

MODELING SOCIAL FACTORS OF ORAL HEALTH EQUITY FOR OLDER ADULTS

Sara Metcalf,¹ Hua Wang,² Susan Kum,¹ Zhu Jin,¹ Peng Wang,³ Michael Widener,⁴ Carol Kunzel,⁵
Stephen Marshall,⁵ and Mary Northridge^{5,6}

¹Department of Geography
The State University of New York at Buffalo
Buffalo, NY 14261, USA

²Department of Communication
The State University of New York at Buffalo
Buffalo, NY 14260, USA

³Department of Computer Science and Engineering
The State University of New York at Buffalo
Buffalo, NY 14260, USA

⁴Department of Geography
University of Cincinnati
Cincinnati, OH 45267, USA

⁵College of Dental Medicine and Mailman School of Public Health
Columbia University
New York, NY 10032, USA

⁶Department of Epidemiology and Health Promotion
New York University College of Dentistry
New York, NY 10003, USA

ABSTRACT

Recognizing oral health equity as a critical indicator of progress toward a more inclusive health care system, this research effort develops simulation models informed by the qualitative and quantitative data collected through the *ElderSmile* community outreach program operated by Columbia University's College of Dental Medicine. Through an iterative process drawing upon group model-building workshops to share expertise among members of our interdisciplinary research team, we have constructed a portfolio of models involving different methods associated with systems science: system dynamics, spatial analysis, agent-based modeling (ABM), social network simulation, and geographic information science (GIS). This poster features a hierarchical ABM, explains how it builds upon other models in the portfolio, identifies performance improvements, and points to conceptual insights that have emerged from this multi-method approach to integrating social and systems science with simulation.

1 CONTEXT

Amidst demographic changes toward an older and more diverse population as well as policy shifts promoting health care access, this collaborative effort aims to model social factors that facilitate or hinder

services to improve oral health equity for the elderly. Because social advantages and disadvantages accrue across the life course, health disparities manifest acutely as well as chronically in terms of missing teeth and other oral health problems experienced by older adults (Northridge et al, 2011). We therefore identify oral health equity as a critical indicator of progress toward an inclusive health care system. Recent studies by Northridge et al (2012) and Widener et al (2012) have outlined social dimensions of oral health outcomes, supporting our hypothesis that social factors can be leveraged to promote oral health among older adults.

2 APPROACH

The hierarchical ABM featured in this poster builds upon experience with a set of three structurally distinct models that examine health-seeking behaviors and participation in the *ElderSmile* program (Metcalf et al, in press). The model is designed to explore the dynamics of health-seeking behavior among adults over 50 years old who attend senior centers in northern Manhattan. The model's hierarchical structure enables simulation at the community, interpersonal, and individual scales. To align with available data sources, three agent classes are simulated: 1) Senior centers where *ElderSmile* preventive health screenings are held; 2) Census blocks containing populations of older adults; 3) Older adults who live in proximity to senior centers that hold *ElderSmile* screenings. In particular, this newly developed simulation model focuses on the senior centers that have held multiple screenings since the program began in 2006. Using the schedule of *ElderSmile* events, simulated participation is compared with observed participation to calibrate the model at a baseline from which scenarios for social network structure, peer communication dynamics, and program outreach efforts are explored, so as to increase awareness, access, and utilization of health services among older adults.

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