Landscape and Urban Planning xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Landscape and Urban Planning

journal homepage: www.elsevier.com/locate/landurbplan

Research Paper

Methods for countering spatial inequality: Incorporating strategic opportunities for housing preservation into transit-oriented development planning

Elizabeth J. Mueller[a], Thomas W. Hilde[b,*], Marla J. Torrado[c]

[a] Community and Regional Planning Graduate Program, The University of Texas at Austin, United States
[b] Department of Urban Studies, Cleveland State University, 2121 Euclid Avenue, UR335, Cleveland, OH 44115, United States
[c] Austin Community Design and Development Center, 1210 Rosewood Avenue, Austin, TX 78702, United States

ARTICLE INFO

Keywords:
Affordable housing
Transit-oriented development
Smart growth
Scenario planning

ABSTRACT

Cities across the U.S. are promoting more compact and connected forms of development as part of a broader effort to create more environmentally and fiscally sound development patterns, under the banner of sustainability. In many fast growing cities, such efforts have had the unintended consequence of fostering redevelopment of currently affordable rental housing in central locations, thus further limiting access to these locations for low-income households and contributing to new patterns of economic and racial segregation. Integrating equity concerns into sustainability planning has proven difficult. Advocates have relied on a variety of measures to assess the average vulnerability to displacement, transit access, and housing and transportation costs facing households of various types across neighborhoods. We propose a more locally grounded approach that estimates the potential loss of affordable rental units and values transit for the access to employment it provides low-income households in particular locations vulnerable to redevelopment, thus making tangible the overlap between social equity and environmental goals.

Our three-part tool allows city planners to assess and compare conditions in transit corridors in order to prioritize and align investments in affordable housing preservation, transit improvements and mixed use redevelopment. It was designed to be replicable in other U.S. metropolitan areas by relying on an integrated national dataset, and linking it to a widely used scenario planning software plugin, Envision Tomorrow. We demonstrate the tool's utility and replicability for Austin, Texas, and Denver, Colorado, two fast-growing cities at different stages in the development of their regional transit networks. Finally, we reflect on the utility of the tool for use in a variety of contexts including in cities outside of the U.S.

1. Introduction

Cities across the U.S. are promoting more compact and connected forms of development as part of a broader effort to create more environmentally and fiscally sound development patterns, under the banner of sustainability. The environmental, economic and health challenges associated with urban sprawl are well-documented and are generally attributed to increased land consumption per capita and reduced accessibility to increasingly dispersed activities (e.g., see Burchell & Mukherji, 2003; Ewing, Bartholomew, Winkelman, Walters, & Chen, 2008; Ewing & Cervero, 2010; Ewing, Schmid, Killingsworth, Zlot, & Raudenbush, 2003; Frumkin, 2002; Litman, 2015). Policy guides, development benchmarks and best practices recommended by professional planning organizations seek to foster sustainable development by promoting a greater mix of land uses and focusing density to support higher transit use and reduce vehicle miles travelled by residents (American Planning Association, 2000, 2002, 2008, 2012; ICMA and Smart Growth Network, 2002, 2003).

The corridor locations targeted under these planning efforts often contain large clusters of aging rental housing affordable to low-income households (Mueller, 2010). A large stock of multifamily housing was constructed in the U.S. between the mid-1960s and early 1980s to meet market demand and in response to favorable tax provisions (Horowitz, 1983; Schwartz, 2006). It was often sited along corridors as recommended by industry publications (Urban Land Institute, 1968). This stock of unsubsidized affordable housing is nearly three times the size of the stock of subsidized housing units (Belsky & Drew, 2007; Joint Center for Housing Studies, 2011, p. 22; Schmidt & Proppe, 2003). Yet

* Corresponding author.
E-mail addresses: ejmueller@austin.utexas.edu (E.J. Mueller), t.hilde@csuohio.edu (T.W. Hilde), marla.torrado@acddc.org (M.J. Torrado).

https://doi.org/10.1016/j.landurbplan.2018.01.003
Received 13 September 2016; Received in revised form 23 September 2017; Accepted 9 January 2018

between 1999 and 2009, nearly one in three rental units affordable to full-time minimum wage earners was lost (Joint Center for Housing Studies, 2012; US Department of Housing and Urban Development, 2013).

Such corridors are also disproportionately home to renters, people of color, low-income households and to households dependent on transit for access to jobs and services. Renters were two-thirds of those living within one-half mile of a fixed guideway transit station in 2000 and Black and Hispanic residents were also disproportionately represented in these neighborhoods (Center for Transit Oriented Development, 2006). Over ninety percent of zero-vehicle households in large metropolitan areas live in neighborhoods with access to transit service. Close to 60 percent of these households are low income (Tomer, 2011). The importance of ongoing transit access for these households is supported by recent analyses that have found the savings to low income households of commuting by transit rather than by car to be substantial (Mueller & Kaplan, 2014; Roberto, 2008). In addition, transit-dependent residents of transit-served neighborhoods in cities, on average, have access to over 47 percent of metropolitan jobs within 90 min, compared to only 39.3 percent for city households commuting by car—although these patterns vary greatly by region (Tomer, 2011).

In cities expanding their transit networks, there is some evidence that the introduction or expansion of transit is helping push housing costs out of reach for low income renters in these neighborhoods. Effects are greatest in cities with strong housing markets and in areas near stations offering frequent service, that provide access to jobs and services comparable to other modes (Wardrip, Williams, & Hague, 2011). Housing prices may even rise based on development plans, before construction has begun (Knaap, Ding, & Hopkins, 2001). Neighborhood demographics shift in favor of higher income residents as higher value uses and land values attract them or when the new transit modes compete with driving (Transit Cooperative Research Program, 2004). Of course, change will be greatest when transit investment is large scale and takes place in an under-invested neighborhood (Knaap et al., 2001; Pollack, Bluestone, & Billingham, 2011; Zuk et al., 2015).

The loss of affordable rental housing in these neighborhoods is occurring in the context of increasing economic segregation in many U.S. cities and rising suburban poverty (Cooke & Denton, 2015; Howell & Timberlake, 2014; Raphael & Stoll, 2010). During the 1990s, the movement of jobs outward, combined with the declining number of poor neighborhoods in central cities, suggests that the rising share of the poor living in suburbs is the result of poverty migration rather than the impoverishment of suburban families (Howell & Timberlake, 2014). Relocation to sprawl locations brings with it reduced access to retail and public services, increased household transportation costs, as well as reduced accessibility to job opportunities (Allard & Roth, 2010; Howell & Timberlake, 2014).

2. Persistent tensions in the pursuit of sustainable development & equitable TOD

Ensuring that transit-oriented development (TOD) does not displace current low-income renters serves both environmental and social goals by maintaining transit ridership and supporting employment of residents. Yet the politics of integrating social equity concerns into TOD and other forms of 'sustainable' development are both complex and durable. Policy solutions focused on curing the ills of urban sprawl are often in tension with those focused on meeting the needs of residents of the low-income neighborhoods that are often the target of TOD projects. Policies and plans aimed at addressing the consequences of sprawl have focused on fostering compact growth near transit lines or station areas within central cities (American Planning Association, 2000, 2002; Ewing et al., 2008). Local governing regimes are likely to coalesce around TOD when it generates both higher returns to developers and increased revenue for city governments (Rayle, 2015). Advocates for poor or minority central city households—whether fighting to prevent their displacement due to transit-oriented growth or redevelopment (Goetz, 2013; Martin, 2007; Wright, 2006) or pushing for access to high opportunity neighborhoods in the suburbs (Briggs, 2005; Powell, 2002)—may find themselves at odds with the anti-sprawl agenda. Research on the impact of TOD on existing low income communities has highlighted conflicts between the push for high value density and the inclusion of low income residents and communities, although effects vary by context (Mueller & Dooling, 2011; Pollock, Bluestone, & Billingham, 2010).

Rising recognition of the relationship between household income, housing tenure and transit use has resulted in proposals for *equitable* TOD, where efforts are made to add or preserve affordable housing within TOD districts (Center for Community Innovation, Reconnecting America Center for Transit-Oriented Development, & The Non-Profit Housing Association of Northern California, 2007; Pollack, Gartsman, Boston, Benedict, & Wood, 2014; Zuk & Carlton, 2015). But implementing such policies locally requires both understanding the connection between transit use and the ongoing presence of low income residents, as well as the political will to prioritize preservation or inclusion of affordable housing in TOD plans. Arguably, contesting the planning agendas of dominant regimes will require the formation of coherent and durable coalitions of environmental and social equity interests (Oden, 2016, p. 41). Building understanding of the relationship between equity and environmental interests will be critical to the formation and success of such coalitions.

2.1. The challenge: making the case for equitable TOD

A variety of measures have been put forward to describe the context for thinking about the impacts of transit investments on particular neighborhoods. We briefly describe these here and consider what each offers to understanding the consequences of displacement, to reframing the conversation around how transit benefits low income households, and to the identification of specific locations for action. Finally, we also consider pragmatic concerns such as ease of use, ease of interpretation, and whether advocates can adapt the analysis to reflect local conditions.

2.1.1. Location efficiency

The *Housing + Transportation Index* (H + T) was launched in 2006, and focused attention on the concept of location efficiency: the relationship between neighborhood characteristics and location and household spending on housing and transportation (Center for Transit Oriented Development (2006)). The Index is now available for 917 metropolitan and micropolitan areas covering 94% of the US population. Data reported are average costs for geographies scaling down to census block groups. These data have been used to argue that affordability should be defined as the combined housing and transportation costs paid by households, focusing attention on the importance of neighborhood location and characteristics in housing policy.

In 2009, the U.S. Department of Housing and Urban Development (HUD), the Department of Transportation and the EPA formed the Partnership for Sustainable Communities. They developed a *Location Affordability Index* (LAI) and portal "as one step toward a more complete understanding of the costs associated with location—which include housing and transportation—so that consumers and policymakers can make informed decisions about where to live, work, and invest." (US Department of Housing and Urban Development & US Department of Transportation, 2017). Building on the H + T Index, the LAI illustrates the costs of housing and transportation as a percentage of family income for eight different family profiles, which are defined by household income, size and number of commuters.

Both indices provide powerful information on the trade-offs between housing and transportation costs associated with various locations within metropolitan areas. The metrics are easily interpretable and make the case for the importance of central locations and access to