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Neighborhood Inclusion and Quality in Richmond, VA: An Empirical Review of Neighborhoods in the Richmond Region Based on Factors of Racial and Economic Inclusion and Quality of Life.

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NEIGHBORHOOD INCLUSION AND QUALITY IN RICHMOND, VA:
AN EMPIRICAL REVIEW OF NEIGHBORHOODS IN THE RICHMOND REGION
BASED ON FACTORS OF RACIAL AND ECONOMIC INCLUSION AND QUALITY
OF LIFE

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

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I. ABSTRACT

This thesis is an empirical review of neighborhoods in the Richmond Region based on factors of inclusion and quality of life. The research attempts to answer the question of whether or not healthy and inclusive neighborhoods exist in the Richmond Region, and if they do what factors they hold in common. Inclusion and quality of life are identified using census data, school assessment reports, HUD reports, and cause-of-death data applied at the neighborhood level (census tract). This data is used to identify neighborhoods within the Richmond Metropolitan Statistical Area (MSA) that have a high quality of life and include racial minorities and low-to-moderate income households at a rate that reflects the region as a whole. Finally, the census tracts that fit these criteria are analyzed to determine correlating factors. The analysis determined that inclusive census tracts with a high quality of life tend to be majority-black suburban neighborhoods located near the urban cores or Richmond and Petersburg. These neighborhoods had a mix of housing types, moderate homeownership rates, newer housing options, access to public schools, access to commercial goods and services, and households with moderate incomes. Policies that promote these types of environments will help create and sustain healthy and inclusive neighborhoods.

Keywords: inclusion, quality-of-life, neighborhood indicators, Richmond, VA
II. INTRODUCTION

Much research and policy on the topic of housing has focused on the creation of affordable housing and reducing spatially isolated minority and low-income groups. Mixed-income and racially diverse neighborhoods have been promoted as a way to address issues of poverty and its related quality-of-life indicators. Many argue that all neighborhoods will ultimately become economically and racially homogenous and that it’s counterproductive and even harmful to attempt to buck this trend. However, the status quo of economic and racial segregation, specifically in Richmond, VA has been correlated to negative quality-of-life outcomes for low-income and minority communities. The purpose of this thesis is to answer the question of whether it is possible for neighborhoods to remain inclusive of lower-income households and racial minorities and maintain a high quality of life; and if so, what are common characteristics of these neighborhoods. Are diverse communities only diverse for a limited period of time as they trend towards racial/ethnic or economic homogeneity? Can inclusion and a high quality-of-life be maintained in neighborhoods? If so, identifying healthy and diverse neighborhoods and identifying correlating factors will help inform public policy aimed at promoting more of these types of neighborhoods.

In order to test this research question the Richmond Metropolitan Area has been selected as a case study. There are three primary components to the research question: 1) identifying census tracts that are inclusive of low-to-moderate income households and racial and ethnic minorities; 2) developing a set of metrics to test quality-of-life and applying them to all census tracts in the Richmond Region; 3) running a correlation analysis among the inclusive and highly-rated census tracts to identify factors that are correlated with high quality-of-life among inclusive tracts.
The literature review takes a look at the history and trends of income and racial segregation in the U.S. and examines the types of methods that have been used to define quality-of-life. The contribution of this study to the literature is to test theories of segregation and use quality-of-life metrics in the local context of Richmond, VA. The findings of the literature review suggest that prolonged income and racial/ethnic integration rarely exists at the census-tract level. The review of Richmond’s own history regarding segregation also suggests that inclusive neighborhoods with a high quality-of-life either do not exist locally or are extremely rare. This assumption is tested by using quality-of-life metrics. The subsequent correlation analysis identifies the common characteristics among inclusive tracts with specific attention paid to those with a high quality-of-life if they are found to exist at all.
III. LITERATURE REVIEW

A. Mixed Income Neighborhoods

1. Failure in outcomes for concentrated poverty – Contextual Effects

Income segregation has an impact on social outcomes for individuals because of contextual or neighborhood effects. Findings for the impact of neighborhoods on individual quality of life have often yielded unclear results. Jencks and Mayer (1989) show that, while there are positive impacts on overall neighborhoods and schools when incomes are mixed, neighborhood effects become increasingly trivial when you take family factors into account. Conversely, Sampson, Raudenbush and Earls (1997) demonstrate that concentrated disadvantage has an impact on crime and quality of life. Economic segregation, along with immigrant concentration, and resident instability were tied to area crime rates. In an attempt to review and summarize the growth of literature on the subject, Sampson et al. review over 40 neighborhood effect studies and show that factors like concentrated poverty, affluence and residential stability do, in fact, impact crime and other quality-of-life outcomes. In addition, collective efficacy and informal social control are shown to have negative correlation with crime and juvenile delinquency. Collective efficacy and social control, in turn, are shown to be impacted by neighborhood socioeconomics (Sampson, Morenoff, and Gannon-Rowley 2002). Because of the impact of neighborhoods on individual households, especially neighborhoods with concentrated poverty, housing and community development policy has focused on promoting mixed-income neighborhoods through low-income housing dispersal and the economic integration of neighborhoods with concentrations of poverty.
2. History of Economic Segregation in Neighborhoods

Economic segregation by neighborhood is tied to income inequality on a metropolitan-wide and national scale. Income inequality is, by its nature, a prerequisite for income segregation. Over the course of the 20th century, income inequality has taken a “U”-shape; inequality was high in the first quarter of the century, dipped during the depression and through WWII, and then has since been rising since the 1970s (Piketty and Saez, 2003). Theoretically, if different households of different incomes were equally distributed across neighborhoods, there would be no income segregation. However, income segregation, along with inequality, has been growing in US cities over this same course of time. Reardon and Bischoff (2011) study this relationship and show that the growth in income disparity between 1970 to 2000 was strongest between middle- and upper-income earners (as opposed to lower- to middle-income earners). This impacted income segregation in US Metro areas, particularly through the concentration of upper-income households in separate neighborhoods that were spatially isolated in the greater Metro areas from middle- and lower-income neighborhoods (Reardon and Bischoff, 2011; Fischer et al. 2004). This pattern of upper-income segregation at the close of the 20th century is accompanied by the continued segregation of low-income neighborhoods that became prominent during the 1960s-1980s (Wilson 1987, Denton and Massey 1993).

a) Economic Models Income Segregation:

In order to explain these trends of income segregation a number of models for neighborhood sorting have been developed that assume profit-maximizing agents that will naturally sort themselves into homogenous neighborhoods. Alonso’s bid-price curve states that individuals maximize their satisfaction by choosing how much land (and house) they can afford at what
distance from the city center (Alonso, 1964). According to this model households with similar incomes are distributed in concentric zones that ring the city. While studying the process of gentrification, Smith (1979) describes the process of neighborhood decline that is tied to building age and the socioeconomic status of the resident. Using the life-cycle of an 19th century urban neighborhood as an example, Smith (1978) describes a disinvestment trend in terms of “rational” economic decisions that maximize the return on investment. As the housing stock begins to age, its utility declines in subsequent steps as a homeowner’s residence, renter’s residence, subdivided renter’s residence, and then finally is abandoned and vandalized or destroyed through arson in order to realize a final economic return: property insurance. Likewise, these local investment trends are accompanied by national lending agencies that practice redlining and drop their investment activity in older neighborhoods for safer investments in outlying, suburban neighborhoods. In this model, building age homogeneity is linked to income homogeneity. The Tiebout Model looks at another segregating force: individual preference for public goods. The model states that individuals will sort themselves by jurisdiction in order to get the highest quality public services (ex. education, police, and garbage) that they can afford, which reinforces a reciprocal relationship between tax base and public services (Krupka 2006). Finally, Reardon and Bischoff (2011) also outline a trend of segregation based on preference for neighbors of a similar socioeconomic status. This particular sorting process is reinforced by the real estate industry, which sets home prices based off of recent sales in the neighborhood, and lending agencies which tie mortgage amounts for these homes to personal income.

The above models demonstrate the prevailing trends toward income segregation. But as cities expand, populations change, and housing stock ages, there are natural demographic and economic shifts at the neighborhood level. What is the fate of neighborhoods that become
economically integrated? Krupka (2006) attempts to answer this question with an empirical study using demographic, economic, and housing information at census block group level. The study found that an influx of new residents of different socioeconomic status into a neighborhood does result in a mix of incomes. This integration is not sustainable, however, as income disparity at the neighborhood level decreases over a ten-year span because of out-migration. The author concludes by saying that, “whatever people’s attitudes are about income-mixing *per se*, economic forces shaped by household residence decisions, business location and/or public service provision do not allow extremely mixed neighborhoods to persist.” (Krupka 2006 p 3).

**b) Federal and Local Policies related to Mixed-Income Neighborhoods**

In order to address these trends, numerous federal, state and local initiatives have been put in place in order to address income sorting through the deconcentration poverty and the promotion of mixed-use neighborhoods. The federal government’s role in promoting mixed-income neighborhoods has focused primarily on the issues surrounding public housing developments and their contribution to concentrated poverty. The promotion of mixed-income neighborhoods did not become a stated priority of the Federal Department of Housing and Urban Development (HUD) until The Housing and Community Development Act of 1974 signaled a change in priorities. The Act included specific language which noted the problems related to concentrated poverty and promoted “the reduction of the isolation of income groups within communities and geographical areas and the promotion of an increase in the diversity and vitality of neighborhoods through the spatial deconcentration of housing opportunities for persons of lower
income\(^1\) Prior to this, federal housing programs were focused on the provision of public housing for low-income households and, secondarily, to promote community preservation and revitalization (Leigh and Mitchell 1980). In line with this new priority, Section 8 housing vouchers grew in popularity through the 1980s.

The Urban Homesteading Program of the Housing and Community Development Act (1974) was designed to increase reinvestment in aging urban neighborhoods. Publicly owned parcels could be transferred to individuals at extremely low prices in the hope that it would spark private investment, increase homeownership, and help repopulate urban neighborhoods that had become largely vacant. (Chandler and Olion 1988) Besides this program, most other federal initiatives at this time were focused on the dispersal of affordable housing units. The 1967 *Gautreaux v. Chicago Housing Authority* ruling required the Chicago Housing Authority (CHA) to disperse public housing residents through the use of Section 8 housing vouchers and by siting new public housing units in low-poverty areas (Duke 2009). The Gautreaux Project was a landmark program that drew attention to the dire condition of public housing and its detrimental impact on urban communities. In the early 1990s the Moving To Opportunity (MTO) program involved the dispersal of public housing tenants through Section 8 vouchers with the additional provision of housing counseling, and a requirement that recipients move to neighborhoods with less than 10 percent poverty (Duke 2009). Gautreaux and MTO both address concentrated poverty through dispersal of affordable housing units. In contrast, HOPE (Housing Opportunities for People Everywhere) VI is a federal program began in the 1990s that focuses on redeveloping existing public housing sites. (Duke 2009) Like past programs, some affordable housing is

\(^1\) *Code of Federal Regulations*, title 46, sec. 5301c(6)
dispersed through Section 8 vouchers, but in addition, some tenants may return to housing developments that include a mix of incomes.

The focus of affordable housing creation at the local level often takes the form of inclusionary zoning ordinances. Inclusionary zoning puts the burden of affordable housing creation entirely on the private sector through minimum standards of affordable housing creation on a percentage basis (usually 10-15%). Affordable units can either be mandated for new construction or included as an option with the provision of a density bonus as an incentive. The definition of affordability often varies, though usually units are targeted for households between 50-70% Area Median Income (AMI) (Schuetz et al. 2009). The redevelopment of aging urban neighborhoods is pursued on the local level through rehabilitation tax abatement programs. Many localities use tax abatement programs to help finance the production of rental housing or to stimulate rehabilitation efforts and spur homeownership in aging and distressed neighborhoods [HousingPolicy.org 2010]. These programs use a reduction in taxable value, usually through retaining the assessed value of the property before rehabilitation as the taxed value for a series of years after project completion. Through these two examples, inclusionary zoning and rehabilitation tax abatements, local governments are also pursuing mixed-income neighborhoods through those means used on the federal level: dispersal of low-income housing and the inclusion of middle- and upper-income housing in low-income communities.

3. **Gentrification – does it create mixed-income communities?**

In addition to government programs and policies, income levels have been mixing at the neighborhood level through private reinvestment in aging urban neighborhoods that are
predominantly low-income and minority. The process often referred to as gentrification\(^2\) has been a factor in urban neighborhoods in US cities since the 1970s. The impact of gentrification began to gain traction in modern research in London in the 1960s (Hamnett 1973). It then crossed the Atlantic and began to take form as a topic of study in the US by the late 1970s and 1980s. By the 1970s, a middle-class “back to the city” movement was being supported by private and public reinvestment in inner-urban neighborhoods in cities like Washington, D.C., Philadelphia, and Baltimore (Smith 1979). The impact of redevelopment in post-WWII Boston “altered the class composition of the central city from predominantly working class to more affluent residents.” (p 87 Paskin 1979) and displacement of poor blacks from urban neighborhoods to low-income suburbs was noted (Paskin 1979, Henderson 1979). It was described through the lens of the Alonso Bid-Price curve as a natural market trend, which states that economic utility of buying and renovating old homes close to the central business district (CBD) is higher than buying suburban homes on the urban fringe (Smith 1979). Gentrification patterns in 19\(^{th}\) century inner-city neighborhoods throughout East Coast cities were noted as the natural economic product of the ‘rent gap’ between existing and potential rent potential. This was made possible by a combination of decaying inner-urban housing stock and an expanding urban periphery moved further away from the CBD (Smith 1979).

4. Review of the value and sustainability of mixed-income neighborhoods

Mixed-income policies have been critiqued for their effectiveness in producing mixed-income neighborhoods for their impact on low-income residents in situations where income mix has been achieved. The Section 8 Housing Voucher Program does improve household safety for

\(^2\) See Definitions section for more detail.
dispersed households by reducing exposure to crime and reduced neighborhood social disorder (Anderson et al. 2003). Given its relatively early inception (1967), studies on the Gautreaux program have been able to study the long-term impacts of the dispersal of low-income households. Studies show that homicide rates for black men were lower for those households that relocated to neighborhoods with higher educational attainment levels (Votruba and Kling 2009) and job stability for black women is higher for those that moved to neighborhoods with more overall resources (Mendenhall et al. 2006). Despite these benefits, the perceived impact from existing neighborhood residents may be negative and vehement opposition from neighborhoods that receive public housing may lead to social and political isolation for dispersed public housing residents (Duke 2009). Gentrification and public dispersal programs have been noted for other ill impacts including, removal of residents from their ‘turf’ (Henderson 1979) and racial exclusion from capital accumulation and movement into inner-city neighborhoods (Lipman 2008). In a review of all research on housing dispersal programs since 1995, Goetz and Chapple (2010) argue that besides subjective feelings of satisfaction and safety, real outcomes for dispersed low-income households did not demonstrate any marked improvement on health, social integration, or greater economic self-sufficiency (Goetz and Chapple 2010). Because of its relative recent implementation, research on HOPE VI outcomes has been largely inconclusive (Anderson et al. 2003). However, one study of the redevelopment of a majority Vietnamese public housing development showed that those residents who returned to the new, mixed-income development did not experience strong social ties to incoming residents that benefited them socially or economically (Kleit and Carnegie 2011).

Mixed-income neighborhoods have a series of theoretical underpinnings that explain their value in improving the lives of low-income households. Joseph, M. (2006) synthesizes four primary
theories and analyze their validity in practice. They are i) the establishment of social networks across socioeconomic lines, ii) informal social control through established norms of public behavior, property maintenance, and volunteerism, iii) behavioral effects through the modeling of middle class ethics and values to those residents who exhibit a “culture of poverty”, and iv) the improved political economy of the neighborhood – when new residents demand higher quality public services and support private enterprises. After reviewing studies of mixed-income developments, the authors conclude that informal social control and improved political economy are valid descriptors of the positive impacts of mixed-income developments (Joseph 2006). Stated benefits to living in mixed-income neighborhoods (by lower-income residents) include, housing quality, overall environment, reduced stress, increased safety, increased self-esteem, increased motivation to advance their lives. Mixed-income neighborhoods have been shown to improve the lives of low-income households because a more constructive neighborhood environment is produced, not because of a change or improvement in social networks and relationships.

Residential satisfaction with mixed-use developments is high; however, mixed-income developments are not sustainable and shift to homogeneity over time (Levy, McDade, and Bertumen, 2010). Even in cases where a mix of income levels is achieved, a mix of socioeconomic groups is less likely. McKinnish, Walsh and White (2010) find that between 1990 and 2000 neighborhoods with an established high dispersion of incomes (i.e. mixed-income neighborhoods) were highly likely to attract an economically diverse set of in-migrants but that income dispersion was misleading because many in-migrants of low-income were not projected to have lifetime low-incomes (McKinnish, Walsh and White 2010). In the assessment of Levy et al. (2010), public policy has failed mixed-income communities because they have not been
able to sustain income mix over the long term. But what about the outcome of those neighborhoods that experience income mix through private means?

Gentrification in the 1990s showed that the influx of white, higher-earning households in low-income minority neighborhoods did not result in displacement of low-income, black households. In addition, these gentrifying neighborhoods also drew a large number of middle-income black households as well. McKinnish et al. (2010) conclude that the paradigm of mass displacement through gentrification in the 1990s is not empirically based. In addition to a demographic review of neighborhood change, Vigdor (2010) compared the improvement of neighborhood quality with the corresponding willingness-to-pay for these changes. This study showed that price increases associated with gentrifying neighborhoods are less than residents’ willingness to pay for them. This finding supports that gentrification provides net benefits, even for renters, that are greater than an increase in cost-of-living.

B. Neighborhood Racial/Ethnic Integration

1. Impacts of Racial Segregation

Despite a reduction in spatial isolation by the end of the 20th century, blacks still remain the most segregated minority group in the US (as compared to Latinos and Asians) (Massey, Fischer 1999). Identifying direct causation between racial isolation and poor quality-of-life outcomes is difficult because of the potential for confounding socioeconomic factors and the difficulty of separating household-level and neighborhood-level impacts on households. Do minorities fare well in spatial isolation? Cutler, et al. conclude in a 2007 review of studies on ethnic concentration that outcomes for spatially isolated ethnic groups are either higher or lower dependent on the educational attainment of that ethnic group. According to the 2008-2010
American Community Survey, blacks still lag behind the rest of the country in educational attainment\(^3\). In addition to lagging educational attainment, spatial isolation for blacks in inner-cities and inner-ring suburbs results in a spatial mismatch with job-rich suburbs and a lower quality of public services in financially constrained localities (Cutler, et al 2008). Research by the end of the 20\(^{th}\) century showed that segregated communities still had unequal access to capital, education and safe and stable neighborhoods (Jargowski, 1997; Massey and Denton 1993; Bullard, Grigsby III, and Lee, 1994). So despite the difficulty in isolating racial segregation as a separate factor, the research has shown that spatial isolation of minority groups, especially blacks, has led to lower quality-of-life outcomes.

2. **History of Racial Segregation in Neighborhoods: Theories and Policies**

A series of Federal Policies throughout the 20\(^{th}\) century have contributed to the spatial isolation of the poor and minorities. The following is a timeline of events and policies that had the effect of isolating these groups. Early 20\(^{th}\) century cities were bound by the spatial constraints of foot travel. Cities were tightly packed and a “jumble of rich and poor … immigrant and native, black and white” (Silver 1984 p 40). The advent of the streetcar suburbs enabled middle- and upper-income whites to leave previously mixed cities. Inner-city neighborhoods became increasingly dominated by blacks and other minority groups. This process of neighborhood sorting in the early 20\(^{th}\) century gave birth to the “invasion-succession” theory of neighborhood change – wherein one socio-economic group invades, and eventually, succeeds the previous group (Talen 2008). Against the backdrop of a growing urban footprint, Euclidian Zoning began to be used as an effective means to separate land uses and protect property values of those uses (usually upper-income residential) that were being threatened by encroaching commercial and industrial

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\(^3\) American Community Survey: 2008-2010. B15002B
sites. Zoning was also being used in urban areas to separate minorities and lower-income housing from white and upper-income blocks (Silver 1984). In 1917 the Supreme Court\(^4\) ruled that the use of zoning for the purposes of racial segregation was unconstitutional. In response, private-sector means of segregation were implemented through the use of restrictive covenants. Zoning ordinances with explicit racial directives and private covenants both served to segregate the city even as modes of transportation made the expansion of the urban footprint possible. (Silver 1984) This combination of economic sorting by neighborhood and racial exclusion was the first of a series of factors that contributed to modern urban segregation by race.

Efforts in the 1930s to stabilize the housing market during the Great Depression led to the establishment of the Home Owners’ Loan Corporation (HOLC) which assessed and ranked the market strength of urban neighborhoods. This process essentially institutionalized and encouraged the practice of redlining and, despite claims of objectivity, undervalued black neighborhoods compared to white neighborhoods of similar income-levels and housing quality. The impact of the HOLC was to bolster the housing markets of white and urban-fringe neighborhoods while simultaneously constraining the ability of residents in poor and minority neighborhoods to get access to credit in order to maintain and make improvements to the housing stock. Racial segregation was considered normative and reasonable (Goering, 1986) and the housing policies reflected these assumptions by the promotion of separation by race and ethnic group. HOLC neighborhood assessments from the 1930s were used by the Federal Housing Administration (FHA) in the 1940s for their loan programs; and until 1950, the FHA also recommended the use of racially restrictive covenants and discouraged a mix of economic classes for the sake of neighborhood stability.

\(^4\) Buchanan v. Warley - 245 U.S. 60 (1917)
The growth and expansion of interstate highways under the Federal Highway Administration in the 1950s further expanded the urban footprint, deconcentrated cities, and in concert with the FHA, contributed to the separation of (predominantly) white middle- and upper-class housing from poor minority housing in the older portions of the city. The construction of highways also had an undue impact on minority neighborhoods and disrupted the urban fabric and housing of black residents of all income levels (Silver 1984).

Though often highly contested by the black community (Silver 1984), urban renewal programs from the 1940s to the 1970s razed poor and unsanitary housing in black neighborhoods and replaced them with large public housing apartment complexes that were segregated by race and almost entirely comprised of blacks. It was not until 1968 that Department of Housing and Urban Development (HUD) had a legislative mandate to affirmatively promote fair housing through its programs (Goering 1986). Housing discrimination through private covenants and lending practices made it extremely difficult for blacks to move out of ageing inner-city neighborhoods. Up until the late 1960s and 70s, black neighborhoods still remained vertically integrated (Wilson 1987). According to William Julius Wilson there were positive benefits of these neighborhoods. They maintained a level of social organization through a sense of community, positive neighborhood identification, and explicit norms and sanctions against aberrant behavior (Wilson 1987).

The civil rights movement brought a broad reversal to government policies regarding segregation and largely ended explicit de jure segregation by race. *Brown v Board of Education* (1954), the Civil Rights Act (1964), the Fair Housing Act (1968), and the Equal Credit Opportunity Act (1975) (Bullard, Grigsby III, and Lee, 1994) all represent prohibitions on discrimination and segregation by government and lenders. These rulings and legislation reversed all previous
policies and private covenants regarding discrimination and segregation by race. They sought to enhance the freedom for minorities, especially blacks, from racism in government, institutions, and the workplace.

The removal of these barriers to housing and lending in the 1960s and 1970s did not result in an end to the housing segregation outcomes. In response, desegregation policy became increasingly affirmative. Under the Johnson Administration, the Kerner Commission (1968) advocated active policies that would improve low-income, black neighborhoods and simultaneously encourage dissemination policies that would enable blacks to leave these neighborhoods (Massey and Denton 1993). The Home Mortgage Disclosure Act (1975) required reporting by lending institutions with associated penalties for racial or economically discriminatory practices. The Community Reinvestment Act (1977) also targeted lending institutions and encouraged investment in distressed communities. The Housing and Community Development Act (1964) also included the mandate for “fair share” plans in the local provision of subsidized housing. This directive was meant to disperse the existing concentration of public housing in the central cities into the greater metropolitan areas. In addition to federal measures, local governments and neighborhood organizations proactively addressed the neighborhood-level segregation occurring throughout the US. Localities such as Oak Park, IL and Shaker Heights, OH had active housing centers that used “integration maintenance (IM)” activities (Goering 1986) to promote or maintain diverse neighborhoods. These activities included targeted marketing to white or black audiences, racial record keeping, close monitoring of housing quality and public service standards, and requirements that homeowners inform the housing center of any intent to sell.

If federal measures to remove barriers to segregation did not work, affirmative federal, state and local policies did not have a pronounced impact on neighborhood segregation either.
Interventionist IM policies only served to slow the rate of re-segregation and did not result in long-term integration (Goering 1986). Furthermore these policies received criticism from black organizations (National Urban League, NAACP, Southern Christian Leadership Conference (Goering, 1986)) because they infringed on the freedom of blacks to choose the location of their housing. And while whites were increasingly supportive of the ideals of desegregation, the use of “benign quotas” (p 182, Goering, 1986) and other forms of affirmative integration measures were also unpopular because of their impact on individual liberty (Goering, 1986). On the national level, housing audits from 1970-1990 show persistent and widespread discrimination by real-estate agents and lenders (Massey and Denton, 1993; Bullard, Grigsby III, and Lee, 1994, Denton and Massey, 1993). Public housing units remained segregated even though local housing authorities were under a directive to affirmatively promote fair housing between whites and blacks. Blacks continued to live in the oldest housing, pay a disproportionate amount, have limited equity accumulation and face restrictions in locational choice (Bullard, Grigsby III, and Lee, 1994). Between 1960-1990 black suburbanization in three large southern cities (Atlanta, Memphis, Richmond) was still segregated from white suburbs as a geographical expansion of black inner-city segregation (Moeser and Silver pp 519-550). In 1990, William Julius Wilson noted that, despite “sweeping anti-discrimination and anti-poverty legislation” of the 1960s and 1970s, conditions in [poor and black urban] neighborhoods had actually gotten worse. Inner-city neighborhoods were also described by Massey and Denton (1993) as “progressively isolated – geographically, socially and economically – from the rest of society” (Massey and Denton 1993 p 2).

3. Review of Studies That Show Instability of Racial Segregation
Most scholars will agree that existing spatial isolation of blacks in America has its roots in slavery and Jim Crow laws of the early 20th century. However, the cause of its perpetuation past institutionalized forms of racism and discrimination has been the subject of much debate. There are three primary arguments put forward to explain why blacks still remain more spatially isolated than any other racial minority: cultural, discriminatory, and economic. First, the *cultural argument* states that the current state of black segregation is due to the breakdown of the family unit and the absence of a strong work-ethic or normal social mores. In 1965, the Moynihan Report was published that analyzed census statistics on the family structure by race. It concluded that the poor economic conditions of blacks were related to poor family structure and that long-term economic progress could not be realized under the current state of the black family. In the 1980s, Charles Murray argued in his book, *Losing Ground*, that government programs designed to promote desegregation and advance the economic standing of blacks actually altered the “rewards and penalties that govern human behavior” (p 16 Wilson, 1987) and further destabilized the black family. The *discriminatory argument* states that the fundamental reason why segregation is perpetuated is through active discrimination against blacks in the lending and real estate industries, government agencies, and American society as a whole. The use of racially restrictive covenants in the first half of the 20th century (Silver 1984) and ongoing the practice of discrimination through residential “steering” by real estate agents and redlining by lending institutions is said to be a stronger cause of residential segregation than the personal preference of blacks and whites to live in segregated neighborhoods (Bullard, Grigsby III, and Lee, 1994). The discrimination argument was crystalized by Douglas Massey and Nancy Denton in *American Apartheid*: “African Americans were subject to a system of institutionalized housing discrimination. Each time that a legislative of judicial action was undertaken to ameliorate
segregation, it was fought tenaciously by a powerful array of people who benefited from the status quo (realtors, bankers, politicians); these actors, in turn, relied on the broader indifference and hostility of most white Americans.” (Massey Denton 1990 p 212). The economic argument states that the root cause of continued segregation is not because of a culture of poverty, or an active system of discrimination, but a combination of historic discrimination and existing economic trends. Wilson argues that the family structure was damaged when black middle-income households gained the freedom to leave black enclaves in the inner-city and thus removed the “social buffer” that middle-income households provided through the patronization of stabilizing institutions like churches, retail, school and other public facilities. Wilson’s other primary argument is that the loss of jobs from the declining manufacturing sector had a disproportionate impact on working-class blacks. The loss of these jobs led to a decline in “marriageable” men and a further breakdown of the family structure (Wilson, 1987). Wilson sees macro-level economic trends as the major contributor to black spatial isolation. Paul Jargowsky extends this argument in his 1997 book *Poverty and Place* by drawing attention to metropolitan-wide economic trends. Jargowsky argues that “ghetto neighborhoods should be thought of as the most impoverished part of a larger distribution of neighborhoods… shaped by metropolitan-wide processes of income generation and neighborhood sorting.” (Jargowsky 1997 p 183)

There is some overlap among all three types of theories, particularly between the economic and discriminatory arguments, but each one departs from the other in its assessment of the root cause of persistent black segregation. This leads to different recommendations for policy action. The Moynihan Report does not make specific policy recommendations but does infer a direction for future study by noting that economic conditions in the black community have been so poor for so
long that “a reversal in the course of economic events will no longer produce the expected response in social areas.” (Moynihan 1965 p 766) For Murray the solution to the social ills noted is to remove the socially damaging impact of government intervention, especially the welfare system. For those who argue that discrimination is still the primary contributor to segregation, the answer is a stronger government intervention through tougher enforcement of existing anti-discrimination laws, the bolstering of support services for low-income housing, and dispersal of minority housing into areas outside of the existing black enclaves. For Wilson, the answer lies in a politically feasible economic policy that benefits wider swathes of low- and middle-income America. For Jargowski, economic policy should focus on the removal of the Home-Mortgage Interest Deduction which would shift more of the tax burden to higher-income households and provide more funding for neighborhood sorting programs (an “economic mobility strategy”) and policies to improve currently impoverished neighborhoods.

As scholars have attempted to define the root problem behind racial segregation there have been a number of government policies that have attempted to address the problem based on these arguments. Conservative policies sought to cut back on social welfare and improvement programs. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), or simply Welfare Reform, shifted the focus of welfare to a more limited role with greater emphasis on temporary assistance and workforce development. Even though an economic measure on the surface, the impact of the Moynihan Report is evident from the outset: “The Congress makes the following findings: (1) Marriage is the foundation of a successful society.” (110 STAT. 2110, SEC. 101. FINDINGS.). Liberal policies sought to outlaw discrimination in its public and private forms and provide a strong support for economic and

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5 One specific example that Jargoswki provides is the expansion of the Enterprise Zone program.
physical revitalization of communities. Jargowsky’s recommendation to pursue dispersion and improvement policies for urban neighborhoods has been reflected in HUD’s Section 8 Voucher program and HOPE VI aims to improve the quality of urban neighborhoods through mixed-income developments in place of concentrated public housing.

The black middle class has grown and expanded since the advent of anti-discrimination legislation (Wilson 1987) and blacks are less isolated in the 21st century than they were in the middle of the 20th century. In spite of these trends, studies have shown that the rates of isolation of blacks is still high relative to other groups (Iceland, J. et al 2009).

Social scientists and scholars have proposed a variety of theories as to how neighborhoods segregate or resegregate. On theory, already noted, is the “invasion-succession” model of neighborhood change where one socioeconomic group would begin to occupy and eventually succeed another. This was theory has been used to describe neighborhood change for a variety of groups not just racial or ethnic groups. (Talen 2008). In 1971 the invasion-succession model was refined when Thomas Schelling argued that neighborhoods experience shifts because every agent (or household) has a tolerance level for a certain amount of unlike neighbors (Schelling, 1969). Once this tolerance is tipped they will move and, in turn, create a tipping point for the next most tolerant agent until only the most tolerant agent is left, creating a neighborhood of all like types. Schelling’s Tipping Point model was developed in the late 1960s, when race relations were extremely unstable and neighborhoods were quickly moving through invasion-succession patterns (Silver 1984). Since then the model has been revisited with more moderate scenarios but similar outcomes. In the 1970s, real estate market trends showed that whites do not mind

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6 Though both of these programs are aimed at economic integration, the history of segregated public housing and the 1968 HUD directive to actively pursue desegregation through federal housing programs are also reflected.
some integration, but will become “panicky” if they are in the minority or expect to be the minority soon. Conversely, blacks prefer to live in neighborhoods were some manner of racial balance has already been reached but few choose to be part of a small minority. (Goering 1986) This mismatch of preference was theorized to be the reason why neighborhood could not maintain integration. The Tipping Point model was revisited again in 2009 with the additional assumption that all residents prefer integrated neighborhoods to non-integrated ones. However, even given a stated preference for integration, residents still prefer being the majority in a mixed neighborhood than being the minority. Using this preference modeling, neighborhoods will still eventually sort out by a given type (O’sullivan 2009). Georing states that “if the ‘tipping’ point theory of re-segregation has validity, the entire desegregation process may be largely immune to antidiscrimination enforcement techniques:” (Goering 1986 p 52). If the process of segregation (or re-segregation) of neighborhoods is based on individual preference, then segregation can be described in economic terms. Under the bid-rent scenario, different racial groups have a higher or lower demand for a particular neighborhood and out-bid the other (Goering 1986). The invasion-succession, and tipping-point models of neighborhood change assume two primary groups interacting. The bid-rent model may include more than two groups interacting, but like the former, it leads to homogeneous neighborhoods.

4. Review of studies that show sustainable and racially mixed neighborhoods

Not all theories and studies show that racial segregation is inevitable. Neighborhood trends in the 1990s demonstrated a decline in spatial isolation of blacks (Reardon et. al, 2009) and the probability of contact with other blacks declined and the average probability of interaction with whites increased. The “tipping” theory of neighborhood segregation was not inevitable. Many
neighborhoods gained black population in the 1990s and maintained their composition throughout the decade and the number of the number of neighborhoods that were exclusively white decreased (Rawlings, et al. 2004). Even while these trends were occurring the white population grew heavily in neighborhoods that already had low diversity and black neighborhoods that were either exclusively or predominantly black saw little influx of white residents (Rawlings, et al. 2004). Metro areas in the US also saw growth in more multi-ethnic neighborhoods (defined by census tract) which was driven by the growth of the Latino population. Researchers note a need for additional research that includes a longer span of time in order to understand whether the growth of multi-ethnic neighborhoods is the new norm or simply neighborhoods in the midst of a racial sorting process (Farrell and Lee 2011; Nyden et al., 1997).

Changes in neighborhood diversity led authors Farrell and Lee (2011) to create three test typologies to understand different approaches to measuring racial diversity in US Metros. These were the bifurcation, fragmentation, and demographic integration models. Each model carries its own assumptions. First, the bifurcation model assumes that the racial split in neighborhoods will be white/nonwhite. This model puts the emphasis on whites as the intolerant racial group and the major actor in self-segregation. Second, the fragmentation model assumes that all racial groups are prone to self-segregate, including Asians, Latinos and blacks. The demographic integration model assumes that neighborhoods across US Metros are growing increasingly diverse as de facto segregation diminishes. The authors conclude that across the US neighborhoods are becoming increasingly inclusive of multiple racial groups, thus arguing for the demographic integration model of neighborhood change.

On a macro scale it appears that neighborhood diversity is increasing. Nyden, Maly and Lukehart (1997) observed 14 different neighborhoods that were identified as having a stable and
racially/ethnically diverse population. This study highlighted the viability of stable and diverse neighborhoods through *intentional* and *laissez faire* means. Neighborhood diversity was measured in terms of how closely census-level racial/ethnic composition resembled metropolitan-wide racial/ethnic composition. The authors found that there were two primary types of diverse neighborhoods identified in a cross-section of 14 neighborhoods, those that have worked hard to achieve/maintain diversity, and those neighborhoods that have provided little intervention. The first group of *self-consciously* diverse neighborhoods were biracial (in all cases this meant black and white), had strong leadership, and support from active housing and pro-diversity organizations that had expressed goals of marketing the community and pursuing fair housing enforcement. Racial stability was also maintained by strong “social seams” - areas that act to seam together different ethnic groups, eg. supermarket, retail, school, park – a neutral ground. This seems to suggest that racial stability is often achieved at the neighborhood level through the maintenance of smaller enclaves of homogeneity within the larger community. The authors also note that these communities usually had strong political and financial resources and median incomes substantially higher than the local average. The second group of neighborhoods had *laissez-faire* diversity. These neighborhoods were home to multiple ethnic groups, often first or second generation immigrants. Neighborhood organizations actively focused on mutually beneficial aims (public services, schools, etc.) and less directly on issues of racism and race relations. Whether defined as laissez-faire or self-conscious, diverse and stable neighborhoods usually had attractive physical characteristics (housing stock, natural features, proximity to downtown), active community organizations, and shared community space that acted as a ‘neutral ground’. Despite these advantages, racially and ethnically diverse neighborhoods still faced challenges that threatened their character as such. For many biracial neighborhoods, white
households were largely comprised of empty-nesters and black households had families with children. Many residents feared that continued trends would eventually lead to the white population shrinking without any families with children to replace them. Laissez-faire communities had come about largely because of social or economic factors in the larger metro which were beyond their direct control. The study revealed that many self-consciously diverse neighborhoods started out through laissez-faire integration, but had to shift to a proactive approach in order to maintain that diversity. Overall, the study positively asserts that “stable diverse communities are not a figment of the progressive policy researcher’s imagination; they do exist. More than 600,000 people live in our select sample of stable diverse urban communities.” (Nyden et al., 1997 p 521)

C. Quality-of-Life Indicators

The concept of Quality of Life (QOL) is extremely broad and conceptual, making it difficult to define and measure. However, it is of fundamental importance as a gauge to the value and effectiveness of public policy and urban planning. Quality-of-life studies can be divided into a series of categories: 1) Breadth of indicators used, 2) geography (global, national, local), and 3) how individual- and neighborhood-level factors are assessed for neighborhood-level studies.

Quality-of-life studies vary greatly according to the breadth of their focus. Raphael, D. et al (1994) present a framework for reviewing approaches to quality of life studies. Studies and concepts can be understood in terms of their emphasis on objective or subjective data and emphasis on individual or system-level factors. The authors note that the concept of QOL began with objective and individual-level data on illness. Over the past decades studies have shifted to an increased emphasis on subjective experience of wellness for the individual, and the impact of
system-level factors, even including societal and global structures. In 1976, John Papageorgiou defined quality-of-life as “a function of biophysical, environmental and social conditions.” (Papageorgiou, Quality of Life Indicators p 76) this understanding of QOL includes a broad list of environmental, health and social factors; however it remains focused on objective data collection. By 1997, the World Health Organization (WHO) defined QOL as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.” (World Health Organization 97 p 1). This definition shows the shift from an objective to a subjective emphasis of QOL. The increased breadth of QOL studies enables researchers to understand the wide varieties of factors that influence individual quality of life. However, the advantage of a quantitative and individual-level focus is to keep personal health as the primary measure of quality of life. This allows researchers to correlate extra-personal factors after individual-level quality have been identified. One example of this approach would be in food desert research. The primary method of assessing the impact of food deserts should be individual-level health outcomes. Once these have been established, correlations can be made to external factors like grocery store location and income levels. By beginning with (or including) grocery store location as a primary indicator of health, one runs the risk of assuming a correlation that could mask an unforeseen factor like the ability of residents to travel longer distances than expected to get fresh food.

Quality-of-life studies also vary by the unit of geographical analysis. Both Papageorgiou and the World Health Organization are concerned with developing a broad definition that is applicable around the world. In the US, national QOL studies have focused on physical/emotional health as the primary indicator of quality. The US America Changing Lives Study is conducted through a
national survey that covers a wide range of physical, emotional and mental health factors. Similarly, the National Health Interview Survey is based off of participant responses to a variety of health related questions. The survey is tied back to the Primary Sample Unit (PSU), which is a rectangular area of land between 100-640 acres. The National Longitudinal Study of Adolescent Health is built on survey data, school reports and focus groups. The information is then stratified by region and urban/rural/suburban locations. Each of these Quality-of-Life indicators is effective for studying a wide range of health trends over decades. However, they lack geographic specificity needed to study trends within a metropolitan area and do not include objective indicators of health (morbidity, infant death, hospital reports of disease, etc.) In order to address QOL within a local context, researchers commonly use the “neighborhood” as the geographical unit of study. This is usually operationalized by using census tract data.

Quality-of-life studies are based on either qualitative data, quantitative data, or some combination of the two. In 2006 – Eibner, C., Sturm, R. used a combination of quantitative indicators and qualitative indicators. Quantitative data was taken from the US Census, including information from County ZIP Code Patterns to understand deprivation levels. This information was compared with qualitative results from the national HealthCare for Communities study to understand the socioeconomic impacts on mental and physical health at the census tract level. In 2005, Franzini, L. et al used a similar format for understanding health outcomes in Texas. Quantitative data on neighborhood factors like poverty, unemployment, vacant housing and female-headed households are compared against qualitative data, like social characteristics of neighborhoods (social cohesion, informal social control, trust, etc.) and self-rated health.

Some studies have favored a quantitative approach and local approach without the use of national health surveys. In 2003 Krieger, N. et al used a series of quantitative factors to
determine area-level health. The study used a high number of health indicators, including mortality, cancer incidence, low birth weight, childhood lead poisoning, Sexually Transmitted Infections (STIs), Tuberculosis Rates, and non-fatal weapon-related injuries. These health indicators were measured against demographic data on income, employment, poverty, wealth, crowding and education.

**D. Addition to the Research**

The research question asks whether or not inclusive and healthy neighborhoods exist in Richmond, VA, and if so, what the common characteristics are. The answer to this question will either confirm or deny the appropriateness of the theories and models reviewed in the segregation literature in the local context of Richmond, VA. National studies are helpful in determining major trends and for providing robust data that is correlated among multiple metropolitan areas. However, without local context, theories or models of segregation may be misapplied to individual regions. This study will look at inclusion and QOL data first and then apply appropriate theories to help further explain local trends. There has yet to be a study specifically for the Richmond MSA that includes economic and racial/ethnic integration trends over a twenty-year span. Similar to Nyden, et al. (1997), this study will be using metropolitan racial/ethnic composition as my standard for diversity. Nyden et al., identified all neighborhoods that matched this composition within 10% of either more or less diverse. This study will differ in this regard and use metropolitan-wide composition as a minimum standard. Neighborhoods that exceed the Richmond area in non-white representation will still be included in further analysis. This difference is rooted in diverging aims. Nyden, et al. are looking for neighborhoods that achieve diversity, while the focus here is for neighborhoods that achieve
inclusion of minority groups. This study reflects the Just City concept of Susan Fainstein (2010) which emphasizes equity over diversity as a philosophical underpinning of a “just” city.

Farrell and Lee (2010), found that the bifurcation model, which assumes white intolerance and a clear black/white divide, was antiquated for many metro areas in the U.S. when studying neighborhood change on a national scale. Given the continued dominance of black/white composition in the City of Richmond and its historical context, I will be using the “bifurcation” model developed by Farrell and Lee (2011) of neighborhood change to see if this model is still appropriate for Richmond, and perhaps, other similar US metros.

In terms of quality-of-life, quantitative data on a neighborhood scale in a metropolitan area that has not previously had a QOL study of this kind performed. The indicators are housing vacancy rate, household instability, unemployment rate, poverty rate, homicide-suicide rate, and infant mortality rate. I am following the progression of QOL research by starting with quantitative data. The QOL can be furthered refined through future research by including more subjective indicators like self-rated health or level of trust and reliance on community. Housing vacancy rate was chosen because of the impact of vacant buildings. Over time, the presence of vacant buildings creates more derelict buildings that have been deemed “blighted” and a threat to public health and safety. Household instability is a measure of the number of households that have moved recently. Instability reduces the likelihood of relationships being formed at the neighborhood level and creates an unstable environment for children that must move to different schools. The unemployment rate is more than an economic measure; it is also a measure of unhappiness. Those without jobs are far more likely to be unhappy (Thompson 2012). Poverty

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7 More on the local context in Richmond, VA in the methodology section.
8 Virginia Code § 1-219.1. [http://leg1.state.va.us/cgi-bin/legp504.exe?000+coh+1-219.1+704604](http://leg1.state.va.us/cgi-bin/legp504.exe?000+coh+1-219.1+704604)
rate is used because poverty is the measure of a household to purchase a basic bundle of necessities as defined by the Consumer Price Index for All Urban Consumers (CPI-U) (Bureau of Labor Statistics 2010). Those living below the poverty line have serious threats to their QOL because of their inability to purchase basic goods and services that sustain a healthy life. Homicide-Suicide rate is used because of the immediate threat to life, the impact on public perception and fear, and the negative environmental factors that may contribute to a homicide or suicide. Infant mortality rate is used because of the immediate threat to life, and because infant mortality is often traced back to preventable diseases, abusive situations, or substance abuse (World Health Organization 2005) that are signs of an unhealthy environment.
IV. METHODOLOGY

A. Introduction

The methodology to the analysis can be broken into six steps that answer the two-part research question: is it possible for neighborhoods in Richmond, VA to remain inclusive of lower-income households and racial minorities and maintain a high quality of life; and if so, what are common characteristics of these neighborhoods? First, a case study region must be selected. Second, a period of time is chosen using three U.S. Census Counts: 1990, 2000 and 2010. Third, a geographic unit of measurement is chosen that most closely approximates the neighborhood-level. Fourth, tracts are identified that maintain the same proportion of non-whites and low-to-moderate income households for three census counts: 1990, 2000 and 2010 to test whether Richmond neighborhoods can be inclusive over an extended period of time. This fourth step splits all census tracts in the Richmond MSA into two categories, Inclusive or Non-Inclusive. Fifth, the quality-of-life (QOL) for all census tracts is identified using sixteen indicators. Each indicator is assigned a point value; “1” for a good QOL result and “0” for a bad QOL result. All census tracts are then ranked based off of how many points they receive, resulting in a 0-16 QOL Score. Lastly, a Correlation Study of census tracts is performed with eight additional factors to see if they can be correlated to QOL, and if so, if the correlation is positive or negative. The correlation study identifies the common characteristics of inclusive and healthy neighborhoods in Richmond, VA.

A. Definitions

Richmond Region: The Richmond Region (also known as the Richmond Metropolitan Statistical Area) is located in central Virginia. It is comprised of four independent cities:
Colonial Heights, Hopewell, Petersburg and Richmond. In addition, there are sixteen counties: Charles City, Chesterfield, Dinwiddie, Goochland, Hanover, Henrico, New Kent, Powhatan, and Prince Georg. In 2010 the Region was expanded to include the counties of Amelia, Caroline, Cumberland, King and Queen, King William, Louisa and Sussex. For the purposes of the longitudinal study, the Region will refer to the counties and cities that have been a part of the Richmond Region since 1990.

**Correlation Analysis:** The correlation analysis a series of variables at the census tract level measured against the quality-of-life score assigned to each census tract. The strength of the linear relationship of the two variables is the correlation coefficient.

**Top-Rated Inclusive Tracts:** Census tracts in the Richmond Region that are inclusive of racial and ethnic minorities and low-to-moderate income households as well as scoring a fifteen or sixteen on the quality-of-life score.

**Quality-of-Life Score:** A measure from 0-16 that includes sixteen indicators, each with a potential score of zero or one. The indicators are distributed for all census tracts, with those tracts located below a half standard deviation above the median given a score of one, and those located above are given a score of zero.

**Low-to-Moderate Income:** Total household income that is equal to or less than 80% of the Area Median Income for the Richmond Metropolitan Statistical Area.

**B. Richmond Neighborhood History**

The Richmond Region is chosen because of its particular history regarding neighborhood-level segregation. In his book, Twentieth-Century Richmond, Christopher Silver outlines two major
themes that dominate politics and urban planning in Richmond: race and metropolitanism. Both of these themes have a major impact on individual neighborhoods throughout the region. Race and racism have been a driving force behind neighborhood change and quality of life outcomes. In addition, the growth of an auto-based transportation network led to further economic isolation as public transportation becomes increasingly inadequate to link the entire region. The entire region is now comprised of multiple independent political jurisdictions that must build their own tax base and provide separate public services. In this context, the inclusion of dispersed low-income housing is extremely difficult. The pattern of racial and economic segregation has occurred in two primary ways: first, on the neighborhood level in the first half of the 20th century and then increasingly at the jurisdictional level from the 1960s to today.

At the beginning of the 20th century, Richmond had a compact urban layout with many different types of uses within walking distance of each another but over the next half century, however, blacks were increasingly isolated and segregated. In 1913, Society of the Betterment of Housing and Living Conditions in Richmond released a study revealing a large portion of housing, especially black, that was unfit for human habitation. Over the next decades the city pursued a policy of containment and isolation that sought to limit the impact of substandard housing on adjacent neighborhoods, as opposed to working to improve the living conditions of those impacted. Zoning was used as a means to promote the segregation of white and black neighborhoods through an explicit racial zoning ordinance that prohibited blacks from buying homes in neighborhoods that were predominantly white. In 1930 this ordinance as ruled unconstitutional in *City of Richmond et al. v. Dean* and consequently, property owners and real estate interests used private deeds and covenants to restrict the expansion of black residents into predominantly white neighborhoods. As in many other cities, the Federal Homeowners’ Loan
Corporation (HOLC) assessed the market value of neighborhoods in Richmond and undervalued black and low-income neighborhoods. This impact by the lending industry on black neighborhoods hurt already increasingly isolated by racial zoning laws and discriminatory covenants.

Richmond had an extensive streetcar network which enabled fast-paced suburbanization and income segregation before the age of automobiles. By the 1940s the city was well into the stages of downtown deterioration and inner-neighborhood decline. The elite of the city saw the solution to a deteriorating downtown through major infrastructure improvements and extensions which would support the growth of the CBD and improve access to the suburbs. A private consultant, Harland Bartholomew, was hired to produce a master plan. The Master Plan for the Physical Development of the City was adopted in 1946. The plan included transportation improvements, land-use regulations and zoning, and a comprehensive face-lift and civic center in the downtown. In addition to these goals, The Master Plan had a strong focus on the retention of housing in the urban core of the city. By the 1940s most of the City had been developed and Bartholomew feared that continued expansion into the periphery would further detract from the downtown business district and the neighborhoods that surrounded it. Bartholomew’s focus on revitalization of inner-urban neighborhoods did not get much support from the political and business elite. Certain aspects of the plan – the expansion of road networks and the construction of a civic center were pursued while other neighborhood revitalization goals were largely ignored.

Bartholomew drew up a more detailed sub-area plan for an inner-urban neighborhood that involved improved site design and new development of middle-class housing. Ultimately, City Council did not support the plan as it interfered with downtown business interests and their plans
for expansion. The housing element of the plan was ignored and the Richmond Redevelopment and Housing Authority (RRHA) was left to provide low-income housing without a connection with the larger city goals of economic progress and expansion. Through the RRHA, the City pursued an affordable housing agenda that was narrowly focused on the construction of public housing units for blacks and was divorced from a consideration of preservation or the inclusion of market-rate housing.

The Master Plan supported the use of an expanded road network that eased congestion, but did not detract or devalue urban neighborhoods. However, in the process of implementation the construction of expressways and highways through the city had a devastating impact on urban neighborhoods. Expressways and highways were sited in locations that displaced low-income and black city residents.

The City of Richmond sought annexation as a means to bring middle- and upper-income neighborhoods back into jurisdictional boundaries and to keep the city as a white majority metropolitan growth and expansion via a series of expressways and highways enabled suburbanization to occur at a rate faster than city boundary expansion. Eventually, the adjoining counties of Chesterfield and Henrico had gained a large enough population and economic base to become self-sufficient localities in their own right. Following the Tiebout model of neighborhood preference, suburban counties were home to primarily white and middle- to upper-income residences, while city neighborhoods were predominantly black and lower-income.

In the context of zoning policies and real estate practices of racial containment of the early 20th century, the Jackson Ward neighborhood became a hub of black culture and commerce. The process of racial containment also led to a neighborhood that was a mix of incomes and had a
number of institutions (banks, schools, and a newspaper) that were located there. Despite some of these benefits, deleterious land uses, like incinerators and landfills were also sighted within the neighborhood. The Richmond-Petersburg Expressway was built in the 1950s and displaced many residents into public housing or adjoining neighborhoods that furthered the demographic shift from white to black neighborhoods throughout the city. Jackson Ward has since followed with decades of decline as the city continued to expand and black suburbanization grew, beginning in the 1960s. In the 1990s-2000s Jackson Ward began to see new investment and a growth of occupied housing [check facts via census]. Wilson’s theory of the history of the black urban neighborhood is exemplified in Jackson Ward. Subsequent reinvestment and gentrification theories also apply to the neighborhoods more recent resurgence amongst white middle-class households.

### C. Geographic Unit of Analysis

The Census Tract is chosen as the geographic unit of measurement because it is a standard of measure that is the best combination of geographic specificity and data availability (Jargowsky 1997) that approximates a neighborhood. The compromise between geographic specificity and data availability does mean that there are drawbacks on both sides. By using census tracts, segregation or integration by income and race/ethnicity that occurs at smaller geographic levels\(^9\) are masked; and data gathering, specifically in the case of mortality data, may be more prone to error because of the small geographic unit of measurement. However, the census tract is specific enough to break down a jurisdiction into many separate areas and includes about 4,000

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\(^9\) Some data from the US Census is also provided by street blocks and groups of these blocks.
residents\textsuperscript{10}. Depending on the density of the population, this usually encompasses between one to three self-identifying neighborhoods in the Richmond Region. This specificity allows analysis that examines trends between different parts of a city and across different neighborhoods. The census tract is also a good unit of analysis because of its ubiquity. Census Tracts are defined by the U.S. Census and data for them are collected at the same general time and using the same methods. This means information is similar across the entire Richmond Region without regard to jurisdictional boundaries. The U.S. Census has two smaller geographical units of measure, the block and the block group, however data gathered through a sample of the population on topics like household income and occupation is not available at these levels.

For every decennial census, census tracts may undergo boundary adjustments to account for population growth or decline. For this reason, census tracts were normalized across the three decades in order to compare like data. 1990 census tracts were spatially normalized to 2000 tracts through the use of GeoLyrics, Inc. software. 2000 census tracts were compared to 2010 census tracts on a case-by-case review of all tract changes between these years. Marginal boundary changes were ignored and those census tracts that were either joined or split were counted as one tract and QOL Score were averaged together (Appendix 1). Another change between the 2000 and the 2010 census is the method that sample data is gathered. Beginning in the mid-2000s, the U.S. Census Bureau gathered detailed household data like occupation, unemployment, income, etc. through an annual survey called the American Community Survey. In the past, sample data were gathered as part of the decennial count; this stopped occurring after the 2000 Census. In the past, one in six households would receive a longer census form that included detailed socioeconomic information. The American Community Survey (ACS)

\textsuperscript{10} Per the U.S. 2010 Census, the average population of the Richmond 2010 MSA was 4,166.
replaces the long-form questionnaire of past censuses. The ACS allows for more up-to-date data but it makes longitudinal comparisons with past census more difficult since the data collection methodology has changed.

The most statistically accurate ACS data comes from estimates of annual surveys over five years. Five-year estimates help reduce the margin of error created by a single, one-year data sample but can also mask any quickly changing trends. Instead, one is comparing a singular year in time with data averaged from responses over a five year period. A note will accompany any place in the research where 2010 Census data is gathered from the ACS and compared with earlier census data.

Lastly, 2010 Census data must be adjusted because the Metropolitan Statistical Area (MSA) was expanded from 13 to 20 jurisdictions by the Office of Management and Budget (OMB). MSAs are adjusted based on changing employment and commuting patterns in the region (Office of Management and Budget 2010). When comparing 2010 tract-level data with MSA-level data, the entire 2010 census is used (e.g. The rate of non-whites in the region is based off of the racial composition of all 20 jurisdictions) so that each tract can be measured against the composition of the entire economic area. But only those census tracts that have been a part of the Richmond MSA for the entire twenty-year period are analyzed for Inclusivity and given a QOL Rank. This is done to preserve the integrity of the longitudinal analysis.

D. Inclusive Tracts

1. Racial/Ethnic Inclusion

The two dominant racial groups in Richmond, VA are whites and blacks. Together, these two groups make up over 90% of the population in Richmond. Because of the dominance and
historical and cultural significance of the relationship between these two groups in Richmond, a case could be made that other racial and ethnic groups do not need to be included in this study. Michael Maly (2000) argues that, despite the prevalence of racial discrimination against blacks in America, ignoring other groups presents a distorted outcome. Furthermore, demographic trends from the last twenty years show that the fastest growing racial and ethnic groups in the Richmond MSA are Asians and Hispanics/Latinos.\footnote{Asians grew from 1.4 to 3.1 percent representation. Hispanics grew from 1 to 5 percent representation.} Between 1990 and 2010, the percentage of blacks remains static at approximately 30%. However, despite this increased representation, the number of metropolitan blacks in 2010 was still three times the combined count of all other non-white racial and ethnic groups combined.

In order to account for the growth of non-black minority groups and give appropriate weight to the significance of relations between whites and blacks in Richmond, a diversity index is used that examines the percentage of whites in any given census tract. The diversity index developed is based on the Base Figure Method (Papageorgiou 1976) as opposed to a more traditional diversity index. In fact, the term “diversity index” may be misleading because it assumes that diversity is the goal. An example of a more traditional diversity index is the interaction index, which looks at the likelihood that a member from a minority group will be exposed to a member from the majority group (U.S. Census Bureau, Housing and Household Economic Statistics Division 2011). For the purposes of this study, however, racial and ethnic inclusion is the goal as opposed to finding the most even distribution or level of interaction. The baseline will be the total ratio of non-whites to whites in the region. Census tracts will be measured, not on a continuum, but on whether their level of non-white inclusion is equal to or greater than the inclusion of non-whites in the entire region. This task will be carried out for the 1990, 2000, and
2010 censuses in order to identify census tracts that have sustained a baseline minority share over two decades. In addition to identifying inclusive census tracts, the longitudinal aspect of the analysis will identify tracts that have demonstrated a sustained level of inclusion over a two-decade period of time. It is assumed that in most cases, minority representation will be black. However, once inclusive tracts have been identified, the Correlation Analysis will examine the racial and ethnic composition.

2. Income Inclusion

In order to identify income inclusion the presence of low-to-moderate income households by census tract is analyzed. Mixed-income neighborhoods have been critiqued on the basis that they do not create a shared sense of community or increased social interaction between different socio-economic groups and eventually lead to displacement (Joseph 2006, Davidson 2010). However, mixed-income neighborhoods also contribute to neighborhood health through improved services and informal social control (Joseph 2006). The inclusion of low- to moderate-income (LMI) households is encouraged for the purpose of equal access to goods and services, not for the sake of income diversity as an end in and of itself. Jargowsky (1997) demonstrates statistically that neighborhood economic health is a product of metropolitan-wide economic strength. Therefore, using the metro area as a baseline measurement is appropriate way to measure relative economic inclusion. For this study, economic inclusion will be measured as to whether or not a census tract contains at least the same proportion of Low-to-Moderate Income (LMI) households as the metropolitan region. Low-to-Moderate Income is defined as household income that is equal or less than eighty percent of the median income for the Richmond MSA. This analysis will be performed through the 1990, 2000, and 2010 censuses to determine whether
or not a census tract has sustained a proportion of LMI households in the face of market and housing shifts. Even if mixed-income census tracts are the exception that proves the rule, my goal will be to identify factors that can be correlated with this exception.

E. Quality of Life

This study will focus on a quantitative and individual-level health diagnostic as a gauge of overall QOL. The only factor that cannot be tied back to an individual or household is housing vacancy rate. QOL is measured on a 0-16 scale using 16 separate factors which are outlined below. To identify which census tracts would qualify as achieving a good Quality of Life the following methodology was used.

1. Housing Vacancy Rate

The rate of vacant units per total units for each census tract in the Richmond MSA from 1990, 2000 and 2010 is calculated by using Census data. Each of these three criteria is added to the list of factors included in the total QOL Score.

2. Household instability

Household instability is the measure of the number of people that are living in a different house than they were five years ago (1990 and 2000 census) or one year ago (2010 census). In 2010 unstable households are separated out between those with children under the age of 18 and those without. This creates a more meaningful metric because it excludes households comprised of singles, college students or couples without children for whom frequent moves may indicate upward mobility and not necessarily economic instability. Regardless of whether frequent
moves are the result of upward mobility or instability, it will likely have a negative impact on school age children who must change environments and peer networks at important developmental stages. The rate of instability is identified by the number of people in recently moved households in each census tract by the total population of each census tract. The measurements from 1990, 2000 and 2010 are added to the list of factors included in the total QOL Score.

3. **Unemployment Rate and Poverty Rate**

The Unemployment and Poverty Rates are measurements made available through the U.S. Census for 1990, 2000 and 2010. In both cases the data for 2010 comes from five-year estimates of annual data gathered through the American Community Survey from 2006 to 2010. Measuring unemployment and poverty rates from these three measurements produced six factors for the total QOL Score.

4. **Homicide-suicide rate**

The homicide and suicide rate was found by dividing the number of annual number of homicides and suicides by the total population of each census tract from 1999 to 2009. Causes of death for homicides/suicides are instances of intentional self-harm, assault, or accidental discharge of firearms which are classified according to ICD-10 Codes. Table 1 shows the number and name of the classifications that are used.

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Accidental Discharge of Firearms</td>
</tr>
<tr>
<td>105</td>
<td>Intentional Self-Harm by Discharge of Firearms</td>
</tr>
</tbody>
</table>
ICD-10 codes were provided by Dr. Derek Chapman, State Maternal & Child Health Epidemiologist with the Virginia Department of Health. Dr. Chapman provided all causes of death that have occurred in the Richmond Region from 1999 to 2009 according to 113 classifications of cause-of-death. Dr. Chapman geocoded this information to the census tract level. Six of these ICD-10 codes were then taken and divided against the population of each census tract from 1999 to 2009. Population for census tracts between census years was gained through estimating a linear progression from the 2000 census population count (taken in 1999) and the 2010 census population count (2009). Using a linear progression means that spikes or other variations in annual population are not captured. However, using population for all census tracts from 1999 to 2009 allows for an annual death rate which allows for multiple measures over the ten year period in which the data is available instead of only one. These multiple points of reference support the goal of a longitudinal study even when data is not available over multiple decades. The homicide-suicide rate for each census tract was then taken from 1999, 2004 and 2009 and added as three factors for the total QOL Score.

5. Infant mortality rate.

Infant mortality rate is the number of infant deaths by census tract divided by the number of births by census tract for entire the Richmond Region from 1999 to 2009. It is derived in much the same way as the joint homicide/suicide rate. Dr. Chapman provided all causes of death from 1999-2009 for the Richmond Region, but with an additional identifier for all deaths that took
place before the first year of life. The number of births per census tract and per year is provided for this same time period. All counts were geocoded to census tract but there were a number of inexplicable geocoding errors, particularly for years 2006 and 2007. For this reason the infant mortality rate is averaged for all 11 years in the range into one figure. One single factor was added to the total QOL Score.

There are a total of 16 factors that are worth a score of either “0” or “1”. To determine this score, each factor was joined to a Census Tract Shapefile with ArcGIS which broke the range of scores into classifications based on standard deviations from the median. Those census tracts that fell within half of one standard deviation above the median were counted as “passing” the QOL test and were given a value of one. All factors become less desirable as they grow larger (rates of poverty, instability, homicide, etc.). Taking the results within one half standard deviation allows for the inclusion of census tracts that may fall above the median in the Region but still have values that are very close to average. Figure 4 shows an example of one such calculation where the unemployment rate for all census tracts in 2010 is graphed from the lowest to the highest. The red line represents the median unemployment rate and the green line represents the cut-off at the 0.5 Standard Deviation. In this instance, all census tracts with an unemployment rate higher than 16.5 percent are scored as “0” and all below scored as “1”. This test was repeated 16 times for all factors and the final QOL score is the sum total of all of these tests. See appendix 1 for the QOL scoring of all census tracts over the 20-year period.
Once Inclusive Tracts are identified and ranked according to Quality of Life, the next step is to examine these tracts in further detail to identify any common themes or correlating factors. This is done by comparing the Top-Rate Inclusive Tracts to other Inclusive Tracts, and sometimes to all census tracts in the Richmond Region. A Top-Rated Inclusive Tract must have a QOL score of 15 or 16. There are 10 of these tracts in the Region.

To examine these tracts nine analytical approaches are used and divided into three sections: Demographics, Spatial Makeup and Housing. Demographic analyses include race/ethnicity, income and school performance; Spatial analyses include neighborhood design and components, population density and neighborhood amenities; Housing analyses include housing tenure, housing age and rate and type of subsidized housing. The Inclusive analysis and QOL analysis
provide a longitudinal picture of neighborhood quality and inclusion. The purpose of the final analysis is to analyze the census tracts as they exist today (or as of the 2010 census).

The correlation coefficient for comparisons between the QOL for MSA-wide and Inclusive Tract data sets is performed. The correlation coefficient is the measure of the degree of linear association is between two measured variables (Taylor 1990) on a scale of -1 to 1. Strong correlations trend towards -1 for negative correlations and 1 for positive correlations. A correlation of zero means that there is no observed relationship between the two variables. The greater the number of data observed means a smaller margin of error. Besides informal inference, no correlation coefficient analysis is done for the Top-Rated Inclusive Tracts because there are only ten items in the data set, thus making it too small for a formal correlation coefficient analysis. The correlation coefficient is a helpful for understanding the strength of correlation between two sets of variables, however it is also difficult to interpret. A correlation coefficient may mean different things depending on the type of analysis. For example, a scientific measurement using precise instruments may require a higher correlation coefficient than a study of demographics and income in an urban area because the former study reduces the number of external variables while the latter study includes a wide array contributing variables that are not being controlled. Another factor that may distort the correlation coefficient is the use of QOL score as one of the two variables being measured. QOL scores are measured on a scale of 0-16 and therefore a data set of over 200 census tracts will have multiple tracts with identical variables. This means that the second variable will be randomly distributed among several census tracts with the same QOL score. This random distribution distorts the strength of a linear measurement because the QOL score is not applied at a fine-grain level that ranks each census tract differently. Despite these difficulties in interpretation the correlation coefficient does allow
for a better understanding of relative strength of each factor included in the correlation analysis in relation to neighborhood quality-of-life. More research would need to be done to understand the ultimate significance of the homeownership rate \( r = .54 \) as it relates to quality-of-life. But in a relative sense this study identifies that, among inclusive tracts, home ownership has a much stronger relation to quality-of-life than the number of subsidized housing units located in any given Inclusive Tract \( r = -0.29 \). Understanding these limitations, this study is using the following range to identify weak, moderate, and strong correlations. These ranges were identified as a general rule [Taylor 1990].

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.68 to 1.0</td>
<td>-0.68 to -1.0</td>
</tr>
<tr>
<td>Moderate Correlation</td>
<td>0.36 to 0.67</td>
<td>-0.36 to -0.68</td>
</tr>
<tr>
<td>Weak Correlation</td>
<td>&gt; 0 to 0.35</td>
<td>&lt; 0 to -0.35</td>
</tr>
</tbody>
</table>

1. Demographics: Racial/Ethnic Composition

Data for the Racial/Ethnic Composition analysis is gathered from the 2010 Census. In order to simplify the data and to make it more legible, all racial/ethnic classifications that are not white only, black only, Asian, Latino (of any race) are classified as “Other/Multiracial” because in almost all cases this category represented an insignificant portion of the population. In one case where it is significant, the composition of the Other/Multiracial population is described in the text. Four tests were run to understand the impact of racial/ethnic composition. First, the Regional racial composition for all three censuses is put into a chart to show regional shifts and trends. Second, 2010 Census Tracts within the Richmond Region are distributed by percentage black from largest to smallest. This line chart also included the percentage white and percentage of all other classifications for each tract. The third step included only the Inclusive Tracts. All
Inclusive Tracts are graphed with 100% Stacked Columns that showed racial composition and then each Inclusive Tract was distributed by QOL Score. Lastly, the racial composition for the Top-Rated Inclusive Tracts is put into a chart so that the percentages could be observed for any correlations between them.

2. **Demographics: Household Income**

The household income of all Inclusive Tracts is graphed using a scatter chart wherein the QOL Score is distributed from highest to lowest (moving from left to right on the x-axis) with the corresponding household incomes included as dots along the same point on the x-axis\(^ {12} \). The ranges of median household median income among the Top-Rated Inclusive Tracts are discussed in the text. Lastly, the Gini Coefficient is used to measure inequality within each of the Inclusive Tracts. The Gini Coefficient is a measure of inequality where a score of zero means that every household has the same share of total income and a score of one means that 100% of all income belongs to one household. This measure is used for each income tract. This measurement is expressed from zero to one.

3. **Demographics: School Performance**

School performance was measured by identifying all high schools that serve the Inclusive Tracts and ranking their performance by SOL pass rates and the Graduation Completer Index (GCI) in the 2011-2012 school year. The GCI is a more nuanced measure of graduation outcomes that includes partial points for outcomes other than the receipt of a diploma. SOL pass rate was derived by the average of pass rates for three SOL tests – math, history and science. All

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\(^{12}\) This method of graphically communicating the correlation between any given factor and QOL is used multiple times to determine if a correlation exists, how strong it is and tightly the scattered variables are grouped along that correlation trend.
assessment data is gathered from Virginia Department of Education School Accreditation Ratings (VDOE: Accreditation and AYP Summary Reports, School Accreditation Ratings 2012). The data for each high school is tied back to the Inclusive Tract which it serves. The calculations used to gather pass rates and GCI is then performed on all public high schools in Virginia. All of the data for the Inclusive Tracts and State averages are plotted on a scatter chart with the QOL Score distributed from highest to lowest.

4. **Spatial: Neighborhood Design**

This analysis looks for trends in the physical layout and spatial relationship of different types of housing, parks, commercial and industrial land uses that may influence the success of Top-Rated Inclusive Tracts. Neighborhood design and land use is an important consideration in understanding potential successes or failures of the built environment. This analysis is performed by looking at aerial photography of the Top-Rated Inclusive Tracts through Bing Maps to observe common trends and patterns in street layout, neighborhood type and land-use. Trends and variations are noted in the text and through visuals taken from Bing Maps aerial photography.

5. **Spatial: Population Density**

This analysis looks at the potential correlation between the number of people living in close proximity to one another and their quality of life. The population density of each Inclusive Tract is derived by taking the total geographical area of the tract and dividing it by the 2010 Census population. The density of Inclusive Tracts is then graphed on a scatter chart along with the
QOL Score wherein the QOL Score for each track is distributed from highest to lowest along the x-axis. Strength of correlation is analyzed and included in the text.

6. **Spatial: Neighborhood Amenities**

A list of neighborhood amenities that are positive influences on a surrounding area is formed to understand if these amenities are correlated to a higher quality of life. The following amenities are chosen for their contribution to education, health, safety, and transportation access: Public Schools, Libraries, Parks, Police Station, Fire Department, Hospital, Bus Route, Mass Transit (Trains, Airport), and Highway Access. The Top-Rated Inclusive Tracts are observed to note whether or not these neighborhood amenities are located within their geographical border. This is done using Bing Maps and by typing in each amenity into the “search term” box while a particular census tract is shown on the screen. Common themes are noted in the text.

7. **Housing: Age (Year Built)**

The median age (or Year Built) of all housing units for each census tract is obtained from the 2010 Census. These ages are graphed on a scatter chart with the QOL Score distributed from the highest to lowest score. Inclusive Tracts are broken out and given a separate color so the age of housing in Inclusive Tracts can be graphically compared to the whole region. Median housing age is also mapped using GIS by joining 2010 Census Tract Shapefiles with 2010 Census Tract data on Median Year Built. The data is broken out into five color-coded classifications that demonstrate the regional location of new and old housing. Finally, the median year built for the Top-Rated Inclusive Tracts is included in a graph.
8. **Housing: Tenure**

Housing tenure is the division of home occupancy by ownership – between households that own the dwelling and those that rent. Homeownership rate is the percentage of occupied housing units occupied by the owner. The rate of homeownership also implies the rate of rental-occupied housing. The homeownership rate for each tract is plotted using a scatter chart with the QOL for all census tracts in the Region distributed from the highest to lowest score with Inclusive Tracts broken out in a separate color.

9. **Housing: Subsidized Housing**

Subsidized housing is measured using data gathered from the Department of Housing and Urban Development (HUD). Three different types of subsidized housing are used: Section 8 Voucher units, All Other Types of HUD housing units, and units created through Low-Income Housing Tax Credits (LIHTC). Data related to Section 8 Voucher units and All Other Types of HUD housing units are gathered from the Section 8 Vouchers and other HUD units are taken from 2007 counts from the HUD data sets for Assisted Housing: Nation and Local, “A Picture of Subsidized Households – 2004 to 2007” (www.huduser.org); the count of LIHTC units was a total of all units created for low-to-moderate income households from 1987 to 2009 gathered from the LIHTC Database on the HudUser website (http://lihtc.huduser.org). All housing unit counts are located to census tracts. The total count of each type of housing, plus an aggregate of all three, is plotted out into four charts that include QOL Score for the entire region ranked from highest to lowest. This same step is then repeated for Inclusive Tracts only. Finally, the information is charted for the Top-Rated Inclusive Tracts. This chart includes total counts and percentage of units relative to all households in the census tract.
The term “subsidized” is used instead of the commonly used term “affordable”. This is because the term affordable is relative and problematic. Affordability is relative to the income of a consumer. The true definition of affordable housing then becomes as wide as the range of incomes and levels of financial stability that exist among different consumers. Certainly the term “subsidized housing” is not without its drawbacks either. The federal government provides a tax deduction through the Home-Mortgage Deduction that amounts to a significant subsidy of owner-occupied housing units. However, for the sake of this study I am looking at subsidized housing that carries with it income requirements and is created for the purpose of serving the low-to-moderate income population.
V. RESULTS

A. Introduction

The goal of this study is to identify those census tracts that have been inclusive of racial and ethnic minorities and low-to-moderate income households for a 20-year period and also maintained a high Quality of Life over this time. The results show those tracts that are considered inclusive (Inclusive Tracts), those tracts with a high quality-of-life (Figure 2), and those tracts that combine high quality-of-life and inclusivity (Figure 3).

Figure 1. Inclusive Tract Overview

Source: 1990, 2000, 2010 U.S. Census
Figure 1 shows all census tracts in the Richmond Region that are either inclusive or exclusive of LMI households per my definition above. Only those tracts in blue have demonstrated racial/ethnic and income inclusion over a twenty year period.

Figure 2 shows the final product of the QOL analysis and Figure 3 shows the combination of Inclusive Tracts and the QOL Score.

Figure 2. Quality of Life (QOL) Overview

Source: 1990, 2000, 2010 U.S. Census; VA Dept. of Health
All of the inclusive tracts are clustered in three distinct areas. In Richmond City and the suburbs immediately adjacent to the north, east and south; in Petersburg and Hopewell and census tracts immediately adjacent to these cities; and all of Charles City County. The QOL analysis identified ten census tracts that are inclusive and have a QOL Score of 15 or 16, hereby known as Top-Rated Inclusive Tracts. The Top-Rated Inclusive Tracts are clustered in suburban areas in and around Petersburg and suburban areas of Eastern Henrico. Each tract is assigned a neighborhood name. The names are approximations given by the author. Wherever possible neighborhood names as they appear on Bing Maps have been used but are no exact overlaps between census boundaries and neighborhood boundaries.
1) *Matoaca (QOL 16).* The Matoaca neighborhood (Census Tract 51041100701) is located in the southeast corner of Chesterfield County. It has a population of 5,674 residents per the 2010 Census and a geographical area of 0.43 square miles. It is located along the Appomattox River directly north of Petersburg and east of Colonial Heights. It is mostly suburban with some farmland and is located in close proximity to Virginia State University.
2) **Walnut Hill North (QOL 16)**. The Walnut Hill North neighborhood (census tract 51730810900) is located in the City of Petersburg. It has a population of 3,461 residents per the 2010 Census and a geographical area of 0.11 square miles. This area is largely comprised of compact single-family developments that abut an auto-oriented commercial corridor. It is also bounded by interstates 95 and 85 on the north and east. Downtown Petersburg and older neighborhoods are located north of I-85.
3) **Walnut Hill South (QOL 16).** The Walnut Hill South neighborhood (census tract 51730811000) is located on the southeastern side of the commercial corridor noted above in the City of Petersburg. It has a population of 4,263 residents per the 2010 Census over a geographical area of 0.36 square miles. Some of the city’s most prosperous neighborhoods are located here. The census tract also includes a fair amount of open space and industrial uses that take advantage of the interstate access along its northern border.
4) **Central Charles City (QOL 15).** The Central Charles City area (census tract 51036600200) is located tract out of the three tracts that make up Charles City County. It is called an “area” instead of a “neighborhood” because it of its rural nature. Central Charles City has a population of 2,338 over 4.08 square miles. It is the largest and most sparsely populated of the Top-Rated Inclusive Tracts. Central Charles City is comprised largely of forestall and agricultural land with most housing occurring along county roadways instead of in subdivisions. Central Charles City is also home to the Chickahominy Indian Tribe (VCI – Virginia Tribes 2012). The missing QOL indicator is a high Murder-Homicide Rate for 2004.
5) *Chickahominy Bluffs (QOL 15)*. The Chickahominy Bluffs neighborhood is located in Henrico County between the Northside of Richmond and Mechanicsville. The neighborhood is named for the wooded Chickahominy Bluffs Battlefield Park centrally located in the census tract (51087201001). The Park is part of the Richmond National Battlefield Park System. Chickahominy Bluffs has a population of 5,847 over an area of 0.54 square miles. Most of this area is located in the Chickahominy River floodplain and is not inhabited. The rest of the area is comprised largely of single-family neighborhoods and the former Henrico Plaza Shopping Center that has been demolished. The neighborhoods missing QOL point is from the 2010 Instability Rate.
6) East Highland Park (QOL 15). The East Highland Park neighborhood (census tract 51087201002) is located in Henrico County. It is directly south of the Chickahominny Bluffs neighborhood and abuts the Northside of Richmond City. It has a population of 2,929 over 0.11 square miles. Route 360 (Mechanicsville Turnpike) bisects the neighborhood and contains some auto-oriented retail. Otherwise the neighborhood is predominantly comprised of modest single-family homes. The missing QOL point is from the 2004 Murder-Homicide Rate.
7) **Highland Springs (QOL 15)**. The Highland Springs neighborhood (census tract 51087201202) is located in eastern Henrico County. It has a population of 6,091 over an area of 0.2 square miles. The neighborhood is mostly small, post-war single-family housing with newer apartment complexes interspersed. Interstate 64 runs along its southern edge. The neighborhood is missing QOL point is from the 2010 Instability Rate.
8) **Sandston-Highland Springs (QOL 15)**. The Sandston-Highland Springs neighborhood (census tract 51087201401) adjoins the Highland Springs neighborhood on the east and south. The neighborhood is bisected by Interstate 64 and contains White Oak Village, the largest shopping center in Eastern Henrico. There are a relatively high number of suburban-style apartment units located around the shopping center. The Richmond International Airport is located immediately to the east of the neighborhood. The neighborhood is missing QOL point is from the 2010 Poverty Rate.
9) **Southwest Petersburg (QOL 15)**. The Southwest Petersburg area (census tract 51730811100) is located, as its name suggests, in southwestern corner of the City of Petersburg. It has a population of 2,883 over an area of 0.39 square miles. Southwest Petersburg has the most undeveloped land within the City. The western side includes the South Crater Road commercial corridor and suburban development. The eastern side is largely undeveloped save for land intensive uses like a golf course, public high school, a sports complex and industrial sites. The neighborhoods missing QOL point is from the 1990 Housing Vacancy Rate.
10) **Byrd Park-Stadium (QOL 15)**. The Byrd Park-Stadium neighborhood (census tract 51760041600) is the only Top-Rated Inclusive Tract located in the City of Richmond. It is made up of two small neighborhoods, the Byrd Park neighborhood and the Stadium neighborhood. Byrd Park gets its name from the large city park located within its borders. The Stadium neighborhood is tightly packed around the University Stadium, formerly leased by the University of Richmond. This neighborhood is the most urban in character, though it contains very few apartment units. The neighborhoods missing QOL point is from the 1999 Homicide-Suicide Rate.
B. Correlating Factors

1. Introduction

Once Inclusive Tracts and Top-Rated Inclusive Tracts have been identified a series of “tests” are run to identify common characteristics and correlating factors between all census tracts, Inclusive Tracts, and Top-Rated Inclusive Tracts. The correlating factors study will assist in answering the second part of the two-part research question: what are the common characteristics of census tracts that are inclusive and exhibit a high quality-of-life?

Table 3. Pearson Correlation Coefficients

<table>
<thead>
<tr>
<th>Figure Title</th>
<th>Fig.</th>
<th>Correlation Coefficient (r)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Census Tracts within MSA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homeownership Rate</td>
<td>24</td>
<td>0.7004</td>
<td>0.000</td>
</tr>
<tr>
<td>Median Housing Age</td>
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<tr>
<td>Density</td>
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<tr>
<td>Gini Coefficient</td>
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</tr>
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<td>Subsidized Units: All other HUD units</td>
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<td>Subsidized Units: Section 8</td>
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<tr>
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<td>15.3</td>
<td>-0.2981</td>
<td>0.000</td>
</tr>
</tbody>
</table>

| Inclusive Tracts Only                     |      |                            |         |
| Income                                   | 17   | 0.6002                     | 0.000   |
| Homeownership Rate                       | 24   | 0.5400                     | 0.000   |
| Median Housing Age                       | 22   | -0.5380                    | 0.004   |
| Density                                  | 16   | -0.3494                    | 0.000   |
| Subsidized Units: Total Subsidized       | 15.4 | -0.2901                    | 0.023   |
| Gini Coefficient                         | 19   | -0.3083                    | 0.011   |
| Subsidized Units: Section 8              | 15.1 | -0.2490                    | 0.053   |
| Subsidized Units: All other HUD units    | 15.2 | -0.2547                    | 0.048   |
| Subsidized Units: LIHTC Units            | 15.3 | -0.1047                    | 0.422   |

Table 3 outlines all of the correlations that are illustrated in this section by scatter charts. The Correlation Coefficient summary includes the correlation coefficient grouped the data set (either the entire MSA or Inclusive Tracts only) Strength of correlation includes both positive and negative correlations. The p value is shown to identify those correlations that are statistically significant.

The p value measurement is as follows: p <= 0.000 = significant at the .000 level (i.e. very significant); p <= 0.010 = significant at the .01 level; p <= 0.05 = significant at the .05 level; p > 0.05 = not significant.
2. Neighborhood Amenities

Table 4. Neighborhood Amenities

<table>
<thead>
<tr>
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<th>Area (sq miles)</th>
<th>Population Density (pop/sq mile)</th>
<th>Neighborhood Name</th>
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<td>Chickahomny Bluffs</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
</tr>
<tr>
<td>51087010200</td>
<td>0.11</td>
<td>27,216</td>
<td>East Highland Park</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>51087012020</td>
<td>0.20</td>
<td>30,794</td>
<td>Highland Springs</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5108701401</td>
<td>0.36</td>
<td>16,426</td>
<td>Sandston-Highland Springs</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
</tr>
<tr>
<td>51170011100</td>
<td>0.08</td>
<td>5,322</td>
<td>Southwest Petersburg</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
</tr>
<tr>
<td>5176001400</td>
<td>0.10</td>
<td>13,985</td>
<td>Stadium Byrd Park</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Source: Bing Maps

A survey of each of the top-ranked Inclusive Tracts was done to identify any correlations with neighborhood amenities. These amenities were chosen for their role in providing safety, education, community meeting space, natural beauty and transportation access. The population density of each tract is included because each of the identified tracts varies greatly in terms of population (1,440 to 6,091) and geographical size (0.10 to 3.95 square miles). Using these ten census tracts as a sample, however, shows that population density does not seem to have a correlation to the availability of the neighborhood amenities listed above. The densely populated neighborhood of Highland Springs (20,794 persons/square mile) has five of the amenities listed; Central Charles City (592 persons/square mile) has six of the listed amenities. As population density decreases, the number of localized amenities does not decrease with it. Once this has been established, it is easier to compare census tracts to one another without concerns that geographically larger or more populous tracts will necessarily have more services.

The most commonly present amenities are elementary schools and direct highway access. In the Richmond MSA, there are 149 ((VDOE: Accreditation and AYP Summary Reports, School

13 Population and area taken from 2010 Census
Accreditation Ratings 2012) public elementary schools located over 281\textsuperscript{14} census tracts for a rate of 0.53 elementary schools for every census tract. The top-ranked Inclusive Tracts have a rate of 0.80 elementary schools per census tract. This does not take into account that some of the top-ranked Inclusive Tracts contained more than one elementary school within their geographical boundaries. The data suggests that neighborhood schools have a positive impact on the quality-of-life of their immediate surroundings.

*Highway access* is another common amenity among top-rated Inclusive Tracts. Within the MSA of 281 census tracts, there are 111\textsuperscript{15} that contain interstates within their boundaries; about half of all tracts. For the top-rated Inclusive Tracts the rate was eighty percent. The success of Inclusive Tracts is not dependent on *bus service*. Only half of the Top-Rated Inclusive Tracts received bus service, and those that did received less service that more densely populated urban core areas in Richmond and central Petersburg. In addition, the success of Inclusive Tracts was not dependent on a *police station* in close proximity. There are fewer police stations, fire stations or hospitals in the region than elementary schools, and so the fact that they are not as highly represented is not surprising. What may be surprising is the fact that only one of the ten top-rated Inclusive Tracts had a police station located within its boundaries. Those amenities that may seem to bring safety and stability to a neighborhood, namely bus service and a highly visible police presence were not highly correlated among these tracts.

\textsuperscript{14} 2010 Census Tracts for Richmond MSA less newly added counties in the expanded MSA.
\textsuperscript{15} This number was derived in ArgGIS by doing a selection of census tracts based on spatial relation to interstates. It excludes Rt. 288.
3. Subsidized Housing

In the Richmond MSA there are 27,099\textsuperscript{16} units of subsidized housing from HUD Public Housing, Section 8 Vouchers and Low-Income House Tax Credit Projects. The Inclusive Tracts make up a quarter of all census tracts in the region (61/251) but contain about half of all of these units (14,252/27,09). Generally, census tracts with higher numbers of subsidized units have a lower QOL, however there are some exceptions specifically among the Inclusive Tracts.

Figure 15 shows a comparison of different types of subsidized housing across the entire MSA. Generally, any type of subsidized housing is negatively correlated with QOL. The strength of

\textsuperscript{16} HUD units in 2007 and LIHTC units constructed 1987-2009. HUDUser.org
this correlation varies between subsidized housing types. Section 8 voucher housing was fairly evenly distributed across census tracts and had a weak negative correlation against QOL of -0.33. Only until the percentage of Voucher housing exceeded about 4% of all households did it begin to show a negative correlation with QOL per the scatter chart (Figure 15, top left). “Other HUD units” (predominantly public housing units) had a moderate negative correlation with QOL for the MSA at -0.37. Table 15 (top right) shows that HUD housing units exceeding 15% of total households begin to show a strong negative correlation with QOL and only a very small percentage of top-rated MSA Tracts (the top 100 tracts, or those with scores of 16-15) contained any HUD units. Low-Income Housing Tax Credit (LIHTC) units displayed a weak negative correlation with MSA census tracts ($r = -0.298$). However they were more common in low QOL tracts. Top-rated MSA Tracts usually had only 20 or fewer LIHTC units, if they had any. In aggregate, tracts with a subsidized unit rate of 0-20% were widely distributed amongst all QOL scores. Tracts with a subsidized unit rate of 20-40% were skewed towards the lowest QOL scores; and tracts with over 40% housing subsidy were almost exclusively in the bottom 20th percentile of MSA Tracts (the lowest 51 scores of 251 tracts). Overall, the total presence of subsidized housing units (Figure 15, bottom right) has a moderate negative correlation of -0.40. What these figures tell us is that, even though higher percentages of subsidized units can negatively impact QOL, there can be a wide distribution of subsidized units, particularly through Section 8 voucher housing, in neighborhoods that maintain a high QOL.

Now that we have looked at Regional Trends, let’s look at trends among Inclusive Tracts. How do Inclusive Tracts incorporate subsidized housing? What is the relationship between Inclusive Tracts and housing policies that favor voucher programs, public housing and the use of tax credits to promote affordable housing?
Figure 15 also shows the impact of subsidized units on Inclusive Tracts. HUD housing through Vouchers and Public Housing has a weak negative correlation with QOL of -0.25. Similar to the MSA overall, there is a wider dispersion of Voucher housing among all QOL levels but very few other types of Public Housing among the top-rated tracts. LIHTC units are less common than other subsidized housing units and there is only a slight negative correlation \((r = -0.10)\) between the presence of these units in an Inclusive Tract and its QOL. Some top-rated Inclusive Tracts also have high percentages of subsidized units. In aggregate, the rate of subsidized units varies widely across the QOL range with a slightly higher, though still weak, negative correlation of -0.29.

<table>
<thead>
<tr>
<th>Tract</th>
<th>Name</th>
<th>QOL Score</th>
<th>Voucher Housing</th>
<th>Other HUD Housing</th>
<th>LIHTC</th>
<th>Total # of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>51041100701</td>
<td>Matoaca</td>
<td>16</td>
<td>40</td>
<td>2.1</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>51730810900</td>
<td>Walnut Hill North</td>
<td>16</td>
<td>29</td>
<td>2.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>51730811000</td>
<td>Walnut Hill South</td>
<td>16</td>
<td>58</td>
<td>2.9</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>51036600200</td>
<td>Central Charles City</td>
<td>15</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>51087201001</td>
<td>Chickahominy Bluffs</td>
<td>15</td>
<td>14</td>
<td>0.8</td>
<td>1</td>
<td>0.1</td>
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<td>15</td>
<td>30</td>
<td>2.6</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>51087201202</td>
<td>Highland Springs</td>
<td>15</td>
<td>73</td>
<td>3.3</td>
<td>264</td>
<td>12.1</td>
</tr>
<tr>
<td>51087201401</td>
<td>Sandston-Highland Springs</td>
<td>15</td>
<td>106</td>
<td>7.7</td>
<td>2</td>
<td>0.1</td>
</tr>
<tr>
<td>51730811100</td>
<td>Southwest Petersburg</td>
<td>15</td>
<td>11</td>
<td>1.1</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>51760041600</td>
<td>Stadium-Byrd Park</td>
<td>15</td>
<td>3</td>
<td>0.5</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Source:
HUD; "A Picture of Subsidized Units", July 4, 2012
http://www.huduser.org/portal/datasets/assthsg.html

Most of the top-rated Inclusive Tracts had 3% or less Section 8 Voucher units. The one public housing development is low-income apartment complex for families located in Highland Springs. The local high school, elementary school, an adult education center, recreation center,
post office and grocery store are all located within a half mile of the development\textsuperscript{17}. East Highland Park, Highland Springs and Sandston-Highland Springs all have created a large portion of their subsidized housing through LIHTC projects. All of these developments are apartment complexes located in close proximity to single-family neighborhoods and other, non-subsidized apartment complexes. They are also all located within walking distance to grocery stores.

4. Density

Figure 16. Density Correlation Analysis – Inclusive Tracts

Population density has a moderate negative correlation ($r = -0.43$) with QOL for Inclusive Tracts. The top-rated Inclusive Tracts, which number 1-10 on the x-axis scale, have a range of densities, but none much higher than 30,000 persons per square mile.

\textsuperscript{17} 300 Airport Place, Highland Springs, VA 23075
5. Household Income

Figure 17. Income Correlation Analysis – Inclusive Tracts

Source: American Community Survey 2006-2010

In order for a census tract to be counted as Inclusive, it must have at least the region’s share of low-to-moderate income households\(^\text{18}\) and maintain this representation from 1990 to 2010. Also included in the QOL assessment is a metric for poverty rate. In spite of the goal of inclusion, Census tracts that have a high poverty rate are downgraded because high poverty rates have a spillover effect that can negatively impact the entire neighborhood and thus impact Quality of Life. As a consequence of these two criteria, I have identified tracts that include low-to-moderate income households without an excessively high percentage of households in poverty.

Figure 17 shows that income is positively correlated with QOL \((r = 0.60)\). The median income for the entire 2010 MSA was $57,543, which is higher than the median income for any Inclusive Tract during that same year.

\(^{18}\) Defined as 80% or below the median income for the entire MSA.
Top-rate Inclusive Tracts had median income range of $35,615 - $57,371\textsuperscript{19}. This demonstrates that a high QOL was able to be maintained in Inclusive Tracts as long as they were able to stay within a reasonable range of the median income for the region. Income levels are important and closely correlated with QOL but they are not the only factor. Figure 8 shows that there were also census tracts with median household incomes around $50,000 that were still ranked lowly on the QOL scale.

Figure 18 shows that as QOL drops, the Gini Coefficient increases slightly ($r = -0.29$). One might assume that census tracts with high QOL might also have some very high-income households that would cause the Gini Coefficient to rise. Instead, those tracts with high QOLs have low inequality measures and incomes that are more tightly clustered together. This supports the theory that high-income households cluster together.

\textsuperscript{19} Excluding an outlier of $25,361.$
6. School Performance

Figure 18. Gini Coefficient Correlation Analysis – Inclusive Tracts

Source: American Community Survey 2006-2010

Figure 19. High School Performance Averaged by QOL Score of Inclusive Tracts

Source: Virginia Department of Education School Accreditation Ratings
The high school graduation rate declines as neighborhood QOL declines. In comparison, the rate of students that pass the Standards of Learning (SOL) tests do not drop at the same rate. In all cases, however, school performance among all inclusive tracts is lower than the statewide average for SOLs or rate of graduation. Much like income, the Top-Ranked Inclusive Tracts have higher performance than other Inclusive Tracts but they still rank below the average.

7. Racial/Ethnic Composition

Table 6. Subsidized Housing – Top-Rated Inclusive Tracts

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2010*</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>68.8%</td>
<td>64.9%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>29.2%</td>
<td>30.0%</td>
<td>29.5%</td>
</tr>
<tr>
<td>American Indian and Alaska Native</td>
<td>0.3%</td>
<td>0.4%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Asian</td>
<td>1.4%</td>
<td>2.0%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Two or More Races</td>
<td>0.3%</td>
<td>1.5%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Hispanic or Latino (of any race)</td>
<td>1.0%</td>
<td>2.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Total Population:</td>
<td>865,642</td>
<td>996,512</td>
<td>1,258,251</td>
</tr>
</tbody>
</table>

* 2010 MSA includes additional outlying counties.

From 1990 to 2000 the Richmond MSA grew in population and the white population shrunk from about 70 to 60 percent. The largest percentage gains were among Asians and Latinos. Blacks have maintained a steady percentage of the total MSA over this period.
Figure 20 shows the distribution of 2010 census tracts grouped by percentage of black population from highest to lowest. It demonstrates that few census tracts reflect the metro-wide racial composition. Given a composition of 60/30/10 of whites, blacks and other races in 2010, one might hope to see a greater number of census tracts that display that general representation. As it currently stands, however, only 19 percent of these tracts have black populations of 20-40 percent. Only 18 percent (46/251) census tracts have a white population between 50-70 percent.

Inclusive Tracts are different from “diverse” census tracts. Instead of selecting tracts based on how close they fall to the metro racial and ethnic composition, I have selected tracts that have a minimum of the metro representation of non-whites. Inclusive Tracts maintain this minimum representation for a 20-year span from 1990 to 2010\textsuperscript{20}. There are 68 Inclusive Tracts. Knowing that the representation of whites cannot be more than 60 percent, do many of these Inclusive

\textsuperscript{20} Inclusive Tracts must also contain a minimum representation of the metro-wide proportion of low-income households over the same 20-year period.
Tracts have a mix that is proportional to the region, or do they quickly fall into majority-black representation? Among the 68 Inclusive Tracts, there are only 15 with a white representation of 30-60 percent (figures taken from data in figure z). Figure 21 shows all 68 Inclusive Tracts in order of rank (16 to 4) from left to right on the x-axis. There tends to be a higher mix of white and black amongst the top-rated Inclusive Tracts that decreases as the QOL diminishes. This trend has plenty of exceptions. There are a few low-rated Inclusive Tracts with high white percentages and high-rated Inclusive Tracts with high black percentages. Latinos and Asians are interspersed in small amounts throughout all of the census tracts with particular tracts of high concentration but none of these neighborhoods are within the top-rated Inclusive Tracts.

Figure 21. 2010 Racial/Ethnic Composition of Inclusive Tracts by QOL Score

![Figure 21. 2010 Racial/Ethnic Composition of Inclusive Tracts by QOL Score](image)

Source: 2010 US Census

Figure 21 shows wide variation in racial composition among Inclusive Tracts rated 16 or 15. In none of the tracts, however, do we see more than an 80 percent representation of blacks and in most tracts white representation is around a quarter. There are no concentrations of Asians or
Latinos above 3 percent each. The one exception among other races is in Central Charles City. According to the 2010 Census, there are 356 American Indians that live here.

Table 7. Racial/Ethnic Composition – Top-Rated Inclusive Tracts

<table>
<thead>
<tr>
<th>Census Tract</th>
<th>Neighborhood Name</th>
<th>White</th>
<th>Black or African American</th>
<th>Asian</th>
<th>Hispanic Latino (of any race)</th>
<th>Other/ Multiracial</th>
</tr>
</thead>
<tbody>
<tr>
<td>51041100701</td>
<td>Matoaca</td>
<td>42%</td>
<td>53%</td>
<td>1%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>51730810900</td>
<td>Walnut Hill North</td>
<td>19%</td>
<td>76%</td>
<td>1%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>51730811000</td>
<td>Walnut Hill South</td>
<td>26%</td>
<td>67%</td>
<td>1%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>51036600200</td>
<td>Central Charles City</td>
<td>27%</td>
<td>52%</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>51087201001</td>
<td>Chickahominy Bluffs</td>
<td>14%</td>
<td>80%</td>
<td>1%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>51087201002</td>
<td>East Highland Park</td>
<td>16%</td>
<td>78%</td>
<td>0%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>51087201202</td>
<td>Highland Springs</td>
<td>21%</td>
<td>74%</td>
<td>0%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>51087201401</td>
<td>Sandston-Highland Springs</td>
<td>27%</td>
<td>63%</td>
<td>2%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>51730811100</td>
<td>Southwest Petersburg</td>
<td>24%</td>
<td>70%</td>
<td>1%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>51760041600</td>
<td>Stadium-Byrd Park</td>
<td>51%</td>
<td>44%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>


As a historically divided city, Richmond still does not have many census tracts that contain a racial composition that mirrors the MSA composition of 60 percent white, 30 percent black and 10 percent of other races or multiracial. Despite this fact, there are parts of the region that have produced neighborhoods and census tracts with majority black neighborhoods that demonstrate a high quality of life. These census tracts are mostly comprised of suburban outgrowths from urban neighborhoods that have historically had high African American populations (North and East Richmond and Petersburg).

8. Neighborhood Design

Using a series of aerial photographs, each neighborhood is examined for patterns in street layout, neighborhood type and land-use. The first neighborhood is Matoaca in Chesterfield County.
Matoaca is essentially a series of subdivisions that have sprung up off of Route 36 in this section of southeast Chesterfield. The street pattern follows a suburban pattern as each subdivision street is connected to the main arterial with no inter-neighborhood connections. The most prevalent land use besides single family subdivisions is agricultural and forestall land. Matoaca is located in Chesterfield County but it has much closer geographic ties to Colonial Heights and Petersburg than other parts of Chesterfield. **Walnut Hill North** in Petersburg is a postwar suburb of the central city. It has a compact single-family residential development over a fairly uniform street grid. The neighborhood also has arterials with more recently constructed apartment buildings and large shopping centers. Interstates 95 and 85 run to the east and north of the neighborhood and create a well-defined edge. **Walnut Hill South** is located south of South Crater Road, which is the primary retail corridor for the city. Walnut Hill South contains a wider variety of suburban housing options than Walnut Hill North. There are wooded developments with curvilinear street patterns; compact single-family developments with angular street grid; suburban-style apartment complexes. The census tract also contains a large amount of open/wooded space and industrial uses with access to interstates 85 and 95. **Southwest Petersburg** is made up of two distinct areas. The eastern area includes suburbs and apartment complexes located adjacent to the South Crater Road commercial corridor. The western portion is much less developed. Because of this, a city golf course, sports complex and high school are located here. There are also active agricultural uses and some industrial sites here as well. Like Walnut Hill South, Southwest Petersburg contains a wide variety of housing and other land uses. The **Sandston-Highland Springs** neighborhood in Henrico contains a number of different land uses packed closely to one another. A major shopping center for Eastern Henrico is located here as well as townhomes, single-family homes and apartments. **Highland Springs** in Henrico
County is a neighborhood located north of Highland Springs-Sandston area which was developed before newer areas surrounding White Oak Village. This neighborhood is primarily made up of Postwar-era single-family housing and some apartment complexes. As a function of its age it has more intra-neighborhood road connections than newer suburban areas. Central Charles City is a rural area dominated by agricultural and forestall uses. Most housing is located along the primary roads that wind through the county. Stadium-Byrd Park is the only Top-Selected Inclusive Tract located in the City of Richmond. The Stadium neighborhood is made up of extremely compact single-family development. Some of the homes are small and are known colloquially as “shotgun shacks”. The Byrd Park section includes a more diverse set of homes. Some are larger and set on curvilinear streets and others are smaller and of modest sizes that are similar to those in the Stadium neighborhood. The defining characteristic for the area is Byrd Park and University Stadium, which add an abundant amount of park space and unique character.

East Highland Park is a Henrico County neighborhood is located in the same narrow band with the Chickahominy Bluffs neighborhood. It is also shares a border with the Northside of the City of Richmond. Because it is closer to the city it experienced development earlier than parts of Chickahominy Bluffs and much of the housing is similar to the older Postwar-era housing available in the other neighborhood. East Highland Park and Chickahominy Bluffs are bisected by Route 360/Mechanicsville Turnpike which is a regional arterial with auto-oriented commercial stretched along the route. The Chickahominy Bluffs neighborhood is located north of Richmond in the narrow band of Henrico between the east and west sides of the County. This neighborhood has single-family housing over a very wide age range. Some neighborhoods were built in the 1950s and others were completed in the 1990s.
A few key themes emerge upon review of the land-use and design of the Top-Rated Inclusive Tracts. First, *dense single-family suburban housing* is the most common residential use. Single-family residential is the most land intensive use in the entire region and these tracts are no different. The neighborhoods usually have housing that is compact and often located on grid-patterned streets. Second, *variety of housing* options is important. Most of the Top-Rated Inclusive Tracts include options for large and small single-family housing as well as apartments. Many tracts also include a wide range of housing age. Third, proximity to *auto-oriented retail* and commercial thoroughfares are commonly found in these neighborhoods. These commercial corridors are not necessarily pedestrian-friendly. They rely on automobile traffic and a “big-box” development pattern that includes ample parking at the front of the building. These types of developments often provide the day-to-day goods and services that are not available in more urban shopping districts.
Suburban neighborhoods line a main arterial with little connectivity to one another. *(Matoaca)*

Active agricultural uses next to the Appomattox River. *(Matoaca)*

Compact single-family subdivision adjacent to a commercial corridor. *(Walnut Hill North)*

Proximity of apartments and single-family units for various income levels. *(Walnut Hill North)*

Proximity of different housing types and compact single-family development. *(Walnut Hill South)*

Industrial site with interstate access. *(Walnut Hill)*

Compact single-family subdivision adjacent to a commercial strip corridor. *(Southwest Petersburg)*

Open space and active agricultural use. *(Southwest Petersburg)*
Suburban single-family and apartment developments in close proximity. *(Sandston-Highland Springs)*

White Oak Village and Interstate 64 (top of photo). *(Sandston-Highland Springs)*

Post-war suburban housing. *(Highland Springs)*

Apartments, grocery store and church. *(Highland Springs)*

Rural housing lining roadways. Very little subdivision. *(Central Charles City)*

Predominantly agricultural and forestall. *(Central Charles City)*

Dogwood Dell and Carillon Tower. *(Stadium-Byrd Park)*

Large homes fronting the park with smaller homes behind. *(Stadium-Byrd Park)*
Stadium neighborhood housing. *(Stadium-Byrd Park)*

The Mechanicsville Turnpike commercial corridor bisects the neighborhood. *(East Highland Park)*

Postwar-era subdivision. *(Chickahominy Bluffs)*

Late-20th century subdivision. *(Chickahominy Bluffs)*
9. **Housing Age**

Figure 22 shows that for the total for all census tracts in the Richmond MSA there is moderate positive correlation ($r = 0.54$) between the median age of housing and the QOL score. Inclusive Tracts also show a moderate positive correlation ($r = 0.54$). The American Community Survey groups all housing built before 1939 into one category. Therefore the chart shows a series of tracts that hit the cut-off point for median age at 70 years old since the data was averaged in 2009. Almost all of these tracts have a low QOL score and a median housing age that is most likely older than 1939. In contrast, census tracts with a QOL score of 16 are clustered between 1960 and 2000 median housing age. Inclusive Tracts are older and

Source: ACS 2006-2010
disproportionately clustered under a median housing age of 1970 and below. Older housing tends to be located in lower QOL areas. This is particularly true for the Inclusive Tracts. Most of the Top-Rated Inclusive Tracts have median housing ages between 1960 and 1980 (Table 8). This tends to match with the general pattern of suburbanization. Figure 23 shows that most of the older housing in the region is located in the central cities of Richmond and Petersburg. These central cities also have large concentrations of low-income minorities and are classified as Inclusive. These concentrations of non-white and low-income households are also score low on the Quality-of-Life indicators. Most of the newest housing in the region is located in newer suburbs and exurban locations. These locations generally have a high QOL score but have new housing that excludes lower income households, thus making it exclusive. Those census tracts with high QOL and inclusion are often located in the first or second suburban ring of the older urban areas. These include Walnut Hill in Petersburg, Sandston, Highland Springs and East Highland Park in Henrico (near Richmond) and Ettrick-Matoaca in Chesterfield (north of Petersburg).

<table>
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<tr>
<th>Census Tract</th>
<th>Neighborhood Name</th>
<th>QOL Score</th>
<th>Median Year Built</th>
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<td>Matoaca</td>
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<td>76</td>
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<td>Walnut Hill South</td>
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<td>51036600200</td>
<td>Central Charles City</td>
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<td>48</td>
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<tr>
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<td>Chickahominy Bluffs</td>
<td>15</td>
<td>95</td>
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<td>East Highland Park</td>
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<td>88</td>
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<td>Highland Springs</td>
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<td>64</td>
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<tr>
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<td>Sandston-Highland Springs</td>
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<td>94</td>
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<tr>
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<td>Southwest Petersburg</td>
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<td>70</td>
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<tr>
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<td>Stadium-Byrd Park</td>
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</tr>
<tr>
<td></td>
<td>Richmond Region</td>
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<td>78</td>
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Table 8. Housing Age – Top-Rated Inclusive Tracts

Source: ACS 2006-2010
10. Housing Tenure

Figure 24. Homeownership Rate – Inclusive Tracts

![Graph showing Homeownership Rate vs Quality of Life Score for OwnersMSA and OwnersIncl.](image)

Source: 2010 US Census

Figure 24 shows a strong positive correlation ($r = 0.70$) between QOL score and homeownership rate for all census tracts within 2000 MSA Area and a moderate positive correlation for Inclusive Tracts ($r = 0.54$). Homeownership rates are tightly packed between 75 to 100 percent for those tracts with the highest QOL score. Census tracts with homeownership rates below 40 percent are concentrated among those census tracts with QOL scores of 12 or below, which represents census tracts with QOL scores in (roughly) the $30^{th}$ percentile and below.

Figure 24 also shows this same correlation but with the Inclusive Tracts highlighted to show their dispersion among the region. Very few of these tracts demonstrate a high homeownership rate. A high homeownership rate (above 80%) may provide for a better QOL but it does so at the exclusion non-white households and/or LMI households. Nor does a high homeownership rate guarantee a high QOL for Inclusive Tracts. The Top-Rated Inclusive Tracts homeownership
rates that range between 55 and 88 percent (Table 9). In the middle range, Inclusive Tracts with a 60 to 80 percent homeownership rate are located across a broad spectrum of QOL levels. In contrast, Inclusive Tracts with home ownership rates below 60 percent are clustered in the bottom 30\textsuperscript{th} percentile for QOL of all tracts.

<table>
<thead>
<tr>
<th>Census Tract</th>
<th>Neighborhood Name</th>
<th>QOL Score</th>
<th>Homeownership Rate (%)</th>
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<tbody>
<tr>
<td>51041100701</td>
<td>Matoaca</td>
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<td>75</td>
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<td>Central Charles City</td>
<td>15</td>
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<tr>
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<td>73</td>
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<td>51760041600</td>
<td>Stadium-Byrd Park</td>
<td>15</td>
<td>71</td>
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</table>

Source: 2010 US Census

A high homeownership rate does not necessarily correlate with a high QOL for Inclusive Tracts. However, low homeownership rates (below 60\%) are closely correlated with low QOL.
VI. DISCUSSION

The findings from the correlation analysis demonstrate some common themes. First, Top-Rated Inclusive Tracts mix a variety of land uses. The neighborhoods in Top-Rated Inclusive Tracts are located near public schools and have close access to highways. Proximity to highways allows access to the greater region and its dispersed centers of employment. Or perhaps the opposite is true; that the correlation with top-rated Inclusive Tracts and highways is because auto-oriented commercial development has come to households already present. This type of commercial development a) supports service-industry jobs that require minimal education and b) provide a wide array of daily goods and services that were once only available in the central city. These census tracts may be the benefactors of the type of auto-oriented commercial development that has had a negative impact on commercial districts and adjacent neighborhoods of the central city.

The housing in Top-Rated Inclusive Tracts is a mix of densely packed single-family subdivisions with multi-family housing interspersed. Top-Rated tracts tend to fair well when they have 4% or less occupied units subsidized through housing vouchers and have less than 20% of subsidized housing of any kind. The use of Low-Income Housing Tax Credits to create subsidized units works well when the units are built in close proximity to market-rate apartment complexes and single-family home subdivisions and within walking distance to grocery stores.

In addition to a mix of land uses, Top-Rated Inclusive Tracts maintain higher homeownership rates, higher household incomes and lower densities than other Inclusive Tracts (usually urban) with lower QOL scores. This coincides with a more suburban development pattern. Overall population density within the census tracts does not exceed much beyond 30,000 people/square
mile (47 people/acre). Homeownership rates must find a delicate balance because tracts with homeownership rates above 75 percent tend to be exclusive but census tracts with rates below 60 percent tend to have lower QOL scores. Top-Rated Inclusive Tracts had homeownership rates that ranged between 55 and 88 percent.

Income was the strongest positive correlating factor with quality-of-life for Inclusive Tracts ($r = 0.60$). Top-Rated Inclusive Tracts have median household incomes within $20,000 of the Regional Median Income of $57,543 but none of them exceed this amount. Income inequality (as defined by the Gini Coefficient) is negatively correlated with QOL. This means that the Top-Rated Inclusive Tracts had median incomes that are close to the Regional median and are more evenly distributed than other Inclusive Tracts. As QOL decreased, median income decreased and inequality increased. This means that low-income census tracts are not without a share of higher-income households but that those households do not seem to exert a notable positive influence on the surrounding neighborhood quality-of-life. One may infer that housing and community development policies can only go so far to improve quality-of-life and that the economic stability and strength of households in any neighborhood will always have a strong impact on their ability to improve their quality-of-life. And even though a mix of housing types is preferable, having a wide range of incomes (represented by a high Gini Coefficient) does not improve overall quality-of-life. A preferred “mixed-income” model would have a greater proportion of households with incomes closer to the median income of the region.

In terms of racial composition, most Inclusive Tracts do not closely reflect the 60/30/10 composition of whites, blacks, and all other groups in 2010 because Richmond still remains a racially divided city where whites and blacks live in neighborhoods in which they are the majority. The Top-Rated Inclusive Tracts do trend closer to the Regional composition of whites
and blacks than other Inclusive Tracts but they are still almost all majority black\textsuperscript{21}. White representation averages around one quarter. Among Inclusive Tracts, Asians and Latinos are clustered in tracts of all different QOL scores and there is no strong correlation between their presence and higher or lower QOL.

The picture that begins to emerge is of a majority-black inner-ring suburb that adjoins the urban core. These neighborhoods have modest income levels, suburban shopping malls, limited public transportation, and single-family developments on small- to medium-sized lots. Even though they are suburban these neighborhoods retain a wide mix of land uses, including commercial shopping centers and multi-family developments. The only two exceptions to the suburban model are the Byrd Park-Stadium neighborhood and Central Charles City. The former is an urban neighborhood and the only Top-Rated Inclusive Tract with a slim white majority (51%) and the latter is a rural area that has historically been majority black\textsuperscript{22}. These black suburbs demonstrate a higher quality of life than their urban neighbors yet retain a black composition of 53 to 80 percent.

The model of economic segregation by age of housing stock (Smith 1979) age helps to explain the success of the inner-ring suburbs. The median household age of housing in these neighborhoods is between 1960 and 1991 (excluding a high and low outlier). This suggests that much of the housing is still occupied by the original buyer or perhaps the second generation of use. In comparison, many of the lowest-ranked neighborhoods have housing stock with a median age of 1939 or earlier. This housing has yet to go through a third, fourth, or fifth generation of use like those residential structures in the urban core that, without sustained

\textsuperscript{21} Inclusive Tracts need only have 30 percent black representation.

\textsuperscript{22} All three of the county’s census tracts were Inclusive for 1990, 2000 and 2010.
upkeep, will inevitably fall into disrepair and/or vacancy. Median Housing Age has one of the stronger correlation coefficients for both the MSA and Inclusive Tracts (see Table 2).

The Tiebout Model helps describe some of the reasons why Top-Rated Inclusive Tracts are located where they are but not all of them. The Tiebout Model explains neighborhood economic sorting by provision of public goods related to jurisdiction. This model provides an appropriate model for understanding the success of inner-ring suburbs in Henrico County and Chesterfield as it relates to the public school system. However it does not explain the success of the Walnut Hill North, Walnut Hill South, and Southwest Petersburg neighborhoods since they are all located within the Petersburg City Public School System.

In the Richmond Region, black suburbanization has remained segregated from white suburbanization. This trend lends support to Wilson’s theory of the impact of black suburbanization on low-income, urban blacks (Wilson 1987). The quality-of-life score depends on a regional picture of well-being. If a series of urban tracts are doing extremely poorly, their scores (for poverty rate, for example) will likely be located above the 0.5 standard deviation of the median. These areas of concentration of poverty will impact the QOL scoring in such a way that, unless a neighborhood has an extremely high rate of poverty, it will be given a positive scoring for QOL in this area. Or in other words, one neighborhood’s failure is another’s success when it comes to assigning the QOL value of “1” or “0” to a census tract. This may also be a reflection of the well-being of the black suburbs in Richmond. The success of these neighborhoods may be based on the ability of residents who grew up in urban areas to leave the urban core in which they or their parents were raised. Thus, black suburbs have higher incomes than their urban counterparts. There are a fewer, if any, bus routes. Population density is reduced. Those in the black community that remain in the urban core have lower incomes, live
in higher density neighborhoods and score lower for quality-of-life due to instances of poverty, homicides, vacant buildings, infant deaths, etc. Richmond’s population began to decline in the 1970s. Perhaps this continued decline through the 2000 census isn’t so much as a result of white-flight (which would have already occurred when Richmond gained a black majority by 1977) but because of black flight. If Wilson’s theory holds true in Richmond, the opening of the housing market during the 1970s to African Americans would have enabled the creation of the black suburbs currently present surrounding Richmond and Petersburg’s urban cores.

The Richmond Region is comprised of 250+ census tracts. Out of those only 10 have the Region’s share of non-whites and low-to-moderate income households and demonstrate a high quality of life. As we look beyond the 2010 census, what will be the future of these tracts? Further study should explore the racial and economic trends of Inclusive Tracts between 1990-2010 to determine if they are becoming increasingly diverse or increasingly homogeneous. Does the influx of Latinos and Asians within the Region signify a shift in the way neighborhoods diversify or will racial enclaves continue to be the norm in the Richmond Region? Will inner-ring suburbs have a declining quality-of-life as the housing stock ages? The answers to these questions should be researched by examining existing trends that have occurred within the Top-Rated Inclusive Tracts over the past 20 years.
VII. CONCLUSION

The research question asks if there are neighborhoods within the Richmond Region that have been able to remain inclusive of low-to-moderate income households and non-whites and also maintain a high quality-of-life for an extended period of time; and if these neighborhoods exist, what are factors that are correlated with their high quality-of-life? The analysis has revealed that there are ten census tracts within the Region that include a minimum proportion of low-to-moderate income households and non-white residents and maintain a high quality of life. These neighborhoods were able to maintain this standard over a twenty-year span from 1990 to 2010. Eight of the ten neighborhoods were majority-black suburbs located adjacent to the urban core. Top-Rated Inclusive Tracts had median incomes that were within $20,000 of the regional median income and were tightly constrained around this moderate-income level. Top-Rated Inclusive Tracts did not contain a wide mix of income levels but instead were characterized by a lower-middle class. Rather than reflect regional racial composition (60 percent white, 30 percent black), nine out of ten of the Top-Rated Inclusive Tracts were majority black. As a reflection of national black suburbanization trends in the 1970s and 1980s, African Americans in Richmond left the urban cores of Petersburg and Richmond and settled in suburbs where they quickly became the majority.

Healthy and inclusive neighborhoods in the Richmond Region are not those that maintain a racial balance similar to the entire MSA. In fact, there are almost no neighborhoods (as defined by census tract) like this. Instead, healthy and inclusive neighborhoods are themselves enclaves of African Americans that live in the suburbs. Reflecting regional and national income disparities, these neighborhoods do not have the same income status as their white suburban counterparts,
and thus remain inclusive of lower-middle and middle-class households while also avoiding concentrations of poverty located in the urban core.

If the unifying theme of healthy and inclusive neighborhoods in the Richmond Region is black suburbanization then the unifying foundation of their existence are the reforms to housing and lending enacted in the 1960s and 1970s that enabled the out-migration of blacks from central cities. The reforms won by this legislation should be continually guarded and promoted by enforcement of anti-discrimination laws. But will this alone help promote more healthy and inclusive neighborhoods and maintain those that already exist? Policies that promote the distribution of Section 8 Voucher housing at minimal rates across the entire region should be pursued. Suburban development should be accompanied by multi-family housing. The quality of public school must be improved to put central cities on an equal footing with surrounding counties. Access to affordable goods and services, especially to low QOL tracts in central cities, should be sought. Affordable housing providers, market-rate developers and local governments should keep close watch on housing conditions in the inner-ring suburbs and promote redevelopment and infill with new units whenever possible. Lastly, an economic policy for the region should be pursued that looks at attracting jobs to the region that provide a living wage and are available to those with lower educational attainment.

Top-Rated Inclusive Tracts had a mix of housing types, moderate homeownership rates, newer housing options, access to public schools, access to commercial goods and services, and households with moderate incomes. Policies that promote these types of environments will help create and sustain healthy and inclusive neighborhoods.
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*Chicago formatting by BibMe.org.*
IX. APPENDIX
### APPENDIX 1: Race/Income Exclusion and QOL Scores

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### Notes
- **No exclusion 1990 - 2010**
- **2010 Tract Only**
- **2000/2010 Shift**