Comparing Small Area Fair Market Rents With Other Rental Measures Across Diverse Housing Markets

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Abstract

Small Area Fair Market Rents (SAFMRs) are calculated at the 40th percentile of the U.S. postal ZIP Code instead of the metropolitan area in an effort to capture localized rents to expand choice for voucher holders to access housing in higher-opportunity neighborhoods. Existing studies on the potential and actual outcomes of SAFMRs demonstrate that findings vary for different types of housing markets. Furthermore, the decisions public housing authorities (PHAs) make in the implementation process affect PHAs' program budget and the rent burden and locational outcomes for voucher households. This study aims to address how these implementation factors are affected by local rental market conditions for three PHAs—Housing Authority of the City of Fort Lauderdale, San Antonio Housing Authority, and Seattle Housing Authority—in diverse housing markets. By comparing different sources of market rent estimates with SAFMRs in each location, we contribute new information about how this rule is likely to produce different residential outcomes in terms of increased access to low-poverty neighborhoods and adjustments to payment standards in low-rent neighborhoods. The findings reveal differences across rent measures in terms of estimated levels and relative differences across ZIP Codes. These findings suggest that housing authorities may face challenges in meeting the objectives of the SAFMR final rule without some form of local adjustments.

Introduction

Over the past several decades, social science research has emphasized how neighborhoods matter through findings across disciplines that reveal associations between an individual's neighborhood conditions and their life outcomes. For example, distressed neighborhoods are often associated

with lower educational attainment and poorer health, whereas resource-rich neighborhoods provide opportunities for economic mobility and improved life outcomes (Brooks-Gunn et al., 1993; Chetty, Hendren, and Katz, 2016; Ellen and Turner, 1997; Gennetian et al., 2012; Ludwig et al., 2012). Scholars, policymakers, and practitioners have therefore emphasized the importance of providing low-income households with access to high-opportunity areas, that is, neighborhoods with attributes that foster economic mobility such as quality schools, low crime rates, employment opportunities, community resources, and healthy environments. This theoretical perspective has prompted housing strategies and policies that focus on reducing both income and racial residential segregation for low-income households.

The Housing Choice Voucher (HCV) program and its policies are seen as a vehicle capable of deconcentrating poverty and expanding housing opportunities for low-income renters. Low-income households that receive a voucher can use it for any unit in the private market that will accept a voucher and will pass U.S. Department of Housing and Urban Development (HUD) inspection standards. Voucher recipients pay approximately 30 percent of their income towards rent, with the housing authority administering the voucher covering the difference. The purpose of the flexibility provided to voucher households in choosing their unit relative to place-based housing subsidies is to provide them with the *choice* to select the neighborhood and unit that best meets their needs. Early evaluation of the HCV program demonstrates the failure of voucher households to benefit from this choice and access high-opportunity neighborhoods, however (Newman and Schnare, 1997). Subsequent studies continued to highlight this outcome, with voucher holders concentrating in high-poverty, minority-concentrated neighborhoods across varied research contexts (Devine et al., 2003; Feins and Patterson, 2005; Galvez, 2011; McClure, 2008; McClure, Schwarz, and Taghavi, 2015; Metzger, 2014; Varady and Walker, 2000; Walter, Li, and Atherwood, 2015; Wang and Varady, 2005).

Many explanations exist for why voucher holders are not accessing higher-opportunity neighborhoods even though, in theory, the voucher should remove geographic restrictions. For example, perceived and real discrimination by race, source of income, or family structure may limit choice for low-income households (Charles, 2005; Feins and Patterson, 2005; Ondrich, Stricker, and Yinger, 1999; Popkin et al., 2004; Popkin et al., 2003; Smith et al., 2002; Varady and Walker, 2003). Few cities in the United States have enacted "source of income discrimination" laws, which prevent landlords from discriminating against voucher-holding applicants who are otherwise qualified, but lack of enforcement in these areas stifles positive outcomes (Tighe, Hatch, and Mead, 2017). Some landlords will not participate in the HCV program because of their perception of voucher holders or other bureaucratic factors (Garboden et al., 2018). Informal search processes are another factor that may cause reconcentration and perpetuate segregation. Voucher holders often depend on their social networks, only consider neighborhoods that are familiar to them, or have incomplete information during the housing search process (Darrah and DeLuca, 2014; Krysan and Crowder, 2017). The design of the voucher program itself may also contribute to undesirable locational outcomes because the voucher holder is only given a limited timeframe (usually 60 days) to find and lease a unit that is within the allowable rent and meets the inspection requirements of the program (Basolo and Nguyen, 2005; DeLuca, Garboden, and Rosenblatt, 2013).

Furthermore, voucher holders' choice is restricted by the limited number of affordable rental units available in high-opportunity neighborhoods that offer access to employment, transit, and amenities (Schuetz, 2009; Tremoulet, Dann, and Adkins, 2016). Tight housing markets with low vacancy rates exacerbate this challenge (Briggs, Popkin, and Goering, 2010; Feins and Patterson, 2005). Fair Market Rents (FMRs), calculated by HUD for the HCV program, are used to determine payment standards for housing authorities and are established at the 40th percentile of all market rents in a metropolitan area (Kahn and Newton, 2013). These payment standards determine the maximum amount of rental subsidy that a housing authority may provide for each household. FMRs have contributed to the concentration of voucher holders in distressed communities because assisted households are unable to rent units in high-cost areas and therefore are often priced out of higher-opportunity neighborhoods (Collinson and Ganong, 2018; Fischer, 2015).

In response to this programmatic barrier, HUD issued a new rule called Small Area Fair Market Rents (SAFMRs) to expand housing choice in neighborhoods of opportunity for voucher households. SAFMRs are calculated at the 40th percentile of U.S. postal ZIP Codes instead of the overall metropolitan area. The purpose of this new rule is to provide housing authorities with estimates that capture localized rents in their jurisdiction in order to expand choices for voucher holders to access housing units in higher-opportunity neighborhoods.[1] Ellen, Horn, and Schwartz (2016) found that when provided the option, voucher holders will move to higher-opportunity neighborhoods with better schools. Studies on the potential impact of SAFMRs reveal they increase access to high-opportunity neighborhoods by expanding the number of units available to voucher holders in higher-income neighborhoods in most, but not all, metropolitan areas (NYU Furman Center, 2018; Palm, 2018).

Emerging evidence on the outcomes of SAFMRs is limited by its recent implementation in only 24 metropolitan areas. Most of these studies are based on a few years of data available from six demonstration markets. In the earliest evaluation of SAFMRs, Collinson and Ganong (2018) found that payment standards established at smaller geographies improve locational outcomes for voucher holders. Data from Dallas, Texas, the first metropolitan area mandated to implement SAFMRs as part of a court settlement in 2010, indicates voucher households have been able to move out of high-poverty, unsafe neighborhoods with the implementation of SAFMRs (Collinson and Ganong, 2018). The two studies that have been conducted on the other demonstration areas, however, highlight how outcomes may vary depending on the housing market in which SAFMRs are implemented (Finkel et al., 2017; Reina, Acolin, and Bostic, 2019).

What is apparent from this early research is where and how SAFMRs are implemented has implications for program outcomes. This research includes but is not limited to: the ability for households to secure a unit in high-opportunity neighborhoods; the impact on the reduction in rent paid by the housing authority to the landlord in lower-income neighborhoods; and the potential cost increase per voucher to housing authorities administering the program, which may result in fewer households being served by the voucher program over time. This study aims to address how these implementation factors are affected by local rental market conditions for three public housing authorities (PHAs)—Housing Authority of the City of Fort Lauderdale, San Antonio Housing

[1] Published in the *Federal Register* as a final rule on January 16, 2016. 81 Fed. Reg. 80567.

Authority, and Seattle Housing Authority—in diverse housing markets. By comparing different sources of market rent estimates with SAFMRs in each location, we contribute new information about how this rule is likely to produce different residential outcomes in terms of increased access to low-poverty neighborhoods and adjustments to payment standards in low-rent neighborhoods.

Background

Designated PHAs in 24 metropolitan areas with substantial voucher concentration were required to adopt the new SAFMR rule for all tenant-based vouchers starting at the beginning of 2018. Project-based vouchers, which are housing subsidies attached to the housing unit instead of issued to a voucher household, are exempt from mandatory adoption. SAFMRs are used to establish payment standards for the voucher program. Payment standards determine the maximum amount that a housing authority pays towards rent for a voucher household. PHAs have some flexibility in establishing the payment standard amounts between 90 and 110 percent of the SAFMR, which is also known as the basic range. PHAs may also establish a payment standard for each ZIP Code in their service area, or group ZIP Codes that have SAFMRs within the basic range of all other ZIP Codes within the group (HUD, 2018). For example, Walter (2018) explored grouping ZIP Codes for several PHAs based on the objectives of the SAFMR rule instead of only using the basic range. Since the goal of the rule is to deconcentrate voucher holders and provide access to high-opportunity neighborhoods, ZIP Codes were first grouped by opportunity and voucher concentration, before grouping ZIP Codes by SAFMRs within the basic range. This strategy intends to make it easier for housing authorities to establish local policies and mobility strategies for each grouping and to better track program outcomes (Walter, 2018).

The number of units accessible to voucher holders depends on how the payment standards are established. In high-rent areas, the payment standard needs to be set at an amount that will maximize the availability of units. In lower-rent neighborhoods, PHAs must decide if payment standards should be held constant or reduced. Setting the initial payment standards is likely the greatest challenge for SAFMR PHAs (HUD, 2018). These decisions affect the rent burden for voucher households, the program budget for PHAs, and the locational outcomes for voucher holders.

Potential and Actual Outcomes of SAFMRs

Research on the potential and actual outcomes of SAFMRs demonstrates findings vary for different types of housing markets. Palm (2018) examined the number of rental listings that will become accessible to voucher holders in high-opportunity areas with the implementation of SAFMRs in five metropolitan statistical areas in California. The analysis reveals a range of results from a decline in accessible rentals in San Francisco ZIP Codes with low poverty rates (less than 10 percent) to a 34-percentage point increase in Sacramento. The decrease in San Francisco is likely due to SAFMR calculations not keeping pace in a market that is experiencing rapidly increasing rents (Palm, 2018).

In response to an interim report commissioned by HUD which found the total number of affordable rental units accessible to voucher holders would decrease by 3.4 percent with the implementation of SAFMRs (Finkel et al., 2017), the New York University (NYU) Furman Center specifically analyzed the 24 metropolitan areas mandated to adopt the rule by 2018. The Furman Center suspected the

findings could differ for the set of mandated areas, because the areas were selected based on specific market characteristics (for example, number of voucher holders concentrated in low-income areas, the percentage of renter units in ZIP Codes where the SAFMR is more than 110 percent of the metropolitan FMR, and vacancy rates higher than 4 percent). The findings of this analysis reveal that these markets would likely see an overall 9.1 percent increase in the affordable units available to voucher holders in the mandated metropolitan areas. This availability would vary by housing market, however, with four metropolitan areas—Gary, Indiana; Hartford, Connecticut; Monmouth-Ocean, New Jersey; and Sarasota, Florida—experiencing a decline in the number of affordable rental units. Of the remaining 20 housing markets that will experience an increase, the range is substantial, from a 1.1 percent increase in Pittsburgh, Pennsylvania, to a 28.3 percent increase in San Antonio, Texas. These findings reinforce the conclusion that the results of implementing SAFMRs are likely to vary across different housing markets.

The HUD-commissioned interim report also examines the performance of SAFMRs in the demonstration areas. This study highlights that SAFMRs provide access to more rental units in higher- opportunity areas in the demonstration areas, but again, these gains vary by housing market. For example, very few units are available in high-opportunity neighborhoods in Long Beach, whereas Cook County experienced large gains. In terms of low-opportunity areas, Laredo and Chattanooga lost some units, but Dallas and Long Beach lost substantially more. Overall, the percentage of voucher holders living in high-opportunity neighborhoods among the demonstration areas has risen slightly, from 11 percent to 13 percent. Still, outcomes for new voucher holders vary depending on the market. Laredo experienced the greatest gain; the share of households moving to high-rent ZIP Codes increased from 5 percent to 22 percent, whereas Mamaroneck experienced a decrease from 83 percent to 59 percent (Finkel et al., 2017).

Another study examining the ability of SAFMRs to improve locational outcomes for voucher households found similar regional variation. Reina, Acolin, and Bostic (2019) used tenant data from the six SAFMR demonstration sites—Dallas, Texas; Cook County, Illinois; Laredo, Texas; Long Beach, California; Mamaroneck, New York; and Chattanooga, Tennessee—to determine if increased payment standards allowed voucher holders to access higher-opportunity neighborhoods. Their findings indicate that voucher households in Dallas had the largest gains in moving to neighborhoods where the SAFMR rent was higher than the FMR. Otherwise, results were mixed; Laredo, Long Beach, and Mamaroneck experienced gains but Cook County and Chattanooga underwent decreases. In terms of neighborhood quality,[2] again voucher holders in Dallas experienced the greatest gains, while Chattanooga voucher holders experienced a decline in neighborhood quality (Reina, Acolin, and Bostic, 2019). Furthermore, Reina (2019), using the same demonstration sites, examined if SAFMRs reduce the number of voucher households living in minority concentrated neighborhoods. Findings indicate that SAFMRs only slightly improved access to lower poverty neighborhoods for Black voucher households, particularly in Dallas compared with the other locations. Overall, these studies highlight how differences in the housing markets where PHAs are required to implement SAFMRs are important to understanding variation in outcomes.

[2] Neighborhood quality in this study is measured by: the poverty rate, unemployment rate, percentage of children living in households headed by single mothers, housing vacancy rate, percentage of fourth graders who are not proficient in math or reading, and violent crime rate (Reina, Acolin, and Bostic, 2018).

Implementation Challenges Relevant to SAFMR Outcomes

Neighborhoods with rapidly increasing rents present a problem for implementing SAFMRs. As Palm (2018) demonstrated in San Francisco, SAFMRs may not keep pace with the actual market; these neighborhoods will not gain units affordable to voucher holders because the payment standard will be set too low. This problem stems from two factors. First, in most markets, SAFMRs use regional and national instead of local inflation trend factors, ignoring the considerable heterogeneity in housing cost trends between metropolitan locations.[3] Second, SAFMRs are calculated from American Community Survey (ACS) estimates, and these data may already include unreliable local estimates with geographical bias and high uncertainty (Bazuin and Fraser, 2013; Folch et al., 2016; Treat, 2017). This issue may be especially true in neighborhoods that are experiencing considerable growth, where housing costs are rapidly increasing (Boeing and Waddell, 2016; Palm, 2018; Treat, 2017). These limitations have prompted researchers to compare SAFMRs with proprietary rental listing data sources to potentially improve housing cost estimates within local rental housing markets.

As an example, Palm (2018) used Rent Jungle data and compared it against Boeing and Waddell's (2016) Craigslist data, finding that the two proprietary sources are more aligned with each other than with the ACS data. Walter (2018) compared SAFMRs with CoStar and Apartments.com data in three housing markets—Fort Lauderdale and Jacksonville, Florida, and San Antonio, Texas. The results highlight considerable rent variations from the SAFMR in some neighborhoods that could lead to fewer families being served by the program or may continue to prevent some households from being able to access units in higher-cost neighborhoods (Walter, 2018). Proprietary sources allow for real-time rental listing estimates at very precise geographic scales, and combined temporal and spatial granularity may be able to provide insight for establishing payment standards in areas where SAFMRs are not accurately reflecting the current rental market.

Another implementation challenge is the impact on households in lower-income neighborhoods where SAFMRs reduce payment standards. Landlords may refuse to decrease rents for current voucher tenants. If the household stays, it will be responsible for paying more towards rent, causing a greater housing cost burden. Housing authorities may decide to implement a "hold harmless" policy for existing tenants that prevents a reduction in their payment standard, but new households admitted to the program may find it difficult to lease units in lower-income neighborhoods because of the payment standard reduction. Further, the interim report on the demonstration areas indicates that such rent adjustments particularly impact households with disabled and elderly members that do not have the means to move. The amount paid by tenants towards rent increased by 16 percent in a 5-year period, with the largest increases (22 percent) observed among lower-rent ZIP Codes (Finkel et al., 2017). In response, PHAs are implementing hold harmless policies, but this approach has financial implications on the number of voucher holders they are able to serve.

As a Moving to Work (MTW) agency with authorization from HUD to design strategies to use federal funding more effectively and request exemptions on voucher rules, King County Housing

[3] In 23 markets, the local consumer price index produced by the Bureau of Labor Statistics is used, but even in these markets, the adjustments will not be able to account for neighborhood specific trends.

Authority in Washington has been implementing policies that use multiple payment standards to better reflect the local rental market since 2001. Although not required to adopt SAFMRs, King County is currently using a six-tier payment standard system. Given the concern over the impact on households in lower-cost areas, King County did not decrease payment standards in these areas at the time of implementation but instead chose to increase the payment standard in these areas to a lesser extent than high-cost neighborhoods. This decision prevented housing costs from rising for households in low-rent areas at the onset of implementation. The payment standard in low-cost areas is now held below the FMR (King County Housing Authority, 2017). This alternative may be one implementation option for housing authorities because they are not required to reduce the payment standard in low-rent areas (HUD, 2018). Holding the payment standard constant, however, increases program costs.

The extent to which new and existing households change their locational patterns in response to the implementation of the SAFMRs will affect the cost of the program and thus influence the number of households the housing authority is able to serve. The HUD interim analysis on the demonstration sites found that the amount housing authorities paid for rent and utilities on behalf of voucher holders decreased on average by 13 percent over a 5-year period. This decrease was substantial in lower-rent areas (30 percent), whereas higher-rent areas experienced an average increase of 3 percent (Finkel et al., 2017). If payment standards are reduced in low-rent areas during implementation, it is reasonable to assume that SAFMRs will result in cost savings for housing authorities. As more voucher holders move to higher-cost areas over time, however, total costs to agencies will likely increase. King County Housing Authority explored long-term cost implications and the hypothetical average payment they could expect, based on the number of households that move to higher-cost neighborhoods. They found that by 2019 the costs savings gained from using multiple payment standards rather than the FMR may be eliminated, and costs may rise based on future mobility trends (King County Housing Authority, 2017).

The points previously raised highlight the need for a comprehensive understanding of the rental markets in which SAFMRs are implemented, as there are significant implications for a household's ability to secure a unit in the neighborhood of their choice and for the cost to the housing authorities administering the program. This research aims to compare the SAFMRs with other rent measures and analyze how they compare in three very different markets. The findings will provide further insight for PHAs currently implementing and considering implementing SAFMRs.

Study Areas

The study areas were selected based on diverse market characteristics and the willingness of the local housing authorities to participate in the study. The three housing authorities that participated in this study vary by location, size, and programs. The Housing Authority of the City of Fort Lauderdale (HACFL) administers over 3,000 vouchers and manages 1,250 tax credit units, 170 affordable housing units, and 95 public housing units. HACFL's service area focuses on Fort Lauderdale but they manage housing units in other cities in Broward County with the exception of the City of Hollywood, which is the only housing authority in the county with which HACFL does not have an interjurisdictional agreement. In the final rule, HACFL was in an area that met the

SAFMR area criteria and was mandated to adopt SAFMRs. HACFL implemented SAFMRs in 2018 based on grouping all ZIP Codes that had SAFMRs within 10 percent of one another resulting in six different payment standards.

The San Antonio Housing Authority (SAHA) is one of the 39 public housing authorities that has MTW status, which gives housing authorities the flexibility to implement innovative activities and programs to enhance housing and services for residents. SAHA serves over 65,000 residents in the city with average incomes of less than $12,500 annually. SAHA administers over 14,000 vouchers and manages more than 6,000 public housing units along with approximately 7,000 mixed-income housing units. In the final rule, SAHA was also mandated to adopt SAFMRs. Based on extensive research, they established two payment standards in 2018 and established a SAFMR Committee to assess the potential impact of making additional changes to their two submarkets.

The Seattle Housing Authority (SHA) also has MTW designation. SHA serves 34,000 residents in the city of Seattle and administers over 10,000 vouchers. They also own and operate more than 8,000 housing units spanning 400 sites throughout Seattle. Although SHA is not one of the areas mandated to adopt SAFMRs, they have been working towards strategies to provide additional housing opportunities to voucher households. As a high-cost market that has seen rapidly increasing rents over the past few years, it has become difficult for voucher holders to locate housing within the city. SHA has implemented strategies like longer search times and is participating in pilot projects such as the Creating Moves to Opportunity that includes a counseling program and higher payment standards for families looking to move to high-opportunity areas with the goal of finding new approaches that will best assist their households and improve long-term outcomes. SHA also participated in a local survey led by King County Housing Authority to update FMRs for the region. The last local survey was completed in 2017 and was made effective for 2018. It resulted in an average FMR increase of 22 percent compared with the original FMR.

The three rental housing markets are diverse in terms of size, rent levels, and vacancy as shown in exhibit 1. Seattle is a higher-cost, lower-vacancy market with high income that results in the lowest levels of rent burden (45 percent). San Antonio is a low-cost, low-income market with relatively high vacancy and a 52 percent share of rent burden households. Fort Lauderdale, while having lower housing costs than Seattle and substantially higher vacancy, has lower household income resulting in a higher share of rent burden households (63 percent).

Exhibit 1

Rental Housing Market Profiles

	Fort Lauderdale	San Antonio	Seattle
Total Housing Units	93,917	552,520	355,293
Total Housing Units per Square Mile	2,587	1,187	2,501
Renter Occupied Units/Percent of Total Housing Units	33,690 (35.87%)	226,675 (41.03%)	174,245 (49.04%)
Rental Vacancy Rate	9.40%	9.10%	3.90%
Average Household Size of Renter-Occupied Units	2.40	2.70	1.90
Median Gross Rent	$1,217	$926	$1,555
Median Household Income	$56,309	$50,044	$86,822
Cost Burden Renter Households (Paying More Than 30 Percent of Income on Rent)	63.30%	51.90%	44.60%

Source: 2017 American Community Survey 1-year estimates

Data and Methods

Information on real estate markets is imperfect. In particular, measures of rent levels and changes are difficult to establish because, unlike sales, rental contracts are not recorded publicly. This lack of data means it is only possible to collect information about contract rent via an ad-hoc and decentralized process. Establishing constant quality in rental estimates is further complicated by the heterogeneous nature of housing units and cyclical variations in the units available for rent.

Traditionally, the main national source of rent estimates at small levels of geography (ZIP Code or below) was the Decennial U.S. Census, with measures for intercensal years extrapolated from the last Census figures. In the last decade, however, several new public and private national rental measures available at small levels of geography and updated at least annually have emerged. Since 2009, the 5-year estimates of the U.S. Census Bureau ACS have provided median contract and gross rent information down to the census tract level. These estimates are updated annually but only available with a lag—even at the time of release they still rely on information that is up to six years old. For example, a fifth of the data used for the 2012–2016 ACS estimates was collected in 2012 and the estimates were released in December 2017. Another limit is that the ACS provides a reliable estimate of rent paid by all renters but does not produce a precise estimate of current market rent because some of these rents reflect contracts that were signed several years ago. To account for these issues with the ACS, the FMRs and SAFMRs released annually by HUD rely on custom estimates of the data produced by the Census Bureau on recent movers in two-bedroom units adjusted for inflation as discussed above.

Several private sources for rental information have also emerged with estimates of local rental costs. Zillow, a residential real estate services firm, offers rental estimates down to the ZIP Code or neighborhood level on a monthly basis with a one-month lag. These estimates include the median asking rent and are available by building type or bedroom size along with their own adjusted rental

measures controlling for the characteristics of the units being advertised and seasonal variations. A limitation of these estimates is that the data used are dependent on unmeasured biases in the listings that are on the platform. A number of other online rental platforms also provide estimates based on their listings or those of their affiliates with similar sources of bias (for example, CoStar/Apartments.com, StreetEasy, Zumper).

More recently, the potential of using the listings on online platforms to produce custom estimates with high levels of geographic specificity, unit type, and timeliness has emerged (Boeing and Waddell, 2016). Scraping these sources still has limits similar to the estimates produced by Zillow and other online listing platforms because they do not capture rental listings that are advertised through other channels such as signs in windows, newspaper ads, or posting boards at shops. The direction and extent of the bias of relying on online listings are unclear and further work is admittedly needed to examine how differences in coverage by online sources vary across communities. Another limit is that these data capture asking rent and not contract rent. Given that the rental market is generally considered to be a spot market with transactions taking place quickly for the advertised rent, this distinction is less of a concern than for sale transactions except in a few markets with oversupply in which renters might have some bargaining power. For the purpose of establishing rent estimates for voucher recipients, another shortfall is that only limited information about the quality of the units and utility payments will generally be provided in the listing.

In this article, existing rental estimates are compiled for three markets: Broward County, Florida; San Antonio, Texas; and Seattle, Washington. Existing rental estimates from HUD's SAFMRs, ACS, Zillow, and CoStar are compared with estimates produced from scraped Craigslist and Apartments.com listings (the methodology is described in the following paragraph). Next, rental estimates are compared in terms of overall descriptive statistics, coverage, and correlation to understand differences in the level and distribution of rents between market data sources and public data estimates like the ACS or HUD's SAFMRs. The differences between HUD's 2018 SAFMRs and the produced 40th percentile asking rent estimates are the presented summary evidence of systematic differences between study areas in terms of increased neighborhood access and potential for net reduction in subsidy, variations which we argue are related to the diverse resident and housing stock characteristics across these locations.

In order to collect rental data from Craigslist and Apartments.com for this project, we are using *Helena*, a novel programming by demonstration (PBD) tool that one of the authors is developing (Chasins and Bodik, 2017). Non-programmers can interact with Helena to specify what data they want to collect from a given webpage. To scrape a dataset, the user records himself interacting with a standard browser, demonstrating how to collect the first row of the data. To collect all the rental listings from a platform, the user demonstrates how to click on the first listing, then how to collect the price, number of bedrooms, address, and other target data from the listing's webpage.

We used Helena for collecting rental listings from February to August 2018. Each of these programs ran continuously, re-executing the program from the start as soon as it reached the end of the list of posts. Relative to scraping only periodically (for example, weekly), this method ensures that all listings posted on the platform were captured, even if they are only online for a few days. The listings are then geocoded based on street addresses included within metadata for the

listing. We have a very high geocoding success rate when listings include address information in their metadata or within their advertisement text, with approximately 98 percent or more of listings geocoded to a rooftop or range interpolated position on a road (if an address was present), or a buffer location (if cross-streets were provided).

Helena allows us to capture listings on multiple platforms and in multiple markets. The collected data still requires substantial post-collection processing to identify duplicate postings of the same units over time, however, both on the same platforms and across platforms. We first deduplicate scraped listings within each source to create sets of listings with unique values based on bedroom sizes, square footage, and spatial locations. To assess the overlap between Craigslist and Apartments.com, we explored different ways to match the listings. Our final implementation requires that location fields, bedroom size, and square footage must be the same between data sources, with an absolute difference of $50 allowed between the two listings being compared. This approach finds match rates of approximately 10 to 25 percent (relative to the number of Apartments.com listings). This assessment is an essential process as we found duplicates are particularly concentrated among higher-rent properties, biasing estimates upward if not removed.[4]

Our final dataset has more than 11,000 unique observations from which to derive rent estimates. We then compute bedroom-specific 40th percentiles of rent for each ZIP Code where we have more than five observations for a given unit size.[5] This function also estimates standard errors for quantiles of interest using a bootstrap approach allowing us to provide a measure of the margin of error for the estimates.

In an effort to produce robust estimates that account for differences in density of posting by bedroom size and spatial patterns in rental markets, we use Bayesian hierarchical smoothing models estimated using Integrated Nested Laplace Approximations (INLA). This estimation procedure is applicable to generalized linear regression models, which are themselves a case of a broader set of models called Latent Gaussian Models (LGMs). These models are expressed in terms of a conditionally independent likelihood function, a latent field which is Gaussian conditional on the hyperparameters, and prior distributions of the hyperparameters. INLA approximates the marginal posterior distributions of the parameters of interest, and in general, provides reliable estimates. We follow the specification of Besag, York, and Mollié (1991) in using an Intrinsic Conditional Autoregressive (ICAR) random effect and an exchangeable random effect for each unit to model spatial structure. As spatial (or space-time) models, they partially pool variation from contiguous spatial neighbors, other bedroom sizes or prior observations to smooth over local deviations in the estimated rent surface. The benefit of these models is that partial pooling induces shrinkage in the predicted estimates and also that they provide a model-based approach for imputing values where direct estimates were missing. Shrinkage towards the conditional mean reduces the bumpiness in the rent surface related to sampling variability (for example, low N). We calculated the margin of errors around these estimates, generally around 10 percent of the estimate. The estimates that are generated through this method using the Craigslist and Apartments.com data are referred to in the remaining sections of the paper as the combined rent estimates.

[4] On the other end, it is possible we miss some units if one posting is used to advertise several units.

[5] This method is admittedly an arbitrary threshold based on the lowest number of observations for which the 40th percentile can be estimated.

Results

Market Level Summary Measures

Exhibit 2 presents summary measures of the nine rent estimates we compared for the three locations: HUD's SAFMR, the 2012–2016 ACS at the ZIP Code and Public Use Microdata Area (PUMA) level, Apartments.com, Craigslist, the combined rent estimates based on the Apartments.com and Craigslist data (our preferred estimate and the one used for comparison in the remaining section of the paper), CoStar, and Zillow.[6] When possible, we present the 40th percentile estimates for two-bedroom units.[7] Exceptions include the ACS data which uses the median for all units at the ZIP Code level, the 40th percentile for two-bedrooms at the PUMA level, and for Zillow where the only available estimate is the median value. All measures are based on asking rent for current listings with the exception of the ACS-derived measures that are based on the gross rent amount (contract rent plus utility costs) and CoStar that captures rents for existing tenants.

The first observation made is in terms of coverage. Only the estimates based on the ACS and the combined rent estimates have complete coverage in all three locations, providing a rent estimate for all ZIP Codes in these jurisdictions. CoStar estimates are also extensive with Zillow and Apartments.com having lower levels of coverage with variation across locations. Developing measures that ensure extensive coverage is crucial to support the decision process of public agencies that must cover their entire jurisdiction.

The second observation is that all sources are consistent on relative rent level of markets from lowest to highest based on mean or median. Rent estimates vary, however, even when excluding the ACS measures that are lagged. Average estimates range from $952 to $1,240 in San Antonio, from $1,403 to $1,860 in Broward, and from $1,683 to $2,547 in Seattle. Variations at the market level are also found through the variations in subareas' minimum and maximum levels across sources.

[6] All rent measures are 2018 estimates in 2018 dollars, except for the ACS measures that are based on the 2012–2016 5-year estimates in 2016 dollars (which is used to create the 2018 SAFMR estimate).

[7] Throughout our analysis, we focus on rent estimates for two-bedroom units for two reasons: (1) it is the most common size for rental units; and (2) it is the size of units used for the custom ACS from which the SAFMR for all unit sizes are derived using a set ratio.

Exhibit 2

Summary Rent Estimates

	Mean	SD	Median	Min.	Max.	N
Broward						
SAFMR	1,531	252	1,460	1,180	2,080	47
ACS 2012–2016 [Median, All Unit Sizes]	1,191	298	1,073	854	2,130	47
Apartments.com	1,860	525	1,758	1,138	3,114	26
Craigslist	1,576	234	1,156	1,175	2,110	45
Combined Smoothed Estimate	1,626	210	1,597	1,271	2,261	47
CoStar	1,403	305	1,314	960	2,127	45
Zillow [Median]	1,598	304	1,500	1,250	2,500	42
ACS 2012–2016 Contract Rent [2 Bed, PUMA]	1,117	147	1,100	1,000	1,500	14
San Antonio						
SAFMR	1,041	175	995	870	1,500	60
ACS 2012–2016 [Median, All Unit Sizes]	752	212	711	454	1,354	60
Apartments.com	1,240	421	1,077	783	2,295	33
Craigslist	952	158	949	673	1,375	56
Combined Smoothed Estimate	1,015	226	947	780	1,718	60
CoStar	976	284	909	610	2,041	52
Zillow [Median]	1,109	322	1,005	880	2,208	20
ACS 2012–2016 Contract Rent [2 Bed, PUMA]	788	152	800	550	1,200	16
Seattle						
SAFMR	2,072	330	2,070	1,500	2,820	26
ACS 2012–2016 [Median, All Unit Sizes]	1,144	174	1,193	831	1,466	26
Apartments.com	2,547	522	2,557	1,604	3,697	18
Craigslist	1,786	257	1748	1,399	2,552	26
Combined Smoothed Estimate	2,163	355	2,099	1,532	3,102	26
CoStar	1,683	455	1,574	1,195	2,961	26
Zillow [Median]	2,239	394	2,223	1,673	2,891	11
ACS 2012–2016 Contract Rent [2 Bed, PUMA]	1,533	233	1,500	1,200	1,900	5

ACS = American Community Survey. PUMA = Public Use Microdata Areas. SAFMR = Small Area Fair Market Rents. SD = Standard Deviation.
Note: The year of the data is 2018 except for the ACS data that is based on 2012–2016, 5-year estimates.

In terms of variations across sources, the 2012–2016 ACS and CoStar measures tend to be the lowest while the Apartments.com and Zillow measures are generally the highest. The SAFMR, Craigslist, and the combined rent estimates are generally in between. This finding suggests that the bias in the data sources has a systematic component, likely linked to the data generation process. Potential sources of the differences include current asking rent versus contract rent for existing tenants, selection of higher or lower end of the housing stock, and median versus 40th percentile rents.[8]

Exhibit 3 reports the correlation between the ZIP Code-level rental estimates for the three locations for two-bedroom rent measures (except for the ACS measure that is for all unit sizes). The SAFMR and the ACS are highly correlated (.9 or above) as would be expected because the former is derived from the latter with most of the adjustments being made at the national level and not changing the relative estimates within a given market. The combined rent estimate is highly correlated with Zillow's median estimate with a correlation of .8 in Broward and close to 1.0 in San Antonio and Seattle. The correlation of the combined rent estimate with the Apartments.com, Craigslist, and CoStar measures are also generally high (somewhat less so in the case of CoStar). The high level of correlation between the combined rent estimate and other market measures in all three locations suggests that this similarity is a robust measure of local rent levels and variations despite the potential for biases due to differences in coverage and type of units posted on different platforms.

The correlation between the SAFMR measure and the other rental market measures varies by housing market. The correlation of the SAFMR with the combined rent estimate is positive and significant in the three locations but varies from .8 in Seattle and .6 in Broward to less than .4 in San Antonio. Similarly, the correlation of the SAFMR with CoStar and Zillow measures vary from .3 to .8. This variation shows that in a market like San Antonio, the SAFMRs substantially differ from other rental measures in ways that are not systematic while the other market measures (the combined rent estimate and the measures from CoStar and Zillow) are more closely correlated.[9]

[8] Zillow and the Census summary data report median rent. HUD estimates that the difference between the median and the 40th percentile is about 11 percent based on the national-level gross rents for two-bedroom units in special tabulations of the 2017 ACS.

[9] If the difference between the SAFMR and other measures are systematic, for example if the difference is always 20 percent lower or higher, the correlation would be 1.0 even if the absolute difference was substantial.

Exhibit 3

Correlation Between ZIP Code Rent Estimates

	SAFMR	ACS 2012-2016	Apartments.com	Craigslist	Combined Rent Estimate	CoStar	Zillow
Broward							
SAFMR	1.00						
ACS 2012–2016 [Median, All Unit Sizes]	0.94	1.00					
Apartments.com	0.35	0.31	1.00				
Craigslist	0.51	0.50	0.75	1.00			
Combined Smoothed Estimate	0.61	0.62	0.81	0.87	1.00		
CoStar	0.78	0.83	0.31	0.52	0.59	1.00	
Zillow [Median]	0.34	0.30	0.85	0.75	0.80	0.23	1.00
San Antonio							
SAFMR	1.00						
ACS 2012–2016 [Median, All Unit Sizes]	0.95	1.00					
Apartments.com	0.35	0.31	1.00				
Craigslist	0.51	0.50	0.75	1.00			
Combined Smoothed Estimate	0.36	0.48	0.81	0.87	1.00		
CoStar	0.47	0.58	0.81	0.72	0.90	1.00	
Zillow [Median]	0.35	0.76	0.85	0.75	0.96	0.94	1.00
Seattle							
SAFMR	1.00						
ACS 2012–2016 [Median, All Unit Sizes]	0.89	1.00					
Apartments.com	0.75	0.70	1.00				
Craigslist	0.64	0.49	0.86	1.00			
Combined Smoothed Estimate	0.78	0.60	0.87	0.87	1.00		
CoStar	0.82	0.57	0.85	0.89	0.94	1.00	
Zillow [Median]	0.85	0.88	0.86	0.97	0.98	0.89	1.00

ACS = American Community Survey. SAFMR = Small Area Fair Market Rent.

Several ZIP Codes have estimated market rents that fall outside the basic range of 90 to 110 percent across the three study locations. Exhibit 4 summarizes the share of ZIP Codes in which the combined estimate is 10 percent or more below the SAFMR, within the basic range of 10 percent of the SAFMR, and more than 10 percent higher. In all three locations, the patterns are generally similar across bedroom size but with some variation. In Broward and Seattle, most estimates are within the basic range of the SAFMR. Among those that are not, there are generally more ZIP Codes in which the combined rent estimates are above the basic range of the SAFMR (over one-fourth of ZIP Codes for two-bedroom units in both locations) rather than below it. In San Antonio, more than one-third of all ZIP Codes have combined rent estimates that are below the basic range of the SAFMR for all unit sizes and less than 10 percent of the ZIP Codes are above the basic range. These variations indicate that, depending on local market dynamics, the difference between the SAFMR and other measures of market rents might not occur in the same direction.

Exhibit 4

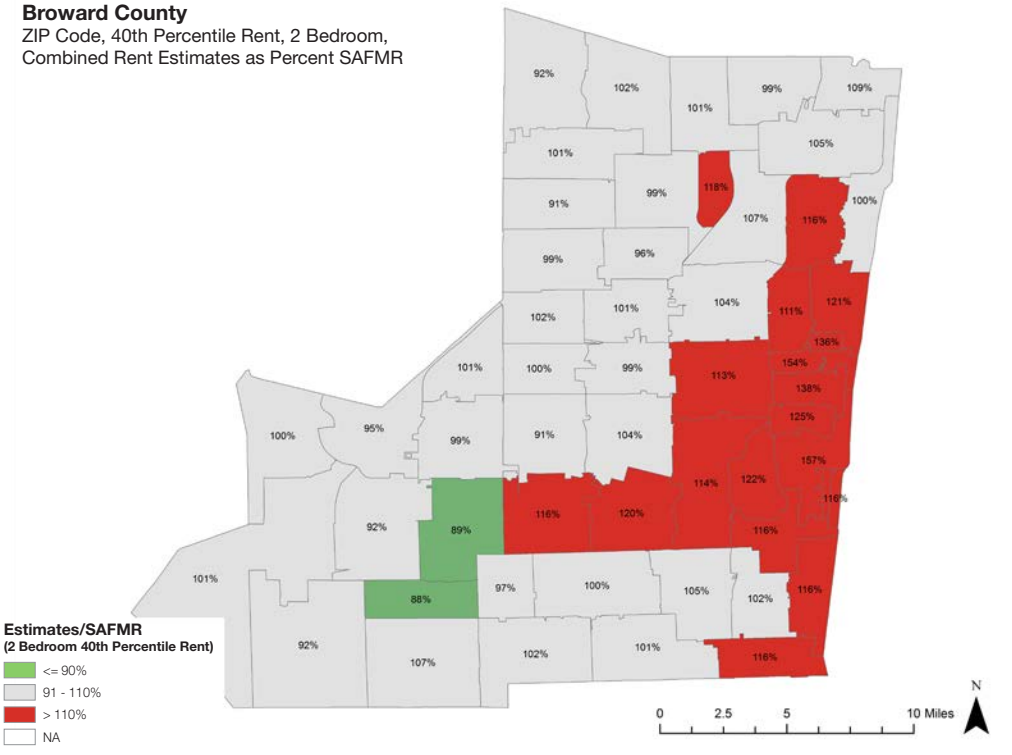
Share of ZIP Codes Above, Within, and Below the SAFMR Basic Range, by Number of Bedrooms

	Number of Bedrooms	Below 0.9	Within 0.9-1.1	Above 1.1
Broward Total ZIP Codes = 47	1	3.8%	56.6%	28.3%
	2	3.8%	56.6%	28.3%
	3	47.2%	34.0%	7.5%
	4+	17.0%	58.5%	13.2%
San Antonio Total ZIP Codes = 60	1	38.4%	37.0%	6.8%
	2	34.2%	38.4%	9.6%
	3	42.5%	32.9%	6.8%
	4+	42.5%	32.9%	6.8%
Seattle Total ZIP Codes = 26	1	19.4%	51.6%	12.9%
	2	6.5%	51.6%	25.8%
	3	29.0%	48.4%	6.5%
	4+	12.9%	51.6%	19.4%

Exhibits 5, 6, and 7 show the ratio of the combined rent estimates relative to the SAFMR for two-bedroom units in the ZIP Codes covering the study locations. Areas in which the combined rent estimates are outside the basic range of the SAFMR are highlighted. Spatial patterns emerge in areas in which the combined rent estimates differ substantially from the SAFMRs suggesting that some of the differences may be systematically associated with housing stock and resident characteristics. The next subsection reveals that areas with lower or higher estimates compared with SAFMRs share common characteristics.

Exhibit 5

Difference Between Combined Rent Estimates and SAFMRs in Broward County, Two-Bedroom 40th Percentile Rent

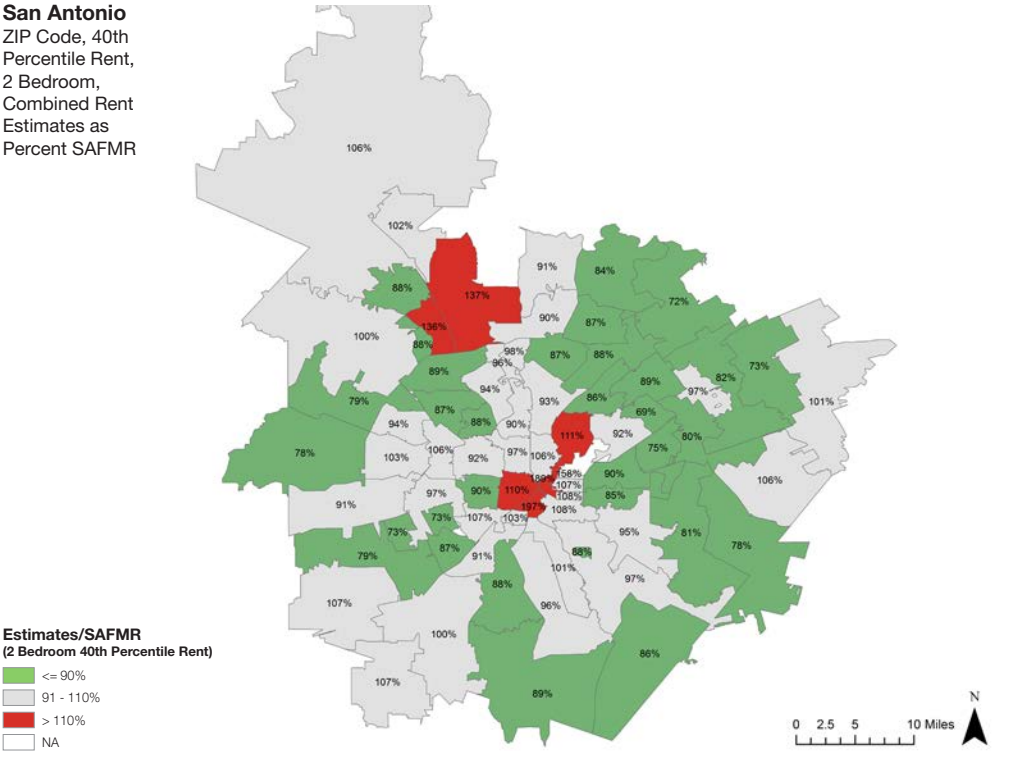


SAFMR = Small Area Fair Market Rent.

Exhibit 6

Difference Between Combined Rent Estimates and SAFMRs in San Antonio, Two-Bedroom 40th Percentile Rent

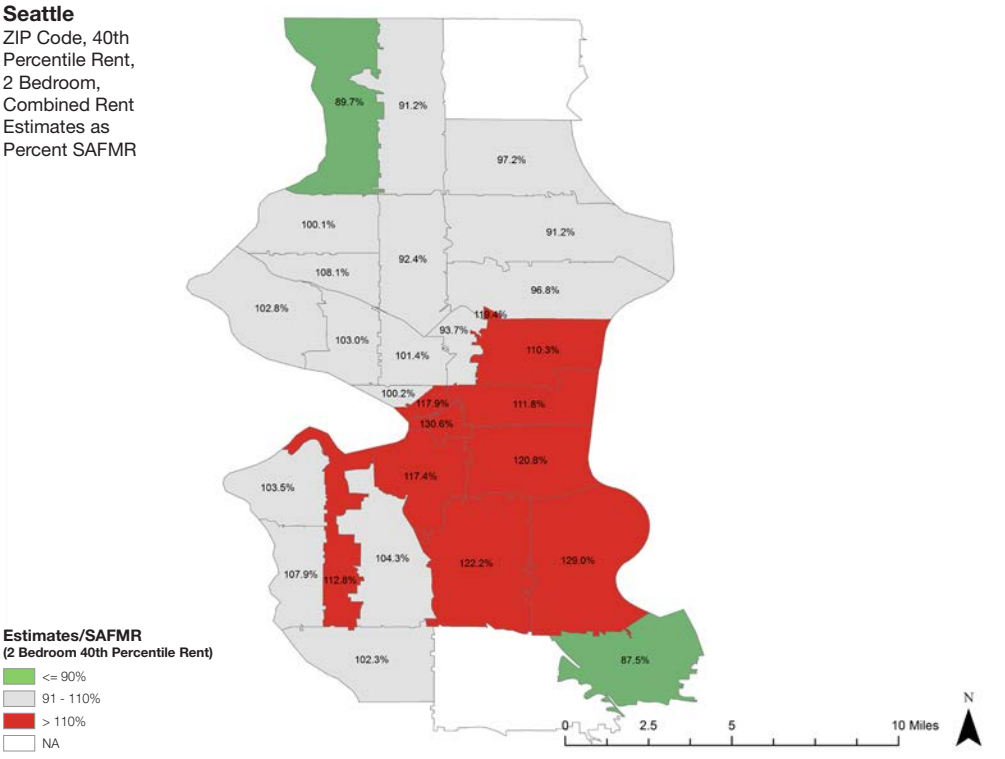
San Antonio
ZIP Code, 40th Percentile Rent, 2 Bedroom, Combined Rent Estimates as Percent SAFMR



SAFMR = Small Area Fair Market Rent.

Exhibit 7

Difference Between Combined Rent Estimates and SAFMRs in Seattle, Two-Bedroom 40th Percentile Rent



SAFMR = Small Area Fair Market Rent.

Characteristics of ZIP Codes Where SAFMRs and Combined Rent Estimates Differ

Exhibits 8 and 9 report differences in building stock and neighborhood characteristics where SAFMRs and the combined rent estimates differ. Exhibit 8 shows areas based on whether the estimated 40th percentile for two-bedroom units is below (dots), within (solid), or above (stripes) the basic range of the SAFMR. For ZIP Codes where the combined rent estimate is below the basic range, on average the combined rent estimates relative to those within the basic range are—$287 higher in Broward, $10 lower in San Antonio, and $406 lower in Seattle. The ZIP Codes where the combined rent estimate is above the basic range have higher rents on average and this observation holds across the three study locations—$103 higher in Broward, $487 higher in San Antonio, and $247 higher in Seattle.

Exhibit 8

Combined Rent Estimates for Two-Bedroom Units Below, Within, and Above the Basic Range

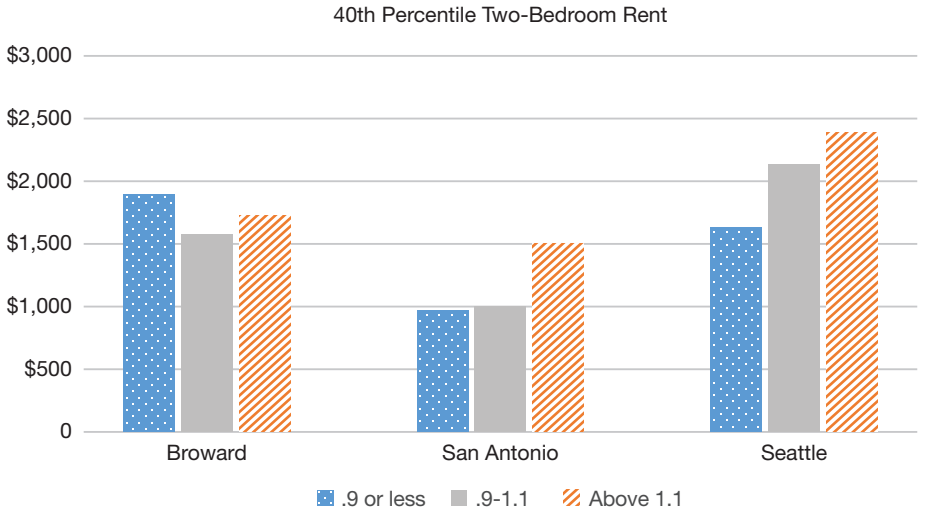


Exhibit 9 summarizes the neighborhood characteristics of ZIP Codes with combined estimates below, within, and above the basic range using ACS 5-year estimates for: poverty rate, homeownership rate, vacancy rate, share of multifamily units, and share of rental units built since 1990. The differences between the ZIP Codes that fall within each category are in the same direction across the three locations. In ZIP Codes that the combined rent estimate is above the basic range, there are higher poverty rates, vacancy rates, and share of multifamily buildings, with lower homeownership rates. The reverse relationship is found in ZIP Codes in which the combined rent estimate is below the basic range of the SAFMR. These findings suggest that the SAFMR is more likely to be underestimated compared with asking rents in neighborhoods with higher-vacancy rates and share of multifamily buildings. This outcome might be because multifamily buildings have higher turnovers and are therefore overrepresented in listings relative to their share of the housing stock. At the same time, the fact that the SAFMR is more likely to be above the combined rent estimate in areas with lower poverty rates and fewer rental options might support voucher recipients' access to these neighborhoods. Further work is needed to examine what might

explain these systematic differences between the combined rent estimate and the SAFMR. Some of the systematic differences could be driven by the adjustments made to produce the SAFMR estimates that, for example, exclude recent units, units lacking full kitchen and bathrooms, or that are below a certain rent level. The exclusion of these units is justified by regulations and policy goals but might explain why the SAFMR departs from other rental market measures.

We also looked at the relationship between the share of rental properties that were recently built (since 1990) and find that in the three locations the combined rent estimate is more likely to be above the SAFMR basic range in areas that have a higher share of recently built renter-occupied housing units. This outcome suggests that one of the contributors to the differences may be the fact that the SAFMR removes properties built within the last 2 years of the ACS to avoid including potential rent premiums associated with new construction. Further, Broward and San Antonio ZIP Codes where the combined rent estimate is below the SAFMR basic range also have a higher share of apartments built after 1990.

Discussion

The comparison of rental measures across three diverse housing markets—Broward, San Antonio, and Seattle—indicates SAFMRs broadly reflect local market conditions and HUD adjustments applied to the ACS data adjust point estimates closer towards asking rents. This study provides evidence of substantial differences across rent measures in terms of estimated levels and relative differences across ZIP Codes, however. Rent measures derived from asking rents on online platforms—Apartments.com, Craigslist, and Zillow—are generally more correlated to each other than compared with the SAFMRs or ACS data.

The combined rent estimates based on scraping and processing listings posted on Apartments.com and Craigslist are closely aligned with Zillow's rent estimates. The combined rent estimates have the benefit of providing a measure for every ZIP Code and can be produced for diverse geographies and time frames. When compared with the SAFMR, the combined rent estimates are below or above the basic range of the SAFMR in a substantial share of ZIP Codes. This finding suggests that housing authorities may face challenges in meeting the objectives of the SAFMR final rule without some form of local adjustments.

As an example, Broward County has a large share of ZIP Codes where the combined rent estimates are higher than the SAFMR. Many of these ZIP Codes are in areas that are opportunity rich in terms of accessibility to jobs and transit and score high in neighborhood quality.[10] If the Housing Authority of the City of Fort Lauderdale continues to base their payment standards on the SAFMRs in these particular ZIP Codes, the objectives of deconcentration and mobility to high-opportunity areas may be stifled because the payment standard is still too low for voucher holders to access these neighborhoods. The housing authority may need to consider an adjustment to the payment standard by providing evidence that the SAFMR is not keeping pace with rapidly increasing rents in these ZIP Codes. Seattle also has the same issue in a large number of ZIP Codes clustered in the southern half of the city whereas this issue is only prevalent in two distinct areas in San Antonio.

[10] See Walter, Evans, and Atherwood (2016) for the accessibility and neighborhood quality indices in Broward County.

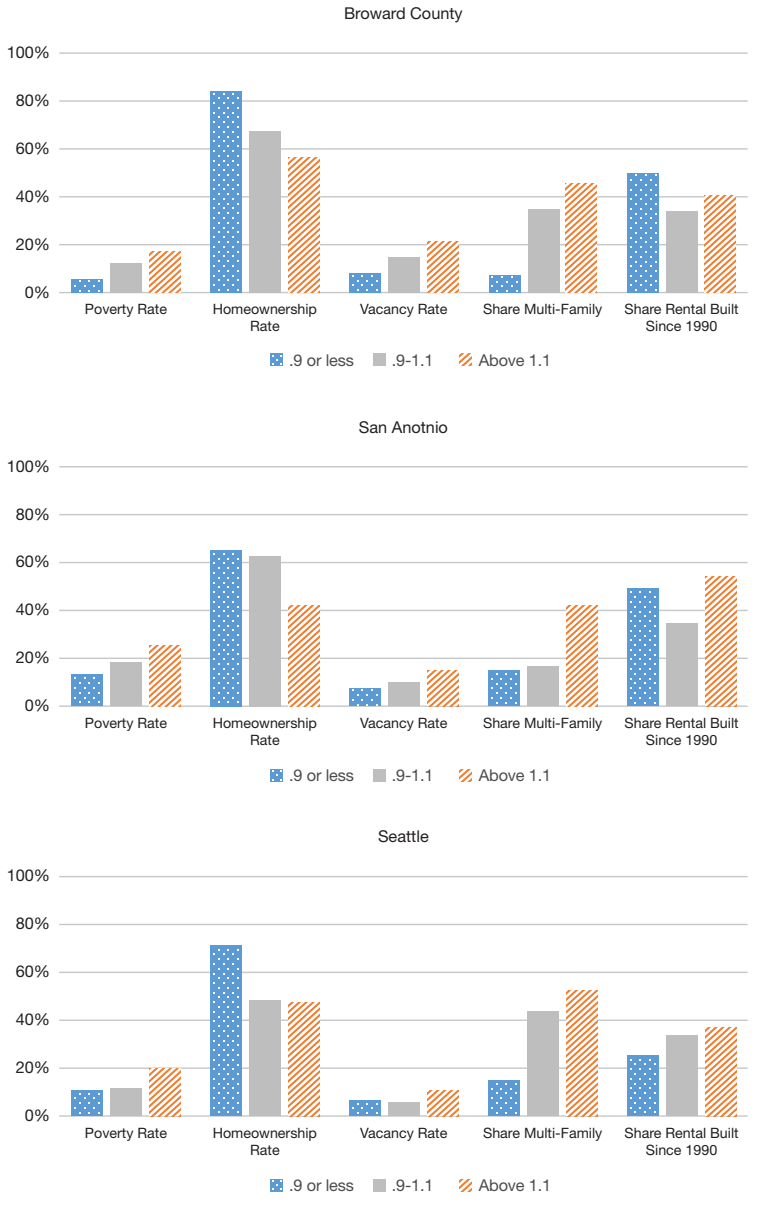
On the other hand, SAFMRs above the combined rent estimates present another potential problem for housing authorities. For example, the San Antonio Housing Authority has many ZIP Codes throughout the city where the combined rent estimates are substantially below the SAFMR. This situation is problematic for the San Antonio Housing Authority as an MTW agency because they must continue to serve the same number of households without additional funding for the voucher program. If the payment standard is set too high and overcharging is systematically occurring, the housing authority will not be able to continue to serve the same number of households while increasing payment standards in higher-opportunity, higher-cost areas. To balance the various goals of program implementation, which include maintaining the number of households served while minimizing any negative impacts to exiting voucher households in low-cost neighborhoods, the San Antonio Housing Authority has proposed the following in their 2020 Annual MTW Plan: (1) setting the payment standard schedule between 81 to 90 percent of SAFMRs to make sure the program is financially feasible; and (2) including a hold harmless and exception overlay policy. This policy protects existing voucher recipients from a payment standard reduction so they can stay in place if they so choose.

Further work is needed to understand why SAFMRs systematically differ from market conditions to guide adjustments to better align SAFMR estimates with local housing market conditions. Absent appropriate measures to make these adjustments, there is a risk that households will have difficulty accessing neighborhoods in which the combined rent estimates are substantially higher than the SAFMRs. Without adjustments, the stated goals of the SAFMR to deconcentrate voucher recipients and increase choice through the creation of localized rental estimates may be compromised. Conversely, as indicated by the San Antonio Housing Authority example, without careful consideration of local rental market data and setting payment standards solely based on SAFMRs, the financial feasibility of the program may be threatened. If not carefully monitored, payment standards based only on SAFMRs may result in a lower number of households being served by the voucher program.

The ability to monitor rental trends and have reliable estimates is essential for housing authorities using SAFMRs. This verification is particularly important in markets with high growth and in neighborhoods with rapidly changing conditions. Take, for example, the characteristics of ZIP Codes with combined rent estimates that are above the basic range of the SAFMR. These areas have a higher share of rental units in multifamily buildings, higher vacancy rates, and a higher share of apartments recently built. These characteristics are potentially contributing to mismeasurement and voucher recipients may have difficulty finding eligible units and successfully leasing in these neighborhoods if adjustments are not made. Therefore, it is vital for housing authorities to have access to and track local rental listing data in neighborhoods that are experiencing rapid growth. This monitoring will provide guidance for adjustments to payment standards that will better reflect the local market. ZIP Codes with combined rent estimates that are below the basic range of the SAFMR are just as important for housing authorities to monitor. Landlords may be able to extract higher rent from housing authorities than what is justified based on local market conditions. Biases in the underlying data sources that rental estimates are created from should be carefully considered to maximize the potential of using small area rental estimates to expand choice for voucher holders to access high-opportunity neighborhoods while maintaining the ability of housing authorities to continue to serve as many voucher households as possible.

Exhibit 9

Differences in Neighborhood Characteristics for ZIP Codes Below, Within, and Above the Basic Range



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