2016

The Small Area Fair Market Rent System in the Richmond Region: An Evaluation of Current Voucher Concentration, Move to Opportunity Counseling, and Value Capture Planning

Catherine L. Bray

Follow this and additional works at: https://scholarscompass.vcu.edu/etd
Part of the Urban Studies and Planning Commons

© The Author

Downloaded from https://scholarscompass.vcu.edu/etd/4283
Acknowledgement

First and foremost, I would like to thank all of the friends and family members who supported me during my postsecondary education, including John Downing, Joanne Livingston, every Bray, Callie Furlong, and Laura Ashworth. Additionally, I would like to thank Dr. Ivan Suen and April Ni’Mary for assistance with methodology and editing. Finally, I would like to thank Dr. Kathryn Howell for her insight, and for introducing me to the many ethical ambiguities of housing policy and the lasting effects of policy decisions on lives.
# Table of Contents

List of Figures ......................................................................................... v
Abstract .............................................................................................. vi

I. Introduction .................................................................................... 1

II. Literature Review

    2.1. The Policy Context ................................................................. 6
    2.2. Significance of Move to Opportunity Policy Planning ............ 8
    2.3. Value Capture Effects ............................................................ 15
    2.4. The Richmond Case ............................................................... 17

III. Methodology

    3.1. General Approach and Purpose ............................................. 21
    3.2. Data Collection ...................................................................... 23
    3.3. Spatial Data Analysis .............................................................. 25
    3.4. Selection of Metrics ............................................................... 26

IV. Results

    4.1. Introduction ........................................................................... 31
    4.2. Descriptive Statistics of Current Voucher Holder Location ....... 31
    4.3. Correlations and Regression Analysis ..................................... 41
    4.4. Value Capture ....................................................................... 47

V. Conclusions and Policy Implications

    5.1. Introduction ........................................................................... 51
    5.2. Summary of Results and Conclusions ................................... 51
    5.3. Relationship to Prior Research .............................................. 54
    5.4. Policy Implications ............................................................... 55
VI. Appendix A

6.1. Standard Regression Analysis .................................................................62

VII. Citations ........................................................................................................63

Vita..........................................................................................................................70
List of Figures

Figure 3.1. Logic Model ................................................................. 22
Table 3.2. Data Collection Table ....................................................... 24
Map 4.1. Map of Housing Choice Voucher Concentration .......................... 33
Graph 4.2.a. Distribution Housing Choice Vouchers by Jurisdiction .............. 34
Graph 4.2.b. Graph of Voucher Holders in Urban and Suburban Jurisdictions ........ 34
Map 4.3. Map of Degree of Housing Choice Voucher Concentration ................. 35
Graph 4.4. Graph of Housing Choice Voucher Use and Race ........................ 36
Map 4.5. Map of Housing Choice Voucher Concentration and Race ................... 37
Map 4.6. Map of Housing Choice Voucher Concentration and Poverty .............. 38
Map 4.7. Map of Housing Choice Voucher Concentration and Low Income Areas ...... 40
Graph 4.8. Graph of Housing Choice Voucher Concentration, Race, and Income ... 41
Table 4.9. Housing Choice Voucher Holder Socioeconomic Data Table .............. 42
Map 4.10. Map of Housing Choice Voucher Holder and Transit Accessibility ........... 43
Table 4.11. Pearson’s Correlations .................................................. 44
Table 4.12. Correlation Coefficients and Model Summary .......................... 45
Table 4.13. Table of Variables Enetered/Removed ................................... 45
Map 4.13. Map of Housing Choice Voucher Holders and Value Capture ............. 48
Graph 4.14. Distribution of Vouchers in Deciles of Cost Change ..................... 49
Map 4.15. Potential New Vouchers .................................................. 50
Table 6.1. Standard Regression Analysis............................................. 62
Abstract

THE SMALL AREA FAIR MARKET RENT SYSTEM IN THE RICHMOND REGION: AN EVALUATION OF CURRENT VOUCHER CONCENTRATION, MOVE TO OPPORTUNITY COUNSELING, AND VALUE CAPTURE PLANNING

By Catherine L. Bray, M.S.W., M.U.R.P. Candidate

A thesis submitted in partial fulfillment of the requirements of the degree of Master of Urban and Regional Planning at Virginia Commonwealth University.

Virginia Commonwealth University, 2016
Major Director: Kathryn Howell

In June of 2015, the U.S. Department of Housing and Urban Development released an Advance Notice of Proposed Rulemaking to establish a more effective Fair Market Rent System using Small Area Fair Market Rents (SAFMRs) in the Housing Choice Voucher Program (HCVP) instead of the current 50th Percentile FMRs. The 50th Percentile FMR is currently in use in the Richmond, Virginia region, and the region is likely to be among early adopters of the new SAFMR System. This thesis assesses existing conditions that will affect implementation of the Small Area Fair Market Rent (SAFMR) System. First, it evaluates where voucher holders have located and concentrated with limited mobility counseling and without the SAFMR System intervention. Second, this evaluation assesses the theory of opportunity and targeting metrics currently in use by the local Move to Opportunity Program administered in the region, because the SAFMR System has a stated objective to enable voucher holders to de-concentrate from low opportunity areas. Finally, this evaluation assesses the SAFMR System’s potential for value capture, estimating total savings and a discrete number of potential new vouchers that may be created with those savings. This research attempts to answer these dimensions of SAFMR System implementation by evaluating key characteristics of current voucher holder concentration in the metropolitan region.
Chapter I: Introduction

A growing body of evidence indicates that zip code is a more powerful predictor of health than genetic code, compelling scrutiny of the effects of segregation on health. Virginia Commonwealth University’s Center on Society and Health illustrates the extreme discrepancy in health outcomes in the city’s East and West Ends. Life expectancy, which reflects mortality from all causes, is 63 years of age in Gilpin Court in the East End, on par with Haiti, the Sudan, and parts of Central America. Less than five miles from Gilpin Court in the West End of Richmond, life expectancy is 83 (Center on Society and Health, 2015).

This disparity among communities is one of many measures drawing attention to the impacts of segregation here and elsewhere in the US. Race and income are linked to disproportionate vulnerability caused by exposure to environmental stressors and toxins, crime and violence, poor neighborhood resources, access to job opportunity, and limited health care access (Defur, Evens, Cohen-Hubal, Kyle, Morello-Frosch, & Williams, 2007; Sampson, 2008).

The need to change the geography of access to opportunity and exposure to risk has shifted from an ideal to a component of regulatory compliance in national housing policy. Efforts include planning to improve the ability of the Housing Choice Voucher Program to assist moves to integrated neighborhoods.

Local, state, and federal agencies are now working to bend mainstream funding to address the serious challenges facing areas of concentrated disadvantage while promoting moves to safe neighborhoods with strong public service systems. Promoted as a valuable implement for accomplishing mobility objectives, the Housing Choice Voucher Program (HCVP) had limited success assisting moves to desegregated, mixed-income communities (Metzger, 2015).
Established in 1974 and formerly known as Section 8, HCVP is the largest housing assistance program administered by the US Department of Housing and Urban Development (Office of the Assistant Secretary for Policy Development and Research, HUD, 2015). HCVP provided housing for 1,700,000 families nationally in 2012 (Schwartz, 2013). HCVP is growing as the stock of public housing in the U.S. ages, and the program has gained popularity as an option for providing scattered-site subsidies in lieu of concentrated public housing (Katz, 2004; Briggs, Popkin, & Goering, 2010).

HUD provides vouchers that are arbitrarily priced to the regional median rental unit cost, which simultaneously overvalues units in low-cost neighborhoods and limits access to high-cost neighborhoods. The use of a single voucher price set to regional Fair Market Rent has been identified as a significant contributor to poor locational outcomes of HCV households (Collinson and Ganong, 2015; Fischer, 2015; Sard & Rice, 2015). Recent economics research indicates that the policy compels price discrimination, which occurs when landlords are motivated to accept vouchers for rental units with a lower market value than the voucher amount (Collinson and Ganong, 2015; Bayer, Casey, Ferreira, & Mcmillan, 2013). This incentive increases the probability that vouchers will be used in segregated and low-income communities. At the same time, HCV holders have been prevented them from entering higher-cost communities because the amount of the stipend amount is lower than the cost of available rental housing (Collinson and Ganong, 2013).

The Small Area Fair Market Rent (SAFMR) System was developed as a response to limitations of the regional voucher price set using Fair Market Rent, the metropolitan median rental price. Developed in response to fair housing litigation in Dallas, Texas, it is foremost intended as a legal remedy for segregation and concentration of voucher holders (Fischer, 2015).
The policy aims to eliminate a critical flaw in the Fair Market Rent (FMR) system that prevents Housing Choice Voucher (HCV) holders from locating housing in neighborhoods where rental prices exceed the regional median, providing access to only lower cost units that are likely to be located in poorer and less integrated neighborhoods. The SAFMR System, a neighborhood-based subsidy capping policy, has been suggested in a larger group of localities to achieve mobility outcomes based on the SAFMR System’s effectiveness in Dallas.

The primary purpose of the SAFMR System is to guide reduced concentration of vouchers in areas of extreme disadvantage where the program has had its most serious adverse effects. Through the proposed amendment to FMR policy, Public Housing Authorities now have the option to modify HCV prices according to zip code level characteristics using the SAFMR System (24 CFR Part 888). Zip code level rental prices reflect local variation in the quality of the housing as well as the public service system. This varies from the regional cost ceiling implemented historically, which set costs to the fiftieth percentile of FMR for the entire metropolitan area (24 CFR Part 888). The SAFMR System applies a percent increase or decrease to the regional rental price standard currently in use by HUD to more closely match the value of the voucher to quality of units in a neighborhood. The SAFMR System is a targeted modification intended to be implemented first in regions where housing options have historically been limited and concentration of voucher holders is high (24 CFR Part 888).

The SAFMR System has potential to achieve mobility impacts while maintaining options for those who wish to remain in low-income neighborhoods where stabilization through community development is in progress. The majority of movers evaluated in SAFMR System demonstration regions remained in areas targeted for HCV rental cost decrease, resulting in savings, referred to in this discussion as value capture. The Richmond metropolitan area is a
priority region for cost modification planning because, through the 50th Percentile Program, Richmond Redevelopment and Housing Authority (RRHA) administers high-cost vouchers linked to price discrimination and increased concentration in lowest quality neighborhoods (Collinson & Ganong, 2015). Richmond Redevelopment and Housing Authority is in line to be among the early adopters of the SAFMR System.

The largest past HCVP program with a strictly mobility focus, Move to Opportunity (MTO), promoted moves to distant low-poverty neighborhoods. The results of a large national MTO demonstration program were mixed, and participation rates were lower than expected (Clampet-Lundquist & Massey, 2008). The SAFMR System has more flexibility based on HCV holder preference and the availability of affordable housing. The SAFMR System will improve access to housing by providing some proportion of vouchers that serve the program’s MTO or mobility imperative and some that have a value capture impact, assisting HCV holders in greatest need at the lowest possible cost (Fischer, 2015). The design of the SAFMR System defies the traditional separation between community revitalization and resident mobility by accommodating both outcomes.

The SAFMR System offers a sharpened policy tool to reduce costs and improve access to opportunity, though as in all cities, outcomes will be dependent on the relationship among HCV holder preference, proposed price changes, transit, and housing access challenges. The SAFMR System generates choices for HCV holders, and cost savings can be used to expand options for program enrollment for the unserved low-income population and improved neighborhood choices for HCV holders. By beginning a careful implementation process to expand on existing strengths of the voucher program and navigate the limitations of the SAFMR System, Richmond Regional collaborators may more effectively serve its low-income population.
This evaluation aims to assess existing conditions that will affect implementation of the SAFMR System. First, this evaluation assesses where voucher holders have located with limited mobility counseling and without the SAFMR System intervention. Second, because the SAFMR System has a stated MTO objective that will rely on existing capacity of mobility counseling programs, this evaluation assesses the theory of opportunity currently in use by the local MTO Program administered in the region. Finally, this evaluation assesses the SAFMR System’s potential for value capture, estimating total savings and a discrete number of potential new vouchers that may be created with those savings. This research attempts to answer these dimensions of SAFMR System implementation by evaluating key characteristics of voucher holder concentration in the metropolitan region.
Chapter II: Literature Review

The review of the literature will discuss a policy context on the HCV program, including an evaluation of the changing regulatory environment. This offers critical support for the theoretical frameworks of the policy, including MTO planning and value capture. This will provide an overview of Richmond, Virginia, evaluating current HCV concentration in poor quality neighborhoods.

2.1. The Policy Context

Policymaking now aims to reduce federal expenditures for vouchers in poor and segregated neighborhoods, at the same time increasing access to high opportunity areas. In July 2015, HUD announced its intention to amend its FMR policy through the SAFMR System (24 CFR Part 888). HCVP opens the private rental market to voucher holders and may be applied to any unit that accepts vouchers and fulfills the requirements of the Rent Reasonableness Application process (24 CFR Part 888). The value of housing is best described as the quality of the rental unit plus the value of its amenities and public service system (Collinson & Ganong, 2016). Narrowly defined by the CFR, amenities and the public service system includes: jobs, transportation, education opportunities, and other services, but may be more broadly operationalized to include safety (24 CFR Part 888). The voucher program previously assumed this rental value could be set on a regional level, but variation in quality of the public service system is so extreme that a single rental price ceiling simultaneously over-values many units in segregated, poor, and often dangerous areas and blocks access to rental units in higher cost zip codes (Collinson and Ganong, 2016).

Fiftieth Percentile System. The Richmond Region currently administers the 50th Percentile FMR System, which is a voucher price increase designed to improve access to better
neighborhoods, but it has not produced the outcomes originally intended (24 CFR 888.113(c); Collinson and Ganong, 2015; Metzger, 2015). For a region to qualify for the program, the concentration of voucher holders must be indicated: 25 percent or more of voucher program participants in the region must be located in the 5 percent of census tracts (24 CFR 888.113(c)). These regions are currently using the 50th Percentile FMR, which is an across-the-board price increase linked in research to price discrimination, a form of steering (Collinson and Ganong, 2015). The program was designed to ensure that voucher holders can find suitable housing where difficult market conditions limit access to affordable housing (24 CFR 888.113(c)). Evaluations of the same program implemented elsewhere have evidenced a failure to match cost to neighborhood quality, resulting in payments that are higher than comparable local rents (Collinson & Ganong, 2015). The 50th Percentile FMR has been called simultaneously too generous in terms of per voucher payments and too stingy in terms of overall program enrollment (Olsen, 2012; Collinson & Ganong, 2015).

**Price Discrimination and HCV.** Recent public economics research from the Harvard Joint Center for Housing Studies emphasizes price discrimination, an area of evaluation previously missing from the literature (Collinson & Ganong, 2015). Price discrimination is caused when the voucher amount exceeds the value of low-quality housing units, increasing the probability that low-income individuals will rent these units. Historically, overvaluation of vouchers has benefited property owners in the form cash gains, not recipients in the form of rental unit quality. This is an income effect for landlords, and benefits of the program have not accrued to voucher holders in the form of improved housing and neighborhood quality, a substitution effect. Collinson and Ganong (2015) have provided an empirical foundation for voucher program change by quantifying the negative effects of the 50th Percentile FMR, which
is an arbitrary price that fails to account for the broad regional variation in neighborhood quality. This was determined through pre- and post-intervention evaluations of same-address voucher use (Collinson and Ganong, 2013).

**SAFMR Program Design.** SAFMR modifications have been particularly useful in demonstration programs in regions similar to Richmond, Virginia with extreme variations in neighborhood quality on the zip code level. SAFMR rental costs vary among zip codes, and they can go as high as 165 percent of the 40th percentile of the regional FMR, using 110 percent payment standard authority when the SAFMR is at 150 percent of the metropolitan area rent (24 CFR part 888). The voucher cost amount is available to all HCV holders, who may better evaluate the value of units and their service systems using zip code-specific pricing (Rosenblatt & Deluca, 2012). Higher voucher cost in a zip code suggests higher quality units and neighborhoods for HCV holders seeking housing (Collinson & Ganong, 2015). The SAFMR System achieves its impact through balanced price modifications that are neutral to the voucher program budget. The rental price increases in high-quality submarkets are paired with decreases in low-quality submarkets. The SAFMR System has no net cost to the federal government. In demonstration cities like Dallas and Houston, these targeted subsidy price increases have been found to significantly increase the total number of moves to better neighborhoods (Collinson and Ganong, 2015). The SAFMR System has the potential to decrease average voucher costs, increasing the total number of vouchers available to serve more people (Fischer, 2015).

**2.2. Significance of the Move to Opportunity Policy Concept**

Because the SAFMR System has been promoted in the CFR as a plan to improve access to opportunity, it is critical to evaluate the assumption that better outcomes for voucher holders are achieved by assisting moves to better neighborhoods. Two large past programs have
compelled public interest in relying on the MTO model to assist both racial and economic integration. The design of these programs was based either solely on race-based designation or poverty-based designation of destination neighborhoods. The first is the Gautreaux intervention implemented in Chicago, which promoted integration of voucher recipients based on race. Evaluation of this program does not appear as frequently in the literature because of its date of implementation and its limited experimental controls. The second is the MTO Program, which was a large randomized national housing mobility experiment sponsored by HUD in five participating cities (Baltimore, Boston, Chicago, Los Angeles, and New York). Starting in 1994, MTO provided 4,600 low-income families with children living in public housing vouchers to move to neighborhoods with a poverty rate lower than 10 percent (Clampet-Lundquist & Massey, 2008). Interpretations of the national MTO Program’s outcomes vary vastly based on method of analysis, program and cohort variations, and the outcome evaluated (Metzger, 2014; Sampson, 2008). Nuanced understanding of the MTO program’s potential benefits as they relate to the similarly designed but independent local MTO program design will guide implementation planning for the SAFMR System.

The body of literature points to a very complex set of mechanisms that create and maintain poverty, and neighborhood effects cannot independently predict life outcomes. Segregation occurs in conjunction with racist attitudes, individual behaviors, and institutional practices to form a pervasive, defective cultural environment (Massey & Denton, 1998). Racial economic hierarchies seem to persist regardless of where individuals choose to live and long-term income effects for beneficiaries moving in childhood are small (Sampson, 2008; Chetty, Hendren, Kline, and Saez, 2014; Popkin, Rosenbaum, & Meaden, 1993). It is critical to note that MTO families did not experience adult economic gains or educational gains for children.
Large-scale evaluation of the MTO Program by Chetty et al. (2014) suggests that residence in low-poverty suburban neighborhoods has a linear developmental exposure effect on children, and increased lifetime income effects are correlated with the child’s age at the time of move, though the overall income effect is small. Age at time of move is critical, and moving at a young age is correlated with higher lifelong earnings and is related to significantly lower graduation rates among teenagers (Chetty et al., 2014; Metzger, Fowler, Anderson, & Lindsay, 2015). Research on effects related to school achievement measured in decreased graduation rates and age at the time of move suggest that moving is an extremely disruptive life event for adolescents (Metzger et al, 2015). While economic benefits for adults overall have been limited (Ludwig et al., 2008; Kling et al., 2007), women spent less time on welfare (Mendenhall, Deluca, & Duncan, 2006).

**Mobility and Health.** Health and safety outcomes are among the best indicators of past MTO success. This suggests that the burdens of living poor neighborhoods, defined as negative externalities, are in fact a core part of the housing good. The assessment of the healthy environment has a critical social meaning that is ideally set apart from other housing goods and amenities (Walzer, 1983). This includes exposure to violence and threats of violence, housing stock and indoor air quality, environmental factors, and access to food and healthcare.

Investigators have suggested that the MTO program may be better termed “Move to Security” (Varady, Desouza, Briggs, Popkin, and Goering, 2011). HCV holders are often moving away from violence and threats of violence. Safety is a strong motivator for movers, when heads of household were asked to identify the most critical reason for moving, three of four said they wanted to move children away from gangs and drugs (Kling, Liebman, and Katz, 2007; Sampson & Sharkey, 2008; Sampson & Raudenbush, 1997). Movers often reported
reduction in fear of attack (Rosenbaum, Reynolds, & Deluca, 2011). Positive mental health and safety outcomes are strong for relocating adults (Ludwig, Kling, Katz, Sanbonmatsu, Liebman, Duncan, & Kessler, 2008; Kling et al., 2007; Clampet-Lundquist & Massey, 2008; Kling, Liebman, & Katz, 2007). Adults who moved with MTO vouchers had much lower rates of diabetes and extreme obesity (Ludwig et al., 2011).

Desegregation may decrease vulnerability of individual HCV holders by limiting exposure to a broad range of environmental stressors that cause poor health outcomes, and MTO also potentially serves a “Move to Wellbeing” imperative. Differences in environmental exposures likely play an important, though poorly understood, role in the origins and persistence of health disparities by race and socioeconomic status (SES) (deFur, Evans, Hubal, Kyle, Morello-Frosch, Williams, 2007). A growing literature shows that exposures to environmental hazards frequently differ by race and SES, including estimates of proximity to emissions (deFur et al., 2007). Several studies have related the level of segregation to rates of morbidity and mortality (Collins and Williams 1999; Fang et al. 1998; Guest et al. 1998; Polednak 1993; LaVeist 1989, 1992,1993; Polednak 1991 ctd. deFur et al., 2007). The evidence suggests a pattern of disproportionate exposures to environmental risks among communities of color and the poor, with racial differences persisting across economic strata (deFur et al., 2007).

HCV holders are more likely to rent units in communities affected by a broad spectrum of environmental hazards with limited enforcement of environmental regulations, and they are less able to use their vouchers to move when children experience morbidities linked to environmental degradation. Unit inspection required by the Rent Reasonableness evaluation process for HCVP does not set a high standard for environmental protection and hazard mitigation, in large part because additional government oversight represents a risk for property
owners that could disincentivize landlords currently accepting vouchers (Paulose, 2015). Additionally, baseline health problems in children decreased the likelihood that families would be able to use voucher to move to low-poverty neighborhoods. A child health problem predicted nearly 40 percent lower odds of complying with MTO conditions, indicating that families with healthy children are more likely to take advantage of MTO interventions (Arcaya et al., 2015).

**Integration.** HCV holders live in areas that are significantly more segregated than renters with around the same monthly income who do not receive a voucher (Metzger, 2014). Only 47 percent of recipients using MTO vouchers actually relocated to low-poverty, integrated neighborhoods (Clampet-Lundquist & Massey, 2008). Past evaluation of MTO revealed that black families tend to flow within areas of concentrated disadvantage, and preference to remain in similar neighborhoods produced limited outcomes (Sampson and Sharkey, 2008). Intended effects of SAFMR related to integration and MTO may similarly be limited by HCV holder choice. Regardless of the success of mobility programs as a federal antipoverty program, a local MTO program has value on its face as an implement for enforcing fair housing laws, and MTO has been upheld by the Supreme Court as a desegregation intervention (Cunningham et al., 2010). The development of the SAFMR System is among recent steps taken by the court to recognize and enforce the right of all people of color who seek federally-funded housing assistance be granted the opportunity to receive assistance in a non-segregated environment (Julian & McCain, 2009).

**Housing Choice Voucher Concentration in Suburbs.** HCV recipients are more likely than the overall population and the poor to live in low-income suburbs with limited access to jobs (Covington, Freeman, & Stoll, 2011; Raphael & Stoll, 2010; Varady et al., 2011). HCV holders have suburbanized since the 1990s as a result of mobility counseling programs.
However, many voucher holders remain in low-quality suburban neighborhoods (Covington, Freeman, & Stoll, 2011; Kneebone & Garr, 2010). These areas are less likely to have an adequate employment density, leading to spatial mismatch between HCV holders and jobs (Covington, 2009). Inner-ring black neighborhoods that are not affected by concentrated poverty also tend to be located in or near areas of concentrated deprivation and often share common service catchment areas (Sampson, Morenoff, and Earls 1999; Sampson, Morenoff, & Gannon-Rowley, 2002). The suburbs adjacent to the urban core now face many of the same challenges affecting cities (Kneebone and Berube, 2015; Lee & Leigh, 2007). City/suburban placement is also not as important for employment outcomes as avoiding neighborhoods with a high degree of racial segregation and few resources Mendenhall, R., Deluca, S., & Duncan, G. (2006). Displacement into pockets of concentrated disadvantage in peripheral counties adjacent to the urban core will not achieve the mobility objectives related to poverty intended by the SAFMR System.

Housing Choice Voucher holders have suburbanized more slowly than other low-income individuals, which may be related to reliance on public transit systems that do not effectively connect cities and suburban neighborhoods (Covington, Freeman, & Stoll, 2011; Tomer, Kneebone, Puentes, & Berube, 2015). Families who did move using MTO experimental vouchers were less likely to lease units in low-poverty neighborhoods if they had car access (Pendall et al., 2013). Connecting HCV holders to housing in the suburban periphery will result in the greatest gains in housing quality, but this requires transportation access (Collinson & Ganong, 2015; Sampson & Sharkey, 2008; Pendall et al., 2013). Roughly 15 percent of mothers interviewed by Varady, Briggs, Popkin, and Goering (2011) identified sacrificing access to public transit as the cost they paid to live in safe neighborhoods.
Defining Destination Neighborhoods for MTO Counseling. What makes a “high-opportunity” areas is still debated, but thresholds for neighborhood characteristics linked to lifelong outcomes are employed by counseling programs like Dallas Inclusive Communities Project to produce an exposure or treatment effect. This is a particularly critical component of this evaluation, as it is assumes that the SAFMR System will rely on a scaled MTO counseling program (Metzger, 2015; Saard & Rice, 2015; Fischer, 2015). Goetz and Chapple (2010) identify a potential theory failure associated with MTO, or dispersal, policy. Its assumption is that high concentrations of poverty result in community decline and poor socio-economic outcomes for individuals. Though there is a significant body of evidence that neighborhood context affects exposure to poverty, it is unclear which factors matter most to individual health and income outcomes and which could improve individual outcomes most effectively (Ellen and Turner 1997; Teitz and Chapple 1998; Galster 2007; Galster, 2012). It is also unclear if poverty is the factor most strongly correlated with HCV concentration.

To assist housing search, mobility counseling programs highlight areas of opportunity where rental housing is available. Chetty et al. (2010) identified high opportunity areas with potential to inform mobility decisions. The common factors identified are commuting zones that have the following: less residential segregation, less income inequality, better primary schools, greater social capital, and greater family stability (Chetty et al. 2015). Factors identified by Chetty et al. coincide with Collinson and Ganong’s Neighborhood Quality Index used to evaluate efficacy of the SAFMR policy, and include test scores at zoned schools and violent crime rate. Collinson and Ganong (2015) note that zip-level moves should be informed by data on opportunity in addition to zip-level rents.
MTO counseling programs typically rely on thresholds or cut-off points instead of quality indices to assist moves to opportunity. Single statistic thresholds for census tracts based on percent black residents or percent Low-Income residents are often employed (Cunningham, Scott, Narducci, Hall, and Stanczyk, 2010). Researchers found that monitoring neighborhoods approaching thresholds for both race and poverty using cost-effective data will assist mobility counseling (Clampet-Lundquist & Massey, 2008).

Cunningham et al. (2010) in association with the Brooking’s Institution and Harvard University’s Joint Center for Housing Studies state that poverty thresholds alone are not adequate. A significant body of literature suggests that poverty rate is far too low and fails to fully account for family needs, suggesting that a supplementary measure such as AMI may be a better metric for evaluating low-income communities (Engelhardt & Skinner, 2013; Johnson & Smeeding, 2012; NYC Center for Economic Opportunity, 2011). No standard threshold has been established by HUD, and demonstration programs have implemented various standards based on guidance from the literature and local conditions. The best practices evaluation by Cunningham et al. (2010) suggests that HUD and local administrators define neighborhood quality based on poverty rate, share of minority households, quality of school, and crime rate.

**High Mobility Counseling Demand.** The regular operation of HCVP varies from the Gautreaux Assisted Housing Mobility Program and the MTO Fair Housing Demonstration, both of which relied on counseling interventions to achieve outcomes. Counseling has been a focal area of federal voucher administration planning since the Clinton administration. However, *HCVP counseling typically has low capacity and is not a priority activity* (Schwartz, 2013). Mobility Counseling Assistance is labor intensive, and has six components: pre-move counseling, housing search assistance, landlord outreach, moving financial assistance, post-move
counseling, and subsequent move assistance (Cunningham et al., 2010). In SAFMR demonstration regions, mobility counseling programs greatly improved neighborhood quality for HCV holders (Collinson & Ganong, 2015). The SAFMR System offers some useful geographic information for voucher holders evaluating rental options, but price information alone will not lead individuals to move to higher quality submarkets and direct counseling remains necessary (Covington, Freeman, & Stoll, 2011).

2.3. Value Capture Effects

Given current program constraints, the greatest value of the SAFMR System may be a combination of small but significant moves to opportunity and value capture. Examination of the MTO program showed that, if the model were used on a larger scale, there may not be enough housing in high-cost neighborhoods to support the objectives of the program (McClure, 2010). HCVP has not been found to result in significant migration out of high-poverty neighborhoods into low-poverty neighborhoods (McClure, Schwartz, & Tagavi, 2015). Because most voucher holders live in zip codes with a SAFMR well below the metro average, vouchers are often used in low-rent, high poverty neighborhoods (Fischer, 2015; Collinson and Gangong, 2015). In the Dallas SAFMR demonstration program, average voucher costs have fallen by about 5 percent, and the Center on Budget and Policy Priorities estimates that HCV costs would decline by about 6 percent if the program were implemented nationally (Fischer, 2015).

This program assists voucher holders remaining in improving neighborhoods where rents may rise as a result of community development investment (Sard & Rice, 2016). Though it may be used in tandem with a scaled-up MTO program, SAFMR also discourages overspending on vouchers, and savings may be redirected to increase the total number of vouchers available (Collinson and Ganong, 2015; Olsen, 2008). The city offers locational advantages in terms of
existing relational networks, social service availability, and transportation access for households without a vehicle (Rosenblatt and Deluca, 2012). As rents increase in neighborhoods as a result of community development investment, the SAFMR System enables voucher price increases that can prevent displacement of HCV households from improving neighborhoods (Fischer, 2015). Its potential to mitigate the displacement effect of gentrification on HCV holders is an added strength of the program.

The SAFMR System has the potential to increase the number of subsidized housing units in low-cost, low-income neighborhoods that are currently targets for community development investment through programs such as Low Income Housing Tax Credits, Community Development Block Grants, and Tax Increment Financing (Collinson and Ganong, 2015; Kling et al., 2007; Malpezzi, 2003). Some critical discussion of the HCV program omits its clearest limitation: demand for vouchers outstrips their supply (Olsen, 2008). Vouchers are available to a small group of HCV holders while the gross majority of identical poor household remain unassisted (Olsen, 2008; Collinson & Ganong, 2015). The HCV program is not scaled to need because of serious resource limitations.

HCV holders tend to be aggregated in high poverty census tract targeted for cost decreases, and proposed SAFMR System modifications will lead to value capture in these areas that may be redirected into program budget in the form of new vouchers (Collinson & Ganong, 2015). The MTO program was not paired with price decreases in areas of concentrated disadvantage. The SAFMR System is a novel plan to match quality to price, blending both mobility and community revitalization planning objectives.

2.4. The Richmond Case
Concentration. In 2013, RRHA served 3,000 families through its Housing Choice Voucher Programs (HOME, 2013). Ninety-three percent of residents were classified as extremely-low income, and 74% of families earn less than $10,000 per year (Koziol & MacKenzie, 2013). Both national and citywide evaluation of the HCVP, which includes both 40th and 50th Percentile FMR, has revealed concentration of recipients in economically and racially segregated neighborhoods (Metzger, 2014; Metger & Pelletiere, 2015; Collinson & Ganong, 2015; Koziol & MacKenzie, 2014). Voucher holders tend to live in low quality neighborhoods in the Richmond Region (Koziol & MacKenzie, 2013). The racial /ethnic composition of all RRHA recipients in 2012 suggests significant effect of targeting: 98% of tenants are black, 2% are white, and 1% are Hispanic (Koziol and MacKenzie, 2013). These HCV holders are most strongly affected by price discrimination compelled by RRHA’s use of the 50th Percentile Fair Market Rent System. Because the vast majority of recipients are black, problems with program design is a disparate impacts concern (Collinson & Ganong, 2015).

Minority populations in the City of Richmond are moving from urban areas of low opportunity to similarly poor neighborhoods in inner ring suburbs, where poverty rates have increased dramatically in the last thirty years (HOME, 2012). The total number of people living in poverty in surrounding counties exceeds the total in the City of Richmond (HOME, 2012). Demand forecasts for the region predict housing supply limitations in Henrico and Chesterfield, which will limit access to the suburban periphery (Sturtevant, 2013).

In a national review of the one hundred largest metropolitan areas, the Richmond region ranked in the bottom decile for its share of working-age residents with access to transit (Tomer et al., 2011). The limited number of transit-accessible jobs in the Richmond region will necessarily limit the number of opportunity areas accessible to HCV holders relying on bus service to work.
The need to maintain a vehicle adds to the cost of living that HCV households must assume independently.

**Mobility counseling.** Mobility counseling based on MTO program design is intended to address the desegregation imperative of fair housing regulation. In Richmond, the novelty and size restrictions of the local MTO program operated by HOME may generate concerns regarding equal access to information for HCV holders without counseling. The local MTO program also relies on a single threshold measure, poverty, which Cunningham et al. (2010) suggest is incomplete. This group of researchers in addition to Collinson and Ganong (2015) suggest multivariate thresholds for evaluating opportunity in a region.

**Value Capture.** It is important to note that the SAFMR system has potential to decrease spending on Housing Choice Vouchers, which can be directed to expand the total number of vouchers available to the large unserved population in the region. In January of 2015, there were 730 homeless adults and 88 homeless children counted in the Richmond Region (Ackermann, 2015). Most compelling is unmet demand expressed as applications to the voucher program. On April 20, 2015, RRHA opened its voucher program waiting list for the first time since 2003. During a one-week period, the agency received applications from 24,000 eligible households for 750 available vouchers (Griego, 2015). The waiting list for HVCP is currently closed.

**Contribution to the Literature.** This evaluation is intended as an analysis of a single place, similar to a professional planning study, to assist stakeholders with implementation policies related to the SAFMR System. The Richmond Region will face serious location-specific, historical impediments to implementing the SAFMR System to improve residential mobility and reduce concentration of voucher holders. The region’s persistent, high rates of residential segregation have changed little in the past several decades (Claiborne, 2012).
Questions remain about existing capacity to address the mobility imperative of the program, and HCV holders may also be served through value capture and program expansion.

This evaluation will provide a regional analysis of existing conditions that will affect the use of the SAFMR System in the Richmond Region, identifying where HCV holders have located without zip code price controls and with a low-capacity mobility counseling program. Concentration of all voucher holders in the region has not been fully evaluated, and high concentration of HCV in lowest quality neighborhoods suggests greatest potential for the SAFMR System to achieve mobility impacts. Additionally, the region’s MTO program relies on a single statistic to evaluate neighborhood quality, poverty rate. Additional metrics may be useful for all phases of mobility counseling to achieve the desegregation imperative of the SAFMR System. This evaluation will assess the degree to which poverty, race, and other socioeconomic factors used in mobility counseling affect concentration. It will demonstrate the critical need for the SAFMR System by illustrating the concentration of voucher holders in communities where Fair Market Rent is less than the regional median. A budget estimate based on current voucher holder location and proposed price change will assess the potential savings offered by the SAFMR System. The Richmond case is of interest as an early implementation planning effort to blend the SAFMR System with existing mobility programming to achieve the best possible outcomes.
Chapter III: Methodology

3.1. General Approach and Purpose

This evaluation provides descriptive statistics on voucher holder concentration based on thresholds commonly used for neighborhood evaluation and mobility counseling in demonstration cities employing the SAFMR System. First, it evaluates where HCV holders are locating currently with very limited MTO counseling and without zip code level price modifications. It attempts to determine which of the critical socio-economic factors identified in the neighborhood effects literature are correlated with voucher holder concentration. Second, a regression analysis is employed to assess which among the relevant neighborhood socioeconomic characteristics are most closely correlated with HCV concentration, assessing the theory of opportunity currently in use by the local MTO program. Its purpose is to identify any theory failure that may limit the efficacy of regional counseling program used in tandem with the SAFMR System. Third, this evaluation assesses the SAFMR System’s potential for value capture, indicated by the percentage of Housing Choice Voucher holders located in areas targeted for cost decrease.

A quantitative approach is adopted using statistical and spatial analysis of socioeconomic and transportation access indicators. Policy recommendations are related to specific locational challenges affecting voucher holders, connecting concentration challenges to programmatic solutions. Refer to Figure 3.1, the Logic Model, connecting standard Public Housing Authority and nonprofit policies to research questions.
The availability of public resources, institutional structures in strong communities, markets, and access to information is influenced by one’s geography and determines life outcomes. HCVP needs to provide access to less segregated, higher income neighborhoods. (Wilson, 1983; Galster & Killen, 1995; Galster & Mikelsons, 1995)

There are locational benefits of living in the city not emphasized by the MTO program. The HCV program provides excessive stipends to too few users, and per user cost decrease will achieve the same outcomes for less. (Collinson & Ganong, 2015; Olsen, 2012; Katz, 2004)

### Identified Need

<table>
<thead>
<tr>
<th>Move to Opportunity</th>
<th>Value Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in regional safety net and housing planning activities</td>
<td>There are locational benefits of living in the city not emphasized by the MTO program. The HCV program provides excessive stipends to too few users, and per user cost decrease will achieve the same outcomes for less. (Collinson &amp; Ganong, 2015; Olsen, 2012; Katz, 2004)</td>
</tr>
<tr>
<td>Define communities of opportunity using metrics on crime, area median income, race, school quality</td>
<td></td>
</tr>
<tr>
<td>Offer higher cost vouchers in high quality neighborhoods</td>
<td></td>
</tr>
<tr>
<td>Rigorous Rent Reasonableness evaluation to decrease overspending in low-cost neighborhoods</td>
<td></td>
</tr>
<tr>
<td>Distribute any SAFMR System savings as new vouchers administered</td>
<td></td>
</tr>
<tr>
<td>Regularly apply new zip code level rents, increasing subsidy costs as fair market rents increase</td>
<td></td>
</tr>
</tbody>
</table>

### Policy Activity

<table>
<thead>
<tr>
<th>Mobility Counseling</th>
<th>SAFMR System Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOME, RRHA</td>
<td>HOME</td>
</tr>
<tr>
<td>RRHA</td>
<td>RRHA</td>
</tr>
<tr>
<td>RRHA</td>
<td>RRHA</td>
</tr>
<tr>
<td>HOME</td>
<td>HOME</td>
</tr>
<tr>
<td>Participate in regional safety net and housing planning activities</td>
<td>Define communities of opportunity using metrics on crime, area median income, race, school quality</td>
</tr>
<tr>
<td>Offer higher cost vouchers in high quality neighborhoods</td>
<td>Rigorous Rent Reasonableness evaluation to decrease overspending in low-cost neighborhoods</td>
</tr>
<tr>
<td>Distribute any SAFMR System savings as new vouchers administered</td>
<td>Regularly apply new zip code level rents, increasing subsidy costs as fair market rents increase</td>
</tr>
</tbody>
</table>

### Policy Outputs

<table>
<thead>
<tr>
<th>Policy Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better connection to all safety net services available in suburban areas</td>
</tr>
<tr>
<td>Better information and counseling to assist move</td>
</tr>
<tr>
<td>Provide sufficient subsidies, removing incentives to use vouchers in poor and racially segregated neighborhoods</td>
</tr>
<tr>
<td>Reduce average voucher costs for all HCV users by preventing overpayment for users in zip codes below the metro average</td>
</tr>
<tr>
<td>Increase total number of HCV users by redirecting cost savings to create new vouchers</td>
</tr>
</tbody>
</table>

### Policy Outcomes

<table>
<thead>
<tr>
<th>Policy Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Regional Safety Net</td>
</tr>
<tr>
<td>More moves away from highest risk neighborhoods</td>
</tr>
<tr>
<td>Value capture</td>
</tr>
<tr>
<td>Program expansion</td>
</tr>
</tbody>
</table>

### Research Question

**Which of the critical socio-economic factors identified in the neighborhood effects literature are correlated with voucher user concentration?**

**Where are voucher users currently concentrated?**

**What is the potential cost savings possible using the SAFMR System?**

### Data and Evaluation Method

<table>
<thead>
<tr>
<th>Data and Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multivariate Regression Analysis</td>
</tr>
<tr>
<td>Concentration Index</td>
</tr>
<tr>
<td>Cost Savings Estimate</td>
</tr>
<tr>
<td>Voucher User Location</td>
</tr>
</tbody>
</table>

**The availability of public resources, institutional structures in strong communities, markets, and access to information is influenced by one’s geography and determines life outcomes. HCVP needs to provide access to less segregated, higher income neighborhoods.**

(Wilson, 1983; Galster & Killen, 1995; Galster & Mikelsons, 1995)
3.2. Data Collection

Data were obtained from secondary sources. Refer to Table 3.2: Data Collection Table on Page 26. Descriptive statistics and multiple variable regression rely on the Census’ American Community Survey’s Poverty Status in the Past 12 Months, Employment Status, Race, Select Economic Characteristics, and Housing and Families data on Percent Single Mothers. The measure of tract income used is tract median family income as a percent of Area Median Income (AMI) defined for the Richmond Region by HUD. Single mother households are defined as those with a female head of household and dependent child under the age of eighteen. School data used are Virginia Department of Education’s Standards of Learning 3rd Grade English subject test pass rates. Census tracts are assigned a 2015 SOL 3rd Grade English Pass Rate based on the elementary school district that the centroid falls within.

Concentration is evaluated using HCV holder totals by census tract from US Department of Housing and Urban Development from its 2013 HUD Picture, the most recent data available as a proportion of total rental units in the tract collected from American Community Survey. Value capture is evaluated using HUD Proposed SAFMR Pricing. Transit accessibility is evaluated using the GRTC Bus Stops point feature from the Richmond Region Planning District Commission.
<table>
<thead>
<tr>
<th>Analysis</th>
<th>Metric</th>
<th>Source</th>
<th>Table Number</th>
<th>Table Name</th>
<th>Geography</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Conditions</td>
<td>Poverty Rate</td>
<td>2014 ACS 5-year estimates</td>
<td>S1701</td>
<td>POVERTY STATUS IN THE PAST 12 MONTH</td>
<td>Tract</td>
<td>Collinson &amp; Ganong, 2013</td>
</tr>
<tr>
<td>Analysis and</td>
<td>Unemployment Rate</td>
<td>2014 ACS 5-year estimates</td>
<td>S2302</td>
<td>EMPLOYMENT STATUS</td>
<td>Tract</td>
<td>Collinson &amp; Ganong, 2013</td>
</tr>
<tr>
<td>Multiple Variable</td>
<td>Percent Black Residents</td>
<td>2014 ACS 5-year estimates</td>
<td>B02001</td>
<td>RACE</td>
<td>Tract</td>
<td>Chetty et al., 2014</td>
</tr>
<tr>
<td>Regression</td>
<td>Percent Single Mothers</td>
<td>2014 ACS 5-year estimates</td>
<td>S1101</td>
<td>HOUSING AND FAMILIES</td>
<td>Tract</td>
<td>Collinson &amp; Ganong, 2013</td>
</tr>
<tr>
<td></td>
<td>Percent Area Median Income</td>
<td>2014 ACS 5-year estimates</td>
<td>DP03</td>
<td>SELECTED ECONOMIC CHARACTERISTICS</td>
<td>Tract</td>
<td>Cunningham et al., 2012</td>
</tr>
<tr>
<td></td>
<td>SOL Pass Rate</td>
<td>Virginia Department of Education</td>
<td></td>
<td>2015 SOL 3RD GRADE SOL PASS RATE</td>
<td>Tract</td>
<td>Cunningham et al., 2013</td>
</tr>
<tr>
<td></td>
<td>Concentration Index</td>
<td>Housing Choice Voucher Locat.</td>
<td>B200819</td>
<td>RENTAL HOUSING</td>
<td>Tract</td>
<td>Howell, 2015</td>
</tr>
<tr>
<td></td>
<td>Walking distance from tract</td>
<td>RRPDC</td>
<td>2010 Tigerline</td>
<td>Planning District</td>
<td>Tract</td>
<td>Biba, Curtin, &amp; Manca, 2014</td>
</tr>
<tr>
<td></td>
<td>centroid to nearest bus stop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value Capture</td>
<td>HUD Proposed SAFMR Pricing</td>
<td>Housing Choice Voucher Locat.</td>
<td>HUD Picture</td>
<td></td>
<td>Tract</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.2 Data Collection Table
3.3 Spatial Data Analysis

Spatial Aggregation. This evaluation relies on census tract-level data to meet its first two objectives, and its existing conditions analysis assesses correlations among voucher concentration, selected socio-economic characteristics, and transportation access first on this more localized geography. The census-tract level analysis of this proportion has some benefits, such as the relative ease of linking socio-economic metrics to the metric compared with other options, and some limitations, such as the limited connection between the census geography and true neighborhoods (Wang & Varady, 2005; Wang, Varady, & Wang, 2008). No current standards currently exist for evaluating tract concentration on the zip code level, which is too large for the methodology selected for the existing conditions analysis.

To answer its second question on value capture, this assessment will rely on zip codes per the SAFMR price setting guidelines. Zip codes bare no relationship to true neighborhoods; however, this geography provides a higher level of detail on local FMR than the current regional standard established by HUD (24 CFR Part 888). To determine the count of voucher holders in a zip code, a tabulation not currently available from HUD, census tracts are evaluated using a spatial join of tract centroids to zip codes, transferring SAFMR Pricing data from the zip code level to each census tract.

Defining the Region. Because this evaluation was completed for program administrators in and around the City of Richmond, Virginia, it relies on the definition of the region established by the Richmond Regional Planning District Commission (RRPDC). This is used in lieu of the HUD definition of the region, which is a significantly larger administrative boundary. The RRPDC regional boundary is more relevant for evaluating the relationship between segregation, income, transportation, and housing.
3.4 Selection of Metrics

**Socioeconomic Data: Descriptive Statistics.** With very limited mobility counseling and without zip code level price modifications and this analysis identifies where HCV holders locating in relationship to socioeconomic variables linked to opportunity planning. Neighborhoods are evaluated on the tract level using thresholds identified in the literature and in local MTO program policy. This includes poverty rate, unemployment rate, percent single mother households, and standardized test scores, per Collinson and Ganong (2012) family income as a percent of AMI per Dallas Inclusive Communities Project (Cunning et al., 2010), and percentage black residents, per Chetty et al., (2013). Percentage of black residents is employed pursuant to the SAFMR System’s desegregation objective. This evaluation also identifies voucher holder locations in relationship to public transit accessible tracts. Tracts are operationalized as Transit-Accessible if there is a bus stop within a half mile of the tract centroid (FTA). Descriptive statistics on the total number of voucher holders in transit accessible tracts will be provided, in addition to maps displaying the spatial relationship between transit access and concentration.

**Question One: Concentration.** To quantify HCV concentration, a Location Quotient is evaluated on the census tract level, which determines the proportion of rental tracts in the region (Howell, 2014; Wang & Varady, 2005). The index value is a measure of the proportion of voucher holders located in a tract in relationship to the total number of rentals available in relationship to both available vouchers and all rental units available in the RRPDC-defined regional geography. Voucher totals are evaluated in relationship to rental units instead of all housing units because voucher holders have access to only the rental housing market. The following Location Quotient is used, where \( V_i \) equals the total number of vouchers in the census.
tract, $U_t$ equals total rental units in the census tract. $V^*$ equals the total vouchers in the planning district and $U^*$ equals total rental units in the MSA.

$$Q_i = \left( \frac{V_i}{U_i} \right) \left( \frac{V^*}{U^*} \right)$$

For the evaluation of neighborhood quality and concentration, any tract scoring 1.5 or greater on the concentration index measure is identified as a concentrated tract (Howell, 2014). These are presented as maps of the region in relationship to socioeconomic threshold statistics.

**Question Two: MTO Program Theory Evaluation.** This employs a regression analysis to assess relevance of the three statistics on neighborhood quality used in a model MTO counseling program implemented by Dallas Inclusive Communities Project in tandem with the SAFMR System. Dallas Inclusive Communities Project employs three thresholds, Percent Black, Percent in Poverty, and Percent of AMI as an indicator of school quality (Cunningham et al, 2010). Percent rental units in a tract is employed as a control. These are analyzed in relationship to critical factors for intergenerational mobility identified by Chetty et al. (2013) and Collinson and Ganong (2015).

This evaluation intends to assess if a theory failure is occurring that may limit the success of local Move to Opportunity counseling that will be used in tandem with the SAFMR System. Currently, the Richmond Move to Opportunity program uses only poverty rate for mobility counseling. The regression is a global model conducted using SPSS, and both stepwise and standard regressions are used. The socio-economic variables selected as explanatory (independent) variables include poverty rate, unemployment rate, single mother households, median family income as a percent of AMI, SOL scores, and percent black residents. The dependent variable is HCV concentration quantified using the Location Quotient described above. The null hypothesis is that poverty is a significant independent variable predicting HCV.
concentration. The alternative hypothesis is that poverty is not a significant independent variable predicting HCV concentration.

**Question Three: Value Capture.** The value capture evaluation relies on HUD Proposed SAFMR pricing information provided on the zip code level. Voucher holder totals for each zip code will be estimated using a spatial join of tract centroids to zip codes, transferring HUD Proposed SAFMR pricing from the zip code to each census tract. Because the average voucher holder lives in a zip code with an SAFMR below regional FMR, savings occur in demonstration programs implementing the SAFMR System.

The relationship between concentration and cost will be established to evaluate the extent to which voucher holders are evenly distributed throughout the rental housing market. To compute the Herfindahl Index, all zip codes within the region were divided into deciles based on percent change in voucher cost. The score indicates the extent to which voucher households are evenly distributed across cost deciles. The index is computed as the sum of the fractions of vouchers (squared) within each cost decile:

\[
H = \sum_{d=1}^{10} \left( \frac{v_d}{V} \right)^2
\]

where \(v_d\) is the number of vouchers in cost decile \(d\), and \(V\) is the total number of vouchers in the MSA. For example, if all voucher households were located in the lowest cost zip codes (maximum concentration in low-quality neighborhoods), the Herfindal index would take a value of one. If all voucher holders were spread evenly across cost deciles (maximum integration), the index would take a value of 0.1.

**Savings Estimate One: Potential Total Savings.** This determines the overall amount of savings and percentage of savings based on current voucher household location. This estimate
provides the actual savings that would occur if voucher holders continued to live in the same neighborhoods.

\[ Y = \left[ \sum (v_t \times \bar{p}) - (v_t \times \bar{p} \times r_t) \right] - C \]

where \( Y \) is total savings calculated as the sum of \( v_t \), the total number of voucher in the tract, multiplied by \( \bar{p} \), the regional voucher price ceiling for a two bedroom apartment based on current FMR, minus \( v_t \) multiplied by \( \bar{p} \) times \( r_t \), the SAFMR System savings rate for the tract, less \( C \), new administrative costs. Public Housing Authorities implementing the SAFMR System have estimated administrative costs to be around ten dollars per voucher (Fischer, 2010). The formula relies on an assumption taken from past evaluation of HCV holder concentration by Wang, Verady, and Wang (2008) that many voucher holders occupy two-bedroom units.

**Savings Estimate Two: Potential New Vouchers.** SAFMR System savings are not eliminated from the program budget but instead are redistributed to create new vouchers. This is a redistribution formula to estimate the potential number of new vouchers that may be generated with savings from SAFMR System. This formula relies on the above assumption that the majority of voucher holders occupy two-bedroom units. It relies on an additional assumption that new HCV holders will reside in the same zip codes as current HCV holders, because current patterns of voucher use reflect both unit availability and landlord willingness to accept vouchers. Potential New Vouchers is estimated using the following formula:

\[ PNV = \sum_{d=1}^{10} \frac{(v_d/V)y}{x_{1-10}} \]

where \((v_d/V)\) is the fraction of vouchers in the cost decile, \( y \) is total savings from the SAFMR System calculated above, and \( x_{1-10} \) is the mean of all SAFMR System two-bedroom voucher costs in the decile. The mean of voucher costs is employed in this formula because it is an
accepted simplification of the SAFMR System rental costs allowable by HUD, and it has served in some regions as an alternative to administering a burdensome number of variable voucher cost standards (24 CFR Part 888). Potential new vouchers ($PNV$) is reported as a discrete number of vouchers potentially generated in each cost decile based on the above estimate.

**Limitations.** There are limitations on the quality of tract level data from HUD and Standards of Learning Score data caused by zone modifiable areal unit problems. For price estimates, tracts were assigned a zip code based on the location of the tract centroid. This is not in line with best practice data management suggestions not to generalize scores from a larger geography to a smaller geography when boundaries do not align (McGrew, Lembo, & Monroe, 2014). Better value capture estimates could be achieved with address-level data, which were not available at the time of analysis. Tracts were also assigned SOL pass rates based on the School Area Boundary that the tract’s centroid falls within. This problem remains difficult to resolve, and use of percent AMI may be used as a proxy statistic for school quality (Cunningham et al., 2010). This approach is currently employed by the Dallas Inclusive Community Project.

The socioeconic data employed in this evaluation assess the correlates of opportunity defined by Chetty et al. (2014) and relate to intergeneration mobility. Intergenerational mobility is not the strongest benefit of the MTO program, and the lifelong income effect for children is fairly low (Chetty et al., 2015). Health and safety factors are more valuable for assessing neighborhoods of opportunity, but crime data, other measures of environmental risk, or locational information on relevant assets linked to community health were not included at the time of methodology selection because of data collection limitations. Finally, the price estimates rely on assumptions on the frequency of voucher use for two bedroom units, because the HUD dataset did not offer complete information on unit size.
Chapter IV: Results

4.1. Introduction

The purpose of this research as described in previous chapters is to assess factors that will effect implementation of the SAFMR System in the Richmond Region. This includes an evaluation of existing conditions of Housing Choice Voucher concentration areas, assessing socioeconomic characteristics of tracts in which HCV holders are located. It evaluates which of the factors critical to mobility is correlated with HCV holder concentration to assess local Move to Opportunity counseling program theory, and estimates potential program savings given current location of voucher holders.

4.2. Descriptive Statistics of Current HCV Holder Location

Vouchers are currently provided without restrictions on geographical destination and voucher price is set regionally without further refinement to match cost to housing quality. With very limited mobility counseling and without zip code level price modifications, where are HCV holders locating? This summary will describe 2015 locational choices of HCV households. In the Richmond Region, there are 4,894 HCV holders included in the 2015 Picture of Subsidized Households provided by HUD. The total number of HCV holders is provided as is the percent of the total number of holders. Concentration, displayed as areas scoring greater than 1.5 using the Location Quotient described above, is mapped by degree and as a threshold in relationship to statistics on race, poverty, and income.

Degrees of Voucher Concentration. Concentration is mapped below using a measure of degree (refer to Map 4.1. Degree of Housing Choice Voucher Concentration). To assess communities of voucher concentration as a portion of the rental market, the Location Quotient described in the previous chapter on Methodologies is used. Following Howell (2015), a
concentration index of 1.5 (or 50% greater than the regional average) is defined as a concentrated tract. A score of 2 indicates that concentration is 100 percent higher than the regional average. This evaluation further identifies Moderate, High, and Extremely High concentration areas. A concentration score between 1.5 and 2.8 is identified as Moderate, 2.8 to 4.9 is described as High, and 4.9 to 7.3 is described as Extremely High. These are classified using four natural breaks in data provided by GIS, identifying four classes of concentration described as Low (not displayed), Moderate, High, and Extremely High. Areas with a Moderate concentration of voucher holders are fairly evenly distributed throughout Chesterfield, Henrico, and Richmond, though 56 percent of areas of High concentration are located in Richmond (22 percent of tracts with moderate scores of concentration are located in Henrico and an addition 22 percent are located Chesterfield). It should be noted that two of three tracts with Extremely High concentrations of voucher holders are located in Chesterfield county. Overall, concentration areas are dispersed throughout the City of Richmond and its suburbs of Henrico and Chesterfield with relatively few extending to rural counties.

Housing Choice Voucher Concentration, 2015
Richmond Regional Planning District Commission Area
Suburbanization and Housing Choice Vouchers. Though the greatest number of Housing Choice Vouchers are used within the City of Richmond, the majority of all voucher holders are located in the suburban jurisdictions of Henrico and Chesterfield. The City of Richmond has the greatest number of HCV households (2,024 total or 41.4%), but more than half of voucher households are located in the suburban jurisdictions of Henrico (1,584 total or 32.4%) and Chesterfield (1,035 total or 21.2%) (Graphs 4.2.a., Distribution of Housing Choice Vouchers by Jurisdictions and 4.2.b., Voucher Holders in Rural, Suburban, and Urban Jurisdictions).

Another significant factor related to suburbanization of Housing Choice Vouchers extends beyond jurisdictional concerns and relates to access to jobs in urbanized areas. This is a valuable designation given the polycentric nature of urbanization in the Richmond Region, where jobs and housing are concentrated in two major population centers in the City of Richmond and Henrico’s West End. The designation of urban and suburban is not purely jurisdictional but can also be defined by population and job density. Distribution HCV holders
in suburbanized areas is demonstrated below in Map 4.3, in which Transportation Analysis Zones have been defined according to varying levels of density. Urban areas are defined as having a population of greater than 35,000 and suburbanized areas are defined as having a population between 1,000 and 3,500 (Richmond Regional Planning District Commission, 2015). Nearly all high density employment tracts, defined by the RRPDC as tracts with more than 10,000 jobs per square mile, are located within the orange urbanized zone below (RRPDC, 2015). Sixty-one percent of concentration areas are defined as suburban, 30 percent are located in urban areas, and the remaining 9 percent are located in rural areas.

Housing Choice Voucher Concentration and Urbanized Areas, 2014
Richmond Regional Planning District Commission Area

Race and HCV Holder Concentration. There is also a strong link between HCV holder location and tracts with a high percentage of black residents. This evaluation employs a classification similar to Housing Opportunities of Virginia’s recent neighborhood designation to
describe Census tracts as White (less than 30 percent black), Integrated (30 to 70 percent black), and Minority (greater than 70 percent) neighborhoods (Koziol & MacKenzie, 2015). The Dallas Inclusive Communities Program offers Move to Opportunity counseling services and defines destination neighborhoods based on a threshold of 26 percent black residents to meet SAFMR System desegregation objectives (Cunningham et al., 2010). There is no race-based threshold used for mobility counseling in the region at this time. For the purpose of this evaluation, tracts in the Richmond Region with a percentage of black residents less than 30 percent are assumed to be potential destination neighborhoods for mobility counseling.

Seventy-eight percent of voucher recipients are located in Richmond neighborhoods with a percent of black residents that exceeds 30 percent, which would not be identified as destination neighborhoods for MTO counseling using a common threshold employed by other localities (Cunningham et al., 2010). (Refer to Graph 4.4. Housing Choice Voucher Use and Race.) Thirty percent of recipients are located in Minority tracts with a high percentage of black residents, and forty-eight percent are located in Integrated neighborhoods with a moderate to high percentage of black residents. Sixty-six percent of HCV holders live in a census tract with more than 30 percent black residents that are also low-income communities indicated by AMI. Of all HCV holders in low-income, minority communities, about half (54%) are located in the City of Richmond and the remaining half (46%) are located in the suburban jurisdictions of Chesterfield and Henrico.
Voucher concentration is mapped from this point forward using thresholds to identify concentration areas, and any tract with an LQ over 1.5 is considered a concentration area. These are identified on the map below using hatchmarks. (Refer to Map 4.5. Map of Housing Choice Voucher Concentration and Race.) Seventy-nine percent of tracts with a high concentration of HCV holders are above the thirty percent threshold of black residents. Thirty-five percent of these concentration tracts are also Minority tracts with greater than 70 percent black residents. Of all 45 minority concentration tracts, 49 percent are located within the City of Richmond, and the remaining are in Henrico (27%) and Chesterfield counties (24%).
Poverty and HCV Holder Concentration. The linkage between HCVP household concentration and poverty is presumed to be strong. This evaluation identifies “high poverty” census tracts in which more than 20 percent of households were below the poverty line. This threshold is employed both because of its frequent appearance in the housing literature and its usage in local Move to Opportunity counseling programming (Cunningham et al., 2010). Forty-three percent of all HCV holders live in high-poverty census tracts.

Thirty-seven percent of tracts with a high concentration of voucher holders are also high-poverty tracts. (Refer to Map 4.6., Map of Housing Choice Voucher Concentration and Poverty.) Eighty-one percent of high-concentration, high-poverty census tracts are located within the City of Richmond. Forty-eight percent of high poverty tracts with a high concentration of HCV
holders also were above the threshold for segregation. Ninety percent of these high poverty, high segregation HCV concentration areas were located in the City of Richmond.

Housing Choice Voucher Concentration and Poverty, 2014
Richmond Regional Planning District Commission Area

Map 4.6. Housing Choice Voucher Concentration And Poverty
Source: HUD Picture of Subsidized Households (2015); U.S. Census Bureau (2014)

Low-Income Neighborhoods and HCV Holder Concentration. Beyond poverty rates, a valuable statistic for considering neighborhood income is median household income as a percent of AMI. Because more areas are classified as low-income than are technically identified as high poverty, AMI provides a useful lens for broadening the scope of analysis on income. Median household income for the tract is provided as a percentage of AMI for the region: tracts with 50 to 80 percent AMI are identified according to HUD guidelines as Low-Income, 30 to 50 percent are Very Low-Income, and below 30 percent are identified as Extremely Low-Income. Sixty-eight percent of all Housing Choice Voucher holders are located in tracts below 80 percent
AMI: 44 percent are located in Low Income tracts, 20 percent are in Very Low Income tracts, and 4 percent are located in Extremely Low Income tracts (Data Table, Map 4.7).

Sixty-three percent of Housing Choice Voucher concentration areas are also Low-Income Census tracts. Three percent of concentrated tracts are Extremely Low-Income (though it should be noted that this is only one tract, located within the City of Richmond). Twenty-eight percent of concentrated tracts are Very Low-Income: Two of these ten Very Low-Income tracts are in Henrico, one is in Chesterfield, and the remaining seven are in the City of Richmond. The remaining sixty-nine percent are Low-Income tracts with a household median income between 50 and 80 percent AMI: 13 are in the City of Richmond, eight are in Henrico, three are in Chesterfield, and one is in Hanover.

Housing Choice Voucher Concentration and Low Income Areas, 2014 Richmond Regional Planning District Commission Area

Map 4.7. Housing Choice Voucher Concentration and Low Income Areas
Source: HUD Picture of Subsidized Households (2015); U.S. Census Bureau (2014)

Race and Low-Income Neighborhoods. Please refer to the Graph 4.8., Graph of Race and Tract Median Household Income as Percent of AMI. Seventeen percent of voucher holders
residing in tracts with less than 30 percent of black residents, identified at White Census tracts, are also considered neighborhoods that are not low-income. This exceeds the fourteen percent of voucher holders in neighborhoods above 80 percent AMI that are more segregated, indicating that voucher holders in white neighborhoods live in higher income tracts. Around three-fifths (63 percent) of voucher holders are located in low-income neighborhoods that are segregated (greater than 30 percent black residents).

**Unemployment, Family Structure, and School Quality.** Other significant characteristics identified in the neighborhood effects literature that affect lifelong income and intergenerational mobility include unemployment rate, percentage of single mother households, and school quality evaluated using pass rates on statewide standardized tests. For all of these, the regional average was employed to identify tracts falling above and below this threshold. Please refer to Table 4.9., the Socioeconomic Data Table. About two-thirds of voucher holders
are located in tracts with an unemployment rate above the regional average of 8.5 percent. Also, about two-thirds of voucher holders are located in tracts with a standardized test pass rate less than the regional average of 75 percent. Seventy percent of voucher holders are located in Census tracts with a percentage of single mother households than exceeds the regional average of 8 percent.

<table>
<thead>
<tr>
<th>Table 4.9. Housing Choice Voucher Holder Socioeconomic Data Table</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing Choice Voucher Total</strong></td>
</tr>
<tr>
<td>Total Vouchers</td>
</tr>
<tr>
<td><strong>Minority Composition</strong></td>
</tr>
<tr>
<td>White, Less than 30% Black Residents</td>
</tr>
<tr>
<td>Integrated, Between 30% and 70% Black Residents</td>
</tr>
<tr>
<td>Minority, Greater than 70% Black Residents</td>
</tr>
<tr>
<td><strong>Below Poverty Level</strong></td>
</tr>
<tr>
<td>Less Than 20%</td>
</tr>
<tr>
<td>Greater Than 20%</td>
</tr>
<tr>
<td><strong>Family Median Income</strong></td>
</tr>
<tr>
<td>Above 80% AMI</td>
</tr>
<tr>
<td>Low Income Tract: 50% to 80% AMI</td>
</tr>
<tr>
<td>Very Low Income Tract: 30% to 50% AMI</td>
</tr>
<tr>
<td>Extremely Low Income: Below 30% AMI</td>
</tr>
<tr>
<td><strong>Unemployment Rate</strong></td>
</tr>
<tr>
<td>Less Than Regional Average, 8.5%</td>
</tr>
<tr>
<td>Greater Than Regional Average, 8.5%</td>
</tr>
<tr>
<td><strong>Single Mother Households</strong></td>
</tr>
<tr>
<td>Less than Regional Average, 8%</td>
</tr>
<tr>
<td>Greater than Regional Average, 8%</td>
</tr>
<tr>
<td><strong>SOL Pass Rates</strong></td>
</tr>
<tr>
<td>Less Than Regional Average, 75%</td>
</tr>
<tr>
<td>Greater Than Regional Average, 75%</td>
</tr>
</tbody>
</table>

Source: HUD Picture of Subsidized Households (2015); U.S. Census Bureau (2014); Virginia Department of Education (2015)
**Voucher Holder Location and Public Transit Access.** A basic locational evaluation of the relationship between public transit access and current voucher holder locational choices is provided below. Refer to Map 4.10., Map of Housing Choice Voucher Concentration and Transit Accessibility. Thirty-seven percent of Housing Choice Vouchers are located in a tract with a bus stop within a half mile of the tract centroid. The majority of voucher holders reside outside of the transit service shed. This evaluation also does not take into account frequency of bus service, so it should be noted that the percentage of HCV holders with regular bus service is less than indicated below. This suggests that many live in areas where access to a vehicle is necessary.

Housing Choice Voucher Concentration and Transit Accessibility, 2014
Richmond Regional Planning District Commission Area

Map 4.10. Housing Choice Voucher Concentration and Transit Accessibility
Source: HUD Picture of Subsidized Households (2015); U.S. Census Bureau (2014); Virginia Department of Education (2015)

---

1. A number of predictor variables to evaluate the relationship between transportation access and concentration were included in initial regression analyses to evaluate the effects of public transit access and car reliance on voucher use. The predictor variables assessed include distance from the tract centroid to nearest bus stop, number of vehicles per acre, number of zero car households per acre, and number of zero and one car households per acre. All had very weak correlations with concentration and no statistically significant relationship with concentration. No predictor variable on transportation access was included in regression models reported in the following section.
5.3 Correlations and Regression Analysis

The correlations and regression analysis employed below is used to address the second question on the region’s preparedness to administer a local Move to Opportunity program in tandem with the SAFMR System, based on its current policy of employing a single metric, percent below poverty, as the threshold statistic for mobility counseling.

Pearson’s Bivariate Correlations. The three threshold measure employed in the Move to Opportunity counseling program in use by Dallas ICP were assessed to establish correlation between these and the dependent variable, HCV concentration. There are several notable correlations in the data (Table 4.11. Pearson’s Correlations). The only strong correlation between IVs and the DV is the relationship between Percentage of Black Residents and HCV concentration. Poverty is the only variable of six included in the regression that is weakly correlated with HCV concentration. Area Median Income is moderately correlated with the DV.

Also, the cross-correlations among the Dallas Inclusive Communities Project’s mobility counseling measures and three additional predictor variables linked to intergenerational mobility and opportunity are evaluated. These correlations establish the strength of the relationship between the MTO policy metrics and critical opportunity measures not used in counseling. Strong correlations suggest that the threshold statistics used in counseling serve as effective proxy statistics for intergenerational mobility and opportunity.

Percent AMI has a moderate correlation with SOL pass rates. SOL pass rates have data limitations caused by Modifiable Areal Unit Problems and may be impractical for use in programming, so AMI may be used as a proxy statistic for education quality following Dallas Inclusive Communities project best practices. Percent AMI also bares a strong negative relationship to percent single mother households, and unsurprisingly, to unemployment. Poverty
rates are moderately correlated with SOL pass rates and strongly correlated with percent single mother households and unemployment. Percentage of Black Residents has a strong negative correlation with SOL pass rates, Percent AMI and SOL Pass rate, and a strong positive correlation with Percent Single Mother Households and Percent Unemployment.

Table 4.11. Pearson’s Correlations

<table>
<thead>
<tr>
<th>Tract-Level Variable (Natural LOG)</th>
<th>Concentration LQ</th>
<th>Percent AMI</th>
<th>Percent Black Residents</th>
<th>Percent Below Poverty</th>
<th>Unemployment Rate</th>
<th>Percent Single Mother</th>
<th>SOL Pass Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Percent AMI*</td>
<td>-.399</td>
<td>-.722</td>
<td>-.819</td>
<td>-.704</td>
<td>-.699</td>
<td>-.423</td>
<td></td>
</tr>
<tr>
<td>2 Percent Black Residents*</td>
<td>.633</td>
<td>-.722</td>
<td>.659</td>
<td>.640</td>
<td>.592</td>
<td>-.518</td>
<td></td>
</tr>
<tr>
<td>3 Percent Below Poverty*</td>
<td>.329</td>
<td>-.819</td>
<td>.659</td>
<td>.616</td>
<td>.572</td>
<td>-.400</td>
<td></td>
</tr>
<tr>
<td>4 Unemployment Rate*</td>
<td>.350</td>
<td>-.704</td>
<td>.640</td>
<td>.616</td>
<td>.575</td>
<td>-.340</td>
<td></td>
</tr>
<tr>
<td>5 Percent Single Mother*</td>
<td>.409</td>
<td>-.699</td>
<td>.592</td>
<td>.572</td>
<td>.575</td>
<td>-.341</td>
<td></td>
</tr>
<tr>
<td>6 SOL Pass Rate*</td>
<td>-.377</td>
<td>.423</td>
<td>-.518</td>
<td>-.400</td>
<td>-.340</td>
<td>-.341</td>
<td></td>
</tr>
</tbody>
</table>

*Note p<.001

Multivariate Regression Results. A stepwise multiple linear regression was calculated to predict Housing Choice Voucher concentration based on the socioeconomic predictor variables, Percent Black Residents, Household Median Income as a percent of AMI, Percent Below Poverty, Unemployment Rate, Percent of Single Mother Households. Percent of Renter Households is entered into the regression model as a control. The final regression excludes all insignificant independent variables and includes Percent Black Residents and Percent Single Mother.

A significant regression equation was found (F(3,189)=54.95, p<.000) with an $R^2$ of .466. Predicted measures of HCV concentration for each tract is equal to -2.342 + 0.999 (Percent Black Residents) – 0.569 (Percent Renter Households) – 0.244 (Percent Single Mother Households), where all variables are estimated using a natural logarithmic transformation. Please Refer to Table 4.12. Correlation Coefficients and Model Summary and Table 4.13. Table of Variables Entered and Removed. The Location Quotient of HCV concentration increased .999 for every one percent increase in the percentage of black residents in the tract. The Location Quotient increased 0.244 for every one percent increase in the percentage of single mother
households. Percent of Black Residents and Percent Single Mother are the only statistically significant predictor of HCV concentration. Percent of Black Residents in the tract is the only statistically significant variable commonly used in MTO counseling. Percent AMI, Percent Below Poverty, Unemployment Rate, and SOL Pass Rate were removed from the final model due to lack of statistical significance. This analysis fails to reject the null hypothesis that Percent Below Poverty is not a statistically significant variable predicting HCV concentration.

Table 4.12. Correlation Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Percent Black Residents</td>
<td>Percent AMI, Percent Below Poverty, Unemployment Rate, Percent Single Mother, SOL Pass Rate, Percent Renter</td>
<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;= .050, Probability-of-F-to-remove &gt;= .100).</td>
</tr>
<tr>
<td>2</td>
<td>Percent Black Residents, Percent Renter</td>
<td>Percent AMI, Percent Below Poverty, Unemployment Rate, Percent Single Mother, SOL Pass Rate</td>
<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;= .050, Probability-of-F-to-remove &gt;= .100).</td>
</tr>
<tr>
<td>3</td>
<td>Percent Black Residents, Percent Renter, Percent Single Mother</td>
<td>Percent AMI, Percent Below Poverty, Unemployment Rate, SOL Pass Rate</td>
<td>Stepwise (Criteria: Probability-of-F-to-enter &lt;= .050, Probability-of-F-to-remove &gt;= .100).</td>
</tr>
</tbody>
</table>

Assumptions. This regression meets assumptions of linearity, normality, and homoscedasticity, and collinearity. The R-squared value is .466, indicating that the model predicts around 47 percent of the variance in Housing Choice Voucher concentration. Refer to
Table 4.12. Correlation Coefficients and Model Summary. Fifty-three percent of variance in the dependent variable is explained by predictor variables that are not in the model. The P-value is 0.000, indicating that the model is statistically significant, and predictors selected do predict the outcome better than chance alone.

The Standardized Beta Coefficients and Significance values indicate that the predictor Percent of Black Residents makes the strongest contribution to predicting Housing Choice Voucher concentration, with a p value of .000. This is the only statistically significant threshold commonly employed in mobility counseling. Percent Single Mother Households also makes a statistically significant contribution to clustering, with a p value of .033. Percent renter households in the tract, the control, was also statistically significant. The relationship between this IV and concentration is negative: an increase in the number of rental units is correlated with increased concentration, because tracts with limited rental housing stock have fewer voucher holding residents.

The analysis reported above is a stepwise regression model used to link mobility counseling and opportunity theory to predictor variables using percent renter households as a control. It finds that race is the only statistically significant counseling threshold predicting voucher concentration. The standard regression model that evaluates the significance of all six common variables from the literature on the theory of opportunity is provided in Appendix A.

5.4 Value Capture

The following value capture evaluation assesses three factors to determine the value capture potential of the program: current concentration of voucher holders in zip codes targeted for voucher price decrease indicated by the Herfindahl Index, total amount of projected savings
if voucher holders remain in neighborhoods with a similar cost, and an estimate of potential new vouchers that could be generated with savings.

**Hefindahl Index and Concentration in Low-Cost Zip Codes.** An evaluation of the measure of concentration of voucher holders in low cost neighborhoods was completed to suggest potential for savings. Rental market concentration was assessed using the Herfindahl Index. The Herfindahl Index score of 0.25 reveals high concentration of vouchers. High concentration in neighborhoods targeted for voucher cost decrease, those below regional FMR, indicates high potential for the program to result in savings. Further analysis on the distribution of vouchers in zip codes targeted for cost change follows.

The distribution of voucher holders confirms the assumption that the vast majority (82%) are located in zip codes targeted for cost decrease. This is not surprising, because the 50th Percentile Fair Market Rent bars voucher holder entry to neighborhoods with higher rental costs. This distribution validates the assumption that the SAFMR System is needed to assist entry to higher cost zip codes. It indicates that the SAFMR System is critical to assist Fair Housing Act objectives.

The distribution also suggests that there is a base cost for housing in the region. There are relatively few HCV holders located in the bottom quintile of cost change, though it should be noted on Map 4.14., Map of Housing Choice Voucher Concentration and Value Capture, that the overall land area of zip codes falling in the bottom quintile of cost change is a relatively small. Most voucher holders are currently located in areas with a projected cost decrease of -15.4 to -11.4 percent (35 percent). Many (33%) also fall in the decile identified for slight decrease in voucher price or maintenance of current price (a cost change of -5.3% of 0.7%). Refer to Graph 4.15., Graph of Distribution of Vouchers in Deciles of Cost Change.
Map 4.14. Housing Choice Voucher Concentration and Value Capture
Source: HUD Picture of Subsidized Households (2015); U.S. Census Bureau (2014); Virginia Department of Education (2015)

Graph 4.15. Distribution of Vouchers in Deciles of Cost Change
Source: HUD Picture of Subsidized Households (2015); U.S. Census Bureau (2014); Virginia Department of Education (2015)
Savings Estimate One: Potential Total Savings. This evaluation estimates the potential savings that may be gained using SAFMR Price modifications if voucher holders remain in same-cost zip codes. The formula is described in the methodology section above. The potential total savings indicated by current voucher holder locations is around $385,000, a savings rate of 8 percent. This exceeds the 6 percent national savings rate projected for the SAFMR System, likely due in part to the heavy concentration of voucher holders in lower cost zip codes linked to price discrimination in regions targeted for SAFMR System implementation (Fischer, 2015; Collinson & Ganong, 2015).

Savings Estimate Two: Potential New Vouchers. Potential new vouchers are also estimated using assumptions based on the current distribution of voucher holders in deciles of cost change. The formula for potential new vouchers is described in detail in Section 3.4 of the Methodology chapter. This evaluation estimates that around 400 new two bedroom vouchers may be created to expand program capacity using SAFMR System savings. The graph below, Graph 4.16., illustrates distribution of new vouchers in cost deciles based on current voucher locations and proposed SAFMR System rental costs. The SAFMR System would not generate a great number of vouchers in the worst quality, lowest cost neighborhoods if the distribution of new HCV holders is similar to the current use distribution. The vast majority of housing in the study area has a base cost that exceeds the cost of housing in the lowest decile range.
Graph 4.16. Potential New Vouchers
Source: HUD Picture of Subsidized Households (2015); U.S. Census Bureau (2014)
Chapter V: Conclusions and Policy Implications

5.1. Introduction

This chapter reiterates the research problem and portions of the methodology of the study. It also provides a summary of results and the evaluator’s interpretations. Additionally, it offers a summary of policy implications and concludes with recommendations for future research.

The SAFMR System is being promoted by HUD and policy researchers who list it as a first-line effort to improve the HCV program (Collinson & Ganong, 2014; Sard and Rice, 2016; Metzger, 2015; & Fischer, 2015). The use of regional FMR pricing has created demonstrable artificial barriers to housing access and has prevented voucher holders from locating housing in higher cost zip codes. This planning evaluation assesses the existing concentration of voucher holders to demonstrate locational outcomes of the HCVP without SAFMR System price modification and limited MTO counseling intervention. It determines the most significant community socio-economic factor predicting HCV concentration for MTO counseling program administration. Finally, it estimates potential program savings and value capture of the SAFMR System.

5.2. Summary of Results and Conclusions

Existing Concentration of Voucher Holders. Without a large local MTO program and without price modifications compelled by the SAFMR System, HCV holders are now distributed in lower cost zip codes throughout the Richmond region, and HCV concentration areas are located in the suburban fringe as well as the City of Richmond. Concentration is not a strictly urban phenomenon. Suburban areas of voucher concentration are primarily located in inner ring suburbs with aging housing stock now facing many of the same challenges as the City of
Richmond. Inner-ring suburbs in the Richmond region, particularly in the East End, are affected by segregation and rapid growth of poverty rates (Claiborne, 2012; HOME, 2015).

HCV holders are concentrated in inner-ring suburbs and city neighborhoods with a large stock of obsolete housing units (Sturtevant & Price, 2012). Availability of rental housing will limit the locational choices of HCV holders, and new housing constructed in suburban localities in the Richmond region is primarily high-cost, high-square footage single-family detached units (Pollard & Stanley, 2007). Rental housing near suburban jobs in outer-ring suburban communities is projected to remain limited. Henrico County is planning an insufficient number of rental housing units to accommodate its future workforce (Sturtevant & Price, 2012). The disconnection between the design of new rental housing supply and demand for affordable and mid-range rental units will perpetuate the critical shortage of rental units in the outer-ring suburbs of Richmond.

The majority of HCV holders are locating in low-income Census tracts with a high concentration of minority residents. Sixty-six percent of HCV holders live in a census tract with more than 30 percent black residents that are also low-income communities indicated by AMI. Of all Housing Choice Voucher users in low-income, minority communities, about half (54%) are located in the City of Richmond and the remaining half (46%) are located in the inner-ring portions of Chesterfield and Henrico. This evaluation underscores the need for antipoverty assistance and social support across fragmented jurisdictions, as many HCV holders have located in segregated, low-income communities Henrico and Chesterfield. Movers leaving the city of Richmond are likely to find themselves farther from employment and further from social opportunity, facing the lack of public assistance, service fragmentation, and inflexible funding sources common in suburbs (Kneebone & Berube, 2015). The city retains its locational benefits
related to density of jobs and housing, and concentration of HCV in poor inner-ring suburbs is a potential negative outcome of the program.

**Local MTO Program Design and The SAFMR System.** MTO at HOME is now administered using a race-neutral poverty criterion to identify destination neighborhoods. The local MTO program relies on a single definition of opportunity neighborhoods, Census tracts with a poverty rate less than 20 percent, and its design does not reflect contemporary best practice standards for MTO counseling (Cunningham et al., 2010). A race neutral policy for local MTO counseling does not assess the single statistically significant threshold linked to HCV concentration: race. Percentage of Black Residents is strongly correlated with all other socioeconomic predictors of outcomes including SOL pass rates, Percent AMI, Poverty Rate, Percent Single Mother Households, and Percent Unemployment.

This can be described as a program theory failure: Poverty-based MTO program planning will not reduce racial concentration of voucher holders, because many segregated HCV concentration areas do not meet the current threshold criterion for high-poverty neighborhoods. Though about 70 percent of voucher holders are located in low-income communities, only 45 percent are located in high-poverty communities. These neighborhoods of concentration are low-income, high minority communities. The literature indicates that poverty rate is far too low, rendering it ineffective for community evaluation and policymaking (Engelhardt & Skinner, 2013; Johnson & Smeeding, 2012; NYC Center for Economic Opportunity, 2011). Finally, there is not substantive evidentiary support indicating that MTO is an effective antipoverty program, and to use only a poverty threshold for counseling is to design the program around a weak outcome.
Targeting communities in the Richmond region using poverty rate alone increases the likelihood that MTO counseling will be used to promote moves to the City of Richmond’s inner ring suburbs, where poverty is growing, social service delivery is less efficient, and jobs are fewer. Because 90 percent of high poverty tracts with a high concentration of vouchers are located within the Richmond city, any effort to improve mobility outcomes will necessarily encourage moves outside of the city. There are existing concentrations HCV holders in proximal inner ring, suburban tracts that are not low poverty but are low-income, minority areas. Local MTO programming is not currently designed to assist SAFMR System objectives related to integration and fair housing. Any effort to scale the program to meet future demand for counseling generated by the SAFMR System will require policy changes to align with its goals.

**Value Capture.** Potential new vouchers represent a significant added welfare benefit that could exceed the SAFMR System’s MTO capability (Collinson & Ganong, 2015). Current high voucher spending results in fewer vouchers with adverse effects on both landlords and tenants. Though some families are expected to move to higher-rent, lower poverty neighborhoods, factors such as racial discrimination and landlord unwillingness to accept vouchers, in addition to voucher holder preference to remain in place, will limit moves (Fisher, 2015). Estimated using the current location of voucher households, there is a potential savings of 8% or $385,000 that could create an additional 400 vouchers for two-bedroom units.

Though the savings achieved using the SAFMR System modification alone may only meet a small fraction of latent demand for vouchers, the change represents initial steps toward improving the function of the program. Federal political will to increase the HCVP budget exogenously will be required to adequately address latent demand. The SAFMR System increases HCVP efficiency and effectiveness to improve potential program investment return.
There are vast welfare gains to be made using smaller, more universal housing subsidies through HCVP (Olsen, 2008).

This planning evaluation makes no effort to predict what the outcome of the SAFMR System will be, or estimate the proportion of households that will move to higher cost neighborhoods. Both MTO and value capture are expected as a result of the SAFMR System. Housing Opportunities Made Equal and Richmond Redevelopment and Housing Authority may make policy modifications to assist both of these program outcomes to the greatest extent possible.

5.3. Relationship to Prior Research

This is a regional assessment of administrative policies related to and potential welfare gains of the SAFMR System identified in Collinson and Ganong’s (2015) research on outcomes of the HUD demonstration program in Dallas. It evaluates current concentration in low-income, minority communities to relate existing conditions affecting voucher users in the region to the body of research on locational outcomes of HCVP, which indicates that voucher users have concentrated in segregated, low-income communities (Metzger, 2014; Metger & Pelletiere, 2015; Collinson & Ganong, 2015; Koziol & MacKenzie, 2014). It finds that HCV households in both urban and suburban areas are located in low-income, high-minority communities. It assesses local program capacity to meet SAFMR System’s MTO goals using a review of the literature on outcomes of the 1994 to 1998 HUD MTO demonstration program and a review of expanded best practices from contemporary MTO programs. It finds that race is the only statistically significant mobility counseling threshold predicting HCV concentration. It assesses potential for value capture based on Olsen (2008) and Collinson and Ganong’s (2015) assertion that value capture and program expansion may offer a greater welfare gain than MTO. It
estimates that, given current locations of HCV households, there is potential to create 400 new two-bedroom vouchers.

5.4. Policy Implications

The SAFMR System may be employed with a series of other policy modifications and best practice standards to improve HCVP program outcomes. These may be implemented by stakeholders at RRHA or HOME with the support of RRPDC. RRHA is responsible for the majority of policy changes and MTO building capacity improvements through landlord outreach. Policy changes indicated by the literature include the following: provide additional information and counseling to assist moves, expand capacity for MTO counseling, incentivize moves to better neighborhoods and improve landlord outreach, maximize value capture through Rent Reasonableness evaluation, and develop capacity for regional safety net planning.

Providing better information and counseling to assist moves. The concept of opportunity is vague and has not been standardized by any federal agency despite its frequent appearance in regulation. Past efforts to identify communities of opportunity in the region have relied on as many as twenty-two variables (Sanford, Koziol, & McCown, 2015). It remains unclear who will be responsible for identifying neighborhoods of opportunity and consistently promoting access to these areas through mobility counseling. HOME has identified its mission to ensure equal housing access through extensive research and is positioned to lead the effort to define communities of opportunity in the region. HOME’s policy position on locating communities of opportunity for HCV holders may guide RRHA in broader efforts to begin SAFMR System implementation.

RRHA should adopt a policy position operationalizing neighborhoods of opportunity to inform its mobility planning efforts. RRHA can increase the amount of information available to
all HCV holders to indicate which zip codes are in designated high opportunity areas. SAFMR System administrators will ideally provide information about neighborhood quality based on poverty rate, share of minority households, quality of schools, and crime rate in line with best practices (Cunningham et al., 2010). Information on share of minority households or race is particularly critical for neighborhood assessment. Increasing information access for all HCV holders is a first step.

**External Mobility Counseling.** The local MTO counseling program is a fairly new, low-capacity program operated by a non-profit organization, Housing Opportunities Made Equal. Expanding the capacity of MTO counseling programs, making one-on-one counseling available to more HCV holders, has potential to improve locational outcomes. MTO counseling assistance is labor and cost intensive (Cunningham et al., 2010). Additional funding from Virginia Department of Housing and Community Development will be required to meet new demand generated by SAFMR System pricing modifications.

HOME may prioritize moves to wellness using crime data, racial, and economic characteristics of neighborhoods, as all are critical determinants of community health (DeFur et al., 2007). Prior to scaling the local MTO to meet need, policy changes will be required so program design accommodates SAFMR System objectives related to desegregation and opportunity. Thresholds for neighborhood evaluation used in mobility counseling address varying objectives related to poverty reduction, safety, health, and wellness. Some of these are linked to stronger evidentiary support for MTO based on past outcomes. Health and safety promotion is the single strongest capability of the program, given weak educational, employment, and income outcomes (Ludwig et al., 2012). The relationship between desegregation and health provides strong rationale for inclusion of race as a dimension of
neighborhood evaluation. Because MTO is not an effective antipoverty program, alternatives to poverty-based neighborhood assessment should be considered.

**Incentivize Moves to Better Neighborhoods and Improve Landlord Outreach.**

Landlord outreach is the most critical mobility counseling function administered in the Richmond region. Thresholds to assess neighborhood quality may be more effectively employed for landlord outreach than for pre-move counseling and housing search assistance. RRHA influences families’ neighborhood choices by providing lists of landlords willing to rent to HCV holders. Unless the agency makes a potentially labor-intensive effort to aggregate listings from landlords, it remains likely that many of the landlords who reach out to the agency will list units that are difficult for them to rent (Saard & Rice, 2016). These units are often located in segregated and poor neighborhoods where families have trouble paying rent on time each month unless they have a rental subsidy (Sard & Rice, 2016).

A race-based mobility counseling threshold may be employed with AMI or poverty measures to identify target neighborhoods where the number of listings available should be increased. This type of counseling activity finds precedent in Gautreaux program policy, which relied more heavily on landlord outreach to develop and maintain a stock of available housing options in less-segregated neighborhoods (Clampet-Lundquist & Massey, 2008). They may also use AMI thresholds to more effectively evaluate tract income. RRHA may apply the same approach to achieve the greatest mobility counseling impacts and incentivize moves to better neighborhoods by improving unit listings available through their own and supporting websites. In the future, HUD may also incentivize RRHA to support opportunity moves through expanded direct counseling and landlord outreach (Saard & Rice, 2016).
**Maximize Value Capture.** RRHA will also undertake rigorous Rent Reasonableness evaluation to renegotiate leases up for renewal in areas targeted for cost reduction in order to effectively implement SAFMR System price modifications (Collinson & Ganong, 2015). This requires reevaluating current leases to apply the pricing identified by the SAFMR System. Applying prices identified by the SAFMR System reduces perverse incentives to accept vouchers for low-quality, difficult to lease units, described as price discrimination (Collinson & Ganong, 2015). This is a novel set of standard operating procedures that will begin when the SAFMR System is implemented.

**Regional Planning.** Strong regional planning will be required to integrate transportation, workforce development, health policy, environmental regulations, and housing systems that work in tandem with HCVP to improve health and wellbeing. The SAFMR System alone cannot compel families to search for housing in higher-cost neighborhoods in a region (Rosenblatt & Deluca, 2012). There remain concerns about availability of rental housing in jobs-dense suburban neighborhoods, and workforce housing should be considered as a component of the region’s larger economic development strategy (Sturtevant & Price, 2012). This will require alternate planning strategies such as re-zoning for multifamily development and parcel aggregation in Henrico and Chesterfield (Sturtevant & Price, 2012). Regional availability of affordable suburban housing is a requisite for equitable HCVP planning.

Best practices proposed by the Brooking’s Institute’s Metropolitan Opportunity Challenge indicate that HCVP should also be blended with other mainstream funding sources to establish a regional human service system. HCV is frequently employed as a dispersal system for concentrated poverty, but HCVP may potentially decentralize poverty and disrupt social service delivery without tangibly improving outcomes for recipients. Because of the disparate
nature of poverty, administrative bodies must use data strategically, operating a common data platform to target investments and create a more uniform service system in metropolitan areas (Kneebone and Berube, 2015).

The Richmond Regional Planning District Commission currently collects basic metrics on social stability, workforce preparation, and community health, and may in the future administer federal grants to increase access to opportunity. The agency serves as a forum for growing metropolitan capacity to improve networks of intermediaries, supporting and assisting institutions working on a regional scale to improve service delivery for the numerous antipoverty programs that operate with HCVP. Housing providers and planners at RRHA and HOME may inform and collaborate with RRPDC’s Comprehensive Resource Center to facilitate regional funding partnerships.

5.5 Recommendations for Future Evaluation

A meaningful analysis of impediments to housing access suggested by availability of rental housing in the region is outside of the scope of this analysis. The Analysis of Impediments (AI) to housing access is currently completed for the City of Richmond only. Rental housing throughout the region is required for the SAFMR System to be effective. Reconciling the need for zip code level and generalized regional information on rental unit availability will improve counseling specific to the SAFMR System. Expanding the AI to the regional level will be a first step in newly required comprehensive planning to increase the availability of rental housing, and ideally it should include an evaluation of landlord willingness to accept vouchers. This scope expansion is required by the new planning guidelines established by the Affirmatively Furthering Fair Housing Rule (24 CFR 450).
Given the strong relationship between MTO and wellbeing, it would be ideal to consider health assets and exposure to risk as dimensions of mobility planning. Health-oriented HCVP planning may achieve the most significant outcomes possible through the program. In the future, RRHA and HOME may use the US Environmental Protection Agency’s Community-Focused Exposure and Risk Screening Tool (C-FERST) currently in development. Agencies also may use proprietary health outcomes data, information on building stock and indoor air quality, and locational information on access to care to achieve strong impacts related to mobility counseling. Community risk assessment paired with price reduction may remove perverse incentives for landlords motivated to accept vouchers for aging housing stock in high-risk zip codes. Regional evaluators should be attentive to any development in cumulative health impacts assessments for housing planning. Progress is being made across disciplines toward evaluating the healthy environment as a distinct and definable social good to inform policy planning.

5.6. Conclusions

The Richmond region stands out as a demonstration of how policy contributes to exposure to community risk, and the use of regional FMR pricing has created demonstrable artificial and unnecessary barriers to housing access in healthy neighborhoods. RRHA is currently paying a premium for vouchers in low-cost, high-risk communities. Zip code level subsidy caps for HCV developed by HUD’s SAFMR System is one policy remedy that has potential to assist moves to lower-risk and non-segregated areas and simultaneously led to savings that can be reapplied to increase the number of vouchers available in the region. RRHA and partnering non-profit organization, HOME, shoulder the responsibility of defining what opportunity means in the Richmond region as they collaborate to assist moves to safe, healthy communities. Solely promoting moves to low-poverty communities will not achieve the
objectives of the SAFMR System, and race is a significant component of community evaluation for all mobility planning activities from direct counseling to critical landlord outreach. A large body of research suggests that a regional approach is needed to increase affordable housing options for low-income families and to develop an integrated and effective human service system across jurisdictions.
VI. Appendix A. Standard Regression Analysis

This is a standard regression analysis assessing the statistical significance of all predictor variables related to HCV concentration. Predictor variables included were Percent Black Residents, Household Median Income as a percent of AMI, Percent Below Poverty, Unemployment Rate, Percent of Single Mother Households. A significant regression equation was found (F(7,185)=23.978, p<.000) with an $R^2$ of .476. Predicted measures of HCV concentration for each tract is equal to 1.323 -0.161 (Percent AMI) +0.986 (Percent Black Residents) + 0.005 (Percent Below Poverty) – 0.242 (Unemployment Rate) + 0.262 (Percent Single Mother Households) – 0.554 (SOL Pass Rates)-0.596 (Percent renter households), where all variables are estimated using a natural logarithmic transformation. Percent of African American Residents was the only statistically significant predictor of HCV concentration.

Standard multiple regression analysis with HCV concentration as the dependent variable

<table>
<thead>
<tr>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.323</td>
<td>(Constant)</td>
<td>1.323</td>
</tr>
<tr>
<td>Percent AMI</td>
<td>-.161</td>
<td>percent AMI</td>
<td>-.161</td>
</tr>
<tr>
<td>Percent Black Residents</td>
<td>.986</td>
<td>Percent Black Residents</td>
<td>.986</td>
</tr>
<tr>
<td>Percent Below Poverty</td>
<td>.005</td>
<td>Percent Below Poverty</td>
<td>.005</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>-.242</td>
<td>Unemployment Rate</td>
<td>-.242</td>
</tr>
<tr>
<td>Percent Single Mother Households</td>
<td>.262</td>
<td>Percent Single Mother Households</td>
<td>.262</td>
</tr>
<tr>
<td>SOL Pass Rate</td>
<td>-.554</td>
<td>SOL Pass Rate</td>
<td>-.554</td>
</tr>
<tr>
<td>Percent Renter (Control)</td>
<td>-.596</td>
<td>Percent Renter (Control)</td>
<td>-.596</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>p</th>
<th>F</th>
<th>R</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.323</td>
<td>3.068</td>
<td>.431</td>
<td>.667</td>
<td></td>
<td>23.978</td>
<td>0.69</td>
<td>0.476</td>
</tr>
<tr>
<td>-.161</td>
<td>.373</td>
<td>-.431</td>
<td>.667</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.986</td>
<td>.129</td>
<td>7.646</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.005</td>
<td>.156</td>
<td>.034</td>
<td>.973</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-.242</td>
<td>.174</td>
<td>-1.388</td>
<td>.167</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.262</td>
<td>.126</td>
<td>2.087</td>
<td>.038</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-.554</td>
<td>.467</td>
<td>-1.186</td>
<td>.237</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-.596</td>
<td>.148</td>
<td>-4.024</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: LOG_LQ_concentration
References


Fischer, M. (2015). Neighborhood-based subsidy caps can make housing vouchers more efficient and effective. Center on Budget and Policy Priorities,


Griego, T. (2015, More than shelter. Richmond Magazine,


Pollard, T., & Stanley, F. Connections and choices: Affordable housing and smarter growth in the greater Richmond area. *Southern Environmental Poverty Law Center*.


Sanford, S., Koziol, B., & McCown, K. Where you live makes all the difference: An opportunity map of the richmond region., 08/14/2015.


Sturtevant, L. (2013). Housing the richmond region's future workforce. *George Mason University School of Public Policy; Center for Regional Analysis*, , 08/14/2015.


VITA

Catie Bray was born in Richmond, Virginia and is an American citizen. She received a Bachelor of English, a Master of Social Work Policy and Planning Practice, and a Master of Urban Planning at Virginia Commonwealth University.