

**Faculty Council Meeting**  
**Meeting Minutes**  
Monday, June 18, 2018  
4:00-5:30PM – BRB 105

4:00PM	Welcome and Chair's Comments	Phoebe Stewart
	Approval of Minutes from May 21, 2018 meeting	Phoebe Stewart
4:05PM	Review and edit draft letter to UHC leadership re: UHC faculty concerns	Phoebe Stewart
4:15PM	Review and vote on Bylaws Committee's proposed Bylaws Amendments in Articles 1, 2 and 3	Phoebe Stewart
4:45PM	Annual report from CAPT	Richard Martin
4:50PM	Discussion and vote on expansion of Master of Science in Anesthesia Program	Shane Angus
5:00PM	Annual report from Budget, Finance and Compensation Committee	Mendel Singer
5:25PM	Report of Steering Committee activities	Sudha Chakrapani
5:27PM	New Business	
5:30PM	Adjourn	

**Members Present**

Eli Bar  
Tracey Bonfield  
Robert Bonomo  
David Buchner  
Sudha Chakrapani  
Gary Clark  
Brian D'Anza  
David Friel  
Supriya Goyal  
Anna Maria Hibbs  
Hung-Ying Kao  
Jayme Knutson  
Cynthia Kubu

Charles Malemud  
Danny Manor  
Raed Bou Matar  
Maureen McEnery  
Claire Michael  
P. Ramakrishnan  
Bradford Richmond  
Scott Simpson  
Phoebe Stewart  
Charles Sturgis  
James Howard Swain  
Melissa Times  
Anna Valujskikh

Michael Wolfe  
Nicholas Ziats  
Richard Zigmond  
Pamela Davis

**Members Absent**

Brian Baskin	Stathis Karathanasis	Vicki Noble
Timothy Beddow	Robert Kelly	Kaine Onwuzulike
Shu Chen	Kiranpreet Khurana	Nimitt Patel
Justis Ehlers	Michael Licina	Aparna Roy
Sherine Ghafoori	Jennifer McBride	Satya Sahoo
Mahmoud Ghannoum	Jonathan Miller	Jochen Son-Hing
Aaron Goldenberg	Vincent Monnier	

**Others Present**

Nicole Deming	Mark Chance	Shane Angus
Matthew Lester		

**Welcome and Chair's Comments (Phoebe Stewart)**

Phoebe Stewart, Chair of Faculty Council, called the meeting to order at 4:00PM. Dr. Stewart thanked the Faculty Council Steering Committee and SOM Committee Chairs and members for their service over the past year. Dr. Stewart noted that annual reviews were submitted by all standing committees, but unfortunately, not all reports would be reviewed during the meeting. The reports from the Admissions Committee, the Bylaws Committee, and the Committee on Students were distributed to Faculty Council members and will be attached to the minutes

Dr. Stewart asked for a vote on appointment Clifford Packer, MD as the new chair of the Committee on Medical Education. Dr. Packer is recommended by the previous chair, Dr. Stagno and the Dean. A motion was made to appoint Dr. Packer as Chair of CME, it was seconded. There was no further discussion and the motion passed with 24 in favor, 2 opposed, 0 abstained.

**Approval of Faculty Council Meeting Minutes for May 21, 2018**

A motion was made and seconded to approve the Faculty Council Meeting minutes for May 21, 2018. The floor was then opened for discussion. There being no additions or amendments to the minutes, a vote was taken. 23 were in favor, 1 opposed, and 1 abstained. The motion passes.

**Review and edit draft letter to UHC Leadership regarding UHC Faculty concerns (Phoebe Stewart)**

Dr. Stewart discussed the draft letter to UH Leadership. At the May meeting, members were asked to take a copy of the draft letter available at the front of the room and submit suggestions to her via email before the June 18<sup>th</sup> meeting. Dr. Stewart opened the matter for discussion. The language was reviewed and discussed. Several FC members raised the issue of whether the contents reflected the opinions of the entire Faculty Council. Some members stated that members could sign the letter while other members discussed the advantage of having the whole Faculty Council support faculty issues regardless of location. A motion was made to table the matter and revisit in the Fall and the motion was seconded. There was no further discussion and a vote was taken. The motion passed with 14 in favor, 12 opposed, and 2 abstained.

**Review and vote on Bylaws Committee's proposed Bylaws Amendments in Articles 1, 2 and 3 – Phoebe Stewart**

As part of the five-year review, the SOM Bylaws Committee forwarded suggestions for changes for Articles 1, 2, 3, and 4 of the Bylaws. The proposed amendments to Articles 1, 2 and 3 were distributed at the May meeting and are presented today. The following italicized text sections represent the Bylaws sections voted on at this meeting, including the modifications approved by Faculty Council at this meeting.

Articles 1-2.3b vote (23 in favor, 2 opposed and 3 abstain)

*These Bylaws of the Faculty of Medicine and all amendments adopted hereinafter shall constitute the rules and regulations governing the conduct and procedures of the Faculty of Medicine in the performance of its duties and in the exercise of its authorized powers, as specified by the constitution of the University Faculty of Case Western Reserve University.*

*The Dean of the School of Medicine shall furnish annually to the secretary of the University Faculty a list of all full-time members of the faculty. (A full-time faculty member is one who is a member of the University Faculty as defined in the Faculty Handbook of Case Western Reserve University.) The Faculty of Medicine shall create a Faculty Council to which it shall delegate all powers not reserved to itself (described below in Article 3).*

*The Secretary shall provide to the Faculty of Medicine due notice of all Faculty and Faculty Council meetings and the agenda thereof and supply the minutes of each meeting in a timely manner.*

*Powers Reserved. The regular faculty members of the Faculty of Medicine shall: (1) make recommendations to the dean for consideration and transmittal to the University Faculty Senate concerning the establishment, discontinuance, or merging of any department., and (2) act upon any matter of import referred to the Faculty of Medicine by the Faculty Council for its recommendation.*

Article 2.3c-2.4a: (18 in favor, 5 opposed and 2 abstain)

*The regular faculty members of the Faculty of Medicine shall have the power to recommend approval of amendments to these bylaws. and the power and obligation to elect (1) senators to the University Faculty Senate; (2) at-large members of the Faculty Council; and (3) a majority of the voting members of the standing committees listed in section 2.6a. Faculty members shall also have the power and obligation to elect their departmental Faculty Council representative (see Article 3.3).*

*In the event of university closure, a Faculty of Medicine meeting scheduled for that day shall be rescheduled.*

Article 2.4b – against rejecting the motion – (16 yes, 6 opposed and 3 abstain) – no to Regular, keep just as special meetings.

A motion was made to reject the proposed changes in SOM Bylaws Article 2.4b – 16 in favor, 6 opposed, 3 abstain. The motion passes and the suggested amendment is rejected. The language will remain:

*b. Special Meetings. The Faculty of Medicine shall also meet on the call of the president or the dean, or on written petition of at least 10 faculty members presented to the Faculty Council, or at the request of the Faculty Council.*

Article 2.5e and 2.6: 22 in favor 1 no and 2 abstain

*e. Prior to each faculty meeting, Faculty Council will determine which faculty members are eligible to vote on each issue scheduled for a vote, guided by 2.5c-2.5d above. If an issue is raised and brought to a vote ad hoc at a faculty meeting, the person chairing the meeting will determine who is eligible to vote based on the above criteria.*

## 2.6: Standing Committees of the Faculty of Medicine

*a. The following Standing Committees shall be charged with specific responsibilities (as described more completely in each committee's Charge as approved by the Faculty Council):*

*(1) The Admissions Committee shall participate in both annual decision-making regarding individual student applicants and in the establishment of admissions policy and procedure.*

*(2) The Bylaws Committee shall consider proposed amendments to the Bylaws of the Faculty of Medicine and make recommendations concerning such proposed amendments to the School of Medicine Faculty Council. It shall also review proposals for new and amended charges of standing committees for the purpose of advising the Faculty Council regarding their compliance with the Bylaws prior to a vote by the Faculty Council. At least once every five years, the Bylaws Committee shall conduct a full review of these Bylaws.*

*(4) The Committee on Appointments, Promotions, and Tenure shall review and make recommendations concerning all appointments or promotions to the ranks of associate professor or professor and the award of tenure, as outlined in Article 5.10.*

*(6) The Committee on Students shall have the responsibility of reviewing the total performance of all students and the authority for decisions on student standing and student promotions. Each year it shall submit the list of candidates for the award of the degree of Doctor of Medicine to Faculty Council (see Article 3.1a).*

Article 2.6a(9) Add committee on Women and Minorities shall be established as a standing committee as described in its charge. Motion passes (18 – 5- 2)

*(9) The Committee on Women and Minorities shall be established as a Standing Committee as specified in its charge.*

Article 2.6-Rest of article 2.6. B-d: Motion passes (21 – 3- 1)

*b. The majority of the voting members of each of these Standing Committees shall be elected by the regular members of the Faculty of Medicine. The number of non-voting members shall not exceed the number of voting members. The Dean may appoint members of any standing committee in accordance with the prescribed structure of each such committee as specified in its charge. The number of appointed voting members shall be less than the number of elected voting members. The chair of the Faculty Council shall solicit recommendations for committee chair appointments from each standing committee, and then shall normally appoint one of the elected members to be the chair of each such committee, unless other provisions for appointment of chairs are made in these Bylaws.*

*c. Standing Committees shall be established or discontinued only by amendment of the School of Medicine By-Laws. The two committees that cannot be discontinued are the Standing Committee on Appointments, Promotion and Tenure, and the Standing Committee on Budget, Finance, and Compensation whose existence is mandated by the Faculty Handbook. Ad hoc committees shall not be appointed that duplicate or substantially overlap with the missions and charges of the Standing Committees. The role of the Faculty Council in relation to standing committees is described in Article 3.1. The regular members of the Faculty of Medicine shall vote upon the nominees and shall elect the majority of voting committee members. The standing committees shall be reviewed by the Faculty Council at least once every five years. Standing committees may present proposed changes to their own charge for*



*consideration by the Faculty Council. Prior to being voted upon by Faculty Council, the Bylaws Committee shall review these charges to ensure compliance with these Bylaws and the Faculty Handbook. In the event that an elected member of a standing committee of the faculty resigns during the term, the Nomination and Elections Committee of the Faculty Council shall appoint a replacement. The first choice should be the faculty member who received the next highest number of votes in the most recent election for this committee position. Should that individual be unwilling or unable to serve, the Nomination and Elections Committee shall appoint an alternate of its choosing to the committee. In either case, this appointee may stand for election to the committee for the remainder of the term of the resigning member at the next regularly scheduled faculty election.*

*d. The dean shall be a member of all standing committees ex officio. Persons holding the office of assistant, associate, or vice dean may be regular members of any of these committees. Standing committees may include members holding the office of assistant, associate, or vice dean, as long as their number does not exceed 25% of the membership. The exception to this rule is the Committee on Medical Education, for which the number of members holding the office of assistant, associate, or vice dean shall not exceed 40% of the membership. Persons holding the office of assistant, associate, or vice dean may not chair a Standing Committee of the Faculty. Membership rosters of all standing committees shall be published on the SOM web site and updated annually by July 1 or when a change in the roster occurs.*

The allotted time for the Bylaws Amendments had expired and the Chair called the discussion to a close. The discussion of the proposed Bylaws Amendments in Articles 3 and 4 will continue in the coming academic year when the Faculty Council reconvenes.

#### **Annual Report from the Committee on Appointments, Promotions and Tenure (Richard Martin)**

Richard Martin, Co-Chair of the CAPT presented a summary of the committee's work during the 2017-2018 academic year. The rate of promotions and tenure appears to be consistent with previous years. The number of applications for senior promotions and appointments continues to increase. See attached report.

#### **Review and vote on the Proposed expansion to the Master of Science in Anesthesia Program – Shane Angus**

The Proposed expansion of the MSA program was presented by Shane Angus to Austin, Texas. A presentation on the current need for anesthesia professionals was made along with a justification for the choice of opening the program in Austin. (See attached presentation) There was a review of the financial investment, availability of funds from the program, and expected return on the investment. The Faculty Council discussed and at the end of discussion, a motion was made and seconded to recommend approval of the MSA program. The motion passed with 16 in favor, 6 opposed and 3 abstained.

#### **Annual Report from the Committee on Budget, Finance and Compensation. (Mendel Singer)**

Mendel Singer, Chair of the CBFC presented a summary of the committee's work during the 2017-2018 academic year (see attached report). Mendel Singer thanked the members of the committee for their work. A review of the University Budget Committees recommendations was shared with the Council outlining the reimbursement of MA students taking courses in other schools. This will be advantageous to the SOM and hopefully encourage collaboration across schools. Mendel Singer reported that all but one department (Surgery) submitted departmental merit and incentive plans and recommended that implementation be reviewed in 2020-2021. A financial overview was also given that included the HEC and impact of the new affiliation agreement with UH. Tables showing the basic science faculty salaries compared to the AAMC median were also presented and discussed. Additional detail is being requested to review and analyze the data in a different way. Ongoing projects for the coming year include: reaching out to department chairs and committees, refining the metrics and benchmarks to understand spending trends, and initiate town hall discussions.

**Report of Steering Committee Activities (Sudha Chakrapani)**

Sudha Chakrapani reviewed the Steering Committee actions including the recommendations for emeritus faculty and chair appointments.

**New business**

The floor was solicited for new business. There being no new items to be addressed, the meeting adjourned at 5:30PM.

Respectfully submitted,

Nicole Deming

# Faculty Council Meeting

**June 18, 2018**

Chair: Phoebe L. Stewart

# Agenda

- Welcome and Chair's Comments
- Approval of Minutes from May 21, 2018 meeting
- Review and edit draft letter to UHC leadership re: UHC faculty concerns
- Review and vote on Bylaws Committee's proposed Bylaws Amendments in Articles 1, 2 and 3
- Annual report from CAPT (Richard Martin)
- Discussion and vote on expansion of Master of Science in Anesthesia Program (Shane Angus)
- Annual report from Budget, Finance and Compensation Committee (Mendel Singer)
- Report of Steering Committee activities (Sudha Chakrapani)
- New Business
- Adjourn



# Welcome and Chair's Comments

1. Thank you to the Chair-Elect and Steering Committee members:

Sudha Chakrapani, Chair-elect

Maureen McEnery

Shu Chen

Danny Manor

Jonathan Miller

Kaine Onwuzulike

Anna Valujskikh

*for their help and dedication this academic year*

2. Thank you to the SOM Committee Chairs and members

*for their dedicated service this academic year*



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# Welcome and Chair's Comments

## 3. Vote on incoming Chair for Committee on Medical Education

Committee on Medical Education charge states:

“The Chair of the Committee shall be nominated by the Chair of the Faculty Council with the advice of the Dean. The appointment shall be made by the Faculty Council.”

Clifford D. Packer, MD, FACP

2016 – present

Professor of Medicine, CWRU School of Medicine

Office Address

Louis Stokes Cleveland VA Medical Center Primary Care Clinic

From Susan Stagno, current CME Chair:

“We have identified Dr. Clifford Packer, who joined the committee during this academic year and therefore has 2 more years in his term to serve and can be re-elected to another term, as an excellent candidate to take the role of Chair of this committee as I have completed my 2 terms of office on the committee. Dr. Packer has been involved with medical student education for a very long time, serves as the clerkship director for the internal medicine core for students rotating at the VA, and is a very dedicated educator. He has agreed to take on this role. We have also sought the approval of the Dean for Dr. Packer and she agrees with this choice.”



# Welcome and Chair's Comments

4. Faculty Council members received:

Minutes from April SOM Faculty Meeting with Dean

Slides from May SOM Faculty meeting on compensation with Dean and Provost

5. Three SOM committee reports were distributed to Faculty Council members:

Admissions, Bylaws, Committee on Students

*Unfortunately there will not be time for oral presentations of these reports*

6. Review and vote on expansion of the Master of Science in Anesthesia Program

Expansion is recommended by the ad hoc committee on Graduate Programs and Faculty Council Steering Committee.

We are asking for your support today so that this program can go forward to the Dean and then to the University-wide Faculty Senate for approval.



# Approval of the Minutes from May 21, 2018 Meeting



# Review and edit draft letter to UHC leadership re: UHC faculty concerns

Dear Mr. Zenty and Drs. Simon and, Peters,

The CWRU SOM Faculty Council recently surveyed the concerns of the faculty at each of the affiliate institutions. We are writing to share with you some of the pressing concerns on the minds of faculty affiliated with University Hospitals. While we are aware that many of these issues are under discussion, we feel that it is important that the UH administration recognizes that they remain pressing concerns for faculty.

The faculty is dedicated to meeting the academic mission of both CWRU and UH. They want “To Heal. To Teach. To Discover.” However, there are barriers that they perceive in achieving these mission-driven goals.

With regards to research, the institutional commitment of UH to sustained, high-quality biomedical research is perceived as an unknown. Included among the unpredictable items are 1) salaries for dual- and single-paycheck PhDs and MDs doing research, and 2) reliable support for research careers over time, including protected time for research, start-up packages, and bridge funding. Concern was also expressed about whether funded researchers outside of the proposed centers of excellence would have access to the same types of resources and support as those within the centers. Furthermore, PhD faculty members in clinical departments want to be seen as valuable in their own right, rather than as ancillary ‘enablers’ for MD researchers. Faculty members also expressed that they strongly value the tenure system, and urge UH to maintain a strong commitment to CWRU tenured careers. Along the same subject, junior investigators expressed frustration at not being allowed to start on the tenure track due to the required fiscal commitment. If a faculty member has responsibilities in research, teaching and service, as expected of other tenure track faculty at CWRU, there should be a possibility of starting on the tenure track.



With regard to education and service, Faculty affiliated with UH are very frustrated regarding their ability to participate. They expressed difficulty adjusting clinical schedules to allow for committee meetings or didactic sessions. They also feel penalized if working with a learner slowed their clinical practice and RVU generation. Faculty members want greater ability to engage in teaching and service activities based at both CWRU and UH. Some UH faculty feel that steps to create an Academic Incentive Plan are promising. However, to date, it has only been discussed as a mechanism tied to one-time financial incentives. This type of program has the potential to make a big impact if these academic metrics, or "aRVUs," could be counted in addition to the clinical productivity metrics (clinical RVUs) that are currently used to evaluate performance and determine salaries.

In summary, the faculty expressed great concern regarding the ability of UH to maintain its presence as an established leader in academic medicine. Sustained excellence requires continuous support of its competitive biomedical researchers and educators. The Faculty Council is sharing this feedback with you in the hopes that this information will shape the ongoing dialog between UH and CWRU and will inform UH policy going forward. We express our desire that UH and CWRU will work collaboratively to support faculty in the academic mission to the benefit of both entities. The Faculty Council and its UH representatives welcome any opportunity to take active roles in such discussions and subsequent decision-making forums.

Sincerely,  
The CWRU School of Medicine Faculty Council



# Review and vote on Bylaws Committee's proposed Bylaws Amendments in Articles 1, 2 and 3

Questions can be addressed to Darin Croft, new Chair of Bylaws Committee

## **Specific goals of amendments to SOM Bylaws proposed in the course of the 5-year review**

### Major changes:

- I. Increase overall faculty participation and leadership opportunities in faculty governance
- II. Ensure equitable representation in co-governance
- III. Ensure that the SOM Bylaws and standing committee charges are aligned
- IV. Ensure that the SOM Bylaws are consistent with the Faculty Handbook and Faculty Senate Bylaws and cross-reference the documents

### Minor changes:

1. Ensure internal consistency and cross-reference related sections of the SOM Bylaws
2. Eliminate redundancy and reiterate selected content for emphasis
3. Move text to group with related content
4. Eliminate undefined terms and outdated provisions
5. Correct errors and oversights

### Curatorial changes:

- a. Clarify and simplify language
- b. Correct grammar, punctuation, etc.)

Note: In the tables on the following pages, the items listed under Major changes are referenced by their Roman Numeral codes and the items under Minor changes are referenced by their Arabic numeral codes.



# Substantive Amendments to the SOM Bylaws Proposed by the Bylaws Committee based on the 2017-18 5-year Review

Page/code	Article/	Title	Topic	Salient difference	Rationale	Vote Tally (Y : N)
5 (I, 1)	2.3b 15-17	Authorities and Powers of the Faculty of Medicine	Powers reserved	Adds that faculty members also elect departmental representatives to Faculty Council	Emphasizes the importance of broad participation of faculty in governance	5 : 0 (03/12/18)
6 (II)	2.6.a.2 22-24	Standing Committees of the Faculty of Medicine	Responsibilities of the Bylaws Committee (BC) beyond proposing and evaluating amendments	Adds that the BC also reviews standing committee charges	Aligns the Bylaws and the revised Bylaws Committee charge approved by Faculty Council on 05/15/17	6 : 0 (01/23/18)
6 (II)	2.6.a.2 24-25	Standing Committees of the Faculty of Medicine	"	Adds that the BC also conducts the 5-year review of the SOM Bylaws	"	5 : 0 (02/12/18)
7 (3)	2.6.b & c 14-17 & 28	"	Composition and functioning of Standing Committees of the Faculty	Moved text from 2.6c to 2.6b and modified it slightly	Passage about composition now grouped with related content instead of with content describing standing committee operations	6 : 0 (01/23/18)*
7 (2)	2.6.c 27-28	"	"	Reiterates that the Bylaws Committee reviews committee charges	"	6 : 0 (01/23/18)*
8 (I)	2.6.d 4-5	"	Role of the dean on Standing Committees of the Faculty	Removes provision that the "dean" may chair Standing Committees of the Faculty	Expands leadership opportunities for faculty and protects the dean from potential conflicts of interest	6 : 0 (01/23/18)
8 (I)	2.6.d 9-11	"	Roles of deans on faculty standing committees	Persons with "dean" in their title may not chair standing committees	Expands leadership opportunities for faculty and protects the dean's office from potential conflicts of interest	6 : 0 (01/23/18)

# Substantive Amendments to the SOM Bylaws Proposed by the Bylaws Committee based on the 2017-18 5-year Review (cont'd)

Page/code	Article/	Title	Topic	Salient difference	Rationale	Vote Tally (Y : N)
8 (III)	3.1 26-28	Purpose and functions of the Faculty Council	SOM Executive Committee (previously not defined in Bylaws)	Makes explicit that Faculty Council serves as the SOM Executive Committee	Codifies FC's response to a query from the Faculty Senate, which was approved on 12/12/2016 and supported by the Senate	5 : 0 (01/23/18)
9 (II)	3.2 a, b 19-20, 24-25, 30-31	Membership of the Faculty Council	Faculty Council representative structure	Makes institutional FC representatives non-voting with the exception of the single VA representative	Equity of representation between clinical and basic science departments	5 : 0 (01/23/18)
9-10 (I)	3.2b 33-35, 1-2	"	Non-voting members of Faculty Council	Allows each standing committee to be represented at FC meetings	To allow identification of issues related to each committee's charge	5 : 0 (11/13/17 & 04/10/18)
10 (I)	3.3a 11-13	Election of Faculty Council Representatives	Process for election of departmental representatives	Previous version did not specify which party was to be informed of an upcoming opening	Ensures that faculty members are made aware of opportunities via direct communication	5 : 0 (03/12/18)
10-11 (3)	3.3 (all)	Election of Faculty Council Representatives	Process for electing different classes of FC representatives	Text rearranged to create a preamble and clearly delineate each constituency	Clarifies how each type of FC representative is elected	5 : 0 (03/12/18)
12 (I)	3.5 1-2	Officers of the Faculty Council	Chair-elect candidate eligibility	Removes the restriction that Chair-elect candidates must have 2 years left in their term	Makes candidates with significant FC experience eligible to serve and prevents candidates from running unopposed	6 : 0 (01/23/18 & 5 : 0 02/12/18)

# Annual report from Committee on Appointments, Promotions, and Tenure (CAPT)

Richard Martin, Committee Co-Chair



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## Promotions and Tenure for Faculty at CWRU SOM 2017-2018

<b><u>For Promotion to Professor (Tenured)</u></b>	
nominated	<b>6 (3F, 3M)</b>
initial positive CAPT rec	<b>6 (3F, 3M)</b>
appeals	<b>0</b>
successful appeals	<b>0</b>
final positive CAPT rec	<b>6 (3F, 3M)</b>
Dean's rec	<b>6 (3F, 3M)</b>
Provost & final rec	<b>6 (3F, 3M)</b>
% successful	<b>100%</b>
<b><u>For Promotion to Professor Non-Tenure Track</u></b>	
nominated	<b>33 (9 F, 24 M)</b>
initial positive CAPT rec	<b>30 (8 F, 22 M)</b>
appeals	<b>1 (1 F, 0 M)</b>
successful appeals	<b>1 (1 F, 0 M)</b>
final positive CAPT rec	<b>31 (9 F, 22 M)</b>
Dean's rec	<b>31 (9 F, 22 M)</b>
Provost & final rec	<b>31 (9 F, 22 M)</b>
% successful	<b>94%</b>

## Promotions and Tenure for Faculty at CWRU SOM 2017-2018 (cont)

<b><u>For Award of Tenure</u></b>	
nominated	<b>10 (0F, 10M)</b>
initial positive CAPT rec	<b>5 (0F, 5M)</b>
appeals	<b>4 (0F, 4M)</b>
successful appeals	<b>2 (0F, 2M)</b>
final positive CAPT rec	<b>7 (0 F, 7 M)</b>
Dean's rec	<b>7 (0 F, 7 M)</b>
Provost & final rec	<b>7 (0 F, 7 M)</b>
% successful	70%
<b><u>For Promotion to Associate Prof in Tenure Track</u></b>	
nominated	<b>13 (3F, 10M)</b>
initial positive CAPT rec	<b>12 (3F, 9M)</b>
appeals	<b>1 (0F, 1M)</b>
successful appeals	<b>1 (0F, 1M)</b>
final positive CAPT rec	<b>13 (3F, 10M)</b>
Dean's rec	<b>13 (3F, 10M)</b>
Provost & final rec	<b>13 (3F, 10M)</b>
% successful	100%



## Promotions and Tenure for Faculty at CWRU SOM 2017-2018 (cont)

<b><u>For Promotion to Associate Prof in Non-Tenure Track</u></b>	
nominated	<b>52 (28F, 24M)</b>
initial positive CAPT rec	<b>48 (26F, 22M)</b>
appeals	<b>2 (1F, 1M)</b>
successful appeals	<b>1 (0F, 1M)</b>
final positive CAPT rec	<b>49 (26F, 23M)</b>
Dean's rec	<b>49 (26F, 23M)</b>
Provost & final rec	<b>49 (26F, 23M)</b>
% successful	94%
<b>Overall Promotion and Tenure</b>	<b>106 of 114 = 93%</b>

# Discussion and vote on expansion of Master of Science in Anesthesia Program

Shane Angus



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# Proposal for a Master of Science in Anesthesia Program – Austin, TX

Presented to the Faculty Council of  
the School of Medicine



Shane Angus, CAA, MSA  
Associate Executive Program Director  
Master of Science in Anesthesia Program

# Shortage of Anesthesia Professionals

- Expanding need for anesthesia professionals
  - Increased surgical and procedural population
    - Increasing population age
    - Increased access to health care

2010 and 2013 RAND studies show

- “The overall conclusion is that shortage of ANs ... Is likely at the national level, with the survey approach providing hints of such a shortage and the economic analysis providing stronger confirmation.”
- “the number of anesthesiologists in 2026 is projected to be nearly equivalent to the total supply today (2013)”

# Austin, Texas

- Austin is a growing region with expanding health care facilities and no anesthesia training
- CWRU Master of Science in Anesthesia (MSA) program is uniquely positioned to fulfill the growing demand for Certified Anesthesiologist Assistants in the region.
- Austin Growth rate 16%, 2010-15, projected 2.9 annual growth
- Support from
  - Texas Society of Anesthesiologists
    - “Focus on the creation of an additional CAA training program and dissemination of CAAs throughout Texas”
  - Austin Anesthesia Group (Mednax)
    - “Confirm that our Board as well as our local and regional leaders are all supportive”
  - Baylor Scott and White
    - “We accept the terms as stated....look forward to a long mutually beneficial relationship”

# Financial

- The expansion will not require 'new' investment, as the financial resources are built-in to the SOM's strategic financial recovery plan developed with and approved by the University.
- Currently MSA program generates a surplus network wide
- Network wide projected \$5,000,000 surplus in year 2024
- Austin specific is projected cost neutral by year 2021 and generating an annual \$1,000,000 profit in year 2024

# Annual report from Budget, Finance and Compensation Committee

Mendel Singer, Committee Chair



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Annual Report to Faculty Council  
Committee on Budget, Finance and Compensation



# Members

- Edward Greenfield
- Lynn Kam
- Charles Malemud
- Danny Manor
- Marvin Nieman
- William Schilling
- Mendel Singer, Chair
- Matthew Lester (*ex-officio*)
- Jonathan Karn (Basic Science Chair – *ex officio*)
- Mitchell Machtay (Clinical Science Chair – *ex officio*)

# University Budget Committee Recommendations

- Committee voted to support the UBC recommendations
  - Master's students taking courses in different school: \$750/credit hour tuition transfer (about 42% - % to be maintained in future)
  - 15% undergraduate advising fee based on home of major
  - Simplification of formula for school portion of University shared overhead
- Provost acted to implement; mix of immediate and 2 year phase-in
- Net result is financially favorable to SOM as a whole
  - Impact will vary greatly by department (winners and losers)
  - SOM only school with tuition sharing by department
- Make it easier for cross-school cooperation in teaching

# Faculty Salary Metrics – Review of Merit and Incentive Plans

- Every department (including clinical depts.) submitted metrics, except for Surgery UH
  - All metrics were reviewed
  - Minor revisions suggested for some
- Most departments recognized that faculty expectations can vary
- A fair number took the approach of each faculty member having individual expectations set in consultation with their chair
  - This was recognized by the committee as a best practice
- Implementation should be reviewed, perhaps through faculty survey, in 2020-2021.

# Financial Overview

- New forecast for FY18 is deficit of \$5.3 million (down from \$7M)
  - How can we improve our grant success rate? Best practices? Sharing proposals?
  - Substantial reduction forecast for FY20
    - Increased NIH F&A; Full implementation of UBC recommendations (see later)
- Increase in research funding, F&A
- Strong, but slower growth in Master's programs
- Health Education Campus
  - CWRU (not SOM) ultimately on hook for \$50 million over 5 years for building
    - CCF responsible for rest of shortfall between actual cost of building and fundraising
  - Projected overhead within budget (About \$2.2 million per year; original est. \$2.5 million)
  - Pending discussions on IT costs, transportation and building maintenance
- SOM deficit for FY18 and FY19 being covered by CWRU due to affiliation agreement
  - SOM budget is about \$500 million (almost half of CWRU budget; more than all other s); deficit about 1%
  - There are 3 other schools with a combined operating deficit almost double SOM, with 44% of budget
  - Some other schools using retained surplus to cancel deficit
  - "Retained Surplus" is a misnomer. No money is actually retained.
    - Schools may apply prior years' surpluses to current year deficit
    - But cash from prior surpluses were not actually "saved" – CWRU uses to balance budget
  - UGEN and AUX making large profit to create CWRU surplus

# Miscellaneous topics

- Concern expressed about security/support from UH for CWRU PhD faculty in UH clinical departments
- Renewed efforts for greater transparency, and faculty input in SOM finances
  - Special thanks to Matthew Lester for his cooperation and candor..and patience
- Department Chair Representatives don't come to the meetings
  - Their perspective is critical to the function of the committee
  - Recommend allowing chair reps to designate substitute to attend
  - Committee chair to work with the basic science and clinical department chairs to ensure there is an interested volunteer to participate

## AAMC Median: How do we stack up?

SOM reviewed the data for basic science faculty  
2016 to 2017 using the same faculty cohort

Fiscal year	Above the Median	Below the Median
2016	76	78
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Excludes MDs, dual employed, part-time, chairs and  
those with Dean titles.

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to AAMC median by rank for total basic science

Fiscal year	Above the Median	Below the Median
2018	96	67

Excludes MDs, dual employed, part-time employees, chairs  
and those with Dean titles.

These tables show the number of faculty above or below the overall AAMC median salary.

SOM administration is not looking to continue using this as the metric moving forward

We are in the process of seeking more granular data, e.g. salary by rank, years in rank, years at CWRU  
e.g. are faculty who stay at CWRU long-term doing worse (small annual increments)

# Planned for 2018-2019

- More interaction with chairs, other committees
  - Present issues to chairs meetings; minimally 1-2 meetings per year, BS and Clin.
  - Sharing issues of concern with relevant SOM committees
    - E.g. Biomedical WorkForce
- Developing framework for better review of financials
  - Refining metrics and benchmarks for tracking trends and identifying potential concerns, and making it easier to review how budget aligns with strategic priorities
  - More public sharing of key financial information in accessible format
- Initiate annual town hall
  - Share info, get feedback, clear up misunderstandings
  - Financial overview
  - Committee agenda
  - Recommendations

# Recommendations

- Review incentive salary policy
  - Currently all at risk, each year
  - No clear target for long-term, e.g. what % of salary should be incentive
  - Should this be part of CBFC charge moving for next year?
- Create committee to inform, review SOM policy and strategic targets
  - Participation of administration, chairs and faculty
  - Could be merged with prior recommendation for a group to review and modernize the SOM economic model for long term success
    - Would need to add members from industry and key alumni



*Thank You!!*

# Report on Faculty Council Steering Committee Activities, Meeting June 4, 2018

- Reviewed annual reports from:
  - (i) CAPT
  - (ii) Budget, Finance and Compensation Committee
  - iii) Bylaws Committee
- Reviewed the suggestions received for the draft letter to the UHC leadership regarding UHC faculty concerns.
- Discussed and voted on Chair Appointments.
- Reviewed Emeritus appointment requests.



# Faculty Council Dates 2018-2019

Faculty Council Meetings are typically held the third Monday of the month  
(where possible) – 4:00 to 5:30PM - BRB105

## 2018

September 17

October 15

November 19

December 17

## 2019

January 28 (January 21 is Martin Luther King Holiday)

February 18

March 18

April 15

May 20

June 17

**no meetings July or August**

\*\*\*\*\*



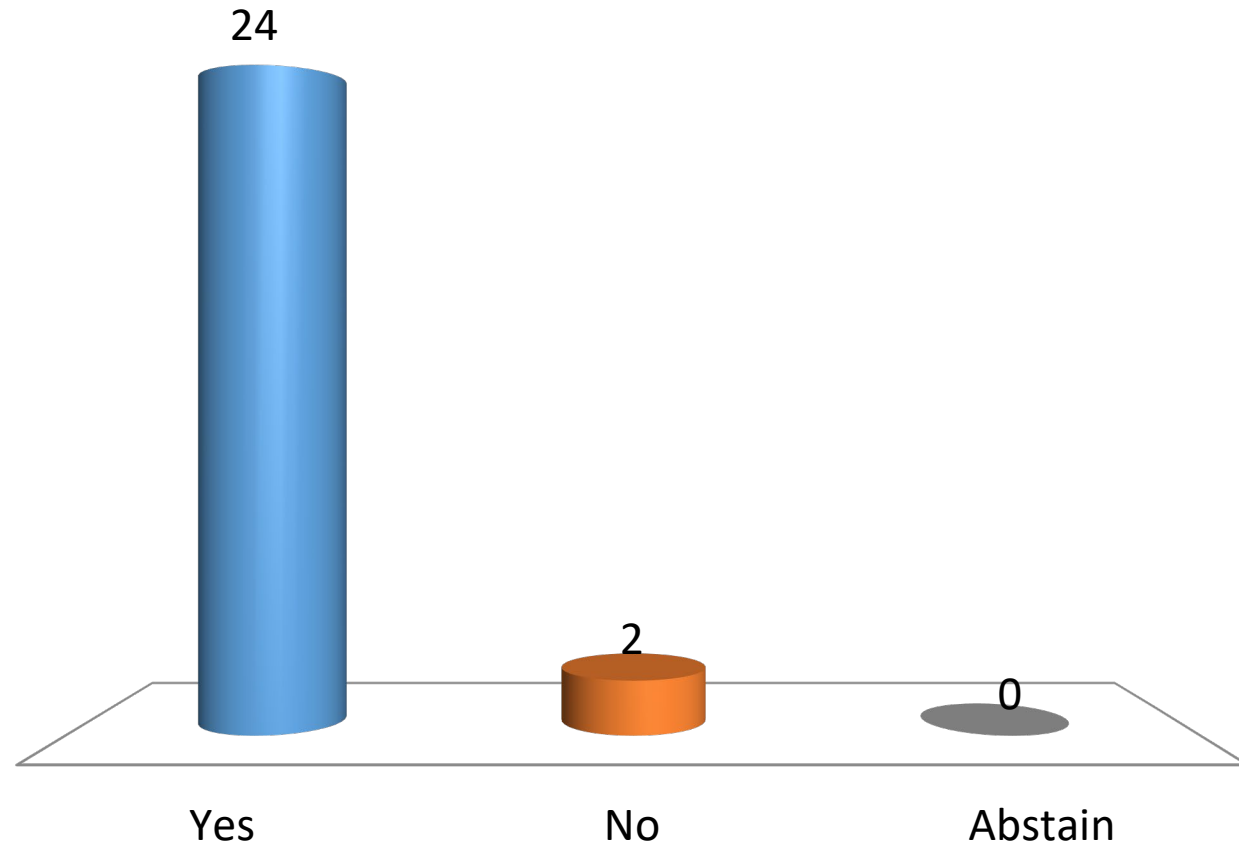
CASE WESTERN RESERVE  
UNIVERSITY EST. 1826

think beyond the possible™

# New Business

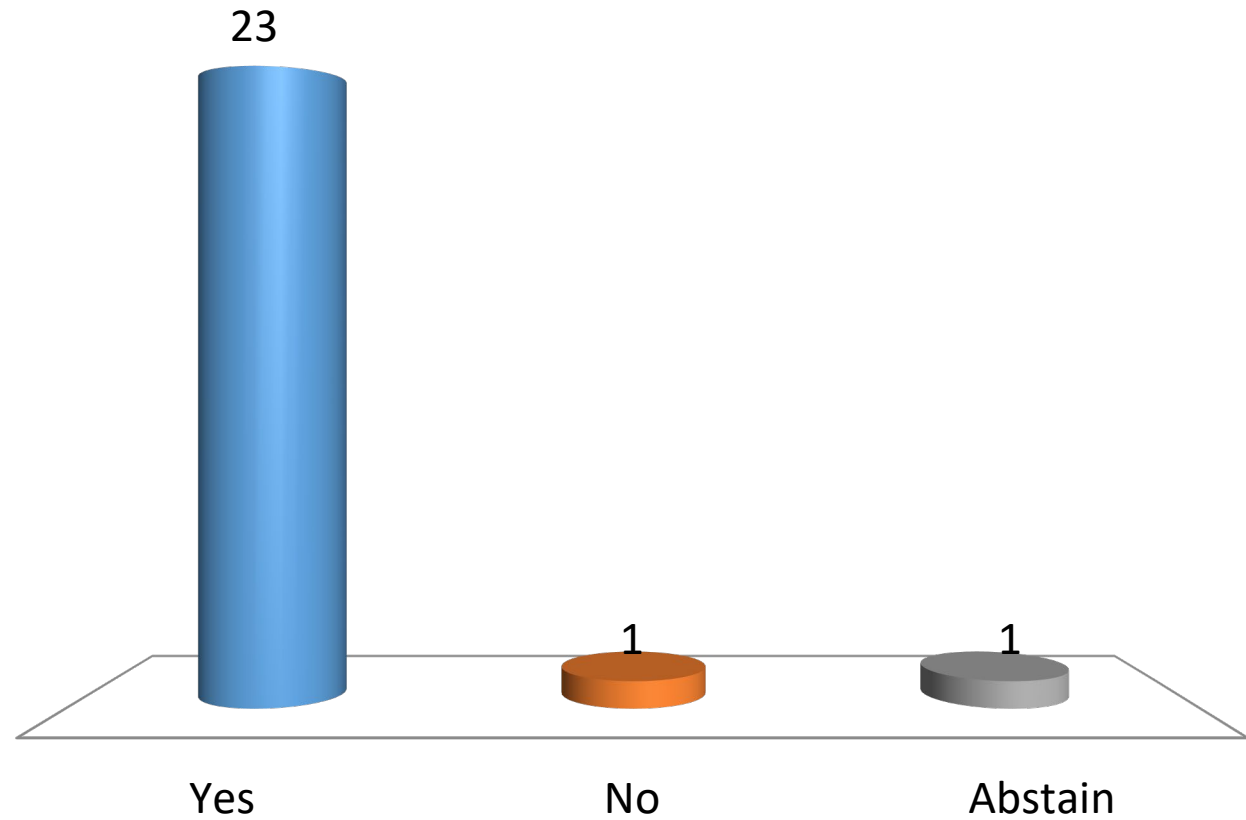
# Do you approve Dr. Clifford Packer as incoming Chair for Committee on Medical Education?

- A. Yes
- B. No
- C. Abstain



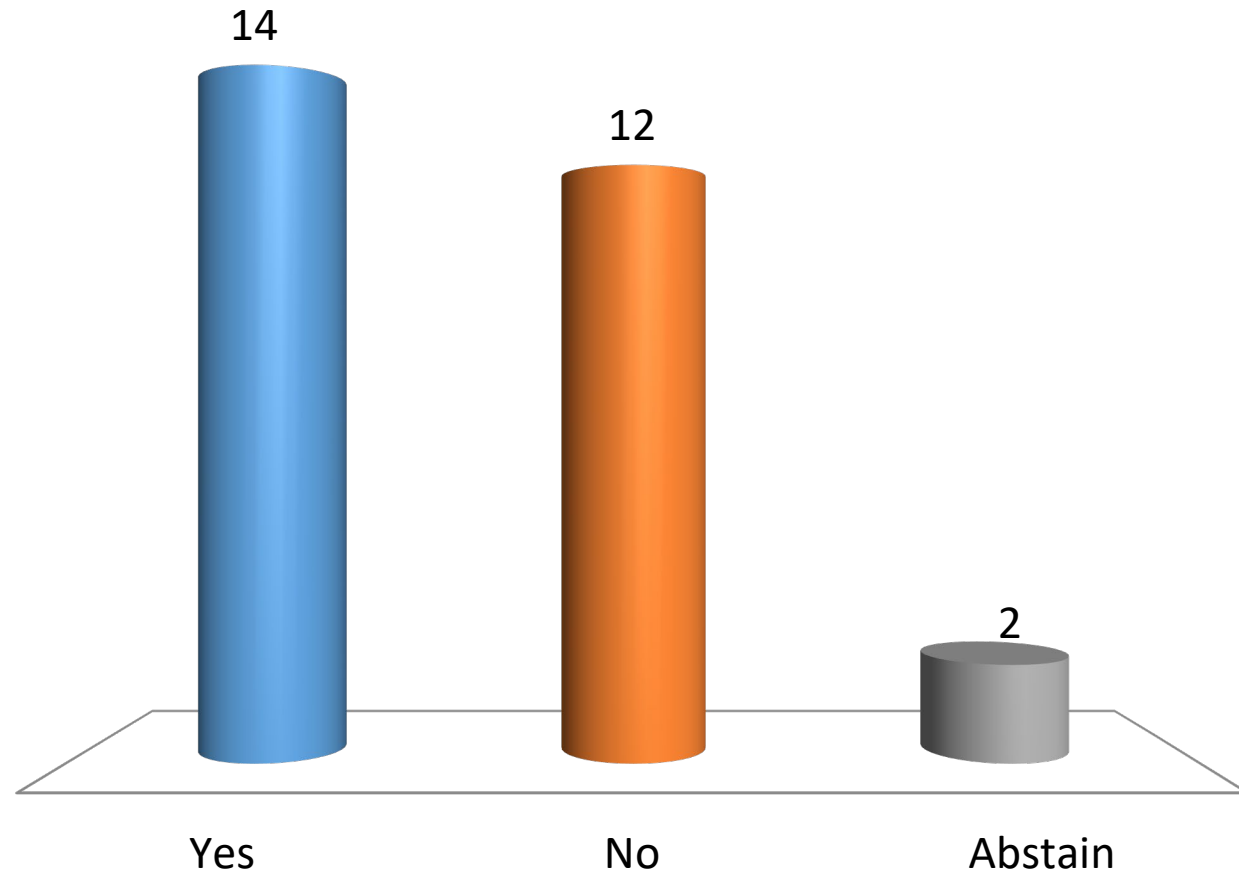
# Do you approve the minutes?

- A. Yes
- B. No
- C. Abstain



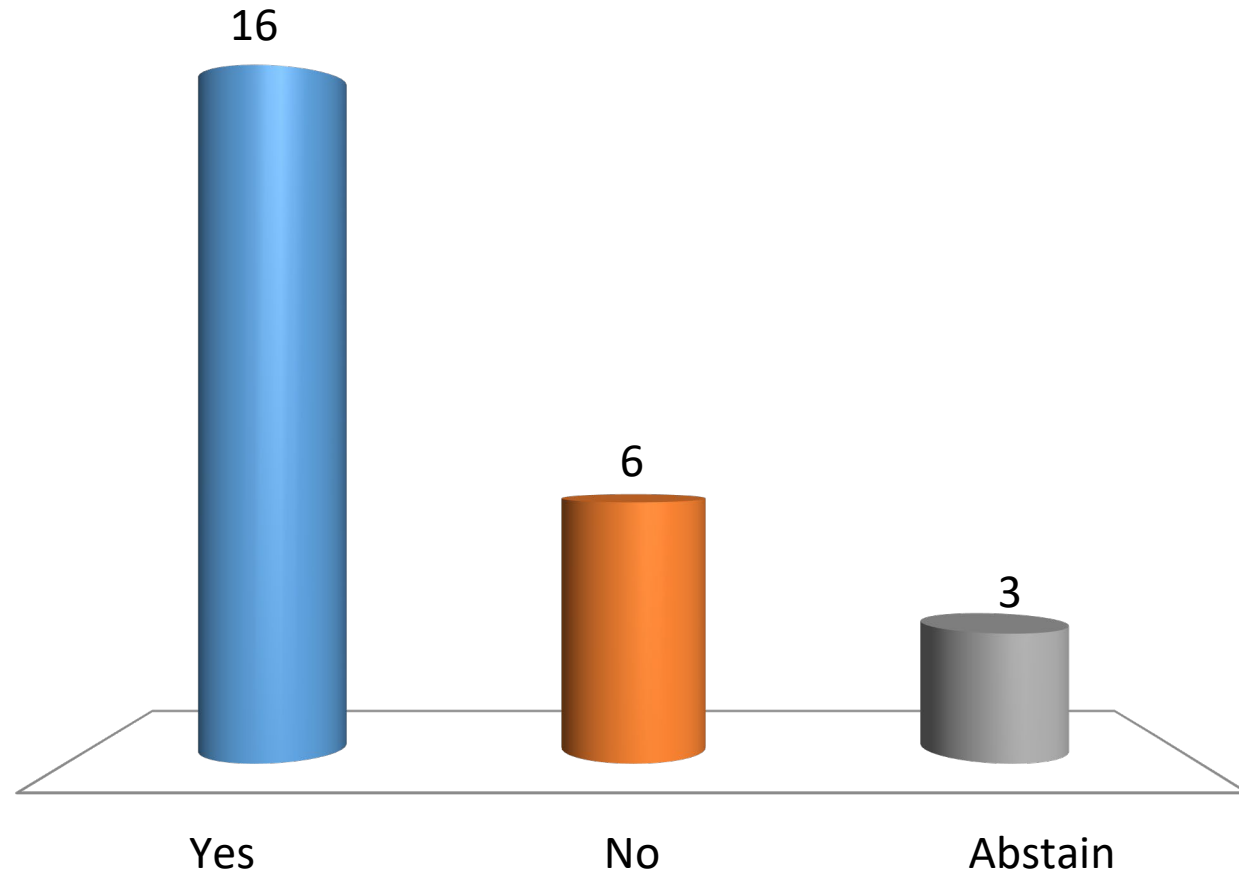
# Do you approve tabling the letter to UHC Leadership?

- A. Yes
- B. No
- C. Abstain



# Do you approve of expansion of the Master of Science in Anesthesia Program?

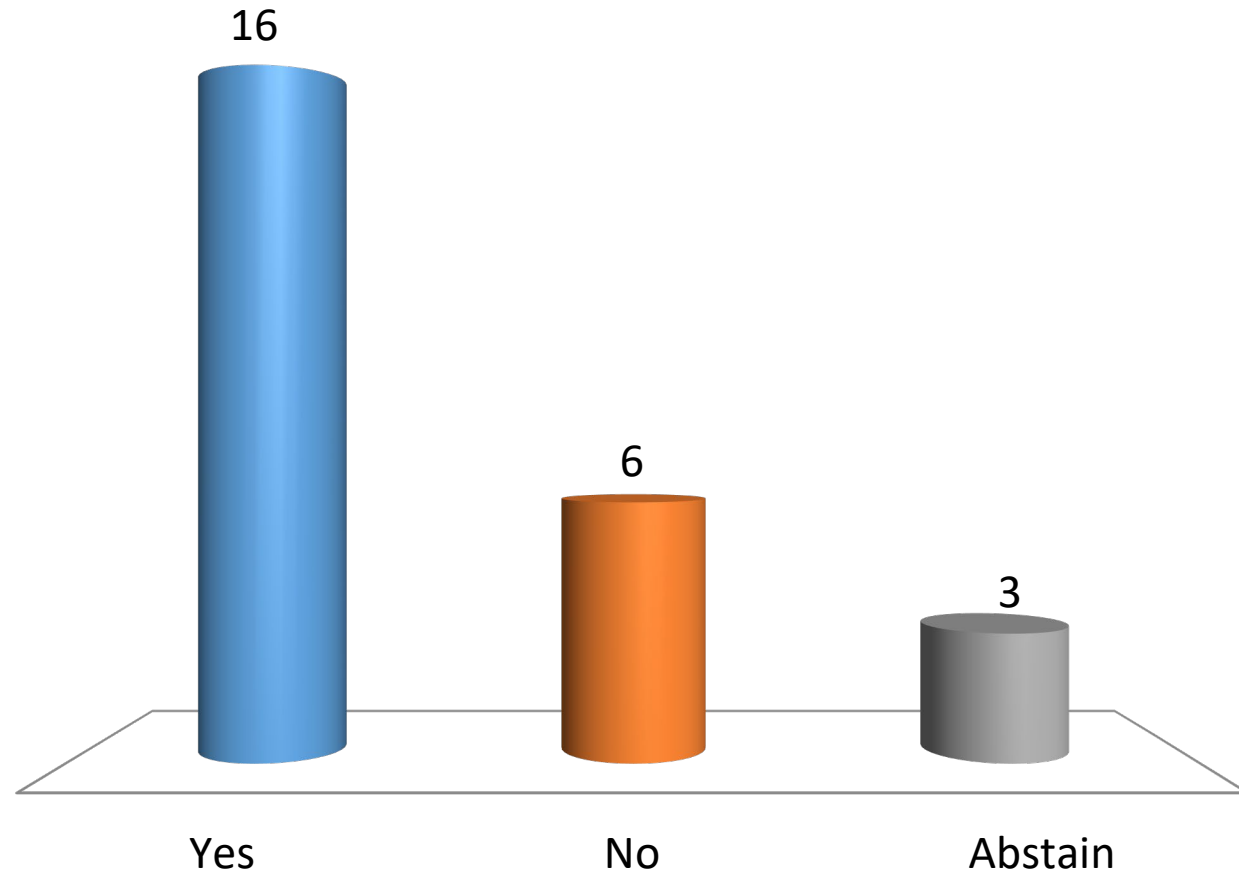
- A. Yes
- B. No
- C. Abstain





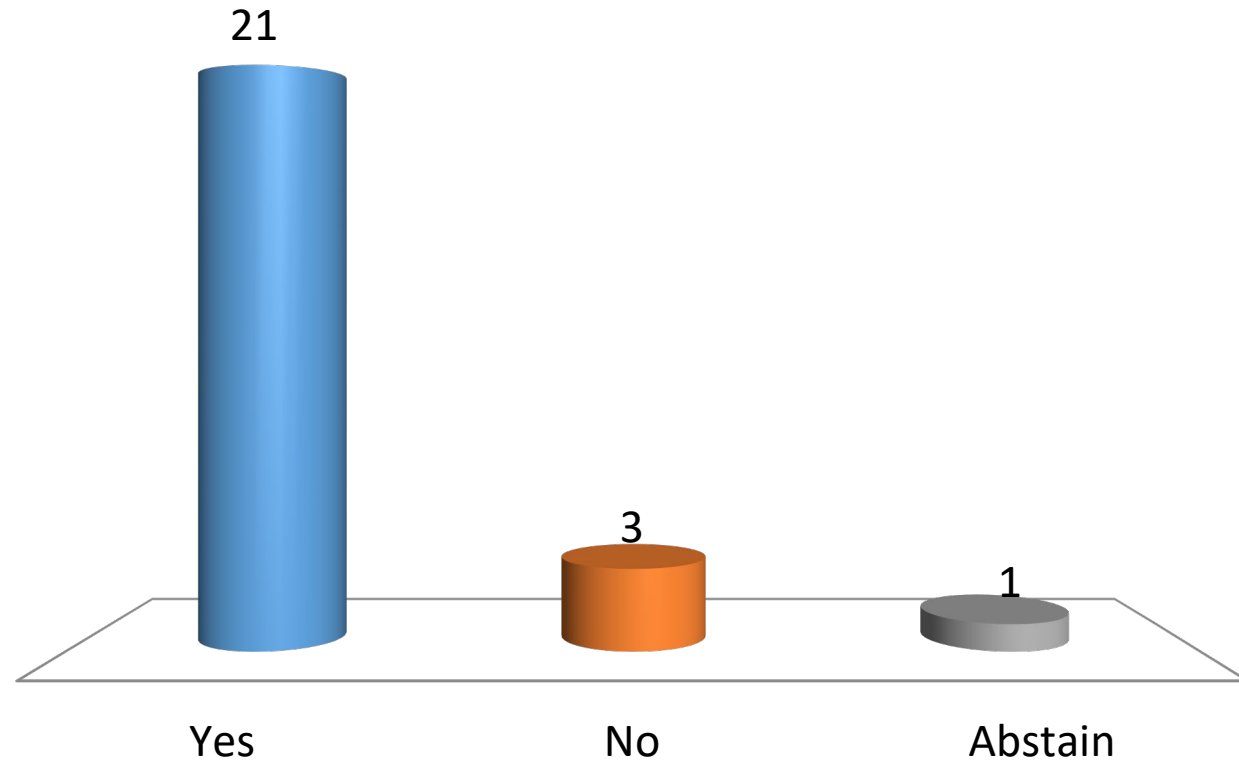
# Do you reject the proposed changes in SOM Bylaws Article 2.4b?

- A. Yes
- B. No
- C. Abstain



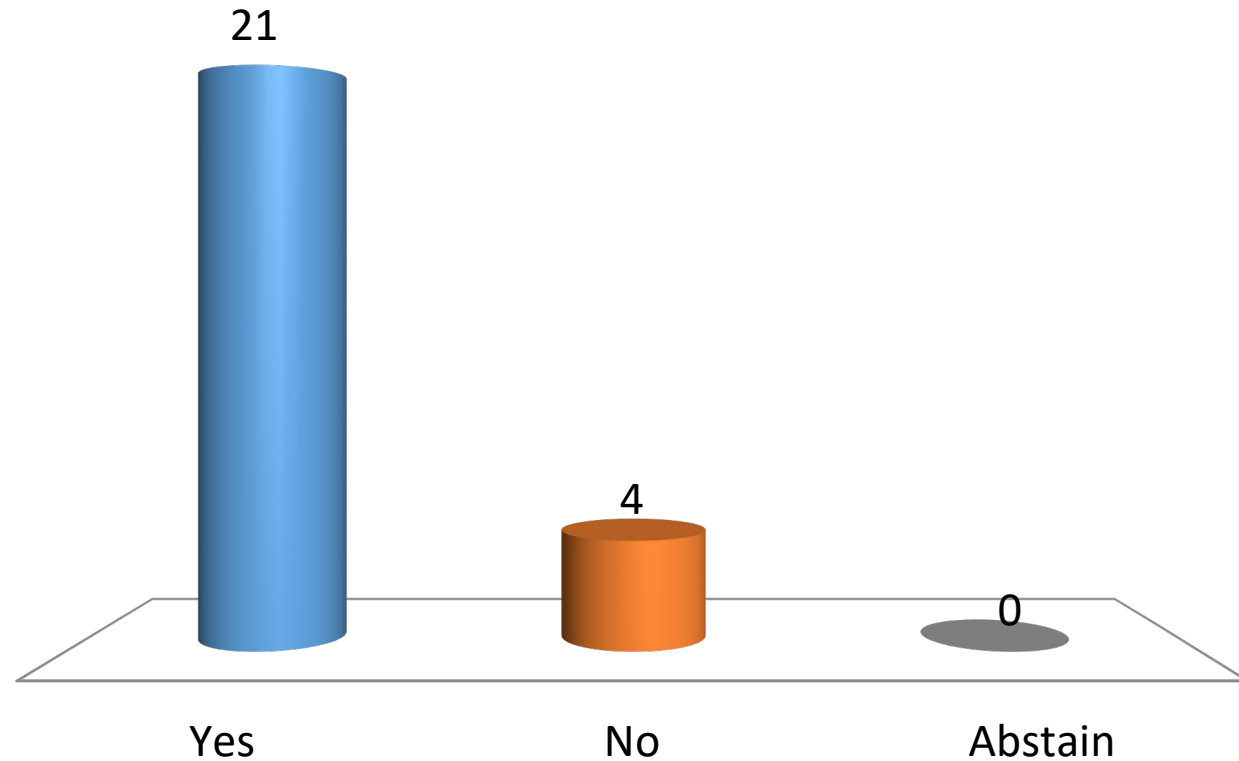
# Do you approve of the proposed changes in SOM Bylaws Article 2.6 b-d?

- A. Yes
- B. No
- C. Abstain



# Do you approve of the proposed changes in SOM Bylaws Article 2.6 point 9?

- A. Yes
- B. No
- C. Abstain





# School of Medicine Faculty Meeting on Compensation

**May 7, 2018**

**Pamela B. Davis, MD, PhD**

Dean, School of Medicine; Senior VP, Medical Affairs, CWRU

**William “Bud” Baeslack**

Provost, Case Western Reserve University

# What are the principles and goals for faculty compensation at the SOM?



# SOM Compensation Principles

Six years ago, a Faculty Council Committee set forth principles to:

1. Honor the **contributions of individual faculty** to their discipline, department, the SOM and CWRU as a whole, enhancing the university and school strategic plan, and increasing national and international recognition.
2. **Be competitive** with peer institutions.
3. Encourage the development and monitoring of **faculty-driven criteria** for merit and incentive components at the Departmental level.
4. **Enhance SOM revenues** over time by appropriately recognizing outstanding faculty efforts.
5. **Provide flexibility** to respond to the unique circumstances of individual faculty.
6. Align with the CWRU faculty by-laws and the CWRU faculty senate guidelines on compensation.



# Faculty Council Recommendations

Raises to be determined by faculty-driven, largely **objective** criteria, and provide incentive raises for exceptional faculty performance:

- Each department sets criteria based on departmental goals.
- Chairs expected to follow departmental criteria.
- No written criteria, no incentive.

Set goal for SOM salary median to match AAMC salary median:

- To be achieved over time.
- Led by high-performing faculty.
- Should stay within fiscally responsible boundaries.



# 2018 Departmental Review

This year, the SOM requested that departments review their criteria:

- Departmental goals may have changed
- After implementation, some departments may wish to alter criteria
- New programs may require new criteria
- New faculty should have the opportunity to contribute their thoughts



# How Compensation is Determined and Distributed at the SOM



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UNIVERSITY

1843 - 2018  
CELEBRATING  
**175**  
YEARS

# SOM Funds Flow

## Where do the funds come from?

- Grants: Federal and Non-Federal
- Tuition (MD, MS, BS)
- Endowments
- Gifts
- Affiliate contributions

## How are the funds spent?

- Compensation
  - Faculty
  - Staff salaries
- Direct operating costs
- Student aid
- Recruitment and Retention
- Facilities
- Administration

# Four Components Comprise Faculty Compensation

## Base salary

Merit

Promotion increases

## Supplements

## Incentive Compensation

## Star Performer Bonuses



# Determining Merit Raise/Incentive Compensation Dollar Pool

## Provost

- Recommends overall percentage increase
- In FY18 = 3%
- The pool comes from school funds, not new dollars or university dollars

## SOM Dean

- Recommends how much is allocated to merit and how much to incentive
- In FY18:
  - 1.5% merit
  - 1.5% incentive

## Department Chairs

- Allocate merit raises: 0 – 4%
- Allocate incentive compensation
- Based on departmental criteria



# Determining Merit and Incentive Compensation

Department-based criteria include:

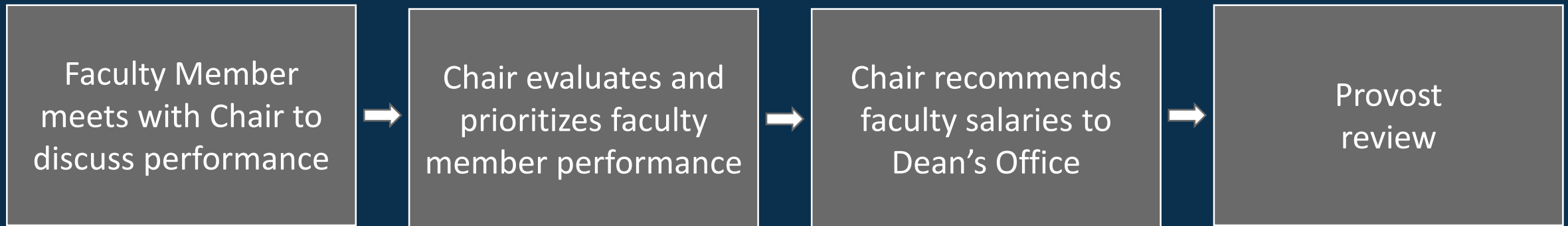
- Contribution to teaching mission
  - Medical Students
  - Undergraduate, PhD, Post-Doc, Master Students,
- Contribution to research mission
  - Grants
  - Publications
- Contribution to service mission
  - Participation in CWRU / SOM committees and groups
  - Professional activities
- Other factors



# Determining Merit and Incentive Compensation

**Merit Raise:** Chairs make recommendations based on performance metrics *established by faculty in each department* for research/teaching/service

**Incentive Compensation:** Chairs make recommendations based on **truly exceptional** performance based on *department-specific, faculty-established* performance metrics **AND** Chair's plan for the department



Chairs can recommend administrative supplements and 'out of cycle' reviews. In addition, some departments declined to set criteria. In this case, no incentive dollars are provided. Additional reviews by Dean and Provost for **outliers, gender, and other** factors.



# Current Analysis



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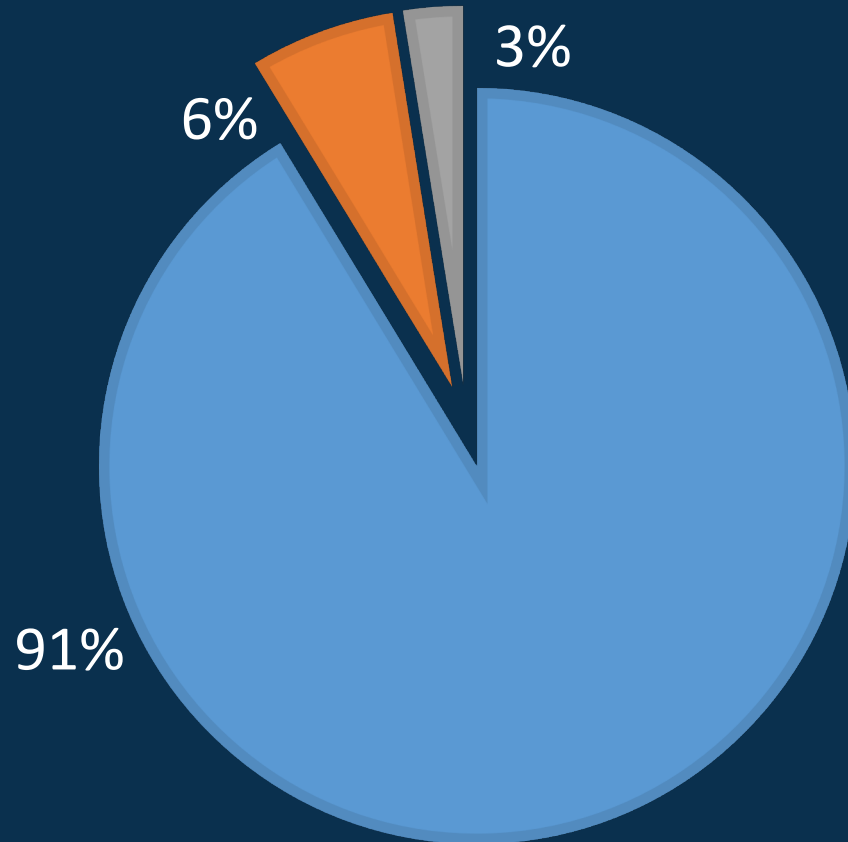
Excludes MDs, dual employed, part-time employees, chairs and those with Dean titles.



# Distribution of Faculty Compensation

## BASIC SCIENCE

■ Base ■ Incentive ■ Admin



51% of faculty received an incentive payment in FY18



# Summary

- Currently incentive compensation is 5-7% depending on rank.
- The structured compensation model has allowed the SOM to increase salaries for productive faculty.
- We need to continue to increase compensation to stay competitive.
- Leveraging the structured compensation plan will be key as it provides department-driven criteria and a pathway for increases that mirror performance.

# Provost



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**Faculty Council Meeting**  
**Draft Meeting Minutes**  
Monday, June 18, 2018  
4:00-5:30PM – BRB 105

4:00PM	Welcome and Chair's Comments	Phoebe Stewart
	Approval of Minutes from May 21, 2018 meeting	Phoebe Stewart
4:05PM	Review and edit draft letter to UHC leadership re: UHC faculty concerns	Phoebe Stewart
4:15PM	Review and vote on Bylaws Committee's proposed Bylaws Amendments in Articles 1, 2 and 3	Phoebe Stewart
4:45PM	Annual report from CAPT	Richard Martin
4:50PM	Discussion and vote on expansion of Master of Science in Anesthesia Program	Shane Angus
5:00PM	Annual report from Budget, Finance and Compensation Committee	Mendel Singer
5:25PM	Report of Steering Committee activities	Sudha Chakrapani
5:27PM	New Business	
5:30PM	Adjourn	

**Members Present**

Eli Bar  
Tracey Bonfield  
Robert Bonomo  
David Buchner  
Sudha Chakrapani  
Gary Clark  
Brian D'Anza  
David Friel  
Supriya Goyal  
Anna Maria Hibbs  
Hung-Ying Kao  
Jayme Knutson  
Cynthia Kubu

Charles Malemoud  
Danny Manor  
Raed Bou Matar  
Maureen McEnery  
Claire Michael  
P. Ramakrishnan  
Bradford Richmond  
Scott Simpson  
Phoebe Stewart  
Charles Sturgis  
James Howard Swain  
Melissa Times  
Anna Valujskikh

Michael Wolfe  
Nicholas Ziats  
Richard Zigmond

## **Members Absent**

### **Others Present**

Nicole Deming  
Matthew Lester

Mark Chance  
Shane Angus

Pamela Davis

### **Welcome and Chair's Comments (Phoebe Stewart)**

Phoebe Stewart, Chair of Faculty Council, called the meeting to order at 4:00PM. She announced that Dr. Cynthia Kubu has been elected as the Chair of the Faculty Council's ad hoc committee to review Faculty Council's structure and membership. Members include: CCF: Cynthia Kubu (Chair), Keshava Murthy Narayana Gowda; CWRU SOM: Phoebe Stewart, Danny Manor; MetroHealth: Nimitt Patel, Supriya Goyal; UH: Alex Huang, Maureen McEnery; and VA: Sarah Augustine, Ronda Mourad.

Dr. Stewart discussed the draft letter to UH Leadership and requested that Faculty Council representatives take a copy of the draft letter available at the front of the room and submit suggestions to her via email before the June 18<sup>th</sup> meeting. Dr. Stewart also directed members to the printed copies of the rationale for proposed amendments to the SOM Bylaws (Articles 1, 2 and 3). These amendments will be discussed by Jo Ann Wise, Chair of the Bylaws Committee, later on the agenda. The amendments are scheduled to be reviewed and voted on at the June 18<sup>th</sup> Faculty Council meeting. Members were encouraged to take copies of the outline and rationale for the proposed amendments and discuss them with the departments.

### **Election of Faculty Council Chair-Elect, Steering Committee and Faculty Council representatives on the Nomination and Elections Committee**

Dr. Stewart reviewed the candidates for election, and took nominations from the floor as required by the SOM Bylaws. There were no nominations from the floor and election commenced. Ballots were distributed as voting members signed in. Sudha Chakrapani, Faculty Council Chair-Elect, and Nicole Deming, collected and counted the ballots. Faculty Council representatives that were not able to attend the meeting were sent a ballot the previous week and those ballots were included in the vote tally.

Faculty Council elected Dr. Supriya Goyal at Faculty Council Chair-Elect. Faculty Council Elected Gary Clark, Cynthia Kubu, Danny Manor, and Vincent Monnier to serve on Steering Committee. A run-off election was required for the 5<sup>th</sup> Steering Committee member between Tracey Bonfield and Shu Chen. Dr. Chen was elected by a vote of 19 for Chen and 11 for Bonfield.

There were no candidates for Faculty Council's representatives on the Nomination and Elections Committee. This year only Faculty Council representatives based in a Clinical Science Department are eligible. The Faculty Council will seek nominations for these positions in September when it reconvenes.

### **Approval of Faculty Council Meeting Minutes for April 16, 2018**

A motion was made and seconded to approve the Faculty Council Meeting minutes for April 16, 2018. The floor was then opened for discussion. There being no additions or amendments to the

minutes, a vote was taken. 25 were in favor, 3 were opposed, and 0 abstained. The motion passes.

### **Annual Report from the Nomination and Elections Committee (NEC) – Arne Rietsch**

Arne Rietsch, Chair of the Nomination and Elections Committee, presented the committee's annual report to Faculty Council. Dr. Rietsch presented an overview of the committee's activities including the nominations and elections for Faculty Senate, and standing committees of the SOM. The NEC also approved the Ballot for Faculty Council's election. Dr. Rietsch reviewed the openings for the upcoming election for SOM standing committee members.

### **Review and vote on NEC-related proposed Bylaws Amendments – Arne Rietsch**

As part of the five-year review, the SOM Bylaws Committee forwarded suggestions for changes involving nominations and elections. The NEC created language and forwarded those proposed to the Bylaws Committee for review. After discussion, the proposed amendments from the NEC and Bylaws were recommended for consideration by Faculty Council. Dr. Rietsch presented the following amendments. 1. Change the term "preclinical" to "basic in section 3.6(b); expanded the pool of eligible candidates for the position of Faculty Council Chair-Elect to all current FC members rather than those with 2 additional years left on their term; introduced language that encourages a diverse slate of nominees; and included language that made faculty already active on two of more standing committees of the School of Medicine (include Faculty Council) ineligible to run for another committee unless no other candidates step forward. The NEC also proposed changing the election to preferential voting rather than a majority.

A motion was made, seconded, and the issue was open for discussion. A vote was then taken to recommend approval of the amendments and it passed by a vote of 28 in favor, 3 opposed and 0 abstained)

A suggestion from the floor was made that the Dean be prohibited from serving as a member of the NEC and made a reference to Robert's Rule. The issue was referred to the Bylaws Committee for discussion and a request to report back to Faculty Council.

### **Re-Review of the Proposed Doctor of Physical Therapy (DPT) Program – Pat Thomas, Matthew Lester, Cheryl Thompson**

The Proposed Doctor of Physical Therapy (DPT) Program was not approved by Faculty Council at the March meeting. It is being re-presented to address concerns that were raised at the previous Faculty Council meeting. The goal of the program is to create a unique, strong, top tier DPT program within the SOM. There are a number of perceived benefits for SOM, including helping us build a reputation as an innovator in health care delivery and workforce development, and enhancing existing strengths in inter-professional education and interdisciplinary research. While we do have a lot of good areas of research within SOM with regard to physical therapy and rehabilitation research, the DPT program would increase the opportunity to expand research and recruit faculty in PT/Rehab sciences.

Eighteen months have been spent in preparation working with the offices of Graduate Studies, Medical Education, Finance and Accounting. Results of these efforts were a feasibility analysis, and confirmation of space and resource (in current space). The team led by Pat Thomas worked with Jill Stanley to plan for space and resources for the program. Cheryl Thompson and others completed site visits to three other DPT programs around the country, attended accreditation workshops, created an Advisory Board for curriculum development and hired an external consultant.

Curricular requirements for this program would be a 3-year post-bac clinical doctorate. All CAPTE requirements, taken to the next level, will be met: core coursework, inter-professional education,



evidence based practice and research, professional and leadership development, and 36 full time weeks of clinical experiences. We want to create a strong program and build on our strengths.

Part of what would make us unique is that CWRU is a top tier medical school with a focus on research. This sets us apart from most of the DPT programs that are available. We have nationally recognized rehabilitation programs at our clinical affiliates. The future of the PT profession will be more research oriented, making this a strong program for the SOM. We will have the opportunity to offer unique features like wellness pathways/electives with the MD program.

Pat Thomas thanked Faculty Council for allowing her and her team to come and present the DPT program again. Dean Davis requesting that Faculty Council reconsider and asked Pat Thomas to present in her place. Concerns raised at the previous meeting focused on financing the program and providing evidence of a need in the area for another DPT program. Dr. Thomas summarized the findings of a market analysis that demand for PT will increase 34% over next ten years and the reputation of CWRU will make it a leader in this area. The students will be recruited across the US rather than just in Ohio, as is true for our PA and MD programs. Unlike other projects, the CWRU DPT program will have a strong research component.

A review of the financial analysis was given and addressed concerns raised in the previous meeting regarding the project start-up costs and the short- and long-term return on investment for the School. A number of faculty based at CWRU affiliates have been involved in the process. At the end of discussion, a motion was made and seconded to recommend approval of the DPT program. The motion passed with 23 in favor, 6 opposed and 2 abstained.

#### **Annual Report from the Committee on Biomedical Research (Jill Barnholtz- Sloan)**

Jill Barnholtz-Sloan, Vice Chair of the Committee on Biomedical Research (CBR) and acting as Co-Chair, presented the annual report. Dr. Barnholtz-Sloan reviewed the structure of the CBR including the four councils and reviewed the current charge. There was a request for Faculty Council's help in communicating the CBR's actions and getting messages to the Dean and to the broader faculty.

The Research Portfolio Council has had monthly meetings. They recommended a new RNA profiling core to start the next fiscal year in July. The Council is working towards finding a new topic on which to focus their efforts for next year. The Biomedical Workforce Council has had monthly meetings and provided recommendations for updating bridge funding guidelines and sent these to Mark Chance's office. The Council is creating a survey to identify faculty in the SOM whose grants were not funded to better understand how to help get these proposals/projects funded in the next round. The Research Infrastructure Council meets to assist Facilities and Finance with SOM space. They work closely with Matthew Lester and Jill Stanley to identify spacing priorities. The Enabling Technologies Council has never met. They struggle with finding their role as they appear to duplicate the SOM Core Committee.

Dr. Barnholtz-Sloan requested comments and suggestions from Faculty Council to assist in the issues raised with the current structure. She expressed the CBR's preference to have regular meetings with a smaller group. They wish to review the current membership structure, and keep the representations from the affiliates and SOM leadership. A recommendation was made to go back to the CBR and create a revised charge for presentation to Faculty Council in the Fall.

#### **Report of Steering Committee Activities (Sudha Chakrapani)**

Sudha Chakrapani reviewed the Steering Committee actions including the recommendations for emeritus faculty. She also discussed the ad hoc committee to review Faculty Council representation and structure.

#### **Report by SOM Representative on the Faculty Senate Executive Committee (Jo Ann Wise)**

1 Dr. Wise reviewed the last of the Faculty Senate meetings including the end of the year Finance meeting  
2 for the Senate. At the end of the year Senate Finance meeting it was reported that the School of Medicine  
3 is the most deeply in debt of all of the Schools. On a positive note, the SOM is prepared for the projected  
4 operating expenses for the new HEC building. In contrast, the Dental and Nursing Schools are less well  
5 prepared.

6  
7 **New business**

8 The floor was solicited for new business. There being no new items to be addressed, the meeting  
9 adjourned at 5:30PM.

10  
11 Respectfully submitted,

12  
13 Joyce Helton  
14

Summary of Committee on Appointments, Promotions, and Tenure Activities June 13, 2018																
		2017-2018	2016-2017	2015-2016	2014-2015	2013-2014	2012-2013	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006		
<b>PROMOTIONS AND TENURE FOR FACULTY AT CWRU SOM</b>																
<u>For Promotion to Professor (Tenured)</u>																
nominated		6 (3F, 3M)	9 (2F, 7M)	2 (1F, 1M)	8 (1F, 7M)	12 (4F, 8M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)*	3 (1F, 2M)*	8 (1F, 7M)	9	2	5		
initial positive CAPT rec		6 (3F, 3M)	9 (2F, 7M)	2 (1F, 1M)	8 (1F, 7M)	9 (2F, 7M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)	3 (1F, 2M)	7 (1F, 6M)	9	1	5		
appeals		0	0	0	0	2 (2F, 0M)	0	0	0	0	0	0	1	0		
successful appeals		0	0	0	0	1 (1F, 0M)	0	0	0	0	0	0	0	0		
final positive CAPT rec		6 (3F, 3M)	9 (2F, 7M)	2 (1F, 1M)	8 (1F, 7M)	10 (3F, 7M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)	3 (1F, 2M)	7 (1F, 6M)	9	1	5		
Dean's rec		6 (3F, 3M)	9 (2F, 7M)	2 (1F, 1M)	8 (1F, 7M)	12 (4F, 8M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)	3 (1F, 2M)	7 (1F, 6M)	9	1	*****		
Provost & final rec		6 (3F, 3M)	8 (1F, 7M)	2 (1F, 1M)	8 (1F, 7M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)	3 (1F, 2M)	3 (1F, 2M)	7 (1F, 6M)	9	2	*****		
% successful		100%	8/9 = 88.9%	2 of 2 = 100%	8 of 8 = 100%		4 of 4 = 100%	6 of 6 = 100%	100%	100%	87.50%	100%	100%	*****		
<u>For Promotion to Professor Non-Tenure Track</u>																
nominated		33 (9 F, 24 M)	32 (9 F, 23 M)	22 (3 F, 19 M)	22 (3 F, 19 M)	28 (7 F, 21 M)	14 (5 F, 9 M)	25 (9 F, 16 M)	17 (6 F, 11 M)	19 (5 F*, 14 M)	18 (6 F, 12 M)	13	7	13		
initial positive CAPT rec		30 (8 F, 22 M)	29 (7 F, 22 M)	22 (3 F, 19 M)	21 (3 F, 18 M)	28 (7 F, 21 M)	11 (2 F, 9 M)	25 (9 F, 16 M)	17 (6 F, 11 M)	17 (4 F, 13 M)	13 (4 F, 9 M)	11	6	13		
appeals		1 (1 F, 0 M)	1 (1 F, 0 M)	0	1 (0 F, 1 M)	0	3 (3 F, 0 M)	0	0	1 (0 F, 1 M)	2 (0 F, 2 M)	2	0	0		
successful appeals		1 (1 F, 0 M)	1 (1 F, 0 M)	0	1 (0 F, 1 M)	0	2 (2 F, 0 M)	0	0	0	2 (0 F, 2 M)	1	0	0		
final positive CAPT rec		31 (9 F, 22 M)	30 (8 F, 22 M)	22 (3 F, 19 M)	22 (3 F, 19 M)	28 (7 F, 21 M)	13 (4 F, 9 M)	25 (9 F, 16 M)	17 (6 F, 11 M)	17 (4 F, 13 M)	15 (4 F, 11 M)	12	6	13		
Dean's rec		31 (9 F, 22 M)	30 (8 F, 22 M)	22 (3 F, 19 M)	22 (3 F, 19 M)	28 (7 F, 21 M)	13 (4 F, 9 M)	25 (9 F, 16 M)	17 (6 F, 11 M)	17 (4 F, 13 M)	15 (4 F, 11 M)	13	6	*****		
Provost & final rec		31 (9 F, 22 M)	30 (8 F, 22 M)	22 (3 F, 19 M)	22 (3 F, 19 M)	13 (4 F, 9 M)	13 (4 F, 9 M)	25 (9 F, 16 M)	17 (6 F, 11 M)	17 (4 F, 13 M)	15 (4 F, 11 M)	11*	6	*****		
% successful		94%	30/32 = 93.8%	100%	100%		13 of 14 = 93%	25 of 25 = 100%	100%	89%*	83.33%	100%	85.70%	*****		
<u>For Award of Tenure</u>																
nominated		10 (0F, 10M)	20 (9F, 11M)	9 (3F, 6M)	9 (3F, 6M)	12 (3F, 9M)	10 (4F, 6M)	8 (0F, 8M)	9 (2F, 7M)	7 (2F, 5M)	12 (3F, 9M)	7	6	8		
initial positive CAPT rec		5 (0F, 5M)	16 (6F, 10M)	8 (2F, 6M)	7 (3F, 4M)	11 (3F, 8M)	8 (3F, 5M)	6 (0F, 6M)	8 (2F, 6M)	7 (2F, 5M)	13 (4F, 8M)	5	5	6		
appeals		4 (0F, 4M)	3 (2F, 1M)	1	0	0	2 (1F, 1M)	0	1	0	0	1	0	1		
successful appeals		2 (0F, 2M)	2 (1F, 1M)	1	0	0	2 (1F, 1M)	0	1	0	0	1	0	1		
final positive CAPT rec		7 (0 F, 7 M)	18 (7 F, 11 M)	9 (3F, 6M)	7 (3F, 4M)	11 (3F, 7 M)	10 (4F, 6M)	6 (0F, 6M)	9 (2F, 7M)	7 (2F, 5M)	11 (3F, 8M)	6	5	7		
Dean's rec		7 (0 F, 7 M)	16 (6 F, 10 M)	9 (3F, 6M)	6 (3F, 3M)	10 (3F, 7 M)	10 (4F, 6M)	7 (0F, 7M)	8 (2F, 6M)	7 (2F, 5M)	9 (2F, 7M)	6	5	*****		
Provost & final rec		7 (0 F, 7 M)	16 (6 F, 10 M)	9 (3F, 6M)	6 (3F, 3M)		10 (4F, 6M)	7 (0F, 7M)	8 (2F, 6M)	7 (2F, 5M)	9 (2F, 7M)	6	5	*****		
% successful		70%	16/20 = 80%	100%	6 of 9 = 66.7%		10 of 10 = 100%	7 of 8 = 88%	89%	100%	75%	85.7%	83.30%	*****		
<u>For Promotion to Associate Prof in Tenure Track</u>																
nominated		13 (3F, 10M)	16 (6F, 10M)	11 (4F, 7M)	10 (4F, 6M)	13 (5F, 8M)	6 (2F, 4M)	9 (2F, 7M)	11 (3F, 8M)**	9 (2F, 7M)	(4F 8M) (8 fo	(6 also fo	(4 also for	6 (3 also for 1)		
initial positive CAPT rec		12 (3F, 9M)	14 (5F, 9M)	11 (4F, 7M)	8 (4F, 4M)	12 (5F, 7M)	6 (2F, 4M)	7 (2F, 5M)	11 (3F, 8M)	6 (1F, 5M)	11 (3F, 8M)	10	10	5		
appeals		1 (0F, 1M)	2 (1F, 1M)	0	0	0	0	0	0	1 (1F, 0M*)	1 (1F)	0	0	0		
successful appeals		1 (0F, 1M)	1(1F, 0M)	0	0	0	0	0	0	1 (1F, 0M)	1 (1F)	0	0	0		
final positive CAPT rec		13 (3F, 10M)	15 (6F, 9M)	11 (4F, 7M)	8 (4F, 4M)	12 (5F, 7M)	6 (2F, 4M)	7 (2F, 5M)	11 (3F, 8M)	7 (2F, 5M)	12 (4F, 8M)	10	10	5		
Dean's rec		13 (3F, 10M)	15 (6F, 9M)	11 (4F, 7M)	8 (4F, 4M)	12 (5F, 7M)	6 (2F, 4M)	7 (2F, 5M)	10 (3F, 7M)***	7 (2F, 5M)	12 (4F, 8M)	10	10	*****		
Provost & final rec		13 (3F, 10M)	15 (6F, 9M)	11 (4F, 7M)	8 (4F, 4M)		6 (2F, 4M)	7 (2F, 5M)	10 (3F, 7M)	7 (2F, 5M)	12 (4F, 8M)	10	10	*****		
% successful		100%	15/16 = 93.8%	100%	80%		6 of 6 = 100%	7 of 9 = 78%	100%	78%*	100%	100%	100%	*****		
<u>For Promotion to Associate Prof in Non-Tenure Track</u>																
nominated		52 (28F, 24M)	42 (21F, 21M)	58 (25F, 33M)	38 (13F, 25M)	38 (15F, 23M)	42 (24F, 18M)	23 (8F, 15M)	42 (13F, 29M)	31 (7F, 25M)+	31 (10F, 21M)	33	26**	22		
initial positive CAPT rec		48 (26F, 22M)	34 (18F, 16M)	53 (23F, 30M)	35 (11F, 24M)	36 (13F, 23M)	39 (22F, 17M)	22 (8F, 14M)	40 (12F, 28M)	30 (7F, 24M)	28 (9F, 19M)	26	18	21		
appeals		2 (1F, 1M)	3 (2F, 1M)	3 (2F, 1M)	1 (1F, 0M)	1 (1F, 0M)	3 (2F, 1M)	0	2	0	0	1	1	0		
successful appeals		1 (0F, 1M)	2 (2F, 0M)	3 (2F, 1M)	1 (1F, 0M)	1 (1F, 0M)	3 (2F, 1M)	0	2	0	0	0	1	0		
final positive CAPT rec		49 (26F, 23M)	36 (20F, 16M)	56 (25F, 31M)	36 (12F, 24M)	37 (14F, 23M)	42 (24F, 18M)	22 (8F, 14M)	42 (13F, 29M)	30 (7F, 24M)	28 (* *)	26	19	21		
Dean's rec		49 (26F, 23M)	36 (20F, 16M)	56 (25F, 31M)	36 (12F, 24M)	37 (14F, 23M)	42 (24F, 18M)	22 (8F, 14M)	42 (13F, 29M)	30 (7F, 24M)	28 (* *)	27	19	*****		
Provost & final rec		49 (26F, 23M)	36 (20F, 16M)	56 (25F, 31M)	36 (12F, 24M)		42 (24F, 18M)	22 (8F, 14M)	42 (13F, 29M)	30 (7F, 24M)	28 (* *)	27	19	*****		
% successful		94%	36/42 = 85.7%	56/58 = 96.6%	36/38 = 94.7%		42 of 42 = 100%	22 of 23 = 96%	100%	97%	90.32%	81.8%	73.10%	*****		
<b>Overall Promotion and Tenure</b>																
		106 of 114 = 93%	96 of 110 = 87.3%	90	87	103	75 of 76 = 99%	67 of 71 = 94%								
<u>INITIAL APPOINTMENTS</u>																
		Incomplete	Incomplete													
CCLCM																
Professor in the NTT		7 (3F, 4M)	5 (2F, 3M)	9 (1F, 8M)	15 (1F, 14M)	15 (1F, 14M)	11 (4F, 7M)	15 (4F, 11M) of 15	11 (2F, 9M) of 12 (2F, 10M)	19 (3F, 16M)	29 of 31 nom'd	12 of 12 nom'd	14 of 14 nom'd	22 (21+ & 1 not apl)		
Associate Professor in the NTT		7 (1F, 6M)	3 (1F, 2M)	13 (5F, 8M)	6 (1F, 5M)	8 (4F, 4M)	11 (6F, 5M)	6 (6M) of 6	11 of 11 (11M)	9 of 9 (2F, 7M)	6 of 8 nom'd	4 of 7 nom'd	12, 1 on appl	33 (inc 2 apls)		
<b>ALL OTHERS</b>																
Professor and Tenure		2 (1F, 1M)	1 (1F, 0M)	3 (0F, 3M)	1 (0F, 1M)	2 (0F, 2M)	5 of 5 (0F, 5M)	2 of 2 (1F, 1M)	2 of 2 (2M)	4 of 4 (4M)	2 of 2	1 on appeal	3 of 4, 2 aft apl	4		
Professor in the NTT		8 (1F, 7M)	2 (0F, 2M)	6 (1F, 5M)	3 (0F, 3M)	2 (1F, 1M)	6 of 6 (0F, 6M)	5 of 5 (1F, 4M)	2 of 2 (2M)	6 of 7, 1 unsuccessful (1F, 5M)	6 of 6	4, 1 on appeal	3 of 4, 1 unusuc apl	1		

Professor in the tenure track			0	0	0	1 (OF, 1M)	0	0	0	1 of 1 (1M)	0	0	2 of 2	0	1
Associate Professor and Tenure			1 (OF, 1M)	0	0	1 (1F, 0M)	0	1 of 1 (OF, 1M)	0	3 of 3 (3M)	1 of 1 (1F)	0	1 of 1	1, no 1 aft apl	0 of 1
Associate Professor in the Tenure Track			0	0	0	1 (OF, 1M)	1 (1F, 0M)	0	0	0	0	2 of 2	1 of 1	2 of 2	1
Associate Professor in the NTT			3 (2F, 1M)	3 (2F, 1M)	6 (1F, 5M)	6 (2F, 4M)	6 (2F, 4M)	7 of 7 (2F, 5M)	7 of 7 (2F, 5M)	4 of 4 (4M)	10 of 10, 1 unsuccessful (2F, 8M)	7 of 8	3 of 3	11 of 11, 1 aft apl	3 (aft apl) of 4
GRAND TOTAL OF CANDIDATES CONSIDERED							137	111	106	112	117	126	97	95	116

**Summary of Committee on Appointments, Promotions, and Tenure Activities**  
**June 13, 2018**

				2017-2018
<b>PROMOTIONS AND TENURE FOR FACULTY AT CWRU SOM</b>				
	<u>For Promotion to Professor (Tenured)</u>			
	nominated			6 (3F, 3M)
	initial positive CAPT rec			6 (3F, 3M)
	appeals			0
	successful appeals			0
	final positive CAPT rec			6 (3F, 3M)
	Dean's rec			6 (3F, 3M)
	Provost & final rec			6 (3F, 3M)
	% successful			100%
	<u>For Promotion to Professor Non-Tenure Track</u>			
	nominated			33 (9 F, 24 M)
	initial positive CAPT rec			30 (8 F, 22 M)
	appeals			1 (1 F, 0 M)
	successful appeals			1 (1 F, 0 M)
	final positive CAPT rec			31 (9 F, 22 M)
	Dean's rec			31 (9 F, 22 M)
	Provost & final rec			31 (9 F, 22 M)
	% successful			94%
	<u>For Award of Tenure</u>			
	nominated			10 (0F, 10M)
	initial positive CAPT rec			5 (0F, 5M)
	appeals			4 (0F, 4M)
	successful appeals			2 (0F, 2M)
	final positive CAPT rec			7 (0 F, 7 M)
	Dean's rec			7 (0 F, 7 M)
	Provost & final rec			7 (0 F, 7 M)
	% successful			70%
	<u>For Promotion to Associate Prof in Tenure Track</u>			
	nominated			13 (3F, 10M)
	initial positive CAPT rec			12 (3F, 9M)
	appeals			1 (0F, 1M)
	successful appeals			1 (0F, 1M)
	final positive CAPT rec			13 (3F, 10M)
	Dean's rec			13 (3F, 10M)
	Provost & final rec			13 (3F, 10M)
	% successful			100%

	<b><u>For Promotion to Associate Prof in Non-Tenure Track</u></b>		
	nominated		<b>52 (28F, 24M)</b>
	initial positive CAPT rec		<b>48 (26F, 22M)</b>
	appeals		<b>2 (1F, 1M)</b>
	successful appeals		<b>1 (0F, 1M)</b>
	final positive CAPT rec		<b>49 (26F, 23M)</b>
	Dean's rec		<b>49 (26F, 23M)</b>
	Provost & final rec		<b>49 (26F, 23M)</b>
	% successful		94%
	<b>Overall Promotion and Tenure</b>		<b>106 of 114 = 93%</b>

Summary of Committee on Appointments, Promotions, and Tenure Activities June 13, 2018															
			2017-2018	2016-2017	2015-2016	2014-2015	2013-2014	2012-2013	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006
<b>PROMOTIONS AND TENURE FOR FACULTY AT CWRU SOM</b>															
<b>For Promotion to Professor (Tenure)</b>															
nominated			6 (3F, 3M)	9 (2F, 7M)	2 (1F, 1M)	8 (1F, 7M)	12 (4F, 8M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)*	3 (1F, 2M)*	8 (1F, 7M)	9	2	5
initial positive CAPT rec			6 (3F, 3M)	9 (2F, 7M)	2 (1F, 1M)	8 (1F, 7M)	9 (2F, 7M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)	3 (1F, 2M)	7 (1F, 6M)	9	1	5
appeals			0	0	0	0	2 (2F, 0M)	0	0	0	0	0	0	1	0
successful appeals			0	0	0	0	1 (1F, 0M)	0	0	0	0	0	0	0	0
final positive CAPT rec			6 (3F, 3M)	9 (2F, 7M)	2 (1F, 1M)	8 (1F, 7M)	10 (3F, 7M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)	3 (1F, 2M)	7 (1F, 6M)	9	1	5
Dean's rec			6 (3F, 3M)	9 (2F, 7M)	2 (1F, 1M)	8 (1F, 7M)	12 (4F, 8M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)	3 (1F, 2M)	7 (1F, 6M)	9	1	*****
Provost & final rec			6 (3F, 3M)	8 (1F, 7M)	2 (1F, 1M)	8 (1F, 7M)	4 (1F, 3M)	4 (1F, 3M)	6 (1F, 5M)	3 (1F, 2M)	3 (1F, 2M)	7 (1F, 6M)	9	2	*****
% successful			100%	8/9 = 88.9%	2 of 2 = 100%	8 of 8 = 100%		4 of 4 = 100%	6 of 6 = 100%	100%	100%	87.50%	100%	100%	*****
<b>For Promotion to Professor Non-Tenure Track</b>															
nominated			33 (9 F, 24 M)	32 (9 F, 23 M)	22 (3 F, 19 M)	22 (3 F, 19 M)	28 (7F, 21M)	14 (5F, 9M)	25 (9F, 16M)	17 (6F, 11M)	19 (5F*, 14M)	18 (6F, 12M)	13	7	13
initial positive CAPT rec			30 (8 F, 22 M)	29 (7 F, 22 M)	22 (3 F, 19 M)	21 (3F, 18M)	28 (7F, 21M)	11 (2F, 9M)	25 (9F, 16M)	17 (6F, 11M)	17 (4F, 13M)	13 (4F, 9M)	11	6	13
appeals			1 (1 F, 0 M)	1 (1 F, 0 M)	0	1 (0 F, 1M)	0	3 (3F, 0M)	0	0	1 (0F, 1M)	2 (0F, 2M)	2	0	0
successful appeals			1 (1 F, 0 M)	1 (1 F, 0 M)	0	1 (0 F, 1M)	0	2 (2F, 0M)	0	0	0	2 (0F, 2M)	1	0	0
final positive CAPT rec			31 (9 F, 22 M)	30 (8 F, 22 M)	22 (3 F, 19 M)	22 (3F, 19M)	28 (7F, 21M)	13 (4F, 9M)	25 (9F, 16M)	17 (6F, 11M)	17 (4F, 13M)	15 (4F, 11M)	12	6	13
Dean's rec			31 (9 F, 22 M)	30 (8 F, 22 M)	22 (3 F, 19 M)	22 (3F, 19M)	28 (7F, 21M)	13 (4F, 9M)	25 (9F, 16M)	17 (6F, 11M)	17 (4F, 13M)	15 (4F, 11M)	13	6	*****
Provost & final rec			31 (9 F, 22 M)	30 (8 F, 22 M)	22 (3 F, 19 M)	22 (3F, 19M)		13 (4F, 9M)	25 (9F, 16M)	17 (6F, 11M)	17 (4F, 13M)	15 (4F, 11M)	11*	6	*****
% successful			94%	30/32 = 93.8%	100%	100%		13 of 14 = 93%	25 of 25 = 100%	100%	89%*	83.33%	100%	85.70%	*****
<b>For Award of Tenure</b>															
nominated			10 (0F, 10M)	20 (9F, 11M)	9 (3F, 6M)	9 (3F, 6M)	12 (3F, 9M)	10 (4F, 6M)	8 (0F, 8M)	9 (2F, 7M)	7 (2F, 5M)	12 (3F, 9M)	7	6	8
initial positive CAPT rec			5 (0F, 5M)	16 (6F, 10M)	8 (2F, 6M)	7 (3F, 4M)	11 (3F, 8 M)	8 (3F, 5M)	6 (0F, 6M)	8 (2F, 6M)	7 (2F, 5M)	11 (3F, 8M)	5	5	6
appeals			4 (0F, 4M)	3 (2F, 1M)	1	0	0	2 (1F, 1M)	0	1	0	0	1	0	1
successful appeals			2 (0F, 2M)	2 (1F, 1M)	1	0	0	2 (1F, 1M)	0	1	0	0	1	0	1
final positive CAPT rec			7 (0 F, 7 M)	18 (7 F, 11 M)	9 (3F, 6M)	7 (3F, 4M)	11 (3F, 7 M)	10 (4F, 6M)	6 (0F, 6M)	9 (2F, 7M)	7 (2F, 5M)	11 (3F, 8M)	6	5	7
Dean's rec			7 (0 F, 7 M)	16 (6 F, 10 M)	9 (3F, 6M)	6 (3F, 4M)	10 (3F, 7 M)	10 (4F, 6M)	7 (0F, 7M)	8 (2F, 6M)	9 (2F, 5M)	9 (2F, 5M)	6	5	*****
Provost & final rec			7 (0 F, 7 M)	16 (6 F, 10 M)	9 (3F, 6M)	6 (3F, 4M)		10 (4F, 6M)	7 (0F, 7M)	8 (2F, 6M)	7 (2F, 5M)	9 (2F, 5M)	6	5	*****
% successful			70%	16/20 = 80%	100%	6 of 9 = 66.7%		10 of 10 = 100%	7 of 8 = 88%	89%	100%	75%	85.7%	83.30%	*****
<b>For Promotion to Associate Prof in Tenure Track</b>															
nominated			13 (3F, 10M)	16 (6F, 10M)	11 (4F, 7M)	10 (4F, 6M)	13 (5F, 8M)	6 (2F, 4M)	9 (2F, 7M)	11 (3F, 8M)**	9 (2F, 7M)	(4F, 8M) (8 F)	6 also for D	4 also for D	6 (3 also for T)
initial positive CAPT rec			12 (3F, 9M)	14 (5F, 9M)	11 (4F, 7M)	8 (4F, 6M)	12 (5F, 7M)	6 (2F, 4M)	7 (2F, 5M)	11 (3F, 8M)	6 (1F, 5M)	11 (3F, 8M)	10	10	5
appeals			1 (0F, 1M)	2 (1F, 1M)	0	0	0	0	0	0	1 (1F, 0M*)	1 (1F)	0	0	0
successful appeals			1 (0F, 1M)	1 (1F, 0M)	0	0	0	0	0	0	1 (1F, 0M)	1 (1F)	0	0	0
final positive CAPT rec			13 (3F, 10M)	15 (6F, 9M)	11 (4F, 7M)	8 (4F, 6M)	12 (5F, 7M)	6 (2F, 4M)	7 (2F, 5M)	11 (3F, 8M)	7 (2F, 5M)	12 (4F, 8M)	10	10	5
Dean's rec			13 (3F, 10M)	15 (6F, 9M)	11 (4F, 7M)	8 (4F, 6M)	12 (5F, 7M)	6 (2F, 4M)	7 (2F, 5M)	10 (3F, 7M)***	7 (2F, 5M)	12 (4F, 8M)	10	10	*****
Provost & final rec			13 (3F, 10M)	15 (6F, 9M)	11 (4F, 7M)	8 (4F, 6M)		6 (2F, 4M)	7 (2F, 5M)	10 (3F, 7M)	7 (2F, 5M)	12 (4F, 8M)	10	10	*****
% successful			100%	15/16 = 93.8%	100%	80%		6 of 6 = 100%	7 of 9 = 78%	100%	78%*	100%	100%	100%	*****
<b>For Promotion to Associate Prof in Non-Tenure Track</b>															
nominated			52 (28F, 24M)	42 (21F, 21M)	58 (25F, 33M)	38 (13F, 25M)	38 (15F, 23M)	42 (24F, 18M)	23 (8F, 15M)	42 (13F, 29M)	31 (7F, 25M)*	31 (10F, 21M)	33	26**	22
initial positive CAPT rec			48 (26F, 22M)	34 (18F, 16M)	53 (23F, 30M)	35 (11F, 24M)	36 (13F, 23M)	39 (22F, 17M)	22 (8F, 14M)	40 (12F, 28M)	30 (7F, 24M)	28 (9F, 19M)	26	18	21
appeals			2 (1F, 1M)	3 (2F, 1M)	3 (2F, 1M)	1 (1F, 0M)	1 (1F, 0M)	3 (2F, 1M)	0	2	0	0	1	1	0
successful appeals			1 (0F, 1M)	2 (2F, 0M)	3 (2F, 1M)	1 (1F, 0M)	1 (1F, 0M)	3 (2F, 1M)	0	2	0	0	0	1	0
final positive CAPT rec			49 (26F, 23M)	36 (20F, 16M)	56 (25F, 31M)	36 (12F, 24M)	37 (14F, 23M)	42 (24F, 18M)	22 (8F, 14M)	42 (13F, 29M)	30 (7F, 24M)	28 (" ")	26	19	21
Dean's rec			49 (26F, 23M)	36 (20F, 16M)	56 (25F, 31M)	36 (12F, 24M)	37 (14F, 23M)	42 (24F, 18M)	22 (8F, 14M)	42 (13F, 29M)	30 (7F, 24M)	28 (" ")	27	19	*****
Provost & final rec			49 (26F, 23M)	36 (20F, 16M)	56 (25F, 31M)	36 (12F, 24M)		42 (24F, 18M)	22 (8F, 14M)	42 (13F, 29M)	30 (7F, 24M)	28 (" ")	27	19	*****
% successful			94%	36/42 = 85.7%	56/58 = 96.6%	36/38 = 94.7%		42 of 42 = 100%	22 of 23 = 96%	100%	97%	90.32%	81.8%	73.10%	*****
<b>Overall Promotion and Tenure</b>															
			106 of 114 = 93%	96 of 110 = 87.3%	90	87	103	75 of 76 = 99%	67 of 71 = 94%						
<b>INITIAL APPOINTMENTS</b>															
			Incomplete	Incomplete											
CCLCM															
Professor in the NTT			7 (3F, 4M)	5 (2F, 3M)	9 (1F, 8M)	15 (1F, 14M)	15 (1F, 14M)	11 (4F, 7M)	15 (4F, 11M) of 15	11 (2F, 9M) of 12 (2F, 10M)	19 (3F, 16M)	29 of 31 nom'd	12 of 12 nom'd	16 of 16 nom'd	22 (21+ & 1 not apl)
Associate Professor in the NTT			7 (1F, 6M)	3 (1F, 2M)	13 (5F, 8M)	6 (1F, 5M)	8 (4F, 4M)	11 (6F, 5M)	6 (6M) of 6	11 of 11 (11M)	9 of 9 (2F, 7M)	6 of 6 nom'd	4 of 7 nom'd	12, 1 on appl	33 (inc 2 apls)
<b>ALL OTHERS</b>															
Professor and Tenure			2 (1F, 1M)	1 (1F, 0M)	3 (0F, 3M)	1 (0F, 1M)	2 (0F, 2M)	5 of 5 (0F, 5M)	2 of 2 (1F, 1M)	2 of 2 (2M)	4 of 4 (4M)	2 of 2	1 on appl	3 of 4, 2 aft apl	4
Professor in the NTT			8 (1F, 7M)	2 (0F, 2M)	6 (1F, 5M)	3 (0F, 3M)	2 (1F, 1M)	6 of 6 (0F, 6M)	5 of 5 (1F, 4M)	2 of 2 (2M)	4 of 4 (4M)	6 of 6	4, 1 on appl	3 of 4, 1 on appl	1
Professor in the tenure track			0	0	0	1 (0F, 1M)	0	0	0	1 of 1 (1M)	0	0	2 of 2	0	1
Associate Professor and Tenure			1 (0F, 1M)	0	0	1 (1F, 0M)	0	1 of 1 (0F, 1M)	0	3 of 3 (3M)	1 of 1 (1F)	0	1 of 1	1, no 1 aft apl	0 of 1
Associate Professor in the Tenure Track			0	0	0	1 (0F, 1M)	1 (1F, 0M)	0	0	0	0	2 of 2	1 of 1	2 of 2	1
Associate Professor in the NTT			3 (2F, 1M)	3 (2F, 1M)	6 (1F, 5M)	6 (2F, 4M)	6 (2F, 4M)	7 of 7 (2F, 5M)	7 of 7 (2F, 5M)	4 of 4 (4M)	(3 of 11, 1 unappointed (2F, 5M))	7 of 8	3 of 3	11 of 11, 1 aft apl	3 (aft apl) of 4
<b>GRAND TOTAL OF CANDIDATES CONSIDERED</b>															
							137	111	106	112	117	126	92	95	116

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# BYLAWS

## THE FACULTY OF MEDICINE

### CASE WESTERN RESERVE UNIVERSITY

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ADOPTED BY THE FACULTY OF MEDICINE, AUGUST 25, 1978  
RATIFIED BY THE FACULTY SENATE, DECEMBER 13, 1978

AMENDED BY THE FACULTY OF MEDICINE, MARCH 25, 1998  
RATIFIED BY THE FACULTY SENATE, APRIL 23, 1998

AMENDED BY THE FACULTY OF MEDICINE JUNE 25, 1999 AND JUNE 30, 2000  
RATIFIED BY THE FACULTY SENATE, NOVEMBER 6, 2000

AMENDED BY THE FACULTY OF MEDICINE, JANUARY 31, 2003  
RATIFIED BY THE FACULTY SENATE, APRIL 27, 2003

AMENDED BY THE FACULTY OF MEDICINE, APRIL 22, 2005  
RATIFIED BY THE FACULTY SENATE, FEBRUARY 27, 2006

AMENDED BY THE FACULTY OF MEDICINE, JANUARY 11, 2010  
RATIFIED BY THE FACULTY SENATE, APRIL 21, 2010

AMENDED BY THE FACULTY OF MEDICINE, AUGUST 26, 2011  
RATIFIED BY THE FACULTY SENATE, FEBRUARY 22, 2012

AMENDED BY THE FACULTY OF MEDICINE, MAY 6, 2014  
RATIFIED BY THE FACULTY SENATE, JANUARY 22, 2016

AMENDED BY THE FACULTY OF MEDICINE, FEBRUARY 15, 2017, JULY 13, 2017, & November 13, 2017  
RATIFIED BY THE FACULTY SENATE, JANUARY 30, 2018



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1 ARTICLE 1 - PURPOSE

2  
3 These ~~Bylaws of the Faculty of Medicine~~ and all amendments adopted hereinafter shall  
4 ~~constitute the rules and regulations governing the conduct and procedures of the Faculty of~~  
5 Medicine in the performance of its duties and in the exercise of its authorized powers, as  
6 specified by the constitution of the University Faculty of Case Western Reserve University. They  
7 are intended also to facilitate the participation of the clinical and adjunct faculty in organizing and  
8 executing the curriculum of the School of Medicine.

Commented [A1]: Approved by the Bylaws committee on 12 December, 2017, 6:0. Rationale: Curatorial

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10 ARTICLE 2 - THE FACULTY OF MEDICINE

11  
12 2.1: Membership of the Faculty of Medicine

13 The Faculty of Medicine shall consist of (1) regular faculty, defined as all persons who  
14 hold full-time appointments in the School of Medicine and who have unmodified titles at the rank  
15 of professor, associate professor, assistant professor, senior instructor, instructor, and (2) special  
16 faculty, those who hold these ranks modified by the adjective clinical, adjunct, visiting, or  
17 emeritus/a. In addition, fifteen students, two elected from and by each of the four University  
18 Program medical school classes, two elected at-large from and by Cleveland Clinic Lerner College  
19 of Medicine ("CCLCM") students, two elected from and by M.D.-Ph.D. students, and three elected  
20 from and by medical school graduate students, shall act as non-voting student representatives.  
21 The president of the university, a vice-president of the university responsible for medical school  
22 activities, and an administrative officer from and selected by each affiliated hospital shall be  
23 members of the faculty *ex officio*. The ~~Dean~~ of the School of Medicine shall furnish annually to  
24 the secretary of the University Faculty a list of all full-time members of the faculty. (A full-time  
25 faculty member is one who is a member of the University Faculty as defined in the Faculty  
26 Handbook of Case Western Reserve University.) The Faculty of Medicine shall create a Faculty  
27 Council to ~~which it shall delegate all powers not reserved to itself (described below in Article 3).~~

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28  
29 2.2: Officers of the Faculty

30 The president of the university and, in the president's absence or by the president's  
31 designation, the dean of the School of Medicine or the dean's representative, shall be chair of the  
32 Faculty of Medicine. The chair of the Faculty Council shall serve as vice-chair of the Faculty of  
33 Medicine. The Faculty of Medicine shall have a secretary who shall be appointed by the dean.  
34 The ~~Secretary~~ shall provide ~~to the Faculty of Medicine~~ due notice of all ~~Faculty and Faculty~~  
35 ~~Council~~ meetings and the agenda thereof ~~and supply the minutes of each meeting in a timely~~

Commented [A2]: Approved by the Bylaws Committee on 12 December, 2017, 6:0.  
Rationale: To be consistent with Article 3.1 as amended in the version of the SOM Bylaws approved by the Faculty Senate on January 30, 2018.

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1 ~~manner~~. The office of the dean shall be requested to supply appropriate administrative support  
2 for these functions.

### 3 2.3: Authorities and Powers of the Faculty of Medicine

4 a. Authorities. Those authorities delegated by the University Faculty to the Faculty of  
5 Medicine for the educational, research, and scholarly activities of the School of Medicine shall  
6 reside in the Faculty of Medicine.

7 b. Powers Reserved. The regular faculty members of the Faculty of Medicine shall: (1)  
8 make recommendations to the dean for consideration and transmittal to the University Faculty  
9 Senate concerning the establishment, discontinuance, or merging of any department, ~~and (2) act~~  
10 ~~upon any matter of import referred to the Faculty of Medicine by the Faculty Council for its~~  
11 recommendation.

12 The regular faculty members of the Faculty of Medicine shall have the power to  
13 recommend approval of amendments to these bylaws. and the power and obligation to elect (1)  
14 senators to the University Faculty Senate; (2) at-large members of the Faculty Council; and (3) a  
15 majority of the voting members of the standing committees listed in section 2.6a. ~~Faculty~~  
16 ~~members shall also have the power and obligation to elect their departmental Faculty Council~~  
17 ~~representative (see Article 3.3).~~

### 19 2.4: Meetings of the Faculty of Medicine

20 a. Regular Meetings. The Faculty of Medicine shall schedule meetings at least three  
21 times each academic year. The dean of the School of Medicine shall be asked to describe the  
22 state of the medical school generally at one of the meetings. Another meeting shall have as its  
23 main business a program relating to medical education. A third meeting will have an agenda  
24 approved by the Faculty Council with at least one-half of the meeting devoted to open forum  
25 items. Meeting dates and times will be coordinated to accommodate appropriate schedules. In  
26 the event ~~of university closure~~, a Faculty of Medicine meeting scheduled for that day shall be  
27 rescheduled. The Faculty Council may cancel a scheduled meeting of the faculty in the event  
28 there is no business to be conducted.

29 b. ~~Both Regular and Special~~ Meetings. The Faculty of Medicine shall also meet on the  
30 call of the president or the dean, or on written petition of at least 10 faculty members presented  
31 to the Faculty Council, or at the request of the Faculty Council.

### 33 2.5: Voting Privileges

34 a. A quorum of the faculty for both regular and special meetings shall consist of 100  
35 members who are eligible to vote on the issue before the faculty as defined below (2.5c-2.5e).  
36 Proxies are not acceptable for purposes of either establishing a quorum or voting.

**Commented [A3]:** All changes to Article 2.2 were approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

**Commented [A6]:** Approved by the Bylaws Committee by e-mail vote on Jan. 26-27.  
Rationale: The first mention of the Division of General Medical Sciences is in Article 3.2 in the context of Faculty Council representation. There is no context here. Alternative language was considered as follows "including the Division of General Medical Sciences (DGMS), which has departmental status".

**Deleted:** or the Division of General Medical Sciences (DGMS)

**Commented [A7]:** Approved by the Bylaws Committee 12 February, 2018, 5:0.  
Rationale: Sentence rearranged and subdivided to distinguish which matters invoke the dean.

**Deleted:** or concerning

**Deleted:** by the Faculty Council

**Deleted:** the determination of

**Commented [A8]:** Approved by the Bylaws Committee on /12 March, 2018, 5:0.  
SUBSTANTIVE.  
Rationale: Emphasizes the importance of electing departmental Faculty Council representatives.

**Commented [A9]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Simplification.

**Deleted:** that inclement weather or other unforeseen event forces the

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**Commented [A10]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

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b. Special meetings of the faculty shall be conducted according to Robert's Rules of Order, Newly Revised. A majority of those present and voting shall be necessary to effect action.

c. Special faculty whose titles are modified by the adjectives adjunct or clinical may vote at meetings only on matters concerning the planning and approval of the curriculum, the execution of the instructional program, the formulation of policies with regard to student affairs, appointment and promotion of special faculty; the election of members of committees dealing with such issues, and the election of their representatives to the Faculty Council.

d. Emeritus and visiting faculty members shall not be eligible to vote.

e. Prior to each faculty meeting, Faculty Council will determine which faculty members are eligible to vote on each issue scheduled for a vote, guided by 2.5c-2.5d above. If an issue is raised and brought to a vote *ad hoc* at a faculty meeting, the person chairing the meeting will determine who is eligible to vote based on the above criteria.

#### 2.6: Standing Committees of the Faculty of Medicine

a. The following Standing Committees shall be charged with specific responsibilities (as described more completely in each committee's Charge as approved by the Faculty Council):

(1) The Admissions Committee shall participate in both annual decision-making regarding individual student applicants and in the establishment of admissions policy and procedure.

(2) The Bylaws Committee shall consider proposed amendments to the Bylaws of the Faculty of Medicine and make recommendations concerning such proposed amendments to the School of Medicine Faculty Council. It shall also review proposals for new and amended charges of standing committees for the purpose of advising the Faculty Council regarding their compliance with the Bylaws prior to a vote by the Faculty Council. At least once every five years, the Bylaws Committee shall conduct a full review of these Bylaws.

(3) The Committee on Budget, Finance, and Compensation shall serve as the faculty's principal forum for the consideration of matters relating to SOM budgeting and financing. This Committee will consult with and advise the SOM administration on the formation and review of SOM policies and procedures concerning faculty compensation.

(4) The Committee on Appointments, Promotions, and Tenure shall review and make recommendations concerning all appointments or promotions to the ranks of associate professor or professor and the award of tenure, as outlined in Article 5.10.

(5) The Committee on Medical Education serves to evaluate, review, and make recommendations concerning overall goals and policies of the School's medical education program, which includes the University and College programs.

**Commented [A11]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

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**Commented [A12]:** Approved by the Bylaws Committee on 9 January, 2018, 5:0.  
Rationale: Correction.

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**Commented [A13]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

**Commented [A14]:** Approved by the Bylaws Committee on 12 February, 2018, 5:0.  
SUBSTANTIVE: Specifies the role of the Bylaws Committee in reviewing the initial and revised charges of Standing Committees of the Faculty.  
Rationale: To align the Bylaws and the revised Bylaws Committee charge approved by Faculty Council on May 15, 2017.

**Commented [A15]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE: Echoes amendments to Article 6, which were approved by the Bylaws Committee on November 13, 2017 (6:0) and by the Faculty Council on January 22, 2018.  
Rationale: To align the Bylaws and the revised Bylaws Committee charge approved by Faculty Council on May 15, 2017.

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**Commented [A16]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

(6) The Committee on Students shall have the responsibility of reviewing the total performance of all students and the authority for decisions on student standing and student promotions. ~~Each year it shall submit the list of candidates for the award of the degree of Doctor of Medicine to Faculty Council (see Article 3.1a).~~

(7) The Lecture Committee shall serve as a selection committee for speakers where no other regular mechanism is in place.

(8) The Committee on Biomedical Research shall carry out the faculty's role in formulating policies related to the conduct of research in the School of Medicine on matters including but not restricted to the research portfolio, enabling technologies, research infrastructure, and biomedical workforce.

b. The majority of the voting members of each ~~of these Standing Committees~~ shall be elected by the regular members of the Faculty of Medicine. ~~The number of non-voting members shall not exceed the number of voting members. The Dean may appoint members of any standing committee in accordance with the prescribed structure of each such committee as specified in its charge. The number of appointed voting members shall be less than the number of elected voting members.~~ The chair of the Faculty Council shall solicit recommendations for committee chair appointments from each standing committee, and then shall normally appoint one of the elected members to be the chair of each such committee, unless other provisions for appointment of chairs are made in these Bylaws.

c. Standing Committees shall be established or discontinued only by amendment of the School of Medicine By-Laws. The two ~~committees that cannot be discontinued~~ are the Standing Committee on Appointments, Promotion and Tenure, and the Standing Committee on Budget, Finance, and Compensation whose existence is mandated by the Faculty Handbook. *Ad hoc* committees shall not be appointed that duplicate or substantially overlap with the missions and charges of the Standing Committees. The ~~role of the~~ Faculty Council ~~in relation to~~ standing committees ~~is described in Article 3.1.~~ The regular members of the Faculty of Medicine shall vote upon the nominees and shall elect the majority of voting committee members. ~~The standing~~ committees shall be reviewed by the Faculty Council at least once every five years. Standing committees may present proposed changes to their own charge for consideration by the Faculty Council. ~~Prior to being voted upon by Faculty Council, the Bylaws Committee shall review these charges to ensure compliance with these Bylaws and the Faculty Handbook.~~ In the event that an elected member of a standing committee of the faculty resigns during the term, the Nomination and Elections Committee of the Faculty Council shall appoint a replacement. The first choice should be the faculty member who received the next highest number of votes in the most recent election for this committee position. Should that individual be unwilling or unable to serve, the

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Commented [A17]: Approved by the Bylaws Committee 5-0 10 April 2018.  
Rationale: To make Article 2.6a.6 consistent with Article 3.1a.

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Commented [A18]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Curatorial.

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Commented [A19]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE. Modified version of text previously present in Article 2.6c.  
Rationale: Passage on composition was out of place in the context of standing committee properties and operations.

Commented [A20]: Approved by the Bylaws Committee on 12 February, 2018, 5:0.  
Rationale: Clarifies the implications of text moved from 2.6c on January 23, 2018.

Commented [A21]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

Deleted: exceptions

Deleted: shall have the authority to amend the representative composition (e.g., by number, rank, department, or institution) of

Commented [A22]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Previous detailed text was out of place, as this section is focused on the full Faculty of Medicine rather than the Faculty Council, which is the subject of Article 3.

Deleted: and the length of terms of office of the members, and shall nominate candidates for committee membership

Commented [A23]: Approved by the Bylaws Committee on 12 February, 2018, 5:0.  
Rationale: Text moved to Article 2.6b (see comment above).

Deleted: Members of any standing committee may be appointed by the dean in accordance with the prescribed structure of each such committee. The ...

Commented [A24]: Approved by the Bylaws Committee on 23 January, 2018, 6:0. ...

1 Nomination and Elections Committee shall appoint an alternate of its choosing to the committee.  
2 In either case, this appointee may stand for election to the committee for the remainder of the  
3 term of the resigning member at the next regularly scheduled faculty election.

4 d. The dean shall be a member of all standing committees *ex officio*. Persons holding  
5 the office of assistant, associate, or vice dean may be regular members of any of these  
6 committees. Standing committees may include members holding the office of assistant,  
7 associate, or vice dean, as long as their number does not exceed 25% of the membership. The  
8 exception to this rule is the Committee on Medical Education, for which the number of members  
9 holding the office of assistant, associate, or vice dean shall not exceed 40% of the membership.  
10 Persons holding the office of assistant, associate, or vice dean may not chair a Standing  
11 Committee of the Faculty. Membership rosters of all standing committees shall be published on  
12 the SOM web site and updated annually by July 1 or when a change in the roster occurs.

13 e. Any action taken in the name of a standing committee shall be made by majority vote.  
14 All members of a committee shall be supplied with minutes of the meetings of the committee and  
15 with copies of official recommendations of the committee.

16 f. The meetings of all standing committees shall be open to all members of the faculty  
17 except for those of the Admissions Committee, the Committee on Students, and the Committee  
18 on Appointments, Promotions and Tenure. Chairs of other committees may declare a meeting or  
19 part of a meeting closed to faculty attendance only if confidential personnel matters are to be  
20 discussed.

## 21 22 ARTICLE 3: THE FACULTY COUNCIL

### 23 24 3.1: Purpose and Functions of the Faculty Council

25 The Faculty of Medicine delegates all powers not reserved to the Faculty of Medicine  
26 itself (see Article 2) to a Faculty Council. The Faculty Council shall serve as the Executive  
27 Committee of the Faculty of Medicine, in accordance with Article X.1 of the Bylaws of the Faculty  
28 Senate. The Faculty Council shall meet regularly to exercise its powers and obligations, which  
29 shall include but not be limited to the following:

- 30 a. To act for the Faculty of Medicine regarding the planning and execution of  
31 educational programs and the formulation of policies concerning curricula, student  
32 admissions, and the conduct of research in consultation with the appropriate  
33 standing committee of the Faculty of Medicine. It shall review the requirements for  
34 the M.D. degree and the recommendations of the Committee on Students regarding  
35 student standings and student promotions;

Commented [A26]: Made a comment

Commented [A27]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE. Removes the provision that the dean may chair any standing committee.  
Rationale: Increases opportunities for faculty members to hold leadership positions and protects the dean from potential conflicts of interest.

Deleted: and may be the chair of any such committee if so appointed by the chair of the Faculty Council with the approval of the Faculty Council

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Commented [A28]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

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SUBSTANTIVE. Eliminates the undefined term "executive officer" and institutes a change precluding deans at any level from chairing Standing Committees of the Faculty.  
Rationale: Increases opportunities for faculty members to hold leadership positions and protects assistant, associate and vice deans from potential conflicts of interest. Also echoes Bylaws changes recently approved by the Faculty Senate.

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Commented [A30]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

Commented [A31]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE: Explicitly identifies the Executive Committee of the Faculty of Medicine for the first time.  
Rationale: In response to a query from the Faculty Senate, Faculty Council at its meeting on December 12, 2016 agreed that the full representative body and not its Steering Committee serves in this capacity.

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Deleted: of the Faculty Council

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Commented [A32]: Approved 5-0 10 April 2018.  
Rationale: To make Article 3.1a compatible with Article 2.6a.6.

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- b. To hear reports of the Standing Committees of the Faculty of Medicine and of the Faculty Council and recommend action on such reports;
- c. To make recommendations to the Faculty of Medicine concerning the establishment, discontinuance, and merging of departments;
- d. To make recommendations to the Faculty of Medicine concerning the establishment, discontinuance, and initial charge and representative composition of the membership of all Faculty of Medicine standing committees (see Article 2.6c);
- e. To elect a chair, a chair-elect, members of the Steering Committee, and the Faculty Council members of the Nomination and Elections Committee;
- f. To classify any issue requiring a vote of the faculty so as to determine the eligibility of the adjunct/clinical and student members to vote on that issue (per 2.4biii and 2.4bv); and
- g. To create *ad hoc* committees to make recommendations concerning its various functions and duties (see Article 3:6d).

### 3.2: Membership of the Faculty Council

a. Voting Members. Voting members of the Faculty Council shall include one representative of each academic department (all references hereafter to academic departments include the Division of General Medical Sciences (DGMS), which has departmental status; see Article 4.7). When more than one autonomous department exists within a single academic discipline, as per section 4.3 below, a representative of each such department shall be elected to the Faculty Council. These representatives shall be referred to as departmental representatives. Other voting members shall include two representatives from the special faculty whose titles are modified by the adjective adjunct or clinical, one representative from the Louis Stokes VA Medical Center and 10 representatives of the regular faculty elected at large. All these representatives shall be members of the faculty.

b. Non-voting Members. Non-voting members of the Faculty Council shall be the president of the university, a vice-president of the university responsible for medical school activities, the dean of the School of Medicine, the associate dean for medical education of the School of Medicine, the chair of the Committee on Medical Education, one representative from each affiliated institution, and student members who shall include not more than two undergraduate medical students, one M.D.-Ph.D. student, and one Ph.D. graduate student. The student members shall be chosen by their respective groups. To facilitate communication between Standing Committees and the Faculty Council, if no member of a Standing Committee of the Faculty of Medicine is a voting member of the Faculty Council, the Faculty Council Chair may

**Commented [A33]:** Approved by the Bylaws Committee 5-0 on April 10, 2018.

Rationale: This is now the first time DGMS is mentioned, so the words in its title are written out.

**Deleted:** DGMS

**Deleted:** each affiliated institution

**Commented [A34]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.

SUBSTANTIVE: Retains the status of the institutional representative from the VA as a voting member. Rationale: The VA has a single FC representative, in contrast to affiliates with multiple departments (see below).

**Commented [A35]:** Approved by the Bylaws Committee on 12/12/17.

SUBSTANTIVE: Changes institutional representatives from voting to non-voting status. Rationale: Historically, each affiliate had one institutional representative and no guaranteed departmental representatives. Instead, one hospital-based faculty member could be elected to represent all departments covering the same discipline. The proposed amendment takes into account the fact that faculty employed full-time by the parent institution, CWRU, do not have an extra voting member of FC, and that all basic science departments at the CCLCM are appointed in a single CWRU department (Molecular Medicine). Recognizing that there may be issues that affect each affiliate as a whole, institutional representatives have been retained as non-voting members. Similar to the non-voting Standing Committee and Senate representatives, these individuals will be responsible for identifying relevant issues and reporting them to their constituent faculty.

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1 ~~appoint one of the Standing Committee's elected members to serve as a non-voting, *ad hoc*~~  
 2 ~~member, in accordance with each committee's charge. If a representative~~ to the university  
 3 Faculty Senate is not included in the Faculty Council as a voting member, the ~~Faculty~~ Council  
 4 ~~Chair~~ shall appoint one of the School of Medicine senators to be an *ad hoc* member of the Faculty  
 5 Council. The ~~Faculty Council Chair~~ may invite other persons to attend designated meetings.  
 6 Faculty Council meetings shall be open to the faculty. Faculty members may at any time request  
 7 hearings before Faculty Council, but a request by a faculty member for a hearing before the  
 8 Faculty Council must be made to the chair prior to the meeting of the Faculty Council.

### 3.3: Election of the Members of the Faculty Council

~~Faculty members have the power and obligation to elect Faculty Council representatives~~  
 (see Article 2.3). Elections shall be held by democratic process. Complaints concerning the  
 occurrence of undemocratic selections of representatives shall be brought to the attention of the  
 chair of the Faculty Council.

a. Departmental representatives: When the term of a departmental representative is  
 coming to an end, the dean shall inform all full-time faculty members of that department. The  
 department shall elect its new representative no later than April 30 of each year, with newly  
 elected members beginning their terms of office on the following July 1. ~~To be eligible to serve~~  
 as a departmental representative to the Faculty Council, a faculty member must be appointed  
 full-time and hold a primary appointment in that department. The election shall be held by  
 democratic process. Complaints concerning the occurrence of undemocratic selections of  
 representatives shall be brought to the attention of the chair of the Faculty Council.

b. At-large representatives: The at-large representatives shall be nominated by the  
 Nomination and Elections committee (see Article 3:6b) and shall be elected by the full-time  
 members of the faculty. The dean shall be requested to supply the Nomination and Elections  
 committee with a list of the basic and clinical science departments and rosters of the full-time  
 faculty members with primary appointments in each department. Five at-large representatives  
 shall be elected from basic science departments and five shall be elected from clinical science  
 departments. There shall be at least two nominees for each of these positions. Those nominees  
 who are not elected shall serve as alternates in the order of votes received (see Article 3:4).

The terms of at-large Faculty Council members shall be staggered such that one or two  
 basic science and one or two clinical representatives are elected each year. No more than  
 one at-large representative shall be from a single department.

c. Institutional representatives: Upon notification by the dean, full-time faculty based at  
 each affiliated institution shall choose, by a method of their own design, one of their members

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Commented [A36]: A narrower version relating only to the Bylaws Committee was approved by the Bylaws Committee on 13 November 2017 and by the Faculty Council on 22 January 2018.  
 Rationale: To make the Bylaws compliant with the Bylaws Committee charge approved by Faculty Council on May 15, 2017.

Commented [A37]: Approved 10 April 2018. 5-0. SUBSTANTIVE: Generalizes the right of each Standing Committee of the Faculty to have a non-voting representative to the Faculty Council.

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Commented [A38]: Approved by the Bylaws Committee on 10 April, 2018 5-0/  
 Rationale: Curatorial.

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Commented [A39]: Approved by the Bylaws Committee on 12 March 2018, 5-0.

Commented [A40]: Moved from 3.3b.

Commented [A41]: Approved by the Bylaws Committee

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1 who has a primary base at that institution and who has not been elected a department  
2 representative to be a representative to the Faculty Council.

3 d. Special Faculty representatives: The Nomination and Elections Committee (see Article  
4 3:6b) shall nominate at least four members of the special faculty whose titles are modified by the  
5 adjective adjunct or clinical as candidates for representative to the Faculty Council. Two of these  
6 nominees shall be elected by the special faculty whose titles are modified by the adjective  
7 adjunct or clinical. The remaining nominees will serve as alternates in the order of votes  
8 received.

#### 10 3.4: Terms of Office of Faculty Council Representatives

11 Departmental and at-large representatives shall serve for a period of three years.  
12 Representatives may not serve consecutive terms but may stand for election after an absence of  
13 one year. A department representative who is unable for any reason to complete a term of office  
14 shall be replaced by a full-time faculty member from the same academic department, elected by  
15 democratic process within that department. The new member shall complete the term of the  
16 former member and shall be eligible for reelection if the remaining term so completed has been  
17 less than two years. A departmental member on leave of absence shall be replaced during that  
18 leave by a faculty member from the same academic department, elected by democratic process  
19 within that department. Upon return from leave, the returned faculty member shall complete the  
20 original term of office. An at-large representative who is unable for any reason to complete a  
21 term of office shall be replaced by an alternate (per 3:3d) who shall serve during the remainder  
22 of the term or during the leave of the representative, as outlined for department representatives.  
23 A representative of the special faculty who is unable for any reason to complete a term shall be  
24 replaced by an alternate (see Article 3:3e) who shall serve during the remaining term or during  
25 the leave of the representative. A representative of an affiliated institution who is unable for any  
26 reason to complete a term shall be replaced by a full-time faculty member with a primary base at  
27 the same institution. That individual shall be chosen by the same mechanism as the original  
28 representative, and shall serve for the remaining term or during the leave of the original  
29 member, as outlined above for department representatives.

30 Members who have three absences from Faculty Council meetings in one year must  
31 resign from the Faculty Council unless their absences were excused by the chair of the Faculty  
32 Council. A warning letter will be sent to the Faculty Council member after two absences, with a  
33 copy to the department chair. Selection of replacements for members who resign is discussed in  
34 the preceding paragraph.

#### 36 3.5: Officers of the Faculty Council

**Commented [A48]:** Approved by the Bylaws Committee on 12 March, 2018.  
Rationale: Moved so that the types of representatives are clearly distinguished.

**Commented [A49]:** Approved by the Bylaws Committee on 12 March, 2018.  
Rationale: Phrase inserted for clarity.

**Commented [A50]:** Changes to 3.b and c (formerly d and e) were approved by the Bylaws Committee on 23 January, 2018.  
Rationale: Correction (update of NEC name) and clarification.

**Deleted:** Representatives

**Commented [A51]:** Approved by the Bylaws Committee on January 23, 2018.  
Rationale: Clarification.

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1 Each year the Faculty Council shall elect a chair-elect from ~~among current members of~~  
2 ~~the Faculty Council. There shall be at least two nominees for the position of chair-elect.~~ The  
3 chair-elect shall serve as vice-chair of the Faculty Council during the first year following election  
4 and succeed to the chair the following year. The chair of the Faculty Council (or the vice-chair of  
5 the Faculty Council in the absence of the chair) shall preside over the Faculty Council and shall be  
6 vice-chair of the Faculty of Medicine. Following completion of this term of office, the immediate  
7 past chair of the Faculty Council shall serve one additional year as a member of the Faculty  
8 Council and as a member of its Steering Committee. For procedures to be followed in the  
9 election of the officers and committees of the Faculty Council, see article 3:6b. The dean shall be  
10 requested to provide administrative support to these officers.

### 11 3.6: Committees of the Faculty Council

12 a. Steering Committee. The Steering Committee shall consist of eight members: the  
13 chair of the Faculty Council, the vice-chair of the Faculty Council, the immediate past chair of the  
14 Faculty Council, and five other Faculty Council members who shall be elected by the Faculty  
15 Council for one-year terms. These members may be reelected successively to the Steering  
16 Committee for the duration of their terms as members of the Faculty Council. The chair of the  
17 Faculty Council (or the vice-chair of the Faculty Council in the absence of the chair) shall serve as  
18 chair of the Steering Committee. The Steering Committee shall set the agenda for meetings of  
19 the Faculty Council. The Steering Committee shall be empowered to act for the Faculty Council  
20 between meetings. The Steering Committee shall report all actions and recommendations to the  
21 Faculty Council. ~~Steering Committee meetings shall be conducted according to Robert's Rules of~~  
22 ~~Order, Newly Revised.~~ The Steering Committee shall act for the Faculty Council and faculty in  
23 reviewing actions of the Committee on Appointments, Promotions and Tenure in order to ensure  
24 equity, adherence to published guidelines, and proper procedure. The Steering Committee shall  
25 consult with the dean on such matters as the dean brings before it. The Steering Committee  
26 shall advise the president concerning the appointment of an interim or acting dean of the School  
27 of Medicine.

28 b. Nomination and Elections Committee. This committee shall consist of eleven  
29 members: the dean, the chair of the Faculty Council, the vice-chair of the Faculty Council, four  
30 other Faculty Council members, two each from the ~~basic~~ and clinical sciences, and four full-time  
31 faculty members who are not members of the Faculty Council, two each from the ~~basic~~ and  
32 clinical sciences. The four Faculty Council members of the Nomination and Elections Committee  
33 shall be elected at large by the Faculty Council and shall serve for the duration of their terms as  
34 Faculty Council members. The four non-members of the Faculty Council shall be elected by  
35

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Deleted: who have at least two years of their terms remaining

Commented [A52]: Approved by the Bylaws Committee on 27 March, 2018, 4-0.  
SUBSTANTIVE: Removes the restriction that FC Chair candidates must have at least two years left in their term.  
Rationale: Removal of the limitation allows candidates who have more experience on FC to run for chair-elect.

Commented [A53]: Approved by the Bylaws Committee on 27 March, 2018, 4-0.  
Rationale: This change prevents a candidate from running unopposed for this important office.

Commented [A54]: Approved by the Bylaws Committee on 12 December, 2017.  
Article 3.7d stipulates that Faculty Council meetings are conducted according to Robert's Rules but this was never explicitly stated for the Steering Committee.  
Rationale: Clarification.

Commented [A55]: Approved by the Bylaws Committee on 10 April, 2018.  
Rationale: Updates language to reflect the current structure of the curriculum (students are in the clinic from their first year onward).

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1 ballot by the Faculty of Medicine and shall serve three-year terms. The chair will be elected from  
2 the members of the committee annually.

3 The Nomination and Elections Committee shall nominate (1) candidates for the chair-  
4 elect of the Faculty Council ~~from the eligible pool (all current members, see Article 3.5)~~, (2)  
5 candidates for the Steering Committee, and (3) candidates for the standing committees of the  
6 Faculty Council. Ballots listing the nominees and leaving space for write-in candidates shall be  
7 sent to all members of the Faculty Council. The election of the chair-elect and the members of  
8 the Steering Committee, the Faculty Council members of the Nomination and Elections  
9 Committee and the members of other standing committees of the Faculty Council will be carried  
10 out at the May meeting of the Faculty Council. Additional nominations for all these offices shall  
11 be invited from the floor. The consent of the nominee must be obtained in order for a write-in or  
12 floor nomination to be valid. Faculty Council members who cannot attend the May meeting may  
13 vote by mail (noting that wherever mail voting or distribution is mentioned in these Bylaws,  
14 voting or distribution by email or other method well-calculated to reach voters shall be  
15 considered satisfactory). Candidates for chair-elect will also be candidates for the Steering  
16 Committee and will be so listed on mail ballots. Faculty Council members shall vote for one  
17 nominee for chair-elect and for six members of the Steering Committee. The five persons with  
18 the highest number of votes, excluding the person elected to the office of chair-elect, shall be  
19 elected to serve on the Steering Committee. Both mail ballots and ballots collected at the Faculty  
20 Council meeting shall be counted, whether or not a quorum is present at the meeting. If the  
21 total number of ballots received does not equal or exceed 50% of the members of Faculty  
22 Council, ballots may be solicited from absentee members. If either the Steering Committee or  
23 the Nomination and Elections Committee perceives a significant deficit in the representation of  
24 faculty constituencies within its membership following the annual election, either committee may  
25 ask the chair of Faculty Council to appoint a single ad hoc voting member to serve on the  
26 respective committee for the remainder of the year. In the case of the Steering Committee, the  
27 appointee should be a current member of the Faculty Council. In the case of the Nomination and  
28 Elections Committee, the appointee should be a regular member of the Faculty of Medicine.

29 In addition, the Nomination and Elections Committee shall nominate (1) candidates for  
30 the at-large representatives to the Faculty Council, (2) candidates for the representatives of the  
31 special faculty whose titles are modified by the adjective adjunct or clinical to the Faculty Council,  
32 (3) candidates for standing committees of the Faculty of Medicine, and (4) candidates for the  
33 University Faculty Senate. In the case of at-large representatives, senators, or members of the  
34 Committee on Appointments, Promotions, and Tenure, the number of ~~candidates~~ shall be at least  
35 twice the number of positions to be filled. ~~In recruiting faculty for the ballot, the NEC shall strive~~  
36 ~~to produce a diverse slate of nominees, considering gender, race, institutional affiliation and~~

**Commented [A56]:** Approved by the Bylaws Committee on 27 March, 2018, 4:0.

Reiterates the provision in Article 3.5 that all current members of Faculty Council are eligible to run for chair-elect.

Rationale: As stated in Article 3.5.

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**Commented [A57]:** Approved by the Bylaws Committee on 12 December, 2017, 6:0.

Rationale: Curatorial.

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**Commented [A58]:** The three sentences that follow represent Bylaws Committee's wordsmithing of the revised charge sent to us by the Nomination and Elections Committee. The amendments were approved 4:0 at the BC's 27 March, 2018 meeting and subsequently accepted by the NEC.

representation of basic and clinical departments. A nominee may not be put on the ballot if in winning the election they would serve on more than two standing committees of the Faculty of Medicine or Faculty Council (ad hoc committees are not included in this count). Exceptions will be made only if no other candidates come forward to fill a committee vacancy. Elections shall be conducted by e-mail or other electronic means, using a preferential voting system. Ballots shall include a clear explanation of the preferential voting system. Ballots listing candidates for the representatives of the special faculty on the Faculty Council shall be distributed to all special faculty whose titles are modified by the adjective adjunct or clinical. Ballots listing candidates for committees dealing with the planning and approval of the curriculum, the execution of the instructional program, and the formulation of policies with regard to student affairs shall be distributed to all members of the faculty. Elections shall be conducted as far in advance of the completion of the terms of sitting members as is practicable. Elections shall be conducted through the campus and first class mail or by email or other electronic means. All electronic ballots shall provide space for write-in candidates. At least two weeks shall be allowed between the distribution of all ballots and the close of the election and determination of election results. Distribution of the ballots and the determination and publication of the election results shall be the responsibility of the Nomination and Elections Committee. After each election, the Committee shall count the votes and publish all the vote totals. Any irregularities or issues in the conduct of the elections shall be investigated and resolved by the Committee. The Nomination and Elections Committee shall report its investigation and resolution to the Faculty Council and the Faculty of the School of Medicine. The dean shall be requested to supply administrative support for the elections.

c. Special Committee to Nominate Candidates for the Search Advisory Committee to the President on the Selection of the Dean of the School of Medicine. This special nominating committee shall be formed when needed and shall consist of the chair of Faculty Council, three other members of the Steering Committee of the Faculty Council, three elected members of the Nomination and Elections Committee, and four academic department chairs (two Basic Science, two Clinical) of the School of Medicine. The chair of the Faculty Council shall serve as chair of this special nominating committee, and the other ten members shall be elected by their respective groups. The majority of the nominees for the Search Advisory Committee selected by this special nominating committee shall be full-time members of the Faculty of Medicine. The president is requested to consider these nominees when appointing members of the Search Advisory Committee.

In the early stages of the search for the dean of the School of Medicine, the chair of the Faculty Council shall solicit recommendations, opinions, and advice regarding selection of the dean from members of the Faculty of Medicine by mail and submit these views directly to the

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**Commented [A59]:** SUBSTANTIVE. Stipulates that a faculty member may serve on only two committees concurrently.  
Rationale: Increases overall participation in faculty governance and broadens representation.

**Commented [A60]:** Approved 2018-04-10, 5 -0. SUBSTANTIVE: Institutes a preferential voting system in place of run-off elections (which were never explicitly described but conducted when candidate(s) did not receive a majority of the votes cast, as required by Robert's Rules).

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Deleted: shall be used for multi-seat elections

**Commented [A63]:** Rationale: Removes archaic language.

Deleted: Electees shall be chosen by mail ballot. Ballots listing candidates for Faculty Council, senators, and standing committees of the faculty shall be mailed to all full-time members of the faculty.

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**Commented [A64]:** Approved by the Bylaws Committee 28 February, 2018.  
Rationale: Modernizes description to match current practice.

**Commented [A65]:** Approved by the Bylaws Committee on 28 February, 2018.  
Rationale: Modernization.

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**Commented [A66]:** Approved by the Bylaws Committee on 28 February, 2018.  
Rationale: Replaces "will" with the more forceful "will."

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**Commented [A67]:** Approved by the Bylaws Committee on 12 December, 2017.  
Rationale: Curatorial.

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1 Search Advisory Committee. When a final list of candidates for the position of dean has been  
2 ~~assembled, the~~ Search Advisory Committee is requested to solicit the views and advice of the  
3 Steering Committee of the Faculty Council on the ranking of the candidates.

4 d. Other Committees of the Faculty Council. The Faculty Council may create other  
5 standing and *ad hoc* committees of the Faculty Council to carry out specific functions and duties  
6 assigned to it. These committees may include members who are not Faculty Council members.  
7

### 8 3.7: Meetings of the Faculty Council

9 a. The Faculty Council shall meet at least once every two months from September  
10 through June of each academic year. Special meetings may be called by a majority vote of the  
11 Steering Committee, by a written petition of 10 members of the faculty addressed to the chair of  
12 the Faculty Council, or by the dean.

13 b. The agenda for each meeting shall be prepared by the Steering Committee, posted  
14 electronically, and sent electronically to all faculty members at least one week in advance of  
15 regular meetings and at least two days in advance of special meetings

16 c. Minutes of the meetings shall be kept and shall be distributed in a timely fashion to  
17 Faculty Council members, to the dean, to all department chairs, and to each member of the  
18 Faculty of Medicine. Approved minutes shall be posted electronically and sent electronically to all  
19 faculty members. The dean is requested to provide administrative support for this purpose.  
20

21 d. The meetings shall be conducted according to Robert's Rules of Order, Newly Revised.

22 ~~A parliamentarian may be appointed by the Faculty Council Chair in order to facilitate orderly~~  
23 ~~transaction of business.~~ A quorum of the Faculty Council shall consist of 50% of the voting  
24 members. Elected members may not designate alternates for council meetings or vote by proxy  
25 in council meetings. Faculty Council members may vote *in absentia* by mail in the election of  
26 officers and standing committees of the Faculty Council (see article 3.6b).

### 27 3.8: Annual Report of the Faculty Council

28 Each year the chair of the Faculty Council shall submit to the faculty a report on the  
29 activities of the Faculty Council.  
30

## 31 ARTICLE 4 – DEPARTMENTS AND DIVISION OF GENERAL MEDICAL SCIENCES (DGMS)

### 32 4.1: Organization of the Faculty into Departments and Division of General Medical Sciences 33 (DGMS) 34

**Commented [A68]:** Approved by the Bylaws Committee on  
12 December, 2017.  
Rationale: Curatorial

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**Commented [A69]:** Approved by the Bylaws Committee on  
12 December, 2017.  
Rationale: Echoes language in the Faculty Senate Bylaws.

1 a. The Faculty of Medicine shall be organized into departments and DGMS representing  
2 academic disciplines as specified in the Constitution of the University Faculty, Article VII, Sec. B.  
3 Departments and Centers in DGMS shall plan and execute programs of research and scholarship  
4 and of professional activity and shall train medical students, graduate students, and, in some  
5 cases, undergraduate students in its discipline.

6 b. Each member of the Faculty of Medicine shall have a primary appointment in an  
7 academic department or DGMS, which has departmental status (see Article 4.7).

#### 8 9 4.2: Function of Departments

10 a. Each department and DGMS shall provide a central administration for its academic  
11 disciplines. Each department and DGMS shall be responsible for the teaching in its discipline in  
12 the School of Medicine, through the core academic program's committee structure and the other  
13 units of the undergraduate medical curriculum and in the affiliated hospitals. Each department  
14 shall also allocate resources to execute powers and responsibilities concerning the faculty's  
15 educational, research, scholarly activities (Faculty Handbook, Chapter 2, Section B), and full  
16 freedom of scholarly investigation and publication of his or her findings (Faculty Handbook,  
17 Chapter 2, Section D). These responsibilities shall be exercised by the academic department  
18 chairs in conformity with the curricular policies, organization, and components that are specified  
19 by the faculty and the dean). Each department may assume responsibility for teaching in its  
20 discipline in the other schools of the health sciences and in the undergraduate and graduate  
21 curricula of the university as determined by need and negotiation. Where appropriate, each  
22 department shall plan and implement graduate programs leading to such graduate degrees as  
23 are authorized by the university and shall be responsible for the content of the curricula in its  
24 discipline in the several programs specified above. Each department shall plan and execute  
25 programs of research and of professional activity and shall train medical students, undergraduate  
26 students, and graduate students in its disciplines. Each department shall maintain and staff the  
27 facilities which lie within its jurisdiction and shall enlist the cooperation of other departments or  
28 of affiliated teaching institutions where this shall be necessary for the execution of its mission.  
29 Each department shall elect one representative to the Faculty Council.

30 b. Each department or, at the request of the hospital affiliate's Associate Dean or  
31 Executive Dean and with the consent of the Dean of the School of Medicine, each affiliated  
32 hospital, shall establish a Department or Affiliated Hospital Committee on Appointments,  
33 Promotions, and Tenure (or Appointments and Promotions only, if appropriate) (all hereinafter  
34 "DCAPT"s) for the purpose of making recommendations concerning appointments and  
35 promotions and if appropriate awards of tenure. The department chair or affiliated hospital

1 associate dean or executive dean shall nominate faculty annually for service on the DCAPT for  
2 the SOM Dean's approval. The department chair shall also nominate a faculty member holding a  
3 primary appointment in the department (or the affiliated hospital, if appropriate), preferably at  
4 the rank of tenured Associate Professor or Professor, to serve as the DCAPT committee chair.

5 c. DCAPTs may comprise all the faculty members holding full-time primary appointment  
6 in the department, except as provided in paragraph 4.2(c), and may also include faculty holding  
7 secondary appointments in the department but holding primary appointments outside the  
8 department or school in any of the university's constituent faculties. Alternatively, department  
9 chairs may nominate a committee of at least three faculty members from among the primary full-  
10 time faculty (and other faculty) to serve as the committee.

11 d. Department chairs themselves shall not be members of their respective department's  
12 DCAPTs. Instead, they shall serve as the initiator for the appointment, promotion, and tenure of  
13 candidates, attending DCAPT meetings for the purpose of presenting candidates for the  
14 committee's consideration, entering into discussion with the committee and answering its  
15 questions, and otherwise being excused from the room. Department chairs shall not be present  
16 for DCAPT voting. Should a faculty member take advantage of the self-initiation process, the  
17 DCAPT chair shall invite the department chair as well as an advocate, selected by the candidate  
18 from among the CWRU faculty, to the meeting at which the self-initiated promotion or tenure  
19 award is discussed to provide the department chair and advocate with the opportunity to offer  
20 his or her perspectives. The advocate and department chair shall present separately and neither  
21 shall be present for the vote.

22 e. The paragraph above, however, shall not restrict department chairs from serving on  
23 an affiliated hospital's committee concerned with appointments, promotions, or tenure. Where  
24 department chairs serve on such committees, they may serve as the as described above and they  
25 may remain present during the discussion and voting, but in no case shall a department chair (or  
26 other committee member) cast a vote regarding the appointment, promotion, or tenure of a  
27 candidate whom she or he initiated for appointment, promotion, or tenure.

28 f. Department chairs have wide discretion to nominate faculty for service on the DCAPT,  
29 but the following principles should be observed. If at all possible, at least two-thirds of the  
30 committee should be composed of tenured faculty in the department at the rank of associate  
31 professor or professor. The DCAPT's membership should include both tenured and non-tenured  
32 faculty; each committee, with the exception of the Cleveland Clinic Lerner College of Medicine  
33 Committee (CCLCM), shall include at least three tenured faculty members, so tenure votes are  
34 not determined by only one or two voters. Preference shall be given to tenured faculty holding  
35 primary appointment in the department. Tenured faculty holding secondary appointment in the  
36 department ("tenured secondary faculty") may be appointed to the committee 1) in addition to



1 all tenured faculty holding primary appointment in the department ("tenured primary faculty") in  
2 order to reach the minimum of three or 2) to exceed it, but in this case the number of tenured  
3 secondary faculty may not exceed the number of tenured primary faculty on the committee.  
4 Women and minority faculty should be represented if at all possible; adjunct and/or clinical  
5 faculty may be nominated for committee membership at the chair's discretion to vote on  
6 promotion of special faculty.

7 g. Department or affiliated hospital CAPTs shall review faculty holding or proposed for  
8 holding primary appointment in the department/affiliated hospital in order to make  
9 recommendations concerning 1) appointment, promotion, and/or award of tenure; 2) third and  
10 sixth year pretenure reviews for tenure track faculty; 3) concerning readiness for promotion for  
11 each full-time assistant and associate professor in the non-tenure track no later than six years  
12 after appointment or promotion to that rank and at least every six years thereafter; and 4) other  
13 actions as appropriate. Copies of reviews under 2) and 3) above shall be provided to the  
14 individual faculty member reviewed; copies of all reviews shall be provided to the dean's office.

15 h. DCAPT recommendations shall be made by the DCAPT chair (unless he or she is the  
16 candidate) after a vote by the DCAPT. The DCAPT chair shall convene a meeting for the purpose  
17 of voting, for which notification shall be made sufficiently in advance to allow those unable to  
18 attend to vote by written absentee vote. All members of the committee may participate in  
19 discussion of all recommendations for appointment, promotion, and tenure. On  
20 recommendations involving promotion, only faculty of rank equal to or superior to that being  
21 considered shall be eligible to vote. On recommendations involving tenure, only faculty with  
22 tenure shall vote. Recommendations shall require a majority (more than half) of those eligible to  
23 vote. In order for a recommendation to be made, at least three eligible committee members  
24 must cast a vote.

25 i. Affirmative recommendations for faculty appointments and all other recommendations  
26 from a DCAPT shall be communicated to the department chair by the DCAPT chair in a letter  
27 which records the numerical vote and reflects the deliberations of the DCAPT, pro and con.  
28 Before transmission, this letter shall be made available for inspection by the faculty members  
29 who participated in the vote. If a faculty member believes the letter to express inadequately the  
30 committee's deliberations, he or she may send independently to the DCAPT chair a statement of  
31 such opinion, which shall be appended to the committee's letter for higher reviews. The  
32 department chair shall forward the DCAPT recommendation letter to the dean and is expected to  
33 add his or her recommendation, which may or may not be the same as the DCAPT's  
34 recommendation, in a separate letter to the dean.

35 j. DCAPT meetings shall be conducted in confidence. All votes shall be conducted by  
36 written secret ballot and shall be tabulated by the committee secretary. Candidates shall not be

1 present at committee meetings (or portions thereof) at which their candidacy is discussed and/or  
2 voted upon. Committee deliberations and votes are confidential and must not be discussed  
3 outside the committee with anyone, including the candidates.

4 k. Recommendations concerning appointment, promotion, and tenure shall be governed  
5 by the then-current Qualifications and Standards for Appointment, Promotion, and the Award of  
6 Tenure for Faculty Members in The School Of Medicine, Case Western Reserve University  
7 (Appendix I of the these Bylaws) and the relevant sections of the Faculty Handbook. Committee  
8 discussions shall be confined to matters relevant under the Standards and Qualifications.  
9 Specifically prohibited from discussion are such matters as gender, race, minority status,  
10 disability status, veterans status, and sexual orientation or marital/partner status.

#### 11 12 4.3: Academic Department Chairs

13 a. Each academic department shall have an academic chair appointed by the president of  
14 the university on recommendation of the dean with the exception of DGMS where the dean  
15 serves as chair. In order to select candidates, the dean will appoint a search committee in  
16 consultation with Faculty Council, which shall normally be multi-departmental in composition, to  
17 provide a slate of candidates from which the selection will normally be made. The search  
18 committee shall include representation from the full-time faculty of the department in question.  
19 The department faculty representation shall consist of at least one full-time faculty member  
20 elected by the full-time faculty of that department. The search committee shall identify its  
21 membership to the academic department and indicate its ready availability, particularly that of  
22 the elected full-time departmental representative member(s) of the search committee, to receive  
23 suggestions, views and advice from interested individual department members or from the entire  
24 academic department throughout the search process. Verbal and/or written suggestions, views,  
25 and advice directed to any member of the search committee should be transmitted promptly to  
26 the whole search committee, unless specified otherwise by the departmental member offering  
27 such suggestions, views and advice.

28 All department chairs shall be selected in strict accordance with the university policy  
29 governing affirmative action.

30 The president will appoint acting or interim department chairs after receiving the  
31 recommendations of the dean. Before making recommendations, the dean shall seek the advice  
32 of a committee consisting of the Steering Committee of the Faculty Council and the Faculty  
33 Council representative from the department for which an acting or interim chair is to be  
34 appointed. When a member of the Steering Committee or the Faculty Council representative is a  
35 candidate for acting or interim department chair, the chair of the Faculty Council shall designate  
36 an alternate member from the department to serve on the advisory committee. The advisory

1 committee shall identify expeditiously its membership to the academic department and indicate  
2 its ready availability, particularly that of the representative from the department, to receive  
3 suggestions, views and advice from interested individual department members or from the entire  
4 academic department. Verbal and/or written suggestions, views and advice directed to any  
5 member of the advisory committee should be transmitted promptly to the whole advisory  
6 committee, unless specified otherwise by the departmental member offering such suggestions,  
7 views and advice. This process shall take place as expeditiously as possible before the advisory  
8 committee makes its recommendations to the dean.

9 b. Each department chair or an appropriate designee shall meet annually with each full-  
10 time faculty member to review performance and to set future goals. The department chair or the  
11 appropriate designee shall then provide a written summary of each evaluation to the faculty  
12 member, with a copy provided to the dean. For departments that choose to use the Faculty  
13 Activity Summary Form (FASF), any changes to that form must be approved by Faculty Council  
14 prior to their incorporation into the document.

15 c. The chair of an academic department may reside at the School of Medicine or at any  
16 one of its affiliated institutions.

17 d. Any individual service of an established academic department in an affiliated teaching  
18 institution may petition the Faculty of Medicine for independent status as a separate academic  
19 department, autonomously representing the academic discipline. The chair of each such  
20 independently established academic department shall be selected in accordance with section 4:3a  
21 and appointed by the president on recommendation of the dean. The dean is requested to seek  
22 the advice of the Steering Committee and elected departmental member(s), as outlined in article  
23 4:3a, before making recommendations to the president.

24 e. All chairs of academic departments and all directors of individual services of affiliated  
25 institutions within a single discipline should meet regularly to coordinate their university-related  
26 functions.

27 f. At least once a year, the Department Chair will call a meeting of their faculty for the  
28 purpose of identifying and defining issues pertinent to the mission of the Department.

#### 30 4.4: Establishment and Discontinuance of Academic Departments

31 Petitions to establish, discontinue or merge academic departments shall be submitted to  
32 the Faculty Council for review. The Faculty Council shall submit all petitions recommended for  
33 approval along with their rationale to the Faculty of Medicine for its consideration. Petitions  
34 recommended for approval by the Faculty of Medicine shall be forwarded to the Dean for  
35 consideration. The Dean will transmit the petition along with his/her recommendation to the  
36 University Faculty Senate for consideration (see Article 2:3b).

1  
2 4.5: Review of Academic Departments

3       Periodic review of each department by persons external to the department is important  
4 for evaluation of the functioning of that department by the faculty and the dean. A committee  
5 appointed by the dean shall review each academic department at intervals no greater than 10  
6 years. The review committee shall include at least one outside consultant. The dean shall  
7 transmit the review committee's report and recommendations to the chair of the Faculty Council.  
8 Departmental faculty shall be provided with an executive summary.

9  
10 4.6: The Department of Biomedical Engineering

11       The Department of Biomedical Engineering is currently unique among the departments.  
12 Created by action of the Board of Trustees in 1968, it is a single department jointly based in the  
13 School of Medicine and the School of Engineering. The department chair will designate each  
14 faculty member, at the time of initial appointment, as being principally based in the School of  
15 Medicine or the School of Engineering. The principal designation will determine which School's  
16 pretenure period and which School's process and qualifications and standards for appointment,  
17 promotion, and award of tenure shall govern the appointment. In other respects, faculty in the  
18 department shall enjoy the rights and privileges and duties and responsibilities of faculty in both  
19 Schools.

20  
21 4.7: The Division of General Medical Sciences (DGMS)

22       DGMS was established in 1986 to provide an organizational home for primary  
23 appointments for faculty pursuing interdisciplinary research and educational objectives. DGMS is  
24 composed of centers headed by center directors who recommend faculty for appointment,  
25 promotion and tenure. The Dean of the School of Medicine shall serve as the Chair of DGMS and  
26 has discretion to establish or close individual centers. Faculty with primary appointments in  
27 DGMS shall retain their primary appointment in DGMS in the event of center closure. In all other  
28 regards DGMS is the equivalent to an academic department.

29  
30 ARTICLE 5 – FACULTY APPOINTMENTS, PROMOTION, AND GRANTING OF TENURE

31  
32 5.1: Classification of Appointments

33       An appointment shall be classified as initial, renewal, or continuing (for appointments  
34 with tenure or for appointments past the first year of several year terms).

35       An appointment shall be classified as full-time or part time. Eligibility for appointment or  
36 reappointment to the full-time faculty is subject to approval by the dean and requires that (1)

1 50% or more time be devoted to approved academic activities and (2) the academic activities  
2 must be conducted at an approved site. If 50% or more of compensation is paid through the  
3 university, the full-time faculty member is eligible for fringe benefits.

4 An appointment shall be classified by academic title and whether the appointment is (a)  
5 with tenure, (b) without tenure but leading to tenure consideration (tenure-track), (c) without  
6 tenure and not leading to tenure consideration (non-tenure track); or (d) special, which will  
7 include the prefix adjunct, clinical, visiting, or emeritus. If the appointment leads to consideration  
8 for tenure, the appointment letter shall specify clearly the academic year in which this  
9 consideration will become mandatory. With regard to special faculty appointments, adjunct  
10 appointments usually refer to part-time faculty members devoting their time to research and/or  
11 teaching in the basic science departments. Clinical appointments usually refer to faculty members  
12 devoting their time to patient care and teaching. Visiting faculty appointments are issued for  
13 specified terms of one year or less than one year and can be full- or part-time. Special faculty  
14 are not eligible for tenure.

15 The dean of the School of Medicine and the provost of the university must approve  
16 available tenured or tenure track slots. The School of Medicine is exempt from the Faculty  
17 Handbook ruling that the majority of the members of each constituent faculty must be tenured or  
18 on the tenure track (Chapter 2, Article I, Sec. D, p. 15), as approved by the University Faculty  
19 Senate and the provost (January, 2004).

20 If the appointment applies to more than one constituent faculty, or department, or to an  
21 administrative office as well as an academic unit, the appointment may be identified either (1) as  
22 a primary-secondary appointment or (2) as a joint appointment. For a primary-secondary  
23 appointment arrangement, one constituent faculty or department shall be identified as the  
24 primary appointment and the other as secondary. Responsibility for the initiation of  
25 consideration of re-appointment, promotion, award of tenure, or termination shall rest with the  
26 primary unit. Faculty with joint appointments have full rights as a faculty member in both  
27 constituent faculties or departments. The notice of appointment shall be issued jointly by the  
28 two constituent faculties or departments. Consideration of appointment, reappointment,  
29 promotion, and/or tenure for joint appointment arrangements shall be as described in the Faculty  
30 Handbook sections pertaining to such appointments.

### 31 32 5.2: Terms of Appointment

33 Appointments with tenure shall be of unlimited duration until retirement, subject only to  
34 termination for just cause (see below). Tenure-track appointments shall normally be made for a  
35 term of one to five years and may be renewed until the end of the pre-tenure period. Non-tenure

track appointments are renewable and shall normally be made for a term of one to five years.  
Special appointments shall be made for terms of one year or less.

#### 5.3: Academic Freedom

Academic freedom is a right of all members of the Faculty of Medicine, and applies to university activities, including teaching and research. Specifically, each faculty member may consider in his or her classes any topic relevant to the subject matter of the course as defined by the appropriate educational unit. Each faculty member is entitled to full freedom of scholarly investigation and publication of his or her findings.

#### 5.4: Tenure

The basic purpose of tenure is to provide the assurance of academic freedom throughout the university. Another important purpose of tenure is to attract and retain outstanding faculty through continued commitment of the university to these faculty members. Tenured faculty members are protected explicitly against dismissal or disciplinary action because their views are unpopular or contrary to the views of others. Non-tenure-eligible colleagues shall derive protection by general extension of these principles of academic freedom.

When awarded, academic tenure rests at the constituent faculty level.

The award of academic tenure to a faculty member is a career commitment that grants that faculty member the right to retain his or her appointment without term until retirement. The appointment of a tenured faculty member may be terminated only for just cause. In the event that a tenured faculty member's school, department or other unit of the university in which the faculty member's appointment rests is closed or reduced in size, the university shall make all reasonable attempts to provide a tenured faculty member with an appointment of unlimited duration until retirement.

Examples of just cause for the termination of any faculty member (tenured, tenure track, non-tenure eligible, or special) include (a) grave misconduct or serious neglect of academic or professional responsibilities as defined through a fair hearing; (b) educational considerations as determined by a majority vote of the entire constituent faculty of the affected individual which lead to the closing of the academic unit of the university or a part thereof in which the faculty member has a primary appointment; and (c) financial exigent circumstances that force the university to reduce the size of a constituent faculty in which the faculty member has a primary appointment.

A tenured faculty member may be terminated for financial exigent circumstances only after all faculty members who are not tenured in that constituent faculty have been terminated in

the order determined by the dean of the School of Medicine in consultation with the department chairs, the Faculty Council and other faculty members.

#### 5.5: The Pretenure Period

The pretenure period in the School of Medicine is nine years. Each faculty member whose appointment leads to tenure consideration shall be considered for tenure no later than in the ninth year after the date of initial appointment at the rank of assistant professor or higher.

A faculty member in the tenure track may request extensions to the pretenure period. The extensions may be (1) requested by exceptionally worthy candidates in the event of unusual constraints in the university, or part or parts thereof, which would prevent tenure award at the end of the normal period; or (2) requested for the purpose of compensating special earlier circumstances disadvantageous to a candidate's tenure consideration (such as serious illness, family emergency, maternity, or extraordinary teaching or administrative assignments); or (3) upon written request by the faculty member within one year after each live birth or after each adoption, an extension of up to one year shall be granted by the provost to any faculty member who will be the primary care giving parent. Extensions should be requested as soon after the occurrence of the relevant circumstances as practicable, ordinarily not later than one year prior to the normally scheduled expiration of the pretenure period. Extensions requested under (1) or (2) above require request by the faculty member, review and a recommendation by the department's committee on appointments, promotions, and tenure, the department chair, and the dean, and approval by the provost. Pretenure extensions may not be used to defer tenure consideration of a faculty member more than three years beyond the normal pretenure period except for extensions made under (3) above.

For faculty members whose tenure consideration has not produced tenure award during the pretenure period, further appointment is normally restricted to one year. In exceptional cases, individuals who failed to receive tenure may be appointed in the non-tenure eligible track on recommendation of the department Committee on Appointments, Promotions, and Tenure, the department chair, the Committee on Appointments, Promotions and Tenure of the School of Medicine, the dean of the School of Medicine, and the approval of the provost. Such appointments are contingent upon full financial support from non-university sources.

The number, nature, and duration of pretenure period extensions made to an individual faculty member's pretenure period shall not be considered by the CAPT when reviewing that faculty member for award of tenure or promotion.

#### 5.6: Qualifications for Appointments, Promotions and Granting of Tenure

Qualifications and standards for faculty appointments, reappointments, promotions, and granting of tenure shall be generally as stated in the Faculty Handbook of Case Western Reserve University. Specific qualifications and standards applying to the School of Medicine shall be determined by the Faculty of Medicine and appended to these bylaws. These qualifications and standards shall be reviewed every five years by the Faculty Council. The dean shall make the text of the current qualifications and standards available to all junior and newly appointed faculty members.

#### 5.7: Tenure Guarantee

Award of tenure for faculty based in the School of Medicine should be accompanied by a base salary guaranteed by the School of Medicine that will be equal for faculty in the school's basic science and clinical science departments. The amount of the guarantee and its financial support are currently under discussion.

#### 5.8: Rolling Appointments for Non-Tenure Track Professors

Upon nomination by the department chair and with the consent of the dean, faculty members at the rank of professor in the non-tenure track with primary appointments in either a clinical or basic science department will be eligible to receive a rolling appointment contract of up to five years in duration accompanied by a salary guarantee for the period of appointment, equal in amount (but not duration) to that guaranteed to tenured professors. A rolling three-year appointment, for example, is a multiple-year appointment that differs from a multiple-three-year fixed term appointment in that, pending satisfactory performance and financial circumstances as determined by the chair and the dean, the appointment is renewed each year for the following three years. Financial support for rolling contracts is to be provided by the School of Medicine with the understanding that, prior to making the rolling commitment, the school would have the opportunity to enlist support from the appropriate hospital, clinical practice plan, or other appropriate entity to underwrite the guarantee.

#### 5.9: Consideration of Recommendations for Appointments, Promotions and Granting of Tenure

##### a. Full-Time Faculty

The dean shall submit recommendations for appointments and promotions to the ranks of associate professor and professor and the granting of tenure concerning full-time faculty with primary appointments based in the departments of the School of Medicine (including those faculty in the Department of Biomedical Engineering with appointments principally based in the School of Medicine) given him or her by the department chairs or other persons as designated by



1 the dean or initiated by other means as outlined in the Faculty Handbook of Case Western  
2 Reserve University, Chapter 3.I.1, to the Committee on Appointments, Promotions and Tenure of  
3 the School of Medicine. This committee shall consider the documented evidence relating to each  
4 candidate and, following the qualifications and standards set forth in Exhibit I to these Bylaws,  
5 shall report its affirmative and negative recommendations to the Steering Committee of the  
6 Faculty Council. Each recommendation shall also be reported promptly to the academic chair of  
7 the candidate's department. The candidate shall be informed by the academic chair of the  
8 committee's recommendation. The academic chair or other nominator may appeal a negative  
9 recommendation by notifying the chair of the Committee on Appointments, Promotions, and  
10 Tenure of the School of Medicine. Appeals may be made in writing or in person. Written  
11 documentation of the appeal and the response of the Committee on Appointments, Promotions,  
12 and Tenure must be appended to the candidate's file. In the event that the appeal to the  
13 Committee on Appointments, Promotions and Tenure is not successful, the academic chair or  
14 other nominator or the affected faculty member may bring to the attention of the Steering  
15 Committee of the Faculty Council, through a detailed, written submission, any alleged errors in  
16 procedure or non-adherence to the current published guidelines for appointments, promotions  
17 and tenure. The Steering Committee of The Faculty Council may investigate the allegations to  
18 the extent that it deems appropriate, may review all other candidates' files as it deems  
19 necessary, and may request the appearance of persons with knowledge of current and prior  
20 procedures and policies of the CAPT. A written report of the results of any investigation by the  
21 Steering Committee shall be appended to the candidate's file. All files will be forwarded to the  
22 dean after the Committee on Appointments, Promotions and Tenure, and, if applicable, the  
23 Steering Committee of the Faculty Council have discharged their responsibilities as specified  
24 above. The dean shall transmit the file, with added comments if desired, to the president of the  
25 university; for informational purposes, the dean will also provide the Dean of the Case School of  
26 Engineering with complete copies of the files of candidates in the Department of Biomedical  
27 Engineering with appointments principally based in the School of Medicine.

28  
29  
30 b. Special Faculty Appointments and Promotions

31 Special faculty appointments and promotions modified by the prefix adjunct, clinical, or  
32 visiting shall be recommended by the department chair and may be granted by the dean. For  
33 these clinical and adjunct appointments and promotions at the ranks of assistant professor,  
34 associate professor, and professor, the dean shall, prior to reaching a decision, also consider the  
35 recommendation of the department's committee on appointments, promotions, and tenure. The  
36 dean shall also consider letters of reference concerning the appointment and promotion of faculty

1 to the ranks of clinical and adjunct associate professor and clinical and adjunct professor. For all  
2 ranks of clinical and adjunct faculty appointments and promotions in , the dean shall, prior to  
3 reaching a decision, also consider the recommendation of the Division's committee on  
4 appointments, promotions, and tenure. This paragraph will govern special faculty appointments  
5 and promotions for faculty in the department of biomedical engineering with appointments  
6 principally based in the School of Medicine. The dean shall inform the Dean of Case School of  
7 Engineering of any such appointments and promotions. c. Secondary Appointments and  
8 Promotions

9 Secondary appointments at all ranks shall be recommended by the chair of the secondary  
10 department, require the concurrence of the primary department chair, and may be made at the  
11 discretion of the dean. Secondary appointment promotions shall be recommended by the  
12 secondary department chair and may be made at the discretion of the dean. For secondary  
13 appointments and promotions in the DGMS, the dean shall, prior to reaching a decision, also  
14 consider the recommendation of the Divisions committee on appointments, promotions, and  
15 tenure. This paragraph will govern secondary appointments in the department of biomedical  
16 engineering principally based in the School of Medicine and promotions of faculty holding such  
17 secondary appointments. The dean shall inform the Dean of Case School of Engineering of any  
18 such appointments and promotions.

19  
20 5.10: The Committee on Appointments Promotions and Tenure

21 a. The Committee on Appointments, Promotions and Tenure shall be a standing  
22 committee of the faculty and shall consist of twenty-four full-time faculty members. Eighteen  
23 members shall be elected by the full-time faculty and six members shall be appointed by the  
24 dean. A representative Dean from faculty affairs shall also be a member of this committee, ex  
25 officio and without vote. Department chairs are not eligible to serve on this committee. Ten of  
26 the committee members shall have the rank of tenured professor; ten shall be professors in the  
27 non-tenure track; and four shall be tenured associate professors. The elected committee  
28 members shall include nine faculty members with primary appointment in clinical science  
29 departments and nine with primary appointment in basic science departments; the appointed  
30 members shall include four from clinical science departments and two from basic science  
31 departments. In each election all reasonable effort will be taken to have the number of  
32 nominees be at least twice the number of positions to be filled. Members will be elected or  
33 appointed for three-year terms. These terms shall be staggered for the full-time faculty  
34 members. Committee members may serve only two consecutive three-year terms but  
35 subsequently may be reelected or reappointed after an absence of one year. The quorum for  
36 conducting the business of the Committee on Appointments, Promotion and Tenure shall be

1 twelve members present for discussion of which eight must have voting privileges. On  
2 recommendations for appointment as or promotion to associate professor, all committee  
3 members are eligible to vote; on recommendations for appointment as or promotion to professor,  
4 faculty committee members who are tenured professors and non-tenure track professors are  
5 eligible to vote; on recommendations to award tenure, tenured committee members are eligible  
6 to vote. Committee members may be present for discussion but are not eligible to vote  
7 regarding candidates for primary appointment, promotion, or award of tenure in the committee  
8 member's own department of primary appointment. The committee will be led by two co-chairs,  
9 each of whom shall serve a one-year term, appointed by the chair of Faculty Council in  
10 consultation with the dean of the School of Medicine. The co-chairs may be selected from either  
11 the elected or appointed members of the committee. The chair of Faculty Council, in  
12 consultation with the dean of the School of Medicine, each year shall also appoint two co-chairs  
13 elect, to serve the following year as the committee's co-chairs. At each committee meeting, at  
14 least one of the co-chairs must be in attendance.

15 b. The standards for appointment, promotion, and granting of tenure determined by the  
16 faculty shall be considered by the committee when evaluating candidates under review.

17 c. The CAPT shall review and make recommendations concerning all appointments as or  
18 promotions to the ranks of associate professor or professor and the award of tenure.  
19

#### 20 5.11 Sabbatical and Special Sabbatical Leaves

21 The purpose of and conditions for sabbatical leaves are discussed in the Faculty  
22 Handbook, Chapter 3, II A. The conditions are based on the premise that the faculty member  
23 requesting a sabbatical leave is tenured. A sabbatical leave may be requested by a faculty  
24 member and, based upon all factors including the specific study proposal and subsequent  
25 recommendations by the department chair, the Faculty Council Steering Committee, and the  
26 dean, may be granted by the president. In cases of tenure track and non-tenure track or special  
27 faculty, special sabbatical leaves may be recommended as well, at the discretion of the dean.  
28 However, such leaves may not necessarily incur the obligation of university or School of Medicine  
29 financial support. For faculty with tenure track, non-tenure-track and special appointments, the  
30 provost shall specify whether the leave period is to be counted as part of the pretenure or pre-  
31 promotion period, as the case may be.  
32

#### 33 ARTICLE 6 - AMENDMENT OF THE BYLAWS

34  
35 An amendment of the bylaws may be proposed by majority vote of the Faculty Council,  
36 by the dean, ~~by written petition of 20 or more faculty members, or by the Standing Committee~~

Deleted: or

1 on Bylaws acting on behalf of the Faculty of the School of Medicine. The amendment must be  
 2 accompanied by a rationale for the proposed change. All proposed amendments shall be  
 3 submitted to the Chair and secretary of the Faculty Council, and to the Chair of the Standing  
 4 Committee on Bylaws. The Bylaws Committee shall review each proposed amendment and  
 5 report its recommendation to Faculty Council. All proposed amendments will be considered and  
 6 voted on by the Faculty Council within the same academic year if submitted prior to March 1 of  
 7 that year. All proposed amendments, their rationale, and the recommendations of the Faculty  
 8 Council will then be sent by mail to full-time members of the faculty and may be discussed at a  
 9 regularly scheduled meeting of the faculty held at least four weeks after notification. During  
 10 discussion of proposed amendments at a faculty meeting, non-substantive changes in the  
 11 proposed amendments may be made by majority vote. The vote on any proposed amendment  
 12 shall be by electronic ballot of the full-time faculty. Approval shall require an affirmative vote by  
 13 a majority of those faculty members returning ballots. Ballots shall remain open for three weeks.  
 14 At least once every five years, the Bylaws Committee shall conduct a full review of these Bylaws  
 15 and forward its recommendations to the Faculty Council for consideration by the procedures  
 16 described above.

**Commented [A70]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**SUBSTANTIVE:** Grants the Bylaws Committee the power to propose, rather than simply evaluate, amendments to the SOM Bylaws. Rationale: To make the Bylaws compliant with the Bylaws Committee charge approved by Faculty Council on May 15, 2017.

**Commented [A71]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**SUBSTANTIVE:** Ensures that the Bylaws Committee Chair receives amendments to the Bylaws proposed by other entities at the same time as other relevant parties. Rationale: To make the Bylaws compliant with the Bylaws Committee charge approved by Faculty Council on May 15, 2017.

**Deleted:** who shall forward all proposed amendments to

**Commented [A72]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**SUBSTANTIVE:** Moves forward the date by which amendments must be submitted in order to be considered within the same academic year. Rationale: To make the Bylaws compliant with the revised Bylaws Committee charge approved by Faculty Council on May 15, 2017.

**Deleted:** April

**Deleted:** the mailing

**Commented [A74]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**Rationale:** Modernization (replaces "mail" with "electronic").

**Deleted:** mail

**Commented [A75]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**Rationale:** Simplification.

**Deleted:** At least

**Deleted:** shall be allowed between the mailing of ballots and the determination of election results

**Deleted:** T

**Deleted:** shall review the bylaws at least once every five years and shall propose amendments as desired to the faculty

**Commented [A76]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**SUBSTANTIVE:** Transfers responsibility for the 5-year review of the Bylaws from the Faculty Council to the Bylaws Committee. Rationale: To make the Bylaws compliant with the revised Bylaws Committee charge approved by Faculty Council on May 15, 2017.

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# BYLAWS

## THE FACULTY OF MEDICINE

### CASE WESTERN RESERVE UNIVERSITY

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ADOPTED BY THE FACULTY OF MEDICINE, AUGUST 25, 1978  
RATIFIED BY THE FACULTY SENATE, DECEMBER 13, 1978

AMENDED BY THE FACULTY OF MEDICINE, MARCH 25, 1998  
RATIFIED BY THE FACULTY SENATE, APRIL 23, 1998

AMENDED BY THE FACULTY OF MEDICINE JUNE 25, 1999 AND JUNE 30, 2000  
RATIFIED BY THE FACULTY SENATE, NOVEMBER 6, 2000

AMENDED BY THE FACULTY OF MEDICINE, JANUARY 31, 2003  
RATIFIED BY THE FACULTY SENATE, APRIL 27, 2003

AMENDED BY THE FACULTY OF MEDICINE, APRIL 22, 2005  
RATIFIED BY THE FACULTY SENATE, FEBRUARY 27, 2006

AMENDED BY THE FACULTY OF MEDICINE, JANUARY 11, 2010  
RATIFIED BY THE FACULTY SENATE, APRIL 21, 2010

AMENDED BY THE FACULTY OF MEDICINE, AUGUST 26, 2011  
RATIFIED BY THE FACULTY SENATE, FEBRUARY 22, 2012

AMENDED BY THE FACULTY OF MEDICINE, MAY 6, 2014  
RATIFIED BY THE FACULTY SENATE, JANUARY 22, 2016

AMENDED BY THE FACULTY OF MEDICINE, FEBRUARY 15, 2017, JULY 13, 2017, & November 13, 2017  
RATIFIED BY THE FACULTY SENATE, JANUARY 30, 2018

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1 **ARTICLE 1 - PURPOSE**

2  
3 These **Bylaws of the Faculty of Medicine** and all amendments adopted hereinafter shall  
4 constitute the rules and regulations governing the conduct and procedures of the Faculty of  
5 Medicine in the performance of its duties and in the exercise of its authorized powers, as  
6 specified by the constitution of the University Faculty of Case Western Reserve University. They  
7 are intended also to facilitate the participation of the clinical and adjunct faculty in organizing and  
8 executing the curriculum of the School of Medicine.

**Commented [A1]:** June 18, 2018 – Faculty Council approved the proposed changes in Article 1

**Commented [A2]:** Approved by the Bylaws committee on 12 December, 2017, 6:0. Rationale: Curatorial

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10 **ARTICLE 2 - THE FACULTY OF MEDICINE**

12 **2.1: Membership of the Faculty of Medicine**

13 The Faculty of Medicine shall consist of (1) regular faculty, defined as all persons who  
14 hold full-time appointments in the School of Medicine and who have unmodified titles at the rank  
15 of professor, associate professor, assistant professor, senior instructor, instructor, and (2) special  
16 faculty, those who hold these ranks modified by the adjective clinical, adjunct, visiting, or  
17 emeritus/a. In addition, fifteen students, two elected from and by each of the four University  
18 Program medical school classes, two elected at-large from and by Cleveland Clinic Lerner College  
19 of Medicine ("CCLCM") students, two elected from and by M.D.-Ph.D. students, and three elected  
20 from and by medical school graduate students, shall act as non-voting student representatives.  
21 The president of the university, a vice-president of the university responsible for medical school  
22 activities, and an administrative officer from and selected by each affiliated hospital shall be  
23 members of the faculty *ex officio*. The **Dean** of the School of Medicine shall furnish annually to  
24 the secretary of the University Faculty a list of all full-time members of the faculty. (A full-time  
25 faculty member is one who is a member of the University Faculty as defined in the Faculty  
26 Handbook of Case Western Reserve University.) The Faculty of Medicine shall create a Faculty  
27 Council to **which it shall delegate all powers not reserved to itself (described below in Article 3).**

**Commented [A3]:** June 18, 2018 – Faculty Council approved the proposed changes in Article 2, with the exception of Article 2.4b. Faculty Council added and approved point 9 in Article 2.6

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29 **2.2: Officers of the Faculty**

30 The president of the university and, in the president's absence or by the president's  
31 designation, the dean of the School of Medicine or the dean's representative, shall be chair of the  
32 Faculty of Medicine. The chair of the Faculty Council shall serve as vice-chair of the Faculty of  
33 Medicine. The Faculty of Medicine shall have a secretary who shall be appointed by the dean.  
34 The **Secretary** shall provide **to the Faculty of Medicine** due notice of all **Faculty and Faculty**  
35 **Council** meetings and the agenda thereof **and supply** the minutes of each meeting **in a timely**

**Commented [A4]:** Approved by the Bylaws Committee on 12 December, 2017, 6:0. Rationale: To be consistent with Article 3.1 as amended in the version of the SOM Bylaws approved by the Faculty Senate on January 30, 2018.

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1 ~~manner~~. The office of the dean shall be requested to supply appropriate administrative support  
2 for these functions.

### 3 2.3: Authorities and Powers of the Faculty of Medicine

4 a. Authorities. Those authorities delegated by the University Faculty to the Faculty of  
5 Medicine for the educational, research, and scholarly activities of the School of Medicine shall  
6 reside in the Faculty of Medicine.

7 b. Powers Reserved. The regular faculty members of the Faculty of Medicine shall: (1)  
8 make recommendations to the dean for consideration and transmittal to the University Faculty  
9 Senate concerning the establishment, discontinuance, or merging of any department, ~~and (2) act~~  
10 ~~upon any matter of import referred to the Faculty of Medicine by the Faculty Council for its~~  
11 recommendation.

12 The regular faculty members of the Faculty of Medicine shall have the power to  
13 recommend approval of amendments to these bylaws. and the power and obligation to elect (1)  
14 senators to the University Faculty Senate; (2) at-large members of the Faculty Council; and (3) a  
15 majority of the voting members of the standing committees listed in section 2.6a. ~~Faculty~~  
16 ~~members shall also have the power and obligation to elect their departmental Faculty Council~~  
17 ~~representative (see Article 3.3).~~

### 19 2.4: Meetings of the Faculty of Medicine

20 a. Regular Meetings. The Faculty of Medicine shall schedule meetings at least three  
21 times each academic year. The dean of the School of Medicine shall be asked to describe the  
22 state of the medical school generally at one of the meetings. Another meeting shall have as its  
23 main business a program relating to medical education. A third meeting will have an agenda  
24 approved by the Faculty Council with at least one-half of the meeting devoted to open forum  
25 items. Meeting dates and times will be coordinated to accommodate appropriate schedules. In  
26 the event ~~of university closure~~, a Faculty of Medicine meeting scheduled for that day shall be  
27 rescheduled. The Faculty Council may cancel a scheduled meeting of the faculty in the event  
28 there is no business to be conducted.

29 ~~b. Both Regular and Special Meetings.~~ The Faculty of Medicine shall also meet on the  
30 call of the president or the dean, or on written petition of at least 10 faculty members presented  
31 to the Faculty Council, or at the request of the Faculty Council.

### 33 2.5: Voting Privileges

34 a. A quorum of the faculty for both regular and special meetings shall consist of 100  
35 members who are eligible to vote on the issue before the faculty as defined below (2.5c-2.5e).  
36 Proxies are not acceptable for purposes of either establishing a quorum or voting.

**Commented [A5]:** All changes to Article 2.2 were approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

**Commented [A8]:** Approved by the Bylaws Committee by e-mail vote on Jan. 26-27.  
Rationale: The first mention of the Division of General Medical Sciences is in Article 3.2 in the context of Faculty Council representation. There is no context here. Alternative language was considered as follows "including the Division of General Medical Sciences (DGMS), which has departmental status".

**Deleted:** or the Division of General Medical Sciences (DGMS)

**Commented [A9]:** Approved by the Bylaws Committee 12 February, 2018, 5:0.  
Rationale: Sentence rearranged and subdivided to distinguish which matters invoke the dean.

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**Commented [A10]:** Approved by the Bylaws Committee on 12 March, 2018, 5:0.  
SUBSTANTIVE.  
Rationale: Emphasizes the importance of electing departmental Faculty Council representatives.

**Commented [A11]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Simplification.

**Deleted:** that inclement weather or other unforeseen event forces the

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**Commented [A12]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

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**Commented [A13]:** June 18, 2018 – Faculty Council voted to reject the proposed changes in article 2.4b

b. Special meetings of the faculty shall be conducted according to Robert's Rules of Order, Newly Revised. A majority of those present and voting shall be necessary to effect action.

c. Special faculty whose titles are modified by the adjectives adjunct or clinical may vote at meetings only on matters concerning the planning and approval of the curriculum, the execution of the instructional program, the formulation of policies with regard to student affairs, appointment and promotion of special faculty; the election of members of committees dealing with such issues, and the election of their representatives to the Faculty Council.

d. Emeritus and visiting faculty members shall not be eligible to vote.

e. Prior to each faculty meeting, Faculty Council will determine which faculty members are eligible to vote on each issue scheduled for a vote, guided by 2.5c-2.5d above. If an issue is raised and brought to a vote *ad hoc* at a faculty meeting, the person chairing the meeting will determine who is eligible to vote based on the above criteria.

#### 2.6: Standing Committees of the Faculty of Medicine

a. The following Standing Committees shall be charged with specific responsibilities (as described more completely in each committee's Charge as approved by the Faculty Council):

(1) The Admissions Committee shall participate in both annual decision-making regarding individual student applicants and in the establishment of admissions policy and procedure.

(2) The Bylaws Committee shall consider proposed amendments to the Bylaws of the Faculty of Medicine and make recommendations concerning such proposed amendments to the School of Medicine Faculty Council. It shall also review proposals for new and amended charges of standing committees for the purpose of advising the Faculty Council regarding their compliance with the Bylaws prior to a vote by the Faculty Council. At least once every five years, the Bylaws Committee shall conduct a full review of these Bylaws.

(3) The Committee on Budget, Finance, and Compensation shall serve as the faculty's principal forum for the consideration of matters relating to SOM budgeting and financing. This Committee will consult with and advise the SOM administration on the formation and review of SOM policies and procedures concerning faculty compensation.

(4) The Committee on Appointments, Promotions, and Tenure shall review and make recommendations concerning all appointments or promotions to the ranks of associate professor or professor and the award of tenure, as outlined in Article 5.10.

(5) The Committee on Medical Education serves to evaluate, review, and make recommendations concerning overall goals and policies of the School's medical education program, which includes the University and College programs.

**Commented [A14]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

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**Commented [A15]:** Approved by the Bylaws Committee on 9 January, 2018, 5:0.  
Rationale: Correction.

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**Commented [A16]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

**Commented [A17]:** Approved by the Bylaws Committee on 12 February, 2018, 5:0.  
SUBSTANTIVE: Specifies the role of the Bylaws Committee in reviewing the initial and revised charges of Standing Committees of the Faculty.  
Rationale: To align the Bylaws and the revised Bylaws Committee charge approved by Faculty Council on May 15, 2017.

**Commented [A18]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE: Echoes amendments to Article 6, which were approved by the Bylaws Committee on November 13, 2017 (6:0) and by the Faculty Council on January 22, 2018.  
Rationale: To align the Bylaws and the revised Bylaws Committee charge approved by Faculty Council on May 15, 2017.

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**Commented [A19]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

(6) The Committee on Students shall have the responsibility of reviewing the total performance of all students and the authority for decisions on student standing and student promotions. Each year it shall submit the list of candidates for the award of the degree of Doctor of Medicine to Faculty Council (see Article 3.1a).

(7) The Lecture Committee shall serve as a selection committee for speakers where no other regular mechanism is in place.

(8) The Committee on Biomedical Research shall carry out the faculty's role in formulating policies related to the conduct of research in the School of Medicine on matters including but not restricted to the research portfolio, enabling technologies, research infrastructure, and biomedical workforce.

(9) The Committee on Women and Minorities shall be established as a Standing Committee as specified in its charge.

b. The majority of the voting members of each of these Standing Committees shall be elected by the regular members of the Faculty of Medicine. The number of non-voting members shall not exceed the number of voting members. The Dean may appoint members of any standing committee in accordance with the prescribed structure of each such committee as specified in its charge. The number of appointed voting members shall be less than the number of elected voting members. The chair of the Faculty Council shall solicit recommendations for committee chair appointments from each standing committee, and then shall normally appoint one of the elected members to be the chair of each such committee, unless other provisions for appointment of chairs are made in these Bylaws.

c. Standing Committees shall be established or discontinued only by amendment of the School of Medicine By-Laws. The two committees that cannot be discontinued are the Standing Committee on Appointments, Promotion and Tenure, and the Standing Committee on Budget, Finance, and Compensation whose existence is mandated by the Faculty Handbook. *Ad hoc* committees shall not be appointed that duplicate or substantially overlap with the missions and charges of the Standing Committees. The role of the Faculty Council in relation to standing committees is described in Article 3.1. The regular members of the Faculty of Medicine shall vote upon the nominees and shall elect the majority of voting committee members. The standing committees shall be reviewed by the Faculty Council at least once every five years. Standing committees may present proposed changes to their own charge for consideration by the Faculty Council. Prior to being voted upon by Faculty Council, the Bylaws Committee shall review these charges to ensure compliance with these Bylaws and the Faculty Handbook. In the event that an elected member of a standing committee of the faculty resigns during the term, the Nomination and Elections Committee of the Faculty Council shall appoint a replacement. The first choice

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Commented [A20]: Approved by the Bylaws Committee 5-0 10 April 2018.  
Rationale: To make Article 2.6a.6 consistent with Article 3.1a.

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Commented [A21]: June 18, 2018 added and approved by Faculty Council

Commented [A22]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Curatorial.

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Commented [A23]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE. Modified version of text previously present in Article 2.6c.  
Rationale: Passage on composition was out of place in the context of standing committee properties and operations.

Commented [A24]: Approved by the Bylaws Committee on 12 February, 2018, 5:0.  
Rationale: Clarifies the implications of text moved from 2.6c on January 23, 2018.

Commented [A25]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

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Deleted: shall have the authority to amend the representative composition (e.g., by number, rank, department, or institution) of

Commented [A26]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Previous detailed text was out of place, as this section is focused on the full Faculty of Medicine rather than the Faculty Council, which is the subject of Article 3.

Deleted: and the length of terms of office of the members, and shall nominate candidates for committ...

Commented [A27]: Approved by the Bylaws Committee on 12 February, 2018, 5:0.

Deleted: Members of any standing committee may be appointed by the dean in accordance with the

Commented [A28]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.

1 should be the faculty member who received the next highest number of votes in the most recent  
2 election for this committee position. Should that individual be unwilling or unable to serve, the  
3 Nomination and Elections Committee shall appoint an alternate of its choosing to the committee.  
4 In either case, this appointee may stand for election to the committee for the remainder of the  
5 term of the resigning member at the next regularly scheduled faculty election.

6 d. The dean shall be a member of all standing committees *ex officio*. Persons holding  
7 the office of assistant, associate, or vice dean may be regular members of any of these  
8 committees. Standing committees may include members holding the office of assistant,  
9 associate, or vice dean, as long as their number does not exceed 25% of the membership. The  
10 exception to this rule is the Committee on Medical Education, for which the number of members  
11 holding the office of assistant, associate, or vice dean shall not exceed 40% of the membership.  
12 Persons holding the office of assistant, associate, or vice dean may not chair a Standing  
13 Committee of the Faculty. Membership rosters of all standing committees shall be published on  
14 the SOM web site and updated annually by July 1 or when a change in the roster occurs.

15 e. Any action taken in the name of a standing committee shall be made by majority vote.  
16 All members of a committee shall be supplied with minutes of the meetings of the committee and  
17 with copies of official recommendations of the committee.

18 f. The meetings of all standing committees shall be open to all members of the faculty  
19 except for those of the Admissions Committee, the Committee on Students, and the Committee  
20 on Appointments, Promotions and Tenure. Chairs of other committees may declare a meeting or  
21 part of a meeting closed to faculty attendance only if confidential personnel matters are to be  
22 discussed.

## 24 ARTICLE 3: THE FACULTY COUNCIL

### 26 3.1: Purpose and Functions of the Faculty Council

27 The Faculty of Medicine delegates all powers not reserved to the Faculty of Medicine  
28 itself (see Article 2) to a Faculty Council. The Faculty Council shall serve as the Executive  
29 Committee of the Faculty of Medicine, in accordance with Article X.1 of the Bylaws of the Faculty  
30 Senate. The Faculty Council shall meet regularly to exercise its powers and obligations, which  
31 shall include but not be limited to the following:

- 32 a. To act for the Faculty of Medicine regarding the planning and execution of  
33 educational programs and the formulation of policies concerning curricula, student  
34 admissions, and the conduct of research in consultation with the appropriate  
35 standing committee of the Faculty of Medicine. It shall review the requirements for

Commented [A30]: Made a comment

Commented [A31]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE. Removes the provision that the dean may chair any standing committee.  
Rationale: Increases opportunities for faculty members to hold leadership positions and protects the dean from potential conflicts of interest.

Deleted: and may be the chair of any such committee if so appointed by the chair of the Faculty Council with the approval of the Faculty Council

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Commented [A32]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

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Commented [A33]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE. Eliminates the undefined term "executive officer" and institutes a change precluding deans at any level from chairing Standing Committees of the Faculty.  
Rationale: Increases opportunities for faculty members to hold leadership positions and protects assistant, associate and vice deans from potential conflicts of interest. Also echoes Bylaws changes recently approved by the Faculty Senate.

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Commented [A34]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
Rationale: Clarification.

Commented [A35]: Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE: Explicitly identifies the Executive Committee of the Faculty of Medicine for the first time.  
Rationale: In response to a query from the Faculty Senate, Faculty Council at its meeting on December 12, 2016 agreed that the full representative body and not its Steering Committee serves in this capacity.

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- the M.D. degree and the recommendations of the Committee on Students regarding student standings and student promotions;
- b. To hear reports of the Standing Committees of the Faculty of Medicine and of the Faculty Council and recommend action on such reports;
  - c. To make recommendations to the Faculty of Medicine concerning the establishment, discontinuance, and merging of departments;
  - d. To make recommendations to the Faculty of Medicine concerning the establishment, discontinuance, and initial charge and representative composition of the membership of all Faculty of Medicine standing committees (see Article 2.6c);
  - e. To elect a chair, a chair-elect, members of the Steering Committee, and the Faculty Council members of the Nomination and Elections Committee;
  - f. To classify any issue requiring a vote of the faculty so as to determine the eligibility of the adjunct/clinical and student members to vote on that issue (per 2.4biii and 2.4bv); and
  - g. To create *ad hoc* committees to make recommendations concerning its various functions and duties (see Article 3:6d).

### 3.2: Membership of the Faculty Council

a. Voting Members. Voting members of the Faculty Council shall include one representative of each academic department (all references hereafter to academic departments include the Division of General Medical Sciences (DGMS), which has departmental status; see Article 4.7). When more than one autonomous department exists within a single academic discipline, as per section 4.3 below, a representative of each such department shall be elected to the Faculty Council. These representatives shall be referred to as departmental representatives. Other voting members shall include two representatives from the special faculty whose titles are modified by the adjective adjunct or clinical, one representative from the Louis Stokes VA Medical Center and 10 representatives of the regular faculty elected at large. All these representatives shall be members of the faculty.

b. Non-voting Members. Non-voting members of the Faculty Council shall be the president of the university, a vice-president of the university responsible for medical school activities, the dean of the School of Medicine, the associate dean for medical education of the School of Medicine, the chair of the Committee on Medical Education, one representative from each affiliated institution, and student members who shall include not more than two undergraduate medical students, one M.D.-Ph.D. student, and one Ph.D. graduate student. The student members shall be chosen by their respective groups. To facilitate communication

**Commented [A36]:** Approved 5-0 10 April 2018.  
Rationale: To make Article 3.1a compatible with Article 2.6a.6.

**Deleted:** to approve

**Commented [A37]:** Approved by the Bylaws Committee 5-0 on April 10, 2018.  
Rationale: This is now the first time DGMS is mentioned, so the words in its title are written out.

**Deleted:** DGMS

**Deleted:** each affiliated institution

**Commented [A38]:** Approved by the Bylaws Committee on 23 January, 2018, 6:0.  
SUBSTANTIVE: Retains the status of the institutional representative from the VA as a voting member.  
Rationale: The VA has a single FC representative, in contrast to affiliates with multiple departments (see below).

**Commented [A39]:** Approved by the Bylaws Committee on 12/12/17.  
SUBSTANTIVE: Changes institutional representatives from voting to non-voting status.  
Rationale: Historically, each affiliate had one institutional representative and no guaranteed departmental representatives. Instead, one hospital-based faculty member could be elected to represent all departments covering the same discipline. The proposed amendment takes into account the fact that faculty employed full-time by the parent institution, CWRU, do not have an extra voting member of FC, and that all basic science departments at the CCLCM are appointed in a single CWRU department (Molecular Medicine). Recognizing that there may be issues that affect each affiliate as a whole, institutional representatives have been retained as non-voting members. Similar to the non-voting Standing Committee and Senate representatives, these individuals will be responsible for identifying relevant issues and reporting them to their constituent faculty.



1 between Standing Committees and the Faculty Council, if no member of a Standing Committee of  
 2 the Faculty of Medicine is a voting member of the Faculty Council, the Faculty Council Chair may  
 3 appoint one of the Standing Committee's elected members to serve as a non-voting, *ad hoc*  
 4 member, in accordance with each committee's charge. If a representative to the university

5 Faculty Senate is not included in the Faculty Council as a voting member, the Faculty Council  
 6 Chair shall appoint one of the School of Medicine senators to be an *ad hoc* member of the Faculty  
 7 Council. The Faculty Council Chair may invite other persons to attend designated meetings.  
 8 Faculty Council meetings shall be open to the faculty. Faculty members may at any time request  
 9 hearings before Faculty Council, but a request by a faculty member for a hearing before the  
 10 Faculty Council must be made to the chair prior to the meeting of the Faculty Council.

### 12 3.3: Election of the Members of the Faculty Council

13 Faculty members have the power and obligation to elect Faculty Council representatives  
 14 (see Article 2.3). Elections shall be held by democratic process. Complaints concerning the  
 15 occurrence of undemocratic selections of representatives shall be brought to the attention of the  
 16 chair of the Faculty Council.

17 a. Departmental representatives: When the term of a departmental representative is  
 18 coming to an end, the dean shall inform all full-time faculty members of that department. The  
 19 department shall elect its new representative no later than April 30 of each year, with newly  
 20 elected members beginning their terms of office on the following July 1. To be eligible to serve  
 21 as a departmental representative to the Faculty Council, a faculty member must be appointed  
 22 full-time and hold a primary appointment in that department. The election shall be held by  
 23 democratic process. Complaints concerning the occurrence of undemocratic selections of  
 24 representatives shall be brought to the attention of the chair of the Faculty Council.

25 b. At-large representatives: The at-large representatives shall be nominated by the  
 26 Nomination and Elections committee (see Article 3:6b) and shall be elected by the full-time  
 27 members of the faculty. The dean shall be requested to supply the Nomination and Elections  
 28 committee with a list of the basic and clinical science departments and rosters of the full-time  
 29 faculty members with primary appointments in each department. Five at-large representatives  
 30 shall be elected from basic science departments and five shall be elected from clinical science  
 31 departments. There shall be at least two nominees for each of these positions. Those nominees  
 32 who are not elected shall serve as alternates in the order of votes received (see Article 3:4).

33 The terms of at-large Faculty Council members shall be staggered such that one or two  
 34 basic science and one or two clinical representatives are elected each year. No more than  
 35 one at-large representative shall be from a single department.

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Commented [A40]: A narrower version relating only to the Bylaws Committee was approved by the Bylaws Committee on 13 November 2017 and by the Faculty Council on 22 January 2018.  
 Rationale: To make the Bylaws compliant with the Bylaws Committee charge approved by Faculty Council on May 15, 2017.

Commented [A41]: Approved 10 April 2018. 5-0. SUBSTANTIVE: Generalizes the right of each Standing Committee of the Faculty to have a non-voting representative to the Faculty Council.

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1 c. Institutional representatives: Upon notification by the dean, full-time faculty based at  
2 each affiliated institution shall choose, by a method of their own design, one of their members  
3 who has a primary base at that institution and who has not been elected a department  
4 representative to be a representative to the Faculty Council.

5 d. Special Faculty representatives: The Nomination and Elections Committee (see Article  
6 3:6b) shall nominate at least four members of the special faculty whose titles are modified by the  
7 adjective adjunct or clinical as candidates for representative to the Faculty Council. Two of these  
8 nominees shall be elected by the special faculty whose titles are modified by the adjective  
9 adjunct or clinical. The remaining nominees will serve as alternates in the order of votes  
10 received.

#### 12 3.4: Terms of Office of Faculty Council Representatives

13 Departmental and at-large representatives shall serve for a period of three years.

14 Representatives may not serve consecutive terms but may stand for election after an absence of  
15 one year. A department representative who is unable for any reason to complete a term of office  
16 shall be replaced by a full-time faculty member from the same academic department, elected by  
17 democratic process within that department. The new member shall complete the term of the  
18 former member and shall be eligible for reelection if the remaining term so completed has been  
19 less than two years. A departmental member on leave of absence shall be replaced during that  
20 leave by a faculty member from the same academic department, elected by democratic process  
21 within that department. Upon return from leave, the returned faculty member shall complete the  
22 original term of office. An at-large representative who is unable for any reason to complete a  
23 term of office shall be replaced by an alternate (per 3:3d) who shall serve during the remainder  
24 of the term or during the leave of the representative, as outlined for department representatives.  
25 A representative of the special faculty who is unable for any reason to complete a term shall be  
26 replaced by an alternate (see Article 3:3e) who shall serve during the remaining term or during  
27 the leave of the representative. A representative of an affiliated institution who is unable for any  
28 reason to complete a term shall be replaced by a full-time faculty member with a primary base at  
29 the same institution. That individual shall be chosen by the same mechanism as the original  
30 representative, and shall serve for the remaining term or during the leave of the original  
31 member, as outlined above for department representatives.

32 Members who have three absences from Faculty Council meetings in one year must  
33 resign from the Faculty Council unless their absences were excused by the chair of the Faculty  
34 Council. A warning letter will be sent to the Faculty Council member after two absences, with a  
35 copy to the department chair. Selection of replacements for members who resign is discussed in  
36 the preceding paragraph.

Deleted: . e. The Nominating

Commented [A52]: Approved by the Bylaws Committee on 12 March, 2018.  
Rationale: Moved so that the types of representatives are clearly distinguished.

Commented [A53]: Approved by the Bylaws Committee on 12 March, 2018.  
Rationale: Phrase inserted for clarity.

Commented [A54]: Changes to 3.b and c (formerly d and e) were approved by the Bylaws Committee on 23 January, 2018.  
Rationale: Correction (update of NEC name) and clarification.

Deleted: Representatives

Commented [A55]: Approved by the Bylaws Committee on January 23, 2018.  
Rationale: Clarification.

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### 3.5: Officers of the Faculty Council

Each year the Faculty Council shall elect a chair-elect from ~~among current members of the Faculty Council. There shall be at least two nominees for the position of chair-elect.~~ The chair-elect shall serve as vice-chair of the Faculty Council during the first year following election and succeed to the chair the following year. The chair of the Faculty Council (or the vice-chair of the Faculty Council in the absence of the chair) shall preside over the Faculty Council and shall be vice-chair of the Faculty of Medicine. Following completion of this term of office, the immediate past chair of the Faculty Council shall serve one additional year as a member of the Faculty Council and as a member of its Steering Committee. For procedures to be followed in the election of the officers and committees of the Faculty Council, see article 3:6b. The dean shall be requested to provide administrative support to these officers.

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Deleted: who have at least two years of their terms remaining

**Commented [A56]:** Approved by the Bylaws Committee on 27 March, 2018, 4-0.

**SUBSTANTIVE:** Removes the restriction that FC Chair candidates must have at least two years left in their term.

**Rationale:** Removal of the limitation allows candidates who have more experience on FC to run for chair-elect.

**Commented [A57]:** Approved by the Bylaws Committee on 27 March, 2018, 4-0.

**Rationale:** This change prevents a candidate from running unopposed for this important office.

### 3.6: Committees of the Faculty Council

a. Steering Committee. The Steering Committee shall consist of eight members: the chair of the Faculty Council, the vice-chair of the Faculty Council, the immediate past chair of the Faculty Council, and five other Faculty Council members who shall be elected by the Faculty Council for one-year terms. These members may be reelected successively to the Steering Committee for the duration of their terms as members of the Faculty Council. The chair of the Faculty Council (or the vice-chair of the Faculty Council in the absence of the chair) shall serve as chair of the Steering Committee. The Steering Committee shall set the agenda for meetings of the Faculty Council. The Steering Committee shall be empowered to act for the Faculty Council between meetings. The Steering Committee shall report all actions and recommendations to the Faculty Council. ~~Steering Committee meetings shall be conducted according to Robert's Rules of Order, Newly Revised.~~ The Steering Committee shall act for the Faculty Council and faculty in reviewing actions of the Committee on Appointments, Promotions and Tenure in order to ensure equity, adherence to published guidelines, and proper procedure. The Steering Committee shall consult with the dean on such matters as the dean brings before it. The Steering Committee shall advise the president concerning the appointment of an interim or acting dean of the School of Medicine.

**Commented [A58]:** Approved by the Bylaws Committee on 12 December, 2017.

Article 3.7d stipulates that Faculty Council meetings are conducted according to Robert's Rules but this was never explicitly stated for the Steering Committee.

**Rationale:** Clarification.

b. Nomination and Elections Committee. This committee shall consist of eleven members: the dean, the chair of the Faculty Council, the vice-chair of the Faculty Council, four other Faculty Council members, two each from the ~~basic and clinical sciences, and four full-time~~ faculty members who are not members of the Faculty Council, two each from the ~~basic and~~ clinical sciences. The four Faculty Council members of the Nomination and Elections Committee shall be elected at large by the Faculty Council and shall serve for the duration of their terms as

**Commented [A59]:** Approved by the Bylaws Committee on 10 April, 2018.

**Rationale:** Updates language to reflect the current structure of the curriculum (students are in the clinic from their first year onward).

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1 Faculty Council members. The four non-members of the Faculty Council shall be elected by  
2 ballot by the Faculty of Medicine and shall serve three-year terms. The chair will be elected from  
3 the members of the committee annually.

4 The Nomination and Elections Committee shall nominate (1) candidates for the chair-  
5 elect of the Faculty Council ~~from the eligible pool (all current members, see Article 3.5)~~, (2)  
6 candidates for the Steering Committee, and (3) candidates for the standing committees of the  
7 Faculty Council. Ballots listing the nominees and leaving space for write-in candidates shall be  
8 sent to all members of the Faculty Council. The election of the chair-elect and the members of  
9 the Steering Committee, the Faculty Council members of the Nomination and Elections  
10 Committee and the members of other standing committees of the Faculty Council will be carried  
11 out at the May meeting of the Faculty Council. Additional nominations for all these offices shall  
12 be invited from the floor. The consent of the nominee must be obtained in order for a write-in or  
13 floor nomination to be valid. Faculty Council members who cannot attend the May meeting may  
14 vote by mail (noting that wherever mail voting or distribution is mentioned in these Bylaws,  
15 voting or distribution by email or other method well-calculated to reach voters shall be  
16 considered satisfactory). Candidates for chair-elect will also be candidates for the Steering  
17 Committee and will be so listed on mail ballots. Faculty Council members shall vote for one  
18 nominee for chair-elect and for six members of the Steering Committee. The five persons with  
19 the highest number of votes, excluding the person elected to the office of chair-elect, shall be  
20 elected to serve on the Steering Committee. Both mail ballots and ballots collected at the Faculty  
21 Council meeting shall be counted, whether or not a quorum is present at the meeting. If the  
22 total number of ballots received does not equal or exceed 50% of the members of Faculty  
23 Council, ballots may be solicited from absentee members. If either the Steering Committee or  
24 the Nomination and Elections Committee perceives a significant deficit in the representation of  
25 faculty constituencies within its membership following the annual election, either committee may  
26 ask the chair of Faculty Council to appoint a single ad hoc voting member to serve on the  
27 respective committee for the remainder of the year. In the case of the Steering Committee, the  
28 appointee should be a current member of the Faculty Council. In the case of the Nomination and  
29 Elections Committee, the appointee should be a regular member of the Faculty of Medicine.

30 In addition, the Nomination and Elections Committee shall nominate (1) candidates for  
31 the at-large representatives to the Faculty Council, (2) candidates for the representatives of the  
32 special faculty whose titles are modified by the adjective adjunct or clinical to the Faculty Council,  
33 (3) candidates for standing committees of the Faculty of Medicine, and (4) candidates for the  
34 University Faculty Senate. In the case of at-large representatives, senators, or members of the  
35 Committee on Appointments, Promotions, and Tenure, the number of ~~candidates~~ shall be at least  
36 twice the number of positions to be filled. ~~In recruiting faculty for the ballot, the NEC shall strive~~

**Commented [A60]:** Approved by the Bylaws Committee on 27 March, 2018, 4:0.  
Reiterates the provision in Article 3.5 that all current members of Faculty Council are eligible to run for chair-elect.  
Rationale: As stated in Article 3.5.

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**Commented [A61]:** Approved by the Bylaws Committee on 12 December, 2017, 6:0.  
Rationale: Curatorial.

**Deleted:** nominees

**Commented [A62]:** The three sentences that follow represent Bylaws Committee's wordsmithing of the revised charge sent to us by the Nomination and Elections Committee. The amendments were approved 4:0 at the BC's 27 March, 2018 meeting and subsequently accepted by the NEC.

to produce a diverse slate of nominees, considering gender, race, institutional affiliation and representation of basic and clinical departments. A nominee may not be put on the ballot if in winning the election they would serve on more than two standing committees of the Faculty of Medicine or Faculty Council (ad hoc committees are not included in this count). Exceptions will be made only if no other candidates come forward to fill a committee vacancy. Elections shall be conducted by e-mail or other electronic means, using a preferential voting system. Ballots shall include a clear explanation of the preferential voting system. Ballots listing candidates for the representatives of the special faculty on the Faculty Council shall be distributed to all special faculty whose titles are modified by the adjective adjunct or clinical. Ballots listing candidates for committees dealing with the planning and approval of the curriculum, the execution of the instructional program, and the formulation of policies with regard to student affairs shall be distributed to all members of the faculty. Elections shall be conducted as far in advance of the completion of the terms of sitting members as is practicable. Elections shall be conducted through the campus and first class mail or by email or other electronic means. All electronic ballots shall provide space for write-in candidates. At least two weeks shall be allowed between the distribution of all ballots and the close of the election and determination of election results. Distribution of the ballots and the determination and publication of the election results shall be the responsibility of the Nomination and Elections Committee. After each election, the Committee shall count the votes and publish all the vote totals. Any irregularities or issues in the conduct of the elections shall be investigated and resolved by the Committee. The Nomination and Elections Committee shall report its investigation and resolution to the Faculty Council and the Faculty of the School of Medicine. The dean shall be requested to supply administrative support for the elections.

c. Special Committee to Nominate Candidates for the Search Advisory Committee to the President on the Selection of the Dean of the School of Medicine. This special nominating committee shall be formed when needed and shall consist of the chair of Faculty Council, three other members of the Steering Committee of the Faculty Council, three elected members of the Nomination and Elections Committee, and four academic department chairs (two Basic Science, two Clinical) of the School of Medicine. The chair of the Faculty Council shall serve as chair of this special nominating committee, and the other ten members shall be elected by their respective groups. The majority of the nominees for the Search Advisory Committee selected by this special nominating committee shall be full-time members of the Faculty of Medicine. The president is requested to consider these nominees when appointing members of the Search Advisory Committee.

In the early stages of the search for the dean of the School of Medicine, the chair of the Faculty Council shall solicit recommendations, opinions, and advice regarding selection of the

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**Commented [A63]:** SUBSTANTIVE. Stipulates that a faculty member may serve on only two committees concurrently.  
Rationale: Increases overall participation in faculty governance and broadens representation.

**Commented [A64]:** Approved 2018-04-10, 5 -0. SUBSTANTIVE: Institutes a preferential voting system in place of run-off elections (which were never explicitly described but conducted when candidate(s) did not receive a majority of the votes cast, as required by Robert's Rules).

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Deleted: shall be used for multi-seat elections

**Commented [A67]:** Rationale: Removes archaic language.

Deleted: Electees shall be chosen by mail ballot. Ballots listing candidates for Faculty Council, senators, and standing committees of the faculty shall be mailed to all full-time members of the faculty.

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**Commented [A68]:** Approved by the Bylaws Committee 28 February, 2018.  
Rationale: Modernizes description to match current practice.

**Commented [A69]:** Approved by the Bylaws Committee on 28 February, 2018.  
Rationale: Modernization.

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**Commented [A70]:** Approved by the Bylaws Committee on 28 February, 2018.  
Rationale: Replaces "will" with the more forceful "will."

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**Commented [A71]:** Approved by the Bylaws Committee on 12 December, 2017.  
Rationale: Curatorial.

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1 dean from members of the Faculty of Medicine by mail and submit these views directly to the  
2 Search Advisory Committee. When a final list of candidates for the position of dean has been  
3 ~~assembled, the~~ Search Advisory Committee is requested to solicit the views and advice of the  
4 Steering Committee of the Faculty Council on the ranking of the candidates.

5 d. Other Committees of the Faculty Council. The Faculty Council may create other  
6 standing and *ad hoc* committees of the Faculty Council to carry out specific functions and duties  
7 assigned to it. These committees may include members who are not Faculty Council members.

### 9 3.7: Meetings of the Faculty Council

10 a. The Faculty Council shall meet at least once every two months from September  
11 through June of each academic year. Special meetings may be called by a majority vote of the  
12 Steering Committee, by a written petition of 10 members of the faculty addressed to the chair of  
13 the Faculty Council, or by the dean.

14 b. The agenda for each meeting shall be prepared by the Steering Committee, posted  
15 electronically, and sent electronically to all faculty members at least one week in advance of  
16 regular meetings and at least two days in advance of special meetings

17 c. Minutes of the meetings shall be kept and shall be distributed in a timely fashion to  
18 Faculty Council members, to the dean, to all department chairs, and to each member of the  
19 Faculty of Medicine. Approved minutes shall be posted electronically and sent electronically to all  
20 faculty members. The dean is requested to provide administrative support for this purpose.

21 d. The meetings shall be conducted according to Robert's Rules of Order, Newly Revised.

22 ~~A parliamentarian may be appointed by the Faculty Council Chair in order to facilitate orderly~~  
23 ~~transaction of business.~~ A quorum of the Faculty Council shall consist of 50% of the voting  
24 members. Elected members may not designate alternates for council meetings or vote by proxy  
25 in council meetings. Faculty Council members may vote *in absentia* by mail in the election of  
26 officers and standing committees of the Faculty Council (see article 3.6b).

### 28 3.8: Annual Report of the Faculty Council

29 Each year the chair of the Faculty Council shall submit to the faculty a report on the  
30 activities of the Faculty Council.

## 32 ARTICLE 4 – DEPARTMENTS AND DIVISION OF GENERAL MEDICAL SCIENCES (DGMS)

### 34 4.1: Organization of the Faculty into Departments and Division of General Medical Sciences 35 (DGMS)

**Commented [A72]:** Approved by the Bylaws Committee on  
12 December, 2017.  
Rationale: Curatorial

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**Commented [A73]:** Approved by the Bylaws Committee on  
12 December, 2017.  
Rationale: Echoes language in the Faculty Senate Bylaws.

1 a. The Faculty of Medicine shall be organized into departments and DGMS representing  
2 academic disciplines as specified in the Constitution of the University Faculty, Article VII, Sec. B.  
3 Departments and Centers in DGMS shall plan and execute programs of research and scholarship  
4 and of professional activity and shall train medical students, graduate students, and, in some  
5 cases, undergraduate students in its discipline.

6 b. Each member of the Faculty of Medicine shall have a primary appointment in an  
7 academic department or DGMS, which has departmental status (see Article 4.7).

8  
9 4.2: Function of Departments

10 a. Each department and DGMS shall provide a central administration for its academic  
11 disciplines. Each department and DGMS shall be responsible for the teaching in its discipline in  
12 the School of Medicine, through the core academic program's committee structure and the other  
13 units of the undergraduate medical curriculum and in the affiliated hospitals. Each department  
14 shall also allocate resources to execute powers and responsibilities concerning the faculty's  
15 educational, research, scholarly activities (Faculty Handbook, Chapter 2, Section B), and full  
16 freedom of scholarly investigation and publication of his or her findings (Faculty Handbook,  
17 Chapter 2, Section D). These responsibilities shall be exercised by the academic department  
18 chairs in conformity with the curricular policies, organization, and components that are specified  
19 by the faculty and the dean). Each department may assume responsibility for teaching in its  
20 discipline in the other schools of the health sciences and in the undergraduate and graduate  
21 curricula of the university as determined by need and negotiation. Where appropriate, each  
22 department shall plan and implement graduate programs leading to such graduate degrees as  
23 are authorized by the university and shall be responsible for the content of the curricula in its  
24 discipline in the several programs specified above. Each department shall plan and execute  
25 programs of research and of professional activity and shall train medical students, undergraduate  
26 students, and graduate students in its disciplines. Each department shall maintain and staff the  
27 facilities which lie within its jurisdiction and shall enlist the cooperation of other departments or  
28 of affiliated teaching institutions where this shall be necessary for the execution of its mission.  
29 Each department shall elect one representative to the Faculty Council.

30 b. Each department or, at the request of the hospital affiliate's Associate Dean or  
31 Executive Dean and with the consent of the Dean of the School of Medicine, each affiliated  
32 hospital, shall establish a Department or Affiliated Hospital Committee on Appointments,  
33 Promotions, and Tenure (or Appointments and Promotions only, if appropriate) (all hereinafter  
34 "DCAPT"s) for the purpose of making recommendations concerning appointments and  
35 promotions and if appropriate awards of tenure. The department chair or affiliated hospital

1 associate dean or executive dean shall nominate faculty annually for service on the DCAPT for  
2 the SOM Dean's approval. The department chair shall also nominate a faculty member holding a  
3 primary appointment in the department (or the affiliated hospital, if appropriate), preferably at  
4 the rank of tenured Associate Professor or Professor, to serve as the DCAPT committee chair.

5 c. DCAPTs may comprise all the faculty members holding full-time primary appointment  
6 in the department, except as provided in paragraph 4.2(c), and may also include faculty holding  
7 secondary appointments in the department but holding primary appointments outside the  
8 department or school in any of the university's constituent faculties. Alternatively, department  
9 chairs may nominate a committee of at least three faculty members from among the primary full-  
10 time faculty (and other faculty) to serve as the committee.

11 d. Department chairs themselves shall not be members of their respective department's  
12 DCAPTs. Instead, they shall serve as the initiator for the appointment, promotion, and tenure of  
13 candidates, attending DCAPT meetings for the purpose of presenting candidates for the  
14 committee's consideration, entering into discussion with the committee and answering its  
15 questions, and otherwise being excused from the room. Department chairs shall not be present  
16 for DCAPT voting. Should a faculty member take advantage of the self-initiation process, the  
17 DCAPT chair shall invite the department chair as well as an advocate, selected by the candidate  
18 from among the CWRU faculty, to the meeting at which the self-initiated promotion or tenure  
19 award is discussed to provide the department chair and advocate with the opportunity to offer  
20 his or her perspectives. The advocate and department chair shall present separately and neither  
21 shall be present for the vote.

22 e. The paragraph above, however, shall not restrict department chairs from serving on  
23 an affiliated hospital's committee concerned with appointments, promotions, or tenure. Where  
24 department chairs serve on such committees, they may serve as the as described above and they  
25 may remain present during the discussion and voting, but in no case shall a department chair (or  
26 other committee member) cast a vote regarding the appointment, promotion, or tenure of a  
27 candidate whom she or he initiated for appointment, promotion, or tenure.

28 f. Department chairs have wide discretion to nominate faculty for service on the DCAPT,  
29 but the following principles should be observed. If at all possible, at least two-thirds of the  
30 committee should be composed of tenured faculty in the department at the rank of associate  
31 professor or professor. The DCAPT's membership should include both tenured and non-tenured  
32 faculty; each committee, with the exception of the Cleveland Clinic Lerner College of Medicine  
33 Committee (CCLCM), shall include at least three tenured faculty members, so tenure votes are  
34 not determined by only one or two voters. Preference shall be given to tenured faculty holding  
35 primary appointment in the department. Tenured faculty holding secondary appointment in the  
36 department ("tenured secondary faculty") may be appointed to the committee 1) in addition to

1 all tenured faculty holding primary appointment in the department ("tenured primary faculty") in  
2 order to reach the minimum of three or 2) to exceed it, but in this case the number of tenured  
3 secondary faculty may not exceed the number of tenured primary faculty on the committee.  
4 Women and minority faculty should be represented if at all possible; adjunct and/or clinical  
5 faculty may be nominated for committee membership at the chair's discretion to vote on  
6 promotion of special faculty.

7 g. Department or affiliated hospital CAPTs shall review faculty holding or proposed for  
8 holding primary appointment in the department/affiliated hospital in order to make  
9 recommendations concerning 1) appointment, promotion, and/or award of tenure; 2) third and  
10 sixth year pretenure reviews for tenure track faculty; 3) concerning readiness for promotion for  
11 each full-time assistant and associate professor in the non-tenure track no later than six years  
12 after appointment or promotion to that rank and at least every six years thereafter; and 4) other  
13 actions as appropriate. Copies of reviews under 2) and 3) above shall be provided to the  
14 individual faculty member reviewed; copies of all reviews shall be provided to the dean's office.

15 h. DCAPT recommendations shall be made by the DCAPT chair (unless he or she is the  
16 candidate) after a vote by the DCAPT. The DCAPT chair shall convene a meeting for the purpose  
17 of voting, for which notification shall be made sufficiently in advance to allow those unable to  
18 attend to vote by written absentee vote. All members of the committee may participate in  
19 discussion of all recommendations for appointment, promotion, and tenure. On  
20 recommendations involving promotion, only faculty of rank equal to or superior to that being  
21 considered shall be eligible to vote. On recommendations involving tenure, only faculty with  
22 tenure shall vote. Recommendations shall require a majority (more than half) of those eligible to  
23 vote. In order for a recommendation to be made, at least three eligible committee members  
24 must cast a vote.

25 i. Affirmative recommendations for faculty appointments and all other recommendations  
26 from a DCAPT shall be communicated to the department chair by the DCAPT chair in a letter  
27 which records the numerical vote and reflects the deliberations of the DCAPT, pro and con.  
28 Before transmission, this letter shall be made available for inspection by the faculty members  
29 who participated in the vote. If a faculty member believes the letter to express inadequately the  
30 committee's deliberations, he or she may send independently to the DCAPT chair a statement of  
31 such opinion, which shall be appended to the committee's letter for higher reviews. The  
32 department chair shall forward the DCAPT recommendation letter to the dean and is expected to  
33 add his or her recommendation, which may or may not be the same as the DCAPT's  
34 recommendation, in a separate letter to the dean.

35 j. DCAPT meetings shall be conducted in confidence. All votes shall be conducted by  
36 written secret ballot and shall be tabulated by the committee secretary. Candidates shall not be

1 present at committee meetings (or portions thereof) at which their candidacy is discussed and/or  
2 voted upon. Committee deliberations and votes are confidential and must not be discussed  
3 outside the committee with anyone, including the candidates.

4 k. Recommendations concerning appointment, promotion, and tenure shall be governed  
5 by the then-current Qualifications and Standards for Appointment, Promotion, and the Award of  
6 Tenure for Faculty Members in The School Of Medicine, Case Western Reserve University  
7 (Appendix I of the these Bylaws) and the relevant sections of the Faculty Handbook. Committee  
8 discussions shall be confined to matters relevant under the Standards and Qualifications.  
9 Specifically prohibited from discussion are such matters as gender, race, minority status,  
10 disability status, veterans status, and sexual orientation or marital/partner status.

#### 11 12 4.3: Academic Department Chairs

13 a. Each academic department shall have an academic chair appointed by the president of  
14 the university on recommendation of the dean with the exception of DGMS where the dean  
15 serves as chair. In order to select candidates, the dean will appoint a search committee in  
16 consultation with Faculty Council, which shall normally be multi-departmental in composition, to  
17 provide a slate of candidates from which the selection will normally be made. The search  
18 committee shall include representation from the full-time faculty of the department in question.  
19 The department faculty representation shall consist of at least one full-time faculty member  
20 elected by the full-time faculty of that department. The search committee shall identify its  
21 membership to the academic department and indicate its ready availability, particularly that of  
22 the elected full-time departmental representative member(s) of the search committee, to receive  
23 suggestions, views and advice from interested individual department members or from the entire  
24 academic department throughout the search process. Verbal and/or written suggestions, views,  
25 and advice directed to any member of the search committee should be transmitted promptly to  
26 the whole search committee, unless specified otherwise by the departmental member offering  
27 such suggestions, views and advice.

28 All department chairs shall be selected in strict accordance with the university policy  
29 governing affirmative action.

30 The president will appoint acting or interim department chairs after receiving the  
31 recommendations of the dean. Before making recommendations, the dean shall seek the advice  
32 of a committee consisting of the Steering Committee of the Faculty Council and the Faculty  
33 Council representative from the department for which an acting or interim chair is to be  
34 appointed. When a member of the Steering Committee or the Faculty Council representative is a  
35 candidate for acting or interim department chair, the chair of the Faculty Council shall designate  
36 an alternate member from the department to serve on the advisory committee. The advisory

committee shall identify expeditiously its membership to the academic department and indicate its ready availability, particularly that of the representative from the department, to receive suggestions, views and advice from interested individual department members or from the entire academic department. Verbal and/or written suggestions, views and advice directed to any member of the advisory committee should be transmitted promptly to the whole advisory committee, unless specified otherwise by the departmental member offering such suggestions, views and advice. This process shall take place as expeditiously as possible before the advisory committee makes its recommendations to the dean.

b. Each department chair or an appropriate designee shall meet annually with each full-time faculty member to review performance and to set future goals. The department chair or the appropriate designee shall then provide a written summary of each evaluation to the faculty member, with a copy provided to the dean. For departments that choose to use the Faculty Activity Summary Form (FASF), any changes to that form must be approved by Faculty Council prior to their incorporation into the document.

c. The chair of an academic department may reside at the School of Medicine or at any one of its affiliated institutions.

d. Any individual service of an established academic department in an affiliated teaching institution may petition the Faculty of Medicine for independent status as a separate academic department, autonomously representing the academic discipline. The chair of each such independently established academic department shall be selected in accordance with section 4:3a and appointed by the president on recommendation of the dean. The dean is requested to seek the advice of the Steering Committee and elected departmental member(s), as outlined in article 4:3a, before making recommendations to the president.

e. All chairs of academic departments and all directors of individual services of affiliated institutions within a single discipline should meet regularly to coordinate their university-related functions.

f. At least once a year, the Department Chair will call a meeting of their faculty for the purpose of identifying and defining issues pertinent to the mission of the Department.

#### 4.4: Establishment and Discontinuance of Academic Departments

Petitions to establish, discontinue or merge academic departments shall be submitted to the Faculty Council for review. The Faculty Council shall submit all petitions recommended for approval along with their rationale to the Faculty of Medicine for its consideration. Petitions recommended for approval by the Faculty of Medicine shall be forwarded to the Dean for consideration. The Dean will transmit the petition along with his/her recommendation to the University Faculty Senate for consideration (see Article 2:3b).



1  
2 4.5: Review of Academic Departments

3       Periodic review of each department by persons external to the department is important  
4 for evaluation of the functioning of that department by the faculty and the dean. A committee  
5 appointed by the dean shall review each academic department at intervals no greater than 10  
6 years. The review committee shall include at least one outside consultant. The dean shall  
7 transmit the review committee's report and recommendations to the chair of the Faculty Council.  
8 Departmental faculty shall be provided with an executive summary.

9  
10 4.6: The Department of Biomedical Engineering

11       The Department of Biomedical Engineering is currently unique among the departments.  
12 Created by action of the Board of Trustees in 1968, it is a single department jointly based in the  
13 School of Medicine and the School of Engineering. The department chair will designate each  
14 faculty member, at the time of initial appointment, as being principally based in the School of  
15 Medicine or the School of Engineering. The principal designation will determine which School's  
16 pretenure period and which School's process and qualifications and standards for appointment,  
17 promotion, and award of tenure shall govern the appointment. In other respects, faculty in the  
18 department shall enjoy the rights and privileges and duties and responsibilities of faculty in both  
19 Schools.

20  
21 4.7: The Division of General Medical Sciences (DGMS)

22       DGMS was established in 1986 to provide an organizational home for primary  
23 appointments for faculty pursuing interdisciplinary research and educational objectives. DGMS is  
24 composed of centers headed by center directors who recommend faculty for appointment,  
25 promotion and tenure. The Dean of the School of Medicine shall serve as the Chair of DGMS and  
26 has discretion to establish or close individual centers. Faculty with primary appointments in  
27 DGMS shall retain their primary appointment in DGMS in the event of center closure. In all other  
28 regards DGMS is the equivalent to an academic department.

29  
30 ARTICLE 5 – FACULTY APPOINTMENTS, PROMOTION, AND GRANTING OF TENURE

31  
32 5.1: Classification of Appointments

33       An appointment shall be classified as initial, renewal, or continuing (for appointments  
34 with tenure or for appointments past the first year of several year terms).

35       An appointment shall be classified as full-time or part time. Eligibility for appointment or  
36 reappointment to the full-time faculty is subject to approval by the dean and requires that (1)

1 50% or more time be devoted to approved academic activities and (2) the academic activities  
2 must be conducted at an approved site. If 50% or more of compensation is paid through the  
3 university, the full-time faculty member is eligible for fringe benefits.

4 An appointment shall be classified by academic title and whether the appointment is (a)  
5 with tenure, (b) without tenure but leading to tenure consideration (tenure-track), (c) without  
6 tenure and not leading to tenure consideration (non-tenure track); or (d) special, which will  
7 include the prefix adjunct, clinical, visiting, or emeritus. If the appointment leads to consideration  
8 for tenure, the appointment letter shall specify clearly the academic year in which this  
9 consideration will become mandatory. With regard to special faculty appointments, adjunct  
10 appointments usually refer to part-time faculty members devoting their time to research and/or  
11 teaching in the basic science departments. Clinical appointments usually refer to faculty members  
12 devoting their time to patient care and teaching. Visiting faculty appointments are issued for  
13 specified terms of one year or less than one year and can be full- or part-time. Special faculty  
14 are not eligible for tenure.

15 The dean of the School of Medicine and the provost of the university must approve  
16 available tenured or tenure track slots. The School of Medicine is exempt from the Faculty  
17 Handbook ruling that the majority of the members of each constituent faculty must be tenured or  
18 on the tenure track (Chapter 2, Article I, Sec. D, p. 15), as approved by the University Faculty  
19 Senate and the provost (January, 2004).

20 If the appointment applies to more than one constituent faculty, or department, or to an  
21 administrative office as well as an academic unit, the appointment may be identified either (1) as  
22 a primary-secondary appointment or (2) as a joint appointment. For a primary-secondary  
23 appointment arrangement, one constituent faculty or department shall be identified as the  
24 primary appointment and the other as secondary. Responsibility for the initiation of  
25 consideration of re-appointment, promotion, award of tenure, or termination shall rest with the  
26 primary unit. Faculty with joint appointments have full rights as a faculty member in both  
27 constituent faculties or departments. The notice of appointment shall be issued jointly by the  
28 two constituent faculties or departments. Consideration of appointment, reappointment,  
29 promotion, and/or tenure for joint appointment arrangements shall be as described in the Faculty  
30 Handbook sections pertaining to such appointments.

### 31 32 5.2: Terms of Appointment

33 Appointments with tenure shall be of unlimited duration until retirement, subject only to  
34 termination for just cause (see below). Tenure-track appointments shall normally be made for a  
35 term of one to five years and may be renewed until the end of the pre-tenure period. Non-tenure

track appointments are renewable and shall normally be made for a term of one to five years.  
Special appointments shall be made for terms of one year or less.

#### 5.3: Academic Freedom

Academic freedom is a right of all members of the Faculty of Medicine, and applies to university activities, including teaching and research. Specifically, each faculty member may consider in his or her classes any topic relevant to the subject matter of the course as defined by the appropriate educational unit. Each faculty member is entitled to full freedom of scholarly investigation and publication of his or her findings.

#### 5.4: Tenure

The basic purpose of tenure is to provide the assurance of academic freedom throughout the university. Another important purpose of tenure is to attract and retain outstanding faculty through continued commitment of the university to these faculty members. Tenured faculty members are protected explicitly against dismissal or disciplinary action because their views are unpopular or contrary to the views of others. Non-tenure-eligible colleagues shall derive protection by general extension of these principles of academic freedom.

When awarded, academic tenure rests at the constituent faculty level.

The award of academic tenure to a faculty member is a career commitment that grants that faculty member the right to retain his or her appointment without term until retirement. The appointment of a tenured faculty member may be terminated only for just cause. In the event that a tenured faculty member's school, department or other unit of the university in which the faculty member's appointment rests is closed or reduced in size, the university shall make all reasonable attempts to provide a tenured faculty member with an appointment of unlimited duration until retirement.

Examples of just cause for the termination of any faculty member (tenured, tenure track, non-tenure eligible, or special) include (a) grave misconduct or serious neglect of academic or professional responsibilities as defined through a fair hearing; (b) educational considerations as determined by a majority vote of the entire constituent faculty of the affected individual which lead to the closing of the academic unit of the university or a part thereof in which the faculty member has a primary appointment; and (c) financial exigent circumstances that force the university to reduce the size of a constituent faculty in which the faculty member has a primary appointment.

A tenured faculty member may be terminated for financial exigent circumstances only after all faculty members who are not tenured in that constituent faculty have been terminated in

1 the order determined by the dean of the School of Medicine in consultation with the department  
2 chairs, the Faculty Council and other faculty members.

#### 4 5.5: The Pretenure Period

5 The pretenure period in the School of Medicine is nine years. Each faculty  
6 member whose appointment leads to tenure consideration shall be considered for tenure no later  
7 than in the ninth year after the date of initial appointment at the rank of assistant professor or  
8 higher.

9 A faculty member in the tenure track may request extensions to the pretenure period.  
10 The extensions may be (1) requested by exceptionally worthy candidates in the event of unusual  
11 constraints in the university, or part or parts thereof, which would prevent tenure award at the  
12 end of the normal period; or (2) requested for the purpose of compensating special earlier  
13 circumstances disadvantageous to a candidate's tenure consideration (such as serious illness,  
14 family emergency, maternity, or extraordinary teaching or administrative assignments); or (3)  
15 upon written request by the faculty member within one year after each live birth or after each  
16 adoption, an extension of up to one year shall be granted by the provost to any faculty member  
17 who will be the primary care giving parent. Extensions should be requested as soon after the  
18 occurrence of the relevant circumstances as practicable, ordinarily not later than one year prior to  
19 the normally scheduled expiration of the pretenure period. Extensions requested under (1) or (2)  
20 above require request by the faculty member, review and a recommendation by the department's  
21 committee on appointments, promotions, and tenure, the department chair, and the dean, and  
22 approval by the provost. Pretenure extensions may not be used to defer tenure consideration of  
23 a faculty member more than three years beyond the normal pretenure period except for  
24 extensions made under (3) above.

25 For faculty members whose tenure consideration has not produced tenure award during  
26 the pretenure period, further appointment is normally restricted to one year. In exceptional  
27 cases, individuals who failed to receive tenure may be appointed in the non-tenure eligible track  
28 on recommendation of the department Committee on Appointments, Promotions, and Tenure,  
29 the department chair, the Committee on Appointments, Promotions and Tenure of the School of  
30 Medicine, the dean of the School of Medicine, and the approval of the provost. Such  
31 appointments are contingent upon full financial support from non-university sources.

32 The number, nature, and duration of pretenure period extensions made to an individual  
33 faculty member's pretenure period shall not be considered by the CAPT when reviewing that  
34 faculty member for award of tenure or promotion.

#### 36 5.6: Qualifications for Appointments, Promotions and Granting of Tenure

Qualifications and standards for faculty appointments, reappointments, promotions, and granting of tenure shall be generally as stated in the Faculty Handbook of Case Western Reserve University. Specific qualifications and standards applying to the School of Medicine shall be determined by the Faculty of Medicine and appended to these bylaws. These qualifications and standards shall be reviewed every five years by the Faculty Council. The dean shall make the text of the current qualifications and standards available to all junior and newly appointed faculty members.

#### 5.7: Tenure Guarantee

Award of tenure for faculty based in the School of Medicine should be accompanied by a base salary guaranteed by the School of Medicine that will be equal for faculty in the school's basic science and clinical science departments. The amount of the guarantee and its financial support are currently under discussion.

#### 5.8: Rolling Appointments for Non-Tenure Track Professors

Upon nomination by the department chair and with the consent of the dean, faculty members at the rank of professor in the non-tenure track with primary appointments in either a clinical or basic science department will be eligible to receive a rolling appointment contract of up to five years in duration accompanied by a salary guarantee for the period of appointment, equal in amount (but not duration) to that guaranteed to tenured professors. A rolling three-year appointment, for example, is a multiple-year appointment that differs from a multiple-three-year fixed term appointment in that, pending satisfactory performance and financial circumstances as determined by the chair and the dean, the appointment is renewed each year for the following three years. Financial support for rolling contracts is to be provided by the School of Medicine with the understanding that, prior to making the rolling commitment, the school would have the opportunity to enlist support from the appropriate hospital, clinical practice plan, or other appropriate entity to underwrite the guarantee.

#### 5.9: Consideration of Recommendations for Appointments, Promotions and Granting of Tenure

##### a. Full-Time Faculty

The dean shall submit recommendations for appointments and promotions to the ranks of associate professor and professor and the granting of tenure concerning full-time faculty with primary appointments based in the departments of the School of Medicine (including those faculty in the Department of Biomedical Engineering with appointments principally based in the School of Medicine) given him or her by the department chairs or other persons as designated by

1 the dean or initiated by other means as outlined in the Faculty Handbook of Case Western  
2 Reserve University, Chapter 3.I.1, to the Committee on Appointments, Promotions and Tenure of  
3 the School of Medicine. This committee shall consider the documented evidence relating to each  
4 candidate and, following the qualifications and standards set forth in Exhibit I to these Bylaws,  
5 shall report its affirmative and negative recommendations to the Steering Committee of the  
6 Faculty Council. Each recommendation shall also be reported promptly to the academic chair of  
7 the candidate's department. The candidate shall be informed by the academic chair of the  
8 committee's recommendation. The academic chair or other nominator may appeal a negative  
9 recommendation by notifying the chair of the Committee on Appointments, Promotions, and  
10 Tenure of the School of Medicine. Appeals may be made in writing or in person. Written  
11 documentation of the appeal and the response of the Committee on Appointments, Promotions,  
12 and Tenure must be appended to the candidate's file. In the event that the appeal to the  
13 Committee on Appointments, Promotions and Tenure is not successful, the academic chair or  
14 other nominator or the affected faculty member may bring to the attention of the Steering  
15 Committee of the Faculty Council, through a detailed, written submission, any alleged errors in  
16 procedure or non-adherence to the current published guidelines for appointments, promotions  
17 and tenure. The Steering Committee of The Faculty Council may investigate the allegations to  
18 the extent that it deems appropriate, may review all other candidates' files as it deems  
19 necessary, and may request the appearance of persons with knowledge of current and prior  
20 procedures and policies of the CAPT. A written report of the results of any investigation by the  
21 Steering Committee shall be appended to the candidate's file. All files will be forwarded to the  
22 dean after the Committee on Appointments, Promotions and Tenure, and, if applicable, the  
23 Steering Committee of the Faculty Council have discharged their responsibilities as specified  
24 above. The dean shall transmit the file, with added comments if desired, to the president of the  
25 university; for informational purposes, the dean will also provide the Dean of the Case School of  
26 Engineering with complete copies of the files of candidates in the Department of Biomedical  
27 Engineering with appointments principally based in the School of Medicine.

28  
29  
30 b. Special Faculty Appointments and Promotions

31 Special faculty appointments and promotions modified by the prefix adjunct, clinical, or  
32 visiting shall be recommended by the department chair and may be granted by the dean. For  
33 these clinical and adjunct appointments and promotions at the ranks of assistant professor,  
34 associate professor, and professor, the dean shall, prior to reaching a decision, also consider the  
35 recommendation of the department's committee on appointments, promotions, and tenure. The  
36 dean shall also consider letters of reference concerning the appointment and promotion of faculty

1 to the ranks of clinical and adjunct associate professor and clinical and adjunct professor. For all  
2 ranks of clinical and adjunct faculty appointments and promotions in , the dean shall, prior to  
3 reaching a decision, also consider the recommendation of the Division's committee on  
4 appointments, promotions, and tenure. This paragraph will govern special faculty appointments  
5 and promotions for faculty in the department of biomedical engineering with appointments  
6 principally based in the School of Medicine. The dean shall inform the Dean of Case School of  
7 Engineering of any such appointments and promotions. c. Secondary Appointments and  
8 Promotions

9 Secondary appointments at all ranks shall be recommended by the chair of the secondary  
10 department, require the concurrence of the primary department chair, and may be made at the  
11 discretion of the dean. Secondary appointment promotions shall be recommended by the  
12 secondary department chair and may be made at the discretion of the dean. For secondary  
13 appointments and promotions in the DGMS, the dean shall, prior to reaching a decision, also  
14 consider the recommendation of the Divisions committee on appointments, promotions, and  
15 tenure. This paragraph will govern secondary appointments in the department of biomedical  
16 engineering principally based in the School of Medicine and promotions of faculty holding such  
17 secondary appointments. The dean shall inform the Dean of Case School of Engineering of any  
18 such appointments and promotions.  
19

#### 20 5.10: The Committee on Appointments Promotions and Tenure

21 a. The Committee on Appointments, Promotions and Tenure shall be a standing  
22 committee of the faculty and shall consist of twenty-four full-time faculty members. Eighteen  
23 members shall be elected by the full-time faculty and six members shall be appointed by the  
24 dean. A representative Dean from faculty affairs shall also be a member of this committee, ex  
25 officio and without vote. Department chairs are not eligible to serve on this committee. Ten of  
26 the committee members shall have the rank of tenured professor; ten shall be professors in the  
27 non-tenure track; and four shall be tenured associate professors. The elected committee  
28 members shall include nine faculty members with primary appointment in clinical science  
29 departments and nine with primary appointment in basic science departments; the appointed  
30 members shall include four from clinical science departments and two from basic science  
31 departments. In each election all reasonable effort will be taken to have the number of  
32 nominees be at least twice the number of positions to be filled. Members will be elected or  
33 appointed for three-year terms. These terms shall be staggered for the full-time faculty  
34 members. Committee members may serve only two consecutive three-year terms but  
35 subsequently may be reelected or reappointed after an absence of one year. The quorum for  
36 conducting the business of the Committee on Appointments, Promotion and Tenure shall be

1 twelve members present for discussion of which eight must have voting privileges. On  
2 recommendations for appointment as or promotion to associate professor, all committee  
3 members are eligible to vote; on recommendations for appointment as or promotion to professor,  
4 faculty committee members who are tenured professors and non-tenure track professors are  
5 eligible to vote; on recommendations to award tenure, tenured committee members are eligible  
6 to vote. Committee members may be present for discussion but are not eligible to vote  
7 regarding candidates for primary appointment, promotion, or award of tenure in the committee  
8 member's own department of primary appointment. The committee will be led by two co-chairs,  
9 each of whom shall serve a one-year term, appointed by the chair of Faculty Council in  
10 consultation with the dean of the School of Medicine. The co-chairs may be selected from either  
11 the elected or appointed members of the committee. The chair of Faculty Council, in  
12 consultation with the dean of the School of Medicine, each year shall also appoint two co-chairs  
13 elect, to serve the following year as the committee's co-chairs. At each committee meeting, at  
14 least one of the co-chairs must be in attendance.

15 b. The standards for appointment, promotion, and granting of tenure determined by the  
16 faculty shall be considered by the committee when evaluating candidates under review.

17 c. The CAPT shall review and make recommendations concerning all appointments as or  
18 promotions to the ranks of associate professor or professor and the award of tenure.  
19

#### 20 5.11 Sabbatical and Special Sabbatical Leaves

21 The purpose of and conditions for sabbatical leaves are discussed in the Faculty  
22 Handbook, Chapter 3, II A. The conditions are based on the premise that the faculty member  
23 requesting a sabbatical leave is tenured. A sabbatical leave may be requested by a faculty  
24 member and, based upon all factors including the specific study proposal and subsequent  
25 recommendations by the department chair, the Faculty Council Steering Committee, and the  
26 dean, may be granted by the president. In cases of tenure track and non-tenure track or special  
27 faculty, special sabbatical leaves may be recommended as well, at the discretion of the dean.  
28 However, such leaves may not necessarily incur the obligation of university or School of Medicine  
29 financial support. For faculty with tenure track, non-tenure-track and special appointments, the  
30 provost shall specify whether the leave period is to be counted as part of the pretenure or pre-  
31 promotion period, as the case may be.  
32

#### 33 ARTICLE 6 - AMENDMENT OF THE BYLAWS

34  
35 An amendment of the bylaws may be proposed by majority vote of the Faculty Council,  
36 by the dean, ~~by written petition of 20 or more faculty members, or by the Standing Committee~~

Deleted: or



1 on Bylaws acting on behalf of the Faculty of the School of Medicine. The amendment must be  
 2 accompanied by a rationale for the proposed change. All proposed amendments shall be  
 3 submitted to the Chair and secretary of the Faculty Council, and to the Chair of the Standing  
 4 Committee on Bylaws. The Bylaws Committee shall review each proposed amendment and  
 5 report its recommendation to Faculty Council. All proposed amendments will be considered and  
 6 voted on by the Faculty Council within the same academic year if submitted prior to March 1 of  
 7 that year. All proposed amendments, their rationale, and the recommendations of the Faculty  
 8 Council will then be sent by mail to full-time members of the faculty and may be discussed at a  
 9 regularly scheduled meeting of the faculty held at least four weeks after notification. During  
 10 discussion of proposed amendments at a faculty meeting, non-substantive changes in the  
 11 proposed amendments may be made by majority vote. The vote on any proposed amendment  
 12 shall be by electronic ballot of the full-time faculty. Approval shall require an affirmative vote by  
 13 a majority of those faculty members returning ballots. Ballots shall remain open for three weeks.  
 14 At least once every five years, the Bylaws Committee shall conduct a full review of these Bylaws  
 15 and forward its recommendations to the Faculty Council for consideration by the procedures  
 16 described above.

**Commented [A74]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**SUBSTANTIVE:** Grants the Bylaws Committee the power to propose, rather than simply evaluate, amendments to the SOM Bylaws. Rationale: To make the Bylaws compliant with the Bylaws Committee charge approved by Faculty Council on May 15, 2017.

**Commented [A75]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**SUBSTANTIVE:** Ensures that the Bylaws Committee Chair receives amendments to the Bylaws proposed by other entities at the same time as other relevant parties. Rationale: To make the Bylaws compliant with the Bylaws Committee charge approved by Faculty Council on May 15, 2017.

**Deleted:** who shall forward all proposed amendments to

**Commented [A76]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**SUBSTANTIVE:** Moves forward the date by which amendments must be submitted in order to be considered within the same academic year. Rationale: To make the Bylaws compliant with the revised Bylaws Committee charge approved by Faculty Council on May 15, 2017.

**Deleted:** April

**Deleted:** the mailing

**Commented [A78]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**Rationale:** Modernization (replaces "mail" with "electronic").

**Deleted:** mail

**Commented [A79]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**Rationale:** Simplification.

**Deleted:** At least

**Deleted:** shall be allowed between the mailing of ballots and the determination of election results

**Deleted:** T

**Deleted:** shall review the bylaws at least once every five years and shall propose amendments as desired to the faculty

**Commented [A80]:** Approved by the Bylaws Committee on November 13, 2017 and by the Faculty Council on January 22, 2018.

**SUBSTANTIVE:** Transfers responsibility for the 5-year review of the Bylaws from the Faculty Council to the Bylaws Committee. Rationale: To make the Bylaws compliant with the revised Bylaws Committee charge approved by Faculty Council on May 15, 2017.

## Introduction

Overarching goal for the 6/18/18 Faculty Council Meeting: To provide a forum for faculty council members to discuss and vote on amendments to Articles 1-3 of the SOM Bylaws, the rules and policies that govern faculty life, that are proposed in the context of a 5-year review by 1) members of the Faculty of Medicine and 2) the Bylaws Committee.

Overarching goal of the 5-year review: To propose amendments aimed at enhancing collaboration and communication between and among the faculty and administration to improve operation of the School of Medicine in the short, medium and long term.

*Recognizing that faculty input is critical*, the Bylaws Committee began this process by soliciting suggestions from faculty members through an e-mail sent by the Office of Faculty Affairs. The ten suggestions and their disposition were provided in a different document also circulated with the agenda for the 5/21/18 Faculty Council meeting.

## Specific goals of amendments to SOM Bylaws proposed in the course of the 5-year review

Major changes:

- I. Increase overall faculty participation and leadership opportunities in faculty governance
- II. Ensure equitable representation in co-governance
- III. Ensure that the SOM Bylaws and standing committee charges are aligned
- IV. Ensure that the SOM Bylaws are consistent with the Faculty Handbook and Faculty Senate Bylaws and cross-reference the documents

Minor changes:

1. Ensure internal consistency and cross-reference related sections of the SOM Bylaws
2. Eliminate redundancy and reiterate selected content for emphasis
3. Move text to group with related content
4. Eliminate undefined terms and outdated provisions
5. Correct errors and oversights

Curatorial changes:

- a. Clarify and simplify language
- b. Correct grammar, punctuation, etc.)

Note: In the tables on the following pages, the items listed under Major changes are referenced by their Roman Numeral codes and the items under Minor changes are referenced by their Arabic numeral codes.

## Substantive Amendments to the SOM Bylaws Proposed by the Bylaws Committee based on the 2017-18 5-year Review

Page/ code	Article/ code	Title	Topic	Salient difference	Rationale	Vote Tally (Y : N)
5 (I, 1)	2.3b 15-17	Authorities and Powers of the Faculty of Medicine	Powers reserved	Adds that faculty members also elect departmental representatives to Faculty Council	Emphasizes the importance of broad participation of faculty in governance	5 : 0 (03/12/18)
6 (II)	2.6.a.2 22-24	Standing Committees of the Faculty of Medicine	Responsibilities of the Bylaws Committee (BC) beyond proposing and evaluating amendments	Adds that the BC also reviews standing committee charges	Aligns the Bylaws and the revised Bylaws Committee charge approved by Faculty Council on 05/15/17	6 : 0 (01/23/18)
6 (II)	2.6.a.2 24-25	Standing Committees of the Faculty of Medicine	"	Adds that the BC also conducts the 5-year review of the SOM Bylaws	"	5 : 0 (02/12/18)
7 (3)	2.6.b & c 14-17 & 28	"	Composition and functioning of Standing Committees of the Faculty	Moved text from 2.6c to 2.6b and modified it slightly	Passage about composition now grouped with related content instead of with content describing standing committee operations	6 : 0 (01/23/18)*
7 (2)	2.6.c 27-28	"	"	Reiterates that the Bylaws Committee reviews committee charges	"	6 : 0 (01/23/18)*
8 (I)	2.6.d 4-5	"	Role of the dean on Standing Committees of the Faculty	Removes provision that the "dean" may chair Standing Committees of the Faculty	Expands leadership opportunities for faculty and protects the dean from potential conflicts of interest	6 : 0 (01/23/18)
8 (I)	2.6.d 9-11	"	Roles of deans on faculty standing committees	Persons with "dean" in their title may not chair standing committees	Expands leadership opportunities for faculty and protects the dean's office from potential conflicts of interest	6 : 0 (01/23/18)

## Substantive Amendments to the SOM Bylaws (cont'd)

8 (III)	3.1 26-28	Purpose and functions of the Faculty Council	SOM Executive Committee (previously not defined in Bylaws)	Makes explicit that Faculty Council serves as the SOM Executive Committee	Codifies FC's response to a query from the Faculty Senate, which was approved on 12/12/2016 and supported by the Senate	5 : 0 (01/23/18)
9 (II)	3.2 a, b 19-20, 24-25, 30-31	Membership of the Faculty Council	Faculty Council representative structure	Makes institutional FC representatives non-voting with the exception of the single VA representative	Equity of representation between clinical and basic science departments	5 : 0 (01/23/18)
9-10 (I)	3.2b 33-35, 1-2	"	Non-voting members of Faculty Council	Allows each standing committee to be represented at FC meetings	To allow identification of issues related to each committee's charge	5 : 0 (11/13/17 & 04/10/18)
10 (I)	3.3a 11-13	Election of Faculty Council Representatives	Process for election of departmental representatives	Previous version did not specify which party was to be informed of an upcoming opening	Ensures that faculty members are made aware of opportunities via direct communication	5 : 0 (03/12/18)
10-11 (3)	3.3 (all)	Election of Faculty Council Representatives	Process for electing different classes of FC representatives	Text rearranged to create a preamble and clearly delineate each constituency	Clarifies how each type of FC representative is elected	5 : 0 (03/12/18)
12 (I)	3.5 1-2	Officers of the Faculty Council	Chair-elect candidate eligibility	Removes the restriction that Chair-elect candidates must have 2 years left in their term	Makes candidates with significant FC experience eligible to serve and prevents candidates from running unopposed	6 : 0 (01/23/18 & 5 : 0 02/12/18)

## **Bylaws Committee Annual Report**

The Bylaws Committee considers amendments to the Bylaws of the Faculty of Medicine proposed by any of the routes specified in Article 6 (majority vote of the Faculty Council, the Dean, written petition of 20 or more faculty members, or the Bylaws Committee itself acting on behalf of the SOM Faculty) and makes recommendations concerning such proposed amendments to the Faculty Council. It also reviews proposals for new and amended charges of standing committees for the purpose of advising Faculty Council about their compliance with the Bylaws prior to a vote by that body. Finally, at least once every five years, the Bylaws Committee conducts a full review of the Bylaws.

### **2017-18 Bylaws Committee roster**

#### **Elected members**

Jo Ann Wise, Ph.D. (Division of General Medical Sciences), Chair

Darin Croft, Ph.D. (Department of Anatomy)

David Friel, Ph.D. (Department of Neuroscience)

Peter Harte Ph.D. (Department of Genetics & Genome Sciences)

Maureen McEnery, Ph.D. (Department of Neurology, University Hospitals)

Jonathan Miller, M.D. (Department of Neurological Surgery, University Hospitals)

#### **Ex officio member**

Nicole Deming, J.D. (Assistant Dean for Faculty Affairs and Human Resources)

## **Activities of the Bylaws Committee during the 2017-2018 academic year:**

- Met once per month during the fall semester and twice per month during the spring semester for a total of fourteen meetings (each 2+ hours)
- Our overarching goal this year was to conduct the 5-year review of the SOM Bylaws
- Meeting dates, major topics and action items were as follows:
  - ❖ October 9:
    1. Discussed overall strategy, including input from committee members sought by e-mail in advance of the meeting.
    2. Discussed whether the 5-year review include the charge of the Committee on Appointments, Promotion and Tenure (CAPT) and should the Appendix be incorporated into the body of the document
    3. Requested input from faculty members through the Faculty Affairs office
    4. Decided to review committee charges with regard to whether they should be included in the Bylaws
    5. Decided to aligning Article 6 (Amendment of the Bylaws) and other sections with the Bylaws Committee charge approved by Faculty Council in 2017.
    6. Agreed on a strategy for editing and sharing of documents.
  - ❖ November 13:
    1. Decided not to incorporate standing committee charges beyond those already included (CAPT and Nomination & Elections Committee)
    2. Amended Article 6 to align with the revised Bylaws Committee Charge. These amendments were approved by Faculty Council on 22 Jan., 2018

❖ December 12:

1. Amended Article 1. Purpose (minor word changes)
2. Amended Articles 2.1-2.3 (Powers reserved and delegated to FC)

❖ January 9:

1. Discussed faculty members' suggested Bylaws amendments (provided electronically prior to and briefly discussed at the May 21 FC meeting)
2. Amended Article 3.1a (codifying FC as SOM Executive Committee)
3. Amending Article 3.2 to include a non-voting FC member from the Bylaws Committee and changing the status of institutional representatives to non-voting

❖ January 23:

1. Discussed classification of amendments into substantive and non-substantive
2. Amended Article 3.1 a to stipulate that FC is the Executive Committee of FC (important clarification)
3. Minor amendments to Article 2.4 (Meetings of the Faculty of Medicine) and 2.5 (Voting Privileges)
4. Substantive amendments to Article 2.6 (Standing Committees of the Faculty of Medicine) to: a) Echo changes in Article 6 regarding the roles of the Bylaws Committee; and b) Remove the provision that the dean may chair any standing committee

❖ February 12:

1. Revisited amendments passed on 23 January, further clarifying “powers reserved”
2. Discussed and proposed revisions to the Nomination and Elections Committee charge (Article 3.6b)
3. Delegated review of Article 4 (Departments) to Peter Harte

❖ February 28:

1. Further discussion and revision of the NEC charge, particularly the provision limiting faculty service to 2 committee including Faculty Council
2. Discussed Article 3.5 (Officers of the Faculty Council)

❖ March 12:

1. Proposed substantive amendments to Article 3.3 to clarify the role of the Faculty Affairs Office in election of Faculty Council Representatives (limited to notification of not just chair but all faculty members in a department)
2. Reorganized Article 3.3 to clarify the different types of FC representatives

❖ March 27:

1. Discussed whether to advance amendments voted upon thus far to FC in April and decided against
2. Proposed amendments to Articles 3.3 and 36b to expand the pool of Faculty Council chair-elect candidates
3. Began the discussion of Article 4 (Departments)



❖ April 10:

1. Voted to recommend to the NEC that a preferential voting system be incorporated into their charge
2. Amended Article 3.2b to emphasize that the Division of General Medical Sciences, which has departmental status, is represented on Faculty Council
3. Further amended Article 3.2b to generalize the option for each Standing Committee of the Faculty to have a non-voting representative to FC
4. Adopted amendments to Article 4.2d, which correct inappropriate use of the term self-initiate as defined by the Faculty Handbook

❖ April 24:

1. Discussed draft table of amendments to facilitate discussion when the Bylaws amendments are presented to Faculty Council
2. Discussed Article 4 in general terms and decided to make a strong effort to get it ready for presentation to FC in May
3. Began drafting specific amendments to Article 4; one member strongly disagreed with several amendments supported by the majority of the committee

❖ May 12:

1. Continued the discussion of Article 4, focusing on 4.7, Division of General Medical Sciences. After clarification of the differences between Centers in DGMS and Departments, a draft upon which the committee tentatively agreed was produced
2. Decided to postpone the vote on 4.7 until the next meeting

❖ May 22:

1. Discussed proposed revisions to the May 10 meeting minutes and decided that, as the document is not public, no changes were necessary
2. Received clarification from Nicole Deming (*ex officio* member) on the differences between the different types of centers: Type A (centers within DGMS that make primary faculty appointments in DGMS), Type B (centers that span different departments and do not make primary faculty appointments) and Type C (centers within a department that do not make primary faculty appointments) but decided not to incorporate this information into the Bylaws
3. Discussed the suggestion by a member of Faculty Council at the previous day's meeting that the Dean should not be a member of the NEC, citing Robert's Rules of Order precluding CEOs from serving. However, careful reading of the passage in RRO indicates that the person who should be excluded is the Chair of Faculty Council, since the NEC is a committee of Faculty Council. Voted against recommending the proposed amendment.
4. Decided to prioritize amendments for presentation and voting by the Faculty Council at its June meeting (order in document vs. importance/time-sensitive nature vs. ease of passage)
5. Revised the draft of Article 4.7 (Division of General Medical Sciences) and voted on a final version
6. Having agreed on the content of Article 4.7, the committee revised the amendments to earlier parts of Article 4

❖ May 24

- The Bylaw's Committee's Official Tracked changes draft of the SOM Bylaws was forwarded by the Bylaws Committee chair to the other committee members and to the Chair of Faculty Council, together with a proposed order of presentation to FC
- A Bylaws Committee member objected to any part of Article 4 going forward except 4.7

❖ May 29

- Two committee members expressed support for forwarding Articles 1-4 in their entirety, citing the importance and time-sensitive nature of the changes in Article 4.2d. They also supported the proposed order of presentation
- It appears that the issue will have to be resolved by FCSC



SCHOOL OF MEDICINE

CASE WESTERN RESERVE  
UNIVERSITY

**Master of Science in Anesthesia Program**

Cleveland Location

Lakeside, Room 2533

11100 Euclid Avenue

Cleveland, Ohio 44106-5007

Phone 216.844.8077 / Fax 216.844.7349

Houston Location

Phone 713.574.9491 / Fax 713.512.8400

Washington D.C. Location

Phone 202.758.2502 / Fax 202.758-2486

<https://case.edu/medicine/msa-program/>

Dear Dean Davis,

We are writing to request your permission to pursue the initiation of a satellite program in Austin, Texas, for our Master of Science in Anesthesia (MSA) program run through the School of Medicine (and degree granted from School of Graduate Studies).

CWRU is one of the founding educational programs for the anesthesiologist assistant profession. Upon graduation from a specialized master's degree program in anesthesiology and completion of professional certification requirements, the Certified Anesthesiologist Assistant (CAA) is an advanced practice clinician working with a supervising anesthesiologist within the perioperative care team model. The MSA program at CWRU started in 1971 as a bachelor's degree, transitioned to a Master of Science degree in 1987, and then to a Master of Science in Anesthesia degree in 2016. We have successfully opened two additional CWRU MSA satellite programs in Houston, Texas and Washington District of Columbia, and both programs are thriving.

We have a long-standing history of providing quality education, and the CWRU MSA program is held in high esteem as the preeminent institution for CAA education in the United States. With our success in Houston, our growing network of clinical training sites and relationships with the anesthesia leadership of Texas, and our knowledge of the state's educational interworkings, we have recognized an opportunity to fulfill an ongoing and significant shortage of anesthesia professionals in the greater Austin area. Last year, leaders of the greater Austin region and the Texas Society of Anesthesiologists approached us to consider extending our CWRU MSA program network to Austin, Texas. Our Executive Medical Director, Matthew Norcia, MD, our Executive Program Director, Joe Rifici, CAA, MEd, CWRU School of Medicine Senior Associate Dean for Finance, Matthew Lester, MBA, MHA, and I are

honored and intrigued by the potential of establishing a satellite program in Austin, Texas. If approved, we plan to matriculate our first class in June 2019.

At the micro level, many details have to be determined. At the macro level, the degree offering from CWRU and the curriculum will mirror that of the MSA programs in Cleveland, Houston, and Washington District of Columbia. The method of delivery will consist of on-site clinical, simulation and didactic faculty instruction, and approximately 21% distance learning instruction led by our Cleveland-based didactic faculty. All clinical and simulation instruction for the Austin MSA program will be done on-site in Austin, Texas, which will be supported by the continued growth of the simulation and operating room clinical resources in Austin.

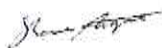
The CWRU MSA program network's executive leadership team of Matt Norcia, Joe Rifici, and I will have direct oversight of establishing the Austin MSA program. We will remain in our individual roles within the Cleveland and Washington, D.C. programs. We will hire an Austin-based Medical Director and Program Director to manage daily operations in Austin consistent with our culture in Cleveland and throughout the CWRU MSA program network.

For the first several years, the CWRU MSA program network's executive leadership team will be directly involved with the admissions process in Austin as we integrate the Austin administrative team and program into the network. We have utilized this strategy in establishing the Houston and Washington, D.C. programs to ensure we matriculate the strongest candidates at each individual program and across the CWRU MSA program network.

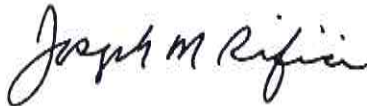
The Austin administrative team will be directly responsible for the process of advising students and tracking student performance in the classroom and in the operating room. The CWRU MSA program network's executive leadership team will closely advise the Austin administrative team on our Cleveland-based methods, which have been established as effective across the MSA program network, and our colleagues in Austin will have access to our online clinical performance evaluation system and our clinical case log database to help facilitate this process.

I hope we have adequately explained our proposal to you. Please do not hesitate to contact us anytime. Thank you for your consideration.

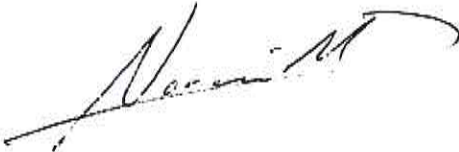
Please find attached formal proposal documentation and letter of support from SOM Office of Finance.



Shane Angus, CAA, MSA  
Associate Executive Program Director, Master of Science in Anesthesia Program  
Case Western Reserve University School of Medicine



Joseph M. Rifici, CAA, M.Ed.  
Executive Program Director, Master of Science in Anesthesia Program  
Assistant Professor of Anesthesiology  
Case Western Reserve University School of Medicine



Matthew P. Norcia, MD  
Executive Medical Director, Master of Science in Anesthesia Program  
Assistant Professor of Anesthesiology  
Case Western Reserve University School of Medicine



Dr. Marc Popovich, MD, FACP, FCCM  
Chair, Department of Anesthesiology and Perioperative Medicine  
University Hospitals Cleveland Medical Center

**CWRU Action Form for Majors/Minors/Programs/Sequences/Degrees**  
(instructions on back)

Docket # \_\_\_\_\_

College/School: \_\_\_\_\_ School of Medicine – Graduate Program \_\_\_\_\_

Department: \_\_\_\_\_ Anesthesiology \_\_\_\_\_

PROPOSED: \_\_\_\_\_ major  
\_\_\_\_\_ minor  
\_\_\_\_\_**X**\_\_\_\_ program location  
\_\_\_\_\_ sequence  
\_\_\_\_\_ degree

TITLE: \_\_\_\_\_ Master of Science in Anesthesia Program, Austin, Texas Location \_\_\_\_\_

EFFECTIVE: \_\_\_\_\_ Summer \_\_\_\_\_ (semester) \_\_\_\_\_ 2019 \_\_\_\_\_ (year)

**DESCRIPTION:**

Austin is a growing region with expanding health care facilities and no anesthesia training programs from which to hire practitioners. Case Western Reserve University, School of Medicine, Master of Science in Anesthesia (MSA) program is uniquely positioned to fulfill the growing demand for Certified Anesthesiologist Assistants in the region. Austin had a growth rate of 16% from 2010 -2015 and has one of the highest projected growth rates of 2.9% per year<sup>1</sup>. In 2015 the city passed Cleveland and Columbus in total population<sup>2</sup>. Austin has two hospitals ranked in the top 25<sup>3</sup>, and is expected to have continued growth in the healthcare sector.<sup>4</sup> In this growing environment the health care institutions are challenged to staff specialized clinical practitioners.

Our MSA program in Houston gives us a strong understanding and relationships with the oversight bodies governing educational and clinical activities in Texas. We would implement the same academic design that has been successful in Cleveland, Houston, and Washington, D.C. for the Austin Program location.

Using our experience from opening Houston and Washington, D.C. our projected first year costs are \$700,000-950,000. This includes faculty, staff, physical space, build out, simulation center, operations, and travel. Our anticipated first class of 2019 is between 10-16 students and growing to 24 within 5 years. The matriculating class tuition will help support operating expenses.

Is this major/minor/program/sequence/degree: \_\_\_\_\_ new  
\_\_\_\_\_ modification  
\_\_\_\_\_ replacement  
\_\_\_\_\_**X**\_\_\_\_ additional location

If modification or replacement please elaborate: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Does this change in major/minor/program/sequence/degree involve other departments? \_\_\_\_\_ Yes \_\_\_\_\_**X**\_\_\_\_ No

If yes, which departments? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact person/committee: \_\_\_\_\_ Shane Angus, Joe Rifci, Matthew Norcia \_\_\_\_\_

1 <https://www.austinchamber.com/economic-development/austin-profile/population>

2 <http://austin.culturemap.com/news/city-life/03-22-17-austin-population-growth-census-report/>

3 <https://www.bizjournals.com/austin/news/2017/08/09/2-austin-hospitals-rank-among-best-in-texas.html>

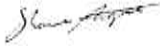
4 <https://communityimpact.com/austin/northwest-austin/healthcare/2017/06/27/austin-area-likely-continue-see-rise-new-health-care-facilities/>



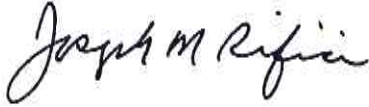
**SIGNATURES:**

**DATE**

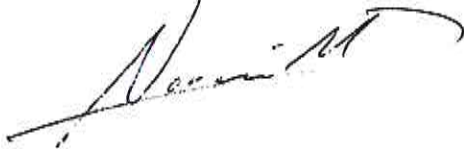
**Department Curriculum Chair(s)/Program Directors:**



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

**Department Chair:**



**College/School Curriculum Committee Chair:**

**College/School Dean(s):**

**FSCUE Curriculum Subcommittee Chair:**

**File copy sent to:**

☐ Registrar

☐ Office of Undergraduate Studies/Graduate Studies

☐ Other:



## INSTRUCTIONS

(\*\* indicates attachments required)

1. Docket # will be filled in by the Dean's Office.
- \*\* 2. For a NEW major/minor/program/sequence/degree, include an outline of the requirements and provide a justification for establishment. For a CHANGE, describe specific changes in requirements and provide justification for all changes.
3. The completed form (with accompanying documents) should be signed by the originating department's curriculum committee chair and department chair, other departments as required, then forwarded to the dean's office. Do not send forms directly to the Registrar's Office. The Provost and various deans' offices will coordinate transmittals.

## **Proposal to Faculty Council/Senate Master of Science in Anesthesia Program in Austin, Texas**

Austin is a growing region with expanding health care facilities and no anesthesia training programs from which to hire practitioners. Case Western Reserve University, School of Medicine, Master of Science in Anesthesia (MSA) program is uniquely positioned to fulfill the growing demand for Certified Anesthesiologist Assistants in the region.

### **Summary**

The MSA program along with the SOM Office of Finance assessed the potential for a new site in Austin with key individuals, medical groups and institutions. Based on this, we propose moving forward with an additional CWRU MSA program in Austin, Texas. The goal is to start a new cohort of students in the summer of 2019.

### **Benefits / Why Austin, Texas**

Austin had a growth rate of 16% from 2010 -2015 and has one of the highest projected growth rates of 2.9% per year<sup>1</sup>. In 2015 the city passed Cleveland and Columbus in total population<sup>2</sup>. Austin has two hospitals ranked in the top 25<sup>3</sup>, and is expected to have continued growth in the healthcare sector.<sup>4</sup> In this growing environment the health care institutions are challenged to staff specialized clinical practitioners. The city hosts the new Dell School of Medicine at UT Austin<sup>5</sup>, however Austin does not host any advanced practice clinician (non-physician extender) programs. The need is strong and anesthesia groups are eager to partner to help fill the current gap and plan for the future. Our partner organizations are Austin Anesthesia Group that provides care at 15 locations in the Austin region and in the initial year could host clinical training for 10-14 first year students. Our other partner is Baylor Scott & White, which has four hospitals in the region and will host clinical training for 4-6 first year students.

Additionally, the MSA program in Houston gives us a strong understanding and relationships with the oversight bodies governing educational and clinical activities in Texas.

### **Risks**

Certified Anesthesiologist Assistants practice under physician anesthesiologist's delegatory authority in Texas since 1997. The nursing equivalent (CRNA) practices anesthesia under a physicians delegatory authority and hold a nursing license<sup>6</sup>. Holding a state license adds security and accountability. For the past several legislative sessions the Texas Medical Association, Texas Society of Anesthesiologist<sup>7</sup> and the Texas Academy of Anesthesiologist Assistants<sup>8</sup> have pursued licensure of CAAs and will continue in the future. We believe this legislation will pass given the long history and positive movement towards approval. This will further increase the demand for quality CAAs in the state.

Currently clinical site availability is focused on two groups: Austin Anesthesia Group<sup>9</sup> (part of the national American Anesthesia group<sup>10</sup>) and Baylor Scott & White (S&W).<sup>11</sup> S&W has four

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<sup>1</sup> <https://www.austinchamber.com/economic-development/austin-profile/population>

<sup>2</sup> <http://austin.culturemap.com/news/city-life/03-22-17-austin-population-growth-census-report/>

<sup>3</sup> <https://www.bizjournals.com/austin/news/2017/08/09/2-austin-hospitals-rank-among-best-in-texas.html>

<sup>4</sup> <https://communityimpact.com/austin/northwest-austin/healthcare/2017/06/27/austin-area-likely-continue-see-rise-new-health-care-facilities/>

<sup>5</sup> <https://dellmed.utexas.edu>

<sup>6</sup> <http://www.tmb.state.tx.us/faq>

<sup>7</sup> [http://www.tsa.org/public/care\\_team.php](http://www.tsa.org/public/care_team.php)

<sup>8</sup> <http://texasaaa.org>

<sup>9</sup> <http://www.aagonline.com>

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hospitals in the region, is opening a new hospital in mid-2018 and will be breaking ground on another new hospital in September 2018. Another significant contributor to the Austin anesthesia market place is Capitol Anesthesiology Association,<sup>12</sup> which currently does not have CAAs on staff, and therefore cannot be a clinical training site. Recently, US Anesthesia Partners (USAP) acquired Capital Anesthesia Group. USAP is a national anesthesia group with a long history of working with CAAs<sup>13</sup> and based on prior experience with USAP we anticipate they will become a clinical site in the future.

### Pro forma Summary

Using our experience from opening Houston and Washington, D.C. our projected first year costs are \$700,000 - \$950,000. This includes faculty, staff, physical space, build out, simulation center, operations, and travel. Our anticipated first class of 2019 is between 10-16 students and growing to 24 within 5 years.

### Austin-Specific Planning to Date

After reviewing the potential of a number of other prospective sites, the MSA program and SOM Office of Finance identified Austin as the most viable option for expansion. The MSA program leadership proceeded to further validate the potential in Austin. This included the following:

- Aligning with local/state leadership and societies – We have met with key stakeholder about the possibility of a CWRU program in Austin, and have been met with a positive response.
- Collaboration with vested parties – We have had discussions with the key clinical partners and primary affiliate and they have agreed provide financial and/or in-kind contributions to the program.
- Inquiries with academic and non-profit commercial real estate firms – We have physical site options focused in the North Austin region because to its increased accessibility to clinical training sites.
- Recruitment of clinicians to the region to act as clinical instructors/ faculty/ leadership – We have collaborated AAG and S&W on acquiring staff with academic interests.

Overall, the reception from clinical and oversight bodies has been very positive. The clinical landscape is strengthening with several key partners to provide clinical education and faculty.

### Current and ongoing initiatives

At this point, we are finalizing details, confirming assumptions, and have continued substantive meetings to finalize the business plan and prepare for a program in Austin.

Our current steps are:

- Accreditation – Beginning the process of seeking approval of a program in Austin. This includes working with the following:
  - CWRU: SOM, Faculty Council and Faculty Senate
  - Texas Higher Education<sup>14</sup>
  - Profession specific – ARC-AA<sup>15</sup>

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<sup>10</sup> <https://www.americananesthesiology.com>

<sup>11</sup> <https://www.bswhealth.com/locations/round-rock>

<sup>12</sup> <http://capanes.com>

<sup>13</sup> <http://www.usap.com/anesthesiology-other-clinical-jobs>

<sup>14</sup> <http://www.thecb.state.tx.us/index.cfm?objectid=3F07A3D3-B85F-9158-C8B168AEF8AA5904>

<sup>15</sup> <http://ras.caahep.org/step2.aspx?ProfessionID=1>

- 
- HLC – Committee approved April 2, 2018. Pending full HLC approval to notify about new program sites
  - Identifying a physical location
    - Specific details on commercial real estate costs/donations/options
    - Specific details on tenant improvement costs/donations/options
    - Simulation equipment and supplies/donations
  - Identifying potential faculty
    - Program Director
    - Medical Director
    - Primary faculty and Instructors
  - MOUs with clinical sites
    - Defined affiliation agreements for clinical placement
    - MOU with key a medical group/hospital(s) to serve as a primary clinical partner that provides financial and/or in-kind contributions
    - Defined student learning opportunities per site

These efforts are ongoing and with approval we will move forward with obtaining a lease for space, maintaining due diligence with clinical sites and key affiliates, hire staff and faculty, and appoint part time faculty.

The Austin MSA Program Financial Model with the following assumptions:

- Tuition is the same as all MSA network programs
- Projected entering class of 12 and growing 4 per year until reaching 24.
- 1.5% tuition increase per year
- Non-salary – adjunct faculty and start up expenses
- Operating expenses – accreditation, physical space, educational equipment and supplies, marketing, meetings, public relations

Major program launch dates are:

- Hire program director in summer/spring 2018
- Start build out of physical space in late 2018
- Move into physical space early 2019
- Hire administrators in early 2019
- Hire faculty in spring 2019

Net financials:

- As is typical from our experience in Houston and D.C. we expect a loss for the first couple of years.
- Estimates show an MSA Network operating margin low of 28% and rising to 42% by year six.
- By year 5 all of the investment will have been made up and, moving forward, will generate a surplus >\$1M for SOM.

Please see letter from Matthew Lester, Senior Associate Dean of Finance for information on the School of Medicine's commitment to investing the resources into the Austin MSA Program.

*Brief Budget outline to follow*

**Network Budget for CWRU Anesthesiologist Assistant Educational Program**  
**Budget (4/16/18)**  
**Start-up and Fiscal Years 2019-2024**

	FY19, Start up 7/1/18 - 6/30/19	FY 2020 2019-2020	FY 2021 2020-2021	FY 2022 2021-2022	FY 2023 2022-2023	FY 2024 2023-2024
<b>STUDENT TUITION</b>						
Summer semester (1st Year)	15,776	16,013	16,253	16,497	16,744	16,995
Fall Semester (1st Year)	24,024	24,384	24,750	25,121	25,498	25,881
Spring Semester (1st Year)	24,024	24,384	24,750	25,121	25,498	25,881
Summer semester (2nd Year)	11,832	12,009	12,190	12,372	12,558	12,746
Fall Semester (2nd Year)	22,022	22,352	22,688	23,028	23,373	23,724
Spring Semester (2nd Year)	22,022	22,352	22,688	23,028	23,373	23,724
Total Tuition	119,700	121,496	123,318	125,168	127,045	128,951
Total First Year	63,824	64,781	65,753	66,739	67,740	68,757
Total Second Year	55,876	56,714	57,565	58,428	59,305	60,194
<b>TUITION RETURN REVENUE</b>						
Austin 1st Years	-	12	16	20	24	24
2nd Years	-	-	12	16	20	24
Houston 1st Years	26	26	26	26	26	26
2nd Years	26	26	26	26	26	26
DC 1st Years	26	26	26	26	26	26
2nd Years	26	26	26	26	26	26
Cleveland 1st Years	25	25	25	25	25	25
2nd Years	25	25	25	25	25	25
Total First Years	77	89	93	97	101	101
Total Second years	77	77	89	93	97	101
Total number of students	154	166	182	190	198	202
<b>Tuition Income</b>						
1st Years	4,914,448	5,765,541	6,115,036	6,473,720	6,841,787	6,944,414
2nd Years	4,302,452	4,366,989	5,123,272	5,433,834	5,752,561	6,079,626
<b>Tuition Revenue</b>						
Minus Attrition @ 5%	9,216,900	10,132,530	11,238,308	11,907,554	12,594,348	13,024,040
Net Tuition Revenue Cleveland Based	460,845	506,626	561,915	595,378	472,288	488,402
Net Tuition Non-Cleveland Based (Austin, DC, Houston)	2,992,500	3,037,388	3,082,948	3,129,193	3,176,130	3,223,772
Tuition Revenue	6,224,400	7,095,142	8,155,360	8,778,361	9,418,217	9,800,268
Tuition Revenue	9,216,900	10,132,530	11,238,308	11,907,554	12,594,348	13,024,040
Net Tuition Revenue	8,756,055	9,625,903	10,676,393	11,312,176	12,122,060	12,535,639
<b>TOTAL PROGRAM REVENUE</b>						
<b>TOTAL PROGRAM EXPENSES</b>						
CWRU CENTRAL UNIVERSITY SKIM AT 3%	262,682	288,777	320,292	339,365	363,662	376,069
MSA NET TUITION (Operating Income)	8,493,373	9,337,126	10,356,101	10,972,811	11,758,398	12,159,570
<b>PROGRAM SURPLUS/DEFICIT</b>	<b>2,626,025</b>	<b>2,657,681</b>	<b>3,582,962</b>	<b>4,112,228</b>	<b>4,811,071</b>	<b>5,056,338</b>
Operating Margin (Goal 50%)	31%	28%	35%	37%	41%	42%
<b>Non-Salary Expenses</b>						
Austin	419,485	612,617	646,557	660,137	676,537	748,467
Cleveland	691,734	709,027	726,753	744,921	763,545	782,633
D.C.	600,663	615,680	631,072	646,849	663,020	679,595
Houston	601,226	616,257	631,663	647,455	663,641	680,232
Total Non-Salary Expenses	2,313,108	2,553,581	2,636,045	2,699,362	2,766,743	2,890,928
<b>Salary Expenses</b>						
Austin	480,588	1,044,943	1,053,991	1,063,157	1,072,443	1,081,851
Cleveland	1,008,459	1,018,544	1,028,729	1,039,016	1,049,406	1,059,901
D.C.	1,072,205	1,082,927	1,093,756	1,104,694	1,115,741	1,126,898
Houston	1,255,671	1,268,228	1,280,910	1,293,719	1,306,656	1,319,723
Total Salary Expenses	3,816,922	4,414,641	4,457,386	4,500,586	4,544,246	4,588,372
<b>TOTAL SALARY &amp; NON-SALARY EXPENSES</b>	<b>6,130,030</b>	<b>6,968,222</b>	<b>7,093,431</b>	<b>7,199,948</b>	<b>7,310,989</b>	<b>7,479,300</b>

**Austin Specific****TUITION RETURN REVENUE**

Austin	1st Years	-	12	16	20	24	24
	2nd Years	-	-	12	16	20	24
Total number of students		-	12	28	36	44	48

Tuition Revenue	-	777,376	1,742,828	2,269,641	2,811,866	3,094,821
Minus attritian 5%		38,869	87,141	113,482	140,593	154,741

<b>Total Tuitin Revenue</b>		738,508	1,655,686	2,156,159	2,671,273	2,940,080
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<b>TOTAL PROGRAM EXPENSES</b>	900,072	1,657,560	1,700,548	1,723,294	1,748,980	1,830,318
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<b>CWRU CENTRAL UNIVERSITY SKIM AT 3%</b>		\$ 22,155	\$ 49,671	\$ 64,685	\$ 80,138	\$ 88,202
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<b>MSA NET TUITION (Operating Income)</b>	\$ -	\$ 738,508	\$ 1,655,686	\$ 2,156,159	\$ 2,671,273	\$ 2,940,080
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<b>PROGRAM SURPLUS/DEFICIT</b>	-\$ 900,072	-\$ 919,053	-\$ 44,862	\$ 432,864	\$ 922,293	\$ 1,109,762
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Non-Salary Expenses						
Austin	419,485	612,617	646,557	660,137	676,537	748,467

Salary Expenses						
Austin	480,588	1,044,943	1,053,991	1,063,157	1,072,443	1,081,851



SCHOOL OF MEDICINE

CASE WESTERN RESERVE  
UNIVERSITY

**Finance and Administration**

10900 Euclid Avenue  
Cleveland, Ohio 44106-4916  
216.368.8676

April 16, 2018

On behalf of the School of Medicine (SOM), I would like to express the SOM's commitment to support the continued growth and expansion of the Anesthesiology Assistant (AA) program at Case Western Reserve University.

The SOM is committed to the future of medicine and the success of the AA, which has built a robust and strong network of three sites: Cleveland, Houston and Washington DC. Through this, the AA program continues to be an exemplar of the commitment to providing valuable degrees to students, creating team-orientated healthcare professionals and training future leaders of the profession.

Therefore, the SOM will commit the necessary financial resources to expand the AA program in Austin, Texas with a budget for operating, faculty recruitments, equipment and capital as outlined in the program proforma. The estimated start-up costs range from \$500-950K and will be funded from existing resources in particular the tuition generated by the existing sites. Based on our experience with launching previous sites, Austin is expected to be net positive financially to CWRU and the AA program with the new cohort of students in AY2018/2019.

Please let me know if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Matthew Lester", written over a horizontal line.

Matthew Lester  
Senior Associate Dean for Finance



## **Appendix - Proposal to Faculty Council Senate MSA Program - Austin**

### **There is a shortage of anesthesia professionals**

There is an expanding need for anesthesia professionals due to an increased surgical and procedural patient population from an increase in both the population age and access to health care.

Economic and patient safety forces continue to move patient care toward a team-based model. Anesthesiologist assistants help fulfill this growing need. The CWRU MSA program has a 100% job placement and our graduates are highly sought after by employers.

In 2010 RAND published *An Analysis of the Labor Markets for Anesthesiology* describing a shortage of anesthesia providers and stating “The overall conclusion is that shortage of ANs and CRNAs is highly likely at the national level, with the survey approach providing hints of such a shortage and the economic analysis providing stronger confirmation. “

In 2014 RAND also published *The Anesthesiologist Workforce in 2013* stating “the number of anesthesiologists in 2026 is projected to be nearly equivalent to the total supply today (2013)”

### **Financial Health of the MSA Program**

The CWRU MSA program is financially sound.

The Austin specific program is projected to be cost neutral in year three and to generate a surplus nearing \$1,000,000 by year 2023.

Network wide the MSA programs generate a surplus and are projected to generate a \$5,000,000 surplus year 2024.

### **The CWRU SOM and Austin, Texas based support**

The SOM supports the MSA program expansion and growth. The expansion will not require ‘new’ investment, as the financial resources are built-in to the SOM’s strategic financial recovery plan developed with and approved by the University. Additionally, clinical site training, simulation center supplies and equipment, financial support, and like kind resources, are provided by our partner institutions and groups in Austin, Texas. (AAG, BSW, TSA)

### **Supporting documentation**

RAND Study 2010 – RANDTR688, 2010

RAND Study 2013 - RANDRR650, 2014

Support documentation from Austin Anesthesia Group (AAG)

Support documentation from Baylor Scott and White (BSW)

Support documentation from Texas Society of Anesthesiologist (TSA)



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# TECHNICAL REPORT

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## An Analysis of the Labor Markets for Anesthesiology

Lindsay Daugherty, Raquel Fonseca,  
Krishna B. Kumar, Pierre-Carl Michaud

Sponsored by Ethicon Endo-Surgery, Inc.

This work was sponsored by Ethicon Endo-Surgery, Inc. The research was conducted in RAND Health, a division of the RAND Corporation.

*The authors of this report are listed in alphabetical order.*

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## Preface

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Anesthesia is an important specialty within medicine and nursing, and professionals practicing this specialty are integral members of health-care teams, especially those involved in surgical procedures. The anesthesiology labor markets are diverse and intricate. Though “workforce studies” have previously examined these markets, debate still persists on the methodologies used to study them and on whether these markets are characterized by shortage or surplus.

Ethicon Endo-Surgery funded this study in order to conduct a comprehensive examination of the labor markets for Anesthesiologists and nurse anesthetists. For the study, we used survey-based, noneconomic, and economic approaches to assess the labor markets for anesthesiology. The study was intended to compare conclusions across different methodologies.

RAND Health, a division within the RAND Corporation, is one of the largest private health research groups in the world. More than 200 projects are currently under way, addressing a wide range of health-care policy issues. The research staff of more than 170 experts includes physicians, economists, psychologists, mathematicians, organizational analysts, political scientists, psychometricians, medical sociologists, policy analysts, and statisticians.

The authors of this report are listed in alphabetical order. Krishna B. Kumar, a senior economist at RAND and a professor at the Frederick S. Pardee RAND Graduate School, is the principal investigator of this project. He may be reached via email at [Krishna\\_Kumar@rand.org](mailto:Krishna_Kumar@rand.org) or by phone at 310-393-0411 x7589.

More information about RAND is available on our Web site: <http://www.rand.org>.



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## Executive Summary

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Anesthesiology is an important specialty within medicine and nursing. Several groups of highly skilled professionals are involved in the provision of anesthesia services in the United States. There are around 40,000 Anesthesiologists (ANs) and anesthesiology residents and 39,000 licensed Certified Registered Nurse Anesthetists (CRNAs) and student CRNAs in the United States, and they provide most anesthesiology services. Labor markets for highly skilled professionals, such as those for anesthesia professionals, can be very “thin,” both because of natural limitations in the aptitude and ability in the population to undergo the rigorous study and training needed for practicing and because of the regulation of the supply of these professionals. These labor markets may not follow the precepts of “competitive” labor markets, in which wages are flexible enough to result in an equilibrium in which supply equals demand. In these markets, shortages or surpluses can occur. Shortages in this critical area of health care can lead to problems in the provision of health services.

In this report, we summarize a study we have conducted on the labor markets for ANs and CRNAs. The research questions that guide our study are as follows:

- What are characteristics of the AN and CRNA labor markets—their demographics, employment arrangements, compensation, and usage of time?
- How do these characteristics differ by geography and facility?
- What are their perceptions of and preferences for anesthesia technologies, and how do these depend on the above characteristics?
- Are these labor markets characterized by shortage or surplus?

## Summary of Methodology

In our surveys, conducted in 2007, we gathered information about ANs and CRNAs on demographics, general employment (including compensation), time usage, preference for technology, and future plans. Questionnaires for these two surveys were developed in collaboration with the respective professional organizations, the American Society of Anesthesiologists (ASA) and the American Association for Nurse Anesthetists (AANA). These societies also generously made available their membership who could be reached electronically and requested to participate in the survey. While the ANs and CRNAs could be relied on to provide individually relevant data, they might be unable to provide data relevant for the entire facility or group with which they were affiliated. In order to gather information at this level—e.g., remuneration level, total number of procedures per day, number of ANs and CRNAs required per day,

waiting times—we surveyed directors of anesthesiology (ANDIRs). Unlike ANs and CRNAs, ANDIRs do not have a professional association on which to rely for contact information. Therefore, we relied on a stratified random sample we purchased from a vendor. Finally, since surgeons are typically the direct users of anesthesia services, we surveyed them to get broad details on AN and CRNA usage.

We use the data from these surveys to first characterize the AN and CRNA labor markets by demography, facilities, earnings, time usage, and preference for technology, focusing in particular on the regional heterogeneity that exists in these characteristics. In doing this, we go beyond summarizing statistics of the survey responses. We conduct statistical analysis to disentangle the source of heterogeneity—for instance, to examine whether the observed geographical variation is driven by the concentration of larger facilities in certain regions.

We then turn our attention to analyzing whether the AN and CRNA labor markets are characterized by shortage or surplus. We use three approaches of increasing completeness and complexity for this purpose:

- The surveys included several workforce-related questions, including the number of open positions, the need for extra professionals to handle the current volume of cases, and whether the provider's practice could handle more cases if additional staff could be hired. We use the responses to these questions to assess the existence and extent of shortage or surplus. While we use statistical techniques to validate responses (for instance, to examine whether ANs and CRNAs perceive similar shortages) and address confounding factors (for instance, to explore whether delays in procedures result from shortages of professionals or inefficiencies in scheduling), this approach can at best be used in conjunction with other methods to assess the state of the labor market. Shortage or surplus is an aggregate phenomenon, and individual responses go only so far in shedding light on it or in capturing the multiple dimensions of labor markets.
- We conduct a demand-based analysis (DBA), the most commonly employed method in workforce analysis, which is sometimes referred to as *noneconomic analysis* (see Lane and Gohmann, 1995). We sum up the supply of full-time equivalent (FTE) workers present in a particular state using national averages of clinical hours worked, which we gathered from our surveys (49 hours per week for ANs and 37 for CRNAs). We then calculate the demand based on the actual volume of services provided, which is then reexpressed in terms of FTEs using time taken per unit of service (e.g., procedure, patient), again based on national averages. While, nationally, these two quantities would have to be equal, within a state, demand could exceed supply, in which case there is a shortage; if supply exceeds demand, then there is a surplus. There is substantial variation in outcomes across states. Furthermore, the unit of variation in regulations regarding residency, education, licensing, and reimbursement mechanisms is the state. We therefore conduct our analysis at the state level, which appears to be the appropriate unit of analysis. If instead of using actual hours worked from our surveys, we use an arbitrarily fixed workweek (for instance, 40 hours per week, as used in other studies), then, even nationally, supply will not equal demand. However, as we discuss in Appendix H, the conclusion of a shortage or surplus is highly sensitive to the assumption used for the fixed workweek.
- Finally, we use an econometric (economic) analysis to estimate statewide supply and demand and, hence, shortage or surplus. Whereas the DBA approach ignores wages and relies only on the quantity of labor to draw inferences on shortage/surplus, the eco-

economic approach relies on estimating the relationship between demand/supply and wages. Economic theory suggests that labor supply increases with wages while labor demand decreases with wages. In this view, a change in wages induces a behavioral response on the part of working professionals and their employers that noneconomic approaches, such as DBA, cannot capture. If wages fully adjust, the market will be in equilibrium—that is, supply will equal demand. However, as we discuss in greater detail in Chapters Two and Four, a disequilibrium model, in which rigidity of wages causes excess demand (shortage) or excess supply (surplus), might be more suitable to analyze the anesthesiology labor markets. We estimate such a model to infer shortage/surplus by state. This approach makes the most complete use of information available on wages and other factors that vary by state and could influence supply or demand (e.g., percentage of population over 65, health maintenance organization [HMO] penetration, capacity of medical facilities). Given this way of distinguishing supply from demand, the model is capable of providing estimates of shortage/surplus not only at the state level but also at the national level.

These three approaches have their own strengths and drawbacks, but each contributes to our understanding of how the labor markets for anesthesia providers function, and, together, they provide a range of estimates, which can be used to gauge the robustness of our conclusions. If we lean toward the economic approach, it is due to its more extensive use of information—for instance, on wages and institutions—than the noneconomic approach.

## Summary of Results

### Survey Findings

The surveys, conducted in 2007, were a rich source of information on various aspects of the CRNA and AN labor markets. We found that there is a great deal of heterogeneity in work arrangements for both types of professionals. Only around 40 percent of CRNAs and ANs are employed by a single group, and 40 percent by a single facility or hospital.<sup>1</sup> The rest work for multiple groups or facilities or are locum tenens.<sup>2</sup> ANs work more hours and make about twice as much as CRNAs. ANs spend a greater percentage of their time on general anesthesia, while CRNAs spend more time than ANs do on monitored anesthesia care (MAC).

There are clear urban/rural differences in the labor markets for anesthesiology. CRNAs and ANs are more likely to be employed by a facility in rural areas and, as we would expect, tend to work in smaller facilities. Rural facilities are more likely to employ CRNAs and less likely to employ ANs. CRNAs and ANs tend to work separately more often in rural areas than in urban ones as well. Both ANs and CRNAs make more money in rural areas, and rural CRNAs also work longer hours. Urban ANs and CRNAs spend more time on general anesthesia and less time on other types of anesthesia.

There are even more-pronounced *regional* differences in the practice of anesthesiology. In the Western United States, facilities in which ANs and CRNAs operate are generally smaller than facilities in other parts of the country, and many of those facilities do not use CRNAs.

<sup>1</sup> *Groups* refers to physician or CRNA group practices and hospitals, and *facilities* includes university and nonuniversity hospitals, academic medical centers, ambulatory surgical centers, and office suites.

<sup>2</sup> A practitioner who temporarily takes the place of another.



ANs in the West are most likely to be employed by groups, while CRNAs in the West are least likely to be employed by groups. In this region, CRNAs and ANs tend to work separately from one another, and interactions between them are less frequent than in other regions. Where CRNAs work in the West, they tend to spend a relatively large percentage of their time in regional/spinal and obstetrical anesthesia compared to their counterparts in the rest of the country. Western CRNAs earn the most, while Western ANs earn the least.

The situation looks quite different in the Northeast. There, ANs and CRNAs tend to work in larger facilities than they do in the West. They are typically used in the same facilities and work more often on the same procedures. CRNAs in the Northeast spend more time in procedures, and a larger fraction of AN and CRNA procedures involve MAC. When we examine specific procedures, including colonoscopies and electrophysiology study (EPS) labs, preference for anesthesia providers over non-anesthesia providers is higher in the Northeast than in other regions. Northeastern CRNAs and ANs tend to work fewer hours and generally earn less than their colleagues in other parts of the country.

We also used our surveys to gather information on the technology preferences of anesthesia providers. Technology could be developed and used in anesthesiology to potentially ease any labor shortages; it is therefore important to understand how anesthesia providers feel about increased use of technology. Interestingly, we find that a majority of ANs and CRNAs across the country tend to prefer the adoption of more technology. CRNAs and ANs are most likely to prefer better technology in general anesthesia. ANs are less likely than CRNAs to want better technology for MAC and more likely than CRNAs to prefer better regional/spinal anesthesia technology. CRNAs and ANs are most likely to prefer better technology in patient monitoring and drug delivery over anesthesia machines and respirators/ventilators.

Again, we find geographical differences. Those in the Midwest are consistently less likely to prefer more technology than are those in the Northeast. However, the largest geographical differences are not in whether more technology was preferred but in which type of technology is preferred. Urban CRNAs are more likely to want better technology for anesthesia machines and patient monitoring, and urban ANs are more likely to want better technology for patient monitoring. Western CRNAs and ANs are also less likely to want more monitored anesthesia technology.

### **Analysis of Labor-Market Shortage/Surplus**

As mentioned earlier, we use three methods to assess shortage/surplus in the labor market for anesthesia providers. Our survey-based approach, in which we directly questioned ANs, CRNAs, ANDIRs, and surgeons on various dimensions of shortage or surplus, yields a few interesting results. We find that a large number of ANs (47.4 percent) report that their “employer needs more ANs to meet current demand,” and an even larger number of CRNAs report that their “employer needs more CRNAs to meet current demand” (79.1 percent). ANDIRs are also more likely than ANs to report needing more CRNAs to meet demand (29.1 percent versus 22.2 percent).

There is a statistically significant relationship between a CRNA or an AN reporting that there are “any open positions” in their primary employment arrangement and that their “employer needs more CRNAs/ANs to meet current demand.” We find that CRNAs and ANs in the Northeast are significantly more likely to report open positions, particularly relative to the West, and CRNAs and ANs in urban areas are also significantly more likely to report open positions than are those in rural areas. The greatest evidence for a shortage of anesthesia pro-

viders is in the Northeast and in urban areas. Northeastern and urban CRNAs and ANs are most likely to report that their employer could handle more cases if they had more CRNAs/ANs. Interestingly, we find that urban CRNAs have not increased hours worked, despite indications of shortage.

This survey evidence is more suggestive than conclusive, which is the reason we conduct both a DBA and an economic analysis to further investigate shortages in these labor markets.

As mentioned already, in DBA, when we use the average clinical workweek gathered from our surveys to define FTE (49 hours for ANs and 37 for CRNAs) and our method for identifying supply and demand, we find that the national labor markets are (roughly) in equilibrium. However, there is wide variation in state-level estimates. We find that 25 states for ANs, and 19 for CRNAs, are in shortage. For ANs, the estimates range from a 36-percent surplus in Washington, D.C., to a shortage of 82 percent in Alabama. In absolute numbers, Florida, Alabama, and North Carolina exhibit the most shortage, and California, New York, and Massachusetts the most surplus. For CRNAs, the estimates range from a 38-percent surplus in South Dakota to a shortage of nearly the same percentage in Iowa. In terms of absolute numbers, Pennsylvania, Michigan, and Florida exhibit the most shortage, and Minnesota, North Carolina, and California the most surplus.

According to the economic approach, the current supply of ANs (FTE) would have to increase by 3,800 to meet U.S. demand, and the current supply of CRNAs (FTE) would have to increase by 1,282 to meet U.S. demand. We find that more than 54 percent of the states are experiencing a shortage of ANs, and more than 60 percent a shortage of CRNAs. Again, there are sizable variations across states. Delaware is seen to have a surplus of ANs of more than 26 percent, while Idaho has a shortage of more than 46 percent. Nevada has a surplus of CRNAs exceeding 53 percent, while New York has a shortage of nearly 28 percent.

The DBA and economic analysis agree in classifying states as experiencing shortage or surplus in only 44 percent of the cases for ANs, and in 52 percent of the states for CRNAs. States with high wages and income are more likely to be classified as facing shortage in the economic approach than in the noneconomic approach, presumably because the latter does not use any information other than the amount of labor. The survey-based approach of estimating shortage correlates well with the economic approach. Given its more complete use of available information, the economic approach might be more relevant for evaluating these labor markets.

The overall conclusion is that shortage of ANs and CRNAs is highly likely at the national level, with the survey approach providing hints of such a shortage and the economic analysis providing stronger confirmation.

Finally, to shed light on how the anesthesiology labor markets might evolve in the future, we use a simple linear projection of supply and demand to examine the evolution of both labor markets until 2020, starting at equilibrium. Using the clinical week averages from our surveys, average entry and exit rates from the recent past for both groups, and a growth rate in the demand for surgeries of around 1.6 percent between 1985 and 2004, we find a projected shortage of ANs by 2020, and an excess supply of CRNAs. However, there are scenarios in the entire range of parameter values we examine in which these situations reverse. These projections simply extrapolate the past and do not account for any changes in the future that might cause future trends to be different, such as changes in the rate of entry or exit from the profession, change in work practices, or an unexpected change in demand for anesthesia services.



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## Abbreviations

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AA	anesthesiology assistant
AANA	American Association for Nurse Anesthetists
AN	Anesthesiologist
ANDIR	director of anesthesiology
ARF	Area Resource File
ASA	American Society of Anesthesiologists
CRNA	Certified Registered Nurse Anesthetist
DBA	demand-based analysis
EPS	electrophysiology study
FTE	full-time equivalent
HMO	health maintenance organization
MAC	monitored anesthesia care
MMIC	Multimode Interviewing Capability
NRMP	National Resident Matching Program
TEE	transesophageal echocardiography



## Introduction

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Anesthesiology is an important specialty within medicine and nursing. Several groups of highly skilled professionals are involved in the provision of anesthesia services in the United States. Anesthesiologists (ANs) are physicians who, after four years of medical-school education, have received specialized residency training in anesthesiology. Certified Registered Nurse Anesthetists (CRNAs) are nurses who have received specialized training and certification in anesthesiology. The practice of anesthesiology is also served by anesthesiology residents who are undergoing training to become full-fledged ANs, student CRNAs, and anesthesiology assistants (AAs). Anesthesiology services are typically provided as part of other medical procedures. In other words, they are *intermediate* rather than *final* services. As such, surgeons and other medical practitioners, such as gastroenterologists, are the proximate users of anesthesiology services. Facilities where procedures are conducted, such as hospitals and ambulatory-care centers, round off the anesthesiology “system.”

In this report, we summarize a study we have conducted on the labor markets for ANs and CRNAs. There are around 40,000 ANs and anesthesiology residents and 39,000 licensed CRNAs and student CRNAs in the United States, and they provide most anesthesiology services. Labor markets for highly skilled professionals, such as those for anesthesia professionals, can be very “thin,” both because of natural limitations in the aptitude and ability in the population to undergo the rigorous study and training needed for practicing and because of the regulation of the supply of these professionals. These labor markets may not follow the precepts of “competitive” labor markets, in which wages are flexible enough to result in an equilibrium in which supply equals demand. In these markets, shortages or surpluses can occur. Shortages in this critical area of health care can lead to problems in the provision of health services.

Previous studies have identified potential shortages of both ANs and CRNAs. Eckhout and Schubert (2001) found that both physician and nonphysician anesthesia personnel are in short supply. Among CRNAs, there are concerns about the aging of the profession, which has a current mean age of 48 years, thus providing a workforce with many individuals close to retirement age.<sup>1</sup> We conducted a rigorous study of these labor markets to measure the potential size of any existing shortages or surpluses. The information in this report can be used by professional associations and the health-care industry to facilitate future planning.

Moreover, previous studies of the anesthesiology workforce have proved controversial.<sup>2</sup> It is therefore useful to employ different methodologies, as we do, to assess shortage or surplus,

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<sup>1</sup> See, for instance, MCCG (undated).

<sup>2</sup> For instance, Schubert, Eckhout, Cooperider, and Kuhel (2001) question the assumptions made by the American Society of Anesthesiologists (ASA) (1994) to arrive at the conclusion that the labor market for anesthesiology was at surplus.



and evaluate the reasons for convergence or divergence across these methodologies. Given that ANs, CRNAs, surgeons, and facilities are joint inputs used to provide anesthesia services, studying them together would allow us to understand how the interactions among the characteristics of these various inputs influence the labor markets. This will not be possible if these markets are studied separately.

The research questions that guide our study are as follows:

- What are characteristics of the AN and CRNA labor markets—their demographics, employment arrangements, compensation, and usage of time?
- How do these characteristics differ by geography and facility?
- What are their perceptions of and preferences for anesthesia technologies, and how do these depend on the above characteristics?
- Are these labor markets characterized by shortage or surplus?

## The Practice of Anesthesiology

ANs are physicians who are trained extensively in the delivery of anesthesia, and a large percentage of them are certified by the American Board of Anesthesiology or the American Osteopathic Board of Anesthesiology as capable of managing complicated medical and surgical situations. After completing a medical degree, prospective ANs must complete four years of an intensive residency before qualifying for board certification. After initial certification, ANs are required to be recertified every ten years. The primary professional association for ANs is the ASA.

CRNAs and AAs are licensed professionals with a master's degree and the training necessary to participate in the delivery of anesthesia. CRNAs are far more prevalent in the United States than AAs, with more than 39,000 licensed and student CRNAs (compared to fewer than 1,000 AAs) (AANA, undated). CRNAs have been delivering anesthesia for more than 125 years, and yet the profession has expanded significantly only since the late 1970s (Bankert, 1989). CRNAs must be recertified every two years by the National Board on Certification and Recertification of Nurse Anesthetists. The professional association representing CRNAs is the American Association for Nurse Anesthetists (AANA). More than 90 percent of the nation's CRNAs are members of AANA. Although relatively similar in training and scope of practice, AAs differ from CRNAs in several ways. They are licensed by a separate board, the National Commission for Certification of Anesthesiologist Assistants. The training programs are also slightly different, and AAs are trained only to work under the direction of Anesthesiologists. Yet, CRNAs and AAs are both listed in the Code of Federal Regulations (42 C.F.R. 482.52) as being eligible to administer anesthesia.

There is significant variation across states in how CRNAs are used in the provision of anesthesia. In 2001, the U.S. Department of Health and Human Services Centers for Medicare and Medicaid Services decided that states could opt out of the requirement that CRNAs be supervised by a physician (CMS, 2001). Fifteen states have opted out of the physician-supervision

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Miller and Lanier (2001, p. 969) note that the response to that study was dramatic and widespread: "Applications to US anesthesiology training programs declined dramatically, and many trainees already in anesthesiology training programs changed specialties."

regulation—from earliest to latest, Iowa, Nebraska, Idaho, Minnesota, New Hampshire, New Mexico, Kansas, North Dakota, Washington, Alaska, Oregon, South Dakota, Wisconsin, Montana, and California. There is a significant amount of debate over the appropriate scope of practice for CRNAs (ASA, 2004; AANA, 2007). The arguments over the mix of professionals focus on both cost and safety considerations (Abenstein et al., 2004; Cromwell, 1999; Pearson, 2002). The debate about the division of labor between CRNAs and ANs appears to be driven by the notion that these labor sources act as direct substitutes for one another (Cromwell, 1999). Yet, to the best of our knowledge, there are no significant studies that examine whether CRNAs and ANs are primarily substitutes (either provider can provide anesthesia care) or complements (both providers are needed to provide anesthesia care).<sup>3</sup>

Wide variation in who actually provides anesthesia is seen throughout the United States (Cromwell and Snyder, 2000). CRNAs can work directly with ANs, or ANs can supervise CRNAs who are working in several different rooms. Often, physician supervision can mean simply having an AN “on call” rather than directly supervising CRNAs. In addition, CRNAs and ANs can both provide anesthesia independently. CRNAs have become a particularly important labor source in rural areas, where they often provide anesthesia independently. However, in some other areas, such as California, CRNAs are rarely used (Seibert et al., 2004). Finally, some forms of anesthesia—particularly conscious (moderate) anesthesia—can be provided without any anesthesia provider at all. ASA has published a document to describe the appropriate practices for anesthesia provision by non-anesthesia providers (ASA, 2002).

While this report focuses on the labor markets for CRNAs and ANs, it is important to keep in mind that surgeons, nurses, and other medical professionals also play important roles in providing anesthesia for many procedures. The data collected through our surveys allow us to examine the variation in provider mix and time usage and to get a partial glimpse at the role these other providers play.

## Current Literature

### The State of Anesthesiology Labor Markets

The discussion over the appropriate provider mix has been overshadowed by an even larger debate on whether there is a shortage of anesthesia providers in the United States. The conclusions from one study (ASA, 1994) led to fears of an oversupply of ANs and actions across the country to reduce the number of new ANs being trained and certified. Since then, a series of reports has been produced that have questioned some of the assumptions made in the 1994 study (about, e.g., utilization of operating rooms, the growth of surgical procedures) and argue that cuts made in AN training have resulted in a shortage of ANs that will become even more acute in the near future (Eckhout and Schubert, 2001; Schubert, Eckhout, Cooperider, and Kuhel, 2001; Schubert, Eckhout, and Tremper, 2003). A simultaneous discussion has been taking place regarding a shortage of CRNAs. All of these reports argue that CRNAs, like most nurses, are facing a shortage as well (Cromwell et al., 1991; Mastropietro et al., 2001; Merwin, Stern, and Jordan, 2006).

The literature on medical labor shortage provides a number of reasons that the AN and CRNA labor markets may be facing shortages. A common explanation for nursing shortages

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<sup>3</sup> It was beyond the scope of this study to examine the extent to which CRNAs and ANs are substitutes versus complements.

is that hospitals have monopsony power (bargaining power in hiring situations). Because there are relatively few highly differentiated facilities available as employers in an area, these facilities may have significant market power to set wages below the level that would be seen in a more competitive market (Robinson, 1988; Sullivan, 1989). However, more-recent studies have challenged this explanation for nursing shortages (Hirsch and Schumacher, 2005; Staiger, Spetz, and Phibbs, 1999). Another argument made is that significant demographic changes and rapid economic growth over a short period of time will not allow time for supply to catch up with the increasing demand (Cooper et al., 2002). Yet another explanation is that there has been insufficient investment in training facilities for these providers of anesthesia (Tremper, Shanks, and Morris, 2006).

### **Methodologies Used in Labor-Market Assessment**

There are a variety of methods used in the literature to determine whether there is a shortage of medical providers. Demand-based analysis (DBA) is perhaps the most widely used approach (and, for this reason, it is one of the methods we also employ in this study). This method is often termed *noneconomic*, since it does not typically take wages into account. It is based on quantities alone. Supply is calculated from hypothetical full-time equivalent (FTE) medical providers from primary surveys or secondary data sources. Demand is calculated from indicators or proxies of patient usage of medical services—that is, from a different data source. For instance, one set of noneconomic analyses uses ratios of medical providers to a number of proxies for demand, such as population over 65 and the number of surgeries (HHS, 2006; Lane and Gohmann, 1995; Fallacaro, 1997). The idea is that, if the ratio is low, falls below some predetermined level, or is projected to decrease, shortage is more likely. Another set of noneconomic analyses attempts to proxy for demand using such measures as inpatient days and chart times and compares this to labor hours supplied by medical providers (Lee, Jackson, and Relles, 1998; Schmitz, Lantin, and White, 1999; HHS, 2006). The U.S. Department of Health and Human Services focuses primarily on these noneconomic methods to count and compare demand and supply in recent documents it has published on workforce-assessment methodologies (HHS, 2006, 2007). As we describe in Chapter Two, our analysis uses data from the same primary surveys for supply and demand calculations, under different assumptions for “identifying” (that is, distinguishing) each.

A less commonly used method of identifying shortage is economic models (Fair and Jaffee, 1972). Lane and Gohmann (1995) argue that it is unwise and unrealistic to examine these labor markets without considering wages. When there is an upward pressure on demand and, therefore, on wages, workers may choose, in response, to increase their hours worked above what is normally considered as full time. Hence, wages paid, along with hours worked, tell us a great deal about the tightness of labor markets. DBA uses only quantities (hours supplied and demanded) and not prices (wages); economic analysis uses both.

In fact, Lane and Gohmann (1995) show that economic and noneconomic analyses generate results that agree only 60 percent of the time. They argue that economic models are preferable because they offer policymakers a wider range of solutions rather than simply increasing supply, presumably because they seek to use all the information available on prices (wages) and quantities. Economic models of labor markets can therefore be a good complement to other approaches in order to assess the state of the CRNA and AN labor markets and those in the health-care segment in general.

The contributions of our study to the existing literature are as follows:

- We use primary data collected through multiple surveys of the various professional groups involved in providing anesthesia care. These surveys help us to provide a rich, descriptive picture of the labor market for anesthesiology, including practice patterns, wages, and preference for technology. In addition, these surveys, which recognize that the different groups jointly provide anesthesia services, allow us to ask pointed questions about working patterns that aid in the comprehensive assessment of the anesthesiology labor markets.
- While workforce studies have been done separately for the AN and CRNA labor markets, to the best of our knowledge, no study has jointly examined these markets. For instance, our econometric analysis treats the AN and CRNA markets jointly and allows for wages in one market to influence demand in the other. Without such a combined analysis, it would be difficult to exploit any complementarities that exist in anesthesia-care provision to provide a more accurate assessment of the two labor markets.
- By employing three different methodologies in the assessment of the AN and CRNA labor markets, we are able to provide a multifaceted perspective on the condition of these markets. When the approaches differ, we are able to shed light on the reasons for the differences, thereby contributing to the debate on the efficacy of the different methods. Our contribution is therefore as much on the methodological front as it is on the substantive front.
- Unlike most existing studies, and as is explained in detail in Chapter Two, our study exploits variation across states on such dimensions as education and licensing and, therefore, estimates shortage or surplus by state rather than a national figure alone. Given the high degree of heterogeneity we observe across states in labor-market characteristics, the statewide estimation is a significant addition to existing studies.

The rest of this report proceeds as follows. In Chapter Two, we describe our research methodology in greater detail. In Chapter Three, we summarize the findings from our surveys, focusing on the geographical and urban/rural variation that exists in the AN and CRNA labor markets. Chapter Four is devoted to a discussion of our analysis on the shortage and surplus in these markets. In Chapter Five, we present a few simple scenarios to study how supply and demand in the two labor markets might evolve up to the year 2020. In Chapter Six, we conclude with a synthesis of our findings and a list of possibilities for future research.



## Research Methodology

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This chapter discusses the surveys that were used to collect data for the studies and the methods that were used in the workforce estimates. In consideration of the broad scope of our research questions and the level of data it takes to answer these questions, we concluded that the public data were not sufficient. We therefore created surveys for four different groups that are associated with the labor market for anesthesia: ANs, CRNAs, directors of anesthesiology (ANDIRs), and surgeons.

### Survey Design

#### Anesthesiologist Survey

The AN survey gathers information on demographics, general employment information (including compensation), time usage, preference for technology, and future plans.<sup>1</sup> It was developed collaboratively with ASA, which also endorsed the survey and shared member information with us so that we could email the link to the online survey to its members. The Web-based survey was hosted and administered by Multimode Interviewing Capability (MMIC), a RAND-based unit with expertise in the design and administration of Internet surveys.

We had access to ASA's entire membership file. This consisted of 23,667 records. Of those, we selected all ANs who had provided their email addresses to ASA. This resulted in a target sample of 19,941 ANs. Each accessible member was sent an initial mailing, followed by two reminders if there was no record of response. We had 4,554 responses, which amounted to a response rate of 22.8 percent. To construct population weights, we had to deal with three different groups of ANs. First, not all ANs are members of ASA. Hence, they could not be surveyed. We relied on the Area Resource File (ARF) to adjust counts of ANs by states. The ARF provides a count of all ANs in each state for 2006. The total AN population was estimated to be 39,698.<sup>2</sup> The second group did not have email addresses available in the ASA file.<sup>3</sup> We

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<sup>1</sup> The questionnaire used for the AN survey can be found in Appendix A.

<sup>2</sup> As long as excluded or included groups do not vary by the strata (mentioned below) used in the calculation of probability weights, what matters for the analysis are percentages rather than actual counts of ANs and CRNAs. Results are likewise delivered in percentages and can be applied to a given total number of ANs or CRNAs. As we will see, the only absolute level that matters for the analysis is the definition of FTE.

<sup>3</sup> A probit regression of the likelihood of not having an email on gender, age, and region—the information that we have available—showed that, while those without emails are slightly more likely to be female and older, there were not significant regional differences.

grouped them with other nonrespondents—the third group—and created probability weights based on state, gender, and age.<sup>4</sup>

### **Certified Registered Nurse Anesthetist Survey**

The CRNA survey also gathers information on demographics, general employment information (including compensation), time usage, preference for technology, and future plans. The survey consists of nearly 50 questions. To facilitate comparisons between the two groups, we designed the CRNA survey to be as similar to the AN survey as possible. The survey was developed collaboratively with AANA, which also endorsed the survey and emailed the link to the online survey to its members. This Web-based survey was also hosted and administered by MMIC.<sup>5</sup>

The AANA membership file consisted of 27,889 records. We had email access to 22,791 of its members. Each accessible member was sent an initial mailing, followed by two reminders if there was no record of response. We had 5,441 responses, which amounted to a response rate of close to 24 percent. To account for those CRNAs who opted out of receiving email, we had to weight our responses appropriately.<sup>6</sup> An additional problem for part of the analysis was that no ZIP Code information was available for approximately 18 percent of respondents; it was not possible to identify the state of residence for these respondents.<sup>7</sup> For most analyses, we simply kept those responses. For any analysis involving classification by state, we did not include them. Weights of remaining respondents were adjusted accordingly, and the aggregate counts are unaffected. The total size of the CRNA population is not known from the ARF. However, AANA estimates the population (including nonmembers) to be 33,914. We scaled weights so that they aggregated up to population size.<sup>8</sup>

### **Director of Anesthesiology Survey**

ANDIRs are in charge of the allocation of ANs and CRNAs and hence have a good overall view of labor-market conditions, as well as other general information, such as remuneration level, total number of procedures per day, number of ANs, CRNA required per day, and waiting times. We therefore included a survey of ANDIRs in our study. Information from this survey is used to supplement the analysis; we do not rely on it exclusively to draw our conclusions. The survey consists of more than 30 questions, some with subquestions.<sup>9</sup>

<sup>4</sup> To construct probability weights, we first calculate the predicted probability, based on a regression of those who responded, as a function of state, gender, and age. Denote by  $p$  the predicted probability based on this probit regression. Then the probability weight is  $w = 1/p$ . We adjusted  $w$  so that the sum aggregates to the total population as estimated from the ARF.

<sup>5</sup> This method of surveying runs the risk of selection bias if members and nonmembers systematically differ. The questionnaire used for the CRNA survey can be found in Appendix B. The questions used in the AN and CRNA surveys were very similar. We had to take into consideration input from ASA in developing the AN survey and AANA for the CRNA survey, which is the source of the few differences.

<sup>6</sup> We constructed probability weights in the same way as for the AN survey, using gender, state, and age and calculating the weight as the inverse of predicted probability.

<sup>7</sup> A probit regression of the likelihood of missing a ZIP Code on explanatory variables, such as gender, age, and experience, indicated that males, older CRNAs, and CRNAs with more experience were less likely to be missing ZIP Codes. CRNAs with missing ZIP Codes do not seem to work more or fewer hours or work for different employers.

<sup>8</sup> The assumption made here is that missingness of ZIP Codes is not systematically related to states.

<sup>9</sup> The questionnaire used for the ANDIR survey can be found in Appendix C.



ANDIRs are not part of a separate, large professional association, so we were not able to rely on a membership list for a sampling frame. We instead acquired a list of nearly 4,000 ANDIRs across the country from SK&A Information Services, a provider of contact lists that is located in Southern California. In addition to names and addresses, the list also provided the number of beds in each establishment. While this survey was Web based, like the AN and CRNA surveys, the directors in the sample had to be contacted by regular mail, and follow-up had to be done by phone. Due to cost considerations, we chose to target a random stratified sample of 1,313 directors from a population of 3,676.

We drew a stratified sample based on different characteristics of potential respondents. In particular, we stratified based on

1. census region: Northeast, Midwest, South, and West
2. rural versus urban county, as classified by the U.S. Department of Agriculture
3. facility size (measured by the number of beds in the establishment: small hospitals have 0–125 beds, medium hospitals 126–250 beds, and large hospitals 250 or more beds).

We sampled from each stratum in order to ensure adequate representation of different types of establishments in different geographical settings for our statistical analysis. Hence, a higher fraction of records in those cells with lower population representation was selected as part of the sample, and vice versa for those cells with higher population representation. Table 2.1 shows the sample selection by stratum.

We had 679 responses, which amounts to a response rate of 51.7 percent. We use weights throughout to calculate population estimates.<sup>10</sup> These weights correct for both sampling and differential nonresponse across the dimensions used for stratification of the sample.

### Survey of Surgeons

We primarily rely on these three surveys (ANs, CRNAs, and ANDIRs) for our analysis. But we also surveyed surgeons in selected specialties. Our questions were added to a survey that

**Table 2.1**  
**Directors of Anesthesiology: Stratified Sample Design**

Beds	Northeast		Midwest		South		West	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Frame (3,676)								
<125	78	91	383	146	311	204	169	130
125–250	32	146	64	131	117	254	16	187
>250	10	246	19	286	28	416	1	211
Sample (1,313)								
<125	53	57	68	61	84	65	62	58
125–250	32	69	58	64	64	52	16	67
>250	10	105	19	109	28	96	1	111

<sup>10</sup> The weights were computed for each cell using this formula: weight = (no. in population)/(no. in sample).



was conducted for another RAND project. We received responses from 816 surgeons and other specialists in general surgery, orthopedic surgery, plastic surgery, urology, obstetrics/gynecology, cardiology, and gastroenterology. Appendix D presents the portion of the survey that is relevant to this project. Since the sample selection was not done randomly across all surgical specialties (enough surgeons were surveyed in these specialties to get roughly equal numbers of responses in each specialty), we refer to findings from this survey where appropriate in our text but do not use them for formal analysis.

## Labor-Market Assessment Methodologies

Our first step is to provide a thorough description of the AN and CRNA labor markets. We examine the demographics of ANs and CRNAs, the makeup of employers and facilities where they are employed, time use, earnings, and technology preference. We primarily rely on results from the AN and CRNA surveys and use the results from the ANDIR and surgeons surveys to support or weaken these findings.

We use probit/regression analysis to identify variation in the various elements of the labor market. All of these analyses control for the census region in which the respondent resides and whether the respondent (or facility) is located in an urban or rural county. Many of our analyses also control for facility size (number of beds for ANDIR; number of surgeons in the primary facility for AN and CRNA surveys), and some control for additional variables, such as employer type. We also attempt to link some of our labor-market features through probit and regression analysis to examine whether the regional patterns we find are representative of larger institutional differences in these regions. Both our probit and regression analyses and the estimates presented in our tables are weighted with our sample weights (described earlier) to ensure that the estimates are representative of the entire population (as we have defined it). We focus on regional and rural/urban differences and identify those differences that are significant ( $p < 0.05$ ).

We then use three methods to assess the labor-market conditions. Throughout this report, we use *shortage* and *excess demand* interchangeably, as we do *surplus* and *excess supply*. We present the technical details in Appendixes E and F and results based on the various methods in Chapter Four.

### Survey-Based Analysis

We included questions in the surveys to directly gauge potential shortages. In the AN and CRNA surveys, we include questions on job openings, employer need for more anesthesia professionals to meet current demand as well as to handle more cases, the recent history of changes to hours worked, the willingness to increase hours worked, and the extra compensation that would be needed if so willing. In the ANDIR survey, we included questions on the time it takes to fill open AN and CRNA positions, an indication of whether procedures had to be postponed due to a lack of anesthesia professionals, and whether the facilities needed more ANs and CRNAs to meet current demand. We examine the heterogeneity in the responses to these questions by region and facility size and study how they correlate to other responses.

Despite our use of statistical techniques to validate responses and address confounding factors, the survey-based approach can provide, at best, corroborating evidence to other methods to assess the state of the labor market. Shortage or surplus is an aggregate phenomenon,

and individual responses go only so far in capturing the multiple dimensions of labor markets. To more completely explore the question of whether the labor markets for ANs and CRNAs are experiencing shortage, we must employ techniques that identify and aggregate supply and demand in these markets.

### Demand-Based Analysis

We next conduct a DBA, the procedure most commonly followed in workforce analyses of physicians and nurses. The basic idea behind DBA is to sum up FTE workers in a particular region and to calculate the demand for services in terms of FTE providers, using information on average provider time required per unit of service. When demand equals supply, there is equilibrium; if demand exceeds supply, there is a shortage; if demand is less than supply, there is a surplus.

A key challenge in an analysis of labor markets is distinguishing supply from demand—the so-called *identification problem*. As mentioned earlier, most DBA studies have solved this problem by calculating supply and demand from different sources. For instance, Lee, Jackson, and Relles (1998) used membership files from the American Academy of Orthopaedic Surgeons and the U.S. Department of Health and Human Services' Health Resources and Services Administration's ARF to calculate supply. They estimated demand from levels of utilization of orthopedic services from several national data sets generated by the National Center for Health Statistics and, to convert utilization data into work times, conducted a survey of practicing orthopedic surgeons.

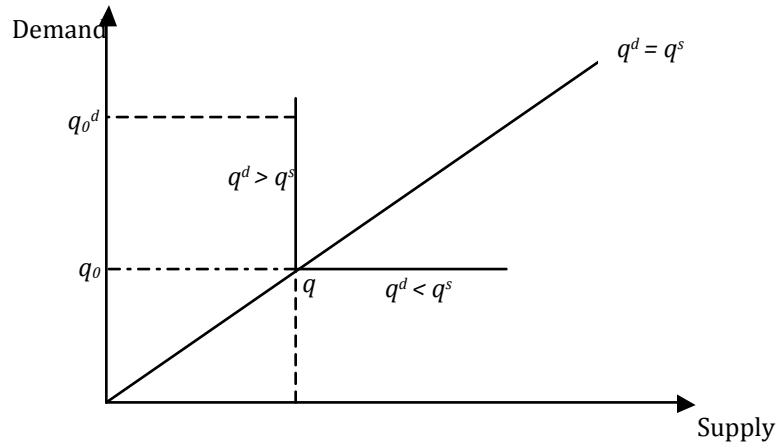
Our analysis uses data from the same primary surveys for supply and demand calculations. We sum up the supply of full-time equivalent (FTE) workers present in a particular state using national averages of clinical hours worked gathered from our surveys (49 hours per week for ANs and 37 for CRNAs).<sup>11</sup> We then calculate the demand using the actual volume of services provided and time taken per unit of service (e.g., procedures, patient)—again based on national averages—which is then reexpressed in terms of FTE. While, nationally, supply and demand would have to be equal, within a state, they need not.<sup>12</sup>

That leaves us with the task of identifying supply and demand within a state. It is important to realize that the quantity of labor,  $q$ , that we observe could be *either* demand or supply. This is represented graphically in Figure 2.1, where  $q^d$  denotes demand and  $q^s$  denotes supply. The 45-degree line denotes points at which supply equals demand (that is, the market is in equilibrium). The horizontal lines denote points at which supply exceeds demand (surplus), and the vertical line denotes points at which demand exceeds supply (shortage). For instance, where  $q_0^d$  intersects the vertical line in Figure 2.1, there is a shortage of  $q_0^d - q_0$ .

<sup>11</sup> We retain states that have more than five survey responses. For ANs, we retain 49 states (we drop Alaska and Wyoming and include the District of Columbia as a state), and, for CRNAs, we retain 47 states (we drop Alaska, Montana, Vermont, and Wyoming and include the District of Columbia as a state).

<sup>12</sup> Our method, therefore, identifies relative shortages and surpluses across states. We also assess the labor markets with a predefined figure for FTE as done in previous workforce studies, instead of using the hours from our surveys. For instance, Engen et al. (2005) use a 40-hour FTE definition in their study of the Canadian anesthesia workforce; Reinier et al. (2005) use a 40-hour FTE in their study of the U.S. nursing workforce; and Pisetsky et al. (1998) use a 40-hour FTE for physician assistants and advanced practice nurses in assessing the value of work performed by anesthesiology residents. Any fixed definition for the workweek, such as 40 hours, would yield shortage/supply at the national level, but, as shown in Appendix H, the results are highly sensitive to hours assumed for the clinical workweek.

**Figure 2.1**  
**Excess Demand and Supply in Demand-Based Analysis**



Since we calculate shortage or surplus across states, by considering some of the components of either supply or demand as invariant across states, we can exploit the heterogeneity in the data observed (for instance, average hours worked per week) for identification of demand and supply at the state level. Implicit in this procedure is the strong assumption that preferences, technology, compensation, and productivity are identical across states. Appendix E provides the technical details of the calculations for DBA.

We proceed stepwise to the final shortage/surplus values that we seek. First, if the desired number of working hours is considered invariant across the country (counterfactual supply), then differences in hours of work across states can be attributed to differences in demand. States where providers work more than the desired level are in excess demand and, where they work less, in excess supply.

Second, if instead the amount of time to do a particular procedure is considered invariant across states (counterfactual demand), then it can be shown that states where procedures are done faster have a larger shortage. We can use such chart times (gathered, in our case, from our surveys) to calculate counterfactual demand and compare with the actually observed supply. The intuition is that, if there is a shortage of supply and the number of procedures demanded is the same (a situation of excess demand), then procedures *have* to be done faster. This, of course, makes the rather strong assumptions mentioned earlier, that differences in procedure times are entirely attributable to a shortage or a surplus and that such factors as differences in productivity do not play any role.

These two procedures attribute all variation across states to differences in either hours worked or time per procedure. If we instead combine both considerations (that both desired working time and per-procedure time are given), we can show that the variation in the *number* of procedures can be exploited to distinguish demand from supply. States that perform more procedures than average have a larger shortage. This third step can be thought of as capturing the total variation observed, which is then “decomposed” into the two components described in the earlier two steps. While we focus on the outcomes of the third step in our discussion, it

is useful to present the outcomes of the first two steps as well, to examine where most of the variation lies—hours worked or time per procedure.

For calculations involving demand, we disaggregate by type of procedure. Respondents were asked the percentage of their clinical time spent doing general anesthesia, monitored anesthesia care (MAC), obstetrical anesthesia, and regional and spinal anesthesia. We use their report on the total number of clinical hours to convert these percentages to hours. We also obtain the number of procedures done per week. We appropriately weight these to aggregate them to the state level. To minimize the effect of outliers and measurement errors, we compute the time per procedure using the aggregated responses at the state level rather than individual responses.

Identifying demand and supply from the same data source, instead of different data sources, aids consistency. Questions on hours worked and time spent per procedure when answered by an individual in the same survey are likely to be more accurate than when deduced from different data sources and surveys. However, the problem of identifying supply from demand is trickier when the same data source is used and involves the use of counterfactuals as described earlier. Using different data sources for DBA permits calculation of national shortage or surplus. While our approach yields equality of supply and demand at the national level, it identifies shortage/supply at the state level. Previous studies have not conducted state-level assessments of anesthesiology labor markets. The equality at the national level we obtain can also give a point of reference against which future workforce estimates can be compared.

Irrespective of whether the same data set is used or how supply and demand are identified, the key limitation of DBA is that it does not use any price (wage) data—an important part of the supply/demand calculus. For example, higher compensation in a particular state could be responsible for a higher quantity of labor supplied there. Characterizing this phenomenon as a shortage, as would be done with one of the assumptions mentioned earlier, is not accurate. What the DBA assumes is that the supply curve is totally *inelastic*. That is, labor supply is unresponsive to wages. DBA also does not use information on differences in regulation and institutions, relying purely on observed quantities of labor. While wage and other considerations are implicit in the observed quantities, DBA does not consider a structural relationship between these quantities and wages. We next turn to describing the econometric (economic) approach, which does use wage data and institutional differences across states and is therefore our preferred method of assessing the labor markets for anesthesiology.

### **Econometric Analysis**

The econometric approach involves estimating a demand and supply relationship under different assumptions about what may be causing excess demand or supply. Such models take account of behavioral responses that cannot be modeled with the DBA discussed in the previous section.

There is substantial variation in outcomes across states. Furthermore, the unit of variation in regulations regarding residency, education, licensing, and reimbursement mechanisms is the state. We therefore conduct our analysis at the state level, which appears to be the appropriate market. It is not possible to disaggregate at the county level because too few respondents per

county are present. We keep information on states with more than five survey responses.<sup>13</sup> Our final sample consists of 48 states with this information.<sup>14</sup>

We use sampling weights to aggregate responses up to the state level. As with the DBA discussed in the previous section, we use national averages of clinical hours worked, gathered from our surveys (49 hours per week for ANs and 37 for CRNAs) to convert labor quantities to FTEs. In addition to the quantity of labor, from our surveys, we use data on hourly wages (annual earnings divided by annual hours of work), average number of procedures per week as a measure of output, and, as a measure of preference for technology, the percentage of respondents in a state who report that their primary employer is too slow at adopting technology.

We also use a number of state-level variables from sources other than our surveys in order to characterize the states and associate them with supply or demand. First, we use the ARF to get information on the total population and the population 65 or older. We also use a measure of population density and median income. As a proxy for competition, we use the health maintenance organization (HMO) penetration rate for 2004. As a measure of capacity, we also use the total number of hospital beds available in the states.

For ANs, we use information on AN residency positions available for the year 2004. For CRNAs, we obtained information on the number of accredited nurse-anesthetist education programs in the state.

We specify the labor supply for each group of anesthesia providers (ANs and CRNAs) at the state level as dependent on wages and other variables likely to influence supply. Likewise, we assume the existence of a demand function at the facility level that is aggregated up to the state level. The quantity demanded also depends on wages (capturing the potential simultaneity of the supply/demand system) as well as on output (procedures) and other variables likely to influence supply. If the labor market is in equilibrium, supply equals demand, and these quantities and the wages are determined simultaneously. However, as discussed in Chapter One, existing literature seems to suggest that there are institutional constraints that prevent the market for anesthesia providers from maintaining equilibrium. Therefore, a disequilibrium model might be the more relevant one.

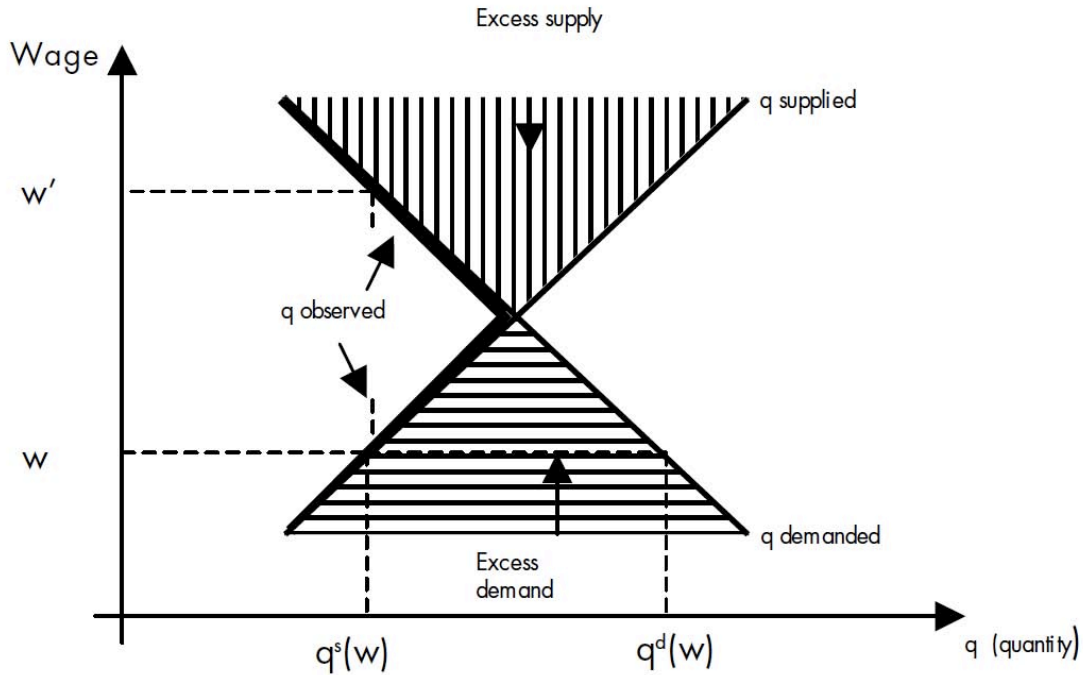
The common approach to modeling disequilibrium is to assume that prices or wages are exogenous (that is, that they do not adjust to equate quantities demanded and supplied). In that case, the minimum of the quantity demanded and supplied is observed. When the observed quantity is the supply, we are in a situation of excess demand. When the opposite occurs, there is excess supply.

Figure 2.2 illustrates this point. Hypothetical demand and supply are plotted against wage. If the market is in equilibrium, the quantity observed will be at the intersection of demand and supply. If we start from a wage different from the equilibrium wage, there will be excess demand or excess supply. For instance, at wage  $w$ , demand is higher than supply. If wages can adjust freely, the employers will bid up the wage. However, if prices cannot adjust (for instance, due to a fixed rate of reimbursement by programs, such as Medicare), the disequi-

<sup>13</sup> There is a trade-off here: If we had insisted on a higher threshold, data from a few of the smaller states would have been discarded. For the estimation of the parameters, we weight state-level likelihood contributions by the square root of the number of underlying respondents in the cell. Under random sampling with equal population variance across cells, the sampling variance is inversely proportional to the square root of the sample size within the cell. Hence, we down-weight cells with few observations and give more weight to cells with more observations.

<sup>14</sup> When we use the word *national* to refer to a shortage or surplus, we refer to the aggregation of those states we analyzed.

**Figure 2.2**  
**An Illustration of Disequilibrium**



librium at wage  $w$  persists. There is unmet demand in the market as only  $q^s(w)$  workers work. If the price is set above the equilibrium wage, a situation of excess supply will arise. The heavier line denotes the minimum of demand and supply that will be observed under disequilibrium.

This figure can also be used to illustrate the shortcoming of DBA discussed in the previous section. If the wage were  $w'$ , the *same* observed quantity  $q^o(w)$  would be indicative of a surplus rather than a shortage. Classifying a situation as a shortage or surplus on the basis of quantity of labor alone is therefore not appropriate.

Empirically, the exclusion restrictions that distinguish supply from demand and allow estimation of the equilibrium model are well understood. In our context, we need one determinant that appears only in the supply equation (but not the demand equation) and one that appears only in the demand equation; residency openings are included only in the AN labor supply equation, and the HMO penetration rate is included only in the AN labor demand equation. We also exclude the wage and output of CRNAs from the AN supply equation. For CRNAs, we follow a similar strategy with the number of accredited nurse-anesthetist education programs in the state used in the supply equation. The equilibrium model is easily estimated by the two-stage least-squares method.

The disequilibrium model with fixed wages does not require exclusion restrictions. However, we impose the same restrictions as in the equilibrium model because these seem natural and may sharpen the estimation.

The surveys we conducted elicited a response that helps identify the wage *elasticity* of labor supply—that is, the percentage by which the number of hours worked increases for a 1-percent increase in the wage rate. We asked respondents whether they would increase hours by 10 percent. If they said yes, they were asked how much income they would require. They



were given the choice of 5 percent, 10 percent, 20 percent, 25 percent, or more than 25 percent. If the respondent did not want to increase hours, we assigned that respondent an elasticity of 0. Therefore, in the disequilibrium model, where the wage is considered fixed and the dependence of supply on the wage is not econometrically determined, we fix the coefficient on wage in the model equal to the average state-level elasticity gathered from the survey.

The disequilibrium model is estimated via the method of maximum likelihood, following Maddala and Nelson (1974). The model delivers the probabilities that the situation is one of excess demand or of excess supply. Following Gourieroux (2000), we can also estimate how far wages are from the equilibrium wages. This is done by equalizing predicted demand and supply and solving for the equilibrium wage. This quantity is then compared with the actual wage.

## Survey Findings

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The surveys we conducted are a rich source of information on the labor markets for anesthesiology. By collecting information from the major participants in the anesthesia labor market (ANs, CRNAs, ANDIRs, and surgeons), we are able to capture the institutional intricacies and the variety of practice methods in anesthesiology. Exploring the labor market and its variation across different regions and facilities is a necessary step in understanding any shortage or surplus that we find in the labor markets. In this chapter, we summarize the key findings of the surveys.<sup>1</sup>

It is important to note that not all findings presented in this chapter are used in the shortage/surplus analysis conducted later. The data actually used are presented in each of the methods employed to analyze shortage/surplus. Our aim in this chapter is primarily to summarize the responses to our questionnaires in order to capture the intricacies of the labor markets for anesthesiology.

We first analyze some basic demographic characteristics of the AN and CRNA populations. We will then relate these characteristics to their labor-market participation and technology preferences.

### Demographic Patterns

CRNAs are more likely than ANs to work in rural areas (Figure 3.1). ANs are much more likely than CRNAs to work in the Northeast and the West. The ANDIR survey shows similar distributions of CRNAs and ANs across regions and rural/urban areas.

Overall, ANs are more likely to be male and CRNAs are more likely to be female (Figure 3.2). Yet, gender composition differs markedly depending on whether we are looking at urban or rural CRNAs. In rural areas, more CRNAs are male (62 percent, versus 38 percent female).

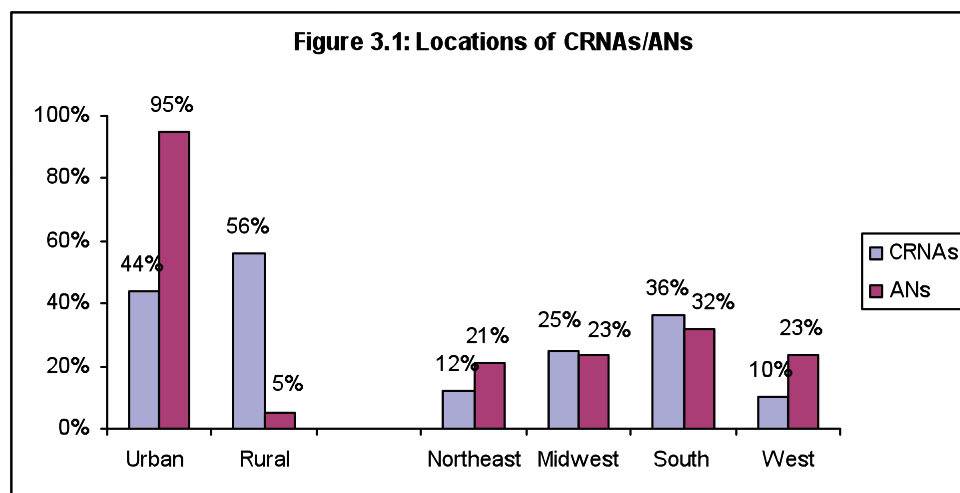
The average age for both CRNAs and ANs is 49, and the average years of experience are 16 for ANs and 17 for CRNAs. A higher proportion of ANs are between the ages of 40 and 55, while CRNAs are more evenly spread across all ages (Figure 3.3). More than one-quarter

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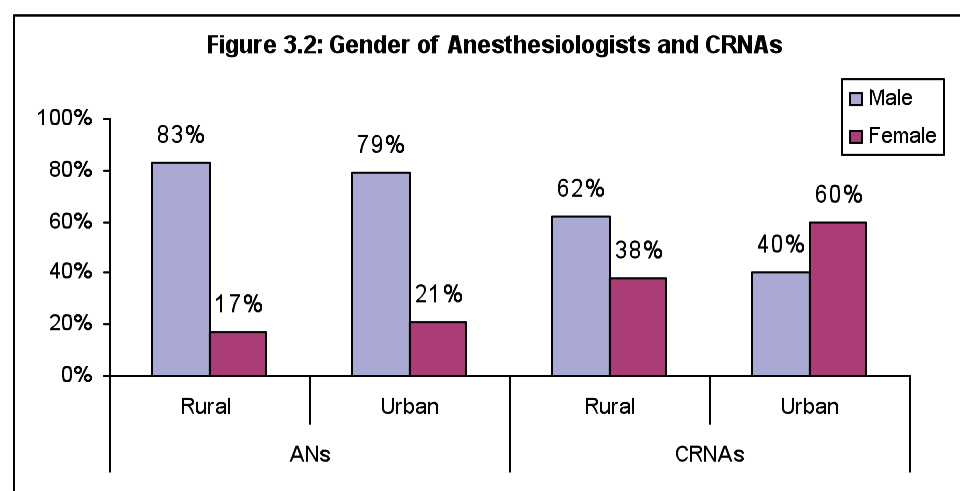
<sup>1</sup> The survey instruments are presented in Appendixes A through D. A familiarity with the questions asked in the surveys would facilitate a correct interpretation of the descriptions that follow. The analysis we present is based on survey responses rather than the sampling frames, which did not have all the details. The results reported in the text are significant at the  $p < 0.05$  level in probit and linear regressions that control for region and urban/rural county (as well as facility size, for the ANDIR results). To avoid clutter, we do not show complete regression results and all details we discuss in the text in the tables. These can be obtained from the authors upon request.



**Figure 3.1**  
**Locations of Certified Registered Nurse Anesthetists and Anesthesiologists**



**Figure 3.2**  
**Gender of Anesthesiologists and Certified Registered Nurse Anesthetists**



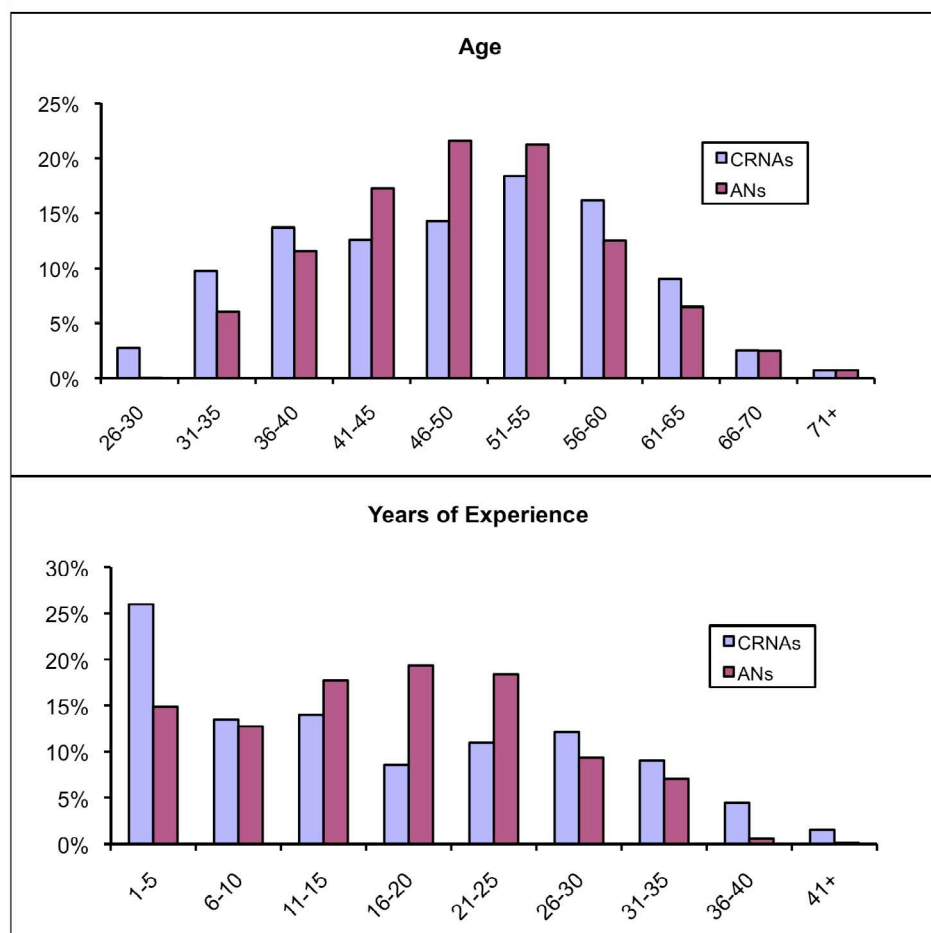
of all CRNAs have only one to five years of experience. In contrast, fewer than 15 percent of ANs are in this lowest experience category.

## Employment Arrangements

Our analyses indicate that there is significant regional and rural/urban variation in labor-market patterns. In this section, we focus on differences in employment arrangements for ANs and CRNAs, and we compare their characteristics with those from the ANDIR survey. We focus on differences in these patterns across our main demographic dimensions: region, rural/urban, and gender.

**Figure 3.3**  
Distribution of Age and Experience (years)

**Figure 3.3: Distribution of Age and Experience (Years)**



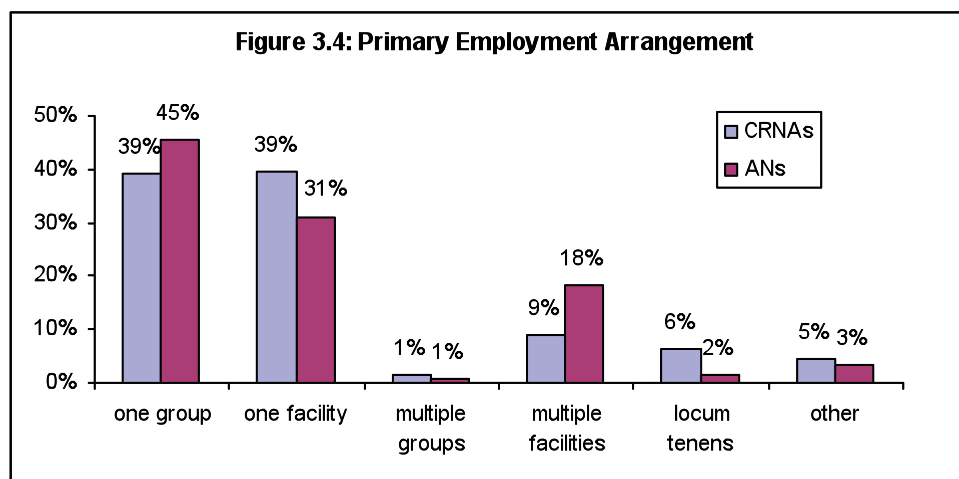
### Employers

ANs and CRNAs were queried about their primary employment arrangement. Nearly 80 percent of ANs and CRNAs report their primary employment to be with one group or one facility (Figure 3.4). ANs are more likely than CRNAs to work for one group or in multiple facilities and less likely to work for one facility.

Table 3.1 looks at regional differences in type of employer for CRNAs and ANs. The following findings are statistically significant even after controlling for age, experience, and gender, which might be responsible for these differences on their own:

- The urban/rural differences are the same for ANs and CRNAs, with both groups more likely to work for one facility in rural areas.
- Regional differences run in opposite directions for ANs and CRNAs. Controlling for urban/rural differences, ANs in the Northeast are most likely to work for one facility, while CRNAs in the Northeast are less likely to be working for one facility (and more

**Figure 3.4**  
**Primary Employment Arrangement**



**Table 3.1**  
**Differences in Type of Primary Employer (%)**

Location	CRNAs			ANs		
	One Group	One Facility	Other	One Group	One Facility	Other
Northeast	43.6	35.9	20.6	39.9	37.5	22.6
Midwest	37.6	43.4	19.1	47.0	32.3	20.7
South	40.0	35.5	24.5	44.5	31.2	24.3
West	29.9	44.0	26.1	50.3	22.4	27.4
Rural	33.6	43.9	22.5	36.7	45.5	17.9
Urban	40.1	37.4	22.5	45.9	29.9	24.2

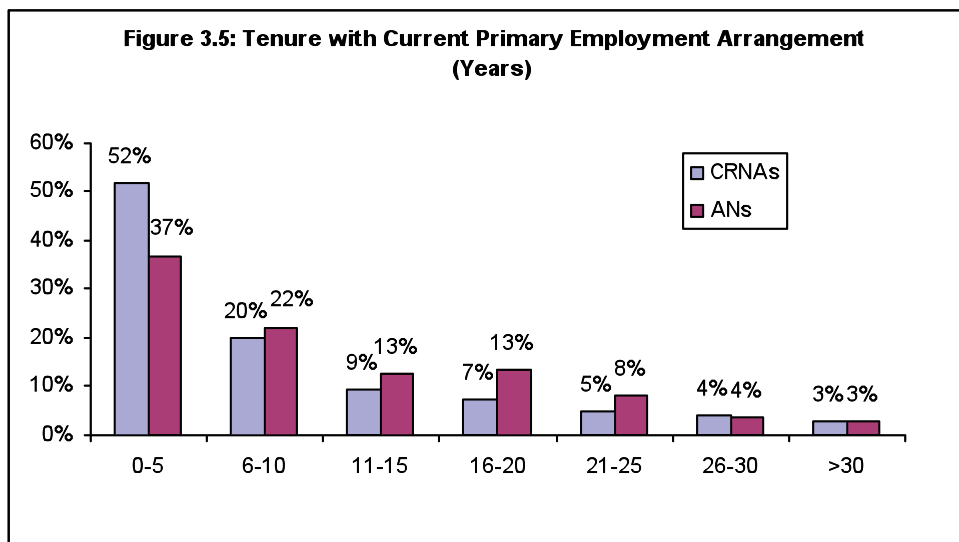
likely to be working for a group) than CRNAs in the Midwest and West. The West appears to have the most differences in type of employment arrangement.

ANs tend to have longer tenure in their current primary employment arrangement. More than 50 percent of the CRNAs have five years or less with their current primary employer, while only 37 percent of ANs have five years or less (Figure 3.5). The average number of years of tenure with the primary employer is around 8.5 years for CRNAs and 10.3 years for ANs.

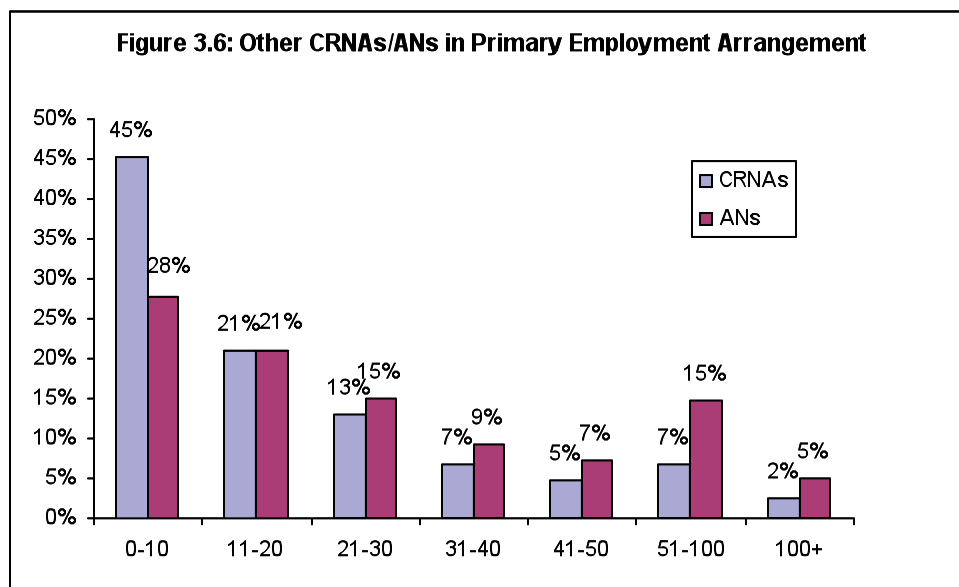
ANs tend to work for larger employers of ANs. Forty-five percent of the CRNAs work with fewer than ten other CRNAs in their primary employment arrangement, while less than 30 percent of ANs work for employers with fewer than ten ANs (Figure 3.6). The mean number of CRNAs in the primary employment arrangement is 22.3, while the mean number of ANs in the primary employment arrangement is 33.9.

These primary employment arrangement characteristics may be related to both the need for anesthesia professionals and employers' ability to hire them when needed. Therefore, these

**Figure 3.5**  
**Tenure with Current Primary Employment Arrangement (years)**



**Figure 3.6**  
**Other Certified Registered Nurse Anesthetists and Anesthesiologists in Primary Employment Arrangement**



characteristics may have implications for whether there is a shortage in the labor market. We take them into consideration in our later analysis of potential shortage.

### Facilities

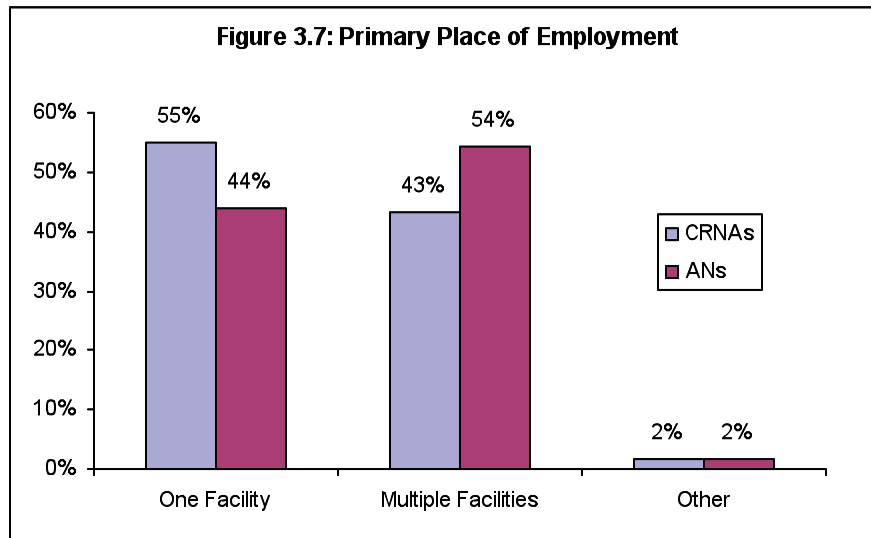
CRNAs and ANs were asked about the primary facilities in which they provide services. Even while working for one group, these professionals may split their time across multiple facilities.

Hence, we also break down employment by whether they work primarily in one facility or in multiple facilities. We find that a little less than half of the CRNAs work in multiple facilities, while a little more than half of the ANs work in multiple facilities (Figure 3.7).

We find that a lower proportion of CRNAs in the South and in the West work in multiple facilities than their counterparts in the Northeast. By contrast, ANs in these regions are more likely than those elsewhere to work in multiple facilities. Urban ANs are more likely to work in multiple facilities (see Table 3.2). These results are consistent with those reported in Table 3.1: The ANs and CRNAs who are most likely to be employed in a single group are the ones most likely to work in multiple facilities.

Employing or having access to CRNAs does not mean that their services will be used on a daily basis. The ANDIR survey found that facilities in the Midwest and South are more likely than facilities elsewhere to use CRNAs daily and that facilities in the West are the least likely to use CRNAs daily (Table 3.3). We also find that Northeastern facilities are most likely

**Figure 3.7**  
**Primary Place of Employment**



**Table 3.2**  
**Regional Differences in Facilities**

Location	CRNAs		ANs	
	Single Facility	Multiple Facilities	Single Facility	Multiple Facilities
Northeast	52.1	46.5	49.6	47.7
Midwest	55.1	44.0	46.7	51.9
South	56.5	41.7	44.7	53.8
West	59.0	38.2	34.6	64.0
Rural	66.8	32.3	66.5	31.7
Urban	53.3	45.0	42.5	55.8

**Table 3.3**  
**Facilities Not Using Any Certified**  
**Registered Nurse Anesthetists or**  
**Anesthesiologists Daily (%)**

Location	No CRNAs	No ANs
Northeast	20	5
Midwest	11	28
South	9	18
West	55	18
Rural	9	45
Urban	26	5

to use ANs daily, and these differences remain significant when we control for facility size and whether the facility is located in an urban/rural county. The ANDIR survey also found that urban facilities were more likely than rural ones to use ANs daily, while rural facilities were more likely to use CRNAs daily.

Our ANDIR and CRNA analyses show similar regional results for direct hiring. The ANDIR survey found that Southern facilities are less likely to directly hire ANs and CRNAs than to obtain services through independent providers. In the CRNA survey, we find that Southern and Northeastern CRNAs are more likely to be employed by a group than a facility (and less likely, therefore, to be directly hired). However, in the ANDIR survey, we do not find too many regional differences for ANs, except that the Northeastern facilities are more likely to use ANs. The AN survey also indicates that Southern ANs are less likely than those in other regions to be hired by one facility but more likely to be hired by one group.

We asked CRNAs and ANs about how many other CRNAs, ANs, and surgeons work in their primary facility. Table 3.4 reports the mean and median number of each type of employee. CRNAs appear to work with more CRNAs and with fewer ANs and surgeons in their facilities than ANs do.<sup>2</sup>

There are clear regional differences in the number of fellow health-care providers CRNAs and ANs report in the facilities. Table 3.5 reports the median number of CRNAs, ANs, and surgeons in various regions. As reported by both CRNAs and ANs in the Northeast, there is

**Table 3.4**  
**Health-Care Providers in Primary Facility**

Providers		CRNAs	ANs	Surgeons
CRNAs	Mean	17.7	10.6	22.5
	Median	10	6	15
ANs	Mean	13.9	23.9	56.5
	Median	7	16	32

<sup>2</sup> One cannot calculate the average ratio of surgeons to ANs or CRNAs directly from this table, since the ratio of averages differs from the average of ratios. Based on individual responses, the average ratio of surgeons to ANs is 4.5, and of surgeons to CRNAs is 6.5.

**Table 3.5**  
**Differences in Median Number of Other Health-Care Providers in Facility, by Location**

Locations	CRNAs			ANs		
	CRNAs	ANs	Surgeons	CRNAs	ANs	Surgeons
Northeast	10	7	20	9	20	35
Midwest	10	5	14	9	15	30
South	9	5	15	10	14	30
West	6	3	10	0	19	40
Rural	4	1	10	4	5	15
Urban	12	7	17	7	18	40

typically a combination of both types of providers in the facilities, though the ratio of CRNAs to ANs and the number of surgeons differs depending on who is reporting. CRNAs in the Midwest, South, and West report a 2-to-1 CRNA-to-AN ratio, while ANs report working with fewer CRNAs. The difference is particularly pronounced in the West, where the average AN reports working with no CRNAs. This is in line with our findings in Table 3.3, which indicated that 55 percent of Western facilities do not use any CRNAs. ANs also appear to work in larger (and different) facilities in terms of number of surgeons. As expected, we also find that urban facilities employ more of all labor sources. Urban facilities have a lower CRNA-to-AN ratio, in line with our finding that the majority of ANs are working in urban areas.

## Earnings

We now turn to analyzing how CRNAs and ANs are compensated for their services. A relatively small percentage of the respondents—11.25 percent of CRNAs and 20.22 percent of ANs—chose not to answer our questions on wages but did respond to the more general question on sources of income. Respondents were given the flexibility to provide their earnings as dollar figures or within ranges.<sup>3</sup>

The data indicate that most income comes from fixed contracts, though there is wide variation in the percentage of income coming from other sources (Table 3.6). There are large regional differences in the percentage of income from fixed contracts, particularly for ANs. Western ANs and CRNAs receive a much larger portion of their earnings from fee-for-service work. The urban/rural difference in source of earnings is significant only for ANs, with urban ANs earning less of their wages from fixed contracts than rural ANs do. The greater fixed-contract earnings for CRNAs in urban areas are driven by census-region effects.

Figure 3.8 presents the sources of income for ANs by type of employer. It is clear that those who are employed by a single facility or considered locum tenens earn, on average, a greater portion of their income from fixed salary or contract. Those who are employed by groups and multiple facilities receive more fee-for-service income.

<sup>3</sup> For those respondents that provided us with earnings in a range, we imputed exact income amounts by assuming that the distribution of earnings within each range was the same as that for respondents who provided us exact dollar amounts within that range.

**Table 3.6**  
**Percentage of Income from Various Sources**

Location	CRNAs			ANs		
	Fixed Contract	Fee-for-Service	Other	Fixed Contract	Fee-for-Service	Other
Northeast	92.2	3.7	4.1	70.5	23.7	5.8
Midwest	89.3	7.3	3.4	60.3	34.6	5.1
South	87.9	9.3	2.7	63.0	32.6	4.4
West	76.8	20.7	2.5	38.9	56.6	4.5
Rural	81.3	15.8	2.9	64.1	33.0	2.9
Urban	89.4	7.5	3.1	58.1	36.9	5.0

**Figure 3.8**  
**Mean Percentage of Anesthesiologists' Income from Various Sources**

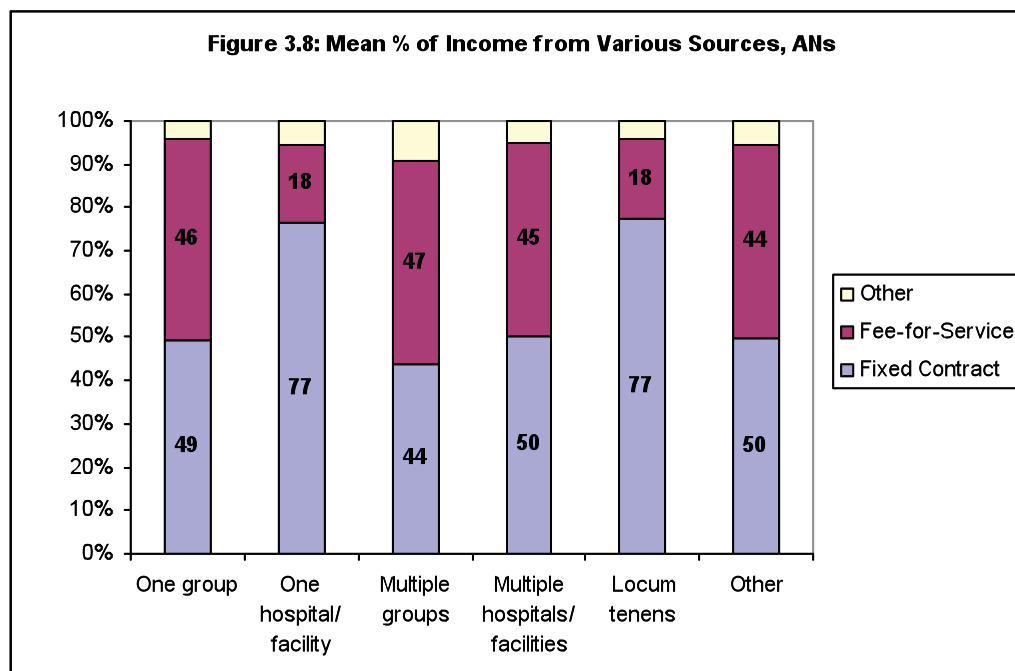
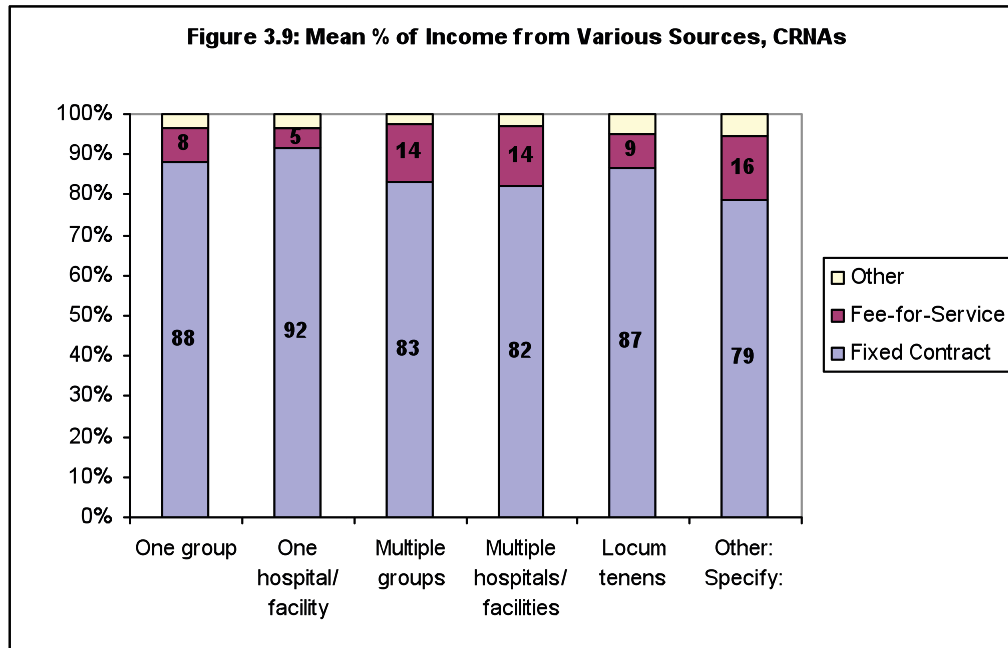


Figure 3.9 presents analogous results on the percentage of income that CRNAs receive from various sources. It is clear that, on average, CRNAs receive a much greater percentage of their incomes from fixed salary or contract. There is much less variation across types of employers, though we find that CRNAs working for multiple groups or facilities are slightly more likely to receive fee-for-service income.

The average annual income for ANs is \$337,551, and, for CRNAs, it is \$151,380. The medians are similar to the respective averages—an indication that the earnings distributions are not too skewed. These findings confirm our findings on compensation from our ANDIR survey. ANDIRs report average annual salaries for ANs and CRNAs of \$303,000 and \$149,000, respectively.



**Figure 3.9**  
**Mean Percentage of Certified Registered Nurse Anesthetists' Income from Various Sources**



CRNAs earn significantly less in the Northeast than their counterparts in other regions, and the ones in the West earn the most (Table 3.7). However, the higher annual wages for Western CRNAs are driven by the greater number of hours worked by these CRNAs, because the difference relative to the Midwest and South is no longer significant when we use the hourly wage. Average annual AN earnings were highest in the Midwest and South and lowest in the West. However, regional differences in hourly AN wages are not statistically significant, with the results primarily driven by differences in hours and urban/rural location.

CRNAs in urban regions earn less than their rural counterparts, while ANs in urban regions earn more. However, this is true only for annual earnings. When annual earnings are converted to hourly earnings using the data provided on average weekly hours, urban CRNAs

**Table 3.7**  
**Regional Differences in Earnings (\$)**

Location	CRNA Survey		AN Survey	
	Annual	Hourly	Annual	Hourly
Mean	151,380	76.08	337,551	127.98
Northeast	139,768	71.51	328,220	122.74
Midwest	155,941	79.55	350,313	138.30
South	158,724	79.09	348,934	131.13
West	169,655	82.95	316,614	117.87
Rural	177,505	85.48	329,908	160.51
Urban	151,280	76.80	338,080	125.73

and ANs are both paid less. As in the CRNA survey, in the ANDIR survey, CRNAs in rural areas earn more. By contrast, the ANDIR survey did not find any regional or rural/urban differences in pay for ANs.

It is possible that the lower wage incomes paid to CRNAs and ANs are compensated with better benefits. To shed light on this possibility, we examined the data we collected on employer contribution for a variety of benefits, including health insurance, disability, dental, vision, retirement, and long-term care, as well as employer provision of education or training funds. On average, employers cover 70.76 percent of health-insurance costs and an average of 60.47 percent of disability insurance for CRNAs but only 59.46 percent of health-insurance costs and 35.19 percent of disability for ANs. Employers cover somewhat more on average for all benefit categories, except retirement, for CRNAs than for ANs (see Table 3.8).<sup>4</sup>

Even after controlling for income differences, CRNAs and ANs in the South have significantly lower health-insurance coverage amounts. We also find that ANs in the Midwest and West have lower benefits than those elsewhere. Urban CRNAs receive more health-insurance coverage than their rural counterparts, which might help explain some of the income differences we see for these areas. There are also significant differences by gender. Not only do men receive higher salaries; they also receive more benefits. These regional, urban/rural, and gender differences remain even when we control for the number of hours worked.

## Time Usage

In gathering information on time usage or procedures done, our questions generally ask for the percentage of time or procedures spent on a particular type of activity. The surveys did not explicitly ask whether the respondent actually *administered* a particular type of anesthesia, *supervised* another professional, or *was supervised by* another professional. The data on hours worked and time usage allow us to explore possible differences in productivity across regions,

**Table 3.8**  
**Percentage of Benefits Paid by**  
**Employer**

Benefit	CRNAs	ANs
Health care	70.8	59.5
Disability	60.5	35.2
Dental	51.5	37.3
Vision	37.1	23.7
Retirement	32.7	40.4
Long-term care	12.0	7.3

<sup>4</sup> The higher levels of compensation through benefits for CRNAs might be associated with the fact that they receive more income from arrangements with fixed salaries or contracts. In additional analyses, we find that CRNAs and ANs with more income from fixed salary or contracts receive more benefits. We also find a small negative relationship between wages and health-insurance benefits, suggesting that employers substitute higher benefits for wages.

as well as potential shortage for anesthesia professionals in facilities by region and urban/rural areas, a theme we further explore in Chapter Four.

On average, CRNAs work 44 hours per week, with the majority of these hours spent doing clinical work (Table 3.9). ANs work substantially more hours, and most of these additional hours are clinical. The regional and urban/rural differences are more pronounced for CRNAs. As expected, it appears that there is a positive relationship between earnings and hours worked for both CRNAs and ANs. Western CRNAs work more and earn more than those in other regions, while Western ANs work less and earn less than those in other regions. Southern CRNAs and ANs both earn more and work more than their Northeastern counterparts. Urban CRNAs make less and work less than rural CRNAs.

There are very few differences in where ANs and the CRNAs spend their clinical hours. Most of the clinical time is spent in the hospital (82 percent), although CRNAs have more outpatient clinical hours than ANs (59 percent versus 51 percent) (Table 3.10).

Urban CRNAs and ANs spend more time than their rural counterparts in out-of-hospital-based care (likely because urban areas are more likely to have nonhospital facilities),

**Table 3.9**  
**Regional Differences in Average Weekly Hours**

Location	CRNAs		ANs	
	Total Hours	Clinical Hours	Total Hours	Clinical Hours
Mean	43.9	36.9	63.7	48.6
Northeast	42.1	35.7	64.6	47.0
Midwest	44.5	35.7	62.9	49.4
South	43.8	37.2	64.5	50.0
West	46.2	36.9	62.3	47.5
Rural	50.1	37.5	62.7	49.8
Urban	42.6	36.3	63.7	48.6

**Table 3.10**  
**Percentage of Clinical Hours Spent in Various Locations**

Location	CRNAs		ANs	
	Mean	Standard Deviation	Mean	Standard Deviation
Hospital	81.7	34.0	81.8	28.8
Inpatient	41.5	26.1	49.4	26.1
Outpatient	58.5	26.1	50.6	26.1
Freestanding ambulatory center	15.1	30.8	14.9	25.6
Office based	1.9	11.6	2.8	12.2
Dental office	0.5	4.9	0.1	2.0
Other	0.8	8.5	0.4	5.2

but there are few regional differences in how CRNAs spend clinical time. Western ANs spend less time in hospital-based care than those in other regions do.

However, results from our surgeons' survey are indicative of a possible future shift in the location of surgical procedures. While 29 percent of procedures are currently conducted in surgeons' offices, surgeons anticipate conducting 32 percent of procedures there in five years; procedures in freestanding ambulatory centers are expected to increase from 15 percent to more than 21 percent. At the same time, hospital procedures are expected to decrease from 54 percent to 44 percent. In other words, a shift of procedures from hospitals to ambulatory centers and surgeons' offices is likely. This would likely entail a shift of anesthesia providers to these facilities as well.

Overall, CRNAs report that they spend nearly 75 percent of their clinical time doing procedures or intraoperative tasks (see Table 3.11). ANs also spend the majority of their time in procedures (nearly 66 percent), though somewhat less than CRNAs do.

Northeast ANs and CRNAs reported spending a larger percentage of their time performing procedures than their counterparts in the Midwest and South do. However, the results for Western ANs and CRNAs run in opposite directions. Western CRNAs spend the smallest percentage of time of all CRNAs in procedures, while Western ANs spend the greatest percentage of time in procedures (Table 3.12). Urban ANs and CRNAs also spend more time

**Table 3.11**  
**Percentage of Clinic Hours Spent on Various Tasks**

Task	CRNAs		ANs	
	Mean	Standard Deviation	Mean	Standard Deviation
Preoperative	8.4	7.8	10.9	11.2
Intraoperative	75.0	20.1	65.9	23.1
Postoperative	5.4	5.2	7.3	6.5
Critical care	2.0	3.8	2.0	9.6
Pain management	1.0	4.5	2.9	5.9
Labor/delivery	6.9	14.5	7.5	11.9
Other	1.2	9.0	0.6	5.7

**Table 3.12**  
**Differences in Time Usage, by Location (%)**

Location	CRNAs		ANs	
	Intra-Operative	Labor/Delivery	Intra-Operative	Labor/Delivery
Northeast	79.5	2.8	67.0	7.7
Midwest	74.4	6.6	62.7	7.2
South	75.3	7.0	63.4	7.7
West	66.9	13.8	71.7	7.4
Rural	70.4	9.1	59.6	8.2
Urban	75.9	6.4	66.3	7.5

in procedures. Hence, though the number of hours worked is smaller in the Northeast and urban areas, more time is potentially spent on performing procedures. We also found that rural CRNAs and Western CRNAs spend a lower proportion of their time on procedures than their counterparts elsewhere, as do rural ANs and Southern and Midwestern ANs.

Overall, the less time CRNAs spend in performing procedures, the more time they spend in labor and delivery (Table 3.12). CRNAs in the West spend a relatively large percentage of time in labor/delivery anesthesia. There are no regional or urban/rural differences for percentage of AN time spent in labor/delivery anesthesia.

## Monitored Anesthesia Care

In this section, we continue to look at CRNA and AN time usage, but with a focus on MAC. Surveys questioned CRNAs and ANs about the percentage of clinical time and the number of procedures they undertake in each of the following anesthesia techniques: MAC, general anesthesia, regional/block/spinal anesthesia, and obstetrical anesthesia.<sup>5</sup> Data collected from these questions play an instrumental role in the shortage analysis we conduct later, by helping us deduce the time required per procedure for the different types of anesthesia, given data on total clinical time and the number of procedures.

CRNAs and ANs spend the majority of their time in general anesthesia. However, ANs spend somewhat more time in general anesthesia, while CRNAs spend more time in monitored anesthesia. Table 3.13 suggests that general anesthesia procedures are more time-intensive than other procedures. General anesthesia procedures appear to be particularly long for ANs, as these procedures take up more than two-thirds of ANs' time but make up less than one-third of their total number of procedures. These results indicate that CRNAs and ANs spending more time on non-general anesthesia will appear more productive in terms of the number of procedures performed for a given amount of time, due to the differing mix of procedures they perform.

The distribution of time spent on regional anesthesia by CRNAs is highly skewed. The median percentage of time is 5 percent. In results not shown in order to avoid clutter, 25 per-

**Table 3.13**  
Percentage of Time Spent on Various Types of Anesthesia

Anesthesia	CRNAs				ANs			
	% of Time		% of Procedures		% of Time		% of Procedures	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
MAC	24.5	20	28.7	24	15.5	10	26.8	25
General	58.5	60	51.1	50	67.0	70	31.5	25
Regional/ spinal	10.3	5	12.6	10	11.2	8	24.2	25
Obstetrical	6.7	0	7.7	1	6.4	2	17.6	25

<sup>5</sup> We did not explicitly ask whether the respondent actually *administered* a particular type of anesthesia, *supervised* another professional, or *was supervised by* another professional.

cent of CRNAs spend no time at all on these procedures. CRNAs in rural areas spend more time on these procedures than do those in urban areas (a median of 5 percent for urban CRNAs and a median of 10 percent for rural CRNAs).

Table 3.14 displays the regional and rural/urban differences for CRNA and AN time usage in the various types of anesthesia. The biggest regional differences are for MAC, with CRNAs and ANs in the Northeast spending significantly more time on this type of anesthesia than those in other regions. CRNAs are also used more often for regional/spinal and obstetrical anesthesia in the West than elsewhere. Western ANs, on the other hand, seem to be used heavily in general procedures. It appears not only that CRNAs are less prevalent in Western facilities but also that they may play a more specialized role rather than being used alongside ANs. CRNAs in urban areas spend significantly more time on general anesthesia and less on all other types of anesthesia than CRNAs in rural areas.

The ANDIR survey yielded findings similar to the CRNA and AN surveys. ANDIRs in the Northeast report that CRNAs and ANs spend a much greater percentage of time on MAC than on other procedures. The fact that Northeastern and rural facilities use *both* ANs and CRNAs more often for MAC than other facilities do suggests that the regional and rural/urban differences cannot be explained by the substitution of CRNAs for ANs or vice versa and suggests that there are other factors associated with the greater use of all anesthesia providers for MAC. This could be attributed to patient differences, facility preferences, or, possibly, regional norms.

Given this proclivity toward MAC, CRNAs and ANs in Northeastern facilities spend a greater percentage of their time performing these types of procedures than they do other procedures. Procedures requiring MAC are significantly shorter (on average) than procedures requiring general anesthesia. The Northeastern CRNAs and ANs are therefore able to complete many more procedures in a day. This can help to explain why, in the ANDIR survey, we found that anesthesia providers in Northeastern facilities were completing many more procedures than those in other areas of the country. Later, we explore whether this greater productivity among Northeastern CRNAs and ANs is mirrored by greater evidence of shortage, to see whether they are “worked harder.” The ANDIR results were also in line with our findings that ANs spend a much greater percentage of time than CRNAs do on general anesthesia and less on MAC.

**Table 3.14**  
**Regional Differences in Mean Time Spent on Various Types of Anesthesiology**

Location	CRNAs				ANs			
	MAC	General	Regional/ Spinal	Obstetrical	MAC	General	Regional/ Spinal	Obstetrical
Northeast	32.9	54.0	10.3	2.9	20.6	61.0	12.0	6.4
Midwest	24.2	56.9	12.2	6.8	14.4	66.7	12.9	6.1
South	23.9	60.7	8.7	6.7	14.6	68.7	10.0	6.7
West	21.6	51.5	14.3	12.6	13.0	70.5	10.3	6.2
Rural	27.9	47.8	15.4	9.0	17.0	59.8	15.9	7.2
Urban	24.7	59.7	9.4	6.1	15.4	67.4	10.9	6.3

Evidence from the surgeons' survey is consistent with the results reported in Table 3.13. More surgeons reported that CRNAs play an important role in the provision of monitored anesthesia than said the same of regional/spinal anesthesia (25.44 percent versus 9.88 percent). Surgeons also reported that ANs provide more procedures in general anesthesia (64.53 percent) than in the other types of anesthesia—36.78 percent in MAC procedures and 21.06 percent in regional/spinal anesthesia procedures.

It is important to understand why percentage of time spent on MAC varies across regions and between urban and rural areas, because this variation has implications for the potential substitutability of non-anesthesia providers for these procedures, which may affect future workforce requirements. One possible explanation is that facilities can choose whether they use anesthesia providers or non-anesthesia providers to sedate the patient for certain procedures. We gathered information on MAC provided by anesthesia (ANs and CRNAs) and conscious sedation provided by non-anesthesia providers.<sup>6</sup> There is also a considerable amount of heterogeneity across procedures (see Table 3.15). The percentages reported by CRNAs and ANs are relatively similar. There are larger discrepancies for non-anesthesia-provider percentages, resulting possibly from the fact that CRNAs and ANs are less likely to know about all of the procedures in which non-anesthesia providers take responsibility for conscious sedation. The small differences that do exist are likely due to the differing areas and types of facilities in which they work.

We found wide regional variation in the type of providers used to deliver MAC and conscious sedation as reported by CRNAs and ANs (Table 3.16). According to CRNAs and ANs, the Northeast uses anesthesia providers significantly more often than facilities elsewhere. While the table presents results for only two types of procedures, this regional pattern holds

**Table 3.15**  
**Providers of Conscious Sedation or Monitored Anesthesia Care for Various Procedures (%)**

Procedure	Non-Anesthesia Providers		Anesthesia Providers	
	CRNA Survey	AN Survey	CRNA Survey	AN Survey
Cataracts	4.60	6.78	74.45	73.01
Adult radiology	42.87	58.02	20.39	16.72
Colonoscopy/ endoscopy	48.10	57.69	43.22	33.41
Pediatric radiology	16.17	29.69	31.33	33.72
EPS lab	25.70	39.44	20.87	27.50
Catheter lab	45.38	65.21	11.02	10.45
TEE lab	34.31	58.90	19.61	16.29
Bronchoscopy suite	39.14	64.91	26.23	15.85

NOTE: Due to "I don't know" responses, percentages for each survey may not sum to 100. EPS = electrophysiology study. TEE = transesophageal echocardiography.

<sup>6</sup> See, for instance, ASA (2004 [2009]), for the distinction between conscious (moderate) sedation and MAC. While MAC might include sedatives or analgesics used in conscious sedation, "the provider of MAC must be prepared and qualified to convert to general anesthesia when necessary" (p. 1).



**Table 3.16**  
**Providers of Anesthesia for Selected Procedures (percentage of procedures for each)**

Location	CRNAs				ANs			
	Colonoscopy		TEE Lab		Colonoscopy		TEE Lab	
	CRNAs/ANs	Non-Anesthesia Provider	CRNAs/ANs	Non-Anesthesia Provider	CRNAs/ANs	Non-Anesthesia Provider	CRNAs/ANs	Non-Anesthesia Provider
Northeast	49.2	24.2	26.3	48.2	57.1	38.1	30.2	32.7
Midwest	24.1	35.9	12.4	67.8	38.5	55.6	14.2	37.6
South	38.0	28.6	15.9	57.5	43.4	44.4	17.1	32.0
West	20.0	29.0	10.5	60.1	29.7	55.7	10.3	24.1
Rural	30.8	36.7	7.5	50.8	47.9	49.3	11.7	21.5
Urban	33.2	28.9	16.7	59.1	40.7	47.8	19.2	36.3

across all procedures. The South and West use anesthesia providers for significantly fewer procedures than other regions do. The procedures with the largest regional variation are colonoscopies and endoscopies, EPS labs, and TEE labs.

The urban/rural differences are less clear, with patterns in the use of anesthesia providers varying across procedures. Urban facilities are more likely than rural ones to use anesthesia providers for EPS, catheter, and TEE labs and less likely to use them in all other procedures. These regional and rural/urban differences remain after controlling for the anesthesia provider's percentage of time in MAC, indicating that the percentages reported for cases facility-wide are not confounded by the amount of time an individual spends on that type of care. It is unlikely that these differences can be fully explained by differences in the patient population receiving these procedures. The results provide evidence for possible regional norms of practice regarding who provides a particular type of service.

Tables 3.15 and 3.16 suggest that non-anesthesia providers may be an important labor source of anesthesia provision.

Overall, there are few differences in the types of patients seen by ANs and CRNAs, so differences in patient characteristics are unlikely to explain the differences in time spent on MAC across these two types of anesthesia providers. However, there are significant regional and urban/rural differences in patient characteristics, so these differences may be partially responsible for regional and urban/rural variations in provision of MAC within each type of provider. Nearly 10 percent of patients treated by respondents to the CRNA survey and 12 percent of respondents to the AN survey were in the highest ASA categories—statuses IV and V (patients who have been classified as extremely ill and near death) (Table 3.17). Nearly 30 percent of the patients cared for by ANs were elderly, nearly the same as the 30.8 percent of patients seen by CRNAs. On average, about one-fifth of the cases are considered urgent or emergent rather than elective for both ANs and CRNAs. The results indicate regional and urban/rural differences in patient age and severity of condition, but not in the percentage of cases that are elective.<sup>7</sup> Patients seen by Northeastern CRNAs are more likely than those in the West to be older and in the higher ASA categories. These differences are particularly large

<sup>7</sup> Regional variation in establishing physical-status scores may also play a role.



**Table 3.17**  
**Regional Patient Characteristics (%)**

Location	ASA Status IV or V		Elderly		Nonelective	
	CRNA	AN	CRNA	AN	CRNA	AN
Mean	9.3	12.1	30.8	29.6	20.1	20.9
Northeast	10.5	12.2	34.3	30.8	19.7	19.9
Midwest	8.2	12.1	30.9	30.3	19.1	19.6
South	9.7	15.4	30.3	29.2	19.0	21.5
West	6.0	11.2	27.3	28.3	20.6	21.6
Rural	10.6	7.3	32.8	33.7	20.6	18.9
Urban	13.1	9.3	29.4	29.9	20.7	19.4

for CRNAs. Patients seen by urban CRNAs are younger than those seen by rural CRNAs but are slightly more likely to be in the higher ASA categories. On the other hand, there are no regional or urban/rural differences in the percentage of cases that are nonelective.

## Working Patterns

Table 3.18 examines joint working patterns of CRNAs and ANs. CRNAs were asked how many anesthesia providers they work with on a typical procedure.<sup>8</sup> We find that CRNAs typically work with one or two ANs on each procedure, although 20 percent of CRNAs report

**Table 3.18**  
**Joint Working Patterns of Anesthesiologists and Certified Registered Nurse Anesthetists**

Location	CRNAs		ANs			
	No. of ANs Typically Working With		% Time Spent Supervising CRNAs		% Time Personally Delivering Anesthesia	
	Mean	Median	Mean	Median	Mean	Median
Total	1.6	1	35.7	23	47.1	30
Northeast	1.8	2	35.2	25	38.0	20
Midwest	1.4	1	41.3	30	39.5	20
South	1.5	1	47.9	50	38.2	20
West	0.9	1	11.6	0	76.1	100
Rural	0.8	0	38.5	0	57.0	0
Urban	1.6	2	35.2	2	40.6	2

<sup>8</sup> The question asked was this: "In your primary facility, how many Anesthesiologists do you typically work with on a procedure?" Note that the survey findings presented in Table 3.18 are not used in the demand-based or economic analyses of the labor markets.

working with no ANs. The following findings are significant when we control for region and urban/rural county:

- CRNAs who spend a greater percentage of time delivering monitored anesthesia also work with fewer ANs (and are more likely to work alone).
- Even controlling for the percentage of time spent on MAC, CRNAs in the Northeast and urban areas work with more ANs than CRNAs in other regions do.
- CRNAs in the West work with fewer ANs than CRNAs in other regions do.

ANs were asked a slightly different question to get at this issue: In what percentage of cases do they (1) supervise or medically direct AAs or CRNAs and (2) personally deliver anesthesia (see Table 3.18).

- On average, ANs spend nearly half of their time personally providing anesthesia and a little more than one-third of their time supervising CRNAs. More than 30 percent of ANs never supervise CRNAs (31 percent). More than half of ANs in the West never supervise CRNAs, and more than half spend all of their time personally delivering anesthesia.
- In general, the regional differences are quite large. ANs in the Midwest and South spend the most time supervising CRNAs, while ANs in the West spend the least time supervising CRNAs. We saw in Table 3.4 that these regional differences are similar for the number of CRNAs a facility has. This might suggest that a lack of CRNA usage in the facility is driving part of the differences in supervision time. But we found that, even when controlling for the number of CRNAs employed by the facility, the regional and urban/rural differences remained, indicating not only that Western facilities are less likely to use CRNAs but also that ANs and CRNAs in the same facility are less likely to work together.

## Preference for Technology

We now examine the preference for technology among CRNAs, ANs, ANDIRs, and surgeons and how these preferences relate to the labor-market characteristics of these groups. We also look at the technology preference of surgeons and ANDIRs. Table 3.19 shows the results for these statements: “Professionally, overall I would describe myself as being pro-technology” and “My primary facility does not adopt new technology fast enough.” Overall, most respondents (91 percent) call themselves pro-technology. However, 34.1 percent of CRNAs and nearly 30 percent of ANs feel that their facilities are not adopting technology frequently enough, while a lower proportion of surgeons feel this way (23 percent).

There is very little regional and rural/urban variation in responses to these general technology-preference questions. The only statistically significant difference is in the Midwest, where CRNAs and ANs are both less likely than their Northeastern counterparts are to state that their facilities are not adopting technology frequently enough. When we add other controls—total hours and tenure with facility or group—we find that having longer hours increases technology preference and that having longer tenure lessens the likelihood of responding that the primary facility does not adopt technology frequently enough. This may

**Table 3.19**  
**General Technology Preference (%)**

Location	I Am Pro-Technology		My Facility Doesn't Adopt Technology Quickly Enough	
	CRNAs	ANs	CRNAs	ANs
Mean	90.8	90.9	34.1	29.1
Northeast	90.9	90.6	37.3	29.9
Midwest	89.3	91.2	28.1	24.5
South	90.3	91.6	36.1	32.9
West	91.7	89.6	34.2	27.9
Rural	91.5	37.5	33.0	25.5
Urban	90.0	36.5	34.0	29.4

be driven by changes in the individual's technology preference or by increased familiarity with the technology adoption of his or her primary facility.

In the general technology questions, we find only one regional difference in the CRNA, AN, and ANDIR surveys. We find that ANDIRs in the Midwest are more likely to say that "increasing technology will improve quality of care." However, the ANDIR survey also found that Midwestern directors were less likely to report that additional MAC technology would lead to cost savings. In combination, these surveys present a picture of Midwestern facilities as preferring technology and being quick adopters of technology that is needed for anesthesia in these facilities, because Midwestern directors show a higher preference for increasing technology to improve quality of care, and ANs and CRNAs in the Midwest believe that their facilities are adopting technology frequently. Other than this Midwestern difference in technology preference, there also were very few regional or rural/urban differences in the ANDIR survey technology findings.

Other questions attempted to get at technology preference by more specifically asking about technology in different areas. They ask whether access to better technology is needed for (1) anesthesia machines, (2) patient monitoring, (3) drug delivery, (4) respirators and ventila-

**Table 3.20**  
**Certified Registered Nurse Anesthetists Stating a Preference for More Technology in Various Areas (%)**

Location	Anesthesia Machines	Patient Monitoring	Drug Delivery	Respirators/Ventilators	Information Technology
Mean	49.3	62.0	55.8	42.5	50.6
Northeast	55.1	62.7	62.2	48.0	58.0
Midwest	42.8	56.0	53.1	37.5	46.6
South	49.0	62.8	53.9	39.5	47.8
West	51.4	62.0	56.8	43.7	53.1
Rural	44.0	56.8	53.6	37.5	46.3
Urban	49.4	61.6	55.7	41.4	50.4

**Table 3.21**  
**Anesthesiologists Stating a Preference for More Technology in Various Areas (%)**

Location	Anesthesia Machines	Patient Monitoring	Drug Delivery	Respirators/Ventilators	Information Technology
Mean	43.6	61.9	61.2	32.5	69.7
Northeast	43.9	65.9	66.5	33.9	72.9
Midwest	40.5	58.6	57.5	29.5	68.9
South	46.9	63.4	61.8	35.0	70.4
West	41.6	58.8	59.1	30.6	66.1
Rural	36.9	55.7	57.2	29.1	67.2
Urban	44.0	62.3	61.5	32.7	69.8

tors, and (5) information technology. Table 3.20 reports the results from the CRNA survey, and Table 3.21 reports the results from the AN survey.

For CRNAs, the most-desired technology is in the area of patient monitoring, with 62 percent stating that they would like to have better technology in this area. This is followed by better drug-delivery technology, which is preferred by 56 percent of CRNAs. The least-desired technology is respirators and ventilators.

The proportions of ANs preferring better technology in these areas are relatively similar to those of CRNAs (see Table 3.21). ANs prefer additional patient monitoring and drug delivery technology to additional technology for anesthesia machines and respirators or ventilators. ANs are much more likely to want better information technology (70 percent, versus 50 percent of CRNAs).

There are significant regional differences across all five areas of technology for CRNAs. Respondents from the Midwest were less likely than those from the Northeast to want better technology. This is consistent with results reported in Table 3.19, which indicate that Midwestern CRNAs are more satisfied with the speed of the technology adoption in their facilities. The South and the West are also less likely to state a preference for more technology in most of the technology categories. Northeastern CRNAs are consistently the most likely to want more technology. Urban CRNAs are more likely to prefer better technology for anesthesia machines and patient monitoring. These regional differences remain even after controlling for percentage of time spent in MAC, indicating that differences in time usage do not account for all differences in technology preference. However, it is unclear whether CRNAs want more technology in the Northeast (and in some cases, in urban areas) because their facilities are not providing as much as those in other parts of the country or because people in these regions have a higher overall preference for technology.

The regional and rural/urban differences for specific technology preferences are similar for ANs and CRNAs. Midwestern and Western ANs are less likely than their counterparts elsewhere to prefer better technology in all areas of technology except anesthesia machines. Urban ANs are more likely than rural ones to prefer better technology for patient monitoring. In addition, ANs who work more hours and spend a greater percentage of time in MAC are more likely than other ANs to prefer access to better anesthesia technology. This suggests that better anesthesia technology may be a complement to AN labor rather than a substitute.

**Table 3.22**  
**Preference for More Technology in Various Types of Anesthesia (%)**

Location	CRNAs			ANs		
	Monitored	General	Reg./Spinal	Monitored	General	Reg./Spinal
Mean	46.9	60.5	49.3	36.2	60.8	63.8
Northeast	49.5	63.4	48.5	40.2	63.7	65.3
Midwest	41.1	56.1	46.0	33.5	57.7	64.1
South	48.8	60.0	47.6	37.9	63.3	64.3
West	43.4	61.1	56.9	32.6	57.6	61.1
Rural	42.8	56.1	52.9	33.7	55.5	66.2
Urban	47.0	60.3	47.2	36.4	61.2	63.6

Table 3.22 examines differences in preferences for technology in the three major categories of anesthesia: (1) general anesthesia, (2) regional/spinal anesthesia, and (3) monitored anesthesia. Overall, CRNAs and ANs are least likely to prefer more technology in MAC than in other categories. Part of this difference may be due to the greater amount of time that CRNAs and ANs spend providing general anesthesia (see Table 3.13).

Relative to those in the Northeast, CRNAs in the Midwest are less likely to prefer better technology in all areas of anesthesia, and ANs in the Midwest are less likely to prefer better general-anesthesia technology. This supports our interpretation from previous results that Midwestern CRNAs have a lower preference for additional technology. One possible explanation is that Midwestern facilities are quicker to adopt technology, while another is that Midwestern facilities need less technology because the facilities are more likely to be smaller, rural facilities and less likely to see the most-seriously ill patients. Western CRNAs and ANs are also less likely than those in other regions to prefer better MAC technology. Western CRNAs, who have been shown to spend more time in regional/spinal anesthesia, also have the highest preference of all CRNAs for technology in this area. In general, the more time a CRNA or AN spends in a type of anesthesiology, the more he or she prefers better technology for that type of anesthesia. The only urban/rural difference is for monitored anesthesia. CRNAs in urban areas prefer better technology for monitored anesthesia.

The overall preference for technology across types of anesthesia is also much higher among CRNAs and ANs than among ANDIRs. Only 12 percent of ANDIRs wanted more MAC technology, and only 23 percent wanted more general-anesthesia technology, while 47 percent of CRNAs (and 36 percent of ANs) want more MAC technology, and 61 percent of CRNAs (and 64 percent of ANs) want more general-anesthesia technology. These differences in preferences may reflect the greater potential control ANDIRs have over the technology that is adopted in the facility and their being more accountable for cost-benefit justifications. From the viewpoint of surgeons, it appears that technology is most important because it improves quality of care, allows for additional functionality, and provides an interesting work environment. These results do seem to indicate, however, that the preference for technology among CRNAs and ANs is not lessened because they view technology as a substitute for their labor.

## Analysis of the Labor Markets

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In this chapter, we present results from our workforce analyses. As discussed in Chapter Two, we use three different methodologies: a survey-based approach, DBA, and economic analysis.

### Survey-Based Analysis

As part of our surveys, we asked questions that would specifically help us to understand whether the labor markets for ANs and CRNAs exhibit shortages. We examine data gathered on job openings, changes in hours worked, and responses to whether the employer needed more CRNAs and ANs to meet current and potential demand. Although those are not direct measures of surplus or shortage, they are suggestive.

The reported percentages of CRNAs and ANs with open positions available in their primary employment arrangement are 58 percent and 68 percent, respectively (Table 4.1). We find large differences in the percentage of CRNAs and ANs reporting open positions across regional and rural/urban areas. CRNAs and ANs in the Northeast are significantly more likely to report open positions, particularly relative to those in the West, and CRNAs and ANs in urban areas are also significantly more likely to report open positions than are their rural counterparts. Controlling for the size of the primary employer does significantly reduce urban/rural differences in open positions but does not completely eliminate the significance of this difference. Larger employers are more likely to have open positions, and these tend to be concentrated in more-populated areas.

The average number of open AN positions reported for these employers is 2.8, and the average number of open CRNA positions reported is 3.4.<sup>1</sup> There are more CRNA positions reported open than AN positions, whether we look at the absolute number of open positions or the percentage of total positions open. The employers for whom Western CRNAs work were less likely to have open CRNA positions and also any open positions. CRNAs and ANs who work for a single facility report more open AN positions than did those who work for a single group. Larger employers also have more open positions.

The AN and CRNA surveys also included a question on whether the respondent's employer (facility or group) needs more CRNAs or ANs to meet current demand. Responses varied across the three surveys. CRNAs are much more likely to state that their employer needs

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<sup>1</sup> One should be cautious in interpreting these numbers because a significant fraction of respondents could not answer this question. Of those respondents reporting any open position (58 percent for CRNAs and 68 percent for ANs), two-thirds knew the number of open CRNA or AN positions for their profession in their primary employment arrangement, while lower proportions knew the number of open positions for other types of anesthesia providers.

**Table 4.1**  
**Open Positions for Certified Registered Nurse Anesthetists and Anesthesiologists**

Location	CRNA Survey		AN Survey	
	% with Any Positions Open	Open Positions for CRNAs	% with Any Positions Open	Open Positions for ANs
Total	58.24	3.36	68.23	2.82
Northeast	71.91	3.44	77.54	2.91
Midwest	54.35	3.06	65.24	2.53
South	55.92	3.56	72.85	2.47
West	44.38	2.31	55.46	3.78
Rural	39.92	2.02	47.32	1.69
Urban	60.50	3.53	69.51	2.88

more CRNAs (78.5 percent) than to state that their employer needs more ANs (32.2 percent). Nearly 36 percent of ANs state that their primary employer needs more CRNAs, while 47.4 percent of ANs state that their employer needs more ANs. In the ANDIR survey, 22 percent of directors believe that they need more ANs to meet current demand, while nearly 30 percent of directors believe that they need more CRNAs to meet current demand.<sup>2</sup> It is possible that ANs and CRNAs are more knowledgeable of the needs for their own group and that ANDIRs are the most knowledgeable of all, having a better perspective on their facility's overall staffing requirements.

CRNAs in the Northeast are significantly more likely than those in any other region to report a need for both more CRNAs and more ANs (Table 4.2). In the Northeast, ANs also note this greater need for labor, particularly relative to the West. These responses suggest that the West in particular is not facing a shortage of anesthesia providers compared with other

**Table 4.2**  
**Percentage Reporting That Employer or Facility Needs More Certified Registered Nurse Anesthetists or Anesthesiologists to Meet Current Demand**

Location	CRNA Survey		AN Survey	
	Need More CRNAs	Need More ANs	Need More CRNAs	Need More ANs
Total	79.07	32.80	35.72	47.44
Northeast	86.58	40.32	46.45	50.27
Midwest	76.39	26.60	36.63	48.20
South	77.21	30.87	43.20	50.94
West	68.52	27.08	14.12	39.10
Rural	63.16	13.32	31.96	38.53
Urban	80.78	34.89	35.95	48.00

<sup>2</sup> In the interest of brevity, we do not present detailed tables of findings from our ANDIR survey. We give primacy to the AN and CRNA surveys and use the ANDIR survey to supplement findings from those two surveys.



regions. Urban CRNAs and ANs both report a greater need than their rural counterparts do for labor (particularly ANs) to meet current demand.

Although there is disagreement on the levels, the regional differences found for the CRNAs stating, “My primary employer needs more CRNAs to meet demand,” closely mirror our findings for the same question on the ANDIR survey. The Northeast is much more likely than all other regions to “need more CRNAs,” particularly relative to the West (though the difference with the South is only marginally significant,  $p = 0.09$ , when we control for rural/urban, facility size, and the number of CRNAs used daily). The rural/urban differences are not significant for ANs or CRNAs when controlling for facility size. There were also no significant regional differences in measures of AN shortage in the ANDIR survey. In the AN survey, we found several measures that indicate that AN shortages are less likely in Western facilities than elsewhere. Western ANs are less likely than ANs elsewhere to say that their employer “needs more ANs to meet current demand” and are less likely to report open positions with their employer.

We then attempt to gauge excess capacity in the workforces of CRNAs and ANs rather than lack of capacity, by asking, “Does your primary employment arrangement need more CRNAs/ANs to handle more cases?”<sup>3</sup>

As seen in Table 4.3, a greater percentage of CRNAs report the need for greater numbers of CRNAs to handle more cases (83 percent) than do ANs report needing ANs (35.3 percent). Approximately one-third of ANs who did report that their employer did not need additional staff to handle additional cases respond that additional CRNAs or ANs are “not the bottleneck to expansion,” implying that, even if their employer added more staff, they still would not be able to handle additional cases. As with the question on staffing needs to meet current demand,

**Table 4.3**  
**Percentage Reporting That Employer or Facility Needs More Certified Registered Nurse Anesthetists or Anesthesiologists to Handle More Cases**

Location	CRNAs		ANs	
	Need More CRNAs	Need More ANs	Need More CRNAs	Need More ANs
Total	82.97	41.81	31.54	35.25
Northeast	87.37	53.27	41.85	39.23
Midwest	80.15	35.29	30.29	31.73
South	80.62	37.92	37.25	38.03
West	78.50	36.40	14.70	31.06
Rural	70.69	18.93	22.78	25.09
Urban	83.68	44.16	32.11	35.90

<sup>3</sup> In the AN survey, the answer “no” was followed by “(additional staff is not the bottleneck to expansion).” In the CRNA survey, the answer “no” could mean that the employer could handle more cases without employing more CRNAs or ANs (excess labor capacity). However, in the AN survey, the answer “no” could mean (1) that their employer could handle more cases without employing more CRNAs or ANs or (2) that, even if their employer increased the number of CRNAs or ANs, they would not be able to handle more cases. A “no” answer by ANs can therefore be interpreted as an indication of additional labor capacity or a lack of nonlabor capacity, such as hospital facilities. The results for this question should therefore be interpreted with caution.



urban respondents were more likely than rural ones to report that their employer would need more professionals to handle additional patient volume. Northeastern CRNAs and ANs and those with larger employers are more likely to report that their employer needs more professionals to handle more cases.<sup>4</sup>

We do find that there is a statistically significant (and large) relationship between a CRNA or AN reporting that his or her employer has open positions and stating, “employer needs more CRNAs (ANs) to meet current demand.” This is useful validation of responses to different but related questions.

We asked in our surveys whether respondents had increased hours worked since 2004 (Table 4.4).

CRNAs in urban areas and ANs in the West are less likely than those elsewhere to have increased hours. This is interesting because our measures of shortage in the form of open positions and perception of need for labor find greater evidence of shortage in these areas. It may reveal the preferences of these groups to work fewer hours. Or, it might be that these CRNAs and ANs are otherwise constrained in the hours they are able to work. It is not that these urban CRNAs and Western ANs are working very long hours, because they are actually working the same or fewer hours than their counterparts in other regions (see Table 3.9 in Chapter Three).<sup>5</sup> But the differences could be due to regulations or because urban CRNAs are actually facing longer workdays than rural CRNAs if commute time is included.

In both the AN and CRNA surveys, we found significantly greater evidence of shortage in urban areas.<sup>6</sup> Urban employers have more open positions and are more likely to need more ANs and CRNAs to meet current demand, yet controlling for facility size diminishes or

**Table 4.4**  
**Percentage with Increase in Hours, 2004–2009**

Location	CRNAs	ANs
Total	41.78	54.77
Northeast	40.18	56.40
Midwest	42.81	57.37
South	43.61	58.79
West	41.78	44.80
Rural	49.19	56.67
Urban	41.27	54.66

<sup>4</sup> Finally, there are significant differences for male CRNAs and ANs with more experience, which remain even when the employer characteristics are controlled for. Experienced workers could be more aware of the right level of capacity in the workforce as they become more knowledgeable about their employer and more involved in higher levels of administration. Or, it may be that seniority affords these workers a more desirable work schedule that leads these CRNAs and ANs to feel less overworked.

<sup>5</sup> We also looked at the possibility that ANs in the West spent more of their total hours on call (and had therefore reached a limit on call availability), but we did not find this to be the case.

<sup>6</sup> Another interesting result is the statistically significant gender effect that remains even when all controls are added. This indicates that male CRNAs see labor-market conditions differently given open positions in the employment arrangement. One possible explanation is that male CRNAs are more eager to increase hours.

eliminates the significance of some of these findings, indicating that facility size is the primary driver of these rural/urban differences. Using data from the ANDIR survey (and controlling for facility size), we find that postponements of procedures due to a lack of CRNAs were greater in urban areas, but there were few other urban/rural differences in shortage.

Another difference in findings between the ANDIR and CRNA surveys is the relationship between direct hiring and shortage. Analysis of the ANDIR survey found that facilities that directly hire were more likely to postpone procedures due to shortage. The AN survey had similar results, with ANs working for one facility more likely to report that their employer “needs more ANs/CRNAs to meet current demand.” However, the CRNA survey finds that group employers, rather than facility (direct) employers, have the greatest likelihood of shortage. Facilities that do not directly employ can use multiple employer groups to staff their facility, so that, when one group may not have enough staff, another group can be used. This flexibility is a likely cause of the results found in the ANDIR survey. Yet, group employers of CRNAs may be more likely to have open positions (and “need more ANs/CRNAs”) because the size of a group employer may be more flexible than a facility employer and more capable of expansion.

Finally, the surgeon survey provides further evidence that there is a shortage of ANs and CRNAs. Surgeons state whether the availability of ANs and CRNAs is adequate for elective procedures. More than three-quarters of surgeons responded that the availability of ANs and CRNAs is inadequate for monitored and general anesthesia (Table 4.5). Those surgeons reporting supply to be inadequate report that approximately 17 percent of elective monitored and regional/spinal anesthesia procedures and 33.4 percent of elective general-anesthesia procedures are rescheduled due to this shortage of anesthesia providers.

All our surveys therefore suggest potential shortages in the AN and CRNA labor markets. The number of open positions, preference for more ANs or CRNAs to meet current demand, and rescheduling or postponement of procedures all point in the direction of shortages. We turn to the next level of our labor-market analysis, in which we do a DBA by tallying up supply of and demand for the two groups of anesthesia providers.

## Demand-Based Analysis

As discussed in Chapter Two, our analysis uses data from the same primary surveys for supply and demand calculations. We use national averages of clinical hours worked gathered from our surveys (49 hours per week for ANs and 37 for CRNAs) to sum up the supply of workers present in a particular state, in FTEs. We then calculate the demand using the actual volume of services provided and time taken per unit of service (e.g., procedures, patient), again based

**Table 4.5**  
**Surgeon Reports of Anesthesia-Provider Shortage (%)**

Type of Anesthesia	% Reporting AN/CRNA Supply Inadequate	% Reporting Some Procedures Rescheduled	% Reporting Some Procedures Delayed
MAC	77.48	16.26	54.62
General	77.46	33.40	69.20
Regional/spinal	64.62	17.13	50.73

on national averages, which is then reexpressed in terms of FTEs. While, nationally, supply and demand would have to be equal (i.e., the “average” state will be in equilibrium), within a given state, they need not.<sup>7</sup>

To briefly summarize the DBA discussion from Chapter Two, if the number of working hours is considered invariant across the states (counterfactual supply), then differences in hours of work across states can be attributed to differences in demand. States where providers work more than the desired level are in excess demand and, where they work less, in excess supply (step 1). If instead the time to do a particular procedure is considered invariant across states (counterfactual demand), then states where procedures are done faster have a larger shortage (step 2). If we combine both considerations, we can show that the variation in the number of procedures can be exploited to distinguish demand from supply (step 3). The primary focus will be on this final step, as it combines observed variations in work hours and procedure times.

In Tables 4.6 and 4.7, we report estimated excess demand (negative if there is excess supply) using DBA.<sup>8</sup> Quantities are reported in terms of FTEs, using 49 hours per week for ANs and 37 hours per week for CRNAs. In Appendix G, we present the summary statistics on the clinical workweek and number of procedures per week used in the DBA calculations.<sup>9</sup>

In the first step, in which average hours worked are constant across states, we find that 27 out of the 49 states examined face excess demand of ANs and 24 out of 47 of CRNAs. In the second step, in which time per procedure is held constant across states, we find that 25 states for ANs and 17 states for CRNAs are in shortage. When we combine the two considerations (step 3), 25 states for ANs and 19 for CRNAs are in shortage. For ANs, the estimates range from a 36-percent surplus in the District of Columbia to a shortage of 82 percent in Alabama. In absolute numbers, Florida, Alabama, and North Carolina exhibit the most shortage, and California, New York, and Massachusetts the most surplus. For CRNAs, the estimates range from a 38-percent surplus in South Dakota to a shortage of nearly the same percentage in Iowa. In terms of absolute numbers, Pennsylvania, Michigan, and Florida exhibit the most shortage, and Minnesota, North Carolina, and California the most surplus.<sup>10</sup>

Figure 4.1 shows a map of the United States for step 3, in which different shades indicate whether we estimate ANs and CRNAs to be in surplus or shortage. We leave unshaded those states that we do not include in our analysis due to an inadequate number of observations.

As mentioned in Chapter Two, many workforce studies have adopted a fixed workweek—typically, 40 hours. Therefore, we also analyze the labor markets with a 40-hour FTE for both

<sup>7</sup> Algebraically, equilibrium at the national level will be approximate due to computational considerations and because averages of ratios (say, while calculating per-procedure times) will not equal ratios of averages.

<sup>8</sup> As mentioned in Chapter Two, we retain states with more than five responses. For ANs, we have 49 states, and, for CRNAs, we have 47 states. We do not include Wyoming in the analysis of CRNAs, since all nine survey responses we have are from rural areas—the only state where this occurred.

<sup>9</sup> The first column of each summary statistics table (Tables 4.6 and 4.7) shows the number of survey responses that have state identifiers and can therefore be included in the DBA; they are lower than the total responses mentioned in Chapter Two. Not all states presented in Appendix G have enough responses to qualify for the DBA.

<sup>10</sup> For ANs, the correlation between clinical hours per week and the excess demand (from Appendix G and Table 4.6) is 0.27, and the correlation between the number of procedures performed per week and the excess demand is 0.55. The correlations are similar for CRNAs. These correlations indicate that the variation in procedures across states contributes substantially more to the excess-demand calculations than the variation in hours worked. This can also be seen in Tables 4.6 and 4.7, in which step 2 (variation in procedures) excess-demand numbers are much closer to the step 3 numbers than are step 1 (variation in hours) numbers.

**Table 4.6**  
**Demand-Based Analysis Results for Anesthesiologists with Full-Time Equivalence of 49 Hours per Week**

State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
Alabama	48.578	0.104	332.617	0.711	382.561	0.818
Arizona	19.139	0.024	-182.587	-0.229	-164.922	-0.207
Arkansas	-23.369	-0.099	5.533	0.023	-10.345	-0.044
California	-239.744	-0.053	-1,300.715	-0.288	-1,569.42	-0.347
Colorado	-17.117	-0.029	-74.591	-0.127	-82.26	-0.14
Connecticut	27.341	0.052	103.006	0.198	136.879	0.263
Delaware	5.492	0.074	1.167	0.016	6.454	0.087
D.C.	-17.105	-0.15	-28.899	-0.254	-41.07	-0.361
Florida	142.874	0.055	616.64	0.237	765.161	0.294
Georgia	1.751	0.002	111.927	0.129	129.193	0.149
Hawaii	-0.685	-0.007	-29.76	-0.287	-28.23	-0.272
Idaho	-11.827	-0.206	8.754	0.152	-3.072	-0.053
Illinois	51.599	0.029	-54.47	-0.03	19.059	0.011
Indiana	-43.36	-0.053	-164.931	-0.203	-200.209	-0.246
Iowa	-20.769	-0.072	-64.465	-0.225	-84.42	-0.294
Kansas	-30.403	-0.112	93.107	0.344	61.037	0.225
Kentucky	10.836	0.022	-28.372	-0.057	-14.884	-0.03
Louisiana	-29.238	-0.064	210.593	0.462	177.054	0.389
Maine	-4.89	-0.044	15.608	0.14	8.042	0.072
Maryland	-67.421	-0.074	-136.761	-0.149	-183.299	-0.2
Massachusetts	-160.45	-0.133	-91.869	-0.076	-258.632	-0.214
Michigan	11.589	0.014	228.152	0.273	230.964	0.276
Minnesota	21.21	0.041	200.412	0.385	210.585	0.404
Mississippi	15.044	0.106	-37.787	-0.266	-22.665	-0.16
Missouri	25.307	0.04	4.574	0.007	6.262	0.01
Montana	8.564	0.1	-30.136	-0.35	-22.683	-0.264
Nebraska	8.766	0.039	-6.048	-0.027	0.233	0.001
Nevada	55.578	0.142	-154.979	-0.395	-98.94	-0.252
New Hampshire	7.738	0.086	23.322	0.258	32.765	0.363
New Jersey	-27.173	-0.019	77.435	0.055	14.918	0.011
New Mexico	2.86	0.015	-59.935	-0.318	-51.837	-0.275

**Table 4.6—Continued**

State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
New York	-124.825	-0.04	-586.776	-0.186	-673.43	-0.214
North Carolina	9.476	0.012	266.578	0.332	298.551	0.372
North Dakota	-1.504	-0.035	10.289	0.238	8.786	0.203
Ohio	21.954	0.015	230.457	0.155	262.339	0.177
Oklahoma	-3.299	-0.012	-38.853	-0.138	-44.113	-0.157
Oregon	13.058	0.029	-46.847	-0.105	-55.854	-0.125
Pennsylvania	-58.531	-0.039	250.605	0.167	193.653	0.129
Rhode Island	-3.006	-0.026	17.841	0.156	17.886	0.157
South Carolina	15.625	0.035	140.776	0.317	161.858	0.364
South Dakota	9.463	0.179	22.819	0.432	32.282	0.612
Tennessee	-28.435	-0.04	233.723	0.33	221.497	0.312
Texas	14.655	0.005	-270.726	-0.092	-250.223	-0.085
Utah	0.212	0.001	-32.297	-0.095	-34.639	-0.101
Vermont	-5.787	-0.114	-8.062	-0.158	-13.157	-0.259
Virginia	15.935	0.017	105.138	0.114	114.149	0.124
Washington	-47.873	-0.057	-116.197	-0.138	-170.676	-0.202
West Virginia	6.297	0.04	6.988	0.044	15.046	0.095
Wisconsin	11.55	0.015	-41.398	-0.055	-39.45	-0.052

NOTE: Step 1 holds desired clinical working hours constant across states, 2 assumes constant procedure times across states, and 3 combines the two.

**Table 4.7**  
**Demand-Based Analysis Results for Certified Registered Nurse Anesthetists with Full-Time**  
**Equivalence of 37 Hours per Week**

State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
Alabama	1.176	0.001	-69.042	-0.067	-45.015	-0.044
Arizona	10.145	0.054	-24.531	-0.131	-6.439	-0.034
Arkansas	39.83	0.136	-10.463	-0.036	31.23	0.106
California	-36.601	-0.038	-126.908	-0.13	-154.917	-0.159
Colorado	-6.364	-0.036	-10.998	-0.062	-32.751	-0.185
Connecticut	-59.395	-0.208	-0.565	-0.002	-55.147	-0.193
Delaware	2.983	0.018	3.433	0.021	6.896	0.042
D.C.	21.082	0.277	-26.382	-0.346	-18.627	-0.244

Table 4.7—Continued

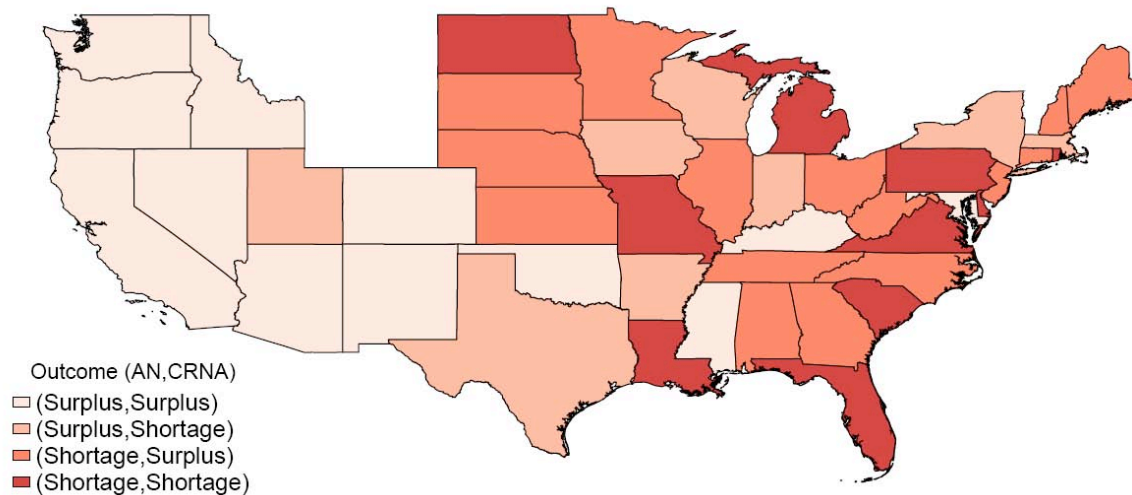
State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
Florida	24.06	0.011	216.316	0.096	248.868	0.111
Georgia	-28.163	-0.038	-28.315	-0.039	-47.1	-0.064
Hawaii	0.996	0.01	-1.341	-0.014	1.14	0.012
Idaho	-4.401	-0.026	-4.571	-0.027	-8.357	-0.049
Illinois	-48.394	-0.058	-98.074	-0.118	-149.828	-0.181
Indiana	-1.252	-0.006	21.426	0.111	16.058	0.083
Iowa	9.59	0.059	52.114	0.321	62.075	0.382
Kansas	-18.527	-0.052	3.948	0.011	-14.552	-0.041
Kentucky	33.025	0.067	-55.257	-0.112	-22.768	-0.046
Louisiana	27.617	0.036	-24.611	-0.032	5.665	0.007
Maine	-17.77	-0.104	-19.356	-0.113	-34.088	-0.199
Maryland	1.925	0.005	-41.91	-0.108	-43.903	-0.113
Massachusetts	-1.029	-0.002	13.085	0.022	10.83	0.019
Michigan	-3.418	-0.002	237.214	0.157	179.656	0.119
Minnesota	-148.079	-0.151	-80.166	-0.082	-241.023	-0.246
Mississippi	-21.722	-0.08	11.227	0.041	-2.133	-0.008
Missouri	53.982	0.061	5.371	0.006	45.298	0.051
Montana						
Nebraska	3.814	0.026	-21.584	-0.145	-22.417	-0.151
Nevada	4.816	0.079	-25.311	-0.417	-20.495	-0.338
New Hampshire	4.995	0.081	-14.319	-0.231	-8.585	-0.138
New Jersey	-28.471	-0.061	25.716	0.055	-5.046	-0.011
New Mexico	-15.225	-0.187	-4.418	-0.054	-17.473	-0.214
New York	-17.075	-0.022	79.139	0.103	61.1	0.079
North Carolina	-99.801	-0.066	-54.007	-0.036	-166.023	-0.11
North Dakota	-8.683	-0.052	34.837	0.211	28.521	0.172
Ohio	-43.511	-0.031	12.225	0.009	-4.732	-0.003
Oklahoma	27.401	0.113	-45.885	-0.19	-12.579	-0.052
Oregon	31.634	0.17	-27.425	-0.147	-6.463	-0.035
Pennsylvania	-5.583	-0.002	124.186	0.053	114.84	0.049
Rhode Island	2.151	0.02	4.055	0.037	1.878	0.017
South Carolina	-4.489	-0.007	52.154	0.079	46.886	0.071

**Table 4.7—Continued**

State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
South Dakota	-28.204	-0.172	-29.629	-0.181	-62.259	-0.379
Tennessee	28.284	0.025	-13.17	-0.011	-3.089	-0.003
Texas	60.92	0.029	-24.099	-0.012	9.058	0.004
Utah	12.883	0.1	-5.956	-0.046	7.881	0.061
Vermont						
Virginia	26.453	0.029	63.486	0.07	96.049	0.106
Washington	-6.913	-0.02	-44.15	-0.13	-51.773	-0.153
West Virginia	22.528	0.073	-37.198	-0.12	-46.087	-0.149
Wisconsin	15.688	0.036	-5.549	-0.013	16.747	0.039

NOTE: Step 1 holds desired clinical working hours constant across states, 2 assumes constant procedure times across states, and 3 combines the two.

**Figure 4.1**  
**Classification of States by Shortage/Surplus, Demand-Based Analysis**



NOTE: States that are not shaded are those that we do not include in our analysis due to an inadequate number of observations.

groups.<sup>11</sup> The analogues of Tables 4.6 and 4.7 for this case are presented and discussed in Appendix H.

We next present results from the economic analysis, which, unlike DBA, does take into account wages and other institutional factors that vary by state.

<sup>11</sup> Previous studies have typically examined either the physician or the nurse market. The assumption of 40-hour FTE for both markets, where the average numbers of hours worked per week are clearly different, is less innocuous.



## Economic Analysis

Two market models were estimated: one assuming equilibrium and another not. In the equilibrium model, wages are assumed to adjust, while, in the second, institutional rigidities prevent wages from adjusting fully. We present results for both models in this section.

Since the economic analysis uses wages and other state-level information to estimate supply and demand relationships, it is not bound by the restrictions discussed for DBA, in which using the same data on the quantity of labor for demand and supply meant that the national labor market was in equilibrium (and we identified shortage/surplus at the state level). In the disequilibrium model presented in this section, we can provide estimates of shortage/surplus not only at the state level but also at the national level.

### Equilibrium Model

In Chapter Two, we discussed the estimation strategy for the equilibrium model in detail. Appendix F describes the technical details of the equilibrium model. In essence, we used the state as the unit of analysis and estimated the demand for a given labor group (ANs or CRNAs) as dependent on wages of both groups, output (procedures), and a set of controls. Supply was estimated as dependent on wages of own group and a set of controls. The controls used were the percentage of respondents in a state who reported that their primary employer is too slow at adopting technology (as a measure of technology or lack thereof), information on the total population and population 65 and older, population density, median income, HMO penetration rate for 2004, number of beds available in the state, AN residency positions available for 2004, and the number of CRNA accredited nurse-anesthetist education programs in the state.

Distinguishing supply from demand requires that we exclude at least one (different) control each in the supply and demand estimations. We did this by excluding residency openings from the AN labor demand equation and the HMO penetration rate from the AN labor supply equation. We also excluded the wages of CRNA and output from the AN supply equation. For CRNAs, we enforced similar exclusions, although we used the number of accredited nurse-anesthetist education programs in the state as the exclusion restriction in the supply equation.

Estimates from the equilibrium model reveal extremely large demand elasticity:  $-2.015$  for ANs and  $-1.772$  for CRNAs. (The demand elasticity signifies the percentage change—a decrease—in demand for a 1-percent increase in the wage rate.) However, they are not statistically significant. The estimates of cross-elasticity (the percentage by which AN demand increases when CRNA wage increases by 1 percent and vice versa) are also not significant. The magnitude and the imprecision of these estimates might be a signal that equilibrium models might not be appropriate for the situation at hand. Lane and Gohmann (1995) report similar results. Therefore, we discuss the disequilibrium model, which is much more likely to be relevant to these markets, in greater detail in the next section.

### Disequilibrium Model

The estimation of the disequilibrium model was also discussed in detail in Chapter Two; technical details are given in Appendix F. In this model, wages do not adjust so as to equate demand and supply; they are assumed fixed. Instead of estimating labor supply and demand elasticity simultaneously as in the equilibrium model, we use data from our surveys to fix supply elasticity. The questions we asked allowed us to calculate that a 1-percent increase in wage would increase AN labor supply by 0.34 percent and CRNA labor supply by 0.41 per-



cent. We fix these and estimate the rest of the disequilibrium model via the method of maximum likelihood.

This model implies that a 1-percent increase in AN wages would decrease their demand by 0.187 percent and a 1-percent increase in CRNA wages would decrease their demand by 0.527 percent. These estimates are statistically significant at the 5-percent level. Therefore, assuming disequilibrium in the labor markets dramatically reduces the estimates for demand elasticity and increases its statistical significance. Output (measured in procedures) is strongly positively related to CRNA demand but not to AN demand. This may be related to the fact that average time per procedure is lower for CRNAs than for ANs (see Tables 3.13 and 3.14 in Chapter Three).

Using the estimates from the disequilibrium model, we compute estimates of the probability of shortage, the expected demand and supply of each state, and the percentage change in the current wages of both labor inputs required to “restore” equilibrium.<sup>12</sup> These are reported in Table 4.8 for ANs and Table 4.9 for CRNAs.<sup>13</sup> Following Gourieroux (2000), we classify states as experiencing shortage if the likelihood of shortage is greater than 50 percent. We

**Table 4.8**  
**Market Disequilibrium Estimates for Anesthesiologists**

State	Probability of Excess Demand	Excess Demand	% Excess Demand	Required Wage Change (%)
Alabama	0.397	-19	-0.027	-0.043
Arizona	0.454	-4	-0.004	0.462
Arkansas	0.643	7	0.017	0.179
California	1.000	1,025	0.150	0.191
Colorado	0.649	22	0.024	0.116
Connecticut	0.029	-93	-0.128	-0.300
Delaware	0.000	-32	-0.261	-0.395
Florida	0.999	273	0.083	0.041
Georgia	0.919	246	0.185	0.267
Hawaii	0.000	-27	-0.133	0.070
Idaho	1.000	64	0.465	0.765
Illinois	0.380	-38	-0.014	-0.059
Indiana	0.990	88	0.077	0.224
Iowa	0.925	31	0.075	0.357

<sup>12</sup> As evident in Table 4.8, there is no simple connection between the change in wage required to restore equilibrium and whether a state is experiencing shortage or surplus. That is, it is not always the case that a shortage state will require higher wages to restore equilibrium. This is because we jointly estimate demand for the two groups (given the dependence of demand for one group on the wages of the other) and variables other than wages also affect the demand of both groups.

<sup>13</sup> In the disequilibrium economic analysis, the predicted supply in the United States will not sum up to the actual observed FTEs. This arises in part because some states are predicted to be in excess supply. Hence, the observed supply is demand constrained.

Table 4.8—Continued

State	Probability of Excess Demand	Excess Demand	% Excess Demand	Required Wage Change (%)
Kansas	0.977	91	0.210	0.320
Kentucky	0.132	-15	-0.020	-0.022
Louisiana	0.925	60	0.091	0.118
Maine	0.162	-9	-0.036	0.103
Maryland	0.545	7	0.005	-0.104
Massachusetts	0.998	215	0.109	0.158
Michigan	1.000	450	0.322	0.567
Minnesota	1.000	94	0.122	0.192
Mississippi	0.889	17	0.048	0.062
Missouri	0.149	-97	-0.109	-0.257
Montana	0.291	-4	-0.029	0.094
Nebraska	0.448	-1	-0.005	0.195
Nevada	0.330	-6	-0.012	0.282
New Hampshire	0.484	0	0.000	0.084
New Jersey	0.521	5	0.002	-0.092
New Mexico	0.003	-21	-0.068	-0.146
New York	1.000	444	0.095	0.007
North Carolina	0.997	109	0.082	0.043
North Dakota	0.453	0	-0.001	-0.015
Ohio	0.865	166	0.079	0.045
Oklahoma	0.371	-14	-0.029	-0.003
Oregon	0.474	0	-0.001	0.094
Pennsylvania	1.000	287	0.128	0.181
Rhode Island	0.000	-16	-0.111	-0.306
South Carolina	0.438	-6	-0.010	0.004
South Dakota	0.089	-9	-0.081	-0.115
Tennessee	0.733	29	0.026	0.006
Texas	1.000	364	0.090	0.106
Utah	0.828	22	0.049	0.664
Vermont	0.062	-9	-0.070	0.459
Virginia	0.719	78	0.056	0.078
Washington	0.610	12	0.009	0.127
West Virginia	0.010	-37	-0.159	-0.308

**Table 4.8—Continued**

State	Probability of Excess Demand	Excess Demand	% Excess Demand	Required Wage Change (%)
Wisconsin	0.986	51	0.049	0.183
Total		3,800	0.072	

NOTE: Based on disequilibrium model estimates.

**Table 4.9  
Market Disequilibrium Estimates for Certified Registered Nurse Anesthetists**

State	Probability of Excess Demand	Excess Demand	% Excess Demand	Required Wage Change (%)
Alabama	0.822	14	0.010	0.001
Arizona	0.000	-262	-0.722	-0.838
Arkansas	0.022	-250	-0.423	-0.400
California	0.999	179	0.134	0.198
Colorado	0.000	-66	-0.168	-0.149
Connecticut	0.999	50	0.109	0.054
Delaware	0.247	-26	-0.120	-0.254
Florida	1.000	594	0.210	0.226
Georgia	0.986	98	0.089	0.141
Hawaii	0.000	-71	-0.492	-0.626
Idaho	0.666	-1	-0.004	0.172
Illinois	1.000	109	0.086	0.076
Indiana	0.000	-152	-0.404	-0.336
Iowa	0.000	-249	-0.498	-0.389
Kansas	0.729	5	0.007	0.079
Kentucky	0.641	-26	-0.027	-0.034
Louisiana	0.868	48	0.044	0.065
Maine	0.000	-101	-0.309	-0.327
Maryland	1.000	86	0.181	0.192
Massachusetts	0.994	41	0.063	0.139
Michigan	1.000	137	0.061	0.205
Minnesota	0.856	79	0.042	0.088
Mississippi	0.531	-16	-0.025	-0.011
Missouri	1.000	149	0.115	0.059
Montana	0.000	-62	-0.379	-0.376
Nebraska	0.000	-165	-0.375	-0.348

Table 4.9—Continued

State	Probability of Excess Demand	Excess Demand	% Excess Demand	Required Wage Change (%)
Nevada	0.000	-65	-0.533	-0.503
New Hampshire	0.000	-34	-0.172	-0.167
New Jersey	0.998	135	0.227	0.244
New Mexico	0.919	7	0.035	0.006
New York	1.000	324	0.279	0.343
North Carolina	1.000	475	0.185	0.229
North Dakota	0.805	7	0.027	0.020
Ohio	1.000	339	0.181	0.208
Oklahoma	0.465	-53	-0.103	-0.102
Oregon	0.274	-74	-0.183	-0.157
Pennsylvania	1.000	322	0.100	0.145
Rhode Island	1.000	33	0.213	0.214
South Carolina	0.562	-51	-0.047	-0.045
South Dakota	0.308	-41	-0.098	-0.126
Tennessee	1.000	142	0.083	0.087
Texas	1.000	238	0.080	0.109
Utah	0.013	-216	-0.713	-0.540
Vermont	0.000	-47	-0.752	-0.693
Virginia	0.847	31	0.026	0.048
Washington	0.253	-122	-0.198	-0.206
Wisconsin	0.680	-12	-0.019	-0.089
West Virginia	0.000	-203	-0.233	-0.191
Total		1,282	0.030	

NOTE: Based on disequilibrium model estimates.

estimate that 54.1 percent of the states have an excess demand for ANs. For states with excess demand, the average size of the AN shortage is 10 percent. Delaware is seen to have a surplus of ANs of more than 26 percent, while Idaho has a shortage of more than 46 percent. The remaining 46 percent of the states are estimated to have an excess supply. The extent of excess supply is, however, lower—on average, 5.9 percent lower than excess demand. Overall, we estimate a shortage of 3,800 Anesthesiologists in the United States.<sup>14</sup>

For CRNAs, more than 60 percent of states are predicted to be in excess demand. Such states have an average gap of 8.5 percent between demand and supply. Nevada has a surplus of CRNAs exceeding 53 percent, while New York has a shortage of nearly 28 percent. Given our

<sup>14</sup> Schubert, Eckhout, Cooperider, and Kuhel (2001) estimate a deficit of 1,000–4,500 ANs by 2005.

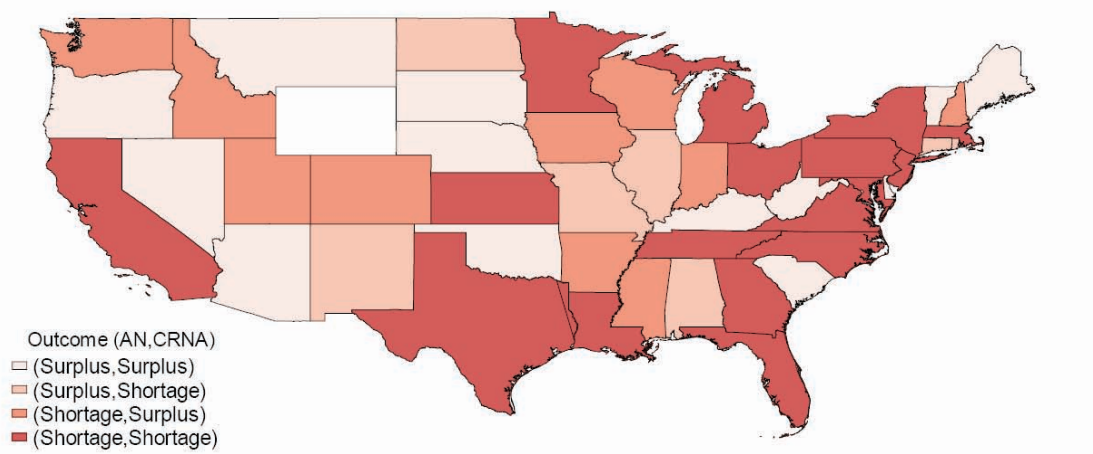
elasticity estimates, our models imply that wages would need to rise by 10.9 percent, on average, to close the gap. This is less than for ANs, reflecting the greater elasticity of both CRNA demand and supply. This implies that, for the same level of excess demand, wages are further away from their equilibrium levels for ANs. Overall, we estimate a shortage of CRNAs at the national level of 1,282.<sup>15</sup>

Figure 4.2 shows a map of the United States for the economic analysis (the analogue of Figure 4.1), in which different shades indicate whether we estimate ANs and CRNAs to be in surplus or shortage. States we do not include in our analysis (Alaska and Wyoming) due to an inadequate number of observations are not shaded.

## Regional Analysis

We had presented the survey results by region to capture important regional differences. The region, as opposed to the state, was also a more tractable unit of analysis for this purpose. We then presented the DBA and economic analysis by state to capture the labor-market situation at a finer level of detail and because variations that exist at the state level made it a natural unit of analysis. For completeness and comparability with the survey analysis, we briefly discuss the results from the DBA and economic analysis at the regional level. Table 4.10 presents shortage/surplus by region, which can be compared to the survey results presented in Tables 4.1 and 4.2, which were indicative of a potential shortage. A positive figure indicates excess demand (shortage) in percentage FTE units, while a negative figure excess supply (surplus).

**Figure 4.2**  
**Classification of States by Shortage/Surplus, Economic Analysis**



NOTE: States that are not shaded are those that we do not include in our analysis due to an inadequate number of observations.

<sup>15</sup> The shortage estimates of 3,800 for ANs and 1,282 for CRNAs are calculated using FTE definitions of 49 hours per week and 37 hours per week, respectively, as gathered from our surveys. If a 40-hour-per-week FTE definition is used, the shortage estimates are 4,655 for ANs and 1,186 for CRNAs.

**Table 4.10**  
**Demand-Based Analysis and Economic Analysis Results, by Region (%)**

Location	CRNAs		ANs	
	DBA	Economic Analysis	DBA	Economic Analysis
Northeast	1.80	10.02	-6.68	6.45
Midwest	-1.98	1.74	6.63	8.26
South	0.28	5.31	14.02	5.19
West	-12.06	-18.48	-27.27	8.33

The regional DBA and economic analysis results for CRNAs are consistent with those we found from the survey. Evidence of a shortage is strongest for the Northeast in all three of our methods. On the opposite end, there is very little evidence of a shortage in the West, and the DBA and economic analysis both show evidence that there is, in fact, a large surplus of CRNAs in that area. Facilities in the West are less likely to use any CRNAs (Table 3.3 in Chapter Three); it is therefore possible that this lower demand leads to a surplus. Both analyses point to a small shortage in the South, more so than in the Midwest (where only the economic analysis points to a small shortage). These are in line with the findings from our surveys, which also find the facilities and employers in the South to be slightly more likely to be facing a shortage than the Midwest, but with both falling somewhere in between the Northeast and the West.

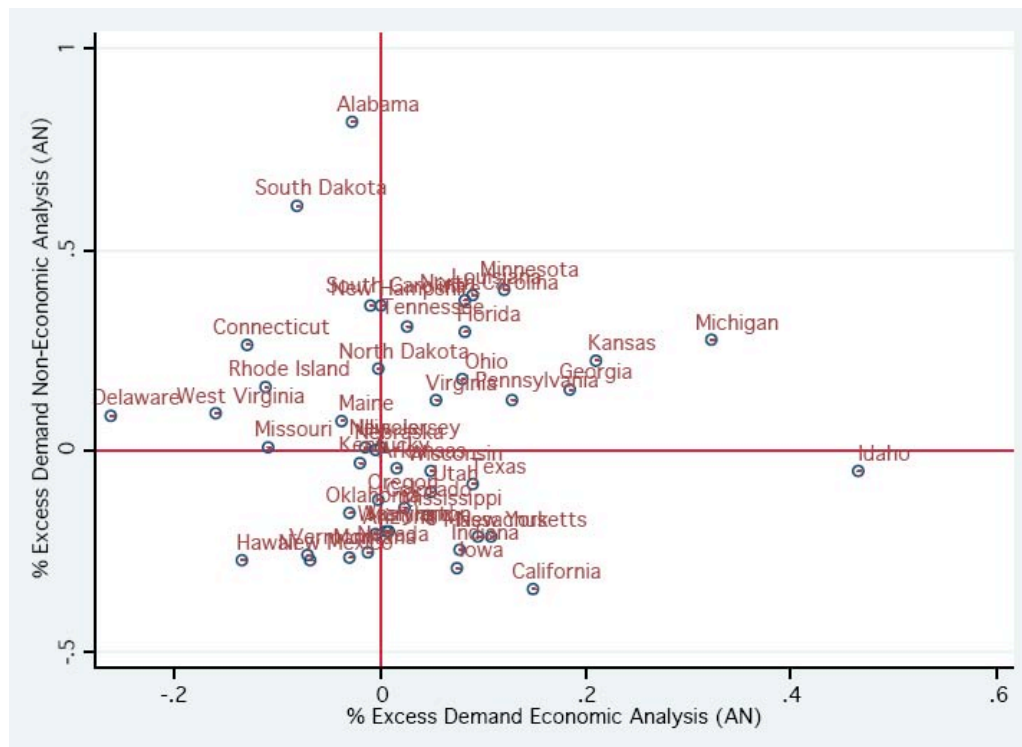
The regional DBA and economic analysis results for ANs are less consistent with each other and with the surveys. The DBA results indicate a large surplus in the West and a smaller surplus in the Northeast, with a shortage in the Midwest and an even larger shortage in the South. The economic analysis, on the other hand, shows moderate shortages in all regions, with the Midwest and West having somewhat larger shortages than the Northeast and South. The DBA results partially correspond to those of the surveys, which found that facilities in the Northeast and South were most likely to have open positions for ANs, while facilities in the West were the least likely (Table 4.1). In summary, the DBA findings indicate large regional differences in AN shortage, while the economic and survey analyses point to little regional variation, with moderate shortage across all regions.

## Comparing the Demand-Based Analysis and Econometric Methods

Given that the DBA (noneconomic) method ignores an important component of the labor markets—namely, wages—as well as other factors that could potentially influence demand and supply, it is not surprising that they paint different pictures of shortage and surplus. We now delve a bit deeper into these differences and explore the potential causes for such differences.

We first plot, in Figures 4.3 and 4.4, the percentage of excess demand arising from the disequilibrium and DBA analysis. If there is perfect agreement between both methods for a state, the point should lie on the 45-degree line through the origin. However, one can see that the overall fit between the two measures is poor. Only in 44 percent of the cases do both approaches agree for ANs, and in 52 percent of the states for CRNAs.

**Figure 4.3**  
**Comparison of Excess Demand: Economic and Noneconomic Analysis for Anesthesiologists**



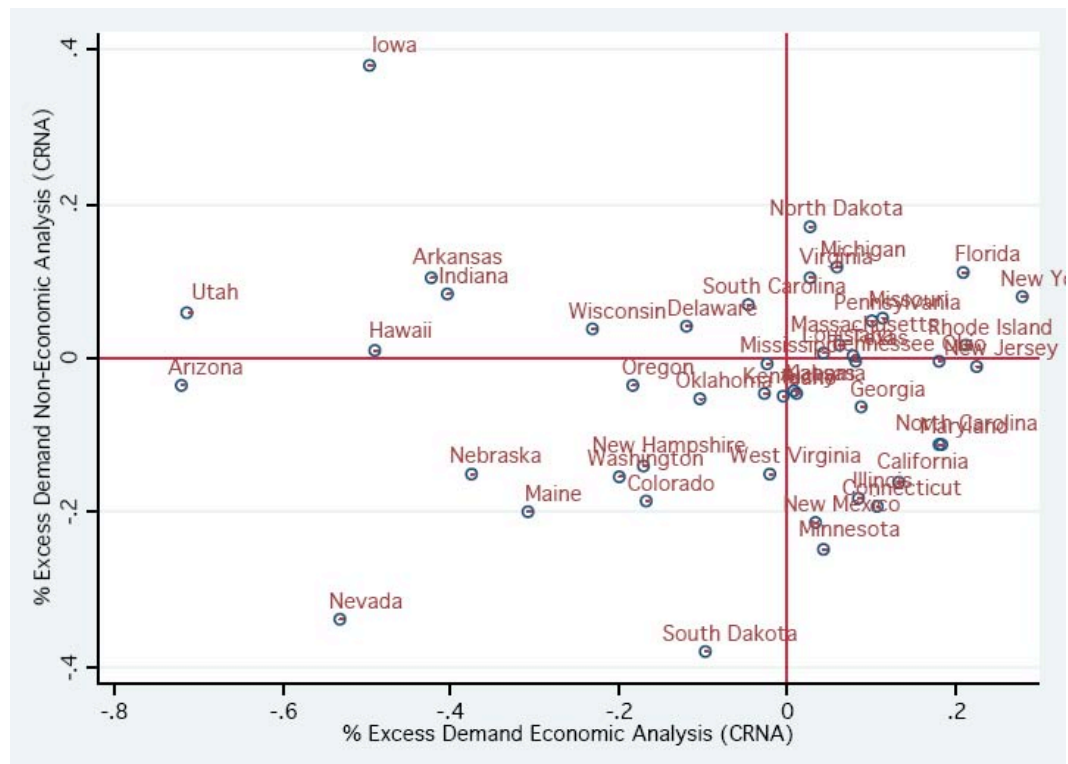
To investigate the reasons for the dissonance between the two methods, we follow Lane and Gohmann (1995) and examine the characteristics of the states based on their classification using both approaches. In Table 4.11, we present average wages, the percentage of each type of providers reporting shortage, the density of the population, median household income, and population size.

Both approaches tend to classify those states in which wages are higher as facing a shortage of ANs. The average hourly wage is \$122 in those states where both methods identify a shortage, as opposed to an average hourly wage of \$109 in those states where both methods reveal a surplus. In a similar vein, the average wage rate is higher (\$117 per hour) when the economic approach identifies a shortage and DBA a surplus than when DBA identifies a shortage and the economic approach a surplus (when it is \$106 per hour). This appears to corroborate a point we have repeatedly made, that the noneconomic approach works on the basis of partial information by ignoring wages and focusing on quantities alone.<sup>16</sup>

We found that, in states where median income is higher, the economic approach tends to report an excess demand for ANs. Finally, in states where a higher fraction of ANs report needing more ANs to meet current demand, both approaches are more likely to classify the

<sup>16</sup> This result is not inconsistent with Figure 2.2 in Chapter Two, in which a high wage is associated with high supply. That figure was drawn for a given state. Across states both the demand and supply curves could shift outward—for example, due to a higher median income of the patient population and better weather—and a higher wage could still be associated with shortage. The point we want to make here is that wages and other variables systematically differ in those states identified as being in shortage by the two types of analysis.

**Figure 4.4**  
**Comparison of Excess Demand: Economic and Noneconomic Analysis for Certified Registered Nurse Anesthetists**



state as being in excess demand (44 percent of respondents reporting greater need of ANs when both methods indicate surplus and 46–51 percent reporting greater need when at least one of the methods finds excess demand). This finding points to the consistency between the survey-based approach and the economic analysis in identifying shortages.

For CRNAs, we find a similar pattern. The wage differences are smaller, but states with higher CRNA wages are nevertheless more likely to be classified by at least one approach as being in excess demand. The percentage of CRNAs reporting greater need for CRNAs is highly correlated with our classification of states. In states where both methods find excess demand, 84 percent of CRNAs report shortage, compared to 68 percent in states where both methods find excess supply.

In summary, we find that the economic and noneconomic approaches yield quite different predictions of shortage and surplus across the states, and for reasons we had expected a priori. The economic approach uses all available information, especially wages. The outcomes of the survey-based method are well correlated with those of the economic approach. Given its more complete use of information, we lean toward the outcomes of the economic approach (which are well corroborated by the survey-based approach).



**Table 4.11**  
**Characteristics of States, Based on Noneconomic and Economic Classification of Shortage**

Variable	NE = 0, E = 0	NE = 1, E = 0	NE = 0, E = 1	NE = 1, E = 1	Total
ANs					
Wage (AN)	108.60	106.17	116.74	121.96	113.82
Wage (CRNA)	71.57	69.93	76.69	74.59	73.40
% AN say shortage	0.44	0.51	0.46	0.47	0.47
Density population	0.15	0.29	0.32	0.62	0.36
Household income	39,435	41,022	43,647	43,132	42,041
Population (millions)	2.816	3.142	9.142	8.172	6.131
No. of states	9	13	14	13	49
CRNAs					
Wage (AN)	110.58	112.91	119.23	112.51	113.82
Wage (CRNA)	73.14	72.50	75.49	72.19	73.40
% CRNA say shortage	0.68	0.71	0.78	0.84	0.75
Density population	0.13	0.17	0.45	0.70	0.36
Household income	39,567	41,538	45,079	42,053	42,041
Population	3.091	2.855	9.078	9.215	6.131
No. of states	14	10	13	12	49

NOTE: NE = noneconomic (0 = surplus, 1 = shortage). E = economic. Statistics reported are means.

## Scenarios for Certified Registered Nurse Anesthetist and Anesthesiologist Labor Markets, 2007–2020

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In this chapter, we use data from our surveys and other available sources to study a few scenarios of how the CRNA and AN labor markets might evolve between 2007 and 2020.

A few caveats are in order:

- Even with very sophisticated models, projecting or forecasting is a treacherous exercise, since completely unforeseen circumstances can alter the situation drastically. This is particularly so with the “linear” projection approach that we and other workforce studies have taken. These projections give estimates of how workforce requirements will change in the future under a given set of assumptions about such things as entry and exit rates and the rate of growth in demand. Therefore, scenario planning, rather than forecasting, is the appropriate interpretation of the analysis in this chapter.
- The reliability of projections for the immediate future is likely to be higher than those for the distant future. Growth rates get “compounded” over longer horizons, and small changes in the time trend can have large effects on results for the distant future.
- The models do not account for factors that may change in the future, such as the ramifications of health-care reform for anesthesiology, changes in certifications or residency positions, potential change in U.S. demand for surgeries due to international tourism, technological change (which could increase labor demand if the technologies complement the skills of ANs and CRNAs or decrease it if they substitute for skills), drug discoveries, change in the mix of the types of anesthesia professionals for cost, technological or regulatory reasons, and increased participation of anesthesia professionals in administration or management (or in general a change in the percentage of time they spend in clinical care).
- In particular, the ongoing economic and financial crisis that followed the surveys we conducted might have long-term implications for both supply (for example, professionals who have seen their retirement savings dissipate might decide to work longer) and demand (for example, closures of some facilities for cost reasons), which the present analysis does not take into account.
- We conduct the projection exercise starting with a situation of equilibrium in both markets. Recall from Chapter Four that DBA yields equilibrium at the national level.<sup>1</sup> Therefore, any drawbacks of this methodology will carry over to the projections.

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<sup>1</sup> Doing projections with the economic approach would require data over time, which we do not have. Given that the economic approach indicates shortages in both labor markets, any shortage seen when we start from a position of equilibrium should be interpreted as a lower bound.

Consistent with the scenario-planning interpretation, we conduct extensive analysis on the sensitivity of the projections to assumptions in key supply and demand parameters. Studying the range of possible outcomes under different parameter assumptions is particularly important given the above caveats.

## Data, Parameters, and Initial Values

Table 5.1 documents the data sources for each parameter, the initial values of these parameters, and the ranges used in our sensitivity analysis. The key parameters used to project demand and supply labor markets are described in this section.

### Demand

Recall that the DBA yields equilibrium at the national level; equilibrium in both markets is therefore our initial condition.<sup>2</sup> The initial values for number of procedures and time per procedure are taken from our surveys.<sup>3</sup>

The average times per procedure for CRNAs and ANs remain fixed in our projections, as do the proportion of all procedures covered by CRNAs or ANs. In other words, we assume that the demand for CRNAs and ANs changes at the same rate over time.

Our survey gives us a snapshot of demand in 2007, but we must use other data sources to project growth in demand. We use the ARF data from 1985 to 2004 to calculate the growth rate of total surgeries completed annually. We use this 1.61-percent annual growth rate found in the ARF data as our baseline value for the growth rate in demand.

There are reasons to believe that growth in surgical procedures will be higher in the future than it was between 1985 and 2004. The U.S. Census Bureau projects that the number of people aged 65 and over will grow at an average annual rate of 2.7 percent between 2005 and 2020. Increases in morbidity and increased access to health care are other potential explanations for higher growth rates in demand for anesthesia providers. We therefore project an alternative growth rate of 3 percent to determine whether this changes the potential for shortage in the CRNA and AN labor markets. We also consider 4- and 5-percent demand growth for CRNAs to see under what conditions shortage could result for them.

Some ANs feel that the demand for their group has seen an increase due to a rapid rise in ambulatory surgical centers. If the current economic slowdown persists for a few years, some of these facilities are likely to be shut down. Moreover, potential health-care reform could make some surgical procedures elective. These factors could decrease the demand for anesthesia services below what would be predicted based on current demand, so we also study a demand growth rate lower than 1.61 percent, of 0.75 percent for ANs.

<sup>2</sup> As mentioned earlier, the national equilibrium will be approximate due to computational considerations and because averages of ratios will not equal ratios of averages.

<sup>3</sup> CRNAs report that they participate in 947,710 procedures weekly and spend an average of 1.22 hours on each procedure. ANs report 1,534,773 procedures and an average of 1.08 hours per procedure. The longer per-procedure time for CRNAs is not inconsistent with the discussion surrounding Table 3.13 in Chapter Three. There, we examine the *percentage* allocation of the clinical times of the two groups across the various types of procedure. The number of procedures and time per procedure given here take into account the actual clinical hours per week, which are different between the two groups. Also note that these figures are relevant for starting the scenarios out in equilibrium, but the evolution of the labor markets depend on the parameters listed in Table 5.1.

**Table 5.1**  
**Summary of Data and Parameters**

Labor Market	Group	Data	Period	Baseline Values	Range of Values (%)
Demand 2007					
				Growth of procedures ( <i>rd</i> ) (%)	
	CRNAs	ARF file	1985–2004	1.61	[1.61, 5]
	ANs	ARF file	1985–2004	1.61	[0.75, 3]
				Number of procedures	
	CRNAs	CRNA survey	2007	947,710	
	ANs	AN survey	2007	1,534,773	
				Time per procedure (hours)	
	CRNAs	CRNA survey	2007	1.224756	
	ANs	AN survey	2007	1.079154	
Supply 2007					
				Exit rate ( <i>rx</i> ) (%)	
	CRNAs	AANA	1994–2007	1.40	[0.5, 3]
	ANs	ASA	1999–2007	1.15	[0.5, 3]
				Entry rate ( <i>re</i> ) (%)	
	CRNAs	AANA	1994–2007	4.4	[1, 5.5]
	ANs	ASA	1999–2007	1.82	[1, 5.5]

**Supply**

We start with the supply used in our DBA. We assume that the changes in the supply of CRNAs and ANs are driven by entries into and exits from the labor market according to the following equations:

$$S_{t+1} = S_t + E_t - X_t$$

$$\frac{S_{t+1}}{S_t} = 1 + re_t - rx_t.$$

Here,  $S$  is the “stock” of labor (i.e., the current number of professionals), and  $t$  and  $t + 1$  refer to the current and next years, respectively. Entry into the labor force (e.g., through certification, completion of residency) is denoted by  $E$ , and exit from the labor force (e.g., through retirement, death) is denoted by  $X$ .<sup>4</sup> The rate of entry,  $re$ , captures new entrants as a fraction of the labor force ( $E/S$ ), and the rate of exit,  $rx$ , captures exits as a fraction of the labor force ( $X/S$ ). Since

$$\frac{S_{t+1}}{S_t}$$

<sup>4</sup> AN residencies typically last three to four years; therefore, we do not consider each resident as an entrant into the AN labor market until four years after entering residency.

is the gross growth rate of labor (which equals  $1 + g$  if  $g$  denotes the growth rate of labor), we can write

$$g = re - rx.$$

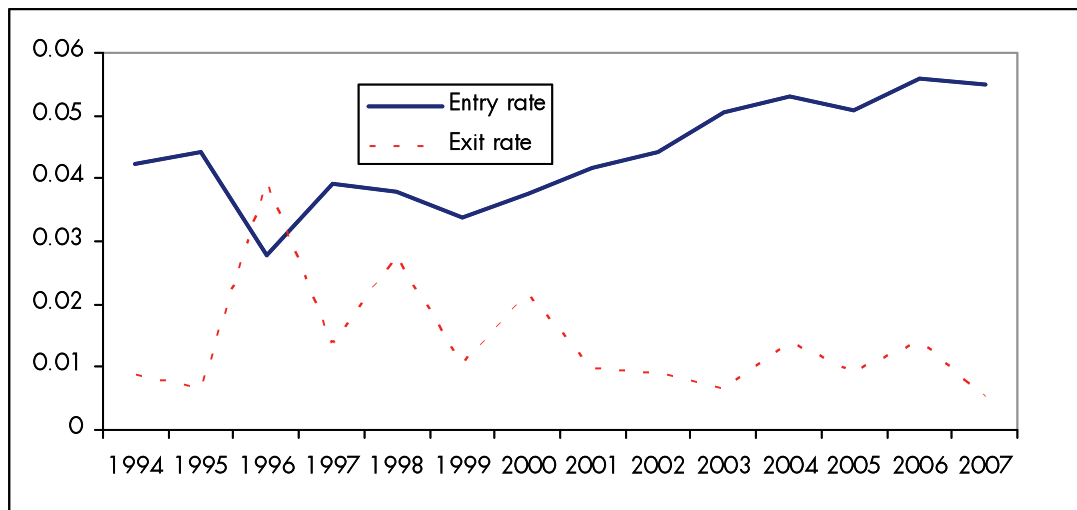
The growth rate of labor is the difference between the entry and exit rates. Therefore, for supply, our key parameters are the rates of entry ( $re$ ) and exit ( $rx$ ).

We assume that all newly certified CRNAs become active members of the labor force immediately. AANA provided us with data on newly certified CRNAs each year between 1994 and 2007, allowing us to calculate the entry rates for these years. Figure 5.1 illustrates the large fluctuations in entry rates through 1998. Since 1999, the pattern has been more consistent, with steady growth in the number of new entrants. Between 1999 and 2007, the entry rate as defined above increased from 3.4 percent to 5.5 percent. The baseline value we use for the CRNA entry rate is 4.39 percent, the average between 1999 and 2007. In our sensitivity analysis, we examine what would happen to the supply of CRNAs if the entry rate remained at the recently seen high of 5.5 percent, as well as what the implications would be if annual CRNA certifications were restricted to a low value of 1 percent of the labor force.

While we do not have data on the number of CRNAs leaving the labor market, AANA did provide the total number of CRNAs in the labor market (between 1994 and 2007). Combining the change in total CRNAs with our data on entries, we are able to calculate the number of CRNAs leaving the labor market using the equations shown above.<sup>5</sup> Our initial value for the exit rate is 1.4 percent, the average exit rate across all years of data.

We can use our survey data to determine whether an exit rate of 1.4 percent is plausible. Table 5.2 displays the retirement expectations for our survey respondents. It is likely that those who are closest to retiring are able to make the most-accurate predictions about years

**Figure 5.1**  
**Entry and Exit Rates in the Certified Registered Nurse Anesthetist Labor Market**



<sup>5</sup> This method leads to a highly variable exit rate. It may also overestimate the entry rate and underestimate the exit rate because it assumes that all newly certified CRNAs enter the labor market.

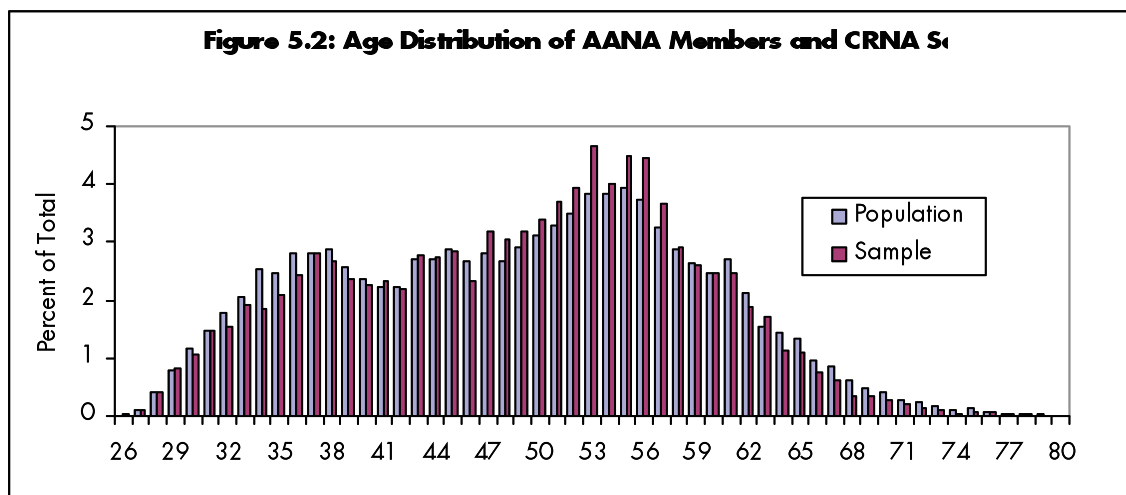
**Table 5.2**  
**Certified Registered Nurse Anesthetists and**  
**Anesthesiologists Planning to Retire (%)**

Retirement Year	CRNAs	ANs
2007	0.23	0.48
2008–2010	6.64	4.46
2011–2015	20.53	19.66
2016–2020	26.05	30.16
After 2020	46.55	45.25

of retirement, so we use those who planned to retire 2008–2010 to estimate retirement rates. This method results in a CRNA exit-rate estimate of 2.2 percent, somewhat higher than the initial value we propose. The higher reports of expected retirement in our CRNA survey may be indicative of higher exit rates in the near future. The age distribution of CRNAs seen in Figure 5.2 shows a distinct hump between the ages of 52 and 60. This indicates that a large number of CRNAs will be reaching retirement age by 2020. To predict what may happen if CRNAs exit at these higher rates, our sensitivity analysis includes an exit rate of 3 percent. We also experiment with a low exit rate of 0.5 percent, to capture the low exit rate in 2007 seen in Table 5.2.

To calculate the labor-market entry rates for ANs, we used data on newly filled residencies (1990–2006) from the National Resident Matching Program (NRM) results for 2006 (Grogono, 2006). However, because residencies typically last three to four years, we do not

**Figure 5.2**  
**Age Distribution of American Association for Nurse Anesthetist Members and Certified Registered Nurse Anesthetist Sample**



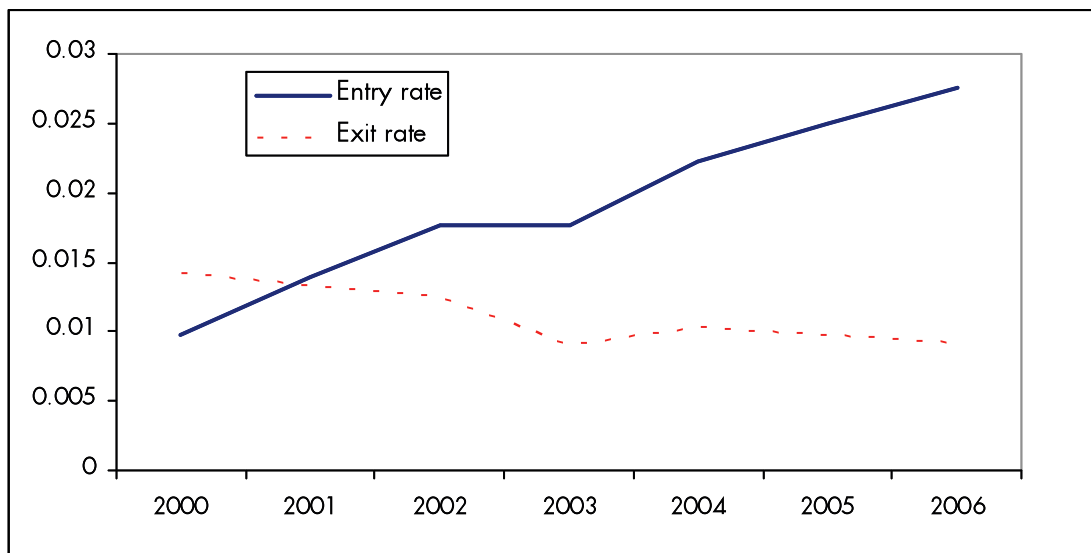
consider each resident as an entrant into the AN labor market until four years after entering residency.<sup>6</sup> Figure 5.3 indicates that, similar to CRNAs, there has been significant growth in the entry rate into the AN labor market in recent years. We use 1.82 percent, the average entry rate between 2000 and 2006, as the baseline entry rate for the AN market. Since the last few years have seen a significant increase in the entry rate of ANs, we also study a 2.5-percent entry rate, the average for the last three years of our data. Finally, we experiment with entry rates of 5.5 percent and 1 percent (as we do for CRNAs) in our sensitivity analysis.

We obtained data from ASA on retirements, deaths, and other exits from the labor force, so we do not need to back out these estimates as we did for CRNAs. The exit rate for ANs has remained somewhat constant since 2000, with the exception of a small decline between 2002 and 2003. We use the average exit rate of 1.15 percent as our baseline value for the exit rate.

Because exit rates in the AN labor market have declined recently, it is useful to examine what may happen if this rate were lower than 1.15 percent; our sensitivity analysis therefore tests the effect of a 0.5-percent exit rate for ANs.<sup>7</sup>

Our survey results suggest a somewhat higher exit rate of 1.49 percent between 2008 and 2010 (see Table 5.2). This indicates that exit rates may increase in future years. It might be

**Figure 5.3**  
**Entry and Exit Rates in the Anesthesiologist Labor Market**



<sup>6</sup> Lee, Jackson, and Relles (1998) assume that the first-year residents = 0.35 FTEs, second- and third-year residents = 0.5 FTEs, and fourth-year residents = 0.75 FTEs. Our surveys show that, on average, 9.94 percent of anesthesiology providers with whom ANs work are residents. If we assume that one-fourth of residents fall into each year of residency, the average FTE is roughly 0.5. This means that residents make up less than 5 percent of the AN labor force in terms of FTEs. We find that nearly 65 percent of ANs report no residents in their facility. Given these facts, we do not include AN residents as part of the AN labor force, but we do take into account the lag between an increase in residency positions and its effect on the labor force.

<sup>7</sup> The lower exit rate is studied to also account for the possibility that members older than 55 drop their membership in ASA. If this is the case, the rate of 1.15 percent might overestimate exit. These ANs might also be working reduced hours and not fully retired.

useful to explore the possibility of higher exit rates in our sensitivity analysis for the following reasons:

- In addition to planned retirements in the survey, there are deaths and disabling diseases—the death rate for 65-year-old men is about 2 percent per year in the United States, so, even if working ANs are much healthier than average, 1 percent or more of them might die or become disabled annually.
- The planning-to-retire data, summarized in Table 5.2, shows that, between 2011 and 2015, nearly 20 percent of ANs plan to retire, which amounts to 4 percent per year. Year of retirement is likely better estimated than most future events, as people can pick an age to retire; therefore, it would be useful to consider this information.
- Even though Figure 5.4—the analogue of Figure 5.2 for ANs—does not show the same hump in the age distribution that we saw for CRNAs, there are about 4 percent each year in the 44–56 age range and 2 percent in the 57–61 range.

To account for these facts, we also study a 3-percent annual exit rate.

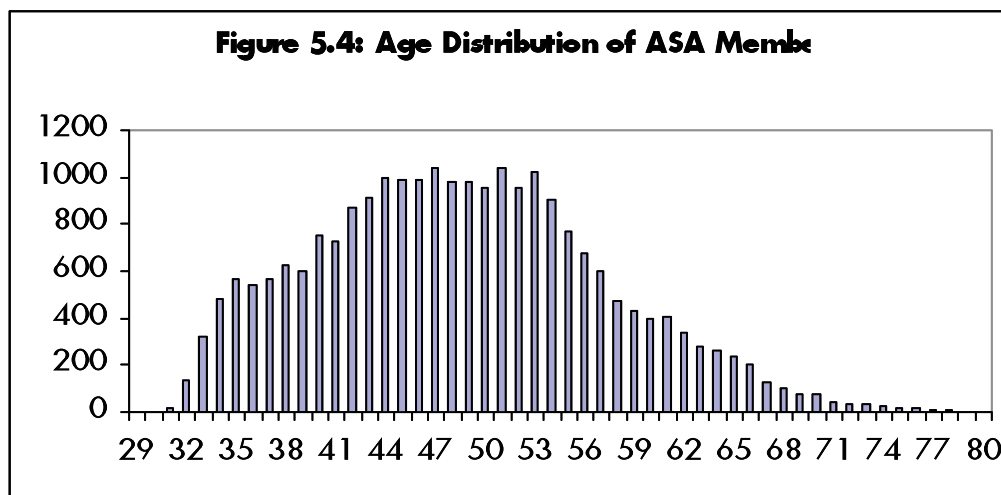
## Labor-Market Scenarios: 2007–2020

Recall that the net growth in supply is given by the difference in entry and exit rates. If this net growth in supply exceeds the demand growth, there will be a surplus; otherwise, there will be a shortage.

### Certified Registered Nurse Anesthetists

When we start from equilibrium and use our baseline values for exit and entry rates (which imply a net growth in supply of  $4.4 - 1.4 = 3$  percent), and the baseline growth in demand (of 1.61 percent), we find a surplus of 7,970 CRNAs by 2020 (see Figure 5.5).

**Figure 5.4**  
**Age Distribution of American Society of Anesthesiologists Members**





**Figure 5.5**  
**Certified Registered Nurse Anesthetist Labor Market, 2007–2020**

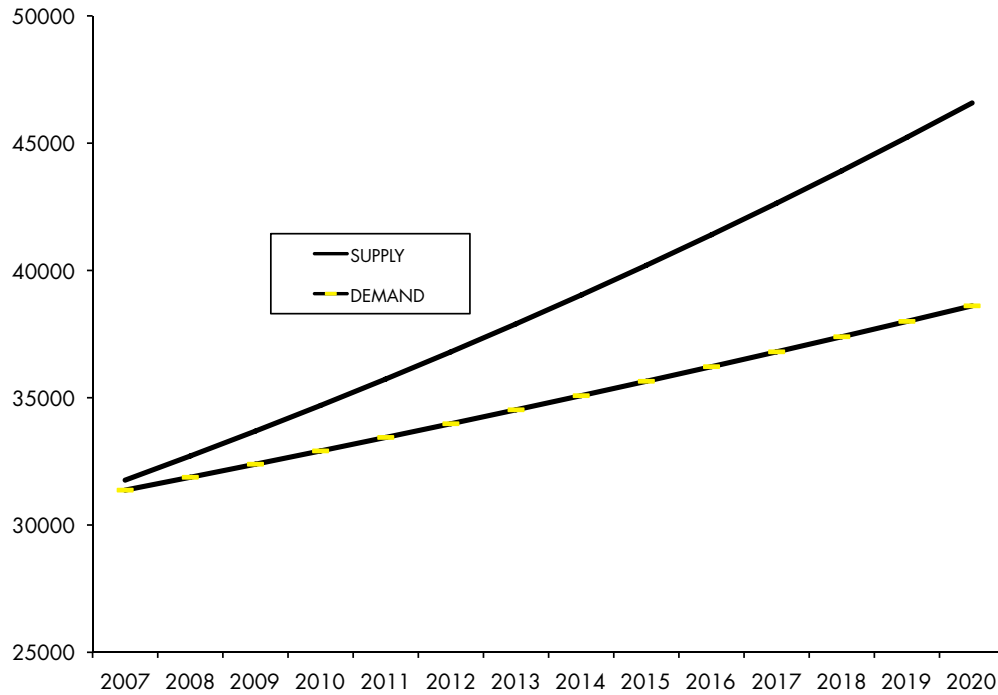
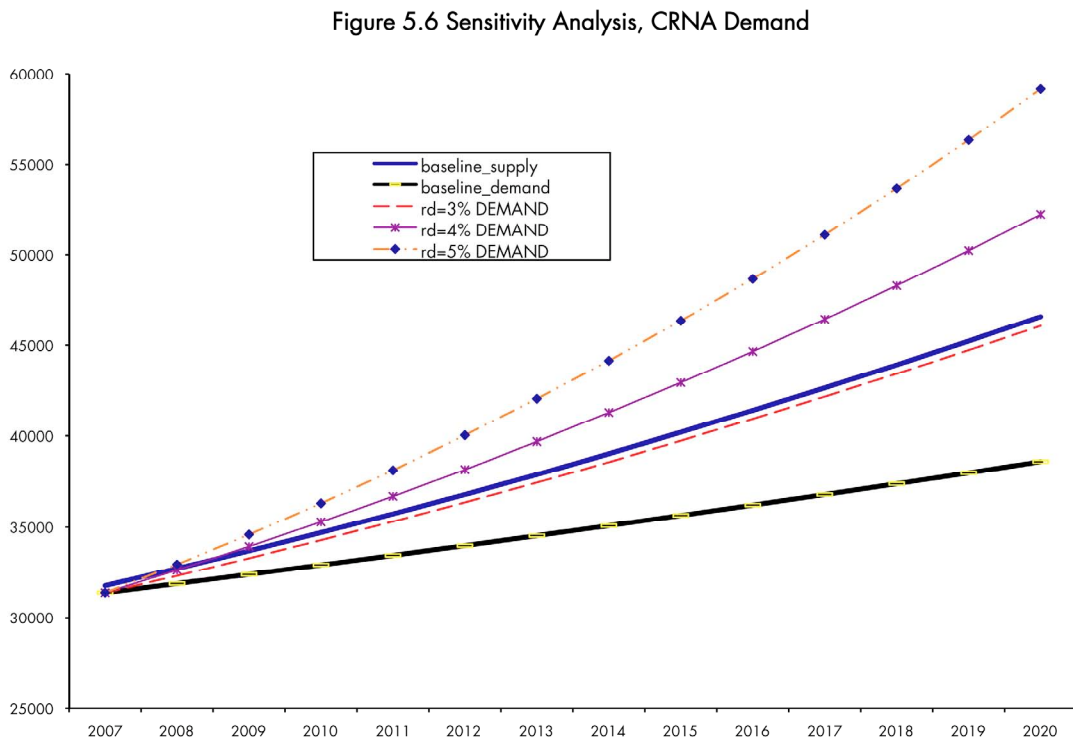


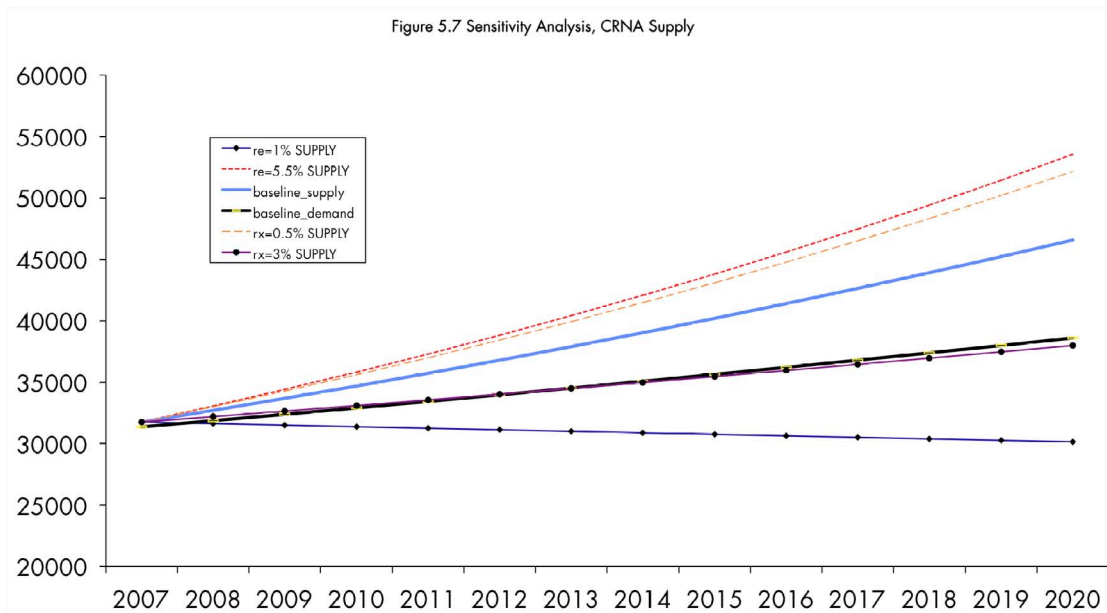
Figure 5.6 presents the sensitivity of our results to changes in the demand for CRNAs. We show the baseline demand and supply over time (as in Figure 5.5), as well as the demand under alternative scenarios. As previously mentioned, demand may be expected to increase more quickly in future years as the percentage of the population over 65 increases substantially. With an annual growth rate of 3 percent, we find that supply and demand will be in equilibrium by 2020, since supply and demand grow at the same rate over time. If growth in demand increases beyond 3 percent annually, we observe a shortage of CRNAs. With a 4-percent annual growth in demand, there is a shortage of 5,655 CRNAs by 2020, and, with 5 percent growth, a shortage of 12,574 by 2020.

The sensitivity of our analysis to changes in the supply of CRNAs is presented in Figure 5.7. We show the baseline demand and supply over time as well as the supply under alternative scenarios. We find that, if entry rates remain as high as the 2007 rate (5.5 percent of the CRNA labor force, which causes the net supply growth rate of  $5.5 - 1.4 = 4.1$  percent to exceed the baseline demand growth of 1.61 percent), the surplus of CRNAs will be as high as 14,942 by 2020. On the other hand, if the entry rate is limited to 1 percent of the CRNA labor force—say, by restricting certification of CRNAs, which results in the labor force *shrinking* by 0.4 percent annually ( $1 - 1.4$ ), there will be a shortage of 8,460 CRNAs by 2020. Our survey data suggest that it is likely that the exit rate will increase as a large portion of the CRNA workforce reaches retirement age in the next few years. An increase in the exit rate to 3 percent would cause the supply to dip below demand slightly (since the net supply growth is

**Figure 5.6**  
**Sensitivity Analysis: Certified Registered Nurse Anesthetist Demand**



**Figure 5.7**  
**Sensitivity Analysis: Certified Registered Nurse Anesthetist Supply**



$4.4 - 3 = 1.4$  percent), creating a shortage of 609 by 2020. A lower exit rate of 0.5 percent (net supply growth of  $4.4 - 0.5 = 3.9$  percent) will cause a surplus of 13,548 by 2020.

In summary, in the scenarios we have examined, a high annual growth in demand (higher than 3 percent, given baseline supply growth) and a low net growth of supply (a combination of low entry and high exit rates that cause supply growth to fall below the baseline demand growth of 1.61 percent per year) will result in shortages by 2020. In other cases, there will be a surplus.

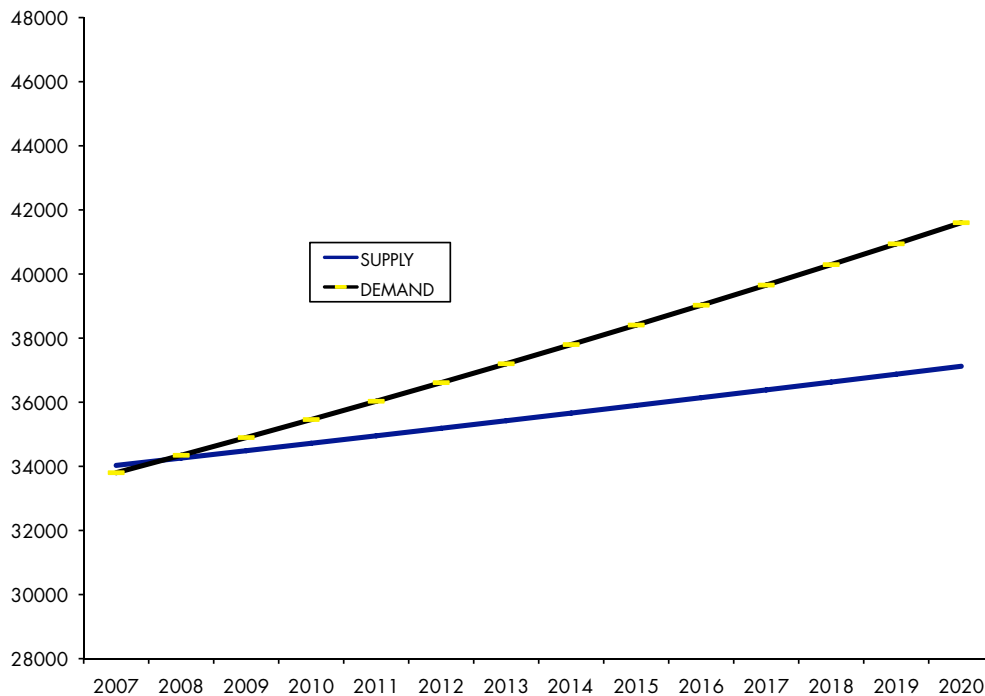
### Anesthesiologists

When we start from equilibrium and use our baseline values for exit and entry rates (which imply a net growth in supply of  $1.82 - 1.15 = 0.67$  percent) and the baseline growth in demand (of 1.61 percent), we find a shortage of 4,479 ANs by 2020 (see Figure 5.8).

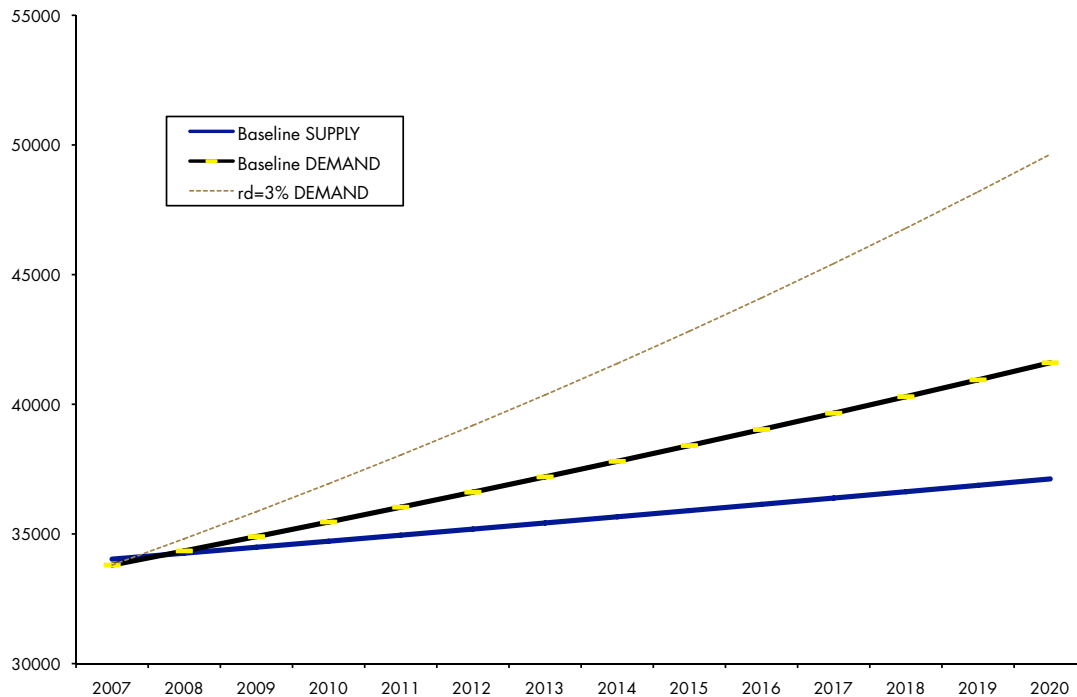
The sensitivity analysis for changes in demand for ANs are presented in Figure 5.9. If the growth rate doubles to 3 percent with the aging of the population, the shortage of ANs will become even more severe, growing to 12,516 by 2020. A lower demand growth rate of 0.75 percent would leave the market roughly in equilibrium by 2020.

Figure 5.10 presents the sensitivity analysis for changes in AN supply. There are kinks in the supply curve, reflecting the lag between increased residencies and the four years that it takes for this increase in supply to materialize in the labor market. As mentioned earlier, we do not consider residents as part of the labor force. In the scenarios we have examined, only an increase in the entry rate to 5.5 percent (the 2007 entry rate for CRNAs, which yields a net

**Figure 5.8**  
Anesthesiologist Projections, 2007–2020



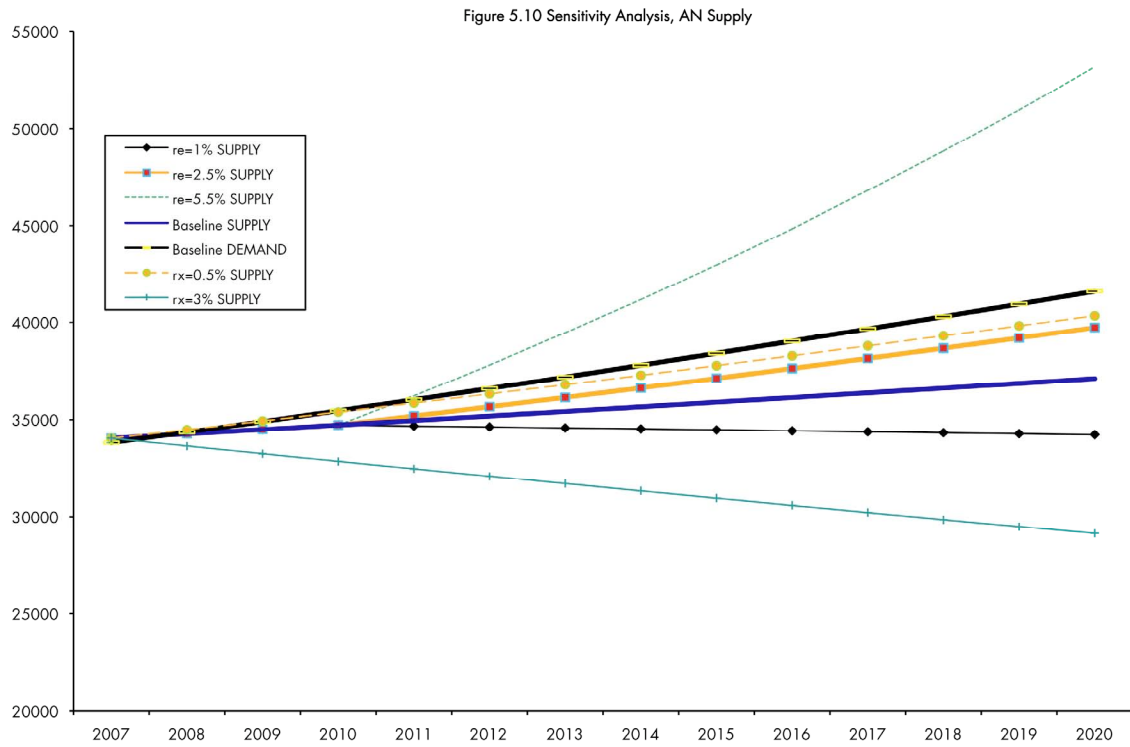
**Figure 5.9**  
**Sensitivity Analysis: Anesthesiologist Demand**



supply growth rate of  $5.5 - 1.15 = 4.35$  percent) will lead to a surplus in 2020 of 11,571 ANs. A 2.5-percent entry rate (net supply growth of 1.35 percent) results in a shortage of 1,882 ANs by 2020, and a 1-percent entry rate (net supply *shrinkage* of 0.15 percent) in a shortage of 7,384. Relative to the benchmark exit rate of 1.15 percent, a lower exit rate of 0.5 percent (net supply growth of 1.32 percent) causes a shortage of 1,263 ANs by 2020, while a higher exit rate of 3 percent (net supply *shrinkage* of 1.18 percent) increases the shortage to 12,450 by 2020.

In summary, in the scenarios we have examined, only an entry rate of 5.5 percent will result in AN surplus by 2020. (Any entry rate over 2.76 percent will cause the net supply growth to exceed the baseline demand growth of 1.61 percent, given the baseline exit rate of 1.15 percent.) In other cases, there will be a shortage.

**Figure 5.10**  
**Sensitivity Analysis: Anesthesiologist Supply**



## Conclusions and Future Directions

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In this report, we have undertaken an analysis of the labor markets for anesthesiology—in particular, for ANs and CRNAs. We conducted surveys among these groups to gather data on work patterns, wages, and demographic characteristics.

Our surveys captured many of the intricacies of these labor markets and revealed wide regional variations in the practice of anesthesiology, especially between the West (where CRNAs are less frequently used than they are elsewhere, but ANs still earn the least of any region in the country) and the Northeast (where CRNAs and ANs tend to work together more than anywhere else, MAC is provided more than anywhere else, and where growth in alternatives to MAC—moderate or deep sedation by sedation nurses or non-NAs—is likely to have the greatest impact on demand). There are also clear urban/rural differences in the labor markets for anesthesiology. Rural facilities are more likely than urban ones to employ CRNAs and less likely to employ ANs. Both ANs and CRNAs earn more in rural areas than in urban ones, and rural CRNAs also work longer hours than their urban counterparts.

We also used our surveys to gather information on the technology preferences of anesthesia providers. A majority of ANs and CRNAs across the country tend to prefer the adoption of more technology, especially in general anesthesia. ANs are less likely than CRNAs to want better technology for MAC and more likely than CRNAs to prefer better regional/spinal anesthesia technology.

Based on direct questions on potential shortages or excess supplies that we included in our surveys, as well as on a detailed econometric study, we conclude that there are shortages in the labor markets for both ANs and CRNAs at the national level. We estimate a shortage of 3,800 ANs and 1,282 CRNAs, nationally. We find that more than 54 percent of the states are experiencing a shortage of ANs, and more than 60 percent a shortage of CRNAs. There are sizable variations across states. Delaware is seen to have a surplus of ANs of more than 26 percent, while Idaho has a shortage of more than 46 percent. Nevada has a surplus of CRNAs exceeding 53 percent, while New York has a shortage of nearly 28 percent.

The noneconomic DBA we have conducted, while based on equilibrium at the national level, also provides shortage/surplus at the state level. However, the economic and noneconomic approaches agree on classifying a state as being in shortage or surplus only about half the time or less. The noneconomic analysis does not use wage and other information in its analysis, while the economic analysis does, making its findings more reliable.

We use a simple linear projection of supply and demand to examine the evolution of both labor markets until 2020, starting at equilibrium. Using the clinical-week averages from our surveys, average entry and exit rates from the recent past for both groups, and a growth rate in the demand for surgeries of around 1.6 percent between 1985 and 2004, we find a projected

shortage of ANs by 2020, and an excess supply of CRNAs. However, there are scenarios in the entire range of parameter values we examine in which these situations reverse for each group.

Our study has important implications for workforce planning. A key policy variable that is under the control of the professions' policymaking bodies is the rate of entry into the profession—residency positions for ANs and certifications for CRNAs. These could be increased in the case of shortages (such as the ones we find nationally). The scenario analysis we have done through 2020 shows how various entry rates, in conjunction with other variables, such as exit rates and demand growth rates, can result in shortage or surplus in the future. An important conclusion of our study is that the labor markets are very heterogeneous. Planning purely at the national level might not mitigate the shortage or surplus situations in particular states or regions. Understanding the degree of mobility across states and its determinants (which is beyond the scope of the current study) might be important for workforce planning in specific regions.

Our surveys have yielded a rich data set that can be used in conjunction with publicly available data to explore other research questions in the future:

- While we have explored the interaction between the labor markets and technology availability and preference for technology, more can be done. For instance, it would be useful to further explore the degree of substitutability or complementarity between technology and the two labor groups. This would shed light on how technological advances could alter the demand for labor; if technology and labor are substitutes, such an advance would decrease the demand for labor. But, if they are complements, the advance would increase the demand for labor. A particular challenge would be to disentangle regulatory features (for instance, the ability to practice independently) and intrinsic technological necessities (for instance, the combination of skills needed for certain procedures) that make factor inputs complements or substitutes.
- We have assumed that wages do not adjust in the AN and CRNA labor markets when we conduct our economic analysis. Examining specific sources of friction that prevent wages from adjusting would strengthen our conclusions. For instance, wages might reflect the level of Medicare reimbursements rather than supply and demand considerations, which are likely to be much more dynamic than adjustments to reimbursements. Or wages could reflect monopsony power (bargaining power in hiring situations) that facilities have in certain labor markets.
- Along similar lines, we have assumed in our analysis that labor markets are localized at least at the state level and that there is little mobility across states. This assumption warrants further examination. As mentioned earlier, given the high level of heterogeneity across states, labor-force planning cannot be done purely at the national level. By collecting data on patterns of mobility, it would be useful to understand the locational choice of ANs and CRNAs and assess the extent to which lack of mobility affects state-level labor-market conditions.

## Anesthesiologist Survey Questionnaire

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### Section A: General Employment Information

A1. When did you start practice as an Anesthesiologist? [1930 . . . 2007]

Please use the following interpretation for hospital/facility:

- *Hospitals* include university hospitals and academic medical centers
- *Facilities* include ambulatory surgical centers, office suites, etc.
- *Groups* include physician group practices.

#### A2–A7: Questions about your main affiliation

A2. For how many years have you been in your current affiliation? [0 ... 50]

A3. Which of the following best describes your current affiliation?

1. One group
2. One hospital/facility
3. Multiple groups
4. Multiple hospitals/facilities
5. Locum tenens
6. Other: Specify \_\_\_\_\_

A4. How many other Anesthesiologists practice in your primary group/practice at all facilities (not including locum tenens or other temporary additions to the group)? [0,300]

A5. How many open positions does your group/practice have for

1. Anesthesiologists
2. Anesthesiologist Assistants (AAs) / CRNAs
3. Unknown (Go to A7)

A6. To cover our current volume of cases, my group/practice would prefer to have

1. More Anesthesiologists (Yes/No/Unknown)
2. More AAs/CRNAs (Yes/No/Unknown)
3. Does Not Apply (Fully Staffed)



A7. My group/practice could handle more cases if we could hire

1. Additional Anesthesiologists (Yes/No/Unknown)
2. Additional AAs/CRNAs (Yes/No/Unknown)
3. Does Not Apply (Fully Staffed)

A8. Which of the following best describes the facility where you provide services?

1. One hospital/facility
2. Multiple hospitals/facilities
3. Other: Specify \_\_\_\_\_

For primary facility questions, please use the following interpretation:

- *Primary facility*: The facility in which you spend a majority of your time.

**A9–A12: Questions about the primary facility in which you provide services**

A9. How many of the following professionals practice/work in your primary facility:

1. Anesthesiologists [0–300, Do Not Know]
2. Anesthesiology residents [0–300, Do Not Know]
3. AAs/CRNAs [0–300, Do Not Know]
4. Student Registered Nurse Anesthetists (SRNAs) [0–300, Do Not Know]
5. Surgeons [0, 1,000]

A10. What is the financial structure of your primary facility:

1. Non-profit
2. For-profit
3. Governmental (e.g., VA)

A11. Is your primary facility a teaching institution (for residents, ANs, or AAs)? Yes/No

A12. Is your primary facility a free-standing ambulatory surgical center? Yes/No

A13. Who supplies your office space?

1. Hospital/facility
2. Group leases or owns office space within the hospital/facility
3. Group leases or owns office space away from the hospital/facility
4. Other: Specify \_\_\_\_\_
5. Do Not Know

The answers you provide to compensation questions allow us to better estimate the response of labor supply to different external events. We do not aim to focus on earnings in this study.

Answers to these questions, as to all other questions in this survey, will be held in the strictest confidence, and no attempt will be made to identify a specific person. However, if you feel uncomfortable answering any of the questions, you may proceed to the next question.

Please use the following interpretation for compensation for professional services:

- State the amount reported as direct compensation on a W2, 1099, or K1, plus all voluntary salary reductions (e.g., 401[k], health insurance, etc.) The amount reported should include salary, bonus, and/or incentive payments, research stipends, honoraria, and distribution of profits to employees. However, please do not include profits resulting from corporate ownership. Also, do not include benefits paid by the practice, e.g., retirement plan contributions, etc. under compensation. We ask about benefits separately.

A14. This survey and the research based on it will greatly benefit from data on compensation. Would you be willing to provide your compensation?

1. Yes, I will provide a dollar figure (GO TO A14a)
2. Yes, but I will only choose a range (GO TO A14b)
3. No, I prefer not to answer (GO TO A15)

A14a. Annual overall compensation (as defined earlier) for professional services before taxes in 2006: \$ \_\_\_\_\_

A14b. What was your annual overall compensation for professional services before taxes in 2006?

1. [100K–150K]
2. [150K–200K]
3. [200K–250K]
4. [250K–300K]
5. [300K–350K]
6. [350K–400K]
7. [400K–450K]
8. [450K–500K]
9. [> 500K]

A15. In 2006, what percentage of your compensation came from

1. Medicare : \_\_\_\_\_ %
2. Managed care : \_\_\_\_\_ %
3. Other: (Specify \_\_\_\_\_ ) \_\_\_\_\_ %
4. Do not know

A16. In 2006, what percentage of your compensation came from

1. Fixed Salary or contract (not paid on a per case basis) : \_\_\_\_\_%
2. Fee for service/per case basis : \_\_\_\_\_%
3. Other (e.g. Administrative supplement, faculty support, etc. Specify \_\_\_\_\_) : \_\_\_\_\_%
4. Unknown

A17. For each of the following benefits, enter the percentage paid by your employer or group:

1. Health insurance \_\_\_\_\_%
2. Disability \_\_\_\_\_%
3. Dental \_\_\_\_\_%
4. Vision \_\_\_\_\_%
5. Retirement \_\_\_\_\_%
6. Long-term care \_\_\_\_\_%
7. Other: Specify \_\_\_\_\_; \_\_\_\_\_%
8. Unknown

A18. What is the annual allowance your employer or group provides for educational purposes, attending conferences etc.?

A18a. \$ \_\_\_\_\_/Year

A18b. # of Days \_\_\_\_\_/Year

A19. Who pays your malpractice insurance premium?

1. Self (including your own PC or LLC)
2. Hospital
3. Employer
4. Other. Specify \_\_\_\_\_
5. Do not know

A20. What is the coverage limit on your malpractice insurance (the choices are given as per incident or claim/per year (e.g., if your policy is 1M/3M, \$1M is your per-incident coverage, and \$3M your per-year coverage)?

1. 0
2. 1M/3M
3. 2M/5M
4. Other: Specify \_\_\_\_\_
5. Do not know

A21. What is the annual cost of your malpractice insurance premium (average mature provider premium, exclusive of “tail” coverage)?

1. \$\_\_\_\_\_
2. Don't know

A22. By what percentage have your work hours changed since 2004?

1. No appreciable change
2. Decreased by less than 10%
3. Decreased by more than 10%
4. Increased by less than 10%
5. Increased by more than 10%

A23. What is your attitude toward increased work hours (total hours—clinical, research, and administrative—rather than billable hours)?

1. I will increase my work hours if the compensation is high enough (go to A22a)
2. I will not increase my work hours because
  - a. I am satisfied with my current level of income
  - b. I do not have any more time available.
  - c. Other: Specify \_\_\_\_\_

A22a. When would you increase your work hours by 10%?

1. If income increased by 5%
2. If income increased by 10%
3. If income increased by 20%
4. If income increased by 25%

A24. Which of the following best describes your primary specialty within Anesthesiology?

1. Generalist
2. Cardiac/Vascular Anesthesia
3. Critical Care
4. Neurosurgical Anesthesia
5. Obstetrical & Gynecologic Anesthesia
6. Pain Medicine
7. Pediatric Anesthesia
8. Trauma anesthesia
9. Ophthalmological Anesthesia
10. GI Anesthesia
11. Plastic Surgery Anesthesia
12. ENT
13. Other: Specify \_\_\_\_\_

## Section B: Time-Use Information

For time-use questions, please use the following interpretation:

- *Week*: a typical seven-day work week (excluding vacation and other paid time off)
- *Clinical time*: total number of hours during which the Anesthesiologist is involved in direct patient care (includes on-call hours spent in actively providing care, and time spent waiting for cases to begin) and providing clinical instruction
- *Administrative hours*: total number of hours spent performing medical director services, attending meetings, scheduling cases, etc.
- *Education and Research hours*: Total number of hours teaching, conducting research, and performing other education duties.

B1. Typically how many hours do you work per week (include clinical, research, administrative, teaching duties, and all call hours)? [0...168]

B1a. Please fill in the following table regarding your typical weekly call hours:

Call Hours	On Site (in a care facility)	Off Site (away from a care facility)
Total	[0 . . 168]	[0 . . 168]
Spent actively providing care	[0 . . 168]	[0 . . 168]

B2. What is your typical clinical workload in hours per week? [0...80]

B2a. What percentage of these hours per week is spent during the weekend? \_\_\_\_\_ %

B2b. Indicate the % of clinical time you spend each week in each of these practice settings:

1. Hospital or hospital-based (if you cannot split it between inpatient and outpatient give the total percentage) \_\_\_\_\_ %
  - a. Inpatient \_\_\_\_\_ %
  - b. Outpatient \_\_\_\_\_ %
2. Free-standing ambulatory center \_\_\_\_\_ %
3. Office-based \_\_\_\_\_ %
4. Dental office \_\_\_\_\_ %
5. Other (Specify \_\_\_\_\_) \_\_\_\_\_ %

B2c. Enter the percentage of clinical time you typically spend each week on each of the following services:

1. Pre-operative evaluation (including obtaining informed consent) \_\_\_\_\_ %
2. Intra-operative care \_\_\_\_\_ %
3. Post-operative and Post-PACU care \_\_\_\_\_ %
4. Critical Care Medicine \_\_\_\_\_ %
5. Pain medicine—chronic \_\_\_\_\_ %
6. Pain medicine—acute and acute pain management \_\_\_\_\_ %
7. Labor and Delivery \_\_\_\_\_ %
8. Other services (Specify): \_\_\_\_\_; \_\_\_\_\_ %

B2d. Enter the percentage of clinical time (and number of procedures) you typically spend each week on each of the following anesthetic techniques:

1. Monitored Anesthesia Care (MAC) \_\_\_\_\_ %  
Number of procedures per week: [0 . . . 100]
2. General Anesthesia \_\_\_\_\_ %  
Number of procedures per week: [0 . . . 100]
3. Regional (excluding epidurals placed for obstetrical cases) \_\_\_\_\_ %  
Number of procedures per week: [0 . . . 100]
4. Labor epidurals \_\_\_\_\_ %  
Number of procedures per week: [0 . . . 100]

B3. What is your typical research workload in hours per week? [1 . . . 100]

B4. What is your typical administrative workload in hours per week? [1 . . . 80]

B5. What is your typical (didactic) teaching workload in hours per week? [1 . . . 80]

B6. In your primary facility, what is the distribution (percentage) of *each* of the following cases where Conscious Sedation is provided by non-Anesthesia providers versus Monitored Anesthesia Care provided by Anesthesia providers?

1. Cataracts
2. Adult Radiology (CTT/MRI)
3. Colonoscopy and UGI endoscopy
4. Pediatric radiology
5. EPS lab
6. Cath lab
7. TEE lab
8. Bronchoscopy suite
9. Other: Specify \_\_\_\_\_

B7. What percentage of patients that you care for are:

1. ASA I
2. ASA II
3. ASA III
4. ASA IV
5. ASA V
6. Unknown

B8. What percentage of patients that you care for are predominantly:

1. Generalist
2. Cardiac/Vascular Anesthesia
3. Critical Care
4. Neurosurgical Anesthesia
5. Obstetrical & Gynecologic Anesthesia
6. Pain Medicine
7. Pediatric Anesthesia
8. Trauma anesthesia
9. Ophthalmological Anesthesia
10. GI Anesthesia
11. Plastic Surgery Anesthesia
12. ENT
13. Other: Specify \_\_\_\_\_

B9. What percentage of patients that you care for are (please do not include labor epidurals as emergency, even if administered in the middle of the night).

1. Elective
2. Urgent
3. Emergency
4. Unknown

B10. What percentage of your patients are

1. Pediatric (0–15)
2. Adult (age between 16 and 65)
3. Elderly adults (age greater than 65)

B11. How many hours (excluding call hours) while you are at work during a typical seven-day work week are you not providing professional services because of reasons such as scheduling, staffing, or management delays? [1 . . 80]

B12. In your primary practice setting, for Monday–Friday:

1. Is block scheduling for procedures or surgeons done? Yes/No
2. What is the OR utilization between 7 AM and 3 PM? (Total hours used/total hours staffed)
  - a. \_\_\_\_\_ %
  - b. Do Not Know
3. How many ORs (as % of total in the facility) are active at 1PM
  - a. \_\_\_\_\_ %
  - b. Do Not Know
4. How many ORs (as % of total in the facility) are active at 4PM
  - a. \_\_\_\_\_ %
  - b. Do Not Know
5. What percentage of the daily anesthesia case load is added after the OR schedule has been set?
  - a. \_\_\_\_\_ %
  - b. Do Not Know

B13. In what percentage of cases do you

1. Supervise residents
2. Medically direct AAs/CRNAs
3. Personally perform anesthesia services



## Section C: Usage of Technology

C1. My primary facility adopts new technology (anesthesia machines, patient monitoring equipment, delivery system for anesthesia drugs, respirators, etc.):

1. Too frequently
2. At the right pace
3. Not frequently enough

C2. Adopting new technology is important for (choose any/all that apply):

1. Patient safety
2. Quality of patient care
3. Additional functionality
4. Freeing Anesthesiologists from routine tasks
5. An interesting work environment
6. None of the above

C3. I would prefer access to better technology than what I have available today in (Yes/No):

1. Monitored Anesthesia Care
2. Regional Anesthesia
3. General Anesthesia

C4. I would prefer access to better technology than what I have available today in (Yes/No):

1. Anesthesia machines
2. Patient monitoring equipment
3. Drug delivery systems
4. Respirators
5. IT
6. Other (specify): \_\_\_\_\_

C5. Professionally, overall I would describe myself as being pro-technology.

1. Yes
2. No
3. Do not know

## Section D: Demographic Information

The answers you provide to the demography questions allow us to better estimate the response of labor supply to different external events. Answers to these questions, as to all other questions

in this survey, will be held in the strictest confidence, and no attempt will be made to identify a specific person. However, if you feel uncomfortable answering any of the questions, you may proceed to the next question.

D1. What is your gender?

1. Male
2. Female

D2. In what year were you born? [1900 . . . 1989]

D3. What is your household status?

1. Single with no dependent child(ren) (If so, ask D4)
2. Single with dependent child(ren) (If so, ask D3b)
3. Married or living with a partner with no dependent child(ren) (If so, ask D3a)
4. Married or living with a partner with dependent child(ren) (If so, ask D3a, D3b)

D3a. Are you the sole earner of your household?

1. Yes
2. No

D3b. How many children live in your household? [0 . . 10]

D4. Were you born in the United States?

1. Yes
2. No

In which country? \_\_\_\_\_

D5. Where did you receive your MD/DO degree?

1. In the US
2. Outside the US

D6. Have you practiced anesthesiology in other countries? Yes/No

If yes, which country? \_\_\_\_\_

D7. How would you classify yourself? Select all that apply:

1. White or Caucasian
2. Hispanic
3. Black or African American
4. American Indian or Alaskan Native
5. Asian or Pacific Islander
6. Other: Specify \_\_\_\_\_

### **Section E: Future Plans**

E1. How many hours per week do you expect to work 1 year from now? (Use 0 if you plan to retire within in a year.) [0 . . . 168]

E2. How many hours per week do you expect to work 5 years from now? (Use 0 if you plan to retire within 5 years.) [0 . . . 168]

E3. When do you expect to retire from anesthesia practice?

1. Before the end of this year (2007)
2. 2008 to 2010
3. 2011 to 2015
4. 2016 to 2020
5. After 2020

## Certified Registered Nurse Anesthetist Survey Questionnaire

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### Section A: Demographic Information

The answers you provide to the demography questions allow us to better estimate the response of labor supply to different external events. Answers to these questions, as to all other questions in this survey, will be held in the strictest confidence, and no attempt will be made to identify a specific person. However, if you feel uncomfortable answering any of the questions, you can proceed to the next question.

A1. What is your gender?

1. Male
2. Female

A2. When were you born? [1900 . . . 1989]

A3. What is your household status?

1. Single with no dependent child(ren) (If so, ask A4)
2. Single with dependent child(ren) (If so, ask A3b)
3. Married or living with a partner with no dependent child(ren) (If so, ask A3a)
4. Married or living with a partner with dependent child(ren) (If so, ask A3a, A3b)

A3a. Are you the sole earner of your household?

1. Yes
2. No

A3b. How many children live in your household? [0 . . . 10]

A4. Were you born in the United States?

1. Yes
2. No

In which country? \_\_\_\_\_

A5. Where did you receive your entry level nursing education?

1. In the US
2. Outside the US

A6. Have you practiced nurse anesthesiology in other countries? Yes/No

If yes, which country? \_\_\_\_\_

A7. How would you classify yourself? Select all that apply:

1. White or Caucasian
2. Hispanic
3. Black or African American
4. American Indian or Alaskan Native
5. Asian or Pacific Islander
6. Other: Specify \_\_\_\_\_

## Section B: General Employment Information

B1. What year did you start working as a CRNA? [1930 . . . 2007]

For employment questions, please use the following interpretation:

- *Facility*: Includes hospitals (including university hospitals), ambulatory surgical centers, and office suites
- *Groups*: Physician and/or CRNA Group practices
- *Employment arrangement*: Includes employment by a facility or group, contractual arrangement, or self-employment
- *Primary employment arrangement*: The current employment arrangement in which you spend the highest amount of time

### B2–B7: Questions about your PRIMARY employment arrangement

B2. How many years have you been in your primary employment arrangement? [0 . . . 50]

B3. Which of the following best describes your primary employment arrangement?

1. One group
2. One facility
3. Multiple groups
4. Multiple facilities
5. Locum tenens
6. Other: Specify \_\_\_\_\_

B4. How many other CRNAs work in your primary employment arrangement at all facilities (not including locum tenens or other temporary additions to the group)? [0,500]

B5. How many open positions are available in your primary employment arrangement?

1. CRNAs
2. Anesthesiologists
3. Unknown (Go to B7)

B6. To cover our current volume of cases, my primary employment arrangement would prefer to have:

1. More CRNAs (Yes/No/Unknown)
2. More Anesthesiologists (Yes/No/Unknown)

B7. My primary employment arrangement can handle more cases by hiring

1. Additional CRNAs (Yes/No/Unknown)
2. Additional Anesthesiologists (Yes/No/Unknown)

For primary facility questions, please use the following interpretation:

- *Primary facility:* The facility in which you spend a majority of your time

**B8–B12: Questions about the primary facility in which you provide services**

B8. As part of your primary employment arrangement, in how many facilities do you provide services?

1. One facility
2. Multiple facilities
3. Other: Specify \_\_\_\_\_

B9. How many of the following professionals practice/work in your primary facility:

1. CRNAs [0,300]
2. Registered Nurse Anesthesia Students [0,300]
3. Anesthesiologists [0,300]
4. Anesthesiology residents [0,300]
5. Surgeons [0, 1,000]

B10. In your primary facility, how many Anesthesiologists do you typically work with on a procedure? [0 . . 20]

B11. What is the financial structure of your primary facility:

1. Non-profit
2. For-profit
3. Governmental (e.g., VA)

B12. Is your primary facility a teaching institution? Yes/No

B13. Is your primary facility a free-standing ambulatory surgical center? Yes/No

The answers you provide to compensation questions allow us to better estimate the response of labor supply to different external events. We do not aim to focus on earnings in this study. Answers to these questions, as to all other questions in this survey, will be held in the strictest confidence, and no attempt will be made to identify a specific person. However, if you feel uncomfortable answering any of the questions, you may proceed to the next question.

Please use the following interpretation for compensation for professional services:

- State the amount reported as direct compensation on a W2, 1099, or K1, plus all voluntary salary reductions (e.g., 401(k), health insurance, etc.) The amount reported should include salary, bonus and/or incentive payments, research stipends, honoraria, and distribution of profits to employees. However, please do not include profits resulting from corporate ownership. Also, do not include benefits paid by the practice, e.g., retirement plan contributions, etc. under compensation. We ask about benefits separately.

B14. This survey and the research based on it will greatly benefit from data on earnings. Would you be willing to provide your earnings?

1. Yes, I will provide a dollar figure (GO TO B14a)
2. Yes, but I will only choose a range (GO TO B14b)
3. No, I prefer not to answer (GO TO B15)

B14a. Annual overall compensation for professional services (clinical, research, teaching, and administrative services, but excluding profits from corporate ownership) before taxes in 2006:  
\$ \_\_\_\_\_

B14b. What was your annual overall compensation for professional services (clinical, research, teaching, and administrative services, but excluding profits from corporate ownership) before taxes in 2006?

1. [<100K]
2. [100K–150K]
3. [150K–200K]
4. [200K–250K]
5. [250K–300K]
6. [>300K]

B15. In 2006, what percentage of your compensation came from

1. Medicare: \_\_\_\_\_%
2. Managed care (i.e., HMOs): \_\_\_\_\_%
3. Other: (Specify \_\_\_\_\_) \_\_\_\_\_%
4. Do not know

B16. In 2006, regardless of source, what percentage of your compensation for professional services (clinical, research, teaching, and administrative services, but excluding profits from corporate ownership) came from

1. Fixed Salary or contract (not paid on a per case basis) : \_\_\_\_\_%
2. Fee for service/per case basis : \_\_\_\_\_%
3. Other (Specify \_\_\_\_\_) : \_\_\_\_\_%

B17. For each of the following benefits enter the sum of percentages paid by all your employers (as opposed to you buying them individually). For instance, if one of your employers pays 20% of your health insurance premium and another 30%, you would enter 50%.

1. Health insurance \_\_\_\_\_%
2. Disability \_\_\_\_\_%
3. Dental \_\_\_\_\_%
4. Vision \_\_\_\_\_%
5. Retirement \_\_\_\_\_%
6. Long-term care \_\_\_\_\_%
7. Other (Specify \_\_\_\_\_) \_\_\_\_\_%



B18. What is the annual allowance your employer provides for educational purposes, attending conferences etc.?

B18a. \$ \_\_\_\_\_/Year

B18b. # of Days \_\_\_\_\_/Year

B20. By what percentage has your work hours changed since 2004?

1. No appreciable change
2. Decreased by less than 10%
3. Decreased by more than 10%
4. Increased by less than 10%
5. Increased by more than 10%

B19. What is your attitude toward increased work hours (clinical, research, educational, and administrative)?

1. I will increase my work hours if the compensation is high enough (go to B19a)
2. I will not increase my work hours because
  - a. I am satisfied with my current level of income
  - b. I do not have any more time available.
  - c. Other: Specify \_\_\_\_\_

B19a. When would you increase your work hours by 10%?

1. If income increased by 5%
2. If income increased by 10%
3. If income increased by 20%
4. If income increased by 25%

B20. Which of the following best describes your primary specialty within Anesthesiology?

1. Anesthesia for all types of surgeries
2. Cardiac/Vascular Anesthesia
3. Critical Care (providing emergency airway, ventilatory, and other support services)
4. Neurosurgical Anesthesia
5. Obstetrical Anesthesia
6. Pain Management
7. Pediatric Anesthesia
8. Trauma Anesthesia
9. Ophthalmological Anesthesia
10. GI Anesthesia
11. Plastic Surgery Anesthesia
12. Other: Specify \_\_\_\_\_

### Section C: Time-Use Information

For time-use questions, please use the following interpretation:

- *Week*: a typical seven-day work week (excluding vacation and other paid time off)
- *Clinical time*: total number of hours during which the nurse anesthetist is involved in direct patient care (includes on-call hours spent in actively providing care, and time spent waiting for cases to begin) and providing clinical instruction
- *Administrative hours*: Performing administrative and clinical management responsibilities
- *Education and Research hours*: Total number of hours teaching, conducting research, and performing other education duties.

C1. Typically how many hours do you work per week (including clinical, research, administrative, teaching duties, and all call hours)? [0 . . . 168]

C1a. Please fill in the following table regarding your typical weekly call hours:

Call Hours	On Site (in a care facility)	Off Site (away from a care facility)
Total	[0 . . 168]	[0 . . 168]
Spent actively providing care	[0 . . 168]	n.a.

C2. What is your typical clinical time in hours per week? [0 . . . 80]

C2a. What percentage of these hours per week is spent during the weekend? \_\_\_\_\_ %

C2b. Indicate the % of clinical time you spend each week in each of these practice settings:

1. Hospital or hospital-based (if you cannot split it between inpatient and outpatient give the total percentage) \_\_\_\_\_ %
  - a. Inpatient \_\_\_\_\_ %
  - b. Outpatient \_\_\_\_\_ %
2. Free-standing ambulatory center \_\_\_\_\_ %
3. Office-based \_\_\_\_\_ %
4. Physician or dentist's office \_\_\_\_\_ %
5. Other (Specify \_\_\_\_\_) \_\_\_\_\_ %

C2c. Enter the percentage of clinical time you typically spend each week on each of the following services:

1. Pre-operative evaluation (including obtaining informed consent) \_\_\_\_\_ %
2. Intra-operative care \_\_\_\_\_ %
3. Post-operative and Post-PACU care \_\_\_\_\_ %
4. Providing emergency airway, ventilatory, and other support services ("critical care") \_\_\_\_\_ %
5. Pain management activities \_\_\_\_\_ %
6. Labor and Delivery coverage, including epidural \_\_\_\_\_ %
7. Other services (Specify): \_\_\_\_\_ %

C2d. Enter the percentage of clinical time (and number of procedures) you typically spend each week on each of the following anesthetic techniques:

1. Monitored Anesthesia Care (MAC) \_\_\_\_\_ %  
Number of procedures per week: [0...100]
2. General Anesthesia \_\_\_\_\_ %  
Number of procedures per week: [0...100]
3. Regional/Blocks/Spinal Anesthesia \_\_\_\_\_ %  
Number of procedures per week: [0...100]
4. Obstetrical anesthesia \_\_\_\_\_ %  
Number of procedures per week: [0...100]

C2e. For what percentage of your clinical time do you work without the involvement of an Anesthesiologist? [0 . . 100]

C3. What is your typical research workload in hours per week? [0–100]

C4. What is your typical administrative workload in hours per week? [0–100]

C5. What is your typical (didactic) teaching workload in hours per week? [0–100]

C6. In your primary facility, what is the distribution (percentage) of *each* of the following cases where Conscious Sedation is provided by non-Anesthesia (non-AN) providers versus Monitored Anesthesia Care provided by Anesthesia (AN) providers?

1. Cataracts
2. Adult radiology
3. Colonoscopy and UGI endoscopy
4. Pediatric radiology
5. EPS lab (Electrophysiology Lab)
6. Cath labs
7. TEE (Transesophageal Echocardiogram) lab
8. Bronchoscopy suite
9. Other: Specify \_\_\_\_\_

C7. What percentage of patients that you care for are:

1. ASA physical status I
2. ASA physical status II
3. ASA physical status III
4. ASA physical status IV
5. ASA physical status V

C8. What percentage of patients that you care for are predominantly

1. Anesthesia for all types of surgeries
2. Cardiac/Vascular Anesthesia
3. Critical Care (providing emergency airway, ventilatory, and other support services)
4. Neurosurgical Anesthesia
5. Obstetrical Anesthesia
6. Pain Management
7. Pediatric Anesthesia
8. Trauma Anesthesia
9. Ophthalmological Anesthesia
10. GI Anesthesia
11. Plastic Surgery Anesthesia
12. Other: Specify \_\_\_\_\_

C9. What percentage of patients that you care for are (please do not include labor epidurals as emergent, even if administered in the middle of the night)

1. Elective
2. Urgent
3. Emergent

C10. What percentage of your patients are

1. Pediatric (0–15)
2. Adult (age between 16 and 65)
3. Elderly (age greater than 65)

C11. How many hours while you are at work during a typical seven-day work week are you not providing professional services because of reasons such as scheduling, staffing, or management delays? [1 . . 80]

C12. In your primary facility, for Monday–Friday:

1. Is block scheduling for procedures or surgeons done? Yes/No
2. What is the OR utilization between 7 AM and 3 PM? (Total hours used/total hours staffed) \_\_\_\_\_ %
3. How many ORs (as % of total in the facility) are active at 1PM \_\_\_\_\_ %
4. How many ORs (as % of total in the facility) are active at 4PM \_\_\_\_\_ %
5. What percentage of the daily anesthesia case load is added after the OR schedule has been set? \_\_\_\_\_ %

## Section D: Usage of Technology

D1. My primary facility adopts new technology (anesthesia machines, patient monitoring equipment, delivery system for anesthesia drugs, respirators, etc.)

1. Too frequently
2. At the right pace
3. Not frequently enough

D2. Adopting new technology improves (choose any/all that apply)

1. Patient safety
2. Quality of patient care
3. Functions that can be performed
4. Freeing nurse anesthetists from routine tasks
5. An interesting work environment
6. None of the above

D3. I would prefer access to better technology than I currently have available today in (Yes/No)

1. Monitored Anesthesia Care
2. Regional Anesthesia
3. General Anesthesia

D4. I would prefer access to better technology than what I currently have available today with regard to (Yes/No)

1. Anesthesia machines
2. Patient monitoring equipment
3. Drug delivery device
4. Respirators/ventilators
5. IT (Electronic health record, etc.)
6. Other (specify): \_\_\_\_\_

D5. Professionally, overall I would describe myself as being pro-technology.

1. Yes
2. No
3. Do not know

## Section E: Future Plans

E1. How many hours per week do you expect to work 1 year from now? (Use 0 if you plan to retire within a year.) [0 . . . 168]

E2. How many hours per week do you expect to work 5 years from now? (Use 0 if you plan to retire within 5 years.) [0 . . . 168]

E3. When do you expect to retire from anesthesia practice?

1. Before the end of this year (2007)
2. 2008 to 2010
3. 2011 to 2015
4. 2016 to 2020
5. After 2020



## Director of Anesthesiology Survey Questionnaire

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### Section A: Facility Information

A1. Which of the following best describes your facility? (Choose all that apply.)

1. A hospital (IF CHOSEN GO TO A2; ELSE GO TO A4)
2. Ambulatory surgery center
3. One or more physicians
4. A managed care organization
5. Another health care provider
6. A healthcare corporation that owns multiple healthcare facilities (e.g., HCA or Health South)
7. Other: \_\_\_\_\_

A2. What type of ownership is this hospital?

1. Nonprofit
  - a. Government
  - b. Church related
  - c. Other: \_\_\_\_\_
2. For profit

A3. Is this hospital a teaching hospital?

1. Yes (SKIP TO A4)
2. No
  - a. What percentage of your physicians are affiliated with a teaching hospital?  
\_\_\_\_\_ %

A4. What percentage of your facility's revenue from patient care comes from

1. Government (Medicare, Medicaid, etc.): \_\_\_\_\_ %
2. Private insurance (Fee-for-service, HMO, PPO): \_\_\_\_\_ %
3. Self pay: \_\_\_\_\_ %
4. Charity, write off, no charge, etc.: \_\_\_\_\_ %



A5. Enter the total number of physicians *directly employed* by your facility. If you obtain all physician services through independent providers choose zero.

1. 0 (GO TO A6)
2. [1–50]
3. [51–100]
4. [101–150]
5. [151–200]
6. [200–250]
7. >250

A5a. What % of these physicians are

1. Part-time (1 to 20 hours per week)
2. Full-time (21 to 40 hours per week)
3. Per diem, temporary, locum tenens

A6. Enter the total number of RNs *directly employed* by your facility. If you obtain all RN services through independent providers choose zero.

1. 0 (GO TO Section B)
2. [1–50]
3. [51–100]
4. [101–150]
5. [151–200]
6. [200–250]
7. >250

A6a. What % of these RNs are

1. Part-time (1 to 20 hours per week)
2. Full-time (21 to 40 hours per week)
3. Per diem, temporary, locum tenens

## Section B: Overall AN/CRNA Employment Information

B1. Does your facility directly employ any Anesthesiologists? If you obtain all Anesthesiologist services through independent providers choose “No.”

1. Yes (GO TO B1a)
2. No (GO TO B5)

B1a. On average, what percentage of requests for Anesthesiologists do you meet using

1. In-house Anesthesiologists
2. Anesthesiologists from independent providers

B2. How many job openings for Anesthesiologists did you have open (and filled) for last year (2006), this year (2007; projected), and next year (2008; projected) (IN MATRIX FORM)?

1. Part-time (1 to 20 hours per week)
2. Full-time (21 to 40 hours per week)
3. Per diem, temporary, locum tenens

B3. On average, *how many weeks* did you have to wait for these Anesthesiologist positions to be filled from the time they became available, last year (2006), this year (2007; projected), and next year (2008; projected) (IN MATRIX FORM)?

1. Part-time (1 to 20 hours per week)
2. Full-time (21 to 40 hours per week)
3. Per diem, temporary, locum tenens

B4. During last year (2006), this year (2007; projected), and next year (2008; projected), how many of the *Anesthesiologists* employed by your facility stopped working on account of (IN MATRIX FORM)

1. Termination (layoff, discharge, etc.)
2. Leaving for a different employer
3. Leaving for a different division/department of your facility
4. Retirement
5. Disability, Death, Other reasons

B5. Does your facility directly employ any CRNAs? If you obtain all CRNA services through independent providers choose "No."

1. Yes (GO TO B5a)
2. No (GO TO B9)

B5a. On average, what percentage of requests for CRNAs do you meet using

1. In-house CRNAs
2. CRNAs from independent providers

B6. How many job openings for CRNAs did you have open (and filled) for last year (2006), this year (2007; projected), and next year (2008; projected) (IN MATRIX FORM)?

1. Part-time (1 to 20 hours per week)
2. Full-time (21 to 40 hours per week)
3. Per diem, temporary, locum tenens

B7. On average, *how many weeks* did you have to wait for these CRNA positions to be filled from the time they became available, last year (2006), this year (2007; projected), and next year (2008; projected) (IN MATRIX FORM)?

1. Part-time (1 to 20 hours per week)
2. Full-time (21 to 40 hours per week)
3. Per diem, temporary, locum tenens

B8. During last year (2006), this year (2007; projected), and next year (2008; projected), how many of the *CRNAs* employed by your facility stopped working on account of (IN MATRIX FORM)

1. Termination (layoff, discharge, etc.)
2. Leaving for a different employer
3. Leaving for a different division/department of your facility
4. Retirement
5. Disability, Death, Other reasons

B9. In what form would you be able to provide compensation levels for Anesthesiologists and CRNAs?

1. Hourly pay/fee (GO TO B10)
2. Annual pay/fee (GO TO B11)
3. Neither (GO TO Section C)

B10. What is the average *hourly* pay/fee of

1. Anesthesiologists
  - a. Part-time (1 to 20 hours per week)
  - b. Full-time (21 to 40 hours per week)
  - c. Per diem, temporary, locum tenens
2. CRNAs
  - a. Part-time (1 to 20 hours per week)
  - b. Full-time (21 to 40 hours per week)
  - c. Per diem, temporary, locum tenens

B10a. INTERMEDIATE SCREEN IF RESPONDENT LEAVES ALL OF THE ABOVE BLANK. GIVE RANGES:

1. <\$50
2. [\$50–\$75]
3. [\$75–\$100]
4. [\$100–\$125]
5. [\$125–\$150]
6. [\$150–\$175]
7. [\$175–\$200]
8. >\$200

B11. What is the average *annual* pay/fee of

1. Anesthesiologists
  - a. Part-time (1 to 20 hours per week)
  - b. Full-time (21 to 40 hours per week)
  - c. Per diem, temporary, locum tenens
2. CRNAs
  - a. Part-time (1 to 20 hours per week)
  - b. Full-time (21 to 40 hours per week)
  - c. Per diem, temporary, locum tenens

B11a. INTERMEDIATE SCREEN IF RESPONDENT LEAVES ALL OF THE ABOVE BLANK. GIVE RANGES:

1. <\$75K
2. [\$75K–\$100K]
3. [\$100K–\$125K]
4. [\$125K–\$150K]
5. [\$150K–\$175K]
6. [\$175K–\$200K]
7. [\$200K–\$225K]
8. [\$225K–\$250K]
9. [\$250K–\$275K]
10. [\$275K–\$300K]
11. [> \$300K]

### Section C: AN/CRNA Assignment Information

C1. On average, the services of how many *Anesthesiologists* are required in your facility per working *day* (independent of whether each performs multiple procedures or works with other Anesthesiologists and/or CRNAs)? [0 . . . 100]

C1a. INTERMEDIATE SCREEN IF RESPONDENT LEAVES THE ABOVE BLANK.  
GIVE RANGES:

1. [1–5]
2. [6–10]
3. [11–15]
4. [16–20]
5. [21–25]
6. [26–30]
7. [31–35]
8. [36–40]
9. [41–45]
10. [46–50]
11. >50

C2. On average, the services of how many *CRNAs* are required in your facility per working *day* (independent of whether each performs multiple procedures or works with other CRNAs and/or Anesthesiologists)? [0 . . . 100]

C2a. INTERMEDIATE SCREEN IF RESPONDENT LEAVES THE ABOVE BLANK.  
GIVE RANGES:

1. [1–5]
2. [6–10]
3. [11–15]
4. [16–20]
5. [21–25]
6. [26–30]
7. [31–35]
8. [36–40]
9. [41–45]
10. [46–50]
11. >50

C3. On average, how many anesthesia procedures are performed in your facility (you can choose to provide this for one of the following time durations):

1. Weekly
2. Monthly
3. Annual

C4. What percentage of anesthesia professionals' time utilized by your facility is spent on procedures involving the following types of sedation (IN MATRIX FORM FOR ANESTHESIOLOGISTS, CRNAs)?

1. Monitored anesthesia
2. Regional/Spinal anesthesia
3. General anesthesia

C5. What percentage of anesthesia professionals' time utilized by your facility is spent on procedures involving the following types of services (IN MATRIX FORM FOR ANESTHESIOLOGISTS, CRNAs)?

1. Pre-operative evaluation and consenting
2. Anesthesia during procedures
3. Post-operative recovery
4. ICU medicine
5. Chronic and acute pain management
6. Advanced life support
7. Other services

C6. What percentage of anesthesia professionals' time utilized by your facility is spent on procedures involving the following specialties (IN MATRIX FORM FOR ANESTHESIOLOGISTS, CRNAs)?

1. Ambulatory Anesthesia
2. Cardiac Anesthesia
3. Critical Care
4. General
5. Neurological Anesthesia
6. Obstetrical Anesthesia
7. Pain Management
8. Pediatric Anesthesia
9. Trauma
10. Other specialties

C7. On average, what percentage of requests for anesthesia services do you have to reschedule or postpone due to lack of availability of Anesthesiologists? [0 . . 100]

C8. On average, what percentage of requests for anesthesia services do you have to reschedule or postpone due to lack of availability of CRNAs? [0 . . 100]

C9. How would you characterize the availability of Anesthesiologists in your facility?

1. Need more to meet current demand
2. Availability sufficient for current demand
3. Need less for existing demand

C10. How would you characterize the availability of CRNAs?

1. Need more to meet current demand
2. Availability sufficient for current demand
3. Need less for existing demand

## **Section D: Technology Preference & Usage**

D1. The medical technology available in Anesthesiology (patient monitoring equipment, delivery system for anesthesia drugs, automated procedures, etc.) causes procedures in our facility to be performed

1. Considerably faster
2. Faster
3. No change in the rate
4. Slower
5. Considerably slower

D2. The medical technology available in Anesthesiology (patient monitoring equipment, delivery system for anesthesia drugs, automated procedures, etc.) causes our facility to provide

1. Considerably higher-quality patient care
2. Higher-quality patient care
3. No change in the quality
4. Lower-quality patient care
5. Considerably lower-quality patient care

D3. For each of the following levels of sedation, choose the availability of technology your facility would prefer (exclude cost considerations for now; we will ask about costs later)

1. Monitored anesthesia care
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level
2. Regional/Spinal anesthesia administration
  - a. Lower than present level
  - b. Same as present level

- c. Higher than present level
- 3. General anesthesia administration
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level

D4. For each of the following types of services choose the availability of technology your facility would prefer (exclude cost considerations for now; we will ask about costs later):

- 1. Pre-operative evaluation and consenting
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level
- 2. Anesthesia during procedures
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level
- 3. Post-operative recovery
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level
- 4. ICU medicine
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level
- 5. Chronic and acute pain management
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level
- 6. Advanced life support
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level
- 7. Other services
  - a. Lower than present level
  - b. Same as present level
  - c. Higher than present level



D5. Rate the likely effectiveness of the following options on the overall quality of monitored anesthesia care in your facility.

1. Greater availability of CRNAs
  - a. Very likely to improve
  - b. Likely to improve
  - c. Be about the same as it is now
  - d. Unlikely to improve
  - e. Highly unlikely to improve
2. Greater availability of Anesthesiologists
  - a. Very likely to improve
  - b. Likely to improve
  - c. Be about the same as it is now
  - d. Unlikely to improve
  - e. Highly unlikely to improve
3. Greater availability of automated monitoring technology
  - a. Very likely to improve
  - b. Likely to improve
  - c. Be about the same as it is now
  - d. Unlikely to improve
  - e. Highly unlikely to improve

D6. Do you think that greater use of technology in the area of monitored anesthesia care will lead to cost-savings?

1. Yes (GO TO D6a)
2. No (GO TO END)

D6a. Which of the following factors are likely to contribute to this cost reduction? (Select all that apply)

1. Reduced time to perform procedures
2. Reduced use of Anesthesiologists
3. Reduced use of CRNAs
4. Reduced malpractice costs
5. Other cost-savings

## Relevant Portions of the Survey of Surgeons

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### Section A: General Information

A1. What is your gender?

1. Male
2. Female

A2. In what year were you born? [1900 . . . 1989]

A3. When did you start practice as a physician? [1930 . . . 2007]

A4. Which of the following best describes your primary specialty?

1. Cardiothoracic surgery
2. General surgery
3. Neurosurgery
4. Ophthalmic surgery
5. Oral and maxillofacial surgery
6. Orthopedic surgery
7. Otorhinolaryngology
8. Plastic surgery
9. Vascular surgery
10. Urology
11. OBGYN
12. Cardiology
13. Gastroenterology
14. Interventional radiology
15. Other: Specify \_\_\_\_\_

## Section B: Practice location

This section asks about the locations where you currently conduct procedures.

B1. Select all the locations where you currently conduct procedures and indicate the percentage of procedures you conduct in each location.

1. Own office \_\_\_\_\_%
2. One or more hospitals \_\_\_\_\_%
3. Free standing ambulatory surgery center \_\_\_\_\_%
4. Other: Specify \_\_\_\_\_%

= 100%

B2. Provide your best estimate of the locations where you will conduct procedures five years from now.

1. Own office \_\_\_\_\_%
2. One or more hospitals \_\_\_\_\_%
3. Free standing ambulatory surgery center \_\_\_\_\_%
4. Other: Specify \_\_\_\_\_%

= 100%

B3. Approximately how many of the following professionals work in your primary procedure location? The “primary procedure location” is the location where you perform the largest share of your procedures.

1. Surgeons or interventional physicians [0, 1,000, Do Not Know]
  - a. Surgeons practicing the same specialty as you [0, 1,000, Do Not Know]
2. Anesthesiologists [0,300, Do Not Know]
3. Anesthesiology residents [0,300, Do Not Know]
4. Anesthesiology Assistants [0,300, Do Not Know]
5. Certified Registered Nurse Anesthetists [0, 300, Do Not Know]
6. Student Registered Nurse Anesthetists [0,300, Do Not Know]

## Section C: Compensation, hours worked, and malpractice coverage

C1. In total, how many hours do you work in a typical week? Please include all of your clinical, research, administrative, and teaching duties in your response. [1 . . . 168]

C2. What percentage of your overall time is spent conducting procedures? \_\_\_\_\_%

C3. What is your willingness to increase the total hours you work? Please consider all of your clinical, research, administrative, and teaching duties in your response.

1. I would be willing to increase total hours worked, if fairly compensated
2. I would not be willing to increase total hours worked even if fairly compensated
3. Can't say

[IF 1, SKIP TO QUESTION C5]

C4. [C3 = 2] Please indicate why you are unwilling to increase your total work hours. Select one.

1. I am satisfied with my current level of income
2. I do not have any more time available.
3. Other: Specify \_\_\_\_\_

[GO TO QUESTION C6]

C5. [C3 = 1] How much would your income have to increase in order for you to increase your work hours by 10%?

1. If income increased by 5%
2. If income increased by 10%
3. If income increased by 20%
4. If income increased by 25%
5. If income increased by more than 25%

C6. Who pays your malpractice insurance premium?

1. Self (including your own PC or LLC)
2. Hospital
3. Employer
4. Other. Specify \_\_\_\_\_
5. Do not know

C7. What are the coverage limits on your malpractice insurance?

1. I don't carry individual malpractice insurance
2. \$1,000,000 per incident/\$3,000,000 per year
3. \$2,000,000 per incident/\$5,000,000 per year
4. Other: Specify \_\_\_\_\_
5. Do not know

C8. What is the annual cost of your malpractice insurance premium (average mature provider premium, exclusive of “tail” coverage)?

1. \$\_\_\_\_\_
2. Do not know

### Section E: Opinions about technology

E1. Please complete the following sentence: The facility where I do the majority of procedures adopts new technology. . . . Examples of new technologies include endoscopes, instruments for laparoscopic surgery, and surgical robots.

1. Too frequently
2. At the right pace
3. Not frequently enough
4. No opinion

E2. Adopting new technology:

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. Increases patient safety					
2. Improves quality of patient care					
3. Allows for additional functionality					
4. Frees physicians from routine tasks					
5. Provides an interesting work environment					
6. Improves efficiency (better utilization of resources, better scheduling, etc.)					

E3. Generally speaking, do you think you receive an adequate amount of training about how to use new technology?

1. Yes
2. No
3. Do not know

E4. Professionally, would you describe yourself as being pro-technology?

1. Yes
2. No
3. Do not know

## Technical Details on Demand-Based Assessment

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Denote by  $n_{Ki}$  the number of workers in occupation  $K = AN, CRNA$  in a state  $i$ . Denote by  $q_{Ki}$  the FTE total employment, where

$$q_{Ki} = n_{Ki} \frac{\bar{t}_{Ki}}{t_K}$$

and  $\bar{t}_{Ki}$  is the average number of clinical hours in the state, while  $t_K$  is a predefined number of clinical hours considered as full time. Denote by  $\bar{t}_{Kij}$  the average time to do a procedure of type  $j$  in state  $i$  and  $p_{Kij}$  the average number of procedures of type  $j$  in state  $i$ .

We observe  $q_{Ki}$ , which can be seen as the minimum of the quantity demanded or supplied. If there is excess demand,  $q_{Ki} = q_{Ki}^s$ , while, if there is excess supply, we observe  $q_{Ki} = q_{Ki}^d$ . We can calculate  $q_{Ki}$  either using total clinical hours,

$$q_{Ki} = n_{Ki} \frac{\bar{t}_{Ki}}{t_K},$$

or using the “demand” for labor,

$$q_{Ki} = n_{Ki} \frac{\sum_j p_{Kij} \bar{t}_{Kij}}{t_K},$$

since

$$\bar{t}_{Ki} = \sum_j p_{Kij} \bar{t}_{Kij}.$$

In the first assumption, labor supply is similar across states such that there exists a desired number of hours worked that is the same across the country. This assumption takes the form

$$L_0 : t_{Ki}^s = t_K,$$

where we choose  $t_K$  for simplicity, but the key point is that desired hours of work are the same across states  $i$ . (In practice, this is chosen to be the national average workweek from our surveys.) If this is the case, then shortage is given by

$$s_{Ki} = q_{Ki}^d - q_{Ki}^s = \frac{n_{Ki}}{t_K} \left( \sum_j p_{Kij} \bar{t}_{Kij} - t_K \right) = \frac{\bar{t}_{Ki} - t_K}{t_K} q_K.$$

Hence, states where inputs work more (less) than the desired level are in excess demand (supply).

In the second assumption, the same amount of time taken to do a particular procedure is same across states. The assumption takes the form

$$D_0 : \bar{t}_{Kij}^d = \bar{t}_{Kj}.$$

We can use such “chart times” to calculate counterfactual demand and compare with actual supply. The shortage simplifies to

$$s_{Ki} = q_{Ki}^d - q_{Ki}^s = \frac{n_{Ki}}{t_K} \sum_j p_{Kij} (\bar{t}_{Kj} - \bar{t}_{Kij}).$$

Hence, states where procedures are done faster have a larger shortage.

Combining both assumptions yields the following expression for shortage:

$$s_{Ki} = q_{Ki}^d - q_{Ki}^s = \frac{n_{Ki}}{t_K} \sum_j (p_{Kij} - p_{Kj}) \bar{t}_{Kj}.$$

This implies that the variation in the number of procedures is exploited to distinguish demand from supply.

## Technical Details on Econometric Analysis

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### Supply

Denote by  $q_{C,j}^s$  the amount of hours supplied by a CRNA in state  $i$  and, similarly,  $q_{A,i}^s$  the amount of hours supplied by an AN in the same state. Denote the type of labor (AN or CRNA) by the index  $K = A, C$ .

Workers can work for a wage rate  $w_{K,i}$ , and  $\mu_{K,i}$  represents nonlabor income. We use a log-log specification for labor supply:

$$\log q_{K,i}^s = \mathbf{x}_{K,i} \gamma_{K,s} + \alpha_K \log w_{K,i} + \theta_K \mu_{K,i} + \varepsilon_{K,i}^s, \quad (\text{F.1})$$

where  $\alpha_K$  is the Marshallian (uncompensated) wage elasticity. We introduce  $\varepsilon_{K,i}^s$ , an unobserved preference component, and  $\mathbf{x}_{K,i}$  is a vector of observed preference shifters.

We asked questions in the AN and CRNA surveys that would allow us to directly calculate the elasticity of labor supply with respect to the wage rate (the percentage increase in labor supply when the wage rate increases by 1 percent). The resulting distribution of this elasticity by state is shown in Figure 4.3 for ANs and Figure 4.4 for CRNAs (both in Chapter Four).

The estimated elasticities vary considerably across states but reveal relatively “inelastic” labor supply. That is, wage increases are likely to produce low increases in the labor supply in response. The average elasticity across states is lower for ANs, at 0.34, than the 0.41 figure for CRNAs (see Figures F.1 and F.2, respectively). The lower estimates for ANs could reflect their higher degree of specialization. The estimates are in the middle of the range estimated in the labor-supply literature for the overall population. Blundell and Macurdy (1999) report estimates in the literature ranging from 0 to 0.9, with most estimates clustered close to the 0.1–0.3 range.

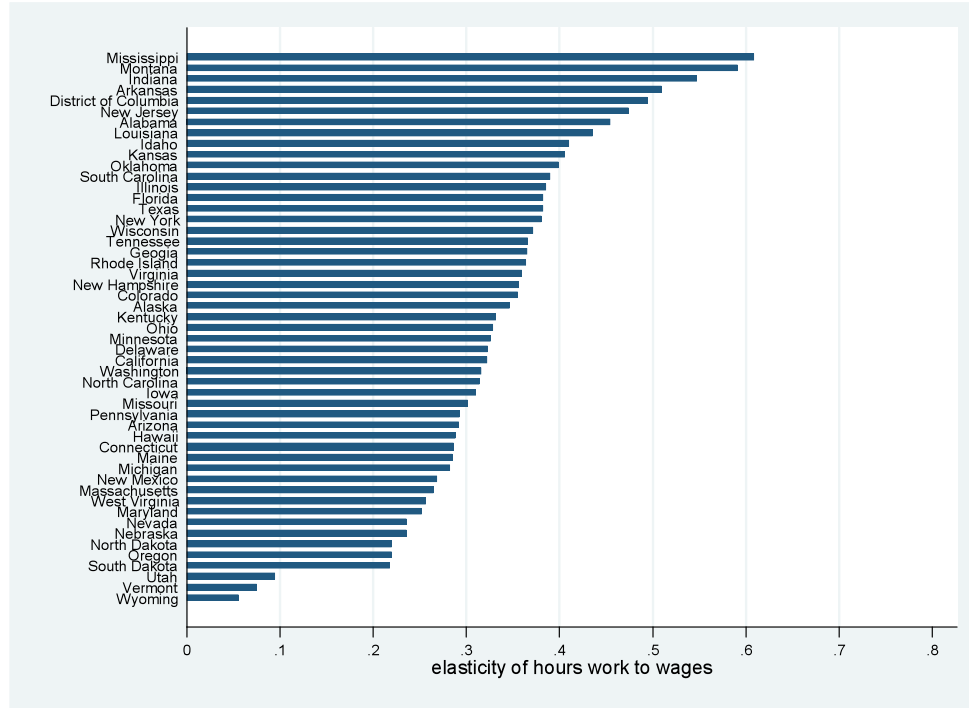
### Demand

We assume the existence of a demand function, which is determined at the facility level but is aggregated up to the state level. We proceed from the dual problem and assume the existence of a cost function such that demand functions depend on output (number of procedures). The equation for demand of each input is given by

$$\log q_{K,i}^d = \mathbf{x}_{K,i} \gamma_{d,K} + \sum_{K'=C,A} \delta_{KK'} \log w_{K',i} + \delta_{Ky} \log y_i + \varepsilon_{K,i}^d, \quad (\text{F.2})$$



**Figure F.1**  
**Estimated Average Elasticity for Anesthesiologists**



where  $y_i$  is output in state  $i$  and  $\varepsilon_{K,i}^d$  is an unobserved demand shifter. From this specification, we can define relevant elasticities. First, estimates of  $\delta_{AA}, \delta_{CC}$  give the constant-output elasticity of demand for each input and  $\delta_{AC}, \delta_{CA}$  the constant-output cross-elasticity for the demand for ANs and CRNAs.

## Equilibrium

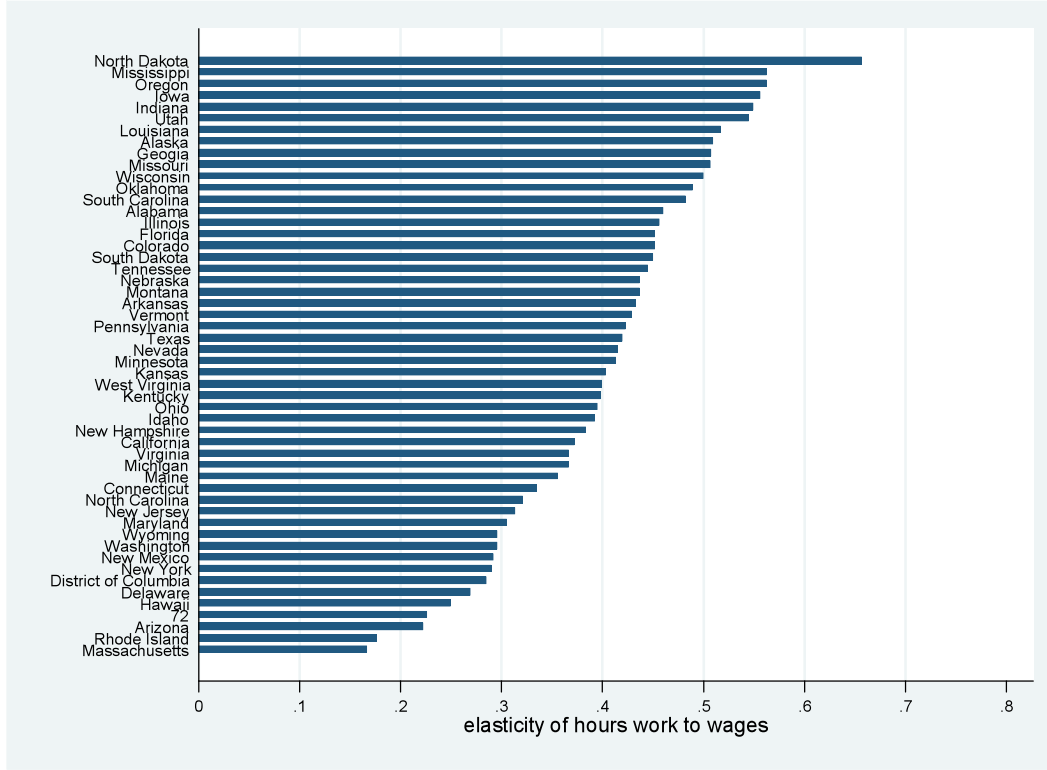
If the data we observe represent an equilibrium, then wages are endogenous and we observe

$$\log q_{K,i} = \log q_{K,i}^d = \log q_{K,i}^s. \quad (\text{F.3})$$

Because the sample is relatively small, identification of correlations between the unobserved preference and demand shifters is tenuous. Hence, we assume that such correlations are 0.

The equilibrium model is estimated by two-stage least squares. In both the disequilibrium and equilibrium models, we weight each observation (state) by the square root of the number of respondents used in computing the aggregate statistics. (This is done for reasons of efficiency and is not to be confused with sampling weights, which are used to aggregate up to the population quantities—the  $q$ s—used in the analysis.) Under the assumption that each response has the same variance, the sampling variance will be inversely proportional to the square root of each cell's size.

**Figure F.2**  
**Estimated Average Elasticity for Certified Registered Nurse Anesthetists**



## Disequilibrium

Here, wages are exogenous, and the minimum of quantity demanded and supplied is observed:

$$\log q_{K,i} = \min(\log q_{K,i}^s, \log q_{K,i}^d). \quad (\text{F.4})$$

In the case where  $\log q_{K,i} = \log q_{K,i}^s$ , we are in a situation of excess demand.

One assumption that might not hold is that output is exogenous. In particular, it is likely correlated with technology or productivity, for which we have poor control. We used as an instrument the number of beds in the state under the assumption that capacity is pre-determined while output might not be. When presenting our estimates, we report the partial F-statistic on the instrument. Overall, the number of beds explains roughly 85 percent of the variation in output.

The conditional expectation of demand and supply in the disequilibrium model is not linear in parameters such that we cannot estimate it by linear regression. Following Maddala and Nelson (1974), we estimate the model by maximum likelihood. The derivation of the likelihood function is available from the authors upon request. The model is characterized by two regimes for each input: excess demand and supply. Assuming that the unobserved shifters in Equations F.1 and F.2 are normally distributed, it is straightforward to derive the probabilities characterizing the two regimes. Following Gourieroux (2000), we can estimate how far wages are from equilibrium wage.

**Factors Affecting Allocation of Anesthesia Labor**

We include a number of state-level variables from sources other than our surveys, in order to characterize the states and associate them with supply or demand.

- Demand Factors
  - First, we use the ARF to get information on the total population and population 65 or older. We also use a measure of population density and median income.
  - Second, we also use the number of beds available in the states as a measure of capacity.
  - Third, as a proxy for competition, we use the HMO penetration rate for 2004.
- Supply Factors
  - We use information on AN residency positions available for the year 2004. ANs need to obtain a license with the state's medical board in order to practice in that state. In the absence of detailed information on the mobility of ANs, we assume that those finishing their residency are likely to stay in the same state.
  - CRNAs are not subject to residency requirements. But the number of education programs in a state may serve as a good proxy of the quantity of trained CRNAs. For CRNAs, we obtained information on the number of accredited nurse-anesthetist education programs in the state.

## Summary Statistics of Clinical Hours and Procedures Used in Demand-Based Analysis

**Table G.1**  
**Clinical Hours and Procedures: Anesthesiologists**

State	Total Observations	Weekly Clinical Hours			Weekly Procedures		
		Obs.	Mean	Standard Deviation	Obs.	Mean	Standard Deviation
Alabama	56	53	54.5	9.9	39	97.9	60.2
Alaska	4	3	63.3	5.8	0	—	—
Arizona	113	98	49.4	13.9	77	35.7	20.1
Arkansas	28	23	45.6	11.2	15	50.9	38.9
California	443	383	46.1	15.5	272	31.9	22.5
Colorado	88	79	48.1	11.0	59	43.2	36.1
Connecticut	75	66	52.2	12.3	49	60.8	48.7
Delaware	12	11	53.6	9.5	7	41.6	15.5
D.C.	12	10	43.4	20.3	7	37.1	28.1
Florida	213	191	51.7	14.9	147	72.8	71.1
Georgia	105	89	50.5	12.7	64	62.5	64.8
Hawaii	17	15	51.1	11.7	13	34.0	21.3
Idaho	10	9	43.9	10.1	7	38.4	21.2
Illinois	182	153	51.0	14.5	107	50.9	34.4
Indiana	115	102	47.2	14.9	80	32.2	18.8
Iowa	50	47	46.3	14.3	33	33.8	20.1
Kansas	50	45	43.7	14.5	32	65.3	53.0
Kentucky	59	49	50.4	13.4	39	54.9	51.1
Louisiana	37	33	46.0	11.2	25	78.2	72.5
Maine	31	25	45.6	9.7	16	51.3	33.5
Maryland	126	104	46.8	14.0	75	34.1	22.8
Massachusetts	179	150	43.0	14.8	105	50.4	106.4

Table G.1—Continued

State	Total Observations	Weekly Clinical Hours			Weekly Procedures		
		Obs.	Mean	Standard Deviation	Obs.	Mean	Standard Deviation
Michigan	110	104	50.3	15.3	78	68.9	58.8
Minnesota	117	103	49.4	12.6	68	103.3	242.2
Mississippi	13	10	54.3	7.8	6	60.7	38.8
Missouri	104	95	48.9	13.3	65	53.9	35.6
Montana	21	20	49.2	12.3	14	38.3	15.1
Nebraska	25	23	50.7	15.1	19	47.5	30.9
Nevada	27	22	57.4	16.2	18	31.1	20.0
New Hampshire	28	23	50.5	10.9	16	56.3	38.2
New Jersey	110	92	46.6	16.0	66	53.9	39.8
New Mexico	20	16	49.4	15.4	13	32.9	14.6
New York	262	216	47.5	14.7	160	43.8	62.8
North Carolina	141	121	50.7	12.8	82	77.5	78.1
North Dakota	11	7	49.9	15.4	7	52.9	8.5
Ohio	177	152	49.7	13.2	106	53.8	45.6
Oklahoma	56	46	48.4	13.4	37	59.4	150.6
Oregon	79	71	46.3	17.4	49	42.2	32.1
Pennsylvania	239	209	47.4	14.0	162	58.8	44.2
Rhode Island	15	14	49.4	10.3	9	57.2	57.1
South Carolina	58	53	51.6	12.7	46	65.1	49.2
South Dakota	9	6	59.2	7.4	4	71.8	16.1
Tennessee	84	67	48.1	13.5	47	72.0	78.2
Texas	283	244	49.3	14.2	190	49.1	78.5
Utah	47	44	48.0	16.8	33	42.3	27.1
Vermont	14	14	41.6	10.9	10	39.6	25.2
Virginia	139	108	49.6	12.1	90	52.4	39.6
Washington	172	147	45.9	13.8	102	42.2	50.1
West Virginia	21	19	50.2	12.1	15	57.3	48.9
Wisconsin	97	89	49.0	12.5	68	44.8	31.4
Wyoming	3	3	56.7	15.3	2	33.0	7.1
Total	4,487	3,876	48.5	14.2	2,850	48.4	13.9

**Table G.2**  
**Clinical Hours and Procedures: Certified Registered Nurse Anesthetists**

State	Total Observations	Weekly Clinical Hours			Weekly Procedures		
		Obs.	Mean	Standard Deviation	Obs.	Mean	Standard Deviation
Alabama	105	95	37.3	10.1	83	32.3	23.5
Alaska	13	13	37.8	10.1	12	31.1	14.9
Arizona	31	29	36.2	12.8	21	29.8	12.1
Arkansas	43	40	42.9	15.3	34	35.5	17.3
California	170	157	36.2	12.9	131	29.6	18.6
Colorado	33	33	34.3	8.7	27	33.0	18.2
Connecticut	44	43	33.6	14.2	37	31.7	18.0
Delaware	29	28	38.0	8.6	21	41.3	21.5
D.C.	6	4	42.0	25.7	3	22.3	11.0
Florida	272	259	37.1	11.0	197	39.2	21.7
Georgia	133	127	36.3	9.7	104	32.9	17.5
Hawaii	15	14	36.9	7.1	12	31.1	18.4
Idaho	44	40	37.8	11.3	36	32.8	15.0
Illinois	140	126	35.4	13.5	101	29.3	15.9
Indiana	48	46	36.3	11.8	30	36.6	22.2
Iowa	47	45	37.5	11.3	32	36.5	18.7
Kansas	84	82	37.2	11.9	69	36.0	21.3
Kentucky	97	93	40.0	9.8	70	34.1	17.1
Louisiana	100	92	40.4	12.3	75	37.0	24.6
Maine	40	36	32.3	11.5	30	28.0	19.4
Maryland	63	57	36.6	8.8	45	32.5	17.7
Massachusetts	67	62	37.1	11.9	50	35.1	24.6
Michigan	231	216	37.1	11.4	179	39.4	26.0
Minnesota	198	184	32.8	12.0	151	28.2	19.2
Mississippi	47	43	34.3	8.3	34	34.8	21.4
Missouri	130	124	39.7	12.2	99	36.3	21.4
Montana	20	19	37.3	11.8	18	39.6	22.6
Nebraska	49	47	37.8	11.6	38	33.8	21.9
Nevada	15	12	37.0	12.0	8	30.4	23.3
New Hampshire	27	24	38.6	6.7	17	38.2	21.8
New Jersey	59	56	34.6	11.0	45	34.1	19.0

**Table G.2—Continued**

State	Total Observations	Weekly Clinical Hours			Weekly Procedures		
		Obs.	Mean	Standard Deviation	Obs.	Mean	Standard Deviation
New Mexico	25	23	33.3	11.9	17	34.8	23.0
New York	112	104	36.1	13.0	86	34.8	22.4
North Carolina	258	242	35.7	11.9	192	29.9	19.4
North Dakota	31	29	34.0	9.9	24	32.5	18.1
Ohio	242	231	34.9	11.0	187	31.9	20.7
Oklahoma	43	42	40.7	14.0	33	34.3	22.5
Oregon	48	45	41.6	11.4	33	31.8	15.3
Pennsylvania	273	257	37.3	13.0	212	38.4	27.0
Rhode Island	17	16	37.8	7.6	13	37.8	19.5
South Carolina	111	105	37.2	12.2	79	36.1	20.3
South Dakota	42	41	33.9	10.6	31	27.9	15.2
Tennessee	141	134	37.7	12.3	101	34.7	18.6
Texas	320	303	37.8	11.8	245	35.0	24.7
Utah	30	26	37.2	11.7	21	26.5	14.9
Vermont	10	8	28.7	7.4	7	21.7	6.2
Virginia	142	128	36.8	10.4	108	33.2	18.4
Washington	98	89	35.9	11.6	77	29.3	19.7
West Virginia	51	47	39.7	12.0	35	40.8	27.3
Wisconsin	98	94	37.9	10.8	80	31.9	15.6
Wyoming	9	9	41.1	16.8	7	25.1	15.4
Total	4,501	4,219	36.7	12.1	3,397	36.8	11.8

## Demand-Based Analysis with Alternative Workweek Definitions

In this appendix, we present the noneconomic analysis with a fixed workweek of 40 hours for ANs and CRNAs. The results are presented in Tables H.1 and H.2.

**Table H.1**  
**Demand-Based Analysis Results: Anesthesiologists with Full-Time Equivalents of 40 Hours per Week**

State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
Alabama	153.539	0.268	407.456	0.711	562.669	0.982
Arizona	199.036	0.204	-223.669	-0.229	-26.438	-0.027
Arkansas	28.278	0.097	6.778	0.023	44.232	0.152
California	783.882	0.142	-1,593.376	-0.288	-844.971	-0.153
Colorado	112.756	0.157	-91.374	-0.127	32.956	0.046
Connecticut	143.091	0.224	126.182	0.198	277.276	0.434
Delaware	22.143	0.245	1.429	0.016	23.322	0.258
D.C.	7.397	0.053	-35.402	-0.254	-21.96	-0.157
Florida	727.727	0.228	755.384	0.237	1,490.029	0.467
Georgia	192.988	0.182	137.11	0.129	349.104	0.329
Hawaii	22.164	0.174	-36.456	-0.287	-11.579	-0.091
Idaho	1.104	0.016	10.724	0.152	11.828	0.168
Illinois	452.775	0.205	-66.726	-0.03	412.914	0.187
Indiana	137.723	0.138	-202.04	-0.203	-54.418	-0.055
Iowa	43.605	0.124	-78.969	-0.225	-34.367	-0.098
Kansas	30.9	0.093	114.056	0.344	142.914	0.431
Kentucky	122.868	0.2	-34.756	-0.057	91.361	0.149
Louisiana	74.184	0.133	257.977	0.462	326.891	0.586
Maine	20.783	0.152	19.12	0.14	36.626	0.268
Maryland	133.908	0.119	-167.533	-0.149	-8.043	-0.007
Massachusetts	112.852	0.076	-112.539	-0.076	-7.422	-0.005



Table H.1—Continued

State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
Michigan	201.719	0.197	279.486	0.273	470.453	0.459
Minnesota	140.901	0.221	245.505	0.385	372.885	0.584
Mississippi	46.988	0.27	-46.289	-0.266	0.795	0.005
Missouri	173.346	0.223	5.604	0.007	150.016	0.193
Montana	28.163	0.267	-36.916	-0.35	-10.116	-0.096
Nebraska	59.563	0.218	-7.409	-0.027	49.11	0.18
Nevada	143.684	0.299	-189.85	-0.395	-45.602	-0.095
New Hampshire	27.664	0.25	28.57	0.258	58.322	0.527
New Jersey	297.239	0.173	94.858	0.055	348.8	0.202
New Mexico	44.033	0.191	-73.421	-0.318	-22.97	-0.1
New York	575.842	0.149	-718.8	-0.186	-96.199	-0.025
North Carolina	185.051	0.188	326.558	0.332	539.168	0.548
North Dakota	8.24	0.155	12.604	0.238	20.845	0.393
Ohio	353.963	0.195	282.31	0.155	648.434	0.356
Oklahoma	60.437	0.175	-47.595	-0.138	10.439	0.03
Oregon	118.753	0.217	-57.387	-0.105	34.335	0.063
Pennsylvania	278.806	0.152	306.991	0.167	587.733	0.32
Rhode Island	21.967	0.157	21.855	0.156	47.56	0.34
South Carolina	114.414	0.21	172.45	0.317	293.549	0.539
South Dakota	21.341	0.33	27.953	0.432	49.294	0.762
Tennessee	127.41	0.147	286.311	0.33	433.577	0.499
Texas	677.519	0.187	-331.639	-0.092	353.044	0.098
Utah	77.66	0.186	-39.563	-0.095	34.967	0.084
Vermont	5.503	0.088	-9.876	-0.158	-3.525	-0.057
Virginia	225.233	0.199	128.794	0.114	345.545	0.306
Washington	143.733	0.139	-142.342	-0.138	-6.702	-0.006
West Virginia	41.381	0.214	8.56	0.044	52.098	0.27
Wisconsin	183.29	0.199	-50.712	-0.055	120.815	0.131

NOTE: Step 1 assumes clinical hours constant across states, 2 assumes a common technology, and 3 combines the two.

**Table H.2**  
**Demand-Based Analysis Results: Certified Registered Nurse Anesthetists with Full-Time Equivalents of 40 Hours per Week**

State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
Alabama	-81.591	-0.087	-63.346	-0.067	-123.972	-0.132
Arizona	-4.648	-0.027	-22.507	-0.131	-19.863	-0.116
Arkansas	15.782	0.059	-9.6	-0.036	7.892	0.029
California	-116.331	-0.13	-116.438	-0.13	-224.886	-0.251
Colorado	-22.246	-0.137	-10.091	-0.062	-46.456	-0.286
Connecticut	-82.607	-0.315	-0.518	-0.002	-78.71	-0.3
Delaware	-10.588	-0.070	3.15	0.021	-6.998	-0.046
D.C.	13.696	0.196	-24.206	-0.346	-22.737	-0.325
Florida	-160.251	-0.078	198.47	0.096	46.009	0.022
Georgia	-88.061	-0.131	-25.979	-0.039	-105.436	-0.156
Hawaii	-6.865	-0.077	-1.23	-0.014	-6.733	-0.076
Idaho	-18.482	-0.118	-4.194	-0.027	-22.111	-0.141
Illinois	-117.122	-0.154	-89.983	-0.118	-210.188	-0.276
Indiana	-17.563	-0.099	19.658	0.111	-1.681	-0.009
Iowa	-3.769	-0.025	47.815	0.321	44.387	0.298
Kansas	-48.148	-0.146	3.622	0.011	-44.501	-0.135
Kentucky	-7.733	-0.017	-50.698	-0.112	-58.923	-0.13
Louisiana	-35.563	-0.050	-22.581	-0.032	-55.704	-0.079
Maine	-31.625	-0.202	-17.759	-0.113	-46.597	-0.297
Maryland	-30.417	-0.085	-38.452	-0.108	-72.465	-0.203
Massachusetts	-49.143	-0.092	12.006	0.022	-38.262	-0.072
Michigan	-132.551	-0.096	217.644	0.157	35.419	0.026
Minnesota	-229.858	-0.256	-73.552	-0.082	-315.135	-0.351
Mississippi	-43.479	-0.174	10.301	0.041	-25.507	-0.102
Missouri	-20.167	-0.025	4.928	0.006	-28.135	-0.035
Montana						
Nebraska	-8.812	-0.065	-19.803	-0.145	-32.879	-0.241
Nevada	-0.193	-0.003	-23.223	-0.417	-23.417	-0.42
New Hampshire	-0.058	-0.001	-13.137	-0.231	-12.518	-0.22
New Jersey	-67.460	-0.156	23.594	0.055	-45.967	-0.107

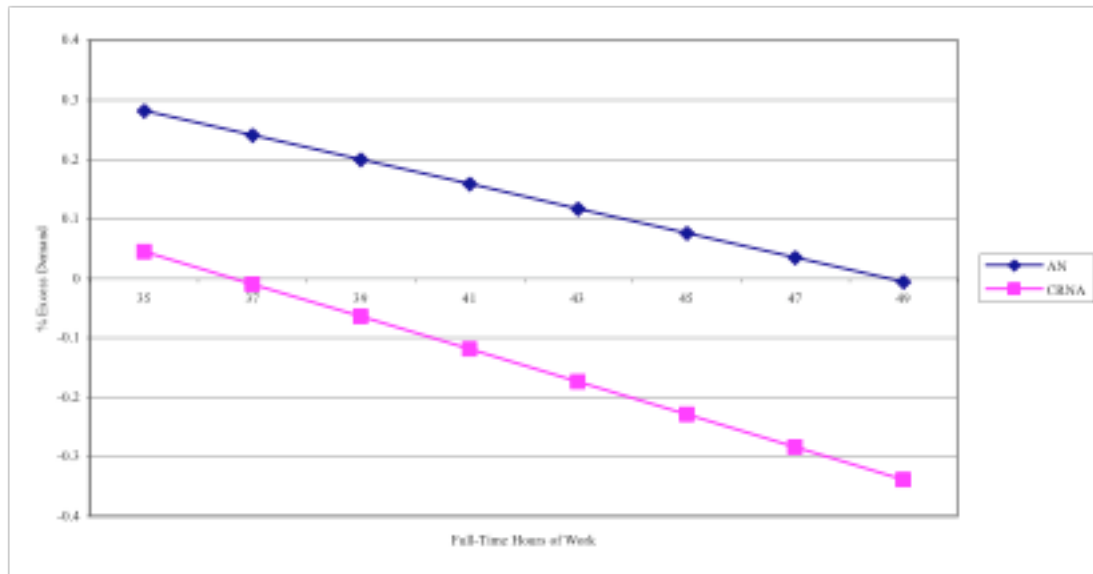
Table H.2—Continued

State	Step 1		Step 2		Step 3	
	FTE	% FTE	FTE	% FTE	FTE	% FTE
New Mexico	-21.776	-0.291	-4.053	-0.054	-23.838	-0.318
New York	-80.832	-0.114	72.61	0.103	-9.106	-0.013
North Carolina	-225.091	-0.163	-49.551	-0.036	-285.851	-0.207
North Dakota	-22.139	-0.146	31.963	0.211	11.996	0.079
Ohio	-158.991	-0.121	11.217	0.009	-123.411	-0.094
Oklahoma	7.943	0.036	-42.1	-0.19	-28.738	-0.13
Oregon	15.384	0.090	-25.163	-0.147	-19.57	-0.114
Pennsylvania	-197.930	-0.093	113.941	0.053	-87.442	-0.041
Rhode Island	-7.219	-0.072	3.72	0.037	-7.47	-0.075
South Carolina	-59.033	-0.097	47.851	0.079	-11.897	-0.02
South Dakota	-42.111	-0.280	-27.185	-0.181	-73.356	-0.487
Tennessee	-68.140	-0.065	-12.083	-0.011	-96.924	-0.092
Texas	-111.984	-0.059	-22.111	-0.012	-159.567	-0.084
Utah	2.328	0.020	-5.465	-0.046	-2.261	-0.019
Vermont						
Virginia	-47.539	-0.057	58.249	0.07	16.315	0.02
Washington	-34.956	-0.112	-40.508	-0.13	-76.115	-0.245
West Virginia	-5.658	-0.020	-34.129	-0.12	-68.612	-0.241
Wisconsin	-19.514	-0.049	-5.091	-0.013	-18.542	-0.047

NOTE: Step 1 assumes clinical hours constant across states, 2 assumes a common technology, and 3 combines the two.

They follow directly from differences in average number of clinical hours worked per week. Since CRNAs spend an average of 37 hours on procedures, using an FTE of 40 hours will cause most states to face an excess supply of CRNAs. Likewise, given that ANs spend an average of 49 hours on procedures, using 40 hours as the benchmark yields a large excess demand. Under step 1, we find that all 49 states we examine face an excess demand of ANs, while only five out of 47 states we examine face an excess demand of CRNAs. At the national level, we obtain that 7,908 more FTE ANs would be required to meet current demand, while there is a surplus of 2,483 FTE CRNAs in the market. Under step 2, the market is roughly in equilibrium at the national level, given the fact that total demand calculated using average time per procedure at the national level, by construction, equals the total number of hours supplied. For ANs, we estimate that 25 of the 49 states examined remain in shortage, and, for CRNAs, the figure is 17 out of 47, a much larger number than in step 1. When we combine the two considerations, 35 out of 49 states face an AN shortage, and six face a CRNA shortage; an overall excess demand of ANs (7,630) and excess supply of CRNAs (2,600) is found.

**Figure H.1**  
**Sensitivity of Excess Demand to Definition of Full-Time Work**



Since this strategy is strongly dependent on the FTE assumed, we examine the sensitivity of the shortage/surplus estimates to this definition in Figure H.1. We plot the percentage of excess demand at the national level for both ANs and CRNAs for full-time clinical hours of work ranging from 37 to 49. For low values, both CRNA and ANs are in excess demand. There is no estimated shortage when we use as our full-time definition the mean number of hours reported in our surveys. As the workweek increases, CRNAs are in excess supply, though definitions much higher than 40 hours per week would be hard to justify given the average hours reported in the survey. Note that the CRNA market is in equilibrium for 37 hours per week and the AN market for 49 hours, consistent with the data presented in Tables 4.6 and 4.7 in Chapter Four.



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RESEARCH REPORT

# The Anesthesiologist Workforce in 2013

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## A Final Briefing to the American Society of Anesthesiologists

*Matthew Baird, Lindsay Daugherty, Krishna B. Kumar,  
Aziza Arifkhanova*

Sponsored by the American Society of Anesthesiologists



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## Preface

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The American Society of Anesthesiologists (ASA) funded the study briefed here as a follow-on to a 2009 study published by the RAND Corporation, reported in *An Analysis of the Labor Markets for Anesthesiology* (Daugherty et al., 2010). For the study, we used analysis of survey data and econometric approaches to assess the anesthesiology workforce.

RAND Health, a unit of the RAND Corporation, is one of the largest private health research groups in the world. More than 200 projects are currently under way, addressing a wide range of health care policy issues. The research staff of more than 170 experts includes physicians, economists, psychologists, mathematicians, organizational analysts, political scientists, psychometricians, medical sociologists, policy analysts, and statisticians.

This publication summarizes the contents of a presentation that was given to an ASA advisory committee on December 18, 2013. Krishna B. Kumar, a senior economist at RAND and the director of RAND Labor and Population, is the principal investigator of this study. He may be reached via email at [Krishna\\_Kumar@rand.org](mailto:Krishna_Kumar@rand.org) or by phone at 310-393-0411 x7589. Lindsay Daugherty, an associate policy researcher at RAND, is the co-principal investigator. She may be reached at [Lindsay\\_Daugherty@rand.org](mailto:Lindsay_Daugherty@rand.org) or by phone at 310-393-0411 x6484.

More information about RAND Health is available on our website:  
<http://www.rand.org/health.html>.



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## Summary

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In the past 20 years, there have been concerns about potential shortages in the anesthesiologist workforce. In 2007, RAND researchers conducted a survey and found that there was indeed evidence of a shortage of anesthesiologists in the workforce (Daugherty et al., 2010). In addition, there are important changes taking place in the population and health care that have implications for future supply and demand of anesthesiologists, including expansion of coverage, an aging population, greater movement of women into the physician workforce, increasing cost pressures, and shifting modes of delivery. To determine what the implications of these changes might be for the anesthesiologist workforce, we conducted a national survey of American Society of Anesthesiologists (ASA) members in 2013. ASA counts more than 90 percent of all practicing anesthesiologists in the United States as its members.

We document large and persistent regional differences in the practice of anesthesiologists. Anesthesiologists in western states are less likely to work in a single facility and work fewer hours on fewer cases than those in other regions. Anesthesiologists in the west are also more likely than those in other regions to work independently and less likely to work with non-anesthesia providers. Anesthesiologists in the west are less likely to be involved in procedures that require either monitored anesthesia care or sedation as well. We also document a substantial increase in the entry of women into the anesthesiologist workforce over the past five years and explore some key differences in workforce characteristics by gender. We show that women work for different types of employers, work fewer hours, and focus on different patients than men do. These differences may lead to shifts in the supply of anesthesiologists and changes in the employment arrangements of anesthesiologists to accommodate preferences and constraints of the growing population of female anesthesiologists.

In our analysis of shortage, we employ a maximum-likelihood strategy that relies on a set of indicators of potential shortage collected from our surveys. We have two robust findings across various model specifications: that there was a decrease in the shortage of anesthesiologists from 2007 to 2013 and that the midwestern and western states had higher levels of shortage in 2013. Our best estimate is that, in 2013, the national labor market for anesthesiologists was in near equilibrium with no shortage. However, our confidence intervals are quite large, suggesting that the study of the anesthesiologist workforce may require use of data disaggregated below the state level and a longer panel.



## Acknowledgments

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We would like to thank members of the advisory committee for their helpful feedback on the methods and research findings, including Richard Dutton, Gifford Eckhout, Fredrick Orkin, Mary Peterson, Armin Schubert, and Kevin Tremper. In addition, we are grateful to Soeren Mattke for his guidance throughout the study. We greatly appreciate David I. Auerbach's thoughtful review on the findings in this report. Finally, we thank the staff of Multimode Interviewing Capability project, RAND's survey capability, for their support in data collection for the study.



## Abbreviations

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AANA	American Association of Nurse Anesthetists
AHRF	Area Health Resource File
ASA	American Society of Anesthesiologists
CRNA	certified registered nurse anesthetist
FTE	full-time equivalent
HMO	health maintenance organization





## ***The Anesthesiologist Workforce in 2013***

**RAND Corporation**  
**December 18, 2013**

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## Outline for the Briefing

### ***Outline for the Briefing***

- **Background and significance**
- **Data and methods**
- **Survey results**
  - **Employment arrangements**
  - **Team care**
  - **Time use**
  - **Indicators of shortage**
- **Econometric analysis**
- **Projections**

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RAND-Workforce Study Final Briefing-2 Dec-18

This report is divided into five sections.

To start, we discuss the background and motivation for the study.

We then discuss the methods for the survey of anesthesiologists we conducted, and the data we used for the study. The econometric methods are discussed in the econometric section.

Next, we describe the results from the survey. We focus on four areas: the employment arrangements of anesthesiologists, including employer type and compensation; the use of and participation in team care, in which anesthesiologists work with other anesthesia providers to provide care; the allocation of time across different types of cases and patients; and indicators of shortage.

Then, we discuss the econometric analysis and our findings on whether the anesthesiologist workforce appears to be in surplus or shortage. We also look at regional patterns in the econometric findings to determine whether certain parts of the country are likely to have a shortage of anesthesiologists. Finally, we end with a discussion of projections for the future.



## ***In a 2007 Study of the Labor Market for Anesthesiology, RAND Had Several Findings***

**The study included surveys of anesthesiologists, nurse anesthetists, and anesthesiology directors.**

- **Finding 1: There was a shortage of approximately 3,800 anesthesiologists and 1,200 nurse anesthetists**
- **Finding 2: There was substantial regional variation in practice by both anesthesiologists and nurse anesthetists.**

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RAND-Workforce Study Final Briefing-3 Dec-18

In 2007, as part of a larger study of the labor markets for anesthesiology, RAND conducted surveys of anesthesiologists, nurse anesthetists, and anesthesiology directors (Daugherty et al., 2010). The two major findings of the study are estimated shortages among anesthesiologists and nurse anesthetists and substantial regional variation in practice by both anesthesiologists and nurse anesthetists.

## ***Many Current and Future Changes Affect the Anesthesiologist Workforce***

- **Changing workforce demographics (e.g., aging anesthesiologists, more women)**
- **An aging population**
- **Cost pressures in health care**
- **New provider models**
- **Affordable Care Act**
- **The recent recession**

**RAND**

RAND-Workforce Study Final Briefing-4 Dec-18

There are some current or impending changes in the United States that could have important effects on the anesthesiologist workforce.

First, several demographic trends affect multiple occupations inside and outside the health care sector. Many professional occupations are becoming more diverse with the entry of women and minorities in greater numbers. Although the racial and ethnic makeup of the anesthesiologist population remained constant between 2007 and 2013, there has been a substantial movement of women into the workforce (see “Details on the 2013 Survey” for more information). In addition, the population is aging. An aging workforce could decrease the supply of anesthesiologists as baby boomers age and retire from the workforce. On the other hand, as the population ages, demand for anesthesiology care is also likely to increase because older individuals have a higher demand for health care services than younger individuals.

There are also several trends that are specific to the health care sector. Until recent years, the cost of health care was growing rapidly in the United States, and it became clear that the high level of growth was not sustainable. Recent fiscal crises have only increased concerns about the cost of health care. The pressure on the health care sector to control costs has led to a range of

efforts to improve efficiency and reduce waste. Health care providers and government officials have been exploring new payment models, and facilities have been working to identify options to reduce costs.

## ***Many Current and Future Changes Affect the Anesthesiologist Workforce***

- **Changing workforce demographics (e.g., aging anesthesiologists, more women)**
- **An aging population**
- **Cost pressures in health care**
- **New provider models**
- **Affordable Care Act**
- **The recent recession**

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RAND-Workforce Study Final Briefing-4 Dec-18

One of the most prominent ideas being discussed as a way to reduce costs is a shift of care provision to lower-cost providers: nurses providing care under the guidance of physicians. This discussion typically focuses on primary care physicians. However, anesthesiologists have also begun to share care provision with the nursing workforce. In recent decades, nurse anesthetists have grown to play an important role in the provision of anesthesia. There are some questions about the movement toward team care in anesthesiology and the impact this may have on the anesthesiologist workforce.

Finally, there are several recent one-time events that may have affected the anesthesiologist workforce. The Patient Protection and Affordable Care Act (Pub. L. No. 111-148, 2010) makes changes to health care in the United States, including the expansion of insurance to a larger portion of Americans, a shift in focus toward preventive care, and encouragement to explore new models of health care payment and health care delivery. All of these moves may have different effects on the demand for anesthesiologists. In addition, the recent economic crisis may have affected both the supply and demand of anesthesiologists. Decreases in wealth and earnings are likely to lead to reduced health care spending and demand for anesthesiologists and may also

lead to delayed retirement for anesthesia care. In addition, it may lead to delayed retirement for anesthesiologists, resulting in an increase in supply.

## ***In Addition, Concerns About Anesthesiologist Shortages Persist***

- **Studies over the past 20 years have found wide variation in estimates of shortage**
- **More recent evidence suggests that reductions in training in the early to mid-1990s led to shortages**
- **An aging population and increases in coverage may lead to substantial shifts in demand**
- **On the other hand, shifts in health care delivery may also affect demand**

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RAND-Workforce Study Final Briefing-5 Dec-18

There have been concerns about a shortage of anesthesiologists in recent years. In the early 1990s, a report predicted a surplus of anesthesiologists (American Society of Anesthesiologists [ASA], 1994), but more-recent studies have shown a shortage (Schubert, Eckhout, Ngo, et al., 2001; Schubert, Eckhout, and Tremper, 2003; Daugherty et al., 2010). One of the potential drivers of this shortage may have been a reduction in residency openings in the early to mid-1990s.

There are now additional reasons to be concerned about a shortage of anesthesiologists with the aging of the population and increases in the size of the insured population under the recent health care reforms. If demand increases and the growth in the number of anesthesiologists does not keep up, there could be a shortage. On the other hand, shifts in health care delivery and, in particular, a movement toward team care may decrease the demand for physicians. If demand decreases and the growth in the number of anesthesiologists stays steady, there may be a surplus of anesthesiologists.

## ***Current Health Care Context and Concerns About Shortage Raise Questions***

- 1) Are patterns of practice changing for anesthesiologists?**
- 2) Have regional differences in practice observed in the 2007 study persisted?**
- 3) What impact is the growing proportion of anesthesiologists who are women going to have on the workforce?**
- 4) Is there still a shortage of anesthesiologists in the United States?**

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The trends and events just described, including a changing population, new provider models, and the recent health care reforms, may have impacts on the anesthesiologist workforce that lead to differences in findings from those in the 2007 survey. In addition, it is important to determine whether the workforce still appears to be in shortage according to econometric analysis. In order to explore the impact of recent trends and assess the likelihood that the workforce is in shortage, this presentation focuses on four research questions.

## ***RAND Conducted a Second Survey of Anesthesiologists to Analyze these Questions***

- **National survey of members of the American Society of Anesthesiologists (ASA)**
  - **Excluded those opting out of third-party emails**
- **Took place April–May 2013**
- **Funded by ASA**

**RAND**

RAND-Workforce Study Final Briefing-7 Dec-18

We conducted a six-week survey in the spring of 2013 to collect current data for the study. The survey was sent to all ASA members, with the exception of a small number of anesthesiologists who did not have email addresses or who opted out of receiving emails for these purposes. ASA funded the study.



### ***Outline***

- Background and significance
- **Data and methods**
- Survey results
  - Employment arrangements
  - Team care
  - Time use
  - Indicators of shortage
- Econometric analysis
- Projections

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RAND-Workforce Study Final Briefing-8 Dec-18

We next describe the survey methods and the data used for the study.

## ***Details on the 2013 Survey***

- **Surveyed online**
- **Response rate of 25.5%, approximately 6,800 responses**
- **49 items on a range of topics, including:**
  - **Employer and facility arrangements**
  - **Compensation**
  - **Time use**
  - **Future plans**
  - **Indicators of shortage**

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RAND-Workforce Study Final Briefing-9 Dec-18

Approximately one-quarter of the individuals who received the survey actually responded, for a total of 6,800 responses. This response rate was significantly higher than the response rate to the 2007 survey, which was below 22 percent.

To allow for comparison of results across surveys, this survey was very similar to the one from 2007. However, a few questions were changed, deleted, or added. The 2013 survey had 49 items that covered a range of topics. These topics included employer and facility arrangements, compensation, time use, future plans, and indicators of shortage.

## *There Were Minimal Differences Between Respondents and Nonrespondents*

### **Minimal Differences Between Respondents and Nonrespondents**

	Nonrespondent	Respondent
Age (years)	49.2	50.0**
Female	0.242	0.283**
Urban	0.950	0.946
Northeast	0.227	0.212**
Midwest	0.217	0.226
South	0.331	0.341
West	0.225	0.222
N	22,269	6,783

\*\* Indicates statistical significance at the  $p < 0.01$  level

**We weight for nonresponse and scale to population numbers.**

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RAND-Workforce Study Final Briefing-10 Dec-18

There are few differences between the respondents and nonrespondents to the 2013 survey. Respondents were slightly older than nonrespondents. In addition, male anesthesiologists and anesthesiologists from the Northeast are somewhat less likely than female anesthesiologists or anesthesiologists from other regions to have responded to the survey.

To account for these differences and minimize survey response bias, we weight our data to ensure that, to the extent possible, they mirror the anesthesiologist population. We create weights through a regression that predicts the probability of responding based on an anesthesiologist's location, age, and gender. A respondent's responses were weighted by the inverse of the probability that he or she would respond. In addition, we scaled the responses to the total number of anesthesiologists in the nation—obtained from the Area Health Resource File (AHRF)—to account for the fact that not all anesthesiologists are ASA members.

*For Most Demographic Characteristics, 2013 Anesthesiologists Look Similar to 2007 Anesthesiologists*

## **2013 Anesthesiologists Look Similar to 2007 Anesthesiologists Across Most Demographics**

	2007	2013
Age (years)	48.7	50.0**
Experience (years)	15.9	20.2** <sup>a</sup>
Female	0.216	0.249**
Urban	0.945	0.952
Northeast	0.226	0.227
Midwest	0.207	0.204
South	0.334	0.332
West	0.233	0.238
Married	0.902	0.892
Has children	0.724	0.665**
Born in United States	0.773	0.794*
Educated in U.S.	0.807	0.832**
White	0.782	0.788
Hispanic	0.025	0.034
Black	0.019	0.024
Asian	0.102	0.113
Other race/ethnicity	0.072	0.039**
N	22,269	6,783

<sup>a</sup> Due to a lack of specificity in the previous survey, we asked respondents to include residency in the new survey, so this change in item likely led to differences in results for experience

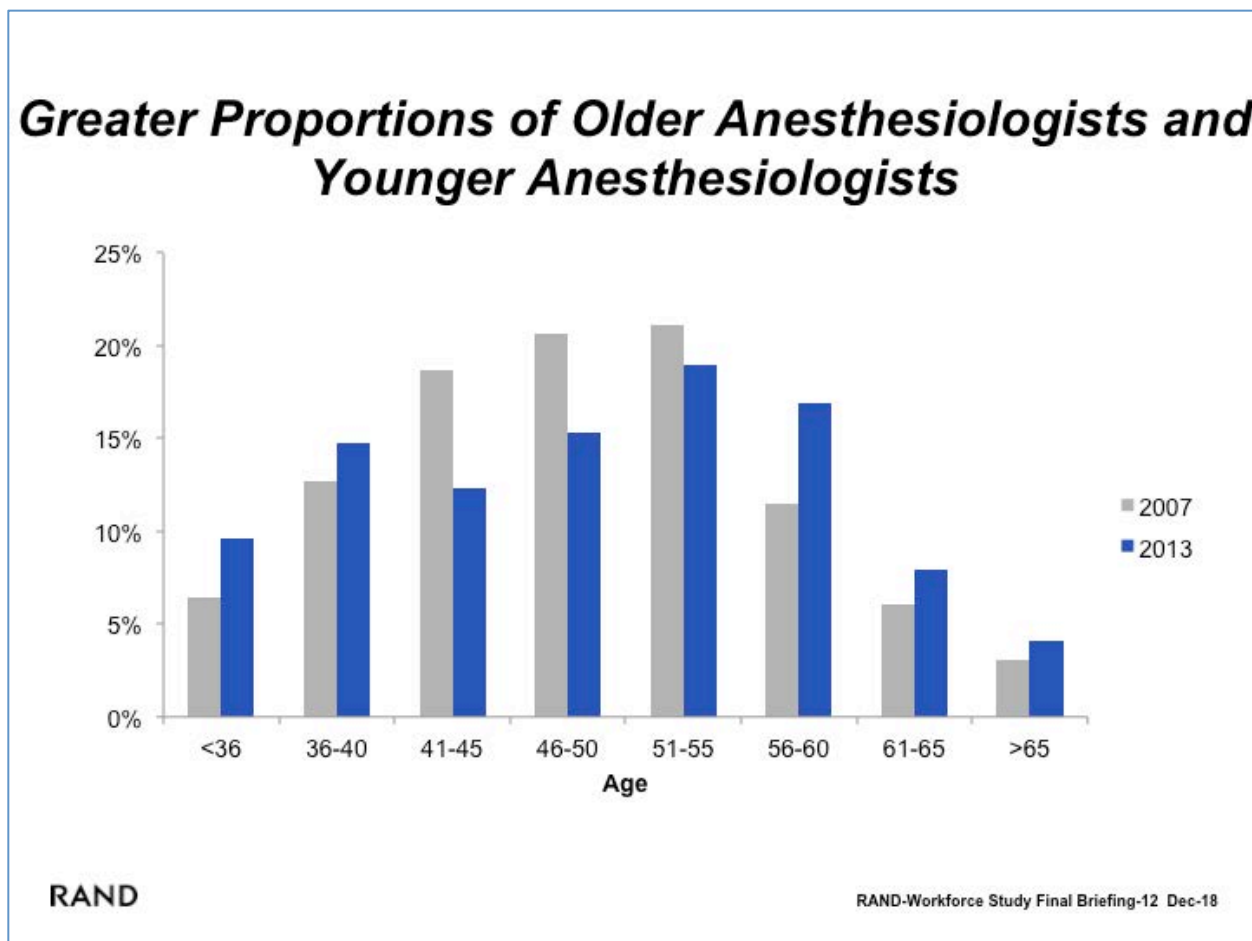
**RAND** \*\* Indicates statistical significance at the p<0.01 level. \* at the p<0.05 level.

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Anesthesiologists in 2013 look similar to anesthesiologists in 2007 across most demographics, but there are a few differences. Anesthesiologists in 2013 appear to be slightly older, on average. We examine this more closely later. As mentioned, 2013 anesthesiologists were more likely to be female. In addition, anesthesiologists in 2013 were less likely to have children and were more likely to be born and educated in the United States than 2007 anesthesiologists. Many of these changes mirror general trends in the population. For example, workforces in many areas are aging and seeing greater numbers of women, and individuals in the United States are having fewer children.

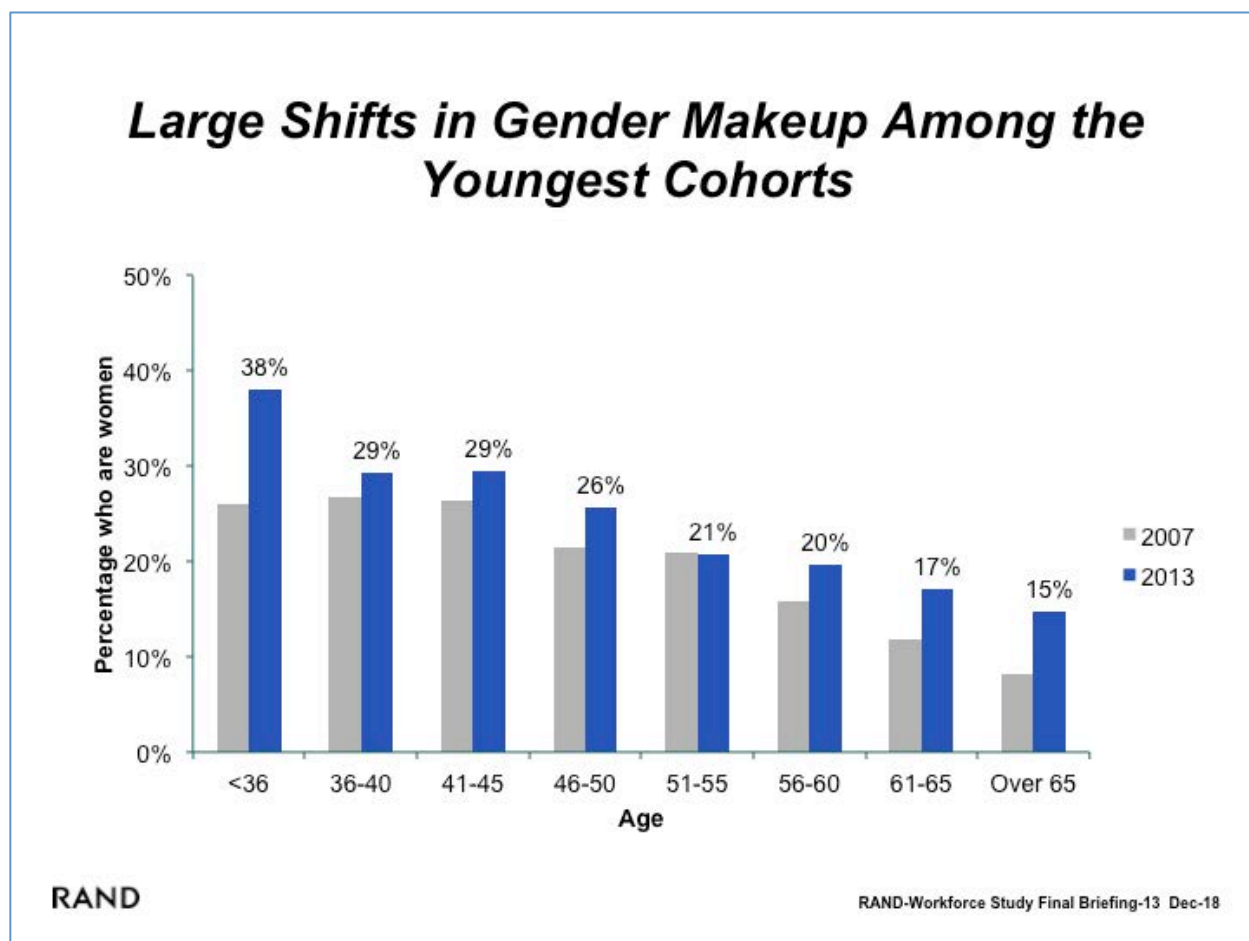
The change in reported experience was likely driven by a change in the question that asked anesthesiologists about experience. Following advice from the ASA advisory group, in the 2013 survey, we explicitly instructed respondents to include residency in their experience as an anesthesiologist; in the 2007 survey, we did not specify this.

*There Were Greater Proportions of Older and Younger Anesthesiologists in the 2013 Sample*



The data indicate that the average age of anesthesiologists had increased; in light of concerns about an aging workforce, it would be useful to examine the full age distribution of anesthesiologists. The 2013 data show greater proportions of anesthesiologists ages 40 or younger and 55 or older. This bulge in the population at older ages likely reflects the aging of baby boomers and potential delays in retirement brought about by the financial crisis. The greater proportions at younger ages likely reflect the increase in residencies over the past decade. The smaller proportions of anesthesiologists between the ages of 40 and 55 likely reflect the cut in anesthesiology residencies that occurred in the early to mid-1990s.

### *There Have Been Large Shifts in Gender Makeup Among the Youngest Cohorts*



When we look at the percentage of female anesthesiologists by age, we find greater proportions of women in 2013 than in 2007 for nearly every age group. Nearly 40 percent of young anesthesiologists are female, a substantial increase from the 26 percent of the 2007 sample who were female.

The largest percentage increases in female anesthesiologists between 2007 and 2013 are for the youngest and oldest age groups. This suggests that female anesthesiologists may be more likely than their male counterparts to delay retirement. The large increase in the percentage of women among the youngest anesthesiologists indicates a trend of women being increasingly likely to go into medicine and choose anesthesiology as a specialty.

## ***We Supplemented Our Survey Data for the Econometric Analysis***

- **We use several variables in the AHRF to capture characteristics that may influence demand**
  - **Number of surgeons**
  - **Number of nurse anesthetists**
  - **Percentage of population 65 and older**
  - **Income**
- **National Resident Matching Program numbers to estimate new supply**

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In addition to the survey data, we used external, nationally representative data to account for other factors that may affect the demand for anesthesiologists. The AHRF is a data set that is updated annually, providing a range of valuable statistics related to health care and workforces within the health care sector at the county level. We used average state-level values for the number of surgeons, the number of nurse anesthetists, the percentage of the population 65 and older, and the average income adjusted for differences in cost of living.

We also used data from the National Resident Matching Program on the total number of residencies to estimate new supply and the growth in supply for our projections.

## Survey Results

### *Employment Arrangements*

#### **Outline**

- **Background and significance**
- **Data and methods**
- **Survey results**
  - **Employment arrangements**
  - **Team care**
  - **Time use**
  - **Shortage indicators**
- **Econometric analysis**
- **Projections**

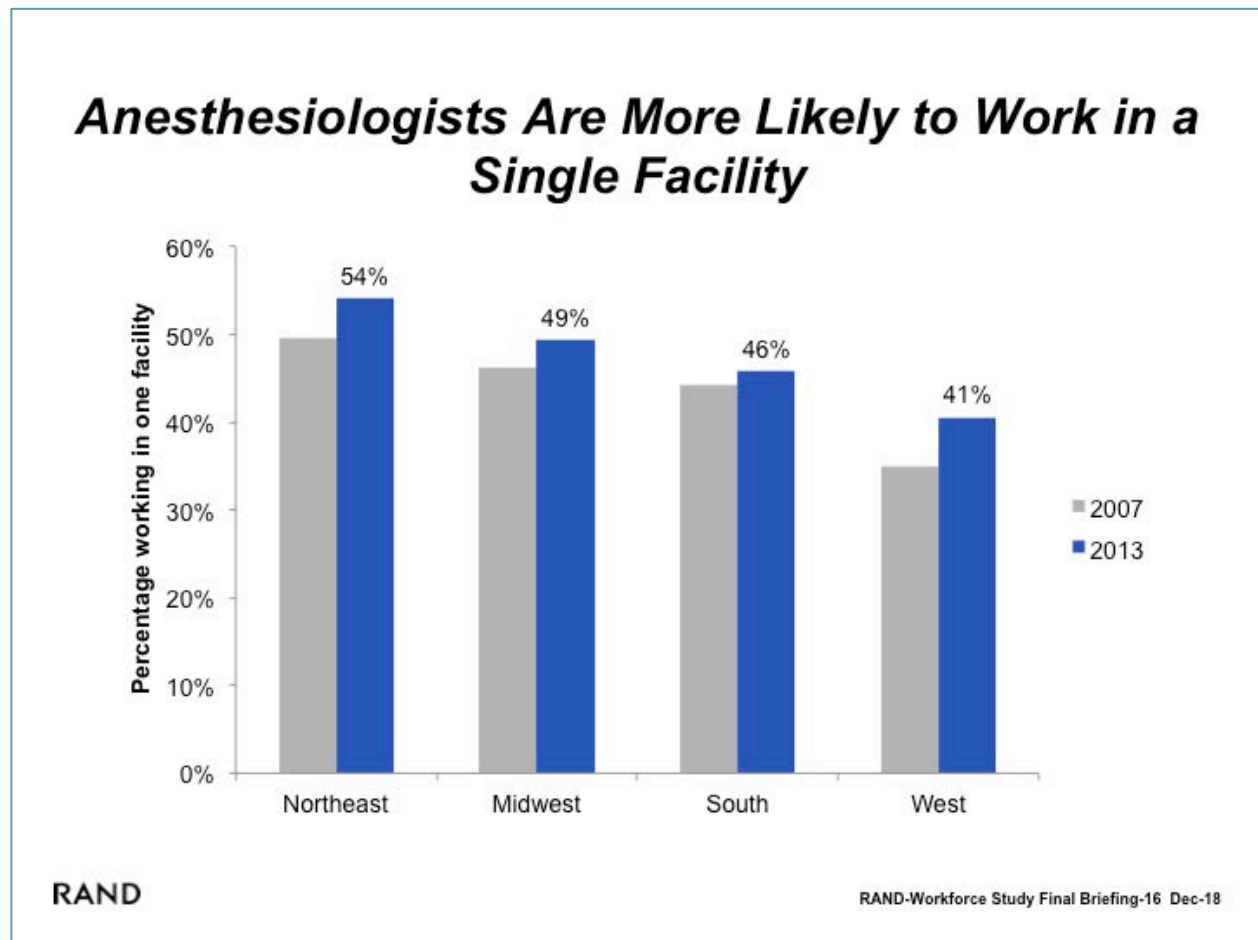
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We next describe some of few key results from the survey. First we look at the employment arrangements of anesthesiologists, including the employers for which anesthesiologists work, the facilities with which they work, and the way in which anesthesiologists are compensated.



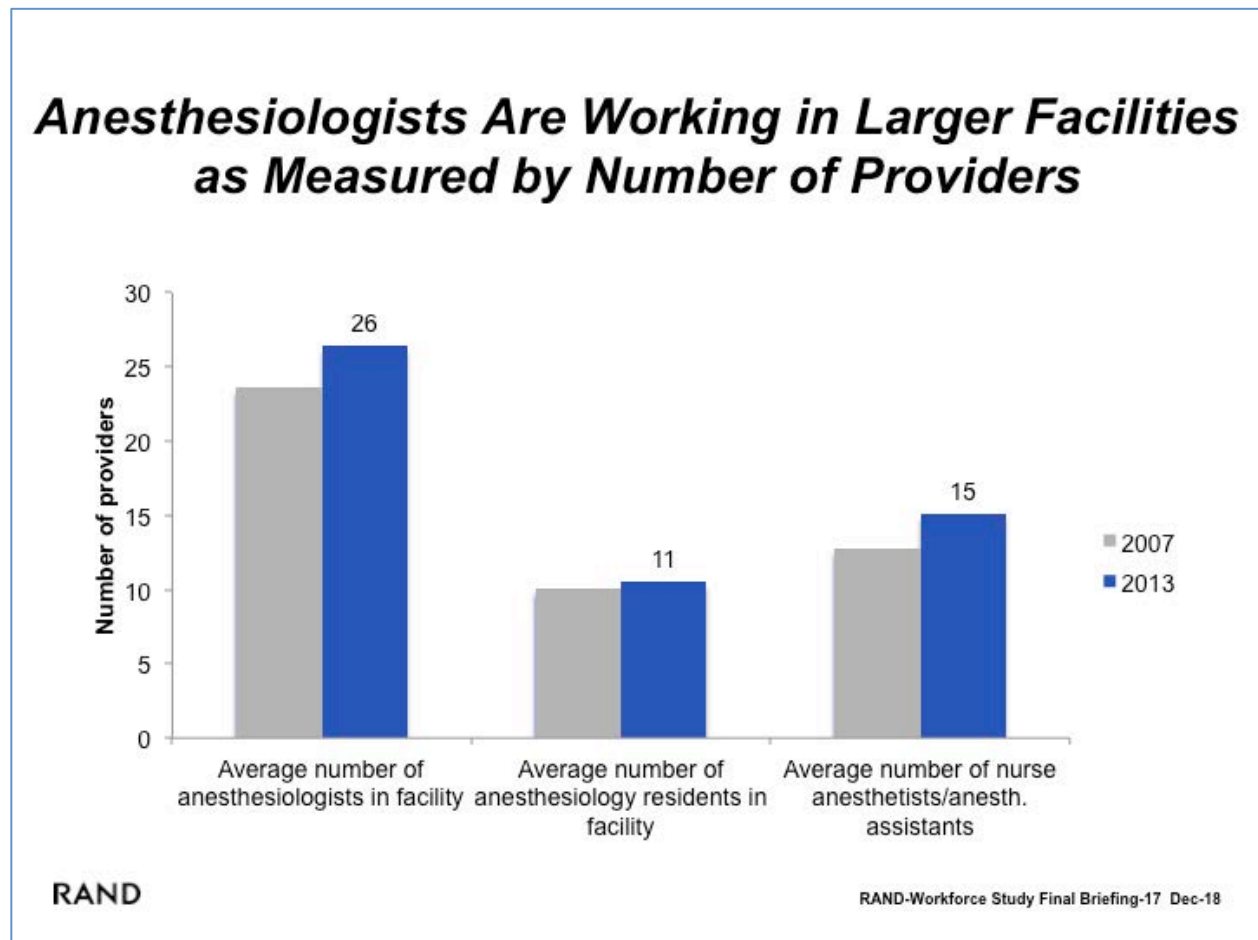
## An Anesthesiologist Is More Likely to Work in a Single Facility in 2013 Than in 2007



In the past six years, the percentage of anesthesiologists who work in single facilities has increased slightly, from 44 percent to 47 percent. Regional data indicate increases across all regions, though only the differences for the Northeast and West are statistically significant. Western anesthesiologists had the largest increase, with a 16-percent increase in the percentage of anesthesiologists working in one facility.

However, anesthesiologists in the West remain the least likely to work in single facilities. Anesthesiologists in the West are more likely than those in other regions to be employed by groups, and this trend is what is likely driving the pattern of cross-facility practice.

## Anesthesiologists Are Working in Larger Facilities as Measured by the Number of Providers



Anesthesiologists appear to be working in larger facilities if we define facility size by the number of anesthesiology providers. The average number of anesthesiologists in a facility has grown by two anesthesiologists, an 8-percent increase, over the past six years. The average number of nurse anesthetists and anesthesiology assistants in a facility has also grown by two, representing an increase of more than 15 percent, in the past six years. There was no change in the average number of anesthesiology residents during that time period.

Unfortunately, because the 2007 survey combined nurse anesthetists and anesthesiology assistants into one group, we cannot distinguish between growth in the number of one from growth in the number of the other.

## There Are Regional Differences in Employer Types

### ***Regional Differences in Employer Type***

	Northeast	Midwest	South	West	West Versus Other
<b>Employer Characteristics</b>					
Employed by one facility	<b>38%</b>	<b>34%</b>	29%	28%	↓
Average number of anesthesiologists	<b>46</b>	<b>38</b>	<b>37</b>	51	↑
Group receives direct compensation	<b>57%</b>	<b>66%</b>	<b>64%</b>	71%	↑
<b>Facility Characteristics</b>					
Work in one facility	<b>54%</b>	<b>49%</b>	<b>46%</b>	41%	↓
Work in multiple facilities	<b>42%</b>	<b>48%</b>	<b>51%</b>	56%	↑
Primary facility is ambulatory facility	9%	<b>8%</b>	10%	10%	↑
Primary facility is nonprofit	<b>68%</b>	<b>72%</b>	60%	63%	
Primary facility is for profit	29%	<b>24%</b>	<b>35%</b>	31%	
Primary facility is governmental	<b>2%</b>	<b>4%</b>	5%	6%	↑
Primary facility is teaching facility	<b>56%</b>	<b>49%</b>	<b>43%</b>	30%	↓
Average number of anesthesia providers	<b>66</b>	<b>59</b>	<b>54</b>	41	↓
Average number of surgeons	51	55	<b>48</b>	54	

Note: Bolded results indicate significantly significant differences from the West at the  $p < 0.10$  level. Arrows indicate the direction of western results relative to those of all other regions.

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Regional differences are apparent across a range of different employer and facility characteristics. For most of the employer and facility characteristics, anesthesiologists in the West are the outliers, showing distinctly different arrangements from anesthesiologists in other regions. We provide arrows to indicate the direction of the difference between the West and other regions, with a downward arrow indicating that the West has lower values for the statistic than other regions do. Bolded numbers are those that are statistically significantly different from the value for western anesthesiologists at the  $p < 0.10$  level.

We noted previously that anesthesiologists in the western United States are less likely work in one facility and more likely to work across multiple facilities; this analysis indicates that they are also less likely to be employed by a single facility. We defined facilities to include university hospitals, academic medical facilities, health care systems (e.g., Mayo, Kaiser, Geisinger), ambulatory surgical centers, office suites, and the like. We defined groups to include physician group practices (including groups that employ individuals working at health care systems or academic hospitals), publicly traded companies, and national anesthesia companies.

Groups are likely to be somewhat larger than the total number of anesthesiologists who can be employed by a single facility, so it seems reasonable that western anesthesiologists would work for employers with larger numbers of total anesthesiologists. In addition, anesthesiologist groups in the West are more likely than those elsewhere to receive direct compensation for their services.

One area in which western anesthesiologists are not found to be an outlier is in the financial arrangement of their primary facilities. Instead, midwestern anesthesiologists are most likely of all anesthesiologists to work for nonprofit facilities, while southern anesthesiologists are most likely of all anesthesiologists to work for for-profit facilities.

## There Are Regional Differences in Employer Types (continued)

### ***Regional Differences in Employer Type***

	Northeast	Midwest	South	West	West Versus Other
<b>Employer Characteristics</b>					
Employed by one facility	<b>38%</b>	<b>34%</b>	29%	28%	↓
Average number of anesthesiologists	<b>46</b>	<b>38</b>	<b>37</b>	51	↑
Group receives direct compensation	<b>57%</b>	<b>66%</b>	<b>64%</b>	71%	↑
<b>Facility Characteristics</b>					
Work in one facility	<b>54%</b>	<b>49%</b>	<b>46%</b>	41%	↓
Work in multiple facilities	<b>42%</b>	<b>48%</b>	<b>51%</b>	56%	↑
Primary facility is ambulatory facility	9%	<b>8%</b>	10%	10%	↑
Primary facility is nonprofit	<b>68%</b>	<b>72%</b>	60%	63%	
Primary facility is for profit	29%	<b>24%</b>	<b>35%</b>	31%	
Primary facility is governmental	<b>2%</b>	<b>4%</b>	5%	6%	↑
Primary facility is teaching facility	<b>56%</b>	<b>49%</b>	<b>43%</b>	30%	↓
Average number of anesthesia providers	<b>66</b>	<b>59</b>	<b>54</b>	41	↓
Average number of surgeons	51	55	<b>48</b>	54	

Note: Bolded results indicate significantly significant differences from the West at the  $p < 0.10$  level. Arrows indicate the direction of western results relative to those of all other regions.

**RAND**

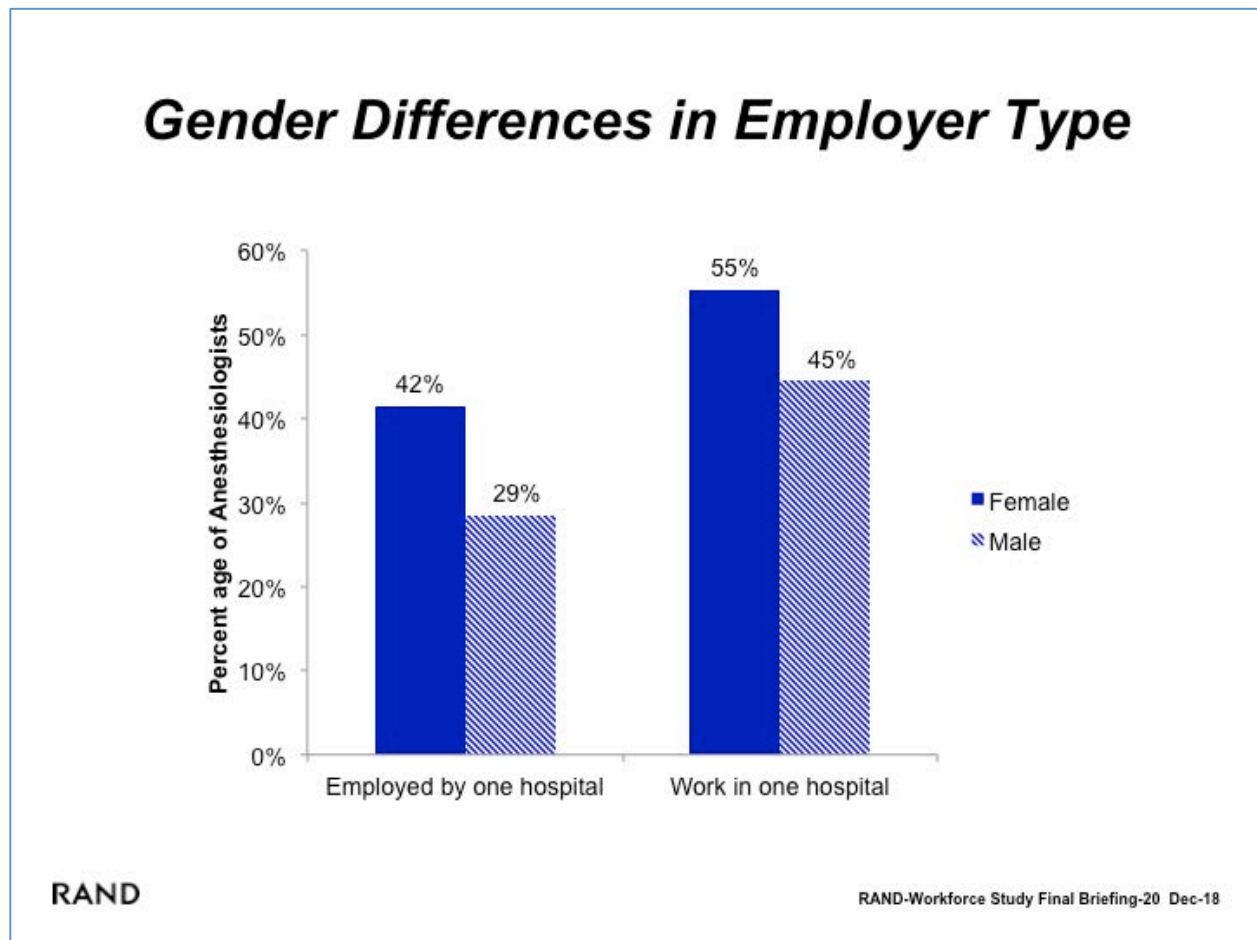
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Western anesthesiologists are slightly more likely than their northeastern or midwestern counterparts to work in governmental facilities and slightly more likely to work in ambulatory surgical centers. Western anesthesiologists are much less likely than those in other regions to work in teaching facilities.

If facility size is defined by the total number of surgeons, southern anesthesiologists work in slightly smaller facilities. However, when we look at the total number of anesthesia providers in a facility, the picture looks quite different. Western facilities appear to employ substantially fewer anesthesia providers for a given number of surgeons. We find that this difference is driven by differences in the numbers of nonphysician anesthesia providers at facilities rather than by differences in the number of anesthesiologists. Western facilities employ similar or greater numbers of anesthesiologists, on average, than those in other regions, but they employ substantially fewer nurse anesthetists. We discuss this issue more in “Team Care.”

Next, we describe differences by gender in employment arrangements.

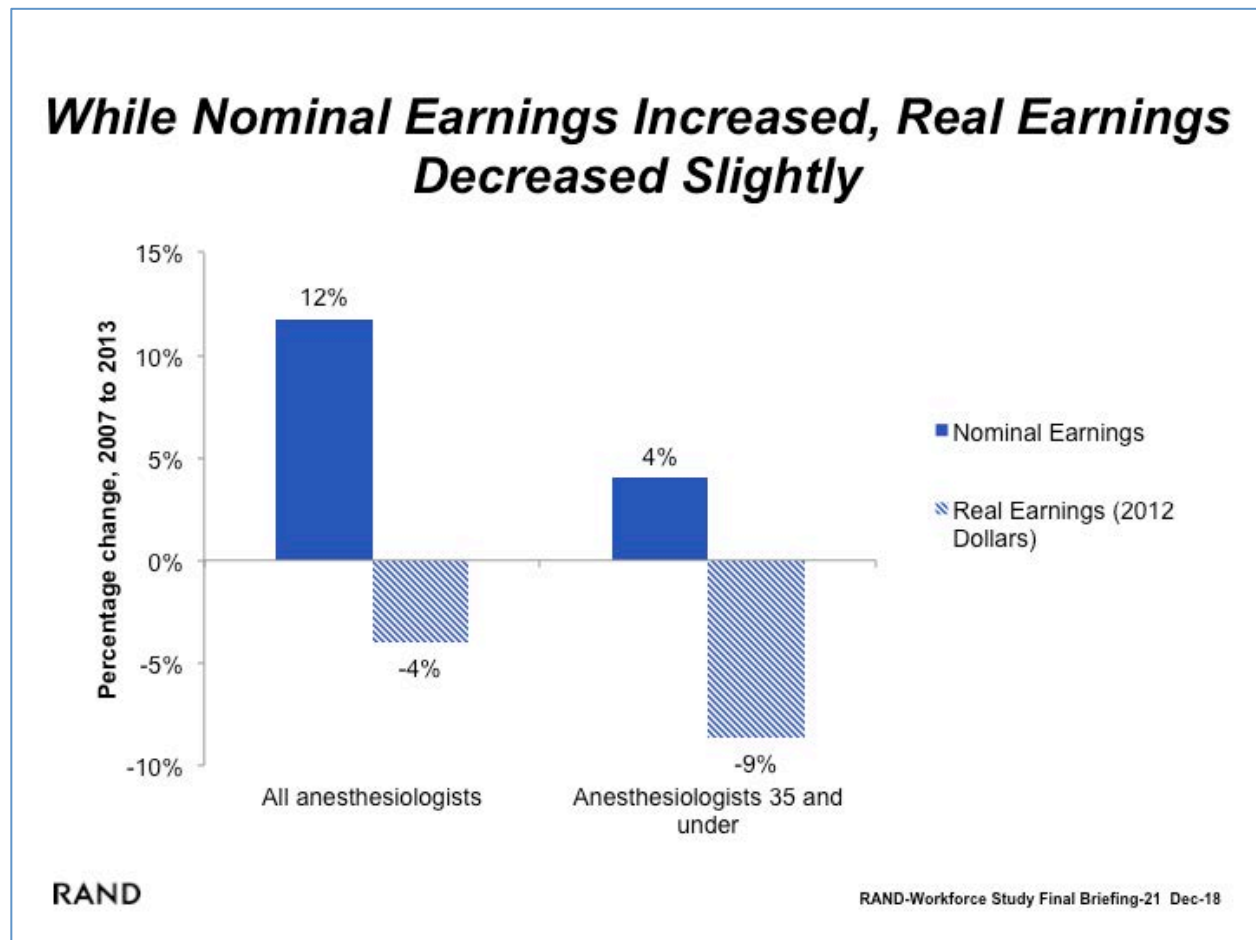
## There Are Gender Differences by Employer Type



A female anesthesiologist is significantly more likely than a male anesthesiologist to be employed by a single facility and work in a single facility. The difference in employer types is particularly large, with women nearly 50 percent more likely than men to be employed by single facilities.

One possible explanation for the differences in employer types is that female anesthesiologists prefer more-structured employment arrangements, with a single location and a more predictable schedule. However, when we look at the likelihood that a female anesthesiologist is employed by a single facility, we find that female anesthesiologists who are married or have children are no more likely to work for a single facility than single female anesthesiologists or those who do not have children.

Although Nominal Earnings Increased, Real Earnings Decreased Slightly



In nominal terms, the average reported annual income increased by nearly 12 percent over two years. However, when we adjust for inflation to examine real earnings, we find a small decrease in earnings, of approximately 4 percent.

Earnings have decreased more among the youngest anesthesiologists than in other age groups. The average real annual compensation for anesthesiologists ages 35 or younger dropped by 9 percent. This may be partially explained by changes in weekly hours, which dropped by 5 percent between 2006 and 2012. The difference in earnings per hour, therefore, is just 3.4 percent, a decrease from \$123 in 2006 to \$119 in 2012. The decreases in annual compensation for young anesthesiologists (not shown) were twice as large for those employed by facilities (13.6 percent) than for those employed by groups (6 percent).



## There Are Some Regional Differences in Compensation

### ***There Are Some Regional Differences in Compensation***

	Northeast	Midwest	South	West	West Versus Other
Average hourly compensation	\$141	\$146	<b>\$153</b>	\$142	↑
Percentage of compensation fee-for-service	<b>20%</b>	<b>32%</b>	<b>31%</b>	57%	↓
Percentage of compensation salary	<b>66%</b>	<b>56%</b>	<b>59%</b>	35%	↓
Percentage of compensation bonus	<b>14%</b>	<b>11%</b>	<b>10%</b>	8%	

Note: Bolded results indicate significantly significant differences from the West at the  $p < 0.10$  level. Arrows indicate the direction of western results relative to those of all other regions.

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When looking at compensation by region, we find that most regions have similar earnings, but the compensation arrangements are quite different from one region to another.

To compare levels of compensation, we looked at hourly earnings to account for differences in hours per week worked in different regions. Anesthesiologists in the South have somewhat higher earnings than those elsewhere, while anesthesiologists in other regions have similar earnings to one another.

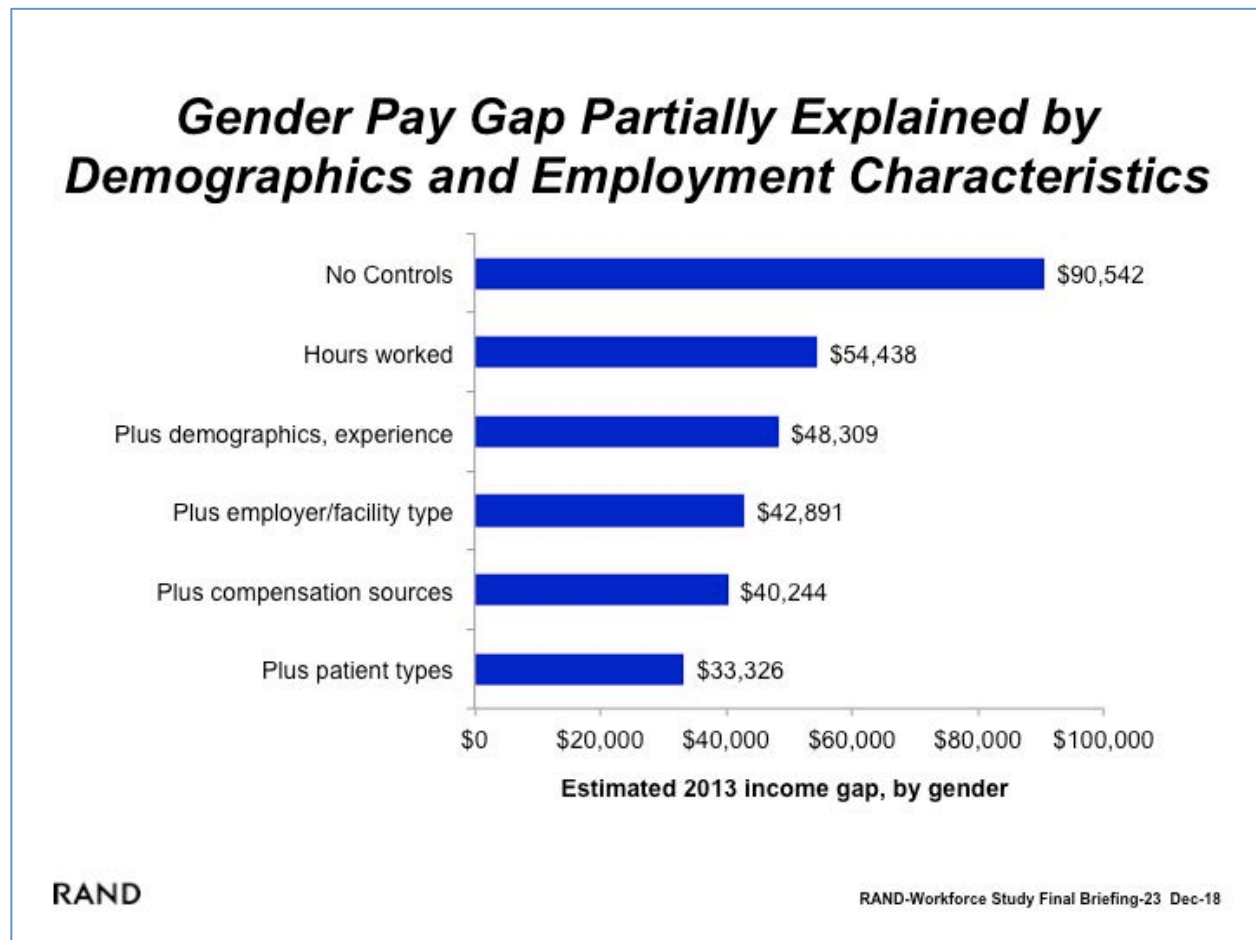
When we look at compensation arrangements, we find that the West is again an outlier. The percentage of compensation in the West that is obtained through fee-for-service payments is nearly double what is reported by anesthesiologists in the West and South and nearly triple what is reported for anesthesiologists in the Northeast. Rather than being compensated through fee-for-service payments, the anesthesiologists in the other regions are compensated through salaries and bonuses.

When we compare patterns in the compensation-arrangement data and the patterns in employer types, we see that regions with large percentages of anesthesiologists employed by



facilities are also regions where compensation is more likely to be paid by salary. It is likely, therefore, that these compensation patterns are being driven by employer type.

## The Gender Pay Gap Is Partially Explained by Demographics and Employment Characteristics

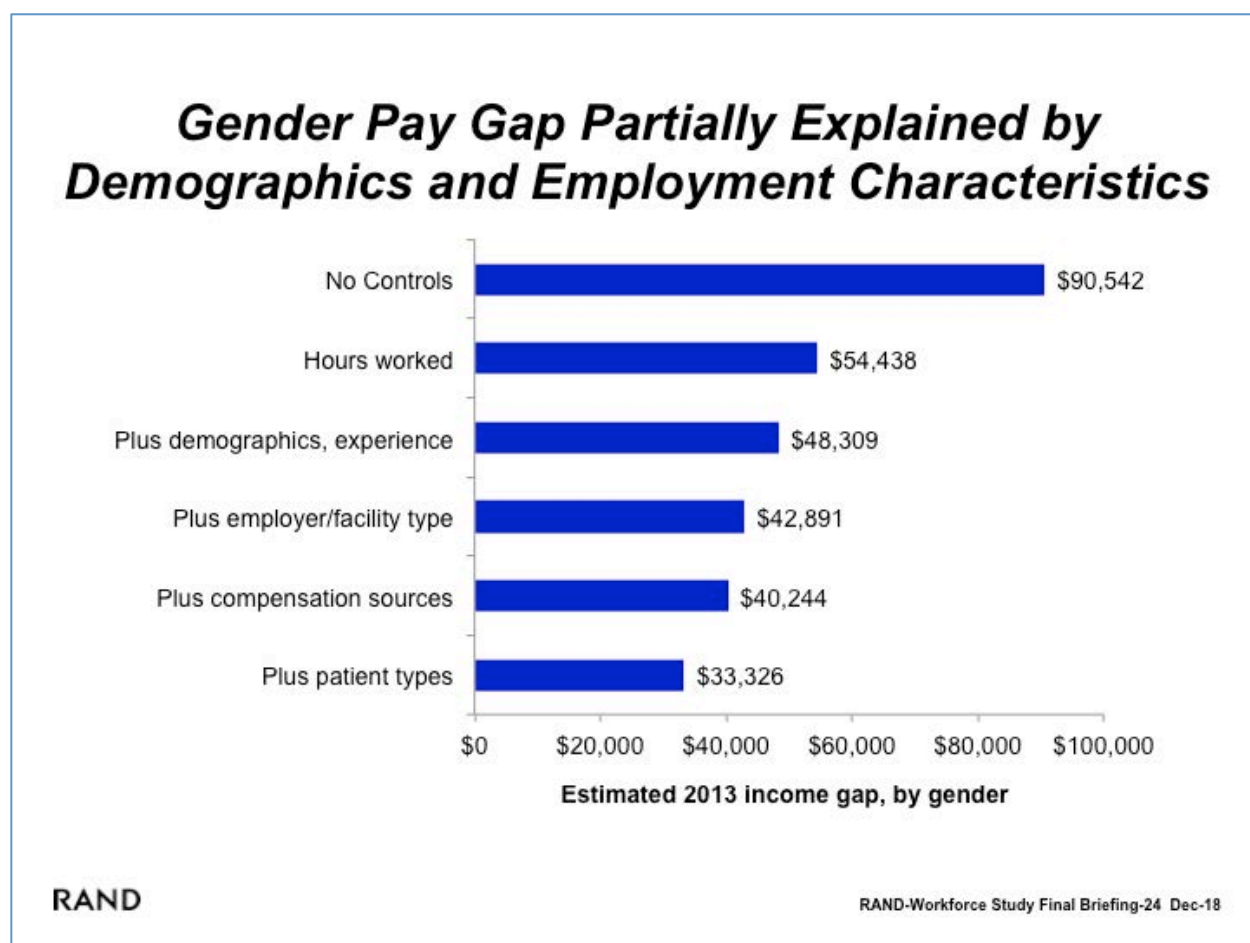


When comparing annual earnings, we observe a gap of more than \$90,000 between the average male anesthesiologist and the average female anesthesiologist. That leads us to ask, how much of the differences in earnings can be explained by observable differences in demographics or employment situations?

One of the largest differences between male and female anesthesiologists is the total number of hours worked, which we describe in the next section. When we account for differences in hours worked, the gender gap in earnings decreases by more than one-third. We also showed that female anesthesiologists are largely concentrated among the youngest cohorts of anesthesiologists. To the degree that earnings increase with experience, accounting for this should decrease the gender gap in earnings. The results of regression analysis indicate that adding demographics and experience reduces the gender pay gap by more than \$6,000. Earlier, we discussed how employer type differs by gender, and compensation type similarly differs by gender. When we control for employer, facility, and compensation arrangement, the gender pay gap is further reduced by \$8,000. We discuss the gender differences in patient types later, with female anesthesiologists more likely to spend time with pediatric patients (see “Female

Anesthesiologists Spend More Time Than Male Anesthesiologists on Pediatric Care”). When we control for these, the gender gap is reduced to just \$33,326, just a little more than one-third of the raw gap in earnings.

The Gender Pay Gap Is Partially Explained by Demographics and Employment Characteristics  
(continued)



To the degree that the differences in employer, patients, and hours stem from decisions made by female anesthesiologists based on their preferences, we may not be worried about the portion of the gender pay gap that can be explained by observable differences in employment situations. If female anesthesiologists are working fewer hours to accommodate personal responsibilities or are choosing to work with pediatric patients because of a passion for children, the accompanying pay differences may be an acceptable trade-off for flexibility and job satisfaction. However, if women are channeled to certain types of patients, less likely to be hired as group employers, or prevented from working their desired hours more often than men, we may be concerned that these gaps reflect illegal discrimination rather than explaining why women's preferences may drive salary differences. From the data from our survey, we are unable to distinguish between these two possibilities.

Even though a large portion of compensation can be explained by the characteristics of the anesthesiologist's employer, facility, and practice, a substantial \$33,000 difference by gender still remains and needs to be better understood.



## Outline

- Background and significance
- Data and methods
- Survey results
  - Employment arrangements
  - **Team care**
  - Time use
  - Indicators of shortage
- Econometric analysis
- Projections

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Next, we discuss the data on team care. This is an important issue in the anesthesiologist workforce literature: the impact of a growing workforce of nonphysician anesthesia providers. Nurse anesthetists and anesthesiology assistants are licensed professionals with master's degrees and the training necessary to participate in the delivery of anesthesia. Nurse anesthetists are far more prevalent in the United States than anesthesiology assistants, with more than 40,000 nurse anesthetists and approximately 1,000 anesthesiology assistants nationally. The primary model of team anesthesia care is the supervision of nonphysician providers by an anesthesiologist. For payments to be made, except in states that opt out of the Medicare provision, Medicare policy requires that nonphysician providers be supervised by an anesthesiologist.

As the nurse anesthetist workforce has grown and policy has led to increases in independent anesthesia provision, there has been considerable debate on the implications that nonphysician providers have on cost and patient safety (ASA, 2004; American Association of Nurse Anesthetists [AANA], 2007). The studies tend to focus on comparing physician and nonphysician providers as direct substitutes. However, in a constrained workforce, nonphysician providers may additionally act as a complement to anesthesiologists, improving the effectiveness

of anesthesiology by increasing staffing ratios and freeing up anesthesiologists to focus more on cases for which their direct presence is required.

## ***Anesthesia Teams Can Vary***

- **Team care: Anesthesiologists can supervise nurse anesthetists in the same facilities on the same procedures**
  - Shifts throughout health care are putting a greater emphasis on nurses as providers
- **In states where nurse anesthetists are exempted from supervision requirements**
  - Nurse anesthetists can work in the same facility on separate procedures
  - Nurse anesthetists can work in different facilities on separate procedures

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In the provision of anesthesiology, it has become common to use teams to deliver care, with teams often made up of a nurse anesthetist or anesthesiology assistant who is delivering care and an anesthesiologist who is supervising the care provider. In most states, physician supervision of nurses providing anesthesia is required by the U.S. Department of Health and Human Services Centers for Medicare and Medicaid Services. This means that nurse anesthetists and anesthesiologists are always working together on the same procedures in the same facilities.

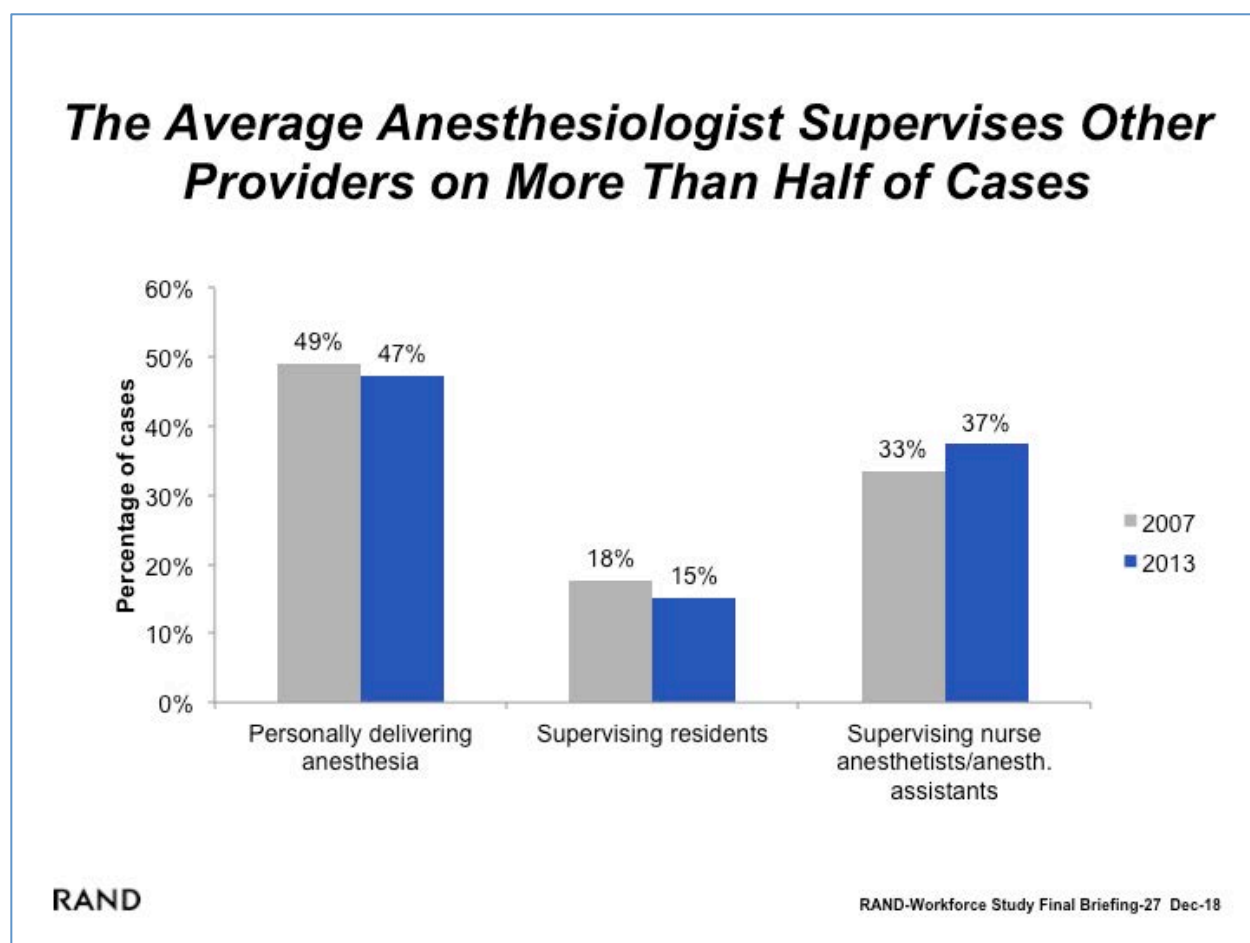
Because of concerns about anesthesia-provider shortages in rural areas, in 2001, the Centers for Medicare and Medicaid Services offered states the opportunity to opt out of the requirement that nurse anesthetists be supervised by a physician. Seventeen states have opted out of the physician-supervision regulation—from earliest to latest, Iowa, Nebraska, Idaho, Minnesota, New Hampshire, New Mexico, Kansas, North Dakota, Washington, Alaska, Oregon, South Dakota, Wisconsin, Montana, California, Colorado, and Kentucky (AANA, undated). In these states, nurse anesthetists can take on an expanded role. They can work in the same facilities as anesthesiologists but work on different procedures, and they can work in separate facilities that do not have any anesthesiologists on duty. It is important to note that nurse anesthetists working



in facilities without anesthesiologists will not be captured anywhere in these data because, in this study, we surveyed only anesthesiologists.

It is important to note that all data on team care in the 2013 wave of the survey were reported by anesthesiologists. For findings from CRNAs, please reference our report on the findings from the previous survey wave (Daugherty et al., 2010).

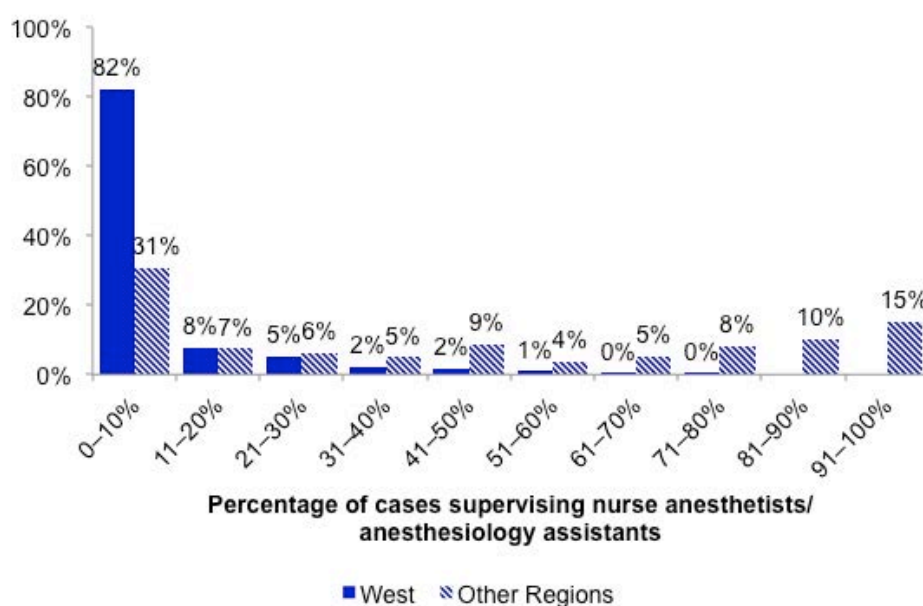
## The Average Anesthesiologist Supervises Other Providers on More Than Half of His or Her Cases



The average anesthesiologist delivers anesthesia personally on approximately half of his or her cases and supervises other anesthesia providers on the remaining cases. Supervision of nurse anesthetists and anesthesiology assistants accounts for a larger percentage of cases in 2013 than in 2007, with an statistically significant increase from 33 percent to 37 percent in those six years.

We cannot separate trends over time for nurse anesthetists and anesthesiology assistants because the 2007 survey combined these anesthesia providers into a single group. However, we find in the 2013 data that supervision of nurse anesthetists accounts for a much greater portion of an anesthesiologist's supervisory time, with just 2 percent of cases reported to involve supervision of anesthesiology assistants in 2013, than the 35 percent of cases involving supervision of nurse anesthetists.

## ***Western Anesthesiologists Are Much Less Likely to Participate in Team Care***



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When looking at the percentage of cases that involve supervision of nonphysician anesthesia providers by region, we find distinctly different patterns for western anesthesiologists and anesthesiologists in other regions. The vast majority of western anesthesiologists supervise non-anesthesia providers on 10 percent or fewer of their cases. There are very few western anesthesiologists who supervise on at least 50 percent of cases, and there is not a single western anesthesiologist who supervises on more than 75 percent of cases. Anesthesiologists in regions outside the western United States seem to have a much wider range of supervision arrangements. One-third of anesthesiologists outside the western United States supervise on relatively few of their cases (0 to 10 percent), one-third supervise on some of their cases (11 to 70 percent), and one-third supervise on most of their cases (70 to 100 percent).

One possible explanation for the greater participation in team care is that western anesthesiologists are more likely to work for groups and multiple facilities. And team care may be more prevalent in facility-based employment situations, in which facilities have incentives to maximize the efficiency of their anesthesia providers. However, in three of the four regions, we do not find facility-employed anesthesiologists spending more time supervising nonphysician

anesthesia providers. In the Northeast and South, group-employed anesthesiologists spend a larger percentage of their cases than facility-employed anesthesiologists in the same regions supervising (41 percent versus 33 percent in the Northeast and 57 percent versus 47 percent in the South). In the West, the opposite is true, with facility-employed anesthesiologists spending a larger percentage of their cases than group-employed anesthesiologists do supervising (8 percent versus 20 percent).

## ***Nurse Anesthetists Are Less Prevalent in the West and Midwest Than in Other Regions***

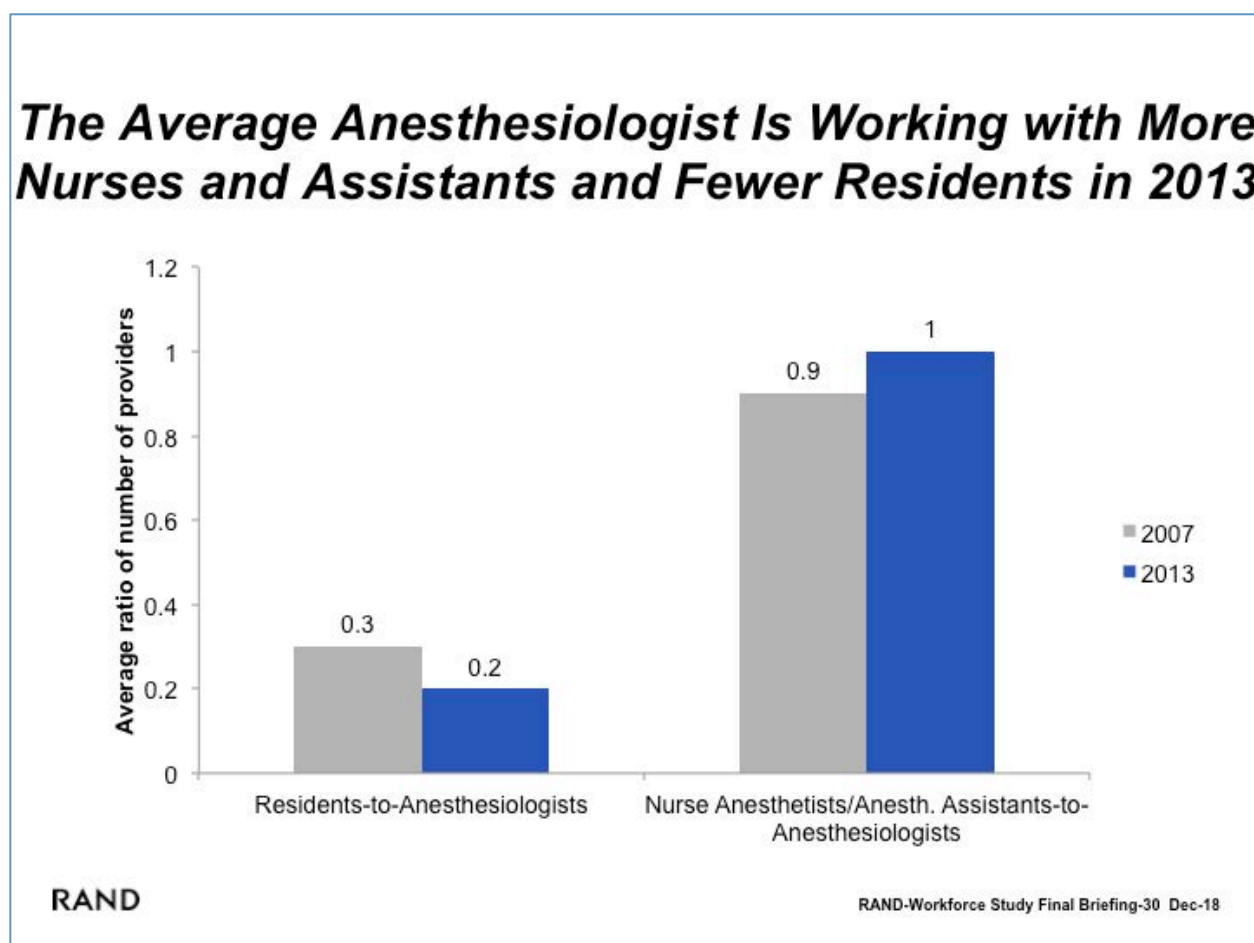
	Nurse Anesthetists	Anesthesiologists	Ratio of Nurse Anesthetists to Anesthesiologists
Northeast	8,933	8,698	1.03
Midwest	5,426	9,665	0.56
South	15,758	14,174	1.11
West	3,272	10,127	0.32

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This table presents the total number of nurse anesthetists and anesthesiologists in 2011 according to the AHRF. The data indicate that there are fewer nurse anesthetists per anesthesiologist in the West and Midwest than in the Northeast and South. This is an interesting finding given that most of the states that allow nurse anesthetists to work without supervision are in the Midwest and West, and there were concerns that nurse anesthetists would be substituted for anesthesiologists if exemption from the requirement of anesthesiologist supervision were permitted.

The Average Anesthesiologist Is Working with More Nurse Anesthetists and Anesthesiology Assistants and Fewer Residents in 2013



When we examine the mix of anesthesia providers at the facility level, we find that the ratio of nonphysician anesthesia providers to anesthesiologists has increased by 10 percent in the past six years. The ratio of residents to anesthesiologists appears to have decreased slightly.

## There are Regional Differences in Anesthesia-Provider Use

### ***Regional Differences in Anesthesia Provider Use***

	Northeast	Midwest	South	West	West Versus Other
Average number of anesthesiologists	<b>32</b>	<b>25</b>	<b>23</b>	28	↓
Average number of nurse anesthetists	<b>17</b>	<b>21</b>	<b>21</b>	6	↓
Average number of anesthesiologist assistants	0	<b>1</b>	<b>2</b>	0	↓
Average number of residents	<b>17</b>	<b>12</b>	8	7	↑
Percentage of facilities using anesthesiologists only	<b>11%</b>	<b>14%</b>	<b>11%</b>	48%	↓
Percentage of facilities using any nurse anesthetists	<b>87%</b>	<b>82%</b>	<b>89%</b>	43%	

Note: Bolded results indicate significantly significant differences from the West at the  $p < 0.10$  level. Arrows indicate the direction of western results relative to those of all other regions.

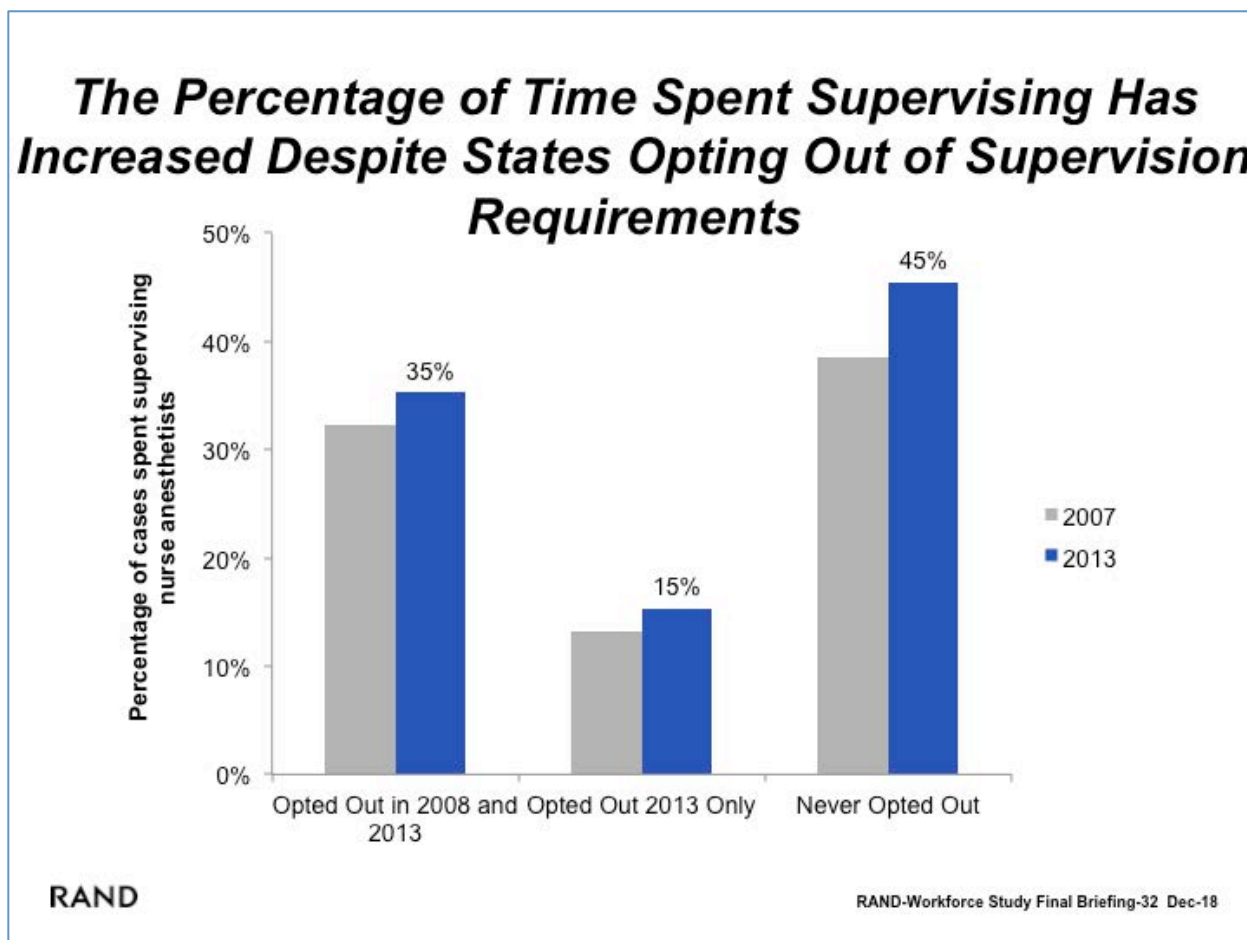
**RAND**

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Regional differences in the mix of anesthesia providers also highlight the West as a clear outlier. The average anesthesiologist in the western United States works in a facility with less than one-third as many nurse anesthetists as the number with which anesthesiologists in other regions work. Only 43 percent of the facilities at which western anesthesiologists work use nurse anesthetists, compared with more than 80 percent of the facilities in other regions. Western facilities appear to rely largely on a physician-only staff mix for the provision of anesthesia, while facilities in other regions tend to use a mix of anesthesia providers. It is important to note, however, that these are regional averages. There is substantial variation within regions in the use of team care for anesthesia.

The facilities at which western anesthesiologists work also use few anesthesiology assistants and have fewer residents, on average. The facilities at which northeastern anesthesiologists work have more anesthesiologists and residents, on average, than other regions have.

## The Percentage of Time Spent Supervising Has Increased Despite States Opting Out of Supervision Requirements



In “The Gender Pay Gap Is Partially Explained by Demographics and Employment Characteristics,” we described the decision of 17 states to opt out of the requirement that nurse anesthetists must be supervised by anesthesiologists. Between 2007 and 2013, three states transitioned to opting out of the physician-supervision regulation.

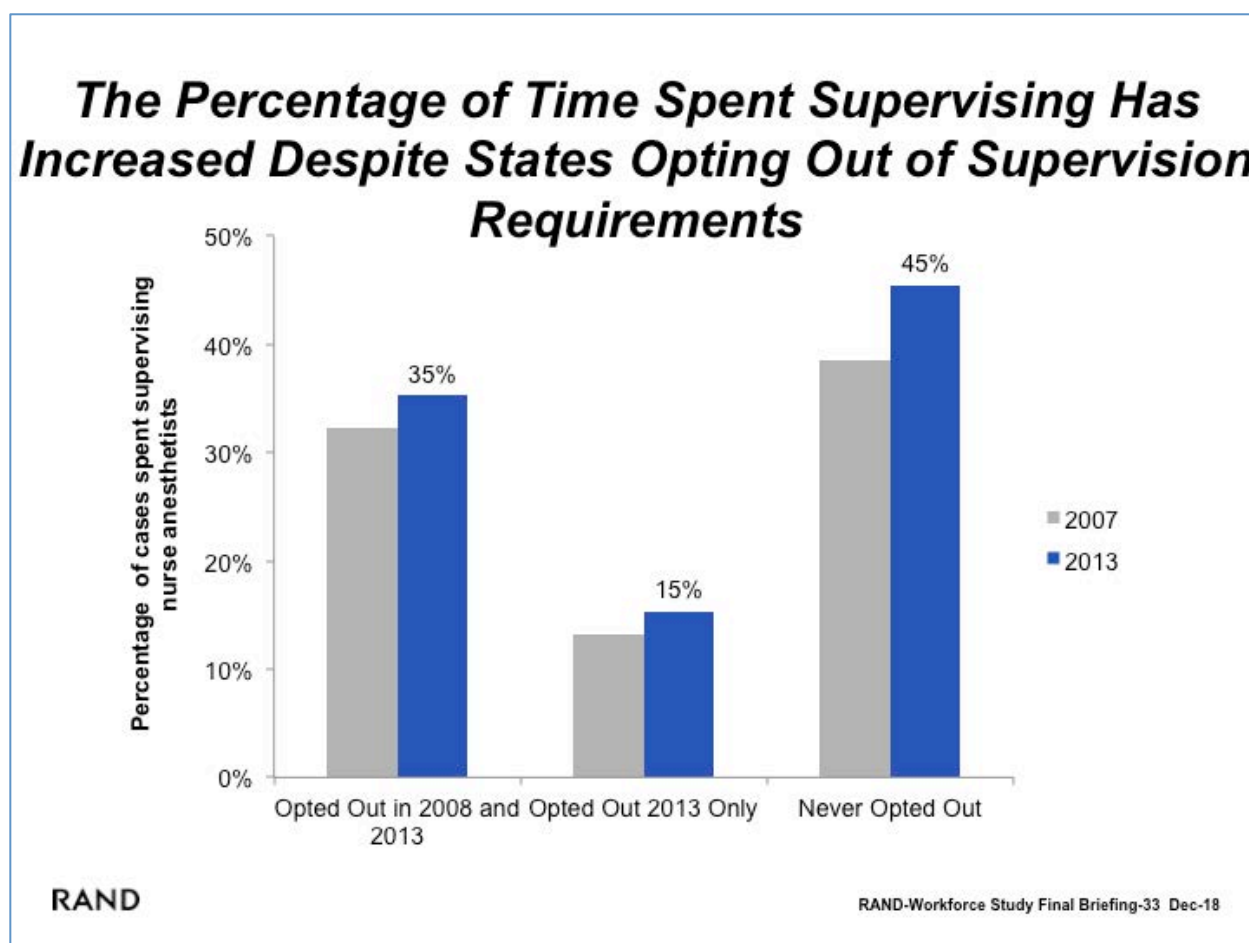
A question we ask is, how has the opt-out provision affected supervision by anesthesiologists? Because the survey was conducted at the anesthesiologist level rather than the facility level, we cannot directly examine changes in the mix in anesthesia providers across all facilities. We showed that the average facility was employing a larger number of nurse anesthetists than it had in 2007, but there is not clear evidence that these additional nurse anesthetists are substituting for anesthesiologists.

Although we cannot assess the impact that opting out has on the displacement of anesthesiologists by nurse anesthetists, we can look at the trends in supervision by opt-out status. It appears that cases spent in supervision increased across all of the different groups; however, the largest increases occurred in states that had not opted out of the regulation. This is in line



with expectations because nurse anesthetists do not need to be supervised in states that opt out. However, it is notable that facilities in opt-out states continue to use anesthesiologists in a supervisory role.

## The Percentage of Time Spent Supervising Has Increased Despite States Opting Out of Supervision Requirements



We find that the three states that opted out of the regulation between 2007 and 2013 have anesthesiologists who are much less likely to spend time supervising nurse anesthetists than personally delivering anesthesia. This is largely driven by California and Colorado, western states where few facilities use both anesthesiologists and nurse anesthetists. The tendency of facilities to use anesthesiologists as the sole providers of anesthesia in the western United States may mean that there are substantial barriers to the movement of nurse anesthetists into western facilities. On the other hand, it may be the case that nurse anesthetists are used in western facilities where anesthesiologists are not employed, and the practice of these nurse anesthetists would not be accounted for, given that the survey focuses only on data provided by anesthesiologists.

## ***Regional Differences Are Not Driven by Differences in State Exemption Status***

Percent age of Time Spent Supervising Nurse Anesthetists

	States Where Nurse Anesthetists Must be Supervised	States Opting Out of Supervision
Northeast	40	44
Midwest	41	46
South	49	47
West	7	13

In fact, states opting out of supervision have anesthesiologists who spend more time supervising nurse anesthetists.

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One possible explanation for the evidence of lower reported time spent in team care among anesthesiologists in the western United States than elsewhere is that nurse anesthetists are exempt from supervision in many western states, and this may lead to nurse anesthetists working separately in these states. However, when we break down the data by region and exemption status, we find that, in all regions except the South, anesthesiologists in states that have opted out of supervision spend *more* time supervising nurse anesthetists than anesthesiologists in states that have not opted out. In addition, anesthesiologists in the western United States spend much less time supervising, regardless of whether their states have opted out of supervision requirements. This provides evidence that opt-out status is not driving regional differences.

## ***Outline***

- **Background and significance**
- **Data and methods**
- **Survey results**
  - Employment arrangements
  - Team care
  - **Time use**
  - Indicators of shortage
- **Econometric analysis**
- **Projections**

**RAND**

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Several questions on the survey asked for time use: total hours and clinical hours; the degree to which call time is spent on-site versus off-site; time spent by stage of care (preoperative, postoperative); time spent by case type, patient type, or anesthesia type; time spent doing administrative work; time spent teaching; and delays in cases for different situations.

Examining time usage might give important clues on the likelihood of shortage and how to address shortage when it exists.

## ***Time Use Stayed Relatively Consistent Between 2007 and 2013***

- **Small, nonsignificant decrease in hours**
- **Same number of procedures per week**
- **Same percentage of time spent in different aspects of care (e.g., preoperative, postoperative)**
- **Same percentage of time spent in different types of patients (e.g., cardiac/vascular, pain management)**
- **Same percentage of time spent on different types of anesthesia (e.g., monitored anesthesia care, general anesthesia)**

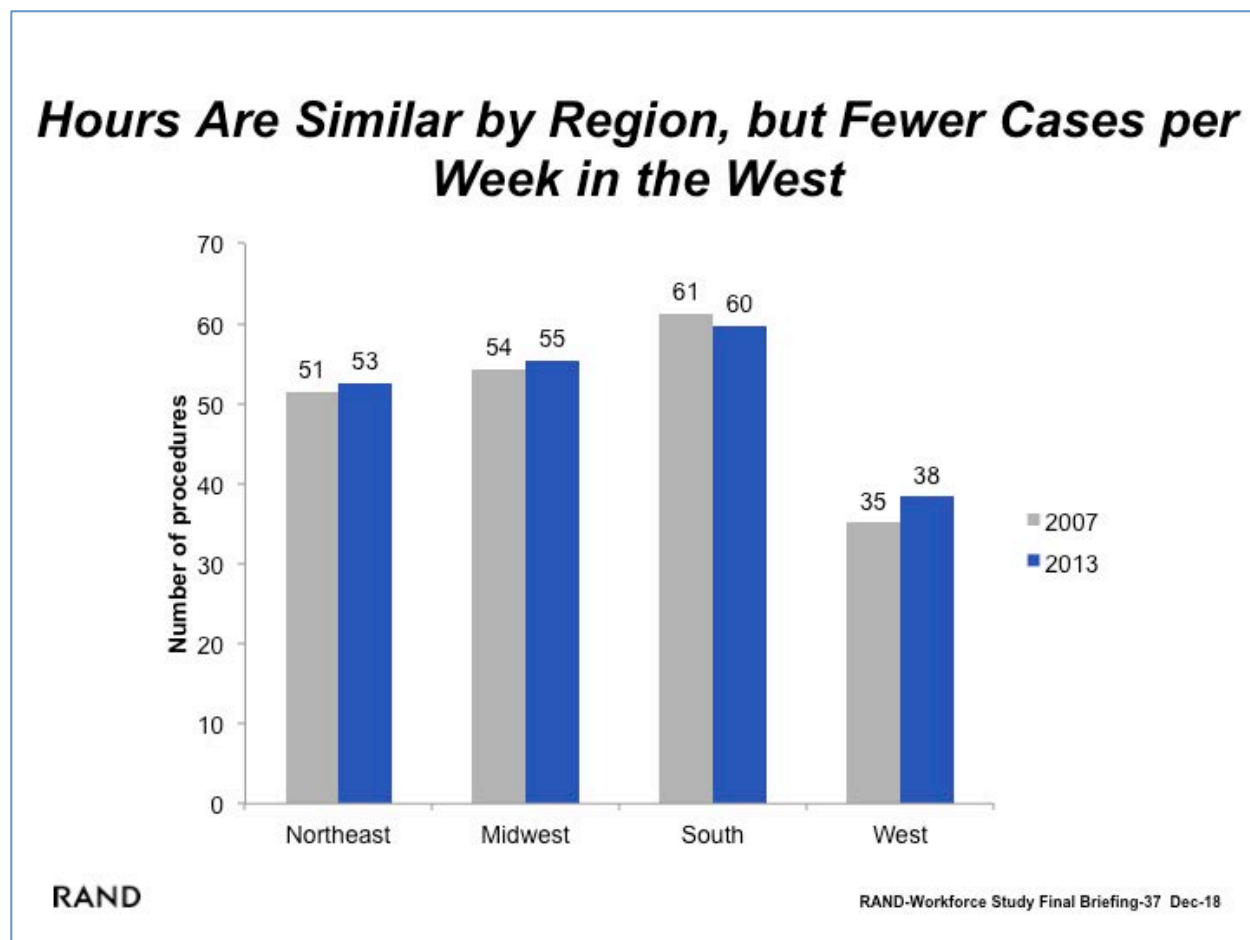
**RAND**

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We find very few changes in anesthesiologists' time use between 2007 and 2013. Anesthesiologists worked the same number of hours and completed the same number of procedures each week in 2013 as in 2007. There are no differences in the percentage of time spent on different aspects of care, on different types of patients, or on different types of anesthesia.

The stability of these findings over time provides us additional confidence in the validity of the survey. There may be no reason to expect a change in many of these time-use variables, and the consistency over time would be unlikely if there were substantial biases or errors in the survey responses.

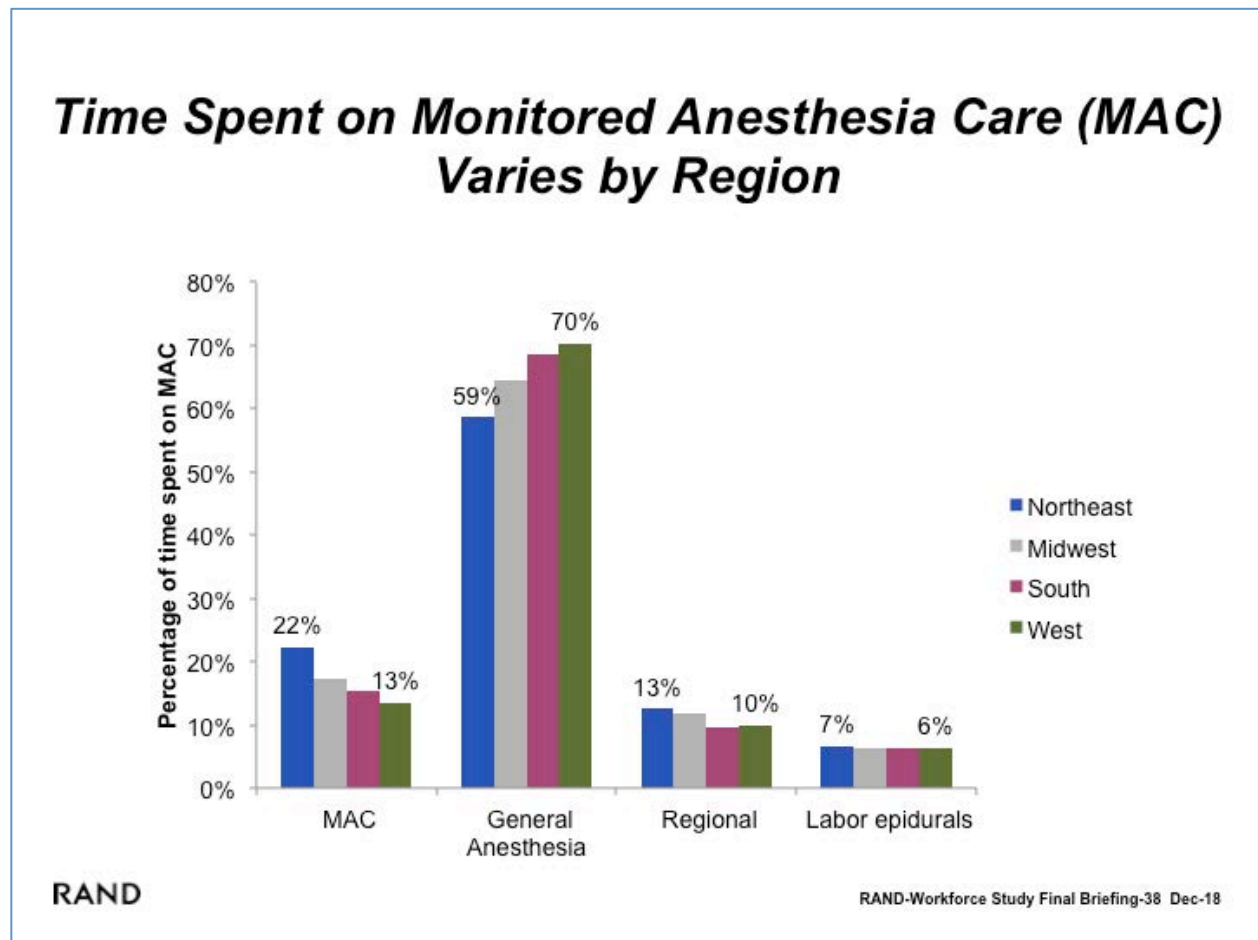
## Hours Are Similar by Region, but Anesthesiologists Have Fewer Cases per Week in the Western United States



The data indicate that weekly clinical hours are similar across regions, though northeastern and western anesthesiologists work approximately one to two hours less per week than midwestern and southern anesthesiologists. However, the average number of procedures completed by western anesthesiologists in a week is substantially lower than anesthesiologists in the other regions. This result is largely driven by the use of team care in facilities. In team-care settings, anesthesiologists are able to supervise two to four cases simultaneously, allowing them to complete more procedures in a week than anesthesiologists not working in a team-care setting.

However, it is important to note that the data speak only to the supply of anesthesiologist labor. In team-care settings, facilities are also employing and compensating nonphysician anesthesia providers to supplement anesthesiologist care. So it is incorrect to conclude from these data that western anesthesiologists are any less productive than anesthesiologists in other regions. To examine the efficiency of different care models, one would need to examine all resources and compare these resource requirements with the value of services produced, an examination that is beyond the scope of our survey or study.

## Time Spent on Monitored Anesthesia Care Varies by Region



Anesthesiologists in all regions spend the majority of their time providing general anesthesia. Yet there are substantial regional differences in the use of anesthesiologist time for different types of anesthesia. Western anesthesiologists spend the most time on general anesthesia and the least time on MAC. Northeastern anesthesiologists spend the most time on MAC and the least time on general anesthesia. There were smaller differences for regional anesthesia and labor epidurals. These regional differences were observed in the 2007 survey data and have changed little over time.

There are myriad reasons that anesthesiologists may devote different proportions of time to different types of anesthesia. Patterns of anesthesia time use could be driven by a different mix of procedures for the population served, use of different types of anesthesia providers for different types of procedures, and the use of anesthesia for procedures in which anesthesia is optional.

## ***Use of Monitored Anesthesia Versus Sedation Varies by Region (2007 Data)***

	Northeast	Midwest	South	West	West Versus Other
<b>Percentage of Cases in Which MAC Delivered by Anesthesia Provider</b>					
Colonoscopy	<b>57%</b>	<b>39%</b>	<b>43%</b>	30%	↓
Transesophageal Echocardiogram	<b>30%</b>	<b>17%</b>	<b>14%</b>	10%	↓

Note: Bolded results indicate significantly significant differences from the West at the  $p < 0.10$  level. Arrows indicate the direction of western results relative to those of all other regions.

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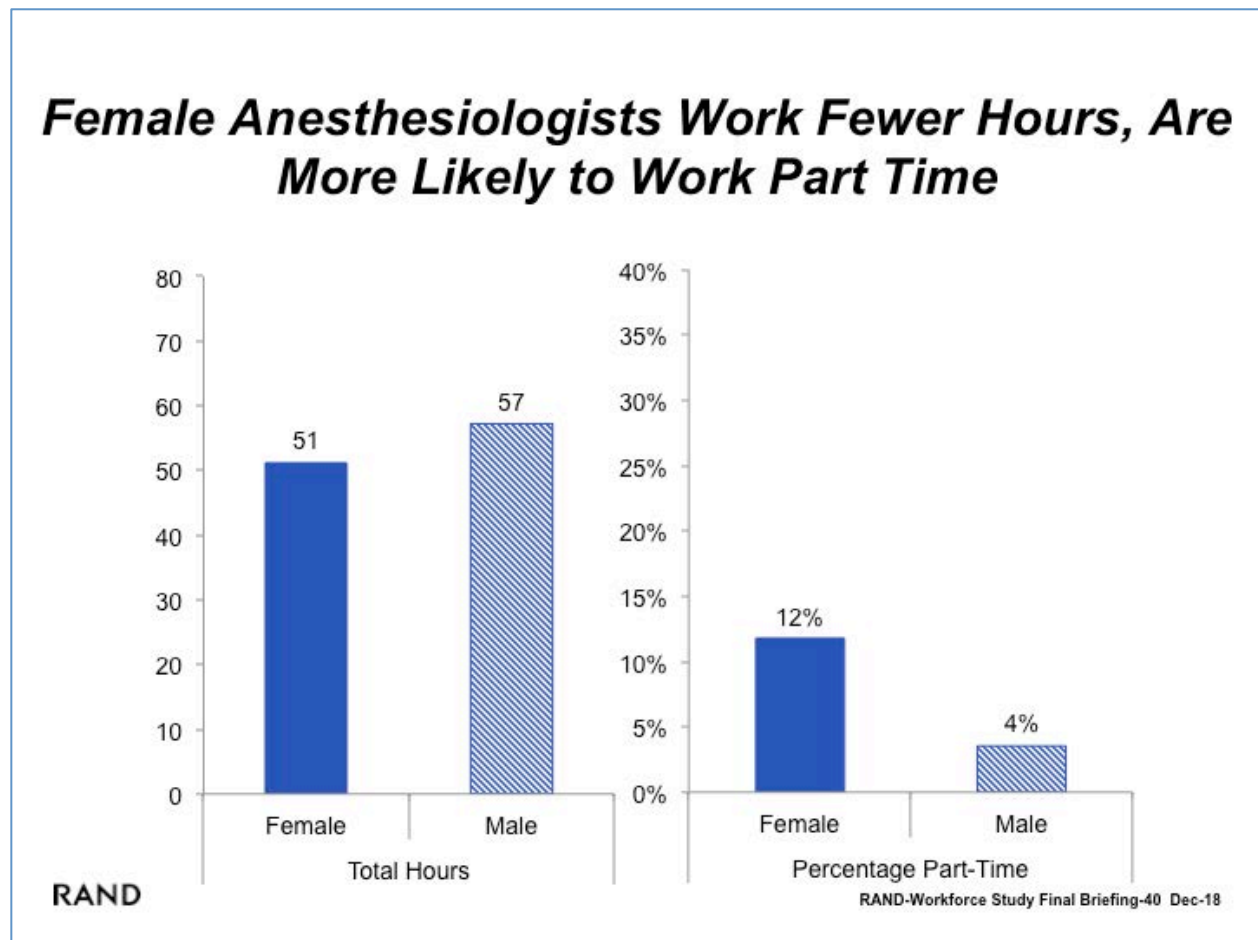
It is useful to review findings from the 2007 survey on the use of anesthesia for procedures on which anesthesia is optional for low-risk patients. (This item was removed from the 2013 survey, so we could not look at more-updated data.) We find that these results are closely related to those found on the percentage of time spent on MAC (see “Time Spent on Monitored Anesthesia Care Varies by Region”). There are large regional differences in the percentage of colonoscopies and transesophageal echocardiograms for which MAC is used. Anesthesiologists in the Northeast report that a greater percentage of these cases use MAC, while western anesthesiologists report that it is less often used on these two types of cases. In fact, northeastern anesthesiologists report using MAC three times as often for transesophageal echocardiograms as western anesthesiologists report and nearly twice as often for colonoscopies in the Northeast than out West.

A recent RAND study indicated that there has been substantial growth in the use of anesthesia for gastrointestinal endoscopies and colonoscopies among low-risk individuals with private insurance (Liu et al., 2012). Using a complementary data source, the study also showed even wider variation by region, with only 15 percent of colonoscopy patients in the western



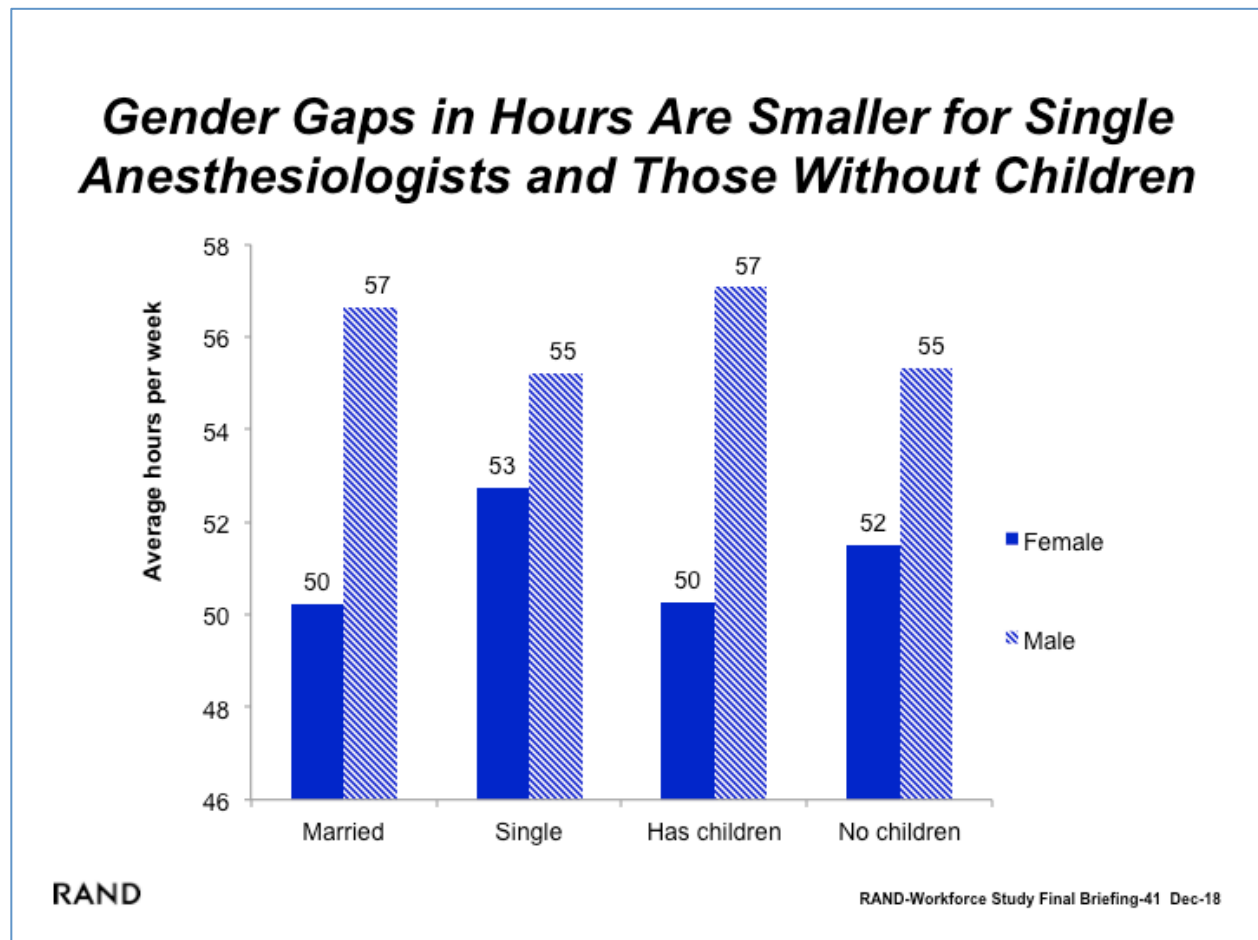
United States receiving anesthesia, compared with 59 percent in the Northeast. The lower numbers for the West in the Liu et al. study than in our survey findings suggest that anesthesiologists may overestimate rate of anesthesia use for colonoscopies, and this may be driven by a limited knowledge about the procedures that take place. Liu et al. argue that the use of anesthesia in these cases should be of concern because it is driving up the cost of care for basic procedures. If the rate of MAC continues to increase, this will put additional demands on anesthesiologist time and potentially lead to shortages of anesthesiologists if they are unable to accommodate this demand.

## Female Anesthesiologists Work Fewer Hours and Are More Likely Than Male Anesthesiologists to Work Part Time



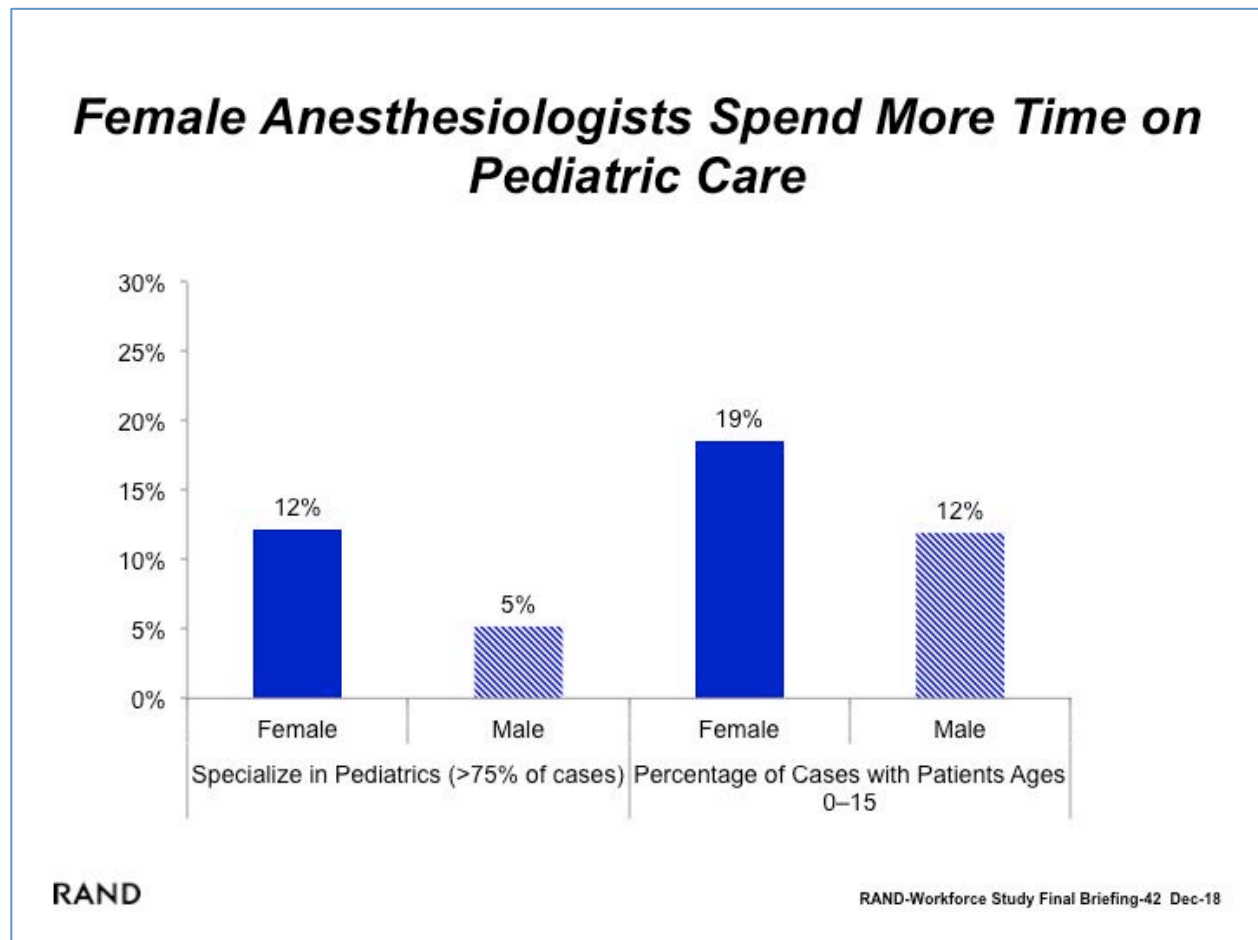
The data on variation in hours worked by gender suggest that female anesthesiologists work an average of six fewer hours per week than their male counterparts. Analysis of part-time work indicates a similar pattern. We define part-time work as it is defined by the U.S. Department of Labor to include anyone who works 35 hours per week or less. The data from the 2013 survey indicates that nearly 12 percent of female anesthesiologists worked part time, a rate that is three times the rate for male anesthesiologists.

## Gender Gaps in Hours Are Smaller for Anesthesiologists Without Children



The most common explanation for reduced work hours among women is that family responsibilities limit the number of hours that can be worked. When we look at the gender gap in work hours by marital status and whether an anesthesiologist has children, we find that the gap is much smaller for single anesthesiologists and for anesthesiologists without children. These descriptive findings support the notion that differences in hours are at least partially driven by family makeup.

## Female Anesthesiologists Spend More Time Than Male Anesthesiologists on Pediatric Care



Analysis of patterns in the time spent on different types of patients and cases indicates that there has been little change in patient mix over time, and there are few significant regional differences. However, when we look at patient type by gender, we do find one substantial difference: a greater percentage of time spent on pediatric patients. Female anesthesiologists are more than twice as likely as male anesthesiologists to specialize in pediatric anesthesia, where specialization is defined as one type of patient accounting for more than 75 percent of all cases.

Another item on the survey addressed time use by patient age from a different perspective; anesthesiologists were asked what percentage of cases involved patients ages 0 to 15 years (pediatric), 16 to 65 years (adult), and 65 years and older (elderly). Again, we find that female anesthesiologists are more likely than their male counterparts to see pediatric patients, with 19 percent of patients pediatric, compared with 12 percent for male anesthesiologists.

## **Outline**

- **Background and significance**
- **Data and methods**
- **Survey results**
  - **Employment arrangements**
  - **Team care**
  - **Time use**
  - **Indicators of shortage**
- **Econometric analysis**
- **Projections**

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To wrap up our summary of the most prominent survey results, we look at a range of indicators of shortage. In the next section, we describe how these indicators of shortage are both of interest in themselves and used to develop the econometric model.

Several items on the survey may speak to the presence of shortage or surplus in the anesthesiologist workforce. Some of these indicators may be stronger than others. For example, the item “To cover our current volume of cases, my group/practice would prefer to have more anesthesiologists” seems to provide a clear indicator of shortage because we would expect facilities to be able to find sufficient numbers of anesthesiologists to meet current case volume in labor markets that are in equilibrium. That said, there may be factors other than a shortage of anesthesiologists that could lead respondents to respond “yes” to this item. For example, the number of surgeons could act as a limiting factor.

An example of a weaker indicator of shortage is the item “My group/practice could handle more cases if we could hire more anesthesiologists.” This question focuses on the issue of anesthesiologists as a limiting factor in the facilities’ ability to increase demand. However, what this item cannot determine is whether there is actually additional demand out there to be met.

Facilities with excess surgical capacity may be able to handle additional cases with increased numbers of anesthesiologists, but, if there are not additional cases to handle, then the anesthesiologist market is not in shortage. This is distinct from the previous item, which establishes that current demand is beyond what can be handled by the current number of anesthesiologists.

## ***Shortage Indicators Show Little Movement, and Direction of Movement Mixed***

Shortage Indicator	Mean 2007	Mean 2013	Change in Probable Shortage
Facility would prefer more anesthesiologists to cover current case volume	0.473	0.503	↑
Number of anesthesiologist openings at facility / number of anesthesiologists at facility	0.129	0.279	↑
Elasticity of labor supply	0.353	0.365	↓
Facility could handle more cases if more anesthesiologists were hired	0.354	0.41	↑
Normalized change in real wages	-0.008		↓

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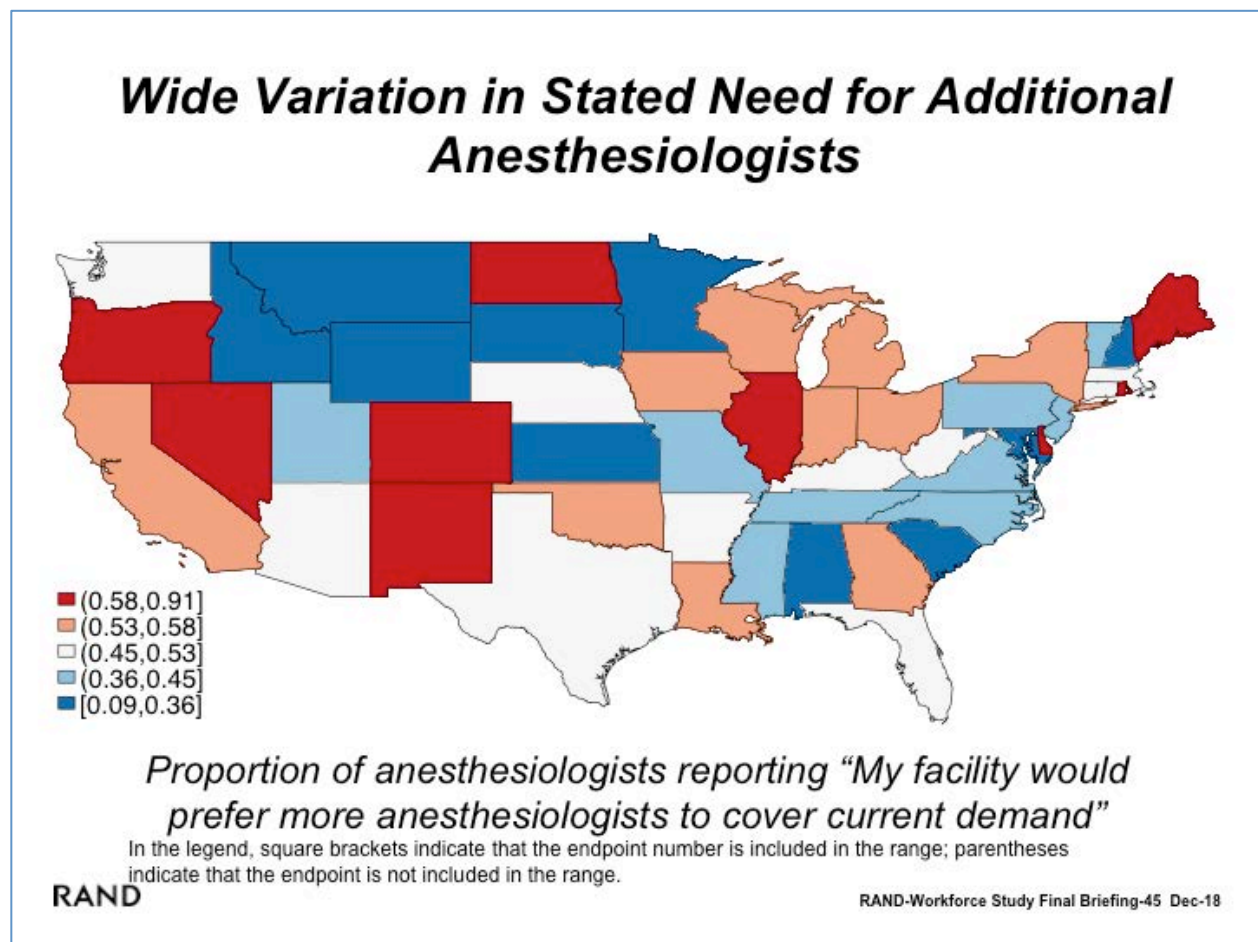
Overall, we find that trends in shortage indicators over time are mixed. In 2007, nearly half of all anesthesiologists reported that *additional anesthesiologists are needed to meet current demand*, and, by 2013, the proportion of anesthesiologists reporting this need had increased. The item on the need for additional anesthesiologists to meet demand showed similar patterns. Another indicator that demonstrated a potential increase in shortage was the number of anesthesiologist openings as a percentage of all positions. In 2007, approximately one in eight positions was open, on average; by 2013, this proportion of positions open had more than doubled.

Other indicators of shortage indicated that the probability of anesthesiologist shortage had decreased. The elasticity of labor supply is the percentage increase in hours that an anesthesiologist would be willing to provide if wages were increased by 1 percent. Low elasticity of labor supply is likely indicative of a shortage, indicating that anesthesiologists are less likely to increase hours for a given increase in wages. The increase in elasticity provides evidence that shortage is less likely in 2013 than in 2007.

Another indicator of shortage is the change in real wages because wages should increase when anesthesiologists are in shortage and facilities are forced to compete for anesthesiologists by offering higher wages. The fact that real wages have decreased slightly over time indicates that the anesthesiologist workforce may be less likely to be in shortage.



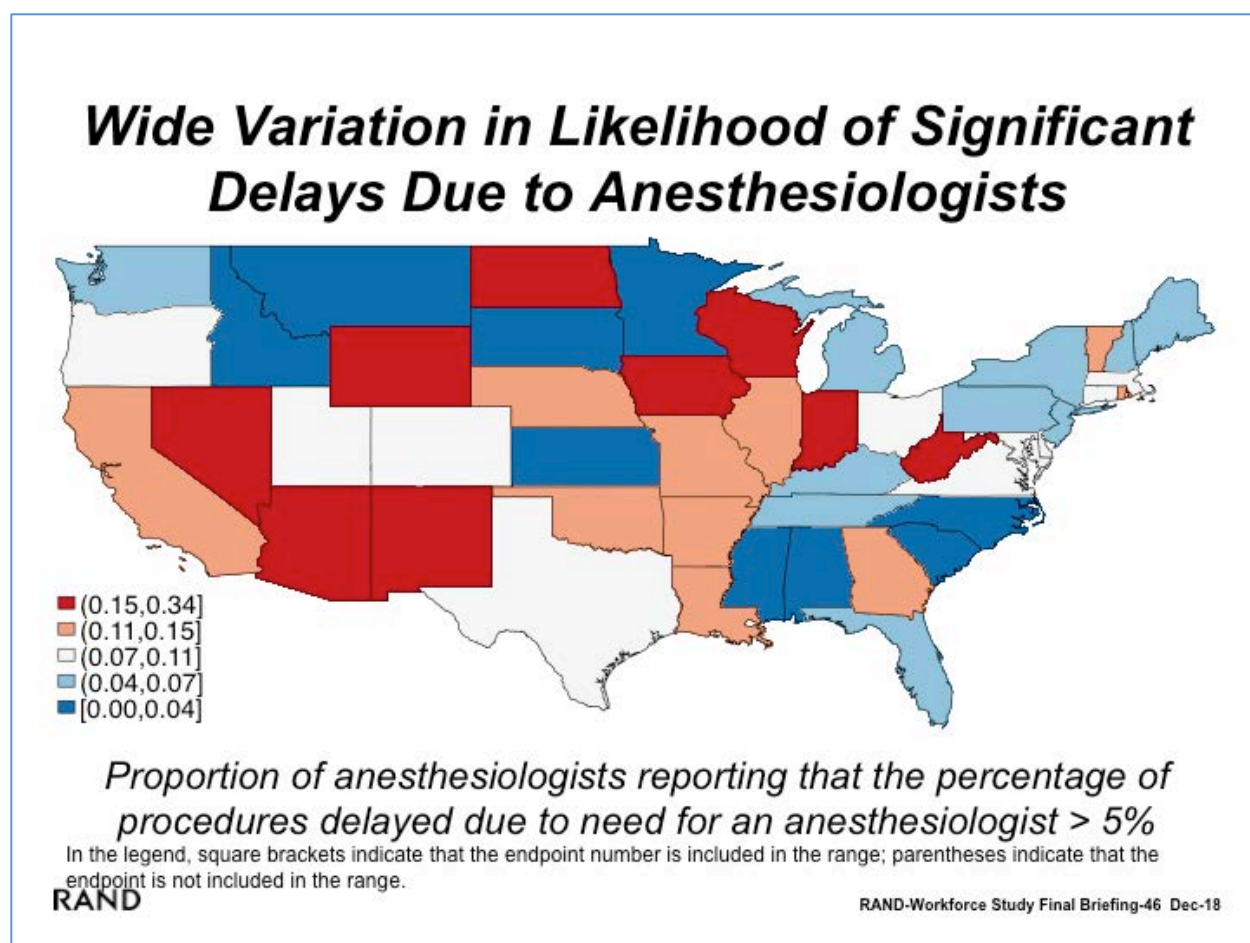
## There Is Wide Variation in the Stated Need for Additional Anesthesiologists



We also look at regional variation in shortage. We find wide variation in the percentage of anesthesiologists in different states reporting “My facility would prefer more anesthesiologists to cover current demand.” In one state, 91 percent of anesthesiologists reported this to be true; in another state, only 9 percent of anesthesiologists reported this to be true. The states with higher percentages of anesthesiologists reporting “more anesthesiologists preferred” have a greater probability of being in shortage.

According to this indicator alone, the West and Midwest appear to have the greatest proportions of states in shortage.

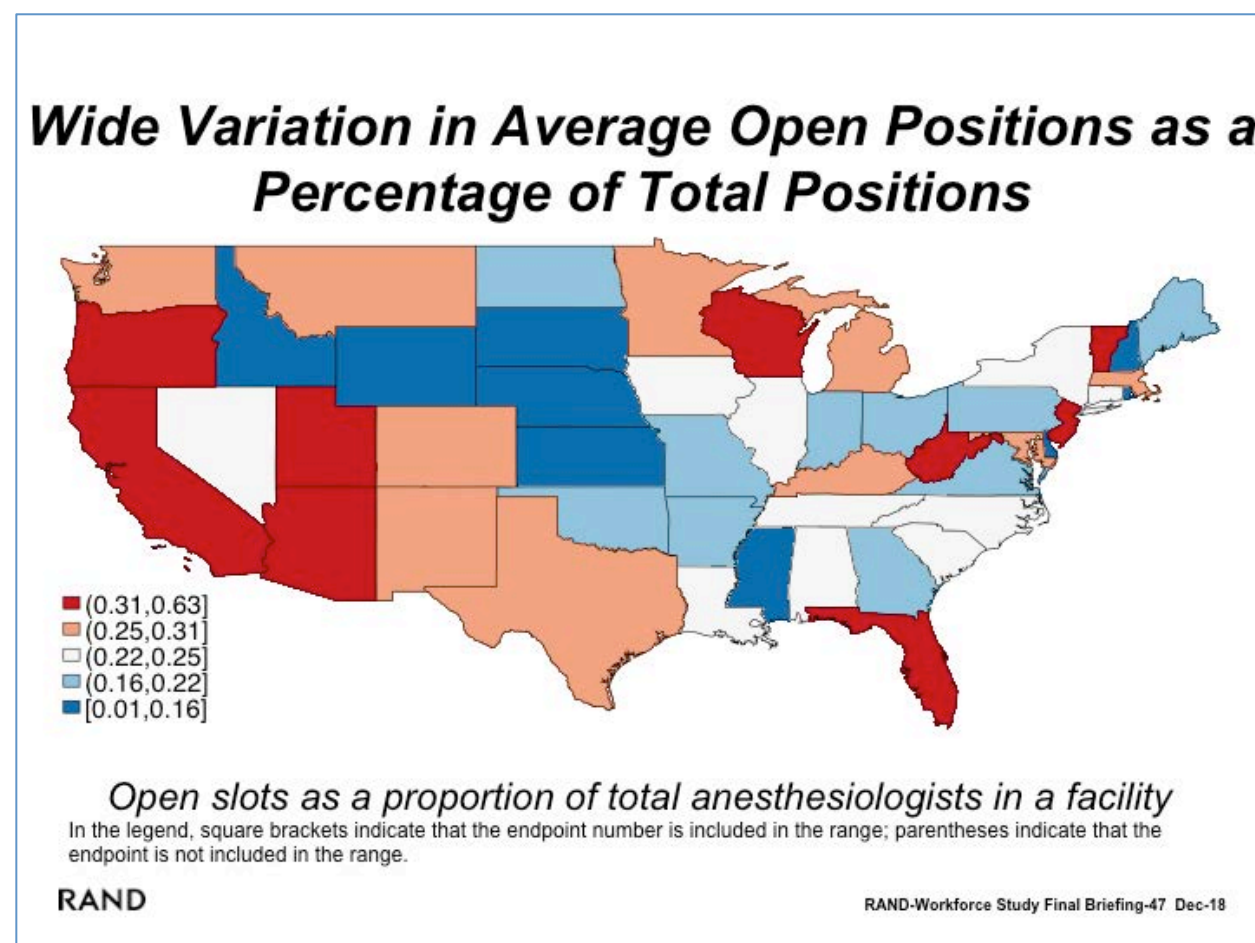
## There Is Wide Variation in the Likelihood of Significant Delays Due to a Need for an Anesthesiologist



Another item on the survey asked what percentage of procedures are delayed due to the need for an anesthesiologist. We determined that a delay of more than 5 percent of procedures due to the need for an anesthesiologist may be a sufficient indicator of shortage. We find wide variation in the percentage of anesthesiologists reporting this to be true for their facilities. In one state, more than one-third of anesthesiologists reported this to be true; in another state, none of the anesthesiologists responding to the survey reported this to be true. The states with higher percentages of anesthesiologists reporting “more than 5 percent of procedures delayed due to the need for an anesthesiologist” have a greater probability of being in shortage.

According to this indicator alone, the West and Midwest appear to have the greatest proportions of states in shortage. The Northeast has relatively few states in shortage according to this measure.

There Is Wide Variation in the Average Number of Open Positions as a Percentage of the Number of Total Positions



As previously noted, another indicator of shortage is the number of open positions as a percentage of the number of total positions. We find wide variation in the proportion of positions that are reported to be open. In one state, anesthesiologists report that 63 percent of all positions are open on average; in another state, anesthesiologists report that just 1 percent of all positions are open. The states reporting that open positions account for a greater proportion of positions have a greater probability of being in shortage.

According to this indicator alone, shortages are largely concentrated in the western United States, with a few states in shortage scattered across the other region.

### ***Outline***

- **Background and significance**
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  - Time use
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- **Projections**

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We next summarize our results on our econometric estimation of the shortage of anesthesiologists.

## ***We Use an Econometric Model***

- **Labor outcomes depend on labor demand and labor supply in a market**
- **But quantities are jointly decided with prices (wages)**
- **Labor supply: Anesthesiologists will supply more labor when the wage increases**
- **Labor demand: Facilities will demand less labor when the wage increases**

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Labor markets are often assumed to be relatively flexible, with wages adjusting in aggregate to clear the market, and workers receiving close to the value of their marginal product of labor. However, such assumptions are more difficult to defend in the case of highly specialized segments of the labor market, which require years of training and subsequent licensure. Anesthesiologists represent an important example of such exceptions.

In the basic economic model, the output of a good or service and the price of that good are jointly determined as a function of demand for that good or service and the supply of it. In this framework, the service (hours worked by anesthesiologists) is jointly determined with the wage. Labor supply designates the number of total hours (or, analogously, full-time equivalents [FTEs]) that anesthesiologists will be willing to supply in a state at any given average wage. As the wage increases, anesthesiologists will be willing to work more hours on the margin. This may happen either from an increase in the number of anesthesiologists (new residents, delayed retirement, labor-market reentry) or from increased hours worked by some or all already working anesthesiologists. Thus, the labor supply curve will be upward sloping from the positive relationship between wages and hours of anesthesiology supplied.



## ***We Use an Econometric Model***

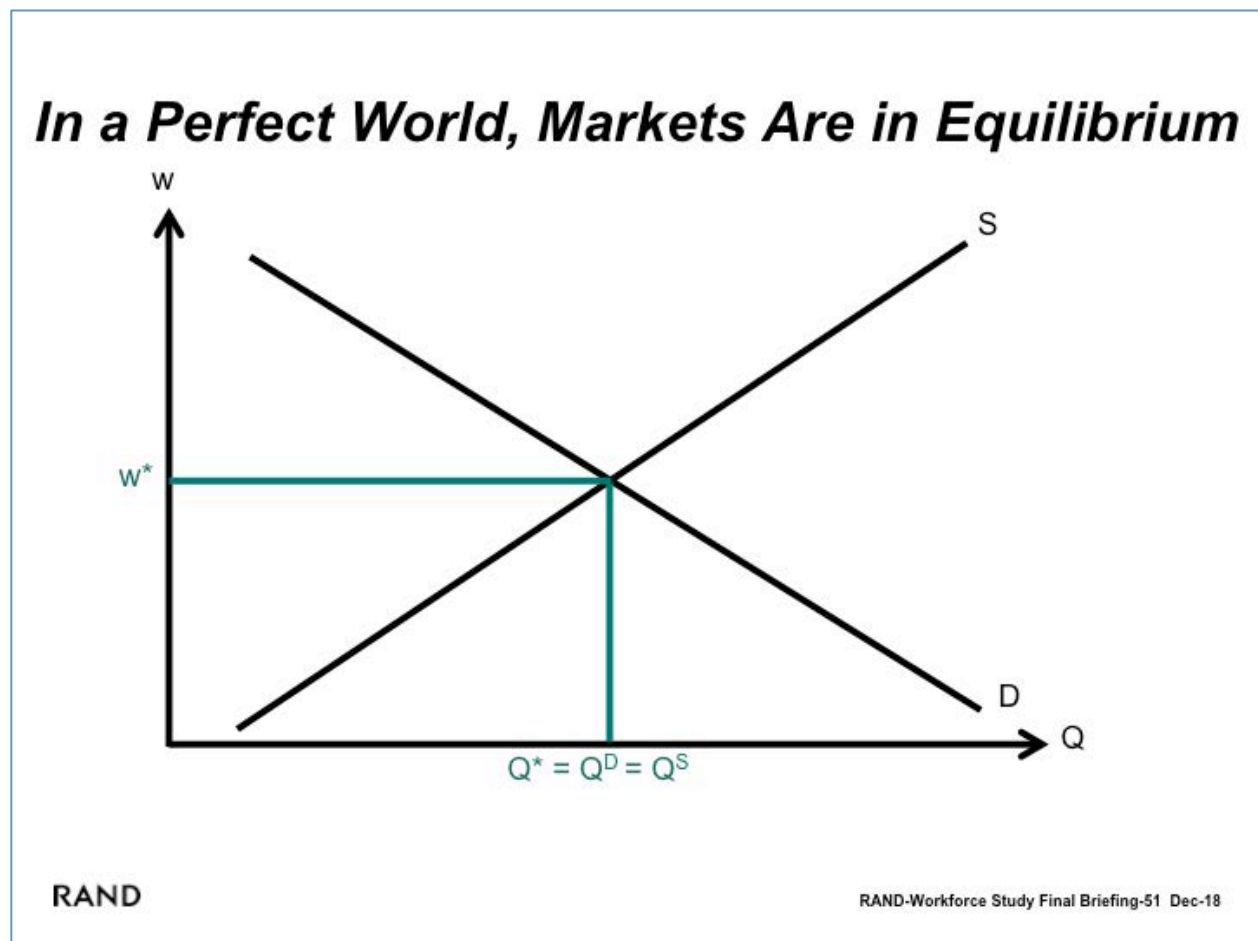
- **Labor outcomes depend on labor demand and labor supply in a market**
- **But quantities are jointly decided with prices (wages)**
- **Labor supply: Anesthesiologists will supply more labor when the wage increases**
- **Labor demand: Facilities will demand less labor when the wage increases**

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Labor demand designates the number of total hours per FTE that a facility, such as a hospital, will want to have anesthesiologists work at any given wage. As the average anesthesiologist wage increases, facilities will demand fewer hours from the anesthesiologists, and some facilities in opt-out states may substitute nurse anesthetists for anesthesiologists. Thus, the labor demand curve will be downward sloping from the negative relationship between wages and hours of anesthesiology demanded.

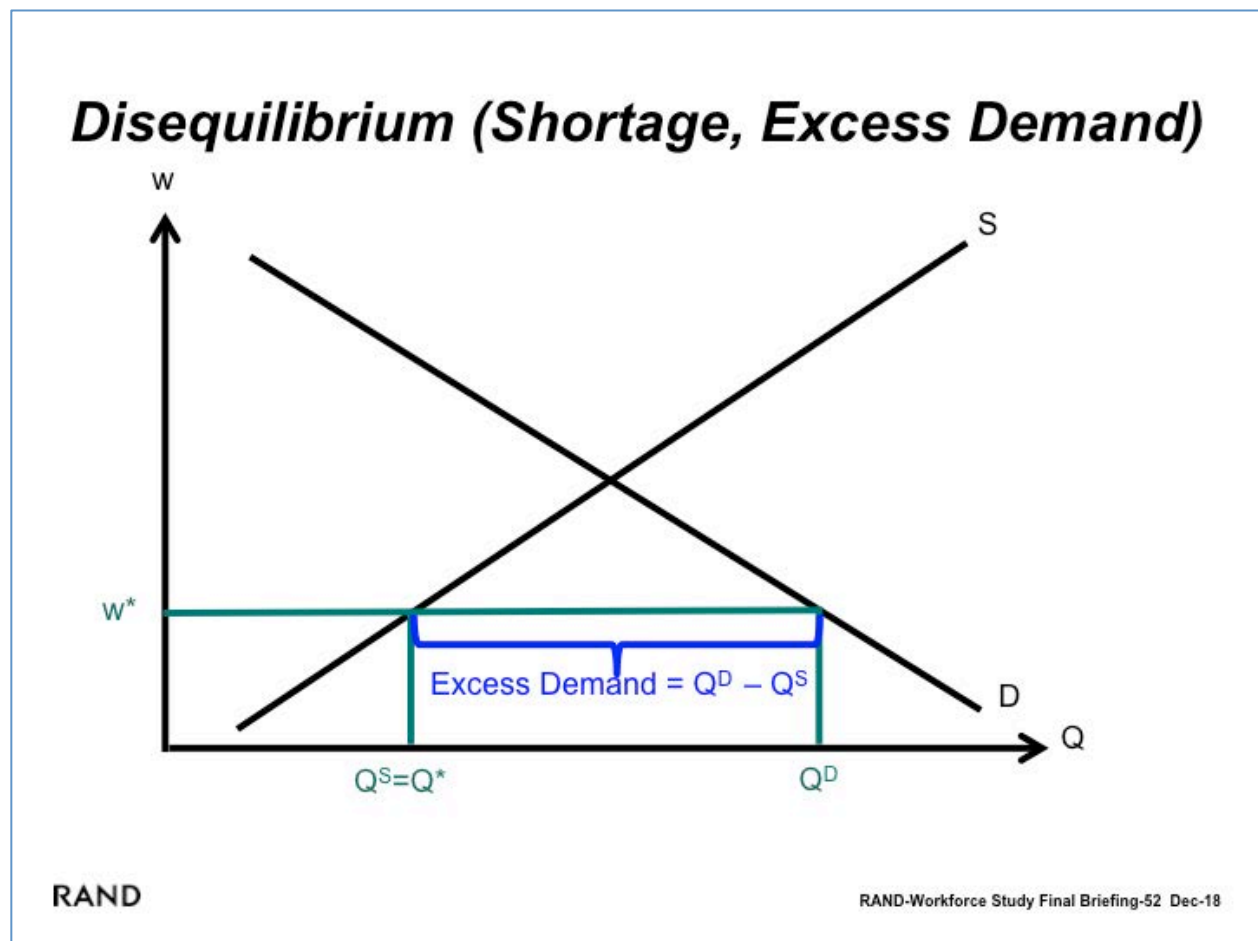
*In a Perfect World, Markets Are in Equilibrium*



When labor markets are perfectly flexible, then, conditional on all of the underlying demand and supply factors, the wage will be such that the market clears, or labor supply equals labor demand. To see why this is the case, imagine that, in a flexible market, the wage is higher than  $w^*$  (the market-clearing wage). In that case, supply will exceed demand, and there is a surplus. However, there will be workers willing to work for a lower wage (whether anesthesiologists not working who would like to or anesthesiologists working who would like to work more but are unable) and facilities willing to expand hours at a lower wage. This will put downward pressure on wages because hours of anesthesiology will be requested by facilities and willingly supplied by some portion of the anesthesiologists. The reverse process occurs when wages are below the market-clearing wage  $w^*$ . Upward pressure on wages from facilities wanting more hours of anesthesiology that are willing to pay a higher wage will push the wage up. In this perfectly flexible market, the wage will then serve to equilibrate the two curves, such that supply is equal to demand.

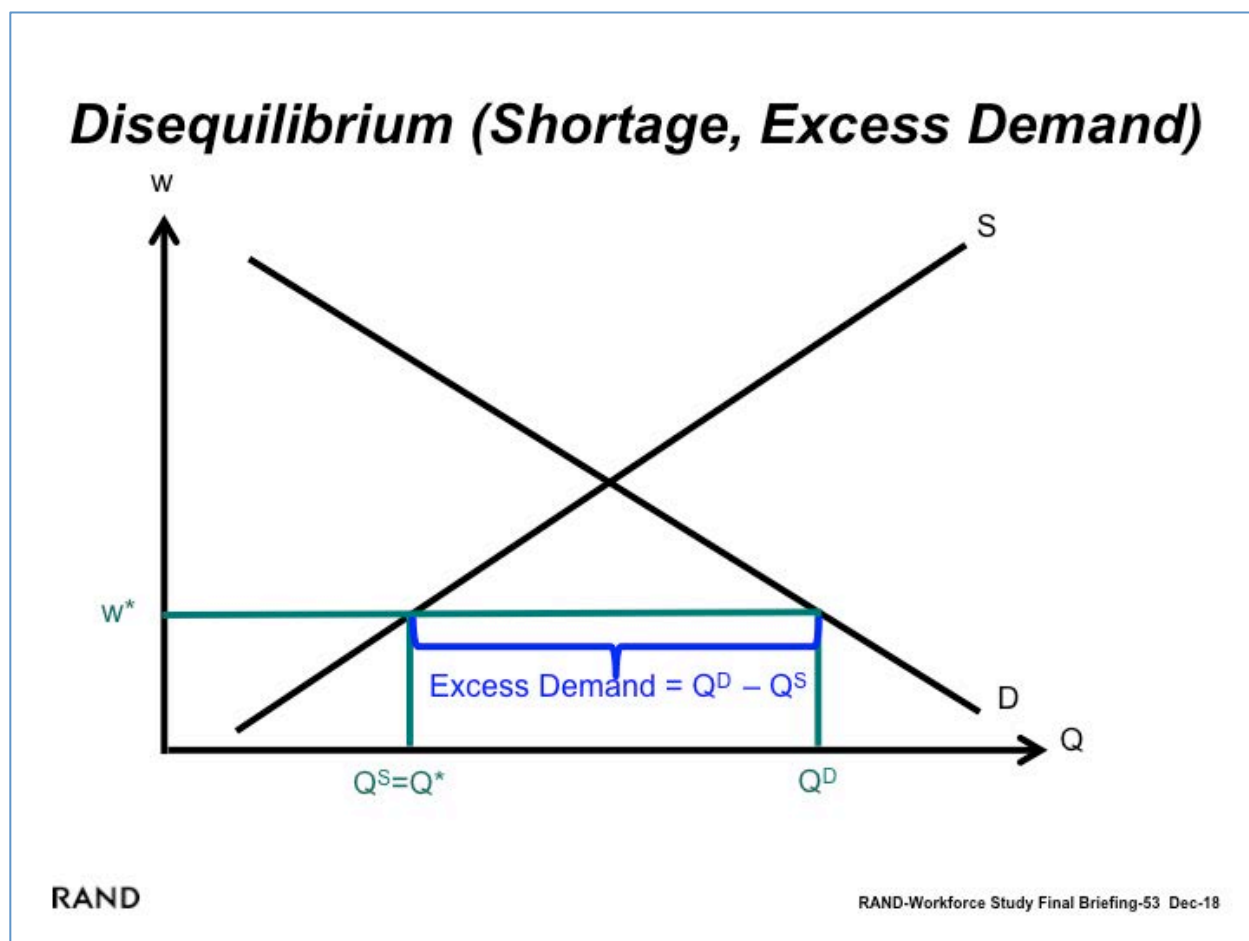


### *Disequilibrium Occurs When There Is a Shortage, or Excess Demand*



However, not all markets are flexible enough to ensure continual market clearing. For the labor market of anesthesiologists, there are market imperfections that can lead to the labor markets (assumed in this analysis to be a state) not clearing at any given point in time. For example, there is a lag with which supply can respond in terms of new anesthesiologists entering; it takes years for a potential anesthesiologist to go through medical school and complete a residency in anesthesiology. Should the market have a demand shock for anesthesiologist services, higher wages will make no difference at the time on that important margin. A similar story might be told for negative demand shocks, a situation in which anesthesiologists may be protected by contracts in the short run. As for current anesthesiologists working, our survey reveals numerous cases in which anesthesiologists were unable or unwilling to increase their numbers of hours, even with any pay increase. Twenty-seven percent of anesthesiologists interviewed responded that they would not increase their hours because they do not have any more time available. Only 36.9 percent said they would be willing to increase their hours if compensation were high enough. When asked why they would not increase hours for any compensation, answers included some personal reasons (family, work-life balance), but also

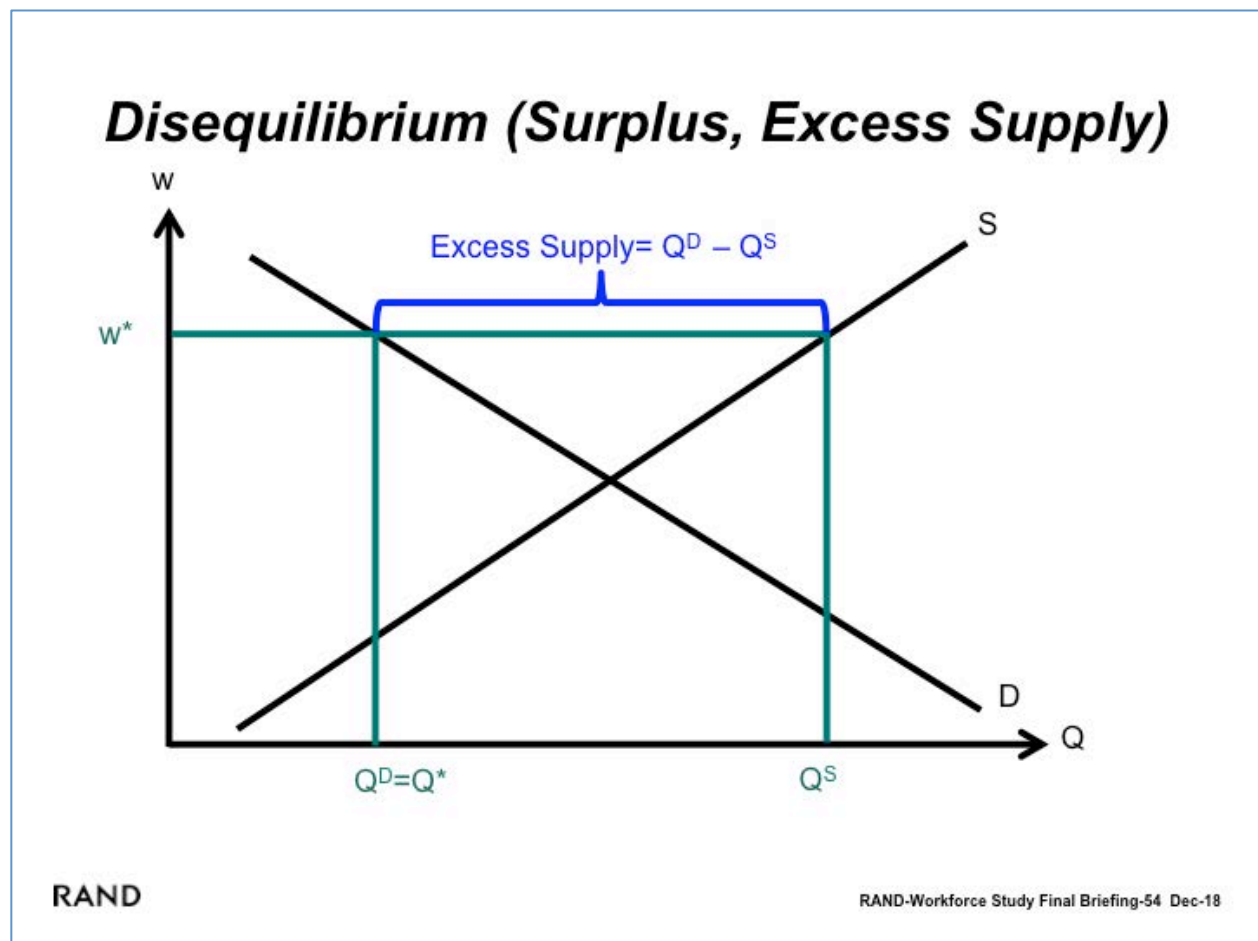
included were replies of being unable to increase hours because of institutional restrictions, including that they were already operating at the maximum allowed number of hours.



There are also potential barriers to market clearing on the demand side. Hospitals and the medical industry in general perform under heavy regulation. Further, health maintenance organizations (HMOs) and pay-for-service arrangements create wedges between market-clearing wages and what can be offered to anesthesiologists.

As a result, the wage may be such that demand does not equal supply. In the case of a wage below the market-clearing wage, demand will exceed supply and there will be a shortage. The lower wage will induce facilities to hire more anesthesiologists and have them work more hours, but, given the low wage, anesthesiologists are less willing to extend hours worked, and there will be little incentive for nonworking anesthesiologists to start working or for new anesthesiologists to enter. As a result, the quantity demanded,  $Q^D$ , will exceed the quantity supplied,  $Q^S$ . The constraining factor, as in all cases, will be the minimum of the two, which, in this case, is the quantity supplied. That quantity,  $Q^*$ , will be the observed quantity in the state. The excess demand, or shortage, is the number of hours per FTE demanded minus the number supplied.

*Disequilibrium Also Occurs When There Is Surplus, or Excess Supply*



On the other hand, the wage might, at any given time, exceed the market-clearing wage. This will induce a shortage because anesthesiologists will want to supply more hours, but there will not be sufficient demand at that high wage, in which some facilities will decrease hours demanded and potentially hire less anesthesiologists or switch over entirely to anesthesiologist substitutes (such as nurse anesthetists in opt-out states). The observed quantity will again be the minimum of the two; however, in this case, the minimum is the quantity demanded and not the quantity supplied. The excess supply, or surplus, is the number of hours per FTE supplied minus the number demanded.

## ***We Can Use Indicators to Help Determine Whether in Shortage or Surplus***

- **We don't know which states are in shortage or surplus**
- **But we can use shortage indicators available from the survey to help place a probability on whether the state is in shortage**
- **Intuitively, a state that consistently has high values for shortage indicators is more likely to be in shortage than other states**
  - **For that state, the estimation procedure puts more weight on matching the observed quantity with the predicted supply than with demand**
  - **The converse is true for a state with consistently low values for shortage indicators.**

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The problem in estimating the demand and supply functions is the uncertainty of which state is in which situation (shortage, surplus, or equilibrium) and by how much in the case of shortage and surplus. In any given state and year, we observe only the minimum of the two (of demand and supply), without knowing which one it is. Should we know what labor demand *and* labor supply in each market were, we could not only estimate the shortage or surplus but also estimate the demand and supply functions (with wage and all other relevant curve shifters).

However, we may use a series of shortage indicators from our survey to provide insight into the probability that a state in a given year is in shortage or in excess. Aggregating these shortage indicators into one single shortage variable allows us to estimate a probability that a state is in shortage, which we can then use to estimate the demand and supply functions and back out predictions of what the quantity demanded and quantity supplied are in each state and year. The econometric method then searches for the form of the demand and supply functions, which, conditional on observed quantities, wages, and control variables, more closely match the predicted quantity demanded with observed quantity if there is, in that state, a high value for the shortage variable (because we then are predicting that the state is in shortage, so that quantity

demand is the minimum and therefore the quantity observed). The shortage variable serves as a weight for each state and year, which determines whether the observed quantity should more closely match the demand function or the supply function.

## ***The National Shortage Observed in 2007 Has Disappeared, but Regional Shortage Remains***

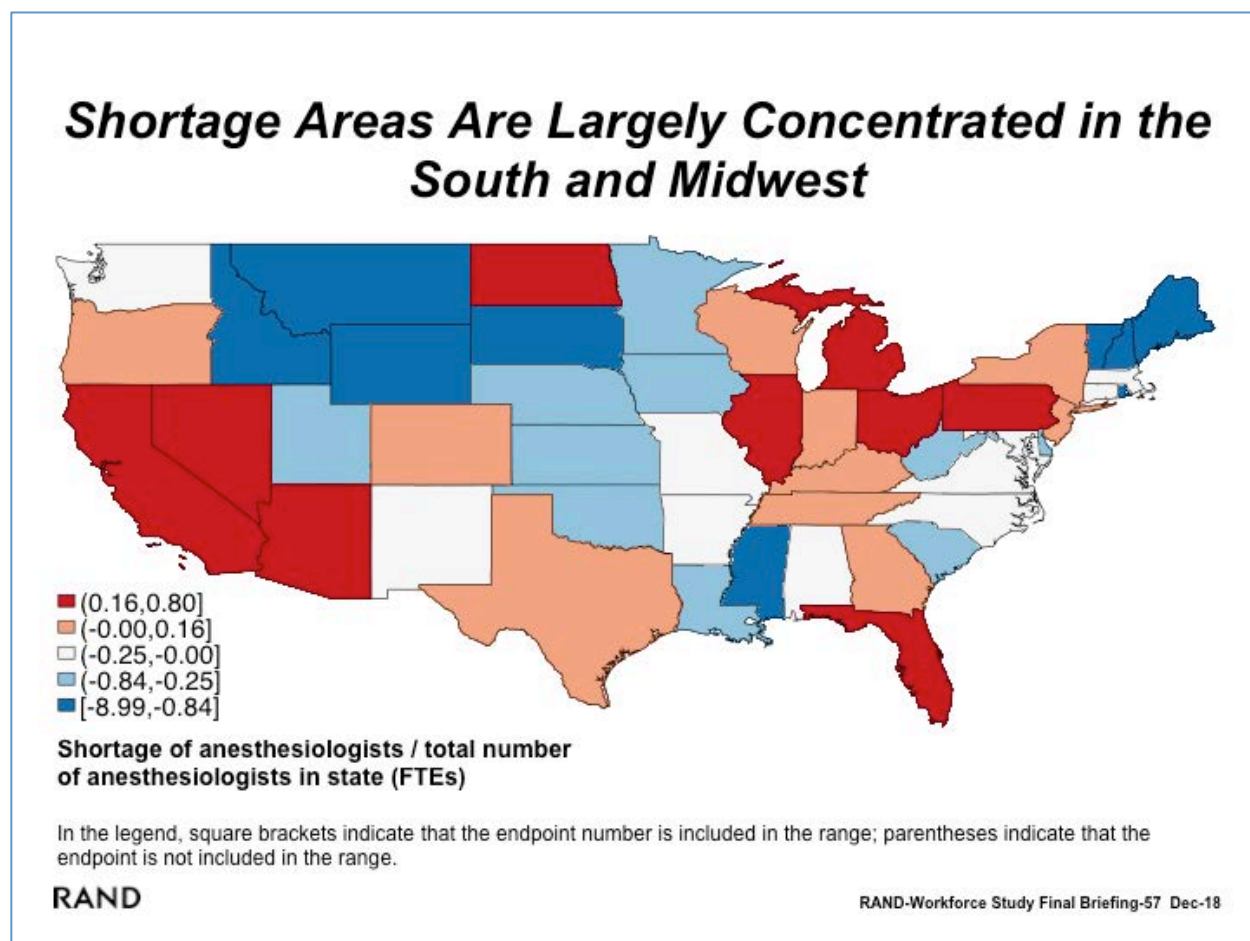
- **Our estimates**
  - **2007: Shortage of 2,023 anesthesiologists**
  - **2013: Surplus of 308 anesthesiologists**
- **Some regions continue to have high likelihood of shortage**

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We estimate this model of disequilibrium using maximum likelihood and a few different strategies to reduce the collection of shortage indicators into one shortage variable. Our best estimate using these models is that, anchoring the national shortage in 2007 at around 2,000 FTE anesthesiologists (aligned with estimates in Schubert, Eckhout, Ngo, et al., 2012); in 2013, that shortage has been erased, and, in effect, there is an equilibrium (a small surplus of around 300 FTE anesthesiologists).

### *Shortage Areas Are Largely Concentrated in the South and Midwest*



However, although we find roughly an equilibrium nationally at present, this does not imply that *each* state is in equilibrium. Instead, we find shortages in the Midwest and West generally, with somewhat fewer states in shortage in the South and Northeast, and a few scattered states roughly at equilibrium. These regional differences and relative rankings were stable across our different estimation procedures.



## ***Results That Are Robust to Various Specifications***

- **We tested multiple algorithms and estimation strategies, and while point estimates varied, two results were consistent**
  1. **Excess demand has decreased from 2007 to 2013 by about 1,000–4,000 anesthesiologists**
  2. **Regional variation indicates shortages more common in the Pacific West and Midwest than in the Northeast and Mountain West/Great Plains**

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We have two robust findings that persist across different models and handling of the shortage indicators to arrive at the probability of shortage. First, we find that there has been a decrease in the excess demand (shortage) for anesthesiologists from 2007 to 2013 of a magnitude approximately equal to 1,000 to 4,000 anesthesiologists; our best estimates are a decrease of 2,000. We hypothesize that this is due, in part, to the Great Recession, which would serve both to decrease demand for anesthesiologists (due likely to a decrease in patient demand for elective surgeries and a decrease in demand from facilities as they substitute into other potentially low-cost methods of delivery) and to an increase in supply of anesthesiologists (such as through delayed retirement in the face of the financial crisis).

Second, as previously mentioned, we find consistent regional patterns—namely, that shortages are more persistent in the West and Midwest than the Northeast and Mountain West. These results suggest a need for regional policies to address labor-market imbalance and attempts to increase labor supply mobility.

### ***Outline***

- **Background and significance**
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  - Employment arrangements
  - Team care
  - Time use
  - Indicators of shortage and future plans
- **Econometric analysis**
- **Projections**

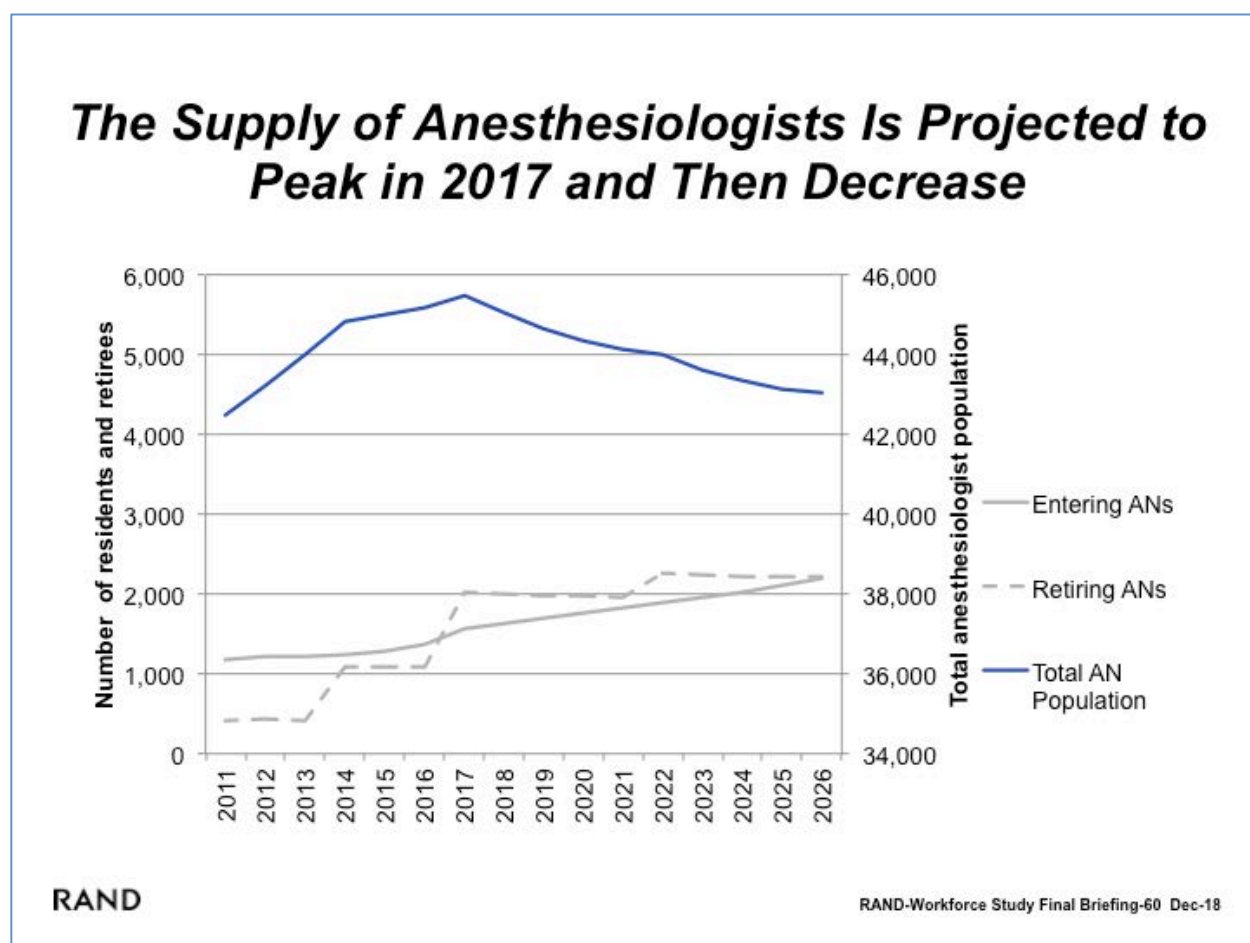
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We next discuss projections for the national shortage or surplus of anesthesiologists until 2025.

Note that we use a simple linear projection of supply and demand to examine the evolution the anesthesiologist labor market. Although we choose parameters for entry and exit anticipating trends, our model cannot account for unexpected events. In this sense, these projections are best viewed as scenarios under various assumptions rather than forecasts.

## *The Supply of Anesthesiologists Is Projected to Peak in 2017 and Then Decrease*



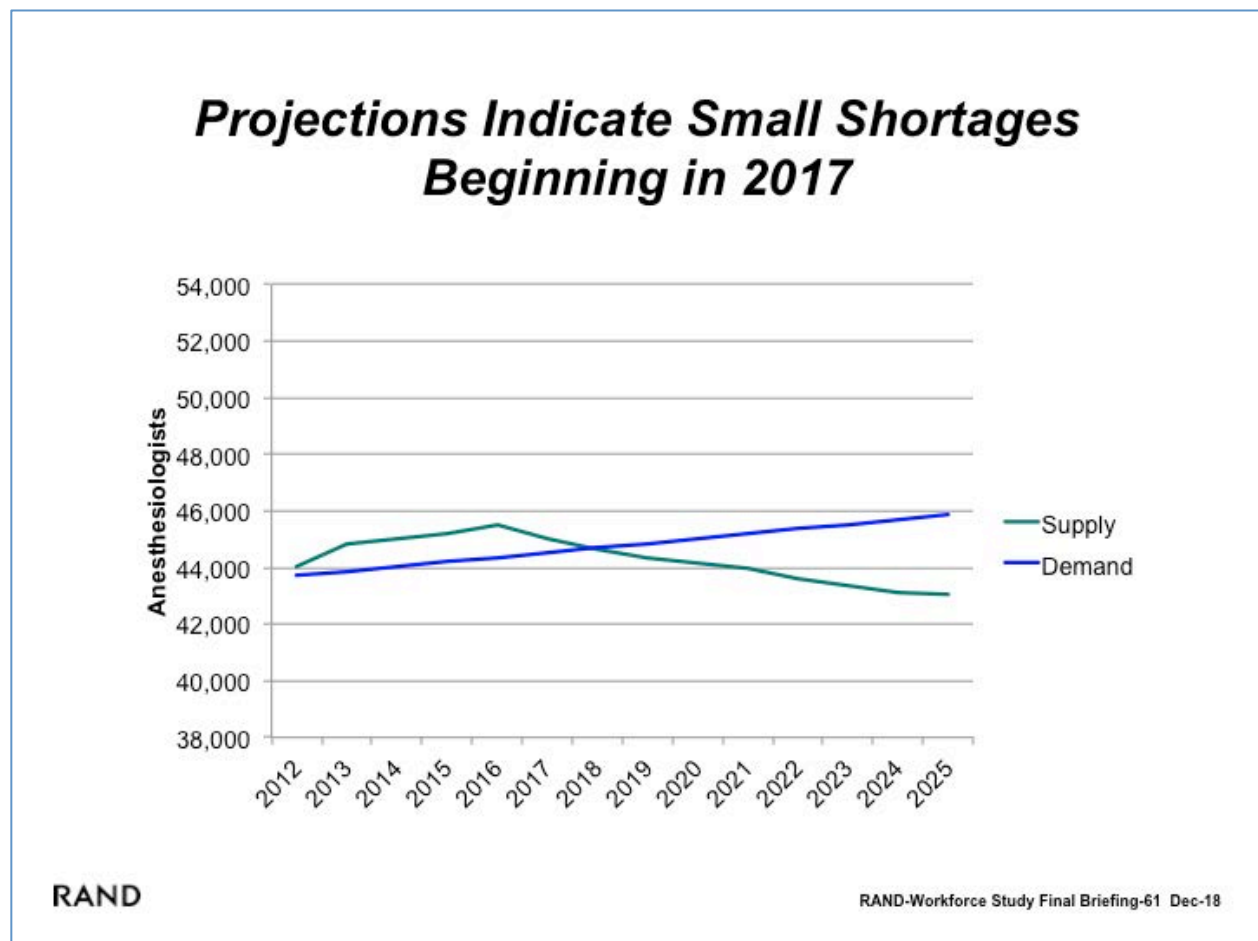
This slide presents the total number of anesthesiologists entering and leaving the workforce, as well as the total supply of anesthesiologists. The number of entering anesthesiologists is based on the number of slots for anesthesiologists that have been filled through the National Resident Matching Program. We assumed a 95-percent completion rate for those entering residencies, so numbers for entering anesthesiologists include 95 percent of slots filled four years prior. To project numbers of entering anesthesiologists beyond 2016, we assume a constant growth rate of 3.76 percent, the rate of growth in anesthesiology residency slots in the past five years.

The number of retiring anesthesiologists is based on an item from the survey. We asked individuals to report their years of planned retirements, with options including this year, 2014 through 2016, 2017 through 2021, 2022 through 2026, and after 2026. Informed by these responses, we calculated expected annual rates of retirement for each year through 2026 and multiplied this by the total anesthesiologist population size.

According to these projections, we see that, through 2016, the number of entering anesthesiologists will outpace the number of retiring anesthesiologists, and the supply of anesthesiologists will increase to nearly 46,000. If residency slots continue to grow at

3.76 percent next year and in years moving forward, the number of retirees will begin to outpace the number of incoming anesthesiologists, and supply will begin to increase. However, even with this decrease in the supply of anesthesiologists after 2016, the number of anesthesiologists in 2026 is projected to be nearly equivalent to the total supply today.

## Projections Indicate Small Shortages Beginning in 2017



We then add the demand for anesthesiologists to look at the full picture of the anesthesiologist workforce. We start with the current state of the workforce as estimated through the econometric analysis, a surplus of 308 anesthesiologists. We assume growth in demand equivalent to the ten-year historical rate of growth in surgeries, which is 0.37 percent according to data from the AHRF.

In the short run, we see that the supply of anesthesiologists is projected to increase more quickly than demand, so the anesthesiologist workforce will experience a small surplus. However, by 2018, as retirements increase, demand will surpass supply and the workforce will be in shortage. By 2025, projections indicate that there will be a shortage of approximately 3,000 anesthesiologists.

However, as mentioned earlier, we recommend that these projections should be viewed with caution because they are based on assumptions that may or may not hold true in upcoming years. As described, there are factors that may cause demand, in particular, to shift in ways that are unpredictable using current data. We next present several scenarios under which projections

would look somewhat different as a theoretical exploration of the impact these changes would have on workforce shortage or surplus.

## ***A Few Scenarios Could Lead to Greater Shortage***

- **Some trends could increase demand, leading to greater likelihood of shortage**
  - **Older, sicker patients in an aging population**
  - **Increasing coverage rates with the Affordable Care Act**
- **Some trends could decrease supply, leading to greater likelihood of shortage**
  - **Increasing proportion of women who work fewer hours**
  - **Retirement of aging anesthesiologist population**

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A few plausible scenarios could lead to greater shortage than the situation considered above. First, there are trends that may cause demand to increase, which would lead to a greater likelihood of shortages among anesthesiologists (all else equal). One of these trends is the aging of the population. Experts have predicted that, as the population ages and becomes less healthy, the number of needed medical procedures will increase. In addition, the expansion of insurance under recent health care reforms is likely to increase health care consumption among the previously uninsured.

There are also some trends that may lead to decreases in supply, which would lead to an increased likelihood of shortage. We described previously how the movement of women into the anesthesiologist workforce has led to lower average hours, which means lower levels of supply for a given number of anesthesiologists. In addition, the impending retirement of baby boomers means that additional anesthesiologists may be needed to replace retiring anesthesiologists.

## ***A Few Scenarios Could Lead to Greater Surplus***

- **Some trends could decrease demand, leading to greater likelihood of surplus**
  - **Cost-cutting efforts**
  - **Shifts toward nonphysician anesthesiology providers**
- **Some trends could increase supply, leading to greater likelihood of surplus**
  - **Growth in residencies at a rate of ~4% (though it is not clear this recent rapid growth will continue)**

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On the other hand, a few scenarios could result in lower shortage, or even a surplus, of anesthesiologists. There are potential trends in health care that may lead to decreases in demand for anesthesiologists, which would lead to a greater likelihood of surpluses (all else equal). For example, pressure to cut costs may lead hospitals to make services more efficient and may reduce the number of procedures performed if some procedures are seen as unnecessary. In addition, there is a movement toward expanding the role of nurses in health care, partially to cut these costs. As facilities shift toward team-care models, they may reduce their demand for anesthesiologists.

There are some trends that may increase supply, which would also lead to an increased likelihood of surplus. In the past five years, residency slots have been increasing at a rate of approximately 4 percent per year, and this has helped to supplement the supply of anesthesiologists. However, the number of residency slots in anesthesiology has been somewhat volatile in the past several decades. National Resident Matching Program data indicate that the number of first-year residency positions declined from 526 in 1981 to 270 in 1988, rebounded to 376 by 1991, hit a low of 248 in 1996, and then climbed steadily to more than 900 positions by



2012. It is not clear, therefore, that we can assume that slots will continue to grow at the rapid rate seen in recent years.

## ***Areas for Future Research***

- **Why might certain regions be seeing greater likelihood of shortage?**
- **Is regional variation associated with variation in cost or quality of care?**
- **Why do female anesthesiologists end up with different employers, compensation arrangements, and patients?**
- **What are the implications of the shift in delivery models on demand for anesthesiologists?**

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The research we have presented suggests that the national anesthesiologist workforce is basically in equilibrium, though there are particular regions that may be experiencing shortages or surplus. In addition to regional differences in likelihood of shortage, there are large differences in employment and practice patterns, with the western United States as a particular outlier relative to other regions of the country across a wide range of measures. These regional patterns raise questions about why certain regions may experience greater likelihood of shortage, and answers to them will shed light on how labor-market imbalances may be addressed. In addition, if the variation in practice results in differences in costs or the quality of care, it may be important to learn from this variation to adopt promising practices across the country to improve quality of care while also ensuring that care is delivered efficiently.

In addition, we described the entrance of women into the workforce at a rapid pace, and a shift in the gender mix of anesthesiologists may have implications for the supply of anesthesiologists and may suggest a need for changes in employment arrangements. However, additional research is required to understand why these differences are present in order to properly accommodate these differences.

Finally, an important question facing the anesthesiologist workforce today is the impact that the shift to team care could have on the demand for anesthesiologists. There has been substantial research done on the implications that nonphysician anesthesia care has for quality. However, given the movement toward greater use of team care, it is important to understand how this may affect the anesthesiologist workforce so that residency slots can be adjusted if appropriate. Detailed facility-level surveys of teams may be useful in shedding light on this issue.

# Thank you!

**RAND**

RAND-Workforce Study Final Briefing-65 Dec-18

## References

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Schubert, Armin; Gifford V. Eckhout, Jr.; and Kevin K. Tremper, “An Updated View of the National Anesthesia Personnel Shortfall,” *Anesthesia and Analgesia*, Vol. 96, No. 1, January 2003, pp. 207–214.

**From:** TROY GRAS <[Troy\\_W\\_Gras@MEDNAX.com](mailto:Troy_W_Gras@MEDNAX.com)>

**Subject: Re: Affiliation agreement Case Western Reserve University, SOM**

**Date:** May 14, 2018 at 3:43:42 PM EDT

**To:** Shane Angus <[sxa46@case.edu](mailto:sxa46@case.edu)>

Hi, Shane. Excellent news on the University approval!! I'm not aware of anybody from AAG who will be in attendance at the conference. I can confirm that our Board as well as our local and regional leaders (Dr. Noah Bunker is regional VP and a former member of AAG) are all supportive of developing your program in Austin. Have fun at the reception...Mednax usually throws a good party! :-)  
-T

Sent from [BlueMail](#)

**From:** Shane Angus [<mailto:sxa46@case.edu>]

**Sent:** Thursday, May 03, 2018 2:07 PM

**To:** TROY GRAS

**Subject:** Re: Affiliation agreement Case Western Reserve University, SOM

Hi Troy,

Might leader of AAG, or your VP, or other Mednax leadership be at the ASA Legislative Conference in DC from May 14-16? I thought it would be a good opportunity to grab lunch and give them brief tour of our program. We are literally a few blocks from where the meeting is held. Feel free to forward this email with an introduction and Ill take it from there - with continued Cc of you of course.

Shane

Shane Angus, CAA, MSA  
Associate Executive Program Director  
Master of Science in Anesthesia Program  
Case Western Reserve University School of Medicine  
820 1st. N.E.  
Washington, D.C. 20002

<http://casemed.case.edu/anesthesiaprogram/program/dc.cfm>

P 202-758-2545

F 216-844-7349

Certified Anesthesiologist Assistant

<http://www.medstarwashington.org/>

Immediate Past Chair

Accreditation Review Committee for Anesthesiologist Assistants

<http://www.caahep.org/arc-aa>

Board of Directors

Anesthesia Patient Safety Foundation

<http://apsf.org>

On May 1, 2018, at 10:24 AM, TROY GRAS <[Troy\\_W\\_Gras@MEDNAX.com](mailto:Troy_W_Gras@MEDNAX.com)> wrote:

This message was sent securely

Thank you! I have forwarded to my VP for processing.

-T

Sent from [BlueMail](#)

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Dear Dr. Gras,

I am writing you today because our Associate Executive Program Director, Shane Angus (cc'd), informed me that your group is interested in establishing a relationship with our program so that students can complete clinical rotations with your group.

Before we can start sending students to rotate with Austin Anesthesiology Group, we must establish an affiliation agreement between our two organizations. I have attached Case Western Reserve University's standard template agreement for clinical rotation affiliation with the Master of Science in Anesthesia program.

If needed, our template agreement can be forwarded to the appropriate people at your organization. After that, there are essentially three options:



1. They can agree 100% with the CWRU contract's contents, have the appropriate people on their end sign it, and then send the signed document back to us for signatures.
2. They can make edits to this document and send it back to us so that our legal department can review those edits.
3. They can disregard this document entirely and send us a copy of their own agreement to be reviewed by our legal department.

Thank you for your time, and please don't hesitate to contact me with any questions or concerns.

I look forward to working with you.

Kind Regards,

Renee

Renee F. Hoenig, MA  
Education Manager  
Master of Science in Anesthesia Program-Cleveland Location  
Case Western Reserve University School of Medicine  
Lakeside, Suite 2533  
[11100 Euclid Avenue](#)  
[Cleveland, OH 44106-5007](#)  
[Office : \(216\) 844-8077](#)  
Fax: [\(216\) 844-7349](#)  
[renee.hoenig@case.edu](mailto:renee.hoenig@case.edu)

<https://case.edu/medicine/msa-program/>

**From:** dcjanes1@gmail.com  
**Subject: Re: CONFIDENTIAL - Draft Agreement - let me know your thoughts**  
**Date:** April 9, 2018 at 7:46:14 PM EDT  
**To:** Shane Angus <sxa46@case.edu>

Mr. Angus,

After reviewing the terms of agreement letter sent by CWRU to Baylor Scott and White Round Rock , we would like to accept the terms stated. We look forward to a long mutually beneficial relationship with CWRU. Please let us know how we can be helpful in encouraging this venture.

Dane Johnson AA-C  
Chief Anesthetist BSWRR

On Mar 11, 2018, at 6:13 PM, dcjanes1@gmail.com wrote:

Shane,

It all looks pretty standard and most likely agreeable. One thing did stand out. The ten year term will probably be more than anyone here would want to sign up for. Has this been standard in past agreements?

God Bless,

Dane

Sent from my iPad

On Mar 9, 2018, at 1:08 PM, Shane Angus <sxa46@case.edu> wrote:

<Terms of Agreement between CWRU SOM and GREATER AUSTIN CENTRAL TEXAS BSW.docx>

**From:** **Shane Angus** sxa46@case.edu  
**Subject:** CONFIDENTIAL - Draft Agreement - let me know your thoughts  
**Date:** March 9, 2018 at 2:08 PM  
**To:** Dane Johnson dcjanes1@gmail.com

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Terms of  
Agree...W.docx

## Terms of Agreement between CWRU SOM and GREATER AUSTIN CENTRAL TEXAS BSW


March, 2018

### **GREATER AUSTIN CENTRAL TEXAS BSW receives:**

1. Early consideration for CAA staff hires.
2. Faculty appointments to anesthesiologist and CAAs interested in education – The faculty would fulfill the duties necessary to be eligible and then maintain their involvement to keep their faculty titles.
3. Member of the MSA Advisory committee - providing an opportunity to meet with regional leaders twice per year to discuss the CAA initiative from a broad range perspective.
4. Affiliation with top 25 School of Medicine
5. With consent, use the CWRU SOM MSA/GREATER AUSTIN, CENTRAL TEXAS, BSW partnership in marketing efforts

### **CWRU SOM MSA receives**

1. Preferential affiliation with GREATER AUSTIN, CENTRAL TEXAS, BSW which includes: student clinical rotation sites, and first “right of refusal” for general and specialty rotations for ten years, clinical instruction at GREATER AUSTIN, CENTRAL TEXAS, BSW clinical affiliates
2. GREATER AUSTIN, CENTRAL TEXAS, BSW won’t add anesthesia professional training programs without requesting CWRU Austin MSA program fulfill the needs first
3. GREATER AUSTIN, CENTRAL TEXAS, BSW provide excess or expired and unused anesthesia supplies and equipment for simulation training
4. Assist with providing anesthesia/operating room equipment for simulation training
5. With consent, use the CWRU SOM MSA/GREATER AUSTIN, CENTRAL TEXAS, BSW partnership in marketing efforts

**From:** Timothy Goodridge tgoodridge@hotmail.com   
**Subject:** Fw: [TSA Ad-Hoc Committee bringing TSA & TAAA Together] TSA Ad-Hoc Committee to bring the TSA and TAAA Together  
**Date:** November 22, 2017 at 5:35 PM  
**To:** Shane Angus sxa46@case.edu

TG

Timothy Goodridge CAA  
Immediate Past President  
American Academy of Anesthesiologist Assistants



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**From:** tsa\_taaa@lists.tsa.org <tsa\_taaa@lists.tsa.org> on behalf of "Chris Bacak" (via tsa\_taaa list) <tsa\_taaa+chris=tsa.org@lists.tsa.org>  
**Sent:** Wednesday, November 22, 2017 10:33 AM  
**To:** tsa\_taaa@lists.tsa.org  
**Subject:** [TSA Ad-Hoc Committee bringing TSA & TAAA Together] TSA Ad-Hoc Committee to bring the TSA and TAAA Together

TO: Sam Gumbert, MD, *Chair*  
Tim Bittenbinder, MD  
Stephen Hoang, MD  
Jeffrey Jekot, MD  
Deborah Plagenhoef, MD  
Crystal Wright, MD  
Jeff Zavaleta, MD  
Tim Goodridge, MMSC  
Brian Haskins, CAA  
Jana McAlister, AA

From: Chris Bacak

Congratulations! In response to recommendation number one of Dr. Deborah Plagenhoef's report to the 2017 TSA House of Delegates, Dr. Girish Joshi has appointed each of you to serve on the TSA Ad-Hoc Committee to bring the TSA and TAAA Together.

The Recommendation read as follows: That an ad-hoc committee of the President's choice be formed to bring TSA and TAAA together to develop strategies to benefit both

organizations and the patients we serve.

The charges for the committee are as follows:

- To develop strategies to benefit both organizations and the patients we serve;
- To focus on the creation of an additional AA training program and the dissemination of AAs throughout Texas; and
- To explore approaches that will increase AA access of rural patients to anesthesiologists through tapping into the Rural Pass-Through Part A Medicare dollars.

Dr. Joshi has confirmed Dr. Sam Gumbert's willingness to serve as chair of the ad-hoc committee and hopes that each of you will also accept his invitation to serve as a member on this committee.

Please advise if you are unable to serve.

Happy Thanksgiving,  
Chris

Christina Bacak  
Executive Director  
Texas Society of Anesthesiologists  
401 West 15<sup>th</sup> Street, Suite 990  
Austin, TX 78701  
Voice: (512) 370-1659  
Fax: (512) 370-1655  
[www.tsa.org](http://www.tsa.org)

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## Texas Society of Anesthesiologists

[www.tsa.org](http://www.tsa.org)

Texas Society of Anesthesiologists advance, promote and support the practice of the medical specialty of Anesthesiology in the State of Texas.

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*It will be the policy of the TSA that we will not share the email addresses of our members with other organizations.*

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TSA Committee Discussion Lists allow two-way communication with other committee members. You received this message as a member on the list: [tsa\\_taaa@lists.tsa.org](mailto:tsa_taaa@lists.tsa.org)

Select REPLY ALL to participate in the discussion. Your message will be delivered to all members of the committee.

Select REPLY if you want to send a message only to the person who sent the email, not to the rest of the committee members.

To be removed from the list, send a message to: [ttaaa-unsubscribe@lists.tsa.org](mailto:ttaaa-unsubscribe@lists.tsa.org)

# COS Annual Report to Faculty Council

Susan L. Padrino, MD  
Chair, Committee on Students  
May 21, 2018



# Role of the COS

- Review full scope of student performance
  - Academic
  - Professionalism
- Recommend students for promotion through the curriculum and for graduation
- Determine appropriate interventions for students with academic or professionalism lapses
- Approve extensions beyond one year, or other exceptions to usual curriculum requirements

# Committee Membership

- Twelve members
  - 3 women
  - 6 men
  - 1 URM
  - 6 Clinical Science
  - 3 Basic Science (one open seat)

# Committee Meetings

- Third Thursdays of the month at 3pm
- Ten meetings since June 2017

# Committee Business

- Internal improvements
  - Training new Society Deans
  - Plan for addressing Title IX Office findings
- Creating new member orientation

# Student presentations

- 2 Early Concerns
  - Other students identified were handled by the Professionalism Working Group
- Students presented
  - 9 Academic issues
  - 6 Professionalism issues
  - 6 Combined issues
  - 5 Administrative issues (extending a year)
  - 16 male
  - 10 female

# Outcomes

- 2 students withdrew