Sara S. Metcalf

Professor of Geography, University at Buffalo

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Education:

UNIVERSITY OF ILLINOIS — Urbana-Champaign, IL
Ph.D. in Geography. — 2003-2007
Advisor: Bruce Hannon. Committee: Sara McLafferty, Lan Mu, Mark Paich, Jim Westervelt.
Thesis: *Simulating the social dynamics of spatial disparity through neighborhood network evolution*.

SANTA FE INSTITUTE — Santa Fe, NM
Complex Systems Summer School. — 2004
Projects: *Modeling ourselves: social selection and development in a substantially novel network;* and *A postmodern critique of complexity sciences*.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY — Cambridge, MA
M.S. degrees in Management and Chemical Engineering. — 1999-2001
Advisors: Charles Fine and Jefferson Tester. Siebel Scholar, Leaders for Manufacturing (LFM).
Thesis: *A system dynamics exploration of future automotive propulsion regimes.*

TEXAS A&M UNIVERSITY — College Station, TX
B.S. degrees in Chemical Engineering and Biochemistry. — 1993-1996
Magna cum Laude, University and Foundation Honors, Engineering Scholars Program (ESP).

Professional Experience:

UNIVERSITY AT BUFFALO — **Buffalo, NY**
- Professor of Geography — 2023 - present
- BEAMS Initiative Lead — 2025 - present
  - Institute for Artificial Intelligence and Data Science (IAD)
- Associate Professor of Geography — 2013 - 2023
- Assistant Professor of Geography — 2007 - 2013

UNIVERSITY OF ILLINOIS — **Urbana-Champaign, IL**
- GRA on NSF-HSD grant to study Ecological Boundary Setting — 2005 - 2007
- NSF GK-12 Teaching Fellow — 2004 - 2005
- GRA for LEAM (Land-use Evolution & impact Assessment Model) — 2003 - 2004

SIMLEARNING
- Consultant, modeling for business strategy — 2002 - 2003

UTC FUEL CELLS — **South Windsor, CT**
- Business and Technology Development — 2001 - 2002

GENERAL MOTORS — **Detroit, MI**
- Graduate Student Fellow, Strategy Support Center — 2000

INTEL CORPORATION — **Rio Rancho, NM**
- Process Engineer — 1997 - 1999

TEXAS A&M UNIVERSITY — **College Station, TX**
- Oceanography and Bioremediation Research — 1993 – 1996

Honors and Awards:

- Exemplary Mentorship Award, UB Pillar of Leadership 2026
- Outstanding Service Award, System Dynamics Society 2022
- Faculty Fellow and Proposal Finalist, UB Food Equity Ideas Lab 2017
- Reviewer of the Year, *American Journal of Public Health* 2012
- Dr. Nuala McGann Drescher Diversity award 2010
- UB Civic Engagement and Public Policy (CEPP) Research Fellowship, "Participatory Modeling for Community Agriculture," with Massachusetts Avenue Project 2010
- University Consortium for GIScience (UCGIS) Junior Faculty award 2009
- Dana Meadows award for best student paper, System Dynamics Society 2005
- Charles S. Alexander fellowship for women in geography 2005-2006
- NSF GK-12 teaching fellowship 2004-2005
- Siebel Scholar award for outstanding academics and leadership 2000
- MIT Leaders for Manufacturing (LFM) fellow 1999-2001
- Texas A&M University and Foundation Honors (magna cum laude) 1996
- Jameson Prize for outstanding essay in Women's Studies 1996
- GE Faculty of the Future research fellow 1995
- National Merit Semifinalist 1992
- Society of Women Engineers' certificate of merit (science and math) 1992

Professional Service:

University at Buffalo

- Faculty Senate Committee on Academic Freedom and Responsibility (CAFR)
  - Chair (2025 - 2026), Member (2023 - 2025)
- Faculty Senate Executive Committee (2023 - 2024)
- Faculty Senator (2011 - 2017, 2021 - 2025)
  - Ad hoc Committee on Faculty Engagement (2015)
- Department of Geography
  - Ad hoc Diversity Committee, Chair (2019 - 2020)
  - Graduate Committee (2020 - 2023)
- College of Arts and Sciences (CAS) PhD Excellence Initiative Curriculum and Teaching Committee (2019 - 2020)
- CAS Distinguished Visiting Scholars Program Committee (2022 - 2023)
- Steering Committee Member, Food Equity Ideas Lab
- External Advisory Board, Institute for Sustainable Transportation & Logistics

System Dynamics Society (SDS)

- Vice President Meetings (2021 - 2023)
- Community Service Awards Committee (2024 - 2028), Chair (2026)
- Publications Committee (2014 - 2023)
- Finance Committee (2023)
- Program Chair, 2020 International System Dynamics Conference
- Policy Council Member at Large (2019 - 2021)
- Society Programs Oversight Committee (2020 - 2023), Chair (2021 - 2023)
- Strengthening the Field Committee (2021 - 2023), Chair (2021 - 2022)

American Association of Geographers (AAG)

- Board Member, Urban Geography Specialty Group (2012 - 2014)

Courses Taught:

Currently taught

- Dynamic Modeling of Human and Environmental Systems (GEO 493/593)
- Transportation and Society (GEO 419/519)
- Urban Social Geography (GEO 367)

Previously taught

- Critical Urban Issues (GEO 633)
- Systems Science Methods for Geography Research (GEO 503)
- Introduction to Human Geography (GEO 102)

Research Projects:

UB Institute for Artificial Intelligence and Data Science (IAD)

- **Benchmarking and Evaluating AI for Modeling and Simulation (BEAMS).** Initiative Lead. The BEAMS Initiative engages the AI and modeling communities in devising tests for how well artificial intelligence and machine learning tools support the modeling process, so as to foster the development of more responsible and ethical tools. This open, interdisciplinary initiative involves collaboration among industry professionals and academics from different institutions. 2025-2027, renewable.

National Socio-Environmental Synthesis Center (SESYNC) Foundation Project

- **Putting People into Climate Models: A Multi-Model Approach to Integrating Human Behavior with Climate Change.** Co-organizer of working group led by Brian Beckage (University of Vermont) and Katherine Lacasse (University of Rhode Island). 2019-2022.

NIH(NIDCR) U56 Award DE027447 in Implementation Science

- **Implementing a Participatory, Multi-level Intervention to Improve Asian American Health.** Multiple Principal Investigator (MPI) of grant with Mary Northridge (NYU College of Dentistry) and Chau Trinh-Shevrin (NYU School of Medicine). NIH support was provided by the National Institute for Dental & Craniofacial Research (NIDCR). 2017-2019.

National Institute for Mathematical and Biological Synthesis (NIMBioS) &
National Socio-Environmental Synthesis Center (SESYNC) Foundation Project

- **Integrating Human Risk Perception of Global Climate Change into Dynamic Earth System Models.** Co-organizer of working group with Brian Beckage (University of Vermont), Louis Gross (University of Tennessee), and Asim Zia (University of Vermont). 2013-2018.

NIH(NIDCR/OBSSR) R01 Award DE023072 in Systems Science

- **Integrating Social and Systems Science Approaches to Promote Oral Health Equity.** Multiple Principal Investigator (MPI) of grant with Mary Northridge (NYU) and Carol Kunzel (Columbia University). NIH support provided by the Office of Behavioral Science & Social Research (OBSSR) and the National Institute for Dental & Craniofacial Research (NIDCR). 2012-2018.

NIH(NIDCR/OBSSR) R21 Award DE021187 in Systems Science

- **Leveraging Opportunities to Improve Oral Health in Older Adults: A System Dynamics Model for Developing and Prioritizing Interventions, Programs, and Policies.** PI of UB subaward to NYU (Mary Northridge, project PI). NIH support

from the Office of Behavioral Science & Social Research (OBSSR) and the National Institute for Dental & Craniofacial Research (NIDCR). 2010-2012.

NSF Award 0433165 in Human and Social Dynamics

- **Ecological Boundary-Setting in Mental and Geophysical Models**. PI of UB subaward to Georgia Tech (Bryan Norton, project PI). 2007-2008.

Publication Record

Google Scholar profile: https://bit.ly/SSMetcalfPubs

Refereed Journal Articles:

53. Metcalf, S., H.D. Palmer, and M.E. Northridge. "Using Participatory System Dynamics Approaches to Improve Community-based Oral Health Care Delivery: A Case Study of the *ElderSmile* Program." 2026. *Systems Research and Behavioral Science*. http://doi.org/10.1002/sres.70062

52. Metcalf, S., H.D. Palmer, and M.E. Northridge. "Multilevel Insights on Promoting Oral Health Equity for Older Adults." 2026. *Aging and Health Research* 6(2): 100280. https://doi.org/10.1016/j.ahr.2026.100280

51. Schoenberg, W., D. Girard, S. Chung, E. O'Neill, J. Velasquez, and S. Metcalf. 2026. "The Qualitative Engine: An Iterative AI Modeling Tool." *System Dynamics Review* 4(2): e70025. https://doi.org/10.1002/sdr.70025

50. Northridge, M.E., S. Metcalf, and R. Kaur. 2026. "Intergenerational Pathways to Oral Health: An Integrative Review." *Aging and Health Research* 6(1): 100273. https://doi.org/10.1016/j.ahr.2026.100273

49. Metcalf, S., L. Wallis, and M. Paich. 2025. "Notes from the Field: Practical Considerations for Agent-Based and Continuous Representations of System Dynamics." *Systems Research and Behavioral Science*. 42(6): 1753-1761. https://doi.org/10.1002/sres.3093

48. Sadjadpour, F., N. Hosseinichimeh, B. Pahel, and S. Metcalf. 2024. "Systems Mapping of Multilevel Factors Contributing to Dental Caries in Adolescents." *Frontiers in Oral Health* 4: 1285347. https://doi.org/10.3389/froh.2023.1285347

47. Porwol, L., S. Metcalf, J.B. Morrison, S.A. Chun, and L.F. Luna-Reyes. 2022. "Facilitating Virtual Conferences: Reflections and Lessons Learned in Two Global Communities." *Digital Government: Research and Practice.* 3(1): 1-12. https://doi.org/10.1145/3494676

46. Zhang, Q., S. Metcalf, H.D. Palmer, and M.E. Northridge. 2022. "Spatial Analysis of Chinese American Ethnic Enclaves and Community Health Indicators in New York City." *Frontiers in Public Health* 10. https://doi.org/10.3389/fpubh.2022.815169

45. Zhang, Q., S. Metcalf, H.D. Palmer, and M.E. Northridge. 2022. "Developing an Agent-based Model of Oral Healthcare Utilization by Chinese Americans in New York City." *Health and Place* 73: 102740. https://doi.org/10.1016/j.healthplace.2022.102740

44. Peterson, S., A. Cooke, and S. Metcalf. 2021. "Interrogating the 'Murder Centre of South Africa': The Spatial Distribution of Homicide Risk in Cape Town." *Geographical Analysis* 53(3): 499-510. https://dx.doi.org/10.1111/gean.12256

43. Northridge, M., Y. Wu, A. Troxel, D. Min, R. Liu, L. Liang, S. Metcalf, S. Seyedzadeh Sabounchi, and S. Yi. 2021. "Acceptability of a Community Health Worker Intervention to Improve the Oral Health of Older Chinese Americans: A Pilot Study." *Gerodontology* 38:117–122. https://dx.doi.org/10.1111/ger.12522

42. Yang, Y., S. Metcalf, and L. Mao. 2020. "Modeling Transit-assisted Hurricane Evacuation through Socio-Spatial Networks." *International Journal of Geographical Information Science* https://doi.org/10.1080/13658816.2020.1828590

41. Beckage, B., K. Lacasse, J. Winter, L. Gross, N. Fefferman, F. Hoffman, S. Metcalf, T. Franck, E. Carr, A. Zia, and A. Kinzig. 2020. "The Earth Has Humans, So Why Don't Our Climate Models?" *Climatic Change* 163:181–188 https://dx.doi.org/10.1007/s10584-020-02897-x

40. Yang, Y., L. Mao, and S. Metcalf. 2019. "Diffusion of Hurricane Evacuation Behavior Through a Home-Workplace Social Network: A Spatially Explicit Agent-Based Simulation Model." *Computers, Environment and Urban Systems* 74: 13-22. https://dx.doi.org/10.1016/j.compenvurbsys.2018.11.010

39. Northridge, M., B. Chakraborty, S. Mirzaei Salehabadi, S. Metcalf, C. Kunzel, A. Greenblatt, L. Borrell, B. Cheng, S. Marshall, and I. Lamster. 2018. "Does Medicaid Coverage Modify the Relationship Between Glycemic Status and Teeth Present in Older Adults?" *Journal of Health Care for the Poor and Underserved* 29(4): 1509-1528. https://dx.doi.org/10.1353/hpu.2018.0109

38. Kum, S., M. Northridge, and S. Metcalf. 2018. "Using Focus Groups to Design Systems Science Models that Promote Oral Health Equity." *BMC Oral Health* 18(1): 99-110. https://dx.doi.org/10.1186/s12903-018-0560-0

37. Jin, Z., M. Northridge, and S. Metcalf. 2018. "Modeling the Influence of Social Ties and Transportation Choice on Access to Oral Healthcare for Older Adults." *Applied Geography* 96: 66-76. https://dx.doi.org/10.1016/j.apgeog.2018.05.005

36. Tidball, K., S. Metcalf, T. Bain, and T. Elmqvist. 2018. Community-Led Reforestation: "Cultivating the Potential of Virtuous Cycles to Confer Resilience in Disaster Disrupted Social-Ecological Systems." *Sustainability Science* 13(3): 797-813. https://dx.doi.org/10.1007/s11625-017-0506-5

35. Zhang, Q., M. Northridge, Z. Jin, and S. Metcalf. 2018. "Modeling Accessibility of Screening and Treatment Facilities for Older Adults using Transportation Networks." *Applied Geography* 93: 64-75. https://dx.doi.org/10.1016/j.apgeog.2018.02.013

34. Northridge, M., S. Metcalf, S. Yi, Q. Zhang, X. Gu, and C. Trinh-Shevrin for the *Implementing a Participatory, Multi-level Intervention to Improve Asian American Health* Research Team. 2018. "A Protocol for a Feasibility and Acceptability Study of a Participatory, Multi-level, Dynamic Intervention in Urban Outreach Centers to Improve the Oral Health of Low-income Chinese Americans." *Frontiers in Public Health* 6: 29. https://dx.doi.org/10.3389/fpubh.2018.00029

33. Estrada, I., C. Kunzel, E. Schrimshaw, A. Greenblatt, S. Metcalf, and M. Northridge. 2018. "'Seniors Only Want Respect': Designing an Oral Health Program for Older Adults." *Special Care in Dentistry* 38(1): 3-12. https://dx.doi.org/10.1111/scd.12265

32. Beckage, B., L. Gross, K. Lacasse, E. Carr, S. Metcalf, J. Winter, P. Howe, N. Fefferman, T. Franck, A. Zia, A. Kinzig, and F. Hoffman. 2018. "Linking Models of Human Behaviour and Climate Alters Projected Climate Change." *Nature Climate Change* 8(1): 79-84. https://dx.doi.org/10.1038/s41558-017-0031-7

31. Chakraborty, B., M. Widener, S. Mirzaei Salehadabi, M. Northridge, S. Kum, Z. Jin, C. Kunzel, H. Palmer, and S. Metcalf. 2017. "Estimating Peer Density Effects on Oral Health for Community-based Older Adults." *BMC Oral Health* 17(1): 166-178. https://dx.doi.org/10.1186/s12903-017-0456-4

30. Northridge, M., A. Schenkel, S. Birenz, I. Estrada, S. Metcalf, and M. Wolff. 2017. "'You Get Beautiful Teeth Down There': Racial/Ethnic Minority Older Adults' Perspectives on Care at Dental Schools." *Journal of Dental Education* 81(11): 1273-1282. https://dx.doi.org/10.21815/JDE.017.085

29. Northridge, M., E. Schrimshaw, I. Estrada, A. Greenblatt, S. Metcalf, and C. Kunzel. 2017. "Intergenerational and Social Interventions to Improve Children's Oral Health." *Dental Clinics of North America* 61: 533-548. https://dx.doi.org/10.1016/j.cden.2017.02-003

28. Greenblatt, A., I. Estrada, E. Schrimshaw, S. Metcalf, C. Kunzel, and M. Northridge. 2017. "Acceptability of Chairside Screening for Racial/Ethnic Minority Older Adults: A Qualitative Study." *JDR Clinical & Translational Research* 2(4): 343-352. https://dx.doi.org/10.1177/2380084417716880

27. Northridge, M., M. Shedlin, E. Schrimshaw, I. Estrada, L. De La Cruz, R. Peralta, S. Birdsall, S. Metcalf, B. Chakraborty, and C. Kunzel. 2017. "Recruitment of Racial/Ethnic Minority Older Adults through Community Sites for Focus Group Discussions." *BMC Public Health* 17: 563-572. https://dx.doi.org/10.1186/s12889-017-4482-6

26. Northridge, M., I. Estrada, E. Schrimshaw, A. Greenblatt, S. Metcalf, and C. Kunzel. 2017. "Racial/Ethnic Minority Older Adults' Perspectives on Proposed Medicaid Reforms' Effects on Dental Care Access." *American Journal of Public Health* 107(S1): S65-S70. https://dx.doi.org/10.2105/AJPH.2016.303640

25. Northridge, M. and S. Metcalf. 2016. "Enhancing Implementation Science by Applying Best Principles of Systems Science." *Health Research Policy and Systems* 14: 74. https://dx.doi.org/10.1186/s12961-016-0146-8

24. Northridge, M., S. Kum, B. Chakraborty, A. Port Greenblatt, S. Marshall, H. Wang, C. Kunzel, and S. Metcalf. 2016. "Third Places for Health Promotion with Older Adults: Using the Consolidated Framework for Implementation Research to Enhance Program Implementation and Evaluation." *Journal of Urban Health* 93(5): 851-870. doi: https://dx.doi.org/10.1007/s11524-016-0070-9

23. O'Sullivan, D., T. Evans, S. Manson, S. Metcalf, A. Ligmann-Zielinska, and C. Bone. 2016. "Strategic Directions for Agent-based Modeling: Avoiding the YAAWN Syndrome." *Journal of Land Use Science* 11(2): 177-187. https://dx.doi.org/10.1080/1747423X.2015.1030463

22. Kum, S., H. Wang, P. Wang, Z. Jin, L. De La Cruz, M. Northridge, C. Kunzel, S. Marshall, and S. Metcalf. 2015. "The ElderSmile TimeMap: Benefits of Connecting Statistics with Time and Place." *American Journal of Public Health* 105(9): 1748-1750. https://dx.doi.org/10.2105/AJPH.2015.302730

21. Metcalf, S., S. Birenz, C. Kunzel, H. Wang, E. Schrimshaw, S. Marshall, and M. Northridge. 2015. "The Impact of Medicaid Expansion on Oral Health Equity for Older Adults: A Systems Perspective." *Journal of the California Dental Association* 43(7): 369-377. https://www.cda.org/Portals/0/journal/journal_072015.pdf

20. Marshall, S., E. Schrimshaw, C. Kunzel, S. Metcalf, A. Port Greenblatt, L. De La Cruz, and M. Northridge. 2015. "Evidence from ElderSmile for Diabetes and Hypertension Screening in Oral Health Programs." *Journal of the California Dental Association* 43(7): 379-387. https://www.cda.org/Portals/0/journal/journal_072015.pdf

19. Northridge, M., C. Yu, B. Chakraborty, A. Port, J. Mark, C. Golembeski, B. Cheng, C. Kunzel, S. Metcalf, S. Marshall, and I. Lamster. 2015. "A Community-based Oral Public Health Approach to Promote Health Equity." *American Journal of Public Health* 105(S3): S459-S465. https://dx.doi.org/10.2105/AJPH.2015.302562

18. Zia, A., B. Norton, S. Metcalf, P. Hirsch, and B. Hannon. 2014. "Spatial Discounting, Place Attachment, and Environmental Concern: Toward an Ambit-based Theory of Sense of Place." *Journal of Environmental Psychology* 40: 283-295. https://dx.doi.org/10.1016/j.jenvp.2014.08.001

17. Widener, M., M. Northridge, B. Chakraborty, I. Lamster, S. Kum, and S. Metcalf. 2014. "Patterns of Chronic Conditions in Older Adults: Exploratory Spatial Findings from the *ElderSmile* Program." *American Journal of Preventive Medicine* 46(6): 643-648. https://dx.doi.org/10.1016/j.amepre.2014.01.013

16. Metcalf, S. 2014. "Modeling Social Ties and Household Mobility." *Annals of the Association of American Geographers* 104(1): 40-59. https://dx.doi.org/10.1080/00045608.2013.846152

15. Metcalf, S., M. Northridge, M. Widener, B. Chakraborty, S. Marshall, and I. Lamster. 2013. "Modeling Social Dimensions of Oral Health among Older Adults in Urban Environments." *Health Education and Behavior* 40(1S): 63S-73S. https://dx.doi.org/10.1177/1090198113493781

14. Widener, M., S. Metcalf and Y. Bar-Yam. 2013. "Agent-based Modeling of Policies to Improve Urban Food Access for Low-income Populations." *Applied Geography* 40: 1-10. https://dx.doi.org/10.1016/j.apgeog.2013.01.003

13. Svendsen, E., M. Northridge and S. Metcalf. 2012. "Integrating Grey and Green Infrastructure to Improve the Health and Well-being of Urban Populations." *Cities and the Environment* (CATE) 5(1). https://digitalcommons.lmu.edu/cate/vol5/iss1/3

12. Widener, M., S. Metcalf and Y. Bar-Yam. 2012. "Developing a Mobile Produce Distribution System for Low-Income Urban Residents in Food Deserts." *Journal of Urban Health* 89(5): 733-745. https://dx.doi.org/10.1007/s11524-012-9677-7

11. Widener, M., M. Horner and S. Metcalf. 2012. "Simulating the Effects of Social Networks on a Population's Hurricane Evacuation Participation." *Journal of Geographical Systems* 15(2): 193-209. https://dx.doi.org/10.1007/s10109-012-0170-3

10. Widener, M., Y. Bar-Yam, A. Gros, S. Metcalf and Y. Bar-Yam. 2012. "Modeling Policy and Agricultural Decisions in Afghanistan." *GeoJournal* 78(4):581-599. https://dx.doi.org/10.1007/s10708-012-9453-y

9. Widener, M., S. Metcalf, M. Northridge, B. Chakraborty, S. Marshall and I. Lamster. 2012. "Exploring the Role of Peer Density in the Self-reported Oral Health Outcomes of Older Adults: A Kernel Density Based Approach." *Health and Place* 18(4): 782-788. https://dx.doi.org/10.1016/j.healthplace.2012.04.004

8. Northridge, M., B. Chakraborty, C. Kunzel, S. Metcalf, S. Marshall and I. Lamster. 2012. "What Contributes to Self-rated Oral Health among Community-dwelling Older Adults? Findings from the ElderSmile Program." *Journal of Public Health Dentistry* 72(3): 235-245. https://dx.doi.org/10.1111/j.1752-7325.2012.00313.x

7. BenDor, T., S. Metcalf and M. Paich. 2011. "The Dynamics of Brownfield Redevelopment." *Sustainability* 3(6): 914-936. https://dx.doi.org/10.3390/su3060914

6. Widener, M., S. Metcalf and Y. Bar-Yam. 2011. "Dynamic Urban Food Environments: A Temporal Analysis of Access to Healthy Foods." *American Journal of Preventive Medicine* 41(4): 439-441. https://dx.doi.org/10.1016/j.amepre.2011.06.034

5. Metcalf, S. and M. Widener. 2011. "Growing Buffalo's Capacity for Local Food: A Systems Framework for Sustainable Agriculture." *Applied Geography* 31(4): 1242-1251. https://dx.doi.org/10.1016/j.apgeog.2011.01.008

4. Metcalf, S., E. Wheeler, T. BenDor, K. Lubinski and B. Hannon. 2010. "Sharing the Floodplain: Mediated Modeling for Environmental Management." *Environmental Modelling and Software* 25(11): 1282-1290. https://dx.doi.org/10.1016/j.envsoft.2008.11.009

3. Metcalf, S. 2008. "Modeling Boundaries of Concern among Conflicting Stakeholders." *Leadership and Management in Engineering* 8(4): 255-262. https://dx.doi.org/10.1061/(ASCE)1532-6748(2008)8:4(255)

2. BenDor, T. and S. Metcalf. 2006. "The Spatial Dynamics of Invasive Species Spread." *System Dynamics Review* 22(1): 27-50. https://dx.doi.org/10.1002/sdr.328

1. BenDor, T., S. Metcalf, L. Fontenot, B. Sangunett and B. Hannon. 2006. "Modeling the Spread of the Emerald Ash Borer." *Ecological Modelling* 197(1-2): 221-236. https://dx.doi.org/10.1016/j.ecolmodel.2006.03.003

Book Chapters:

6. Yi, S., M. Lee, Y. Li, R. Russo, and S. Metcalf. 2022. "Integrating Systems Science with Community Partnered Research to Serve Asian American Communities." Chapter 6 in S. Kwon, C. Trinh-Shevrin, N. Islam, and S. Yi. [eds.], *Applied Population Health Approaches for Asian American Communities*. Wiley. pp. 109-120.

5. Metcalf, S., H. Palmer, Q. Zhang, and M. Northridge. 2021. "Modeling Dissemination of Health Information and Beliefs in Urban Social Networks." Chapter 18 in Z. Neal and C. Rozenblat [eds.], *The Handbook of Cities and Networks.* Edward Elgar Publishers. pp.366-388.

4. Metcalf, S., E. Svendsen, L. Knigge, H. Wang, H. Palmer, and M. Northridge. 2016. "Urban Greening as a Social Movement." Ch. 15 of *Part 3. Socio-Political Change & Adaptation* in J. Gatrell, R. Jensen, N. Hoalst Pullen, and M. Patterson [eds.], *Urban Sustainability: Policy and Praxis*. Springer series on Geotechnologies and the Environment, vol. 14. pp. 233-248.

3. Knigge, L., J. Brimlow, and S. Metcalf. 2016. "Food Hubs: Connecting Small Farmers to Local and Regional Markets." Ch. 11 of *Part 2. Economic Change, Industry, & Sustainable Local Alternatives* in J. Gatrell, R. Jensen, N. Hoalst Pullen, and M. Patterson [eds.], *Urban Sustainability: Policy and Praxis*. Springer series on Geotechnologies and the Environment, vol. 14. pp. 169-184.

2. Metcalf, S. 2012. "A Systems Modeling Framework for the Role of Agriculture in a Sustainable Urban Ecosystem." Chapter 2 in in N. Reid, J. Gatrell, and P. Ross [eds.], *Local Food Systems in Old Industrial Regions*. London, UK: Ashgate Press. pp. 6-28.

1. Bradbury, H. with S. Simington, S. Metcalf, A. Burke, C. Grey, D. Winslow, S. Severn, C. Page, D. Kalule, C. Bragdon, S. Schley, C. Greener, S. Boughan, J. LaValle. 2004. "Webs Rather than Kevlar: Designing Organizational Systems." Chapter 14 in R.J. Boland and F. Collopy [eds.], *Managing as Designing*. Stanford, CA: Stanford University Press. pp. 113-120.

Editorials and Invited Contributions:

10. Metcalf, S. and S. Peterson. 2018. Simulation Modeling. In J. Wilson [ed.], *Geographic Information Science & Technology Body of Knowledge*. University Consortium for Geographic Information Science. https://dx.doi.org/10.22224/gistbok/2018.4.2 https://gistbok.ucgis.org/bok-topics/simulation-modeling

9. Metcalf, S. and M. Northridge. 2017. Engaging in Systems Science to Promote Health Equity. *SAGE Research Methods Cases*. https://dx.doi.org/10.4135/9781526410993

8. Metcalf, S. and S. Kum. 2016. "System Dynamics." In N. Castree, M. Goodchild, W. Liu, A. Kobayashi, R. Marston, and D. Richardson [eds.], *International Encyclopedia of Geography: People, the Earth, Environment, and Technology*. Wiley-Blackwell and the American Association of Geographers. https://dx.doi.org/10.1002/9781118786352.wbieg0936

7. Svendsen, E., G. Baine, M. Northridge, L. Campbell, and S. Metcalf. 2014. "Recognizing Resilience." *American Journal of Public Health* 104(4): 581-583. https://dx.doi.org/10.2105/AJPH.2013.301848

6. Metcalf, S. and L. Knigge. 2014. Sustainable Agriculture. In B. Warf [ed.], *Oxford Bibliographies Online: Geography*. New York: Oxford University Press. https://www.oxfordbibliographies.com/view/document/obo-9780199874002/obo-9780199874002-0042.xml

5. Metcalf, S. 2012. Book review of "Reconnecting Markets: Innovative Global Practices in Connecting Small-Scale Producers with Dynamic Food Markets," edited by E. Bienabe, J. Berdegue, L. Peppelenbos, and J. Belt. *Economic Development Quarterly* 26(4): 373-374. https://dx.doi.org/10.1177/0891242412457484

4. Metcalf, S., M. Northridge and I. Lamster. 2011. "A Systems Perspective for Dental Health in Older Adults." *American Journal of Public Health* 101(10): 1820-1823. https://dx.doi.org/10.2105/AJPH.2011.300321

3. Northridge, M., M. Glick, S. Metcalf and D. Shelley. 2011. "Public Health Support for the Health Home Model." *American Journal of Public Health* 101(10): 1818-1820. https://dx.doi.org/10.2105/AJPH.2011.300309

2. Metcalf, S. 2010. "Models and Modeling." Entry in B. Warf [ed.], *Encyclopedia of Geography*. Thousand Oaks, CA: Sage Publications.

1. Bradbury, H. with S. Simington, S. Metcalf, A. Burke, C. Grey, D. Winslow, S. Severn, C. Page, D. Kalule, C. Bragdon, S. Schley, C. Greener, S. Boughan, J. LaValle. 2003. "Webs not Kevlar: Designing Sustainable Organizations." *Reflections: Journal for the Society for Organizational Learning*. Special Issue on Women's Leadership. Summer 4(4): 65-68.

Refereed Proceedings:

Schoenberg, W., D. Girard, S. Chung, E. O'Neill, J. Velasquez, and S. Metcalf. "How Well Can AI Build SD Models?" 43rd International System Dynamics Conference. Boston, MA: August 3-7, 2025.

Dehghani Saryazdi, M., A. Arjmand, and S. Metcalf. "Optimizing Customer Orders with a Dynamic Balanced Scorecard Model." 43rd International System Dynamics Conference. Boston, MA: August 3-7, 2025.

Eberlein, R., W. Schoenberg, and S. Metcalf. "Evolving Program Construction at the System Dynamics Conference." 42nd International System Dynamics Conference. Bergen, Norway: August 4-8, 2024.

Metcalf, S., M. Paich, and L. Wallis. "Notes from the Field: Practical Considerations for Agent-Based and Continuous Representations of System Dynamics." 41st International System Dynamics Conference. Chicago, IL: July 23-27, 2023.

Sadjadpour, F., N. Hosseinichimeh, B. Pahel, and S. Metcalf. "Systematic Mapping of Multilevel Factors Contributing to Dental Caries in Adolescents." 41st International System Dynamics Conference. Chicago, IL: July 23-27, 2023.

Eberlein, R., J. Ansah, R. Niles, S. Metcalf, and J. Sterman. "What can we learn from that? Recognizing the contributions of practitioners, researchers, and champions we have recently lost." 40th International System Dynamics Conference. Frankfurt, Germany: July 18-22, 2022.

Metcalf, S., H. Palmer, Q. Zhang, and M. Northridge. "Modeling Information Processing within Social Networks: Understanding the Persistence of Contrarian Health Beliefs." 38th International Conference of the System Dynamics Society. Virtual Bergen, Norway: July 19-24, 2020.

Metcalf, S., M. Paich, and M. Northridge. "Integrating participatory and qualitative insights into dynamic models of oral health disparities." 37th International Conference of the System Dynamics Society. Albuquerque, New Mexico: July 19-23, 2019.

Beckage, B., L. Gross, K. Lacasse, E. Carr, S. Metcalf, J. Winter, P. Howe, N. Fefferman, T. Franck, A. Zia, A. Kinzig, and F. Hoffman. "Linking Models of Human Behavior and Climate Alters Projected Climate Change." Abstract GC21A-05. Presented at the 2018 American Geophysical Union (AGU) Fall Meeting. Washington, DC: December 10-14, 2018.

Beckage, B., L. Gross, K. Lacasse, E. Carr, S. Metcalf, J. Winter, P. Howe, N. Fefferman, T. Franck, A. Zia, A. Kinzig, and F. Hoffman. 2018. "Modeling the Importance of Spatial Discordance in Greenhouse Gas Emissions and Climate Impacts on Future Climate Change using a Coupled Climate and Social Model." 36th International System Dynamics Conference. Rekjavik, Iceland: System Dynamics Society.

Zia, A., M. Widener, S. Metcalf, and C. Koliba. 2017. "Modeling Voting Decisions in Governance Networks for Agents with Heterogeneous Mental Models and Alternate Network Structures." *Proceedings of the annual conference of the Computational Social Science Society of the Americas*. Santa Fe, NM: Computational Social Science (CSS) Society of the Americas.

Wang, H., M. Northridge, C. Kunzel, Q. Zhang, S. Kum, J. Gilbert, Z. Jin, and S. Metcalf. 2016. "Modeling Social Capital as Dynamic Networks to Promote Access to Oral Healthcare." *Lecture Notes in Computer Science* Volume 9708, Chapter 12. Washington, DC: International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS). https://dx.doi.org/10.1007/978-3-319-39931-7_12

Kum, S., H. Wang, Z. Jin, W. Xu, J. Mark, M. Northridge, C. Kunzel, S. Marshall, and S. Metcalf. 2015. "Boundary Objects for Group Model Building to Explore Oral Health Equity." *Proceedings of the 33rd International Conference of the System Dynamics Society*. Cambridge, MA: System Dynamics Society.

Metcalf, S., H. Wang, S. Kum, Z. Jin, P. Wang, M. Widener, C. Kunzel, S. Marshall, and M. Northridge. 2013. "Modeling Social Factors of Oral Health Equity for Older Adults." Extended abstract for poster in R. Pasupathy, S. Kim, A. Tolk, R. Hill & M. Kuhl (Eds.), *Proceedings of the* 2013 *Winter Simulation Conference*, 3994-3995. Washington, DC: Informs Simulation Society. https://informs-sim.org/wsc13papers/includes/files/389.pdf

Widener, M., M. Horner and S. Metcalf. 2012. "Simulating the Effects of Social Networks on People's Hurricane Evacuation Rates." Proceedings of the 91st Annual Meeting of the TRB, *Transportation: Putting Innovation and People to Work*. Washington, DC: Transportation Research Board.

Metcalf, S., M. Widener, M. Northridge, M. Paich, S. Marshall and I. Lamster. 2011. "Modeling the Dynamics of Dental Health among Older Adults." *Proceedings of the 29th International Conference of the System Dynamics Society*. Washington, DC: System Dynamics Society. https://proceedings.systemdynamics.org/2011/proceed/papers/P1307.pdf

Widener, M., S. Metcalf and Y. Bar-Yam. 2011. "Modeling Food Preference within Urban Environments." In *International Conference on Complex Systems*. Quincy, MA: New England Complex Systems Institute (NECSI).

Zia, A., C. Koliba, S. Metcalf, M. Widener and J. Sheade. 2011. "Agent Based Models of Cross-Jurisdictional Governance Networks: Simulating the Emergence of Project Prioritization Patterns Under Alternate Policy Regimes and Network Structures." In *COMPACT Work: Challenges Of Making Public Administration and Complexity Theory Work*. Rotterdam, the Netherlands: The American Society for Public Administration (ASPA), Section on Complexity and Network Studies (SCNS), and Erasmus University Rotterdam, research group Governance of Complex Systems (GOCS).

Metcalf, S. 2010. "Agent-based Simulation of Intra-urban Social Network Structures and Household Mobility." In *Getting to Scale: Planning in Multi-Scale, Functionally Integrated Environments*. Minneapolis, MN: Association of Collegiate Schools of Planning (ACSP).

Zia, A., S. Metcalf, B. Norton, P. Hirsch and B. Hannon. 2010. "An Ambit Base for Sense of Place: Where We (C)are?" In *Getting to Scale: Planning in Multi-Scale, Functionally Integrated Environments*. Minneapolis, MN: Association of Collegiate Schools of Planning (ACSP).

Metcalf, S., M. Widener and J. Baker. 2010. "A Systems Modeling Framework for Sustainable Urban Agriculture: Benchmarking Buffalo." In *Local Food Systems in Old Industrial Regions*. Toledo, OH: International Geographical Union (IGU) Commission on the Dynamics of Economic Spaces.

Metcalf, S. and M. Paich. 2005. "Spatial Dynamics of Social Network Evolution." *Proceedings of the 23rd International Conference of the System Dynamics Society*. Boston, MA: System Dynamics Society. https://proceedings.systemdynamics.org/2005/proceed/papers/METCA487.pdf

BenDor, T., S. Metcalf, L. Fontenot and B. Sangunett. 2005. "A Decision Support System for Emerald Ash Borer Eradication Using Spatial-Dynamic Modeling." *Proceedings of the 23rd International Conference of the System Dynamics Society*. Boston, MA: System Dynamics Society. https://proceedings.systemdynamics.org/2005/proceed/papers/BENDO192.pdf

BenDor, T. and S. Metcalf. 2005. "Conceptual Modeling and Dynamic Simulation of Brownfield Redevelopment." *Proceedings of the 23rd International Conference of the System Dynamics Society*. Boston, MA: System Dynamics Society. https://proceedings.systemdynamics.org/2005/proceed/papers/BENDO191.pdf

BenDor, T., S. Metcalf, V.G. Pallathucheril and B. Hannon. 2005. "The Spread of the Emerald Ash Borer: Modeling the Impacts of Changing Land Use Patterns." In *Beyond the City Beautiful*. Kansas City, MO: Association of Collegiate Schools of Planning (ACSP).

Reports and Non-Refereed Proceedings:

Members of the AI in SD Education Task Force: Auping, W., K. Chichakly, D. Fisher, N. Hosseinichimeh, B. Kopainsky, R. MacDonald, S. Metcalf, W. Schoenberg, P. Steinmann, and R. Zaini. 2025. "Using Artificial Intelligence in System Dynamics Education." White Paper of the AI in SD Education Task Force Version 2025.09. System Dynamics Society.

Metcalf, S., J.B. Morrison, and E. Rouwette. 2021. "Report to the Policy Council of the System Dynamics Society from the ISDC 2020 Conference Organizers." Virtual Bergen, Norway: System Dynamics Society.

Ford, D., S. Metcalf, K. Stave, S. Howick, and L. Malczynski. 2016. "System Dynamics Society Publications Strategy." Report of the Publications Strategy Development Team to the Policy Council of the System Dynamics Society. Albany, NY: System Dynamics Society.

Metcalf, S. and M. Northridge. 2016. "Systems Science Introductory Module." New York, NY: NYU College of Dentistry.

Widener, M., Y. Bar-Yam, A. Gros, S. Metcalf and Y. Bar-Yam. 2011. "Modeling Policy and Agricultural Decisions in Afghanistan." arXiv:1111.5351. NECSI Report 2011-11-02. Cambridge, MA: New England Complex Systems Institute.

Bradbury, H., S. Metcalf and S. Schley. 2006. "When Isis Flies: Women Leading Sustainability Through Learning and Intelligent Connection." *Proceedings of the First International Women Leading Sustainability Dialogue*. Portland, OR: SoL Sustainability Consortium.

Metcalf, S. 2005. "Observer's Report." *Proceedings of Confluence I: Seeking Common Ground for Floodplain Functionality and Development.* Dubuque, IA: The Nature Conservancy.

Metcalf, S. and J. Clemens. 2005. "After Santa Fe: Updated Connections of a Geographically Dispersed Social Network." Followup study with participants of the 2004 Complex Systems Summer School. Santa Fe, NM: Santa Fe Institute.

Metcalf, S. and J. Clemens. 2004. "Modeling Ourselves: Social Selection and Development in a Substantially Novel Network." *Proceedings of the 2004 Complex Systems Summer School*. Santa Fe, NM: Santa Fe Institute.

Champion, B., M. Rodriguez, J. Blakeslee and S. Metcalf. 2004. "A Postmodern Critique of Complexity Sciences." *Proceedings of the 2004 Complex Systems Summer School*. Santa Fe, NM: Santa Fe Institute.

Metcalf, S. 2004. "LEAM Social Model." Report of the Land-use Evolution and impact Assessment Model. St. Louis, MO: East-West Gateway.

Invited Presentations, Panels, and Workshops:

Metcalf, S. The Impact of Mark Paich. Presented as part of the plenary address, "What can we learn from that? Recognizing the contributions of practitioners, researchers, and champions we have recently lost." 40th International System Dynamics Conference. Frankfurt, Germany: July 21, 2022.

Metcalf, S. and A. Crooks. "Agent-Based Modeling Tutorial and Workshop." Computational Data Science and Engineering (CDSE) days. University at Buffalo. Buffalo, NY: March 30, 2021. https://youtu.be/clPu6wMuLfg

International panel organized and hosted by Porwal, L. "Broken Internet Symposium." The COMPACT Project. January 21, 2021.

Metcalf, S. "Leveraging Systems Science to Model Health Beliefs and Behaviors." Closing keynote address. GeoHealth Network Conference: Building Capacity for Health Geography. University of Toronto. Toronto, ON: April 30, 2019.

Behdad, S., M. Bohm, S. Metcalf, L. Mu, T. Pham, E. Thomas, and S. Muldoon (moderator). Panel on "Building Sustainable Solutions." Women in STEM Summit, University at Buffalo. Buffalo, NY: April 18, 2018.

Freudenheim, J., S. Metcalf, S. Neelamegham, L. Epstein, and L. Bian (moderator). NIH panel hosted by the National Center for Geographic Information and Analysis, and the Office of Research Advancement, University at Buffalo. Buffalo, NY: August 24, 2015.

Metcalf, S. "Qualitative Modeling in Systems Science." Invited talk at the NYU Center for Drug Use and HIV Research. New York, NY: September 18, 2014.

Ligmann-Zielinska, A., C. Bone, L. Fernandez, M. Zellner, S. Metcalf, D. Brown, and D. O'Sullivan (discussant). Panel on "Learning from Models" as part of the Land Systems Science Symposium. 109th Annual Meeting of the Association of American Geographers. Los Angeles, CA: April 9-13, 2013.

Metcalf, S. "Agent-Based System Dynamics: Hybrid Models of Urban Health." UB Applied Mathematics Seminar Series. Buffalo, NY: February 26, 2013.

Metcalf, S. "Buffalo's Local Food and Urban Agriculture Movements." UB Undergraduate Academies. Buffalo, NY: October 4, 2012.

Metcalf, S. "Integrating the Social and Spatial Dynamics of Older Adults' Participation in an Oral Health Outreach Program." Guest lecturer in the System Dynamics track at the 2012 Institute on Systems Science and Health (ISSH). Social System Design Lab, Brown School of Social Work. Washington University. St. Louis, MO: June 14, 2012.

Metcalf, S. "The Role of Urban Agriculture in a Local Food System." Invited talk at the Research Roundtable panel on *Rebuilding Community Food Systems: Opportunities for Multidisciplinary Research*, organized by S. Raja with S. Robert, L. Epstein and M. Conard during the Buffalo Food Policy Summit. Buffalo, NY: September 21, 2011.

Metcalf, S. "Modeling Social Structures to Support Healthy Aging." Invited talk for *Understanding Social Determinants of Health and Reducing Health Inequities*. Third Annual Workshop on Dynamic Modeling for Health Policy. University of Saskatchewan. Saskatoon, Saskatchewan, Canada: July 18-20, 2011.

Metcalf, S. "Modeling the Local Food Movement: A Civic Engagement with the Massachusetts Avenue Project (MAP)." UB Civic Engagement and Public Policy (CEPP) research fellowship presentation with D. Picard, S. Raja and L. Schneekloth as a discussion panel. Buffalo, NY: November 16, 2010.

Metcalf, S. "The Treason of Images and the Radical Non-Innocence of 'Just Looking.'" Invited talk and panel session at the *Representing Reality* conference for GIS-IGERT participants. Buffalo, NY: May 15, 2010.

Dsouza, E., M. Stevens, J. Stevens, E. Sharkey and S. Metcalf. "Urban Agriculture." Panel session with Massachusetts Avenue Project and the Wilson Street Urban Farm at the UB *Power Shift* conference for engaged student citizenship and action to address climate change. Buffalo, NY: April 18, 2010.

Metcalf, S. "An Agent-Based Exploration of Social Influence on Household Mobility." Civil Engineering Seminar Series, University of Toronto. Toronto, Ontario: March 12, 2010.

Metcalf, S. "Systems Modeling for Sustainable Cities." UB Environmental Engineering Seminar Series. Buffalo, NY: December 4, 2009.

Metcalf, S. "Boxes, Bodies, and Botany: Building Agents with Stock-Flow Structures in Models of Human-Environment Interaction." Spatial Analysis Seminar Series, Department of Geography, McMaster University. Hamilton, Ontario, Canada: November 6, 2009.

Metcalf, S. "Social Interaction and Shifts Toward Sustainable Transportation." Invited talk at the Workshop on *Frontiers in Transportation: Social Interactions*. Niagara-on-the-Lake, Ontario, Canada: August 27-29, 2009.

Metcalf, S. "Ecological Boundary-Setting in Mental and Geophysical Models." University at Buffalo (UB) GIS-IGERT Seminar Series. Buffalo, NY: February 8, 2008.

Metcalf, S. "Networks and Neighborhoods." MIT Sloan Operations Management and System Dynamics Seminar Series. Cambridge, MA: March 13, 2006.

BenDor, T. and S. Metcalf. "A Decision Support System for Emerald Ash Borer Eradication Using Spatial-Dynamic Modeling." Invited plenary presentation at the 23rd International Conference of the System Dynamics Society. Boston, MA: July 17-21, 2005.

Borshchev, A., N. Osgood, G. McDonnell, M. Paich, H. Rahmandad, M. Heffernan, S. Metcalf, and C. Johnson. "Agent Based Modeling: Why Bother?" Panel workshop at the 23rd International Conference of the System Dynamics Society. Boston, MA: July 17-21, 2005.

Metcalf, S. "Champions of Sustainability." Plenary panel conversation at the SoL Forum for Business Innovation in Sustainability. Dearborn, MI: October 11-14, 2004.

Metcalf, S. with H. Bradbury and S. Schley. "Women Leading Sustainability." Meeting at the SoL Forum for Business Innovation in Sustainability. Dearborn, MI: October 11-14, 2004.

Bradbury, H., S. Metcalf and S. Schley. "Women Leading Sustainability." Concurrent conversation at the SoL Forum for Business Innovation in Sustainability. Dearborn, MI: October 11-14, 2004.

Metcalf, S. "Women Leading Sustainability." Facilitated dialogue at the *SoL Sustainability Consortium*. Albany, NY: April 13-15, 2004.

Metcalf, S. "Future Propulsion Regimes: Thinking About 'Green' Powertrain Technologies in an Uncertain World." *International Motor Vehicle Program (IMVP)*. Cambridge, MA: September 29-30, 2000.

Conference Presentations:

Palmer, H. and S. Metcalf. "Distributional Consequences of International Trade Exposure." Northeast Political Science Association. Boston, MA: November 14-16, 2024.

Sadjadpour, F., N. Hosseinichimeh, B. Pahel, and S. Metcalf. "Systematic Mapping of Multilevel Factors Contributing to Dental Caries in Adolescents." 41st International System Dynamics Conference. Chicago, IL: July 23-27, 2023.

Metcalf, S., Q. Zhang, and H. Palmer. "A Dynamic Model of the Distributional Consequences of International Trade Exposure." 39th International System Dynamics Conference. Virtual Chicago, Illinois: July 26-30, 2021.

Metcalf, S., H. Palmer, Q. Zhang, and M. Northridge. "Modeling Information Processing within Social Networks: Understanding the Persistence of Contrarian Health Beliefs." 38th International System Dynamics Conference. Virtual Bergen, Norway: July 19-24, 2020.

Metcalf, S., H. Palmer, Q. Zhang, and M. Northridge. "An Agent-based Model of Information Dissemination and Belief Formation in Social Networks of Urban Ethnic Minority Groups." 37th International System Dynamics Conference. Albuquerque, NM: System Dynamics Society. Albuquerque, New Mexico: July 19-23, 2019.

Metcalf, S., M. Paich, and M. Northridge. "Integrating participatory and qualitative insights into dynamic models of oral health disparities." 37th International System Dynamics Conference. Albuquerque, New Mexico: July 19-23, 2019.

Metcalf, S., H. Palmer, Q. Zhang, and M. Northridge. Modeling Dissemination of Health Information and Beliefs in Urban Social Networks. 115th Annual Meeting of the American Association of Geographers. Washington, DC: April 3-7, 2019.

Jin, Z., M. Northridge, and S. Metcalf. "Modeling Effects of Patients' Cumulative Experiences with Dental Care on Future Care-Seeking Behaviors." 114th Annual Meeting of the American Association of Geographers. New Orleans, LA: April 10-15, 2018.

Gilbert, J., M. Northridge, and S. Metcalf. "Using Qualitative Data to Develop an Agent-Based Model of Oral Health Care for Racial/Ethnic Minority Older Adults." 114th Annual Meeting of the American Association of Geographers. New Orleans, LA: April 10-15, 2018.

Zhang, Q., M. Northridge, S. Yi, and S. Metcalf. "Modeling Social Factors to Promote Oral Health Equity." Annual Meeting of the Middle States Division of the American Association of Geographers. Geneseo, NY: October 20-21, 2017.

Metcalf, S., L. Knigge, E. Svendsen, H. Palmer, H. Wang, and M. Northridge. "An Integrated Approach to Modeling Adolescent Engagement with Environmental Stewardship Programs." 113th Annual Meeting of the American Association of Geographers. Boston, MA: April 5-9, 2017.

Gilbert, J. and S. Metcalf. "Modeling the Social Dynamics of Community Gardens." 113th Annual Meeting of the American Association of Geographers. Boston, MA: April 5-9, 2017.

Jin, Z. and S. Metcalf. "Developing Ontology for Agent-Based Modeling." 113th Annual Meeting of the American Association of Geographers. Boston, MA: April 5-9, 2017.

Kum, S., M. Northridge, and S. Metcalf. "A Qualitative Systems Science Approach to Agent-based Model Validation." 113th Annual Meeting of the American Association of Geographers. Boston, MA: April 5-9, 2017.

Zhang, Q., J. Gilbert, Z. Jin, M. Northridge, H. Wang, C. Kunzel, and S. Metcalf. "Modeling the Dynamics of Oral Health Disparities in Aging Adult Populations." 113th Annual Meeting of the American Association of Geographers. Boston, MA: April 5-9, 2017.

Jin, Z., J. Gilbert, S. Kum, Q. Zhang, H. Wang, C. Kunzel, M. Northridge, and S. Metcalf. "Modeling Multi-Scalar Factors of Oral Health Equity for Older Adults." 112th Annual Meeting of the American Association of Geographers. San Francisco, CA: March 29 - April 2, 2016.

Zhang, Q. and S. Metcalf. "Modeling the Accessibility of Healthcare Facilities to Older Adults in Urban Areas." 112th Annual Meeting of the American Association of Geographers. San Francisco, CA: March 29 - April 2, 2016.

Zia, A., N. Fefferman, P. Howe, S. Metcalf, T. Franck, K. Lacasse, F. Hoffman, J. Winter, A. Schlosser, B. Beckage, and L. Gross. "Modeling the Effects of Heterogeneous Climate Change Risk Perceptions on Energy Consumption and Greenhouse Gas (GHG) Mitigation Behaviors: An Agent Based Model of US Population, 2010-2030." SwarmFest 2015: Agent-based Simulation and the Study of Complexity. Columbia, SC: July 10-12, 2015.

Jin, Z., M. Northridge, H. Wang, C. Kunzel, S. Kum, and S. Metcalf. "The Influence of Social Support and Transportation on Older Adults' Access to Oral Healthcare." 110th Annual Meeting of the Association of American Geographers. Chicago, IL: April 21-25, 2015.

Metcalf, S. "Modeling Urban Health and Behavior at the Intersection of Social, Natural, and Built Environments." 109th Annual Meeting of the Association of American Geographers. Los Angeles, CA: April 9-13, 2013.

Widener, M., M. Northridge, B. Chakraborty, S. Marshall, I. Lamster, S. Kum, and S. Metcalf. "Detecting Spatial Patterns of Diabetes and Hypertension in Older Adults using Oral Screening Data." 109th Annual Meeting of the Association of American Geographers. Los Angeles, CA: April 9-13, 2013.

Metcalf, S. "Modeling Disparities in Urban Health Access at Multiple Scales." System Dynamics Winter Camp. Austin, TX: January 4-5, 2013.

Metcalf, S., M. Widener, M. Northridge, S. Marshall and I. Lamster. "Modeling Social Dimensions of Oral Health among Older Adults in Urban Environments." The 108th Annual Meeting of the Association of American Geographers. New York City, NY: February 24-28, 2012.

Zia, A., C. Koliba, S. Metcalf and M. Widener. "Agent Based Models of Cross-Jurisdictional Governance Networks: Simulating the Emergence of Project Prioritization Patterns Under Alternate Policy Theoretical Frameworks and Network Structures." The 11th Biannual *Public Management Research Association Conference*. Maxwell School of Citizenship and Public Affairs, Syracuse University, Syracuse, NY. June 2-4, 2011.

Metcalf, S., M. Widener, M. Northridge, B. Chakraborty, S. Marshall and I. Lamster. "Simulating Access to Oral Health Intervention Opportunities for Urban Seniors." Presented at the 107th Annual Meeting of the Association of American Geographers. Seattle, WA: April 12-16, 2011.

Metcalf, S., M. Widener, M. Northridge, B. Chakraborty, S. Marshall and I. Lamster. "Modeling Ways to Improve Oral Health in Older Adults." Presented at the *System Dynamics Winter Camp*. Austin, TX: January 7-8, 2011.

Metcalf, S., M. Widener, M. Northridge, B. Chakraborty and I. Lamster. "Systems Modeling to Identify Oral Health Interventions for Older Adults." Presented at *Modeling for Public Health Action: From Epidemiology to Operations*. Atlanta, GA: December 9-10, 2010.

Widener, M., S. Metcalf, M. Northridge, B. Chakraborty, I. Lamster and S. Marshall. 2010. "A Systems Modeling Approach for Improving Oral Health Outcomes in Older Adults." Presented at the System Dynamics Society PhD Colloquium. Albany, NY: October 29, 2010.

Widener, M. and S. Metcalf. "Planting Place: Examining Spatial Meanings in Post-Industrial Cities through Reactions to Urban Agriculture." Presented at the Urban Agriculture session of the 106th Annual Meeting of the Association of American Geographers. Washington, DC: April 14-18, 2010.

Metcalf, S. and M. Widener. "S(t)imulating (S)pace: Cultivating a Postmodern Geographic (Con)science." Presented at the Complexity session of the 106th Annual Meeting of the Association of American Geographers. Washington, DC: April 14-18, 2010.

Zia, A., S. Metcalf and M. Widener. "Management of Complex Governance Networks: Opportunities and Challenges for Agent Based Models of Policy Analysis." Presented to the *American Society for Public Administration*. San Jose, CA: April 9-13, 2010.

Metcalf, S. "Moving Beyond Automata: Critical Thinking and Computer Models." Presented at the 105th Annual Meeting of the Association of American Geographers. Las Vegas, NV: March 22-27, 2009.

Metcalf, S. and M. Paich. "A Retrospective Assessment of Insights from a Model of the Transition to Alternative Vehicle Propulsion Technologies." Presented at the *System Dynamics Winter Camp*. College Station, TX: January 9-10, 2009.

Metcalf, S, D.-J. Kim, Y. Yang and P. Hirsch. "Modeling Mental and Cultural Models of Shared Resource Concerns." Presented at the 104th Annual Meeting of the Association of American Geographers. Boston, MA: April 15-19, 2008.

Metcalf, S. "Designing a Network of Women Leading Sustainability to Confront Uncertainty." Presented at the 14th Annual MIT *Leaders for Manufacturing (LFM) Alumni Conference*. Seattle, WA: October 10-11, 2007.

Metcalf, S. “Networks and Neighborhoods: Calibrating an Agent-Based Model of Social Influence on Community Structure.” Presented at the 103rd Annual Meeting of the Association of American Geographers. San Francisco, CA: April 17-21, 2007.

Metcalf, S. “Networks and Neighborhoods: Calibrating Agents to Create Robust System Dynamics of Community Structure.” Presented at the *System Dynamics Winter Camp*. Austin, TX: January 5-6, 2007.

Metcalf, S. “Exploring Spatial Disparity with an Agent-Based Model of Neighborhood Network Evolution.” Presented at the 102nd Annual Meeting of the Association of American Geographers. Chicago, IL: March 7-11, 2006.

Metcalf, S. “With Space in Mind: Simulating Social Influence on Perceptions of Place.” Presented at the 101st Annual Meeting of the American Association of Geographers. Denver, CO: April 5-9, 2005.

Metcalf, S. “Beyond Automata: The Challenge of Modeling Ourselves.” Presented at the 11th Annual *Critical Geography Mini-Conference*. Terra Haute, IN: October 2-3, 2004.

Metcalf, S., T. BenDor, B. Deal and V.G. Pallathucheril. “Regional Modeling and the Role of Brownfields Redevelopment in Land-Use Transformation.” Educational session at *Brownfields 2004: Gateway to Revitalization*. St. Louis, MO: September 20-22, 2004.

Metcalf, S. “Dynamics of Urban Decline: Spatial Analysis of the Patterns of Decline in the St. Louis Metropolitan Area.” Presented at the 100th Annual Meeting of the Association of American Geographers. Philadelphia, PA: March 14-19, 2004.

Poster Presentations:

Metcalf, S. and W. Schoenberg. “Benchmarking and Evaluating AI for Modeling and Simulation.” 122nd Annual Meeting of the American Association of Geographers. San Francisco, CA: March 16-21, 2026.

Eberlein, R., W. Schoenberg, and S. Metcalf. “Evolving Program Construction at the System Dynamics Conference.” 42nd International System Dynamics Conference. Bergen, Norway: August 4-8, 2024.

Metcalf, S., M. Paich, and L. Wallis. “Notes from the Field: Practical Considerations for Agent-Based and Continuous Representations of System Dynamics.” 41st International System Dynamics Conference. Chicago, IL: July 23-27, 2023.

Sadjadpour, F., N. Hosseinichimeh, S. Metcalf, and B. Patel. “Mapping Feedback Mechanisms Underlying Dental Caries among Adolescents.” National Oral Health Conference. Fort Worth, TX: April 11-13, 2022.

Zhang, Q., M. Northridge, S. Yi, and S. Metcalf. “Modeling Multi-Level Factors to Promote Oral Health Equity for Chinese Americans.” 114th Annual Meeting of the American Association of Geographers. New Orleans, LA: April 10-15, 2018.

Zhang, Q. and S. Metcalf. “Sensitivity Analysis of an Agent-Based Model of Healthcare Accessibility.” ABM 2017: Agent-Based Models in the Social, Human-Environment, and Life Sciences. San Diego, CA: April 20-22, 2017.

Jin, Z. and S. Metcalf. "Using Ontology for Structural Validation of Agent-based Models." ABM 2017: Agent-Based Models in the Social, Human-Environment, and Life Sciences. San Diego, CA: April 20-22, 2017.

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