

# Mind the Gap: Federal Rental Housing Subsidies and Neighborhood Affordability for Extremely Low-Income Renters

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## **Abstract:**

The U.S. is in the midst of an affordability crisis, as over 20 million households pay more than 30% of their income towards rent. Lowest-income renters constitute the largest share of these households, underscoring the need for federal programs to intervene where private housing markets have failed to support residents in the most precarious financial position. This analysis explores the relationship between the rental affordability gap, subsidized housing and extremely low-income renters over a period of five years to better understand the effectiveness of federal rental programs matching assistance to need. This study serves as a proof of concept of using Census tract-level, publicly-available data on subsidized housing and neighborhood composition to draw conclusions on national trends. This analysis finds that the largest share of cost-burdened, extremely low-income renters are living in neighborhoods where 10% or less of the need for affordable housing is being met and this is becoming more severe over time. At the same time, subsidized housing across all eight federal programs analyzed is being directed to neighborhoods with a moderate supply of affordable housing underscoring a spatial mismatch between need and supply. The Housing Choice Voucher program, however, is the most effective subsidy program at providing low-rent housing in areas of severe unaffordability. Finally, using Ordinary Least Squares regression models, I find that subsidized housing is responsive to the demand for deeply affordable housing, with the Low-Income Housing Tax Credit program as a notable exception. Most programs have a positive relationship with both poverty and affordability and a negative relationship with percent White, perhaps raising fair housing concerns. This study is not without limitations, especially relating to data quality and representations of neighborhoods, and cautions future studies in taking a similar approach. Nonetheless, in light of these findings, this article calls for a critical need to restructure national housing policy and priorities.

## **I. INTRODUCTION**

The U.S. is currently in the midst of an affordability crisis, as nearly half of the 41 million renters are burdened by housing costs (U.S. Census Bureau 2016). The situation is made even more urgent by the fact that this burden is most acutely experienced by residents in the most precarious financial position. Extremely low-income (ELI) renters, defined here as households making less than \$20,000 per year, comprise the largest share of all cost-burdened renters, at 9.86 million total households. Moreover, cost-burdened ELI households constitute the majority of all ELI households, as nearly 90% of all ELI households pay more than 30% of their income towards rent. With such tight financial margins, many of the lowest-income families are left with less earnings to pay for additional household expenses, life emergencies or to put towards savings.

Given that a wide majority of extremely low-income renters are unable to find affordable rental housing on the private market, subsidized housing works to narrow the gap. The private market provides about 5 affordable units for every 100 ELI households, while subsidized housing provides nearly 25 affordable units for every 100 ELI households (Urban Institute 2015), underscoring the crucial role of

subsidy programs. There are nearly a dozen federal programs currently in existence that assist low-income renters, and do so through demand-side mechanisms, supply-side mechanisms, or often an overlapping and mix of both. The Housing Choice Voucher program is currently the largest demand-side program, providing rental assistance vouchers to over 2.4 million eligible low-income families to take to housing on the private market. The Low-Income Housing Tax Credit program is currently the largest supply-side program responsible for creating new units of affordable housing. By giving tax incentives to investors to capitalize the acquisition or rehabilitation of lower-income housing, developers are able to “pencil out” projects such that low-priced rents are not cost-prohibitive. In the absence of subsidy programs, affordable rental units for ELI households would be nearly non-existent. Considering that federal subsidies for low-income housing are the primary reason any ELI households are finding affordable housing and that only one in four ELI households eligible for federal assistance actually receive assistance (NLIHC 2012), it is important to evaluate the effectiveness of subsidy programs in meeting the need.

This analysis focuses on residents who face the greatest hardships to securing affordable rental housing and asks four questions:

1. Are cost-burdened ELI renters located in neighborhoods with a severely constricted supply of affordable housing, a moderate supply of affordable units, an adequate supply of affordable rental housing, or even a surplus?
2. Are subsidized units being directed to neighborhoods with the greatest gap in affordability?
3. Are certain subsidy programs able to more effectively meet the need than other programs?
4. What factors explain some of the variability in where subsidized housing units are located?

I use publicly-available data from the U.S. Census Bureau to derive estimates of the gap in number units affordable to ELI households for each Census tract in the nation from 2008-2012, and assign each tract to one of six strata based on the gap in affordable housing. I then join to these estimates the number of subsidized units from eight of the major federal low-income housing programs, using data from the Department of Housing and Urban Development (HUD). Finally, I develop parsimonious Ordinary Least Squares (OLS) regression models to determine what variables are most predictive in where subsidized housing is locating. This study attempts to better understand the relationship between subsidized housing, affordability and neighborhood composition.

My findings suggest that there is a spatial mismatch between need and supply. The largest share of cost-burdened, extremely low-income renters are living in neighborhoods where only 10% of the need for affordable housing is being met and the gap in affordability is worsening over time. Moreover, subsidized housing across all of the eight federal programs analyzed is being directed to neighborhoods with a moderate supply of affordable housing. The Housing Choice Voucher program, however, is the most effective subsidy program at providing low-rent housing in areas of severe unaffordability. Finally, using Ordinary Least Squares regression models, I find that subsidized housing is responsive to the demand for deeply affordable housing, with the Low-Income Housing Tax Credit program as a notable exception. Most programs have a positive relationship with both poverty and affordability and a negative relationship with percent White, perhaps raising fair housing concerns.

This study serves as a proof of concept of the extent to which questions about affordability can be approached using open, administrative data and in doing so, this study comments on the viability of this approach if adopted by other advocates, policy analysts and decision-makers. While the findings do convey a compelling story, these results should be tempered by some serious limitations resulting both

from data quality issues and by using Census tracts as a proxy for neighborhoods and housing markets. Further research could improve on this study through a more rigorous testing of data accuracy, a more appropriate representation of neighborhoods and a more in-depth examination of the mechanisms or structures giving rise to the results found here.

## **II. OVERVIEW OF FEDERAL LOW-INCOME HOUSING PROGRAMS**

Since the start of the public housing program in 1937, the U.S. federal government has attempted to intervene where the private housing market has failed to provide an adequate supply of affordable rental housing. Federal rental assistance and production programs provide subsidies through varied mechanisms, be it via the tax code to incentivize developers and private investment to build or rehabilitate affordable units, or with formula-based allocations to states and municipalities, or via rental assistance given directly to low-income tenants. Unlike homeownership benefits, none of the rental programs are entitlements; instead, households can slip through the cracks if they are unable to pay the minimum monthly rent, obtain a voucher or find a unit of suitable size, condition or location. In these instances, very low-income renters are often forced to find a market-rate rental unit that may be unaffordable, of substandard quality or of insecure tenure. Moreover, obtaining a rental subsidy may not guarantee affordability, especially for extremely low-income tenants. Most rental assistance programs are designed to cover the difference in rent between 30% of a tenant's income and average market rents. If a tenant finds a unit that charges rent beyond HUD's coverage limits, a tenant may still be severely cost-burdened.

This analysis focuses on eight major federal rental assistance and production programs: public housing, the Section 8 Housing Choice Voucher (HCV), project-based Section 8 (PBS8), the Low-Income Housing Tax Credit (LIHTC), HOME Investment Partnerships (HOME), Section 236, Moderate Rehabilitation, and HUD-assisted multi-family programs. The following section briefly describes relevant aspects of each of these programs.

### ***Public Housing***

Public housing, authorized with the Housing Act of 1937, was the nation's first large-scale rental housing production program. Public housing is owned and operated by about 3,300 local public housing authorities (PHAs) (HUD 2016). As of 2015, 1.19 million public housing units were in existence, though about 10,000 public housing units are being lost annually in response to the estimated \$25.6 billion backlog in capital improvement funds (HUD 2015, Finkel et al. 2010). The construction of public housing units has largely halted except for mixed-income redevelopment initiatives such as HOPE VI or Choice Neighborhoods (Urban Institute 2015). More recently, some localities have been converting public housing units to project-based Section 8 and LIHTC-financed units in a new pilot program, Rental Assistance Demonstration (RAD) as part of an effort to use alternative funds to rehabilitate severely distressed units (Enterprise 2013). PHAs set eligibility guidelines based on 80% and 50% the county or metropolitan median incomes for low-income and very low-income tenants, respectively, and set rent to not exceed 30% of a tenant's adjusted income (HUD 2016). A majority (71%) of tenants of public housing are extremely low income, earning less than 30% of the area median income (HUD 2015).

### ***Multi-Family Programs***

In the late 1960s, HUD supplemented the development of public housing with programs that helped finance privately owned rental projects. Most significant in number was the Section 236 program that offered developers of rental buildings a 40-year term mortgage insured by the Federal Housing Administration (FHA), often with an interest rate around 1% (McClure and Johnson 2014). In return for these benefits, developers had to set-aside units within their developments for low-income tenants. The

Rental Assistance Program was often used with Section 236 developments to allow low-income tenants to pay no more than 30% of their income towards rent (McClure and Johnson 2014). Although the Section 236 program officially ended in 1973, about 45,500 units are still in operation today, with 46% of tenants earning less than \$20,000 annually (HUD 2015).

The Section 202 and Section 811 programs provide affordable housing to low-income elderly and disabled residents, respectively. Authorized during the early 1960s, these programs gave non-profit organizations interest-free capital advances towards the production of new rental units as long as the units remained affordable to low and very-low income residents for a period of 40 years (McClure and Johnson 2014). Tenants receive project-based rental assistance to pay no more than 30% of their income towards rent. As of 2015, around 172,000 Section 202 and Section 811 units remain in operation, and 91% of tenants earn less than \$20,000 annually (HUD 2015).

### *Section 8 and Moderate Rehabilitation*

With the Community Development Act of 1974, the creation of the Section 8 tenant- and project-based certificate program represented a shift in policy from the rental production programs of the 1960s and early 1970s to rental assistance programs (Landis and McClure 2010). The tenant-based program, renamed the Housing Choice Voucher program in 1998, provides tenants a certificate to take to a participating landlord in the private housing market (Landis and McClure 2010). HUD establishes Fair Market Rents (FMR), or maximum rent standards, based on moderately-priced rental units in the metropolitan area or county and subsidizes the difference between 30% of a tenant's income and the FMR. The landlord has no obligation to charge at or below FMR, and tenants could plausibly find a unit with rent higher than FMRs and thus pay more than 30% of their income towards rent, even after the HUD subsidy (HUD 2016b). The HCV program may not be immediately available to all those households who are eligible, as the national average wait time to receive a voucher is 30 months (HUD 2015). Indeed, for some localities the waiting lists may be even longer. For example, the current wait time is 99 months, or just over 8 years, in Philadelphia (HUD 2015). The Housing Choice Voucher program is designed to help households earning the lowest income find housing, as federal law stipulates that 75% of voucher holders have to be extremely-low income; indeed, 80% of voucher households earned less than \$20,000 annually (O'Regan and Horn 2015). Currently, the HCV program is the largest rental assistance program, with 2.4 million households receiving assistance (HUD 2015).

Formally named the New Construction and Substantial Rehabilitation program, the project-based Section 8 program also allocates certificates for rental assistance, but unlike in the HCV program where certificates follow tenants, the project-based Section 8 program attaches certificates to individual projects. When the program was still funded to produce new units, public housing authorities (PHAs) were able to allocate up to 20% of their HCVs to property owners who agreed to construct or upgrade their housing stock and set some of the units aside for very low income tenants (HUD 2016c). While production of new units officially ended in 1982, funding for the program continues through HUD's annual contracts with PHAs and as of 2015, 1.2 million households were still receiving rental assistance through the program (McClure and Johnson 2015, HUD 2015). Moreover, 87% of tenants earned less than \$20,000 annually (HUD 2015). Maximum rents cannot exceed HUD's Fair Market Rents, with tenants paying no more than 30% of their income towards rent and rental assistance covering the remainder (HUD 2016d).

The Moderate Rehabilitation program began in 1978 to complement the Section 8 program by providing the means to upgrade the then 2.7 million units that were in need of moderate repairs (HUD

2016e). Like the HCV and project-based Section 8 program, it is administered by local PHAs and provides rental assistance to low-income tenants earning less than 80% of the area median income (AMI). Tenants pay rent not exceeding 30% of their income and access this housing through the HCV waiting list. While it was officially repealed in 1991, the Moderate Rehabilitation program has about 22,800 units in operation with 92% of tenants making less than \$20,000 annually (HUD 2015).

### *Low-Income Housing Tax Credit*

The Low-Income Housing Tax Credit program was created as part of the Tax Reform Act of 1986 and is currently the largest federal rental production program, having financed the construction of 2.2 million units since the program's inception (O'Regan and Horn 2013, McClure and Johnson 2014). It is administered by the Internal Revenue Service (IRS) through the tax code and because of this status, LIHTC is not subject to the fluctuations of annual Congressional appropriations as is the case with all other rental subsidy programs. For this reason, the LIHTC program is often considered a more stable source of funds for low-income housing (Khadduri and Wilkins 2006). States receive tax credits from the federal government on a per capita basis and allocate tax credits to projects in a competitive process. States set evaluation criteria for the competitive process in Qualified Allocation Plans (QAPs) and allocate credits to the highest scoring projects. The tax credits are then passed onto private investors who capitalize the acquisition, rehabilitation or new construction of rental housing for low- to moderate-income tenants. Housing developments financed with LIHTC must either 1) allocate 20% of its units to households making 50% of the area median income (AMI) or 2) allocate 40% of units to households at or below 60% AMI (O'Regan and Horn 2013). Moreover, rents are set based on 30% of the maximum income limit, leaving tenants making less than the maximum income limit cost-burdened if the highest acceptable rents are charged (O'Regan and Horn 2013). The LIHTC program has been criticized for not targeting the housing needs of ELI renters specifically, and in a study of 38% of all LIHTC units, 45% of tenants earned at or below 30% AMI (O'Regan and Horn 2013).

### *HOME Investment Partnerships*

The HOME program, authorized by the Cranston-Gonzalez National Affordable Housing Act of 1990, distributes federal block grants to states and local governments to pursue housing activities required to benefit residents with income below 80% AMI (Jones 2014). Funds are allocated to states and localities, referred to as "participating jurisdictions", based on a formula weighing the extent of poverty, age of housing, change in population and degree of overcrowding in neighborhoods (Jones 2014). Housing-related activities include activities to promote both affordable homeownership and renting. As of 2014, 55% of HOME funds were directed towards rental units and tenant-based rental assistance (Jones 2014). The HOME program is the largest federal block grant program designed to fund affordable housing, facilitating the financing, construction, rehabilitation and operation of 1.2 million units since its inception (Jones 2014). For HOME-funded rental units, rents are the lesser of HUD's Fair Market Rents or 30% of a tenant's income (Jones 2014).

Figure 1 provides an overview of the estimated number of units and households subsidized in 2015 by the programs included in this analysis.

*Figure 1. Overview of federal rental subsidy programs included in this analysis, 2015.*

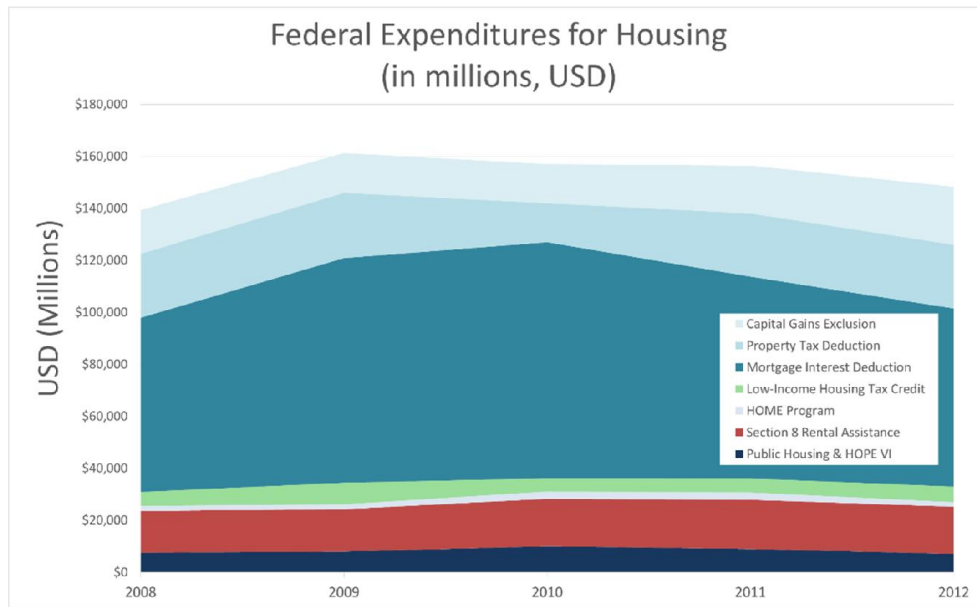
<b>Program</b>	<b>Total Units or Households in Existence</b>	<b>Tenants Earning &lt;\$20,000</b>	<b>Year Program was Authorized</b>
<i>Units In Existence as of 2015*</i>			
Housing Choice Vouchers	2,447,016	80%	1974
Project Based Section 8	1,231,377	87%	1974
Public Housing	1,119,864	78%	1937
Section 236	45,514	46%	1968
Moderate Rehabilitation	22,804	92%	1978
Other Multi-Family	172,002	91%	1960s
<i>Units Placed In Service Since 2000#</i>			
LIHTC	1,452,587	n.a.	1986
HOME	553,251	n.a.	1990

*\*HUD Picture of Subsidized Households, 2015*

*#This is a rough estimate that assumes a minimum 15-year affordable use period, HUD Data Portal (2016)*

There has been a general shift in national policy priorities from relying on public housing authorities to house low-income residents to incentivizing strategies in the private market, perhaps beginning with the authorization of the Housing Choice Voucher program and extending into the present with the expansion of the Low-Income Housing Tax Credit program. Concomitant with a decline in the public housing program is an expansion of market-based programs; indeed, in 2015, both the Housing Choice Voucher and LIHTC programs individually had more units in existence than units owned and operated by public housing authorities (*HUD 2015*). However, federal expenditures for low-income housing pale in comparison to those expenditures for homeowner benefits. Currently, the mortgage interest, property tax and capital gains tax deductions, which are all programs that favor homeowners, are almost three times the yearly expenditures as all of the rental assistance programs combined (Figure 2). Moreover, these homeowner benefits largely target upper-income households, as 75% of the mortgage interest and property tax deductions are used by households making more than \$100,000 annually (CBPP 2013). A shortage of funds may not fully explain the great need for low-income housing, but also, politics and priorities that do not favor the most underserved.

*Figure 2. Federal Expenditures for Selected Housing Programs, 2008 – 2012.*



### III. RELATIONSHIP TO EXISTING RESEARCH

Limited attention of housing scholars has been directed towards how well federal housing policies meet the demand for low-priced rental housing despite the well-documented rise in housing costs, decline in wages and growth in the rental population over the past decade. Much of the focus has been on one dimension at a time: either examining one subsidy, or one locale, or over one year. Or studies have taken a high-level approach – presenting aggregate national or state-wide trends, without offering a description on how the affordability of neighborhoods may be changing over time. While each of these studies focuses on the barriers ELI renters face to finding affordable housing on a national scale, none of the studies take a more granular approach, nor try to understand the relative effectiveness of each subsidy program at intervening in neighborhoods of varying levels of affordability.

National-level analyses have presented a fairly dire outlook regarding the availability of units affordable to extremely low-income renters. In a recent report, the Urban Institute (2015) coupled county-wide Census data on ELI households and HUD data on rental assisted households to find that in no county in the U.S. was there a sufficient supply of housing affordable to ELI households. On average, affordable housing was available to less than a third (28%) of ELI households. Moreover, the severity of the issue is intensifying. Since 2000, the number of ELI renters has increased by 38%, while the supply of non-assisted housing has decreased, underscoring the growing importance of subsidized housing to provide some units of affordable housing to ELI renters. Indeed, the private market only supplies 4 affordable units for every 100 ELI renter households (Urban Institute 2015).

In a historical perspective on federal housing policy, Landis and McClure (2010) examine the mismatch in federal rental assistance and need for deeply affordable units at the state level. Using 2000 decennial Census data and HUD data on all subsidized rental housing, they compare for each state the number of low-income, cost-burdened rental households (i.e., those households earning less than \$20,000 and paying more than 35% of income towards housing costs) to the total number of federally-

subsidized rental units. With the exception of Delaware and Puerto Rico, all states left many extremely low-income renters to fall through the cracks. Nationally, the authors found that federal rental housing assistance fails to reach 42% of households that need it.

Hillier and Culhane (2003) provide a detailed analysis of the barriers to quality, affordable housing faced by residents earning less than \$20,000 in Philadelphia. Using data from HUD and the 2000 decennial Census, their findings suggest that not only do extremely low-income renters pay disproportionately more in housing costs than similar households of higher incomes, federal subsidies are only reaching one in three of these renter households, forcing many to find sub-standard housing in private market (Hillier and Culhane 2003). Consistent with more recent national trends, the authors report that the number of public housing units, the main supply of permanently affordable units, is decreasing and many privately-owned, publicly subsidized units are at risk of opting out of subsidy programs when their contracts expire. The authors use a straightforward metric to quantify the affordability gap: the ratio of the number of rental households earning less than \$20,000 to the number of units affordable to these households. I employ a similar metric in my methodology.

Other reports have evaluated the effect of one place-based subsidy policy in closing the gap. McClure (2010) articulates that the LIHTC program, by design, makes units inaccessible to the lowest income residents and even further, LIHTC projects locate in census tracts that on average have a surplus of affordable units. In essence, the LIHTC program is falling short in two major regards: in creating units affordable to those who need it most and by locating units in neighborhoods with the greatest need for affordable units. DeFilippis and Wyly (2008) focused on the spatial distribution of units of the project-based Section 8 program in New York City. The authors found that these units were located in higher poverty neighborhoods as compared to other forms of rental assistance. Moreover, as subsidy contracts expired, project-based Section 8 units were disappearing from gentrifying neighborhoods, where tight rental markets can't sufficiently incentivize landlords to charge lower rents.

Baron (2014) further explored the relationship between gentrifying markets and the spatial distribution of federally subsidized rental units. The analysis used national tract-level data on public housing and Housing Choice Vouchers, as well as American Community Survey demographic data from 2009 and 2012 to compare the distribution of subsidized housing in neighborhoods identified as gentrifying. By regressing the number of subsidized units and the median monthly rents against gentrification indicators, the author found what many policy makers, developers and low-income residents would expect – that census tracts with high gentrification scores had a direct relationship with monthly rents (i.e., housing affordability) and an inverse relationship with the number of subsidized housing units (i.e., housing accessibility).

Research suggests that the efficacy of federal subsidy programs in meeting the demand for deeply affordable housing is astonishingly inadequate for a given metropolitan area or across one subsidy program. However, no study to date has evaluated the majority of assisted housing programs in tandem over time. The proposed research attempts to fill this gap in knowledge by considering eight of the largest federal rental programs across all neighborhoods, from years 2008 2012.

#### **IV. DATA AND METHODS**

This analysis uses publicly-available data issued by the U.S. Census and the Department of Housing and Urban Development (HUD) to study the availability of rental units affordable to extremely low-income (ELI) renters and to evaluate the relative effectiveness of federal low-income rental programs in



intervening at varying levels of neighborhood affordability. This study also employs fair housing goals as a framework to ask if subsidized housing is concentrated in areas of high poverty or in communities of color. The methodology consists of four parts: 1) calculating an “affordability ratio” or the reciprocal of the affordability gap, to characterize Census tracts, 2) linking estimates on the number of subsidized rental units in each tract, 3) developing descriptive statistics on the relationship between the affordability ratio, cost-burdened ELI renters, subsidized housing and socio-economic indicators, and 4) building OLS regression models in an attempt to find statistically significant relationships between the number of subsidized housing and explanatory variables. A final section describes the limitations inherent in the data and methodology used in this analysis.

### *ELI Affordability Ratio and Socio-Economic Predictors*

To develop a five-year panel dataset on neighborhood affordability and socio-economic composition, I compiled American Community Survey (ACS) data for all Census tracts in the coterminous U.S.. I used the ACS five-year averages, and as such, I took the midpoint of each five-year ACS period to construct yearly panels. Thus, for example, the 2009-2013 ACS dataset was used to represent 2011 data. This approach allowed for five consecutive years of socio-economic and housing data, covering years 2008 through 2012.

Renter households earning less than \$20,000 in annual income comprised the universe of extremely low-income (ELI) households. While more a more in-depth analysis may have derived city-specific income limits characterizing ELI renters, this approach has the value of being a straightforward, generally applicable, and easily interpretable indicator of the demand for affordable housing. Given that a household is generally considered cost-burdened when paying more than 30% of their income towards rent, I defined the supply of affordable housing as the number of units with gross monthly rent less than \$500, or 30% of the monthly earnings of household making \$20,000 annually. Both of these variables, the demand for and supply of affordable housing, were extracted from the ACS datasets on selected housing characteristics.

For each tract that had at least one ELI household, I then calculated the “affordability ratio” as the ratio of the number of housing units with monthly rent less than \$500 to the number of ELI households. This ratio could be interpreted as the fraction of demand for affordable units met by the available supply. It is a conservative estimate as it is possible that a more affluent household could occupy one of these units, precluding the unit from an ELI household. I categorize tracts according to one of six strata, based on the affordability ratio: tracts for which the affordability ratio was less than 10% (i.e., 10 affordable units are available for every 100 ELI households), 10-25%, 25-50%, 50-75%, 75-100% and 100% (i.e., tracts with a surplus of housing affordable to ELI renters). These strata provide a way to understand where most cost-burden ELI renters are living and where subsidized units are locating, within the lens of neighborhood affordability.

To develop tract-level estimates of neighborhood composition, I focused on a limited set of demographic and socio-economic variables. These variables are: the percent of the population that is non-White, percent in poverty, percent unemployed, median household income, percent with a high school degree, and percent of female-headed households. These indicators are included in descriptive statistics to give a sense of the characteristics of neighborhoods by each affordability strata, but the only indicators from this set that were included as explanatory factors in the OLS models were poverty rate, and percent White as these variables directly link back to fair housing questions.

### *Universe of Federally-Subsidized Rental Housing*

To the panel of neighborhood characteristics, I joined tract-level data on federally-subsidized renter housing. The following data sources offered by the Department of Housing and Urban Development (HUD) were merged to represent the universe of subsidized housing: the Picture of Subsidized Households (Picture) data, the Low-Income Housing Tax Credit (LIHTC) database, and the HOME Investment Program (HOME) database. All datasets are available to the public for free through the HUD User online research portal and are in tabular or geo-referenced (i.e., ESRI shapefile) formats.

The Picture data are provided at various spatial levels, with the most granular dataset representing individual projects. For ease and consistency, I used annual, tract-level summaries for the Housing Choice Voucher, project-based Section 8, and public housing programs. I obtained these data for 2008 through 2012, and standardized each dataset using the data analytics and statistical software, R, to create consistent fields across all years. The 2008 Picture data were processed differently than other years because the tract-level estimates did not contain information on all subsidy programs. Fortunately, the project-level dataset did contain information on all subsidy programs, so I spatially-referenced this dataset and aggregated it to the level of Census tracts.

In addition, the Picture data are summarized using 2000 Census tract identifiers while all other datasets used in this analysis are linked to 2010 Census tract identifiers. In order to join the Picture data to other datasets, all years of Picture data were updated from 2000 Census tract boundaries to the 2010 boundaries using a crosswalk provided by Brown University's Longitudinal Tract Database (LTDB) (Logan 2014). This crosswalk provides weights with which to adjust estimates to account for instances where the areal extent of tracts in 2000 changes in 2010. I used these weights to adjust the counts of subsidized units in each tract by subsidy program.

The LIHTC and HOME datasets are provided by HUD as individual spatially-referenced files (i.e., ESRI shapefiles) and each contain project-level data spanning the full lifetime of each program. The LIHTC dataset contains a field indicating when the project was placed in service; this field was used as a proxy for when the LIHTC investment was made and consequently, when the LIHTC project came into existence. This field was used to signify the annual panel dataset that with which the project should be associated. For example, if a project was placed in service in 2012, this project was counted in the 2012 panel. Similarly, the HOME dataset had a field indicating when the investment was completed. It is important to note that this distinction is not precisely consistent with the Picture data. The number of subsidized units in programs included in the Picture data represent the number of units in existence in that given year; with the HOME and LIHTC data, it represents the number of units created in a given year. Given the limited information provided in the HOME and LIHTC datasets, I was unable to determine the total number units of these programs in existence, and acknowledge this as a limitation of this analysis.

Often housing developers will layer LIHTC subsidies with funds from other programs to make an affordable housing project cost-effective. To account for potential double-counting of LIHTC and HOME investments for the same project and within the same year, I used Geographic Information System (GIS) software to identify LIHTC projects that 1) were located within 25 feet of a project in the HOME dataset and 2) received investment in the same year. I assumed 25 feet to be a distance that would capture projects of the same address. These duplicate projects were preserved in the LIHTC dataset and removed from the HOME dataset. With duplicates removed, I aggregated the project-level data to the level of Census tracts using the 2010 tract identifier provided in the original data. These datasets were merged with the yearly panel of Picture data. The final dataset on housing investments contained the number of subsidized housing units in existence in a given Census tract for each year by each subsidy

program type. Because information on subsidy layering between the LIHTC program and programs in the Picture data was not available, some double counting could still exist. However, because this study is focused on both the absolute magnitude of subsidy housing units locating in tracts, as well as how each subsidy program performs separate from other programs, the double counting of subsidies may not present such a severe issue.

### *Descriptive and Statistical Methods*

I present descriptive statistics on the number of tracts that fall into each affordability strata. I then present the number of ELI households unable to find affordable housing (i.e., the gap in affordable housing) for each strata over the years 2008 through 2012. I present some socio-economic variables to comment on the differences in neighborhood composition across each strata and finally present the total number of subsidized units in tracts of each of the six strata by each program. These descriptive statistics allow me to observe trends in where cost-burdened ELI households are concentrated and where subsidized housing units are locating over a five year period.

I advance this inquiry by testing for a statistical relationship between the number of subsidized units and neighborhood level indicators. To explore this relationship, I developed Ordinary Least Squares (OLS) regression models, with the number of subsidized units as the dependent variable and the following independent variables: the number of ELI households (i.e., demand for affordable rental housing), the affordability ratio (i.e., inverse of the gap in affordability), percent White, and percent in poverty. I developed one model that considered the all programs in aggregate and separate models for each subsidy program. For each subsidy model, I only included tracts that contained at least one subsidized housing unit corresponding to the program. For example, in the LIHTC model, I only included tracts that contained at least one LIHTC unit. I scaled each variable in each model by centering and de-meaning each variable to standardize each beta coefficient in terms of standard deviations. This allowed me to determine the most predictive variable within each model.

### *Limitations*

Despite the evident value of convenience of time and cost, publicly available administrative data have significant limitations that should be given serious consideration. As has been cited in previous studies, Census tract boundaries are not precise representations of neighborhood boundaries (McClure 2010, Galster 2008, Sperling 2012). Neighborhoods are entities constantly in flux, both in geography and in character, and as such, using a static boundary such as a Census tract may either introduce error or conceptually not account for the mobility of residents who choose housing outside of one neighborhood (Khadduri 2010, Sperling 2012). The Modifiable Areal Unit Problem (MAUP) applies here, which warns that the results of aggregations of point-based phenomena (e.g., characteristics about people or individual buildings) may be sensitive to both the scale at which the aggregations occur (e.g., tracts versus counties) or how boundaries of similar scales are drawn (e.g., tracts versus zip codes). (Wong 2008, Yang 2005). It is possible that this analysis would yield different results if I had used a different geographic approximation of neighborhoods. However, I hope that by avoiding neighborhood-level prescriptions and by considering all tracts in the nation, some of the error is accounted for. Moreover, if one purpose of this analysis is to demonstrate the advantages and pitfalls of using administrative data to gain knowledge on housing affordability and to broadly evaluate federal policy, it is useful to employ a definition of neighborhoods that has a precedent in academic literature and is widely available to researchers and practitioners.

The margin of error inherent in the American Community Survey data presents another limitation. The ACS is a long-form survey administered to a small sample of respondents. Answers given

in the surveys are then extrapolated by the Census to tabulate estimates at various geographies for the whole nation. Because the ACS is often using a small sample of individuals to determine characteristics of a whole Census tract, the samples may not always be representative. The ACS publishes the expected margin of error for each variable and generally, it can be assumed that variable estimates in the five-year averages have narrower margins of error than equivalent variable estimates in the one- or three-year ACS averages. In this analysis, the margins of error for the affordability and socio-economic indicators were often quite wide. For some tracts, especially less populous tracts, the margin of error could be as large as or even larger than the estimate. Because of the prevalence of this issue, efforts were not taken to omit records with a wide margin of error. Instead, this study presents findings with skepticism and encourages subsequent studies to interrogate more critically the validity of using administrative data as an analogue for the lived experiences of residents. Future studies could improve on this study by applying a more rigorous process to assess data quality, as well as incorporating qualitative data to complement (or even replace) quantitative data.

## V. DISCUSSION

The findings of this study suggest that there is an unsettling shortage of units affordable to extremely low-income renters. Consistent with previous reports, there are only about 30 affordable units available for every 100 ELI households, and very few tracts have a surplus of affordable housing for ELI renter households. From 2008 to 2012, only about 4% of all Census tracts actually had a surplus and that number decreased over time.

While the number of tracts with a surplus in affordable housing is decreasing over time, the number of tracts with the greatest shortage in affordable housing is increasing over time, and these tracts constitute the largest share of all tracts. These tracts are defined by affordability ratios less than 10, meaning that the available supply of affordable housing could only meet 10% of the demand. By 2012, tracts with an affordability ratio less than 10 totaled to over 26,700 in number, accounting for nearly 40% of all tracts. Tracts with an affordability ratio of 10-50% also increased slightly over the five-year time period, counterbalanced by decreases in tracts with affordability ratio of 50-100%. Figure 3 presents an overview of these findings.

Figure 3. Tracts by affordability strata, 2008-2012.

Affordable Units per 100 ELI Renter Households	2008		2009		2010		2011		2012	
	Tracts	Pct.	Tracts	Pct.	Tracts	Pct.	Tracts	Pct.	Tracts	Pct.
Less than 10	22,541	33%	24,329	36%	25,255	37%	26,119	38%	26,730	39%
Between 10-25	11,259	17%	11,925	18%	12,967	19%	13,446	20%	13,885	20%
Between 25-50	15,630	23%	15,975	24%	16,294	24%	16,271	24%	16,381	24%
Between 50-75	9,912	15%	8,784	13%	8,162	12%	7,900	11%	7,470	11%
Between 75-100	4,578	7%	3,955	6%	3,324	5%	2,968	4%	2,754	4%
Surplus (> 100)	3,576	5%	2,859	4%	2,356	3%	2,105	3%	1,871	3%
All Tracts	67,496		67,827		68,358		68,809		69,091	

Note: only includes tracts with one or more ELI renter households

Despite ELI renter households being more likely to live in neighborhoods that have a moderate supply of affordable housing, there are more ELI households unable to find affordable housing in neighborhoods with a severe shortage. In 2012, there were approximately 3.9 million total ELI renter households in tracts with a moderate supply of affordable housing, with 2.5 million households unable to find affordable housing. In tracts with low affordability (i.e., affordability ratio less than 10), there were 3.58 million ELI households, of which, 3.48 million households were presumably unable to find affordable housing. It is clear that low affordability tracts have the lowest met demand in terms of both percent of total and by sheer number of households. Moreover, the gap in affordable housing is increasingly more rapidly in low affordability tracts. In low affordability tracts, the gap widened by nearly 900,000 households between 2008 and 2012, while in moderate affordability tracts, the affordability gap grew by about 170,000 households. Because low affordability tracts have the greatest need for affordable housing, it is important to consider how well subsidy programs intervene in these neighborhoods. Figure 4 and Figure 5 present additional statistics on the total number of ELI renter households and gap in affordable housing from 2008 through 2012.

Figure 4. Total number of ELI renter households, 2008-2012.

Affordable Units per 100 ELI Renter Households	ELI Renter Households				
	2008	2009	2010	2011	2012
Less than 10	2,659,720	3,005,273	3,209,995	3,443,452	3,588,895
Between 10-25	2,661,945	2,856,091	3,115,440	3,266,753	3,390,478
Between 25-50	3,753,937	3,879,785	3,990,640	3,988,530	3,973,354
Between 50-75	2,284,377	1,938,988	1,727,190	1,628,845	1,505,166
Between 75-100	733,022	572,972	457,721	385,633	337,119
Surplus (>100)	297,515	210,438	164,061	133,574	114,764

Note: only includes tracts with one or more ELI renter households

Figure 5. Gap in affordable housing (i.e., number of ELI renter households for which there is no available supply of affordable housing), 2008-2012.

Affordable Units per 100 ELI Renter Households	Gap In Affordable Housing				
	2008	2009	2010	2011	2012
Less than 10	2,585,746	2,919,668	3,116,270	3,338,639	3,479,381
Between 10-25	2,195,929	2,357,514	2,573,086	2,697,682	2,802,974
Between 25-50	2,367,442	2,454,881	2,534,476	2,542,100	2,536,527
Between 50-75	895,934	765,431	685,714	653,751	602,986
Between 75-100	108,846	86,322	69,274	59,169	51,135
Surplus (>100)	(92,632)	(67,513)	(50,553)	(42,203)	(36,050)

Socio-economic characteristics of tracts varied by affordability strata. Low affordability tracts and tracts with a surplus of affordable units had lower rates of unemployment and poverty, and higher median household incomes on average than tracts of other strata (Figure 6). Moderate affordability tracts (i.e., tracts with 25-50 affordable units per 100 ELI renter households) had the lowest median household income on average at \$45,700 and had higher unemployment and poverty rates. These tracts had the highest share of ELI renter households, but ELI renter households were still a fairly small

proportion of the overall population of these tracts, at 6.5%. Locating subsidized housing in low affordability tracts may also be in line with fair housing goals, as these tracts have lower poverty rates and on average, 72% of the population is White.

Figure 6. Socio-economic composition of tracts, stratified by affordability ratio, 2012.

Affordable Units per 100 ELI Renter Households	Median Income (\$)	White (%)	High School Diploma or Less (%)	Unemployment (%)	Poverty (%)	Female-Headed Household (%)	ELI Renter HHs as Pct. of Total Pop.
Less than 10	67,036	72.3	36.6	9.0	9.9	29.8	3.2%
Between 10-25	47,690	68.0	46.4	11.2	16.5	35.3	6.1%
Between 25-50	45,700	72.2	49.1	11.0	16.9	34.8	6.5%
Between 50-75	46,359	78.6	50.3	10.1	15.2	32.6	5.7%
Between 75-100	53,465	83.7	47.3	8.4	11.1	28.0	3.6%
Surplus (>100)	57,802	87.0	45.6	7.3	8.1	24.4	1.8%
All Tracts	55,063	73.0	43.7	10.0	13.4	32.2	4.8%

Note: only includes tracts with one or more ELI renter households; HH = household.

All federal programs examined locate a majority of subsidized households in tracts in which the rental supply met 25-50% of the demand for affordable units. These are tracts that have a significant need for affordable housing, but perhaps not the greatest need as is the case with tracts that only meet 10% of the demand. However, of the programs analyzed, the Housing Choice Voucher program located both a higher proportion and total number of rental-assisted households in tracts with a high affordability gap than any other program. In 2012, 632,175 voucher-holding households were located in tracts with the highest gap in affordability. Overall, these households represented 28% of all voucher recipients in the program. The LIHTC program was second to the HCV program in locating new units in tracts with a high affordability gap. In 2012, 20% of LIHTC units went to these tracts. Of all programs, the public housing program located the lowest percent of units in tracts with a high affordability gap. In 2012, only 5%, or 44,044 units went to these tracts, with the majority of units locating in tracts where the supply of affordable rental housing met 25-50% of the demand. Figure 7 presents the findings for all subsidy programs.

Figure 7. Number of subsidized households by program, 2012.

Affordable Units Per 100 ELI HHs	All Programs		LIHTC		Public Housing	
	Units	Pct.	Units	Pct.	Units	Pct.
Less than 10	794,531	19%	6,440	20%	44,044	5%
Between 10-25	1,052,382	25%	6,829	22%	119,051	14%
Between 25-50	1,603,653	37%	11,348	36%	400,389	47%
Between 50-75	661,782	15%	5,753	18%	241,500	28%
Between 75-100	128,524	3%	704	2%	43,355	5%
Surplus (Over 100)	36,641	1%	375	1%	9,415	1%
All Tracts	4,277,512		31,449		857,754	

Affordable Units Per 100 ELI HHs	HCV		Section 8		HOME	
	Units	Pct.	Units	Pct.	Units	Pct.
Less than 10	632,175	28%	53,746	9%	11,181	18%
Between 10-25	655,247	30%	144,652	23%	17,639	28%
Between 25-50	661,256	30%	287,438	46%	23,432	38%
Between 50-75	208,381	9%	111,132	18%	8,164	13%
Between 75-100	44,152	2%	25,517	4%	1,504	2%
Surplus (Over 100)	17,164	1%	6,265	1%	338	1%
All Tracts	2,218,376		628,750		62,258	

Affordable Units Per 100 ELI HHs	Section 236		Moderate Rehab		Other Multi-Family	
	Units	Pct.	Units	Pct.	Units	Pct.
Less than 10	5,481	8%	1,656	12%	39,808	10%
Between 10-25	15,334	22%	3,982	28%	89,648	23%
Between 25-50	34,187	50%	5,890	41%	179,712	45%
Between 50-75	11,482	17%	2,535	18%	72,835	18%
Between 75-100	2,023	3%	232	2%	11,035	3%
Surplus (Over 100)	388	1%	97	1%	2,599	1%
All Tracts	68,895		14,393		395,637	

Notes: only includes tracts with one or more ELI renter households.

### Statistical Models

For each OLS regression model, I included only those tracts that contained at least 1 unit of subsidized housing by program and at least one ELI renter household in 2012. I also removed all records where the ratio of affordable units to ELI households was more than 2.5, as records above this threshold were infrequent and seemed to be outliers. A correlation test showed that no independent variables were collinear at a level greater than 0.5 (Figure 8).

Figure 8. Correlation matrix.

	PctWh	PctPov	AffRatio	ELI_HHs
PctWh	1			
PctPov	-0.49	1		
AffRatio	0.14	0.04	1	
ELI_HHs	-0.3	0.56	0	1
SubUnits	-0.35	0.42	0.08	0.61
LIHTC	-0.04	0.04	0	0.06
MF	-0.15	0.2	0.08	0.27
PH	-0.17	0.26	0.1	0.32
S236	-0.06	0.07	0.02	0.12

PBS8	-0.08	0.13	0.08	0.32
HCV	-0.41	0.37	0	0.52
MR	-0.03	0.07	0	0.09
HOME	-0.07	0.07	0	0.1

The results regression model of all subsidized units was able to explain about 42% of the variability in the number of subsidized units per Census tract, with all beta-coefficients highly statistically significant. These results suggest a fairly strong explanatory model, especially considering such a limited set of variables. The number of ELI renter households, or the demand for affordable housing, was the most explanatory variable and had a positive relationships with the dependent variable, suggesting that subsidized housing is responsive to the need for affordable housing. Subsidized housing also had a positive relationship with the affordability ratio, suggesting that as affordability increases as all other variables are held constant, the number of subsidized housing units would also increase. Based on the findings presented in the descriptive statistics, it may be that subsidized housing has a non-linear relationship with affordability, as the number of subsidized housing units seem to increase with affordability ratio values up to about 50% and then decreases thereafter. There was a negative relationship with percent White and a positive relationship with percent of households below the poverty line, which suggests that as the percent White decreases or the poverty rate increases, holding all other variables constant, the number of subsidized units would increase. Given these very preliminary and high-level results, it's difficult to know if this should raise concerns about fair housing. More detailed and location-specific data on the composition of neighborhoods and subsidized housing could provide a more in-depth analysis on if subsidized housing is disproportionately locating in low-income areas and communities of color.

Generally, all other models had very low R-squared values suggesting a low goodness-of-fit, except for the HCV and public housing models. This is most likely due to program-specific variables that were not included in the model (e.g., local land costs for the LIHTC model). Nonetheless, in all models except the LIHTC model, the number of ELI renter households was the strongest explanatory variable included in this analysis. The results of the regression model for public housing were fairly similar in interpretation to the aggregate model in that all independent variables except for percent White had a positive relationship to the number of subsidized units. The results of the Housing Choice Voucher model, on the other hand, suggested that, holding all other variables constant, the number of vouchers increased as the poverty rate decreased. Again, these are fairly location-ambiguous, high-level and simplistic models, but these results seem to suggest that the HCV program is more effective at locating voucher holders in areas of lower poverty.

Figure 9. OLS regression results for all nine program-based models, 2012.

Explanatory Variables	All Programs	LIHTC	PH	HCV	PBS8
ELI Households	<b>0.5385***</b>	0.0493	<b>0.4142***</b>	<b>0.451***</b>	<b>0.4158***</b>
Pct. White	-0.2058***	<b>-0.2165***</b>	-0.149***	-0.2806***	-0.04786***
Pct. Poverty	0.01519***	0.0394	0.01887(.)	-0.009246*	-0.1279***
Affordability Ratio	0.1243***	0.0093	0.1902***	0.0044	0.1363***
Adjusted R-squared	0.4222	0.0600	0.2726	0.3485	0.1568
No. of Observations	58,920	390	12,048	57,706	13,922



Explanatory Variables	S236	HOME	MF	MR
ELI Households	<b>0.273***</b>	<b>0.1868***</b>	<b>0.2505***</b>	<b>0.1262**</b>
Pct. White	-0.0196	-0.1654***	-0.08963***	0.08181(.)
Pct. Poverty	-0.05932*	-0.1343***	0.08584***	0.09026*
Affordability Ratio	0.1188***	0.0159	0.1332***	0.0496
Adjusted R-squared	0.0827	0.04565	0.1415	0.0251
No. of Observations	1,834	1,531	10,900	612

Notes: Variables with the highest predictive power are in bold. Beta coefficients reflect standardized variables and should not be interpreted as units of change.

Significance codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

### Philadelphia Case Study

The story regarding affordability and ELI renters emerging from Philadelphia seems to be similar to national trends. The largest proportion of tracts are tracts with a very high affordability gap (i.e., the supply of affordable housing provides 10 units for every 100 ELI renter households). Tracts with an affordability ratio less than 10 were 32% of all tracts in Philadelphia in 2008 and increased steadily to 41% in 2012. In 2012, only 3 neighborhoods had a supply of affordable housing that met 75% of the demand or more. Figure 10 presents the number of tracts stratified by affordability ratio groupings.

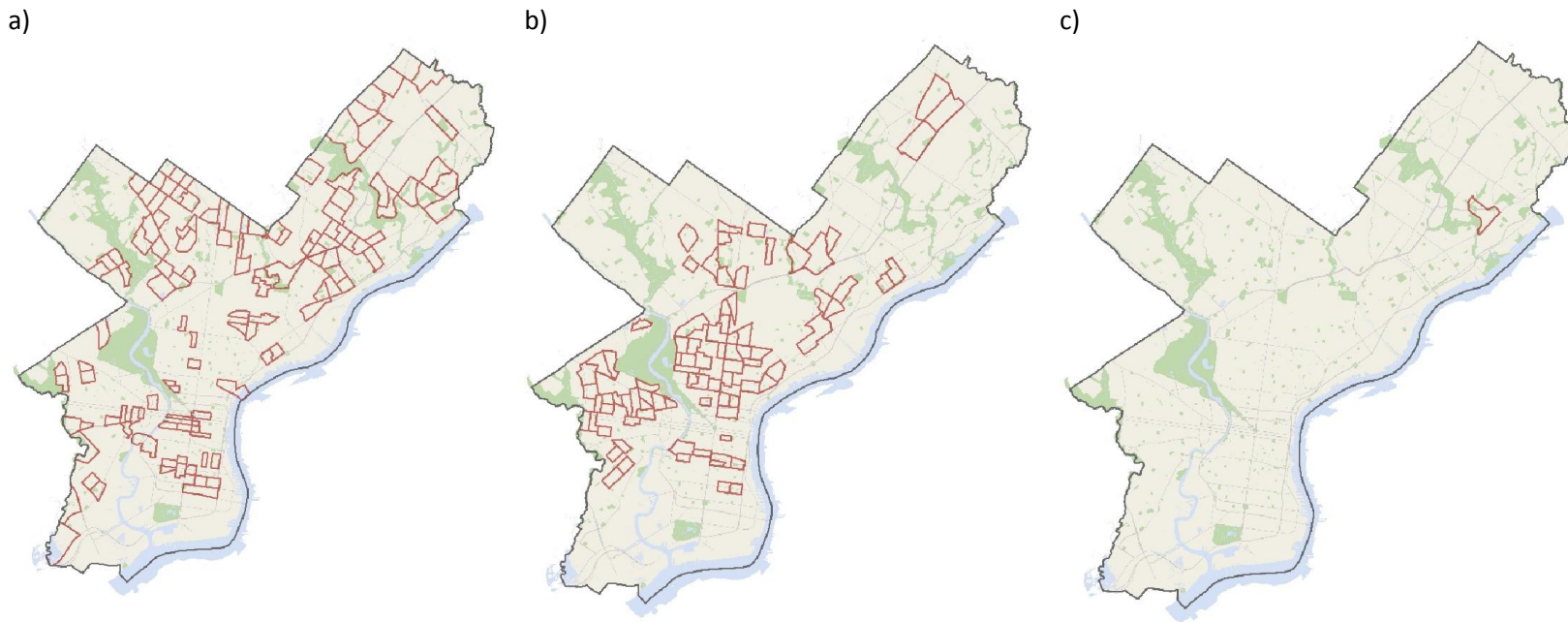
Figure 10. Philadelphia Census tracts by affordability strata, 2008-2012.

Affordable Units per 100 ELI Renter Households	2008		2009		2010		2011		2012	
	Tracts	Pct.	Tracts	Pct.	Tracts	Pct.	Tracts	Pct.	Tracts	Pct.
Less than 10	118	32%	136	37%	147	40%	150	40%	153	41%
Between 10-25	101	27%	104	28%	101	27%	109	29%	111	30%
Between 25-50	103	28%	91	25%	93	25%	99	24%	89	24%
Between 50-75	39	11%	30	8%	25	7%	19	5%	16	4%
Between 75-100	6	2%	6	2%	4	1%	4	1%	1	0%
Surplus (> 100)	3	1%	3	1%	2	1%	2	1%	2	1%
All Tracts	370		370		372		372		372	

Note: only includes tracts with one or more ELI renter households

It can be helpful to examine the spatial distribution tracts that fall into each of the affordability strata. The following maps display 2012 estimates of tracts of low affordability, moderate affordability and the one tract that had a surplus of housing affordable to households making less than \$20,000 (Figure 11).

Figure 11. Maps of Philadelphia tracts where the supply of affordable housing meets: a) 10% or less of the demand, b) 25-50% of the demand, and c) >100% of the demand for affordable housing.



The maps illustrate that low affordability tracts are fairly dispersed across the city, with pockets in West Philadelphia, South Philadelphia and various sections of North and Northeast Philadelphia. In contrast, moderate affordability tracts seem to be clustered in lower-income neighborhoods north of Center City such as Sharswood, Strawberry Mansion, Hartranft and West Kensington. There was only one neighborhood in 2012 that offered a surplus of housing affordable to ELI renter households - Pennypack Woods in Northeast Philadelphia.

Generally, low affordability tracts had a higher median household income, with lower unemployment and poverty rates. Conversely, neighborhoods with a moderate supply of affordable housing had a lower median household income and higher unemployment and poverty rates. Tracts with the lowest household income, highest unemployment and highest poverty rate (43%) were those tracts for which the supply of housing provided 75-100 units for every 100 ELI households. In 2012, there was only 1 neighborhood in this category, Bartram Village. Bartram Village is home to over 500 public housing residents and it seems that these residents constitute a large fraction of the total population in this neighborhood.

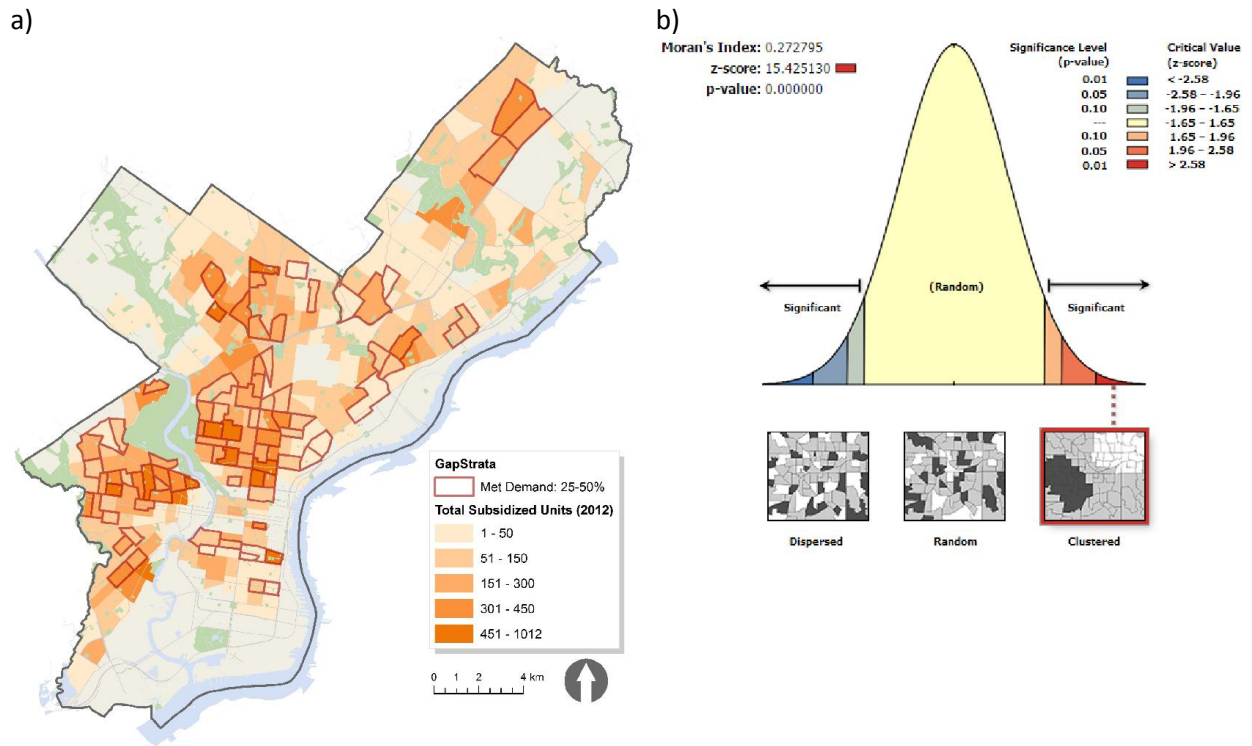
Figure 12. Socio-economic indicators, 2012.

Affordable Units per 100 ELI Households	Median Income (\$)	White (%)	High School Diploma (%)	Unemployment (%)	Poverty (%)	Female-Headed Household (%)	ELI HHs of Total Pop. (%)
Less than 10	49,242	51.9	46.2	13.0	15.5	42.3	5.7
Between 10-25	37,389	40.0	54.4	16.4	22.5	47.9	7.8
Between 25-50	31,797	27.4	57.6	18.7	27.0	52.8	10.3
Between 50-75	37,296	35.4	50.7	14.7	21.3	51.5	11.6
Between 75-100	18,077	1.3	71.7	25.2	43.1	69.7	17.0
Surplus (>100)	71,006	84.3	34.2	7.6	4.9	41.4	5.1
All Tracts	41,051	41.8	51.6	15.4	20.6	46.9	7.7

Note: only includes tracts with one or more ELI renter households.

There does seem to be a fairly strong association between moderately affordable neighborhoods and subsidized housing. Subsidized housing seems clustered in North Philadelphia and in pockets of West Philadelphia (Figure 13a). Calculating Moran’s I, a test for spatial autocorrelation, reveals that subsidized housing units are indeed clustered in Philadelphia. The very low p-value suggest that I can reject that null hypothesis that the pattern of subsidized housing is randomly distributed, and the very high z-score indicates that there is a less than 1% likelihood that the clustered pattern is resulting from a random sorting (Figure 13b). The results are quite interesting – perhaps there are mechanisms or decision-making processes in place that prioritize clustering of subsidized housing in a few pockets of neighborhoods in Philadelphia. Perhaps in those neighborhoods it less expensive to develop housing or for the city to acquire land. Nonetheless, neighborhoods with the highest concentration of subsidized housing seem to be predominantly Black and low-income neighborhoods. Given the apparent clustering, future studies could more critically examine how the City and developers site these developments and assess if fair housing practices are being upheld.

Figure 13. a) Choropleth map of total number of subsidized units and tracts with a moderate supply of affordable housing, 2012; b) Results of Moran's I to test for spatial autocorrelation of subsidized housing units.



## VI. POLICY IMPLICATIONS

This study calls for a critical restructuring of national housing policies and priorities to support a more just and equitable system. If we, as planning professionals and practitioners, take seriously that access to housing is a basic facet of vibrant cities, then we have to likewise seriously examine the structural forces that create a system in which 70% of our nation's lowest income households are unable to find affordable housing. Since this is a fairly lofty call to arms, I organize recommendations into three conceptual frames: 1) recommendations to alter existing housing policies to incentivize low-rent housing, to preserve affordable housing for longer and to make more efficient use of subsidies, 2) recommendations to incentivize the private or quasi-private housing market to expand the supply of affordable housing, and 3) recommendations to reorient policies, pedagogy and priorities towards systems that build power within low-income communities.

First, it is clear that existing rental subsidy policies only meet a small fraction of the need and existing policies should be altered to better serve extremely low-income residents. On a high level, one argument is that the lack of adequate funding for subsidized programs is the primary reason programs fail to support more households. The problem could be solved if not for lack of funds. But a comparison between federal expenditures for low-income housing and homeowner programs reveals that a lack of funding may not be truly at the core of the issue. Homeowner subsidies are conferred onto homeowners at the time of becoming a homeowner, and as such are entitlements, in contrast to rental

programs that do not guarantee subsidies for all low-income renters. So, if rental programs were to be universal programs or an entitlement, would we have the funding for it? Perhaps the answer is yes. In a rough calculation, Landis and McClure (2010) estimate that expanding the HCV program to have universal coverage would cost approximately \$20 billion annually, which would still be far less than annual homeowner tax deductions. In light of this comparison, it seems that the main barrier is political will.

So then, given the lack of political will, what are some basic policy changes that would make the existing programs work better; that is, support more ELI households for a longer period of time? Currently, public housing is the only federal program that guarantees permanent affordability for the life of the physical structure, as developers could opt out of subsidy programs such as LIHTC or project-based Section 8 or HOME at the end of their subsidy contracts. The affordability contracts of these programs could be extended from 15 years, as is typical with LIHTC-assisted homes, to 30 to 40 years, giving policy-makers, advocates and residents more time to more appropriately plan for waves of expiring subsidies. Moreover, more stringent affordability restrictions can be established for subsidized projects in neighborhoods that are seeing accelerated change in home value as compared to income growth. While perhaps a simplistic measure, this ratio could be a proxy for gentrifying neighborhoods and could identify and slow growth that outpaces gains in renter incomes, thus preserving housing for lower income rental households in economically burgeoning areas. HUD and local PHAs could also adopt small-area Fair Market Rents as a replacement for the county or metropolitan area-wide Fair Market Rents that are currently set as the maximum rent guideline for the HCV, project-based Section 8, Moderate Rehabilitation and HOME program. Pilot programs for small-area FMRs were initiated in Dallas, Texas and with a few participating PHAs, but if instituted nationally, could help set a more accurate guideline for affordable rents, both in low-rent areas where a metro-wide FMR would inflate rents and in subsidizing higher-rent areas. Setting a small-area FMR would have the effect of using subsidies more efficiently and creating more affordable options for ELI renters.

It also bears mentioning that one's ability to pay for housing costs is a basic function of income. Wages that have not kept pace with inflation nor housing costs are simply not going to be able to provide the needed financial security, especially for low-income tenants that do not have reserves for emergencies or other unexpected expenses. As such, a federal policy goal should be to raise the minimum wage to "living" wage standards. In a nutshell, pay people more and they'll be able to afford more.

Second, there is a dominant frame that advocates for invigorating the private market as a means for creating a greater supply of affordable housing. The LIHTC program is perhaps the most prominent example of this theory, and has been successful in creating about 2 million units since its inception. However, the LIHTC program offers two main concessions to the private market that weaken its ability to house extremely low-income tenants: 1) often units are only mandated to be affordable for 15 years and 2) to make the deals financially viable, developers seek out tenants able to pay higher rents, often creating housing that the private market may have provided in absence of the program (Malpezzi and Vandell 2002). An alternative strategy is to structure incentives to better allow developers to locate in neighborhoods where the housing cost-burden of extremely low-income households is most severe. This strategy would allow new housing to be built in neighborhoods that need affordable housing the most. Finally, some localities with tight or accelerating housing markets have begun to zone areas for mandatory inclusionary zoning. Mandatory inclusionary zoning still works to incentivize the private market by giving developers dimensional exemptions in order to increase density, and therefore increase revenues, but requires some set-asides for affordable housing in return. The income targets for

tenants of these set-aside units are often contentious, with developers claiming that they need tenants who are able to pay higher rents in order to keep a stable funds for operations and debt service, and low-income housing proponents advocating for initiatives that prioritize stable residency of low-income communities. City-specific mandatory inclusionary zoning plans offer some promise, but not without a great deal of contention.

Finally, there are some planning recommendations that could be viewed as interrogating or disrupting power dynamics within the system, rather than correcting side-effects of an unjust system. This frame may be best exemplified by the concepts of solidary economy articulated by Loh and Shear (2015):

*Solidarity economy (SE) is a set of theories and practices that engenders ethical economic relationships and new possibilities for democratic and transformative community development. SE advances democratic community development by providing an alternative to capitalist ideology from which the core goals of solidarity and agency can be imagined, identified, and realized. Further, it advances a set of concrete economic practices that enact these goals while sustaining people and the planet.*

In this theory of action, low-income and historically dispossessed residents are not one-dimensional subjects (i.e., recipients of policy decisions) but are co-creators and co-leaders of the community development movement. The structural forces and legacies of classism, racism and capitalism are acknowledged and new, transformative and equitable systems imagined.

One such model that, while not new, has been gaining popularity in the past decade is the community land trust (CLT). Located in over 200 communities in 46 states, CLTs have created over 150,000 homes since emerging from southern U.S. civil rights activism in 1970 (NCLTN 2016, Davis 2010). CLTs are able to use a one-time public subsidy to maintain permanently affordable homes for low-income residents. Permanent affordability is achieved by placing the land in a trust (thereby removing the price of land from speculative markets) and restricting the resale value of properties to subsequent buyers (NCLTN 2016). CLTs build power of low-income residents by having board structures comprised of equal share of residents, community members and members of the managing non-profit.

## **VII. CONCLUSION**

The ability of subsidy programs to intervene in areas with the greatest shortage of affordable housing for extremely low-income renters raises important policy considerations. This study confirms the findings of previous work that the unmet need for affordable housing is profound. In only 4% of tracts were there a surplus of affordable units. Moreover, ELI renter households are more likely to live in neighborhoods where the supply of affordable units is less than a tenth the number of ELI households. Over time, the number of tracts with the greatest unmet need is increasing.

But certain subsidy programs, by virtue of their design and local implementation, are more effective at closing the gap in the areas with the greatest need for deeply subsidized housing. The Housing Choice Voucher program allows more than a quarter of voucher recipients to access affordable housing in areas that have the steepest gap in affordability and these areas tend to have residents with higher household incomes and lower rates of unemployment and poverty. Moreover, unlike in other programs, such as the LIHTC program, the HCV program tends to serve the lowest-income residents, creating a greater

likelihood that ELI households are able to secure housing that is appropriate to their income. The HCV may be the most effective program because it allows recipients to have some flexibility in where to live.

In light of these findings, this study advocates for a restructuring of national housing policies to alter existing housing policies to better support the lowest-income and most vulnerable residents, to incentivize the private market to expand the supply of affordable housing, and to reorient policies, pedagogy and priorities towards systems that build power within low-income communities.

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