Accessibility and Neighborhood Quality: A Parcel Level Evaluation of Housing Choice Voucher Locations in Duval County, FL

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INTRODUCTION

Along with demographic, economic changes and new community concerns, accessibility-based planning and other planning concepts, such as smart growth, new urbanism, and transit-oriented development, have become new planning options appealing to practitioners in the new era. Although the benefits of accessibility such as increased transit ridership and positive health outcomes are well documented and different planning practices are put in place, it is particularly difficult for low-income households to afford units at accessible locations due to the high demand for accessible neighborhoods and price premiums resulted from the accessibility. In addition, what may add complexity to this issue is that the quality of accessible amenities or neighborhood quality can influence how the benefits of accessibility are appreciated. This notion adds a third dimension, quality, to the two-dimensional interaction between accessibility and affordability. Concerning the low-income affordable housing issue, it is essential to make sure that the realization of factors associated with one dimension is not compromised by factors of other dimensions; in other words, one dimension does not negate the advantages of other dimensions.

In this regard, assisted housing for low-income tenants is designed and administered by U.S. Department of Housing and Urban Development (HUD) to promote subsidized housing for the poor in "sustainable communities" – neighborhoods with better conditions and access to opportunities based on socioeconomic, environmental, health, educational and other aspects. Housing Choice Voucher (HCV) program, in particular, is the largest rental housing subsidy that frees the voucher recipient's right to choose in the housing market. In addition to following the trend of federal housing policy in support of deconcentrating poverty, it further minimizes class segregation as the program promotes spatial mobility while providing housing subsidy to over two million households. Besides, other initiatives of HUD, Office of Policy Development and Research and Office of Sustainable housing and Communities, as well as the Location Affordability Index produced by the Center for Neighborhood Technology, address the coordination among affordability, accessibility and neighborhood quality.

To assess the performance of these policy initiatives, two sets of indices characterizing accessibility and affordability are assembled. This study then examines affordability, accessibility and neighborhood quality of units served by HCV program and compares these features with all residential parcels. By combining a measure of comprising factors suggesting the neighborhood quality with the accessibility measure, this study also attempts to reveal the challenges and the tradeoffs among affordability, accessibility and neighborhood quality in Duval County when addressing the affordable housing issue. The results of this study further illustrate where transportation and land-use planning efforts are most needed to ensure that HCV recipients and other social groups enjoy the benefits of built environment.

RESEARCH DESIGN

According to the land parcel shapefile developed based on the data from Florida Department of Revenue (available at Florida Geographic Data Library), around 87% of land in Duval County, which comprising 316,136 parcels are classified as residential (vacant residential, single family, multifamily, condominium, and mobile home). More than 13,600 units are subsidized by vouchers with an effective date ranging from the middle of 2012 to the end of 2013 in Duval County. Those subsided units are located in 3,588 residential parcels, among which 1,883 households with elderly are located in 387 residential parcels and 7,946 households with children are located in 2,703 residential parcels.

The overall analysis was based on the conceptual framework proposed by Koschinsky and Talen (2015). Firstly, this research provides a countywide analysis of the supply of accessible and quality neighborhoods at the parcel level. In detail, this step identifies accessible and quality neighborhoods using accessibility and neighborhood indices. In terms of the accessibility index, if the suitability scores for residential parcels are distributed proportionately across nine strata, suitability score "5" should be the mean and average for component scores. Based on this, this study defines parcels with a composite accessibility score over 20 as accessible locations. In regard to quality neighborhoods, it is defined as places where nearby school quality is better than the median of all residential parcels, poverty level is lower than the median, and exposure to toxins is lower than the median.

Based on this result, accessibility and neighborhood quality of parcels where HCV-subsided rental units locate are further evaluated in comparison to all residential parcels. In addition, two subgroups, HCV with elderly and HCV with children, are introduced into this analysis, as it has been suggested by Wang (2016) that certain preferences of these groups are harder to satisfy. After that, a measure of comprising factors suggesting the neighborhood quality is combined with the accessibility measure to better illustrate the challenges and the tradeoffs among affordability, accessibility and neighborhood qualities.

Data and Variables	Descriptions	Scale
Accessibility		
Driving accessibility score	An annual driving cost estimated by applying the HUD Location Affordability Index (LAI)	Parcel level
Walking accessibility to services score	A count of service destinations with ¼ mile network walking distance	Parcel level
Transit accessibility to jobs score	A score ranging from 0 to 40 based on accessibility to employment destinations within 15-60 minutes	Parcel level
Transit accessibility to services score	A score ranging from 0 to 100 based on accessibility to the service destination type within 15-60 minutes	Parcel level
Neighborhood quality		
School quality	The school proficiency index is applied to describe the performance of nearby elementary schools. Values are percentile ranked and range from 0 to 100. The higher the score, the higher the school system quality is in a neighborhood.	Census block-group level
Poverty level	The low poverty index captures poverty in a given neighborhood. The resulting values range from 0 to 100. The higher the score, the less exposure to poverty in a neighborhood.	Census tract level
Environmental health	The environmental health index is applied to describe potential exposure to harmful toxins.	Census block-group level
General information		
Land parcel data	Land use description at the parcel level	Parcel level

Table 1: Data and variables specifications

	Average of School Proficiency Index	Average of Poverty Level	Average of Environment Health Index
HCV with elderly (parcels)			
accessible with HCV with elderly	29	18	20
accessible without HCV with elderly	35	28	19
inaccessible with HCV with elderly	37	30	26
inaccessible without HCV with elderly	56	54	33
HCV with children (parcels)			
accessible with HCV with children	28	17	19
accessible without HCV with children	35	28	19
inaccessible with HCV with children	30	31	24
inaccessible without HCV with children	56	54	33
HCV (parcels)			
accessible with HCV	28	16	19
accessible without HCV	35	28	19
inaccessible with HCV	31	31	24
inaccessible without HCV	56	54	33
All residential parcels			
Accessible	35	28	19
Inaccessible	56	54	33

Table 2: Means of Neighborhood Quality Indices With and Without Certain Types of HCV, by Parcel Groups and Access Level

Number of parcels					
Compromised?	Accessibility	HCV with elderly	HCV with children	HCV	All residential parcels
No	Inaccessible	15	98	123	87095
No	Accessible	4	13	16	3591
Yes	Inaccessible	150	1605	1923	151277
Yes	Accessible	218	987	1526	74173
	Total	387	2703	3588	316136
Percentage of parcels					
Compromised?	Accessibility	HCV with elderly	HCV with children	HCV	All residential parcels
No	Inaccessible	3.88%	3.63%	3.43%	27.55%
No	Accessible	1.03%	0.48%	0.45%	1.14%
Yes	Inaccessible	38.76%	59.38%	53.60%	47.85%
Yes	Accessible	56.33%	36.51%	42.53%	23.46%
	Total	100%	100%	100%	100%

Table 3: Proportions of Parcels, by Accessibility, Compromised or Not

RESULTS

Accessibility and Neighborhood Quality of Tenant-Based HCV Locations

The nonparametric correlation test further reveals that the accessible areas are positively and significantly (at the .01 level) correlated with voucher household locations and negatively correlated with good school quality, low poverty level area and low toxin exposure countywide. Furthermore, one interesting result emerged from the test is that HCV tenant-based housing is positively and significantly correlated with both driving accessibility and transit and walk accessibility. This outcome differs from the findings presented in Koschinsky and Talen's work (2015) that HUD-assisted housing is positively correlated with car-dependent but not walkable or transit-accessible area. This difference can be attributed to local context. Other possible explanations for this result may be the usage of different accessibility measures and the inadequate consideration of project-based HUD housing programs in this analysis.

With the freedom of choice, the distribution of tenant-based voucher housing under HCV program is considered to be more spatially dispersed in most cases (Koschinsky and Talen, 2015). However, in Duval County, approximately 99% of HCV units are located within the urban area boundary developed by the U.S. Census Bureau based on the population density. While the HCV-subsidized units are relatively concentrated in the urban area, HCV parcels tend to have better access compared with all residential parcels in the county. The single most striking observation to emerge from the data comparison is that more than 50% of parcels that HCV households with elderly chose to stay are accessible locations, whereas HCV units with children have relatively poorer access compared with all HCV units. In the regard, the good access of HCV locations seem to be consistent with the conclusion drawn by Koschinsky and Talen (2015) that HCV-subsidized units represent the greatest number of HUD-assisted units with walkable access.

In terms of the neighborhood features, some conclusions can be drawn after the means of neighborhood quality indices are compared among groups (Table 2). The most obvious finding to emerge from the analysis is that inaccessible neighborhoods have access to better schools, lower poverty levels and lower exposure to toxins than accessible neighborhoods. The indices values of inaccessible neighborhoods in some cases are nearly twice as high as the inaccessible neighborhoods. In the meantime, neighborhood quality is better, especially in terms of school quality and poverty rate, in those without HCV-subsidized units than those with them. Taken together, accessible neighborhoods with HCV households are closer to low-performing schools and pollutants. Special attention is needed to provide equitable and quality education to children living in accessible neighborhoods with HCV-subsidized rental units.

DISCUSSION

In Duval County, there is a lack of accessible neighborhoods in general. More than 75% residential parcels are inaccessible and more than 57% of HCV households still suffer from inaccessibility. The realization of accessibility and affordability cannot be discussed without considering the neighborhood context. This is also a more significant challenge faced by low-income households in Duval County. According to the results of this analysis, more than 95% HCV households locate in poor quality neighborhoods with 42% of them in accessible neighborhoods. Within a relatively weak context, accessibility is linked with high poverty level, low-performance school and more pollutant exposure in Duval County. According to Schwartz (2011), prioritizing accessibility without fully considering socioeconomic factors such as school quality, crime and etc., could unintentionally buttress exclusionary zoning in the local neighborhood. Therefore, this study contends that multi-dimensional socioeconomic indices, in addition to accessibility, should be included into the evaluation of housing programs.

Based on the results of this analysis, accessible areas with no comprising factors can be identified as best practices of housing development; Accessibility plans with a focus on multi modes of transportation can be developed for inaccessible neighborhoods with no compromising factors with safeguards to preserve affordability and promote neighborhood quality;. Neighborhood improvements or community revitalization needs to be prioritized for accessible neighborhoods with compromising factors to realize the joint goal of increased accessibility and neighborhood quality; For inaccessible neighborhoods with compromising factors (the worst scenario), it is suggested to reposition the area and refocus the investment to an accessible and inclusive neighborhood through a progressive planning process.

REFERENCES:

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