

Housing Segregation and Earnings:
Identifying Regional Differences over Time

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February 29, 2004

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Abstract

The segregation of cities in the United States has been of considerable interest in how it affects the economic outcomes of blacks and whites. Previous literature has examined the negative effects of segregation on blacks' educational attainment, earnings, idleness, and rate of single motherhood. In highly segregated cities with ghettos, blacks have unequal access to quality jobs, schooling, and role models. Over time, new laws, better communication, and better transportation should break some of the barriers caused by segregation, diminishing its negative effects.

This paper examines the effects of segregation on an individual's earnings over time, focusing on variations across regions. Using Census data from 1950 to 1990, it illustrates how segregation in an individual's city impacts his or her earnings. It concludes that the effects of segregation on earnings depend on region and time, and are largely a factor of the level of discrimination against blacks.

1. Introduction

Despite the fact that laws passed in recent generations took aim at reducing explicit and implicit attempts at perpetuating racial housing segregation, many cities still have a high degree of housing segregation based on race. During the second half of the twentieth century, whites moved to the suburbs, leaving inner cities filled with blacks. At the same time, as transportation improved, businesses and firms also left the city for the suburbs. Consequently, blacks were prevented, either explicitly through discrimination or implicitly through transportation and information problems, from knowing of and accepting jobs in the suburbs.

To the extent that housing segregation still exists in the present-day, housing segregation limits the opportunities of individuals from both majority and minority races. If segregation limits the abilities of whites and blacks to take certain jobs, it may reduce the overall productivity of society. The wage rates received by individuals should reflect the overall productivity of those individuals. If segregation affects the wages that people receive, then segregation reduces or improves the overall productivity of society by allowing a higher degree of specialization and trade. Lower wages can lead to poor quality housing, education, public facilities, and insufficient outlets for minors. If children lack these assets to their future growth, segregation's negative impacts may indeed be self-perpetuating, where a certain group is segregated from the rest of the city, and those people continue to receive low wages and cannot bring themselves out of their poor situation.

Previous literature addresses the changes in the effects of segregation on earnings over the latter half of the twentieth century. However, previous literature does not consider the varying effects based on region. Many trends have occurred during this time that have affected the layout of cities and where people live. The second wave of the Great Migration occurred,

which brought a large influx of blacks into northern cities. In addition, the development of the interstate highway system increased the suburbanization of population and employment. The north has also seen a decline in overall population, as people have moved from the rustbelt to the Sunbelt of the south and west. All of these changes should have impacts on the level of segregation in cities, and the effects of segregation. These varying factors have stronger influences in some regions, which suggests that the changes in the effects of segregation should not be the same for all regions of the country.

In this paper, I examine the effects of segregation on earnings for blacks and whites over time. Using data from the U.S. Census, I group Metropolitan Statistical Areas (MSAs), which are an economically integrated unit consisting of a city and its suburbs, by region and examine the effects of segregation for the given years. Section 2 reviews previous literature pertaining to segregation and the outcomes of individuals. Section 3 develops the theory regarding the effects of segregation on earnings. Section 4 describes the empirical model and data used for the results. Section 5 contains the empirical results and analysis, and Section 6 concludes.

2. Previous Literature

Kain (1968) is the initial development of the spatial mismatch hypothesis, which describes how and why segregation affects minorities. Using data from the Detroit Area Traffic Study of 1952 and the Chicago Area Traffic Study in 1956, he evaluates the effects that suburbanization of businesses has on the employment rates of inner-city blacks. Kain asserts that the segregation of cities makes it difficult for inner-city blacks to obtain suburban jobs because they are so far away. Cities face high degrees of segregation because the white populations of the suburbs occasionally take steps to limit the ability of minorities to move into

their neighborhoods. Such steps included previously legal measures, such as contracts and racial zoning, or illegal ones, such as threats of violence or collusion by banks, lenders, and realtors. Kain chose Detroit and Chicago because they exhibit a number of characteristics that he finds important to his study: they are highly segregated and they both contain a large ghetto, or ethnic neighborhood, in the inner city.

Kain suggests housing market segregation could have adverse impacts for numerous reasons. First, the costs of transportation to get to the jobs may preclude blacks from pursuing employment in the suburbs. Second, the distance may limit the information that inner-city blacks have about opportunities in the suburbs. Third, suburban employers may discriminate against hiring blacks, fearing negative reaction from the whites in the areas. Similarly, even if they do not feel pressure against hiring blacks, they may not feel pressure to hire them, either. Lastly, black employers in the cities may have similar employment practices, but favoring blacks.

Kain points to several factors that lead to transportation costs that limit blacks' abilities to gain knowledge of and consider suburban employment. Housing segregation makes it difficult for blacks to relocate to the suburbs if they find a good job. They have a limited ability to commute to the suburbs, Kain argues, because of relatively low rates of car ownership. Therefore, they rely on public transportation, which generally focuses on transporting people into the city for jobs, rather than out of it. These transportation costs effectively serve as a reduction in the wage rate, so if someone is undecided whether to take a suburban job or not, they will not take the job because of transportation costs.

Kain's results suggest segregation does affect Negro employment. He also finds that because blacks generally have lower education levels than whites, certain types of jobs have

disproportionate numbers of blacks working in them. For instance, few blacks work in professional, managerial, clerical, or sales jobs outside the city. On the other hand, ghetto jobs with relatively high levels of customer contact, such as retail, finance, and public administration, have disproportionately many blacks working in them.

Kain's results demonstrate that housing segregation influences where blacks or minorities work. To the extent that higher paying jobs locate outside of the city, their wages could be disproportionately low. If higher degrees of segregation limit the ability of blacks to obtain jobs outside the city and whites in the ghetto, then more segregated cities should lose some of the potential income because of the residential restrictions. Consequently, segregation would serve as a limit on wealth in the city.

Cutler and Glaeser (1997) examine the effects of segregation on black and white outcomes using 1990 Census data. They argue that highly segregated cities should, in theory, have an ambiguous effect on the outcomes of blacks. They may create costs for blacks because of the spatial mismatch hypothesis developed by Kain, and that it can cut blacks off from public goods that benefit smaller areas, such as quality schools. On the other hand, ghettos may discourage wealthy blacks from leaving, providing benefits to poorer blacks. In addition, infant black businesses located in the ghetto may face some protection against competition from white-owned businesses.

Cutler and Glaeser focus on individuals aged 20-24 and 25-30, since these age groups face the strongest peer influences. In addition, they theoretically have the least mobility, since they have not had enough accumulated wealth to choose where they live. Using these age groups, Cutler and Glaeser examine educational attainment, work status, income, and probability of a woman being an unmarried mother. They measure educational attainment by using the

probability of a person graduating college or high school. They measure work status probability by counting those people neither working nor in school. Lastly, they define income as all wages, salaries, and self-employment income.

Their primary findings suggest outcomes for blacks worsen with increased segregation. Blacks graduate from high school less often, are more likely to be idle, have decreased earnings, and have an increase in the rate of single motherhood. In addition, while segregation does not impact the college graduation rates of blacks, whites in more segregated cities tend to have higher college graduation rates. As a remedy, they conclude: “if we consider the more extreme experiment of eliminating current levels of segregation entirely, then all of the black-white differences in earnings, high school graduation rates, and idleness would disappear, as would two-thirds of the black-white difference in single motherhood” (p847).

In an attempt to determine the reasons why segregation affects blacks negatively, Cutler and Glaeser test three hypotheses. First, they examine whether racial housing segregation approximates income segregation. They find a small correlation, suggesting this hypothesis is false. Second, they test whether not having positive role models, as in those with higher education, negatively influences blacks in segregated cities more. They find a high correlation between less segregated cities and those where blacks have exposure to educated people. Finally, they examine parental background by including variables for the number of older women with no children and then number of older men with some college education. They find that having older unmarried women with children increases the chance of younger women being unmarried with children, and the presence of older men with some college education increases the chance of younger men having some college education. Lastly, they find that as blacks’ average distance from work increases, so does the probability of being idle. As the distance from

work increases, the wages blacks receive if they do work decreases. However, as all of these factors negatively influence blacks' outcomes, Cutler and Glaeser conclude: "These factors, however, do not explain more than one-third of the effect of segregation on outcomes. We are left with the conclusion that segregation is extremely harmful for blacks, but we do not have an exact understanding of why this is true" (p865).

Collins and Margo (2000) build upon Cutler and Glaeser (1997). They use the models and theory developed by Cutler and Glaeser and add a historical element by examining data from 1940 to 1990. They conclude, "In contrast to their [Cutler and Glaser] results, we generally find little or no evidence that segregation was associated with idleness or single motherhood prior to 1970; rather, the 'bad' effects of ghettos appear to have emerged in the 1970s, and then intensified in the 1980s" (p240). This paper mimics much of the methodology used by Collins and Margo, although the model differs slightly and the results consider separate regressions depending on region.

To measure the level of segregation in a given metropolitan statistical area, Cutler and Glaeser (1997) and Collins and Margo (2000) make use of a formula developed by Duncan and Duncan (1955). They develop a 'segregation curve' that allows for the comparison of many different measurements of segregation. The formula measures the portion of a city's black or white population that would have to relocate in order to obtain perfect integration:

$$(1) \quad \text{Housing Segregation} = \frac{1}{2} \sum_{i=1}^k \left| \frac{Black_i}{Black} - \frac{Nonblack_i}{Nonblack} \right|,$$

where k equals the number of census tracts in the MSA, i is the index for census tracts, $Black_i$ equals the number of blacks in tract i , $Nonblack_i$ is the number of non-blacks in tract i , $Black$ is the number of blacks in MSA, and $Nonblack$ equals the number of non-blacks in MSA. If there

is complete integration, then the index will be zero, and if there is complete segregation the index will equal one. This measure of segregation deals with housing segregation, which is the most important type for this paper's purposes, and consequently, it is the measure used.

Lundberg and Startz (1998) examine how racial segregation in both employment and housing may each lead to inequalities in both markets, and simply integrating one area may not cause equality. Their main concern is “while there has been rapid growth of an economically successful black middle class, living conditions in some central-city ghettos have deteriorated markedly” (p293). To examine the wage inequalities between the races, they develop a “new growth theory model that uses the amount of human capital in a community to determine the amount of human capital obtained by later generations. In this case, if a group, such as blacks, faced severe discrimination that inhibited their abilities to obtain human capital, even after removing blatant discriminatory methods, they still may face perpetuated effects of low human capital obtainment. Their model also suggests that separation between the majority and minority—housing segregation—perpetuates the lower performance of the minorities by exacerbating the negative neighborhood effects. They do concede, however, that while allowing mobility may create positive spillovers between groups that benefit the minorities, mobility may also allow advantaged minorities to flee their neighborhoods, resulting in an even worse off minority community. They conclude by suggesting, “workplace integration and affirmative action are unlikely to generate rapid convergence between black and white incomes if community externalities are important” (p320). Instead, they advocate programs that would help generate human capital in the minority community or develop infrastructure that improve the situations of those minorities.

Zax and Kain (1996) examine the effects of the suburbanization of companies on blacks. They use a natural experiment from 1974, when a large company moved from central Detroit to a suburb. They investigate employee records from 1971 through 1976 to see how the move affected different types of individuals. The company announced in 1971 that it would move in 1974 to Dearborn, to a new location around 8 miles away from its original one. They describe the move as having positive impacts on those who lived closer to Dearborn, as their commute time decreased, but had negative impacts on those living closer to Detroit's central business district, since the move increased their commute. Zax and Kain estimate that 187 employees received the benefits, and 370 received the losses. They note that 26.8 percent of the losers were black, while blacks only made up 20.3 percent of the sample, meaning that blacks were disproportionate among the losers.

Although the commute time changed for everyone, Zax and Kain argue that many people would have offset their commuting time gains by exchanging them for better housing, in more distant suburbs. That is, those originally in Dearborn would move to another, better suburb, and individuals from the inner-city would move to the suburbs, essentially keeping commute time constant. However, residential segregation made it difficult for inner-city blacks to move into the suburbs. In their words, "as residential segregation limited the ability of black employees to adjust through moves, black employees whose commutes would have been lengthened should have relied more heavily on adjustments through quits than did white employees who experienced comparable increases in their journeys to work" (p482). They hypothesize that whether a person moved or quit depended on race, a number of neighborhood characteristics, and travel time.

Zax and Kain find the results that they expected. They note, “The relocation of the company studied here led 11% of all black employees with service at its original workplace to quit during 1974 and 1975. These quits would not have occurred had black workers enjoyed the same residential opportunities as otherwise identical white workers” (p496). They suggest that since the suburbanization of employment is an ongoing trend in the United States that the results witnessed for this firm are not extraordinary. The increased transportation costs force inner city residents, who are usually black, to quit their relocated jobs or turn down opportunities. With the absence of perfect information, the search costs imposed on blacks looking for employment make it unreasonable to even consider employment in the suburbs, simply because it is too difficult to look there.

Raphael (1998) looks at youth employment based on ethnicity, using Oakland as a case study. He chooses to compare a low-growth area around the central business district with a high-growth suburb. Raphael finds that the youths in the suburb in question have higher employment rates than the youths in the central-city neighborhood. Although he admits that these results may come from difference in schooling or peer groups, he concludes, “the salient difference in employment growth between the 680 corridor and the downtown area strongly suggest that spatial accessibility to employment opportunity is one determinant of the observed spatial patterns” (p523). However, concerning the case of blacks in suburbs, Raphael finds, “suburban housing markets act to reproduce inner-city ghetto conditions [by blocking access to employment], effectively neutralizing any benefit associated with a suburban residence” (p523). This result, he claims, suggests that cities may not have a pure dichotomy between inner-city ghetto and suburb, since both may have similar conditions.

Borjas (1995) examines how ethnic neighborhoods and residential segregation affect ethnic externalities. He bases his work off the notion that a person's earnings are a function of his or her parents' earnings, as well as the mean earnings for his or her ethnicity. He claims, "the ethnic spillover effect retards inter-generational improvement for relatively disadvantaged ethnic groups and slows down the deterioration of skills ... among the more advantaged groups" (p365). While trying to find the impact of ethnic neighborhoods on ethnic spillovers, he finds that most ethnic capital is simply a replacement for neighborhood impacts, that is, ethnicity does not matter as much as the neighborhood. He also finds that ethnicity neighborhood effects are strongest when the people involved are highly segregated from other people.

This paper builds upon this previous research because the spatial distribution of residence and employment, peer effects, and economic growth all vary by region. How a region developed may determine the level of segregation in its cities, and how segregation affects outcomes.

3. Development of Theory

First, consider a fully segregated city; that is, the entire white population lives separate from the entire non-white population. In the case that information and transportation between the two parts of the city is weak, whites and non-whites will not know very much about employment opportunities in the other city section, nor will they be very willing to commute to those opportunities which they do know about. Consequently, almost all whites will work in the white area, and almost all non-whites will work in the non-white area. In this instance, both whites and non-whites will specialize and create their own sub-economies, each being fully self-sustaining. Individuals will specialize, and firm composition would be identical, as transportation costs would limit the ability of white firms to do business in the non-white area,

and non-white firms would be unable to do business in the white area. In this case, given equal endowments and equal populations, both economies would be a mirror image of the other.

A number of problems to this starting point exist. First, the populations of the whites and non-whites may not be equal. Using U.S. history as an example, assume the whites consist of a majority of the population. The greater number of people will allow specialization above and beyond what the non-whites are capable of, and over time, the white population will become increasingly wealthy. Second, if the whites have a greater endowment of either physical or human capital, their specialization process will occur more quickly or they will be able to become even more specialized. Consequently, the white population would become increasingly wealthy. Arguably, this situation of imperfect information and high transportation costs mimics that of the United States several decades ago.

In the case of the completely segregated city, as transportation costs decrease and information flows more freely, the two areas will become more integrated. Whites and non-whites can gain knowledge of employment opportunities in the opposing section, and they can move more easily to jobs or markets in the other area. Consequently, there will be more competition between firms for customers, and there will be more competition between workers for jobs. As a result, the city will become even more specialized, creating additional wealth. If there was perfect information and no transportation costs, the level of segregation in the city would be irrelevant, since goods and people could flow easily between areas.

Such a change is characteristic of the last few decades in the United States. The creation of interstate highways, better public transportation, the expansion of television and other news media, and the electronic age have lowered barriers to transactions between employees and firms, and firms and customers.

However, there are a number of other factors that should influence the effects of segregation. Cutler and Glaeser (1997) argue that segregation could have a positive effect on outcomes for blacks because it would provide positive role models, discourage wealthy blacks from leaving, and provide businesses with some protection. Collins and Margo (2000), who find the negative effects of segregation only occurred recently, suggest several reasons why segregation may have a more negative effect later in the century. They suggest that the end of discrimination through the Civil Rights movement opened up opportunities for blacks to leave ghettos and lowered the demand for black businesses and black labor.

Segregation should therefore have an ambiguous impact on earnings, since a more highly segregated city limits interaction between whites and non-whites, which precludes a certain level of specialization among the workforce, but it also allows positive neighborhood effects that would increase earnings.

Since technology increased with time during this period, transportation costs decreased and information flow increased. Consequently, a segregated city should become less divided economically, even if it remains highly segregated. This effect should decrease any negative effects that segregation has on earnings. On the other hand, with the Civil Rights Movement and increased opportunity for blacks, the positive neighborhood effects could erode over time, diminishing the positive effects of segregation on earnings.

It is difficult to ascertain which force regarding segregation's effects—the neighborhood effects or the limits on economic activity—should overpower the other, or if they should cancel each other out. One hypothesis is that the effects of segregation depend on the discrimination present in the MSA. If blacks in a certain MSA face a great deal of discrimination, then having a highly segregated city will help black businesses thrive and blacks gain employment, meaning

the infant industry and neighborhood effects argument dominates. On the other hand, if there is relatively less discrimination in the MSA, then having a highly segregated MSA causes blacks and whites to miss out on quality economic opportunities, meaning the loss of economic opportunity argument dominates.

Theoretically, this correlation between the effects of segregation and discrimination could result in segregation having different effects by region. If two regions have vastly different levels of discrimination, then the effects of segregation could differ. In addition, the growth patterns of cities in different regions could fuel different effects of segregation. This paper hypothesizes that the effects of segregation will differ by region, and that different patterns of historical growth and discrimination could factor into this difference.

4. Model Development and Data Sources

The model used in this paper largely follows the framework set forth in Cutler and Glaeser (1997) and Collins and Margo (2000). Specifically, Collins and Margo (2000) consider the model:

$$\begin{aligned}
 \ln(\text{earnings}) = & \alpha_0 + \alpha_1(\text{Segregation}) + \alpha_2(\text{Segregation} * \text{Black}) + \alpha_3(\text{Black}) \\
 & + \alpha_4(\text{Female}) + \alpha_5(\ln(\text{MSAPopulation})) + \alpha_6(\ln(\text{MSAPopulation}) \\
 & * \text{Black} + \alpha_7(\text{PercentBlack}) + \alpha_8(\text{PercentBlack} * \text{Black}) \\
 (2) \quad & + \alpha_9(\ln(\text{MedianIncome})) + \alpha_{10}(\ln(\text{MedianIncome}) * \text{Black}) \\
 & + \alpha_{11}(\text{PercentManufacturing}) + \alpha_{12}(\text{PercentManufacturing} \\
 & * \text{Black}) + \alpha_{13}(\text{Age}) + e
 \end{aligned}$$

which largely follows the model used in Cutler and Glaser (1997). The variables are defined as follows: earnings is the sum of all wages and salaried income, observations with zero or negative income are not considered; segregation is the value of the dissimilarity index for the MSA in which the person resides; black is a dummy variable equaling one if the person is black; MSA

population is the number of people living in the MSA in which the individual resides; percent black is the percent of the MSA's population that is black; median income is the median income in the MSA; manufacturing is the percentage of the MSA's population that works in manufacturing; and age is a collection of year-specific dummy variables. Collins and Margo use this model for the years that they consider, using separate regressions for each year.

Using this model as a starting point, there are several variables which could explain the differences in earnings that are not included in the model in Collins and Margo. First, Cutler and Glaeser include dummy variables for Asians, Hispanics, and other minorities. In the Integrated Public Use Microdata Series (IPUMS), which is used in this paper and by Collins and Margo, the Hispanic variable is not available for all years, so they simply limit their sample to blacks and whites. In an attempt to more accurately model the earnings function of individuals, the model for this paper will include observations for individuals that are not white or black. Since the IPUMS dataset does not allow for identifying Hispanics throughout the years, the model will include a single dummy variable for any other race besides black or white.

Second, the education level of the individuals in the data set is included in the model as a continuous variable. The impacts of education on earnings are obvious, and although there is concern that including this variable could induce problems with simultaneity, with segregation affecting educational attainment, there is a lack of research about the historical effects of segregation on education. Collins and Margo do not consider educational attainment, but conclude that segregation has had adverse affects only recently. Consequently, the model assumes that educational attainment is not determined by the level of segregation in the MSA. To that end, the model should include a continuous variable for the number of years of school completed.

Lastly, and most importantly, the model in this paper controls for the amount of time worked by each individual. The models in Cutler and Glaeser and Collins and Margo do not account for varied amounts of time that each person works. Wages, not earnings, should be a better indicator of an individual's level of productivity. The main issue should be how much an individual makes per hour of work, not how much per year, since each person can work multiple jobs or excessive hours. If each black person living in the ghetto makes approximately the same as some whites in the suburb, but has to spend 80 hours a week to earn that much, as opposed to 40, he or she is definitely not as well off. Consequently, estimates of the effects of segregation that do not control for time worked are missing a fundamental aspect of the labor market: that people do not work equal amounts of time. To that end, the model should include a variable that approximates or equals the number of hours worked in the entire year for each individual.

Adding these three variables onto the model used results in the following equation:

$$\begin{aligned}
 \ln(\text{earnings}) = & \beta_0 + \beta_1(\text{Segregation}) + \beta_2(\text{Segregation} * \text{Black}) + \beta_3(\text{Black}) \\
 & + \beta_4(\text{OtherRace}) + \beta_5(\text{Female}) + \beta_6(\ln(\text{MSAPopulation})) \\
 & + \beta_7(\ln(\text{MSAPopulation}) * \text{Black}) + \beta_8(\text{PercentBlack}) \\
 (3) \quad & + \beta_9(\text{PercentBlack} * \text{Black}) + \beta_{10}(\ln(\text{MedianIncome})) \\
 & + \beta_{11}(\ln(\text{MedianIncome}) * \text{Black}) + \beta_{12}(\text{PercentManufacturing}) \\
 & + \beta_{13}(\text{PercentManufacturing} * \text{Black}) + \beta_{14}(\text{Schooling}) \\
 & + \beta_{15}(\text{TimeWorked}) + \beta_{16}(\text{Age}) + e
 \end{aligned}$$

where the variables are defined above.

The data for individuals comes from the Integrated Public Microdata Series (IPUMS), which contains census data for most of the given years. The IPUMS dataset does not identify MSAs in 1960, so that year is left off the dataset for this paper. Along with the samples used for Cutler and Glaeser and Collins and Margo, the sample is restricted to individuals with age between 20 and 30 years. An extraction for each year created the samples, and each extraction

included only 20-30 year olds and those living in an identified metropolitan area. In addition, it is limited to those who have positive earnings, and were not attending school. The 1950 dataset from IPUMS does not identify school attendance for 30 year olds, so those with age 30 are dropped from the sample for that year. Top-coded incomes are multiplied by 1.4 in the years 1950-1980. The top-coded incomes for the 1990 sample are state-specific, with observations from that state receiving the median value of the top-coded incomes. IPUMS metropolitan area codes are matched, where possible, to the codes from the city-specific data. Metropolitan areas with fewer than 100 observations were dropped.

The data for the MSA-specific variables – segregation index values, populations, and the 1990 values for percent black, median income, and percent manufacturing – come from Cutler, Glaeser, and Vigdor (1999) or Cutler and Glaeser (1997). The variables percent black, median income, and percent manufacturing are calculated within the IPUMS sample. Person weights are used in the regressions when required, which is the years 1950 and 1990.

The segregation data is only available for certain metropolitan areas in the various years. In 1950, the regression includes 45 metropolitan areas. In 1990, the regression includes 267 metropolitan areas. If a metropolitan area had fewer than 100 observations in a given year, the observations from that metropolitan area in that year were dropped.

Interpretation of several variables changes between the years considered. First, the schooling variable changes from time to time. For 1950, the top code is five years of schooling beyond high school; in 1970, the top code is six years beyond high school; and in 1980, eight years beyond high school is the top code. The variable used changes for the 1990 portion of the sample. For 1990, the exact number of years of schooling beyond high school is not identified, but the level of degree attained is identified. Consequently, the assumption is that the following

degrees increase the years of schooling beyond high school as follows: an associate degree adds two years, a bachelor's degree adds four years, a master's degree adds five years, a professional degree adds seven years, and a doctorate degree adds ten years. In addition, individuals whose highest attainment is below the high school level are grouped into groups of first through fourth, and fifth through eighth grades. In these cases, the individual receives the median value of the grouping, that is, 2.5 and 6.5, respectively.

Another change in the data is that the time worked variable becomes more accurate along with time. In 1950 and 1970, the IPUMS has two variables, weeks worked per year and hours worked last week, both of which are in intervals. To start, for the data used in this paper, I assume the number of hours worked last week is consistent with the normal number of hours worked every week. In addition, to calculate the time worked variable, the median number of weeks and hours for each bracket are multiplied, giving an estimate of the total hours worked per year. For 1980 and 1990, the data are much more accurate, as the IPUMS contains data on the usual number of hours worked per week and the exact number of weeks worked last year. These values are multiplied to obtain the values for the time worked variable used in this paper.

Using the data described above, the models given by equations (2) and (3) were estimated for all the available cities in each of the given years. These regression results are included in Table 1.

Table 1
Regression Results for All Cities

Dependent Variable ln(earnings)	1950		1970		1980		1990	
	Eq (2)	Eq (3)	Eq (2)	Eq (3)	Eq (2)	Eq (3)	Eq (2)	Eq (3)
Segregation	.0679 (.1081)	-.0352 (.1566)	-.0570 (.0644)	-.2435 (.0860)	.0049 (.0322)	-.0041 (.0303)	.1559 (.0618)	.0692 (.0610)
Segregation*Black	.0946 (.3568)	-.2087 (.3142)	.3390 (.1833)	.2737 (.1595)	-.1454 (.0936)	.0030 (.0631)	-.9221 (.1193)	-.2389 (.0882)
Black	-2.5671 (2.6674)	-1.2741 (2.3433)	-3.925 (1.3906)	-4.5067 (.9567)	-.5537 (1.1274)	-1.2218 (.9587)	-1.1205 (.7170)	-.6460 (.5741)

Other Race	---	-.3538 (.1427)	---	-.1094 (.0325)	---	-.0753 (.0174)	---	-.0673 (.0108)
Female	-.4410 (.0404)	.3205 (.0401)	-.7095 (.0294)	-.4819 (.0234)	-.5507 (.0210)	-.2617 (.0127)	-.3419 (.0168)	-.1383 (.0067)
ln(population)	.0279 (.0108)	.0136 (.0113)	.0097 (.0054)	.0429 (.0080)	.0042 (.0037)	.0168 (.0037)	.0042 (.0127)	.0323 (.0118)
ln(population)*black	.0534 (.0231)	.0590 (.0242)	.0073 (.0179)	.0001 (.0132)	.0156 (.0128)	.0080 (.0057)	.0708 (.0181)	.0290 (.0164)
Percent Black	.3714 (.1314)	.0998 (.1431)	.3748 (.0756)	.2086 (.0880)	.3038 (.0381)	-.0108 (.0526)	.5925 (.1020)	.1180 (.1160)
Percent Black*black	-.7376 (.3567)	-1.0986 (.3694)	-.5152 (.1851)	-.6108 (.1435)	-.2211 (.1154)	.1577 (.1027)	-.4221 (.1614)	-.0151 (.1039)
ln(median income)	.4739 (.0972)	.4525 (.1724)	.7391 (.0390)	.1839 (.0943)	.8807 (.0371)	.7106 (.0487)	.7289 (.0527)	.5232 (.0483)
ln(median income)*black	.1864 (.3508)	.0543 (.3080)	.4025 (.1856)	.4989 (.1268)	.0191 (.1363)	.7106 (.0487)	.0460 (.0765)	.0243 (.0671)
Percent manufacturing	.1382 (.1053)	-.1022 (.1637)	-.1653 (.0710)	.0494 (.1049)	-.1242 (.0456)	.0388 (.0589)	.0366 (.1301)	.1864 (.1054)
Percent manufacturing * black	-.0844 (.3472)	.4375 (.2723)	-.2569 (.2623)	-.0061 (.1924)	.2166 (.1725)	.3867 (.1299)	-.4304 (.2254)	-.2430 (.1592)
Schooling	---	.0235 (.0021)	---	.0519 (.0015)	---	.0459 (.0010)	---	.0629 (.0015)
Time Worked	---	.0004 (.00002)	---	.0005 (.000007)	---	.0008 (.000009)	---	.0008 (.00001)
Intercept	3.1864 (.7171)	2.8730 (1.3052)	1.7130 (.2839)	4.8313 (.7316)	.6412 (.3133)	.0549 (.4072)	1.1682 (.4486)	.8859 (.3866)
R ²	.127	.352	.199	.388	.137	.487	.140	.545
Adjusted R ²	.126	.351	.199	.388	.137	.487	.140	.545
AIC	2.396	2.099	2.713	2.444	2.706	2.187	2.684	2.047
Subset F-test value	---	322.93	---	3274.19	---	4401.22	---	2785.86
Observations	18506	18506	123212	123212	216823	216823	193213	193213
Metropolitan Regions	45	45	118	118	257	257	267	267

Notes: Standard errors are in parentheses, and are adjusted for heteroscedasticity and clustering. Each regression includes dummy variables for each age in the data set. Variables and regions are defined in the text.

The results reported in Table 1 correspond with the models given in Collins and Margo (2000)—equation (2) in this paper—and the model in equation (3), which has additional variables.

Adding the variables mentioned above has a slight impact on the results. The two variables of interest—the segregation index and the segregation-black interaction—had slight, but important changes. They occasionally change sign or change from being statistically significant to not. The less important variables often have sizable changes in the size of the coefficient estimate, change statistical significance, or change sign.

The most important aspects of the results displayed in Table 1 are the goodness of fit statistics. In all cases, the model becomes more accurate with the addition of the new variables, as witnessed by the sizable jump in the adjusted coefficient of determination and the lower AIC value. In addition, a subset F-test on the coefficients on the variables in question for each year demonstrates that they are collectively significantly significant. These results strongly suggest the model given by equation (3) is the better model of the two.

Seeing that the model given by equation (3) proved the better model than the one in equation (2), the remaining results that focus on the regional differences of the effects of segregation are based on equation (3).

5. Empirical Results

Appendices A through D display the regression results for the OLS estimates for each year and region.

The most important aspect of the analysis in this paper is the effects of segregation on both blacks and whites across regions. Table 2 shows the coefficients on the segregation rate for each regression. These coefficients show the semielasticity of earnings with respect to the segregation index value for all non-blacks.

Table 2
Coefficients on Segregation Index

Year	All	North	South	Central	Midwest	West
1950	-.0352 (.1566)	-.1214 (.1188)	-.0105 (.3728)	-.5743 (.1777)	.0567 (.2284)	-1.4010 (.6175)
1970	-.2435 (.0860)	-.1093 (.1373)	-.0826 (.1976)	-.1702 (.2062)	-.1067 (.1377)	-.5498 (.1790)
1980	-.0041 (.0303)	-.0768 (.0407)	.2854 (.0645)	-.1020 (.0916)	.0502 (.1017)	.1566 (.0857)
1990	.0692 (.0610)	-.4094 (.1706)	.5568 (.1133)	-.2880 (.1429)	.2607 (.0860)	-.1925 (.0716)

Table 3 shows the coefficients on the segregation rate interacted with the black dummy variable. These coefficients show the difference in the semielasticities of earnings with respect to the segregation index value between blacks and non-blacks. A negative coefficient signifies that segregation has worse effects for blacks than non-blacks; a positive coefficient signifies that segregation has better effects for blacks than non-blacks.

Table 3
Coefficients on Segregation * Black

Year	All	North	South	Central	Midwest	West
1950	-.2087 (.3142)	-1.9371 (.9572)	-.5199 (.4829)	.1108 (.8499)	-1.8680 (.3898)	7.1873 (.3921)
1970	.2737 (.1595)	.1644 (.3053)	.2802 (.3821)	.2893 (.7068)	.7753 (.8608)	.0562 (.3229)
1980	.0030 (.0631)	-.0599 (.0690)	-.2529 (.1269)	-.4559 (.2808)	.1447 (.2352)	.7745 (.3412)
1990	-.2389 (.0882)	-.6125 (.2922)	-.4436 (.1159)	.3511 (.3527)	-.2196 (.3165)	.0928 (.2641)

Table 4 shows the coefficient on the black dummy variable. These coefficients show the change in the intercept value if an individual is black relative to the intercept for whites. This coefficient provides an estimate for the degree of discrimination in each region and year, since the change in the earnings is not attributed to anything except the fact that the individual is black. The more negative the coefficient, the higher the degree of discrimination against blacks.

Table 4
Coefficients on Black

Year	All	North	South	Central	Midwest	West
1950	-1.2741 (2.3433)	-13.2896 (7.4426)	-37.8000 (5.8167)	-.2591 (9.3341)	1.8198 (2.5361)	-7.3156 (.5281)
1970	-4.5067 (.9567)	-3.1039 (1.5995)	-3.2031 (1.0740)	-6.2811 (4.3075)	-1.5008 (3.5654)	2.3528 (2.1756)
1980	-1.2218 (.9587)	-2.9848 (1.4432)	-.4323 (1.5843)	.7013 (1.3455)	-.9014 (1.3678)	-2.2471 (1.1433)
1990	-.6460 (.5741)	-.3367 (1.6314)	-1.0514 (.5538)	-.0213 (2.5849)	5.5882 (2.7781)	.0667 (1.6793)

The results for all the cities grouped together show similar results to those found by Collins and Margo (2000). It appears that the negative effects of segregation only appeared later in the data, with the first significant and negative coefficient coming in 1990. Prior to that, the coefficients all are insignificant, and vary between positive and negative. The effects of segregation on non-whites are also insignificant for most of the years, but with 1970 showing a statistically significant, negative coefficient. Lastly, the coefficient of black starts out insignificantly negative, jumps to very significantly negative in 1970, then increases towards zero in 1980 and 1990. However, these last two years return to statistical insignificance.

Sections 5.1-5 survey the results as they pertain to each of the regions: North, South, Central, Midwest, and West.

5.1 North

Metropolitan statistical areas in the following states were considered to be in the North: Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and West Virginia.

The coefficient on the segregation index follows the trend of all the cities fairly closely. Regression results from the four years show negative effects of segregation on non-blacks, but the levels are insignificant up through 1980. In 1990, similar to the collection of all cities, the North displays negative effects for the first time.

The coefficient on the segregation-black interaction shows that in 1950, segregation was relatively worse for blacks than non-blacks. In addition, the magnitude of the coefficient suggests the effects were fairly strong. In 1970 and 1980, the coefficient moves to insignificant levels, first positive, and then negative. Finally, in 1990 the coefficient returns to a negative,

significant level. These results show that the North closely followed the coefficient estimates for all cities, but in 1950 segregation had a negative effect.

The coefficients on the black dummy variable suggest that discrimination did not have a statistically significant effect in 1950, 1970, or 1990. In each of these years, the coefficient is negative, but insignificant. In 1980, the coefficient is negative and statistically significant.

5.2 South

Metropolitan statistical areas in the following states were considered to be in the South: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

The regression results for the South show an odd pattern for the coefficient on segregation. Similar to the results for all the cities, the coefficients start out negative and insignificant. However, in 1980 and 1990, the coefficients are positive and significant. These estimates suggest that segregation increased the earnings of non-blacks during these years.

The coefficients on the segregation-black interaction mirror the trend of the effects of segregation. In 1950 and 1970, the coefficients are negative and insignificant, so segregation appears to have relatively no different effects for blacks and whites. In 1980 and 1990, the coefficients are negative and significant, suggesting segregation affects blacks more adversely than non-blacks. However, since the coefficients on the segregation index are positive, and the magnitudes of the coefficient on the segregation-black interaction are close to those of the base case, the actual effects on blacks may be zero.

Coefficient estimates for the black dummy variable suggest diminishing levels of discrimination against blacks. In 1950 the magnitude and significance of the coefficient estimate

are extremely high, and it decreases in 1970. In the last two years, the estimates are negative but insignificant. These results suggest that discrimination in the South decreased over the period in question. In addition, since the relative effects of segregation on blacks decrease during the time period—from zero to negative—it appears the South supports the theory that the level of discrimination is inversely related to the effects of segregation.

5.3 Central

Metropolitan statistical areas in the following states were considered to be in the Central: Illinois, Indiana, Kentucky, Michigan, Ohio, and Wisconsin.

Regression results suggest that that the Central region of the country has little to tell about the three key variables discussed in this paper. The coefficients on the segregation index are insignificantly negative until 1990, when it is negative and significant. These results suggest that non-black earnings in the Central region are not affected very much by the degree of segregation.

The coefficient on the segregation-black interaction shows little trend as well. The coefficient in all four years is insignificant, although in the early years it is positive. In 1980, the coefficient is negative, while in 1990 the coefficient reverts back to a positive.

Similarly, the coefficients for the black dummy variable are insignificant for all four years. However, the signs of the insignificant coefficients follow the theory outlined above: the positive coefficients on the segregation-black interaction have corresponding coefficients on the black dummy variable that is an opposite sign, suggesting segregation benefits blacks when discrimination lowers their wages. These results are not very strong, though, since the coefficients are all insignificant.

5.4 Midwest

Metropolitan statistical areas in the following states were considered to be in the Midwest: Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming.

The coefficients on the segregation index for the Midwest are insignificant until 1990. In 1950, the coefficient is positive, in 1970, negative, and then positive again in 1980. In 1990, it is positive and significant, meaning that segregation increases the earnings of non-blacks.

The coefficient on the segregation-black interaction shows the complete opposite trend. In 1950, the coefficient is negative and significant, a result which is similar to the North. In 1970 and 1980, the coefficient is positive and insignificant, and then is negative and insignificant in 1990. This trend suggests that segregation's effect on blacks relative to non-blacks has improved in the Midwest.

The coefficient on the black dummy variable shows discrimination in favor of blacks in certain years. First, the coefficient is positive and insignificant in 1950. In 1970 and 1980, the coefficient is negative and insignificant. Finally, it is positive and significant in 1990. These results suggest that in 1950 and 1990, blacks received higher earnings because of their race—in essence the opposite of the expected result.

5.5 West

Metropolitan statistical areas in the following states were considered to be in the West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Nevada, New Mexico, Oregon, Utah, and Washington.

The West shows consistency in terms of negative effects of segregation on whites. Regression results show negative coefficients in 1950, 1970, and 1990, all of which are statistically significant. In 1980, the coefficient is positive, but is statistically insignificant. In addition, the magnitude of the significant coefficients declines, meaning that the negative effects of segregation on non-whites diminished over the time period.

Coefficient estimates on the segregation-black interaction have positive values for all four years in the period. While the values in 1960 and 1990 are insignificant, 1950 and 1980 have significant values. The magnitude of the value for 1950 is especially large, suggesting major improvements in the earnings of blacks with increased segregation.

Estimates for the coefficient on the black dummy variable suggest that the theoretical relationship between discrimination and the effects of segregation on blacks is accurate. For 1950, the coefficient estimate is large, statistically significant, and negative, and in 1980, is fairly large, negative, and almost statistically significant. In 1970 and 1990, the estimate is positive, but not close to statistical significance. These results suggest that discrimination against blacks in the West decreased during the time period in question.

6. Conclusions

Judging from the preceding discussion about the individual regions and the trends in the effects of segregation and discrimination, the regions have distinct characteristics regarding the effects of segregation.

Certain regions show positive effects of segregation on whites, while others show negative effects. Most notably is the year 1990, where the regression results with all cities included show an insignificant coefficient. However, splitting the data into regions shows that

no region has an insignificant coefficient. While the North, Central, and West have negative effects, the South and Midwest have positive effects. In fact, the opposite signs for each region seem to balance each other out.

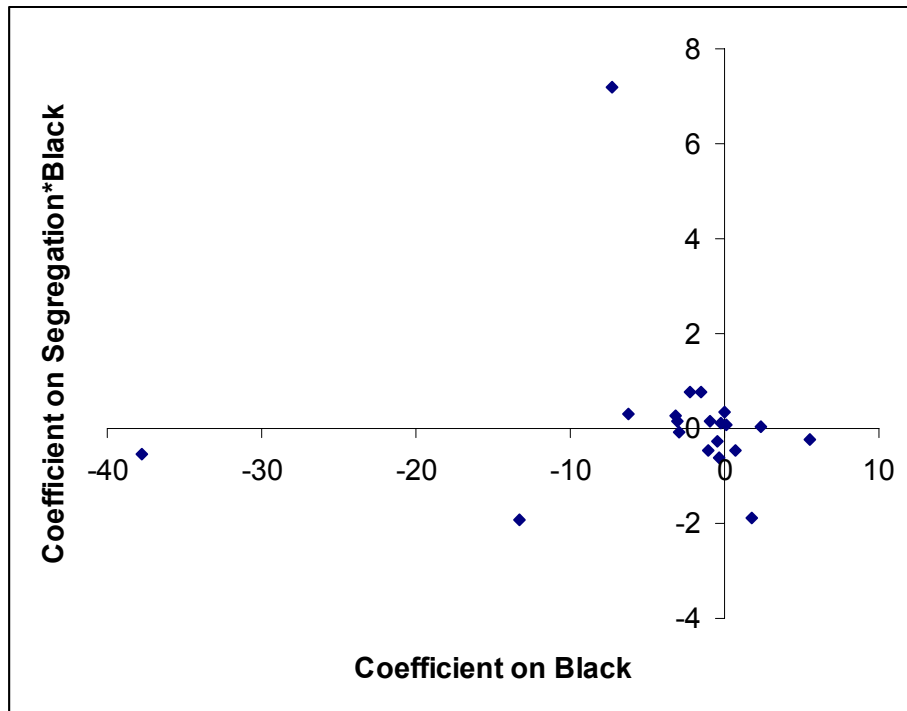
The coefficients on the segregation-black interaction also display different trends between regions. In the North, there are consistently negative or insignificant effects of segregation on blacks. The Central shows all insignificant effects, and the West shows very positive effects in 1950 becoming diminished to insignificant effects by 1990. Again, the estimates while including all cities are often insignificant, while dividing the data into regions produces significant results with opposing signs for various regions.

The trends in the level of discrimination show similar differences between regions. For example, the data suggest the North witnessed consistently diminishing levels of discrimination against blacks, while the Central never had significant effects from discrimination. Surprisingly, the Midwest also showed discrimination in favor of blacks in 1990, as they received higher base earnings than whites, without considering the other variables in the model.

The empirical results presented above support the hypothesis that segregation is beneficial if the level of discrimination is high, and segregation is bad if the level of discrimination is low. Graph 1 depicts the combination of the coefficient on the black dummy variable versus the coefficient for the segregation-black interaction for the regressions for every year and region.

Graph 1

Plot of Coefficient on Black versus Coefficient on Segregation*Black



This conclusion that segregation's effects depend upon the level of discrimination leads to some insight as to why segregation's effects on earnings may vary over region and time. First, the period in question was marked with volatility with regard to race relations and the treatment of blacks. If blacks faced a large degree of discrimination early in the period, then segregation should be beneficial since the positive neighborhood effects would improve earnings. If discrimination decreased, then segregation would be relatively more harmful in that it would limit economic opportunity, so segregation would negatively affect blacks. Second, the level of discrimination could depend on the region's history and growth, which would determine segregation's effects. For example, relatively new cities—such as many of those in the West—

may have relatively less discrimination because ethnic neighborhoods are not as historically developed. Older cities—such as those in the North—generally have very old ethnic neighborhoods, which could affect the level of discrimination and effects of segregation.

This paper has built upon previous literature that deals with how the degree of segregation in a city affects outcomes. The addition of variables to previous models and a regional approach lead to results that suggest that the effects of segregation are not uniform over time, but they largely reflect the characteristics of the region, especially the level of discrimination in that region.

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Appendix A

Regression Results for 1950

Variable	All	North	South	Central	Midwest	West
Segregation	-.0352 (.1566)	-.1214 (.1188)	-.0105 (.3728)	-.5743 (.1777)	.0567 (.2284)	-1.4010 (.6175)
Segregation*Black	-.2087 (.3142)	-1.9371 (.9572)	-.5199 (.4829)	.1108 (.8499)	-1.8680 (.3898)	7.1873 (.3921)
Black	-1.2741 (2.3433)	-13.2896 (7.4426)	-37.8000 (5.8167)	-.2591 (9.3341)	1.8198 (2.5361)	-7.3156 (.5281)
Other Race	-.3538 (.1427)	-.5060 (.1132)	---	.1222 (.0080)	-1.2699 (.0867)	-.3890 (.1931)
Female	.3205 (.0401)	-.2264 (.0463)	-.3907 (.0985)	-.3332 (.0611)	-.2792 (.0370)	-.4465 (.0352)
ln(population)	.0136 (.0113)	.0367 (.0065)	-.1866 (.0904)	.0457 (.0123)	-.0609 (.0178)	.1187 (.0752)
ln(population)*black	.0590 (.0242)	.1643 (.0565)	-.3145 (.1867)	.1298 (.0596)	.7393 (.0279)	-1.2467 (.0540)
Percent Black	.0998 (.1431)	.0710 (.1400)	.1974 (.3828)	-.5539 (.2830)	.5982 (.0524)	.6313 (1.4129)
Percent Black*black	-1.0986 (.3694)	-.9008 (.6732)	-.3272 (.5870)	-2.9623 (1.9295)	-.5021 (.3188)	9.6333 (.8115)
ln(median income)	.4525 (.1724)	.5760 (2334)	1.4366 (.3676)	.1580 (.1536)	1.6740 (.0837)	-.1358 (.2036)
ln(median income)*black	.0543 (.3080)	1.5708 (.9589)	5.5606 (.9647)	-.2023 (1.1931)	-1.4341 (.3675)	2.1770 (.0998)
Percent manufacturing	-.1022 (.1637)	.0458 (.1069)	-.7961 (.2484)	.5386 (.1190)	1.1258 (.2157)	-2.1778 (.8718)
Percent manufacturing * black	.4375 (.2723)	1.6856 (.6605)	-.6391 (.5837)	.1885 (.6949)	4.0077 (.4735)	13.2558 (.6583)
Schooling	.0235 (.0021)	.0231 (.0020)	.0225 (.0081)	.0162 (.0040)	.0345 (.0099)	.0343 (.0056)
Time Worked	.0004 (.00002)	.0004 (.00002)	.0004 (.00004)	.0005 (.00003)	.0005 (.00003)	.0004 (.00005)
Intercept	2.8730 (1.3052)	1.5376 (1.7586)	-1.8013 (2.4488)	5.0987 (1.0939)	-5.8563 (.4927)	7.1029 (1.2671)
Coefficient of Determination	.352	.344	.356	.389	.388	.350
Adjusted Coefficient of Determination	.351	.342	.345	.386	.379	.345
AIC	2.099	2.032	2.216	2.026	2.164	2.213
Observations	18506	8201	1458	4601	1546	2700
Metropolitan Regions	45	13	9	12	6	7

Notes: Standard errors are in parentheses, and are adjusted for heteroscedasticity and clustering. Each regression includes dummy variables for each age in the data set. Variables and regions are defined in the text.

Appendix B

Regression Results for 1970

Variable	All	North	South	Central	Midwest	West
Segregation	-.2435 (.0860)	-.1093 (.1373)	-.0826 (.1976)	-.1702 (.2062)	-.1067 (.1377)	-.5498 (.1790)
Segregation*Black	.2737 (.1595)	.1644 (.3053)	.2802 (.3821)	.2893 (.7068)	.7753 (.8608)	.0562 (.3229)
Black	-4.5067 (.9567)	-3.1039 (1.5995)	-3.2031 (1.0740)	-6.2811 (4.3075)	-1.5008 (3.5654)	2.3528 (2.1756)
Other Race	-.1094 (.0325)	-.1958 (.0581)	-.2035 (.0808)	-.2504 (.0843)	-.2145 (.0871)	-.0733 (.0223)
Female	-.4819 (.0234)	-.3722 (.0409)	-.5153 (.0354)	-.5221 (.0464)	-.5071 (.0272)	-.5055 (.0443)
ln(population)	.0429 (.0080)	.0093 (.0094)	.0555 (.0326)	.0505 (.0122)	.0726 (.0210)	.0423 (.0376)
ln(population)*black	.0001 (.0132)	-.0420 (.0127)	.0311 (.0483)	-.0685 (.0468)	-.0074 (.0591)	-.0100 (.0342)
Percent Black	.2086 (.0880)	.4726 (.0691)	.1458 (.3602)	-.0901 (.2638)	-.1932 (.1778)	.7913 (.7862)
Percent Black*black	-.6108 (.1435)	-.0433 (.2336)	-.1849 (.5039)	.0297 (.9056)	-1.2950 (.5952)	1.1687 (1.0081)
ln(median income)	.1839 (.0943)	.5625 (.1349)	-.0134 (.1455)	.4712 (.1271)	.1240 (.1082)	.0398 (.1462)
ln(median income)*black	.4989 (.1268)	.4086 (.1691)	.2730 (.1806)	.8363 (.5092)	.0996 (.4813)	-.1497 (.2642)
Percent manufacturing	.0494 (.1049)	-.0160 (.1045)	-.6924 (.2803)	.1082 (.1002)	.0922 (.1404)	.1511 (.3114)
Percent manufacturing * black	-.0061 (.1924)	.0364 (.1742)	.3151 (.4957)	-.8931 (.4188)	.6593 (.7821)	1.1719 (.4768)
Schooling	.0519 (.0015)	.0501 (.0017)	.0566 (.0027)	.0461 (.0038)	.0567 (.0040)	.0499 (.0025)
Time Worked	.0005 (.000007)	.0005 (.00001)	.0004 (.00002)	.0005 (.000009)	.0005 (.00002)	.0005 (.00001)
Intercept	4.8313 (.7316)	1.8776 (1.1273)	6.2916 (.9550)	2.2996 (1.1137)	4.8170 (.7094)	6.2462 (1.1636)
Coefficient of Determination	.388	.375	.391	.398	.395	.382
Adjusted Coefficient of Determination	.388	.374	.391	.397	.394	.382
AIC	2.444	2.392	2.399	2.483	2.442	2.492
Observations	123212	34920	16162	24570	14071	26489
Metropolitan Regions	118	27	24	21	15	23

Notes: Standard errors are in parentheses, and are adjusted for heteroscedasticity and clustering. Each regression includes dummy variables for each age in the data set. Variables and regions are defined in the text.

Appendix C

Regression Results for 1980

Variable	All	North	South	Central	Midwest	West
Segregation	-.0041 (.0303)	-.0768 (.0407)	.2854 (.0645)	-.1020 (.0916)	.0502 (.1017)	.1566 (.0857)
Segregation*Black	.0030 (.0631)	-.0599 (.0690)	-.2529 (.1269)	-.4559 (.2808)	.1447 (.2352)	.7745 (.3412)
Black	-1.2218 (.9587)	-2.9848 (1.4432)	-.4323 (1.5843)	.7013 (1.3455)	-.9014 (1.3678)	-2.2471 (1.1433)
Other Race	-.0753 (.0174)	-.1307 (.0170)	-.1153 (.0286)	-.1675 (.0225)	-.1089 (.0226)	-.0404 (.0245)
Female	-.2617 (.0127)	-.1859 (.0270)	-.2576 (.0117)	-.3233 (.0140)	-.3106 (.0155)	-.2548 (.0199)
ln(population)	.0168 (.0037)	.0098 (.0066)	-.0240 (.0096)	.0326 (.0067)	.0160 (.0076)	-.0317 (.0112)
ln(population)*black	.0080 (.0057)	-.0014 (.0120)	.0376 (.0195)	.0188 (.0171)	.0050 (.0050)	-.0112 (.0461)
Percent Black	-.0108 (.0526)	.0125 (.1171)	.1297 (.0814)	.0417 (.1499)	.2064 (.0865)	.5720 (.2357)
Percent Black*black	.1577 (.1027)	.0420 (.1658)	-.1106 (.1531)	.7885 (.4921)	-.9454 (.3260)	-1.1603 (.9487)
ln(median income)	.7106 (.0487)	.5384 (.0834)	.8400 (.0977)	.5762 (.0662)	.8184 (.0714)	.7111 (.0713)
ln(median income)*black	.7106 (.0487)	.3196 (.1545)	-.0058 (.1893)	-1.055 (.1483)	.0760 (.1654)	.2032 (.1287)
Percent manufacturing	.0388 (.0589)	-.1847 (.0949)	.1573 (.1385)	.2416 (.1119)	-.0967 (.1494)	.3484 (.1142)
Percent manufacturing * black	.3867 (.1299)	.2585 (.2137)	.4058 (.2954)	.8837 (.1807)	.1229 (.4412)	.1269 (.3332)
Schooling	.0459 (.0010)	.0475 (.0017)	.0525 (.0020)	.0436 (.0017)	.0491 (.0022)	.040 (.0028)
Time Worked	.0008 (.000009)	.0009 (.00001)	.0008 (.00002)	.0009 (.00001)	.0008 (.00002)	.0008 (.00002)
Intercept	.0549 (.4072)	1.6859 (.7346)	-.7811 (.7938)	1.0347 (.5712)	-.9264 (.5692)	.6644 (.6194)
Coefficient of Determination	.487	.498	.465	.525	.490	.465
Adjusted Coefficient of Determination	.487	.497	.465	.525	.489	.464
AIC	2.187	2.123	2.194	2.198	2.163	2.226
Observations	216823	52147	39532	41981	28724	48470
Metropolitan Regions	257	55	70	51	32	40

Notes: Standard errors are in parentheses, and are adjusted for heteroscedasticity and clustering. Each regression includes dummy variables for each age in the data set. Variables and regions are defined in the text.

Appendix D

Regression Results for 1990

Variable	All	North	South	Central	Midwest	West
Segregation	.0692 (.0610)	-.4094 (.1706)	.5568 (.1133)	-.2880 (.1429)	.2607 (.0860)	-.1925 (.0716)
Segregation*Black	-.2389 (.0882)	-.6125 (.2922)	-.4436 (.1159)	.3511 (.3527)	-.2196 (.3165)	.0928 (.2641)
Black	-.6460 (.5741)	-.3367 (1.6314)	-1.0514 (.5538)	-.0213 (2.5849)	5.5882 (2.7781)	.0667 (1.6793)
Other Race	-.0673 (.0108)	-.0746 (.0164)	-.1336 (.0266)	-.0900 (.0274)	-.0646 (.0316)	-.0475 (.0142)
Female	-.1383 (.0067)	-.1016 (.0128)	-.1517 (.0094)	-.1473 (.0126)	-.1608 (.0075)	-.1453 (.0149)
ln(population)	.0323 (.0118)	.0252 (.0165)	.0120 (.0142)	.0405 (.0165)	.0252 (.0109)	.0225 (.0119)
ln(population)*black	.0290 (.0164)	.0273 (.0235)	.0040 (.0163)	-.0223 (.0393)	.0128 (.0352)	.0549 (.0249)
Percent Black	.1180 (.1160)	.5523 (.2252)	.0967 (.0617)	.3820 (.3448)	-.0072 (.1369)	1.1311 (.2461)
Percent Black*black	-.0151 (.1039)	-.2185 (.3179)	-.4125 (.1005)	.2156 (.7831)	-.5454 (.4415)	-.7610 (.5858)
ln(median income)	.5232 (.0483)	.3932 (.0627)	.4815 (.0552)	.4261 (.0715)	.4930 (.0845)	.4595 (.0521)
ln(median income)*black	.0243 (.0671)	.0195 (.1278)	.1175 (.0617)	.0006 (.2767)	-.5554 (.3095)	-.1098 (.1544)
Percent manufacturing	.1864 (.1054)	.3567 (.3950)	.4729 (.0897)	.3332 (.1860)	.4003 (.2255)	.3933 (.2565)
Percent manufacturing * black	-.2430 (.1592)	.3787 (.4819)	-.1409 (.1970)	-.8776 (.4210)	-.2004 (.8120)	.6891 (.5952)
Schooling	.0629 (.0015)	.0620 (.0021)	.0702 (.0028)	.0674 (.0047)	.0657 (.0026)	.0567 (.0018)
Time Worked	.0008 (.00001)	.0008 (.00001)	.0008 (.00003)	.0009 (.00002)	.0008 (.00002)	.0008 (.00002)
Intercept	.8859 (.3866)	2.6480 (.5952)	1.2435 (.4461)	1.7094 (.7097)	1.0758 (.7660)	1.8608 (.5657)
Coefficient of Determination	.545	.543	.544	.584	.563	.512
Adjusted Coefficient of Determination	.545	.543	.543	.584	.563	.512
AIC	2.047	1.982	2.013	2.048	2.040	2.105
Observations	193213	49075	38977	30143	24186	46839
Metropolitan Regions	267	54	71	50	37	45

Notes: Standard errors are in parentheses, and are adjusted for heteroscedasticity and clustering. Each regression includes dummy variables for each age in the data set. Variables and regions are defined in the text.