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MATERNAL DEPRESSION IN THE UNITED STATES: A GEOGRAPHIC COMPARISON BETWEEN GEOGRAPHIC REGIONS AND RURALITY

by

Samantha J. Patterson

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Sociology

Approved:

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UTAH STATE UNIVERSITY
Logan, Utah

2018

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ABSTRACT

Maternal Depression in the United States: A Geographic Comparison between Geographic Regions and Rurality

by

Samantha Patterson, Master of Science

Utah State University, 2018

Major Professor: Dr. E. Helen Berry
Department: Sociology

The purpose of the study is to examine geographic regions and rural-urban residence relative to mother's major depressive disorder, major depressive episode, and dysthymia. The study uses the National Epidemiologic Survey on Alcohol and Related Conditions-III, a nationally representative, cross-sectional data set collected in the years 2012 and 2013, that includes a diagnostic codebook using the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* criteria. The National Epidemiologic Survey on Alcohol and Related Conditions-III categorizes rural-urban residence by aggregating the Rural-Urban Continuum Codes developed by the U.S. Department of Agriculture. Region and selected demographic variables including age, race/ethnicity, marital status, education, income, religion, and social support will be included.

The research questions are, first, do mothers living in rural counties experience higher levels of major depressive disorder, major depressive episode, or dysthymia compared to mothers living in urban areas, and, second, do mothers who live in the West experience higher rates of major depressive disorder, major depressive episode, or dysthymia compared to other regions in the United States? Research to date has suggested that the geographic isolation of rurality is associated with depression. Further, the western region of the U.S. is often referred to as a "suicide belt". The Centers for Disease Control and Prevention 2017 report shows that nine of the 20 states with the highest rates of suicide are in the intermountain west, a factor associated with depression. Because children with mothers who experience depression are more likely to experience poor psychological development and child abuse, identifying geographic and population variables that may be associated with depression is critical.

Descriptive statistics and logistic regression analysis are used to examine population characteristics associated with major depressive disorder, major depressive episode, and dysthymia. The research tests the hypothesis that living in a rural location will increase the chances of a mother experiencing maternal depression. I also hypothesize that the Western region of the U.S. will exhibit higher rates of maternal depression compared to other regions. The study is important because it helps inform decisions based on resource needs and increases awareness of potential mother and child outcomes.

(152 pages)

PUBLIC ABSTRACT

Maternal Depression in the United States: A Geographic Comparison between Geographic Regions and Rurality

Samantha Patterson

Health disparities exist between rural and urban areas but geographic comparisons of mental health are less studied and conclusive. Maternal depression has not been examined by region or rurality in the United States but might be influenced by geographic locations due to the variance of social support and healthcare available in some locations compared to others. The research focuses on (1) whether rurality increases a mother's risk of experiencing depression and (2) if region impacts a mother's risk of depression. I used the NESARC-III data that included three general depressive disorders: major depressive episode, major depressive disorder, and dysthymia. Regions are divided into the Northeast, Midwest, South, and the West. Rurality includes rural and urban locations. Certain demographic variables are included to control for variations by location. The research is a secondary analysis of the NESARC-III data so the research costs are limited. The statistical analysis uses step-wise logistic regression models.

The study finds that mothers do not experience depressive disorders differently between regions or rural/urban locations. A check analyzing all females shows that living in the West increases a woman's risk of experiencing both major depressive episodes and major depressive disorders. Variables explaining the most variation between having and not having a depressive disorder are the social support variables.

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I would also like to thank the members on my committee including Drs. E. (Eddy) Helen Berry, Jennifer Givens, and Gabby Ciciurkaite for their dedication to helping me succeed as a researcher. I would especially like to thank Dr. Eddy Berry, my main advisor, for the time and effort she has spent guiding me in my research.

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Finally, I would like to thank my family and friends for the constant encouragement and support in attaining my goals. Without their belief and support in my work and ability, I would not be where I am today.

Samantha Patterson

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CHAPTER I

Throughout the United States history, economic and social developments and advances have changed our mostly agricultural society into a suburban and urban culture. However, a substantial rural population still exists and due to their rurality they experience certain health deficits, both physically and mentally, throughout the lifetime (Eberhardt and Pamuk 2004). Some of the health disparities include premature mortality, unintentional injuries, chronic obstructive pulmonary disease, suicide, oral hygiene, obesity, chronic pain, diabetes, and overall poorer health status (Eberhardt and Pamuk 2004). Rurality contributes to various health deficits particularly due to the inaccessibility of healthcare facilities. At the same time, the characteristics of the rural population also matter. For instance, rural populations are typically poorer and older than urban populations. Other behaviors that increase health disparities exist too. Rural populations are more likely to smoke contributing to health deficits. Differences also exist between health insurance coverage where rural areas have higher percentages of persons uninsured (Eberhardt and Pamuk 2004). Mental health differences have not shown regular patterns of rural-urban disparities in the U.S. but the variations may be due to fewer diagnoses, differences in mental health stigmas, and dissimilarity in treatment (Eberhardt and Pamuk 2004).

To ascertain whether rurality and region are factors in unequal health outcomes, one must look at potentially confounding variables. Location variables are important because of biological differences seen with age and gender or they can be deeper societal

issues that cause disparities in access to resources and/or lead to differences in chronic stress experiences like race/ethnicity, income, and education. Culture and environmental factors are equally important to consider when examining health differences by rural/urban residence and region, particularly mental health differences. Demographic, cultural, and environmental characteristics can vary depending on the community, the level of rurality or urbanicity, and the region of the U.S. To address demographic, cultural, and environmental differences, the research study focuses on the U.S. as a whole, identifying and controlling for differences.

The United States Rural Population and Rural Definitions

According to the U.S. Census Bureau American Community Survey Data (2008-2012d), the rural population in 2012 was 59,475,462, with the total U.S. population being 309,138,711, or in other words approximately 19.24% of the U.S. population live in rural areas. The U.S. Census Bureau defines rural as all populations, housing units, or territories not in an urban area (Ratcliffe et al. 2016; United States Census Bureau 2010). Urban areas are determined based on land-use classifications and the residential population density (Ratcliffe et al. 2016). Urban areas are classified into either urbanized areas, with a population of 50,000 or more, or urban clusters, with a population of 2,500

to less than 50,000 (Ratcliffe et al. 2016). The Census uses the rural definition for categorizing census blocks and tracts (United States Census Bureau 2010).

The Office of Management and Budget (OMB) uses a separate definition categorizing counties as either metropolitan or nonmetropolitan. Metropolitan is defined as an area that has one or more core counties and nonmetro areas are counties outside of the metropolitan areas. The nonmetro areas are further divided into micropolitan and noncore counties (Coburn et al. 2007). Because the definitions are often used interchangeably it is important to note that rural/urban and nonmetro/metro are different and can lead to major problems in policy implications if not addressed (Coburn et al. 2007; Johnson-Webb, Baer, and Gesler 1997). For this study the geography references counties but I will use rural and nonmetro, as well as urban and metro interchangeably. Rural/urban and nonmetro/metro will be interchanged due to the classifications used by the National Epidemiologic Survey on Alcohol and Related Conditions-III, or the NESARC-III data set, which are rural and urban. Using rural and urban interchangeably with metro and nonmetro is common and helps keep the paper readable.

Due to the health disparities experienced among rural populations, it is important to study rural-urban differences when studying health (Eberhardt and Pamuk 2004). Maternal depression is one such health topic that has not been examined in terms of rural-urban and regional differences. In order to examine whether or not the prevalence of maternal depression varies geographically, I will be conducting a secondary data analysis utilizing the NESARC-III data. NESARC-III conducted the data for the main study between April 2012 and June 2013 (Grant et al. 2014). For the purpose of this study,

maternal depression will be defined as depression experienced by a woman who has any child (biological, adopted, foster, or other) less than 18 years of age.

The format of the rest of the thesis is as follows. Chapter 2 contains the literature review, starting with literature pertaining to rural physical and mental health outcomes, followed by literature on depressive disorders, symptomology, common treatments, maternal depression and how it affects families, along with common demographic variables that are associated with depressive disorders and maternal depression. Chapter 3 includes the methods of both the NESARC-III data set and the secondary analysis methods used for this study. Chapter 4 is a compilation of the results from the descriptive and logistic regression analysis. Chapter 5 contains the discussion and conclusion of the findings.

CHAPTER II

The first part of the chapter will discuss the rural physical and mental health disparities literature. The next section will provide a basic overview of what depression is, what depressive disorders include, and what common depressive symptoms are, as experienced by persons with depression. A review of why depression matters will follow covering material on health outcomes and costs, quality of life, and life expectancy changes. The final section will examine some of the social and economic burdens of depression and concludes with a summary of the basic demographics of depression.

How Does Geographic Location Affect Health?

Urban and rural location and mental health. The impact of rural-urban dwelling and mental health literature, specifically depression, shows varying results depending on the area of study, the definitions of rural/urban, and the variables used as controls (Huang et al. 2007; Patten et al. 2006; Romans, Cohen, and Forte 2011; Vigod et al. 2013). Vigod et al. (2013) have studied postpartum depression for Canadian women using rural, semi-rural, semi-urban, and urban classifications defined using the population size and density of an area, the population size of an area's urban core, and the proportion of individuals in the rural areas that commute to urban centers for work. They measured the risk of

postpartum depression using the 10-item Edinburgh Postnatal Depression Scale (EPDS) and found that women living in urban locations are at a higher risk of postpartum depression compared to all other groups. Once the characteristic differences between urban and rural are considered, specifically interpersonal violence, social support, immigration status, and perceived health, the differences found between the groups mostly disappeared (Vigod et al. 2013). Another study focused on Canadian experiences of major depression, found that rural places of residence experience a higher annual prevalence of depression compared to urban places of residence but the difference is fairly small (Patten et al. 2006). Other research has studied the physical and mental health of Polish women and has found that living in rural areas approaches statistical significance at the .05-level for low mental health. Polish women who live in rural areas do experience poorer physical health at statistically significant level (Zagozdzon, Kolarzyk, and Marcinkowski 2011).

Comparing the U.S. and foreign-born populations has shown that those living in rural areas have a higher rate of depressive symptomology compared to those living in urban or suburban areas (Huang et al. 2007). Probst et al. (2006) had similarly findings while studying those who live in rural areas. Persons who live in rural areas have a higher prevalence of depression but they suggest that the result might not be explained by rural residence itself. Instead, they suggest that the differences of depression between rural and urban locations can be explained by the characteristics of rural populations like poverty and health status (Probst et al. 2006). Another study of the Canadian population has suggested that the experiences of major depressive episodes are complex and vary

depending on where people live, their age, marital status, race, working status, and immigration status (Wang 2004).

In order to understand whether the U.S.'s rural and urban populations experience maternal depression differently, it is important to use a nationally representative sample and look at the variables that impact the rate of depression in populations.

General characteristics of urban and rural populations in the United States. Characteristics of the urban and rural populations continually change but some major characteristics hold constant like rural locations being older and less ethnically and racially diverse compared to urban locations (Meit et al. 2014). However, Brown (2014) has noted that three trends are occurring among the rural populations in the U.S. The distribution of population growth in rural and urban areas are changing, rural populations are aging, and rural areas are becoming more ethnically and racially diverse (Brown 2014).

Rural counties in the South and West regions of the United States have higher levels of poverty (Meit et al. 2014). Brown (2014) states that due to industrial restructuring most rural jobs are low-skill and low-wage positions that lead to insecure work for rural families. A lack of job opportunities beyond low-skill and low-wage positions has led to the working-age population moving to urban areas (Brown 2014). Research is clear that poverty and depression are highly correlated so having a higher rural population experiencing poverty may lead to higher rates of depression among rural populations.

One of the prominent things that have kept rural areas growing is immigration and the fertility rates of immigrants (Brown 2014). Brown (2014) has argued that the ethnic and racial populations in the rural U.S. are more diverse than previously acknowledged but notes that certain racial/ethnic groups tend to cluster in specific areas. African American's who live in rural locations are typically found in the South, Hispanic's were primarily concentrated in the Southwest until recently, and Native American's are usually located in the Midwest and Western regions of the U.S. In recent years, African American rural populations have decreased but Hispanic rural populations have increased, thereby diversifying rural areas (Brown 2014). Between the years 2000 and 2006, the Hispanic growth accounted for 44% of the rural population growth (Brown 2014).

Due to a lack of work opportunities, many persons of working age have left rural locations for urban areas; however, rural areas are attractive retirement locations for the older populations (Brown 2014). Between migrating-in older populations and migrating-out young adults, there is a rise in the age of rural populations (Brown 2014). Rural areas have higher rates of disability among the population and, as expected, are related to an older population.

Social support is important in coping and preventing mental illness, especially within poor, geographically isolated locations that may limit social interactions (Letvak 2002). Religious attendance can increase a persons' perceived social support, again varying based on location, religion, and church activity. Rural locations are considered

highly religious however a study conducted by Chalfant and Heller (1991) found that geographic region explained more of religious variations than rural/urban does.

Health differences in rural and urban locations. Studying health differences among rural and urban locations is not new and a vast amount of literature exists on the subject. I will summarize the health disparity findings using *The 2014 Update of the Rural-Urban Chartbook* (Meit et al. 2014). I believe *The 2014 Update of the Rural-Urban Chartbook* provides an adequate summary of the health differences experienced by different levels of rurality. *The 2014 Update of the Rural-Urban Chartbook* defines rural counties as nonmetropolitan counties including micropolitan counties and non-core counties (Meit et al. 2014).

Behavioral differences impact health and increase certain health risks. The behavioral differences observed between rural and urban locations are smoking, alcohol consumption, and physical inactivity. Adolescents and adults who live in rural counties are more likely to smoke than people in other counties (Meit et al. 2014). Persons who live in Western nonmetro areas have the highest level of alcohol consumption. Finally, physical inactivity percentages were the highest in nonmetro counties and obesity rates increased as rurality increased (Meit et al. 2014)

Mortality differences exist between rural and urban locations. For the ages 1-24 years old, death rates are the highest in the most rural counties in the West. For the ages 25-64 years old, death rates are higher in nonmetro counties in the South and West (Meit et al. 2014).

Mental health differences in rural and urban locations. The 2014 Update of the Rural-Urban Chartbook (Meit et al. 2014) measured differences in mental health and found that the proportion of adults who reported any mental illness in the past year was highest for the micropolitan West region counties. As rurality increased the proportion of adults who reported a serious mental illness increased. Adult major depressive episode was highest among people who lived in Western micropolitan counties while adolescent major depressive episode was highest among females in Western rural counties (Meit et al. 2014). A higher percentage of people experienced serious psychological distress in rural counties in the South. The findings have shown that a majority of mental health illnesses are found in rural locations throughout the U.S. (Meit et al. 2014).

What causes health and mental health differences between urban and rural locations? Overall, researchers have found that people living in rural locations are less likely to receive health care services (Berry 2014; Rost et al. 1998; Zagozdzon, Kolarzyk, and Marcinkowski 2011). According to Rost et al. (1998), depressed persons in rural locations have approximately three times the odds of being admitted to the hospital for both physical and mental problems with rural subjects committing suicide at a higher rate compared to urban subjects. Rural counties in the West have about twice as many suicides compared to metro counties (Meit et al. 2014). The findings suggest that more resources for combating mental disorders and suicide prevention should be made available to rural locations. Rural culture provides another explanation for observed health differences. Many of the differences between health behaviors are largely

explained by education and income, which are the same characteristics that make intervention difficult (Hartley 2004).

Social support might be higher in rural counties than urban counties. Romans et al. (1992) studied a group of women in New Zealand and found that rural women have higher social integration scores and better social relationships compared to urban women. A sense of community is stronger in rural areas than urban areas. In addition, many rural families have extended family close by leading to increases in received and perceived social support. Persons in rural locations are likely to have more children than urban populations. Having more children can either lead to higher stress and concerns with mental health or it can increase the support system of the mother.

Depressive Disorders Symptomology and Common Treatment Options

Depressive disorders overview. Depression is a word that is typically associated with down or sad moods. The *Diagnostic Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) separates depressive disorders into eight different categories and provides diagnostic criteria for each of the disorders to use for clinical analysis (American Psychiatric Association 2013). The overall symptoms common between the disorders are “sad, empty, or irritable moods” and “somatic and cognitive changes” that cause disruptions to the individual’s life (American Psychiatric Association 2013). In

order to understand the importance of depression in society, it is necessary to understand the basic depressive disorders.

The DSM-5 includes the following depressive disorders: major depressive disorder, persistent depressive disorder or dysthymia, premenstrual dysphoric disorder, disruptive mood dysregulation disorder, substance/medication-induced depressive disorder, depressive disorder due to another medical condition, other specified depressive disorder, and unspecified depressive disorder (American Psychiatric Association 2013). The difference between the disorders includes timing, the cause, and the duration. Each of the disorders must cause impairment in functioning or lead to disruptions in the patient's life in order to be considered a diagnosable disorder (American Psychiatric Association 2013). The depressive disorders included in both the DSM-5 and the NESARC-III data will be major depressive disorder and persistent depressive disorder, previously referred to as dysthymia. Dysthymia is the term that will be used for the majority of this study to remain congruent to the classifications provided by the NESARC-III data. Major depressive episode is the third depressive disorder that will be focused on in the study. Major depressive episode is not considered a separate disorder in the DSM-5; rather it is mentioned under the major depressive disorder criteria and will be included with major depressive disorder for this reason.

Major depressive disorder and major depressive episode. Major depressive disorder (MDD)[1] diagnostic criteria include a depressed mood and/or a loss of interest or pleasure, persisting daily and spanning a two-week period or more. The depressed mood and/or loss of pleasure cannot be attributed to the loss of a loved one, a medical condition, or the result of using psychologically altering substances (American Psychiatric Association 2013). In addition to these requirements, the patient must experience four or more of the following symptoms during the same time period as the other symptoms: significant and unintentional weight loss or gain, an increase or decrease in appetite, insomnia or hypersomnia, fatigue or a significant decrease in energy, psychomotor agitation or retardation, feelings of worthlessness or guilt, inability to concentrate or make decisions, and/or suicidal ideation, a suicide attempt, or repetitive thoughts of death (American Psychiatric Association 2013). Kessler et al. (2003) have found that approximately seven percent of the U.S. population experiences MDD during a 12-month period and approximately 16% experience MDD during their lifespan.

MDE is a single event of depression and/or loss of pleasure that spans a two-week period causing impairment. MDE includes at least five of the following symptoms: depressed mood almost every day for the majority of the day, decreased interest or

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[1] These are general diagnosing criteria for depressive disorders but are not identical to the disorders included in the NESARC-III data. As a result, the descriptions will sound repetitive but they are somewhat different. The definitions will be revisited in Chapter 3 Methods under Dependent variables: depressive disorders.

pleasure of activities nearly every day, weight loss not due to dieting, inability to sleep or oversleeping every day, psychomotor agitation, loss of energy, feelings of worthlessness, inability to concentrate or make decisions, and suicidal ideation or thoughts of death (American Psychiatric Association 2013). MDE and MDD have almost exact diagnostic criteria but MDD is used if the MDE is recurrent or severe (American Psychiatric Association 2013).

Persistent depressive disorder or dysthymia. Criteria for diagnosing persistent depressive disorder (PDD), or dysthymia, includes, experiencing a depressed mood for most of the day for the majority of days over at least two years, and two or more of the following symptoms: low self-esteem, fatigue or loss of energy, hopelessness, hypersomnia or insomnia, difficulty making decisions or difficulty concentrating, and/or poor appetite or overeating (American Psychiatric Association 2013). Again, the symptoms cannot be explained by a medical condition, substance use, or be better described by a different psychological disorder. Blanco et al. (2010) studied the prevalence of chronic major depressive disorder and dysthymic disorder, which were combined to form PDD in the new DSM-5 criteria. According to Blanco et al. (2010), the lifetime prevalence for dysthymic disorder is 0.9% and the lifetime prevalence for chronic major depressive disorder is 3.1% for the U.S. population. They also found that the 12-month prevalence for dysthymic disorder is 0.5% and the 12-month prevalence for chronic major depressive disorder is approximately 1.5% (Blanco et al. 2010).

Treatment options and summary. Treatment options vary based on the patient's needs and preferences but psychotherapy, stress management, brain stimulation therapy, exercise, vitamin and supplement usage, and antidepressant medications are the main options for persons experiencing depressive disorders (Mayo Clinic 2018; National Institute of Mental Health N.d.). Each option is geared toward eliminating or decreasing the symptoms of depression.

To summarize, the DSM-5 includes eight main depressive disorders and the symptomology for each disorder (American Psychiatric Association 2013). Despite the differences in timing, duration, and onset, all of the disorders include "sad, empty, and/or irritable moods" that cause problems with cognitive and somatic processes and disrupt the functioning of the individual (American Psychiatric Association 2013; Mayo Clinic 2018). The disorders are often reoccurring and can cause significant distress to the patient through negative health outcomes, poor quality of life, and a shortened life expectancy.

Depression Costs and Outcomes

*Depression influences health, quality of life, and life expectanc*y. The consequences and outcomes of depression can be difficult to measure partially because of the stigma that surrounds mental health and the ethical concerns involved in studying vulnerable populations. Even with the difficulties surrounding the study of depression, many have studied health outcomes, quality of life, and life expectancy changes due to

the presence of a depressive disorder (Cassano and Fava 2002; Chang et al. 2011; Faith, Matz, and Jorge 2002; Katon 2003; Kiecolt-Glaser and Glaser 2002; Moussavi et al. 2007; Reynolds, Haley, and Kozlenko 2008; Ruo et al. 2003). Depression has been linked to negative health outcomes because it can influence poor health behaviors and can contribute to systemic issues (Cassano and Fava 2002; Kiecolt-Glaser and Glaser 2002; Ruo et al. 2003; Sotelo and Nemeroff 2017). Poor health behaviors included are symptoms of the disease like insomnia or hypersomnia, overeating or failing to eat due to a poor appetite, rapid weight loss or gain, fatigue, loss of interest, and suicidal ideation or suicide attempts (American Psychiatric Association 2013; Kiecolt-Glaser and Glaser 2002). Because of the symptoms of depressive disorders, it is common for persons experiencing depression to decrease their amount of exercise, ignore nutritional needs, and it increases their chances of using and abusing alcohol and drugs (Cassano and Fava 2002). Compared to other chronic medical disorders, depressive disorders cause higher overall impairment (Lépine and Briley 2011).

The symptoms of depressive disorders, however, do not account for all the differences in health outcomes experienced by those who face depression and those who do not. Depression is often comorbid, meaning present along with other diseases or disorders (Cassano and Fava 2002; Faith et al. 2002; Katon 2003; Moussavi et al. 2007; Ruo et al. 2003; Sotelo and Nemeroff 2017). Researchers find that associations exist between depression and strokes, cardiovascular disease, obesity, hypertension, heart attacks, diabetes, cancer, renal disease, and arthritis (Cassano and Fava 2002; Faith et al. 2002; Katon 2003; Moussavi et al. 2007; Ruo et al. 2003; Sotelo and Nemeroff 2017).

Further, Moussavi et al. (2007) have observed that people with chronic diseases experience a significantly higher risk of depression. The same study has found that those who are diagnosed with chronic diseases and depression, especially when the chronic disease is diabetes, have poorer health than those who have two different chronic diseases. Researchers Kiecolt-Glaser and Glaser (2002) found that depression could cause immune issues, specifically with the production of proinflammatory cytokines that influence the function of the immune and endocrine responses. The response or lack of responses by the immune and endocrine systems helps explain why so many people with depression also experience certain chronic illnesses and poorer health outcomes (Kiecolt-Glaser and Glaser 2002).

Studies have provided evidence that depression lowers life expectancy (Chang et al. 2011; Lee et al. 2012; Reynolds et al. 2008). Depressive symptoms can lead to and encourage a sedentary lifestyle. According to Lee et al. (2012), physical inactivity is responsible for approximately nine percent of premature deaths worldwide and if eliminated, would increase the life expectancy by 0.68 years. In older populations, depressive symptoms significantly reduced both active life expectancy and total life expectancy, even after controlling for comorbid diseases (Reynolds et al. 2008). Reynolds et al. (2008) has found that active life expectancy was reduced between 6.5 years to 2.2 years depending on the age and gender of the individual. Research conducted by Chang et al. (2011) similarly showed that people in the United Kingdom during the period of 2007 to 2009 exhibit differences in life expectancy when comparing the general population with the population diagnosed with serious mental illness. Examining

depressive episodes and recurrent depressive disorders, they found that the life expectancy for males experiencing depressive disorders live approximately 10.6 years less than the general male population. The female life expectancy for populations with a depressive disorder is approximately 7.2 years less than the entire female population (Chang et al. 2011).

Depression not only decreases life expectancy, it affects an individual's quality of life as well (Cassano and Fava 2002; Ferrari et al. 2013; Simon 2003). Ferrari et al. (2013) utilized the Global Burden of Disease, a study conducted by the World Health Organization (WHO) that measures the disability-adjusted life years (DALY) and the years lived with disability (YLD). The study goal is to measure the burden of depression, focusing on the burden caused by major depressive disorder (MDD) and dysthymia. The researchers used the population survey data to calculate the YLD and the DALY, the latter calculated by summing the YLD's and the years lost to premature death due to the specific disorder measured (Ferrari et al. 2013). For the year 2010, MDD ranked second globally and dysthymia ranked 19th globally for YLD and MDD ranked 11th globally for DALY with dysthymia ranked at 51st globally (Ferrari et al. 2013). A separate study found that during a six-month time span, it is estimated that a depressed person will lose 30 days of normal functioning and 20 days of paid employment (Cassano and Fava 2002).

The economic and social burdens of depression. Depression is a social and economic burden to societies (Cassano and Fava 2002; Greenberg et al. 2003; Katon

2003; Lépine and Briley 2011; Simon 2003). Persons experiencing depression often experience debilitating symptoms and deal with depression as a chronic condition. Depression is one of the most common chronic conditions found in general medical practices (Cassano and Fava 2002). Depression can be diagnosed in persons as young as three years old but is not typically diagnosed until adulthood (Luby et al. 2009). Because depressive disorders are often chronic and can occur at such a young age, it is especially burdensome on both individuals and societies.

Patients who experience depressive symptoms are more likely to report lower social support compared to patients without depressive symptoms, however, direction of causation is difficult to establish (Ruo et al. 2003). The social dysfunction caused by depressive symptoms can lead to issues in the work environment and in the home. For example, Lépine and Briley (2011) state that depression can disrupt relationships with spouses, leading to divorce or separation. Furthermore, struggling with social functioning can lead to more sick days, less employment, and longer spans of unemployment (Lépine and Briley 2011; Simon 2003). Lépine and Briley (2011) reported that over a five-year period, approximately 21% of non-depressed study participants were newly unemployed compared to 33% of depressed participants.

Depressive disorders are an economic burden to individuals and societies (Greenberg et al. 2003; Lépine and Briley 2011; Simon 2003). Economic burdens may come in many forms and be measured many different ways but the main areas of research include health care costs, work productivity lost, and the costs of suicide. Health care costs are burdensome to both individual families and the society. Depressive disorders

may lead to unemployment, longer spans of unemployment, and more time away from jobs. Unemployment, spans of unemployment, and time away from jobs increase an individual's eligibility of social support programs such as Medicaid ultimately increasing the amount of citizens dependent on others for support. Economic burdens of depression are also due to lost productivity from depressed employees. Being unable to go to work, find a job, and/or work efficiently due to depressive symptoms may lead to societal and individual economic losses (Lépine and Briley 2011; Simon 2003). Another huge financial burden associated with depression is suicide. Lépine and Briley (2011) report that when comparing depressed populations with the general public, depressed persons are between 21 and 27 times more likely to commit suicide. Overall, Greenberg et al. (2003) states that the estimated economic burden of depression in the U.S. costs around 83 billion dollars in 2000 compared to the approximate 77.4 billion dollars it cost in 1990, adjusted for inflation.

In conclusion, depression has been linked to poorer health and health outcomes, lower life expectancy, lower quality of life, and higher economic and social burdens for societies and individuals. The additional burdens associated with depression for individuals and societies have a ripple effect that influences families and communities.

Maternal Depression and the Impact it has on Families

Research addressing maternal depression and the impact it has on family relations includes marriages, experiences of depression for partners, challenges regarding child outcomes, practices associated with parenting, and impacts on the mother's experience and health. Maternal depression experiences vary based on the research but overall previous research has established that maternal depression can and does negatively impact family relations.

Living with someone experiencing depression. Maternal depression has been linked to increases in stress and conflict with spousal relations (Coyne et al. 1987; Downey and Coyne 1990; Lépine and Briley 2011). For example, Coyne et al. (1987) found that over 40% of respondents living with a person experiencing a depressive episode also met the criteria for psychological intervention. Benazon and Coyne (2000) observed that spouses of patients with depression experience depressed moods significantly higher than the general population. The results may be due to selection as, according to Downey and Coyne (1990), people who suffer from depression are more likely to marry others who experience psychiatric disorders and they tend to have higher rates of marital conflict and divorce.

The stress and conflict experienced while living with depressed persons may in turn lead to more severe experiences of depression for both individuals (Downey and

Coyne, 1990). Experiencing severe forms of depression for both partners impacts not only the marriage and relationship between partners, but it combines to disadvantage children in terms of parenting experiences and genetic influence (Burke 2003; Gelfand and Teti 1990; Lovejoy et al. 2000). The role of support systems possibly acts as a shield against negative outcomes for children. Fathers who do not experience depression and provide support to the mother who is experiencing depression can guard children against negative outcomes associated with poor maternal parenting practices (Burke 2003; Coyne et al. 1987; Field 1998; Gelfand and Teti 1990; Goodman et al. 2011). Some ways that fathers can help mitigate problems known to effect childhood outcomes include (1) being present in raising the child or children, (2) supporting the mother, (3) preventing marital conflict, (4) remaining educated on the disorder, and (5) understanding the mother's depressive symptoms and helping others, like the children, understand the disorder (Gelfand and Teti 1990; Goodman et al. 2011).

Child outcomes are linked to maternal depression. Adverse child outcomes are linked to maternal depression. Researchers have found that infants and young children with depressed mothers have deficiencies in growth, health, interactive development, cognitive development, and other psychosocial elements of the developmental process, as well as increased risks of mood disorders and externalizing and internalizing problems (Burke 2003; Cogill et al. 1986; Cohn and Tronick 1983; Gelfand and Teti 1990; Goodman et al. 2011; Lovejoy et al. 2000; Martins and Gaffan 2000; Murray et al. 1996; Rahman et al. 2004; Raposa et al. 2014). Martins and Gaffan (2000) analyzed studies of

infants with depressed mothers using the standard Ainsworth Strange Situation procedure that categorizes infant behavior into four categories; type A as insecure-avoidant behavior, type B as secure behavior, type C as insecure-ambivalent/resistant behavior, and type D being disorganized/disoriented behavior. The researchers found that six out of the seven studies produced similar patterns of infants showing avoidant (type A) or disorganized (type D) attachment, with disorganized attachment being more constant than avoidant attachment across the studies (Martins and Gaffan 2000).

Other research conducted by Field (1998) has shown that newborns can be affected by maternal depression as soon as the neonatal period. Study results conclude that infants whose mothers experienced depression and elevated levels of stress hormones during pregnancy had more sleep that was difficult to code, had activation in the right frontal lobe typical for chronic depression, had lower vagal tones where higher tones are associated with better learning tasks and attentive behavior, and had elevated levels of stress hormones (Field 1998). Besides the physical indicators discussed, Field (1998) found that infants of depressed mothers showed less interest and exhibited more angry and sad faces. Additionally, infants scored lower on mental and motor scores, had lower birth weight, and were less exploratory in play and overall behavior (Field 1998).

Other studies show negative physical consequences for infants of mothers who experience depression. Maternal depression research in a rural Pakistani community showed that infants whose mothers experienced prenatal depression had an increased risk of diarrhea issues, poor growth, and lower birth weights compared to infants with mothers who did not experience prenatal depression (Rahman et al. 2004). The growth of

the child is considered poor even after controlling for initial low birth weights showing the impact depression has on children's health outcomes (Rahman et al. 2004).

Parenting practices. Negative outcomes for infants and young children are partially explained by how depressed mothers interact with their infants or in other words, how the mother is parenting. When mothers are depressed they are more likely to be short-tempered, cold, slow, dazed, and inattentive. Downey and Coyne (1990) explain that mothers who are clinically depressed respond less consistently and slower when interacting with their children. Gelfand and Teti (1990) observed that depressed mothers displayed one of the following patterns: mothers switched from being disengaged to intrusive with their infants or mothers displayed low responsiveness, low activity, and flat affect, simply meaning they did not display much emotional expression (Gelfand and Teti 1990). Gelfand and Teti (1990) further found that mothers who suffered from depression often failed to predict and prevent physical hazards, like an infant rolling off the mother's lap actually witnessed during the course of an interview. Because infants rely solely on caretakers for stimulation, care, and protection, negative interactions may lead to disconnect from the caretaker and may influence the child's interactions with others. Surprisingly, Field (1998) has noted that depressed mothers do not interact with negative affect towards infants of non-depressed mothers, but the behavior of the depressed infants did not change when interacting with other non-depressed mothers.

Lovejoy et al. (2000) research maternal depression and the experiences of parenting by conceptualizing then measuring negative, disengaged, and positive

behaviors, defined as experiences in mood, specifically adverse moods for negative affect, neutral or distant moods for disengaged affect, and pleasurable moods as positive affect. The researchers found that mothers who experience depression have a higher chance of experiencing negative affect during interactions with their children, which was moderated by whether the depression was considered current or lifetime (Lovejoy et al. 2000). Lovejoy et al. (2000) found that mothers who were currently experiencing depressive symptoms had higher levels of negative affective behaviors compared to mothers who were classified as experiencing lifetime depression. Subsequently, Halligan et al. (2007) finds that children with mothers who experience both postnatal depression and late maternal depression, in this case defined as depression occurring after the child is five years old, have increased rates of depression.

Children with mothers experiencing depression may experience lingering effects but it appears that children exposed to maternal depression at younger ages are most affected (Goodman et al. 2011; Lovejoy et al. 2000). Goodman et al. (2011) report that there are sensitive periods of time where young children are more dependent on mothers and are more susceptible to developing psychiatric disorders if their mother experiences depressive disorders. Alternative explanations might be that the children have fewer years to develop in a healthy environment. As children become older they rely less on their parents and they become mentally mature enough to understand their mother's psychiatric disorders and symptoms (Goodman et al. 2011). As children grow older they have other support systems outside of the family, like friends and teachers, and the older they get the better they can communicate with others. Together relying less on the

parents, having social support outside of the home, and understanding the psychiatric disorders may help mitigate the impact maternal depression has on the child.

Even though studies have shown that older children are not as susceptible to negative outcomes compared to younger children and infants, maternal depression can still negatively impact children of older ages. Studies have shown that school aged children with depressed parents have worse physical health and experience deficits in functional ability, social skills, and academic competency (Downey and Coyne 1990; Gelfand and Teti 1990). Children with depressed parents are less adjusted and experience more social and academic issues compared to children without depressed parents (Downey and Coyne 1990). They also score higher in depressive markers and clinical depression compared to children without depressed mothers (Downey and Coyne 1990; Gelfand and Teti 1990). Halligan et al. (2007) observed that adolescents whose mothers experienced postnatal depression are more than three times likely to experience adolescent depression compared to those whose mothers did not experience postnatal depression.

Effects of maternal experience and health. While most maternal depression literature focuses on how maternal depression can cause negative outcomes for children and spouses it is also important to discuss the impact it has on the mother's experiences and health. Suffering from undiagnosed or untreated mood disorders can severely decrease an individual's ability to function. Schonfeld et al. (1997) compares living with undiagnosed major depressive disorder or anxiety disorders to living with physical health

disorders like diabetes or arthritis. Not only is it harmful to live with the disorders but many of the depressive or mood disorders reoccur. Halligan et al. (2007) conducted a longitudinal study of mothers and children and find that mothers who experience postnatal depression are likely to have recurrent depressive episodes. Approximately 84% of mothers who had postnatal depression experienced a separate episode by the time their child was thirteen years old (Halligan et al. 2007). Additionally, Halligan et al.'s (2007) study has supported the evidence that depression is often a chronic illness that can affect a person throughout their life.

Not only is living with depression difficult for mothers and other family members, the symptoms of the disorder may lead to bad experiences for the mother along with an additional burden of feeling inadequate in fulfilling the role of a mother. Mothers experiencing depression are more likely to have negative parenting experiences. Lovejoy et al. (2000) state that mothers with depression feel that they have more difficulty as a parent compared to other mothers.

Potential research limitations, biases, and treatments. Studying maternal depression and the impact it has on families can be difficult and biased. Throughout the years, the DSM has modified the clinical criteria for mood or affective disorder diagnoses. Along with changes made to actual clinical diagnoses, some researchers depend on self-report or depressive indexes to inform their research. Along with mothers fitting the criteria of depression, any self-report measures of children's outcomes or behaviors completed by the mother may be biased due to the nature of the disorder

(Gelfand and Teti 1990). Another issue when studying the impact of maternal depression is the fact that each family experience is heterogeneous not homogeneous. Maternal depression is defined in many different ways so it could mean something as broad as any mother who experiences depression to something much more specific, like experiencing depression up to one year after giving birth.

Differential experiences in terms of spousal support, disposition of the child, social, and economic resources are all shown to influence and sometimes cancel out negative child outcomes (Coyne et al. 1987; Gelfand and Teti 1990). Other treatments and interventions have shown promising results (Field 1998; Lyons-Ruth et al. 1990). Field (1998) states that massage therapy for both infants and mothers helps decrease levels of stress and may lead to better sleep patterns for infants. Researchers Lyons-Ruth et al. (1990) found that infants being raised by poor mothers with maternal depression did better during a home visiting service program compared to infants raised in similar conditions without home visits in both development and attachment measures. Hiring a nanny or a childcare facility may reverse negative affect by increasing positive interactions with adults and may relieve some of the stress from the mother. Additional help may include interactive coaching sessions, implementing medical direction, and participating in other professional programs geared towards improving maternal or paternal interaction with children, especially if the maternal depression experiences occur when young children or infants are present (Field 1998; Weissman et al. 2006).

What Demographic and Sociological Variables Influence Depression and Maternal Depression?

The following section will review research about demographic and sociological variables that influence depressive and/or maternal depressive outcomes. Each section included below, with the exception of gender, encompasses the variables I hypothesize will have some interactive effect with maternal depression. The variables include social support, marital status, religious attendance, age, race/ethnicity, economic resources, and body mass index (BMI). While most of the variables are expected to have some interactive relationship, it is important to look at them separately in order to provide a thorough review of the literature.

Who experiences depression? Depression can affect any age, gender, or race but certain populations experience a higher risk of developing depressive disorders compared to others. Riolo et al. (2005) used a nationally representative study to examine the prevalence of MDD and dysthymic disorder among race/ethnicity, gender, age, income, marital status, and education. The study found that people who identify as white are more likely to experience MDD while African Americans and Mexican Americans have a higher prevalence of dysthymic disorder. Females experience higher rates of MDD but males experience higher rates of dysthymic disorder. Lack of education, being separated, divorced or widowed, and having an income below the poverty level all contribute to higher rates for both MDD and dysthymic disorder (Riolo et al. 2005).

Gender. The literature provides an ongoing debate whether woman experience higher levels of depression or if selection and symptom variations account for the differences observed. Hammen (1982) has argued that the experiences of depression are similar between men and women but depressive symptoms in women may be closer to typical symptomology than depressive symptoms experienced by men. Another consideration is that depression evokes negative responses from others, specifically for men. Coping mechanisms lead to differences in gender experiences and diagnosis for depression. Women tend to verbalize their problems and receive social support or visit the doctor more frequently while men are likely to turn to drug and alcohol use, which has been hypothesized as a method for coping with depression (Hammen 1982; Weissman et al. 1993).

Other studies have argued that women actually do experience higher rates of depression than men (Weissman et al. 1993). Weissman et al. (1993) have studied the prevalence of lifetime MDD, bipolar disorder, and dysthymia in the U.S., Edmonton, Munich, and New Zealand and concluded that the prevalence for lifetime MDD and dysthymia is higher in females than in males while bipolar disorder has similar prevalence between the sexes. Similarly, Halligan et al. (2007) found that girls experience depressive disorders at higher rates than boys when studying the prevalence of depressive disorders in children. However, as previously mentioned, Riolo et al. (2005) found that men are more likely than women to experience dysthymia. Measuring the role of gender in depressive disorders is complicated and can be sensitive to the

conceptualization of depressive disorders and the methods used to collect the information, as illustrated by the studies reviewed.

Age. Age may impact experiences of depression and depressive symptoms differently for mothers compared to the general population. According to Mirowsky and Ross (1992), age is associated with depression, with the higher rates of depression in the older and younger categories, the highest rates among the oldest ages, and the lowest rate of depression being around 45 years of age. In contrast, Deal and Holt (1988) observed that young mothers are more susceptible to depression compared to older mothers. The experiences of higher depression for young mothers are explained by social support, resources, and the higher risk of being a single mother (Deal and Holt 1988).

Race/ethnicity. Race and ethnicity have the most varied findings out of all the variables reviewed. Some studies find that African Americans, Hispanics, and/or U.S. born Americans have the highest scores of depressive symptomology and other studies state that white Americans and American Indians experience the highest levels of depression (Ertel, Rich-Edwards, and Koenen 2011; Riolo et al. 2005; Surkan et al. 2006). Riolo et al. (2005) find that African Americans and Mexican Americans are at a higher risk for dysthymic disorder while white Americans are at a higher risk for experiencing major depressive disorders.

Further research expands the race/ethnic comparison by adding U.S. born verses foreign-born comparisons of depressive symptoms in mothers. Huang et al. (2007) finds

that every ethnic/racial group of mothers born in the United States have a higher risk of experiencing moderate to severe depressive symptoms compared to foreign born mothers except for the Asian/Pacific Islander group. Breaking the group down further, it is found that the group considered Asian/Pacific Islander had varying outcomes based on where they originate from, with Filipina mothers experiencing the highest rates of severe depressive symptomology.

Race and ethnicity might impact help seeking behaviors (Huang et al. 2007; Riolo et al. 2005). Riolo et al.'s (2005) research has found that African Americans and Mexican Americans, compared to white Americans, are less likely to receive treatment for depressive disorders. Research conducted by Huang et al. (2007) has found that racial and ethnic minorities and foreign-born mothers are less likely to seek help from doctors and less likely to think they need help from doctors compared to non-Hispanic whites. The study has found that the group experiencing the highest prevalence of depressive symptoms is non-Hispanic black mothers, specifically U.S. born non-Hispanic black mothers (Huang et al. 2007).

Social support. Social support plays an important and multifaceted role in depression. Those who are depressed often experience psychosocial symptoms such as avoiding social situations, remaining quiet or passive during social interactions, and failing to interact even with those they live with. Paradoxically, the presence of social support or the perception of high social support provides benefits and buffers for both depressed mothers and their children (Burke 2003; Coyne et al. 1987; Field 1998;

Gelfand and Teti 1990; Gjesfjeld et al. 2010; Goodman et al. 2011; Herwig et al. 2004; Surkan et al. 2006).

In a study by Herwig et al. (2004), social support was highly correlated to parenting practices and partnership satisfaction, both of which are main factors that influence problematic behaviors in children whose mothers experience maternal depression. Social support, parenting practices, and partnership satisfaction interact together and are associated with internal and external child behavioral problems like aggressive behavior, delinquent behavior, conduct problems, withdrawal, depression, anxiety, and emotional symptoms (Herwig et al. 2004). Herwig et al.'s (2004) study supports findings previously mentioned, that when spouses are supportive of mother's experiencing depression, their children often suffer less severe or minimal adverse outcomes.

Social support mediates the impact of depression for mothers. Siefert et al. (2000), tests for social and environmental predictors of maternal depression, studying recent or current welfare recipients and have found that mothers without maternal depression scored significantly higher on social support measures compared to mothers experiencing depression. Another study produced by Cairney et al. (2003) finds that single mothers are especially susceptible to depression because they perceive lower levels of social support, they are not able to be socially involved, and they tend to have less contact with their social networks compared to mothers who are married. Some of these single-mothers experiences may be due to the lack of childcare, economic resources, and time.

Gjesfjeld et al. (2010) researches the relationship between economic stress and social support in terms of mediating depression. They find that being married and working at a job outside of the home both lead to higher social support scores. The same study found that social support was a mediator for part of the relationship found between economic stress and depressive symptoms, but not all of it (Gjesfjeld et al. 2010).

Marital status. Studies have shown that being single is higher for those who experience depression compared to the general public. It is difficult to establish whether the depression/marriage relationship is due to the marital discord that can occur because of depressive symptomology or if it is simply due to selectivity. Research has suggested that depressive disorders lead to greater marital instability and the instability increases the severity of depression and the risk of the spouse to experience depression or depressive symptomology as well (Coyne et al. 1987; Downey and Coyne 1990; Lépine and Briley 2011).

However, not all studies point to a direct link between depression and marriage. Gjesfjeld et al. (2010) has found that marriage does not have a direct relationship with depressive symptoms but a direct relationship exists between marriage and social support, as well as a direct relationship between social support and depressive symptoms. The direct relationships suggest that even though marital status does not appear to directly impact a mother's experience of depressive symptoms, it does interact with social support, which does have a direct link.

As mentioned previously, good spousal relationships can provide a buffering effect for women experiencing depressive symptoms (Surkan et al. 2006). Studies support that single mothers often have a higher risk for depression than married mothers (Cairney et al. 2003). Research by Cairney et al. (2003) has found that single mothers are more likely than married mothers to experience an episode of depression and experience more stress. Single mothers have higher levels of chronic stress, which together with social support can explain up to 40% of the relationship found between depression and single parents (Cairney et al. 2003).

Religious attendance. Religious attendance and affiliation is ambiguous and difficult to measure, partially because of biases caused by social desirability but also because being 'religious' can be defined multiple ways. Strawbridge et al. (1998) studied the relationship between religion and depression by dividing religion into two different categories, non-organized and organized religion. Organized religion is defined as participating and attending services and activities, while non-organized religion is defined as praying and allowing religion and spirituality to be important but not specifically attending organized services (Strawbridge et al. 1998). They found that organized religion has a negative relationship with depression but worsened associations of depression and abuse, caregiving, and marital problems. Non-organized religion was not associated with depression. Both religious categories helped mediate associations for stressors that did not include the family (Strawbridge 1998). Overall, religion can help some aspects of depression but makes others worse.

Smith, McCullough, and Poll (2003) conducted a meta-analysis looking at 147 studies and found that religiousness and depressive symptoms were negatively correlated, however, they found that the way religion was measured largely impacted the results. Hackney and Sanders (2003) similarly conducted a meta-analysis searching for relationships between religiosity and psychological distress, life satisfaction, and self-actualization. They found a statistically significant association of approximately .10, meaning that religion influences better psychological outcomes (Hackney and Sanders 2003).

Economic resources. Economic resources, or the lack thereof, are decidedly related to experiences of depression. Stressful life events are a well-researched risk factor of depression. Economic stress can be classified as a stressful life event, especially for single, working mothers (Siefert et al. 2000). Low socioeconomic status (SES) is strongly associated with an increased risk of depressive disorders and symptomology (Riolo et al. 2005; Siefert et al. 2000; Surkan et al. 2006). Gjesfjeld et al. (2010) find a correlation between depressive disorders and low household income and economic stress. Research conducted by Gjesfjeld et al. (2010) studies whether or not social support mediates the effect between economic stress and depression. They found that part of the relationship between economic stress and depression is explained by social support, but not all (Gjesfjeld et al. 2010). Further research conducted by Riolo et al. (2005), studied the prevalence of major depressive disorder and dysthymia, and suggests that those living in poverty have a 1.5 times higher rate of major depressive disorder, but only for whites.

Body Mass Index (BMI). Research conducted by De Wit et al. (2009) shows that a U-shaped association between BMI and depression exists. Using a sample of 43,534 persons from the Netherlands, they found statistically significant differences between obese and underweight persons' depression scores and normal and overweight persons' depression scores. Persons who were obese and underweight were more likely to experience depression than persons who were overweight or of a normal weight (De Wit et al. 2009).

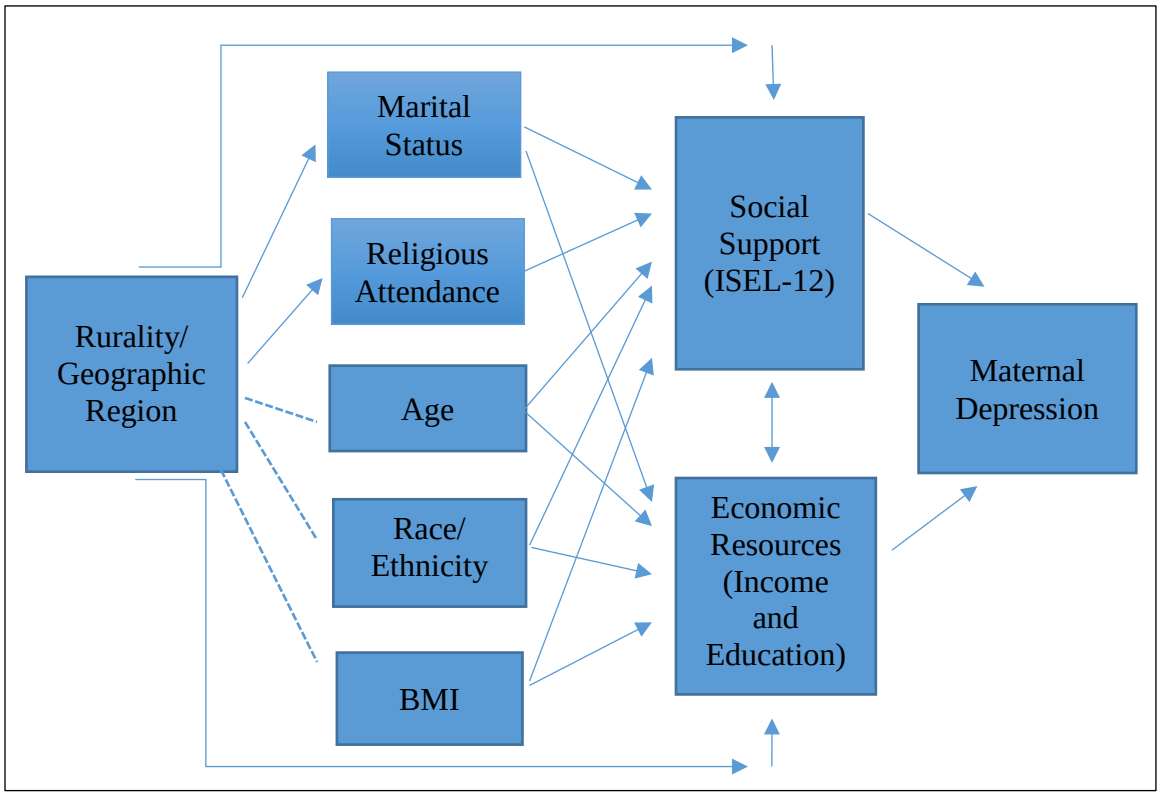

Figure 1. Conceptual Model of the Independent Variables Interaction with Maternal Depression

CHAPTER III

METHODS

Overview of NESARC-III Data

The National Epidemiologic Survey on Alcohol and Related Conditions-III is provided by the National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism (NIAAA). The data was collected using semi-structured interviews described as the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS-5), which has been tested for reliably using test-retest designs (Grant et al. 2015). The target population was the "civilian noninstitutionalized population, 18 years and older, residing in the contiguous United States (U.S.) and Alaska and Hawaii, including persons living in households and select noninstitutionalized group quarters" (Grant et al. 2014: 1-1). Active duty military personnel were excluded but veterans were included in the sampling frame. The main study included a sample of 36,309 persons with African American, Asian, and Hispanic adults oversampled to ensure sound estimates (Grant et al. 2014).

NESARC-III sampling methods. NESARC-III data was collected using a multistage probability sampling technique to select a sample from the target population.

Individual counties made up primary sampling units (PSUs), with the exception of some rural counties that lacked large enough populations, covered too vast an area, or had excessive travel requirements. The rural counties not included as a PSU due to size, area, or excessive travel requirements were combined with other counties or excluded in the case of Alaska and Hawaii's scarcely populated areas. PSUs were designed to have a minimum of 5,760 housing units located in the PSU and cover up to 100 miles. The final PSU count created is 2,349. From the PSUs, researchers used stratified proportional-to-size sampling, specifically the measure of size (MOS) as described in the NIAAA: NESARC-III Source and Accuracy Statement, Section 3, to select 150 units (Grant et al. 2014).

Secondary sampling units (SSUs) are census blocks within selected PSUs. Using a variety of detailed measures and processes, NESARC-III oversampled high and moderate-minority segments (Grant et al. 2014). Addresses or dwelling units (DUs) were selected using U.S. Postal Service master address files for each selected segment. In areas where the master address files were not accurate or appropriate to use, field researchers created their own list of DUs. The process led to 71,052 DUs selected (Grant et al. 2014). Areas that rely solely on P.O. boxes, are considered rural route addresses, or are areas close to or on Indian reservations were mostly excluded because of the inability to locate the actual DU in a timely manner. Systematic sampling procedures were used to select addresses from the selected segments. Additional detail is documented in the NIAAA: NESARC-III Source and Accuracy Statement (Grant et al. 2014).

The selection of eligible adults within the DUs selected were limited to one sample person if less than three eligible individuals lived in the DU but allowed two sample persons if there were four or more persons eligible to complete the survey. Weights were added to adjust for nonresponse. Because the relevant population were mothers, only those individuals whom self-identified as women were utilized. The resulting sample consists of 20,447 females.

Secondary Analysis: Defining and Categorizing Variables

Dependent variables: depressive disorders. The NESARC-III's AUDADIS-5 categorized ten different depressive disorders, specifically; past year major depressive episode (nonhierarchical), prior to past year major depressive episode (nonhierarchical), lifetime major depressive episode (nonhierarchical), past year major depressive disorder (hierarchical), lifetime major depressive disorder (hierarchical), past year dysthymia (nonhierarchical), prior to past year dysthymia (nonhierarchical), lifetime dysthymia (nonhierarchical), past year dysthymia (hierarchical), and lifetime dysthymia (hierarchical) (National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014b).

The disorders were classified based on the specific disorders (major depressive episode, major depressive disorder, or dysthymia), by the time-period, and by

nonhierarchical classification verses hierarchical classification (National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014a; National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014b). Lifetime dysthymia (nonhierarchical) and prior to past year dysthymia (nonhierarchical) were exactly the same so I excluded lifetime dysthymia (nonhierarchical) from the analysis.

The specific depressive disorders included in the NESARC-III data set are major depressive episode (MDE), major depressive disorder (MDD), and dysthymia. MDE is not classified in the DSM-5 as a separate disorder from MDD but is used here as a separate diagnosis because it is somewhat different from MDD. Again, MDD and MDE share very similar criteria but the diagnosis is MDD if the episode is recurrent and/or severe (American Psychiatric Association 2013). Dysthymia is a disorder that spans a long time-period and has classic yet typically less severe depressive symptoms when compared to MDE and MDD.

In addition to the disorder differences, timing differences exist within the different disorders. Past year, prior to past year, and lifetime classifications exist for each disorder. Past year denotes that a person experienced the depressive disorder within the past year. Prior to past year is classified as a depressive disorder experienced a year prior to the year before the study. Lifetime indicates that the individual had multiple “episodes” or recurrent struggles with the depressive disorder (National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014b; National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014d).

Finally, the distinctions between hierarchical and nonhierarchical classifications are addressed. According to the notes provided by the NESARC-III data site, the differences simply indicate whether the diagnoses included any exclusionary criteria provided by the DSM-5. Nonhierarchical classifications have specified that exclusionary criteria were not used. Hierarchical classifications are the opposite, using the exclusionary criteria during the diagnosing process (National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014a; National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014b). For example, if a person experienced depressive symptoms but attributed the symptoms to a medical condition like hypothyroidism, then that person would be included in the nonhierarchical count but excluded from the hierarchical count. Another way to view the classification of hierarchical and nonhierarchical is persons classified as experiencing a nonhierarchical depressive disorder includes anyone meeting the specified criteria of depressive symptoms with no exclusions, whereas, hierarchical depressive disorders eliminates persons whose conditions or situations might better explain depressive symptoms or experiences. For the remainder of the study hierarchical and nonhierarchical will be abbreviated to h and nh.

The dependent variables were dummy coded one for having a specific depressive disorder or zero for not having a specific depressive disorder. Each of the nine depressive disorders utilized the coding mentioned. Females who met the AUDADIS-5 diagnostic criteria for past year MDE (nh), prior to past year MDE (nh), lifetime MDE (nh), past year MDD (h), lifetime MDD (h), past year dysthymia (nh), prior to past year dysthymia

(nh), past year dysthymia (h), and lifetime dysthymia (h) were given a one for that specific disorder. Any females who did not meet the AUDADIS-5 diagnostic criteria for any of the separate depressive disorders mentioned were coded as zero. Please note that throughout the remainder of the paper, I will use the word diagnosed or diagnostic criteria and I am referring specifically to the AUDADIS-5 criteria and "diagnosis". The study does not suggest that referring to a diagnosis means a clinical diagnosis.

Independent variable: geographic categories. NESARC-III has defined geographic region based on the U.S. Census classifications that are separated into four different categories; Northeast, Midwest, South, and West (Grant et al. 2014; United States Census Bureau 2015). The Northeast region consisted of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, and Pennsylvania. The Midwest included the states Indiana, Illinois, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. The South is made up of Delaware, the District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, and Texas. The West included Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming, Alaska, California, Hawaii, Oregon, and Washington (United States Census Bureau 2015). Region was treated like a dummy variable so each specific region has been coded separately. Northeast was coded one and West, South, and Midwest were coded zero for the Northeast dummy variable. Midwest was coded one while the Northeast, South, and

West were coded zero for the Midwest dummy variable. The same process was repeated for the South and West regions too.

Rural and urban are classified using the USDA Rural-Urban Continuum Codes. NESARC-III defines urban as codes 1-3 and rural as codes 4-9 (Grant et al. 2014). The 2013 Rural-Urban Codes use the following classifications:

(1) Counties in metro areas of 1 million population or more

(2) Counties in metro areas of 250,000 to 1 million population

(3) Counties in metro areas of fewer than 250,000 population

(4) Urban population of 20,000 or more, adjacent to a metro area

(5) Urban population of 20,000 or more, not adjacent to a metro area

(6) Urban population of 2,500 to 19,999, adjacent to a metro area

(7) Urban population of 2,500 to 19,999, not adjacent to a metro area

(8) Completely rural or less than 2,500 urban population, adjacent to a metro area

(9) Completely rural or less than 2,500 urban population, not adjacent to a metro area (United States Department of Agriculture 2016).

Independent variable: maternal depression. Maternal depression is defined as depression experienced by a woman with any child less than 18 years old. Any child includes biological, adopted, foster, or other children under the age of 18. The assumption with this type of measurement is that those included in this category will have a child or children still living at home that they primarily care for or help care for. After much trial and error for the measure, it was decided to compare women without children

living at home or without children altogether to women with children younger than 18 years of age by using a bivariate measure. NESARC-III measured the number of the sample person's biological children and unrelated children at various ages. All ages for both sample respondent's biological children and unrelated children were summed, excluding the 18+ categories, and anything above a one was coded as one. Anyone who did not have related or unrelated children under the age of 18 years old was coded as zero.

Independent variable: age. Age has been used as a continuous variable and a categorical variable. Analyzing the descriptive statistics, I used both the continuous and categorical measures of age. In order to understand how different age groups are affected by depressive disorders, the main analysis used groups. Looking at the entire female sample, ages are divided into seven groups that include 18-25 year olds coded as one, 26-35 year olds coded as two, 36-45 year olds coded as three, 46-55 coded as four, 56-65 year olds coded as five, 66-75 year olds coded as six, and 76-90+ year olds coded as seven. Analyzing only mothers in the sample, I combined the age groups into five different groups with the groups 1-4 remaining the same as previously mentioned but groups 5-7 were combined to 56-90+ year olds and coded five. The combination of the older age groups when looking at mothers specifically was done because the older age groups are typically not mothers to dependent children and therefore needed combined to keep the participant's information confidential.

Independent variable: race and ethnicity. Race and ethnicity were categorized by NESARC-III as non-Hispanic white, non-Hispanic black, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian/Native Hawaiian/Other Pacific Islander, or Hispanic, any race (National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014c). If the sample person identified as multi-racial, NESARC-III applied the Census Bureau's algorithm to select one race. NESARC-III outlines that if a person is considered multi-racial the researchers or interviewers should choose the code in the following order:

(1) African American or black

(2) American Indian or Alaska Native

(3) Native Hawaiian or Other Pacific Islander

(4) Asian

(5) white (National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism 2014a)

Because some racial categories had many fewer people than others, with blacks making up 22.6% of the sample, whites making up 52%, and Hispanics making up 19.3%, but American Indian or Alaska Native only consisting of 1.5%, Asian, Native Hawaiian or Other Pacific Islander making up 4.6%, it was clear that for the sake of clarity of comparisons, several categories needed to be combined. The final groups consisted of white non-Hispanic, black non-Hispanic, other non-Hispanic, and Hispanic. White non-Hispanic was coded one, black non-Hispanic coded two, other non-Hispanic coded three, and Hispanic any race was coded four.

Independent variable: social support variables including marital status, religious attendance, and Interpersonal Support Evaluation List-12. Marital status was classified as married, living with someone as if married, widowed, divorced, or separated, or never married. Married or living with someone as if married was coded one, being widowed, divorced, or separated was coded two, and never married was coded three. Religious attendance is defined by whether or not the sample person attends religious services with yes coded as one and no coded as zero. Perceived social support was measured using the Interpersonal Support Evaluation List-12 (ISEL-12) index measure. The ISEL-12 index measures an individual's perceived social support using 12 different questions, six of which are reverse coded (Carnegie Mellon University 2015). NESARC-III has included all 12 questions in order to calculate the ISEL-12 index and is frequently used as a social support measure among NESARC-III data users (Sacco, Bucholz, and Harrington 2014). The statements are provided in Figure 2 and participants were given the choice of answering 1-definitely false, 2-probably false, 3-probably true, and 4-definitely true. After adjustments, the final score ranges between 0-36 with lower scores indicating lower perceived social support and higher scores meaning higher perceived social support (Carnegie Mellon University 2015).

Interpersonal Support Evaluation List-12 Measure

1. If I wanted to go on a trip for a day, like to the country, city, mountains or beach, I would have a hard time finding someone to go with me.
2. I feel that there is no one I can share my most private worries and fears with.
3. If I were sick, I know I would find someone to help me with my daily chores.
4. There is someone I can turn to for advice about handling problems with my family.
5. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.
6. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.
7. I don't often get invited to do things with others.
8. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment, like taking care of my plants, garden or pets, getting the mail or watching the house in general.
9. If I wanted to have lunch with someone, I could easily find someone to join me.
10. If I were stranded 10 miles from home, someone I know would come and get me.
11. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.
12. If I needed some help moving to a new house or apartment, I would have a hard time finding someone to help me.

Figure 2. Statements Used for the Social Support Measure the Interpersonal Support Evaluation List-12
Source: National Institutes of Health: NIAAA NESARC-III Questionnaire

Independent variable: economic resources. Economic resources are evaluated using personal household income and education. Personal household income is measured by the amount that the sample person makes annually, with income from food stamps included. I chose to use personal household income because it is the lowest imputed income score available for the NESARC-III data, with only 10.3% of the data imputed compared to family income at 11.5% imputed and household income with 13.1% imputed (National Institutes of Health: National Institute on Alcohol Abuse and Alcoholism

2014a). The range of personal income is from $0 to $100,000 or more. Personal income was divided into five different groups starting with $0 to $9,999 and ending with $50,000 or more. Each group was given a number starting with the group $0-$9,999 coded as one, the group $10,000-$19,999 receiving a code of two, $20,000-$34,999 coded as three, $35,000-$49,999 coded as four, and $50,000 or more coded as five.

Education was measured by the years of school completed with the minimum being zero years and the maximum being 18 years. The years were aggregated into four groups with categories being: less than high school, high school or GED, some college, associate degree, or technical degree, and Bachelor's degree or higher. The coding used for the education variable is less than high school coded as one, high school or GED coded two, some college, associate degree, or technical degree being coded as three, and Bachelor's degree or higher coded as four.

Independent variable: Body Mass Index. Body Mass Index is defined as a person's weight relative to their height. BMI was calculated by dividing weight (kg) by height (m) squared. I anticipate the variables will interact in the ways seen in Figure 1. BMI is maintained as a continuous independent variable.

Secondary Analysis: Overview

To begin, I evaluated the descriptive statistics for all variables of interest including, age, race/ethnicity, marital status, education level, household income, BMI, religious attendance, Interpersonal Support Evaluation List-12 (ISEL-12), geographic region, rurality, and the nine depressive disorders. Descriptive statistics are used to analyze the sample's characteristics compared to the national characteristics. Once demographic variables are analyzed using descriptive statistics, logistic regression analysis will be run and the results interpreted. The SPSS software program was utilized for the statistical analysis.

CHAPTER IV

RESULTS

Descriptive Statistical Analysis

General descriptive statistics show an overview of the demographics and variables of interest for the NESARC-III female sample of 19,967. To establish that the sample is representative of the national sample, comparisons of summary statistics for each group are available. As seen in Table 1, the largest female percentage is found in the age group 26-35 years old with an overall median age of the sample being 44 years old. The median age for females in the U.S. that are 18 years old or older is 46.8 (United States Census Bureau 2018). Some college, associate degree, or technical certification is the largest group of educational attainment with 35% of the female sample falling into this category. The lowest percentage of educational attainment for the NESARC-III female sample is less than high school at 14.8%. National percentages of educational attainments show that some college or associate degree is also the highest percentage with about 30.2% of the U.S. female population in this category. The smallest group of educational attainment for females in the U.S. is less than high school with approximately 13.7% of the population fitting in this category (United States Census Bureau: American FactFinder 2008-2012b). The median educational attainment in years of education completed is 13.0 for the sample and 13.6 for the U.S. female population (United States Census Bureau: American

FactFinder 2008-2012b). The NESARC-III sample of females for the variables age and educational attainment represents the U.S well.

Over half of the NESARC-III female sample, approximately 55%, has a personal income between $0 and $19,999 matching the approximate national female percentage of 55% (United States Census Bureau: Current Population Survey Annual Social and Economic Supplement 2013). The percentage of persons in both the highest and lowest category is larger for the national female population when comparing to the NESARC-III female sample. The median personal income for the NESARC-III female sample is $18,577 and the national personal income median for U.S. females is $21,520 (United States Census Bureau: Current Population Survey Annual Social and Economic Supplement 2013). The median differences are likely a product of sampling techniques and incentives provided to participants, but overall the NESARC-III data is representative of the nation's personal income for females.

For the NESARC-III female sample, 52% of the sample considers themselves non-Hispanic white, with 22.6% non-Hispanic black, 6.1% considers themselves non-Hispanic other, and 19.3% Hispanic any race. The NESARC-III race/ethnicity percentages are quite different compared to the national percentages. National women's race/ethnicity percentages are 65.9% non-Hispanic white, 12.3% non-Hispanic blacks, 7.6% non-Hispanic other, and 14.2% Hispanic any race (United States Census Bureau 2018). The differences observed between the NESARC-III females and the nations female race and ethnicity categorization is likely due to the NESARC-III sampling design

that oversampled minority populations. Race/ethnicity is not entirely representative of the nation's race/ethnic groups.

Around 44% of females are married or living as if they were married, 31% are divorced, widowed, or separated, and 26% have never been married for the NESARC-III sample. National statistics show that approximately 48% of females are married, 24% are divorced, widowed, or separated, and 29% have never been married (United States Census Bureau: American FactFinder 2008-2012c). Again, some of the differences occur due to variations in classification and sampling techniques but the sample is representative of the U.S. No national comparisons using government data are available for the variable religious attendance because of the separation of church and state but the NESARC-III female percentage that attends religious services is 55.1%. The Interpersonal Support Evaluation List-12 did not have any national data for comparison. The mean ISEL-12 (range 0-36) score for the NESARC-III females is 29.83. The average body mass index for NESARC-III females is 28.23 compared to the national average of females over 25 being 29.00 (Fryar et al. 2016).

In terms of rurality, 83.2% of the NESARC-III female sample lives in an urban area and 16.8% lives in a rural area. The national comparison shows similar results with 19.3% rural and 80.7% urban for both females and males (United States Census Bureau 2016). The NESARC-III region variable shows that 40.9% of the female sample lives in the South, 24.1% in the West, 20.6% in the Midwest, and 14.4% in the Northeast. National comparisons show that approximately 37.2% of females live in the South, 23% live in the West, 21.6% live in the Midwest, and 18.1% live in the Northeast (United

States Census Bureau: American FactFinder 2008-2012a). Region and rurality variables are both representative of the U.S. sample. Around 40% of the sample has children under 18 years old but again no national numbers were found for this comparison.

Depressive disorders prevalence among the female participants of the NESARC-III study can be found in Table 2. Lifetime MDE (nonhierarchical) is the most frequent depressive disorder with around 27% of the female participants meeting the specified criteria. Prior to past year MDE (nonhierarchical) and lifetime MDD (hierarchical) are the next frequent with 25% of female participants diagnosed using the AUDADIS-5 criteria. Past year MDE (nonhierarchical) with 15% and past year MDD (nonhierarchical) with 13% follow. Dysthymia disorders are the lowest diagnosed depressive disorders with prior to past year dysthymia (nonhierarchical) at around eight percent, lifetime dysthymia (hierarchical) with approximately seven percent, past year dysthymia (nonhierarchical) with approximately five percent, and finally past year dysthymia (hierarchical) with around four percent.

Table 1. General Descriptive Statistics for NESARC-III (2012-2013) Female Sample (N=19,967) Compared to National Medians

	%	Median	US Median (2008-2014)
Age			
18-25	13.8		14.1
26-35	20.1		16.9
36-45	18.1		16.6
46-55	18.0		18.4
56-65	14.6		15.9
66-75	8.6		9.5
76-90+	6.8		8.6

		44.0	46.8[a]
Education (by years completed)			
Less than high school	14.8		13.7
High school or GED	26.1		28.0
Some college/associate degree/technical certification	34.9		30.2
Bachelor's degree or higher	24.2		28.1
		13.0	13.6
Total Personal Income			
$0-$9,999	28.3		35.4
$10,000 to $19,999	25.3		19.3
$20,000 to $34,999	22.2		18.6
$35,000 to $49,999	11.2		10.9
$50,000 or more	13.0		15.7
		$18,577	$21,520
Race/Ethnicity			
White, non-Hispanic	52.1		65.9
Black, non-Hispanic	22.6		12.3
Other, non-Hispanic	6.1		7.6
Hispanic, any race	19.3		14.2
Marital Status			
Married & living together as if married	43.8		47.6
Widowed, divorced, or separated	30.5		23.8
Never married	25.7		28.7
Do you currently attend religious services[b]			
No	44.9		N/A[c]
Yes	55.1		N/A[c]
ISEL-12		29.83 (6.04)[d]	N/A
BMI[e]		28.23 (6.94)[d]	29.0[d]
Rurality			
Urban	83.2		80.7[f]
Rural	16.8		19.3[f]
Region			

Northeast	14.4	18.1
Midwest	20.6	21.6
South	40.9	37.2
West	24.1	23.0
Do you have any child under 18 years old?		
No	60.7	N/A
Yes	39.3	N/A

Sources: US Census Bureau, Centers for Disease Control and Prevention, and Fryar et al.
[a] Note only the age range of 18-90+ is included in the national comparison median.
[b] 14 missing cases
[c] Not available in Census estimates due to separation of church and state
[d] Mean (Standard Deviation)
[e] BMI excludes missing and filtered out subjects with 70+ BMI due to unrealistic numbers (likely coding error)
[f] Both sexes included

Table 2. Percentage of Depressive Disorders[a] for NESARC-III Female Sample, N=19,967

Depressive Disorder	%
Past year DSM-5 major depressive episode (nonhierarchical)	14.6
Prior to past year DSM-5 major depressive episode (nonhierarchical)	24.9
Lifetime DSM-5 major depressive episode (nonhierarchical)	26.7
Past year DSM-5 major depressive disorder (nonhierarchical)	13.4
Lifetime DSM-5 major depressive disorder (hierarchical)	24.9
Past year DSM-5 dysthymia (nonhierarchical)	4.5
Prior to past year DSM-5 dysthymia (nonhierarchical)	7.5
Past year DSM-5 dysthymia (hierarchical)	3.8
Lifetime DSM-5 dysthymia (hierarchical)	6.5

[a] Hierarchical diagnoses exclude disorders as outlined by the DSM-5 and non-hierarchical diagnoses do not utilize the exclusionary criteria in the DSM-5

The next step is to look at descriptive statistics by both Census region and rurality. Table 3 provides the mean, standard deviation, and the ANOVA F-test statistic

for the interval-level variables including age, education, BMI, and ISEL-12 (range 0-36). The West has the youngest average age with 45.030 and the Northeast has the oldest average age with 46.803. Educational attainment by years is the lowest in the South region and highest in the Northeast region. BMI appears to be slightly lower in the South and slightly higher in the Northeast however very little difference is found between each region's BMI averages. ISEL-12 mean is the highest in the Midwest and lowest in the Northeast. Age, education, and ISEL-12 show a statistically significant F-test, meaning that the variances for the Northeast, Midwest, South, and West regions are not the same. BMI is not statistically significant.

More specifically, the Scheffe's test, found in Table 4, shows the variances between the age, education, BMI, and ISEL-12 variable means comparing each region to the other. The mean variance for age is different at a statistically significant level for Northeast and Midwest regions when compared to the West region mean. The Midwest region mean is also different from the South mean for age at a statistically significant level. The South region and the West region means are both different from the Midwest and Northeast means for education and vice versa. The mean variances for education between the regions are different at a statistically significant level. BMI means do not vary enough to be statistically significant between regions. When comparing ISEL mean variances to the Northeast, the table shows that all region (Midwest, South, and West regions) means are different at the .000-level with each region experiencing lower ISEL-12 scores. The Midwest region also has a mean that varies from the South region mean

for ISEL-12 at a .021-level. The difference shows that the South has a higher ISEL-12 mean.

Table 3. Interval-Level Variables Descriptive Statistics and ANOVA by Census Region for All Females, N=19,967

	Northeast Mean (SD)	Midwest Mean (SD)	South Mean (SD)	West Mean (SD)	F-test
Age	46.803 (18.02)	46.742 (18.03)	45.781 (17.57)	45.030 (17.59)	9.518***
Education	13.380 (2.87)	13.348 (2.60)	12.981 (2.67)	13.025 (3.18)	25.558***
BMI[a]	28.431 (7.10)	28.229 (6.83)	28.137 (6.92)	28.282 (6.97)	1.383
ISEL-12	29.194 (6.39)	30.147 (5.76)	29.788 (6.08)	30.028 (5.97)	16.279***

[a] BMI excludes missing and filtered out subjects with 70+ BMI due to unrealistic numbers (likely coding error)
*p< .05; **p< .01; ***p< .001

Table 4. Scheffe's Test for Interval-Level Variables ANOVA by Region for All Females, N=19,967: Mean Difference

		Age	Education	BMI[a]	ISEL-12
Northeast	Midwest	0.061	0.032	0.202	-0.954***
	South	1.023	0.399***	0.295	-0.594***
	West	1.773***	0.355***	0.150	-0.834***
Midwest	Northeast	-0.061	-0.032	-0.202	0.954***
	South	0.962*	0.367***	0.092	0.359*
	West	1.712***	0.323***	-0.053	0.119

West	Northeast	-1.773***	-0.355***	-0.150	0.834***
	Midwest	-1.712***	-0.323***	0.053	-0.119
	South	-0.750	0.044	0.145	0.240

[a] BMI excludes missing and filtered out subjects with 70+ BMI due to unrealistic numbers (likely coding error)
*p< .05; **p< .01; ***p< .001

The result of Table 5 shows that demographics vary between Census regions. Chi-square tests whether or not variables by region, are independent from one another. Variables like education, total personal income, and race/ethnicity are not independent of region. Marital status and religious attendance show that all regions, with the exception of the Midwest, are not independent. It is notable that age for all regions but the South, and certain depressive disorders are not independent of one another. For most MDE and MDD depressive disorders the variables are not independent of one another for the regions West and South. Having any child less than 18 years old and dysthymia disorders are independent of region, which was not anticipated.

Table 5. Descriptive Statistics and Chi Square by Census Region for All Females, N=19,967

	Northeast		Midwest		South		West	
Age	%	n	%	n	%	n	%	n
18-25	13.2%	378	13.2%	543	13.5%	1101	15.2%	731
26-35	19.0%	544	19.5%	803	20.5%	1674	20.5%	985
36-45	17.3%	496	17.8%	735	18.4%	1501	18.2%	875
46-55	19.1%	548	17.3%	713	18.1%	1481	17.8%	855
56-65	14.8%	424	15.5%	638	14.4%	1172	14.2%	682
66-75	8.5%	245	8.8%	363	8.6%	705	8.5%	408
76-90+	8.1%	233	7.9%	325	6.5%	529	5.8%	280

Total		2868		4120		8163		4816
Pearson Chi-Square	14.304*		15.050*		6.461		20.556**	
Education								
Less than high school	13.4%	385	12.0%	494	15.9%	1297	16.1%	775
High school or GED	27.0%	774	26.6%	1097	27.8%	2266	22.2%	1070
Some college/associate degree/technical certification	31.0%	890	35.9%	1477	35.2%	2875	36.0%	1734
Bachelor's degree or higher	28.6%	819	25.5%	1052	21.1%	1725	25.7%	1237
Total		2868		4120		8163		4816
Pearson Chi-Square	46.047***		32.945***		80.653***		51.487***	
Total Personal Income								
$0-$9,999	26.1%	748	25.6%	1054	29.7%	2421	29.6%	1423
$10,000 to $19,999	25.8%	739	25.5%	1049	26.1%	2127	23.7%	1140
$20,000 to $34,999	19.8%	568	23.8%	980	22.9%	1868	21.0%	1009
$35,000 to $49,999	10.7%	307	12.6%	520	10.6%	864	11.3%	546
$50,000 or more	17.6%	506	12.6%	517	10.8%	883	14.5%	698
Total		2868		4120		8163		4816
Pearson Chi-Square	69.490***		29.835***		72.669***		24.970***	
Race/Ethnicity								
White, non-Hispanic	55.4%	1589	66.7%	2748	46.2%	3769	47.5%	2287
Black, non-Hispanic	19.5%	559	21.2%	872	34.4%	2809	5.5%	264
Other, non-Hispanic	6.2%	177	4.2%	173	3.5%	289	12.2%	586
Hispanic, any race	18.9%	543	7.9%	327	15.9%	1296	34.9%	1679
Total		2868		4120		8163		4816
Pearson Chi-Square	21.385***		595.603***		1185.334***		2024.994***	
Marital Status								
Married & living together as if married	41.6%	1194	42.9%	1767	41.9%	3422	49.2%	2370
Widowed, divorced, or separated	28.7%	822	30.7%	1264	32.7%	2665	27.7%	1335
Never married	29.7%	852	26.4%	1089	25.4%	2076	23.1%	1111
Total		2868		4120		8163		4816
Pearson Chi-Square	28.476***		2.270		33.180***		74.550***	
Do you currently attend religious services?[a]								
No	53.5%	1530	45.8%	1885	38.3%	3125	50.3%	2422
Yes	46.5%	1332	54.2%	2233	61.7%	5035	49.7%	2391

Total		2862		4118		8160		4813
Pearson Chi-Square		98.574***		1.548		244.473***		74.938***
Do you have any child under 18 years old?								
No	61.4%	1760	61.7%	2541	60.1%	4909	60.6%	2918
Yes	38.6%	1108	38.3%	1579	39.9%	3254	39.4%	1898
Total		2868		4120		8163		4816
Pearson Chi-Square		0.551		1.901		2.106		0.060
Depressive Disorders[b]								
Past year DSM-5 MDE nh	15.8%	452	13.5%	555	14.0%	1141	15.8%	762
Pearson Chi-Square		3.784		5.074*		3.944*		7.943**
Prior to past year DSM-5 MDE nh	26.6%	762	24.8%	1020	23.4%	1912	26.5%	1277
Pearson Chi-Square		5.013*		0.053		16.030***		8.905**
Lifetime DSM-5 MDE nh	28.4%	814	26.2%	1081	25.3%	2061	28.5%	1371
Pearson Chi-Square		4.966*		0.516		14.454***		10.380**
Past year DSM-5 MDD h	14.4%	413	12.2%	502	13.0%	1057	14.4%	694
Pearson Chi-Square		3.181		6.117*		1.942		6.144*
Lifetime DSM-5 MDD h	26.5%	761	24.4%	1004	23.7%	1937	26.5%	1274
Pearson Chi-Square		4.657*		0.846		10.488**		7.965**
Past year DSM-5 dysthymia nh	4.5%	130	4.5%	187	4.4%	356	4.6%	220
Pearson Chi-Square		0.028		0.054		0.400		0.136
Prior to past year DSM-5 dysthymia nh	8.1%	231	7.9%	326	6.8%	556	7.9%	379
Pearson Chi-Square		1.641		1.456		8.729**		1.449
Past year DSM-5 dysthymia h	3.7%	106	3.9%	161	3.8%	311	3.9%	187
Pearson Chi-Square		0.167		0.082		0.017		0.046
Lifetime DSM-5 dysthymia h	6.8%	194	6.9%	286	6.0%	492	6.9%	333
Pearson Chi-Square		0.286		1.401		5.847*		1.490

[a] Missing 14 cases

[b] Hierarchical diagnoses (h) exclude disorders as outlined by the DSM-5 and non-hierarchical diagnoses (nh) do not utilize the exclusionary criteria in the DSM-5.

*p< .05; **p< .01; ***p< .001

Table 6 and Table 7 include descriptive statistics and appropriate statistical analysis by rurality. Table 6 shows us the mean, standard deviation, and the T-tests for the variables age, education, BMI, and ISEL-12. The average age for females living in rural locations is approximately five years older than females living in urban locations. Females in rural locations also have a slightly lower average educational attainment. BMI for females in urban and rural locations is similar with only a 0.13 difference in the averages. The ISEL-12 variable shows that females in rural locations have higher levels of perceived social support compared to females living in urban locations by a measure of approximately 0.6, which may explain why rural women show less clinically diagnosable depression than anticipated.

T-tests are utilized to see if the means for each variable are different comparing the rural and urban means for each variable. The variables age, education, and ISEL-12 are all statistically significant at the < .001 level. The statistically significant results show that the means for each of these variables are different by rurality. BMI, as seen in the Census region descriptive statistics, is not statistically significant meaning the observed means are not different in this case.

Table 6. Interval-Level Descriptive Statistics and T-test by Rurality for All Females, N=19,967

	Urban	Rural	T-test
	Mean (SD)	Mean (SD)	
Age, N=19995	45.054 (17.67)	50.350 (17.45)	-15.872***
Education, N=19995	13.169 (2.90)	12.907 (2.44)	5.503***[b]
BMI[a], N=19995	28.256 (6.96)	28.122 (6.87)	1.020
ISEL-12, N=19967	29.738 (6.06)	30.314 (5.94)	-5.107***[b]

[a] BMI excludes missing and filtered out subjects with 70+ BMI due to unrealistic numbers (likely coding error)
[b] Equal variances not assumed based on Leven's Test for Equality of Variances result of <.05.
*p< .05; **p< .01; ***p< .001

Table 7 provides variable percentages and chi-square tests to see whether variables are independent of rural/urban status. Age, education, total personal income, race/ethnicity, marital status, and having children under 18 years old are not independent of rural/urban residence. Religious attendance is not independent of rural/urban status either but the lack of independence is minimal. The results of the main variables are as expected; however, the depressive disorders did not perform as expected. All but two of the nine depressive disorders are independent of rural/urban residence and the two depressive disorders that are not independent of rural/urban status are statistically significant at the .05-level. Thus, depression is generally not linked to rural/urban residence.

Table 7. Descriptive Statistics Chi-Square by Rurality for All Females, N=19,967

	Urban		Rural		Pearson Chi-Square
	%	n	%	n	
Age					286.432***
18-25	14.7%	2436	9.4%	317	
26-35	21.2%	3521	14.4%	485	
36-45	18.5%	3076	15.8%	531	
46-55	17.6%	2927	20.0%	670	
56-65	13.6%	2251	19.8%	665	
66-75	7.9%	1313	12.2%	408	
76-90+	6.5%	1084	8.4%	283	
Total		16608		3359	
Education					126.816***
Less than high school	14.7%	2447	15.0%	504	
High school or GED	24.9%	4131	32.0%	1076	
Some college/associate degree/technical certification	34.9%	5790	35.3%	1186	
Bachelor's degree or higher	25.5%	4240	17.7%	593	
Total		16608		3359	
Total Personal Income					75.306***
$0-$9,999	27.7%	4596	31.3%	1050	
$10,000 to $19,999	24.8%	4111	28.1%	944	
$20,000 to $34,999	22.4%	3724	20.9%	701	
$35,000 to $49,999	11.3%	1882	10.6%	355	
$50,000 or more	13.8%	2295	9.2%	309	
Total		16608		3359	
Race/Ethnicity					1206.229***
White, non-Hispanic	46.7%	7750	78.7%	2643	
Black, non-Hispanic	24.3%	4040	13.8%	464	
Other, non-Hispanic	6.8%	1128	2.9%	97	
Hispanic, any race	22.2%	3690	4.6%	155	
Total		16608		3359	
Marital Status					307.467***
Married & living together as if	41.7%	6922	54.5%	1831	

married					
Widowed, divorced, or separated	30.4%	5040	31.1%	1046	
Never married	28.0%	4646	14.4%	482	
Total		16608		3359	
Do you currently attend religious services?[a]					5.432*
No	45.3%	7515	43.1%	1447	
Yes	54.7%	9080	56.9%	1911	
Total		16595		3358	
Do you have any child under 18 years old?					30.152***
No	59.9%	9946	65.0%	2182	
Yes	40.1%	6662	35.0%	1177	
Total		16608		3359	
Depressive Disorders[b]					
Past year DSM-5 MDE nh	14.7%	2438	14.1%	472	0.885
Prior to past year DSM-5 MDE nh	24.6%	4087	26.3%	884	4.363*
Lifetime DSM-5 MDE nh	26.4%	4385	28.0%	942	3.847*
Past year DSM-5 MDD h	13.5%	2244	12.6%	422	2.172
Lifetime DSM-5 MDD h	24.7%	4103	26.0%	873	2.465
Past year DSM-5 dysthymia nh	4.4%	730	4.9%	163	1.367
Prior to past year DSM-5 dysthymia nh	7.4%	1228	7.9%	264	0.875
Past year DSM-5 dysthymia h	3.8%	626	4.1%	139	1.032
Lifetime DSM-5 dysthymia h	6.5%	1076	6.8%	229	0.525

[a] Missing 14 cases

[b] Hierarchical diagnoses (h) exclude disorders as outlined by the DSM-5 and non-hierarchical diagnoses (nh) do not utilize the exclusionary criteria in the DSM-5.

*p< .05; **p< .01; ***p< .001

Logistic Regression Analysis for All Females

Table 8 through Table 16 shows the logistic regression for all females for each depressive disorder and the models that help predict what variables increase or decrease the risk for depressive disorders. Generally, each model improves with the added variables with the exception of the variables BMI and sometimes region and rurality. Adding the variable "children under 18 years old" improves the models for MDE and MDD disorders but does not appear to add much to the dysthymia disorders. Each of the final models has a Chi-square value that is statistically significant meaning that each of the models improves the fit or predictive value of the depressive disorders compared to the initial null model.

General output shows that age, race, marital status, Interpersonal Support Evaluation List-12, and having children under 18 years old are the most important predictors of depressive disorders. Using the ages 18-25 years old as the reference group, the models show that persons in the older age groups are less likely to have a depressive disorder. Models for dysthymic disorders show that compared to 18-25 year old category adults in middle age categories actually have an increased likelihood that they are diagnosed with dysthymic disorders. In every model having a higher income than the reference group of $0-$9,999 decreases the probability of a depressive disorder diagnosis. Black non-Hispanics, other non-Hispanics, and Hispanics any race categories are all less likely to be diagnosed with every depressive disorder compared to non-Hispanics whites. The reference group for marital status is married or living together as if married and

compared to this group, persons categorized as widowed, divorced, or separated have a higher chance of experiencing a depressive disorder. The ISEL-12 scale shows that there is a decreased risk of being diagnosed with depressive disorders as the score increases indicating a higher level of social support. The final variable that is statistically significant for each model is the “children under 18 years old” variable. In each model, having children less than 18 years old predicts that a female will experience lower risks of a depressive disorder diagnosis.

The variables education, religion attendance, and region each have varying statistical significance depending on the depressive disorder under review. It appears that when education is statistically significant having a higher education actually increases the probability of being diagnosed with MDD or MDE. When religious attendance is statistically significant it decreases the probability that the person will be diagnosed with a depressive disorder. Living in the Western region of the U.S. increases the probability of a depressive disorder for all MDE and MDD disorders and for one of the dysthymic disorders. BMI and rurality did not show up as a statistically significant predictor for any of the final models.

Table 8 provides the logistic regressions of past year DSM-5 MDE nonhierarchical for all females. Variables that show statistically significant results for the final model, controlling for all other variables in the model, include: age groups 46-55, 56-65, 66-75, and 76 to 90+, income groups $20,000 to $34,999, $35,000 to $49,999, and $50,000+, race/ethnic groups non-Hispanic black, non-Hispanic other, and Hispanic (any race), marital status of divorced, widowed, or separated and never married, ISEL-12,

religious attendance, living in the West region, and having children younger than 18 years old. Compared to 18-25 year olds, those who are in the 46-90+ age categories are less likely to experience past year MDE (nh). Using the reference group $0-$9,999 for personal income, females who made $20,000 plus have a lower chance of experiencing past year MDE (nh). Being non-Hispanic black, non-Hispanic other, and Hispanic (any race) decreases a female's chance of being diagnosed with past year MDE (nh) compared to non-Hispanic whites. Being divorced, widowed, separated or never married increases the chance an individual experienced past year MDE (nh) when compared to married females, a factor that makes sense given that those who had higher levels of perceived social support, as measured by the ISEL-12 measure, experienced a lower probability of being diagnosed with past year MDE (nh). Attending religious services is also associated with social support and decreases the risk of diagnoses. Using the South region as a reference group, this study found that living in the West does increase the risk of being diagnosed with past year MDE (nh). And finally, having children less than 18 years old decreases a woman's risk of being diagnosed with past year MDE (nh).

Past year MDE (nh) logistic regression shows us that rurality does not increase a female's chance of being diagnosed with this disorder, however living in the West region does increase the risk. The variables that make the biggest difference in the model are the addition of the social support variables including marital status, ISEL-12, and religious attendance adding approximately .055 to the Nagelkerke R Square measure. Overall Table 8 failed to support hypothesis number one regarding rurality but supports hypothesis number two, that region matters.

Table 9 shows the logistic regression of prior to past year DSM-5 MDE (nh) for all females. As shown in the final model the age groups 36-45, 66-75, and 76-90+, an educational attainment of some college, associate degree, or technical certificate and a bachelor's degree or higher, any personal income over $20,000, being Hispanic (any race), non-Hispanic black, or other non-Hispanic race/ethnicity, having a marital status of divorced, widowed, or separated, having a higher ISEL-12 score, attending religious services, living in the West region, and having children under 18 are all statistically significant variables. The age group 36-45 has a slightly higher risk of being diagnosed with prior to past year MDE (nh) compared to the 18-25 year category while the ages 66-75 and 76-90+ have a lower risk of diagnosis. Compared to the educational attainment of less than high school, females with some college, an associate's degree, or a technical certificate and those with a Bachelor's degree or higher are at a higher risk of prior to past year MDE (nh). All personal income groups of $20,000 or more are at a slightly lower risk of a diagnosis. The race categories non-Hispanic black, non-Hispanic other, and Hispanic are all statistically significant at the .001-level and all experience a decreased risk of being diagnosed with prior to past year MDE (nh). Being widowed, separated, or divorced and living in the West also increases a female's risk of diagnosis but having higher levels of perceived social support, as found with the ISEL-12 measure, attending religious services, and having children under 18 years old decreases a female's risk of prior to past year MDE (nh).

The variables that make the biggest difference in the logistic regression models for prior to past year MDE (nh) are race/ethnicity and the social support variables. Both

groups of variables increase the Nagelkerke R Square score by .029. Table 9 did show that the West region increases the risk of prior to past year MDE (nh) by .128 compared to the South but rurality is not statistically significant. Again, the results indicate that hypothesis one regarding rurality is not supported but hypothesis two is supported.

Table 10 displays the logistic regression for lifetime DSM-5 MDE (nh) for all females. Variables that are statistically significant in the final model include the age groups 66-75 and 76-90+, an educational attainment of some college, associate's degree, or technical certificate and a Bachelor's degree or higher, the personal income categories of $20,000 to $34,999, $35,000 to $49,999, and $50,000 or more, races/ethnicity categories non-Hispanic black, non-Hispanic other, and Hispanic, a marital status of widowed, divorced, or separated, the variable ISEL-12, religious attendance, living in the West region, and having children under 18 years old. Being in the age groups 66-90+ and having a personal income of $20,000 or more reduces the female's risk of a lifetime MDE (nh) diagnosis. Race/ethnicity in all categories being compared to non-Hispanic whites are also at a lower risk of diagnosis. The variables ISEL-12, religious attendance, and having kids under 18 years old decrease a woman's chance of being diagnosed with lifetime MDE (nh). Having a higher education, specifically having some college, associate's degree, or technical certificate and having a Bachelor's degree or higher increases the chance of experiencing lifetime MDE (nh). Being separated, divorced, or widowed and living in the West region increases the risk of lifetime MDE (nh).

Each model is statistically significant which means it improves the predictability of a lifetime MDE (nh) diagnosis. The variables that make the biggest differences in the

models are race/ethnicity and the social support variables adding a respective .027 and .033 to the Nagelkerke R Square score. The variable rurality is not statistically significant leading us to conclude that hypothesis one is not supported. The West region is again statistically significantly associated with the dependent variables at the .01-level, supporting hypothesis two.

Table 11 provides logistic regressions for past year DSM-5 MDD (h) for all females. The final model shows that the age groups 46-55, 56-65, 66-75, and 76-90+ are all statistically significant. Other statistically significant variables include personal income categories $20,000 to $34,999, $35,000 to $49,999, and $50,000 or more, race categories non-Hispanic black, non-Hispanic other, Hispanic, marital status of never married and divorced, separated, or widowed, ISEL-12, living in the West region, and having children under 18 years old. The age categories of 46 through 90+ all decrease a woman's risk of past year MDD (h) with the decreased risk becoming greater the older the age category. Compared to having a personal income of $0 to $9,999, women who have an income of $20,000 or more have a decreased risk, with the greatest decrease being females with a personal income of $50,000 or more. The race/ethnic categories of non-Hispanic black, non-Hispanic other, and Hispanic have a decreased risk of experiencing past year MDD (h) compared to non-Hispanic white. When compared to married females, divorced, separated, or widowed and never married females have an increased risk. ISEL-12 and having children under 18 years old both decrease a female's risk of experiencing past year MDD (h). Finally, living in the West increases a woman's risk of diagnosis by .125 but it is only significant at the .05-level.

Every model is statistically significant meaning they are all better than the null at predicting who is diagnosed with past year MDD (h). The social support variables make the most difference in the models adding .047 to the Nagelkerke R Square model summary. As mentioned, hypothesis two is supported because the models show an increased risk of diagnosis based on living in the West region. Rurality is not statistically significant again so it fails to support the first hypothesis.

Table 12 displays logistic regressions for lifetime DSM-5 MDD (h) for all females. The variables and categories that are statistically significant at the .001-level is age groups 66-75 and 76-90+, some college, associate degree, or technical certificate, all race/ethnicity variables, marital status of widowed, divorced, or separated, and the variable ISEL-12. Variables and categories statistically significant at the .01-level include an educational attainment of Bachelor's degree or higher and living in the West region. Statistically significant variables and categories at the .05-level is personal income of $20,000 to $34,999, religious attendance, and having children under 18 years old. A decreased risk of lifetime MDD (h) is experienced by females in the age groups 66 through 90+, females who have a personal income of $20,000 to $34,999, females classified as non-Hispanic black, non-Hispanic other, and Hispanic any race, females who have a higher ISEL-12 score, and females who have children under 18 years old. An increased risk for lifetime MDD (h) is found for females with some college, associate degree, or technical certification or a Bachelor's degree or higher, females who are divorced, widowed, or separated, and females who live in the West region.

Overall the models in Table 12 show us that the models improve with each additional variable or group of variables and the models are better than the null model. The variables that make the most difference include race/ethnicity and the social support variables. Race/ethnicity and social support variables each add similar amounts to the Nagelkerke R Square summary with .026 and .024. Hypothesis one is unsupported because rurality was not statistically significant. The West region is statistically significant at the .05-level again increasing female's chances of experiencing lifetime MDD (h) compared to females in the South region and supports hypothesis number two.

Table 13 shows the logistic regressions of past year DSM-5 dysthymia (nh) for all females. Variables and categories that are statistically significant in the final model are all age groups except 26 to 35 and 56 to 65, high school diploma or GED, all personal income groups except $10,000 to $19,999, all race/ethnicity groups, all marital status categories, ISEL-12, religious attendance, and having children under 18 years old. Variables and categories that are statistically significant at the .001-level include age groups 66 to 75 and 76 to 90+, personal incomes $20,000 to $34,999, $35,000 to $49,999, and $50,000 or more, race/ethnicity categories non-Hispanic black and Hispanic, being divorced, widowed, or separated, and ISEL-12. The variables and categories statistically significant at the .01-level are the age group 46 to 55, non-Hispanic other, never being married, attending religious services, and having children under 18 years old. Finally, the least statistically significant variables at the .05-level include the ages 36-45 and having a high school diploma or GED. Being in the age groups 36 to 45 and 56 to 65 increases a female's risk of past year dysthymia (nh) but

being in the age categories of 66 to 75 and 76 to 90+ decreases one's risk. Having a high school diploma or GED, having a personal income of $20,000 or more, being any race/ethnicity other than non-Hispanic white, having a higher ISEL-12 score, attending religious services and having children under 18 years old all decreases a female's risk of past year dysthymia (nh) diagnosis. Falling into the categories of never married or divorced, separated, or widowed increases the risk of past year dysthymia (nh).

For past year dysthymia (nh), the models improve with the addition of every variable or group of variables at each step. The variables that make the biggest difference are the social support variables, which add .068 to the Nagelkerke R Square summary. Neither rurality nor regions are statistically significant meaning Table 13 does not support hypothesis one or two.

Table 14 provides logistic regressions of prior to past year DSM-5 dysthymia (nh) and shows that every age group, all personal income groups over $20,000, all race/ethnicity categories, being widowed, divorced, or separated, social support variable ISEL-12, religious attendance, living in the West region, and having kids under 18 years old are all statistically significant. Compared to 18 and 25 year olds, being in the age groups 26 through 65 increases a female's risk of prior to past year dysthymia (nh) but being older than 66 decreases one's risk. Having a personal income of $20,000 or more and being non-Hispanic black, non-Hispanic other, or Hispanic each decreases a female's risk of experiencing prior to past year dysthymia (nh). Other variables that decrease a woman's risk of diagnosis include a high ISEL-12 score, attending religious services, and having children younger than 18 years old. The variables that increase a female's risk

other than specified age groups is being divorced, widowed, or separated and living in the West region.

Again, models are shown to be statistically significant meaning they are better than the null at predicting prior to past year dysthymia (nh) and improves with each variable or group of variables added. The biggest increase in the Nagelkerke R Square measure is when social support variables are included, adding .057. Rurality is not statistically significant but West region is significant at the .05-level and provides supports for hypothesis two. Hypothesis one is not supported because region does not increase or decrease a female's risk of prior to past year dysthymia (nh).

Table 15 shows the logistic regressions of past year DSM-5 dysthymia (h) for all females. Variables that show statistical significance in one or more categories include age, educational attainment, personal income, race/ethnicity, marital status, ISEL-12, religious attendance, and children less than 18 years old. Age categories 26-35 and 46-55 increases one's risk of past year dysthymia (h) whereas the ages 66-75 and 76-90+ decreases the risk. Having a high school diploma or GED and making a personal income of $20,000 or more both decrease female's risk of experiencing past year dysthymia (h). Compared to non-Hispanic white, non-Hispanic black, non-Hispanic other, and Hispanic any race experience a decreased risk of diagnosis. Attending religious services, having a higher ISEL-12 score, and having children under 18 years old also decreases one's risk of being diagnosed with past year dysthymia (h). Being widowed, separated, or divorced or never married both increases a female's risks of experiencing past year dysthymia (h).

For Table 15, the social support variables make the biggest difference for the models increasing the Nagelkerke R Square measure from .037 to .098 or adding .061 from Model 3 to Model 4. The models increase the predictability at every step. In Table 15 both rurality and region fail to be statistically significant and provides no support for neither hypothesis one nor hypothesis two.

Table 16 provides the logistic regressions of lifetime DSM-5 dysthymia (h) for all females. The variables that include at least one or more statistically significant category for the final model are age, personal income, race/ethnicity, marital status, ISEL-12, religious attendance, and having children under 18. The categories and variables that are statistically significant at the .001-level include age groups 26-35, 46-55, and 76-90+, personal income categories $20,000-$34,999, $35,000-$49,999, and $50,000 or more, race/ethnicity groups non-Hispanic black, non-Hispanic other, Hispanic any race, being widowed, divorced, or separated, and social support variable ISEL-12. Age groups 36-45 and 56-65 and having children under 18 years old are both statistically significant at the .01-level. Religious attendance is statistically significant at the .05-level.

Again, social support variables add the most to the Table 16 models with .050 added to the Nagelkerke R Square measure. Similar to Table 15, rurality and region are not statistically significant and therefore do not support hypothesis one or hypothesis two.

Table 8. Logistic Regressions of Past Year DSM-5 Major Depressive Episode (nonhierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	-0.170 (.066)*	-0.069 (.067)	-0.073 (.068)	-0.092 (.072)	-0.091 (.072)	-0.088 (.072)	-0.059 (.072)	4002
36 to 45	-0.167 (.067)*	-0.041 (.069)	-0.049 (.070)	-0.142 (.077)	-0.140 (.077)	-0.137 (.077)	-0.111 (.077)	3605
46 to 55	-0.193 (.068)**	-0.071 (.070)	-0.107 (.070)	-0.239 (.079)**	-0.238 (.079) **	-0.239 (.079)**	-0.274 (.079)**	3595
56 to 65	-0.278 (.072)***	-0.165 (.074)*	-0.243 (.075) **	-0.448 (.085)***	-0.446 (.085)***	-0.446 (.085)***	-0.521 (.087)***	2915
66 to 75	-0.700 (.095)***	-0.621 (.096)***	-0.741 (.097) ***	-0.961 (.106)***	-0.959 (.106)***	-0.966 (.107)***	-1.051 (.109)***	1718
76 to 90+	-1.308 (.131)***	-1.324 (.132)***	-1.483 (.133) ***	-1.866 (.142)***	-1.864 (.142)***	-1.875 (.143)***	-1.966 (.144)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		-0.063 (.066)	-0.135 (.067)*	-0.020 (.068)	-0.023 (.069)	-0.024 (.069)	-0.032 (.069)	5204
Some college, associate degree, or technical certificate		0.025 (.063)	-0.083 (.065)	0.088 (.067)	0.087 (.067)	0.078 (.067)	0.062 (.067)	6973
Bachelor's degree or higher		-0.125 (.073)	-0.274 (.076)***	-0.016 (.079)	-0.018 (.079)	-0.034 (.079)	-0.060 (.079)	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		0.002 (.053)	0.016 (.053)	-0.071 (.055)	-0.071 (.055)	-0.071 (.055)	-0.067 (.055)	5051
$20,000 to $34,999		-0.231 (.059)***	-0.216 (.059) ***	-0.255 (.061)***	-0.256 (.061)***	-0.255 (.061)***	-0.257 (.061)***	4422
$35,000 to $49,999		-0.287 (.076)***	-0.295 (.077) ***	-0.272 (.078)***	-0.273 (.078)**	-0.274 (.079)***	-0.276 (.079)***	2235
$50,000 or more		-0.389 (.079)***	-0.409 (.079) ***	-0.400 (.081)***	-0.402 (.081)***	-0.418 (.081)***	-0.422 (.081)***	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.487 (.055) ***	-0.560 (.059)***	-0.558 (.059)***	-0.546 (.060)***	-0.526 (.061)***	4501
Other, non-Hispanic			-0.404 (.092) ***	-0.463 (.094)***	-0.463 (.094)***	-0.520 (.095)***	-0.513 (.095)***	1223
Hispanic, any race			-0.373 (.057) ***	-0.391 (.058)***	-0.390 (.058)***	-0.452 (.061)***	-0.428 (.061)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married								8747
Widowed, divorced, or separated				0.577 (.052)***	0.576 (.052)***	0.577 (.053)***	0.571 (.053)***	6081
Never married				0.250 (.058)***	0.248 (.058)***	0.241 (.058)***	0.207 (.059)***	5125
Interpersonal Support Evaluation List-12 (range 0-36)				-0.066 (.003)***	-0.066 (.003)***	-0.066 (.003)***	-0.066 (.003)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-0.128 (.043)**	-0.129 (.043)**	-0.117 (.043)**	-0.108 (.043)*	10991
Body Mass Index					0.005 (.003)	0.005 (.003)	0.005 (.003)	19953
Region (reference: South)								
Midwest						-0.079 (.058)	-0.072 (.058)	4118
Northeast						0.101 (.063)	0.107 (.063)	2862
West						0.160 (.056)**	0.160 (.056)**	4813
Rurality (reference: urban)								
Rural						-0.052 (.059)	-0.048 (.059)	3358
Children <18 years old (reference: no)								
Yes							-0.187 (.049)***	7835
Model Summary								
-2 Log likelihood	16383.818	16314.977	16210.188	15575.808	15572.988	15555.133	15540.307	
Nagelkerke R Square	0.017	0.023	0.032	0.087	0.087	0.088	0.090	
Chi-Square	190.779***	259.621***	364.409***	998.789***	1001.610***	1019.465***	1034.290***	

Note: Past year DSM-5 Major Depressive Episode is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 9. Logistic Regressions of Prior to Past Year DSM-5 Major Depressive Episode (nonhierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	0.085 (.058)	0.096 (.060)	0.092 (.060)	0.040 (.063)	0.041 (.063)	0.043 (.063)	0.059 (.063)	4002
36 to 45	0.247 (.059)***	0.265 (.060)***	0.258 (.061)***	0.143 (.066)*	0.144 (.066)*	0.147 (.066)*	0.163 (.067)*	3605
46 to 55	0.271 (.059)***	0.307 (060)***	0.255 (.061)***	0.112 (.067)	0.113 (.067)	0.112 (.067)	0.094 (.068)	3595
56 to 65	0.287 (.061)***	0.317 (.063)***	0.198 (.064)**	-0.002 (.071)	-0.004 (.071)	-0.003 (.071)	-0.038 (.073)	2915
66 to 75	-0.125 (.075)	-0.084 (.076)	-0.273 (.077)***	-0.486 (.084)***	-0.485 (.084)***	-0.490 (.085)***	-0.537 (.087)***	1718
76 to 90+	-0.797 (.095)***	-0.732 (.096)***	-0.988 (.098)***	-1.321 (.106)***	-1.320 (.106)***	-1.328 (.106)***	-1.378 (.108)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		0.038 (.057)	-0.086 (.058)	-0.005 (.059)	-0.008 (.059)	-0.009 (.059)	-0.013 (.059)	5204
Some college, associate degree, or technical certificate		0.316 (.054)***	0.142 (.056)*	0.260 (.057)***	0.259 (.058)***	0.252 (.058)***	0.244 (.058)***	6973
Bachelor's degree or higher		0.316 (.061)***	0.076 (.064)	0.250 (.065)***	0.248 (.065)***	0.237 (.065)***	0.225 (.066)**	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		0.047 (.045)	0.071 (.046)	0.016 (.047)	0.016 (.047)	0.016 (.047)	0.017 (.047)	5051
$20,000 to $34,999		-0.131 (.049)**	-0.107 (.049)*	-0.137 (.050)**	-0.138 (.050)**	-0.137 (.050)**	-0.139 (.050)**	4422
$35,000 to $49,999		-0.136 (.061)*	-0.147 (.061)*	-0.139 (.062)*	-0.138 (.062)*	-0.138 (.062)*	-0.140 (.062)*	2235
$50,000 or more		-0.103 (.060)	-0.134 (.061)*	-0.128 (.062)*	-0.129 (.062)*	-0.140 (.062)*	-0.143 (.062)*	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.806 (.046)***	-0.823 (.049)***	-0.821 (.049)***	-0.809 (.051)***	-0.799 (.051)***	4501
Other, non-Hispanic			-0.582 (.075)***	-0.623 (.075)***	-0.622 (.075)***	-0.664 (.077)***	-0.660 (.077)***	1223
Hispanic, any race			-0.609 (.048)***	-0.622 (.049)***	-0.622 (.049)***	-0.667 (.051)***	-0.654 (.052)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married								8747
Widowed, divorced, or separated				0.384 (.042)***	0.383 (.042)***	0.384 (.042)***	0.381 (.042)***	6081
Never married				0.020 (.048)	0.018 (.048)	0.021 (.048)	-0.007 (.049)	5125
Interpersonal Support Evaluation List-12 (range 0-36)				-0.045 (.003)***	-0.045 (.003)***	-0.045 (.003)***	-0.045 (.003)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-0.115 (.035)**	-0.116 (.035)**	-0.106 (.035)**	-0.100 (.035)**	10991
Body Mass Index					0.004 (.002)	0.004 (.002)	0.004 (.002)	19953
Region (reference: South)								
Midwest						- .045 (.047)	-0.042 (.047)	4118
Northeast						0.089 (.052)	0.093 (.052)	2862
West						0.128 (.046)**	0.128 (.046)**	4813
Rurality (reference: urban)								
Rural						-0.028 (.047)	-0.026 (.047)	3358
Children <18 years old (reference: no)								
Yes							-0.103 (.040)*	7835
Model Summary								
-2 Log likelihood	22178.556	22105.890	21698.560	21285.824	21282.618	21267.508	21260.969	
Nagelkerke R Square	0.016	0.022	0.051	0.080	0.081	0.082	0.082	
Chi-Square	219.594***	292.260***	699.591***	1112.326***	1115.533***	1130.643***	1137.182***	

Note: Prior to past year DSM-5 Major Depressive Episode is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 10. Logistic Regressions of Lifetime DSM-5 Major Depressive Episode (nonhierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	0.061 (.056)	0.079 (.058)	0.074 (.058)	0.027 (.061)	0.028 (.061)	0.031 (.061)	0.046 (.061)	4002
36 to 45	0.173 (.057)**	0.199 (.059)**	0.191 (.059)**	0.080 (.064)	0.081 (.064)	0.084 (.064)	0.099 (.065)	3605
46 to 55	0.205 (.057)***	0.246 (.059)***	0.195 (.059)**	0.056 (.065)	0.057 (.065)	0.055 (.065)	0.037 (.066)	3595
56 to 65	0.214 (.060)***	0.249 (.061)***	0.135 (.062)*	-0.059 (.069)	-0.057 (.069)	-0.059 (.069)	-0.099 (.071)	2915
66 to 75	-0.195 (.073)**	-0.153 (.074)*	-0.333 (.075)***	-0.546 (.082)***	-0.545 (.082)***	-0.551 (.082)***	-0.597 (.084)***	1718
76 to 90+	-0.868 (.092)***	-0.807 (.093)***	-1.051 (.095)***	-1.389 (.103)***	-1.387 (.103)***	-1.396 (.103)***	-1.444 (.105)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		0.025 (.055)	-0.092 (.056)	-0.011 (.057)	-0.013 (.057)	-0.014 (.058)	-0.019 (.058)	5204
Some college, associate degree, or technical certificate		0.270 (.053)***	0.105 (.055)	0.223 (.056)***	0.222 (.056)***	0.216 (.056)***	0.208 (.056)***	6973
Bachelor's degree or higher		0.262 (.059)***	0.036 (.062)	0.214 (.063)**	0.212 (.063)**	0.201 (.064)**	0.189 (.064)**	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		0.033 (.044)	0.054 (.045)	-0.004 (.046)	-0.004 (.046)	-0.004 (.046)	-0.002 (.046)	5051
$20,000 to $34,999		-0.135 (.047)**	-0.114 (.048)*	-0.147 (.049)**	-0.147 (.049)**	-0.146 (.049)**	-0.148 (.049)**	4422
$35,000 to $49,999		-0.148 (.059)*	-0.159 (.060)**	-0.153 (.061)*	-0.152 (.061)*	-0.152 (.061)*	-0.154 (.061)*	2235
$50,000 or more		-0.122 (.059)*	-0.152 (.060)*	-0.149 (.061)*	-0.150 (.061)*	-0.162 (.061)**	-0.164 (.061)**	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.738 (.044)***	-0.757 (.047)***	-0.755 (.047)***	-0.740 (.049)***	-0.730 (.049)***	4501
Other, non-Hispanic			-0.582 (.047)***	-0.624 (.074)***	-0.624 (.074)***	-0.669 (.075)***	-0.665 (.075)***	1223
Hispanic, any race			-0.582 (.047)***	-0.596 (.048)***	-0.595 (.048)***	-0.642 (.050)***	-0.630 (.050)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married								8747
Widowed, divorced, or separated				0.404 (.041)***	0.404 (.041)***	0.406 (.041)***	0.403 (.041)***	6081
Never married				0.037 (.047)	0.035 (.047)	0.031 (.047)	0.012 (.048)	5125
Interpersonal Support Evaluation List-12 (range 0-36)				-0.046 (.003)***	-0.046 (.003)***	-0.046 (.003)***	-0.046 (.003)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-0.123 (.034)***	-0.123 (.034)***	-0.113 (.035)**	-0.108 (.035)**	10991
Body Mass Index					0.005 (.002)*	0.005 (.002)	0.005 (.002)	19953
Region (reference: South)								
Midwest						-0.054 (.046)	-0.051 (.046)	4118
Northeast						0.091 (.051)	0.095 (.051)	2862
West						0.143 (.045)**	0.143 (.045)**	4813
Rurality (reference: urban)								
Rural						-0.016 (.046)	-0.013 (.046)	3358
Children <18 years old (reference: no)								
Yes							-0.100 (.039)*	7835
Model Summary								
-2 Log likelihood	22926.962	22868.616	22494.755	22040.329	22036.488	22017.536	22011.099	
Nagelkerke R Square	0.016	0.020	0.047	0.079	0.079	0.080	0.081	
Chi-Square	223.626***	281.972***	655.833***	1110.259***	1114.100***	1133.052***	1139.488***	

Note: Lifetime DSM-5 Major Depressive Episode is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 11. Logistic Regressions of Past Year DSM-5 Major Depressive Disorder (hierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	-0.120 (.069)	-0.039 (.070)	-0.044 (.070)	-0.072 (.074)	-0.070 (.074)	-0.067 (.074)	-0.037 (.075)	4002
36 to 45	-0.148 (.070)*	-0.046 (.073)	-0.054 (.073)	-0.161 (.080)*	-0.160 (.080)*	-0.155 (.080)	-0.127 (.080)	3605
46 to 55	-0.163 (.071)*	-0.063 (.073)	-0.096 (.073)	-0.240 (.082)**	-0.240 (.082)**	-0.238 (.082)**	-0.276 (.082)**	3595
56 to 65	-0.205 (.075)**	-0.113 (.077)	-0.184 (.077)*	-0.401 (.088)***	-0.399 (.088)***	-0.396 (.088)***	-0.476 (.090)***	2915
66 to 75	-0.639 (.098)***	-0.573 (.099)***	-0.683 (.100)***	-0.916 (.110)***	-0.914 (.110)***	-0.918 (.110)***	-1.008 (.112)***	1718
76 to 90+	-1.239 (.132)***	-1.188 (.133)***	-1.334 (.134)***	-1.723 (.144)***	-1.721 (.144)***	-1.730 (.144)***	-1.827 (.146)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		-0.045 (.069)	-0.108 (.070)	-0.002 (.071)	-0.000 (.071)	-0.002 (.071)	-0.010 (.071)	5204
Some college, associate degree, or technical certificate		0.047 (.066)	-0.048 (.068)	0.113 (.070)	0.112 (.070)	0.102 (.070)	0.086 (.070)	6973
Bachelor's degree or higher		-0.074 (.076)	-0.204 (.079)*	0.040 (.081)	0.038 (.081)	0.020 (.082)	-0.008 (.082)	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		0.008 (.056)	0.021 (.056)	-0.062 (.057)	-0.062 (.057)	-0.062 (.057)	-0.058 (.057)	5051
$20,000 to $34,999		-0.200 (.061)**	-0.186 (.061)**	-0.224 (.063)***	-0.225 (.063)***	-0.225 (.063)***	-0.227 (.063)***	4422
$35,000 to $49,999		-0.214 (.078)**	-0.221 (.078)**	-0.201 (.080)*	-0.199 (.080)*	-0.201 (.080)*	-0.203 (.080)*	2235
$50,000 or more		-0.321 (.081)***	-0.339 (.081)***	-0.329 (.083)***	-0.330 (.083)***	-0.348 (.083)***	-0.351 (.083)***	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.469 (.057)***	-0.537 (.061)***	-0.535 (.061)***	-0.536 (.062)***	-0.515 (.063)***	4501
Other, non-Hispanic			-0.438 (.097)***	-0.492 (.099)***	-0.491 (.099)***	-0.549 (.100)***	-0.541 (.100)***	1223
Hispanic, any race			-0.324 (.059)***	-0.342 (.060)***	-0.341 (.060)***	-0.409 (.063)***	-0.383 (.063)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married								8747
Widowed, divorced, or separated				0.562 (.054)***	0.561 (.054)***	0.560 (.054)***	0.553 (.054)***	6081
Never married				0.216 (.060)***	0.214 (.060)***	0.206 (.060)**	0.169 (.061)**	5125
Interpersonal Support Evaluation List-12 (range 0-36)				-0.062 (.003)***	-0.062 (.003)***	-0.062 (.003)***	-0.062 (.003)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-0.096 (.044)*	-0.096 (.044)*	-0.086 (.045)	-0.076 (.045)	10991
Body Mass Index					0.005 (.003)	0.005 (.003)	0.005 (.003)	19953
Region (reference: South)								
Midwest						-0.109 (.060)	-0.101 (.060)	4118
Northeast						0.079 (.065)	0.086 (.065)	2862
West						0.125 (.057)*	0.125 (.057)*	4813
Rurality (reference: urban)								
Rural						-0.090 (.062)	-0.085 (.062)	3358
Children <18 years old (reference: no)								
Yes							-0.200 (.050)***	7835
Model Summary								
-2 Log likelihood	15536.358	15493.989	15404.397	14875.641	14872.805	14855.979	14840.084	
Nagelkerke R Square	0.014	0.018	0.026	0.073	0.073	0.075	0.076	
Chi-Square	150.921***	193.290***	282.882***	811.638***	814.474***	831.300***	847.195***	

Note: Past year DSM-5 Major Depressive Disorder is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 12. Logistic Regressions of Lifetime DSM-5 Major Depressive Disorder (hierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	0.092 (.058)	0.090 (.059)	0.085 (.060)	0.029 (.062)	0.030 (.062)	0.032 (.063)	0.048 (.063)	4002
36 to 45	0.193 (.059)**	0.194 (.060)**	0.186 (.061)**	0.065 (.066)	0.066 (.066)	0.069 (.066)	0.085 (.066)	3605
46 to 55	0.241 (.058)***	0.258 (.060)***	0.211 (.061)**	0.063 (.067)	0.063 (.067)	0.063 (.067)	0.045 (.067)	3595
56 to 65	0.272 (.061)***	0.286 (.062)***	0.178 (.063)**	-0.021 (.071)	-0.020 (.071)	-0.019 (.071)	-0.060 (.073)	2915
66 to 75	-0.140 (.075)	-0.111 (.076)	-0.282 (.077)***	-0.498 (.084)***	-0.497 (.084)***	-0.501 (.084)***	-0.548 (.086)***	1718
76 to 90+	-0.760 (.094)***	-0.706 (.095)***	-0.937 (.096)***	-1.265 (.104)***	-1.264 (.104)***	-1.271 (.104)***	-1.320 (.106)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		0.021 (.057)	-0.090 (.058)	-0.017 (.059)	-0.019 (.059)	-0.020 (.059)	-0.025 (.059)	5204
Some college, associate degree, or technical certificate		0.279 (.054)***	0.123 (.056)*	0.229 (.057)***	0.228 (.057)***	0.221 (.057)***	0.213 (.057)***	6973
Bachelor's degree or higher		0.294 (.061)***	0.083 (.063)	0.242 (.065)***	0.240 (.065)***	0.228 (.065)***	0.216 (.065)**	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		0.025 (.046)	0.045 (.046)	-0.007 (.047)	-0.007 (.047)	-0.006 (.047)	-0.005 (.047)	5051
$20,000 to $34,999		-0.102 (.048)*	-0.082 (.049)	-0.111 (.050)*	-0.111 (050)*	-0.110 (.050)*	-0.112 (.050)*	4422
$35,000 to $49,999		-0.088 (.060)	-0.098 (.061)	-0.092 (.062)	-0.090 (.062)	-0.090 (.062)	-0.092 (.062)	2235
$50,000 or more		-0.062 (.060)	-0.090 (.061)	-0.084 (.062)	-0.086 (.062)	-0.097 (.062)	-0.100 (.062)	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.720 (.046)***	-0.731 (.048)***	-0.729 (.048)***	-0.722 (.050)***	-0.712 (.050)***	4501
Other, non-Hispanic			-0.601 (.075)***	-0.636 (.076)***	-0.635 (.076)***	-0.678 (.077)***	-0.675 (.077)***	1223
Hispanic, any race			-0.544 (.048)***	-0.555 (.049)***	-0.555 (.049)***	-0.603 (.051)***	-0.590 (.051)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married				0.366 (.042)***	0.366 (.042)***	0.366 (.042)***	0.363 (.042)***	8747
Widowed, divorced, or separated				-0.002 (.048)	-0.003 (.048)	-0.008 (.048)	-0.027 (.049)	6081
Never married								5125
Interpersonal Support Evaluation List-12 (range 0-36)				-0.041 (.003)***	-0.041 (.003)***	-0.041 (.003)***	-0.041 (.003)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-0.196 (.035)**	-0.096 (.035)**	-0.087 (.035)*	-0.082 (.035)*	10991
Body Mass Index					0.004 (.002)	0.004 (.002)	0.004 (.002)	19953
Region (reference: South)								
Midwest						-0.074 (.046)	-0.070 (.046)	4118
Northeast						0.079 (.052)	0.082 (.052)	2862
West						0.114 (.046)*	0.114 (.046)**	4813
Rurality (reference: urban)								
Rural						-0.035 (.047)	-0.033 (.047)	3358
Children <18 years old (reference: no)								
Yes							-0.102 (.040)*	7835
Model Summary								
-2 Log likelihood	22214.414	22153.500	21815.866	21464.632	21461.326	21444.905	21438.415	
Nagelkerke R Square	0.014	0.019	0.043	0.069	0.069	0.070	0.070	
Chi-Square	194.767***	255.682***	593.315***	944.549***	947.856***	964.276***	970.767***	

Note: Lifetime DSM-5 Major Depressive Disorder is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 13. Logistic Regressions of Past Year DSM-5 Dysthymia (nonhierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	0.051 (.125)	0.228 (.127)	0.230 (.128)	0.212 (.134)	0.213 (.134)	0.216 (.134)	0.251 (.134)	4002
36 to 45	0.172 (.125)	0.400 (.128)**	0.398 (.128)**	0.302 (.140)*	0.302 (.140)*	0.306 (.140)*	0.333 (.140)*	3605
46 to 55	0.462 (.119)***	0.685 (.122)***	0.630 (.123)***	0.509 (.137)***	0.509 (.137)***	0.511 (.137)***	0.463 (.138)**	3595
56 to 65	0.306 (.127)*	0.507 (.130)***	0.391 (.131)**	0.206 (.148)	0.207 (.148)	0.209 (.148)	0.116 (.152)	2915
66 to 75	-0.558 (.187)**	-0.429 (.189)*	-0.611 (.190)**	-0.774 (.204)***	-0.773 (204)***	-0.773 (.204)***	-0.877 (.207)***	1718
76 to 90+	-0.805 (.224)***	-0.725 (.226)**	-0.967 (.228)***	-1.264 (.242)***	-1.264 (.242)***	-1.263 (.242)***	-1.374 (.245)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		-0.275 (.106)**	-0.423 (.108)***	-0.275 (.110)*	-0.276 (.110)*	-0.274 (.110)*	-0.281 (.111)*	5204
Some college, associate degree, or technical certificate		-0.095 (.100)	-0.300 (.103)**	-0.057 (.106)	-0.057 (.106)	-0.061 (.106)	-0.078 (.107)	6973
Bachelor's degree or higher		-0.271 (.121)*	-0.539 (.125)***	-0.173 (.129)	-0.173 (.129)	-0.180 (.130)	-0.207 (.130)	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		0.003 (.086)	0.021 (.086)	-0.074 (.089)	-0.074 (.089)	-0.074 (.089)	-0.066 (.089)	5051
$20,000 to $34,999		-0.426 (.101)***	-0.408 (.101)***	-0.419 (.104)***	-0.419 (.104)***	-0.421 (.104)***	-0.419 (.104)***	4422
$35,000 to $49,999		-0.792 (.146)***	-0.805 (.146)***	-0.729 (.149)***	-0.728 (.149)***	-0.731 (.149)***	-0.728 (.149)***	2235
$50,000 or more		-0.771 (.142)***	-0.808 (.142)***	-0.752 (.146)***	-0.753 (.146)***	-0.757 (.146)***	-0.757 (.146)***	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.624 (.095)***	-0.662 (.101)***	-0.660 (.101)***	-0.651 (.104)***	-0.627 (.105)***	4501
Other, non-Hispanic			-0.459 (.158)***	-0.527 (.161)**	-0.527 (.161)***	-0.557 (.163)**	-0.546 (.163)**	1223
Hispanic, any race			-0.733 (.104)***	-0.727 (.106)***	-0.727 (.106)***	-0.754 (.110)***	-0.719 (.111)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married				.559*** (.088)	0.559 (.088)***	0.557 (.088)***	0.546 (.088)***	8747
Widowed, divorced, or separated				.313** (.101)	0.312 (.101)**	0.311 (.102)**	0.266 (.103)**	6081
Never married								5125
Interpersonal Support Evaluation List-12 (range 0-36)				-.087*** (.005)	-0.087 (.005)***	-0.087 (.005)***	-0.087 (.005)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-.265*** (.074)	-0.266 (.074)***	-0.263 (.074)***	-0.255 (.074)**	10991
Body Mass Index					0.003 (.005)	0.003 (.005)	0.002 (.005)	19953
Region (reference: South)								
Midwest						-0.006 (.096)	0.002 (.097)	4118
Northeast						-0.028 (.109)	-0.021 (.109)	2862
West						0.094 (.096)	0.093 (.096)	4813
Rurality (reference: urban)								
Rural						-0.029 (.097)	-0.026 (.097)	3358
Children <18 years old (reference: no)								
Yes							-0.235 (.084)**	7835
Model Summary								
-2 Log likelihood	7206.497	7106.945	7027.680	6606.900	6606.642	6604.991	6597.045	
Nagelkerke R Square	0.013	0.029	0.042	0.110	0.110	0.110	0.111	
Chi-Square	81.099***	180.651***	259.961***	680.697***	680.954***	682.605***	690.551***	

Note: Past year DSM-5 dysthymia is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 14. Logistic Regressions of Prior to Past Year DSM-5 Dysthymia (nonhierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	0.237 (.103)*	0.384 (.104)***	0.386 (.105)***	0.371 (.110)**	0.372 (.110)**	0.376 (.110)**	0.417 (.110)***	4002
36 to 45	0.295 (.104)**	0.482 (.106)***	0.477 (.106)***	0.398 (.115)**	0.398 (.115)**	0.403 (.115)***	0.440 (.116)***	3605
46 to 55	0.575 (.100)***	0.768 (.102)***	0.711 (.102)***	0.610 (.113)***	0.610 (.113)***	0.612 (.113)***	0.561 (.114)***	3595
56 to 65	0.579 (.103)***	0.753 (.105)***	0.628 (.106)***	0.472 (.119)***	0.473 (.119)***	0.476 (.119)***	0.371 (.122)**	2915
66 to 75	-0.033 (.134)	0.097 (.135)	-0.101 (.136)	-0.242 (.148)	-0.242 (.148)	-0.243 (.149)	-0.361 (.151)*	1718
76 to 90+	-0.466 (.166)**	-0.358 (.167)*	-0.622 (.169)***	-0.895 (.181)***	-0.895 (.181)***	-0.906 (.182)***	-1.032 (.184)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		-0.102 (.088)	-0.263 (.090)**	-0.128 (.092)	-0.129 (.092)	-0.132 (.092)	-0.141 (.092)	5204
Some college, associate degree, or technical certificate		0.120 (.083)	-0.101 (.086)	0.111 (.088)	0.111 (.088)	0.096 (.089)	0.078 (.089)	6973
Bachelor's degree or higher		0.020 (.096)	-0.271 (.100)**	0.037 (.103)	0.036 (.103)	-0.009 (.104)	-0.020 (.104)	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		-0.014 (.069)	0.009 (.070)	-0.072 (.072)	-0.072 (.072)	-0.075 (.072)	-0.070 (.072)	5051
$20,000 to $34,999		-0.457 (.080)***	-0.438 (.081)***	-0.457 (.083)***	-0.457 (.083)***	-0.463 (.083)***	-0.464 (.083)***	4422
$35,000 to $49,999		-0.543 (.104)***	-0.556 (.104)***	-0.501 (.107)***	-0.500 (.107)***	-0.509 (.107)***	-0.510 (.107)***	2235
$50,000 or more		-0.683 (.106)***	-0.722 (.107)***	-0.682 (.109)***	-0.683 (.109)***	-0.701 (.110)***	-0.705 (.110)***	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.743 (.077)***	-0.786 (.082)***	-0.786 (.082)***	-0.769 (.084)***	-0.743 (.085)***	4501
Other, non-Hispanic			-0.475 (.123)***	-0.549 (.125)***	-0.549 (.125)***	-0.600 (.127)***	-0.589 (.127)***	1223
Hispanic, any race			-0.783 (.084)***	-0.799 (.086)***	-0.799 (.086)***	-0.851 (.089)***	-0.814 (.089)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married				0.439 (.068)***	0.439 (.068)***	0.436 (.068)***	0.425 (.068)***	8747
Widowed, divorced, or separated				0.222 (.080)**	0.221 (.080)**	0.203 (.081)*	0.152 (.081)	6081
Never married								5125
Interpersonal Support Evaluation List-12 (range 0-36)				-0.078 (.004)***	-0.078 (.004)***	-0.078 (.004)***	-0.078 (.004)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-0.213 (.058)***	-0.213 (.058)***	-0.202 (.058)**	-0.191 (.058)**	10991
Body Mass Index					0.002 (.004)	0.002 (.004)	0.001 (.004)	19953
Region (reference: South)								
Midwest						0.080 (.076)	0.089 (.076)	4118
Northeast						0.108 (.085)	0.116 (.085)	2862
West						0.172 (.075)*	0.170 (.075)*	4813
Rurality (reference: urban)								
Rural						-0.109 (.077)	-0.106 (.077)	3358
Children <18 years old (reference: no)								
Yes							-0.269 (.067)***	7835
Model Summary								
-2 Log likelihood	10499.553	10402.184	10245.107	9764.214	9764.059	9755.489	9739.341	
Nagelkerke R Square	0.013	0.024	0.043	0.100	0.100	0.101	0.103	
Chi-Square	103.254***	200.623***	357.700***	838.593***	838.748***	847.318***	863.466***	

Note: Prior to past year DSM-5 dysthymia is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 15. Logistic Regressions of Past Year DSM-5 Dysthymia (hierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	0.117 (.137)	0.281 (.139)*	0.283 (.139)*	0.253 (.146)	0.255 (.146)	0.257 (.146)	0.290 (.146)*	4002
36 to 45	0.159 (.139)	0.368 (.141)**	0.365 (.142)*	0.250 (.154)	0.252 (.154)	0.256 (.154)	0.282 (.154)	3605
46 to 55	0.545 (.130)***	0.752 (.133)***	0.699 (.134)***	0.561 (.148)***	0.561 (.148)***	0.566 (.149)***	0.522 (.150)***	3595
56 to 65	0.396 (.139)**	0.582 (.141)***	0.474 (.142)**	0.271 (.160)	0.273 (.160)	0.278 (.160)	0.192 (.164)	2915
66 to 75	-0.475 (.202)*	-0.353 (.204)	-0.523 (.205)*	-0.701 (.219)**	-0.700 (.219)**	-0.697 (.219)**	-0.794 (.223)***	1718
76 to 90+	-0.585 (.229)*	-0.507 (.231)*	-0.734 (.233)**	-1.042 (.248)***	-1.041 (.249)***	-1.035 (.249)***	-1.137 (.252)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		-0.295 (.115)*	-0.436 (.117)***	-0.290 (.119)*	-0.291 (.119)*	-0.287 (.119)*	-0.293 (.119)*	5204
Some college, associate degree, or technical certificate		-0.082 (.108)	-0.274 (.111)*	-0.037 (.114)	-0.037 (.114)	-0.040 (.114)	-0.055 (.114)	6973
Bachelor's degree or higher		-0.234 (.129)	-0.481 (.134)***	-0.128 (.138)	-0.129 (.138)	-0.132 (.139)	-0.155 (.139)	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		.015 (.093)	0.030 (.093)	-0.058 (.096)	-0.057 (.096)	-0.055 (.096)	-0.049 (.096)	5051
$20,000 to $34,999		-.432*** (.109)	-0.418 (.110)***	-0.424 (.112)***	-0.424 (.112)***	-0.425 (.112)***	-0.424 (.112)***	4422
$35,000 to $49,999		-.708*** (.154)	-0.722 (.154)***	-0.639 (.156)***	-0.637 (.156)***	-0.639 (.157)***	-0.636 (.157)***	2235
$50,000 or more		-.697*** (.150)	-0.732 (.150)***	-0.666 (.154)***	-0.667 (.154)***	-0.668 (.154)***	-0.669 (.154)***	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.567 (.101)***	-0.604 (.108)***	-0.601 (.108)***	-0.599 (.111)***	-0.576 (.111)***	4501
Other, non-Hispanic			-0.510 (.175)**	-0.580 (.178)**	-0.579 (.178)**	-0.606 (.180)**	-0.596 (.180)**	1223
Hispanic, any race			-0.693 (.112)***	-0.692 (.114)***	-0.691 (.114)***	-0.714 (.119)***	-0.682 (.119)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married								8747
Widowed, divorced, or separated				0.528 (.093)***	0.527 (.093)***	0.524 (.094)***	0.514 (.094)***	6081
Never married				0.275 (.109)*	0.273 (.109)*	0.274 (.109)*	0.234 (.111)*	5125
Interpersonal Support Evaluation List-12 (range 0-36)				-0.085 (.005)***	-0.085 (.005)***	-0.086 (.005)***	-0.085 (.005)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-0.216 (.079)**	-0.217 (.079)**	-0.218 (.080)**	-0.210** (.080)	10991
Body Mass Index					0.005 (.005)	0.005 (.005)	0.005 (.005)	19953
Region (reference: South)								
Midwest						-0.020 (.103)	-0.013 (.103)	4118
Northeast						-0.100 (.119)	-0.095 (.119)	2862
West						0.068 (.102)	0.067 (.102)	4813
Rurality (reference: urban)								
Rural						-0.034 (.104)	-0.032 (.104)	3358
Children <18 years old (reference: no)								
Yes							-0.218 (.090)*	7835
Model Summary								
-2 Log likelihood	6415.158	6339.919	6279.464	5935.454	5934.681	5932.715	5926.857	
Nagelkerke R Square	0.012	0.026	0.037	0.098	0.098	0.098	0.099	
Chi-Square	68.410***	143.649***	204.105***	548.114***	548.887***	550.853***	556.712***	

Note: Past year DSM-5 dysthymia is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 16. Logistic Regressions of Lifetime DSM-5 Dysthymia (hierarchical) All Females, N=19,953: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	n
Age (reference: 18 to 25 years old)								
18 to 25								2751
26 to 35	0.287 (.111)*	0.411 (.113)***	0.411 (.113)***	0.380 (.118)**	0.381 (.118)**	0.385 (.118)**	0.422 (.119)***	4002
36 to 45	0.285 (.113)*	0.443 (.116)***	0.437 (.116)***	0.332 (.125)**	0.333 (.125)**	0.339 (.125)**	0.372 (.126)**	3605
46 to 55	0.636 (.108)***	0.805 (.110)***	0.749 (.111)***	0.621 (.122)***	0.621 (.122)***	0.627 (.122)***	0.581 (.123)***	3595
56 to 65	0.684 (.111)***	0.835 (.113)***	0.713 (.114)***	0.529 (.127)***	0.531 (.127)***	0.537 (.127)***	0.443 (.130)**	2915
66 to 75	0.048 (.143)	0.165 (.144)	-0.027 (.146)	-0.197 (.158)	-0.196 (.158)	-0.194 (.158)	-0.300 (.161)	1718
76 to 90+	-0.288 (.171)	-0.186 (173)	-0.442 (.174)*	-0.741 (.187)***	-0.740 (.187)***	-0.746 (.188)***	-0.859 (.190)***	1367
Education (reference: Less than high school)								
Less than high school								2949
High school diploma or GED		-0.103 (.094)	-0.260 (.096)**	-0.127 (.098)	-0.128 (.098)	-0.130 (.098)	-0.137 (.098)	5204
Some college, associate degree, or technical certificate		0.128 (.089)	-0.086 (.092)	0.118 (.094)	0.118 (.094)	0.104 (.095)	0.088 (.095)	6973
Bachelor's degree or higher		0.087 (.102)	-0.195 (.106)	0.100 (.109)	0.099 (.109)	0.074 (.110)	0.049 (.110)	4827
Personal Income (reference: $0 to $9,999)								
$0 to $9,999								5641
$10,000 to $19,999		-0.013 (.074)	0.010 (.075)	-0.066 (.077)	-0.066 (.077)	-0.068 (.077)	-0.064 (.077)	5051
$20,000 to $34,999		-0.433 (.086)***	-0.414 (.086)***	-0.429 (.088)***	-0.429 (.088)***	-0.434 (.088)***	-0.436 (.088)***	4422
$35,000 to $49,999		-0.452 (.108)***	-0.463 (.109)***	-0.403 (.111)***	-0.402 (.111)***	-0.410 (.111)***	-0.411 (.111)***	2235
$50,000 or more		-0.628 (.111)***	-0.665 (.112)***	-0.618 (.114)***	-0.619 (.114)***	-0.634 (.115)***	-0.638 (.115)***	2604
Race/Ethnicity (reference: White)								
White, non-Hispanic								10385
Black, non-Hispanic			-0.735 (.082)***	-0.776 (.087)***	-0.774 (.087)***	-0.765 (.090)***	-0.741 (.090)***	4501
Other, non-Hispanic			-0.472 (.131)***	-0.543 (.133)***	-0.543 (.133)***	-0.595 (.135)***	-0.585 (.135)***	1223
Hispanic, any race			-0.759 (.090)***	-0.779 (.091)***	-0.778 (.091)***	-0.831 (.095)***	-0.797 (.095)***	3844

Marital Status (reference: Married or living as if married)								
Married or living together as if married								8747
Widowed, divorced, or separated				0.418 (.072)***	0.418 (.072)***	0.412 (.072)***	0.402 (.072)***	6081
Never married				0.174 (.086)*	0.173 (.086)*	0.157 (.086)	0.111 (.087)	5125
Interpersonal Support Evaluation List-12 (range 0-36)				-0.076 (.004)***	-0.076 (.004)***	-0.076 (.004)***	-0.076 (.004)***	19953
Do you currently attend religious services? (reference: no)								
Yes				-0.164 (.061)**	-0.164 (.061)**	-0.156 (.062)*	-0.146 (.062)*	10991
Body Mass Index					0.003 (.004)	0.003 (.004)	0.003 (.004)	19953
Region (reference: South)								
Midwest						0.062 (.080)	0.070 (.080)	4118
Northeast						0.043 (.091)	0.050 (.091)	2862
West						0.152 (.080)	0.150 (.080)	4813
Rurality (reference: urban)								
Rural						-0.124 (.082)	-0.121 (.082)	3358
Children <18 years old (reference: no)								
Yes							-0.241 (.072)**	7835
Model Summary								
-2 Log likelihood	9539.363	9470.338	9337.364	8941.439	8940.846	8933.812	8922.363	
Nagelkerke R Square	0.013	0.022	0.039	0.089	0.089	0.090	0.092	
Chi-Square	95.972***	164.997***	297.971***	693.895***	694.488***	701.522***	712.972***	

Note: Lifetime DSM-5 dysthymia is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Logistic Regression Analysis for All Mothers

To test whether mother's experience depressive disorder risks differently than all females I have provided separate logistic regressions for all depressive disorders for only females who have children under 18 years old. The sample size is 7,835. Age groups are combined from ages 56 to 90+ in an attempt to make similar sized groups but still results in the smallest group included in the analysis with only 457 mothers in this category. For every depressive disorder model, the social support variables appeared to make the most difference when added to the models. Specifically, being divorced, widowed, or separated increases a mother's risk of experiencing every depressive disorder. Having a higher ISEL-12 score and being any race/ethnicity except non-Hispanic white also appears to be statistically significant for every depressive disorder and decreases a mother's risk of depressive disorders. Age, educational attainment, personal income, religious attendance, never being married, and BMI also appears to be statistically significant throughout the tables but varies enough to exclude them from a general summary. Each variable will be discussed in detail for each specific depressive disorder.

Table 17 includes logistic regressions of past year DSM-5 MDE (nh) for mothers. The final model shows that the age group 36-45, all race/ethnicity categories, widowed, divorced, or separated, ISEL-12, and religious attendance are all statistically significant. Race/ethnicity variables, being widowed, divorced, or separated, and ISEL-12 are all significant at the .001-level. In addition, all statistically significant variables decrease a mother's risk of experiencing past year MDE (nh) with the exception of the category

widowed, divorced, or separated. Adding age to the model did not make the chi-square value statistically significant meaning it was not better than the null at predicting past year MDE (nh). The social support variables make the biggest difference in the models adding .058 to the Nagelkerke R Square measure. Hypothesis one and hypothesis two are not supported because region and rurality are not statistically significant.

Logistic regressions of prior to past year DSM-5 MDE (nh) for mothers is found in Table 18. The final model shows the variables and categories that are statistically significant at the .001-level including some college, associate degree, or technical certificate, non-Hispanic black, non-Hispanic other, and Hispanic any race, being widowed, separated, or divorced, and the social support variable ISEL-12. Having a Bachelor's degree or higher, and attending religious services are statistically significant at the .05-level. The higher educational attainment variables of some college, associate degree, or technical certificate or Bachelor's degree or higher as well as being divorced, widowed, or separated actually increase a mother's chance of experiencing prior to past year MDE (nh). Non-Hispanic black, non-Hispanic other, and Hispanic any race along with ISEL-12 and religious attendance variables and categories all decrease a mother's risk of prior to past year MDE (nh). The variables that make the biggest impact on the models are the social support variables. Nagelkerke R Square measures jump from .047 to .086 with the addition of the social support variables in Model 4. Region and rurality are not statistically significant meaning they do not support either hypothesis one or two.

Table 19 shows the logistic regression of lifetime DSM-5 MDE (nh) for mothers. Variables and categories that are statistically significant and increase a mother's risk of

experiencing lifetime MDE (nh) are some college, associate degree, or technical certificate and Bachelor's degree or higher as well as being widowed, divorced, or separated. Being non-Hispanic black, non-Hispanic other, Hispanic any race, attending religious services, and having a high ISEL-12 score decreases a mother's risk of experiencing lifetime MDE (nh). Social support variables and race/ethnicity add the most to the models. Social support increases the Nagelkerke R Square measure by .041 and race/ethnicity increases the measure by .032. Table 19 does not show statistically significant results for rurality or region meaning that table does not provide support for hypothesis one or two.

Table 20 provides the logistic regression of past year DSM-5 MDD (h) for mothers. The variables that are statistically significant in the final model are all of the race/ethnicity categories, being widowed, divorced, or separated, and the social support measure ISEL-12. Each category and variable mentioned is statistically significant at the .001-level. Being widowed, divorced, or separated increases a mother's risk of experiencing past year MDD (h). Having a higher ISEL-12 score, being categorized as non-Hispanic black, non-Hispanic other, and Hispanic any race all decreases a mother's risk of being diagnosed with past year MDD (h) for mothers. Race/ethnicity and social support variables add the most to the models with a combined .061 to the Nagelkerke R Square measure. Rural and region are not statistically significant meaning they do not support either hypothesis one or hypothesis two.

Table 21 shows the logistic regression of lifetime DSM-5 MDD (h) for mothers. The final models show that having some college, associate degree, or technical certificate

or a Bachelor's degree or higher, being any race/ethnicity besides non-Hispanic white, being widowed, divorced, or separated, and having a higher ISEL-12 are all statistically significant. Mothers who have higher educations meaning some college, technical certificate, or higher, and mothers who are divorced, widowed, or separated have higher risks of being diagnosed with lifetime MDD (h). Mothers who are non-Hispanic black or other, or Hispanic any race, or mothers who have higher levels of ISEL-12 have a decreased risk of experiencing lifetime MDD (h). Models are statistically significant at every step meaning they are different from the null. The variables that matter the most for the models are race/ethnicity and the social support variables. Combined they add .064 to Nagelkerke R Square measures. Region and rurality are not statistically significant and as such do not support hypothesis one or hypothesis two of the study.

Table 22 includes the logistic regressions of past year DSM-5 dysthymia (nh) for mothers. Variables and categories that are statistically significant at the .001-level for the final model are non-Hispanic black, Hispanic any race, and ISEL-12. .01-level statistically significant variables include religious attendance. Variables that are statistically significant at the .05-level are the age group 46-55, a personal income of $35,000 to $49,999, non-Hispanic other, widowed, separated, or divorced, and BMI. Variables that increase a mother's risk of past year dysthymia (nh) diagnosis include being 46-55 years old and being widowed, divorced, or separated. Having an income of $35,000 to $49,999, being non-Hispanic black, non-Hispanic other, or Hispanic any race, or having a higher BMI or ISEL-12 score all decreases a mother's chance of experiencing past year dysthymia (nh). The social support variables make the greatest difference in the

models, adding .074 to the Nagelkerke R Square measure. Rurality and region again show they are not statistically significant and result in failing to support hypothesis one and hypothesis two.

Table 23 provides the logistic regressions for prior to past year DSM-5 dysthymia (nh) for mothers. Model 6 shows that the variables that have at least one statistically significant category are age, personal income, race/ethnicity, marital status, ISEL-12, religious attendance, and region. Age categories show that every age group compared to the 18-25 year old reference group have an increased risk of experiencing prior to past year dysthymia (nh). Being widowed, divorced, or separated and living in the Northeast region also increases a mother's risk of diagnosis. Mothers with a personal income of $20,000 or more and mothers who are non-Hispanic black, non-Hispanic other, or Hispanic any race have decreased risks of experiencing prior to past year dysthymia. Having higher ISEL-12 scores and attending religious services also decreases a mother's risk of diagnosis. Race/ethnicity and social support variables make the most difference in Table 23. Adding the social support variables increases Nagelkerke R Square by .059 and race/ethnicity adds .027. Again, region and rurality are not statistically significant and therefore do not support hypothesis one or two.

Table 24 includes the logistic regression of past year DSM-5 dysthymia (h) for mothers. Model 6 shows that being 46-55 years of age and being widowed, divorced, or separated are statistically significant and both increase a mother's risk of past year dysthymia (h) diagnosis. The variables and categories non-Hispanic black, non-Hispanic other, Hispanic any race, higher ISEL-12 scores, religious attendance, and higher BMI

scores are all statistically significant and all decrease a mother's risk of experiencing past year dysthymia (h). Models show that social support variables make the most difference by adding .067 to the Nagelkerke R Square measure. Rurality and region are not statistically significant and do not support hypothesis one or hypothesis two.

Table 25 displays logistic regressions of lifetime DSM-5 dysthymia (h) for mothers. Variables that have at least one category being statistically significant are age, personal income, race/ethnicity, marital status, ISEL-12, and religious attendance. All age groups, except the reference group of 18-25 years old, as well as being widowed, divorced, or separated all increase a mother's risk of experiencing lifetime dysthymia (h). A personal income of $20,000 to $34,999, $35,000 to $49,999, being non-Hispanic black, non-Hispanic other, or Hispanic any race, attending religious services, and having a higher ISEL-12 score all decreases a mother's risk of experiencing lifetime dysthymia (h). Models show that social support variables make the biggest difference in the models by adding .053 to the Nagelkerke R Square measure. Variables region and rurality are not statistically significant and as such do not support hypothesis one or hypothesis two.

Less depressive diagnosis for all women and mothers is associated with those who are considered minority groups, those who are married, have higher personal incomes, have lower educational attainment, attend religious services, and have higher levels of perceived social support. Older ages groups and having a child under the age of 18 years old decrease all female's risk of depressive disorders but age categories are not associated with depressive risks among mothers, with the exception of a few dysthymia disorders. Less perceived social support, being divorced, separated, or widowed, being more

educated, and being white are all associated with more depression. Having a personal income of $20,000 or more matters for mothers for most dysthymia disorders.

Living in the West region increases all female's risk of having MDE and MDD diagnosis but is not associated with any depressive disorder when analyzing mothers' risks. BMI is only slightly associated with mothers' risk for past year dysthymia (nh) and past year dysthymia (h). Rural/urban residence is not associated with any depressive disorder for either mothers or all females. While the data supports previous research on social support variables and income, it did not support the belief regarding rural/urban residence, nor to a large extent, that region matters. Another surprising finding is that higher educational attainment is associated with higher risks of depressive disorders.

Table 17. Logistic Regressions of Past Year DSM-5 Major Depressive Episode (nonhierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	-0.200 (.095)*	-0.123 (.097)	-0.146 (.098)	-0.162 (.104)	-0.160 (.104)	-0.154 (.104)	2543
36 to 45	-0.288 (.097)**	-0.164 (.102)	-0.193 (.102)	-0.245 (.112)*	-0.243 (.112)*	-0.242 (.112)*	2395
46 to 55	-0.157 (.111)	-0.039 (.115)	-0.073 (.115)	-0.141 (.126)	-0.139 (.126)	-0.148 (.127)	1212
56 to 90+	0.131 (.151)	-0.057 (.153)	-0.095 (.154)	-0.257 (.168)	-0.254 (.168)	-0.271 (.169)	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		-0.001 (.098)	-0.052 (.101)	0.042 (.103)	0.040 (.103)	0.038 (.103)	2042
Some college, associate degree, or technical certificate		0.061 (.095)	-0.040 (.099)	0.148 (.102)	0.147 (.102)	0.144 (.102)	2803
Bachelor's degree or higher		-0.296 (.120)*	-0.450 (.125)***	-0.147 (.129)	-0.149 (.129)	-0.153 (.130)	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		0.116 (.083)	0.145 (.084)	0.034 (.087)	0.034 (.087)	0.033 (.087)	2011
$20,000 to $34,999		-0.075 (.093)	-0.046 (.094)	-0.092 (.097)	-0.094 (.097)	-0.096 (.097)	1729
$35,000 to $49,999		-0.150 (.125)	-0.145 (.125)	-0.146 (.128)	-0.145 (.128)	-0.145 (.128)	846
$50,000 or more		-0.115 (.133)	-0.123 (.134)	-0.130 (.137)	-0.129 (.137)	-0.145 (.138)	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.544 (.085)***	-0.602 (.093)***	-0.600 (.093)***	-0.582 (.096)***	2054
Other, non-Hispanic			-0.550 (.155)***	-0.616 (.158)***	-0.615 (.158)***	-0.649 (.161)***	492
Hispanic, any race			-0.391 (.083)***	-0.428 (.086)***	-0.428 (.086)***	-0.467 (.092)***	2151

Marital Status (reference: Married or living as if married)							
Married or living together as if married							3968
Widowed, divorced, or separated				0.396 (.085)***	0.396 (.085)***	0.407 (.085)***	1762
Never married				0.181 (.092)*	0.180 (.092)	0.177 (.092)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.073 (.005)***	-0.073 (.005)***	-0.073 (.005)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.188 (.068)**	-0.189 (.068)**	-0.176 (.069)*	4368
Body Mass Index					0.003 (.005)	0.003 (.005)	7835
Region (reference: South)							
Midwest						-0.045 (.093)	1578
Northeast						0.173 (.100)	1108
West						0.123 (.091)	1898
Rurality (reference: urban)							
Rural						0.004 (.097)	1177
Model Summary:							
Log likelihood	6466.484	6439.465	6387.182	6124.515	6124.084	6118.677	
Nagelkerke R Square	0.002	0.008	0.020	0.078	0.078	0.079	
Chi-Square	8.989	36.008***	88.291***	350.957***	351.389***	356.795***	

Note: Past year DSM-5 Major Depressive Episode is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 18. Logistic Regressions of Prior to Past Year DSM-5 Major Depressive Episode (nonhierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	0.064 (.084)	0.047 (.086)	0.012 (.087)	-0.039 (.091)	-0.036 (.092)	-0.033 (.092)	2543
36 to 45	0.187 (.084)*	0.154 (.088)	0.110 (.089)	0.018 (.096)	0.020 (.096)	0.022 (.096)	2395
46 to 55	0.251 (.095)**	0.237 (.099)*	0.182 (.100)	0.066 (.108)	0.068 (.108)	0.066 (.108)	1212
56 to 90+	0.179 (.128)	0.213 (.130)	0.156 (.132)	-0.052 (.143)	-0.049 (.143)	-0.053 (.143)	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		0.074 (.088)	-0.021 (.090)	0.051 (.092)	0.049 (.092)	0.049 (.092)	2042
Some college, associate degree, or technical certificate		0.383 (.083)***	0.211 (.087)*	0.354 (.089)***	0.354 (.089)***	0.352 (.089)***	2803
Bachelor's degree or higher		0.295 (.097)**	0.024 (.102)	0.245 (.105)*	0.242 (.105)*	0.242 (.106)*	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		0.100 (.071)	0.151 (.073)*	0.073 (.075)	0.072 (.075)	0.073 (.075)	2011
$20,000 to $34,999		-0.130 (.078)	-0.081 (.079)	-0.123 (.081)	-0.125 (.081)	-0.123 (.081)	1729
$35,000 to $49,999		-0.022 (.097)	-0.010 (.098)	-0.016 (.101)	-0.015 (.101)	-0.014 (.101)	846
$50,000 or more		0.102 (.100)	0.094 (.101)	0.084 (.104)	0.085 (.104)	0.081 (.104)	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.890 (.072)***	-0.903 (.078)***	-0.901 (.078)***	-0.896 (.081)***	2054
Other, non-Hispanic			-0.702 (.121)***	-0.751 (.123)***	-0.750 (.123)***	-0.771 (.125)***	492
Hispanic, any race			-0.671 (.071)***	-0.703 (.073)***	-0.703 (.073)***	-0.725 (.077)***	2151

Marital Status (reference: Married or living as if married)							
Married or living together as if married							3968
Widowed, divorced, or separated				0.325 (.070)***	0.325 (.070)***	0.328 (.070)***	1762
Never married				-0.008 (.079)	-0.009 (.079)	-0.007 (.079)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.057 (.004)***	-0.057 (.004)***	-0.057 (.004)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.146 (.057)*	-0.147 (.057)*	-0.143 (.057)*	4368
Body Mass Index					0.004 (.004)	0.004 (.004)	7835
Region (reference: South)							
Midwest						-0.034 (.075)	1578
Northeast						0.037 (.084)	1108
West						0.062 (.075)	1898
Rurality (reference: urban)							
Rural						-0.004 (.078)	1177
Model Summary:							
Log likelihood	8628.449	8586.534	8387.330	8176.581	8175.432	8173.979	
Nagelkerke R Square	0.002	0.010	0.047	0.086	0.086	0.086	
Chi-Square	10.660*	52.576***	251.780***	462.528***	463.677***	465.131***	

Note: Prior to past year DSM-5 Major Depressive Episode is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 19. Logistic Regressions of Lifetime DSM-5 Major Depressive Episode (nonhierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	0.033 (.081)	0.021 (.083)	-0.011 (.084)	-0.065 (.088)	-0.061 (.088)	-0.058 (.088)	2543
36 to 45	0.095 (.081)	0.071 (.085)	0.031 (.086)	-0.067 (.093)	-0.064 (.093)	-0.062 (.093)	2395
46 to 55	0.203 (.092)*	0.196 (.095)*	0.146 (.096)	0.025 (.105)	0.028 (.105)	0.027 (.105)	1212
56 to 90+	0.104 (.125)	0.135 (.127)	0.081 (.129)	-0.135 (.139)	-0.130 (.139)	-0.135 (.140)	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		0.075 (.084)	-0.013 (.087)	0.061 (.088)	0.058 (.088)	0.058 (.088)	2042
Some college, associate degree, or technical certificate		0.342 (.080)***	0.183 (.084)*	0.327 (.086)***	0.326 (.086)***	0.326 (.086)***	2803
Bachelor's degree or higher		0.248 (.094)**	0.000 (.099)	0.223 (.102)*	0.220 (.102)*	0.224 (.103)*	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		0.114 (.069)	0.159 (.070)*	0.081 (.072)	0.080 (.072)	0.080 (.072)	2011
$20,000 to $34,999		-0.106 (.076)	-0.063 (.077)	-0.104 (.079)	-0.107 (.079)	-0.104 (.079)	1729
$35,000 to $49,999		-0.007 (.095)	-0.001 (.096)	-0.005 (.098)	-0.004 (.098)	-0.001 (.098)	846
$50,000 or more		0.086 (.098)	0.076 (.100)	0.066 (.102)	0.067 (.102)	0.064 (.102)	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.795 (.069)***	-0.807 (.075)***	-0.805 (.075)***	-0.795 (.078)***	2054
Other, non-Hispanic			-0.694 (.118)***	-0.744 (.120)***	-0.743 (.120)***	-0.761 (.122)***	492
Hispanic, any race			-0.624 (.069)***	-0.657 (.071)***	-0.657 (.071)***	-0.676 (.075)***	2151

Marital Status (reference: Married or living as if married)							
Married or living together as if married							3968
Widowed, divorced, or separated				0.338 (.068)***	0.338 (.068)***	0.342 (.069)***	1762
Never married				-0.008 (.076)	-0.010 (.076)	-0.005 (.076)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.058 (.004)***	-0.058 (.004)***	-0.058 (.004)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.144 (.055)**	-0.145 (.055)**	-0.142 (.055)*	4368
Body Mass Index					0.006 (.004)	0.006 (.004)	7835
Region (reference: South)							
Midwest						-0.042 (.073)	1578
Northeast						0.026 (.082)	1108
West						0.068 (.073)	1898
Rurality (reference: urban)							
Rural						0.022 (.077)	1177
Model Summary:							
Log likelihood	8971.132	8936.713	8761.651	8531.216	8529.101	8527.265	
Nagelkerke R Square	0.001	0.008	0.040	0.081	0.082	0.082	
Chi-Square	6.368	40.787***	215.849***	446.284***	448.399***	450.235***	

Note: Lifetime DSM-5 Major Depressive Episode is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 20. Logistic Regressions of Past Year DSM-5 Major Depressive Disorder (hierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	-0.128 (.100)	-0.053 (.102)	-0.075 (.103)	-0.101 (.109)	-0.100 (.109)	-0.093 (.109)	2543
36 to 45	-0.242 (.103)*	-0.127 (.107)	-0.153 (.108)	-0.222 (.117)	-0.222 (.117)	-0.218 (.117)	2395
46 to 55	-0.066 (.116)	0.045 (.120)	0.015 (.120)	-0.073 (.131)	-0.072 (.131)	-0.078 (.132)	1212
56 to 90+	-0.065 (.158)	0.005 (.160)	-0.026 (.161)	-0.217 (.175)	-0.215 (.175)	-0.226 (.175)	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		0.023 (.103)	-0.022 (.105)	0.070 (.107)	0.069 (.107)	0.068 (.108)	2042
Some college, associate degree, or technical certificate		0.070 (.100)	-0.018 (.103)	0.159 (.106)	0.159 (.106)	0.154 (.106)	2803
Bachelor's degree or higher		-0.262 (.125)*	-0.395 (.130)**	-0.112 (.134)	-0.113 (.134)	-0.123 (.135)	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		0.090 (.087)	0.115 (.088)	0.006 (.091)	0.005 (.091)	0.006 (.091)	2011
$20,000 to $34,999		-0.098 (.097)	-0.073 (.098)	-0.119 (.101)	-0.120 (.101)	-0.123 (.101)	1729
$35,000 to $49,999		-0.107 (.128)	-0.103 (.128)	-0.104 (.131)	-0.104 (.131)	-0.105 (.131)	846
$50,000 or more		-0.119 (.138)	-0.125 (.139)	-0.134 (.142)	-0.134 (.142)	-0.151 (.142)	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.496 (.088)***	-0.553 (.096)***	-0.552 (.096)***	-0.547 (.100)***	2054
Other, non-Hispanic			-0.579 (.165)***	-0.634 (.168)***	-0.634 (.168)***	-0.682 (.170)***	492
Hispanic, any race			-0.345 (.087)***	-0.384 (.089)***	-0.384 (.089)***	-0.440 (.095)***	2151

Marital Status (reference: Married or living as if married)							
Married or living together as if married							3968
Widowed, divorced, or separated				0.405 (.087)***	0.405 (.087)***	0.412 (.088)***	1762
Never married				0.151 (.096)	0.151 (.096)	0.148 (.096)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.070 (.005)***	-0.070 (.005)***	-0.070 (.005)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.127 (.071)	-0.127 (.071)	-0.116 (.071)	4368
Body Mass Index					0.002 (.005)	0.002 (.005)	7835
Region (reference: South)							
Midwest						-0.046 (.096)	1578
Northeast						0.127 (.105)	1108
West						0.125 (.094)	1898
Rurality (reference: urban)							
Rural						-0.065 (.102)	1177
Model Summary:							
Log likelihood	6068.850	6048.166	6006.454	5785.715	5785.616	5781.072	
Nagelkerke R Square	0.002	0.006	0.016	0.067	0.067	0.068	
Chi-Square	6.517	27.201**	68.913***	289.652***	289.750***	294.295***	

Note: Past year DSM-5 Major Depressive Disorder is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 21. Logistic Regressions of Lifetime DSM-5 Major Depressive Disorder (hierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	0.090 (.083)	0.071 (.086)	0.040 (.087)	-0.018 (.091)	-0.015 (.091)	-0.012 (.091)	2543
36 to 45	0.144 (.084)	0.107 (.088)	0.069 (.089)	-0.035 (.096)	-0.033 (.096)	-0.030 (.096)	2395
46 to 55	0.280 (.095)**	0.261 (.098)**	0.215 (.099)*	0.088 (.107)	0.090 (.107)	0.091 (.107)	1212
56 to 90+	0.139 (.129)	0.166 (.131)	0.114 (.133)	-0.105 (.143)	-0.102 (.143)	-0.102 (.143)	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		0.071 (.087)	-0.019 (.089)	0.050 (.091)	0.048 (.091)	0.049 (.091)	2042
Some college, associate degree, or technical certificate		0.353 (.083)***	0.195 (.086)*	0.327 (.088)***	0.326 (.088)***	0.324 (.088)***	2803
Bachelor's degree or higher		0.277 (.097)**	0.036 (.102)	0.236 (.105)*	0.234 (.105)*	0.232 (.105)*	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		0.092 (.071)	0.133 (.072)	0.062 (.074)	0.061 (.074)	0.062 (.074)	2011
$20,000 to $34,999		-0.118 (.078)	-0.078 (.079)	-0.115 (.081)	-0.116 (.081)	-0.115 (.081)	1729
$35,000 to $49,999		0.002 (.097)	0.009 (.098)	0.005 (.100)	0.006 (.100)	0.007 (.100)	846
$50,000 or more		0.108 (.100)	0.098 (.101)	0.091 (.103)	0.092 (.103)	0.088 (.104)	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.765 (.071)***	-0.774 (.077)***	-0.7742 (.077)***	-0.774 (.080)***	2054
Other, non-Hispanic			-0.719 (.123)***	-0.762 (.125)***	-0.761 (.125)***	-0.788 (.027)***	492
Hispanic, any race			-0.611 (.071)***	-0.643 (.072)***	-0.643 (.072)***	-0.672 (.077)***	2151

Marital Status (reference: Married or living as if married)							
Married or living together as if married							3968
Widowed, divorced, or separated				0.312 (.070)***	0.312 (.070)***	0.313 (.070)***	1762
Never married				-0.029 (.078)	-0.030 (.078)	-0.028 (.079)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.054 (.004)***	-0.054 (.004)***	-0.054 (.004)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.102 (.056)	-0.103 (.056)	-0.101 (.057)	4368
Body Mass Index					0.004 (.004)	0.004 (.004)	7835
Region (reference: South)							
Midwest						-0.032 (075)	1578
Northeast						-0.008 (.085)	1108
West						0.058 (.075)	1898
Rurality (reference: urban)							
Rural						-0.035 (.079)	1177
Model Summary:							
Log likelihood	8636.302	8599.704	8440.983	8253.473	8252.497	8250.977	
Nagelkerke R Square	0.002	0.009	0.039	0.073	0.073	0.074	
Chi-Square	9.711*	46.308***	205.029***	392.540***	393.516***	395.036***	

Note: Lifetime DSM-5 Major Depressive Disorder is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 22. Logistic Regressions of Past Year DSM-5 Dysthymia (nonhierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	0.180 (.189)	0.308 (.192)	0.285 (.192)	0.324 (.202)	0.303 (.202)	0.321 (.202)	2543
36 to 45	0.145 (.191)	0.355 (.197)	0.330 (.198)	0.345 (.215)	0.334 (.215)	0.328 (.215)	2395
46 to 55	0.319 (.210)	0.505 (.216)*	0.463 (.216)*	0.478 (.236)*	0.467 (.236)*	0.460 (.236)*	1212
56 to 90+	0.473 (.263)	0.558 (.266)*	0.469 (.268)	0.421 (.292)	0.400 (.292)	0.386 (.293)	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		-0.171 (.166)	-0.346 (.170)*	-0.233 (.174)	-0.225 (.174)	-0.226 (.174)	2042
Some college, associate degree, or technical certificate		-0.170 (.162)	-0.433 (.169)*	-0.173 (.173)	-0.173 (.173)	-0.168 (.173)	2803
Bachelor's degree or higher		-0.520 (.213)*	-0.873 (.222)***	-0.421 (.228)	-0.415 (.228)	-0.400 (.230)	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		0.166 (.144)	0.192 (.145)	0.047 (.151)	0.050 (.151)	0.048 (.151)	2011
$20,000 to $34,999		-0.133 (.167)	-0.104 (.168)	-0.134 (.173)	-0.125 (.173)	-0.121 (.173)	1729
$35,000 to $49,999		-0.625 (.261)*	-0.632 (.261)*	-0.608 (.266)*	-0.613 (.266)*	-0.606 (.266)*	846
$50,000 or more		-0.249 (.247)	-0.290 (.247)	-0.259 (.253)	-0.263 (.253)	-0.257 (.254)	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.620 (.150)***	-0.660 (.164)***	-0.668 (.164)***	-0.644 (.170)***	2054
Other, non-Hispanic			-0.477 (.262)	-0.571 (.268)*	-0.576 (.268)*	-0.543 (.272)*	492
Hispanic, any race			-0.898 (.161)***	-0.928 (.166)***	-0.931 (.166)***	-0.893 (.176)***	2151

Marital Status (reference: Married or living as if married)							
Married or living together as if married							3968
Widowed, divorced, or separated				0.347 (.149)*	0.346 (.149)*	0.358 (.150)*	1762
Never married				0.286 (.166)	0.295 (.166)	0.302 (.167)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.096 (.008)***	-0.095 (.008)***	-0.095 (.008)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.406 (.125)**	-0.400 (.125)**	-0.399 (.125)**	4368
Body Mass Index					-0.019 (.009)*	-0.019 (.009)*	7835
Region (reference: South)							
Midwest						-0.043 (.162)	1578
Northeast						0.072 (.176)	1108
West						-0.026 (.165)	1898
Rurality (reference: urban)							
Rural						0.149 (.162)	1177
Model Summary:							
Log likelihood	2624.920	2598.839	2560.327	2391.125	2786.866	2385.600	
Nagelkerke R Square	0.002	0.014	0.031	0.105	0.107	0.107	
Chi-Square	4.222	30.303**	68.815***	238.017***	242.276***	243.542***	

Note: Past year DSM-5 dysthymia is dummy coded with 1 indicating yes and 0 indicating no.
p< .05; **p< .01; ***p< .001

Table 23. Logistic Regressions of Prior to Past Year DSM-5 Dysthymia (nonhierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	0.309 (.154)*	0.444 (.156)**	0.412 (.157)**	0.446 (.165)**	0.437 (.165)**	0.441 (.165)**	2543
36 to 45	0.224 (.157)	0.416 (.162)*	0.379 (.163)*	0.393 (.176)*	0.387 (.176)*	0.386 (.176)*	2395
46 to 55	0.328 (.174)	0.510 (.179)**	0.455 (.180)*	0.461 (.195)	0.456 (.195)*	0.444 (.195)*	1212
56 to 90+	0.551 (.214)*	0.664 (.217)**	0.570 (.219)**	0.519 (.239)*	0.509 (.239)*	0.492 (.239)*	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		-0.018 (.140)	-0.205 (.144)	-0.102 (.146)	-0.098 (.146)	-0.107 (.147)	2042
Some college, associate degree, or technical certificate		0.033 (.135)	-0.255 (.141)	-0.030 (.145)	-0.029 (.145)	-0.040 (.145)	2803
Bachelor's degree or higher		-0.225 (.168)	-0.621 (.176)***	-0.234 (.182)	-0.230 (.182)	-0.256 (.183)	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		-0.014 (.117)	0.026 (.118)	-0.097 (.122)	-0.096 (.122)	-0.096 (.122)	2011
$20,000 to $34,999		-0.386 (.136)**	-0.345 (.137)*	-0.387 (.142)**	-0.383 (.142)**	-0.389 (.142)**	1729
$35,000 to $49,999		-0.530 (.188)**	-0.532 (.189)**	-0.523 (.193)**	-0.525 (.193)**	-0.526 (.193)**	846
$50,000 or more		-0.337 (.189)	-0.375 (.190)*	-0.361 (.194)	-0.363 (.194)	-0.389 (.195)*	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.815 (.125)***	-0.847 (.137)***	-0.851 (.137)***	-0.862 (.141)***	2054
Other, non-Hispanic			-0.599 (.213)**	-0.686 (.216)**	-0.688 (.216)**	-0.701 (.220)**	492
Hispanic, any race			-0.984 (.131)***	-1.011 (.134)***	-1.012 (.134)***	-1.047 (.142)***	2151

Marital Status (reference: Married or living as if married)							
Married or living together as if married							3968
Widowed, divorced, or separated				0.275 (.121)*	0.274 (.121)*	0.288 (.121)*	1762
Never married				0.206 (.135)	0.209 (.135)	0.195 (.136)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.082 (.007)***	-0.082 (.007)***	-0.081 (.007)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.381 (.100)***	-0.379 (.100)***	-0.362 (.100)***	4368
Body Mass Index					-0.009 (.007)	-0.009 (.007)	7835
Region (reference: South)							
Midwest						-0.087 (.132)	1578
Northeast						0.272 (.137)*	1108
West						-0.024 (.135)	1898
Rurality (reference: urban)							
Rural						-0.066 (.134)	1177
Model Summary:							
Log likelihood	3695.140	3671.105	3590.431	3411.597	3410.026	3403.717	
Nagelkerke R Square	0.003	0.011	0.038	0.097	0.097	0.100	
Chi-Square	7.864	31.900**	112.574***	291.408***	292.978***	299.288***	

Note: Prior to past year DSM-5 dysthymia is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 24. Logistic Regressions of Past Year DSM-5 Dysthymia (hierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	0.323 (.215)	0.455 (.219)*	0.436 (.219)*	0.464 (.229)*	0.442 (.229)	0.443 (.229)	2543
36 to 45	0.269 (.219)	0.475 (.225)*	0.460 (.225)*	0.458 (.242)	0.447 (.242)	0.449 (.242)	2395
46 to 55	0.602 (.232)**	0.780 (.238)**	0.751 (.238)**	0.750 (.258)**	0.739 (.258)**	0.743 (.259)**	1212
56 to 90+	0.654* (.290)	0.718 (.293)*	0.631 (.295)*	0.569 (.320)	0.547 (.320)	0.549 (.320)	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		-0.178 (.178)	-0.368 (.183)*	-0.257 (.186)	-0.249 (.186)	-0.246 (.186)	2042
Some college, associate degree, or technical certificate		-0.249 (.176)	-0.521 (.183)**	-0.272 (.187)	-0.273 (.187)	-0.269 (.187)	2803
Bachelor's degree or higher		-0.529 (.227)*	-0.872 (.237)***	-0.441 (.244)	-0.434 (.244)	-0.424 (.245)	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		0.185 (.156)	0.200 (.157)	0.065 (.162)	0.068 (.162)	0.070 (.162)	2011
$20,000 to $34,999		-0.233 (.186)	-0.219 (.187)	-0.239 (.192)	-0.231 (.192)	-0.225 (.192)	1729
$35,000 to $49,999		-0.458 (.265)	-0.476 (.266)	-0.446 (.270)	-0.451 (.270)	-0.446 (.271)	846
$50,000 or more		-0.233 (.264)	-0.282 (.265)	-0.243 (.271)	-0.248 (.271)	-0.238 (.271)	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.498 (.158)**	-0.526 (.173)**	-0.534 (.174)**	-0.531 (.180)**	2054
Other, non-Hispanic			-0.668 (.307)*	-0.763 (.313)*	-0.768 (.313)*	-0.578 (.317)*	492
Hispanic, any race			-0.917 (.177)***	-0.944 (.181)***	-0.946 (.181)***	-0.950 (.192)***	2151
Marital Status (reference: Married or living as if married)							

Married or living together as if married							3968
Widowed, divorced, or separated				0.334 (.160)*	0.334 (.160)*	0.330 (.160)*	1762
Never married				0.240 (.182)	0.250 (.182)	0.261 (.183)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.093 (.009)***	-0.093 (.009)***	-0.093 (.009)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.359 (.134)**	-0.353 (.134)**	-0.358 (.135)**	4368
Body Mass Index					-0.020 (.010)*	-0.020 (.010)*	7835
Region (reference: South)							
Midwest						-0.061 (.173)	1578
Northeast						-0.141 (.201)	1108
West						0.013 (.179)	1898
Rurality (reference: urban)							
Rural						0.033 (.178)	1177
Model Summary:							
Log likelihood	2306.651	2284.597	2252.721	2117.485	2113.293	2112.616	
Nagelkerke R Square	0.005	0.016	0.031	0.098	0.100	0.100	
Chi-Square	9.195	31.249**	63.126***	198.362***	202.553***	203.230***	

Note: Past year DSM-5 dysthymia is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

Table 25. Logistic Regressions of Lifetime DSM-5 Dysthymia (hierarchical) for Mothers, N=7,835: Logits (Standard Error)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	n
Age (reference: 18 to 25 years old)							
18 to 25							1228
26 to 35	0.404 (.170)*	0.535 (.173)**	0.504 (.174)**	0.543 (.182)**	0.531 (.182)**	0.537 (.182)**	2543
36 to 45	0.294 (.174)	0.476 (.179)**	0.443 (.180)*	0.459 (.194)*	0.452 (.194)*	0.457 (.194)*	2395
46 to 55	0.511 (.189)**	0.681 (.193)***	0.632 (.194)**	0.644 (.210)**	0.637 (.210)**	0.633 (.210)**	1212
56 to 90+	0.681 (.231)**	0.779 (.234)**	0.682 (.236)**	0.632 (.256)*	0.621 (.256)*	0.616 (.257)*	457
Education (reference: Less than high school)							
Less than high school							1341
High school diploma or GED		0.017 (.149)	-0.191 (.154)	-0.088 (.156)	-0.083 (.156)	-0.089 (.156)	2042
Some college, associate degree, or technical certificate		0.012 (.146)	-0.297 (.153)	-0.079 (.156)	-0.078 (.156)	-0.091 (.156)	2803
Bachelor's degree or higher		-0.176 (.179)	-0.586 (.187)**	-0.211 (.193)	-0.206 (.193)	-0.238 (.194)	1649
Personal Income (reference: $0 to $9,999)							
$0 to $9,999							2402
$10,000 to $19,999		0.019 (.125)	0.052 (.126)	-0.064 (.130)	-0.062 (.130)	-0.060 (.131)	2011
$20,000 to $34,999		-0.433 (.149)**	-0.402 (.150)**	-0.436 (.154)**	-0.432 (.154)**	-0.439 (.154)**	1729
$35,000 to $49,999		-0.426 (.195)*	-0.435 (.196)*	-0.420 (.200)*	-0.422 (.200)*	-0.426 (.200)*	846
$50,000 or more		-0.324 (.201)	-0.369 (.202)	-0.349 (.206)	-0.352 (.206)	-0.375 (.207)	847
Race/Ethnicity (reference: White)							
White, non-Hispanic							3138
Black, non-Hispanic			-0.751 (.131)***	-0.796 (.144)***	-0.801 (.144)***	-0.825 (.148)***	2054
Other, non-Hispanic			-0.735 (.239)**	-0.820 (.243)**	-0.823 (.243)**	-0.864 (.246)***	492
Hispanic, any race			-1.054 (.143)***	-1.088 (.147)***	-1.089 (.147)***	-1.153 (.154)***	2151
Marital Status (reference: Married or							

living as if married)							
Married or living together as if married							3968
Widowed, divorced, or separated				0.272 (.129)*	0.272 (.129)*	0.275 (.129)*	1762
Never married				0.223 (.146)	0.227 (.146)	0.213 (.146)	2105
Interpersonal Support Evaluation List-12 (range 0-36)				-0.081 (.007)***	-0.081 (.007)***	-0.080 (.007)***	7835
Do you currently attend religious services? (reference: no)							
Yes				-0.317 (.106)**	-0.315 (.106)**	-0.302 (.107)**	4368
Body Mass Index					-0.011 (.008)	-0.011 (.008)	7835
Region (reference: South)							
Midwest						-0.069 (.140)	1578
Northeast						0.164 (.150)	1108
West						0.022 (.143)	1898
Rurality (reference: urban)							
Rural						-0.160 (.145)	1177
Model Summary:							
Log likelihood	3314.475	3294.395	3220.748	3073.098	3071.173	3067.843	
Nagelkerke R Square	0.004	0.012	0.039	0.092	0.093	0.094	
Chi-Square	11.998*	32.078**	105.725***	253.375***	255.301***	258.630***	

Note: Lifetime DSM-5 dysthymia is dummy coded with 1 indicating yes and 0 indicating no.
*p< .05; **p< .01; ***p< .001

CHAPTER V

DISCUSSION

The research questions addressed are, first, do mothers living in rural counties experience higher levels of MDD, MDE, or dysthymia compared to mothers living in urban areas, and, second, do mothers who live in the West experience higher rates of MDD, MDE, or dysthymia compared to other regions in the United States? Models show that depression for all females is not associated to rurality in any model. The results came as a surprise but due to the sampling technique the most rural locations in the U.S. were excluded. Models show that the West region is statistically significant for six of the nine depressive disorders even after all other variables are controlled for. The statistically significant results reveal an increased risk for women living in the West region compared to women living in the South region to experience past year, prior to past year, and lifetime MDE (nh), past year and lifetime MDD (h), and prior to past year dysthymia (nh). The results follow national trends of depressive disorders and suicide rates that plague the West.

As a double check, I tested mothers separately from all females, defining mothers as a woman with children under 18 years old. Again, none of the logistic regression models established associations with rural/urban residence and depressive disorders. Models also failed to find any associations between region with the exception of prior to

past year dysthymia (nh) in which case mothers living in the Northeast have an increased risk of diagnosis. Curious as to why the results differed so much from the models including all females, I entered all the variables included in the logistic regression models but in reverse. The results showed a pattern of the Northeast region and/or rural location increasing mother's risk of all depressive disorders except past year dysthymia (h) and lifetime dysthymia (h). The associations disappear when the race/ethnicity variable is added. The result of the models was unexpected but dissected, shows how important race/ethnicity is as a control variable.

To summarize, models examining all females and mothers with children less than 18 years old show that living in rural areas is not associated with depressive disorders after controlling for all other variables. The finding is consistent for every depressive disorder. The results of the study fail to support hypothesis number one leaving me to conclude that rurality does not impact a mother's risk of depressive disorders. The second hypothesis received partial support from the study showing that women living in the West region experience higher risk of every category of MDE and MDD as well as a higher risk of prior to past year dysthymia (nh). However, mothers living in the West do not experience a higher risk of depressive disorders. Results show that mothers living in the Northeast do experience prior to past year dysthymia (nh) at a higher rate compared to mothers in the South. The results lead me to conclude that in general, mothers living in the West region do not experience depressive disorders at a higher rate than mothers living in other regions.

This study is one of many that have attempted to understand the complexity of depressive disorders and contributes to the literature by examining the impact of geographic variables. Revisiting Figure 1, some of the variables performed as expected while others did not. For all women, variables such as personal income, marital status, Interpersonal Support Evaluation List-12, and religious attendance each worked as predicted by previous literature. Specifically, having higher personal income leads to a lower risk of depressive disorder diagnoses. Those who are widowed, divorced, or separated have a higher risk of depressive disorders. Those that score higher on the ISEL-12 measure and those who currently attend religious services have a decreased risk of being diagnosed with most depressive disorders. Variables that behaved as expected in logistic regression models for mothers included some age groups, marital status, the ISEL-12 measure, and religious attendance. Any age group compared to the 18-25 group experience a higher risk of prior to past year dysthymia (nh) and lifetime dysthymia (h), which is to be expected due to the nature of these disorders. Mothers who are divorced, widowed, or separated have higher depressive disorder diagnosis compared to married mothers. ISEL-12 and religious attendance decreases a mother's risk of depressive diagnosis as was predicted for social support variables.

Other variables did not perform as expected. Age, education, race, BMI, and having a child under 18 years old performed differently than anticipated for all female models. Models show that older age categories, 66-90+ years of age, have a decreased risk of depressive disorders for women. The results are especially surprising for the dysthymia disorders where time is one of the main diagnosing criteria so older

populations would be expected to experience higher rates of dysthymia. When education was statistically significant for women, those with higher educational attainment were at an increased risk of depressive disorders. The result is especially surprising but I suspect that woman with a higher education are more apt to accept and admit to their experiences with depressive symptoms.

In all instances, being black non-Hispanic, other non-Hispanic, and Hispanic any race decreased the risk of being diagnosed with a depressive disorder compared to non-Hispanic whites. Initially I expected race/ethnicity differences to be cancelled out by social support measures but in the final models both continued to remain statistically significant. As previously mentioned, NESARC-III sampling design did oversample minority groups. The sampling design and the consistent results for every model even after controlling for age, education, and personal income leads me to conclude that minority groups have a decreased risk of the depressive disorders MDE, MDD, and dysthymia.

Another surprise was having no statistically significant results for BMI when looking at the logistic regressions for women. In cases where BMI was not statistically significant it is possible that the extreme BMIs canceled each other out to show that there is not an increased or decreased risk. To counter this, I grouped the BMI for all females and ran the logistic regressions using BMI as a categorical variable but did not find any changes so reverted back to BMI as a continuous variable. For women, having children under 18 years old decreased one’s risk of experiencing depressive disorders after

controlling for all other variables. The result held constant across every depressive disorder.

Variables that have performed unexpectedly for the models analyzing depressive disorder associations for mothers include age, education, race/ethnicity, and BMI. Models show that age is not statistically significant for the final models of MDE and MDD disorders even though models for all women do indicate a decreased risk for depressive disorders. For the final models for mothers both education and income did not appear to matter much after adding other variables like social support and race/ethnicity variables into the model. When associations did appear for education it was in the opposite direction predicted. Having an educational attainment of some college, associate degree, or technical certificate and having a Bachelor's degree or higher both increased a mother's risk of experiencing prior to past year MDE (nh), lifetime MDE (nh), and lifetime MDD (h). Race/ethnicity performed the same for mothers as it did for all women. Controlling for other variables, each model showed that every race/ethnicity category was associated with every depressive disorder and decreased a mother's risk of experiencing depressive disorders. BMI showed no associations in final models for all females but for mothers experiencing past year dysthymia (nh) and past year dysthymia (h) BMI showed negative associations after all variables were controlled for. To specify, the result means that the risk of experiencing past year dysthymia (h and nh) decreases as the mother's BMI increases, which is the opposite of what previous studies suggest.

Study limitations include potential biases due to social desirability, selection biases due to the monetary incentives provided to participants in the survey process, and

interviewer effects. A sample bias is also likely because NESARC-III did not include the most rural locations due to the difficulty of sampling them in a timely manner. The research is limited with convenient rural population samples and possibly restricts a true picture of rural female population depressive disorder risks. The rural variable construction is a somewhat crude measure.

Future research should add to the research of depressive disorder predictors by utilizing nationally representative data sets and adding to the research by investigating other less obvious variables that might lead to better models for predicting depressive disorder risks. The research material covering maternal depression is vast, however, few studies look at maternal depression as something that continues until the child is grown. Focusing on the most vulnerable children, or infants, is clearly important, but as other studies have shown there are adverse affects for children of all ages that have mothers struggling with depression. Another part of this research needs to address the experiences of the mothers. Feeling inadequate as a mother or having a difficult child that makes parenting extremely challenging may lead to experiences of depression or more severe depression.

In conclusion, I will address what I would do differently or would have included if time allowed it. Initially I would separate females into groups of females with no children, females with children under five, females with children between five and 12, females with children between 12 and 17, and females with children 18 years old or older. Grouping mothers in this way would provide better insight into the specific experiences at the various age groups. It would also be helpful to understand what

variables matter at the different stages of motherhood. Other variables like the number of children, occupation and type of employment, mother's experiences, and history as a child, and studying anxiety disorders and drug use would also have been ideal but quickly became too messy to include in this study. The NESARC-III data set has so many variables that would have been appropriate to incorporate. If time allowed it, I would have spent more time playing with the data to see what different variables improved the model fit.

In terms of analysis, including interaction effects for the variables, specifically the social support variables and the SES variables, would have added to the research project. Again, I wish I incorporated employment and employment type to see if certain jobs added protective measures against the risk of experiencing depressive disorders or whether working in general decreased a woman's and mother's risk of experiencing depressive disorders. Separating the "non-Hispanic other" races would have also been informative seeing that American Indian/Native Americans in previous research typically had higher depressive disorder risks compared to other race/ethnicities. Another interesting variable that I would have liked to incorporate would have been the religious affiliation. There was simply not enough time or space to include all of these items into this thesis project, but I hope that other researchers will utilize the vast amounts of data available from the NESARC-III data set and other nationally representative data sets collected to better understand the risks of maternal depression and depressive disorders found in the United States.

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