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Affordability and Availability of Rental Housing in the Third Federal Reserve District: 2015

By Eileen Divringi*

This study presents the fourth installment in a series of reports analyzing the affordability and availability of rental housing in the Third Federal Reserve District. In addition to evaluating affordable rental housing needs in the District overall, this report provides an in-depth look at each of the three states that are part of the Third District as well as 14 metropolitan statistical areas (MSAs) across the region. While data and methodological changes preclude the comparison of this report with the department's prior publications, key trends are discussed wherever possible.

Highlights

- Across the Third District, there were more than 274,000 extremely low-income (ELI) and very low-income (VLI) renter households for which an affordable home was not available in 2012.
- This problem has worsened in recent years as the number of affordable and available rental units per 100 ELI renter households declined from 41 to 33 in the Third District between 2007 and 2012.
- Nearly three-quarters of ELI renter households and nearly one-third of VLI renter households in the Third District spent more than half of their income on housing in 2012.

The demand for rental housing has increased substantially in recent years. Nationwide, the number of renter households grew by roughly 6.3 million between 2005 and 2013. The rental vacancy rate fell to 7.4 percent in the third quarter of 2014 — its lowest value since 1995 — suggesting that growth in the supply of units has lagged that of demand.[1] A major driver of this increase has been declining homeownership rates in the aftermath of the Great Recession, with householders aged 35–64 comprising the vast majority of new renter households. Similarly, the recession expanded the pool of lower-income households for which renting may be the only feasible option,[2] with a predictable effect on the already low vacancy rates for low-cost units.[3]

Perhaps unsurprisingly, the increasing demand for rental housing appears to have magnified affordability challenges. Nationwide, the percentage of renter households paying at least 30 percent of their income toward rent and utility costs (the point beyond which they are considered cost burdened)[4] grew

* The author would like to thank Keith Wardrip, Theresa Y. Singleton, and Danilo Pelletiere for their helpful comments and guidance.

[1] U.S. Census Bureau, Current Population Survey/Housing Vacancy Survey, Series H-111, Table.

[2] Joint Center for Housing Studies of Harvard University, *The State of The Nation's Housing 2014, Chapter 5: Rental Housing* (Cambridge: Harvard University, 2014).

[3] Barry L. Steffen et al., *Worst Case Housing Needs 2011: Report to Congress* (Washington, D.C.: U.S. Department of Housing and Urban Development, August 2013).

[4] For a discussion of this threshold, see Frederick J. Eggers and Fouad Moumen, "Trends in Housing Costs: 1985–2005 and the 30-Percent-of-Income Standard" (Washington, D.C.: U.S. Department of Housing and Urban Development, Office of Policy Development and Research, June 2008) and Danilo Pelletiere, "Getting to the Heart of Housing's Fundamental Question: How Much Can a Family Afford?" (Washington, D.C.: National Low Income Housing Coalition, February 2008).

from 45.7 percent in 2005 to 51.5 percent in 2013.[5] These trends were mirrored in the Third District, where the shortage of affordable units became increasingly acute for renter households making 50 percent or less of the median family income (MFI) in their area. As of 2012, the deficit of units affordable and available to these households exceeded 274,000.

Overview

This report provides a broad overview of trends in rental housing affordability across the Third District and its three states. After this section, there is a set of fact sheets that provide a more detailed overview of each geographic area analyzed in this report, with MSA profiles organized by the state in which their principal city is located.

The analysis in this report uses an anonymized subset of individual responses to the U.S. Census Bureau's American Community Survey (ACS) called Public Use Microdata Sample (PUMS) files. These files allow for custom calculations and tabulations, enabling users to explore specific social, economic, and demographic topics in greater depth. Of relevance to this study, the ACS PUMS releases a housing unit file that includes information on occupancy characteristics, housing-related costs, and physical conditions.

As with other ACS products, PUMS data sets are released in one-, three-, and five-year files that combine data from each survey year. Larger sample sizes, such as those contained in the five-year file, are more appropriate for analyzing less populous areas, while one-year files provide more timely and reliable information for more populated areas. Estimates in this report were produced using one-, three-, or five-year files, depending on the size of the geographic area in question. For a more comprehensive discussion of data sources and methods, please consult the Methodology section included in the Appendix to this report.

To assess different aspects of rental affordability by income level, households were sorted into one of four categories. A household is considered low income (LI) if its income is 51–80 percent of the median family income (MFI) in its MSA or broader nonmetropolitan region, very low income (VLI) if its income is 31–50 percent of the MFI, or extremely low income (ELI) if its income is equal to or less than 30 percent of MFI.[6]

Key Definitions

- **Extremely low income (ELI)** — households with incomes that are equal to or less than 30 percent of the median family income (MFI) in their region
- **Very low income (VLI)** — households with incomes that are 31–50 percent of the MFI in their region
- **Low income (LI)** — households with incomes that are 51–80 percent of the MFI in their region
- **Gross rent** — sum of monthly housing and utility costs
- **Affordable** — a unit for which gross rent is no more than 30 percent of monthly household income
- **Affordable and available** — an affordable unit that is either vacant or currently occupied by a household in the corresponding income level
- **Cost burden** — gross rent that exceeds 30 percent of monthly household income
- **Severe cost burden** — gross rent that exceeds 50 percent of monthly household income

[5] U.S. Census Bureau, Selected Housing Characteristics, Table DP04, American Community Survey 1-Year Estimates 2005, 2013 (Washington, D.C.: U.S. Census Bureau, 2012).

[6] Additional adjustments were made for the number of people in each household. For details, see Appendix: Methodology.

Cascade Focus is published by the Community Development Studies and Education Department at the Federal Reserve Bank of Philadelphia and is available online at http://www.philadelphiafed.org/community-development/publications/.

Cascade Focus summarizes the department's research on issues related to community development in low- and moderate-income communities and fair and impartial access to credit in underserved markets. The views expressed in this publication are those of the author(s) and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System. No statements in this paper should be treated as legal advice.

Federal Reserve Bank of Philadelphia

Housing Cost Burdens

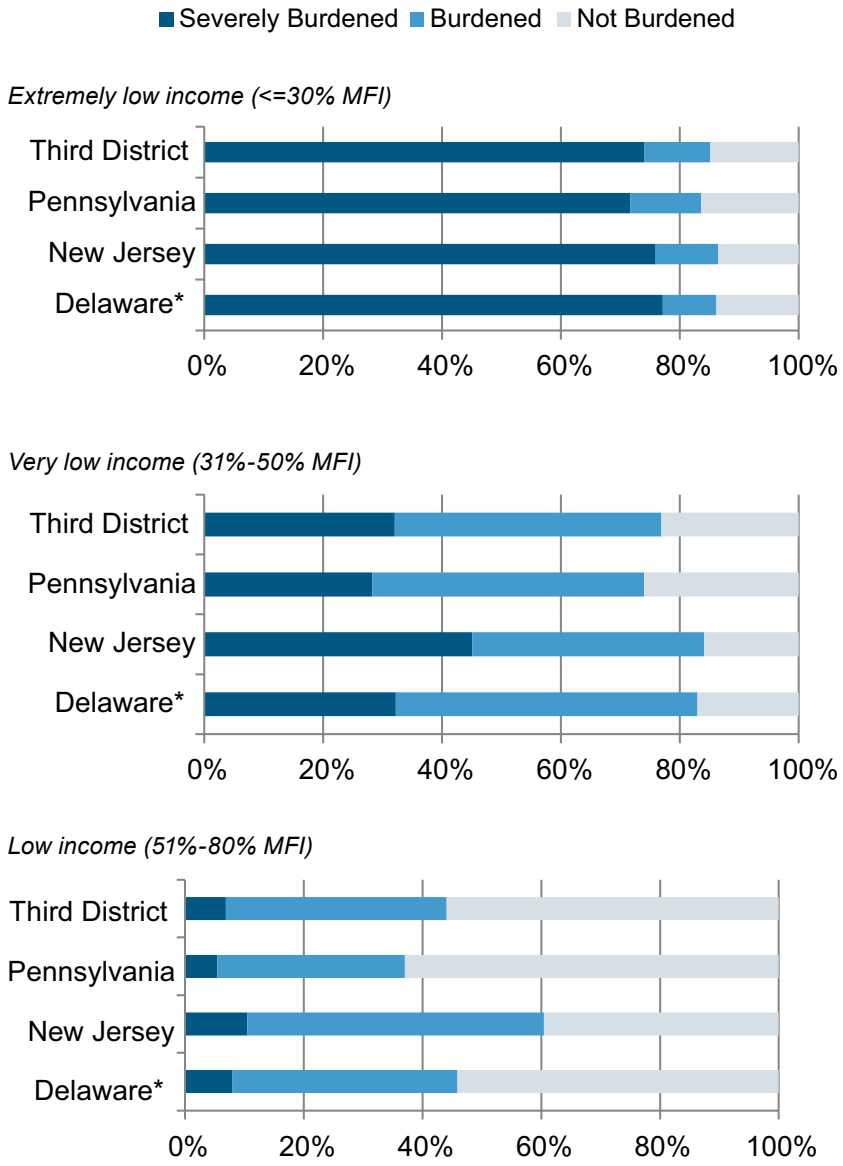
As noted previously, a household is considered housing-cost burdened if its gross rent exceeds 30 percent of its monthly income. If housing costs exceed 50 percent of monthly income, the household is considered severely cost burdened. Analyzing the rate of housing cost burden for renter households at different income levels provides an indicator of how challenging it is to access suitable, affordable rental housing in a given area.

Extremely Low-Income Households

As one might expect, ELI households had the greatest difficulty finding rental housing options within their means. Across the Third District, 85 percent of ELI renter households were housing-cost burdened in 2012, with the proportion that was severely burdened increasing from 68 percent in 2007 to 74 percent.[7] In each state and MSA analyzed in this report, the vast majority of ELI households was severely housing-cost burdened in all of the time periods examined.

In two MSAs, State College and East Stroudsburg, ELI renters faced exceptionally high rates of cost burden, with 95 percent of renters in this income category experiencing some level of burden in 2008–2012. In State College, in particular, pressure from the student rental market associated with Pennsylvania State University is likely a driving factor. Even in metropolitan areas with comparatively low cost burdens across the board (such as the Pittsburgh, Trenton, and Allentown-Bethlehem-Easton MSAs), rates of ELI cost burden exceeded 80 percent.

Figure 1
Housing cost burden by renter income category, 2012



*Delaware figures represent the 2010–2012 time period.
Source: Author's calculations using U.S. Census Bureau 2012 and 2010–2012 American Community Survey Public Use Microdata Sample

As suggested by the high rates of severe cost burden found in this analysis, the housing costs paid by many cost-burdened ELI households substantially exceeded the maximum that would be considered affordable. In the Philadelphia-Camden-Wilmington MSA,[8] the typical

[7] All changes discussed in this text are statistically significant at the 90 percent confidence level unless otherwise noted.

[8] All figures referring to the Philadelphia-Camden-Wilmington MSA exclude Cecil County, MD, which fell outside the three-state study region.

cost-burdened ELI household was paying $591 more in gross rent than it could afford in 2012. In 2008–2012, the typical cost-burdened ELI household in the East Stroudsburg MSA paid a gross rent that was $740 more. Rents in these MSAs represent a substantial financial burden for many households at the lowest end of the income scale.

Very Low-Income Households

Cost burdens were also prevalent among VLI renters, affecting 77 percent of these households across the Third District in 2012. In all 14 MSAs examined in this report, roughly two-thirds or more of VLI households experienced some level of housing cost burden, according to the most recent estimates. In most MSAs, between one-quarter and one-half of these households was severely cost-burdened, while in the Atlantic City-Hammonton MSA, the figure was 57 percent in 2008–2012. The gaps between affordable and actual gross rents were typically smaller than those of ELI households, with the rent gap for the typical cost-burdened VLI renter household in the Philadelphia-Camden-Wilmington MSA at $350 in 2012 and $375 in the East Stroudsburg MSA in 2008–2012.

Overall, it is clear that burdensome housing costs disproportionately affected renters in these bottom two income categories. Though ELI and VLI households constituted 47 percent of all renter households in the Third District in 2012, they accounted for 77 percent of those that were cost burdened.

Low-Income Households

The proportion of cost-burdened LI renters in the Third District grew substantially between 2007 and 2012, from 35 percent to 44 percent. While LI renter households were still less likely to be cost burdened than ELI or VLI renters, there was a substantial amount of variation between geographic areas. In New Jersey, 60 percent of LI renters were cost burdened in 2012, compared with 37 percent in Pennsylvania in the same year. In the Atlantic City-Hammonton MSA, 66 percent of LI renters were cost burdened in 2008–2012, while less than one-third was in the Lebanon, Erie, and York-Hanover MSAs during the same period.

Between 2007 and 2012, the percent of cost-burdened LI renter households in the Philadelphia-Camden-Wilmington MSA grew from 37 percent to 47 percent. This phenomenon appears to be concentrated in the city of Philadelphia, which accounted for nearly half of this increase but constituted less than 40 percent of the MSA's total renter households. Zooming in further on the city of Philadelphia, it is clear that significant changes occurred in the rental housing market between 2007 and 2012. In 2007, roughly one-quarter of renter households in this income category was cost burdened; by 2012, the figure was 42 percent, representing both a statistically significant and meaningful increase. Similarly, the rate of housing cost burden for LI renters in the Allentown-Bethlehem-Easton MSA jumped 13 percentage points, to nearly one-half of all renters in this income category experiencing some level of housing cost burden in 2010–2012.

The differences between cost-burdened LI households' affordable and actual gross rents also varied substantially, but they were generally lower than those of ELI and VLI households. On the higher end, gross rent for the typical cost-burdened LI household in the Atlantic City-Hammonton MSA was $305 more than it could afford in 2008–2012, compared with $135 in the Lebanon MSA. The equivalent figure for the Philadelphia-Camden-Wilmington MSA was $245 in 2012.

Overall, this analysis suggests that a growing percentage of lower-income renters in the region are facing burdensome housing costs. For Third District renters at each income level specified in this report, both the overall percentage of cost-burdened renter households and the proportion for which these burdens were severe significantly increased between 2007 and 2012. Burdens were particularly acute for ELI and VLI households, while trends for LI renters suggested emerging challenges.

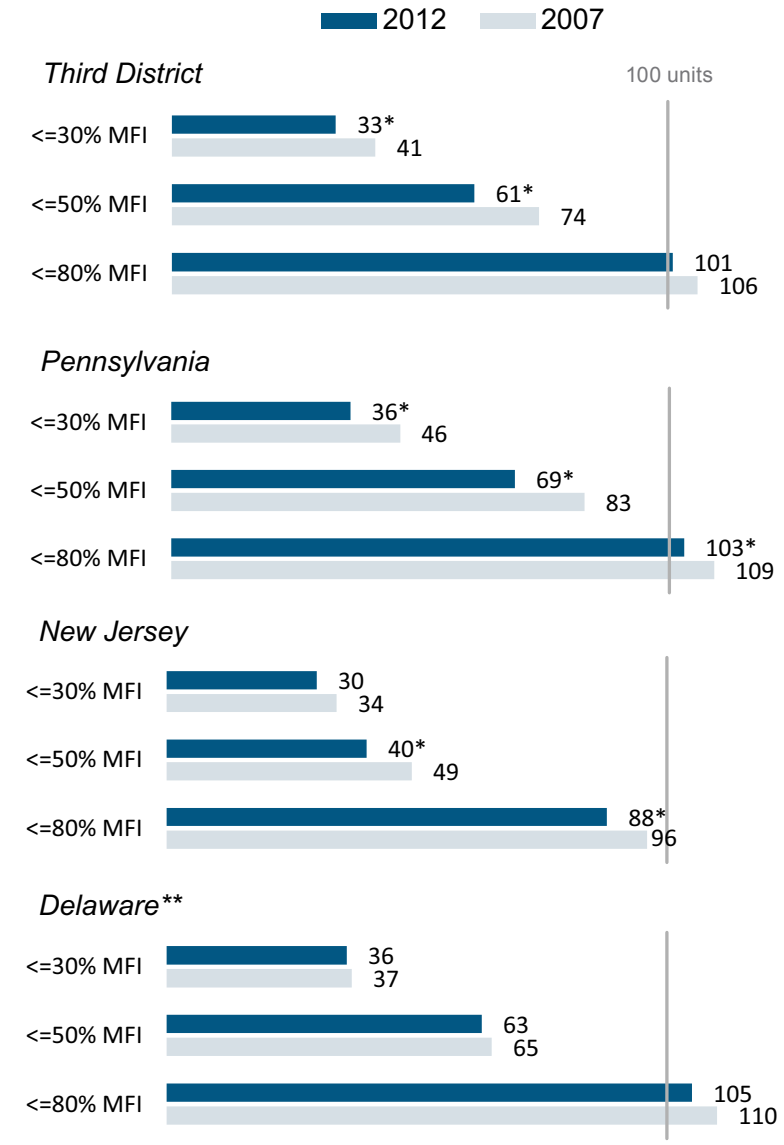
In both Pennsylvania and New Jersey, the number of affordable and available rental units per 100 renter households declined significantly for households at or below 50 percent of MFI from 2007 to 2012.

Housing Supply

This section assesses the supply of affordable rental housing from three perspectives. The first examines how the supply of affordable and available units matched up with the demand in a given area, measured as the number of affordable and available rental units per 100 renter households at or below a specific income threshold. Units were divided into affordability categories based on income thresholds set at 30 percent, 50 percent, and 80 percent

of MFI, then evaluated against the number of renter households in the corresponding income category. A unit was considered available if it was vacant or occupied by a household at or below the given threshold. Derived from the first, the second indicator translates these ratios into an estimate of the total deficit or surplus of affordable and available rental units in a specific geography. The third indicator discusses rental vacancy rates and the stock of affordable vacant units at the MSA level to assess the extent to which these units served as a buffer against affordability pressures.[9]

Figure 2
Number of affordable and available units per 100 renter households



*Denotes statistically significant change at the 90% confidence level
**Delaware figures represent the 2007–2009 and 2010–2012 time period.
Source: Author's calculations using U.S. Census Bureau 2007, 2012, 2007–2009, and 2010–2012 American Community Survey Public Use Microdata Sample files

Affordability and Availability

As shown in Figure 2, in each of the three states there were substantially fewer than 100 units of affordable and available rental housing per 100 renter households making equal to or less than 30 percent and 50 percent of MFI in 2012 (2010–2012 for Delaware). In each state, the supply of affordable and available units was sufficient to house roughly one-third of households making 30 percent or less of MFI. With the exception of New Jersey, a sufficient number of units were affordable and available to households making at or below 80 percent of MFI, reinforcing the finding that affordability challenges are largely concentrated among the lowest-income renters. Across the Third District, there was a deficit of more than 274,000 units affordable and available to households making 50 percent or less of MFI in 2012, while there was a slight surplus when the income threshold was raised to 80 percent of MFI.

In both Pennsylvania and New Jersey, the number of affordable and available rental units per 100 renter households declined significantly for households at or below 50 percent of MFI from 2007 to 2012. Additionally, over this period, Pennsylvania saw a significant decrease in the ratio of units that were affordable and available to renter households making 30 percent or less of MFI.

In New Jersey, the ratio for households making at or below 80 percent of MFI declined from 96 units for every 100 households to a more substantial deficit of 88 units per 100 households. These trends suggest an intensification of

[9] For details, see Appendix: Methodology.

rental affordability issues for lower-income households in these two states. While the ratios in Delaware did not significantly change at any of the income levels between the 2007–2009 and 2010–2012 periods, there was a deficit of roughly 15,700 units affordable and available to households making 50 percent or less of MFI in 2010–2012.

The extent of affordable and available unit shortages varied across MSAs. Perhaps unsurprisingly given their high levels of cost burden, the East Stroudsburg and State College MSAs had the fewest affordable and available units per 100 renter households with incomes at or below 30 percent of MFI (15 and 14, respectively, in 2008–2012). In both MSAs, the vast majority of units affordable in this income category seem to be occupied by households with incomes above 30 percent of MFI. For example, while there were sufficient units in the East Stroudsburg MSA to affordably house 55 percent of the renters in this income category, this affordable stock accommodated a mere 15 percent of the demand. Along with Atlantic City-Hammonton and Lancaster (in 2010–2012), these were the only MSAs in which there was a shortage of units affordable and available to households with incomes up to 80 percent of MFI.

Vacancy

At the MSA level, vacancy rates can play an important and complex role in the affordability of rental housing. Generally, low vacancy rates indicate that the supply of rental units has not kept up with demand, leading to increased competition for available units, higher prices, and more intense affordability pressures. High rental vacancy rates are typically associated with weaker demand and can lead to lower rent levels. This process, however, does not necessarily create a greater availability of housing within the means of ELI and VLI renters, in part because rents affordable at these incomes would be inadequate for private landlords to maintain residential properties.[10] Relative to nationwide trends, many MSAs in the Third District show evidence of weak demand for rental housing, which has translated into an adequate supply of units affordable to households making 51–80 percent of MFI and a tighter housing market for renters in the lowest income categories. For example, though rental vacancy rates in the Philadelphia-Camden-Wilmington MSA remained about 9–10 percent from 2007 to 2012, there was a deficit of more than 131,000 units affordable and available to renter households making at or below 50 percent of MFI in 2012. At the same time, there was a surplus of more than 8,000 units affordable and available to households with incomes up to 80 percent of MFI.

Additionally, there were significant changes in the composition of vacant units in the Philadelphia-Camden-Wilmington MSA. The proportion of vacant units affordable to ELI renter households declined by half, making up only 8 percent of vacant units in 2012. Over the same period, the proportion that was affordable to households making more than 80 percent of MFI doubled. These changes are consistent with a pattern of newer, more expensive rental units coming online, while the stock of deeply affordable units becomes increasingly depleted.

Overall, this analysis suggests that the relative supply of rental units affordable and available for ELI and VLI households across the Third District declined between 2007 and 2012. Further, with a limited — and in some cases declining — supply of vacant units affordable to these households at the MSA level, these trends are likely to persist if overall rental demand continues to grow.

The most prominent finding of this report is that unmet affordable housing needs are overwhelmingly concentrated among VLI and ELI renters and appear to have worsened over the study period.

Housing Quality

The ACS PUMS data provide a limited window into the housing quality challenges that lower-income renters face. This analysis focuses on issues of overcrowding (in which the number of residents exceeds the total number of rooms) and incomplete facilities (for units that lacked complete kitchen or plumbing

[10] Rob Collinson. "Rental Housing Affordability Dynamics, 1990–2009." *Cityscape* 13:2 (2011), U.S. Department of Housing and Urban Development, pp. 71–103.

For example, in an MSA where the MFI is $75,000, an ELI renter household would have an income of $22,500 at most. Its maximum affordable monthly housing cost, which includes rent as well as utilities, would be roughly $560. After accounting for maintenance costs and debt service, it is unlikely that a private landlord would be able to profitably offer a unit at this rent level.

facilities). The overall rates of housing quality issues were generally low — roughly 6 percent of lower-income renter households in the Third District experienced either of these issues in 2012. However, these challenges were more prevalent in some areas.

In New Jersey, more than one in 10 lower-income renter households experienced at least one housing quality issue in 2012. This was true of 13 percent of LI renter households in the Atlantic City-Hammonton MSA in 2008–2012. At both the state and MSA levels, overcrowding was the primary cause. By contrast, in the Lebanon, East Stroudsburg, and State College MSAs, rental housing quality issues were concentrated among ELI renters, affecting more than one in 10 of these households in 2008–2012. In the State College and Lebanon MSAs, this was primarily a result of overcrowding, whereas incomplete facilities were the leading cause in the East Stroudsburg MSA.

Conclusion

The most prominent finding of this report is that unmet affordable housing needs are overwhelmingly concentrated among VLI and ELI renters and appear to have worsened over the study period. Even in relatively affordable MSAs such as Pittsburgh, Harrisburg-Carlisle, and Dover, the vast majority of renters making 50 percent or less of MFI experienced some level of cost burden. For many of these households, the burdens were severe. While this finding may be unsurprising, it is notable that, with a handful of exceptions, in much of the Third District there was a sufficient supply of units that were affordable and available to households making up to 80 percent of MFI.

It is important to acknowledge that housing costs are just one side of this equation. For many households, opportunities to move up the income ladder are critical for addressing not just housing affordability, but broader questions of quality of life. However, given the growing abundance of low-wage employment, it is unlikely that even substantial improvements in economic mobility would erase the need for deeply affordable housing. According to the Bureau of Labor Statistics, 46 percent of projected job openings between 2012 and 2022 are in occupations with median annual wages of less than $30,000.[11] In many of the regions examined in this report, these occupations would put single-earner households just under 50 percent of the area MFI. The affordable housing needs of workers in these professions and others who face barriers to maintaining high-quality employment will persist for the foreseeable future.

Furthermore, it is worth noting that, within some larger MSAs, the distribution of lower-income renters varies across more localized housing markets. For example, while renter households with incomes at or below 50 percent of MFI made up 48 percent of total renter households in the Philadelphia-Camden-Wilmington MSA in 2012, they constituted 59 percent of renters in the city of Philadelphia. Though the MSA as a whole did not see a significant change in its rental vacancy rate between 2007 and 2012, the city's rate declined from 12 percent to 9 percent. Since the city is home to a disproportionate share of lower-income renters, changes in its housing market affect affordability in ways that might not be immediately obvious at the MSA level.

Ultimately, the findings of this report speak to persistent and growing deficits of rental housing affordable and available to the most economically vulnerable households in the Third District. It suggests that affordable housing resources would be most effectively targeted toward ELI and VLI households in many of the region's metropolitan areas. Given the magnitude of this challenge and the limited fiscal capacity of the cities within these MSAs, successful efforts to address the affordable housing shortages identified in this report will likely involve regional collaboration and depend on support — financial and otherwise — from federal and state partners.

[11] Author's calculations using Bureau of Labor Statistics, Table 1.7 Occupational Employment and Job Openings Data, Projected 2012–22, and Worker Characteristics, 2012, Employment Projections; published December 19, 2013; http://www.bls.gov/emp/ep_table_107.htm

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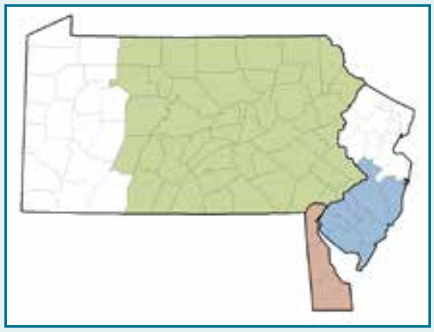
Fact Sheets on Rental Data for Key Locations Across the Region

The pages that follow provide an in-depth look at each of the three states that are part of the Third District as well as the 14 metropolitan statistical areas (MSAs) across the region that are discussed in the report. The individual fact sheets detail rental data in each area and offer a snapshot of key findings in three categories: cost burden, housing supply, and housing quality.

The Third Federal Reserve District

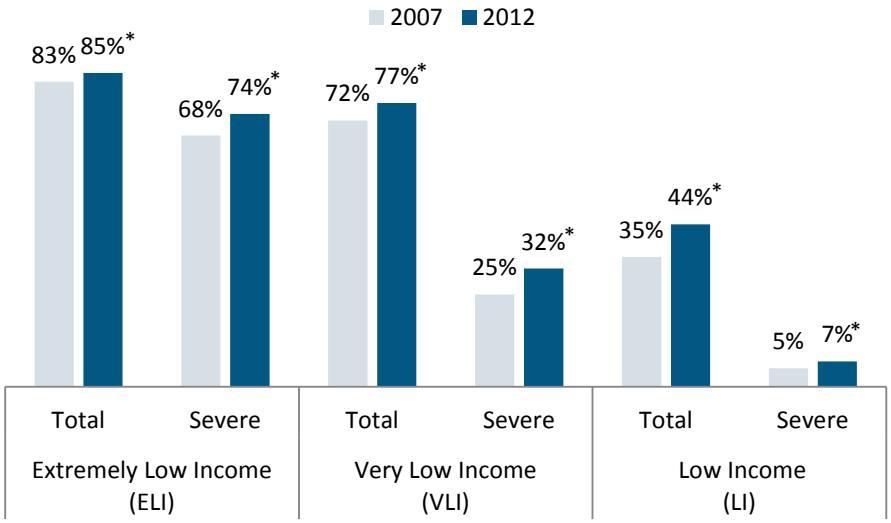
The Federal Reserve Bank of Philadelphia serves the Third District, which covers eastern and central Pennsylvania, southern New Jersey, and Delaware. The Bank's Community Development Studies and Education Department supports the Federal Reserve System's economic growth objectives by promoting community development in low- and moderate-income communities and fair and impartial access to credit in underserved markets.



Sources: ArcUSA, U.S. Census Bureau, ESRI

Third Federal Reserve District

Housing cost burden by renter income category



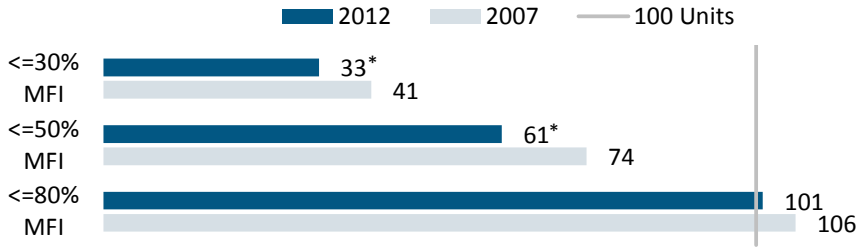
Median gap between affordable and actual gross rent for cost-burdened households, 2012

Extremely Low Income	*Very Low Income*	*Low Income*
$545	$320	$230

Surplus/deficit of affordable and available rental units, 2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-276,758	-274,261	7,474

Number of affordable and available units per 100 renter households



Key Findings

Cost Burden

- Rates of severe cost burden increased for renters in each lower-income category between 2007 and 2012.
- More than three-quarters of ELI and VLI renter households were housing cost burdened in 2012.

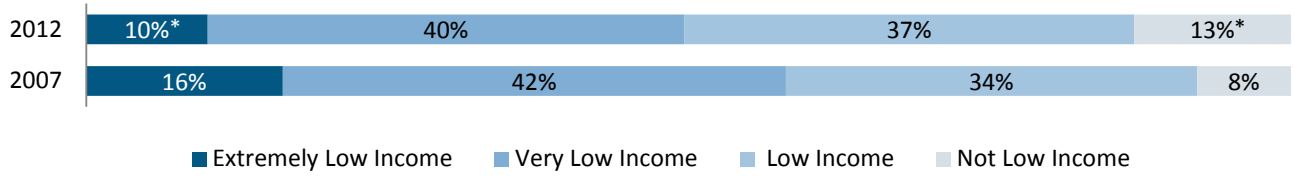
Housing Supply

- The number of affordable and available units per 100 renter households declined for households with incomes at or below 30% and 50% of MFI between 2007 and 2012.
- In 2012, the shortage of affordable and available units was greatest among renter households with incomes at or below 30% of MFI.
- The percent of vacant units affordable to ELI renters declined between 2007 and 2012. This was partially offset by an increase in the proportion that was only affordable to households above the low-income threshold.

Housing Quality

- 6.3% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2012.

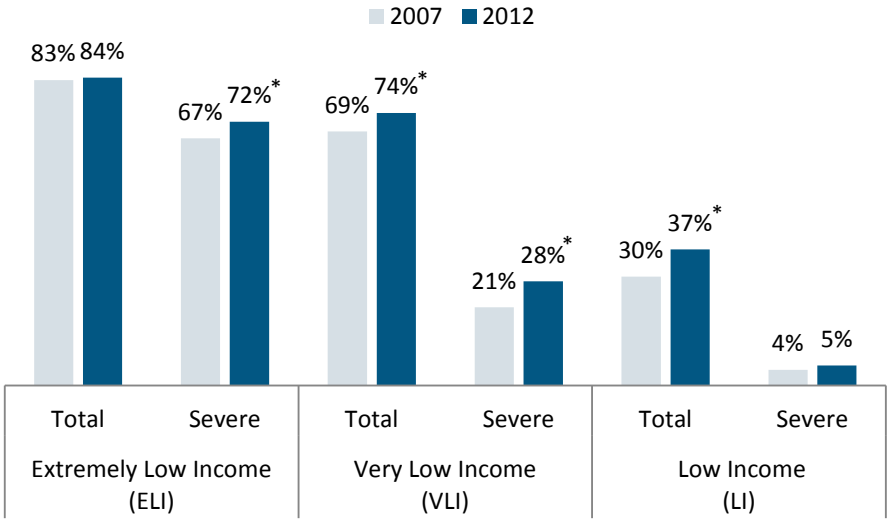
Vacant rental units by affordability category



* Denotes statistically significant change at the 90% confidence level
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007 and 2012 American Community Survey Public Use Microdata Sample files

Pennsylvania

Housing cost burden by renter income category



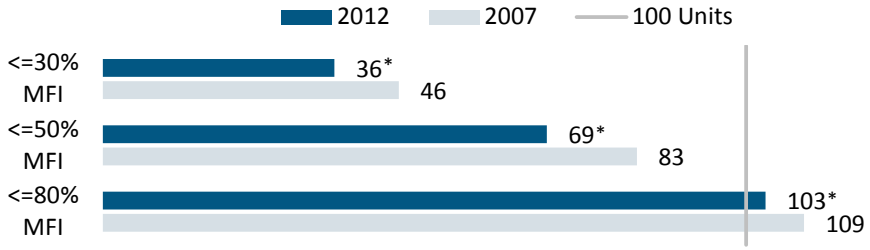
Median gap between affordable and actual gross rent for cost-burdened households, 2012

Extremely Low Income	*Very Low Income*	*Low Income*
$475	$277	$192

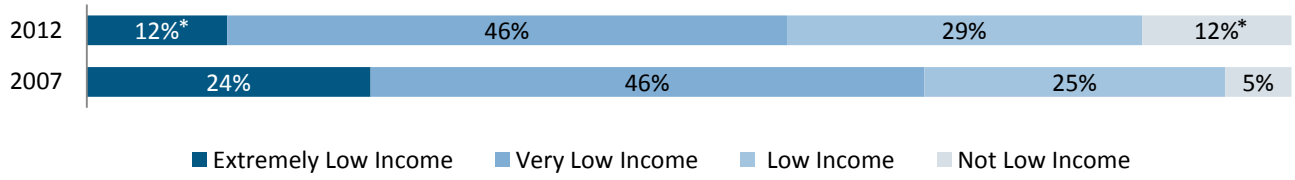
Surplus/deficit of affordable and available rental units, 2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-272,045	-225,897	29,041

Number of affordable and available units per 100 renter households



Vacant rental units by affordability category



Key Findings

Cost Burden

- The proportion of ELI and VLI renter households that were severely cost burdened increased between 2007 and 2012.
- The overall rate of housing cost burden for VLI and LI households increased between 2007 and 2012.

Housing Supply

- The number of affordable and available units per 100 households declined at each income threshold between 2007 and 2012.
- In 2012, the shortage of affordable and available units was greatest among renter households with incomes at or below 30% of MFI.
- The proportion of vacant units affordable to ELI renters decreased by half between 2007 and 2012, while the proportion that was affordable to households above the low-income threshold grew.

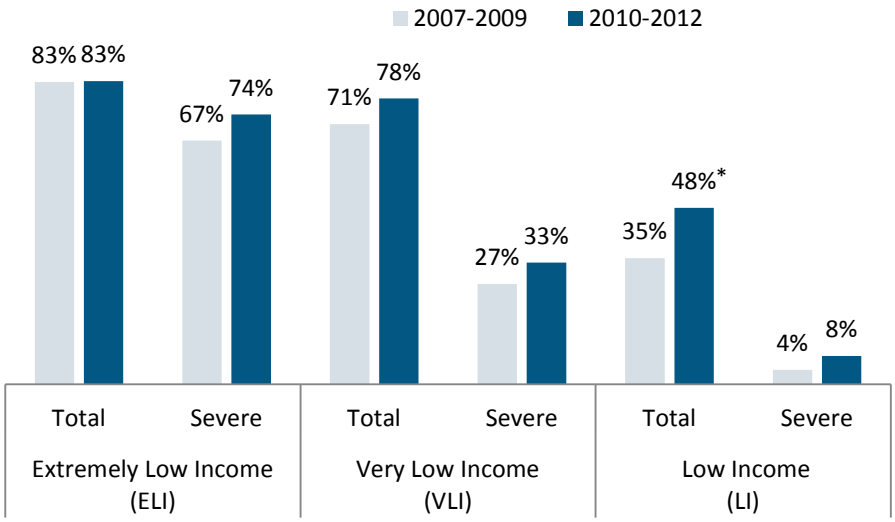
Housing Quality

- 5.6% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2012.

* Denotes statistically significant change at the 90% confidence level
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007 and 2012 American Community Survey Public Use Microdata Sample files

Allentown-Bethlehem-Easton, PA-NJ MSA

Housing cost burden by renter income category



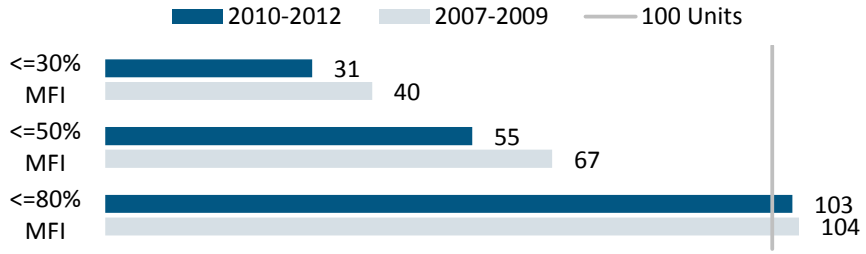
Median gap between affordable and actual gross rent for cost-burdened households, 2010-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$560	$313	$225

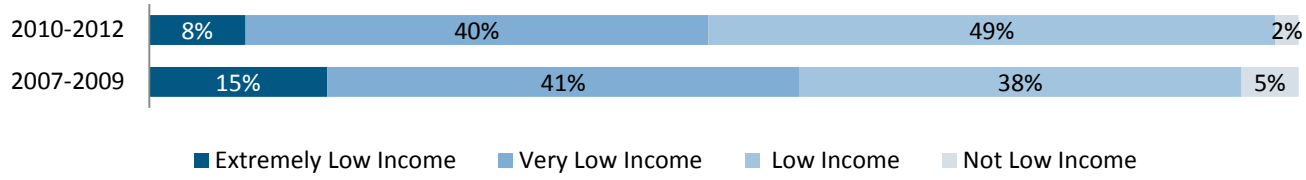
Surplus/deficit of affordable and available rental units, 2010-2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-16,606	-18,108	1,736

Number of affordable and available units per 100 renter households



Vacant rental units by affordability category



Key Findings

Cost Burden

- Approximately one-third of VLI renter households and three-quarters of ELI renter households were severely housing cost burdened in 2010-2012.
- The proportion of cost-burdened LI renter households increased by 13 percentage points between 2007-2009 and 2010-2012.

Housing Supply

- The supply of units affordable and available to households with incomes at or below 30% of MFI was sufficient to meet less than one-third of demand in 2010-2012.
- In 2010-2012, the deficit of affordable and available units was greatest for households with incomes at or below 50% of MFI.
- There was a slight surplus of units affordable and available to renter households with incomes at or below 80% of MFI in 2010-2012.

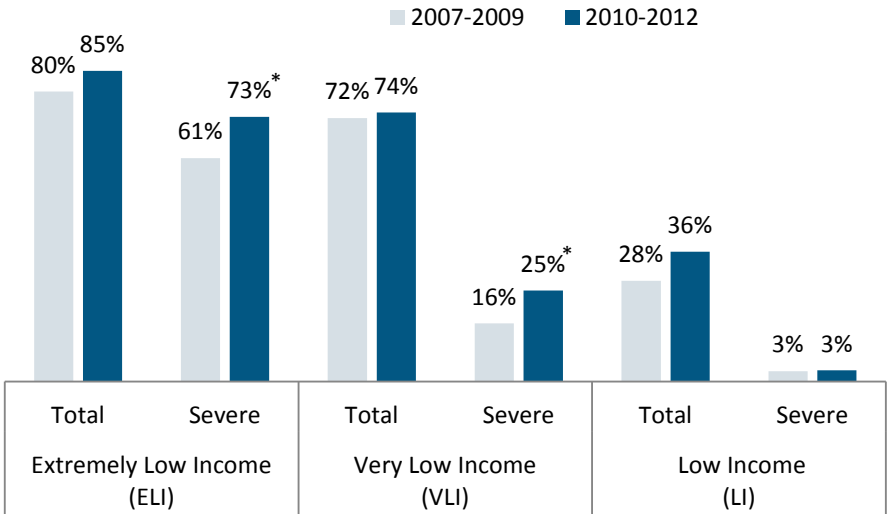
Housing Quality

- 7.1% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2010-2012.

* Denotes statistically significant change at the 90% confidence level
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007-2009 and 2010-2012 American Community Survey Public Use Microdata Sample files

Harrisburg-Carlisle, PA MSA

Housing cost burden by renter income category



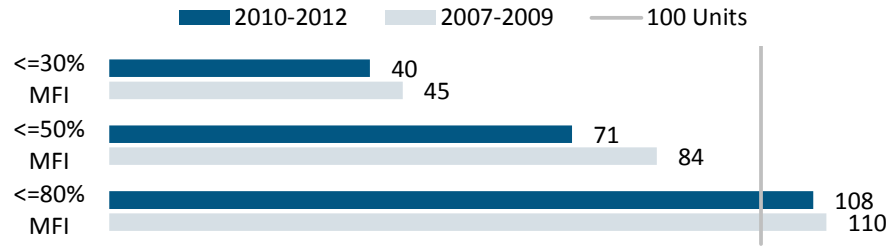
Median gap between affordable and actual gross rent for cost-burdened households, 2010-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$535	$264	$160

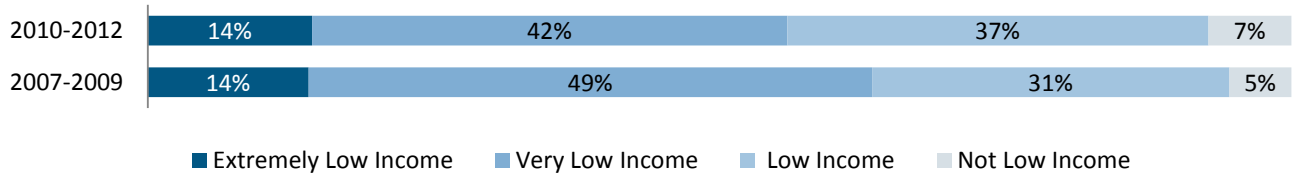
Surplus/deficit of affordable and available rental units, 2010-2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-10,226	-8,338	3,472

Number of affordable and available units per 100 renter households



Vacant rental units by affordability category



Key Findings

Cost Burden

- 85% of ELI renter households were cost burdened in 2010-2012.
- Almost three-quarters of ELI renter households were severely cost burdened in 2010-2012.
- The proportion of ELI and VLI renter households that were severely cost burdened grew from 2007-2009 to 2010-2012.
- Over one-third of LI renter households was cost burdened in 2010-2012.

Housing Supply

- The deficit of affordable and available units was greatest among renter households with incomes at or below 30% of MFI in 2010-2012.
- In 2010-2012, the number of affordable and available units per 100 ELI renter households was sufficient to meet less than one-half of the demand.

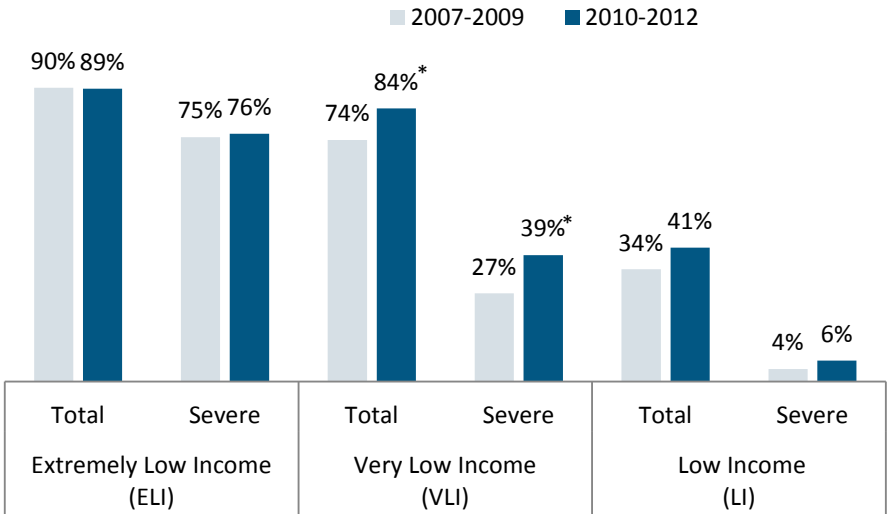
Housing Quality

- 5.7% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2010-2012.

* Denotes statistically significant change at the 90% confidence level
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007-2009 and 2010-2012 American Community Survey Public Use Microdata Sample files

Lancaster, PA MSA

Housing cost burden by renter income category



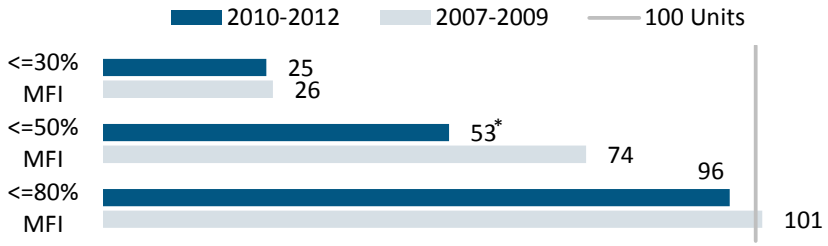
Median gap between affordable and actual gross rent for cost-burdened households, 2010-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$515	$306	$228

Surplus/deficit of affordable and available rental units, 2010-2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-9,265	-11,513	-1,482

Number of affordable and available units per 100 renter households



Key Findings

Cost Burden

- Almost nine in 10 ELI renter households were housing cost burdened in 2010-2012.
- The proportion of VLI renter households that were cost burdened grew by 10 percentage points between 2007-2009 and 2010-2012.

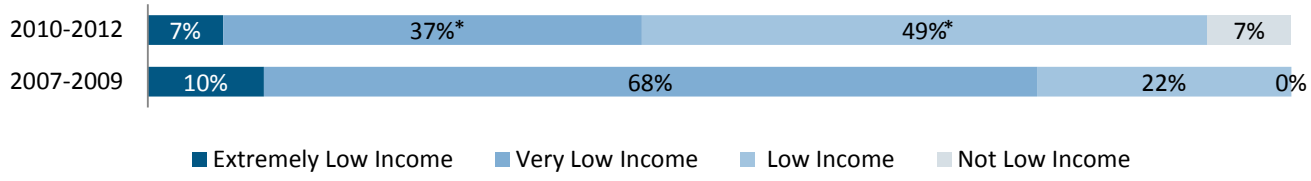
Housing Supply

- The supply of units affordable and available to renter households with incomes at or below 30% of MFI was sufficient to meet only one-quarter of demand in 2010-2012.
- The number of affordable and available units per 100 renter households with incomes at or below 50% of MFI declined by 21 units between 2007-2009 and 2010-2012.
- There was a deficit of affordable and available units for households below each income threshold in 2010-2012.

Housing Quality

- 5.1% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2010-2012.

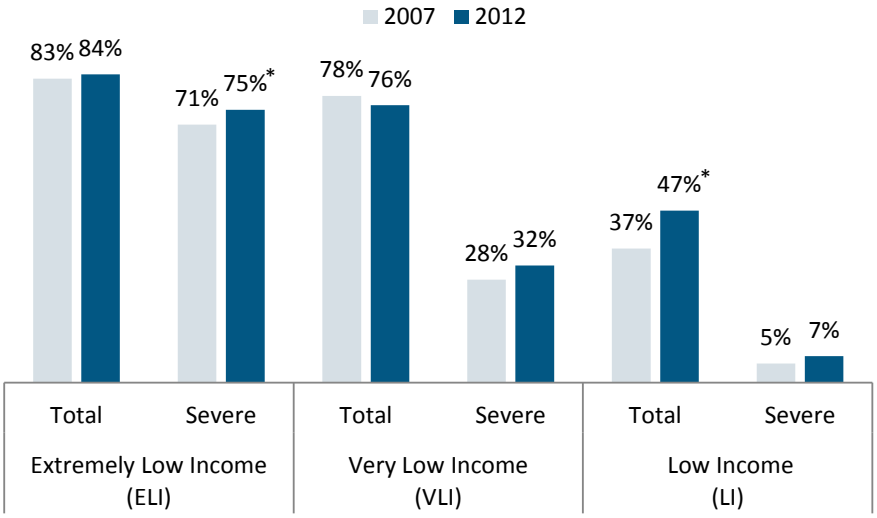
Vacant rental units by affordability category



* Denotes statistically significant change at the 90% confidence level
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007-2009 and 2010-2012 American Community Survey Public Use Microdata Sample files

Philadelphia-Camden-Wilmington, PA-NJ-DE MSA**

Housing cost burden by renter income category



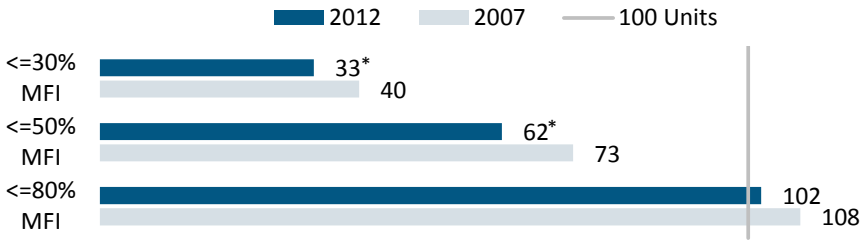
Median gap between affordable and actual gross rent for cost-burdened households, 2012

Extremely Low Income	*Very Low Income*	*Low Income*
$591	$350	$245

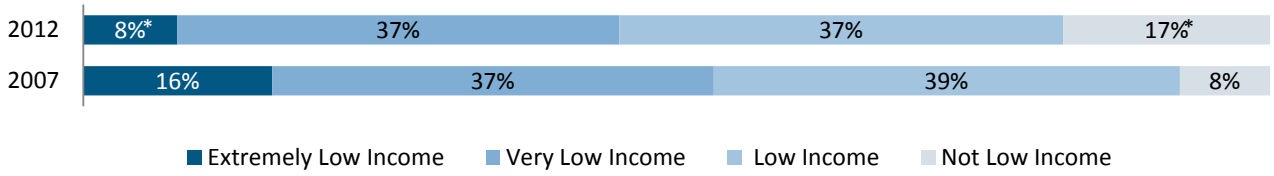
Surplus/deficit of affordable and available rental units, 2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-145,501	-131,431	8,415

Number of affordable and available units per 100 renter households



Vacant rental units by affordability category



Key Findings

Cost Burden

- Three-quarters of ELI renter households were severely housing cost burdened in 2012.
- The proportion of cost-burdened LI renter households increased 10 percentage points between 2007 and 2012.

Housing Supply

- Between 2007 and 2012, the number of affordable and available units per 100 households declined for renter households with incomes at or below 30% and 50% of MFI.
- The supply of units affordable and available to renter households at or below 30% of MFI was only sufficient to meet roughly one-third of the demand.
- From 2007 to 2012, the proportion of vacant units affordable to ELI renter households declined by half, while the proportion affordable to households above the low-income threshold doubled.

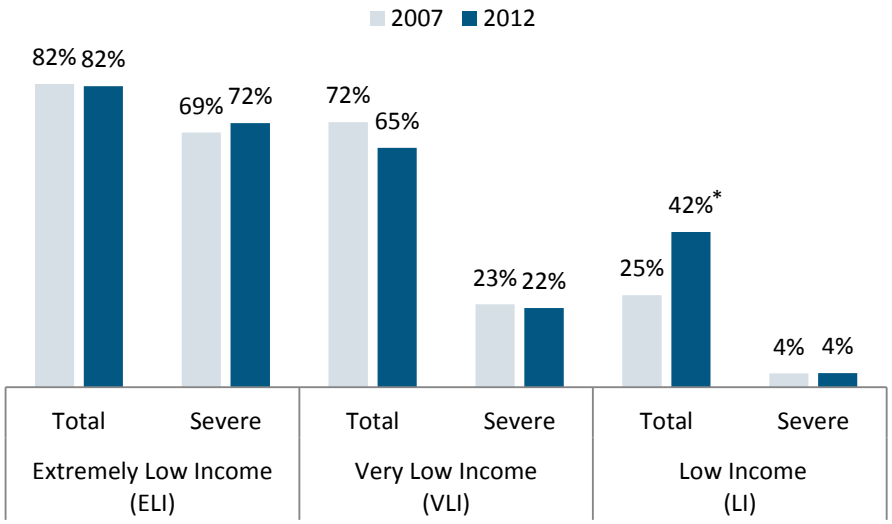
Housing Quality

- 6.4% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2012.

* Denotes statistically significant change at the 90% confidence level
** Excludes Cecil County, MD
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007 and 2012 American Community Survey Public Use Microdata Sample files

City of Philadelphia, PA

Housing cost burden by renter income category



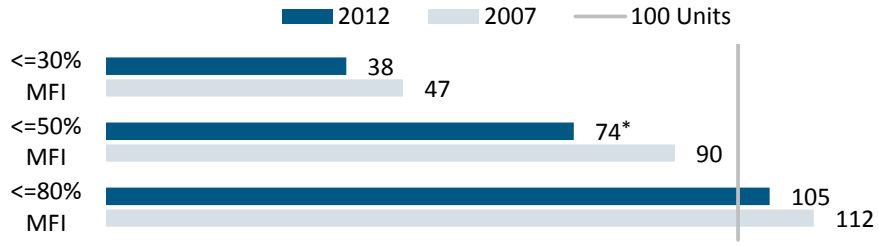
Median gap between affordable and actual gross rent for cost-burdened households, 2012

Extremely Low Income	*Very Low Income*	*Low Income*
$528	$293	$223

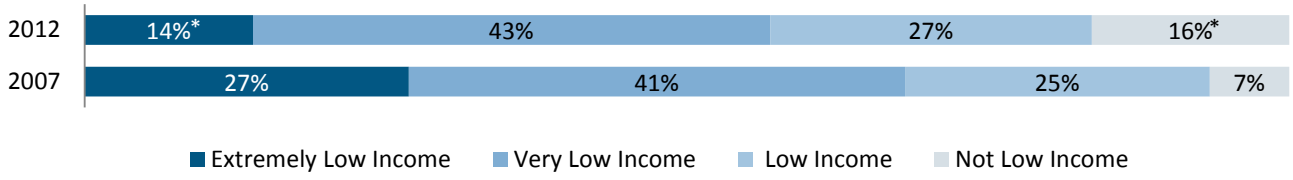
Surplus/deficit of affordable and available rental units, 2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-69,600	-41,523	9,436

Number of affordable and available units per 100 renter households



Vacant rental units by affordability category



Key Findings

Cost Burden

- More than 80% of ELI renter households were housing cost burdened in 2012.
- The proportion of LI households that were cost burdened grew by 17 percentage points between 2007 and 2012, though the percentage for which these burdens were severe remained flat.

Housing Supply

- The deficit of affordable and available units was greatest for renter households with incomes at or below 30% of MFI in 2012.
- From 2007 to 2012, the proportion of vacant units affordable to ELI renter households declined by almost half.
- The number of affordable and available units per 100 renter households with incomes at or below 50% of MFI declined from 2007 to 2012.

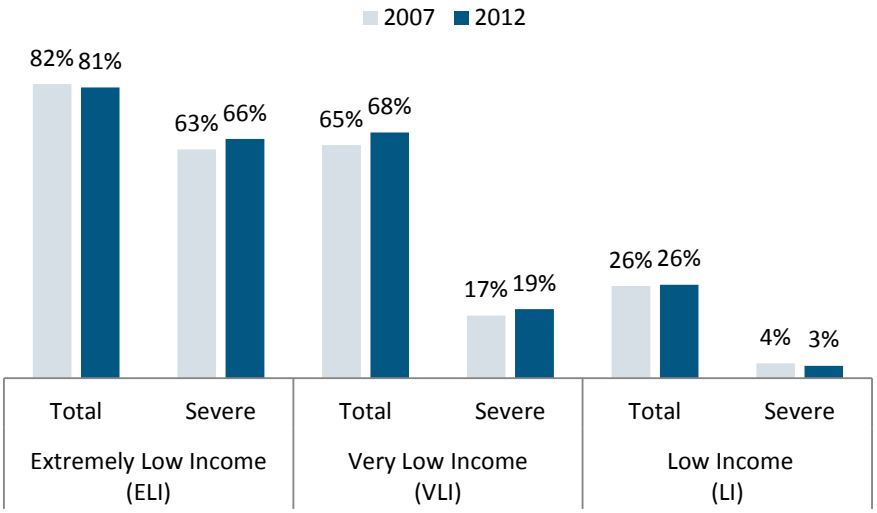
Housing Quality

- 6.2% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2012.

* Denotes statistically significant change at the 90% confidence level
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007 and 2012 American Community Survey Public Use Microdata Sample files

Pittsburgh, PA MSA**

Housing cost burden by renter income category



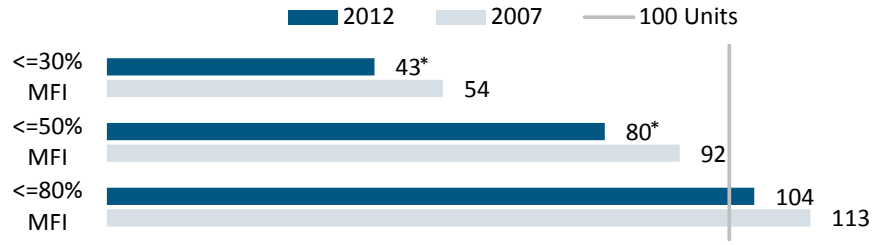
Median gap between affordable and actual gross rent for cost-burdened households, 2012

Extremely Low Income	*Very Low Income*	*Low Income*
$398	$205	$148

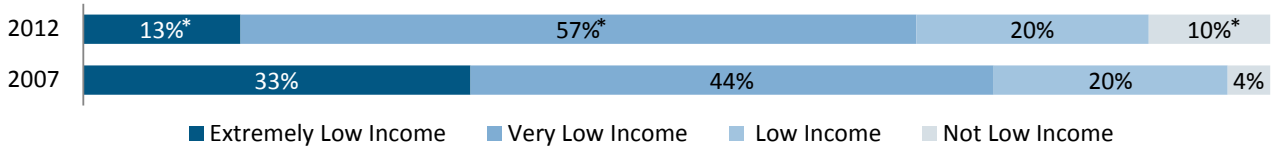
Surplus/deficit of affordable and available rental units, 2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-47,863	-28,876	7,572

Number of affordable and available units per 100 renter households



Vacant rental units by affordability category



Figures may not sum to 100 percent due to rounding.

Key Findings

Cost Burden

- More than 80% of ELI renter households were housing cost burdened in 2012.
- Roughly two-thirds of ELI renters and one-fifth of VLI renters were severely housing cost burdened in 2012.

Housing Supply

- The number of units affordable and available to households with incomes at or below 30% and 50% of MFI declined between 2007 and 2012.
- The supply of units affordable and available to renter households with income at or below 30% MFI covered less than half of the demand in 2012.
- The proportion of vacant units affordable and available to ELI renter households declined by 20 percentage points from 2007 to 2012; this decline was offset by increases in the proportions affordable to VLI households and households with incomes above the low income threshold.

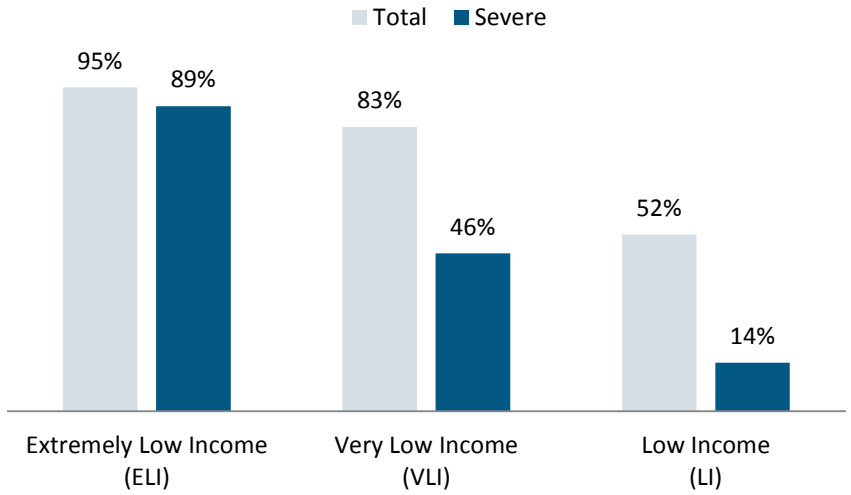
Housing Quality

- 4.4% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2012.

* Denotes statistically significant change at the 90% confidence level
** Includes Greene County, PA
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007 and 2012 American Community Survey Public Use Microdata Sample files

East Stroudsburg, PA MSA

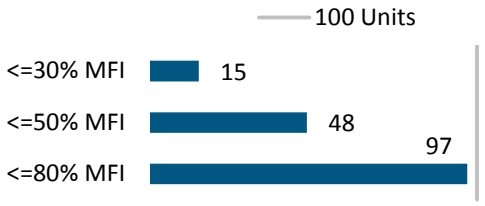
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$740	$375	$245

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

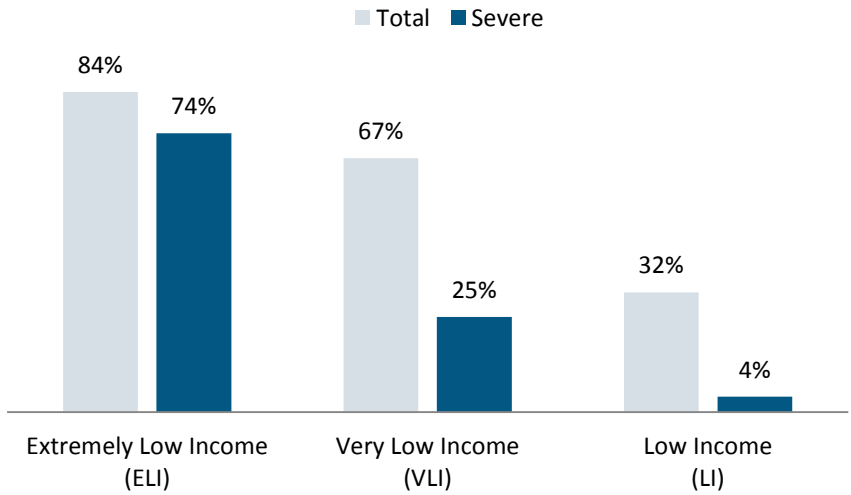
<= 30% MFI
-2,335

<= 50% MFI
-2,969

<= 80% MFI
-275

Erie, PA MSA

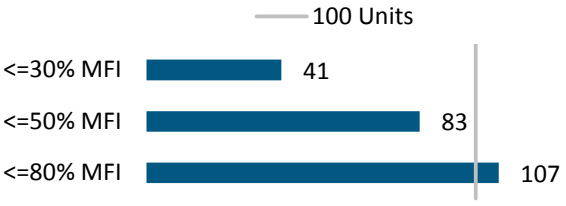
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$380	$221	$193

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

<= 30% MFI
-6,306

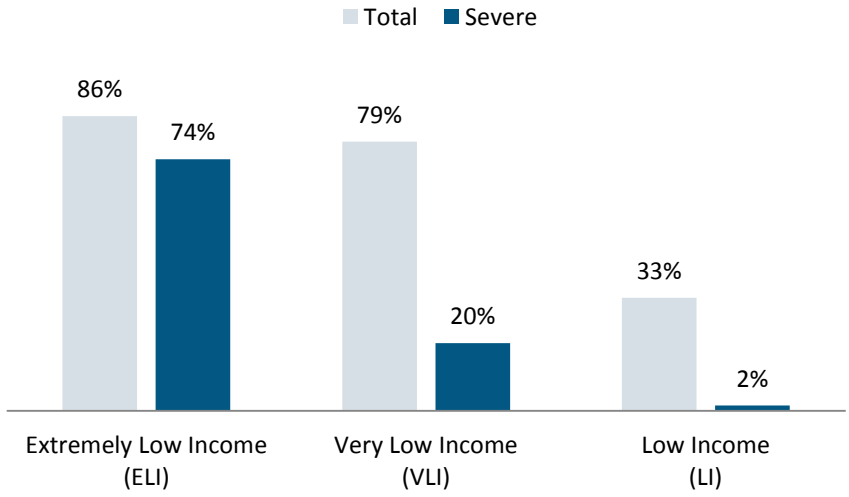
<= 50% MFI
-2,994

<= 80% MFI
1,701

MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2008-2012 American Community Survey Public Use Microdata Sample file

Lebanon, PA MSA

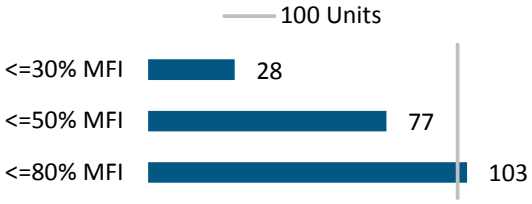
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$393	$195	$135

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

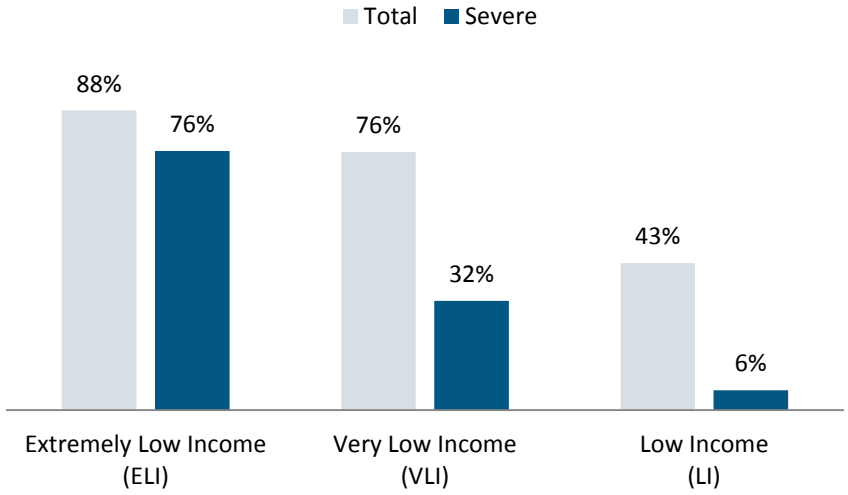
<= 30% MFI
-2,447

<= 50% MFI
-1,387

<= 80% MFI
265

Reading, PA MSA

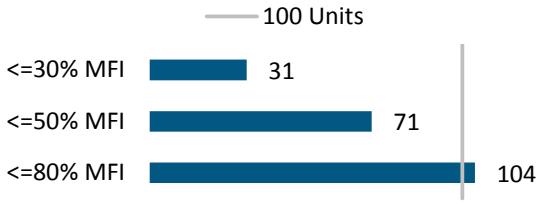
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$433	$285	$159

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

<= 30% MFI
-8,356

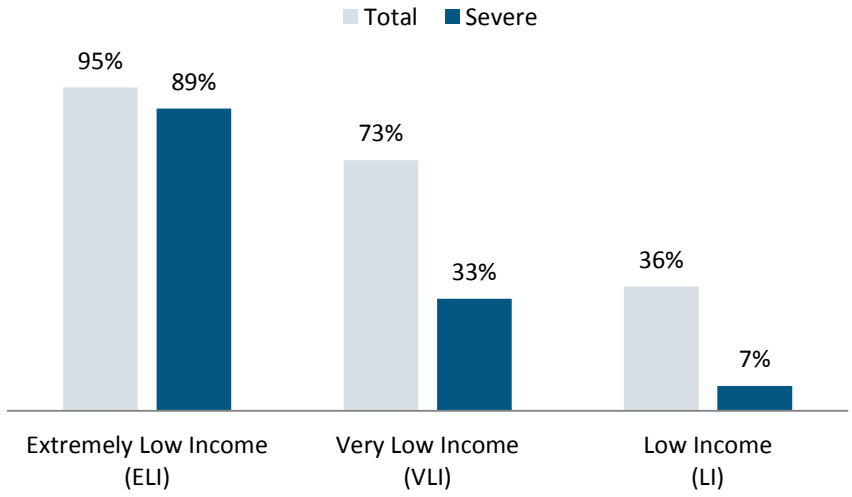
<= 50% MFI
-5,831

<= 80% MFI
1,120

MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2008-2012 American Community Survey Public Use Microdata Sample file

State College, PA MSA

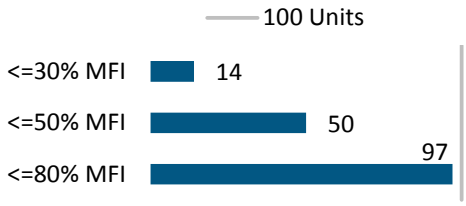
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$662	$300	$147

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

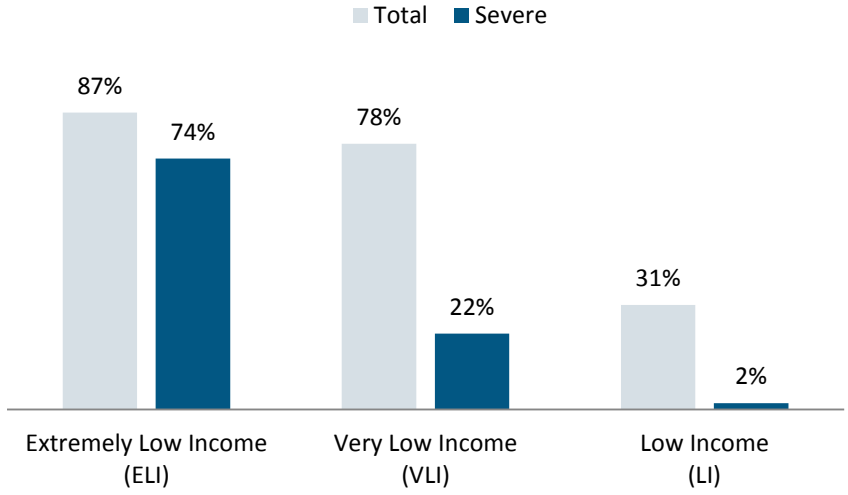
<= 30% MFI
-6,728

<= 50% MFI
-6,156

<= 80% MFI
-539

York-Hanover, PA MSA

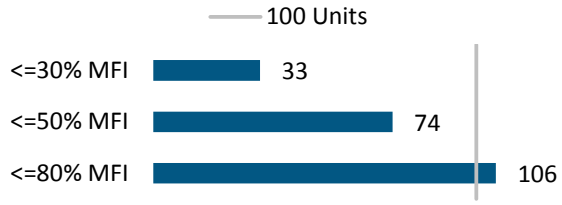
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$416	$240	$175

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

<= 30% MFI
-6,359

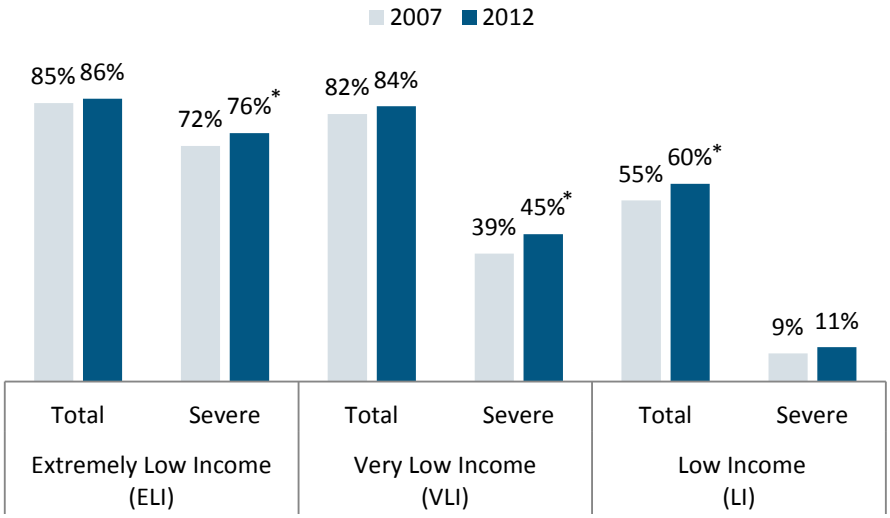
<= 50% MFI
-4,738

<= 80% MFI
1,684

MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2008-2012 American Community Survey Public Use Microdata Sample file

New Jersey

Housing cost burden by renter income category



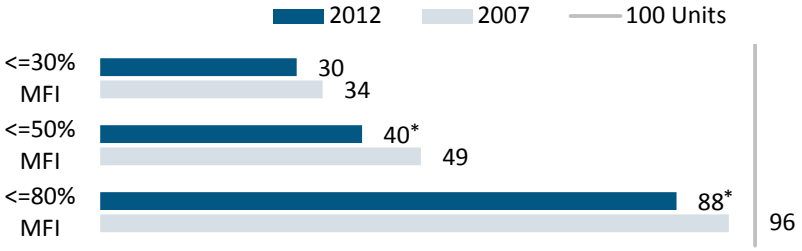
Median gap between affordable and actual gross rent for cost-burdened households, 2012

Extremely Low Income	*Very Low Income*	*Low Income*
$725	$458	$315

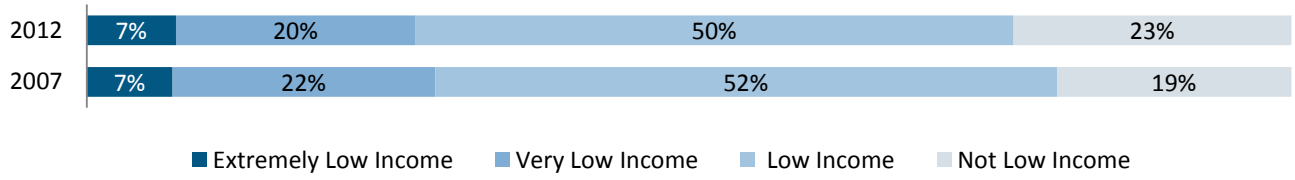
Surplus/deficit of affordable and available rental units, 2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-200,479	-281,291	-80,032

Number of affordable and available units per 100 renter households



Vacant rental units by affordability category



Key Findings

Cost Burden

- The majority of renter households in each lower-income category were housing cost burdened in 2012.
- The typical cost-burdened ELI renter household paid a rent that was $725 more than it could afford in 2012.

Housing Supply

- The number of units affordable and available per 100 households declined for renter households with incomes at or below 50% and 80% of MFI between 2007 and 2012.
- In 2012, the deficit of affordable and available units was greatest among renter households with incomes at or below 50% of MFI.
- There was a deficit of affordable and available units at each income threshold in 2012.

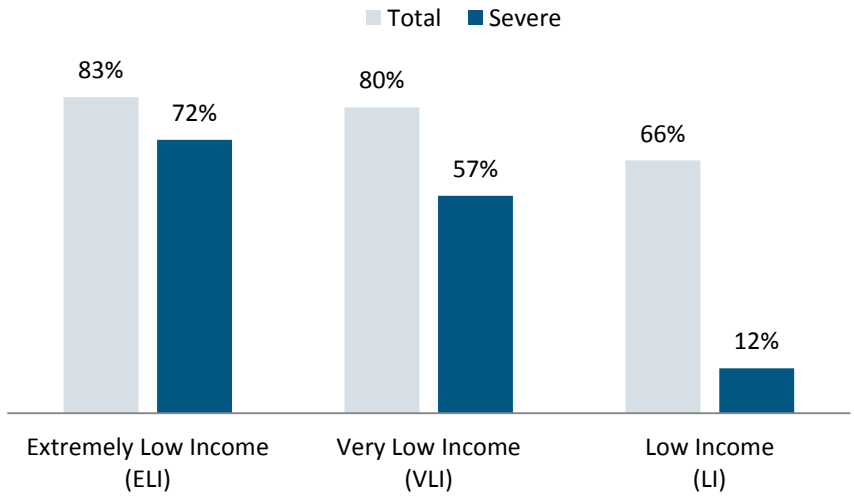
Housing Quality

- 10.1% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2012.
- The primary cause of housing quality issues in 2012 was overcrowding.

* Denotes statistically significant change at the 90% confidence level
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007 and 2012 American Community Survey Public Use Microdata Sample files

Atlantic City-Hammonton, NJ MSA

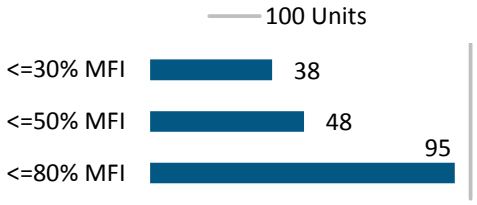
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$598	$475	$305

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

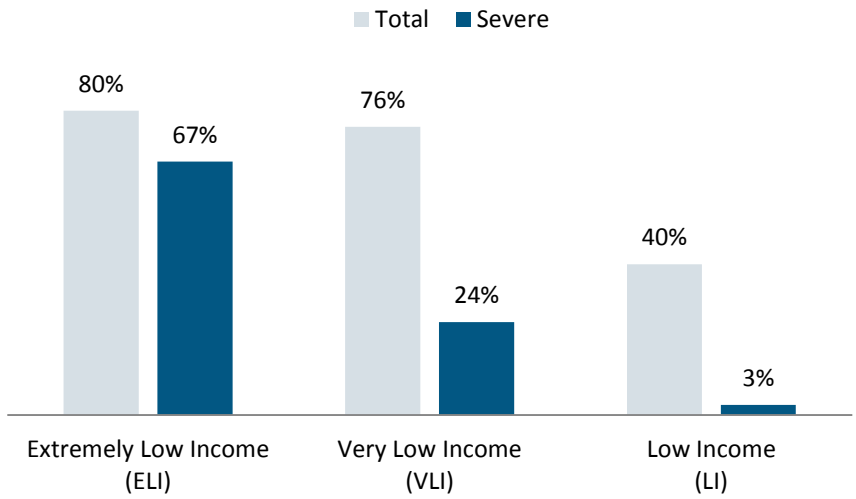
<= 30% MFI
-5,312

<= 50% MFI
-7,455

<= 80% MFI
-1,045

Trenton, NJ MSA

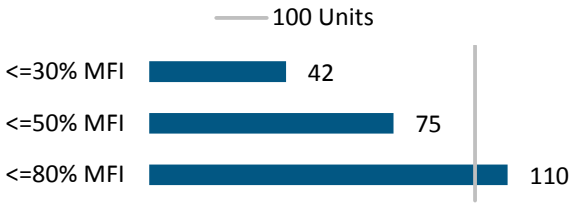
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$633	$350	$205

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

<= 30% MFI
-8,247

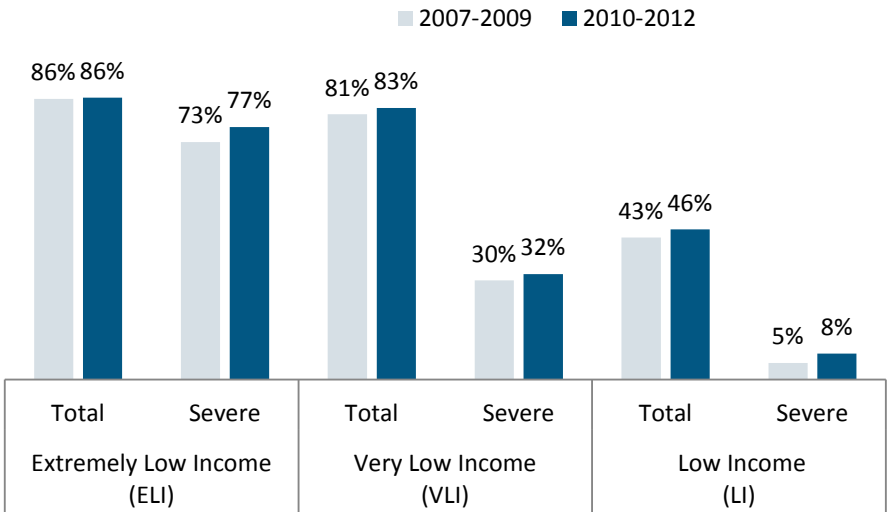
<= 50% MFI
-5,532

<= 80% MFI
3,010

MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2008-2012 American Community Survey Public Use Microdata Sample file

Delaware

Housing cost burden by renter income category



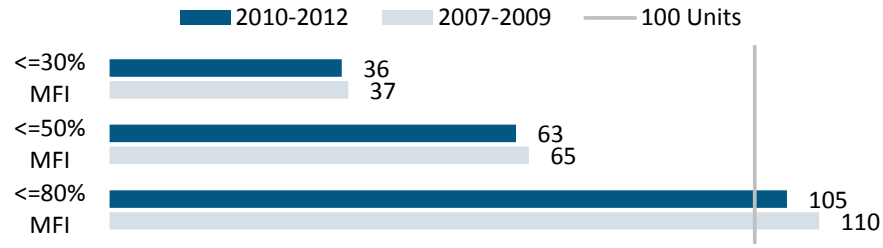
Median gap between affordable and actual gross rent for cost-burdened households, 2010-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$595	$304	$228

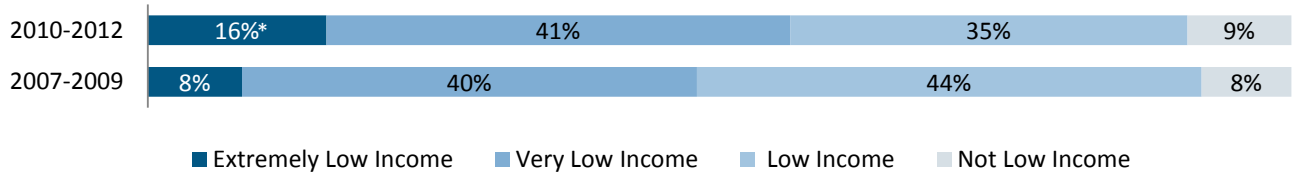
Surplus/deficit of affordable and available rental units, 2010-2012

<= 30% MFI	<= 50% MFI	<= 80% MFI
-14,785	-15,744	3,150

Number of affordable and available units per 100 renter households



Vacant rental units by affordability category



Key Findings

Cost Burden

- More than 80% of ELI and VLI renter households were housing cost burdened in 2010-2012.
- More than three-quarters of ELI renter households were severely cost burdened in 2010-2012.
- Almost one-third of VLI renter households was severely cost burdened in 2010-2012.

Housing Supply

- In 2010-2012, the deficit of affordable and available units was greatest among renter households with incomes at or below 50% of MFI.
- Despite an increase in the proportion of vacant units that were affordable to ELI renter households between 2007-2009 and 2010-2012, there was a deficit of units affordable and available to these households in 2010-2012.

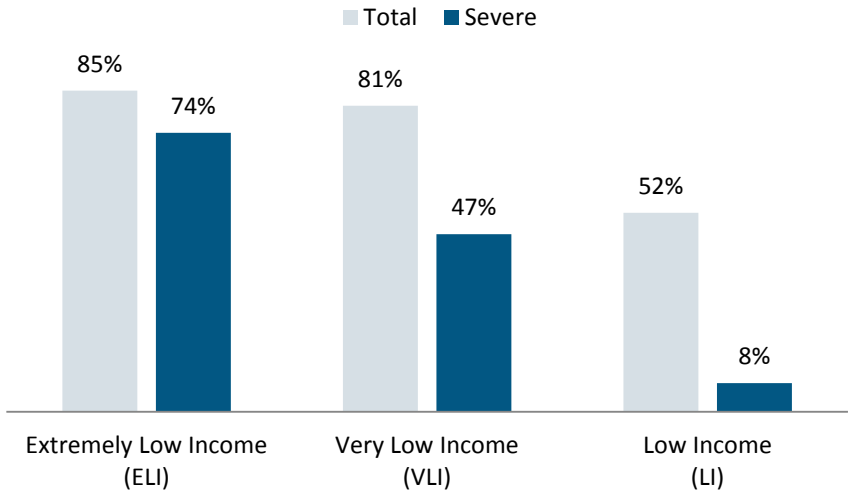
Housing Quality

- 6.7% of lower-income renter households lived in units that were crowded and/or had incomplete facilities in 2010-2012.

* Denotes statistically significant change at the 90% confidence level
MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2007-2009 and 2010-2012 American Community Survey Public Use Microdata Sample files

Dover, DE MSA

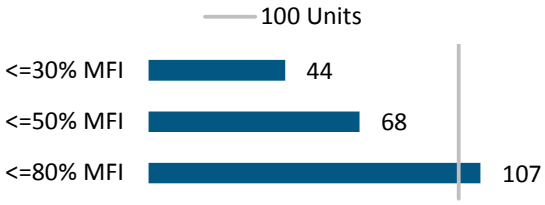
Housing cost burden by renter income category, 2008-2012



Median gap between affordable and actual gross rent for cost-burdened households, 2008-2012

Extremely Low Income	*Very Low Income*	*Low Income*
$564	$445	$225

Number of affordable and available units per 100 renter households, 2008-2012



Surplus/deficit of affordable and available rental units, 2008-2012

<= 30% MFI
-2,077

<= 50% MFI
-2,111

<= 80% MFI
669

MFI: Median Family Income
Source: Author's calculations using U.S. Census Bureau 2008-2012 American Community Survey Public Use Microdata Sample file

APPENDIX: Methodology

Data

The American Community Survey (ACS) program of the U.S. Census Bureau was the primary source of data used in this report. Through the ACS, the Census Bureau surveys roughly 3 million households nationwide each year to assess key housing, demographic, and economic characteristics. Data from this survey sample, which represents about 2.5 percent of households nationwide, are used to produce estimates reflecting one, three, and five years' worth of survey data for geographies of various sizes. Additionally, the Census Bureau releases a set of anonymized individual responses to ACS questionnaires in what are known as Public Use Microdata Sample (PUMS) files. The analysis in this report relies on one-year (2007 and 2012), three-year (2007–2009 and 2010–2012), and five-year (2008–2012) PUMS housing unit files.

The lowest level of geography at which PUMS data are available is a specialized census geography called a Public Use Microdata Area (PUMA). These are areas with populations of at least 100,000 that were developed to preserve the privacy of individual respondents. Densely populated geographies, such as the city of Philadelphia, are split into multiple PUMAs that fit together within their boundaries, while PUMAs in less dense areas generally contain multiple counties or parts of counties. In this analysis, PUMAs were matched with standard census geographies using information provided by the Missouri State Data Center's MABEL/Geocorr2K application.

Changes in the PUMA geographies following the 2010 Census were implemented in the 2012 ACS, presenting major cross-year comparability challenges for this update. As a result, estimates were only produced for geographies that could be wholly or very closely reconstructed with both sets of PUMA geographies (discussed further under "Estimates").

The determination of whether to use the one-year, three-year, or five-year files was made based on the number of renter households in a given geography. While the one-year files allow for more timely estimates, the three- and five-year files produce more reliable estimates for less populous geographies where the single-year sample is small. The one-year files were used for geographies with at least 200,000 renter households, the three-year files for geographies with 50,000–200,000 renter households, and the five-year file for all other geographies.

ACS estimates of median family income (MFI) were used to categorize the individual housing unit/household records contained in the PUMS file into relative affordability and income categories. PUMAs that were wholly contained within an MSA were assigned the MFI of that MSA. Single-county, nonmetropolitan PUMAs were assigned the county's MFI. PUMAs containing multiple nonmetropolitan counties or parts of counties were assigned the PUMA MFI. Lastly, PUMAs containing a mix of MSA geographies or MSA and nonmetropolitan geographies were assigned a weighted average of the MSA(s) and/or county MFIs based on the proportion of housing units falling within each. The time periods of the MFI estimates used for MSA-level analyses correspond to those of the PUMS file (e.g., if analysis of the State College MSA uses the five-year ACS PUMS, the five-year ACS MFI estimate was used as the underlying PUMA income). In order to produce one-year rental housing estimates for New Jersey, Pennsylvania, and the Third District, one-year income estimates were used for all PUMAs and aggregated to develop estimates for these larger geographies.

Analysis

By comparing household-level income reported in the PUMS file with the median family income for the broader geographic area, renter households were divided into the following income categories to enable closer analysis of the rental housing needs of different income segments:

- **Extremely low income (ELI)** — households with incomes <=30 percent of area MFI
- **Very low income (VLI)** — households with incomes 31–50 percent of area MFI
- **Low income (LI)** — households with incomes 51–80 percent of area MFI
- **Not low income** — households with incomes >80 percent of area MFI

To account for the variation in income needs of households of various sizes, we adopted HUD's approach to adjusting MFI estimates based on household size.[a] An unadjusted MFI was used to categorize households of four, with a downward adjustment

[a] U.S. Department of Housing and Urban Development, Office of Policy Development and Research, FY 2014 Income Limits Briefing Material (Washington, D.C.: U.S. Department of Housing and Urban Development, December 1, 2013). See page 9 for the description of household size income adjustments. It should be noted that HUD's income limits are subject to additional adjustments that were not included in this analysis, such as caps on year-to-year growth and adjustments for areas in which housing costs or incomes are exceptionally high.

of 10 percent for each person fewer than four; for example, a one-person household would be categorized based on 70 percent of MFI, a two-person household based on 80 percent of MFI, and so on. For each person in a household exceeding four, the MFI was adjusted upward by 8 percent so that a six-person household would be categorized using 116 percent of MFI.

Once households were sorted into income categories, the ratio of their monthly gross housing costs to their monthly income was calculated to assess the variation in housing cost burdens across income levels. For units in which utility costs were separate from rent, gross housing costs were calculated as the sum of rent and utility costs. Households for which monthly gross rent exceeded 30 percent of monthly income were considered burdened by their housing costs, while those paying more than 50 percent of their monthly income were classified as severely cost burdened.

The PUMS housing file also allows for the identification of certain housing quality challenges such as overcrowding and inadequate facilities. Units in which the number of residents exceeded the number of rooms were coded as crowded, and those in which respondents reported incomplete kitchen or plumbing facilities were coded as having inadequate facilities. The presence of one or both in a given unit was counted as a housing quality issue. Like cost burdens, the frequency of housing quality issues was calculated for each household income category.

The housing units, including those that were vacant, were also sorted into affordability categories to enable analysis of the supply of affordable rental units. Since utility costs were not recorded for vacant units, only the rent reported in the ACS questionnaire could be used in this determination. To be considered affordable, monthly gross rent could not exceed 30 percent of monthly household income. Units were categorized using the MFI-based income thresholds outlined previously. Again, adjustments were made to reflect the variation in income sufficiency for different household sizes. Following HUD's methodology, the applicable household size was inferred from the number of bedrooms in a unit. Efficiencies were assumed to accommodate one person, one-bedroom units were assumed to accommodate 1.5 persons, and each additional bedroom was assumed to accommodate an additional 1.5 persons.

It may be instructive at this point to include an example of how a unit would be categorized. Assume there is a two-bedroom unit with a gross rent of $900 in an area with an MFI of $50,000. The applicable income thresholds in that community would be:

- Extremely low-income threshold: 30% × $50,000 × 90%[b] = $13,500
- Very low-income threshold: 50% × $50,000 × 90% = $22,500
- Low-income threshold: 80% × $50,000 × 90% = $36,000

At a rent of $900 per month, the unit is affordable at an annual income of $32,400 ($900 monthly rent/30 percent to reflect the maximum affordable share of household income × 12 months × 90% to adjust for a three-person household), placing it above the ELI and VLI thresholds but within the means of a three-person household in the LI category.

Estimates

While many of the estimates produced for this report were the result of simple cross tabulations (e.g., rates of cost burden and housing quality issues by household income category), others required additional calculations. Where changes in the PUMA boundaries affected the ability to construct consistent MSA geographies throughout the study period, household and unit estimates from the PUMAs containing both MSA and nonmetropolitan geographies were allocated based on the proportion of housing units that fell within the MSA.[c] This proportion was added to the estimates from PUMAs that were wholly contained within the MSA, providing an approximation of the estimate for the full geography. This approach was also used to produce estimates for the Third District.

Since this approach assumes uniformity across the mixed PUMA, to preserve the integrity of the MSA-level estimates, it was only done if less than 5 percent of an MSA's housing units were subject to this adjustment. In MSAs where more than 5 percent of housing units were in PUMAs that combined MSA and nonmetropolitan counties (as was the case for the Scranton-Wilkes Barre-Hazelton MSA), estimates were not produced. Nonmetropolitan

[b] This represents the three-person household adjustment factor; a two-bedroom unit is assumed to house three people comfortably.
[c] The MABEL/Geocorr2k tool provides housing unit-based allocation factors for all counties within a PUMA.

Greene County was included in the Pittsburgh MSA estimates to avoid exceeding this 5 percent threshold.

The median rent gap, or the gap between a household's maximum affordable rent and actual gross rent paid by the household, was calculated for cost-burdened households in each income category. Following the housing cost-burden analysis described previously, the threshold for maximum affordable rent was set to 30 percent of monthly household income. For each cost-burdened household, this threshold rent was subtracted from the actual gross rent reported in the ACS. The median of these differences is reported for cost-burdened ELI, VLI, and LI households. Unlike all other tabulations in this report, it was not feasible to incorporate the mixed-PUMA adjustment described in the preceding two paragraphs into this calculation. For the purposes of this analysis, a PUMA was included in the calculations if more than one-half of its housing units fell within the target geography (either the MSA or the Third District).

Following the methodology outlined in HUD's *Worst Case Housing Needs* series of reports to Congress,[d] two ratios were calculated to assess the sufficiency of the existing affordable rental stock relative to demand. The first dealt solely with affordability, calculating the number of units (both occupied and vacant) in a given affordability category per 100 households in the corresponding income category.[e] For example, if there were 1,000 rental units affordable to ELI renter households and 2,000 ELI renter households in a given geography, there would be 50 affordable units per 100 ELI households.

The second ratio looked at both the affordability and availability of rental units. As with the first, it focused on the stock of units in a given affordability category. However, to measure the portion of the stock that was actually available to households in the corresponding income category, it subtracted the number of these units that were occupied by households in a higher income category. Continuing the previous example, if 200 of the 1,000 rental units were occupied by higher income households, there would be 40 units per 100 ELI households because only 800 units would be affordable and available for the 2,000 renter households in this income category.[f] It is important to note that these ratios were cumulative for each income level, including all housing units and households that fell at or below a given affordability or income category.

Both the affordable ratio and the affordable and available ratio have value in their own right. Because of space considerations and because the latter better reflects access to low-cost units, only the affordable and available ratio is reported in this publication.

Additionally, the overall deficit or surplus of units affordable and available to different income levels is reported for the most recent estimate year or period. These estimates were calculated by subtracting the number of households in an income category from the number of available units in the corresponding affordability category. As with the ratios, these estimates are cumulative. This report only presents surplus/deficit estimates for the most recent period (2012, 2010–2012, or 2008–2012). This is because more recent ACS data are "controlled" to the 2010 census whereas prior data use population estimates based on the 2000 census, complicating the comparison of housing counts across these years.[g] In keeping with Census Bureau guidelines, this report focuses on change over time in characteristics (such as percent cost burdened), testing only these estimates for significant difference.[h]

[d] For the latest in this series, see Barry L. Steffen et al., *Worst Case Housing Needs 2011: Report to Congress* (Washington, D.C.: U.S. Department of Housing and Urban Development, August 2013).

[e] Because these affordability categories are based on ranges relative to MFI, this calculation assumes a similar distribution of units and households within these ranges. Where these distributions are dissimilar, there is the potential to overstate or understate the affordability of the rental stock.

[f] These calculations likely overestimate the level of affordability for two reasons: 1) vacant rental units in which utility costs are not reported may be included in a lower affordability category than they would be if utility costs were known, and 2) households that reported paying no cash rent were categorized as affordable to extremely low-income households. Regarding the latter issue, if arrangements that make this possible for current occupants were not available to the broader population, these units may not fall into this affordability category.

[g] U.S. Census Bureau, *American Community Survey Research Note: Change in Population Controls* (Washington, D.C.: U.S. Census Bureau, September 2011).

[h] U.S. Census Bureau, *A Compass for Understanding and Using American Community Survey Data: What PUMS Data Users Need to Know* (Washington, D.C.: U.S. Census Bureau, February 2009).

Comparability with Prior Reports

In 2010, CDS&E published a special report titled *Affordability and Availability of Rental Housing in Pennsylvania*[i] that used both ACS data from 2005 and 2006 as well as HUD-produced Comprehensive Housing Affordability Strategy (CHAS) data sets from 1990 and 2000. This report was subsequently updated in 2011 using CHAS data from 2005 to 2007 that were based on ACS data collected during those three years.[j]

Estimates in these prior reports *should not be compared* with the estimates presented in this report. The CHAS data included in the 2010 report were based on the long-form survey administered in conjunction with the decennial census.

Differences between long-form and ACS estimates have been observed in reported income levels and rents,[k] as well as vacancy rates.[l]

Additionally, though the CHAS data sets in the 2011 update were based on the ACS, differences between the methodology of this report and that used to construct CHAS data sets can have noticeable impacts on the estimates they produce. For example, CHAS data sets do not classify renter households that report zero or negative income in housing cost burden tabulations. In this report, these households are categorized as ELI and any reported housing costs are considered to exceed 50 percent of income. Furthermore, CHAS data sets use 30, 50, and 80 percent income thresholds that are subject to a range of administrative adjustments, whereas income thresholds included in this report are calculated as straight percentages for MSAs or nonmetropolitan areas.[m]

Lastly, in addition to the 2010 report and 2011 update referenced previously, CDS&E published a report titled *Affordability and Availability of Rental Housing in the Third Federal Reserve District: 2012*[n] in December 2012. Though the data sources and analyses in this prior report are largely consistent with those outlined here, adjustments made in response to changes in PUMA boundaries (such as the efforts to reconstruct consistent MSA geographies over time as described previously) limit comparison with these estimates as well. Specifically, these adjustments affect estimates from the Third District (2007 and 2012), the Philadelphia-Wilmington-Camden MSA (2012), and the Atlantic City-Hammonton MSA (2008–2012).

[i] Erin Mierzwa, Kathryn P. Nelson, and Harriet Newburger, *Affordability and Availability of Rental Housing in Pennsylvania* (Philadelphia: Federal Reserve Bank of Philadelphia, Community Development Studies and Education Department, March 2010).

[j] Federal Reserve Bank of Philadelphia, Community Development Studies and Education Department, *New Rental Housing Data Based on the 2005–07 American Community Survey (ACS)* (Philadelphia: Federal Reserve Bank of Philadelphia, 2011).

[k] Gregg J. Diffendal, Rita Jo Petroni, and Andre L. Williams, *Meeting 21st Century Demographic Data Needs — Implementing the American Community Survey, Report 8: Comparison of the American Community Survey Three-Year Averages and the Census Sample for a Sample of Counties and Tracts* (Washington, D.C.: U.S. Census Bureau, 2004).

[l] Deborah H. Griffin, *Comparing 2010 American Community Survey 1-Year Estimates of Occupancy Status, Vacancy Status, and Household Size with the 2010 Census — Preliminary Results* (Washington, D.C.: U.S. Census Bureau, December 2011).

[m] For further discussion of how the CHAS data set differs in its approach to categorizing household income and unit affordability, see Keith Wardrip, Thomas Hylands, and Joshua Strazanac, *Documentation for Affordability and Availability of Rental Housing in the Third Federal Reserve District: 2012* (Philadelphia: Federal Reserve Bank of Philadelphia, Community Development Studies and Education Department, December 2012).

[n] Keith Wardrip, Thomas Hylands, and Joshua Strazanac, *Affordability and Availability of Rental Housing in the Third Federal Reserve District: 2012* (Philadelphia: Federal Reserve Bank of Philadelphia, Community Development Studies and Education Department, December 2012).

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