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Data and Analytics for Neighborhood Development: Smart Shrinkage Decision Modeling in Baltimore, Maryland

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Many older cities in the United States confront the problem of long-term declines in population and economic activity in certain neighborhoods have resulted in blighted conditions that make conventional revitalization initiatives based on increased residential and commercial development unlikely to succeed. Planning scholars have developed a theory of smart shrinkage in which emphasis is placed on non-residential land uses that can maintain and improve quality of life while positioning some land for future growth-oriented activities (Hollander and Németh 2011; Hollander 2010). Smart shrinkage research and practice involves application of methods from information technology and decision science to identify vacant and abandoned parcels for acquisition and redevelopment for alternative uses in such a way as to meet multiple social and economic goals while respecting myriad resource constraints (Johnson, Hollander and Hallulli 2013; Johnson 2011). This presentation addressed the following questions: How do planning practitioners conceptualize the problem of smart shrinkage? In what ways do the decision processes they apply in practice diverge from the theory of decision modeling? How can planners make most appropriate use of information and decision sciences to develop sustainable and politically-feasible strategies for smart decline?

To answer these questions, I described a project with planners from Baltimore, Maryland that I have been working on with Dr. Michael Johnson and Dr. Eliza Davenport Whiteman (Johnson and Hollander 2014; Davenport Whiteman 2014) that uses spatial data and spatial and decision-analytic methods to select aggregations of parcels, called clusters, for alternative land uses that jointly optimize multiple objectives. These land uses consist of: urban farming, wastewater management and site stabilization for future development. We describe decision modeling results consisting of alternative cluster development strategies, and contrast our model's recommendations with redevelopment choices actually made by client practitioners. In so doing, we articulate a theory of decision modeling for smart shrinkage that we believe will make best use of data, technology and planner expertise to generate novel and effective strategies for blighted neighborhood stabilization and revitalization. This methodology adapts principles from participatory action research, community information technology and community-based operations research.

This presentation provides a foundation for practitioners to make better use of large volumes of data describing blighted communities, accommodate diverse attitudes about policy and planning responses to blight, and judiciously apply advanced methods in data analysis and decision models. In addition, our study extends theory for urban planners and public sector operations researchers, and provides insights for planning education. The full findings and conclusions are presently being organized into a book for publication, which I hope will be published later this year or early 2021.

Giving this presentation and answering insightful questions from faculty and students at the University of Tsukuba has prompted me to reflect on some of the underlying and foundational issues driving much of the neighborhood change I was studying in Baltimore and throughout the U.S. It made me think about the fact that when American planners are confronted with deteriorating zones of a metropolitan area, they are almost exclusively focused on uplifting those zones - of addressing the social, cultural, economic factors that are driving people to not want to invest in, live in, work in these places. Redevelopment is essentially a demand-side approach, it argues that we ought to enhance the demand for these places. Spending time in Japan and mulling over some of the latest research I have been doing, makes me wonder if instead a supply-side approach would work. Let's look at the process of urbanization, the building of structures that, generally last only about 30 years. When they are new, they are inviting and welcoming, quite desirable. But when they are old and in need of repair and rebuilding, their newness is no longer an attraction. If there are no other important and powerful magnets in the vicinity, then the structures will deteriorate due to lack of continued investment and the required repair and rebuilding that follows.

The demand-side approach tells us that we need to change the fundamental attractiveness of these places, I wonder if some of that is misguided. Instead, why not focus on the core problem: that buildings decay. They are durable in that they don't decay very quickly, we see that in ruins from Aztec civilizations from thousands of years ago. But their durability as functional living, working, playing structures decays quite quickly. The answer then lies in the modular city: structures should only be built as semi-permanent buildings if there is something that suggests a long life of demand. If not, they should be built to be modular and portable, so when their newness wears off, they can be deconstructed, relocated, or the like. This way, no segment of urbanized area is in derelict shape, en masse (certainly small pockets and individual circumstances dictate that decline will happen even in the most popular locales). I have written previously about the notion of the modular city, in particular in my "Modular City: A Path Towards Safe and Comfortable Town Development" an award-winning entry into the SRF Competition with Takayuki Suzuki, and Brian DeChambeau (2013).

This modular building system would be implemented during construction so as to aid deconstruction when the building is no longer needed, but also to support the new weights and requirements of additional floors or additions. The second component of the Modular City is a legal one, whereby the use of buildings will be dictated partially by whether the city is growing, declining, or maintaining even population. During a period of growth, key limits or controls on growth will be imposed which support smart and sustainable expansion. These tools are well-documented in the Smart Growth and New Urbanist literature and include techniques

like form-based zoning, historic preservation districts, and façade improvement programs.

Likewise, when the Modular City faces depopulation, a similar suite of policy mechanism can insure that the key principles of creating a safe, comfortable, and sustainable city are implemented. The Relaxed Zoning Overlay provides for flexibility in the kinds of uses that a local government would allow when a place begins to exhibit population decline (Hollander 2011; Pantalone and Hollander 2011). For example, instead of a house sitting empty for years due to falling residential demand, and then becoming subject to squatters or arsonists, under a Relaxed Zoning code the house could be reused for non-residential uses like an artists' studio or urban agriculture, thus sustaining a high quality of life in the neighborhood. All fodder for thinking about the possible ways to address depopulation: creative ideas that just might help cities adjust to the change they face.

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