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MIXED-INCOME HOUSING AND NEIGHBORHOOD INTEGRATION: EVIDENCE FROM INCLUSIONARY ZONING PROGRAMS

CONSTANTINE E. KONTOKOSTA
New York University

ABSTRACT: *Using propensity score matching and regression techniques, together with an original database of approximately 12,000 inclusionary zoning (IZ) units built in Montgomery County, Maryland and Suffolk County, New York, this article comparatively analyzes the effect of IZ programs on racial and income integration and neighborhood change at the census tract level between 1980 and 2000. In particular, the article explores the question of whether IZ programs encourage stable neighborhood integration over time. This analysis fills a gap in the current empirical literature on the effect of IZ programs on neighborhood change and integration, an original policy goal that has not been evaluated previously due to data limitations. The findings indicate that the effect of IZ units on neighborhood racial and income transition is dependent on the siting of IZ units, the initial characteristics of the neighborhoods in which they are built, and the institutional framework of the IZ program. In the aggregate, IZ units positively affect the level of both racial and income integration in neighborhoods where units are built, although stark differences emerge between the two study areas. The findings do reveal the potential for IZ programs to exacerbate existing concentrations of poverty and patterns of residential racial segregation.*

Economically diverse communities are perceived to provide benefits for lower-income households by reversing the documented adverse effects of concentrations of poverty (Massey & Eggers, 1990; Wilson, 1987). Studies have shown that spatial concentrations of poverty are correlated with low school performance (Crane, 1991), higher incidence of crime (Massey, 1995), and lower earnings (Danziger & Gottschalk, 1987). Jencks and Mayer (1990) argue that, when neighborhood poverty rates exceed a certain threshold level, behavioral pathologies spread and collective socialization erodes (see also Quercia & Galster, 2000). These neighborhood effects are produced through the creation of a “ghetto culture” of short-term goals (Anderson, 1990), the absence of role models or stable institutions (Wilson, 1987, 1996), or the lack of adequate employment (Goetz, 2000; Kain, 1968). Other scholars have argued that the link between neighborhood or project characteristics and social outcomes is inconclusive and more research is needed to explain the specific variables that account for the correlation (Briggs, 1997; Ellen, Mijanovich, & Dillman, 2001; Gans, 1990).

Inclusionary zoning (IZ) is a mixed-income housing policy that either requires or encourages income-integrated residential developments through the inclusion of low-income housing units as part of a market-rate project (Calavita & Grimes, 1998; Calavita, Grimes, & Mallach, 1997; Meltzer & Schuetz, 2010; Schuetz, Meltzer, & Been, 2009). One of the original goals of IZ is income integration at the project level and, by extension, the surrounding neighborhood, thus avoiding the low-income concentrations historically created by other subsidized housing programs (Calavita & Grimes, 1998). In addition, IZ programs may serve to limit residential racial segregation and discrimination by

Direct correspondence to: Constantine E. Kontokosta, New York University, Center for Urban Science and Progress, 1 MetroTech Center, Brooklyn, NY 11201. E-mail: ckontokosta@nyu.edu.

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creating housing opportunities for a range of incomes and by counteracting the exclusionary effects of restrictive land use regulations (Bollens, 1990; Donovan & Neiman, 1992; Ihlanfeldt, 2004; Pendall, 2000). For IZ to be an effective policy tool, it must not only create new affordable housing, but also spatially disperse new units and promote income and racial integration within a specific community. Since IZ policies were designed, in part, as a response to the ghettoization, stigmatization, and isolation produced by other subsidized housing policies, the efficacy of IZ must be measured by its ability to achieve positive outcomes for neighborhood integration (Calavita & Grimes, 1998; Calavita et al., 1997; Galster, 2007).

While the focus of research on IZ programs has been on housing production and economic effects, an overlooked measure of success for IZ is the degree to which greater and more stable racial and income integration occurs in a given neighborhood (Knapp, Bento, & Lowe, 2008; Meltzer & Schuetz, 2010; Schuetz et al., 2009; Schuetz, Meltzer, & Been, 2011). Using propensity score matching and multivariate regression techniques, together with an original database of approximately 12,000 IZ units built in Montgomery County, Maryland and Suffolk County, New York, this article comparatively analyzes the effect of IZ programs on racial and income integration and neighborhood change at the census tract level between 1980 and 2000. The purpose of this article is to explore whether IZ programs encourage stable neighborhood integration over time. This analysis fills a gap in the current empirical literature on the effect of IZ programs on integration, an original policy goal that has not been evaluated previously due to data limitations (Benson, 2009; Mukhija, Regus, Slovin, & Das, 2010).

LITERATURE REVIEW AND EMPIRICAL EVIDENCE

The Economic Effects of Inclusionary Zoning Programs

The recent proliferation of IZ programs in the United States has brought with it a growing interest in their effects on local housing markets. Specifically, studies have examined the impact of IZ policies on house prices (Knapp et al., 2008; Schuetz et al., 2011), housing supply (Clapp, 1981; Mukhija et al., 2010; Schuetz et al., 2011), and affordable housing production (Calavita & Grimes, 1998; Mukhija et al., 2010; Porter, 2004), and have analyzed policy structure and diffusion (Calavita et al., 1997; Meltzer & Schuetz, 2010; Schuetz et al., 2009).

While the evidence from the relevant literature on the economic effects of land use regulations indicates a positive correlation between restrictiveness and house prices (see, e.g., Fischel, 1985; Glaeser, Gyourko, & Saks, 2005; Ihlanfeldt, 2007; Quigley & Rosenthal, 2005), the empirical evidence of the impacts of IZ is more ambiguous, but suggests that price increases occur in jurisdictions with IZ as compared to those without. A study of cities in California by Knaap et al. (2008) indicates that in jurisdictions with IZ house prices increased, on average, 2.2% more than in non-IZ jurisdictions. More recently, research on municipalities in suburban Boston and the San Francisco metropolitan area produced mixed results (Schuetz et al., 2011). In the Boston area, there is evidence that IZ policies increased prices and decreased housing production, particularly during periods of economic expansion, although the effect is marginally significant and relatively small. On the other hand, the analysis of municipalities in the San Francisco area reveals no statistically significant effects (Schuetz et al., 2011).

The variation in results may be explained, in part, by the absence of a common policy structure and effective implementation strategies. Schuetz et al. (2009) highlight the differences in IZ programs in San Francisco, Washington D.C., and Boston with respect to policy elements such as incentives, project applicability, in-lieu-of-payment options, and whether the program is mandatory or voluntary. These factors are shown to influence affordable housing production by varying the restrictiveness and implicit cost (which can be viewed as an impact fee or tax) of IZ regulations.

Another relevant study was completed by Clapp (1981), who examined the impact of IZ on the location and type of construction activity using a general supply-demand model. Clapp suggests two possible outcomes: (1) IZ ordinances will have no impact on locational decisions of developers if a density bonus provision exists that is proportional to the decrease in the revenue from the below

market component or if alternative housing options are limited, and (2) housing supply will decrease as developers seek less restrictive markets, resulting in an increase in house prices within the specified municipality.

In a survey of IZ ordinances, Porter (2004) found that IZ can be productive if aggressively supported by state and regional agencies. However, Porter finds three general weaknesses of IZ as the definitive response to the provision of affordable housing. First, IZ ordinances must be part of an array of complementary affordable housing programs to begin to address the need for affordable units. Second, IZ functions more effectively in conjunction with state requirements for affordable housing, rather than relying on local efforts alone. Third, IZ programs are extremely vulnerable to the effects of economic cycles, which can substantially reduce housing production during a downturn (Porter, 2004).

Given the uncertainty around the impacts of IZ programs, a logical question emerges as to the motivations driving the decision to adopt IZ by local jurisdictions. In a study of IZ in California, Meltzer and Schuetz (2010) find, using hazard models, that political affiliation and the strength of local housing advocates are positive predictors of policy adoption. The political motivations of local jurisdictions to adopt IZ may also stem from a desire to avoid interference from higher level government or the courts in local affairs. Local politicians may advance IZ as a means of appearing to address affordable housing issues in an effort to delay or prevent low-income housing mandates from regional or state governments or those resulting from state court rulings. Rather than wait for a state or court-ordered mandate, as in Massachusetts and New Jersey, for example, municipalities may adopt IZ as a means of addressing local housing issues “on their own terms” (Calavita & Grimes, 1998). The actions of public officials in this case may represent “symbolic politics” (Edelman, 1964), where IZ has an expressive value of appearing to address low-income housing concerns while producing varying results.

Neighborhood Change and the Impact of Mixed-Income Housing

Racial residential segregation and concentrations of poverty are associated with social, political, and economic isolation that produces negative pathologies and constrained opportunities. At the neighborhood level, these can be characterized by a lack of employment opportunities, decreased educational attainment, high crime rates, welfare dependency, and high rates of teenage pregnancy (Crane, 1991; Ellen & Turner, 1997; Goldsmith, 2009; Kain, 1968; Wilson, 1987). Even after controlling for race, spatial segregation and concentration of poverty are associated with negative outcomes in schooling, employment, and single parenthood (Cutler, Glaeser, & Vigdor, 1999; Rosenbaum, 1992; Rubinowitz & Rosenbaum, 2000). Taken together, racial residential segregation and concentrated poverty have limited the capabilities and opportunities for racial minorities (Danziger & Gottschalk, 1987; Yinger, 1995; Young, 2000). This is most notable for blacks, as the level of spatial segregation between blacks and whites exceeds that of any other racial or ethnic minority and whites in the United States (Ellen, 2000; Massey & Denton, 1993). The negative effects of racial segregation are most pronounced for poor black households, who bear the burden of racial discrimination and economic isolation (Wilson, 1987). It is clear that patterns of residential segregation exacerbate processes of exclusion that limit freedom of housing choice, reinforce structures of privilege and disadvantage, obscure the perception of privilege by those that have it, and impede political communication among segregated groups (Blumer, 1958; Young, 2000).

Effective IZ policies should help to promote stable neighborhood integration over time, at least conceptually (Goetz, 2003). Housing built through IZ programs has the potential to overcome segregation based on racial and socioeconomic residential preferences if communities with IZ units experience a gradual racial and income transition over time and avoid the stigmatization historically created by concentrated pockets of low-income housing. As IZ units are developed, new occupants of those units should have different racial and socioeconomic characteristics from the typical existing resident of the neighborhood, given the lower housing costs associated with IZ units.¹ Therefore, these in-movers should create greater diversity within a community and increase economic and racial diversity as compared to neighborhoods without IZ units. However, this assumption only holds if

(1) existing residents do not move out in response to the in-movers, (2) IZ units are allocated in proportion to the income-eligible population by race, and (3) IZ units do not crowd out other forms of low-income housing (by diverting attention or resources from other subsidized housing programs) and thus reduce options for lower-income households or depress the absolute number of low-income housing units in the aggregate. Given these conditions, the presence of IZ units (and not simply the adoption of an IZ policy) may result in a more stable form of integration and neighborhood change.

Empirical Evidence of the Effects of Mixed-Income and Subsidized Housing

The results of previous empirical studies on neighborhood shifts in racial and socioeconomic composition associated with subsidized housing suggest that outcomes are highly contextual and depend on a number of local characteristics, including land use, zoning, existing racial composition, and political coalitions (Beauregard, 1990; Freeman, 2000; Quercia & Galster, 2000; Taub, Taylor, & Dunham, 1984). The theoretical claim is that subsidized housing (mixed-income, in this case) will cause Whites to flee and avoid neighborhoods where subsidized housing exists, following the invasion-succession hypothesis (Freeman & Botein, 2002; Park, 1936; Schwartz & Tajbakhsh, 1997).

Similarly, according to Ellen (2000), white resistance to mixed neighborhoods is based on negative expectations of future neighborhood quality. By extension, it is possible that jurisdictions that have adopted an IZ program will experience higher income or discriminatory resident (existing) households (1) moving from jurisdictions that have IZ ordinances to those that do not, (2) avoiding jurisdictions with IZ ordinances (Freeman & Rohe, 2000; Rohe & Freeman, 2001), or (3) moving to areas that have restrictive IZ policies with strict local preferences for unit allocation. If existing residents are able to prevent new affordable housing development, or contain it in certain neighborhoods, then choices for new, lower income entrants may be constrained and any resulting impact on racial or income transition will be minimal.

Galster (1990) provides another framework to evaluate racial transition caused by mixed-income housing programs. In his study of neighborhoods in Cleveland, Galster finds that the degree of racial transition between 1970 and 1980, using the Schelling (1969, 1972) segregation model (see also Clark, 1991), was positively correlated with the percentage of the minority population in 1970 and the level of segregationist sentiment held by white residents. Most relevant to the question at hand, however, was the result that government-sponsored integration programs did not reduce the rate of white flight and, in fact, correlated with higher rates of white turnover. Similarly, Galster and Keeney (1993) find public housing development in Yonkers to be correlated with an increase in Black population. Saltman (1990) supports this view by finding that there is a negative relationship between the presence of public housing in a neighborhood and stable racial integration. These studies suggest that mandated mixed-income housing programs could create a similar outcome to public housing, although tempered by the fractional production of low-income units and the (typically) higher target income levels for occupants.

Freeman and Rohe (2000) counter the conclusions of the above studies. In their study of all metropolitan areas in the United States between 1980 and 1990, the authors find no compelling evidence that subsidized housing causes racial transition. Instead, they argue that public and assisted housing can be used as a mechanism to promote neighborhood racial and income integration. Likewise, Goldstein and Yancey (1986) claim that public housing had no negative effect on neighborhood racial transition in Philadelphia between 1950 and 1980.

Conversely, minority-to-white neighborhood transition (gentrification) associated with IZ units could occur through the perpetuation of existing patterns of residential segregation and local demographic groupings (Freeman & Botein, 2002). Specifically, many IZ programs utilize a priority preference system and lottery to allocate affordable units. If priority is given to existing residents within the jurisdiction and the jurisdiction is predominantly one race (e.g., as in the Town of Southold, Suffolk County, New York with 90.7% non-Hispanic White population in 2000), it can be expected that affordable units will be allocated disproportionately to households of that race. Therefore, resident preferences limit the possibility for outsiders to enter a particular municipality, restricting the allocation of affordable units to those households that have already gained access to the community.

This could result in greater difficulty for lower income minority households to find adequate housing within the jurisdiction, forcing them to look elsewhere.

It is unclear what the expected outcome of IZ would be on neighborhood stability. This will depend largely on the individual community context. On the one hand, if a neighborhood receives a certain amount of IZ units (within a new residential subdivision, for example), and residents know that few, if any, additional units will be produced in the near future (due to the time lag of development and/or restrictions on new housing construction), existing residents may accept new homeowners/renters of differing race/ethnicity or class. This may suggest a more gradual process of integration, one that may be more durable over time. Similarly, if the IZ policy structure targets moderate- and middle-income households, existing residents may be less likely to perceive a threat to their neighborhood since there may only be a modest difference between incomes of incoming and existing residents.

On the other hand, if the amount of IZ units is above (or pushes the total in the community above) the threshold amount that existing residents might be willing to accept, neighborhood stability may be compromised and transition may occur more rapidly than can be explained by the occupants of the IZ units themselves. In this respect, a question of self-selection is raised: jurisdictions that adopt IZ programs, and those neighborhoods where IZ units are actually produced, share certain characteristics that in turn may affect how households within that jurisdiction respond to new low-income housing units.

STUDY AREA INSTITUTIONAL FRAMEWORK AND IZ POLICY STRUCTURE

Montgomery County, Maryland

Montgomery County was an early leader in the creation of an IZ affordable housing strategy, developing one of the first incentive zoning programs in the country (Trombka et al., 2004). The Moderately Priced Dwelling Unit (MPDU) program was enacted in 1974, following growing concerns in the 1960s and 1970s that the housing market in Montgomery County favored high-priced homes and offered limited options for moderate-income working families. The reasons for this concern stemmed from the typical supply and demand influences that often precipitate housing market tightening: increasing demand from lower-income households, growth controls and infrastructure limitations that constrain supply, and strong demand for high-priced homes (Trombka et al., 2004).

Led by housing advocacy groups, Bill 3–72 (later Chapter 25A—the MPDU Law) required residential developers of projects greater than 50 units to provide 15% of the units as MPDUs, subject to income and sales price restrictions. The initial ordinance was debated by the various stakeholders involved in the process, reflecting the ideological and legal tension surrounding IZ programs. The initial legislation did not provide any incentive or density bonus to the developer in exchange for the MPDUs; therefore, the question arose of whether the MPDU law represented a taking without just compensation. On the other hand, there was a concern that providing a density bonus might overwhelm infrastructure capacity and undermine land use planning efforts, both important considerations that have not been fully resolved (Trombka et al., 2004).

After a successful legal challenge in 1974 to the original bill, a revision to the legislation included a density bonus of 20% for projects required to provide MPDUs. The MPDU ordinance has been revised multiple times since its first enactment over 35 years ago. Table 1 highlights some of the key changes.

Montgomery County and the State of Maryland have also actively pursued “Smart Growth” policies at the county and state levels. In 1964, Montgomery County adopted the General Plan for the Year 2000, which outlined areas of preservation and locations for new commercial and residential development along transportation corridors. In 1993, the General Plan Refinement study reviewed development patterns in relation to the goals set forth in the 1964 plan (M-NCPPC 1993). Although the County had not grown as envisioned, there were positive examples of new development around transit hubs. In general, the concepts remained valid and politically supported, despite challenges to implementation. Reflective of the ongoing tension between pro-growth interests and environmental

TABLE 1**Changes to the MPDU Ordinance**

	1974	1981	1988	2002
Project Size (units)	50	50	50	35
Affordable Units Required (% of total)	15.0%	12.5%	12.5% to 15% ^a	unchanged
Density Bonus Allowed	20.0%	20.0%	Up to 22% ^a	unchanged
Control Period - Rental Units (years)	5	10	20	unchanged
Control Period - Ownership Units (years)	5	10	10	unchanged

Note: An in-lieu-of fee option was enacted in 1988.

^aA sliding scale requirement was instituted in 1988, with the minimum set 12.5% with no density bonus. The bonus increases up to 22% by providing more than the minimum number of affordable units, up to a maximum of 15%.

Source: Author.

preservation advocates, it has been generally the case that preservation programs have been more robustly supported than policies to support new development hubs.

At the state level, Maryland adopted the Maryland Planning Act of 1992, which provided funding incentives for development that conformed to traditional “Smart Growth” principles, such as growth in suitable areas and protection of critical environmental areas (Duany, Speck, & Lydon, 2009; Harrigan & von Hoffman, 2002). In 1997, Maryland added the Priority Funding Areas Act that directed State funding for infrastructure projects to certain areas designated as “priority funding areas.” Most recently, the State extended its vision for future growth and preservation through the Smart and Sustainable Growth Act of 2009.

Suffolk County, New York

Despite a long history of housing affordability problems (Nassau-Suffolk Regional Planning Board 1970), Suffolk County does not have a comprehensive housing policy. The County first adopted a master plan in 1970 and has recently (as of 2009) begun updating and expanding its comprehensive plan, but has left housing policy largely to the individual towns and villages. As early as 1970, estimates of affordable housing need totaled 51,000 units, with more recent estimates putting the figure around 141,377 units through 2020 (Burchell, DiGiovanna, & Dolphin, 2007). The County, however, has not set regional production goals or “fair share” targets for the localities.

The County consists of ten towns and 32 villages (33 as of 2010), in addition to over 200 special-purpose units of government. In total, there are 237 local governments according to the 2007 Census of Governments. Based on the 2007 American Community Survey population estimate of 1,510,716, Suffolk County has one local government unit for every 6,374 persons, which is in dramatic contrast to the figure for Montgomery County of one local government unit per 37,710 residents. This indicates a highly fragmented governance framework in Suffolk.

New York is a strong “home-rule” state, reflected in local control of land use decisions with limited direct involvement from higher levels of government. In Suffolk County, the 43 towns and villages are each responsible for their own affordable housing production and goals, with limited oversight at the regional or state levels. Since the early 1970s, Suffolk County has recommended that all new residential developments set aside 20% of the units as affordable housing (SCPC, 2009). This policy is not a mandate; rather, it is implemented as a condition of approval on applications before the Suffolk County Planning Commission, which provides an advisory opinion that can be overruled at the local level with a majority vote. Often, ad hoc negotiations between the developer and locality result in alternative methods to meeting affordable housing guidelines rather than building such units on-site.

In 2009, the New York State Legislature adopted General Municipal Law Article 16A, which created a state-mandated IZ program for the two counties of Long Island. The “Long Island Workforce Housing Act”, as the law is known, requires any project built to maximum yield of five units or more to provide ten percent of the total units as affordable to households earning 130% of the area median

TABLE 2

Descriptive Statistics, Montgomery County and Suffolk County, 1980-2000

	Montgomery County			
	1980	1990	2000	% Chg, 1980-2000
Population	583,806	761,666	873,341	49.6%
% Bachelors Degree	41.9%	49.6%	54.8%	12.9%
% Employed - Prof./Tech.	29.5%	31.5%	36.3%	6.8%
Population Density	3,933	4,694	5,244	33.4%
% Black	8.7%	11.8%	15.3%	6.6%
% Hispanic	3.7%	7.2%	11.4%	7.8%
% Non-Hispanic White	83.2%	73.4%	61.6%	- 21.6%
Housing Units	217,957	297,620	334,632	53.5%
% Single-Family	62.5%	58.7%	58.2%	- 4.3%
% Built before 1939	8.3%	6.5%	6.2%	- 2.0%
% Owner-occupied	67.7%	67.8%	69.4%	1.7%
Vacant Units	8,901	13,581	10,067	13.1%
% Vacant	4.1%	4.6%	3.0%	- 1.1%
	Suffolk County			
	1980	1990	2000	% Chg, 1980-2000
Population	1,282,852	1,320,547	1,419,356	10.6%
% Bachelors Degree	17.8%	23.3%	28.0%	10.2%
% Employed - Prof./Tech.	17.7%	19.1%	22.3%	4.6%
Population Density	3,086	3,106	3,288	6.5%
% Black	6.1%	6.6%	7.7%	1.6%
% Hispanic	4.6%	6.3%	10.2%	5.6%
% Non-Hispanic White	88.5%	85.5%	79.5%	- 9.0%
Housing Units	405,306	480,879	522,306	28.9%
% Single-Family	82.0%	81.7%	82.7%	0.8%
% Built before 1939	13.3%	11.1%	9.6%	- 3.8%
% Owner-occupied	76.8%	74.3%	75.7%	- 1.1%
Vacant Units	19,940	56,583	53,014	165.9%
% Vacant	4.9%	11.8%	10.1%	5.2%

Source: Author.

income (although in-lieu-of-payments may be made as an alternative to on-site construction). In exchange, developers receive a 10% density bonus. The law was adopted in response to severe affordable housing shortages on Long Island (evidenced by the housing need estimates presented above) and, possibly, to recent legal challenges to the provision and distribution of low-income housing in Westchester County, New York.

At the local level, affordable housing policies vary considerably in structure, content, and enforcement. None of the towns or villages had a mandatory inclusionary zoning program in place during the study period. Substantial discrepancies exist across the ten towns, which often reflect local political realities and the tenuous position of pro-development housing policies in a county with strong land preservation goals and advocates. Beginning with the introduction of a purchase of development rights program for farmland in 1974, and expanding to protection of environmentally sensitive areas through direct acquisition in the 1980s, Suffolk has preserved over 29,000 acres and has made land preservation a key focus of regional policy (Suffolk County Department of Planning, 2007).

Study Area Descriptive Statistics

The study area descriptive statistics shown in Table 2 demonstrate the comparability of the two counties for the purposes of this study. While Suffolk is larger than Montgomery in population and land mass (911 square miles to 496 square miles), the two counties shared a similar population density and proportions of Black and Hispanic populations in 1980. Although Suffolk has a considerably

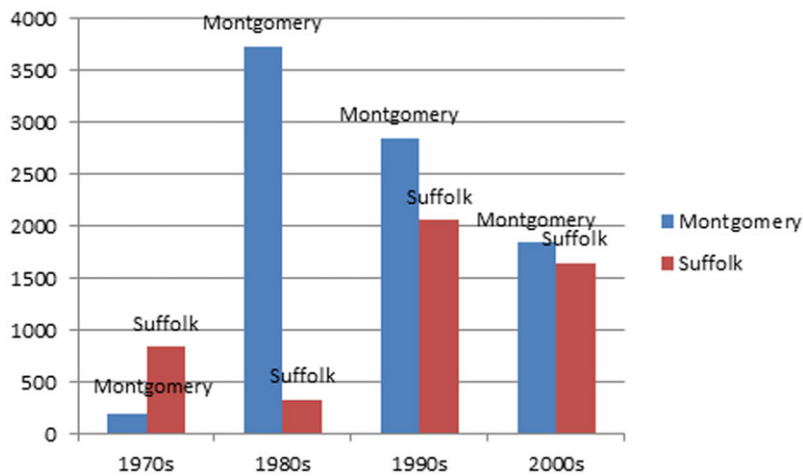


FIGURE 1
Number of Affordable Units Built by Decade, Montgomery County and Suffolk County

Source: Author.

TABLE 3
IZ and LIHTC Units Built, 1980s and 1990s, Average per Tract

	Inclusionary Zoning Units			LIHTC Units		
	1980s	1990s	Total pre-2000	1980s	1990s	Total pre-2000
Mean	31	38	77	2	11	13
St dev	55	63	93	11	40	44
Maximum	299	431	506	113	253	253
% of Total Units	1.5%	1.9%	3.8%	0.1%	0.5%	0.6%

Source: Author.

larger percentage of single-family homes, ownership rates were roughly similar in the two counties and have converged over time. Most relevant to this study is the comparative percentage and absolute changes in key variables. Notably, the change in total housing units in Montgomery and Suffolk between 1980 and 2000 was 116,675 and 117,000, respectively. This indicates a net difference of just 325 housing units between Suffolk and Montgomery Counties over the 20-year study period. The similarities in demographic characteristics in 1980 and the essentially equal number of net housing units between 1980 and 2000 make the two areas suitable for a comparative analysis of housing markets and neighborhood change.

Figure 1 presents the development of all affordable units, including low-income housing tax credit (LIHTC) and HUD-subsidized units, in the study area by decade, beginning in 1971, and Table 3 shows the average number of units built in tracts with any IZ units built before 2000.

As Table 3 demonstrates, IZ units accounted for only a small percentage of the total housing stock constructed, with all IZ units built before 2000 representing only 3.8% of the total housing stock, on average, as of 2000. However, this was significantly greater than the number of LIHTC units built in the two study areas, with approximately six times more IZ units built in the selected neighborhoods.² Location data were collected for a total of 2,393 IZ units³ in Suffolk County and 8,650 IZ units in Montgomery County for the study period between 1980 and 2000.

EMPIRICAL METHODS

This article explores the effect of IZ housing units on three components of neighborhood integration and transition—race, income, and stability—by comparing census tracts with IZ units to those where no IZ units have been built across two distinct regional study areas: Suffolk County, New York and Montgomery County, Maryland. It should be emphasized that the focus of this study is on the effects of IZ units actually built, and not just the effect of the presence of a local IZ policy.

Propensity score matching is used here to define comparable neighborhoods for the analysis. Measures of diversity and stability include entropy index values for race and income, percentage change in non-Hispanic White population, and percentage change in the proportion of middle-income households. In addition, the direct effect of IZ unit occupant characteristics is compared to estimates of neighborhood transition to discern the effect attributable to the household composition of residents occupying IZ units.

Data Sources and Study Timeframe

The study area for this analysis includes all 177 census tracts in Montgomery County, Maryland and all 312 tracts in Suffolk County, New York. The time period for the analysis is from 1980 to 2000, which captures neighborhood changes when a majority of IZ units were built in the study area. By beginning the analysis in 1980, effects from pre-existing IZ units are minimized, given the relatively limited production in the 1970s in both counties. Census tracts are used as a proxy for neighborhoods, following much of the empirical studies of neighborhood-level segregation (Galster, Booza, & Cutsinger, 2008; Iceland, Weinberg, & Steinmetz, 2002).

Data for Montgomery County were compiled from numerous agencies, including the Montgomery County Planning Department, Department of Housing and Community Affairs, Housing Opportunities Commission, Maryland State Department of Assessments and Taxation, and the Maryland State Department of Planning. Addresses for all IZ units built since 1974 were extracted from the Department of Housing and Community Affairs MPDU database and supplemented by additional research on individual properties.

Suffolk County has no central repository of affordable housing data. Therefore, this work represents the first comprehensive database of affordable housing built in Suffolk, as well as the first database of units built through IZ and mixed-income housing programs. Data were compiled during 2008 and 2009 from the Suffolk County Department of Planning, the Department of Affordable Housing, the Long Island Housing Partnership, the Community Development Corporation of Long Island, and village and town planning officials.

For both counties, census data are from the GeoLytics Neighborhood Change Database, which includes tract-level data for 1970, 1980, 1990, and 2000. Geographic information system (GIS) files, used to include spatially dependent control variables in the statistical analyses, are from the NYS GIS Clearinghouse and the Montgomery County Department of Technology. Data on LIHTC units and HUD program units were extracted from the U.S. Department of Housing and Urban Development Low Income Housing Tax Credit database and the Picture of Subsidized Housing database.

Measure of Integration—The Entropy Index

Traditional measures of segregation, as described by Massey and Denton (1993), have limitations in their ability to convey changes within tracts and across more than two racial/ethnic groups (Reardon & O’Sullivan, 2004). In both Suffolk and Montgomery Counties, where Hispanics and Asians collectively account for over 10% and over 20% of the total population, respectively, it is critical to examine the level of integration beyond the typical White-Black relationship. Similarly, a measure of income integration should capture the full range of income categories, from very low income to high income (Galster et al., 2008).

To account for this limitation, a measure of diversity known as the Entropy Index is used to measure multi-group integration for both race and income (Allison, 1978; Fischer, 2003; Iceland,

2004; James & Taeuber, 1985; Reardon & Firebaugh, 2002; Reardon & Yun, 2001; White, 1986). The entropy index is given by

$$H_i = \Sigma \sum_{m=1}^M Q_{im} / \ln(m),$$

where

$$Q_{im} = \pi_{im} \ln(\pi_{im}) \quad \text{if } \pi_{im} > 0, \\ = 0 \text{ otherwise,}$$

π_{im} = the proportion of the population of tract i consisting of persons in group m , and

M = number of groups (four for race, five for income).

The entropy index is equal to 1.0 when all income/racial groups are equally represented in a neighborhood. When only one group is present, the index assumes a minimum value of zero. In this article, four racial/ethnic groups are included in the racial entropy measure: non-Hispanic White, non-Hispanic Black, Hispanic, and Asian. Following Galster et al. (2008) and HUD income guidelines, five income categories are included in the calculation for income integration: less than 50% of the area median income (AMI), 51–80% AMI, 81–100% AMI, 101–120% AMI, and greater than 120% AMI.

Impacts on Racial and Income Integration and Transition

To analyze the impact of IZ units on integration, two methods are used: propensity score matching with independent sample t -tests to determine statistically significant differences between groups and linear multivariate regression models. Based on the data from 1980 to 2000, regression models are used to determine changes in neighborhood racial and income integration and composition over time in jurisdictions that have IZ in relation to those that do not.

For racial integration, following Galster (1990) and Ellen (2000), the dependent variable is the percentage change in non-Hispanic White population between 1980 and 2000. This variable provides an estimate of racial transition in neighborhoods, specifically analyzing the determinants of changes in non-Hispanic White population. While this dependent variable is relatively straightforward to interpret, it does not create a complete picture of neighborhood integration (Ellen, 2000; Reardon & O'Sullivan, 2004). However, given the high proportion of non-Hispanic Whites in both counties, the variable provides a suitable measure of racial change. To develop a more comprehensive picture of neighborhood diversity, the entropy index is also employed in this analysis.

Turning to impacts on income integration, the dependent variable becomes the percentage change in families earning between 80% and 120% of AMI. This income category captures the extent of income polarization in a neighborhood by measuring the extent of relative changes in middle-income households (Hardman & Ioannides, 2004).

For both the racial and income models, the independent variables in this analysis are grouped into five categories: socioeconomic status, tract demographics, housing market conditions, measures of integration, and IZ units. For socioeconomic status, the model includes household income, percentage change in household income between 1970 and 1980, percent in professional occupations, percent with a college degree, percent in poverty, percent receiving public assistance, percent of households earning more than 120% of AMI, and the percent of Black households earning more than 80% of AMI.

Demographic variables include measures of neighborhood racial composition (percent Black and percent Hispanic) and quadratic terms for each (percent Black and percent Hispanic squared). The quadratic terms allow for varying effects of a specific population as that population increases and

TABLE 4

Tract Entropy Index Values and Selected Racial Characteristics by Quartile, 1980

	Income Integration Index		Racial Integration Index		% Black		% Hispanic		% non- Hispanic White	
	MC	SC	MC	SC	MC	SC	MC	SC	MC	SC
Least Likely	0.86	0.79	0.41	0.16	9.5%	2.0%	4.3%	2.3%	82.1%	94.8%
Less Likely	0.87	0.76	0.46	0.19	10.3%	3.5%	5.0%	3.2%	80.1%	92.5%
More Likely	0.87	0.71	0.42	0.27	8.0%	8.8%	4.1%	4.8%	82.8%	85.5%
Most Likely	0.85	0.64	0.39	0.48	8.3%	16.5%	3.0%	13.9%	84.6%	68.9%

test for the presence of thresholds (Quercia & Galster, 2000). The percent of the population over age 65 is also included, as is the change in non-Hispanic White population between 1970 and 1980.

The housing market conditions category includes variables for percent ownership, percent single-family housing, percent of all units built before 1939, median gross rent, percent of housing units with public sewers, population density (and population density squared), and two measures of housing unit growth (between 1970 and 1980 and between 1980 and 2000).

Racial and income integration are calculated using the entropy index described above. These integration measures are included in the model to estimate the impact of the 1980 level of neighborhood integration on racial and income transition and stability over time. The expectations for racial and income change caused by IZ units in integrated neighborhoods is ambiguous. It is possible that more integrated neighborhoods would be more stable over time, and thus IZ units should have little additional impact. On the other hand, integrated neighborhoods may be closer to a perceived tipping point, and IZ units might affect the existing racial composition enough to accelerate the process of transition.

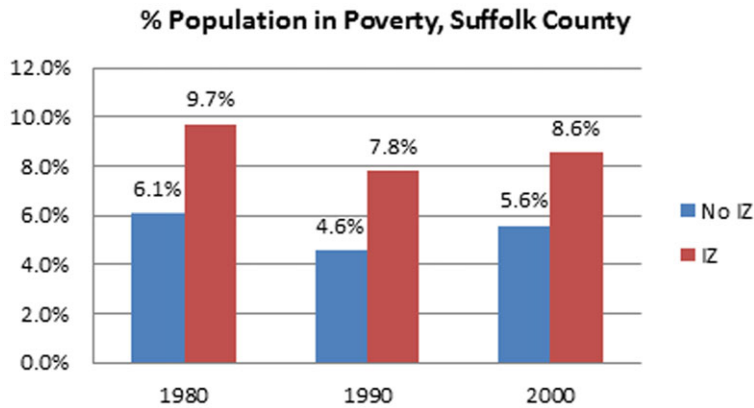
Finally, three variables account for the effect of IZ units built in a given census tract. These include the total number of IZ units produced between 1980 and 2000, a second binary variable for any IZ units built between 1980 and 2000, and a third variable for the proportion of IZ units built to total number of housing units as of 1980 ($IZUnits_{1980-2000}/HU_{1980}$). The regression model is designed to test for the effect of IZ units built on changes in non-Hispanic White population and middle-income households in that neighborhood. The third variable accounts for the relative number of IZ units built to the initial supply of housing in the census tract. The average percent change in non-Hispanic White population in surrounding tracts is also included as a control for spatial correlation in neighborhood change and potential spillover effects beyond the census tract boundaries.

RESULTS OF THE EMPIRICAL ANALYSES

Neighborhood Integration and Change—Propensity Score Model Results

To identify comparable neighborhoods, tracts were grouped into four categories based on the likelihood of receiving IZ units. This grouping was determined by the output of a propensity score model using logistic regression (Rosenbaum & Rubin, 1985; Rubin & Thomas, 1996) to estimate the probability of a tract receiving IZ units during the study period given a range of explanatory variables and controlling for the local IZ policy structure. Table 4 shows the entropy index values for race and income in 1980, as well as selected racial characteristics, for all tracts grouped by propensity score quartile (tracts ranked from least likely to most likely to receive IZ units).

Table 4 reveals the pronounced differences between the characteristics of tracts most likely to receive IZ units in the two counties. In Montgomery County, race is not a significant factor in explaining the likelihood of receiving units. On the other hand, in Suffolk County, neighborhoods with higher proportions of Black and Hispanic populations (and those more racially integrated) are more likely to receive IZ units. Inclusionary zoning units were also more likely to be built in

**FIGURE 2****Poverty Rate in Suffolk County, 1980-2000**

Source: Author.

TABLE 5**Racial and Income Integration, Change from 1980 to 2000**

	Racial Integration Chg		% NHW Change		Income Integration Chg		% Mid Income Chg	
	No IZ	IZ	No IZ	IZ	No IZ	IZ	No IZ	IZ
Least Likely	0.16	0.21	-9.7%	-10.2%	0.13	0.29	4.8%	11.0%
Less Likely	0.15	0.22	-9.0%	-12.8%	0.20	0.28	7.4%	13.0%
More Likely	0.18	0.21	-13.1%	-12.6%	0.22	0.30	5.6%	10.3%
Most Likely	0.22	0.27	-18.2%	-24.1%	0.16	0.13	0.7%	-0.7%

income-segregated and poor neighborhoods. This is evidenced by the higher poverty rates in IZ neighborhoods in Suffolk when compared to neighborhoods without IZ, as shown in Figure 2.

The impact of IZ units on racial and income integration is shown in Table 5. This figure illustrates the change in racial and economic integration entropy measures, the percentage change in non-Hispanic White population, and the proportion of middle-income households between 1980 and 2000 for tracts that received IZ units in relation to comparable neighborhoods that did not. The difference is also examined by county (shown in Table 5) to explore regional variations in outcomes.

Table 5 shows that, on average, tracts in the study area became more integrated over time. This is consistent with empirical research on neighborhood mixing (Cutler et al., 1999; Dawkins, 2004; Farley & Frey, 1994). Neighborhoods with IZ units had larger relative increases in both racial and income integration (with one exception) than neighborhoods where no IZ units were built. Although the percentage of non-Hispanic White population had a larger decline in IZ neighborhoods, only those classified as “most likely” to receive IZ units experienced a statistically significant difference (measured by *t*-test) from non-IZ neighborhoods, in this case an almost 6 percentage point greater decline. Changes in the percentage of households in the middle-income group increased substantially more in neighborhoods with IZ, with the exception of neighborhoods in the “most likely” category, where the proportion was relatively unchanged between 1980 and 2000.

When comparing the two counties as shown in Table 6, several substantial differences become apparent. The results for Montgomery County demonstrate that neighborhoods with IZ units became more racially integrated over time, while experiencing relative stability in income integration. While there was a larger decline in non-Hispanic White population, the magnitude of the decline, on average, is only marginally greater than the direct effect resulting from the IZ unit occupants themselves (discussed below), and is consistent with the resultant higher levels of racial integration.

TABLE 6

Racial and Income Integration, Change from 1980 to 2000, by County

	Racial Integration Chg			% NHW Change			Income Integration Chg			% Middle Income Change		
	No IZ	IZ	diff	No IZ	IZ	diff	No IZ	IZ	diff	No IZ	IZ	diff
Montgomery												
Least Likely	0.23	0.34	0.11	-18.1%	-22.3%	-4.2%	-0.03	-0.02	0.01	-1.0%	-3.9%	-3.0%
Less Likely	0.23	0.31	0.08	-19.3%	-22.6%	-3.3%	-0.05	0.01	0.06	-3.9%	0.7%	4.6%
More Likely	0.24	0.32	0.09	-21.7%	-23.1%	-1.4%	-0.11	0.00	0.11	-9.0%	-4.5%	4.5%
Most Likely	0.25	0.33	0.07	-19.9%	-24.9%	-5.0%	-0.03	-0.05	-0.02	-3.5%	-6.1%	-2.7%
Suffolk												
Least Likely	0.14	0.17	0.03	-6.2%	-7.2%	-0.9%	0.10	0.25	0.15	7.1%	14.7%	7.6%
Less Likely	0.14	0.18	0.05	-6.9%	-9.5%	-2.6%	0.16	0.23	0.07	9.7%	17.0%	7.3%
More Likely	0.16	0.17	0.01	-9.9%	-9.4%	0.4%	0.20	0.24	0.04	10.9%	14.8%	3.8%
Most Likely	0.15	0.10	-0.05	-15.2%	-21.5%	-6.3%	0.19	0.34	0.15	7.9%	15.8%	7.9%

In Suffolk County, neighborhoods most likely to receive IZ units experienced a smaller change in the racial entropy measure and significantly greater declines in non-Hispanic White population. Given that these neighborhoods also had more than double the County average of percentage of Blacks and Hispanics in 1980, this is a particularly disconcerting finding, one that suggests a continued pattern of spatial segregation by race. When looking at income measures, neighborhoods with IZ units consistently show greater levels of integration and higher percentage gains of middle-income households. This is consistent with expectations, as IZ programs in Suffolk County are targeted to those households earning between 80% and 120% of AMI and are subject to income qualification.

Correlates of Non-Hispanic White Turnover

An ordinary least-squares regression model is estimated to determine the influence of IZ units and census tract-level characteristics on the change in non-Hispanic White population between 1980 and 2000. The purpose of this analysis is to determine the effect of the presence of IZ units on the proportion of non-Hispanic White population over time, while controlling for factors described above. Three models are estimated: the full sample of all tracts, tracts in Montgomery County only, and tracts in Suffolk County only.

The results of the analysis using the change in proportion of non-Hispanic White population as the dependent variable are presented in Table 7. As a robustness check, results using the percentage change in the proportion of non-Hispanic Whites as the dependent variable are shown in Table 8.

The results shown in Table 7 are consistent with previous empirical evidence with respect to the coefficients for socioeconomic and demographic variables (Ellen, 2000; Galster, 1990). Coefficients for educational attainment and proportion of higher income households in 1980 were significant in Montgomery County, where neighborhoods with a larger proportion of college-educated residents were more likely to experience increases in non-Hispanic White population. On the other hand, a greater proportion of higher income households in 1980 is correlated with a decrease in non-Hispanic White population between 1980 and 2000.

For the full model, which includes all tracts in both counties, the coefficients for both integration measures were negative and statistically significant. Therefore, neighborhoods that were initially more diverse experienced larger decreases in non-Hispanic White population percentage from 1980 to 2000, suggesting that neighborhoods with higher levels of integration (and thus higher initial relative proportions of Blacks and Hispanics) may be less likely to attract non-Hispanic White households. This finding can be supported by several of the segregation mechanisms discussed earlier. Neighborhoods with a greater proportion of single-family homes and higher median home values were more likely to experience increases in non-Hispanic White population. This is consistent with research that shows minority and low-income households face barriers to entry in certain local

TABLE 7

OLS Regression Results, Change in Proportion of Non-Hispanic White Population

Model	B	t	B	t	B	t
Constant	-0.085	-0.233	0.336	0.429	-0.092	-0.173
SOCIOECONOMIC						
Education (% with Bachelors)	0.161	2.288	0.311	2.285**	0.022	0.243
Household Income (000s)	-0.001	-1.753*	0.000	0.149	-0.002	-1.675*
Income (% change 1970–1980)	0.002	0.162	-0.019	-0.828	0.018	1.225
% in Poverty	-0.128	-0.993	0.094	0.301	-0.075	-0.613
% HH Earning Above 120% AMI	-0.260	-0.304	-0.293	-2.310**	0.040	0.370
% Black Population Earning > 80% AMI	-0.015	-0.278	-0.101	-1.355	-0.041	-0.576
% Professional Occupations	0.142	1.645*	0.158	0.922	0.009	0.094
DEMOGRAPHIC						
% Over 65	0.142	2.162**	0.377	3.215***	-0.103	-1.435
% Black	0.395	1.961**	0.172	0.496	0.194	0.577
% Black squared	-0.320	-1.052	0.008	0.008	-0.069	-0.212
% Hispanic	0.120	0.472	2.010	2.429**	-1.223	-3.428***
% Hispanic squared	-0.415	-0.741	-3.687	-0.793	1.654	2.941***
% Non-Hispanic White	-0.004	-0.011	-0.753	-0.991	0.118	0.224
% Change NHW (1970–1980)	0.062	1.959**	0.262	2.068**	0.010	0.358
Avg. % Chg in NHW of Adjacent Tracts	0.855	20.267***	0.688	11.035***	0.867	16.573***
INTEGRATION						
Racial Entropy Measure	-0.295	-2.227**	-0.602	-1.718*	-0.052	-0.372
Income Entropy Measure	-0.173	-4.354***	0.043	0.563	-0.092	-1.802*
HOUSING						
% Growth in Housing Units (1970–1980)	-0.003	-0.986	0.001	0.164	0.016	2.176**
% Growth in Housing Units (1980–2000)	-0.003	-3.333***	-0.003	-2.076**	0.000	0.013
Median Gross Rent (diff from County) (000s)	0.031	1.062	-0.004	-0.081	0.019	0.591
Median House Value (000s)	0.000	3.192***	0.000	2.747***	0.000	1.116
% Built Before 1939	0.004	0.109	0.045	0.690	0.027	0.761
% Ownership	-0.065	-1.821*	-0.053	-0.995	-0.004	-0.078
% Single-Family	0.101	3.790***	0.144	3.359***	0.021	0.601
Population Density (Persons/sq.mi.)	0.000	-0.156	-0.001	-1.865*	0.001	1.641
Population Density squared	0.000	1.881*	0.000	2.274**	0.000	-2.261**
INCLUSIONARY ZONING						
Any IZ Units Built Before 2000 (Yes/No)	-0.020	-2.099**	0.000	0.003	-0.017	-1.703*
Total IZ Units Built Before 2000	0.000	1.261	0.000	-1.212	0.000	0.578
IZ Units as % of Total Units (1980)	0.006	0.226	0.055	0.501	-0.007	-0.345
COUNTY	0.079	6.257***				
N	485		173		312	
R ²	0.769		0.822		0.78	
Adjusted R ²	0.754		0.786		0.757	
F-statistic	50.318		22.818		34.475	

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

housing markets and, potentially, opposition by existing residents to more diverse housing options out of perceived negative impacts on property values (Dear, 1992; Pendall, 2000). On the other hand, neighborhoods with higher percentage increases in housing units (measured as the number of net new units between 1980 and 2000 divided by the number of units in 1980) between 1980 and 2000 experienced larger decreases in non-Hispanic White population. Therefore, neighborhoods where more housing units were built, relative to the initial housing stock, became more racially integrated over time.

The variables of interest, those in the “Inclusionary Zoning” category, are statistically significant in two cases. For both the full model and the Suffolk sample, if a neighborhood had *any* IZ units built between 1980 and 2000, then that neighborhood was more likely to have a decline in its

TABLE 8

OLS Regression Results, Percentage Change in Proportion of Non-Hispanic White Population

Model	B	t	B	t	B	t
Constant	-3.105	-5.196***	-1.134	-1.161	-4.75	-4.311
SOCIOECONOMIC						
Education (% with Bachelors)	0.33	2.888***	0.408	2.408**	0.26	1.407
Household Income (000s)	-1.25E-03	-1.214	-1.19E-04	-0.121	5.58E-04	0.262
Income (% change 1970–1980)	0.012	0.562	-0.022	-0.783	0.011	0.392
% in Poverty	-0.281	-1.34	0.04	0.103	-0.046	-0.186
% HH Earning Above 120% AMI	-0.051	-0.368	-0.373	-2.321**	0.015	0.067
% Black Population Earning > 80% AMI	-0.103	-1.175	-0.121	-1.299	-0.279	-1.982**
% Professional Occupations	-0.027	-0.192	0.13	0.611	-0.358	-1.803*
DEMOGRAPHIC						
% Over 65	0.265	2.488**	0.451	3.091***	0.084	0.578
% Black	0.586	1.779*	-0.321	-0.746	1.156	1.661*
% Black squared	2.975	6.023***	3.271	2.562**	3.917	5.874**
% Hispanic	-0.182	-0.439	2.356	2.287**	-1.218	-1.659*
% Hispanic squared	3.225	3.544***	-7.835	-1.353	7.054	6.154**
% Non-Hispanic White	3.056	5.225***	0.699	0.739	4.664	4.282***
% Change NHW (1970–1980)	-0.035	-0.682	0.358	2.265**	-0.091	-1.659*
Avg. % Chg in NHW of Adjacent Tracts	1.105	16.141***	0.88	11.331***	1.061	10.019***
INTEGRATION						
Racial Entropy Measure	0.781	3.626***	-0.095	-0.217	1.402	4.853***
Income Entropy Measure	-0.302	-4.681***	0.03	0.313	-0.167	-1.618
HOUSING						
% Growth in Housing Units (1970–1980)	0.002	0.316	0	0.068	0.068	4.582***
% Growth in Housing Units (1980–2000)	-0.003	-1.796*	-0.003	-1.63	0.005	1.12
Median Gross Rent (diff from County)	3.95E-05	0.835	9.85E-06	0.17	5.00E-05	0.754
Median House Value (000s)	2.15E-04	2.014**	3.48E-04	2.579**	-2.68E-05	-0.157
% Built Before 1939	-0.002	-0.036	0.043	0.533	0.077	1.057
% Ownership	-0.137	-2.355**	-0.101	-1.522	-0.015	-0.157
% Single-Family	0.182	4.215***	0.188	3.529***	0.133	1.858
Population Density (Persons/sq.mi.)	0	-0.559	-0.001	-1.916	0.001	0.776
Population Density squared	4.84E-10	2.027**	6.07E-10	2.474**	-1.20E-09	-0.875
INCLUSIONARY ZONING						
Any IZ Units Built Before 2000 (Yes/No)	-0.032	-2.078**	0.004	0.183	-0.033	-1.688*
Total IZ Units Built Before 2000	0	1.098	0	-0.996	-1.80E-05	-0.079
IZ Units as % of Total Units (1980)	0.006	0.163	0.055	0.402	0.003	0.061
COUNTY	0.091	4.406***				
N	484		173		311	
R ²	0.737		0.849		0.717	
Adjusted R ²	0.719		0.818		0.687	
F-statistic	42.261		27.625		24.509	

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

non-Hispanic White population. This is logical, given that a majority of the first occupants of IZ units (based on data for Montgomery County) are other than non-Hispanic White. The question becomes, however, whether the decline in non-Hispanic White population exceeds the change attributable to first occupants alone. This direct effect on racial transition is discussed in greater detail below.

Of particular interest is the presence of spatial correlation in neighborhood change. In other words, is the rate of change in non-Hispanic White population related to the rate of change in surrounding neighborhoods? The variable labeled *avg. % chg in NHW of adjacent tracts* captures the average percent change in non-Hispanic White population in adjacent tracts. In all three models, this variable is positive and strongly significant (a scatterplot with tract percent change in non-Hispanic Whites is shown in Figure 3). The coefficients suggest that there are spillovers in neighborhood change indicators and also reveals the potential limitations of using census tracts as a proxy for neighborhoods (Clapp & Wang, 2006). This result supports the findings that spatial concentrations

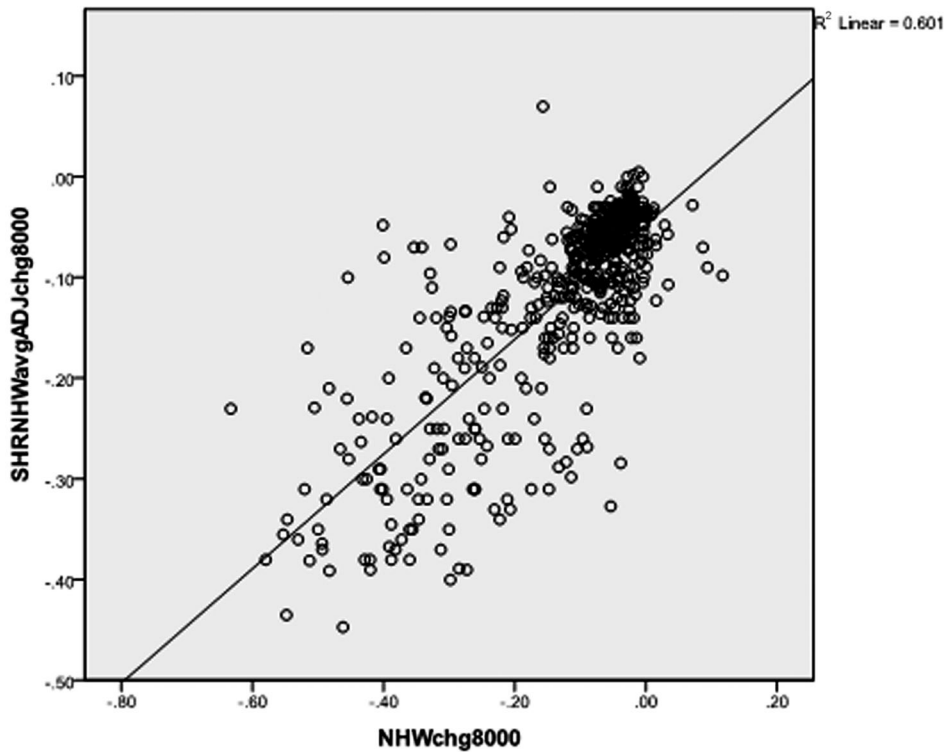


FIGURE 3

Scatterplot, Spatial Correlation of Non-Hispanic White Population Change

of minorities and affordable housing units were widely evident in the data, particularly for Suffolk County.

Effect on Neighborhood Income Integration

The impact of IZ units on income integration and transition, as measured by the change in the proportion of middle-income households, is shown in Table 9. Model 1 includes both counties. The results show coefficients of the expected sign for control variables such as income, poverty, education level, and professional occupation (Ioannides, 2004; Talen, 2006). There is a decrease in the proportion of middle-income households in neighborhoods that have more Black households earning more than 80% of AMI. Given the positive correlation with percentage change in high-income households between 1980 and 2000, it is possible that this finding indicates a process of gentrification in neighborhoods with greater proportions of higher income Black households. The measures of integration are both negative and statistically significant, suggesting that greater racial and economic integration at the neighborhood level in 1980 is correlated with decreases in the middle-income population over time. Given the overall trend in the study area of a “hollowing out” of middle-income groups, these coefficients indicate that areas with higher initial proportions of middle-income households experienced greater declines between 1980 and 2000.

The coefficients of interest, those for IZ units built before 2000 (both binary and total number), are not statistically significant when looking at both counties simultaneously. However, analyzing each county individually produces statistically significant results, although with opposite signs for Montgomery and Suffolk for the *any IZ units built* binary variable. In Montgomery County, the larger the total number of IZ units built led to greater increases in middle-income households—an expected

TABLE 9

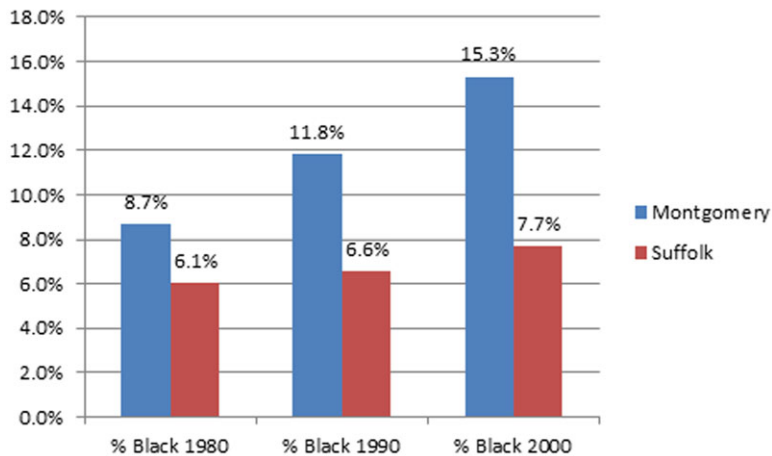
OLS Regression Results, Change in Proportion of Middle-Income Households

Model	(1) B	t	(2) B	t	(3) B	t
Constant	0.684	14.849***	0.527	6.889***	0.662	11.389***
SOCIOECONOMIC						
Education (% with Bachelors)	-0.353	-5.024***	-0.776	-6.105***	-0.195	-2.315**
Income (% change 1970–1980)	-0.018	-1.358	0.002	0.077	0.008	0.537
Household Income	0.000	-4.279***	0.000	0.549	0.000	-7.051***
% in Poverty	-0.554	-4.183***	0.069	0.250	-0.706	-5.523***
% with Public Assistance	-0.083	-0.541	-0.654	-2.069**	0.093	0.605
% HH Earning Above 120% AMI	0.025	0.355	-0.015	-0.169	0.278	2.516**
% Black Population Earning > 80% AMI	-0.181	-3.310***	-0.241	-3.639***	0.025	0.343
% Professional	0.142	1.687*	0.444	2.995***	-0.021	-0.213
DEMOGRAPHIC						
% Over 65	-0.227	-3.411***	-0.126	-1.245	-0.435	-5.645***
% Black	0.087	0.532	0.731	2.495**	-0.347	-1.708*
% Black squared	-0.178	-0.978	-0.806	-1.550	0.274	1.245
% Hispanic	0.205	0.847	1.221	1.788*	-0.104	-0.369
% Hispanic squared	-0.580	-1.411	-5.720	-1.721*	-0.090	-0.209
% Change NHW (1970–1980)	-0.084	-2.678***	-0.002	-0.016	-0.076	-2.692***
INTEGRATION						
Racial Entropy Measure	-0.136	-1.933*	-0.368	-3.248***	0.014	0.153
Income Entropy Measure	-0.481	-11.938***	-0.351	-5.252***	-0.429	-8.042***
HOUSING						
% Growth in Housing Units (1970–1980)	0.001	0.353	-0.004	-1.003	0.026	3.235***
% Growth in Housing Units (1980–2000)	-0.001	-0.748	-0.001	-0.535	0.014	6.349***
Median Gross Rent	0.000	0.723	0.000	1.966*	0.000	-0.361
% Housing Units with Public Sewers	0.016	0.804	0.060	1.715	-0.016	-0.578
% Built Before 1939	0.023	0.721	-0.032	-0.610	0.116	3.142***
% Ownership	-0.054	-1.577	0.041	0.890	0.033	0.662
% Single-Family	-0.011	-0.408	-0.142	-3.633***	0.032	0.736
Population Density (Persons/sq.mi.)	0.000	0.673	0.000	0.614	0.000	-0.974
Population Density squared	0.000	0.095	0.000	-0.299	0.000	1.160
INCLUSIONARY ZONING						
LIHTC any before 2000	-0.014	-0.639	-0.029	-1.212	-0.059	-1.336
LIHTC before 2000	0.0000	-0.247	0.0001	0.381	0.0000	0.525
IZ units before 2000	0.0001	1.496	0.0003	3.391***	-0.0001	-0.881
IZ units any before 2000	0.007	0.786	-0.028	-2.010**	0.032	3.100***
Prop IZ to Total HU 1980	-0.379	-1.882*	-0.591	-0.929	0.010	0.047**
COUNTY						
N	488		176		312	
R ²	0.780		0.818		0.795	
Adjusted R ²	0.77		0.78		0.773	
F-statistic	52.3		21.788		36.308	

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

result given the income targets of the IZ units and the greater probability of these neighborhoods having higher proportions of multifamily housing. The coefficient for neighborhoods receiving *any* IZ units is negative, suggesting that there is a nonlinear effect produced by the number of IZ units built.

In Suffolk County, the variable for *any IZ units built* between 1980 and 2000 is significant, and, in this case, positive. In Suffolk, the county-level affordable housing program and most local-level programs target households earning between 80% and 120% of AMI. Since this is equivalent to the middle-income range, the coefficient suggests that IZ can be effective in maintaining and expanding housing opportunities for the targeted income range. In addition, as IZ units are typically built as part of multifamily housing developments, greater densities should result in lower per unit housing

**FIGURE 4****Percent Change in Black Population, 1980-2000**

Source: Author.

costs. These results also reinforce the outcomes of the propensity score matching analysis discussed above.

Neighborhood Stability

Neighborhood stability, which refers to the duration of integration after reaching certain thresholds, has been shown to facilitate positive neighborhood and individual outcomes, with particular benefits for poor neighborhoods (Ellen, 2000; Goering, 1978). From a social isolation perspective, however, stability can have negative impacts on residents in disadvantaged neighborhoods, where opportunities for neighborhood improvement may be perceived as limited (Ross, Reynolds, & Geis, 2000).

What constitutes a “stable” neighborhood? For racial integration, Ellen (2000) examines neighborhood change between 1980 and 1990 and classifies stable neighborhoods as those whose Black population does not change by more than 10%. Lee and Wood (1991) utilize a 5% change as the threshold.

A more reliable measure of neighborhood stability involves a reference to the average change in the respective county as a whole. In this case, the change in percentage Black population between 1980 and 2000 at the neighborhood level is compared to the average change in Black population for the respective county. Tracts that differed from the county average by less than 5% (above or below) are, in this case, considered stable neighborhoods. Figures 4 and 5 present, respectively, the change in the Black population for each county and the incidence of stable neighborhood change by presence of IZ units and county.

Using this relative measure of stability, there is no significant difference between IZ and non-IZ neighborhoods in Montgomery County. In both cases, roughly half of the tracts can be considered stable. In Suffolk County, the change in Black population was relatively modest between 1980 and 2000, growing by only 1.6% over the 20-year period. The results indicate a greater level of stability in neighborhoods without IZ units. However, based on the results of the regression models presented above, the greater instability in IZ neighborhoods does not necessarily reflect an outcome tied to the presence of the IZ units themselves. Rather, neighborhoods in Suffolk County likely to receive IZ units may have experienced continued racial and income transition due to their initially (1980) high proportions of minority and poor households.

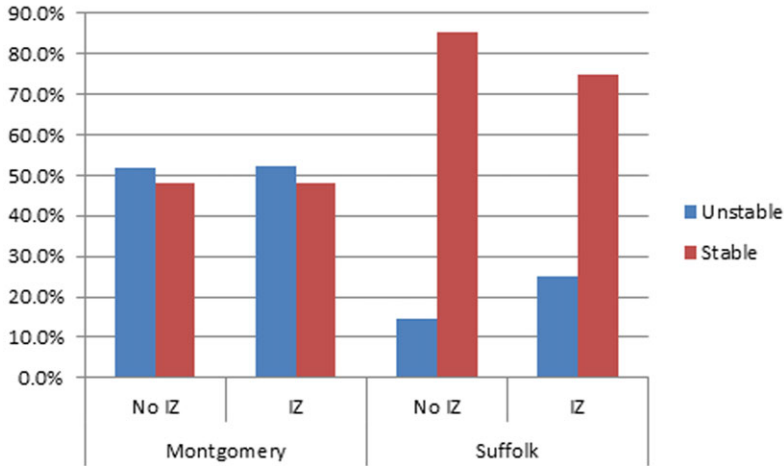


FIGURE 5

Neighborhood Stability using Relative Difference Measure

THE DIRECT EFFECT AND ALLOCATION OF IZ UNITS

When considering the results presented above, it is important to account for the direct effect of the income and racial characteristics of the occupants of the IZ units themselves. For example, assume a neighborhood with a total population of 100 persons, all of whom are non-Hispanic White. Over a period of time, ten housing units are built with each being occupied by two persons, resulting in an increase in population from 100 to 120. If all of the occupants of the new housing units are Black, then the percentage change in non-Hispanic White population would be approximately -17% . This would be considered the direct effect of the new units, assuming, in this example, that none of the existing residents moved out and were replaced by Black (or other minority group) households during the time period.

Direct Effect—Income

Discerning the direct income effect of IZ units is rather straightforward—IZ units are targeted and restricted to a defined income band. Lotteries are typically used to allocate the units, with the pool consisting only of qualified potential buyers or tenants. Qualifications almost always include income statements and other financial documents to prove that the potential buyer or tenant does, in fact, fall within the prescribed income range.

Given this income qualification, it can be assumed that IZ units are allocated to households earning, on average, between 50% and 80% of AMI in Montgomery County and between 50% and 120% of AMI in Suffolk County. While there may be individual exceptions, these income requirements reflect the guidelines outlined in the respective IZ policies. Therefore, the direct effect on neighborhood income integration would be equal to the proportion of IZ units built to the total number of housing units built between 1980 and 2000, given by the following equation:

$$(\text{Total units built } 1980\text{--}2000) * (\text{IZ units as a \% of total units})$$

$$* (\% \text{ of households with AMI of } X \text{ in IZ units})$$

$$= \text{Direct effect of IZ (in \%) on tract's overall percentage of households with AMI of } X.$$

For example, in Montgomery County, the target income for IZ units falls below the middle-income range analyzed in the OLS regression. As such, if only IZ units were built between 1980 and 2000, and

holding all other potential endogenous income changes constant, then the change in the proportion of middle-income households would decrease by an amount equal to the number of IZ units as a percentage of total units built.

Direct Effect—Race/Ethnicity

The direct effect of IZ unit occupants on racial transition is more complicated to discern. While the race of an IZ unit occupant could be estimated based on the proportion of a particular racial group within a target income range, this would result in an unreliable approximation. Moreover, this simplification would ignore any possible deviations between expected distributions and actual IZ unit allocations (Glaeser & Luttmer, 2003). Many jurisdictions have preference systems for the allocation of units that favor current residents.⁴ For instance, in the Town of Southold, priority is given to households that have lived in the town for at least three years prior to their application. In 2000, non-Hispanic Whites accounted for 90.7% of the total population in the Town of Southold. Therefore, it can be expected that the allocation of IZ units by race could differ significantly from the racial distributions within each income group in the region.

The IZ unit database created for this article includes the racial characteristics of first occupants of more than 8,000 IZ units in Montgomery County. Data were extracted for each unit from a database maintained by the Montgomery County Department of Housing and Community Affairs. While it can be expected that the racial characteristics of occupants would change over time, as owner/tenant turnover occurs, these data provide a unique opportunity to examine both the direct effect of IZ units on neighborhood racial transition and the patterns of IZ unit allocation.

The direct effect on racial transition is given by the following equation:

$$\begin{aligned} & (\text{Total units built 1980–2000}) * (\text{IZ units as a \% of total units}) * (\% \text{ of race/ethnicity } X \text{ in IZ units}) \\ & = \text{Direct effect of IZ (in \%) on tract's overall percentage of race/ethnicity } X. \end{aligned}$$

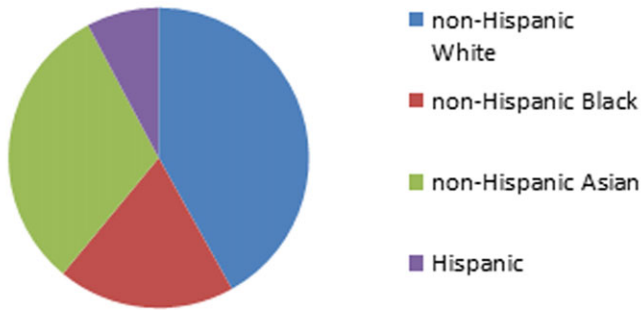
Based on the Montgomery County data, the largest tract-level direct effect accounts for a 5.0% decline in non-Hispanic White population between 1980 and 2000. In other neighborhoods, the IZ unit occupants actually increased the non-Hispanic White population, by as much as 1.6%. On average, IZ unit occupants had the aggregate direct effect of reducing the non-Hispanic White population in a neighborhood by 0.8% over the study period. This is a relatively modest figure when compared to the average decline in non-Hispanic White population of 24.0% in neighborhoods with IZ units built between 1980 and 2000.

The average difference in percent non-Hispanic White change from 1980 to 2000 between neighborhoods with IZ units and those without is 3.5% in Montgomery County (see Table 6). After accounting for the direct effect of IZ unit occupants, neighborhoods with IZ units had a 2.7% larger decline in non-Hispanic White population (3.5% less 0.8%). This suggests that IZ units may have an influence on the residential preferences of Whites, either by causing them to flee communities where IZ units are built or by avoiding them. However, over the 20-year study period, this is a rather modest difference, equating to an annualized rate of non-Hispanic White population loss of 0.14%.

A closer examination of the allocation of IZ units by race in Montgomery County also reveals a sharp discrepancy between eligible population size and the occupancy of IZ units for non-Hispanic Whites and Asians. The income-eligible population in Montgomery County in 2000 was 70.6% and 9.7%, respectively, but first occupants of IZ units built between 1980 and 2000 were 41.9% non-Hispanic White and 31.2% Asian (see Figure 6).

The data reveal an under-allocation of IZ units by race of 28.7% for non-Hispanic Whites and an over-allocation of 21.5% for Asians. This is a significant discrepancy, and suggests issues with the allocation mechanism and/or social network effects and an important area of future research (Coleman, 1988; Forrest & Kearns, 2001; Ioannides & Loury, 2004).

IZ Allocation by Race/Ethnicity, 1980-2000



Income-Qualified Population, 2000

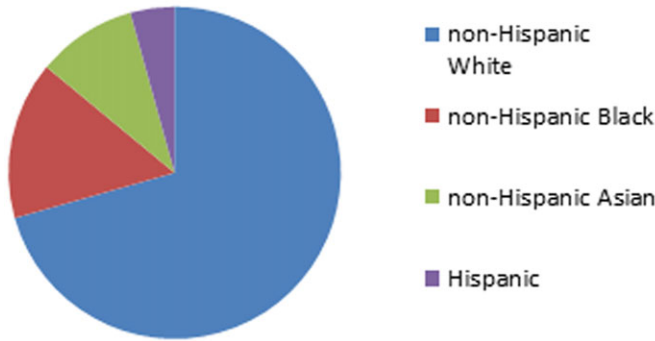


FIGURE 6

Income-Qualified Population and IZ Unit Allocation by Race/Ethnicity

Source: Author.

CONCLUSIONS AND POLICY IMPLICATIONS

Inclusionary zoning emerged as a policy option to counter the exclusionary outcomes of certain zoning practices that became evident during the 1960s and 1970s (Calavita & Grimes, 1998; Calavita, Grimes, & Mallach, 1997; Danielson, 1976; Ihlanfeldt, 2004). A previously unaddressed question in the literature has been the effect of IZ on neighborhood racial and income integration and transition.

Determining the characteristics of neighborhoods that receive IZ units is a necessary first step to understanding how neighborhoods that have IZ units change over time. The results of this analysis indicate that neighborhoods most likely to receive IZ units are those that are, on average, more racially integrated. However, in Suffolk County the higher level of integration is associated with neighborhoods with disproportionately high populations of minority households. Greater income integration, on the other hand, does not appear to increase the probability of a neighborhood receiving IZ units. Entropy index values for racial integration indicate that neighborhoods most likely to receive IZ units are almost twice as integrated as those least likely to receive units. Therefore, the impact of IZ on neighborhood transition is considered in light of the fact that neighborhoods with IZ units tend to be more racially integrated at the outset.

The results presented here reveal that the effect of IZ units on neighborhood racial and income transition is dependent on the initial socioeconomic and housing market characteristics of the neighborhoods in which IZ units are built. In the aggregate, IZ units increase the level of both racial and income integration above that experienced by neighborhoods without IZ units. However, looking at each study area separately, stark differences emerge. In Suffolk County, neighborhoods where

IZ units were built experienced a statistically significant decline in non-Hispanic White population, but had higher levels of income integration and larger increases in the proportion of middle-income households over time. It should be emphasized, however, that Suffolk County neighborhoods with IZ units had significantly higher proportions of minority households and rates of poverty. In Montgomery County, neighborhoods with IZ units became more racially diverse over the study period, while income diversity remained relatively constant. While only 6.8% of tracts can be classified as racially stable, fully 83.6% of neighborhoods demonstrated stability in the level of income integration between 1980 and 2000. This is counter to the evidence from Suffolk County, where 17.9% of tracts were racially stable, but only 16.1% could be classified as stable with respect to income mix.

Overall, for the combined study area, tracts with IZ units experienced a 2.0% greater decline in non-Hispanic White population than tracts without IZ units. This is consistent with research on racial transition and subsidized housing that has found either no statistically significant relationship (Saltman, 1990; Freeman & Rohe, 2000; Goldstein & Yancey, 1986) or a modest positive impact (Galster & Keeney, 1993). Some additional non-Hispanic White population loss would be expected from an effective IZ program—and desirable from the perspective of increasing neighborhood integration—as the racial characteristics of the occupants of IZ units would most likely represent a range of racial groups. In Montgomery County, for example, only 41.0% of the first occupants of IZ units were non-Hispanic White. However, in neighborhoods with IZ units, the loss of non-Hispanic White population between 1980 and 2000 was, on average, greater than what could be accounted for from the direct effect of occupant race alone, suggesting a secondary, indirect effect.

The results also indicate that IZ units had an inconsistent effect on the proportion of middle-income households within a given census tract. In Montgomery County, tracts with IZ units experienced a 2.8% greater decline, on average, in middle-income households than tracts without IZ units. However, as more units were built, there was a small, but significant positive effect. For every 100 IZ units added to the housing stock, the proportion of middle-income households increased by 3%. These results are not surprising. Inclusionary zoning units in Montgomery County are targeted to households earning less than the middle-income range. Although IZ units themselves are intended for lower income households, they are part of developments that tend to be multifamily rental and ownership projects. Holding unit amenities constant, multifamily housing is more affordable than single-family housing, which suggests additional housing opportunities for middle-income households in neighborhoods that receive IZ units. In Suffolk County, the presence of *any* IZ units is correlated with a 3.2% greater increase in middle-income households over time. Given the target income range of most IZ programs in Suffolk, which tends to be between 80% and 120% of AMI, this finding is consistent with expectations.

Inclusionary zoning can be an effective policy to counter patterns of residential racial segregation and spatial concentrations of poverty. But the evidence from Montgomery and Suffolk Counties demonstrates that there is significant variation in the implementation of IZ policies that impacts the efficacy of the programs. Three significant challenges emerge from this analysis. First, from the perspective of data collection and management, there is a sharp divide between the practices of Montgomery County and those of localities in Suffolk County. Better monitoring of IZ units, both when they are constructed and over time, would allow local governments to routinely assess the distribution and effects of IZ units built. This is a necessary step for effective policy evaluation and would support evidence-based arguments to encourage low-income housing production. Second, the siting of IZ units, despite the presence of an IZ program, is still contingent on local zoning, housing market conditions, and community reaction to new mixed-income development. In Suffolk, for instance, the neighborhoods most likely to receive IZ units were among the poorest and had the largest relative proportions of minority households in the County. Third, after IZ units are constructed, there is reason for concern that the allocation of those units is not proportionate to the eligible populations in various racial and ethnic groups. The analysis of IZ unit occupants in Montgomery County revealed substantial discrepancies between the relative size of eligible populations by race and ethnicity and the proportion of IZ units allocated to different groups. While this finding may reflect the importance of social networks in sharing information about housing opportunities, it may also indicate that the allocation process is flawed and does not equitably assign households to

housing units. Together with concerns raised about IZ unit spatial dispersion, the misallocation of IZ units may undermine the effectiveness of IZ programs in supporting stable neighborhood integration. Future research should address these issues.

ENDNOTES

- 1 While many IZ ordinances have provisions that give priority allocation to current residents of the municipality, this practice should be discouraged and is ripe for a constitutional challenge similar to those brought against federal housing programs (Norquist, 2009).
- 2 Note that the LIHTC program was created in 1986 (Cummings, 1999).
- 3 This figure is a reliable estimate of units built through IZ programs derived by subtracting units built through all other low-income housing programs from the total subsidized housing inventory. Exact records of IZ program production were not available for Suffolk County from local planning departments or any of the data sources accessed for this study. No records exist for units built off-site through in-lieu-of-payment negotiations.
- 4 For example, in the Town of Southold, Suffolk County, New York, priority for affordable units is outlined in Article VI, Section 280, Subsection 30, Paragraph C of the Zoning Code:
 - I. Income-eligible individuals or families who have lived in the Town of Southold in the same school district as the dwelling unit or lot for a period of at least three years prior to the submission of their application.
 - II. Income-eligible individuals or families who have lived in the Town of Southold for a period of at least three years prior to the submission of their application.
 - III. Income-eligible individuals/families who have been employed in the Town of Southold for a period of at least three years prior to the submission of their application.
 - IV. Income-eligible individuals/families who have previously lived for a minimum of three years in the Town of Southold and wish to return.
 - V. All other eligible applicants.

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