

Integrating Grey and Green Infrastructure



to Improve the Health and Well-being of Urban Populations

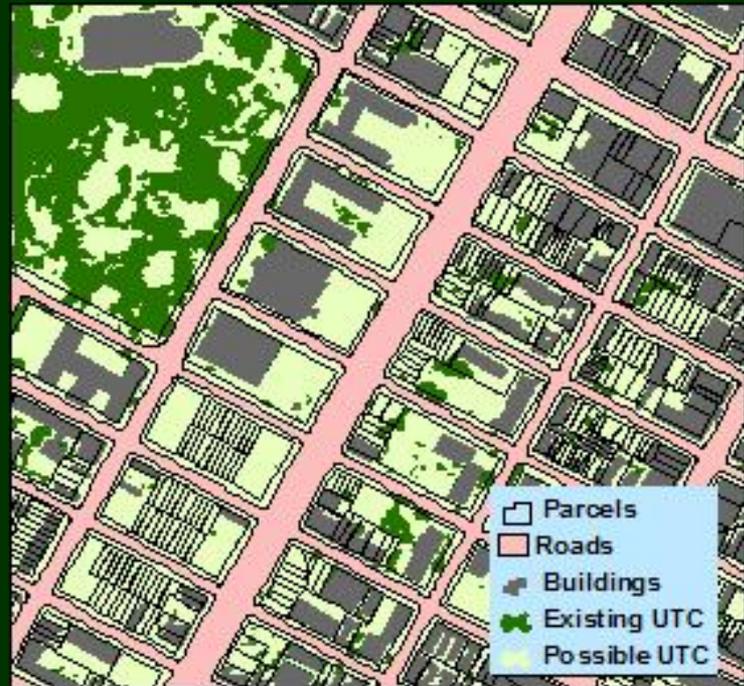
ACGA National Conference, New York, NY, August 19, 2011



Erika S. Svendsen, PhD, Research Social Scientist, USDA Forest Service,
Northern Research Station & New York City Urban Field Station
&

Mary E. Northridge, PhD, MPH, Editor-in-Chief, *American Journal of Public Health* and Professor, New York University & Columbia University

City as ecosystem



Contested space



Are there tools to help us arrive at mutually beneficial processes and outcomes?

Well-intentioned but wholly inadequate efforts to integrate grey and green infrastructure



WHO Definition of Health

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Definition of Well-being?

- Multiple dimensions
- Measured in various ways
- *For individuals*: quality of life, life satisfaction
- *For communities*: livability, shared experiences

Thinking in Systems

A Primer

Donella H. Meadows

Edited by Diana Wright.

Sustainability Institute



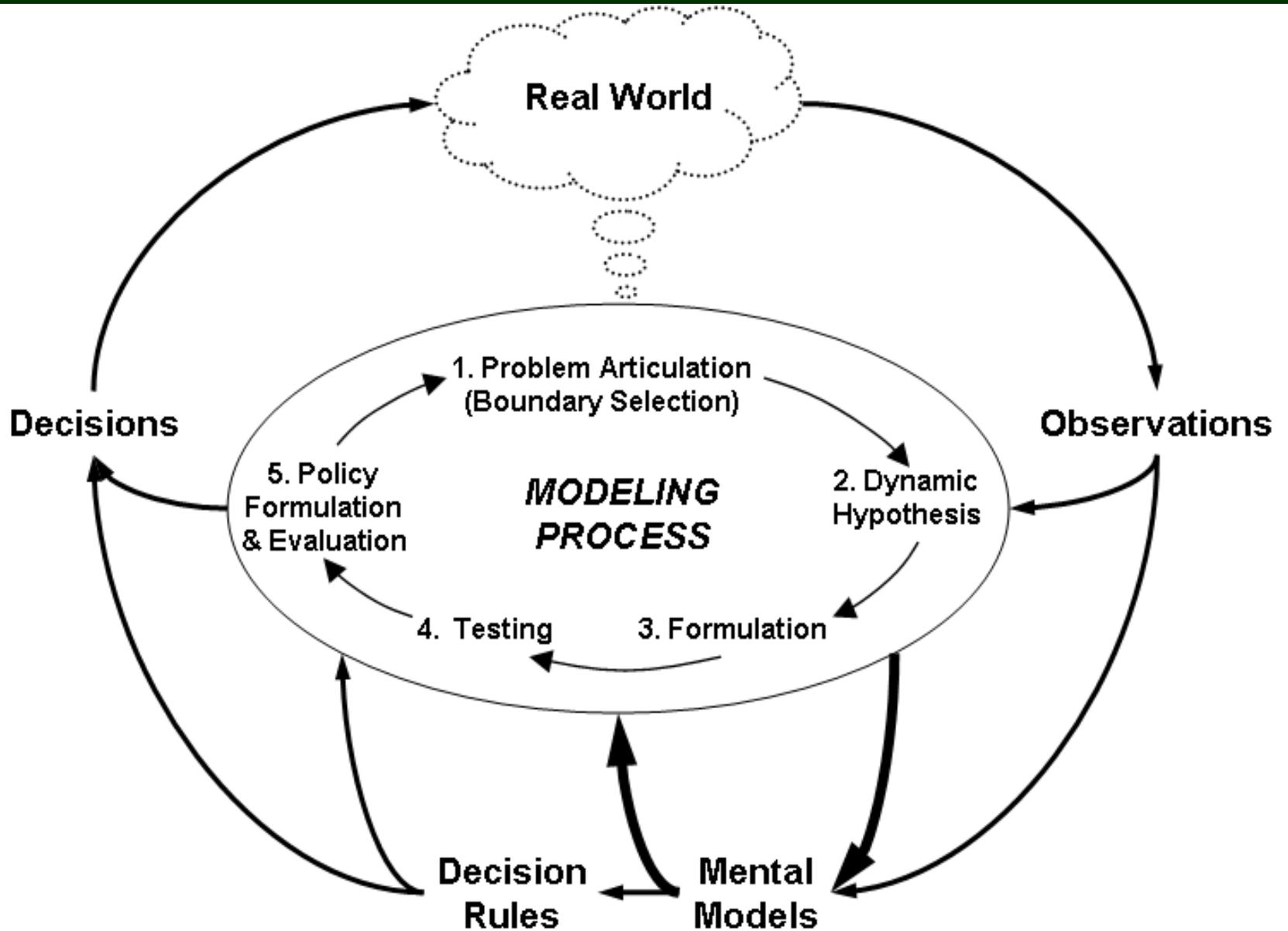
Opportunities with systems thinking

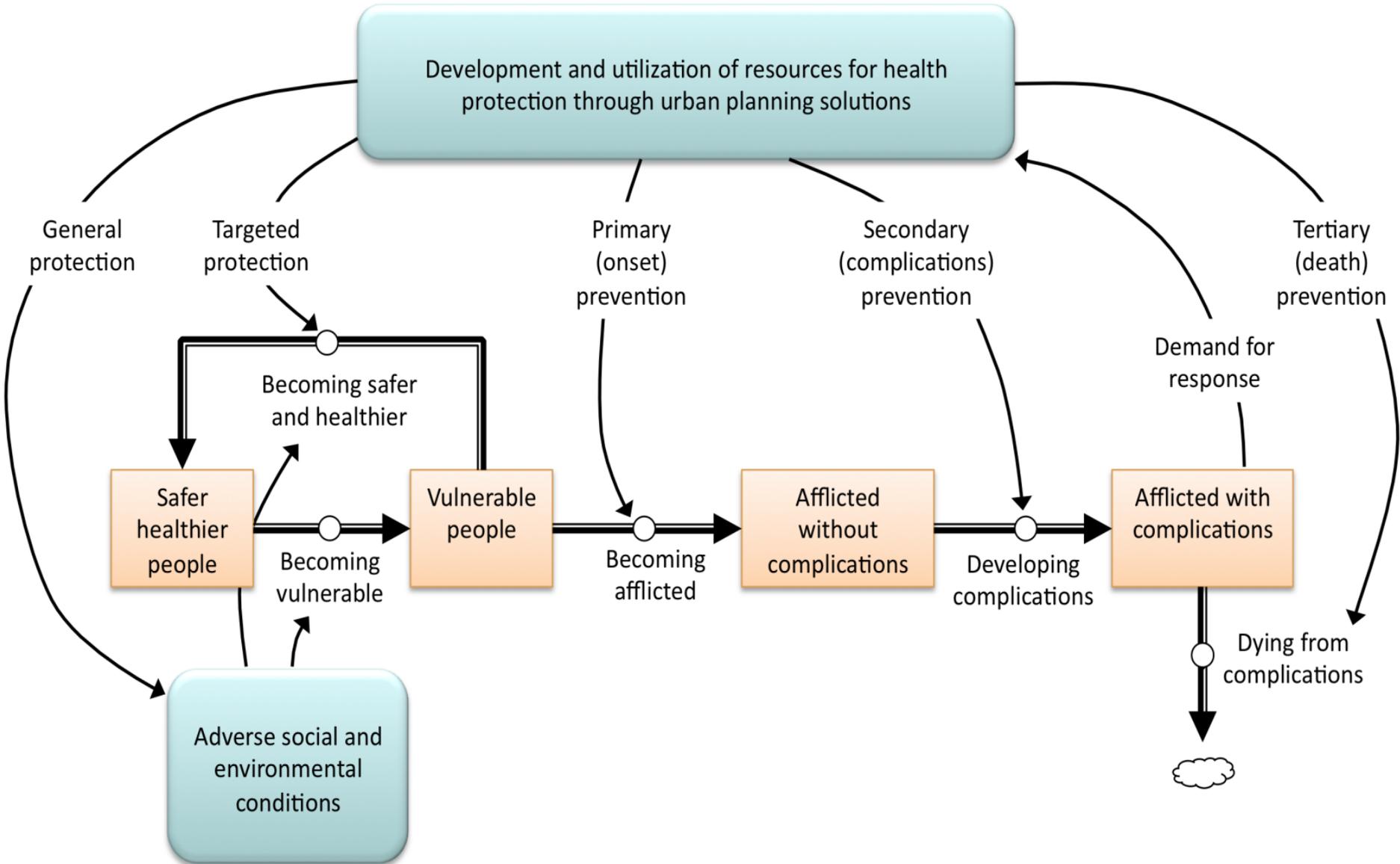
- Consistent with ecosystem functioning
- Improves understanding of underlying structure of cities that shapes behavior
- Incorporates dynamic changes over time

Benefits of systems modeling

- Potential for participatory engagement
- Allows for nonlinear relationships and emphasizes interconnectness
- Incorporates lived experiences and scientific findings

The iterative process of dynamic modeling





What role do social networks play in fostering the closer integration of grey and green infrastructure and achieving positive health outcomes?



“Many of the interconnections in systems operate through the flow of information.”

Using the words of gardeners to create an expansive view of nutrition

"Children could see and watch food they eat grow"

"Organic food, fresh food"

"I love working outdoors in the garden, growing vegetables. We used to have a little garden behind the apartment building to raise our own food, and then we wanted to expand and teach kids"

"Idea of actually growing something—sell it, eat it, or enjoy it"

"I love to eat fresh grown vegetables, and I love to watch them grow"

"We love it! The vegetables are so much better and cheaper."

"Where I come from, the Puerto Rican mountains, that's all we did—grow vegetables and coffee, so it's always on my mind"

"The look on people and children's faces when they see the abundance of fruits and vegetables gives me satisfaction"

"I love teaching teenagers and people how to relax and grow their own vegetables"

"Providing fresh vegetables and herbs for community members"

"I love the culture of the garden. I like to see the vegetables and like to give them away and tell people about the beauty of the garden."

"Creating a huge bounty of vegetables and flowers from tiny seeds"



Cultivate in children a desire for fresh food



Give away vegetables and share the culture of the garden



Savor the taste of locally-grown produce



Take pride in growing wholesome fruit

Using the words of gardeners to express what is **sacred and restorative**

"I'm a farmer; I've grown all **my life**. I love to see stuff grow and to see people happy."

"I just **enjoy** it."

"I adore natural beauty and a **unified community**"

"I like flowers, plants. It's **a habit**. My kids moved away."

"It's like **a therapy**."

"Gardening gives me **energy**"

"It's like **home**, everyone's backyard."

"Planting makes me **feel at peace**"

"I like to make the **neighborhood look good**"

"Organic vegetables...the beautification...a sense of community togetherness...there is an overall achievement that **a change has been made by our community**."

"The garden helps me to relax; also it **reminds me** of my mother. She helped to start the garden 25 years ago. Working the soil and seeding keeps **me centered**."

"We love it! The vegetables are so much better and cheaper. Also, we're seniors, so it keeps us **active** and gives us something to do. We cook **together**, BBQ. The flowers are beautiful."

"Nine years ago our community was full of drugs and prostitution, and the community needs a strong group to fight for **the right of our space**. The corner of the block was empty and full of rats. To clean the area and for safety reasons, motivated to create this beautiful garden."



Mobilize and engage to strengthen community ties



Advocate for safe spaces for enjoyment and reflection



Foster creative expression of self and community

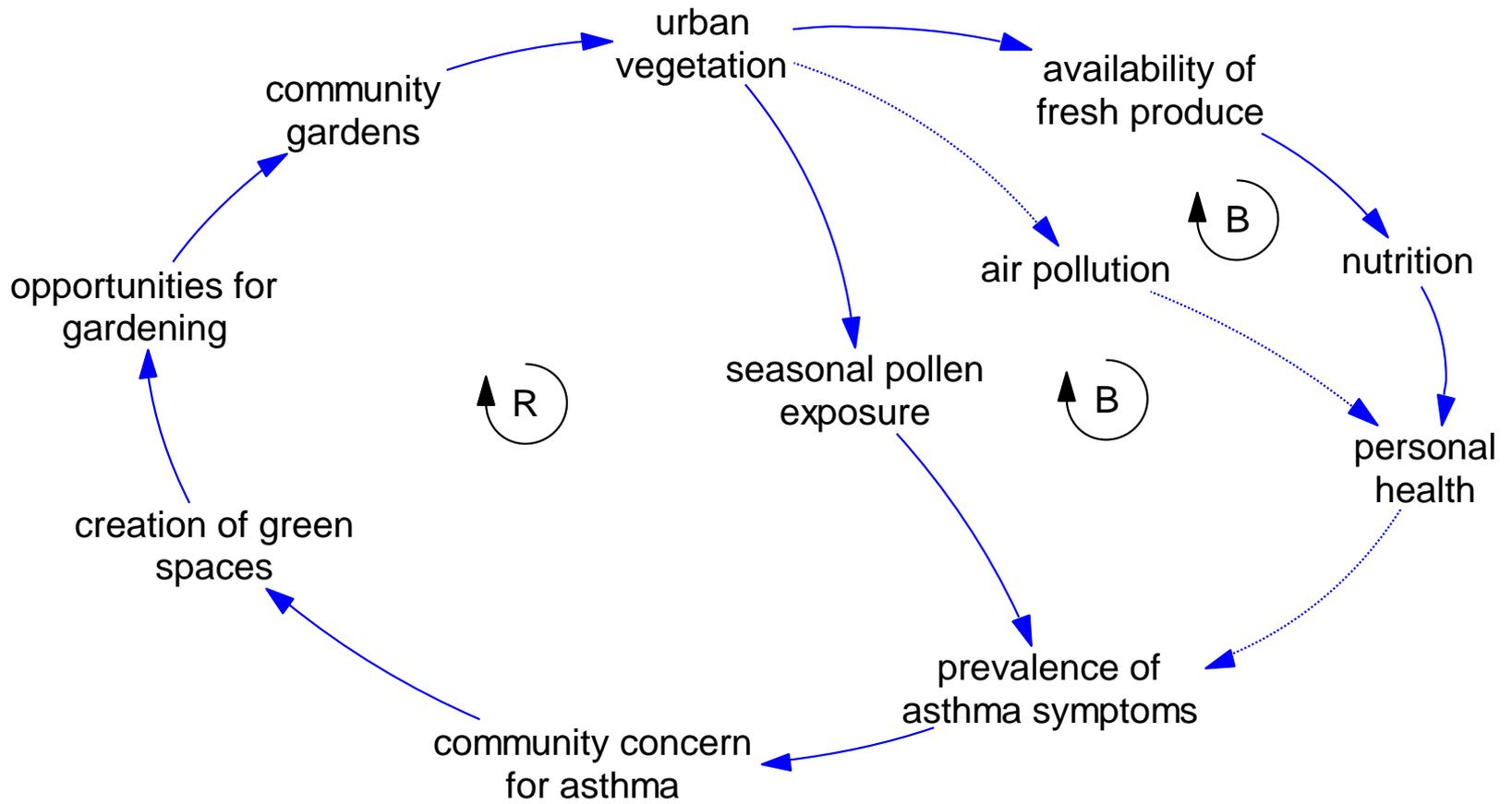


Share knowledge and leave a legacy

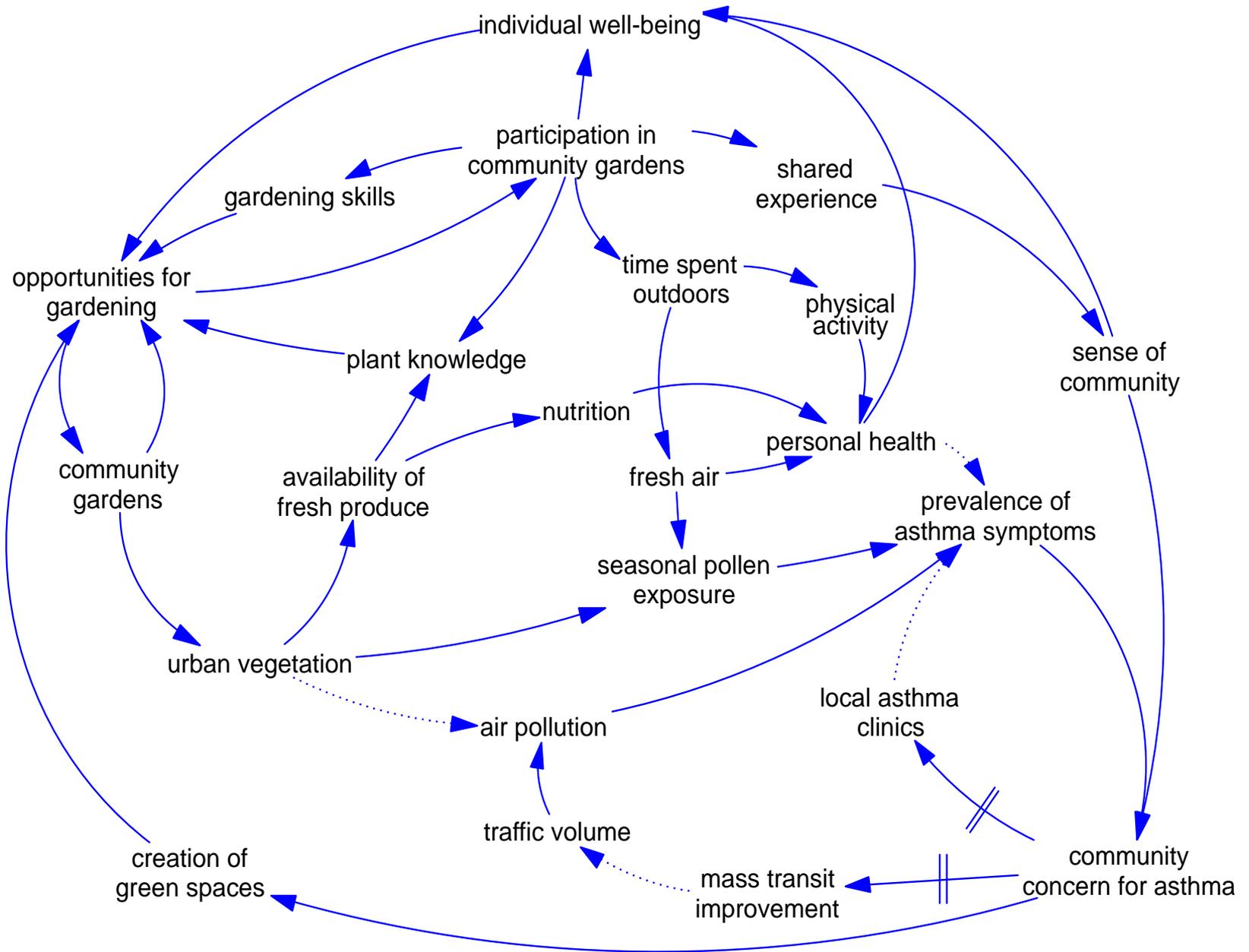
Develop a model to solve a particular problem



“Focus diagnosis on the structure of the system.”

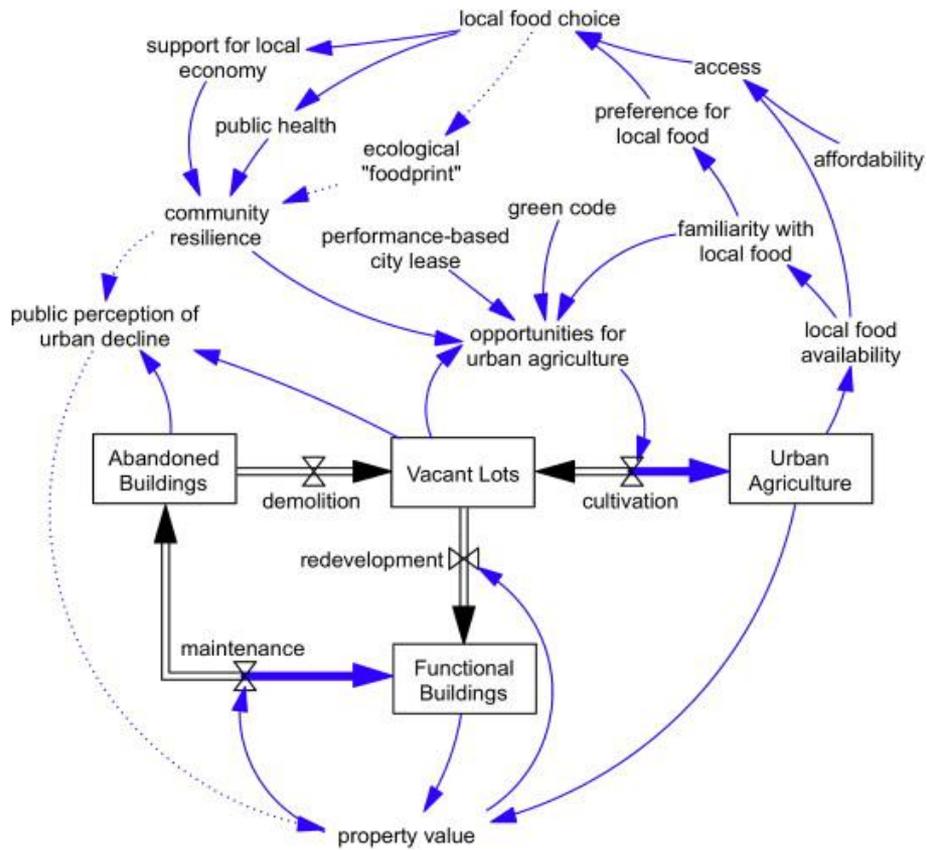


Modeling by Sara Metcalf





Metcalf, S. S. and M. J. Widener. (2011). Growing Buffalo's capacity for local food: A systems framework for sustainable agriculture. [Applied Geography](#) 31: 1242-1251.



Recognize that the design and function of local neighborhoods is critical to health and well-being

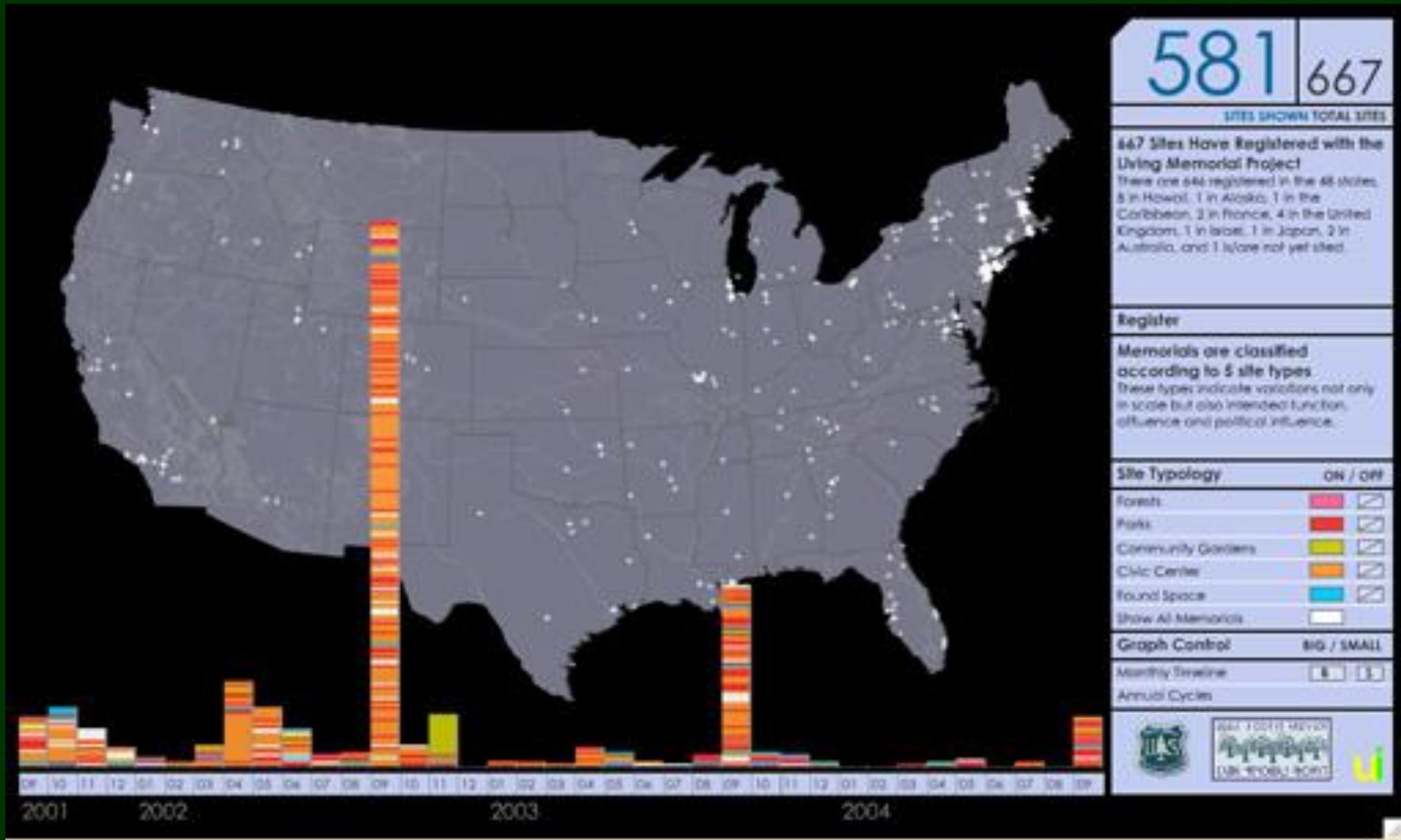




Affirm our roles as local stewards and public health champions



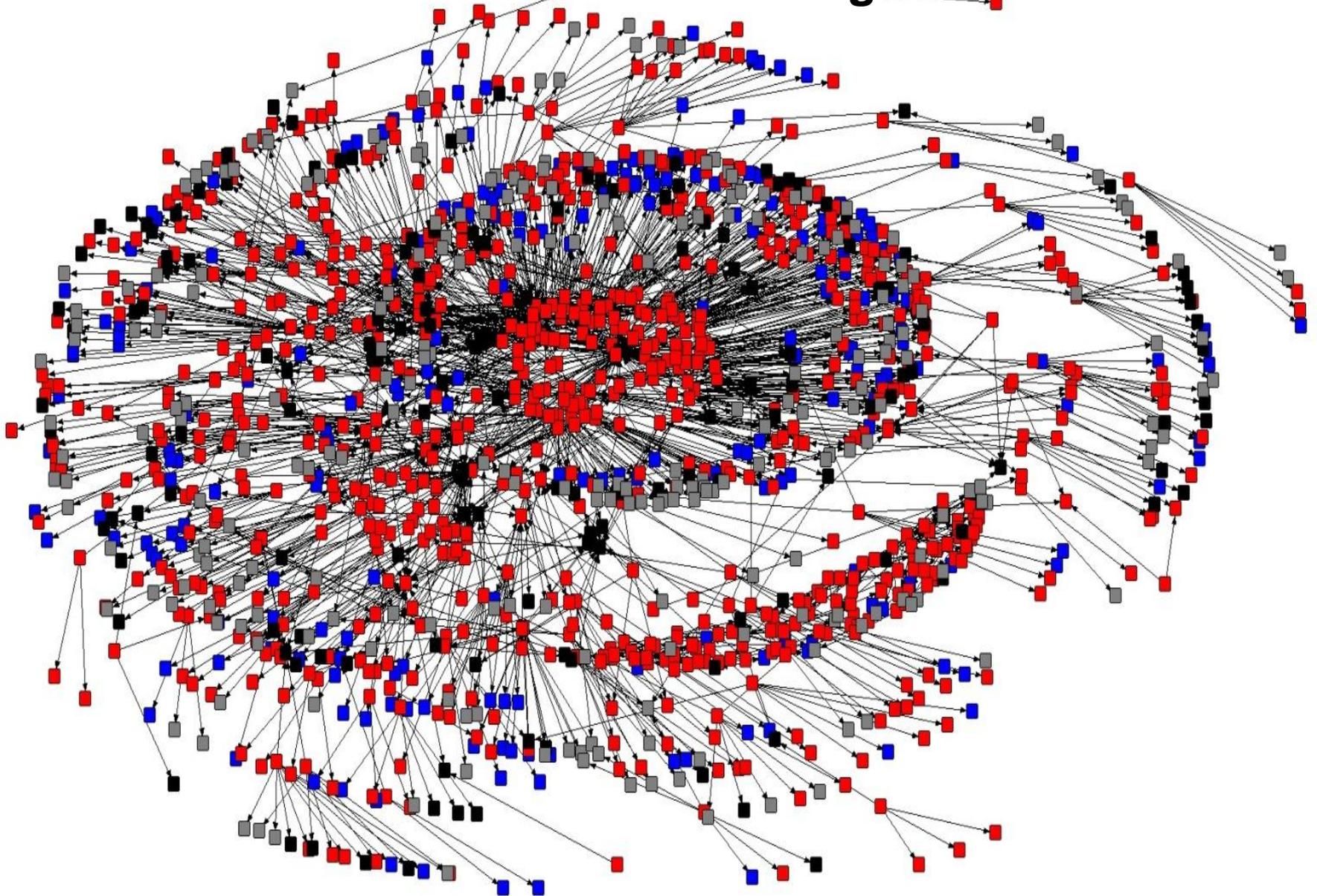
Organize and interpret data over time and across space



Map open spaces along with social information



Harness social networks and strengthen connections



Liberate our thinking



Photos by Steffi Graham

- Andrews, G. J. and R. A. Kearns (2005). Everyday health histories and the making of place: The case of an English coastal town. Social Science and Medicine 60: 2697-2713.
- Folke, C. (2006). Resilience: The emergence of a perspective of social-ecological analysis. Global Environmental Change 16: 253-267.
- Helphand, K. I. (2006). Defiant Gardens - Making Gardens in Wartime. San Antonio, Trinity University Press.
- Lawson, L. J. (2005). City Bountiful: A Century of Community Gardening in America. Berkeley, University of California Press.
- Link, B. G. and J. C. Phelan (1995). Social Conditions as Fundamental Causes of Disease. Journal of Health and Social Behavior. extra issue 80-94.
- Machlis, G. E., J. E. Force, Burch, W. R. (1997). The human ecosystem part I: The human ecosystem as an organizing concept in ecosystem management. Society and Natural Resources. 10: 347-367.
- McDonnell, M. and S. T. A. Pickett (1993). Humans as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas. New York, Springer-Verlag.
- Meadows, D. (2008). Thinking in Systems: A Primer. White River Junction, VT, Chelsea Green Publishing Co.
- Metcalfe, S. S. and M. J. Widener. (2011). Growing Buffalo's capacity for local food: A systems framework for sustainable agriculture. Applied Geography 31: 1242-1251.
- Northridge, M. E. and L. Freeman L. (2011) Urban planning and health equity. Journal of Urban Health. 88: 582-597.
- Olsson et al (2004). Adaptive co-management for building resilience in social-ecological systems. Environmental Management 34: 75-90.
- Sampson, R. J. (2003). Neighborhood-level context and health: Lessons from sociology. Neighborhoods and Health. I. Kawachi and L. F. Berkman. New York, Oxford University Press.
- Sampson, R. J. and S. W. Raudenbush (1999). Systematic Social Observation of Public Spaces: A New Look at Disorder in Urban Neighborhoods. American Journal of Sociology 105(3): 603-651.
- Sterman, J. D. (2000). Business Dynamics: Systems Thinking and Modeling for a Complex World. Boston, McGraw-Hill.
- Svendsen and Campbell (2006): Land-markings: 12 Journeys through 9-11 Living Memorials. U.S. Forest Service, Northern Research Station.
- Townsend, M. (2006). Feeling blue? Touch green! Participation in forest/woodland management as a treatment for depression. Urban Forestry and Urban Greening 5: 111-120.