

The Effects of Small Area Fair Market Rents on the Neighborhood Choices of Families with Children

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Abstract

This paper reports and extends the quantitative findings of the Small Area Fair Market Rent Demonstration Evaluation, focusing on the important subgroup of families with children. We test whether varying housing assistance subsidy caps with ZIP Code rent levels (that is, introducing Small Area Fair Market Rents or SAFMRs) increases the likelihood that voucher-holder families with children locate in higher opportunity neighborhoods, as proxied by poverty rates, the proficiency levels of local elementary schools, jobs proximity, and environmental hazards. Because of our focus on families with children, we pay particular attention to school proficiency levels and poverty rates. We estimate a difference-in-differences specification on a repeated cross-section of administrative data to estimate the effect of the introduction of SAFMRs in seven public housing agencies as compared to a large group of agencies that continued to operate under metro area FMRs. Five years after implementation, Small Area FMRs do not appear to affect overall move rates, but they meaningfully affect the locational outcomes among families with children who move. The share of such families settling in neighborhoods in the top quartile of our opportunity index measure increases by 11 percentage points (a 120-percent increase).

Introduction

The Housing Choice Voucher (HCV) program, the largest housing assistance program administered by the United States Department of Housing and Urban Development (HUD), provides rental subsidies to over 2.5 million children under the age of 18. The median of these children's families' annual income is approximately \$15,000 (in 2008), with 73 percent having family incomes below the federal poverty level (Horn, Ellen, and Schwartz, 2014).¹

HCV subsidies allow households to rent units on the private market. In theory, voucher holders can locate in a wide variety of neighborhoods, including low-poverty neighborhoods that offer a rich set of resources and opportunities. In practice, however, households with vouchers are frequently concentrated in high-poverty neighborhoods with limited access to the amenities and services associated with economic opportunity.

A growing body of evidence, summarized below, documents that low-income children benefit from spending more of their childhood living in neighborhoods with lower poverty rates and with schools that have higher proficiency rates. So, a key question for policy makers is how to enable more voucher families with children to move to higher-opportunity areas. Because resources for such policies are limited, strategies that can encourage such moves without significantly raising overall subsidy costs are especially needed.

We explore the efficacy of one particular policy reform aimed at encouraging moves to higher-opportunity neighborhoods: Small Area Fair Market Rents (SAFMRs), voucher ceiling rents that vary with ZIP Code rent levels.² Traditionally, ceiling rents in the HCV program have been based on a Fair Market Rent (FMR) set for an entire metropolitan area (metro FMR). We evaluate the effect of a demonstration that HUD launched in late 2012 to test Small Area FMRs in five randomly selected public housing agencies (PHAs): Chattanooga Housing Authority (Tennessee), Housing Authority of Cook County (Illinois), Housing Authority of the City of Laredo (Texas), Housing Authority of the City of Long Beach (California), Town of Mamaroneck Housing Authority (New York).³ We also include two housing agencies in the Dallas, Texas metro area, where SAFMRs were introduced in 2011 as part of a legal settlement (Housing Authority of the City of Dallas and Housing Authority of Plano). We compare pre to post changes in opportunity measures for the ZIP Codes where voucher families with children locate in these seven SAFMR PHAs to the same location outcomes over the same time period for a large sample of voucher families with children assisted by PHAs that were eligible for the demonstration but were not randomly selected to participate.

Our empirical analysis shows that, as intended, SAFMRs increase the pool of units affordable to voucher holders in high-opportunity neighborhoods and decrease the number affordable in low-opportunity neighborhoods. Further, we find evidence that the shift to SAFMRs affects voucher holder families' choice of locations. We find that HCV families with children are no more or less

¹ With an estimated 6.1 million families with children with incomes below the poverty line in 2008, the HCV program provides rental subsidies to approximately 12 percent of families with children with below-poverty incomes.

² While the FMR plays a key role in determining the subsidy amount, the actual voucher ceiling, or payment standard, is set by the PHAs. Payment standards generally fall between 90 and 110 percent of the FMR.

³ Many of the findings we report here are also reported by the authors in the Small Area Fair Market Rent Demonstration Evaluation: Final Report, Dastrup et al. (2018).

likely to move after the implementation of SAFMRs. We find strong effects, however, among those that do move. Using a difference-in-differences regression framework, we find that these mover households are 6.7 percentage points more likely to locate in a ZIP Code that ranks at least one decile higher (within the metro area) in our ZIP Code opportunity index as a result of the introduction of SAFMRs. Although effects are largest among movers, we also see shifts in the locational choices of new voucher holder families with children. Nonetheless, after 5 years, one-third of voucher holders with children in our study area still live in neighborhoods in the bottom quartile of our opportunity measure.

We find variation across housing authorities depending on local housing market conditions. Specifically, the extent to which the catchment area of the housing agency includes rental units where voucher holders can enjoy higher subsidies after the introduction of SAFMRs plays an important role in whether the policy can encourage moves to higher rent neighborhoods. In some cases, most ZIP Codes in the catchment area, or service area of a housing agency, have average rents that are lower than the 40th percentile rent in the larger metro area. In such a housing agency, the SAFMRs will largely fall below original FMRs, meaning that the number of units that rent below the voucher ceiling will fall. Switching to SAFMRs in such a housing agency may be problematic, as the pool of available units may shrink. At the other extreme, if the ZIP Codes in the housing agency's service area have rents that are generally above the metro area rents, a switch to SAFMRs will generally increase the pool of available units.

In late 2016, HUD made SAFMRs optional for all PHAs, and beginning in 2018, it required the housing agencies in 24 metro areas to administer their tenant-based voucher program using SAFMRs. By mandating SAFMRs in entire metropolitan areas rather than individual housing agencies, HUD limited the change in the pool of available units within a metro area. Given this mandate, together with the greater flexibility nationwide, we will see increased use of SAFMRs in the coming years, and this article sheds important light on their potential effect on voucher holder families with children.

Background and Literature

Housing Choice Voucher Program and Neighborhood Access

One of the long-standing arguments for tenant-based subsidies is that they give people far more choice about where to live and allow them to reach a broader set of neighborhoods (Orlebeke, 2000; Schwartz, 2006). Research shows that neighborhoods make a difference in people's lives. The strongest such evidence comes from the Moving to Opportunity (MTO) for Fair Housing demonstration program experiment. Analysis of the MTO experiment found that children who moved to lower-poverty neighborhoods through the program had improved academic outcomes (Turner, Nichols, and Comey, 2012) and enjoyed significantly improved college attendance rates and earnings in young adulthood (Chetty, Hendren, and Katz, 2016). Adults also benefited from increased time in lower-poverty neighborhoods, with significant improvements to their health and well-being (Ludwig et al., 2011) and some evidence of employment and earnings gains (Turner, Nichols, and Comey, 2012).

Despite these potential benefits, however, housing choice voucher holders, including families with children, rarely use their vouchers to live in low-poverty neighborhoods. A number of research papers have documented that voucher holders, especially Black and Hispanic voucher holders, tend to live in highly disadvantaged areas (Devine et al., 2003; Galvez, 2010; McClure, 2008, 2011; Owens, 2012; Pendall, 2000). On average, voucher holders live in less disadvantaged neighborhoods than the residents of public or other HUD-assisted housing (Devine et al., 2003; Hartung and Henig, 1997; Kingsley et al., 2003; Pendall, 2000), but only in slightly less disadvantaged neighborhoods than the average low-income household (Galvez, 2010; Pendall, 2000; Wood, Turnham, and Mills, 2008). These same patterns generally hold for neighborhood poverty, socioeconomic disadvantage, violence, and school performance (Horn, Ellen, and Schwartz, 2014; Lens, Ellen, and O'Regan, 2011).

One factor that is likely contributing to this concentration is the spatial distribution of homes that are affordable to voucher holders under metro area-wide ceiling rents. In a recent contribution to this body of research, McClure, Schwartz, and Taghavi (2015) conclude that “if the nation wants to pursue poverty deconcentration through the [voucher] program, we cannot rely on the program, as it is now structured, to accomplish this goal. Additional incentives and constraints will be needed....” We test the impact of the new set of incentives offered by shifting to SAFMRs.

Small Area Fair Market Rents

Historically, rental subsidies provided by the voucher program have been subject to a single, metro area-wide cap, the area’s metro FMR, generally set at the 40th percentile of rents paid by recent movers in the area. With a single rent cap, voucher holders have access to relatively few units in high-rent neighborhoods. In late 2012, HUD launched the SAFMR demonstration to test whether replacing traditional metro FMRs with subsidy limits that vary with ZIP Code rent levels enable more voucher holders to reach neighborhoods of opportunity.⁴ Specifically, to set SAFMRs in the demonstration, HUD multiplied the metro FMR by the ratio of the ZIP Code median rent to the metro area median rent, the “rent ratio” that HUD calculates for each ZIP Code from special tabulations of U.S. Census Bureau (Census) data:

$$\text{SAFMR} = \text{Rent Ratio} * \text{Metro FMR}$$

As explained in the Dastrup et al. (2018) report, switching from metro FMRs to SAFMRs should make a higher share of units available to voucher holders in higher rent neighborhoods, and a lower share in lower rent neighborhoods. The share is the same where the rent ratio equals 1, and the SAFMR equals the metro FMR.⁵

When SAFMRs are implemented at the level of the housing agency rather than the metro area, it is also possible that a disproportionate share of ZIP Codes in PHA catchment areas have median rents that fall below the metro median. This will mean that most ZIP Codes in that PHA will see a

⁴ SAFMR became effective in demonstration PHAs in late 2012.

⁵ See Kahn and Newton (2013) for a contemporary description of the demonstration. Full documentation of how metro FMRs and SAFMRs are currently calculated by HUD is available at huduser.gov/portal/datasets/fmr.html and huduser.gov/portal/datasets/fmr/smallarea/index.html.

reduction in the share of units renting under the SAFMR. This is much more likely to happen in a PHA whose jurisdiction is small relative to the full metro area.⁶

Two prior studies have modeled the likely effects of SAFMRs (or a similarly structured policy reform) on voucher holder location outcomes. Geyer (2017) and Collinson and Ganong (2018) introduce useful models that show that allowing subsidies to vary with small geographies within a metro area may be effective in encouraging voucher holders to move to higher opportunity neighborhoods. However, there are reasons to question the extent to which switching to SAFMRs will help families with children reach higher opportunity areas. First, while SAFMRs may be necessary to help families reach higher-rent neighborhoods, they may not be sufficient; it is unclear in practice if landlords in higher-rent areas will be willing to participate in the voucher program. Further, higher rent does not necessarily mean higher opportunity for families with children; higher rents may capitalize amenities that have little relevance for children.

Two prior studies have also empirically examined the effects of SAFMRs. Reina, Acolin, and Bostic (2018) study the short-term impact of the introduction of SAFMRs on locational outcomes in Dallas and in HUD's demonstration sites. They find that after the shift to SAFMRs, voucher households live in higher opportunity neighborhoods in Dallas than voucher holders in surrounding counties, but they find no positive association with access to opportunity in the other demonstration sites. Significantly, however, they only examine outcomes in 2014, just two years after sites adopted SAFMRs, and the voucher program (including the demonstration) exempts sitting tenants who stay in place from subsidy cap reductions for 1 to 2 years. Collinson and Ganong (2018) also include an empirical analysis of the switch to SAFMRs in the Dallas metro area and find that, after the adoption of SAFMRs, more voucher holders lived in high opportunity neighborhoods, at no additional subsidy cost.

We build on these earlier papers in several ways. First, while Collinson and Ganong's analysis is restricted to the Dallas metro area, we offer an empirical analysis of the impacts of SAFMRs in five additional jurisdictions across the country, which allows us to examine the effect of SAFMRs when implemented in a variety of housing market contexts. Second, we analyze longer-term results than any of the prior studies, observing voucher holders 5 years after implementation. This is

⁶ The ability of PHAs to set payment standards between 90 to 110 percent of FMRs (and SAFMRs) may ameliorate the effects of this reduction. Voucher holders are allowed to use their vouchers in other jurisdictions, but such portability can be administratively difficult and is relatively rare. In our analysis sample here, only a small fraction of households used their voucher in another jurisdiction, and preliminary analysis indicates that this did not change after the adoption of SAFMRs. We omit these households from our sample. We also note that the within-ZIP Code distribution of rents for rental units in ZIP Codes with median rents below and above the metro area median rent may also matter. Consider, for example, a metro area in which the variance of rents is greater in ZIP Codes with median rents above the metro area median than it is in ZIP Codes with median rents below the metro area median. In such a metro area, a SAFMR that is 10 percent higher than the FMR in higher-rent neighborhoods will add fewer units than will be lost in a ZIP Code where the SAFMR is 10 percent lower than the FMR. To illustrate this possibility, consider a hypothetical geography of three ZIP Codes, A, B, and C, each with three rental units. The units in A rent for \$10, \$11, and \$12, the units in B rent for \$12, \$13, and \$14, while units in C are more dispersed, renting for \$13, \$15, and \$17. The 40th percentile of all the rents is 12. Four of the units (three in A and one in B) have rents at or below this 40th percentile. The median of all the rents is 13. The median rent of 11 in ZIP Code A is 15 percent lower, so a "SAFMR" for ZIP Code A would be $0.85 * 12 = 10.2$, with one unit renting below this amount. ZIP Code B shares its median with the overall median, and still has one unit at or below 12. The median rent of 15 in ZIP Code C is 15 percent higher than the median of all rents. At a resulting SAFMR of $1.15 * 12 = 13.8$, one unit is now below the threshold. With only one unit in each neighborhood now below SAFMR, the total number of units affordable has fallen from four to three.

especially critical given that the voucher program contains provisions that existing voucher holders are held harmless from declines in the subsidy cap that applies to them for 1 to 2 years after the implementation of SAFMRs. Third, we focus on the key subgroup of families with children. As discussed above, the potential for neighborhood opportunity to alter long-term outcomes makes housing policy particularly relevant for these voucher holders. Finally, we also analyze the initial location decisions of families with children newly receiving a voucher and distinguish them from those of existing voucher holders who move.

Data and Methods

Our core interest lies in examining whether the shift to ZIP-Code level SAFMRs has enabled voucher families with children to reach neighborhoods that offer a richer set of amenities and opportunities for advancement, and at what, if any, additional cost. In this section we define the opportunity index we use, introduce our sample and data, and review our methods.

Data and Sample

Our analysis requires a variety of datasets, both publicly available measures of neighborhood opportunity and administrative data to which we gained access specifically for this study. Our core dataset consists of HUD administrative records with individual-level detail on household characteristics, income, and rent information for housing choice voucher holder families for the fourth quarter of 2008 (a baseline period for identifying moves in 2009) through the last quarter of 2017. The data include the ZIP Code and census tract where a voucher is used, tenant income and rent payments, the total monthly housing assistance payment subsidy amount provided, and household composition and demographics.

We also rely on the SAFMRs and metro FMRs that HUD publishes each year. For the analysis of the potential of SAFMRs to alter the location of homes affordable to voucher holders, we use fiscal year (FY) 2015 data only, since we want to capture changes that result from rent formula changes rather than any shifts in underlying rents.⁷ For the analysis of voucher holder location outcomes over time, we use FY2009 (pre-SAFMR) through FY2017 data.

We use a special tabulation of American Community Survey (ACS) data that the Census produces for HUD in order to determine rent ratios and SAFMRs. The dataset reports estimates, by bedroom size, of the number of units with rents in reasonably narrow ranges for each ZIP Code. We merge 2008–2012 ACS 5-year estimates, which provide a more accurate count of the total number of rental units in each census tract, with HUD SAFMRs to determine the number of units below the respective FMR based on the proportions observed in the special tabulations.

Our sample includes voucher holder families in seven PHAs where SAFMRs have been implemented (SAFMR PHAs), together with all voucher holder families in a large set of

⁷ Of course, it is possible that neighborhoods with relatively high concentrations of voucher holders may see changes in rents over time with changes in the maximum subsidy available through the program in that neighborhood. We do not examine these market-level effects. The rent distribution data we rely on for the affordability analysis is based on the 5-year ACS estimates, which do not allow the year-over-year comparisons that would be required to address this question within our analysis framework.

Comparison PHAs, located in the same HUD-defined clusters as the treatment PHAs.⁸ We define a voucher holder family with children as any household with at least one child below 18 years old. In total, the Comparison PHAs include 138 housing agencies serving slightly more than 550,000 voucher holder families with children (in 2015). Dallas and Plano were not part of any cluster as their programs pre-dated the demonstration program, but the clusters that they would have been assigned to are included in our comparison group.⁹

Defining Neighborhood Rent and Opportunity Levels

We assign ZIP Codes to three categories based on the ZIP Code's rent ratio. High-rent ZIP Codes are those in which the median rent is at least 10 percent higher than the metro area median (that is, the ZIP Code rent ratio is greater than 110 percent). In medium-rent ZIP Codes, the rent ratio is between 90 percent and 110 percent, while in low-rent ZIP Codes, the rent ratio is less than 90 percent.

We also rely on four measures of neighborhood opportunity: poverty, school proficiency, employment access, and environmental quality. The measures are detailed in exhibit 1. These are all measures that HUD has used to capture neighborhoods that offer better quality of life and greater opportunities for economic mobility. In all cases, we construct indices, so a higher number indicates higher opportunity.¹⁰

⁸ HUD invited the five SAFMR PHAs participating in the demonstration by randomly selecting them from clusters defined to ensure a variety of PHAs were included in the demonstration. The clusters were defined based on the number of vouchers administered, fair market rent levels, and the share of working-age heads-of-household among voucher recipients. We use all the remaining housing agencies that were in the same clusters as the SAFMR PHAs as a comparison group (Comparison PHAs).

⁹ SAFMRs have been implemented in all 12 PHAs that administer HCVs in the Dallas metro area. Our analysis includes only the Housing Authority of the City of Dallas, which administers most of the vouchers in the area, and the Housing Authority of Plano, a smaller PHA which administers vouchers in a higher-rent area with high measures of opportunity. Finkel et al. (2017) provides more detail on cluster definition and assignment.

¹⁰ The opportunity measures designed for this study are all initially derived from census tract-level measures. SAFMRs are defined for ZIP Codes, in part because ZIP Codes are easier for families seeking housing to use. To make our opportunity measures match the geography of SAFMRs, we convert the census tract measures to ZIP Code measures using population-weighted tract to ZIP Code crosswalks.

Exhibit 1

Opportunity Indicators

Opportunity Indicator (Data Source/s)	Description
Overall Opportunity Index (Composite of the Other Opportunity Indicators)	The Overall Opportunity Index was created specifically for this evaluation. It is the percentile rank by renters in the metropolitan area of the simple average of the percentile rank indexes for the share of nonpoor, public school proficiency, employment access, and environmental hazards.
Percent Nonpoor (ACS 5-Year Estimate, 2010–2014)	The ACS five-year estimates provide the percent nonpoor for each census tract. The percent nonpoor is the ratio of the population above the poverty level to the total population for whom poverty status was determined.
Public School Proficiency (2011–2012)	School-level data on state exams for grade 4 students approximate the quality of local public schools. The measure is based on the public school(s) nearest to each block group and school zone from the School Attendance Boundary Information System. Block group data were weighted by numbers of households to create census tract-level data. The higher the score, the higher the school system quality is in a neighborhood.
Jobs Proximity Access (HUD, 2010)	This index measures the access a neighborhood has to employment opportunities as measured by the distance between block groups and job locations weighted by employment size. Block group data were weighted by numbers of households to create census tract-level data. The higher the index value, the better the access to employment opportunities for residents in a neighborhood.
Environmental Hazards (Environmental Health Hazard Index, 2005)	The Environmental Health Hazard Index is a tract-level index of potential exposure to toxins based on National Air Toxic Assessment data from the U.S. Environmental Protection Agency. The higher the value, the better the environmental quality of a neighborhood.

To facilitate comparisons across measures and geographies, we normalize the Percent Nonpoor, School Proficiency, Employment Proximity Index, and Environmental Hazard Index to be the percentile of the raw index among rental units in the metro area.¹¹ To create an aggregate index, we average these component index percentile scores and calculate the percentile of the average score, again among rental units, in the metro area.¹² Because prior research has focused on neighborhood poverty rates and school proficiency measures as important markers of opportunity for families with children, we report findings separately for these measures in addition to our overall opportunity index.

¹¹ We explored the possibility of including access to transportation in our neighborhood opportunity index. Data on this indicator are not available across all the SAFMR PHAs, and where data are available, they are highly correlated with employment access. Similarly, we explored using neighborhood crime rate data in our measurement of neighborhood opportunity but did not have uniform and consistent coverage in the data for our study geographies.

¹² The Overall Opportunity Index ranges from 0 to 100. A score of 50 for a ZIP Code means that the average of the four component indexes percentile ranks for that ZIP Code is greater than the average in ZIP Codes that contain half of the rental units in the metro area. Data on public school proficiency is missing in 10 percent of the ZIP Codes in our analysis and in under 6 percent of ZIP Codes in the SAFMR PHAs. In these ZIP Codes, we construct the Overall Opportunity Index as the average of the three other component indexes.

Methods

Our first aim is to produce a single point-in-time estimate of how the adoption of SAFMRs changes the set of housing units affordable to voucher holder families. We contrast the estimated count of units with rents below SAFMRs to the count of units with rent below the metro FMR in high-, medium-, and low-rent ZIP Codes. We also compare counts in high-, medium-, and low-opportunity ZIP Codes, as defined by bottom quartile, 25th–75th percentile, and top quartile on the aggregate opportunity index.¹³

Our second aim is to analyze changes in the neighborhoods where voucher holder families with children live. We estimate difference-in-differences regressions using a repeated cross section that includes 2 to 3 years before the implementation of SAFMRs, and 5 to 6 years after the implementation. This approach compares the change in location outcomes after the implementation of SAFMRs in the SAFMR PHAs with the change in location outcomes in the same time period for the Comparison PHAs where SAFMRs were not implemented. We look separately at families with children who newly acquired a voucher and existing voucher holders who moved, since second movers have more time to search for housing and thus may be better able to take advantage of opportunities provided by SAFMRs.¹⁴

Our primary outcome is whether a family with children moves to a higher (at least 10 percentile points) opportunity neighborhood in a given year. We also directly examine the change in the level of the continuous opportunity scores that result from a move. To isolate the effect of SAFMRs on families with children, we limit our sample to HCV holder households that include a child under the age of 18.¹⁵ We examine the difference in the opportunity index of the initial and destination ZIP Codes for all voucher holder families with children and those who move. We organize our data into a household by year panel. That is, we have repeated observations for households receiving vouchers between 2009 and 2017. The panel is unbalanced because households enter and leave the sample as they newly receive a voucher or exit the voucher program. Our regression sample is all households in SAFMR or Comparison PHAs for these years. We fit the following model:

¹³ This analysis includes a simplifying assumption that PHAs set the payment standard, which generally must fall between 90 and 110 percent of the FMR or SAFMR, equal to 100 percent of the FMR or SAFMR. This gives PHAs some latitude in setting the maximum rent that is subsidized with the voucher (with higher payment standards resulting in fewer low-income households provided with subsidies). The findings we present here could be either mitigated or amplified by PHA decisions in setting payment standards.

¹⁴ For data privacy reasons, we do not have access to exact voucher holder addresses or geocode coordinates. We determine that a family has moved if both the ZIP Code and census tract in which the family lives changes in the administrative record during a given year (or relative to the prior year). A household administrative record is updated at least annually (on a rolling basis) as a result of required annual income recertification. Additional administrative actions can generate an updated record, including a household move.

To streamline our unadjusted analyses of the proportion of families with a voucher living in each neighborhood type, we aggregate our move data to reflect four 2-year periods, one before the implementation of SAFMRs, and three after.

¹⁵ Sensitivity analyses (not included) do not show meaningful differences in findings when the sample is restricted to households with children under the age of 13 or under the age of 5. The coefficient of interest in the models we estimate on a restricted sample are nearly identical to the analogous coefficients from models estimated on the full sample of HCV holders with a “families with children” subgroup indicator interacted with the difference-in-difference terms. We present the restricted sample results here for a cleaner exposition. The interacted model for the overall opportunity index outcome is reported in Dastrup et al. (2018).

$$MovedUp_{ist} = \alpha + \lambda D_t + \delta(SAPHA_s * D_t) + \beta X_{ist} + \gamma PHA_s + \epsilon_{ist}$$

$MovedUp_{ist}$ is the binary outcome variable indicating if household i in PHA type s (SAFMR or Comparison) moved to a ZIP Code with at least a 10-point higher opportunity index score as compared with their initial ZIP Code in time period t . The term D_t is an indicator of whether period t is after SAFMR implementation (2013–2017 for all SAFMR PHAs, with an additional 2011–2012 indicator term added for the Dallas PHAs that implemented SAFMRs 2 years earlier). The term $SAPHA_s * D_t$ indicates that an observation is for a household in a SAFMR PHA in the periods after SAFMRs are implemented. The estimate for the parameter δ is our difference-in-differences effect of interest. It measures the additional percentage point likelihood that a household in the SAFMR PHAs will move to a higher opportunity ZIP Code as a result of the policy change.¹⁶ Our identifying assumption is that no other factors are changing differentially in SAFMRs relative to Comparison PHAs that are correlated with the $MovedUp_{ist}$ outcome. Our model includes a set of potentially time varying household-level characteristics X_{ist} observable in HUD’s tenant-level data. We include PHA-level fixed effects, γPHA_s . The model has an individual, time, PHA error term, ϵ_{ist} .

We also estimate the same model with $\Delta Opportunity_{ist}$ as the outcome of interest. This outcome measures the change in neighborhood opportunity score that results from the move. Therefore, a value of 10 indicates that a family moved to a ZIP Code with a one decile higher score within the metro area in the given opportunity measure.

To capture the possibility that rent rules affect households in lower-rent neighborhoods differently than those in higher-rent neighborhoods, we interact the $SAPHA_s$ term with indicators for whether the household lives in a high-, medium-, or low-rent neighborhood at the start of the period, as well as including the indicators separately in the model and interacted with D_t . This method allows us to estimate different δ coefficients for each neighborhood type.

To test whether the adoption of SAFMRs affect the unconditional probability of moving, we expand our sample to the full set of existing voucher families with children and estimate regressions where our outcome variable is an indicator of whether a family with children moved at all. Now the parameter δ is interpreted as indicating whether families with children are more likely to relocate at all (whether to a higher, similar, or lower opportunity neighborhood) as a result of SAFMRs. We also estimate our model on the outcomes of whether a household moved up a decile in opportunity using the full unconditional sample.

Results

This section begins with our analysis of how SAFMRs alter the share of units that are affordable in neighborhoods with different levels of rent and opportunity. We then present findings on actual location outcomes for voucher families with children.

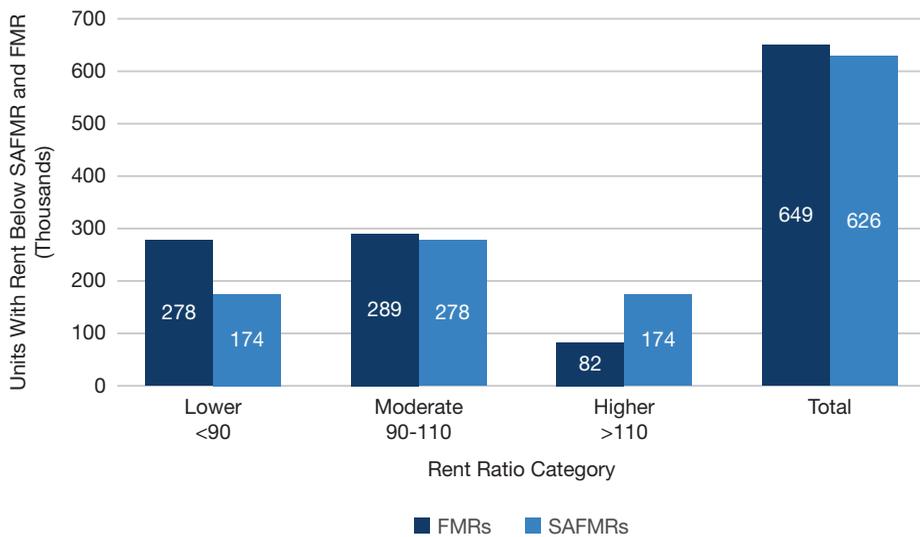
¹⁶ The estimated coefficient on the indicator for Dallas metro area PHAs in 2011–2012 captures the initial effect of SAFMRs in these two PHAs.

Location of Units Affordable to Voucher Holder Families with Children

We start with a ZIP-Code level analysis for the seven PHAs where SAFMRs were implemented during our analysis period that explores shifts in the neighborhood distribution of rental units that are *potentially* affordable to voucher holder families in that they charge rents below the applicable FMR. Exhibit 2 shows the shift to SAFMRs clearly increased the number of rental units in high-rent neighborhoods that were affordable to voucher holder families (or renting under the applicable FMR cap) in the seven SAFMR PHAs. Under SAFMRs, 174,000 units in high-rent neighborhoods were affordable to voucher holder families, more than double the number that would have been affordable under metro FMRs (82,000). At the other end of the spectrum, the number of units with rents below the applicable FMR in low-rent neighborhoods fell with the switch from conventional to SAFMRs, from 278,000 to 174,000. The exhibit also shows that the reduction in units available in low-rent neighborhoods was larger than the increase in units available in higher rent neighborhoods, meaning that the total number of rental units affordable to voucher holder families fell slightly after the adoption of SAFMRs.

Exhibit 2

Number of Units Renting Below Voucher Rent Cap Under FMR and SAFMR, by Rent Ratio



FMR= Fair Market Rent; Small Area FMR = Small Area Fair Market Rent.

Notes: Analysis dataset includes all ZIP Codes in the service areas of the seven Small Area FMR PHAs in our analysis.

Sources: HUD FY2015 Fair Market Rents; HUD FY2015 Small Area Fair Markets Rents; 2012 American Community Survey 5-Year Estimates (special tabulation for HUD of rent and rental units by ZCTA); 2012 American Community Survey 5-Year Estimates (total rental units), converted to ZIP Code estimates using HUD ZIP Code to census tract crosswalks

Exhibit 3 shows that there is a lot of variation across the seven geographic areas in the change in the number of affordable units across neighborhood rent types that results from the introduction of SAFMRs. The exhibit shows the percentage change in units renting below the applicable FMR in each of the PHAs where they were implemented.¹⁷

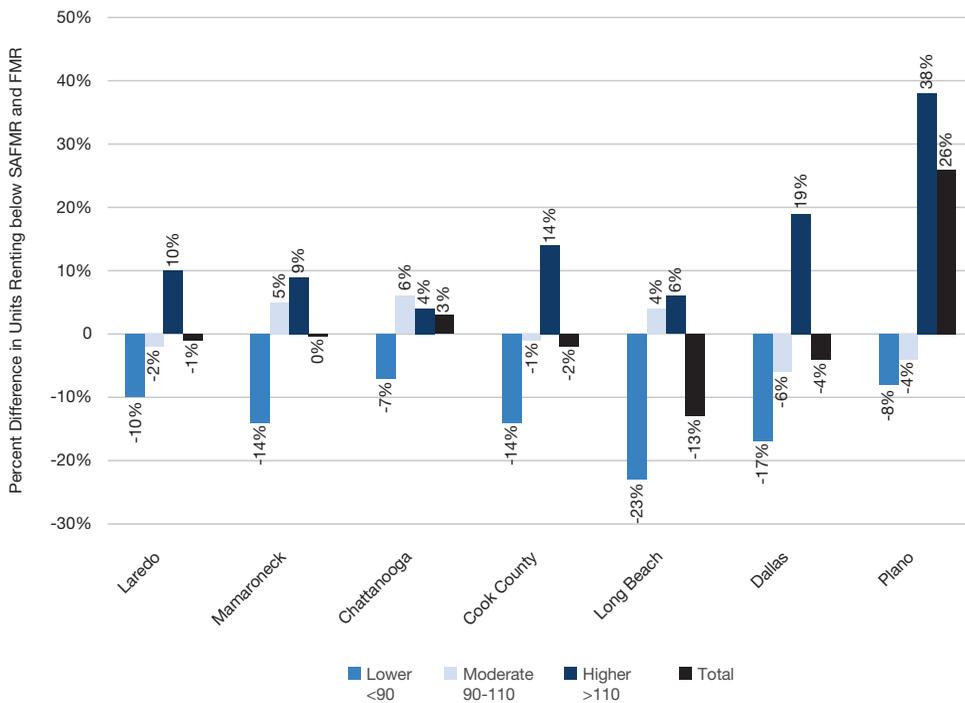
¹⁷ Specifically, we calculated the number of units renting below the SAFMR minus the number of units renting below the metro FMR, divided by the number of units renting below the metro FMR.

In the Mamaroneck, Dallas, and Cook County housing authorities, we see 14- to 17-percent declines in lower rent neighborhoods and similarly sized gains in units in higher rent neighborhoods. For these PHAs, relative to metro FMRs, SAFMRs shifted affordable units from lower to higher rent neighborhoods, with the overall number of units affordable staying about the same. In Chattanooga and Laredo, the direction of the change is the same, but magnitudes are smaller.

In Long Beach, by contrast, most of the affordable rental housing stock is in lower rent neighborhoods. Introducing SAFMRs in PHA results in large losses (23 percent) in the share of units affordable in low-rent neighborhoods that are not offset by gains in high-rent and moderate-rent neighborhoods. Very few rental units are available in the higher rent ZIP Codes within the Long Beach PHA's jurisdiction. Meanwhile, in Plano, where very few rental units are in low-rent areas, SAFMRs result in substantially more (nearly 40 percent) units that are affordable in high-rent neighborhoods relative to metro FMRs, with only a modest decrease in the low- and moderate-rent neighborhoods. Note that these differences are more pronounced because in the demonstration, SAFMRs were implemented in individual housing agencies rather than full metropolitan areas (NYU Furman Center, 2018).

Exhibit 3

Percent Change in Number of Units Renting Under FMR After Implementation of SAFMRs, by ZIP Code Rent Ratio



FMR = Fair Market Rent. SAFMR = Small Area Fair Market Rent.

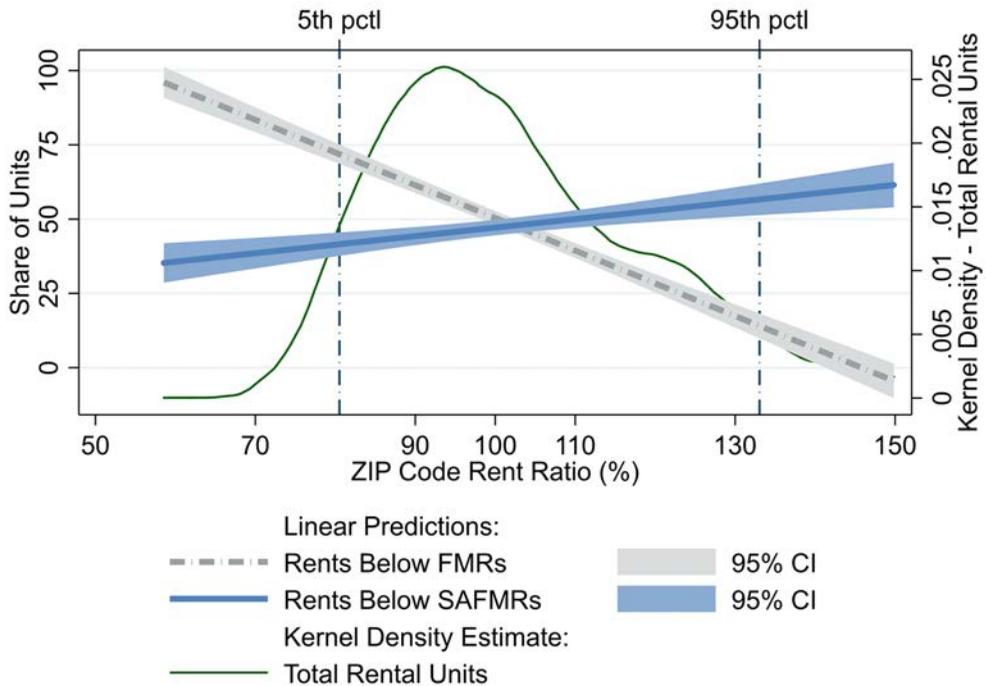
Note: Analysis dataset includes all ZIP Codes in the service areas of the seven Small Area Fair Market Rent Public Housing Authorities in our analysis.

Sources: HUD FY2015 Fair Market Rents; HUD FY2015 Small Area Fair Markets Rents; 2012 American Community Survey 5-Year Estimates (special tabulation for HUD of rent and rental units by ZCTA); 2012 American Community Survey 5-Year Estimates (total rental units)

Exhibit 4 confirms that SAFMRs flatten the relationship between the share of units affordable with a housing choice voucher and ZIP Code rent levels. Fewer units rent below SAFMRs than FMRs in ZIP Codes with lower rent ratios and more units rent below SAFMRs than FMRs in ZIP Codes with higher rent ratios.

Exhibit 4

Fitted Relationship Between Share of Units Affordable Under SAFMRs and FMRs and ZIP Code Rent Ratio



FMR = Fair Market Rent. SAFMR = Small Area Fair Market Rent.

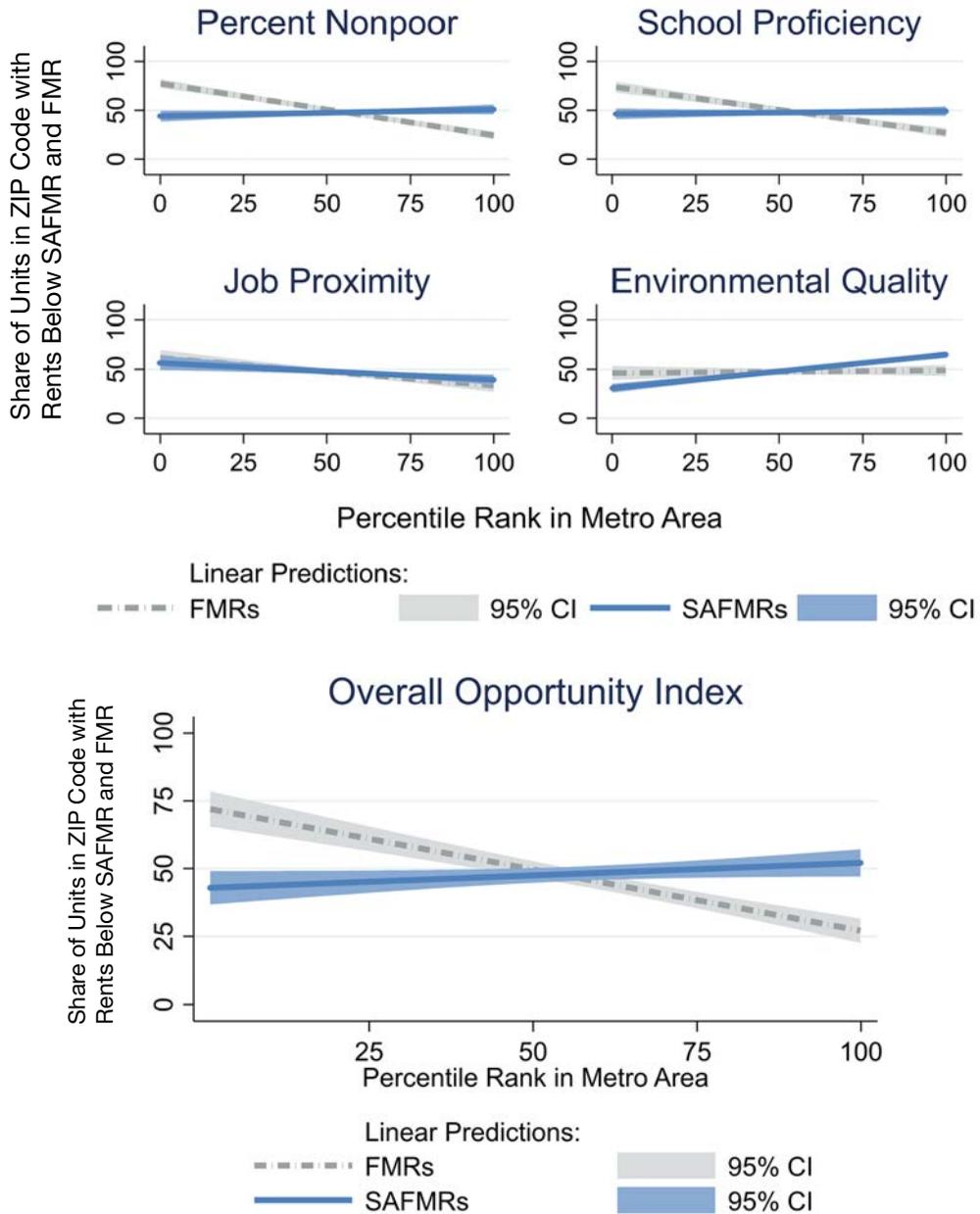
Note: Analysis dataset includes all ZIP Codes in the service areas of the seven Small Area Fair Market Rent Public Housing Authorities in our analysis.

Sources: HUD FY2015 Fair Market Rents; HUD FY2015 Small Area Fair Markets Rents; 2012 American Community Survey 5-Year Estimates (special tabulation for HUD of rent and rental units by ZCTA); 2012 American Community Survey 5-Year Estimates (total rental units)

The switch to SAFMRs not only provides more options in high-rent areas but also in high-opportunity areas, or at least areas with lower poverty rates, higher performing schools, and cleaner air. Exhibit 5 shows that, for each index, more units are potentially available to voucher holder families in high-opportunity areas under SAFMRs compared with metro area FMRs, and fewer units are available in low-opportunity areas. For example, the share of units renting under the applicable FMR in low-poverty ZIP Codes rose from a third to over a half, while the share renting under the applicable FMR in high-poverty ZIP Codes fell from 70 percent to 48 percent under SAFMRs.

Exhibit 5

Changing Share of Units Affordable by Opportunity Measure Quartiles



FMR = Fair Market Rent. SAFMR = Small Area Fair Market Rent.
 Notes: All ZIP Codes in Small Area Fair Market Rent (SAFMR) public housing authority (PHA) service areas (seven PHAs where SAFMRs have been implemented). Overall index calculated as percentile rank within Metro Area of average of component indexes percentile ranks.
 Sources: HUD FY2015 metro Fair Market Rents and SAFMR; 2012 American Community Survey (ACS) 5-year estimates (special tabulation for HUD of rent and rental units by ZCTA and public extract of total rental units; 2014 ACS 5-year estimates (poverty rate/percent nonpoor); School Proficiency Index, 2011–2012 (from HUD Open Data); Job Proximity Index, 2010 (from HUD Open Data); Environmental Health Hazard Index, 2005 (from HUD Open Data)

Actual Location of Voucher Holder Families with Children

The analyses above suggest that Small Area Fair Market Rents are doing what they were intended to do: opening up more opportunities for voucher holder families with children to move to high-rent areas that offer a richer set of resources and greater racial diversity. They do not, however, tell us whether voucher holder families with children are able to take advantage of those opportunities. In this section, we examine the actual location outcomes of voucher holder families with children before and after the adoption of SAFMRs.

Exhibit 6 reports the results of difference-in-differences regressions for the sample of voucher holders that moved in a given year. Here we see that SAFMRs increased the likelihood that voucher holder families with children who move reach higher-opportunity neighborhoods. In column 1, families with children who move are nearly 7 percentage points more likely to move to a neighborhood with a significantly higher (at least 10 points) opportunity index score than are their counterparts in Comparison PHAs as a result of the introduction of SAFMRs (the coefficient 0.067*** in column 1).¹⁸ Given that 30 percent of moves in SAFMR PHAs meet this criterion before the introduction of SAFMRs, this statistic represents a 22-percent increase in the incidence of such moves.

Column 2 demonstrates that the effect is strongest for households that start in low-rent ZIP Codes (column 2), although the coefficient estimates for the different starting rent ratio categories are not statistically significantly different from each other.

The regression coefficients reported in Column 3 indicate an average 4.4-percentile increase in our opportunity index resulting from the introduction of SAFMRs. This is a 175-percent increase relative to the mean of 2.5 for pre-SAFMR moves in SAFMR PHAs. While families with children with a voucher who move under metro area FMRs also tend to locate to ZIP Codes with higher opportunity measures, the resulting *increase* in average metro area percentile ranking on opportunity more than doubles as a result of SAFMRs.

¹⁸ This is 2.4 percentage points higher and statistically significantly different than the effect for households without children.

Exhibit 6

Regression Estimates of Effect of SAFMRs on Overall Opportunity Index, Conditional on Moving for HCV Holder Families with Children

	Model			
	(1)	(2)	(3)	(4)
	<i>Move Up</i>	<i>Move Up, by Starting Rent Ratio</i>	<i>Change in Overall Index</i>	<i>Change in Overall Index by Starting Rent Ratio</i>
	Outcome Variable Mean (SAFMR Pre-SAFMR)			
	<i>Moved Up (10 Percentile)</i>	<i>Moved Up (10 Percentile)</i>	Δ <i>Opportunity</i>	Δ <i>Opportunity</i>
	0.304	0.304	2.51	2.51
	Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)
SAFMR PHA Post-SAFMR	0.067*** (0.017)		4.38*** (1.11)	
SAFMR PHA Post-SAFMR ZIP Rent Ratio Interaction		Lower (<90) 0.095* (0.043) Moderate (90–110) 0.073*** (0.015) Higher (>110) 0.050 (0.026)		6.00 (3.66) 4.66** (1.28) 5.41** (1.89)
Dallas PHAs 2011–2012	0.042** (0.013)	Interacted	2.66** (0.82)	Interacted
Year = 2011–2012	– 0.004 (0.003)	Interacted	– 0.99*** (0.20)	Interacted
Post-SAFMR	– 0.012*** (0.004)	Interacted		
Household Characteristics	Yes	Yes	Yes	Yes
PHA Fixed Effects	Yes	Yes	Yes	Yes
Intercept	0.324*** (0.008)	0.316*** (0.010)	1.92*** (0.42)	1.13 (0.68)
Sample Size (Household Years)	376,180	376,180	376,180	376,180
Number of PHAs	145	145	145	145

HCV = Housing Choice Voucher. PHA = Public Housing Authority. SAFMR = Small Area Fair Market Rent.

*** = $p < 0.001$. ** = < 0.01 . * = < 0.05 .

Sources: HUD FY2015 Fair Market Rents and HUD FY2015 Small Area Fair Markets Rents (rent ratios); HUD PIC data extract; opportunity index (see exhibit 1)

Results for school proficiency and neighborhood poverty measures are consistent with those for the average combined measure. As shown in exhibit 7, families with children with a voucher are about 6 percentage points more likely to move to a ZIP Code with local schools that are a decile higher within the metropolitan area in terms of the percent of students that are proficient (column 1).

The average increase in percentile gains in school proficiency for movers goes up by 3.9 percentile points (column 3) as a result of the introduction of SAFMRs.

Exhibit 7

Regression Estimates of Effect of SAFMRs on Move Outcomes with Respect to School Proficiency, Conditional on Moving for HCV Holder Families with Children

		Model			
		(1)	(2)	(3)	(4)
		<i>Move Up</i>	<i>Move Up, by Starting Rent Ratio</i>	<i>Change in Overall Index</i>	<i>Change in Overall Index by Starting Rent Ratio</i>
		Outcome Variable			
		Mean (SAFMR Pre-SAFMR)			
		<i>Moved Up School (10 Percentile)</i>	<i>Moved Up School (10 Percentile)</i>	<i>ΔPctl School Proficiency</i>	<i>ΔPctl School Proficiency</i>
		0.307	0.307	1.56	1.56
		Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)
SAFMR PHA		0.059***		3.87**	
Post-SAFMR		(0.015)		(1.24)	
SAFMR PHA	Lower (<90)		0.074***		4.34***
Post-SAFMR	Moderate (90–110)		0.081**		5.51*
ZIP Rent Ratio	Higher (>110)		0.017		2.34
Interaction			(0.037)		(1.93)
Dallas PHAs 2011–2012		0.013 (0.009)	Interacted	1.38 (0.79)	Interacted
Year = 2011–2012		– 0.006* (0.003)	Interacted	– 0.93*** (0.18)	Interacted
Post-SAFMR		– 0.010* (0.004)	Interacted	– 1.48*** (0.25)	Interacted
Household Characteristics		Yes	Yes	Yes	Yes
PHA Fixed Effects		Yes	Yes	Yes	Yes
Intercept		0.324*** (0.007)	0.365*** (0.012)	1.51*** (0.42)	5.09*** (0.91)
Sample Size (Household Years)		365,156	365,156	365,156	365,156
Number of PHAs		137	137	137	137

HCV = Housing Choice Voucher. PHA = Public Housing Authority. SAFMR = Small Area Fair Market Rent.

***=p<0.001. **=p<0.01. *=p<0.05.

Sources: HUD FY2015 Fair Market Rents and HUD FY2015 Small Area Fair Markets Rents (rent ratios); HUD PIC data extract; opportunity index (see exhibit 1)

As shown in exhibit 8, families with children with vouchers are also more likely to move to lower poverty ZIP Codes after the introduction of SAFMRs.

Exhibit 8

Regression Estimates of Effect of SAFMRs on Move Outcomes with Respect to Percent Nonpoor, Conditional on Moving for HCV Holder Families with Children

		Model			
		(1)	(2)	(3)	(4)
		<i>Move Up Percent Nonpoor</i>	<i>Move Up Percent Nonpoor, by Starting Rent Ratio</i>	<i>Change Percent Nonpoor Percentile</i>	<i>Change in Percent Nonpoor Percentile by Starting Rent Ratio</i>
		Outcome Variable			
		Mean (SAFMR Pre-SAFMR)			
		<i>Moved Up Percent Nonpoor (10 Percentile)</i>	<i>Moved Up Percent Nonpoor (10 Percentile)</i>	<i>ΔPctl Percent Nonpoor</i>	<i>ΔPctl Percent Nonpoor</i>
		0.320	0.320	3.20	3.20
		Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)
SAFMR PHA		0.060***		4.27***	
Post-SAFMR		(0.016)		(0.93)	
SAFMR PHA	Lower (<90)		0.014 (0.047)		3.34 (3.99)
Post-SAFMR	Moderate (90–110)		0.097*** (0.016)		5.25*** (1.16)
Interaction	Higher (>110)		0.102*** (0.018)		8.36** (2.18)
Dallas PHAs		0.036** (0.012)	Interacted	3.13*** (0.71)	Interacted
Year = 2011–2012		– 0.004 (0.003)	Interacted	– 1.01*** (0.22)	Interacted
Post-SAFMR		– 0.012** (0.004)	Interacted	– 1.74*** (0.26)	Interacted
Household Characteristics	Yes	Yes	Yes	Yes	Yes
PHA Fixed Effects	Yes	Yes	Yes	Yes	Yes
Intercept		0.34*** (0.007)	0.45*** (0.01)	2.65*** (0.42)	10.90*** (0.96)
Sample Size (Household Years)		376,180	376,180	376,180	376,180
Number of PHAs		145	145	145	145

HCV = Housing Choice Voucher. PHA = Public Housing Authority. SAFMR = Small Area Fair Market Rent.

*** = p < 0.001. ** = p < 0.01. * = p < 0.05.

Sources: HUD FY2015 Fair Market Rents and HUD FY2015 Small Area Fair Markets Rents (rent ratios); HUD PIC data extract. Opportunity index (see exhibit 1)

As for families with children newly receiving a voucher, exhibit 9 shows that, after the implementation of SAFMRs, families with children newly receiving a voucher locate in ZIP Codes that are at a 4.8 higher percentile on average in the metropolitan area distribution of overall opportunity (column 1), a 3.7 higher percentile in school proficiency (column 2), and a 5.3 higher percentile in the percent of households that are nonpoor (column 3).

Exhibit 9

Regression Estimates of Effect of SAFMRs on Location Outcomes for New HCV Holder Families with Children

	Model		
	(1) Overall Index Percentile	(2) School Proficiency Percentile	(3) Percent Nonpoor Percentile
	Outcome Variable Mean (SAFMR Pre-SAFMR)		
	Overall Index Percentile 33.1	School Proficiency Percentile 35.4	Percent Nonpoor Percentile 36.5
	Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)
SAFMR PHA Post-SAFMR	4.80*** (1.39)	3.72*** (0.89)	5.33*** (1.26)
Dallas PHAs 2011–2012	0.55 (0.87)	– 0.55 (0.75)	1.32 (0.79)
Year = 2011–2012	– 0.15 (0.26)	– 0.35 (0.27)	– 0.18 (0.28)
Post-SAFMR	– 1.17*** (0.33)	– 1.48*** (0.30)	– 0.92** (0.30)
Household Characteristics	Yes	Yes	Yes
PHA Fixed Effects	Yes	Yes	Yes
Intercept	33.76*** (0.71)		36.03*** (0.67)
Sample Size (Household Years)	161,712	154,963	161,712
Number of PHAs	144	136	144

HCV = Housing Choice Voucher. PHA = Public Housing Authority. SAFMR = Small Area Fair Market Rent.

*** = $p < 0.001$. ** = $p < 0.01$. * = $p < 0.05$.

Sources: HUD FY2015 Fair Market Rents and HUD FY2015 Small Area Fair Markets Rents (rent ratios); HUD PIC data extract; opportunity index (see exhibit 1)

The regression estimates presented in exhibit 10 show that SAFMRs do not change the overall incidence of moves among all families with children with vouchers (column 1) and result in only a small statistically significant decrease in moves from lower-rent ZIP Codes (column 2). However, column 3 shows that the unconditional likelihood of moving to a higher-opportunity neighborhood increases by a half a percentage point (on a base of 4.2 percent) after SAFMR adoption.

Exhibit 10

Regression Estimates of Effect of SAFMRs on Location Outcomes for All HCV Holder Families with Children

	Model			
	(1)	(2)	(3)	(4)
	<i>Moved Neighborhood</i>	<i>Moved Neighborhood, by Starting Rent Ratio</i>	<i>Moved Up a Decile in Opportunity Index</i>	<i>Moved Up a Decile in Opportunity, by Starting Rent Ratio</i>
	Outcome Variable Mean (SAFMR Pre-SAFMR)			
	<i>Moved</i> 0.139	<i>Moved</i> 0.139	<i>Moved Up</i> 0.042	<i>Moved Up</i> 0.042
	Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)	Coefficient (Std Err)
SAFMR PHA Post-SAFMR	-0.004 (0.008)		0.007*** (0.002)	
SAFMR PHA Post-SAFMR ZIP Rent Ratio Interaction	Lower (<90)	-0.007 (0.005)		0.010 (0.005)
	Moderate (90–110)	-0.001 (0.010)		0.009** (0.004)
	Higher (>110)	-0.003 (0.010)		0.005 (0.003)
Dallas PHAs 2011–2012	-0.012 (0.007)	Interacted	0.003 (0.002)	Interacted
Year = 2011–2012	0.005 (0.004)	Interacted	0.001 (0.001)	Interacted
Post-SAFMR	-0.018*** (0.003)	Interacted	-0.007*** (0.001)	Interacted
Household Characteristics	Yes	Yes	Yes	Yes
PHA Fixed Effects	Yes	Yes	Yes	Yes
Intercept	0.141*** (0.004)	0.147*** (0.005)	0.045*** (0.002)	0.055*** (0.003)
Sample Size (Household Years)	2,707,779	2,707,779	2,707,779	2,707,779
Number of PHAs	145	145	145	145

HCV = Housing Choice Voucher. PHA = Public Housing Authority. SAFMR = Small Area Fair Market Rent.

*** = p < 0.001. ** = p < 0.01. * = p < 0.05.

Note: Sample includes all families with children with a voucher in each year except new voucher holders in the first year they receive a voucher.

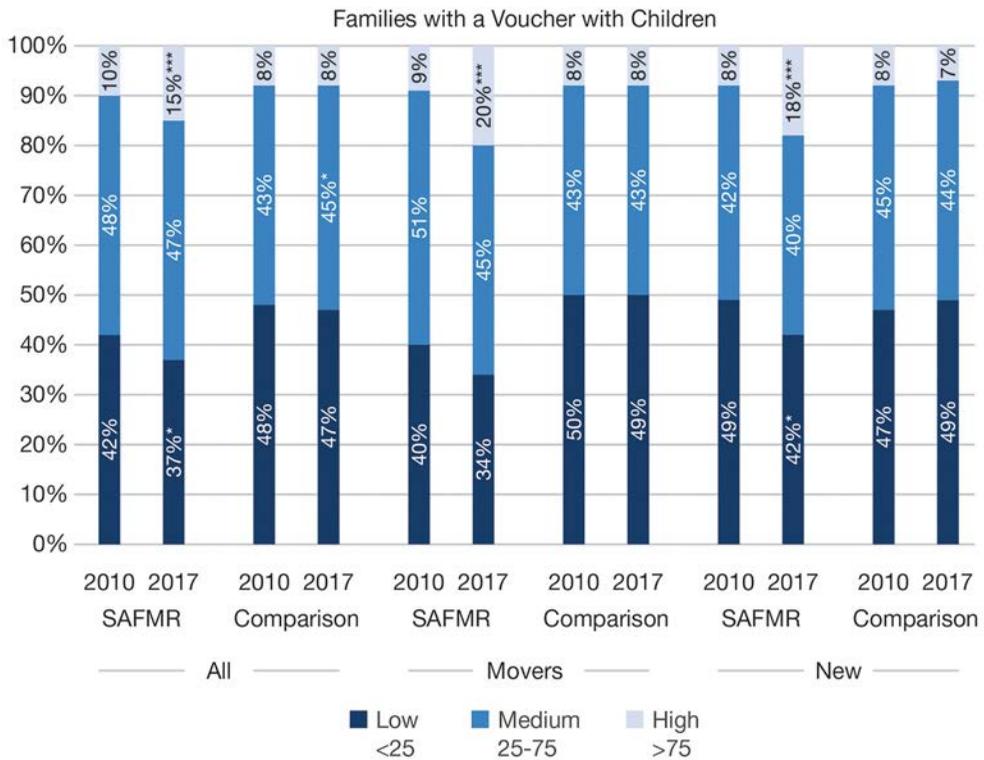
Sources: HUD FY2015 Fair Market Rents and HUD FY2015 Small Area Fair Markets Rents (rent ratios); HUD PIC data extract; opportunity index (see exhibit 1)

The combined result of these effects in terms of neighborhood opportunity outcomes for families with children with a voucher is summarized in exhibit 11. By 2017, 15 percent of voucher holder families with children in SAFMR PHAs lived in neighborhoods in the highest quartile of our opportunity index as compared with 10 percent in 2010. Changes were even larger for families

with children that moved and those initially receiving a voucher. By 2017, 20 percent of families with children with a voucher that moved were locating to neighborhoods in the top quartile of the opportunity distribution, and 18 percent of new voucher holder families with children were using their voucher in these types of ZIP Codes. Meanwhile, in Comparison PHAs we see essentially no changes over the same period.

Exhibit 11

The Share of Voucher Holder Families with Children Who Live (After Any Moves) in ZIP Codes by Opportunity Level Over Time, in SAFMR and Comparison PHAs



PHA = Public Housing Authority. SAFMR = Small Area Fair Market Rent.

Notes: All voucher holder families with children in ZIP Codes in Small Area FMR PHA service areas (seven PHAs where Small Area FMRs have been implemented) and in 144 Comparison PHAs. Statistically significantly different from the same proportion in 2010 at p-value < 0.001 ***, < 0.01 **, and < 0.05 *.

Sources: HUD FY2015 Fair Market Rents and HUD FY2015 Small Area Fair Markets Rents (rent ratios); HUD PIC data extract (counts); opportunity index (see exhibit 1)

Conclusion and Policy Implications

Our analysis shows that SAFMRs show promise as a strategy to enable more voucher holder families with children to reach high-opportunity neighborhoods. First, SAFMRs increase the pool of units potentially available to housing choice voucher holder families in high-opportunity neighborhoods and reduce the number in neighborhoods that offer more minimal opportunities. Further, the shift to SAFMRs appears to affect voucher holder families' actual choice of locations. Among voucher holder families with children who move, the share locating in ZIP Codes in the top

quartile of opportunity levels increases by 11 percentage points after the introduction of SAFMRs. No changes are observed in a set of comparison jurisdictions. Combined with prior research findings on long-term benefits from moves to higher opportunity neighborhoods to children in households receiving housing assistance, our research suggests that the implementation of SAFMRs may transform the HCV program toward achieving some gains in intergenerational economic well-being of low-income households. Notably, as detailed in Dastrup et al. (2018), these effects appear to be achieved at no additional cost to the government 5 years after implementation, reflecting lower subsidies to voucher holder families in low-opportunity neighborhoods more than offset the increased subsidies in higher opportunity areas.

While effects are largest among movers, we also see shifts in the locational choices of new voucher holder families with children. Given the time pressure that new voucher holder families face to find a home that meets voucher program quality standards and rents for less than the ceiling rent, it is perhaps not surprising that we see a more modest change for new voucher holder families as compared with continuing voucher holder families who have more time to search for new homes. As more PHAs adopt SAFMRs, they might pay more attention to helping new voucher holder families navigate the market and reach better neighborhoods. They may also need to do more work to recruit more landlords in high-rent areas, and at least for those with catchment areas dominated by low-rent ZIP Codes, adopt reforms to make it easier for voucher holder families to move to other jurisdictions.

Appendix A: Additional Exhibits

Exhibit A.1

Rental Units and ZIP Codes by ZIP Code Rent Ratio for SAFMR PHAs

		n	ZIP Code Rent Ratio					
			<0.9		0.9-1.1		>1.1	
All SAFMR PHAs	Units (%)	1,290,864	380,598	(29)	588,330	(46)	321,936	(25)
	ZIP Codes (%)	411	87	(21)	186	(45)	138	(34)
Laredo	Units (%)	25,544	6,582	(26)	15,228	(60)	3,734	(15)
	ZIP Codes (%)	5	1	(20)	3	(60)	1	(20)
Mamaroneck	Units (%)	143,226	51,090	(36)	64,066	(45)	28,069	(20)
	ZIP Codes (%)	67	9	(13)	32	(48)	26	(39)
Chattanooga	Units (%)	53,390	8,638	(16)	36,152	(68)	8,600	(16)
	ZIP Codes (%)	30	6	(20)	21	(70)	3	(10)
Cook County	Units (%)	291,302	96,374	(33)	130,023	(45)	64,904	(22)
	ZIP Codes (%)	127	37	(29)	53	(42)	37	(29)
Long Beach	Units (%)	107,946	60,531	(56)	35,990	(33)	11,425	(11)
	ZIP Codes (%)	13	5	(38)	5	(38)	3	(23)
Dallas	Units (%)	668,981	157,382	(24)	306,396	(46)	20,523	(31)
	ZIP Codes (%)	168	29	(17)	71	(42)	68	(40)
Plano	Units (%)	236,040	21,549	(9)	111,166	(47)	103,324	(44)
	ZIP Codes (%)	52	1	(2)	21	(40)	30	(58)

PHA=Public Housing Agency. SAFMR=Small Area Fair Market Rent.

Notes: Analysis dataset includes all ZIP Codes in PHA service areas where SAFMRs have been implemented. Services areas determined based on review of PHA administrative documents. Percentage of total for each row in parentheses.

Sources: Rent ratios calculated using HUD FY2015 Fair Market Rents and HUD FY2015 Small Area Fair Market Rents; total rental units recovered from 2012 American Community Survey 5-year estimates, converted to ZIP Code estimates using HUD ZIP Code to census tract crosswalks

Exhibit A.2

Substantial Variation Across PHAs in Number of Units Renting Below FMRs and SAFMRs

	Total Units with Rents Below FMR, All ZIP Code Rent Ratios		Difference	Percent Change SAFMR vs. FMR
	SAFMR	FMR		
All SAFMR PHAs	626,483	648,607	- 22,125	- 3.4
Laredo	14,163	14,317	- 208	- 1.4
Mamaroneck	90,665	90,955	- 290	- 0.3
Chattanooga	23,395	22,673	721	3.2
Cook County	152,749	155,401	- 2,652	- 1.7
Long Beach	54,140	62,575	- 8,435	- 13.5
Dallas	291,066	302,246	- 11,180	- 3.7
Plano	101,009	80,163	20,846	26.0

FMR = Fair Market Rent. PHA = Public Housing Authority. SAFMR = Small Area Fair Market Rent.

Note: Analysis dataset includes all ZIP Codes in PHA service areas where SAFMRs have been implemented.

Sources: HUD FY2015 Fair Market Rents; HUD FY2015 Small Area Fair Market Rents; 2012 American Community Survey 5-year estimates (special tabulation for HUD of rent and rental units by ZCTA); 2012 American Community Survey 5-year estimates (total rental units)

Exhibit A.3

Summary Statistics for Regression Sample of Families with Children with a Voucher That Move

Pre or Post SAFMRs	Sample			
	SAFMR PHAs		Comparison PHAs	
	Pre	Post	Pre	Post
N (Household Years)	18,886	20,293	252,832	269,859
Outcome Variables				
Move Up at Least 10 Points in Opportunity Index	31.2%	35.2%**	30.5%	29.5%**
Change in Overall Opportunity Index	2.9	4.5*	1.5	0.4***
Analysis Subgroup				
Household Includes Children	69.2%	63.5%***	71.0%	64.7%***
Other Household Characteristics Regression Covariates				
Single Female Head of Household	92.3%	90.0%***	90.5%**	87.9%***
Adults in Household				
Ages 18-24				
1	20.0%	19.9%	19.3%	16.7%***
2 or More	5.6%	5.6%	3.6%***	3.4%***
Ages 25-61				
1	83.0%	80.3%***	79.6%***	80.0%*
2 or More	8.3%	8.7%	8.6%	9.2%***
Ages 62 Plus				
1	8.0%	9.9%***	7.3%	9.5%***
2 or More	0.5%	0.6%	0.5%***	0.6%***
Presence of Children				
Under Age 5	24.2%	23.0%*	32.1%***	26.6%***
Ages 5-12	48.4%	44.4%***	51.5%**	47.4%***
Ages 13-17	37.7%	34.9%***	32.3%***	32.0%
Race/Ethnicity				
White (Non-Hispanic)	11.8%	11.3%	27.5%***	25.6%***
Black	84.9%	86.1%	70.5%***	72.8%***
Hispanic	6.8%	6.6%	14.8%***	13.0%***
Other	3.3%	2.4%*	1.9%	1.7%***

Note: Statistical tests compare: SAFMR Pre, SAFMR Post; SAFMR Pre, Comp Pre; Comp Pre, Comp Post.
*** = $p < 0.001$. ** = $p < 0.01$. * = $p < 0.05$.

Exhibit A.4

Summary Statistics for Regression Sample of All Families with Children with a Voucher

Pre or Post SAFMRs	Sample			
	SAFMR PHAs		Comparison PHAs	
	Pre	Post	Pre	Post
N (Household Years)	180,584	236,669	2,300,476	2,820,158
Outcome Variables				
Move to a New ZIP Code	10.5%	8.6%***	11.0%	9.6%***
Move Up at Least 10 Points in Opportunity Index	3.3%	3.1%	3.4%	2.9%***
Analysis Subgroup				
Household Includes Children	53.8%	48.5%***	55.4%	50.5%***
Includes Adult(s) 62 or Older	18.8%	21.0%***	17.2%	19.9%***
Includes Head or Co-Head with a Disability	38.0%	39.4%**	37.8%	40.2%***
Other Household Characteristics Regression Covariates				
Single Female Head of Household	86.2%	83.6%***	83.9%*	82.0%***
Adults in Household				
Ages 18-24				
1	18.8%	18.1%*	17.2%**	15.6%***
2 or More	5.2%	4.9%	3.4%***	3.4%**
Ages 25-61				
1	73.6%	71.2%***	71.9%	70.8%***
2 or More	8.5%	8.7%	9.0%	9.7%***
Ages 62 Plus				
1	16.9%	19.1%***	15.8%	18.5%***
2 or More	1.9%	1.8%	1.3%	1.5%***
Presence of Children				
Under Age 5	16.6%	15.1%***	21.8%***	17.7%***
Ages 5-12	35.4%	31.8%***	38.1%*	35.0%***
Ages 13-17	30.3%	26.8%***	26.5%***	25.9%***
Race/Ethnicity				
White (Non-Hispanic)	19.0%	19.0%	38.3%***	35.9%***
Black	75.4%	75.9%	58.7%***	61.3%***
Hispanic	8.4%	9.0%	16.1%***	14.8%***
Other	5.4%	4.8%**	3.0%	2.9%*

Note: Statistical tests compare: SAFMR Pre, SAFMR Post; SAFMR Pre, Comp Pre; Comp Pre, Comp Post
 *** = $p < 0.001$. ** = $p < 0.01$. * = $p < 0.05$.

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