THE IMPORTANCE OF PLACE IN PREDICTING DIFFERENCES IN DEPRESSIVE SYMPTOMS

By

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CHAPTER I

INTRODUCTION

What is known about depression has increased greatly due to extensive interest in this disorder. The DSM-IV-TR describes depression as a two-week period of depressed mood or loss of interest combined with at least four of the following: drastic changes in sleep or appetite/weight, psychomotor disturbance, loss of interest in previously pleasurable activities, fatigue, feeling worthless or inappropriately guilty, inability to concentrate, and recurrent suicidal ideation. Finally, these symptoms must cause marked distress or impairment in the life of the individual (DSM-IV-TR). The lifetime prevalence rate of major or unipolar depression, according to DSM-III-R criteria, was estimated to be 17% in the United States (Kessler et al, 1994).

WHO in 2001 conducted an assessment of the Global Burden of Disease (GBD) for 2000, a follow-up to their assessment of the GBD for 1990. All published and non-published papers that focused on depressive disorders in pertinent populations were analyzed to create epidemiological data based on the DSM-IV and the DSM-III-R criteria. In 2000, unipolar depression accounted for 4.6% of total disability adjusted life years (DALY) and was one of the leading causes worldwide for total DALYs. Additionally, they found that depression in women was the fourth leading cause of disease burden and only seventh for men. Finally, in the Americas, depression was the leading contributor to total disease burden, at 8% (Ustun et al, 2000).

Unipolar depression is projected to be one of the leading three contributors to global disease burden by 2020 (Kim, 2008). Additionally, depression greatly impacts the economy, each year approximately $36.6 billion dollars of "salary-equivalent productivity" is lost because of missed work-days due to depression (Kim, 2008) The large impact of depression both on personal livelihood and the economy, has resulted in an increasing number of studies on the causes of depression and the importance of environment on depression. A literature review by Diez Roux and Mair (2010), looked at various studies related to neighborhood and chronic diseases or mental health. They focused on key studies from the literature and compared both studies that used census data and those that measured neighborhood characteristics directly. Their review of the literature found that for 11 out of 16 studies, social cohesion, neighborhood ties, and social capital were all protective for depression. Additionally, residential stability was linked to depression in 4 out of the 8 studies and dangerous or violent neighborhoods were associated with increased depression.

The environment and depression link has been largely studied using neighborhood characteristics, most prominently, neighborhood SES. A literature review by Kim (2008) was conducted of all published studies focused on neighborhood and depression. The study found that of the 28 qualifying studies based on their selected criteria, neighborhood socioeconomic status (SES)was a protective factor for depression (i.e. when neighborhood SES was high it could serve as a protective factor for depression) and neighborhood social disorder (i.e. neighborhoods with graffiti, criminal activity, etc) was a risk factor for depression (Kim, 2008).

A study conducted by Silver, Mulvey, and Swanson (2002) focused on environment and depression using data from the National Institute of Mental Health's Epidemiological Catchment (ECA) surveys. The study utilized report measures from 11,686 respondents in 261 distinct census tracts. Logistic regression analysis of the data revealed that: gender (female), age (younger), household income (lower), and habitation with significant other or spouse (not present), resulted in increased rates of major depression. Additionally, if the neighborhood was characterized by high turnover of residents and poverty, rates of major depression were greater. Depression was assessed as a mean score based on responses to 7 questions about depressive symptoms. While neighborhood SES seems like a good predictor of depression, studies have examined other factors such as neighborhood stress and cohesion.

Ross, Reynolds, and Geis (2000) further examined the relationship between psychological distress, defined by symptoms of depression and anxiety, and stability within neighborhoods. They found in neighborhoods with high levels of poverty, stability resulted in high levels of distress, but in neighborhoods with lower poverty, levels of distress were low. This evidence supported the social isolation hypothesis. The hypothesis posits that people in poorer, stable neighborhoods have higher levels of distress due to their inability to move out of their neighborhoods or exert control over their situation.

Further, another study was conducted to examine if social disorganization in neighborhoods was a chronic stressor for the residents. In addition, the main effect of social support was observed to identify if it could mediate some of the effects of high disorganization in a neighborhood. The study utilized participants from the Self-help in Eliminating Life-threatening Disease (SHIELD) project, which included inner-city

participants in Baltimore, Maryland who were willing to be screened for an HIV prevention intervention. Most of the people in the dataset either currently or formerly did drugs. The researchers found that perception of high social disorganization was a chronic stressor due to the lack of ability to control the disorder within the neighborhood. Additionally, social support was not a mediating effect for high levels of perceived neighborhood disorder (Latkin & Curry, 2003).

Finally, a study conducted by Matheson et al, (2006) examined data from the Canadian Community Health Survey (CCHS) as well as data from the 2001 Canadian census. After eliminating all ineligible cases the data sample contained 56,428 interviews and represented 3619 census tracts. After oblique rotation factor analysis of the data, they found four factors: residential instability, material deprivation, dependency, and ethnic diversity. To identify people with depression they used a short form of the Composite Diagnostic Interview Schedule for major depression. Those with a score of 4 or greater were identified as being depressed. Multilevel modeling was used and found odds ratios for depression that women were at twice as great a risk as men for depression, and younger people had an increased risk compared to people aged 60-74; however, those who were married, graduated from high school, and a visible minority all had a decreased risk for depression. Additionally, they asserted that material deprivation and residential instability are indicative of increased risk for depression and are largely uncontrollable at the individual level.

Researchers have also looked at the relationship of race, neighborhood characteristics, and depression. Studies have examined the heterogeneity of rates of depression due to differences in race. In a study conducted to assess neighborhood effects

on depression in Latinos, one of the key findings was that Latinos who resided in low SES neighborhoods and were born in the US were at a higher risk than other Latinos for mental health and substance abuse problems. Additionally, linguistic isolation and "collective efficacy" which refers to social bonds within the neighborhood were negatively related to depression for those people who had been in the US for longer than 15 years (Vega et al, 2011).

Similarly, a study conducted by Gary, Stark, and LaViest (2007) focused on how neighborhood characteristics impacted mental health in a racially integrated neighborhood in an urban setting. In this study the neighborhood was representative of both African Americans (59.3%) and Whites (40.7%). The people in this neighborhood were also matched in terms of socioeconomic status. Perceptions of the severity of problems in the neighborhood were linked with higher rates of anxiety, stress, and depression for both African Americans and Whites. Yet, perceived neighborhood cohesion did indicate lower levels of anxiety, depression, and stress for Whites only, which was statistically significant.

To further examine racial differences in depression, Schootman et al (2007), studied the incidence of depression in middle-aged African-Americans in relation to neighborhood environment. Census data was used to identify census tracts, census block groups, and the blocks that matched the participants' addresses. The researchers were primarily interested in clinically relevant levels of depression symptoms (CRLDS) in association with neighborhood characteristics. They found that African Americans with low income, prior hospitalization, severe chronic conditions, impaired visual acuity, lower body functional limitations, and smokers all developed CRLDS at follow-up. They did not find any statistically significant relationship between their separate location variables and CRLDS in

their population. Nonetheless, they did find that people who rated their neighborhood worse were more likely to develop CRLDS at follow-up.

Statement of the Problem

As previously outlined depression is becoming increasingly common and can be closely related to neighborhood factors across the nation and other countries. As indicated earlier, depression is projected to become even more of a contributor to global burden of disease in the future. The questions my research will aim to address are:
1) What place characteristics are risk factors for depressive symptoms? 2) What place characteristics are protective factors? 3) How do place characteristics increase or decrease the importance of certain slopes as predictors of depressive symptoms?

CHAPTER II

METHOD

Data Collection

The Southern Community Cohort Study (SCCS) contains data from 12 states in the southeast (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Caroline, South Carolina, Tennessee, Virginia, and West Virginia). The data collection process began in March 2002 and ended in September 2009. Participants completed a questionnaire through the mail, but approximately 85% were entered into the study at their community health center (CHC). 71 different CHCs participated in the study where trained CHC personnel conducted interviews with participants. In addition to the questionnaire, biological specimens from the participants were obtained, which included a blood sample or saliva sample, and a urine sample. The SCCS contains approximately 73,700 men and women aged 40-79, 70% of participants were African American, and the remainder was non-Hispanic White (Signorello, Hargreaves, & Blot, 2010). No new interviews were obtained to complete this research. The study relies on the data to provide useful information to examine depressive symptoms using a composite CES-D score.

Apparatus or Measures

To assess depressive symptoms in this study, 10 items from the 20-item Center for Epidemiologic Studies Depression Sale (CES-D Scale) were used. The CES-D was designed to assess depressive symptoms with particular emphasis on the affective components. The CES-D has high internal consistency, good test-retest reliability, and validity to measure current mood state (Radloff, 1977). Participants were asked to rate on a scale how frequent during the past week the statement described their feelings. The scale ranged from rarely or none of the time to most or all of the time on a series of 8 statements. The statements were "I was bothered by things that usually don't bother me", "I had trouble keeping my mind on what I was doing", I felt depressed", I felt that everything I did was an effort", I felt hopeful about the future", "I was happy", "I felt lonely" and "I could not get going". There were two additional questions that were rated from never to very often, "In the past month, how often have you felt that you were unable to control the important things in your life?, and "In the past month, how often have you felt difficulties were piling up so high that you could not overcome them?".

Data Analysis Plan

A statistical method called linear modeling (HLM) will be used to gain a better understanding of the questions: 1) how does the risk for depressive symptoms vary among places, and 2) based on place what are some individual characteristics that either increase or decrease in importance as predictors of depressive symptoms.

A hierarchical model can be used when you have nested data sets. The SCCS data includes 12 Southern states. All of the addresses of the interviews were geo-coded and linked to a census block, which was then linked to a census tract. Each location includes a varying number of SCCS interviews. Multi-level modeling allows one to understand the association between individual characteristics (including composite CES-D) from site to site, and how they vary within sites. It also allows one to determine how the importance of certain characteristics as predictors of depressive symptoms varies from one site to the next. When an independent measurement is made of site characteristics (e.g. using census data), one can test how the importance of certain predictors of depressed symptoms is associated with the independently measured site variables.

Site characteristics will be measured using the 2000 US census data. Social and housing characteristics of the census tract will be summarized using variables that measure independent dimension. Data extracted from the 2000 US census file identified 4,363 tracts. One hundred twenty seven variables describing the demographic, educational, social, and economic characteristics of the people living in the census tract were extracted. Factor analysis was then conducted which resulted in a 10-factor solution.

HLM Analysis

To accurately analyze all of the data collected for the study, hierarchical linear models (HLM) were used to study depressive symptoms (composite CES-D score) in relation to individual differences within different places. HLM was used to study the effect

of depressive symptoms within the nested data structures. Therefore the individual differences are nested within place.

Level 1 of the hierarchical model describes individual differences, ignoring place. A regression or logit regression model aids in predicting an outcome with a linear combination of individual difference measures. The level 2 model is created to evaluate the intercept parameter of the level 1 equation and how it varies across the different levels of the nesting variable (i.e., how depressive symptoms vary by place). This kind of model is often referred to as an intercept as outcomes model. Variations between units in the intercept parameter are modeled with linear equations as a function of the variables measured at the second level of the model. The level 1 and 2 models can also evaluate the slopes of level 1 factors against particular level 2 intercepts. The interaction of this combination results in a slopes as outcome model.

Level 1: Individual Level

Data from the Southern Community Cohort Study (SCCS) resulted in approximately 73,700 interviews obtained. The SCCS data included interviews from 12 US states in the Southeast. Addresses from the interviews were combined with census data using a county FIPS code, which linked the interviews with a specific geographic location. The factor values were averaged across all census tracts within the specific geographic unit and resulted in a geographic description for each county. Once the interviews and geographic units were combined, the sample used for analysis was decreased to 58,739 participants.

Demographic variables in the level 1 were either used as continuous variables or were dummy coded for use in the regression analysis. These variables included 1) sex, 2) total hours spent sitting per day, 3) total hrs spent watching tv and movies per day, 4) total hours per week spent doing physical activity, 5) high school education, 6) some college or junior college, 7) college graduate, 8) college postgraduate (compared to HS dropout), 9) income 15k-25k, 10) income 25k-50k, 11) income greater than 50k (compared to income less than 15k), 12) Black, 13) Other Races (compared to White), 14) unemployed, 15) employment unknown (compared to employed), 16) married, 17) divorced, 18) widowed (compared to single), 19) age linear, 20) age quadratic, 21) rare drinker, 22) frequent drinker, 23) problem drinker (compared to non-drinker), 24) Social Support (natural log), 25)sleep linear, 26) sleep quadratic, 27) current smoking status, 28) bmi linear, 29) bmi quadratic.

Level 2: Places

Level 2 represents geographic differences within places and was measured using census variables that were derived using factor analysis. There were 4,623 distinct places represented in the data that characterize all counties within the 12 US states. Codes were created in the SCCS to link the level 1 and 2 variables.

SPSS was used to extract housing and population variables from US census data for all 12 states. Variables were created to represent percentages of total population and housing stock within the census tract. 127 variables, which included population and housing adjusted percentages, were used in the factor analysis.

A factor analysis was conducted using principal components extraction and varimax rotation. A ten-factor solution was obtained from the factor analysis and is displayed in Table 1.

Table 1: Component Matrix for 10 factors										
	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
PerOccProfessional ** Percent of those who are employed who have professional jobs	.909									
PerColGrad **percent with any college degree	.909									
totalcoll ** percent of total population that has completed at least some college	.900									
permalecoll ** percent of males who have completed at least some college	.893									
perfemalecoll ** percent of femals who have completed at least some college	.878									
perHHabove75k ** Percent of households earning more than $75k	.861									
permalegrad ** percent of males who have completed a masters or more	.855									
totalgrad ** percent of total population that has completed a masters or more	.855									
MedHHIncome1999 Households: Median household income in 1999	.834									
percapitaincome ** percapita income	.826									
perm100k ** percent of households with annual income of $100,000 or more	.821									
perfemalegrad ** percent of females who have completed a masters or more	.795									

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
permwhite ** percent of males with white collar jobs	.784									
pertotwhite ** percent of population with white collar jobs	.781									
PerHH_DivIntRentalIncome ** percent of households that recive dividend or rental income	.773		-.345							
MedNonFamIncome ** median non fam income	.748									
PerHSGrad ** Percent who graduated from high school	.746	-.400						.312		
totalhs ** percent of total population that has a high school degree (incl. equiv.) or more	.746	-.400						.312		
permalehs ** percent of males who have a high school degree (incl. equiv.) or more	.744	-.366						.314		
perfemalehs ** percent of females who have a high school degree (incl.equiv.) or more	.718	-0.415								
PerNoHS ** percent who dropped out before finishing high school	-.694	0.357								
totallhs ** percent of total population with less than a high school education	-.694	0.357								
permalelhs ** percent of males with less than a high school education	-.693	0.323								
PerOwnerOccPovertyIncome ** percent of population that is living below poverty in owner occupied housing	.690									

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
perm200k ** percent of households with annual income of $200,000 or more	.672									
perfemalelhs **percent of females with less than a high school education	-.666	0.380								
perfwhite ** percent of females with white collar jobs	.662									
pertotblue **percent of population with blue collar jobs	-.627		-0.333		0.542					
permblue ** percent of males with blue collar jobs	-.620				0.558					
MarriageGap ** income gap between married with kids and single mothers with kids	.617									
PerHHLessThan25K ** percent of households earning less than $25K	-.610		0.315	0.448		0.381				
GenderGap ** difference between male and female earnings	.599									
perl25k ** percent of households with annual income less than $25,000	-.586		0.318	0.416		0.395				
maledis ** percent of males who with a disability	-.543			0.516						
perfblue ** percent of females with blue collar jobs	-.538				0.440					
perchildpov ** percent of children who are in poverty	-.497	0.367	0.459							
PerInPoverty ** percent of population living below the poverty level	-.482	0.409	0.447			0.332				
perl10k ** percent of households with annual income less than $10,000	-.440		0.422	0.378		0.415				

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
PerEmployed ** percent over 16 who are employed	.433	-0.323		-0.383	0.368			0.350		
perhouse_2 ** Percent of households with just two people	.422	-0.375	-0.336							
PerRenterOccPovertyIncome ** percent of population that is living below poverty in renter occupied housing										
perother ** percent of total population that is neither white alone nor black/african american alone		0.857								
perhisp ** percent of total population that is hispanic/latino		0.837								
PerSpanishLingIsolated ** percent of people living in spanish speaking linguistically isolated households		0.785								
perenghh ** percent of households that are english speaking		-0.779								
perborninst ** percent of population that was born in state of residence		-0.681			0.340					
PerWhiteBornInState ** percent of whites born in state		-0.629			0.314					
perlackplumb ** percent of housing units that lack plumbing		0.605								
PerNativeBorn ** Percent of population born in the US		-0.602			0.307				-0.511	
PerNophoneservice_total ** percent of households with no phone service		0.573							0.372	
perhhwelfare ** percent of households with public assistance income	-.362	0.467	0.452							

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
perZeroVehicle ** percent of households with no vehicle		0.411								
PerRural ** percent of persons living in rural area		-0.389	-0.378					-0.371		
poponevehicle ***percent of housing units with only one vehicle		0.381								
ownoccperroom ** people per room in owner occupied housing										
rentoccperroom ** people per room in renter occupied housing										
PerBuilt1939orEarlier ** percent of houing units build before 1939										
PerOneBed ** percent of housing units with one bedroom										
PerFiveorMoreBeds ** percent of housing units with five or more bedrooms										
PerNoBeds ** percent of housing units with no bedrooms										
PerBlack ** percent of population that is Black			0.860							
PerNoWorkWhite ** percent of population that is Whites who do not work			0.715							
persmhh ** percent of households that are headed by single women with children	-.325		0.710		0.331					
perurbanhunit ** percent of housing units in urban area			0.659							
perhhpovsm ** of total households, the percent of which are impoverished single mother households	-.372		0.652		0.307					

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
perhhsm ** PERCENT OF HOUSEHOLDS THAT ARE IMPOVERISHED SINGLE MOTHERS	-.372		0.652		0.307					
PerWhite ** Percent of population that is White		-0.574	-0.619							
PerMarried ** percent of total population that is married	.375		-0.599			-0.355				
PerBlack35HrsWork ** percent of population that is full time Black workers	.314		-0.560							0.379
PerHHGrandchildren ** percent of population living in households with grandchildren present	-.304		0.451							
PerDriveWorkAlone ** percent of population who drives to work alone	.397	-0.393	-0.426					0.379		
pervacant ** percent of housing units that are vancant			0.407							
perocc ** percent of housing units that are occupied			0.329							
PerBlackBornInState ** percent of blacks born in state										
perlackkitch ** percent ofhousing units that lack a kitchen										
perfunemp ** percent of females in labor force who are unemployed				0.816						
persenior ** percent of population that is age 65 or older				0.810						
PerSocialSecurity ** percent of workforce on social security				0.806						

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
persrfemale ** percent of females who are age 65 or older				0.796						
persrmale ** percent of males who are age 65 or older				0.774						
totunemp ** percent of population in labor force that is unemployed				0.767						0.408
permunemp ** percent of males in labor force who are unemployed				0.657						0.445
totaldis ** percent of noninstitutionalized population 5 years and older with a disability	-.552			0.560						
femaledis ** percent of females with a disability	-.508		0.326	0.548						
PerPhysMentCareDisability ** percent of population with phyical or mental disability	-.313			0.474						
perchild ** percent of population that is under age 18					0.820					
perfemalechild ** percent of females who are under age 18					0.791					
permalechild ** percent of males who are under age 18			0.320		0.777					
PerChildren8to17 ** percent of population that is children 8 to 18 years old					0.748					
Perchildren7Under ** percent of poplation that is children under 7					0.707					
PerPersonsInHHolds ** percent of persons living in households					0.672			0.302		-0.439
perhouse3Plus ** Percent of households with three or more people				-0.330	0.671					

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
perfemale ** percent of total population that is female				0.416	0.527					-0.337
PerWhite35HrsWork ** percent of population that is full time White workers			-0.335	-0.327	0.406					
POP100 Population Count (100%)										
PerWalktoWork ** percent of people who walk to work						0.741				
PerInCollege ** percent of the population enrolled in college						0.704				
PerNoWorkBlack ** percent of population that is Blacks who do not work						0.698				
PerWhiteWalkBikeWork ** percent of Whites who walk or bike to work						0.672				
PerWorkPartTime ** percent of work force working part time						0.593				
PerinGradSchool ** percent of the population enrolled in graduate school	.384					0.499				
PerBlackWalkBikeWork ** percent of Blacks who walk or bike to work						0.402				
perrent ** Percent of housing units occupied by renters							-0.915			
perown ** percent of housing units owner occupied							0.915			
PerHUOwnerOccupied ** Percent of housing units that are owner occupied							0.915			
PerMobile ** percent of housing that is mobile homes							0.804			

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
rentmobile2 ** percent of housing that is renter occupied trailers							0.761			
ownmobile2 ** percent of housing that is owner occupied trailers							0.553			
MeanPersonPerRoom ** Average number of people per room							0.337			
ownunitstruc ** units per building for owner occupied buildings										
perdivfemale ** percent of females who are divorced								0.747		
perdivtotal ** percent of total population that is divorced								0.722		
perus95 ** percent of population age 5 and older that was in the United States in 1995						0.359		0.558		
perhouse_1 ** Percent of households with just one person				0.338		0.415		0.484		
PerUrban ** Percent of persons living in urban area		0.356	0.363					0.435		
HU100 Housing Unit Count (100%)								0.395		
PerForeignBorn ** percent of population that was foreign born		0.598							0.645	
PerPublicTransToWork ** percent of population who takes public transit to work			0.339						0.642	
PerWhitePubTransWork ** percent of whites who take public transit to work									0.598	
PerBlackPubTransWork ** percent of blacks who take public transit to work									0.502	
PerHispanicNonCitizen ** percent of hispanics who are not US citizens									0.366	

Table 1 Continued	White Collar	Immigrant Urban	BSMHH	Elderly Unemployed	Stable Suburban	Student	Owner Occupied Housing	Divorced	Foreign Born	Institutionalized
popperown ** percent of population living in owner occupied units										
popperrent ** percent of population living in renter occupied units										
PerInstitutionalized ** percent of total population that is institutionalized										0.794
PerPersonsInGQuarter ** Percent of persons living in group quarters					-0.316	0.425				0.735
permale ** percent of total population that is male					0.356					0.643
rentunitstruc ** units per building for renter occupied buildings										
PerTwoBeds ** percent of housing units with two bedrooms										

The ten factors were named and interpreted as White Collar, Immigrant, Black Single Mother Headed Households, Elderly Unemployed, Stable Suburban, Student, Owner Occupied Housing, Divorced, Foreign Born, and Institutionalized. High values for **White Collar** are census tracts where there are a high percentage of people who have professional jobs, high percent of the total population that has completed at least some college, high percent of households with annual income of $200,000 or more, and percent of total population that has completed masters or more. **Immigrant Urban** is characterized by high values of percent of total population that is neither White alone nor Black/African American alone, high percent of total population that is Hispanic/Latino, and high percent of people living in Spanish speaking linguistically isolated households. **Black Single Mother Headed Households** is an area that is characterized by high values of percent of population that is Black, percent of population that is Whites who do not work, percent of households that are headed by single women with children, and percent of housing units in urban areas. **Elderly Unemployed** is an area with a high percent of females in labor force who are unemployed, percent of population that is age 65 or older, percent of males who are age 65 or older, and percent of total population in the labor force that is unemployed. **Stable Suburban** is represented by a high percent of population that is under age 18, percent of females who are under age 18, percent of population that is children 8 to 18 years old, percent of population that is children under 7, and percent of population that is full time White workers. **Student** indicates an area with high values in percent of people who walk to work, percent of population enrolled in college, percent of Blacks who do not work, and percent of the population enrolled in graduate school. **Owner Occupied Housing Units** is an area with a high percentage of housing units owner occupied, percent

of housing that is mobile homes, and percent of housing that is owner occupied trailers. Areas with high values for **Divorced** are characterized by percent of total population that is divorced, percent of population 5 and older in the United States in 1995, percent of households with just one person, and percent of persons living in an urban area. **Foreign Born** indicates a high percent of the population that was foreign born, percent of population that takes public transit to work, and percent of Hispanics who are not US citizens. **Institutionalized** represents places with a high percent of total population that is institutionalized, percent of total population that is male, and finally percent of persons living in group quarters.

CHAPTER III

RESULTS

SCCS study sample

The demographic characteristics of the sample analyzed for this study can be found in Table 2. The table illustrates the population according to demographic variables across race: Black, White, Other. Each race is evaluated according to income, employment status, marital status, gender, education, and their current smoking status.

Table 2: Demographic Characteristics of the Sample

		White		Black		Other	
Variable	Category	Freq	%	Freq	%	Freq	%
Income							
	Less than $15,000	8523	23.4%	26701	73.4%	1157	3.2%
	$15,00-$25,000	3081	23.0%	9875	73.7%	435	3.2%
	$25,000-$50,000	2015	28.0%	4909	68.1%	282	3.9%
	$50,000 and above	1205	42.2%	1510	52.9%	138	4.8%
Education Level							
	Less than 9 years	1500	28.6%	3556	67.7%	193	3.7%
	9-11 years	2960	21.2%	10634	76.3%	336	2.4%
	12 years, completed High School, or GED	5221	25.0%	15152	72.5%	538	2.6%
	Vocational, Technical, or Business training	735	23.5%	2252	72.1%	135	4.3%
	Some college or Junior college	2835	25.1%	7943	70.2%	536	4.7%
	Graduated from college	1039	27.9%	2500	67.2%	181	4.9%
	Graduate school (up to and including a Masters degree)	391	33.1%	725	61.3%	66	5.6%
	Graduate school beyond a Masters degree (include doctors, dentists, lawyers, Ph.D)	143	35.5%	233	57.8%	27	6.7%
Gender							
	Male	4962	21.2%	17753	75.7%	722	3.1%
	Female	9862	27.1%	25242	69.4%	1290	3.5%
Marital Status							
	Married/Cohabitate	6339	33.5%	11829	62.6%	729	3.9%
	Divorced/Separated	5241	25.2%	14801	71.1%	769	3.7%
	Widowed	1568	26.1%	4255	70.7%	196	3.3%
	Single, never been married	1676	11.9%	12110	85.9%	318	2.3%
Smoke Now							
	Yes	6406	24.2%	19171	72.5%	882	3.3%
	No	3847	30.6%	8260	65.6%	478	3.8%
Employment							
	Yes	4828	22.0%	16410	74.7%	722	3.3%
	No	9873	26.5%	26169	70.1%	1273	3.4%
	Unknown	123	22.1%	416	74.8%	17	3.1%
Total		14824		42995		2012	

CES-D Depression Scores

The composite CES-D scores were calculated based on responses to 10 questions about depressive symptoms and all participants were given a score that ranged from 1-30. A score of 1 indicates the lowest score of CES-D symptoms while a score of the 30 indicates the highest score of CES-D symptoms. Figure 1 shows the frequency distribution of depression scores separately for Whites, Blacks, and Others.

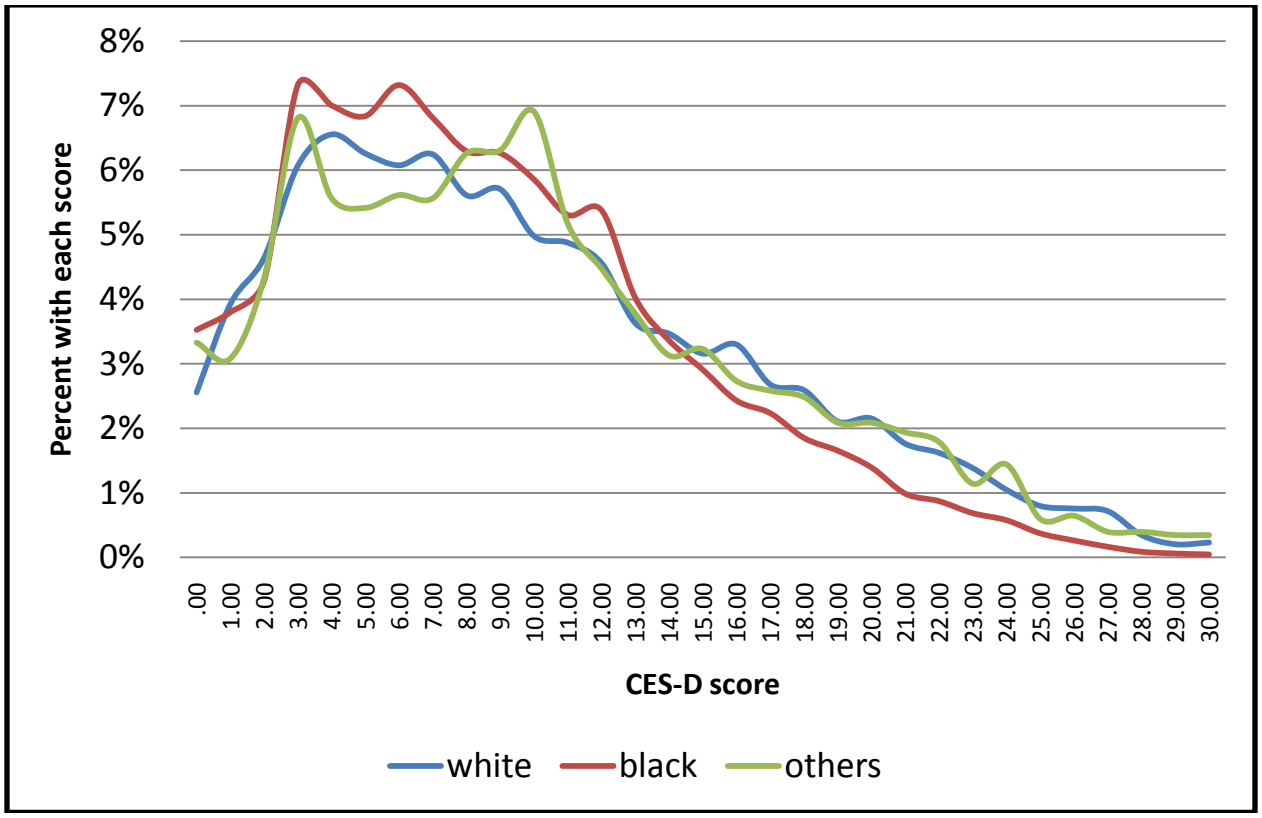

Figure 1. Percent of Race by score for each composite CES-D score

While the profiles are similar, Whites and Others tend to have higher depressive symptoms scores than Blacks. The scores have been geographically presented on maps representing metropolitan areas within the SCCS in Figures 2-5. The areas with more extreme CES-D scores are the darkest blue represented in the maps. Graphically, the CES-D composite scores areas cluster around recruitment center areas and indicate how the scores vary across tracts.

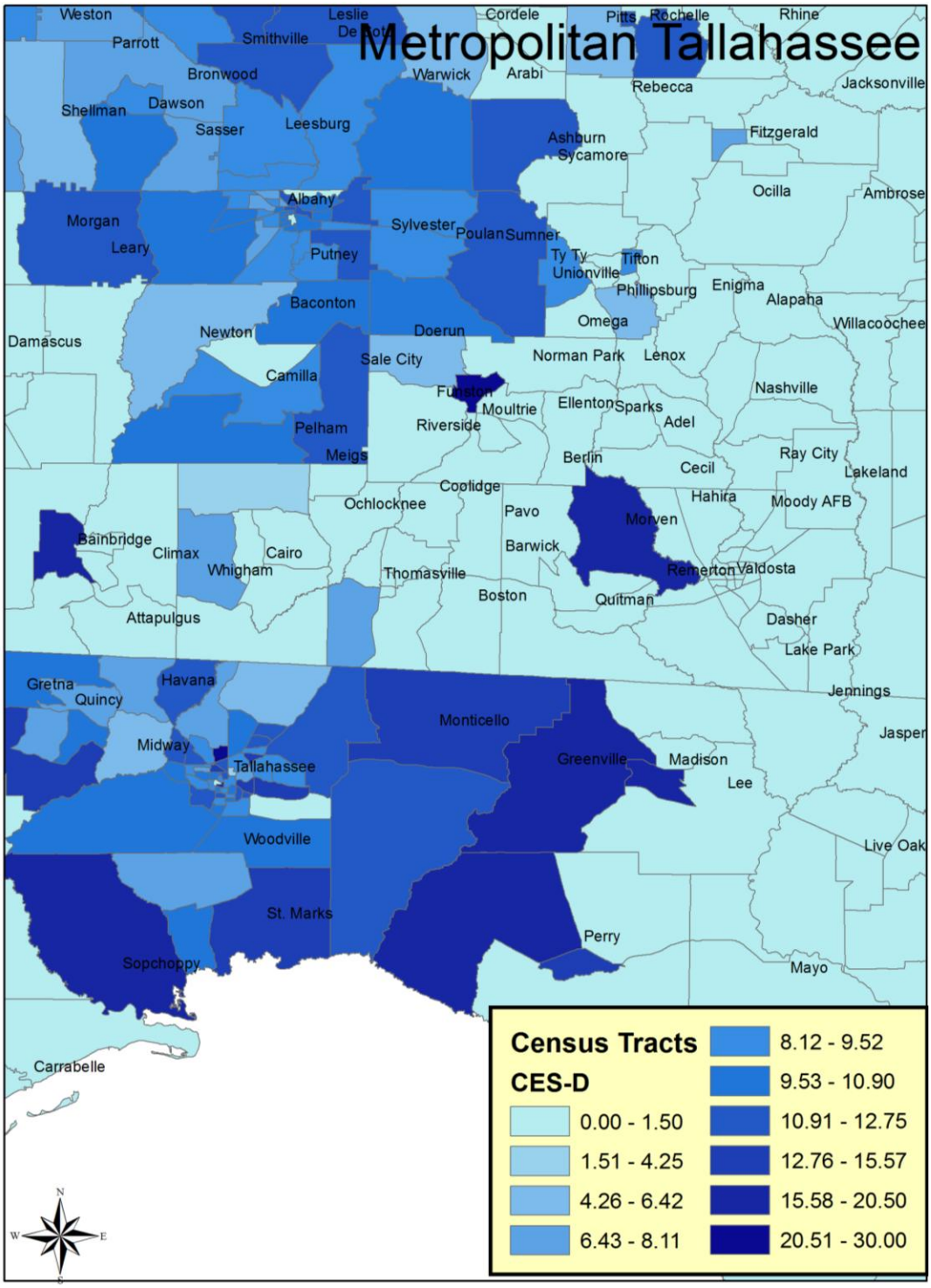

Figure 2. Geographic depiction of calculated composite CES-D scores represented within census tracts in metropolitan Tallahassee, FL.

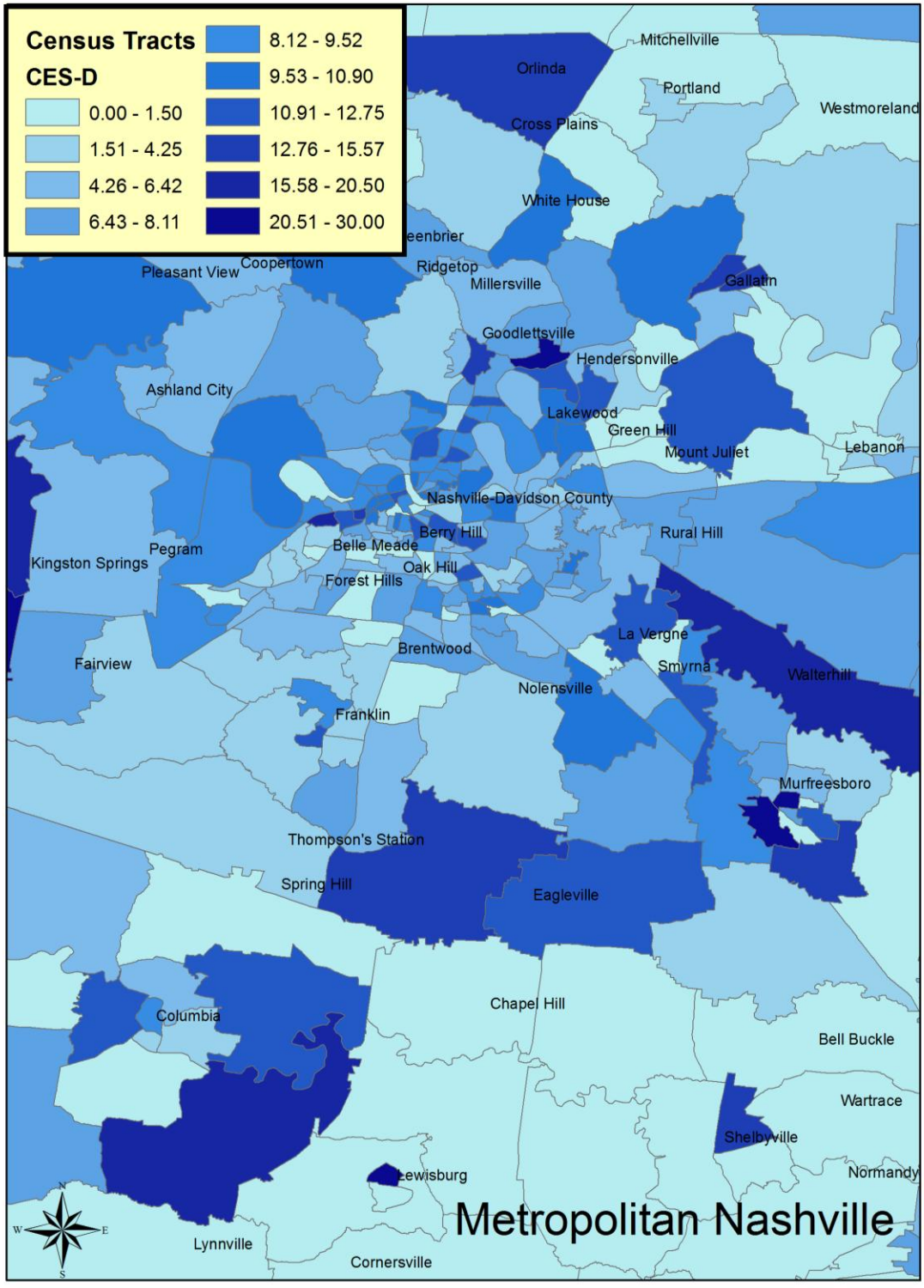

Figure 3. Geographic depiction of calculated composite CES-D scores represented within census tracts in metropolitan Nashville, TN.

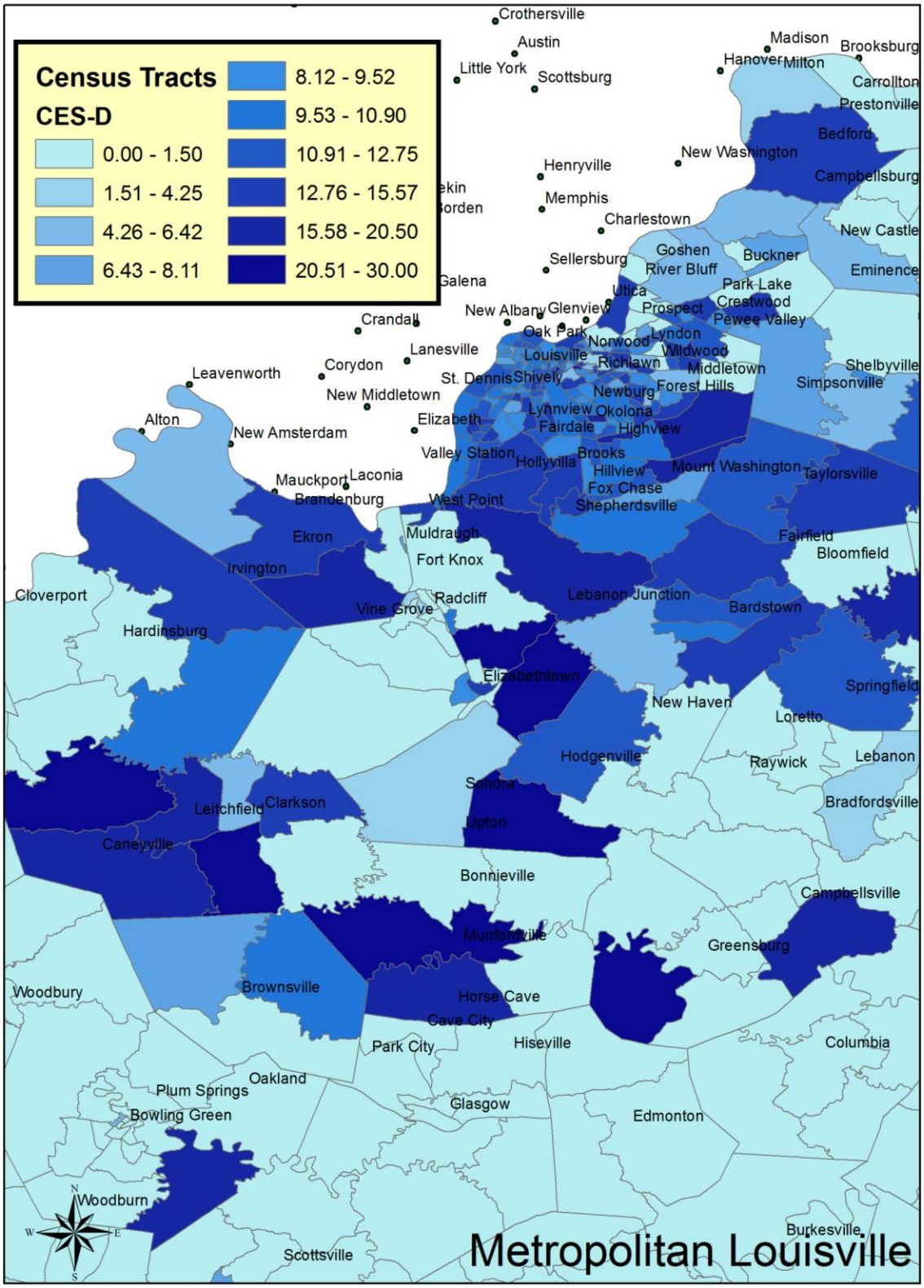

Figure 4. Geographic mapping of composite CES-D scores according to census tracts in metropolitan Louisville, KY.

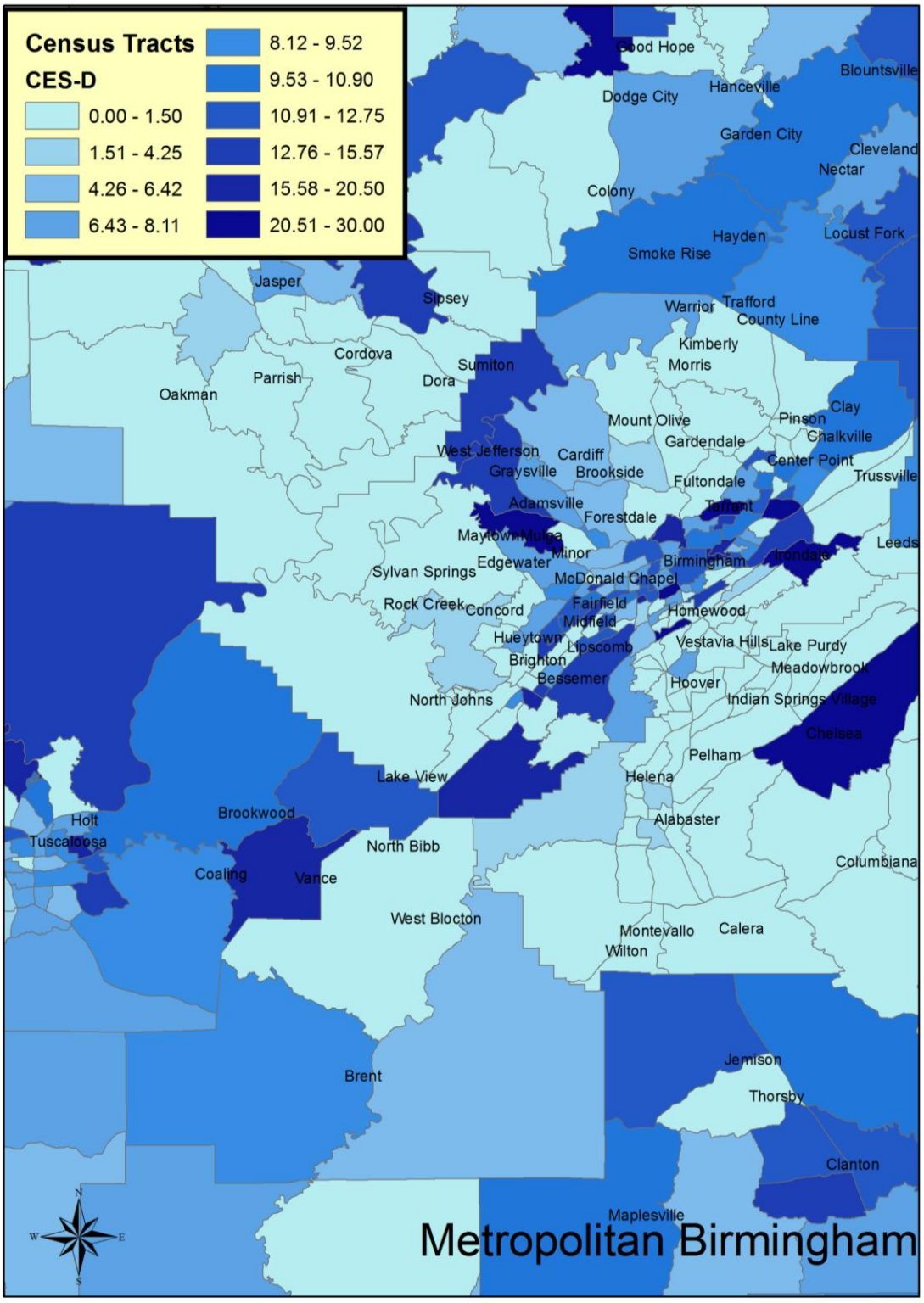

Figure 5. Geographic mapping of composite CES-D scores according to census tracts in metropolitan Birmingham, AL.

Level 1 Model

Table 3 presents the level 1 (individual differences) multiple linear regression results in which individual characteristics were used to predict depressive symptom scores. All of the variables were significant predictors of depressive symptoms (p's<.05) except total hours per day sitting, quadratic BMI, and other race (compared to Whites). There were positive associations for female; hours per day spent watching TV and movies; unemployed and unknown employment (compared to employed); divorced, widowed, and single (compared to married); rare drinker, frequent drinker, and problem drinker (compared to non-drinker); quadratic hours per day sleeping; the linear trend of bmi; and current smoker. Negative associations were present for total weekly activity; high school, some college, college grad, and postgrad (compared to high school dropout); natural log of social support; and the linear trend of hours per day sleeping.

Table 3: Level 1 Slopes Model

Predictor	Coefficient	Error	T-ratio	d.f.	P-value
Intercept					
Gender (male)	1.21	0.05	23.67	58738	0.000
Total Hrs Per Day Sitting	0.01	0.01	1.87	58738	0.061
Total Hrs Per Day TV Movies	0.15	0.01	13.78	58738	0.000
Total Hrs Per Week Activity	-0.01	0.01	-2.62	58738	0.009
High School (HS dropout)	-0.74	0.06	-12.87	58738	0.000
Some College	-1.18	0.07	-16.64	58738	0.000
College Grad	-1.67	0.10	-15.94	58738	0.000
Post Grad	-2.05	0.13	-15.61	58738	0.000
Income 15k-25k (less than 15k)	-0.64	0.06	-10.84	58738	0.000
Income 25k-50k	-1.02	0.07	-13.80	58738	0.000

Table 3 Continued					
Predictor	Coefficient	Error	T-ratio	d.f.	P-value
Income Greater than 50k	-1.68	0.11	-15.35	58738	0.000
Black (White)	-1.39	0.08	-17.88	4632	0.000
Other Race	-0.21	0.14	-1.43	58738	0.152
Unemployed (Employed)	1.63	0.07	22.60	4632	0.000
Employment Unknown	0.70	0.27	2.64	58738	0.009
Divorced (Married)	0.66	0.06	11.15	58738	0.000
Widowed	0.42	0.09	4.74	58738	0.000
Single	0.37	0.07	5.62	58738	0.000
Age Linear	-0.08	0.00	-24.09	58738	0.000
Age Quad	0.00	0.00	-11.66	58738	0.000
Rare Drinker (Non-Drinker)	0.19	0.05	3.50	58738	0.001
Frequent Drinker	0.20	0.08	2.62	58738	0.009
Problem Drinker	0.69	0.08	8.21	58738	0.000
Natural Log of Social Support	-1.11	0.03	-35.87	4632	0.000
SleepLinear	-0.52	0.01	-36.26	4632	0.000
SleepQuad	0.11	0.00	31.03	4632	0.000
BMI Linear	0.02	0.00	6.17	58738	0.000
BMI Quad	0.00	0.00	-0.77	58738	0.442
Smoke Now	0.58	0.05	10.58	4632	0.000

Level 2 Model

Intercepts as outcomes

The level 2 intercepts as outcomes model is used to understand place differences in average depression symptom scores. Using the 10 factors, White Collar, Immigrant Urban, Black Single Mother Headed Households, Elderly Unemployed, Stable Suburban, Student, Owner Occupied Housing Units, Divorced, Foreign Born, and Institutionalized, the level 2

model, shows that only 2 of the 10 factors were significant (p's<.01). Those factors were Black Single Mother Headed Households (BSMHH) and Stable Suburban. Black Single Mother Headed Households has a negative relationship, which indicates that people in areas high on this factor tend to have lower scores of depressive symptoms. Therefore, areas with a high percent of Blacks, a high percent of Whites who did not work, and households headed by single females, are likely to have lower mean levels of depressive symptoms. A geographical representation of the BSMHH factor for some of the metropolitan areas represented in the SCCS data is shown in figures 6-8.

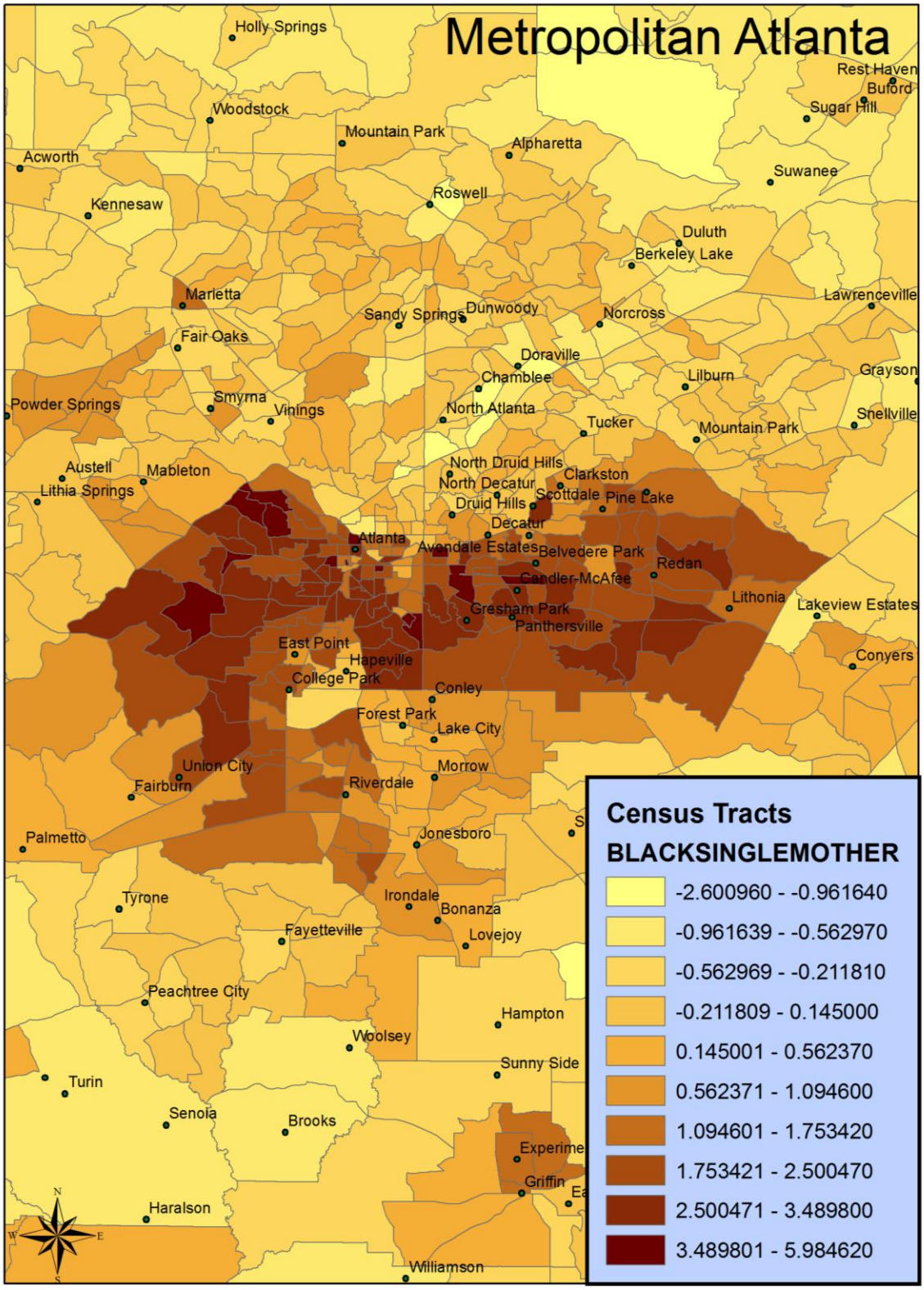

Figure 6. Geographic illustration of the Black Single Mother Headed Household factor by census tract in metropolitan Atlanta, GA.

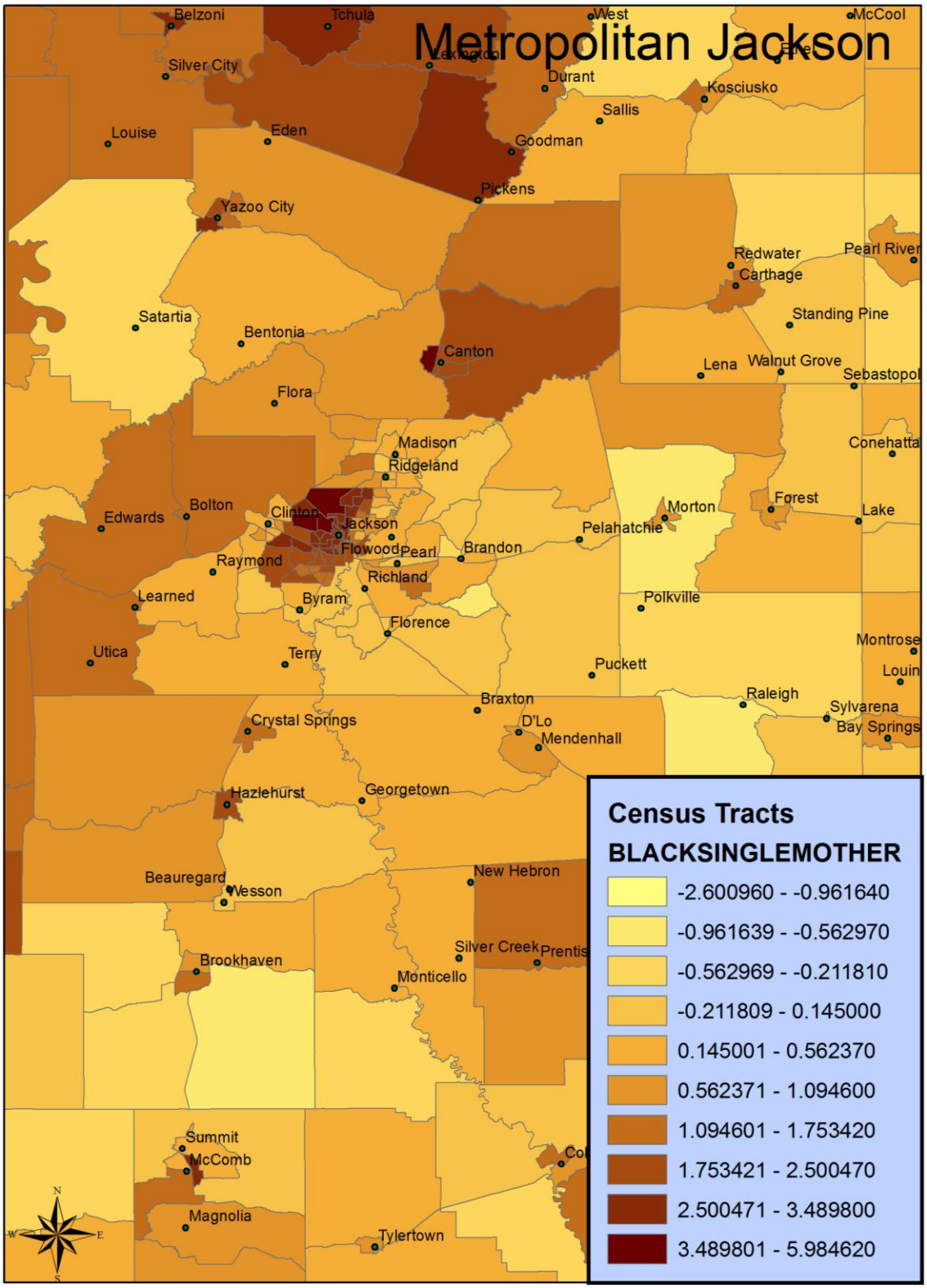

Figure 7. Geographic mapping of the factor Black Single Mother Headed Households by census tract in metropolitan Jackson, MS.

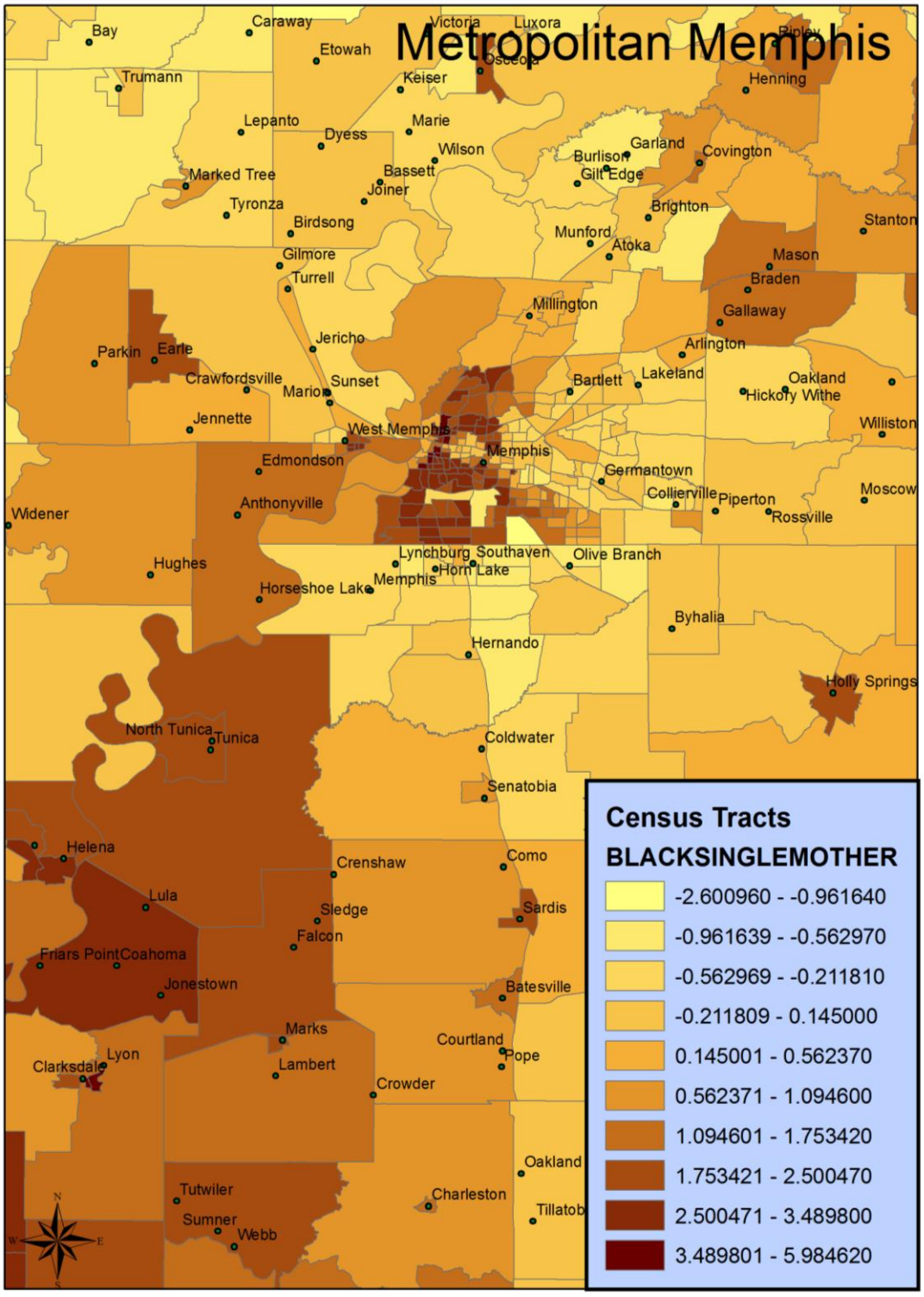

Figure 8. Geographic mapping of the Black Single Mother Headed Households factor according to census tract in metropolitan Memphis, TN.

Stable Suburban has a positive relationship with the CES-D intercept parameter. Therefore, areas characterized by a high percent of the population that is under 18, a high percent of the population that is children age 8 to 18 years old, a high percent of total population that is female, and a high percent of population that is full time White workers, are more likely to have higher scores of depressive symptoms. Geographic mapping of these areas in some of the SCCS states are displayed in figures 9-11.

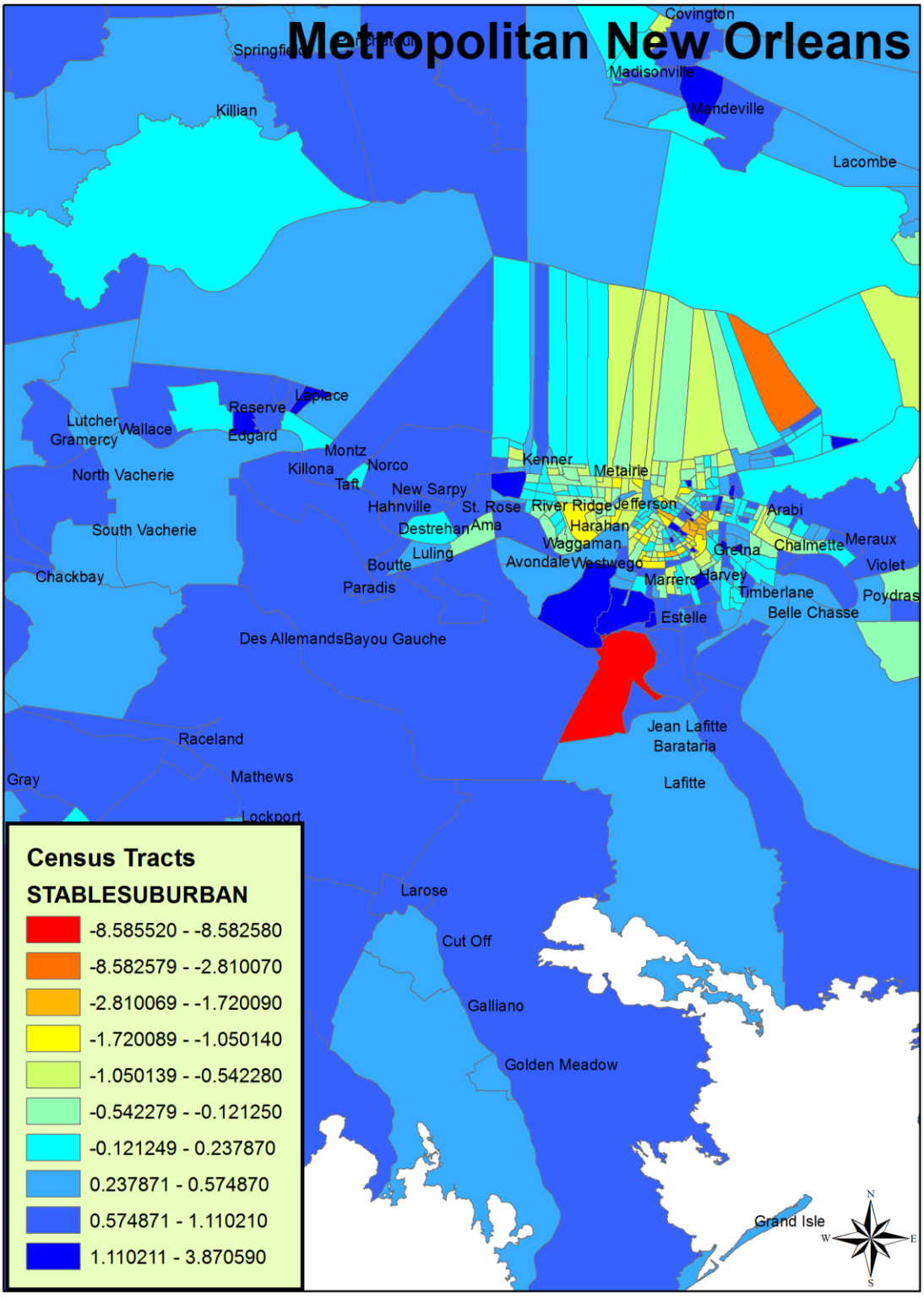

Figure 9. Geographic mapping of the factor Stable Suburban factor according to census tract in metropolitan New Orleans, LA.

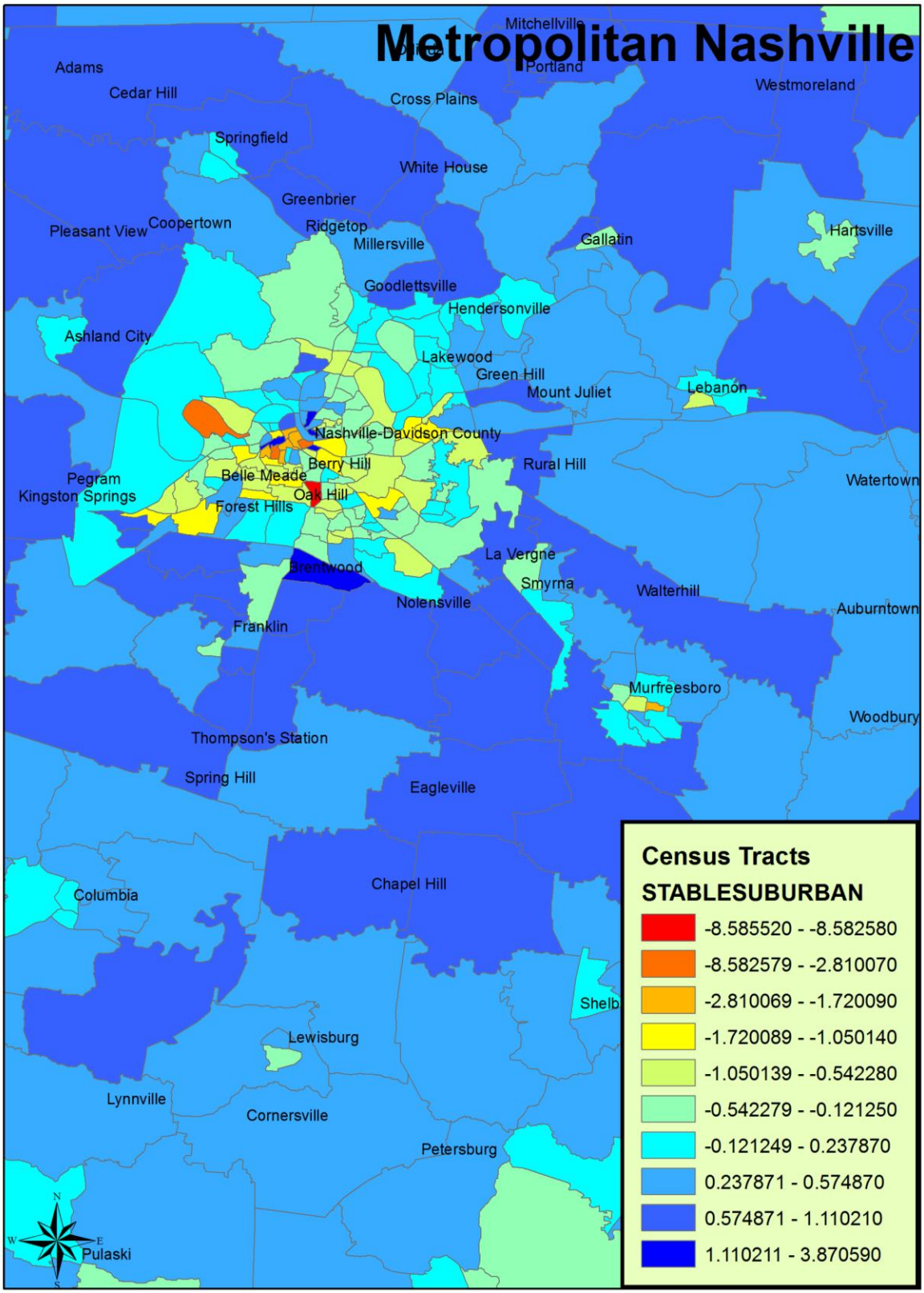

Figure 10. Geographic mapping of the factor Stable Suburban factor according to census tract in metropolitan Nashville, TN.

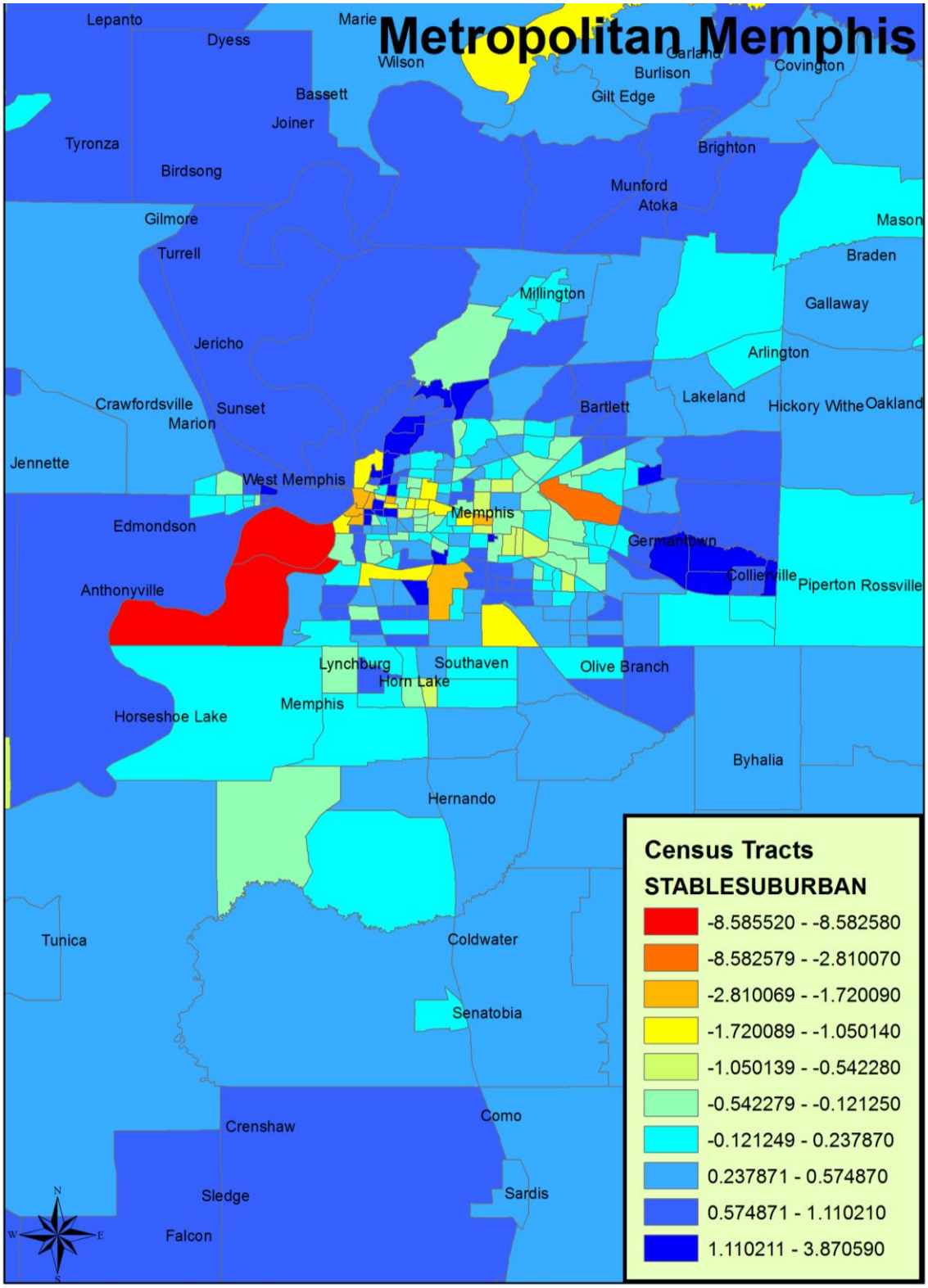

Figure 11. Geographic mapping of the factor Stable Suburban factor according to census tract in metropolitan Memphis, TN.

Slopes as Outcomes

After creating the level 1 model, and the level 2 intercepts as outcomes model, a number of slopes as outcomes models were explored. A slopes as outcomes model shows how the importance (regression coefficient) of a level 1 predictor changes as a function of place. The level 2 geography variables are used to model how the slope coefficients vary by location. Table 4 shows the best fitting slopes as outcomes models.

Table 4: Level 2 Model

Predictor	Coefficient	Error	T-ratio	d.f.	P-value
INTRCPT2,	8.58	0.16	54.95	4631	0.000
BLACK SINGLE MOTHER,	-0.19	0.06	-3.11	4631	0.002
STABLESUBURBAN,	0.15	0.05	2.97	4631	0.004
Black Slope					
BLACK SINGLE MOTHER,	0.13	0.06	2.31	4632	0.021
Unemployed Slope					
BLACK SINGLE MOTHER,	-0.20	0.04	-5.49	4632	0.000
Social Support Slope					
BLACK SINGLE MOTHER,	0.10	0.02	6.17	4632	0.000
Sleep Linear Slope					
STABLESUBURBAN,	-0.06	0.02	-2.84	4632	0.005
Sleep Quadratic Slope					
STABLESUBURBAN,	-0.01	0.00	-2.19	4632	0.028
Smoke Now Slope					
DIVORCED,	0.13	0.05	2.57	4632	0.011

Level 2 slope models were fit for: Black, Unemployed, SocialSupport, Sleeplinear, SmokeNow and Sleepquad. Black Single Mother Headed Households (BSMHH), was a significant predictor of the slopes for Black, Unemployed, and SocialSupport. As the value

of BSMHH increases, the importance of Black, and SocialSupport increase as predictors of depressive symptoms. As mentioned previously, the area factor BSMHH is represented by a high percent of Blacks, a high percent of Whites who are unemployed, and a high percent of single female-headed households. BSMHH was a significant predictor for the decrease in importance of Unemployed as a predictor of depressive symptoms. Finally, as the value of BSMHH goes up, the importance of social support in predicting depressive symptoms increases.

Stable Suburban was a significant predictor of the slope coefficients for Sleeplinear and Sleepquad. As the value of Stable Suburban increases, the importance of Sleeplinear and Sleepquad decrease as predictors of depressive symptoms. The level 2 factor Stable Suburban as stated earlier is characterized by a high percent of the population that is under 18, a high percent of children between the ages of 8 and 18, and a high percent of the population that is female. The slopes of both SleepLinear and SleepQuad have negative relationships with the level 2 factor Stable Suburban. Thus, the linear increase of hours of sleep each day decreases in importance as a predictor of depression for areas characterized by Stable Suburban. Also, the importance of getting less sleep or more sleep as a predictor of depression decreases in areas with high values of the factor Stable Suburban.

Divorced (see figures 12-14) was a significant predictor of the slope coefficient for SmokNow. SmokNow was a variable that was dummy coded for whether the current presence of smoking was absent or present. The coefficient indicates that as an area increases in value for the place factor Divorced, the importance of smoking increases as an indicator of depressive symptoms.

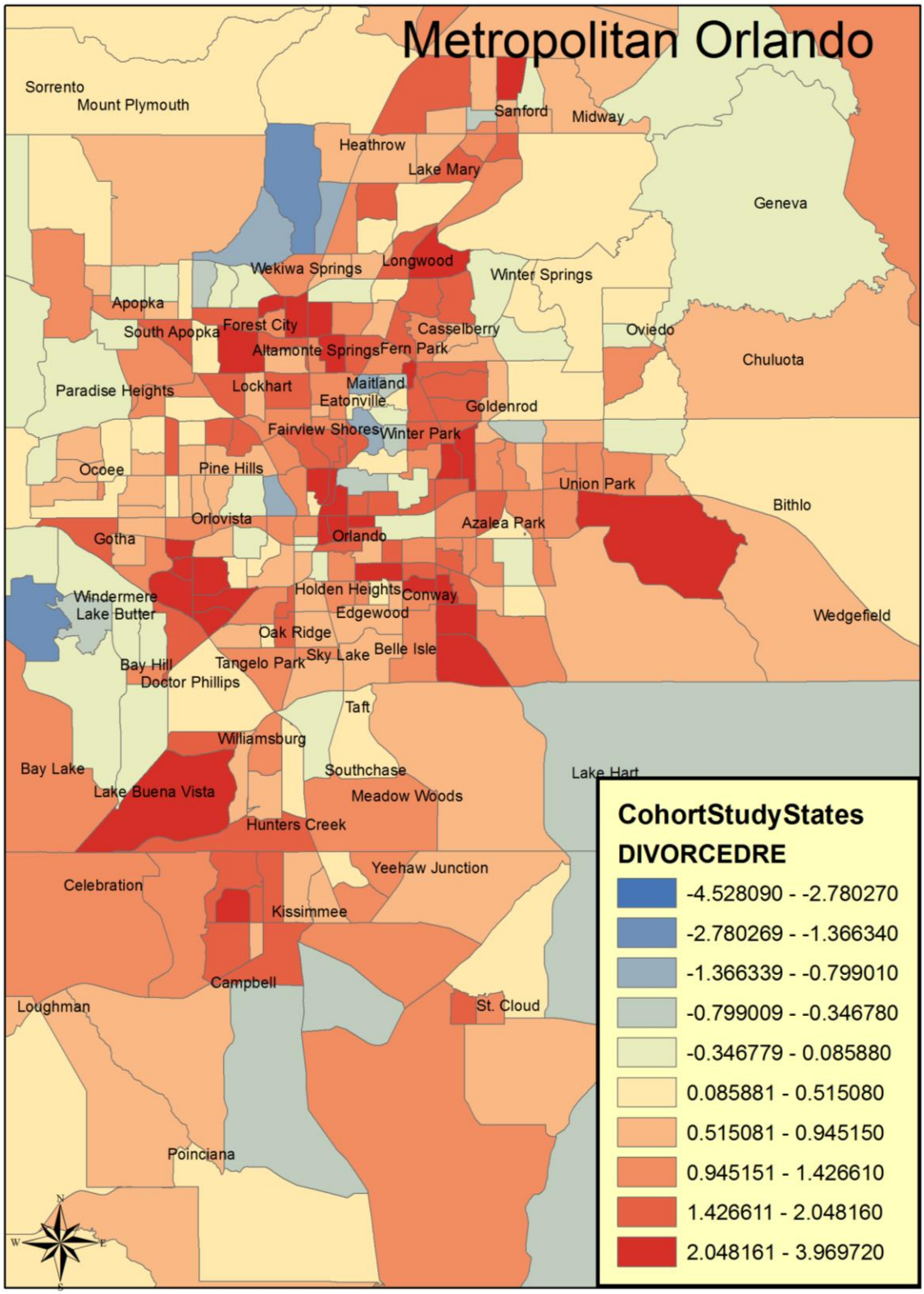

Figure 12. Geographic mapping of the factor Divorced by census tract in metropolitan Orlando, FL.

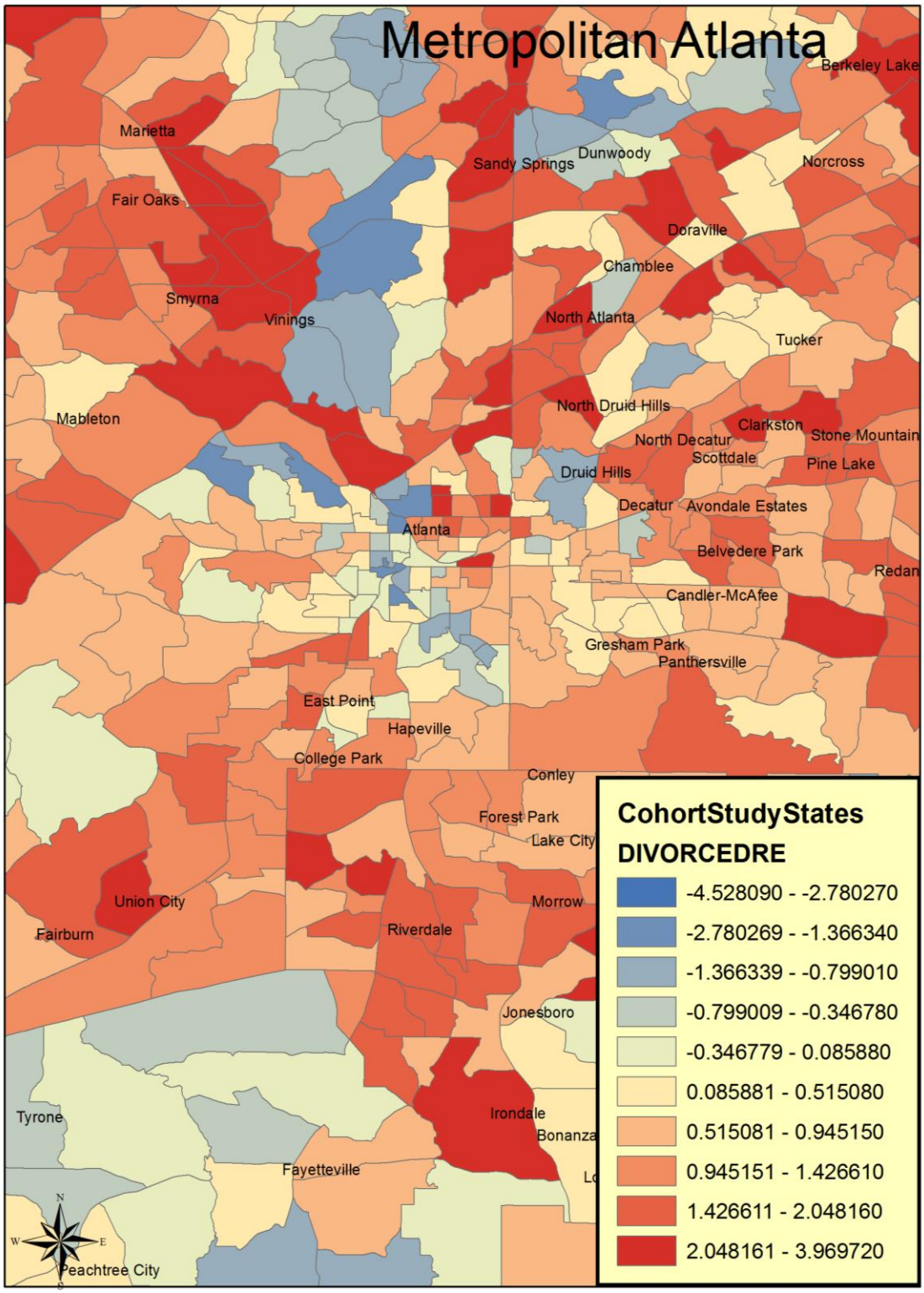

Figure 13. Geographic mapping of the factor Divorced by census tract in metropolitan Atlanta, GA.

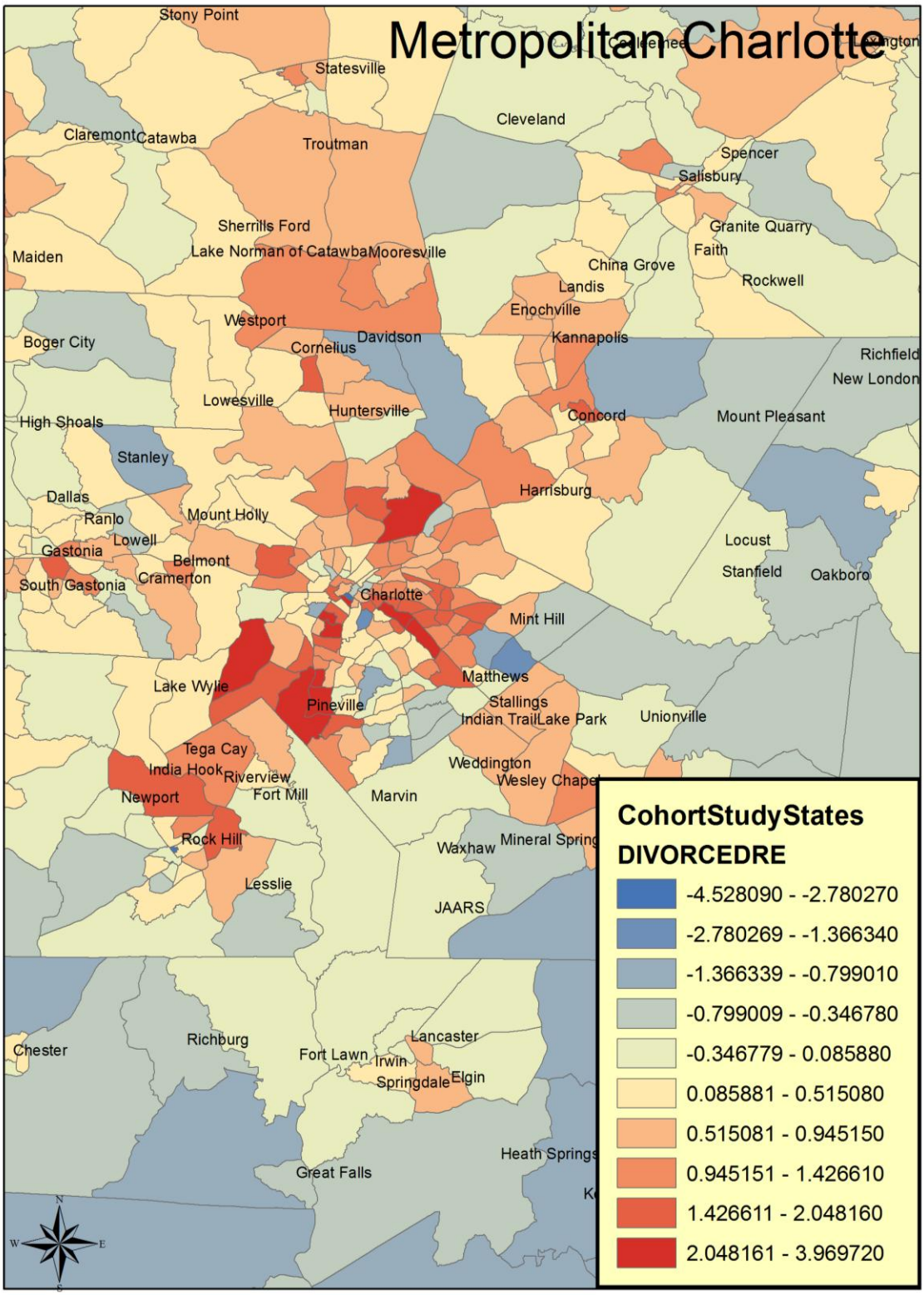

Figure 14. Geographic mapping of the factor Divorced by census tract in metropolitan Charlotte, NC.

CHAPTER IV

DISCUSSION

The level 1 model confirmed many previous studies of depressive symptoms showing that depressive symptoms are higher in females than males and higher in Whites than in Blacks. It also shows that income, education, and social support have protective effects.

The more important question addressed in this study was how differences between places are associated with variability in depressive symptoms. This study asked three specific questions about place differences and depressive symptoms: 1) What are the risk factors for higher levels of depressive symptoms, 2) Can we identify protective factors associated with places? 3) Are there places that moderate the association between individual differences and their associations with depressive symptoms?

Analysis of the SCCS data, shows that depressive symptoms only vary significantly by place for Black Single Mother Headed Households (BSMHH) and Stable Suburban. In addition, analysis of the level 2 intercepts as outcomes models show that across place living in an area high in levels of the Stable Suburban factor is a risk factor for higher depressive symptom scores. Alternatively, living in an area that is high in levels of the BSMHH factor is a protective factor against higher depressive symptom scores. In summary, analysis identified both risk and protective factors for higher depressive symptom scores.

Additionally, the slopes as outcome model shows the slopes Black and Social Support, increase as predictors for depressive symptoms as the level of BSMHH factor

increases. Smoke Now also increases in importance as a predictor of depressive symptom scores as the levels of the Divorced factor increase. Yet, the slope Unemployed decreases in importance as a predictor for depressive symptoms as the level of BSMHH increases. Sleeplinear and SleepQuad decrease in importance as predictors of depression for the factor Stable Suburban. These findings suggest several things important for understanding depressive symptoms across areas.

First, one of the clinical symptoms of depression is increased or decreased sleep, however in areas characterized by Stable Suburban, the predictive value of this symptom loses importance. This may suggest that people with depressive symptoms who live in areas characterized by Stable Suburban, a high percent of the female population and a high percent of children between the age of 8 and 18, are less likely to be impacted by sleep disturbance as a part of their depressive symptoms. Given that young children load so high on this factor, decreased sleep may be a normal occurrence and decrease the likelihood of sleep disturbance as a cause of significant increase in depressive symptoms.

Second, the importance of social support as a predictor of depressive symptoms increases as the levels of BSMHH increases. A study conducted by Dressler (1985) found that for women in a majority Black Southern neighborhood, “extended kin support” was indicative of fewer symptoms of depression. This was only significant in women aged 34 or older. Our measure of social support was calculated by adding the scores from two of the SCCS questions concerning support: 1) “How many close friends or relatives would help you with your emotional problems or feelings if you need it?” 2) “How many different people could you ask for help in an emergency or with lending you money?” For both questions, the participant could choose None, 1, 2, 3 or more. We then took the natural log

of the answer, which produced a better fitting distribution. The findings from this study suggest that social support is an important predictor of depression for people high in this factor. Perhaps the importance of kin that was found in the Dressler study is also present in the Black Single Mother Headed Household factor. Thus, some of the protection in the BSMHH factor could be attributed to the social support of family found among Southern Blacks.

Third, the slope Unemployed decreases in importance as the level of the factor BSMHH increases. The Black Single Mother Headed Households factor is characterized by a high percent of Whites who do not work and impoverished single female-headed households. Decreased importance of unemployment as a predictor could reflect a cultural characteristic of areas that are high on this factor. It could indicate that in a majority where many people are not working being unemployed is not as stigmatizing as it would be in an area where many people are working.

Additionally, in a study by Lincoln, Chatters, and Taylor (2003), they found that for Whites traumatic events and financial hardship were related to negative relationships with their relatives. However, for Blacks, only traumatic events were indicative of negative relationships with relatives. They found that financial strain was more prevalent in Blacks in their study, and therefore concluded that due to the increased rate of financial strain, it might not have as negative of an impact on family relationships in Blacks as in Whites. They also mention that Blacks are more likely to gain financial assistance within their social networks. Ultimately, the area factor Black Single Mother Headed Households might have a decreased importance for unemployment as a predictor of depressive symptoms because

of strong family support for Blacks in these areas that might provide them with financial support.

Fourth, the slope Black increases in importance as a predictor of depressive symptoms in areas characterized by BSMHH. Usually, being a racial minority is a protective factor, however, in areas with high levels on the Black Single Mother Headed Households factor, being Black is an important predictor of depressive symptom. Schootman et al. (2007) did find that Blacks who were low-income among other factors had critically relevant symptoms of depression at follow-up. This could indicate that the increase in Black as a predictor could be a result of income. Additionally, due to the fact that Blacks represent over 70% of the participants in the dataset it is more likely that an effect would be captured for Blacks as a race in this study as opposed to other studies.

Fifth, the slope of Smoke Now was found to be more important as a predictor of depressive symptoms for increased values of the factor Divorced. Divorced is an area characterized by a high percent of females who are divorced, a high percent of the total population that is divorced, and a high percent of households with just one person. The relationship between the increased importance of smoking as a predictor for depressive symptoms and the factor Divorced could be the result of the increased stress related to getting a divorce. A study by Mckee et al (2003), found that women were more likely than men to relapse to smoking if an adverse financial event occurred. Additionally, women who were current smokers were more likely to continue smoking if an adverse financial event occurred. Divorce is typically marked by not only being a stressful life event, but also, huge changes in financial status. Therefore, the increased importance of smoking as a predictor

of depressive symptoms in areas characterized by the place factor Divorced might be attributed to the stress related to the adverse financial changes.

Implications

The results from this analysis provide valuable insight for understanding more about the relationship between neighborhood and depression. Understanding the protective factor of living in an area characterized, as Black Single Mother Headed Households, needs to be further explored. Individuals in these areas, a high percent of Blacks, a high percent of Whites who are unemployed, and a high percent of impoverished Black single mothers, seem to be more resistant to adverse life events resulting in depressive symptoms. Alternatively, stress in these areas might be better captured in measures of substance abuse or somatization of symptoms rather than depressive symptom scores.

Whether the protection of this factor can be partly attributed to the increased importance of social support or the decreased importance of being unemployed, areas with high levels on this factor provide unique opportunities to initiate policy solutions to help understand more about individuals in these areas. Given the results of slopes as outcomes models with this factor, social support is an important predictor of depressive symptom scores. Therefore, in neighborhoods characterized by this factor it might be good to create community outreach projects. Allowing people to gain support systems from within their communities could help to further increase the protective factor of living in these neighborhoods. The community outreach projects would need to focus on collective

neighborhood initiatives. The work could range from planting a community garden or playground in their neighborhood. It would be important for the project to be motivated by those within the community and to foster neighborly interaction.

The factor Stable Suburban was a risk factor for increased CES-D scores. This means that areas characterized by a high percent of children under the age of 18, a high percent of households with 3 or more people, and a high percent of females, and a high percent of the population that is White and full time workers, were associated with higher depressive symptom scores. Studies on depression in groups who reside in suburban areas are scarce; this suggests that more research needs to be done to understand how depression rates change for individuals in these areas.

One study that looked at depression in rural areas, defined as a non-metropolitan area, found that rates of depression were higher than the rates in urban areas, 6.11% and 5.16% respectively (Probst et al, 2005). While rural might not significantly capture suburban populations, it could capture a tiny portion of the effect.

Additionally, levels of depressive symptoms in the area factor Stable Suburban may be attributable to levels of maternal depression in the area or isolation due to the physical distance between communities. Nonetheless, more research needs to be conducted on depression in suburban groups, so more effective solutions for reducing risk for depression and scores of depressive symptoms in these areas can be established.

Furthermore, given the increased importance of Black as a predictor of depressive symptoms in areas characterized by high levels of the Black Single Mother Headed Households factor it seems important to have more outreach focused specifically on reaching Blacks in these areas. Studies have shown that among low-income Blacks,

stigmatizing beliefs and attitudes towards treatment of depression result in somatization of symptoms and therefore a lower likelihood of a depression diagnosis (Rusch et al, 2008). Reducing the stigma surrounding depression might result in a higher diagnosis rate for Blacks.

As mentioned previously, many studies have shown that minorities typically have lower rates of depression (Matheson et al, 2006). Perhaps the increased number of Blacks in the study made it easier to capture the effect of Black as an important predictor of depressive symptoms in areas characterized by the BSMHH factor. Therefore, the importance of Black as a predictor in Black Single Mother Headed Household areas could have been a latent effect, which only became more visible given the great numbers of Black participants. These findings only lead to confirm the hypothesis that there are greater numbers of depressed Blacks than reported, and with increased awareness as well as access to treatment, stigmatization of this disorder could be reduced in these communities.

Lastly, the finding that unemployment decreases in importance as a predictor of depression for individuals in Black Single Mother Headed Household factor areas might be attributable to a pattern of greater unemployment in Blacks. In, 2009, the *Washington Post* reported that for young Black men the unemployment rate had hit the same rate as unemployment during the Great Depression (Haynes, para.2). It was documented at a record 34.5%. Yet, the unemployment rate for Blacks at the same time was near 15.7% compared to the National average of 10.2%. Currently, Black unemployment still outpaces unemployment for Whites. In March unemployment for Blacks moved from 15.3 to 15.5 percent and for Whites was 7.9% (Ross, 2011, para.6). These statistics imply that Blacks typically are very affected by unemployment when the economy takes a downturn.

Therefore, given this history of unemployment as well as possible expectation of dire job opportunities, being unemployed does not have as huge an impact on their mental health.

While unemployment decreases in importance as a predictor of depression in these areas, being employed could potentially decrease depressive symptoms. Roxburg (2009) found that a difference in depression between employed Black women and unemployed or part-time employed women was the greatest compared to White men and women as well as Black men. The study also found that Black women reap the greatest benefit (in terms of depression scores) from full time employment compared to the other groups. This suggests in areas described by the Black Single Mother Headed Households factor, job workshops as well as increasing the number of local jobs could be effective. Since the gains in lower depression are linked so well with employment, it seems that increasing access to jobs and job workshops might lead to lower scores of depressive symptoms.

Limitations

While the SCCS data provided invaluable insight into depressive symptoms in these groups there were some limitations to this study. First, some of the census tracts represented within the data had few people. Therefore, the effects of the small numbers within certain tracts would indicate very pronounced results. Yielding some extreme observations and small numbers of participants could make certain tracts look very different than they might actually be. Second, the majority of the SCCS data was acquired through interviews at recruitment centers, which limits the ability to generalize this data to other areas. Finally, the CES-D, while a reliable and valid measure does not indicate a

clinical diagnosis. Therefore, even though some people might have scored high in terms of report of their symptoms, they might not meet diagnostic criteria for an MDD diagnosis. In a study conducted by Thomas et al (2001), found that in a population of low-income women attending primary care clinics in Louisiana that the CES-D was a good measure to detect distress among the women. They found that the CES-D had 95% sensitivity and 70% specificity in this population. However, they did note that when compared to DSM-IV criteria for a MDD diagnosis that two-thirds of the women who received a score of 16 or higher did not meet criterion for depressive disorder.

Future Directions

More qualitative ethnographic research should be conducted to understand more about individuals who experience depressive symptoms in both Stable Suburban and Black Single Mother Headed Household geographic areas. Specifically, more research to explore why Black is an increased predictor of depression in areas characterized by the Black Single Mother Headed Household factor. Explanations related to income and education has been provided in the literature, but this area of research is not as developed as it could be to inform treatment in these populations. Another area that should be further explored is the impact of social support. Increased research could point to whether social support is only impactful if it is within your family or if it extends to neighborhood relationships. Additionally, further research would illuminate if the effect of social support exists in the absence of family and if it is still an important indicator of depressive symptoms in individuals within the Black Single Mother Headed Households factor.

In addition, understanding depression in individuals within the Stable Suburban factor needs to be more precisely examined. Particularly, to indicate if maternal depression is what drives depression to be more common in those areas, or if actual physical isolation within the suburbs due to distance between communities contribute to why Stable Suburban is a risk factor. Finally, learning more about the role of sleep in these areas would be useful to better understand why sleep, whether more or less, is not as important a predictor of depressive symptoms in this group. There are many questions left to answer about depressive symptoms in these groups and continued research would only help give more of a context for some of the phenomenon observed in this study.

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