

The National Cascade – How are we doing?

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Disclosures

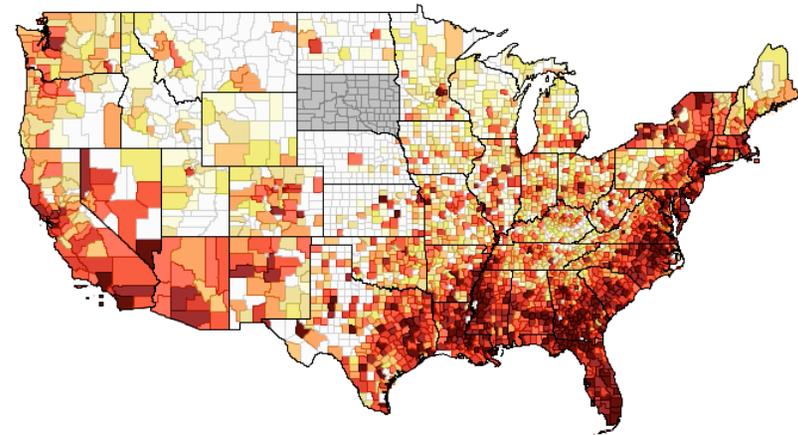
Dr. del Rio has served as a consultant for ViiV Healthcare and is a member of the Board of Directors of IASUSA and ACTHIV

Outline

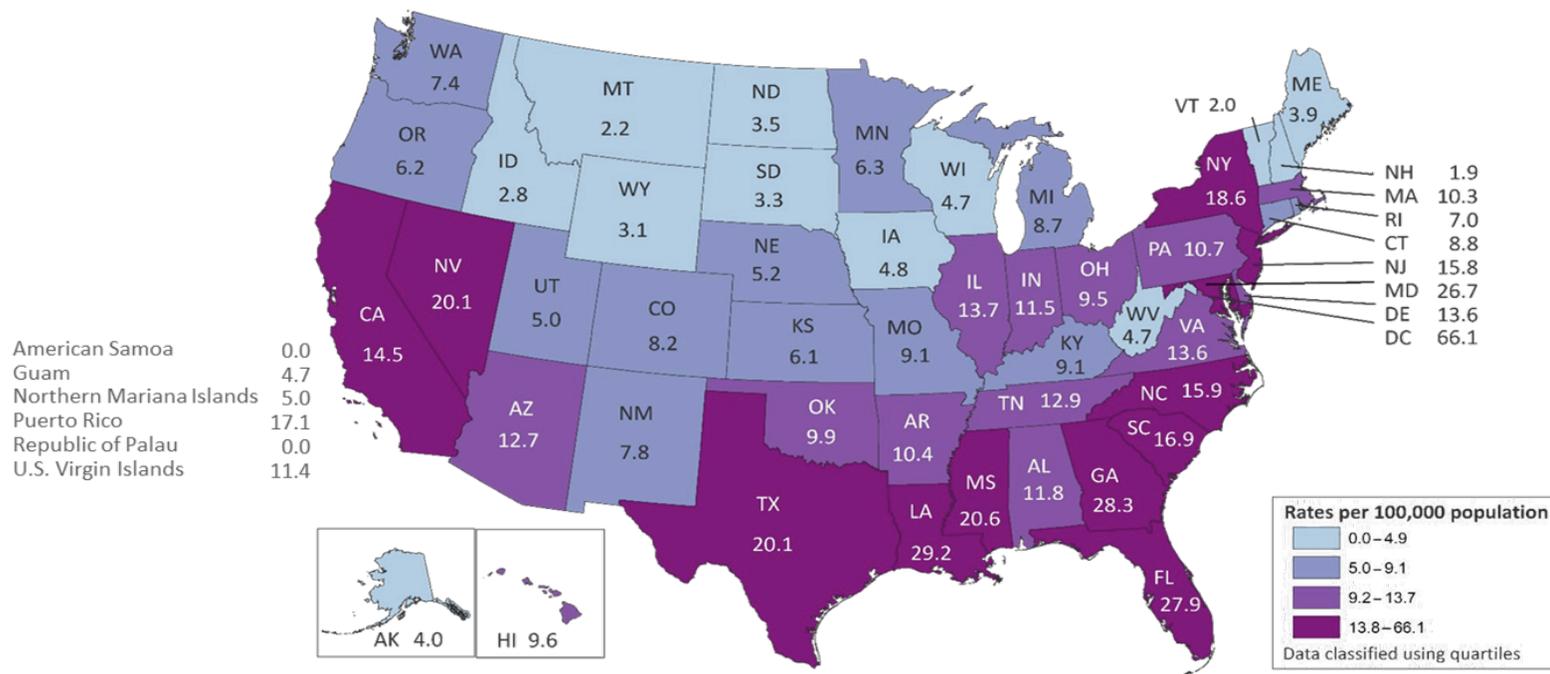
- US HIV Epidemiology:
 - Geography
 - High risk groups (e.g. Black MSM)
- Role of social determinants of health in disparities
- HIV Care Cascade:
 - by Gender, age, geography
- Role of Integrated health system
 - Provider shortage
- Political commitment

HIV in the United States

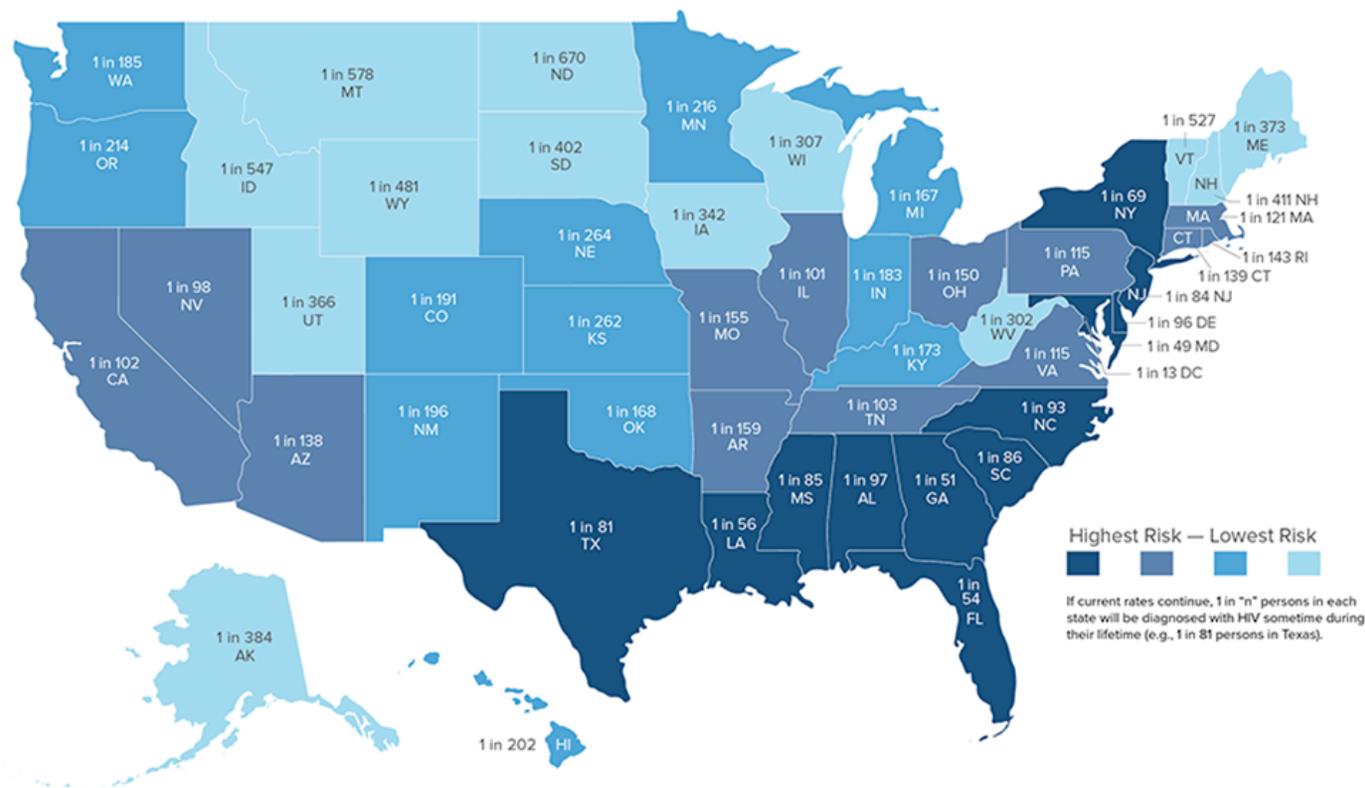
- ~ 1,122,900 adults and adolescents were living with HIV at the end of 2015
 - 45% reside in Southern States
- In 2014, an estimated 37,600 new HIV infections occurred
 - A decline of 10% from 2010
 - 70% among gay and bisexual men
- In 2016, 39,782 people received an HIV diagnosis
 - > 50% in Southern States
 - > 60% among gay and bisexual men
 - ~40% of these among black/AA



Rates of New HIV Diagnoses- 2015



Estimated Lifetime Risk of HIV Acquisition of HIV Based on 2015 Rates



2015 HIV Surveillance Report, 2016

HIV Incidence



| | Black MSM | White MSM |
|--------------------------------|--------------|--------------|
| Overall | | |
| Incidence rate | 6.6% / year | 1.7% / year |
| New HIV infections | 24 | 8 |
| % HIV-positive at end of study | 11.3% | 3.6% |
| Age 18 – 24 | | |
| Incidence rate | 12.1% / year | 1.0 % / year |
| New HIV infections | 16 | 1 |
| % HIV-positive at end of study | 16.6% | 1.6% |
| Age 25+ | | |
| Incidence rate | 3.5% / year | 1.9% / year |
| New HIV infections | 8 | 7 |
| % HIV-positive at end of study | 6.0% | 4.5% |

Sullivan, P, et al. PLOS One, March 2014



| | Factor | Rate (% / year) | Rate Ratio | Helps explain disparity? |
|------------------------------|------------------------|--------------------|-------------|-----------------------------|
| Social determinants | Black participant | 6.6 | 3.8 | -- |
| | White participant | 1.7 | <i>ref.</i> | |
| Individual risk behaviors | Health Insurance | 2.6 | <i>ref.</i> | YES |
| | No health Insurance | 6.3 | 2.4 | |
| Partner pool / network | UAI | 5.3 | 4.8 | NO |
| | No UAI | 1.1 | <i>ref.</i> | |
| | Older partners (≥10 y) | 8.6 | 2.8 | NO |
| | No older partners | 3.1 | <i>ref.</i> | |
| | Black partners | 8.6 | 4.5 | YES |
| | No black partners | 1.9 | <i>ref.</i> | |

Sullivan, P, et al. PLOS One, March 2014

**The Spectrum of Engagement in HIV Care and its
Relevance to Test-and-Treat Strategies for
Prevention of HIV Infection**

Edward M. Gardner, Margaret P. McLees, John F. Steiner, Carlos del Rio,
and William J. Burman

Clinical Infectious Diseases. 2011;52:793-800

Centers for Disease Control and Prevention

MMWR

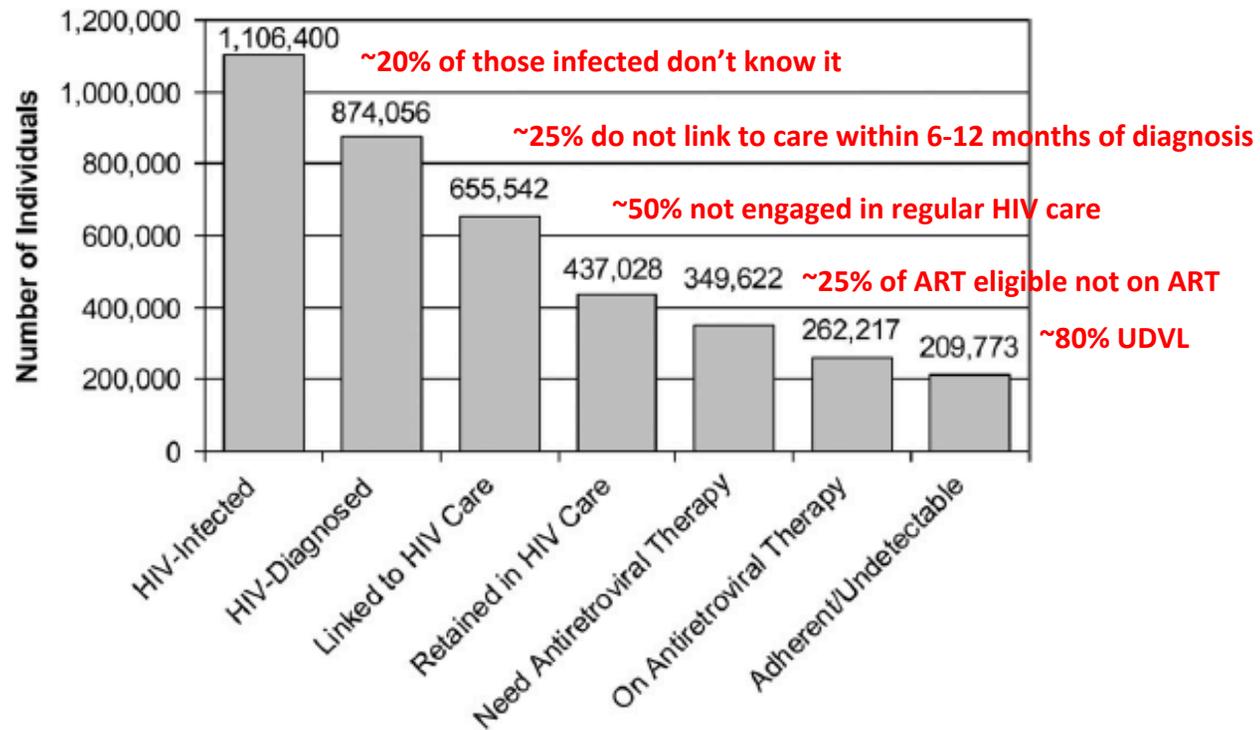
Morbidity and Mortality Weekly Report

Early Release / Vol. 60

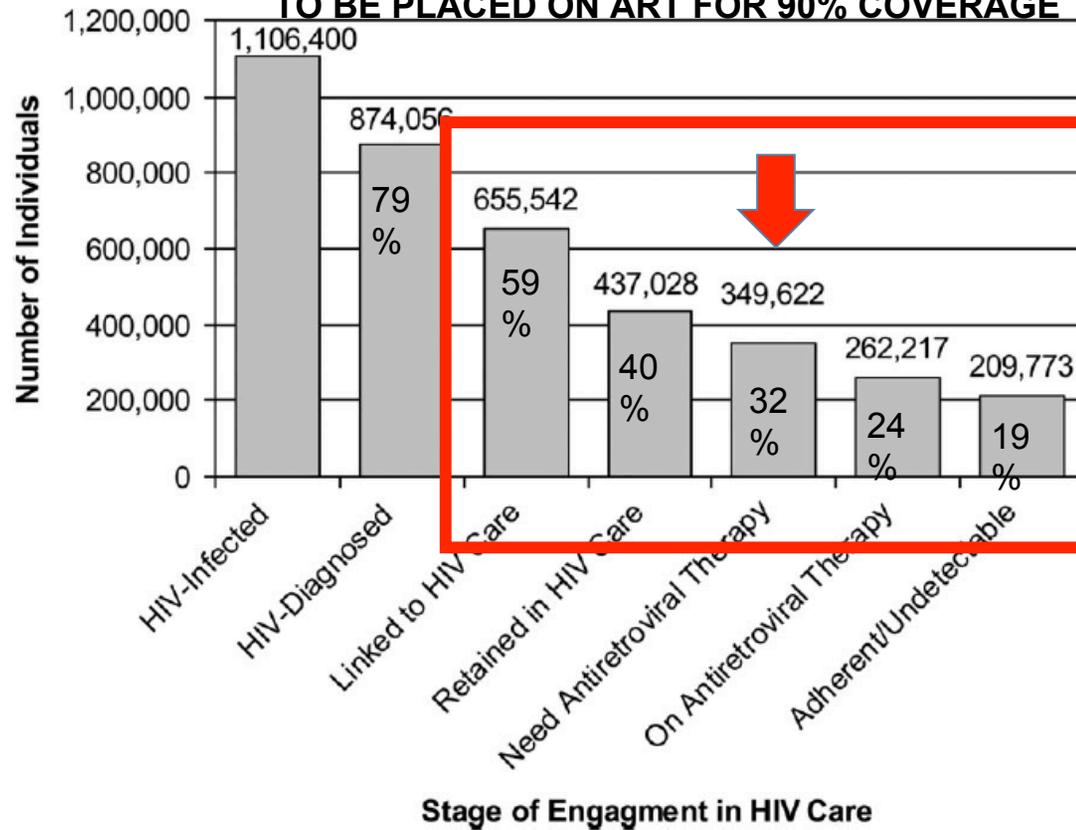
November 29, 2011

Vital Signs: HIV Prevention Through Care and Treatment — United States

Engagement in HIV care and Treatment in the US



**APPROXIMATELY 850 – 900K PEOPLE WOULD
BE NEED
TO BE PLACED ON ART FOR 90% COVERAGE**



The Spectrum of Engagement in HIV Care and its Relevance to Test-and-Treat Strategies for Prevention of HIV Infection

Edward M. Gardner,^{1,3} Margaret P. McLees,^{1,3} John F. Steiner,² Carlos del Rio,^{4,5} and William J. Burman^{1,3}

¹Denver Public Health and ²Kaiser Permanente Colorado, Denver, ³University of Colorado Denver, Aurora, Colorado, and ⁴Rollins School of Public Health of Emory University, and ⁵Emory Center for AIDS Research, Atlanta, Georgia

Clinical Infectious Diseases 2011;52(6):793–800

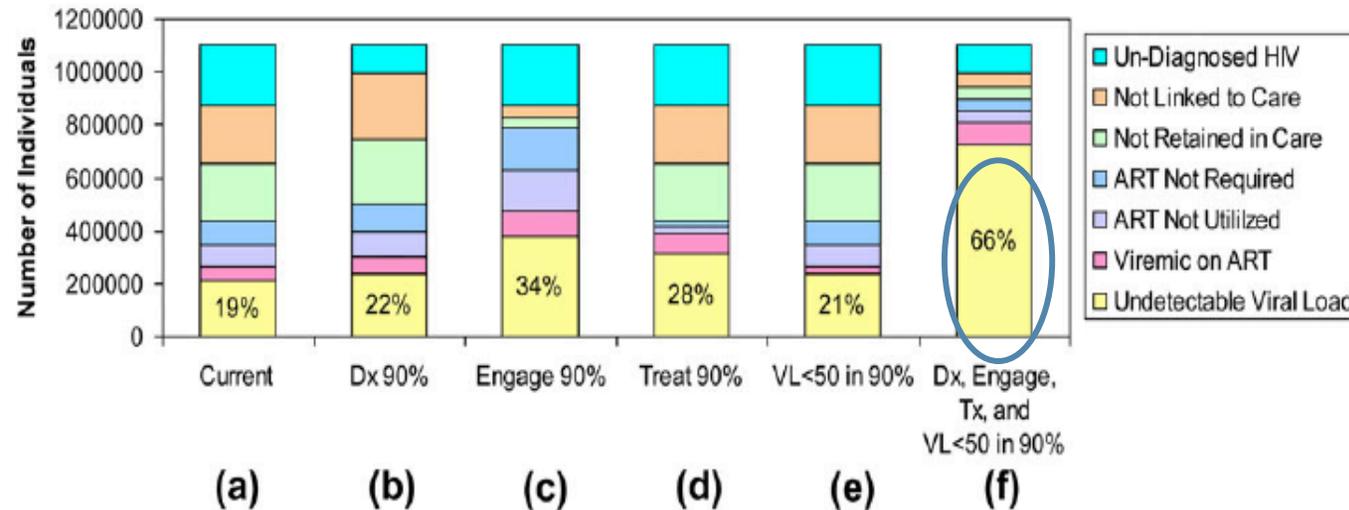
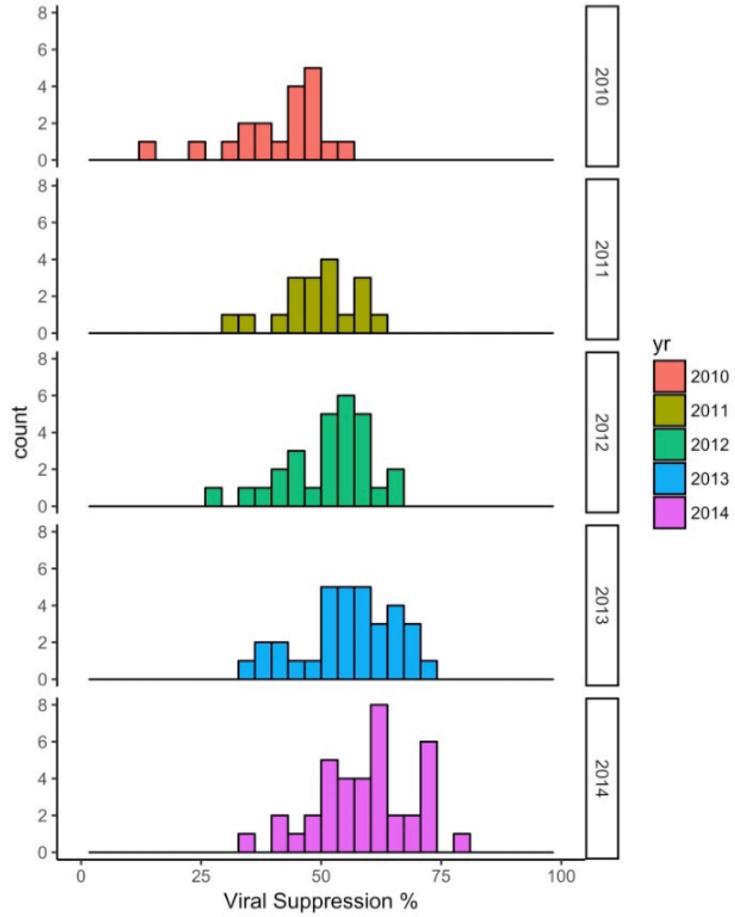
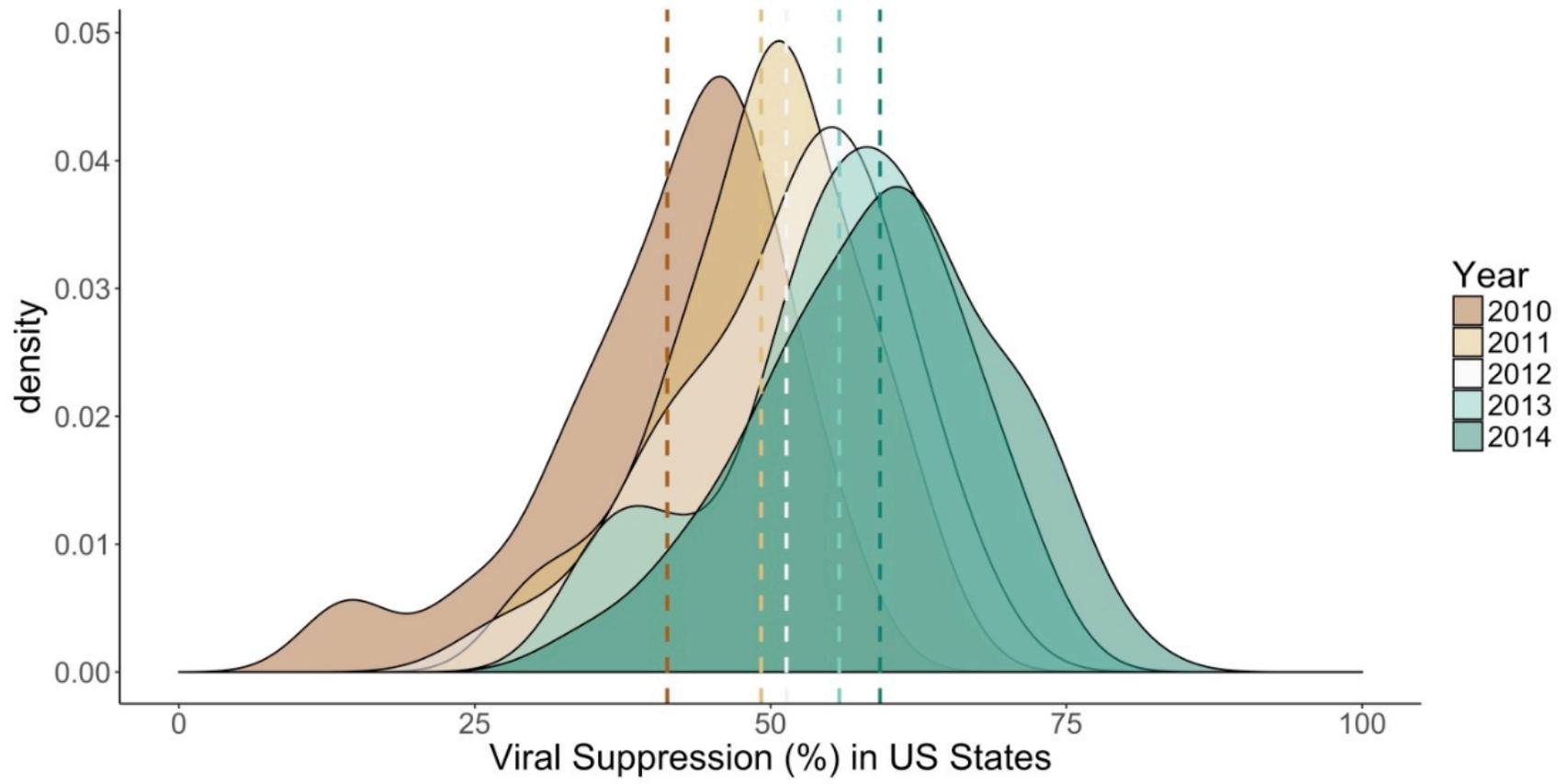


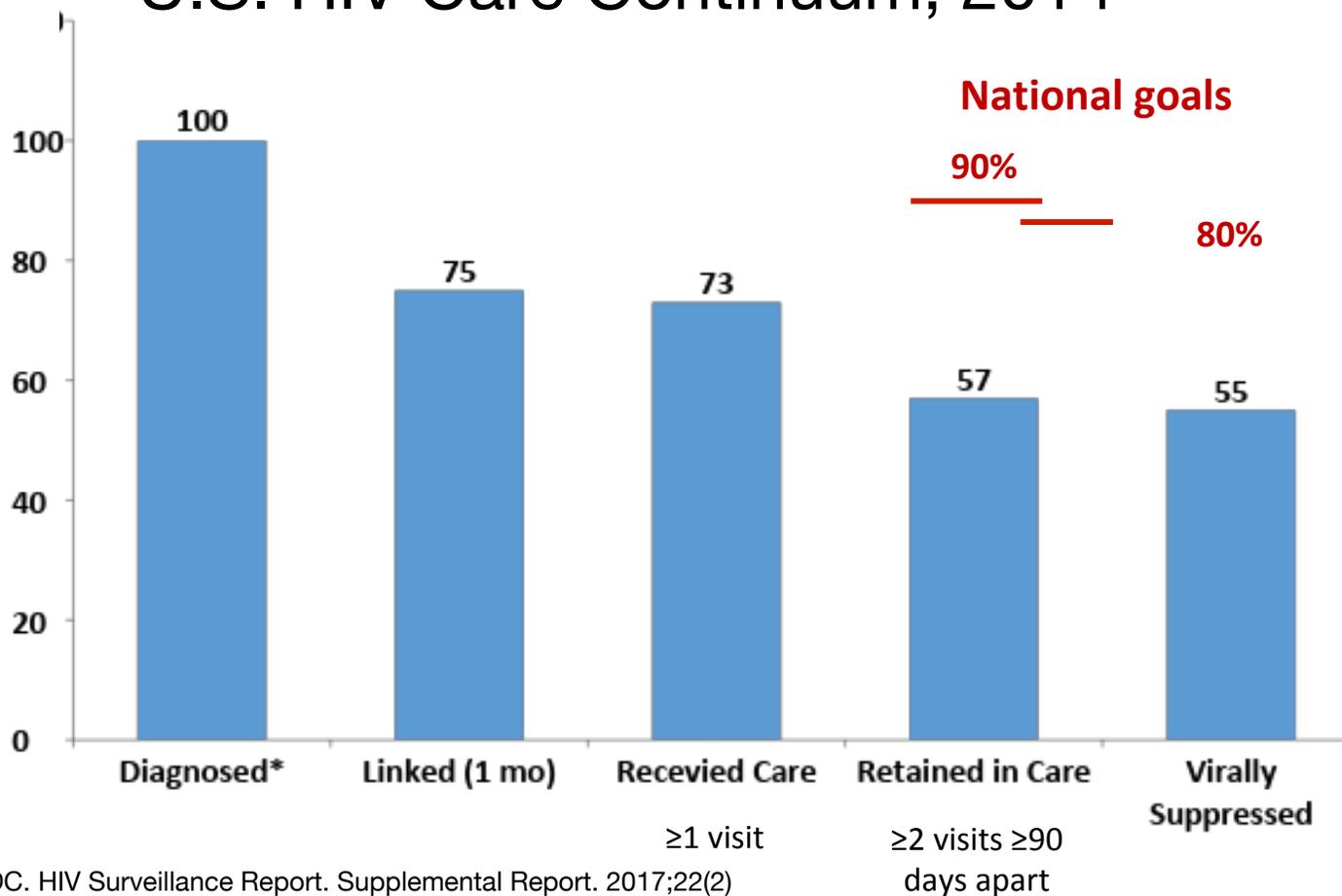
Figure 3. Six simple simulations (a–f) assessing different levels of engagement in care

Viral Suppression (%) in US States



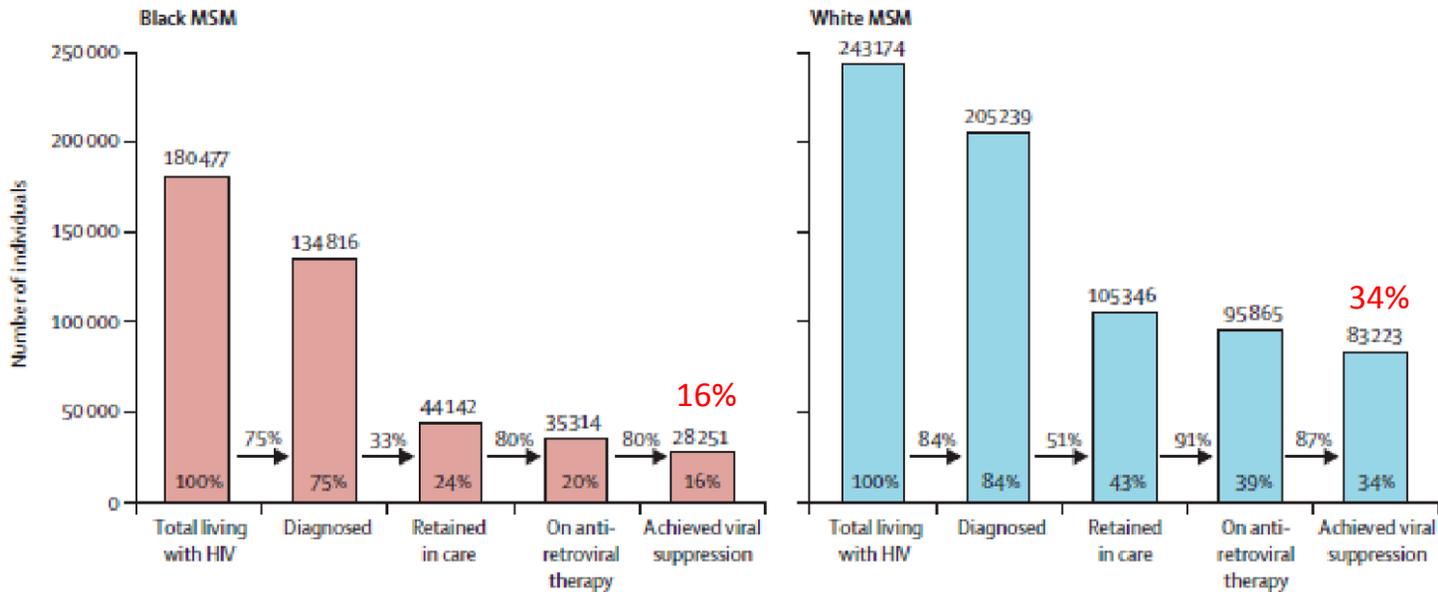


U.S. HIV Care Continuum, 2014



Source: CDC. HIV Surveillance Report. Supplemental Report. 2017;22(2)

HIV Care Continuum for Blacks and Whites in the US



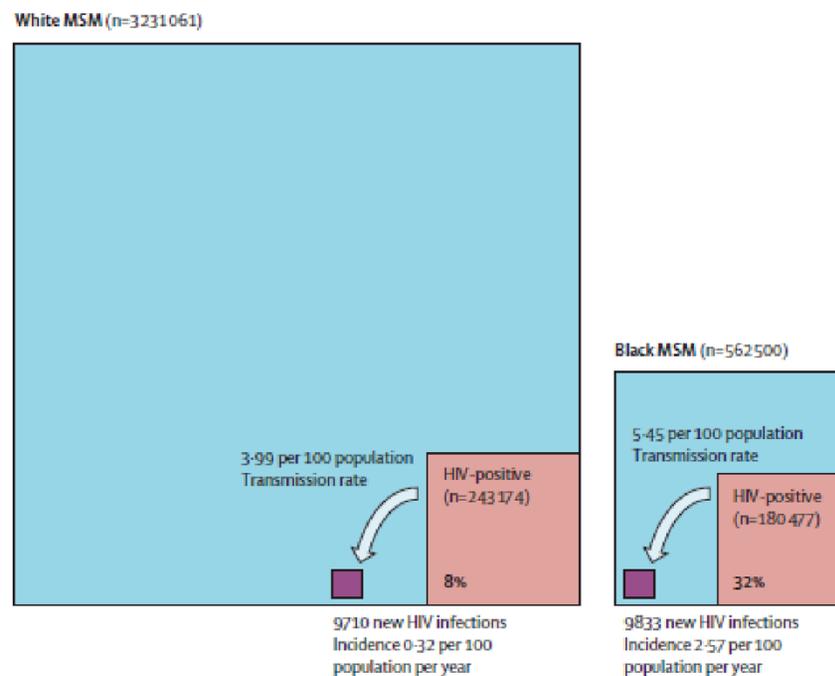
Rosenberg E, et al. Lancet HIV 2014

Estimated HIV transmission and incidence as per the observed HIV care continuum

9710 and 9833 new HIV transmissions per year attributable to HIV-infected white and black MSM

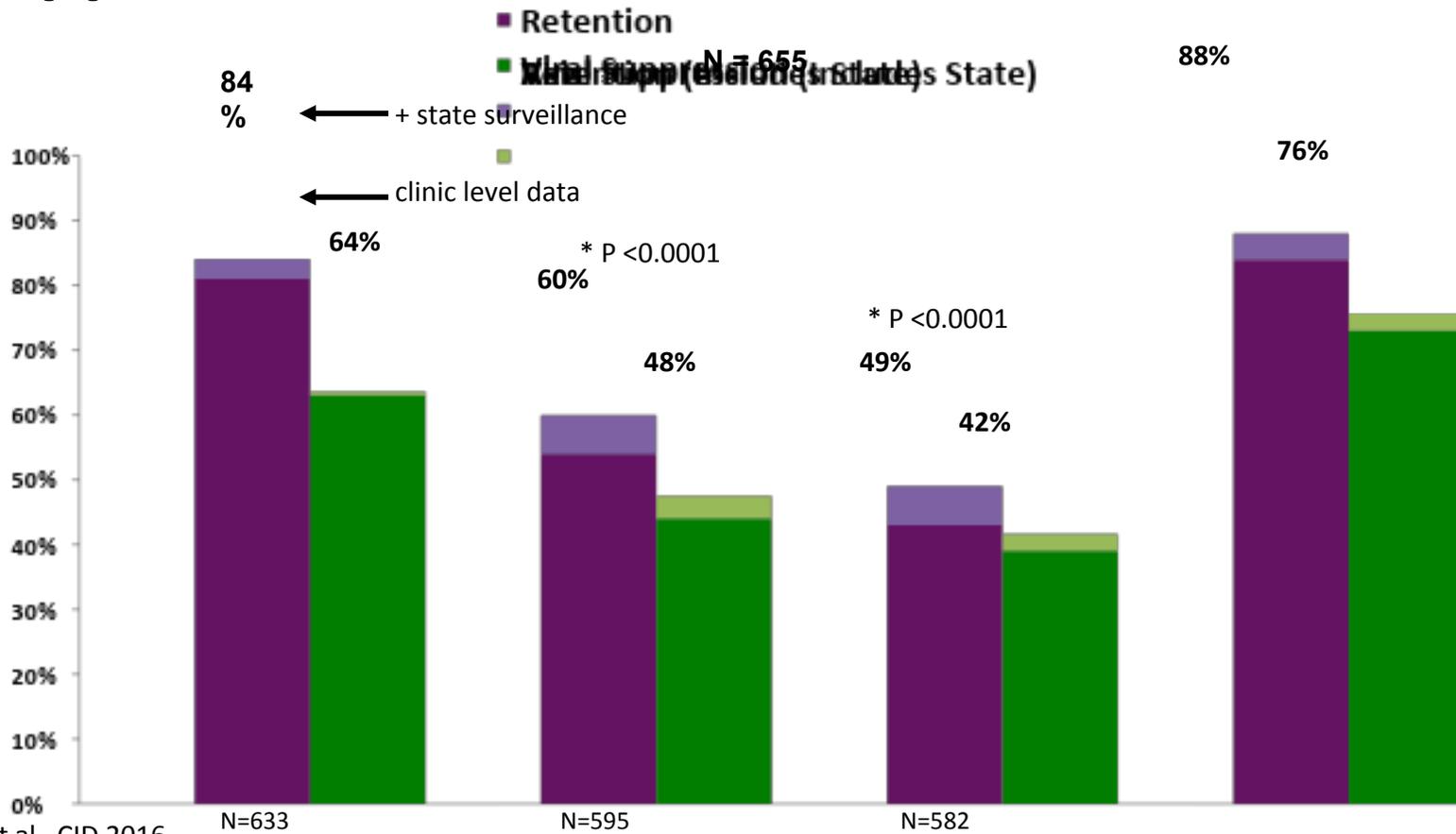
Incidence: WMSM = 0.32 per 100 pop per year
BMSM = 2.57 per 100 pop per year

Even if disparities in Care Continuum are addressed the estimated HIV incidence would be 5.8 times higher for BMSM compared to WMSM



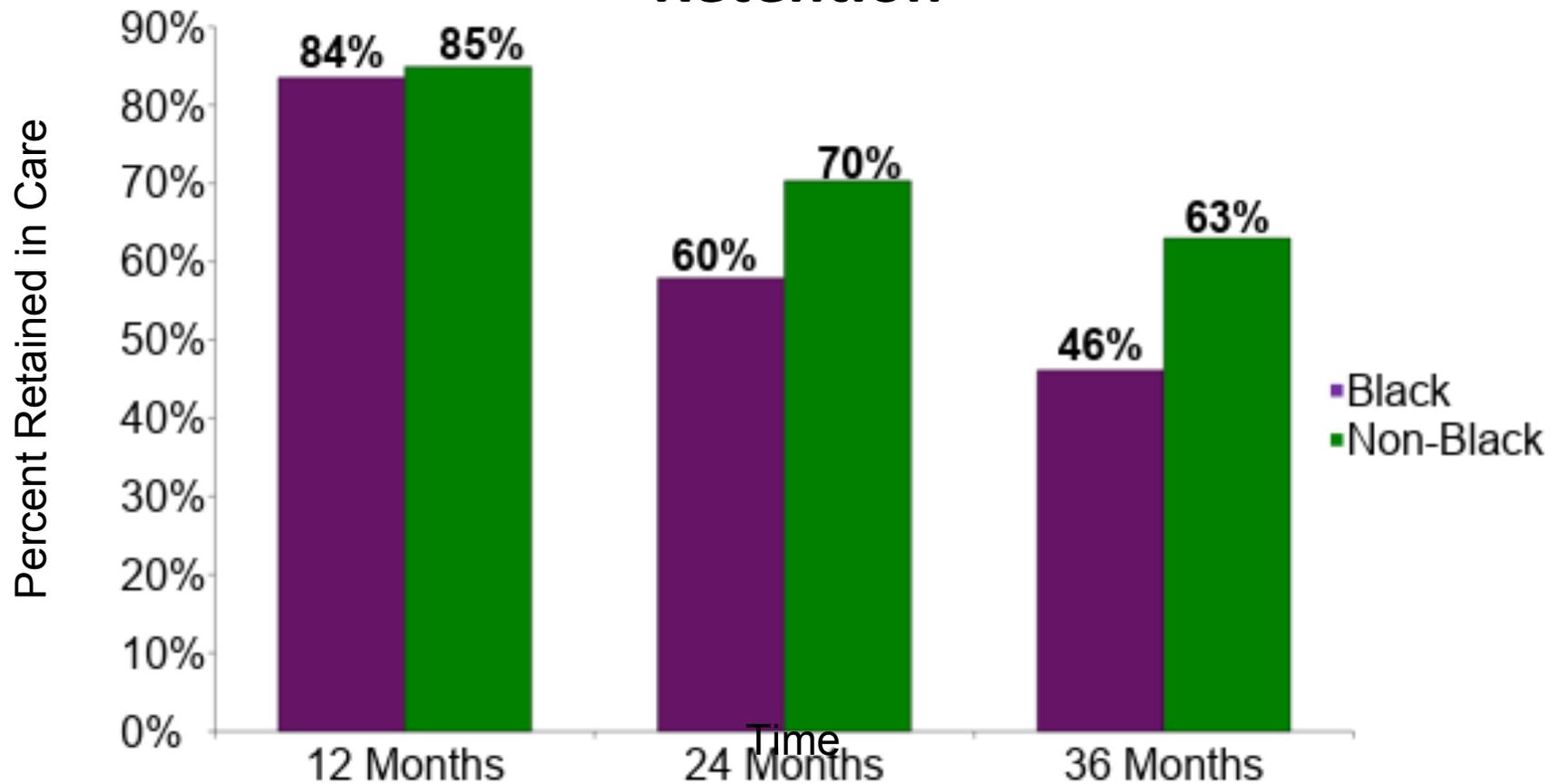
Rosenberg E, et al. Lancet HIV 2014

Longitudinal Retention and Viral Suppression



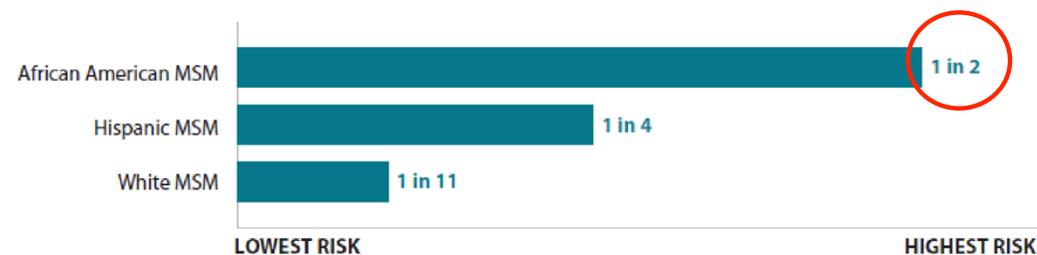
Colasanti, J, et al. CID 2016

Continuous View Unmasks Racial Disparity in Retention



HIV in the US

- The US HIV epidemic is increasingly affecting populations which have historically suffered from health disparities.
- ~ 40,000 new infections per year
 - MSM comprise ~ 62% of new infections
 - Blacks and Hispanics account for > 50% of new infections

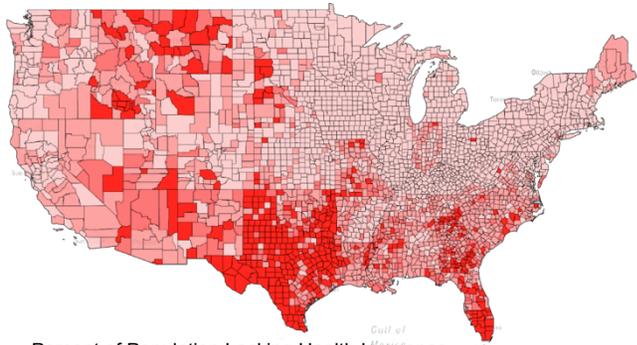


“One of the strangest things about the H.I.V. epidemic in the Deep South...is how easily most Americans have elided it...It’s a plague from some anterior time, some exterior continent, something our kids will read about in books or that we glimpse as history...”

Sarah Stillman, *The New Yorker*, 2014

No simple answer but social
determinants of health are
important drivers

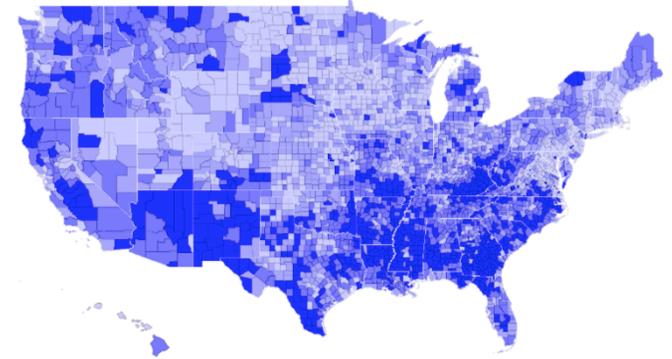
Lack of Health Insurance



Percent of Population Lacking Health Insurance



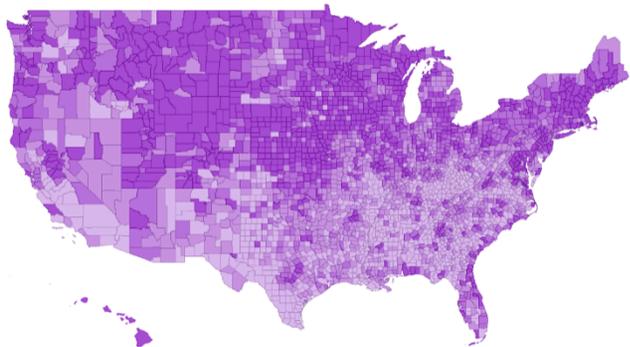
Poverty



Percent of Population Living in Poverty, by County, 2013



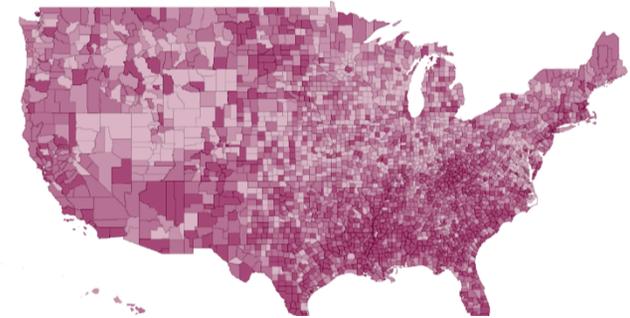
High School Education



Percent of Population with a High School Education, by County, 2013



Income inequality (Gini coefficient)

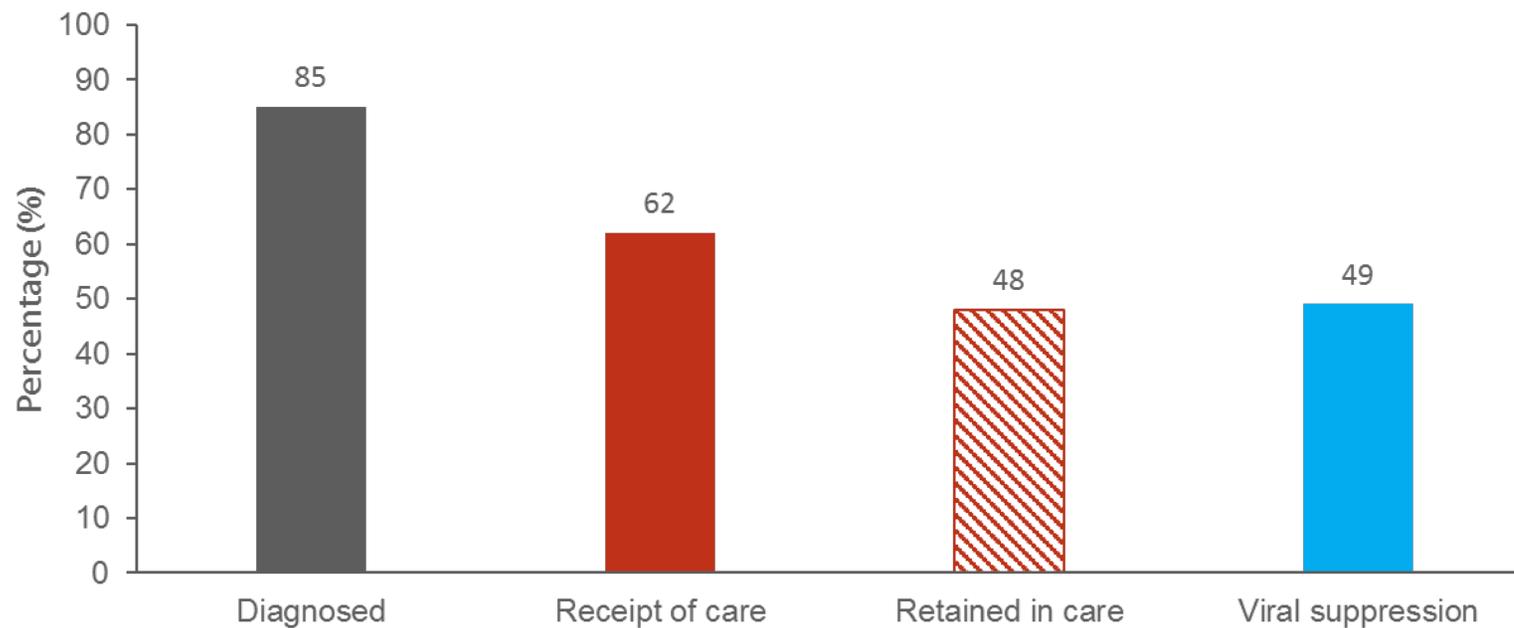


Income Inequality (Gini Coefficient), by County, 2013



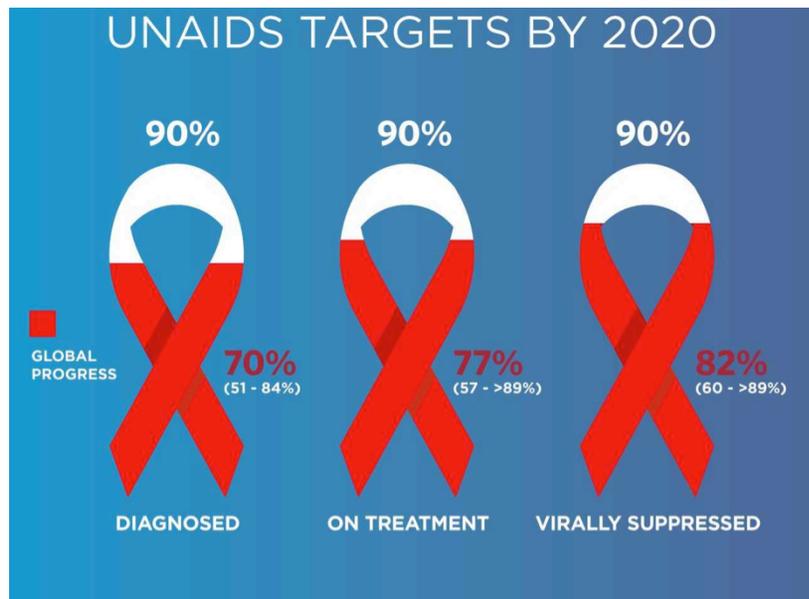
Persons Living with Diagnosed or Undiagnosed HIV Infection

HIV Care Continuum Outcomes, 2014—United States



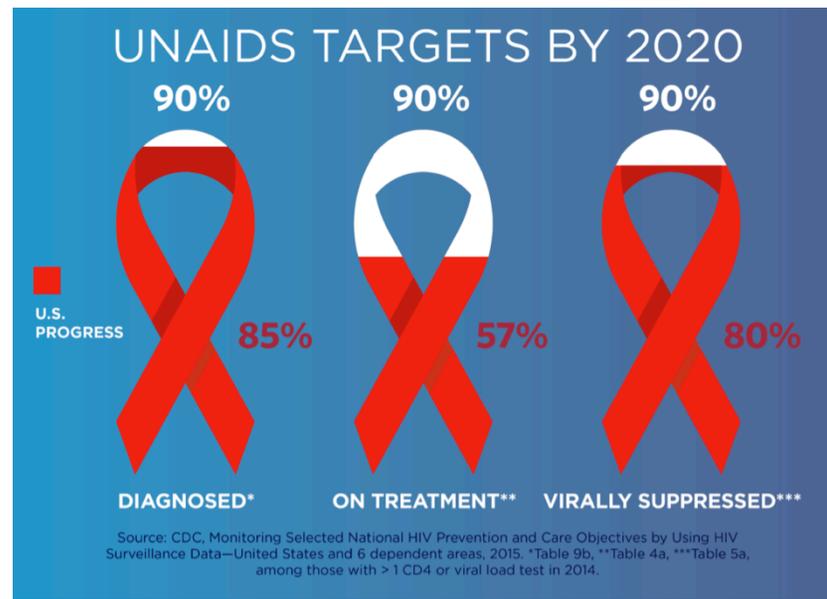
Note. Receipt of medical care was defined as ≥ 1 test (CD4 or VL) in 2014. Retained in continuous medical care was defined as ≥ 2 tests (CD4 or VL) ≥ 3 months apart in 2014. Viral suppression was defined as < 200 copies/mL on the most recent VL test in 2014.

Global Progress



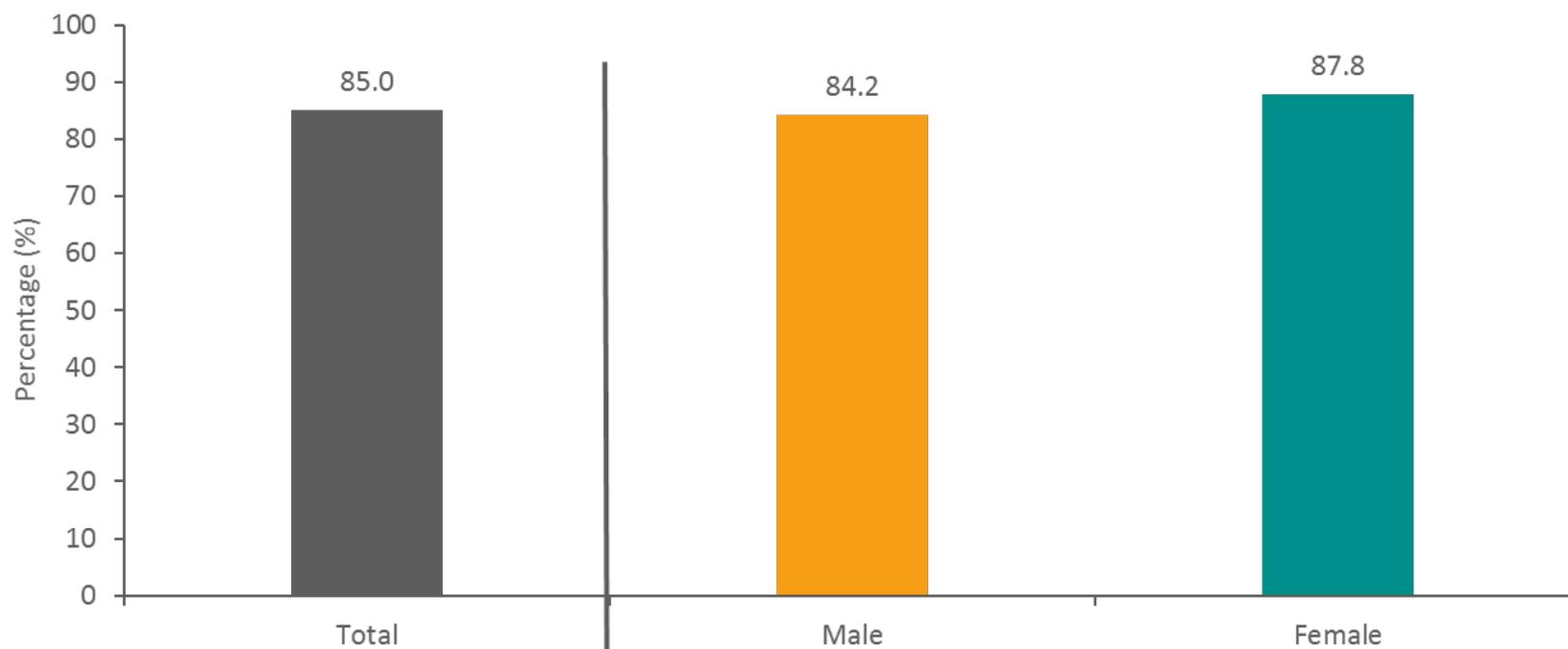
44% of all living with HIV being virally suppressed

U.S. Progress



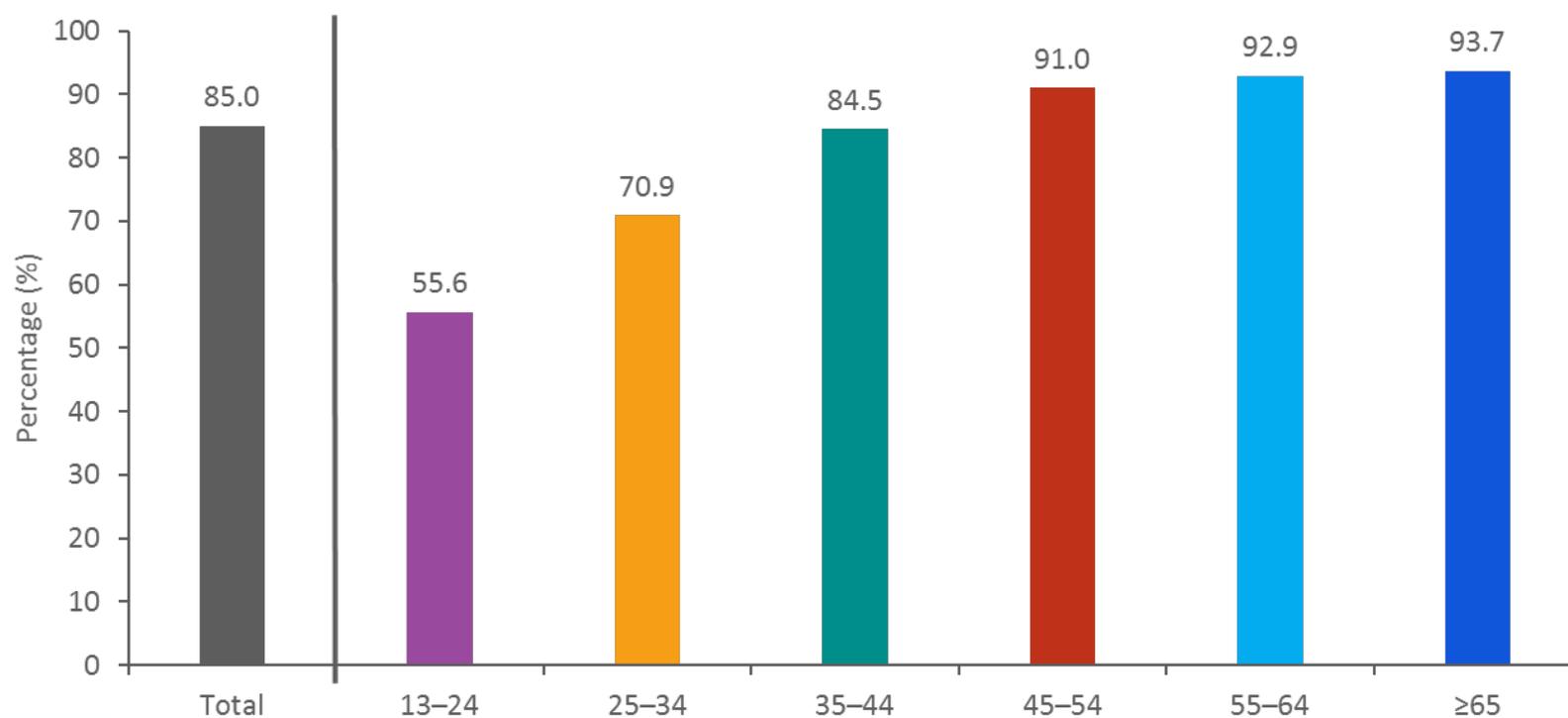
38% of all living with HIV being virally suppressed

Diagnosed Infection among Persons Aged ≥ 13 Years Living with Diagnosed or Undiagnosed HIV Infection, by Sex, 2014—United States



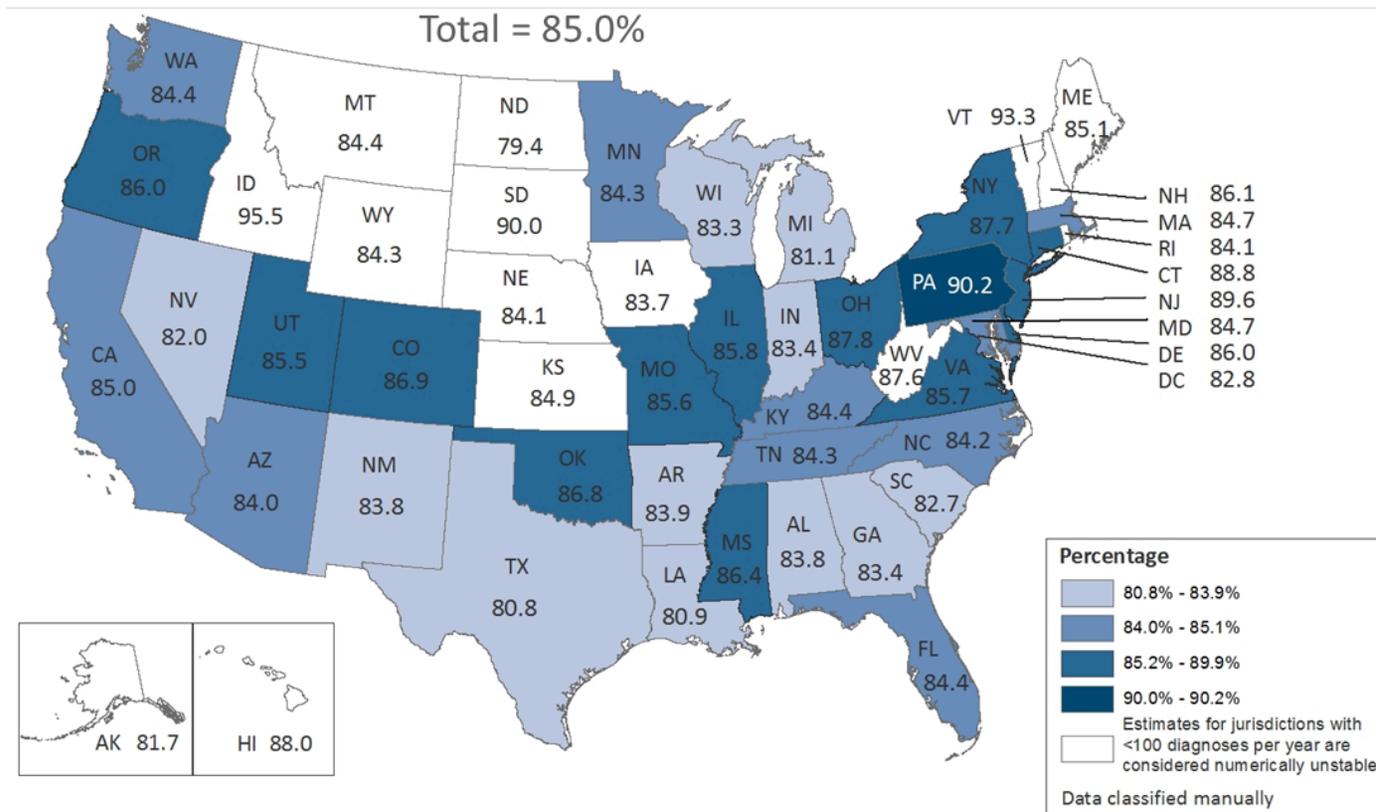
Note. Estimates were derived using HIV surveillance and CD4 data for persons aged ≥ 13 years at diagnosis in the 50 states and the District of Columbia.

Diagnosed Infection among Persons Aged ≥ 13 Years Living with Diagnosed or Undiagnosed HIV Infection, by Age, 2014—United States



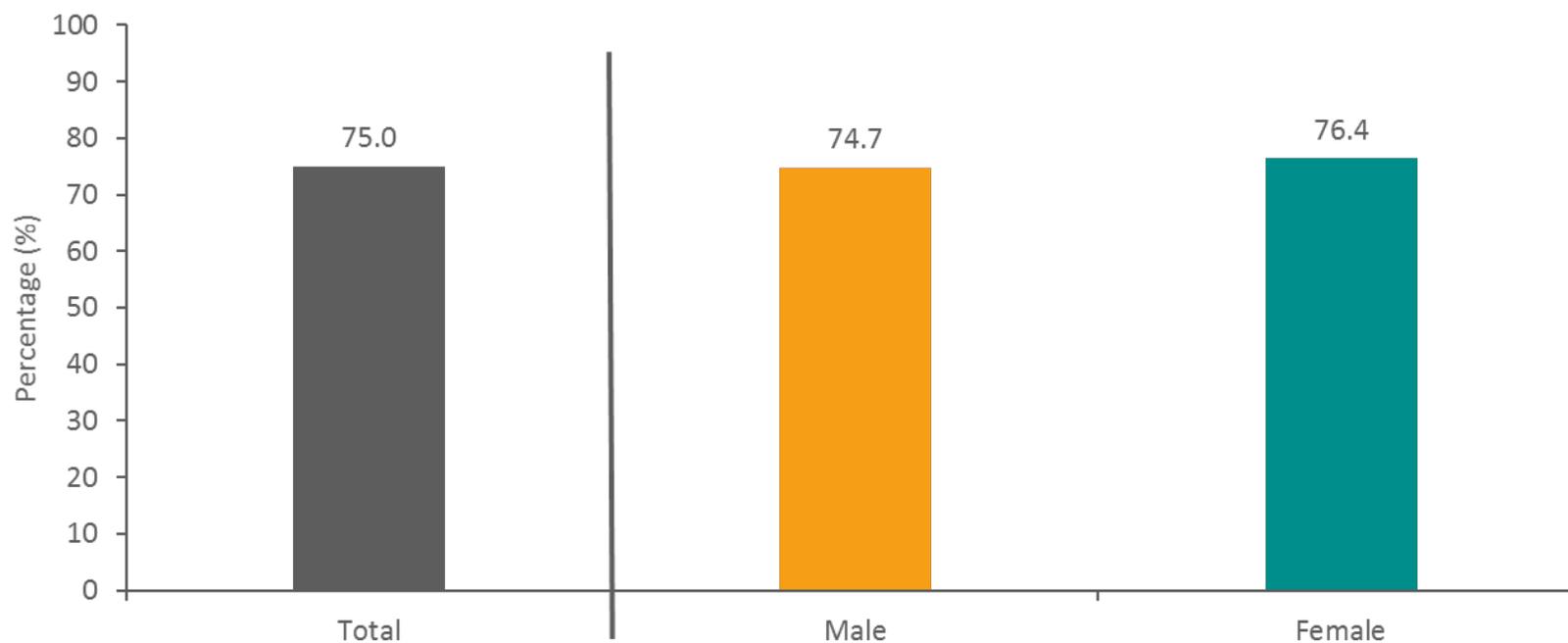
Note. Estimates were derived using HIV surveillance and CD4 data for persons aged ≥ 13 years at diagnosis in the 50 states and the District of Columbia.

Diagnosed Infection among Persons Aged ≥13 Years Living with Diagnosed or Undiagnosed HIV Infection, 2014—United States



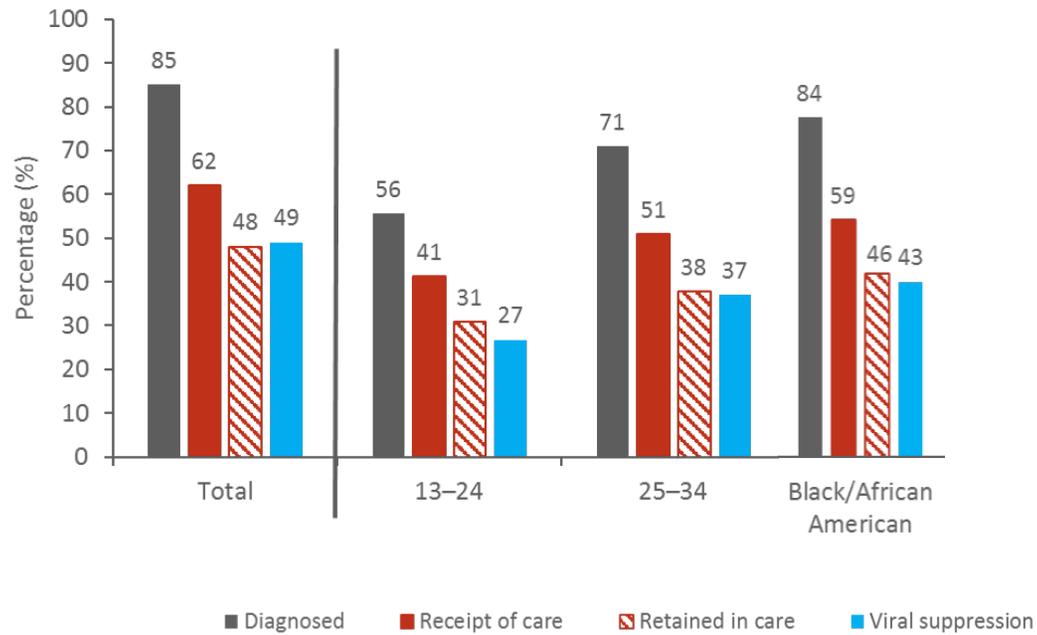
Note. Estimates were derived by using HIV surveillance and CD4 data for persons aged ≥13 years at diagnosis in the 50 states and the District of Columbia.

Linkage to HIV Medical Care within 1 Month after HIV Diagnosis during 2015, among Persons Aged ≥ 13 Years, by Sex—37 States and the District of Columbia



Note. Linkage to HIV medical care was defined as having a CD4 or VL test ≤ 1 month after HIV diagnosis.

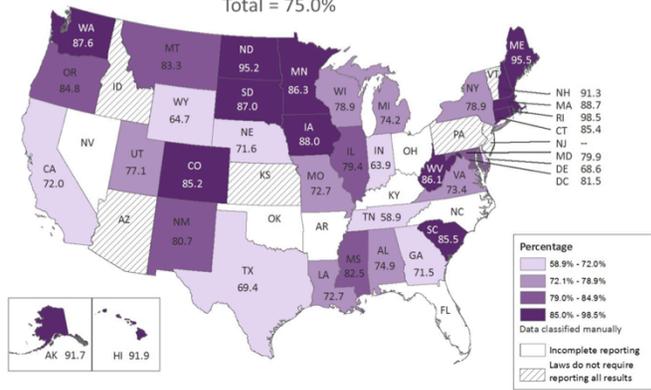
Disparities in HIV care Continuum: youth and AA do worse



Linkage, retention and viral suppression is worst in the South

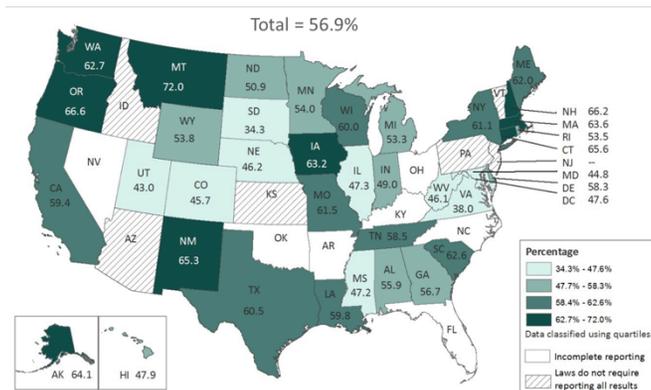
LINKAGE

Total = 75.0%



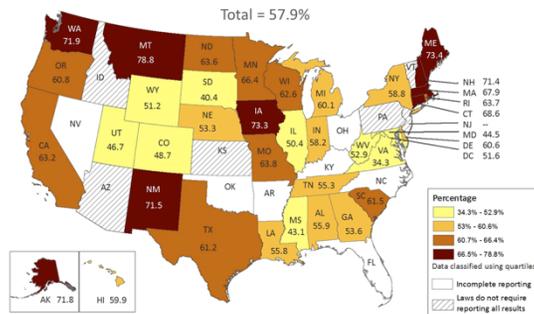
RETENTION

Total = 56.9%



VIRAL SUPPRESSION

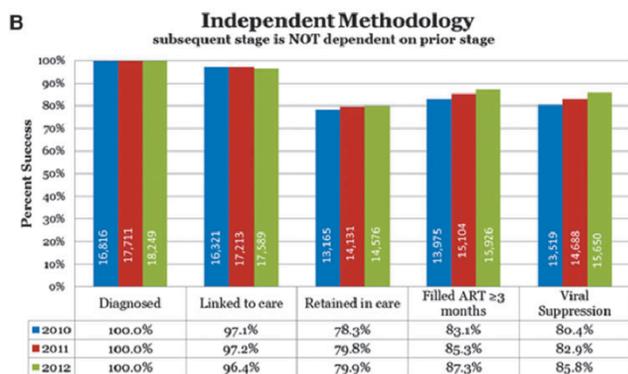
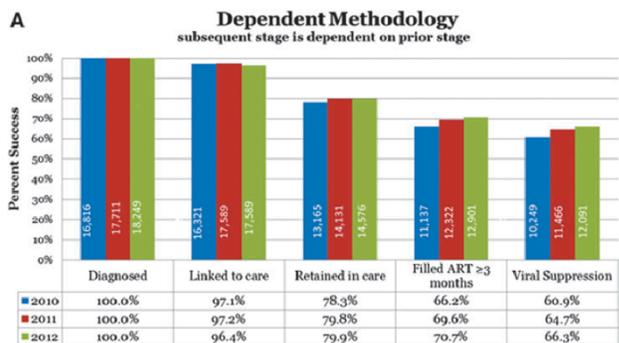
Total = 57.9%



Having an integrated healthcare
system matters

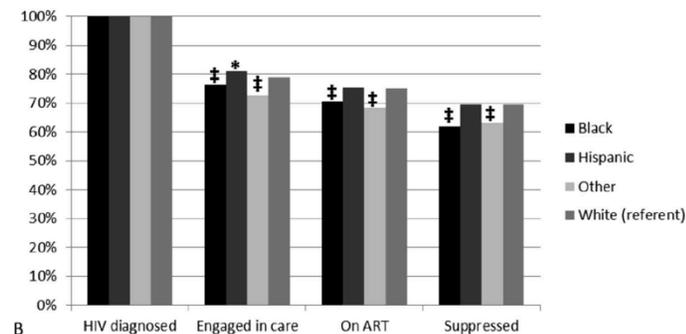
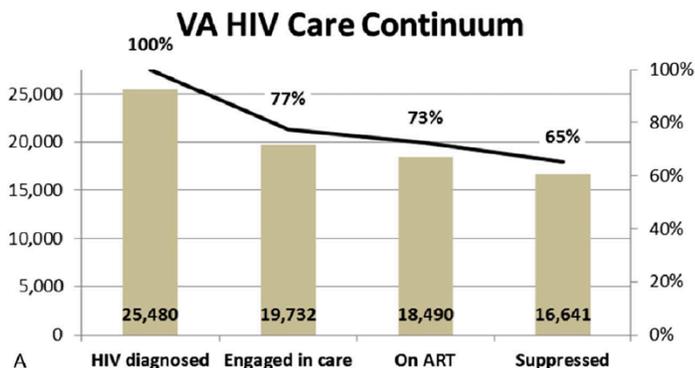
The HIV Care Cascade Measured Over Time and by Age, Sex, and Race in a Large National Integrated Care System

AIDS PATIENT CARE and STDs
 Volume 29, Number 11, 2015
 © Mary Ann Liebert, Inc.
 DOI: 10.1089/apc.2015.0139

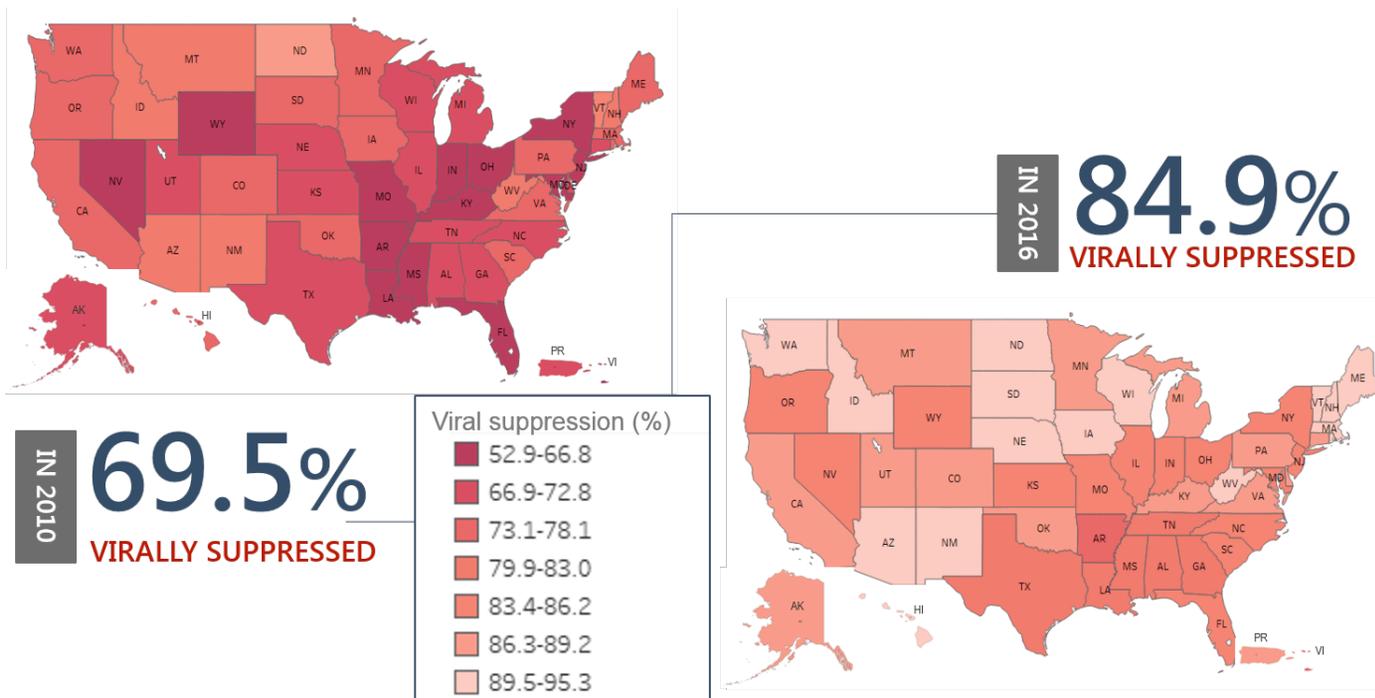


HIV Care Continuum Applied to the US Department of Veterans Affairs: HIV Virologic Outcomes in an Integrated Health Care System

J Acquir Immune Defic Syndr • Volume 69, Number 4, August 1, 2015



Viral Suppression among RWHAP Clients, by State, 2010 and 2016—United States and 2 Territories

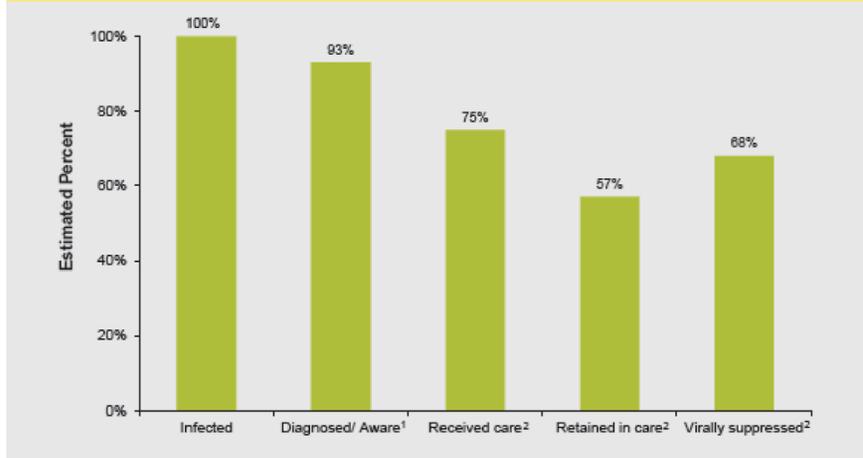


Viral suppression: ≥1 OAHs visit during the calendar year and ≥1 viral load reported, with the last viral load result <200 copies/mL.
^a Puerto Rico and the U.S. Virgin Islands.

Having political commitment
matters

HIV Care Continuum in San Francisco, CA

Figure 3.3 Continuum of HIV care among persons living with diagnosed or undiagnosed HIV infection, 2015, San Francisco



¹ The estimated percent aware of HIV infection for San Francisco was derived from the National HIV Behavioral Surveillance (MSM4 2014, PWID4 2015, HET4 2016) and the Transwomen Empowered to Advance Community Health study (TEACH3 2016).

² The estimated percent received care, retained in care, and virally suppressed among all infected was derived by applying the 93% diagnosed/aware to the 81% who had ≥ 1 lab tests, 61% who had ≥ 2 lab tests, and 73% who were virally suppressed among persons living with HIV who were last known to reside in San Francisco as shown in Figure 3.2, respectively.

Table 3.2 Care Indicators among persons newly diagnosed with HIV in 2015 by demographic and risk characteristics, San Francisco

| | Number of diagnoses ¹ | % Linked to care within 1 month of diagnosis ² | % Retained in care 3-6 months after linkage ² | % Virally suppressed within 12 months of diagnosis ² |
|------------------------------|----------------------------------|---|--|---|
| Total | 296 | 78% | 64% | 77% |
| Gender | | | | |
| Male | 262 | 79% | 65% | 79% |
| Female | 28 | 73% | 54% | 85% |
| Trans Female | 8 | 63% | 63% | 75% |
| Race/Ethnicity | | | | |
| White | 118 | 84% | 70% | 81% |
| African American | 42 | 67% | 45% | 69% |
| Latino | 65 | 78% | 68% | 78% |
| Asian/Pacific Islander | 37 | 73% | 59% | 81% |
| Other/Unknown | 18 | 81% | 56% | 56% |
| Age at Diagnosis | | | | |
| 13-24 | 45 | 84% | 69% | 76% |
| 25-29 | 62 | 71% | 61% | 74% |
| 30-39 | 91 | 73% | 59% | 81% |
| 40-49 | 65 | 86% | 71% | 75% |
| 50+ | 33 | 82% | 61% | 79% |
| Transmission Category | | | | |
| MSM | 221 | 81% | 68% | 82% |
| PWID | 20 | 60% | 40% | 70% |
| MSM-PWID | 24 | 63% | 33% | 50% |
| Heterosexual | 20 | 85% | 70% | 75% |
| Other/Unidentified | 11 | 73% | 73% | 84% |
| Housing Status | | | | |
| Housed | 267 | 79% | 67% | 79% |
| Homeless | 29 | 66% | 38% | 59% |

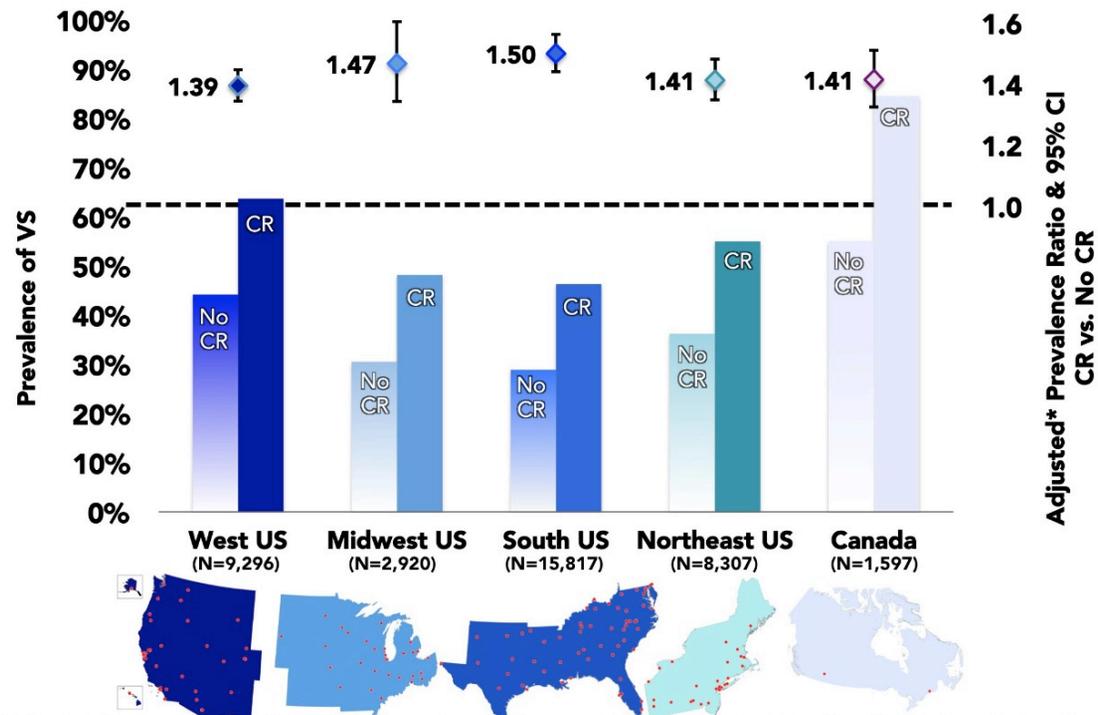
¹ Includes persons diagnosed in 2015 based on a confirmed HIV test and does not take into account patient self-report of HIV infection.

² Percent of total diagnoses.

Source: San Francisco DPH, HIV Epidemiology Annual Report 2016. Available at: <https://www.sfdph.org/dph/files/reports/RptsHIVAIDS/Annual-Report-2016-20170831.pdf>

Continuous Retention in HIV care by region

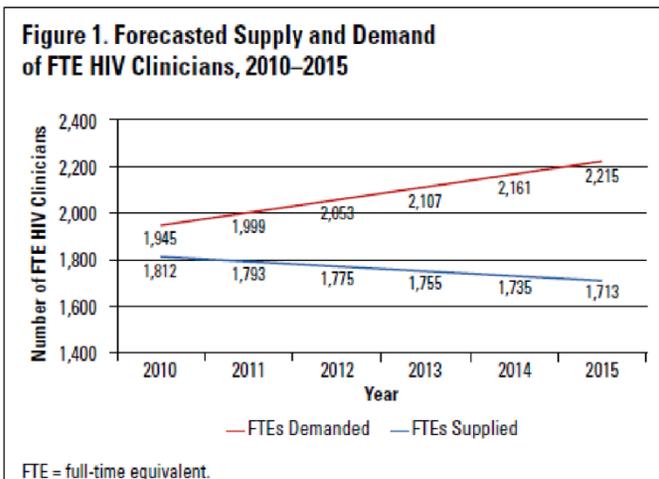
Figure: Prevalence (bars), adjusted prevalence ratio estimates (diamonds), and 95% confidence intervals (CI) for HIV viral suppression (VS), conditional on continuous retention (CR), within regions of the US and Canada.



*Adjusted for age, sex, race, HIV acquisition risk, calendar year, total time in cohort, baseline ART (>6 months), and baseline CD4+ count (<200, 200-350, or >350 cells/mm³). Clinics contributing data mapped as red dots within regions.

Meeting Future HIV Care Providers Demand Predictions from the MMP Provider Study and the HRSA HIV Workforce Study

- Estimate modest but Insufficient Increase in HIV Care Providers
 - Assumes **stable ID** and primary care positions
- Estimate 190 net new providers = capacity to provide care to 65,000 additional patients over 5 years
- Prevalence estimated to **increase by 30,000 annually** so need for care of ~ 100,000 patients by 2019.



Weiser, J, et al. Qualifications, Demographics, Satisfaction, and Future Capacity of the HIV Care Provider Workforce in the United States, 2013-2014. *Clin Infect Dis.* (2016) 63 (7): 966-975. doi: 10.1093/cid/ciw442. First published online: June 29, 2016.

HIV Clinician Workforce Survey 2012, NAMCS (2009), NHAMC (2008), HCUP-NIS (2002-09) and Federal and State HIV surveillance data (2008)

Conclusions

- Despite scale-up of HIV testing knowledge of serostatus still has significant room for improvement.
 - If 85% of those living with HIV know their serostatus there are ~180,000 persons that don't.
 - This is particularly true for young people and men.
- Closing the gap will require:
 - Prioritizing HIV testing
 - New technologies
 - Innovative service delivery strategies

Conclusions

- Retention in care is the “Achilles heel” of the HIV care continuum and improving it will be critical in achieving the goals of the National HIV/AIDS Strategy.
- Addressing social determinants of health and insuring access to healthcare are critical in confronting the HIV epidemic in the US.
 - *“If the majority of determinants of health are social, so must be the remedies”* Sir Michael Marmot
 - Giving health insurance to everyone would make a huge difference
- We need to start thinking more about a “longitudinal care continuum” rather than a cross-sectional one as long-term virologic suppression is what matters.
- Political commitment matters.

Acknowledgements

- AIDSV
 - Patrick Sullivan
 - Cory Woodyatt
- CDC HIV/AIDS Division
 - Jonathan Mermin
 - Irene Hall
- Emory CFAR
 - Wendy Armstrong
 - Jonathan Colasanti