OMB No. 0925-0001 and 0925-0002 (Rev. 10/2021 Approved Through 01/31/2026)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.

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NAME: Hovmand, Peter

eRA COMMONS USER NAME (credential, e.g., agency login): phovmand

POSITION TITLE: Professor, Case Western Reserve University

EDUCATION/TRAINING

| INSTITUTION AND LOCATION | DEGREE  (if applicable) | Completion Date  MM/YYYY | FIELD OF STUDY |
| --- | --- | --- | --- |
| Bucknell University, Lewisburg, PA | ABEE | 05/1991 | Electrical Engineering & Mathematics |
| Michigan State University, East Lansing, MI | M.S.W. | 06/1997 | Social Work |
| Michigan State University, East Lansing, MI | Ph.D. | 06/2003 | Social Work & Community Psychology |

# A. Personal Statement

# For the last 25 years, I have been leading research teams in developing system dynamics models, computer simulations, interactive web-based interfaces, and methods with an emphasis on participatory systems modeling in organizations and community settings. The primary focus of my research is on structural violence, dynamic capabilities of human service delivery systems, and participatory methods for system dynamics computer modeling and simulation. Application areas involve a wide variety of contexts, disciplines, and application areas including both domestic and international work in low, middle, and high-income countries from inclusive education for children with disabilities in post-conflict zones to obesity prevention and cancer disparities. Through this work and founding the Brown School’s Social System Design Lab at Washington University in St. Louis, I have developed an international reputation in public health systems science in the areas of systems science, specifically, system dynamics computer modeling and simulation using Community-Based System Dynamics (CBSD).

**Relevant to this proposal are the following completed and ongoing studies and collaborations:**

NIH/NCI Center for Global Health 2021-2023

“IPA Systems thinking to the Center for Global Health”  
The goal of this IPA was to support the NCI/Center for Global Health leadership and staff in taking a systems approach to global cancer prevention and control through systems mapping of CGH strategy and implementation and supporting capacity building in systems science for NCI. Specific activities included working on supporting the SyNC project in Peru on using group model building as an implementation strategy for scaling-up cervical cancer screening and access to timely treatment and supporting the development the feminist framework using group model building in the *Lancet* Commission on Women, Power, and Cancer.

Role: Special Advisor

NIH/NCATS (Hovmand and Biroscak, Co-PIs) 2023-2028

“RC2 Systems Marketing Analysis for Research Translation (SMART) Innovation Program”

The goal of special innovation program is to accelerate the translation of known, effective interventions into practice and at a speed and reach that can significantly close regional gaps in health. The project does this by engaging clinical research teams in a structured process for understanding and identifying the drivers of health outcomes.

Role: Co-Principal Investigator

USDA (Novotny, PI) 2021-2026

“Food System Resiliency for Children's Healthy Living (CHL Food System)”

The primary goal of the project is to use system dynamics research methods to develop a model and simulations that identify drivers of resiliency in food supply chains for decreasing food wastage and increasing food and nutrition security, diet quality, and healthy body size among children to prevent chronic disease in households and communities across the US Affiliated Pacific areas (Alaska, Hawaii, Guam, Commonwealth of the Northern Mariana Islands, and American Samoa).

Role: Co-Investigator

**Publications relevant to this proposal that I would like to highlight include:**

1. Ginsburg, O., Vanderpuye, V., Beddoe, A. M., Bhoo-Pathy, N., Bray, F., Caduff, C., Florez, N., Fadhil, I., Hammad, N., Heidari, S., Kataria, I., Kumar, S., Liebermann, E., Moodley, J., Mutebi, M., Mukherji, D., Nugent, R., So, W. K. W., Soto-Perez-de-Celis, E., Unger-Saldaña, K., Allman, G., Bhimani, J., Bourlon, M. T., Eala, M. A. B., **Hovmand, P. S.**, Kong, Y.-C., Menon, S., Taylor, C. D., & Soerjomataram, I. (2023, 2023/09/26/). Women, power, and cancer: a Lancet Commission. The Lancet. https://doi.org/https://doi.org/10.1016/S0140-6736(23)01701-4
2. Gullett, H. L., Brown, G. L., Collins, D., Halko, M., Gotler, R. S., Stange, K. C., & **Hovmand, P. S.** (2022). Using Community-Based System Dynamics to Address Structural Racism in Community Health Improvement. *J Public Health Manag Pract, 28*(4 Suppl 4), S130-S137. doi:10.1097/PHH.0000000000001492
3. Economos, C. D., Calancie, L., Korn, A. R., Allender, S., Appel, J. M., Bakun, P., Hennessy, E., **Hovmand, P. S.**, Kasman, M., Nichols, M., Pachucki, M. C., Swinburn, B. A., Tovar, A., & Hammond, R. A. (2023, Mar 20). Community coalition efforts to prevent childhood obesity: two-year results of the Shape Up Under 5 study. *BMC Public Health, 23*(1), 529. https://doi.org/10.1186/s12889-023-15288-5
4. Rosenthal, J., Arku, R. E., Baumgartner, J., Brown, J., Clasen, T., Eisenberg, J. N. S., **Hovmand, P.**, Jagger, P., Luke, D. A., Quinn, A., & Yadama, G. N. (2020). Systems Science Approaches for Global Environmental Health Research: Enhancing Intervention Design and Implementation for Household Air Pollution (HAP) and Water, Sanitation, and Hygiene (WASH) Programs. *Environmental Health Perspectives, 128*(10), 105001. <https://doi.org/doi:10.1289/EHP7010>

# B. Positions, Scientific Appointments, and Honors

## Positions and Scientific Appointments

2024-present Interim Director, Center for Community Health Integration, School of Medicine, Case Western Reserve University, Cleveland, OH

2024-present Professor (secondary appointment), Population and Quantitative Health Sciences, School of Medicine, Case Western Reserve University, Cleveland, OH

2021-present Pamela B. Davis, MD, PhD Professor of Medicine  
Professor, Center for Community Health Integration, School of Medicine

Professor, Biomedical Engineering, Case School of Engineering

Professor (secondary appointment), Mandel School of Applied Social Sciences  
Case Western Reserve University, Cleveland, OH

2023-2024 VP of Chapters and Special Interest Groups, System Dynamics Society

2020-2023 Co-lead, System Dynamics Society Structural Racism Special Interest Group

2020-2021 Visiting Professor, Center for Community Health Integration, School of Medicine, Case Western Reserve University, Cleveland, OH

2019-2022 Instructor, System Dynamics Summer School, System Dynamics Society

2019 Conference Program Chair, International Conference of the System Dynamics Society

2017-2020 Professor of Practice, Brown School, Washington University in St. Louis, St. Louis, MO

2013-2017 Associate Professor of Practice, Brown School, Washington University in St. Louis,   
St. Louis, MO

2009-2020 Founding Director, Social System Design Lab, Brown School of Social Work, Washington University in St. Louis, St. Louis, MO

2007-2009 Assistant Professor, Women and Gender Studies, Washington University in St. Louis,   
St. Louis, MO

2003-2009 Assistant Professor, Brown School of Social Work, Washington University in St. Louis, MO

1998-2003 Instructor, Michigan State University, East Lansing, MI

**Honors**

2019 Audre Lorde Academic Exploration Award, Holobaugh Honorees, Washington University in St. Louis, St. Louis, MO

2019 Exemplary Educational Partner Awardees, Jennings School District, Jennings, MO

2018 Excellence Award for MSW Advising, Brown School, Washington University in St. Louis, St. Louis, MO

2015 Excellence in Mentoring from the Graduate Student Senate of the College of Arts & Sciences, Washington University in St. Louis, St. Louis, MO

2009 Excellence in Teaching Award, Brown School, Washington University in St. Louis, St. Louis, MO

# C. Contributions to Science

1. Led the creation of Scriptapedia (2009-present), a documented set of “scripted” group model building exercises to increase the rigor of participatory group model building methods and be able to distinguish specific from non-specific treatment effects and replicate participatory group model building exercises across diverse communities. Prior to this contribution, participatory group model building exercises were undocumented, variable in their implementation, required high levels of system dynamics expertise, and thus not scalable. By developing Scriptapedia, we have been able to standardize group model building workshops and facilitate the growth in the use of group model building in diverse communities across the United States and internationally.
   1. **Hovmand, P.S.,** Andersen, D.F., Rouwette, E., Richardson, G. P., Rux, K., & Calhoun, A. (2012). Group model building “scripts” as a collaborative tool. *Systems Research and Behavioral Science, 29*, 179-193.
   2. Brennan, L. K., Sabounchi, N. S., Kemner, A. L., & **Hovmand, P. S.** (2015). Systems thinking in 49 communities related to healthy eating, active living, and childhood obesity. *Journal of Public Health Management and Practice, 21*, s55-s69. PMID 25828223.
   3. Allender, S., Millar, L, **Hovmand P.S.**, Bell, C, Moodie, M., Carter, R., Swinburn, B., Strugnell, C., Lowe, J., de la Haye, K., Orellana, L., & Morgan, S. (2016). Whole of Systems Trial of Prevention Strategies for Childhood Obesity: WHO STOPS Childhood Obesity. *International Journal of Environmental Research and Public Health*. 2016 Nov 16;13(11), E1143. PMID: 27854354
   4. Trani, J F., Ballard, E., Bakhshi, P., & **Hovmand, P.S.** (2016). Community based system dynamic as an approach for understanding and acting on messy problems: a case study for global mental health intervention in Afghanistan. *Conflict and Health,* 2;10:25. eCollection. PMID: 27822297.
2. Pioneered the use of system dynamics computer modeling and simulations in community-based settings as Community-Based System Dynamics (CBSD) (2008-present). Prior to this work, system dynamics computer modeling and simulation was largely engaged only trained professionals (e.g., researchers, government leaders, management). This work extended the use of system dynamics modeling into community settings with diverse stakeholders and provided the first look at how marginalized communities saw social determinants of health from a systems perspective.
   1. **Hovmand, P.S.** (2014). *Community Based System Dynamics*. Springer
   2. Homa, H. Rose, J., **Hovmand, P.S**., Cherng, S.T., Riolo, R.L., Kraus, A., Biswas, A., Burgess, K., Aungst, H., Stange, K. (2015). A participatory model of the paradox of primary care. *Annals of Family Medicine, 13*, 456-465. PMCID: PMC4569454
   3. Hoehner, C. M., Sabounchi, N. S., Brennan, L. K., **Hovmand, P. S.**, & Kemner, A. (2015). Behavior over time graphs: assessing perceived trends in healthy eating and active living environments and behaviors across 49 communities. *Journal of Public Health Management and Practice, 21*, s45-s54. PMID: 25828222.
3. Led and collaborated in pioneering approaches to design innovative community prevention frameworks for identifying and eliminating disparities (2009-present). This effort looked for innovative approaches to map and develop community prevention frameworks including the design of community based social marketing prevention strategies and “long tailed” approaches to eliminating disparities.
4. Sabounchi, N. S., **Hovmand, P. S.,** Osgood, N. D., Dyck, R. F. , & Jungheim, E. S. (2014). A systems approach to modeling weight gain and obesity in reproductive age women. *American Journal of Public Health,* 104(7), 1240-1246. PMID: 24832413
5. Kreuter, M. W., **Hovmand, P. S.**, Pfeiffer, D. J., Fairchild, M., Rath, S. Golla, B., & Casey, C. (2014). The “Long Tail” and public health: New thinking for addressing health disparities. *American Journal of Public Health.* e1-e8. PMID: 25322308.
6. Munar, W., **Hovmand, P.S.**, Flemming, C., & Darmstadt, G.L. (2015). Scaling-up impact in perinatology through systems science: Bridging the collaboration and translational divides in cross-disciplinary research and public policy. *Seminars in Perinatology, 39*(5), 416-423. PMID: 26184341.
7. Gullett, H. L., Brown, G. L., Collins, D., Halko, M., Gotler, R. S., Stange, K. C., & **Hovmand, P. S.** (2022). Using Community-Based System Dynamics to Address Structural Racism in Community Health Improvement. *J Public Health Manag Pract, 28*(4 Suppl 4), S130-S137. doi:10.1097/PHH.0000000000001492
8. Led transdisciplinary approaches to advancing the design of innovative implementation strategies using system dynamics computer modeling and simulation models (2005-prsent) with applications to coordinated community response in domestic violence, adolescent suicide, implementation of evidence-based practices in mental health service organizations, and most recently “long-tailed” approaches to reducing health disparities. This work addresses the specific problem that implementation strategies may be sensitive to risk and uncertainties in system structures that can lead to unintended consequences, especially in complex community interventions.
   1. **Hovmand, P. S.,** & Ford, D.N. (2009). Computer simulation of implementation strategies. In Rossetti, M.D., Hill, R. R., Johansson, B., Dunkin, A., and Ingalls, R.G. (Eds.), *Proceedings of 2009 Winter Simulation Conference*,3088-3098*.*
   2. **Hovmand, P. S**., Ford, D.N., Flom, I., & Kyriakakis, S. (2009). Victims arrested for domestic violence: unintended consequences of arrest policies. *System Dynamics Review*, 25(3), 161-181.
   3. **Hovmand, P. S.,** & Ford, D.N. (2009). Sequence and timing of three community interventions to domestic violence. *American Journal of Community Psychology, 44*(3-4), 261-272.
   4. **Hovmand, P. S.,** Calzada, E. J., Gulbas, L. E., Kim, S. Y., Chung, S., Kuhlberg, J., . . . Zayas, L. H. (2022). System Dynamics of Cognitive Vulnerabilities and Family Support Among Latina Children and Adolescents. Clinical Child and Family Psychology Review, 25(1), 131-149. doi:10.1007/s10567-022-00395-3
9. Developed and tested formal weak and strong definitions of mathematical equivalence between different computer and statistical modeling approaches including system dynamics feedback models, structural equation models, social and geographical networks, and individual/agent-based models for identifying latent causal models underlying numerical longitudinal and time series data.
   1. **Hovmand, P. S.** (2003). Analyzing dynamic systems: A comparison of structural equation modeling and system dynamics modeling. In B. H. Pugesek, A. Tomer, & A. v. Eye (Eds.), *Structural equation modeling: Applications in ecological and evolutionary biology* (pp. 212-234). New York: Cambridge University Press.
   2. **Hovmand, P. S.**, & Chalise, N. (2015). Simultaneous Linear Estimation Using Structural Equation Modeling. In H. Rahmandad, R. Oliva, & N. D. Osgood (Eds.), *Analytical Methods for Dynamic Modelers* (pp. 71-94). Cambridge, MA: The MIT Press.