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There's No Place Like Home? Understanding the Relationship Between Racial Residential Segregation and Self-Reported Health

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How does context influence health? County racial composition and racial residential segregation shape health outcomes by creating different contexts that influence access to health-related resources. White Americans disproportionately possess these material and intangible resources. Therefore, I propose that the higher the percent of non-Hispanic white residents in U.S. counties, and the higher the racial residential segregation in U.S. counties, the lower the percent of adult residents who report poor or fair health in U.S. counties. To explore these hypotheses, I analyze 2014 demographic and survey data from 2946 U.S. counties. Findings provide mixed support for my hypotheses. Percent white has a significant inverse relationship with county self-reported health. Controlling for median household income, access to health insurance and primary care physicians, and rurality, the higher the percent of white residents, the lower the percent of residents reporting poor or fair health in U.S. counties. However, the dissimilarity index has no significant relationship with the dependent variable. In both models, control variables of median household income, access to health insurance and primary care physicians, and rurality are significantly linked to self-reported health. These results suggest that the control and distribution of material (economic and political) and intangible (social and cultural) resources is key to predicting health outcomes. The concentration of resources in white communities is a critical aspect of maintaining structures of institutional racism. Changing the control and distribution of these resources will be key to overcoming widespread racial health disparities and other pervasive forms of structural racial inequality.

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While public opinion often views health as an individual issue, shaped by genetics, lifestyle choices, and coincidence, social scientists have studied many aspects of physical and mental health as being influenced by external, structural influences. Contextual factors including access to quality health care, the presence or absence of environmental pollutants, encouragement of health-related behaviors, and exposure to discrimination and racism can play an enormous role in the health of individuals and the communities that they live in. Even in disorders that are determined by a single gene, "the severity and timing of gene expression are affected by environmental triggers, and... established genetic risks can be exacerbated or become protective in the presence of specific environmental exposures" (Williams and Sternthal 2010:S18). It is clear that one's physical and social environments play important roles in shaping health outcomes, and the interactions between these complicated, multilevel influences can generate a vast range of consequences.

In the United States, widespread health disparities exist between racial and ethnic groups. Different communities of color face elevated rates of different diseases and chronic conditions when compared to white people (Anderson and Fullerton 2014; Nelson 2013; Williams and Sternthal 2010). These disparities are measurable and have tangible consequences; however, they are not driven by biology. Other individual factors, including socioeconomic status, health behaviors, psychosocial factors, and access to healthcare also do not fully account for these disparities (White and Borrell 2011). Instead, racial health disparities are manifestations of larger, structural inequalities; they are connected to the contexts and conditions that are produced and perpetuated by structural racism. However, a widespread emphasis on the biological drivers of health serves "important ideological functions" (Williams and Sternthal 2010:S17). Focusing on genetic difference can often "divert attention from the social origins of disease, reinforce social

norms of racial inferiority, and promote the maintenance of the status quo," ultimately absolving the structures, policies, and practices that encourage health disparities (S17).

Racism is a "multilevel construct" that encompasses both institutional processes as well as individual practices, including "discrimination, racial prejudice and stereotypes, and internalized racism" (Williams and Sternthal 2010:S20). While individual racism is often more easily seen and understood as "racism," it operates within a broader context of structural racism, which "[does] not require the actions or intent of individuals" (Gee and Ford 2011:116). Instead, structural forms of racism manifest in the "macrolevel systems, social forces, institutions, ideologies, and processes that interact with one another to generate and reinforce inequities among racial and ethnic groups" (116). Structural racism has many tangible manifestations, including racial residential segregation, that bear on the lives, experiences, and opportunities of people of color.

Additionally, "given that racism shapes the lives of people of color, it seems not only reasonable but necessary to study the hypothesis that racism influences health outcomes" (Gee and Ford 2011:116). Researchers have found that people of color who report experiencing acts of racism first-hand have poorer health outcomes (Gee and Ford 2011; Stewart 2008). Structural racism, while sometimes less obvious than individual racism, operates just as insidiously and perhaps more comprehensively through a variety of mechanisms to shape access to health-related resources, health behaviors, and health outcomes. Systems of racial classification, processes and practices of racial residential segregation, and the racial health disparities that emerge are all manifestations of structural racism.

In this work, I focus on the impacts of racial residential segregation on self-reported health using a national set of county-level data. Since segregation is linked to a variety of negative health outcomes, and since people of color disproportionately bear the burden of this segregation, I expect to find that racial residential segregation will negatively affect the health of people of color, while having a neutral or positive effect on the health of white people. I hypothesize that the higher the

percent of non-Hispanic white residents in U.S. counties, the lower the percent of adult residents who report poor or fair health. I additionally hypothesize that the higher U.S. counties rank on a dissimilarity index of residential segregation between people of color and white people, the higher the percent of adult residents who report poor or fair health.

THEORETICAL FRAMEWORK

Researchers have explored the effects of racial residential segregation by defining and clarifying its dimensions and the mechanisms through which it influences health, and have developed theories that propose both detrimental and beneficial effects of segregation. The understanding that race is a social creation eliminates biological explanations of health disparities, and affirms that widespread health disparities between white people and people of color have structural and social origins. Racial health disparities are manifestations of structural and institutional racism; these external factors underlie and reinforce these disparities. Many sociologists have focused on the impacts of racial residential segregation on health (Anderson and Fullerton 2014; Bell et al. 2006; Britton and Shin 2013; Chang 2006; Debbink and Bader 2011; Lee 2009; Nelson 2013; Schulz et al. 2002; Subramanian, Acevedo-Garcia, and Osypuk 2004; Williams and Collins 2001; Williams and Sternthal 2010, among others). I similarly focus on segregation as a specific spatial manifestation of structural and institutional racism to assess its health implications.

Defining Racial Residential Segregation

In the simplest of terms, residential segregation is "the degree to which two or more groups [in this case, racial or ethnic groups] live separately from one another in a geographic area" (White and Borrell 2011:439). It has been outlined to have five distinct dimensions: evenness, concentration, clustering, centralization, and exposure (also known as isolation). Evenness, the most commonly used measure, is the "degree to which racial/ethnic groups are overrepresented or underrepresented across neighborhoods," and is measured using a dissimilarity index. These five

dimensions are defined and operationalized differently, and scholars have proposed that each may have a distinct relationship with health (Bell et al. 2006; Britton and Shin 2013).

Racial residential segregation is not an accidental or neutral phenomenon. Rather, it was "manufactured by [white people] through a series of self-conscious actions and purposeful institutional arrangements that continue today" (Massey and Denton 1993:154). Segregation was "imposed by legislation, supported by major economic institutions, enshrined in the housing policies of the federal government, enforced by the judicial system, and legitimized by the ideology of white supremacy that was advocated by churches and other cultural institutions" (158). Therefore, segregation is a manifestation of racial ideologies, institutional discrimination, and social processes, and works with these structures to "shape the spatial distribution of racial groups and the distribution of resources among them" (Schulz et al. 2002:681).

Although the discriminatory policies and practices that created and institutionalized racial residential segregation were made illegal in 1968 with the passage of the Fair Housing Act, segregation remains widespread across the United States. The processes that created residential segregation remain "entrenched and institutionalized," while the enforcement of fair housing practices are "individual, sporadic, and confined to a small number of isolated cases" (Massey and Denton 1993:162). Segregation among black Americans is the highest of all racial and ethnic groups and has been maintained through mechanisms that include red-lining, housing covenants, discriminatory real estate practices, the creation of interstate highways, and white flight (Collins and Williams 1999; Schulz et al. 2002). These social processes have concentrated political, economic, and social resources in white institutions and predominantly white suburbs, while the withdrawal of resources from communities predominantly inhabited by poor people and people of color has reduced these communities' access to them (Schulz 2002). As such, scholars identify racial residential segregation as the "cornerstone on which black-white disparities in health status have

been built in the United States" because it shapes socioeconomic conditions at the individual, household, neighborhood, and community levels (Williams and Collins 2001:405).

Segregation's Relationship to Health

Residential segregation impacts individual health through its effects on community-level conditions and individual-level opportunities (Subramanian et al. 2004; Yang, Zhao, and Song 2017). Where someone lives can shape access to quality healthcare and health education; can provide encouragement for or dissuasion from health behaviors; and can alter health-relevant environmental factors, including air pollution and water contamination. These factors, in turn, can shape the health outcomes of individuals, families, and entire communities. Therefore, racial residential segregation facilitates access to health for some, while limiting access for many others. Segregation is a manifestation of structural racism, a mechanism through which it perpetuates racial inequality, and a key driver of racial health disparities (Williams and Sternthal 2010).

Sociologists have focused on six distinct "pathways" through which racial residential segregation influences health by shaping contextual conditions and individual opportunities. First, segregation limits access to quality educational and economic opportunities. Second, segregation's concentration of poverty and social disorder can limit residents' ability to engage in health-beneficial behaviors. Third, concentrated poverty can expose residents to higher levels of financial stress and other forms of individual, household, and neighborhood stressors. Fourth, weakened social ties and community infrastructure can negatively impact neighborhood interpersonal relationships. Fifth, institutional neglect and disinvestment can expose residents to low quality housing, crime, and environmental contamination, including poor air and water quality and industrial toxins. Finally, segregation interferes with access to quality healthcare and other health-related resources (Britton and Shin 2013; Gee and Ford 2011; Schulz et al. 2002; White and Borrell 2011; Williams and Collins 2001; Williams and Sternthal 2010). Overall, segregation affects health by unequally distributing social and material health-related resources and restricting residents'

access to these resources. Through a variety of mechanisms, racial residential segregation "simultaneously diminishes opportunities for [people of color] while promoting white privilege" (Nelson 2013:647).

Theories on the Relationship Between Segregation and Health

Researchers have developed a variety of theories on the relationship between segregation and health and the mechanisms through which this relationship operates. Some of these theories propose that segregation is detrimental to health, while others investigate segregation's potential benefits.

Place stratification theory. Place stratification theory emphasizes institutional racism and discrimination in the creation and perpetuation of segregation. Segregation functions as a "comprehensive system of stratification" to "spatially [concentrate] household poverty in the neighborhoods inhabited by socioeconomically disadvantaged racial/ethnic groups" (Anderson 2017a:150; Britton and Shin 2013:38). Groups experiencing similar levels of poverty likely experience similar levels of segregation, have similar access to health-related resources, and experience similar health outcomes (Walton 2009). Although place stratification theory specifically focuses on the laws and practices that contributed to the segregation of black Americans, residential segregation inherently contributes to the "marginalization of a group in social and physical space" (Anderson 2017a:150). As such, the beliefs of place stratification theory may hold true for the experiences of non-black people of color.

Geographic concentration of poverty theory. Geographic concentration of poverty theory contends that segregation exacerbates community-level poverty by concentrating poverty and the social issues linked to economic disenfranchisement in geographic and social space (Anderson and Fullerton 2014; Anderson and Fullerton 2012; Massey and Denton 1993). Cities with higher levels of racial residential segregation have increased levels of poverty within segregated areas, and offer

"spatial buffers" for the non-segregated group from poverty and its effects (Anderson and Fullerton 2014; Massey and Denton 1993).

Contrasting theories. The claims of spatial assimilation theory and immigrant and ethnic enclave theories diverge heavily from those of place stratification theory and geographic concentration of poverty theory. These contrasting theories argue that for some immigrants and non-black people of color, residential enclaves or patterns of segregation can be a result of choice or personal preference, rather than emerging from legalized institutional discrimination. Furthermore, segregation may serve as a temporary phase within a process of integration into mainstream society in which individuals can build their economic and social capital. Because the mechanisms producing residential segregation may differ between racial or ethnic groups, the consequences of segregation may differ as well.

Spatial assimilation theory and immigrant and ethnic enclave theories emphasize the potential resources and "sociocultural advantages" of residential enclaves, including social integration, engagement, and support; financial capital; concentrated health-related resources, educational resources, and ethnic institutions; employment networks; immigrant support; shared health-related norms; decreased exposure to racial discrimination; and a sense of self-esteem and mutual respect (Anderson 2017a; Anderson and Fullerton 2014; Britton and Shin 2013; Nelson 2013; Walton 2009; Yang et al. 2017). These advantages may result from an "ethnic density effect," in which people of color who constitute a larger proportion of the population are likely to have better mental and physical health than those who experience more racial or ethnic isolation. Ethnic density may buffer and even outweigh the harms of segregation to positively impact health (Bécares, Nazroo, and Jackson 2014; Roy, Hughes, and Yoshikawa 2012). Spatial assimilation theory further emphasizes that the development of health disparities may be attributed in part to neighborhood socioeconomic status, where perhaps only segregation in areas with high socioeconomic status benefits health (Anderson 2017a; Roy et al. 2012). Overall, spatial

assimilation theory and immigrant and ethnic enclave theories focus on the protective health effects of the resources found in residential enclaves.

Criticism of contrasting theories. However, spatial assimilation theory and immigrant and ethnic enclave theories minimize of the role of institutional and individual racism in racial residential segregation. These theories also fail to "explain the persistent structural disadvantages" that many black individuals and communities experience (Nelson 2013:648). Furthermore, even if elements of an ethnic density effect do exist, there may be a threshold beyond which these benefits are "supplanted by other conflicting, deleterious processes resulting from extreme residential concentration, a consequence of a long-standing history of institutional racism" (Bécares et al. 2014:2339; Roy et al. 2012). Segregation is a spatial manifestation of racial ideologies, institutional processes, and individual practices that were generated by white individuals in the interests of white communities (Schulz et al. 2002). Intentional social, economic, and geographic exclusion is built into residential segregation, whether or not specific health advantages for some groups emerge in immigrant or ethnic enclaves (Anderson and Fullerton 2014).

FINDINGS OF PREVIOUS RESEARCH

Many researchers have examined the relationships between measures of segregation and various health indicators (including health outcomes, health behaviors, and health-related resources) among racial and ethnic groups. Some have focused on black communities and individuals (Bécares et al. 2014; Bell et al. 2006; Chang 2006; Collins and Williams 1999; Debbink and Bader 2011; Subramanian et al. 2004; White and Borrell 2011, among others), while others have focused on non-black people of color (Anderson and Fullerton 2014; Lee 2009; Lee and Ferraro 2007; Nelson 2013; Walton 2009; Yang et al. 2017, among others).

Black Communities

Much of the research on the relationship between segregation and health has focused on non-Hispanic black Americans. Results largely indicate a relationship between increased levels of

segregation and worse health across a variety of health indicators, including adult mortality rates, particularly cancer mortality; higher body mass index, odds of being overweight, and rates of female obesity; increased odds of poor self-reported health; increased rates of preterm birth, very preterm birth, and fetal growth restriction; and lower average birth weight (Bell et al. 2006; Britton and Shin 2013; Chang 2006; Collins and Williams 1999; Debbink and Bader 2011; Kershaw, Albrecht, and Carnethon 2012; Subramanian et al. 2004; White and Borrell 2011).

Other research has uncovered a more complicated relationship between segregation and the health of black Americans. Segregation may be correlated with more optimal birth outcomes when using a measure of clustering rather than isolation or when high poverty rates are not present (Bell et al. 2006; Walton 2009). Increased ethnic density may be protective against depression until a certain threshold, or only for the mental health of particularly disadvantaged black individuals (Bécares et al. 2014). Black individuals in segregated communities may have access to psychiatrists, but remain likely to visit non-psychiatric clinicians for their mental health concerns (Dinwiddie et al. 2013). Finally, health and life satisfaction in racially dense communities may depend in part on neighborhood income, where only higher neighborhood income protects health (Roy et al. 2012). In demonstrating that segregation largely has adverse consequences for the health of black individuals and communities, sociological research has provided "ample evidence of the harmful effects of segregation on health and equality of opportunity among African-Americans in the US" (Bell et al. 2006:3041).

Non-Black People of Color

Research into the relationship between residential segregation and the health of non-black people of color has produced inconclusive results. Latino respondents in segregated communities have been found to have a lower likelihood of having positive self-rated health, a personal physician, or health insurance, to have less access to psychiatrists, and to be more likely to be treated by non-psychiatric clinicians for mental health concerns (Anderson and Fullerton 2014;

Dinwiddie et al. 2013). Other research has found that segregation is correlated with increased rates of depression and anxiety for Puerto Rican and Mexican Americans, lower rates of positive self-reported health among Mexican, Puerto Rican, and Cuban Americans, increased rates of very preterm birth among Mexican American women, and increased health problems for Puerto Rican Americans (Britton and Shin 2013; Lee 2009; Lee and Ferraro 2007; Nelson 2013).

However, some results have suggested an advantageous relationship between segregation and health. Segregation may be linked to better self-reported health for Hispanic residents, decreased likelihood of low birth weight for Asian Americans, and lower rates of obesity for Mexican-American women. Residential segregation may also have no significant impact on the birth weight of Hispanic Americans or the physical health of Mexican-Americans (Kershaw et al. 2012; Lee and Ferraro 2007; Walton 2009; Yang et al. 2017).

Overall, research into the relationship between segregation and the health of non-black people of color has yielded inconsistent results. Some results have suggested that segregation has negative effects on the health of Hispanic and Asian American groups (Anderson and Fullerton 2014; Britton and Shin 2013; Lee 2009; Lee and Ferraro 2007; Nelson 2013), or that its impact varies between racial or ethnic groups (Dinwiddie et al. 2013; Kershaw et al. 2012; Walton 2009). These findings contradict assertions of the advantages of immigrant and ethnic enclaves. Other research has found protective relationships between segregation and health outcomes (Kershaw et al. 2012; Walton 2009; Yang et al. 2017).

Health-Related Resources

Findings demonstrating the harm of segregation have also held true for the distribution of health-related resources. Black-white segregation has been shown to be related to a lower likelihood of having health insurance for black residents and an exacerbated black-white healthcare gap, while black, Asian, and Latino segregation has been correlated with lower levels of health-related organizations, including "food resources, physical fitness facilities, health care resources,

civic organizations, and social service organizations" (Anderson 2017b:256; Anderson and

Fullerton 2012). However, neighborhoods with high immigrant populations have been found to be

positively related to the density of these resources (Anderson 2017b). Finally, black and Latino

segregation has been linked to lower levels of auxiliary health care practitioners, a group that

includes "mental health providers, dentists, physical/occupational/speech therapists,

chiropractors, optometrists, podiatrists, and miscellaneous health care practitioners" (Anderson

2017a:145). While health insurance, health-related organizations, and auxiliary health care

practitioners are not direct indicators of health, the existence and accessibility of these resources

have clear implications for health outcomes (Anderson 2017a; Anderson 2017b).

Conclusions on the Literature

Results of previous literature suggest that isolation from white people may be protective for

some racial or ethnic groups, under some conditions, for some health indicators. This is perhaps

because the origins and processes of residential segregation in the United States differ between

racial or ethnic groups (Yang et al. 2017). However, results suggesting that segregation has health

benefits of segregation do not "legitimize the institutions and practices that perpetuate

racial/ethnic residential segregation." Segregation is still a product of discriminatory processes and

practices that "reflect prejudice and racial discrimination on the part of [white people]" (Bell et al.

2006:3041). In addition, rather than indicating the benefits of segregation, varied findings may

result from the use of different measures of segregation, the exploration of different health

indicators, and the complicated nature of the relationship between segregation and health.

Results imply that the relationship between segregation and health varies between

measurement of segregation, between and within racial and ethnic groups, and between health

indicators (including health outcomes, health behaviors, and access to health resources) (Lee

2009). Findings that segregation may have both "deleterious and protective effects" underscore the

"complexity and heterogeneity" of the factors that shape health (Bell et al. 2006:3041). Clearly,

research must continue to explore the relationship between segregation and racial health disparities.

RESEARCH METHODS

Data Set

In this study, I analyze 2014 data compiled by the *County Health Rankings and Roadmaps* program through the University of Wisconsin Population Health Institute and the Robert Wood Johnson Foundation. The dataset uses county-level data from all counties in the United States, for a total *N* of 3141 counties (UWPHI and RWJF 2017).

I operationalize racial residential segregation in two ways. My first independent variable measures percent non-Hispanic white residents in U.S. counties. This measure comes from the U.S. Census Bureau's Population Estimates Program, which uses demographics data on births, deaths, and migration to calculate population change between decennial censuses. My second independent variable is a dissimilarity index of residential segregation between people of color and white people in U.S. counties, a measure produced by the U.S. Census Bureau's American Community Survey (ACS). The ACS is a nationwide survey that produces five-year demographic estimates based on previously-collected data (in this case, between 2010 and 2014). My dependent variable, the percent of adult residents who report poor or fair health in U.S. counties, is collected through the Center for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a state-based annually-conducted random digit dial telephone survey carried out in all 50 U.S. states, the District of Columbia, and U.S. territories and is a representative sample of each state's total non-institutionalized adult population.

My control variables are median household income in U.S. counties, the percent of residents under age 65 without health insurance in U.S. counties, the number of residents per primary care physician in U.S. counties, and the percent of residents who live in a rural area in U.S. counties. The measure of the median household income in U.S. counties comes from the U.S. Census' Small Area

Income and Poverty Estimates (SAIPE) program, which combines data from administrative records, intercensal population estimates, the decennial census, and direct estimates from the American Community Survey to provide single-year estimates of the median household income in U.S. counties. The percent of residents under age 65 without health insurance in U.S. counties comes from the U.S. Census' Small Area Health Insurance Estimates (SAHIE), which incorporates data from multiple household surveys and is created using complex statistical modeling to generate accurate estimates for counties with low numbers of residents or respondents. The number of residents per primary care physician in U.S. counties is taken from the Area Health Resource Files, which is a product of the U.S. Department of Health and Human Services' Health Resources and Services Administration. The Area Health Resource Files is a collection of more than 50 sources that largely utilizes the American Medical Association's Physician Masterfile. Finally, the percent of residents who live in a rural area in U.S. counties is calculated by the U.S. Census Bureau's Population Estimates Program using birth, death, and migration demographics data. For further information on how the data were collected, consult the *County Health Rankings and Roadmaps* website (http://www.countyhealthrankings.org/).

While there are 3141 counties in the United States, I created two datasets to account for the different number of missing cases for each measure of racial residential segregation. The analysis using percent non-Hispanic white in U.S. counties utilizes a sample of 2946 counties after eliminating 197 counties missing the primary care physician variable, one county missing percent white, and one county missing median household income and percent uninsured. The second analysis uses a sample of 2661 U.S. counties after eliminating 361 counties missing the dissimilarity index and 119 missing the primary care physician variable.

Measures

I study the relationship between racial residential segregation and self-reported health. Accordingly, my independent variable is racial residential segregation, which I operationalize in

two ways: first by examining the percent of non-Hispanic white residents in U.S. counties, and then by analyzing an index of dissimilarity examining residential between segregation people of color and white people in U.S. counties.

The first independent variable, percent non-Hispanic white in U.S. counties, is a demographic measure of county racial composition. It serves as a proxy measure for racial residential segregation, as a very high or very low percent of white residents can indicate more residential segregation between white people and people of color. The second independent variable, a dissimilarity index, captures the evenness with which people of color and white people are distributed across the census tracts that make up each county. Higher values indicate higher levels of racial residential segregation: 0 signifies complete integration, 100 indicates complete segregation, and values above 60 demonstrate high levels of segregation (Schulz et al. 2002). This variable can be interpreted as the percent of white people or people of color who would hypothetically need to move to different geographic areas to produce a county racial distribution that matches the county's demographics.

To measure the dependent variable of self-reported health, I analyze the percent of adult residents who report "poor" or "fair" health in U.S. counties. This variable uses a BRFSS question which asks "In general, would you say that your health is excellent, very good, good, fair, or poor?" The percent has been adjusted to account for age distributions between counties. As a result, the data reflect the rate of poor or fair health that a county would have if its age structure mirrored the age of the United States' population in 2000. As residents age, poor health is more common; accordingly, failing to adjust for age could mistakenly show higher rates of poor or fair health in older counties. In this analysis, the percentage serves as as an indicator of overall county health.

Self-reported health is a commonly-used measure of community health; although it is subjective, it is a reliable health indicator that is strongly correlated with morbidity and mortality rates (Anderson and Fullerton 2014). Additionally, self-reported health is relatively easy to

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measure, as it requires asking respondents only one question. Relying on self-reported health is effective because the measure encompasses the multidimensionality of health, allowing respondents to consider physical, mental, and emotional health in their responses. Accordingly, self-reported health rates are a useful indicator of county health.

Finally, to isolate the effects of racial residential segregation on self-reported health, I control four demographic factors that can impact access to quality health care and contribute to health. The first control variable is median household income in U.S. counties in thousands of dollars. I divided the SAIPE measure of median household income in U.S. counties by 1000 to more easily see the variable's effects on health. I also control for the percent of residents under age 65 without health insurance in U.S. counties, the number of residents per primary care physician in U.S. counties, and the percent of residents who live in a rural area in U.S. counties.

FINDINGS

Univariate Results

Figure 1 shows the percent of non-Hispanic white residents in U.S. counties. Notably, in the majority of U.S. counties, over 60 percent of residents are non-Hispanic white individuals, and around 40 percent of counties are composed of at least 90 percent non-Hispanic white residents. The left skew of this measure is reflected in Table 1, which shows that while the mean is 77 percent white residents, the median is 84 percent white. The difference between the two measures reflects the presence of outliers with low values. Additionally, a standard deviation of 20 means that about two-thirds of U.S. counties in the sample are composed of between 57 and 97 percent non-Hispanic white residents.

<div align="center">***Insert Figure 1 about here***</div>

<div align="center">***Insert Table 1 about here***</div>

Figure 2 shows the dissimilarity index between people of color and white people, and suggests a concentration of values between 20 and 40. This measure is reflected in Table 1, which

provides a mean of 32 and a median of 31. Table 1 also shows a standard deviation of 13, indicating that in approximately two-thirds of U.S. counties, between 19 and 45 percent of white people or people of color would hypothetically need to move for county racial distribution to reflect county racial demographics.

Insert Figure 2 about here

Figure 3 shows the percent of adult residents who report poor or fair health in U.S. counties, depicting a concentration of cases between 10 and 25 percent. More specifically, according to Table 1, the mean of this measure is 17 percent and the median is 16 percent. The standard deviation is 5, meaning that between 12 and 22 percent of adult residents experience poor or fair health in about two-thirds of U.S. counties.

Insert Figure 3 about here

Figure 4 represents the median household income in U.S. counties in thousands of U.S. dollars, and shows a concentration of cases between $30,000 and $60,000, with a right skew composed of outlier counties with high median household incomes. As seen in Table 1, the mean of this measure is $47,360 and the median is $45,430. Additionally, the standard deviation is 12, meaning that in about in two-thirds of counties, the median income is between $35,000 and $59,000.

Insert Figure 4 about here

Figure 5 shows the percent of residents under age 65 without health insurance in U.S. counties, and suggests a concentration of values between 10 and 25 percent. Specifically, as seen in Table 1, both the mean and median are 17 percent. Furthermore, the standard deviation is 5, which signifies that between 12 and 22 percent of residents under age 65 lack health insurance in two-thirds of U.S. counties.

Insert Figure 5 about here

Figure 6 depicts the number of residents per primary care physician in U.S. counties, and shows a concentration of cases between 50 and 150. More precisely, according to Table 1, the mean of this measure is 97 and the median is 80 residents per physician. There is a large standard deviation of 62, which means that there are between 35 and 159 residents per primary care physician in approximately two-thirds of U.S. counties.

Insert Figure 6 about here

Finally, Figure 7 shows the percent of residents who live in a rural area in U.S. counties. 100 percent of residents live in a rural area in almost 20 percent of counties. As seen in Table 1, both the mean and median for this measure are 57, and the standard deviation is 31, indicating that in about two-thirds of U.S. counties, between 26 and 88 percent of residents live in a rural area.

Insert Figure 7 about here

Bivariate Results

Table 2 shows the correlations between the percent of residents who report poor or fair health, percent white, and the four control variables. There is a statistically significant relationship between the percent of residents who report poor or fair health and percent non-Hispanic white in U.S. counties. The relationship is significant at the $p < .001$ level, and is strong and negative. As the percent of white residents in U.S. counties increases, the percent of residents who report poor or fair health decreases.

*** Insert Table 2 about here ***

The relationships between the percent of adult residents who report poor or fair health and the control variables are all statistically significant at the $p < .001$ level as well. Median household income has a strong and negative relationship with the dependent variable; as median household income increases, the percent of residents who report poor or fair health decreases. In contrast, the other control variables have positive relationships with the dependent variable. Percent uninsured has a strong positive relationship with the dependent variable; as the percent of residents under 65

without health insurance increases, the percent of residents who report poor or fair health also increases. The number of residents per physician has a weak positive relationship with the dependent variable; as the numbers of residents per primary care physician increases, the percent of residents who report poor or fair health increases as well. Finally, rurality has a very weak positive relationship with the dependent variable; as the percent of residents who live in a rural area increases, the percent of residents who report poor or fair health increases.

Percent non-Hispanic white in U.S. counties has statistically significant relationships with three of the control variables. Its relationship with median household income is positive and weak; as the percent of white residents increases, median household income increases. Percent white has a moderate negative relationship with percent uninsured; as the percent of white residents increases, the percent of residents under age 65 without health insurance decreases. The independent variable has a moderate positive relationship with rurality; as the percent of white residents increases, the percent of residents who live in a rural area also increases. These relationships are all significant at the $p < .001$ level. Finally, the independent variable does not have a statistically significant relationship with the number of residents per primary care physician.

Looking at Table 3 allows for an analysis of the correlations between the percent of adult residents who report poor or fair health, the dissimilarity index, and four control variables. There is no statistically significant relationship between the dissimilarity index and the percent of residents who report poor or fair health.

***Insert Table 3 about here ***

However, Table 3 does show significant relationships between the percent of adult residents who report poor or fair health and the control variables. All four relationships are significant at the $p < .001$ level. Median household income has a strong and negative relationship with the dependent variable; as median household income increases, the percent of residents who report poor or fair health decreases. In contrast, the other control variables have positive

relationships with the dependent variable. Percent uninsured has a strong positive relationship with the dependent variable; as the percent of residents without health insurance increases, the percent of residents who report poor or fair health increases as well. The number of residents per primary care physician has a moderate positive relationship with the dependent variable; as the numbers of residents per physician increases, the percent of residents who report poor or fair health increases. Finally, rurality has a weak positive relationship with the dependent variable; as the percent of residents who live in a rural area increases, the percent of residents who report poor or fair health also increases.

The dissimilarity index between people of color and white people has a statistically significant relationship with three of the control variables. It has weak negative relationships with percent uninsured, number of residents per physician, and rurality. As racial residential segregation increases, the percent of residents under age 65 without health insurance decreases, the number of residents per primary care physician decreases, and the percent of residents who live in a rural area decreases. These relationships are significant at the $p < .001$ level. The dissimilarity index does not have a statistically significant relationship with median household income.

Multivariate Results

I created one regression model for each independent variable, allowing for the individual examination and comparison of the two models. Table 4 shows the regression of poor or fair health on the independent and control variables.

<center>*** Insert Table 4 about here ***</center>

Model 1 examines the relationships between percent white, the control variables, and the percent of residents who report poor or fair health, and demonstrates that median household income has the strongest effect on the dependent variable (β = -.571***). Percent white is also a powerful predictor of the percent of residents who report poor or fair health (β = -.443***).

Residents per physician, percent uninsured, and rurality also play a role in the dependent variable (β = .114***, .059***, and -.041**, respectively). The regression equation and the regression coefficients for Model 1 are all significant at the $p < .001$ level, with the exception of rurality which is significant at the $p < .01$ level. Overall, percent white and the four control variables account for 67.5 percent of the variation in the percent of residents who report poor or fair health in U.S. counties (R^2 = .675).

Examining Model 1's unstandardized coefficients in Table 4, we can see that for every $10,000 increase in median household income, the percent of residents who report poor or fair health decreases by over 2 percent (b = -.231***). Furthermore, for every 10 percent increase in the percent of white residents, the percent of residents who report poor or fair health decreases by about 1 percent (b = -.111***). For every 100 additional residents per primary care physician, the dependent variable increases by .9 percent (b = .009***). For every 10 percent increase in percent uninsured, the dependent variable increases by .5 percent (b = .053***). Finally, for every 10 percent increase in percent rural, the percent of residents reporting poor or fair health decreases by .06 percent (b = -.006***).

Turning to Model 2, we can examine the relationships between the dissimilarity index, the percent of residents reporting poor or fair health, and the control variables. Unlike Model 1, the dissimilarity index between people of color and white people does not have a statistically significant relationship with the dependent variable. However, as in the first model, Model 2 demonstrates that median household income is the best predictor of the dependent variable (β = -.578***). Similarly, percent uninsured, rurality, and residents per physician also affect the percent of residents who report poor or fair health (β = .294***, -.171***, and .137***, respectively). The regression equation and the regression coefficients for Model 2 are all significant at the $p < .001$ level. Together, the dissimilarity index and the four control variables explain 56.5 percent of the variation in the dependent variable (R^2 = .565).

In Model 2, for every $10,000 increase in median household income, the percent of residents who report poor or fair health decreases by over 2 percent (b = -.227***). For every 10 percent increase in the percent of uninsured residents under age 65, the dependent variable increases by almost 3 percent (b = .274***). For every 10 percent increase in the percent of residents living in a rural area, the percent of residents who report poor or fair health decreases by about .3 percent (b = -.028***). Finally, for every 10 additional residents per primary care physician, the percent of residents who report poor or fair health increases by .1 percent (b = .011***).

Comparatively, Model 1 is more effective than Model 2 because it explains more of the variation in the dependent variable, as seen in the difference between the two models' R^2 values (.675 and .565, respectively). This difference can be attributed to the differing significance of the independent variables in the two models. While percent white has a statistically significant relationship with the dependent variable and is a strong predictor of it, the dissimilarity index does not have a significant relationship with the dependent variable. In both models, however, the control variables have significant relationships with the percent of residents who report poor or fair health. Median household income is the strongest predictor of the dependent variable in both models. However, the relative strength of the three remaining control variables changes between Model 1 and Model 2. In the first model, residents per physician is a better predictor of the dependent variable than percent uninsured and rurality, but in the second model, percent uninsured and rurality are better predictors of the dependent variable than residents per physician.

DISCUSSION

Overall, the regression analysis confirms the first hypothesis; as percent non-Hispanic white in U.S. counties increases, the percent of residents who report poor or fair health in U.S. counties decreases. However, regression analysis fails to support the second hypothesis; the dissimilarity

index does not have a statistically significant relationship with the dependent variable in either the bivariate or the multivariate analyses.

The regression analysis indicates that median household income is the strongest predictor of county rates of self-reported health. Other control variables of percent uninsured, the number of residents per physician, and rurality are also related to the dependent variable. Furthermore, although one independent variable (percent white) is significantly linked to county health, the other (the dissimilarity index) is not. These results suggest that the racialized access to health-related resources that emerges from residential segregation plays a crucial role in structuring health opportunities and disparities. Segregation creates contextual conditions with different access to material (economic and political) and intangible (social and cultural) resources that can impact health outcomes. Findings that percent white is negatively related to rates of poor or fair health suggest that the control and distribution of these resources are concentrated in the hands of white individuals and in predominantly white communities.

A discussion of these results must recognize that systems of race and racial classification are social creations, and are not rooted in genetic difference. Through historic systems of institutionalized racial stratification and widespread practices of racial discrimination, white institutions, communities, and individuals have systematically concentrated power and resources for their own interests. Systems of race- and class-based oppression are intimately tied to each other. Racial health disparities arise as a consequence of these systems and are perpetuated because of them (Bécares et al. 2014; Bell et al. 2006; Dinwiddie et al. 2013).

With this understanding, it is possible to identify important elements of truth in each of the theories previously discussed. As place stratification theory argues, racial residential segregation is the product of structural processes and individual practices that shape the opportunities and resources accessible to individuals living in segregated communities (Anderson 2017a; Britton and Shin 2013; Walton 2009). However, as geographic concentration of poverty theory contends,

segregation impacts health not through the concentration of racial and ethnic groups per say, but through its spatial and social concentration of community- and individual-level poverty (Anderson and Fullerton 2014; Anderson and Fullerton 2012; Massey and Denton 1993). As these results suggest, and as ethnic and immigrant enclave theories assert, residential enclaves can have health advantages in communities with better socioeconomic conditions (Anderson 2017a; Anderson and Fullerton 2014; Bécares et al. 2014; Britton and Shin 2013; Nelson 2013; Roy et al. 2012; Walton 2009; Yang et al. 2017). These theories, and the results of this study, emphasize the importance of neighborhood socioeconomic status as a mechanism through which segregation drives health disparities.

Racial health disparities emerge from the racialized access to resources that results from segregation, rather than being an inherent byproduct of a separation from white institutions, communities, and individuals. Even so, segregation is not an accidental or neutral phenomenon; it is a product of racist processes and practices and isolates communities spatially, socially, and economically from mainstream society. A 1968 commission appointed by President Johnson in preparation for the Fair Housing Act reported that "'white institutions created [racial residential segregation], white institutions maintain it, and white society condones it'" (Massey and Denton 1993:155). Almost 50 years later, racial residential segregation still exists, continues to impact the health outcomes of segregated communities, and is still maintained and condoned by white institutions and white society. As Collins and Williams (1999:496) wrote, "both the origins and the persistence of residential segregation in the United States reflect the successful implementation of individual and institutional discrimination rooted in racism."

Furthermore, as other researchers have written, residential segregation's health consequences demonstrate that segregation is a "fundamental cause" of racial health disparities. Fundamental causes of disease involve resources including "money, power, prestige and social connectedness" that allow those with control over these resources to more easily avoid the risk of

disease, prevent disease, and alleviate the consequences of disease (Dinwiddie et al. 2013). Because white institutions and individuals have concentrated these resources in predominantly white communities, residential segregation is both a product of structural racism and a perpetrator of it. Health is tied to resources, and the racial and social organization of communities shapes the presence and accessibility of resources. Accordingly, residential segregation is a fundamental cause of racial health disparities because it shapes conditions and resources at the individual, household, neighborhood, and community levels (Dinwiddie et al. 2013; Williams and Collins 2001).

CONCLUSIONS

This study explores the effects of racial residential segregation on self-reported health. Using the 2014 version of *County Health Rankings and Roadmaps*, a dataset compiling county-level statistics from a variety of sources, I examine the relationship between two measures of residential segregation (percent white and a dissimilarity index of segregation) and the percent of adult residents who report poor or fair health in U.S. counties. I control for median household income, the percent of residents under age 65 without health insurance, the number of residents per primary care physician, and the percent of residents who live in a rural area. Regression analysis shows that while percent white is significantly related to self-reported health, the dissimilarity index is not. Furthermore, median household income is the strongest predictor of county health, while percent uninsured, the number of residents per physician, and rurality are also related to the dependent variable.

These findings provide limited support for well-established theoretical arguments. Using percent white as a proxy measure of racial residential segregation, I demonstrate a relationship between segregation and worse self-reported health. This finding supports place stratification theory and geographic concentration of poverty theory, which claim that segregation harms health and drives racial health disparities. Results also indicate that the distribution and accessibility of material and nonmaterial resources involved in segregation help predict health outcomes. Finally,

these findings suggest that resource distribution is the key mechanism through which racial health disparities emerge and are perpetuated. White individuals, communities, and institutions have used institutional and individual means to concentrate resources to benefit their own health (Bécares et al. 2014; Bell et al. 2006; Dinwiddie et al. 2013).

Additionally, while I did not find an advantageous relationship between segregation and health, my results support arguments made by spatial assimilation theory and immigrant and ethnic enclave theories about the role of resource distribution in health. These results imply that theory must strive to consider the role of both material and intangible resources in shaping health outcomes. However, this work must recognize that the potential advantages that emerge within systems of racial residential segregation do not make segregation a neutral system or compensate for the racism from which it emerges (Bell et al. 2006; Massey and Denton 1993).

Limitations

The operationalization of the variables in this study, the complexities of residential segregation and health, and the flaws of the quantitative method limit the size and scope of the conclusions that can be drawn from these results.

Although county-level data enables the analysis of broad patterns, it delivers a measure of *county* rates of self-reported health. The results cannot be discussed at the individual level. Doing so would commit the ecological fallacy. As a result, the study cannot differentiate between the effects of segregation on the health of white people and people of color. County-level data enables this study to examine the community-level consequences of segregation, but prevents it from fully interrogating *whose* health is harmed by segregation. It overlooks that health is ultimately an individual experience, and that health disparities are racial and economic in nature (Subramanian et al. 2004). Furthermore, the data is unable to examine health inequalities that take place within county borders. Finally, county lines are relatively artificial geographic demarcations that may not reflect the lived social and economic borders of communities.

The dissimilarity index fails to consider the racial direction of residential segregation, only articulating *to what extent* this segregation exists. In doing so, it ignores the different explanations for the concentration of white people and the concentration of people of color; while the former preserves white supremacy and the control of resources tied to racial stratification, the latter is both a product of this racism and an act of self-protection. Additionally, the dissimilarity index provided by *County Health Rankings and Roadmaps* is only available for counties with at least 100 residents of color, forcing the elimination of 361 predominantly white counties. Finally, the dissimilarity index combines all people of color into one group, erasing the diversity of the experiences of different racial and ethnic groups, differing histories of segregation, and health disparities that vary between groups.

A measure of white racial concentration attempts to overcome these limitations, as it better examines the racially-different impacts of segregation and has no missing cases. However, the variable still does not uncover trends at the individual level. Additionally, as a proxy measure of segregation, percent white only partially represents segregation. It does not "reflect the unequal geographic distribution" of racial or ethnic groups, does not capture processes of racial inequality, does not indicate the degree of interaction between racial or ethnic groups, and does not account for the interactions that take place across county borders (Subramanian et al. 2004; White and Borrell 2011:442). Finally, like the dissimilarity index, percent white combines all people of color into one group.

While this study considers two measures of racial residential segregation, segregation has multiple other dimensions, which are related but can produce different results (Bell et al. 2006; Britton and Shin 2013). Segregation also manifests in schools, workplaces, and social networks, and its presence in these locations may impact health just as much as residential segregation. This study is unable to fully examine the consequences of different forms of segregation or the complicated interactions between these forms of segregation.

The operationalization of the dependent variable also limits the conclusions that can be drawn from the results. Measures like self-reported health that rely on individual interpretation are subject to measurement error, as individuals' perceptions of their own health are embedded within differing personal and cultural contexts. Differences between racial, ethnic, or cultural groups may result from differences in the meaning or reporting of health, rather than objective differences in health indicators (Anderson and Fullerton 2014).

Finally, the methodology of quantitative research presents limitations for this study and others like it. People are more than numbers, and the statistical nature of quantitative research sterilizes the lived experiences and identities of the social world. The use of numbers to classify individuals and their experiences, aggregate them into county data, and ignore complexities erases a crucial human element from quantitative studies and limits the depth with which they can probe interactional processes and individual experiences. Regression analysis buries the source of racial disparities by neglecting "the dynamic social interactive processes that create racial inequality" (Stewart 2008:285). Systems of race and racial inequality do not exist solely at the structural level, but are "'built' or 'created' in everyday interactions among individuals that take place within and across social institutions" (287). While structural processes are key in generating and perpetuating racial health disparities, the role of interactional mechanisms and individual actions should not be neglected. The social world is made up of individuals and interactions just as much as it is composed of institutions and systems. While quantitative research allows for generalization and comparison, its value in fully explaining racial inequality is limited by its neglect of interactional mechanisms and the nuances of individuals' and communities' experiences navigating systems and structures of oppression.

Recommendations for Future Research

The limitations of this study and the complexities of segregation, health, and the relationship between the two leave room for substantial future research in the field. First, the

examination of the effects of segregation on health can be improved by the use of multilevel analysis. Racism operates on institutional, interactional, and individual levels, and multilevel analysis considers the contextual and individual components of the variables. The inquiry of the multiple levels of segregation and health would enable the study of specifically *whose* health is impacted by segregation (Anderson and Fullerton 2012; Bell et al. 2006; Lee 2009; Subramanian et al. 2004).

Additionally, research should continue to explore the many definitions and measurements of segregation and health and their relationships. Sociologists should investigate self-reported health while also examining other health outcomes (i.e., rates of adult and infant mortality, depressive symptoms, obesity, birth weight), health behaviors (i.e., utilization of physical and mental health services, tobacco use), and access to resources that can impact health (i.e., median household income, prevalence of primary care physicians, rates of health insurance, concentration of health-related organizations including physical fitness facilities and food resources). Furthermore, all people of color do not share the exact same experiences, and racial and ethnic groups are not homogenous. Research should continue to explore health disparities between communities of color, as well as the variations in health outcomes within racial, ethnic, and nationality groups to more deeply explore the nuances of race in discussions about residential segregation (Britton and Shin 2013; Lee 2009; Lee and Ferraro 2007; Nelson 2013). Research should also explore other dimensions of residential segregation; evenness, concentration, clustering, centralization, and exposure are interrelated, but they are distinct and can produce different results. Racial residential segregation is one key form of structural racism that contributes to health disparities, but it is not the only one. Future research should continue and expand the work of this study and previous studies investigating the relationship between segregation, resources, and racial health disparities.

Policy Implications

A key policy implication of this research emerges from the finding that median household income more strongly predicts county health than racial residential segregation. Access to health insurance and primary care physicians also had significant relationships with the dependent variable. The health of poor communities and communities of color are disproportionately harmed by residential segregation. Therefore, policy and practice to eliminate racial health disparities must focus on improving access to health-related resources for poor people and people of color in socially, economically, and geographically segregated communities. These resources must not only be present, but must be accessible to all and be context-specific. Until all individuals have equal opportunities to access and benefit from health resources, racial health disparities will continue.

Others have found that immigrant and ethnic enclaves can provide significant material and intangible resources that are advantageous for community health, despite resulting from discriminatory processes and practices of residential segregation (Anderson 2017a; Anderson and Fullerton 2014; Walton 2009). To offset the harm caused by the concentration of resources in predominantly white communities, while preserving the potential sociocultural advantages of ethnic and immigrant enclaves, policy should work to improve access to health-related resources for people of color and immigrants in segregated communities. The concentration of material (economic and political) and intangible (social and cultural) resources in predominantly white communities is key in the maintenance of institutional racism. Reducing and eliminating racial health disparities and other manifestations of racial inequality relies on transforming the control and distribution of these resources and facilitating access to them.

Ultimately, however, racial health disparities may only be fully eliminated with the total eradication of institutional and individual racism. Residential segregation contributes to racial health disparities, but it is certainly not the only manifestation of structural racism that does so. Systems of racism "may reinforce one another, and efforts to dismantle one system may yield little

effect without simultaneous efforts on another system" (Gee and Ford 2011:128). To fully confront, deconstruct, and undo the legacies of racism that create and perpetuate racial health disparities, it is necessary to address *all* forms of racism. Health is a human right, and as such, analyses of the structures, processes, and practices that systematically shape access to this right must continue. This work must probe *why* these disparities exist, examine the origins of the problem, analyze the mechanisms through which it operates, understand its consequences, and develop both institutional and individual practices that can enable all to live healthy lives.

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Tables and Figures

Table 1. Means, Medians, and Standard Deviations for Variables

Variable	Mean	Median	Standard Deviation	N
Percent Non-Hispanic White	77.30	84.44	19.537	2946
Residential Segregation Index of Dissimilarity: People of Color/White People	31.56	31.12	13.101	2661
Percent of Adults Who Report Poor or Fair Health	16.83	15.80	4.900	2946
Median Household Income (in Thousands of U.S. Dollars)	47.36	45.43	12.131	2946
Percent of Uninsured Residents Under Age 65	17.32	17.00	5.403	2946
Number of Residents per Primary Care Physician	96.91	79.73	62.054	2946
Percent of Residents Who Live in a Rural Area	56.69	57.14	30.962	2946
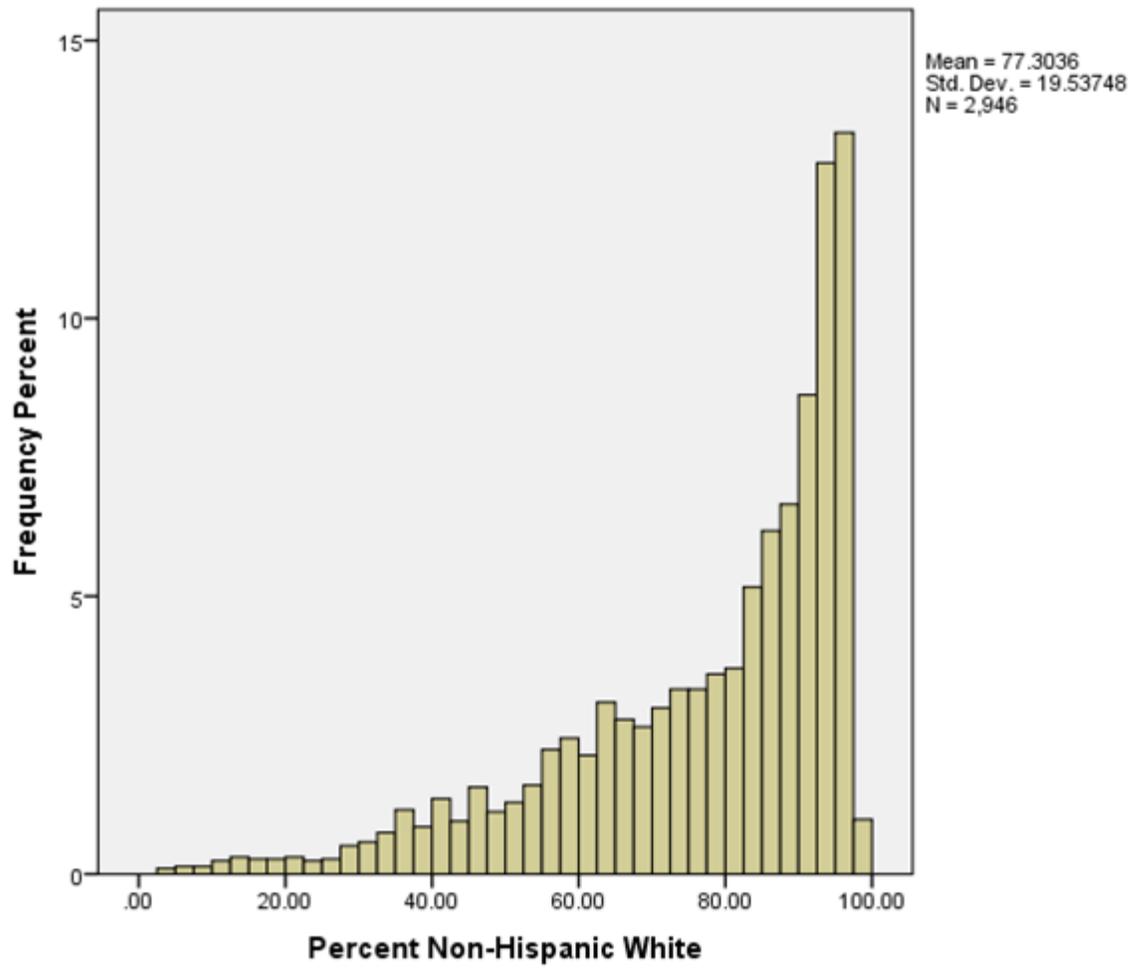
Figure 1. Percent Non-Hispanic White Residents in U.S. Counties
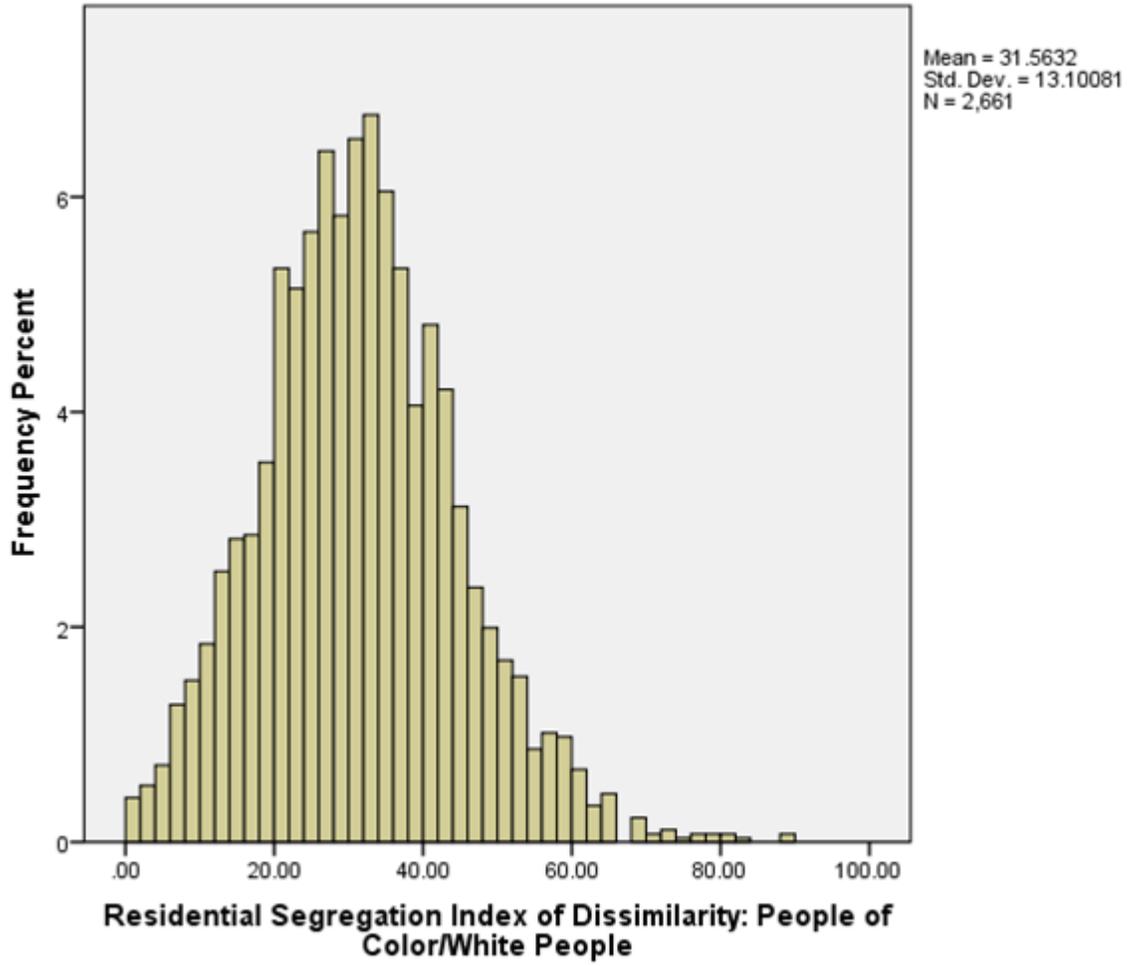
Figure 2. Residential Segregation Index of Dissimilarity Between People of Color and White People
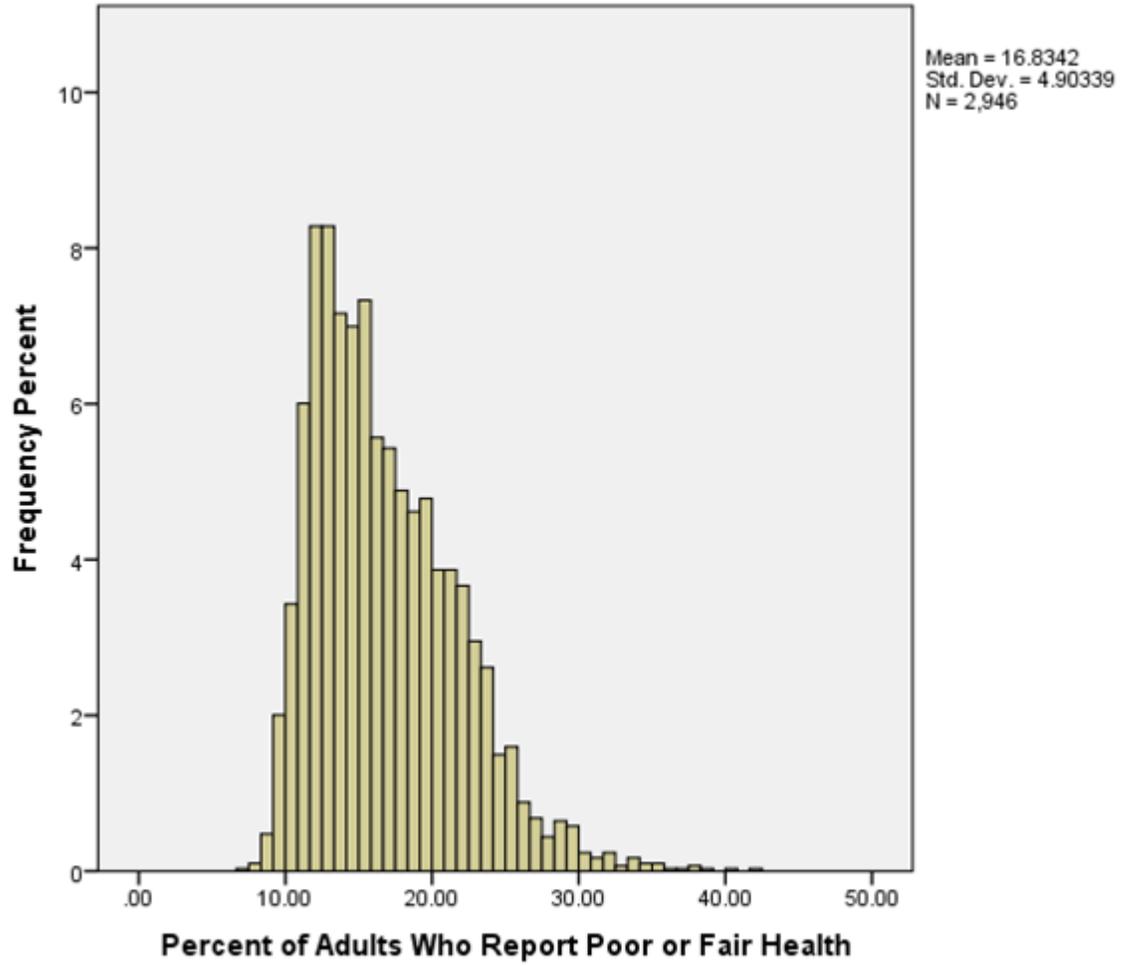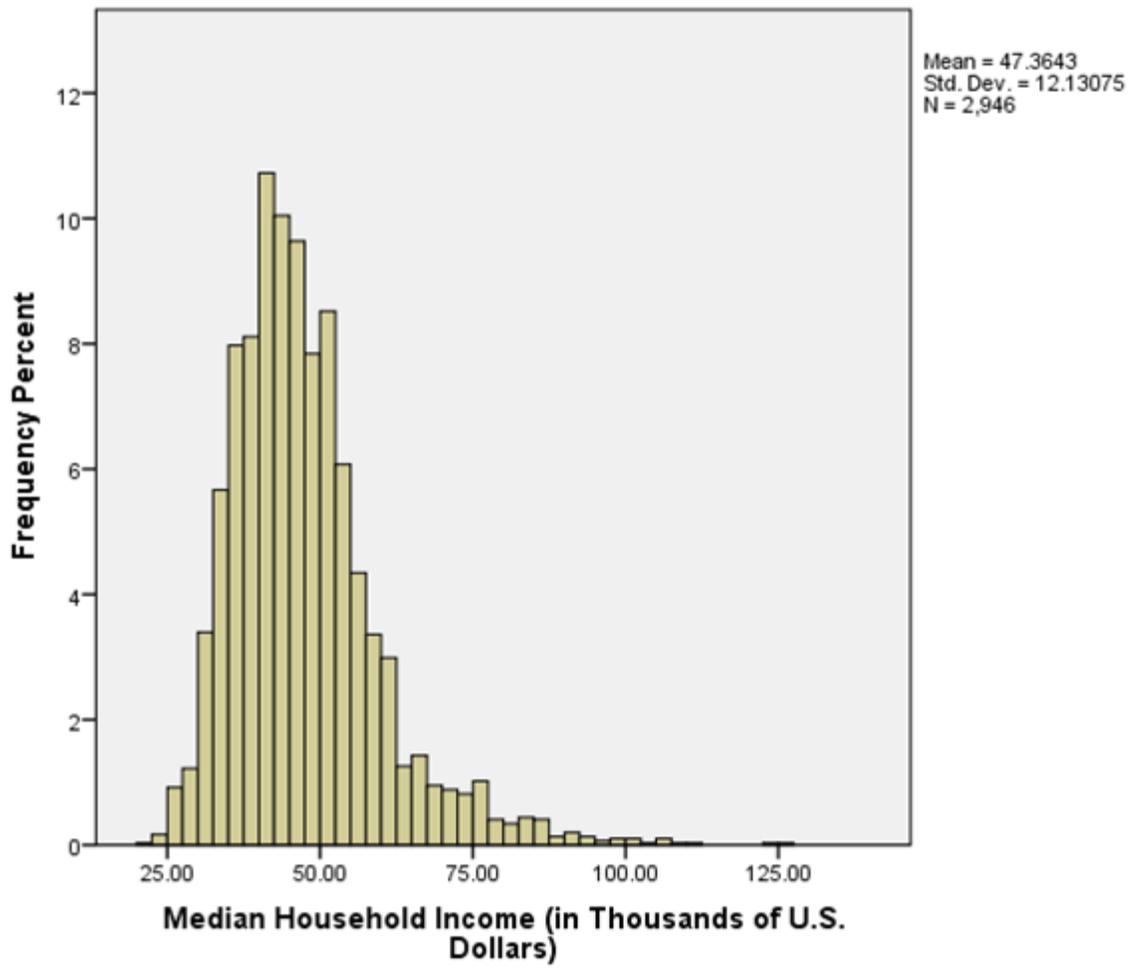
Figure 3. Percent of Adult Residents Who Report Poor or Fair Health in U.S. Counties
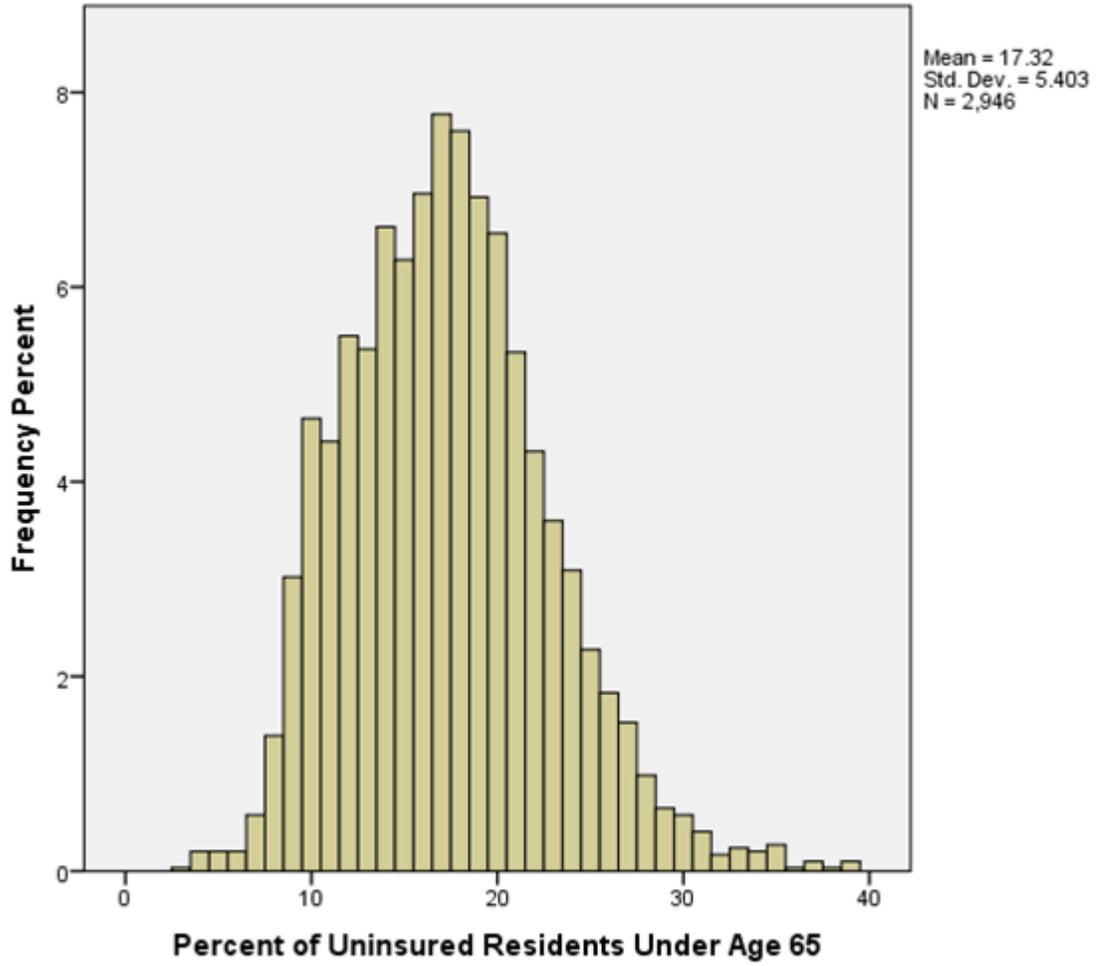
Figure 4. Median Household Income in U.S. Counties (in Thousands of U.S. Dollars)
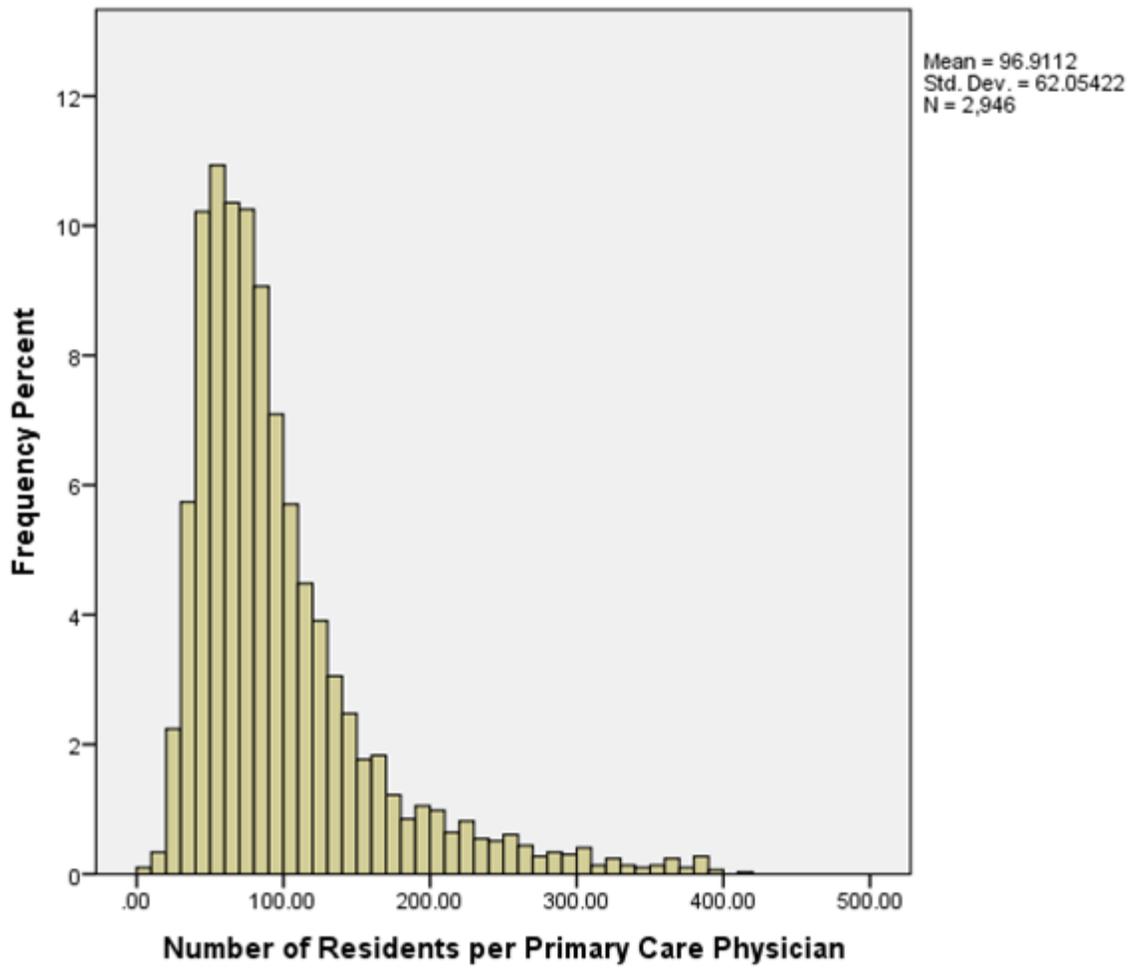
Figure 5. Percent of Residents Under Age 65 Without Health Insurance in U.S. Counties

Figure 6. Number of Residents per Primary Care Physician in U.S. Counties
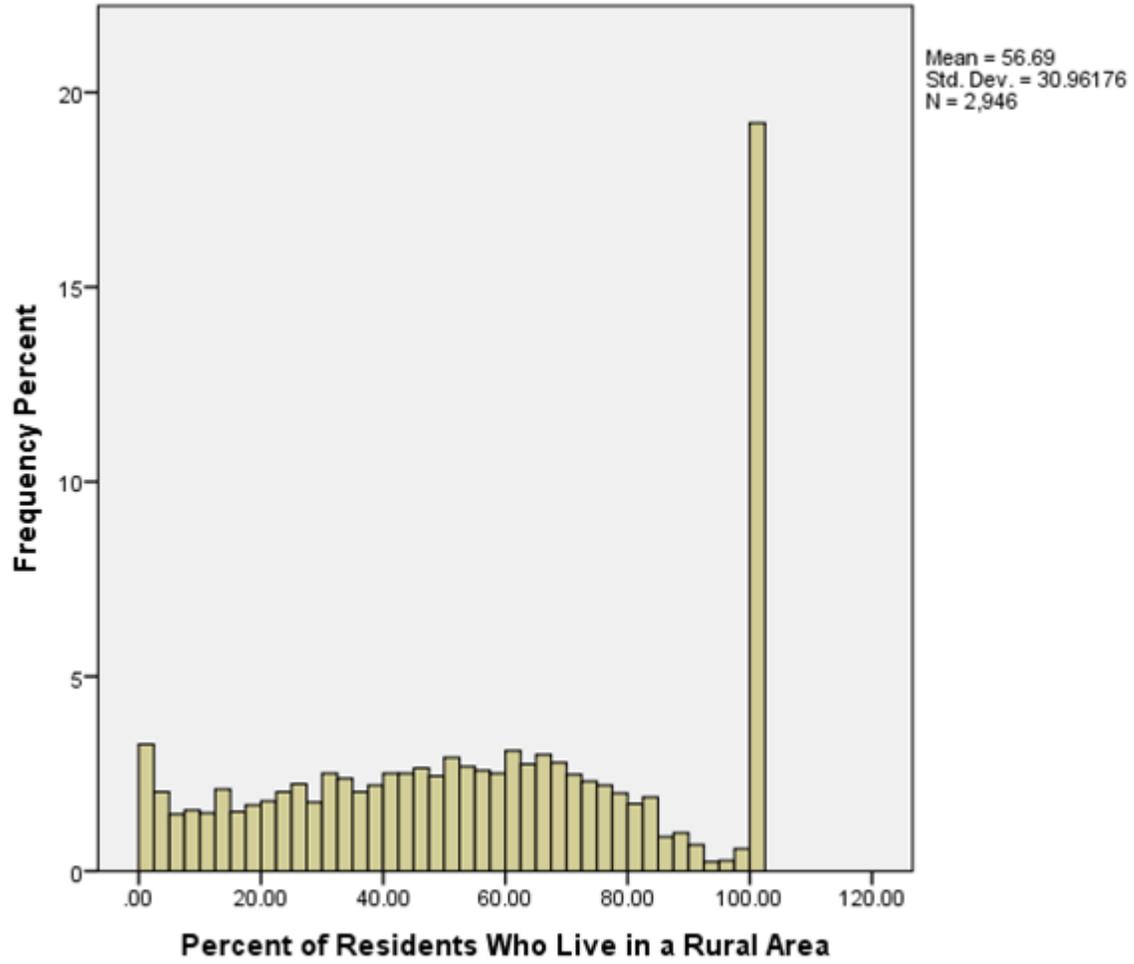
Figure 7. Percent of Residents Who Live in a Rural Area in U.S. Counties

Table 2. Correlation Between Percent of Adults Who Report Poor or Fair Health, Percent Non-Hispanic White, and Four Variables (Listwise deletion, two-tailed test, *n* = 2946)

	Percent White	Median Household Income	Percent of Uninsured Residents	Number of Residents per Physician	Rurality
Poor or Fair Health	-.549***	-.657***	.530***	.248***	.077***
Percent White		.110***	-.452***	-.032	.318***
Median Household Income			-.452***	-.216***	-.364***
Percent of Uninsured Residents				.173***	.187***
Number of Residents per Physician					.345***

*** *p* < .001

Table 3. Correlation Between Percent of Adults Who Report Poor or Fair Health, Dissimilarity Index, and Four Variables (Listwise deletion, two-tailed test, *n* = 2661)

	Dissimilarity Index	Median Household Income	Percent of Uninsured Residents	Number of Residents per Physician	Rurality
Poor or Fair Health	-0.033	-.679***	.566***	.257***	.165***
Dissimilarity Index		0.023	-.176***	-.208***	-.229***
Median Household Income)			-.475***	-.226***	-.403***
Percent of Uninsured Residents				.223***	.169***
Number of Residents per Physician					.422***

*** *p* < .001

Table 4. Regression of Poor or Fair Health on All Variables

Variable	Model 1		Model 2	
	b	*β*	*b*	*β*
Percent White	-.111***	-.443	-	-
Dissimilarity Index	-	-	.008	.021
Median Household Income	-.231***	-.571	-.227***	-.578
Percent Uninsured	.053***	.059	.274***	.294
Residents per Physician	.009***	.114	.011***	.137
Rurality	-.006**	-.041	-.028***	-.171
Constant	34.936	-	23.326	-
R^2	0.675		0.565	
df	(5, 2940)		(5, 2660)	
F	1220.045***		690.312***	
N	2946		2661	

** $p < .01$; *** $p < .001$