THE IMPACT OF THE LATEST ECONOMIC RECESSION ON HEALTH IN THE UNITED STATES

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ABSTRACT: The effects of the 2008 financial crisis extend beyond just the economy. Economic contraction and increased unemployment for extended periods of time have been shown to affect both positively and negatively mental health and health behaviors. Joblessness increases time available to devote to healthy behaviors, however the financial uncertainty also increases stress-related health concerns. Using data from the 2006 and 2012 National Health and Interview Survey, this study examines the effects of the Great Recession on individual's physical health and psychological well-being. Understanding better how economic conditions influence health will allow the creation of public policy that benefits the population.

I. Introduction

This study examines the impact of the Great Recession on Americans' health. A recession is defined as a period of negative economic growth for two consecutive quarters, as measured by a decline in GDP (NBER, 2010). Beginning officially in December 2007, the Great Recession was caused by a loss in value of mortgage-backed securities, as a result of the bursting of the housing market bubble. While the great recession was given an official end date of June 2009, the economy was far from being fully recovered. The economic recession saw high unemployment rates, peaking at 10% in October of 2009 (NBER, 2010). This peak in job loss occurred months after the declared end of the recession. Approximately 8.7 million jobs were lost between December 2007 and early 2010 (The Legacy of the Great Recession, 2014). The lingering effects of the recession are still being felt to this day. The job market has yet to make a full recovery, and unemployment rates are still above pre-recession rates. Instances of hidden unemployment and underemployment mask the true severity and longevity of the most recent financial crisis.

Despite the declared end date in 2009, the recession has had a number of long lasting effects on the United States' population. Most research focuses primarily on the financial ramifications of the recession; looking at the impact on the economy as a whole as well as changes in consumer spending and savings. Many businesses and consumers altered their financial behaviors for fear of another recession. Very little research has been done regarding the physical and psychological effects of the latest economic recession. This study looks at both of these effects and how they may have altered health in the United States. Additionally, most research examines the impact of general economic contraction on health behavior, while this study focuses entirely on the latest economic recession. The purpose of this study is to examine

the effects of the Great Recession on the United States population's physical and psychological well being.

The increase in unemployment has been shown to have both a beneficial and detrimental impact on health in the United States (The Legacy of the Great Recession, 2014). Looking at the direct impact of a recession on an individual's health yields conflicting results. Long periods of unemployment increases the time available to devote to one's health; however joblessness has also been shown to increase rates of anxiety, depression, and other related mental health issues. Additionally, periods of economic recession are also accompanied by decreased income for most individuals, which limits the amount they can spend on health care needs. Studies have shown conflicting results as to whether high rates of prolonged unemployment ultimately improve or worsen health. This study will focus on a variety of different health related outcomes to determine which were significantly affected by the recession, and in what ways these factors impacted the health of people in the United States.

It is important to see what the effects of a recession are on health for public policy reasons. Fully understanding the way populations are affected during times of financial difficulty offer a number of practical applications. It can aid in the implementation of public assistance programs, provision and management of medical care, and efficient allocation of research funds. If certain health factors are improved during times of economic downturn, how can policy be implemented to replicate these improvements during economic growth. Additionally, identifying detrimental effects on health provides insight into how policies can be shaped to mitigate issues for future recessions. By understanding the past, we can work to improve health by creating public policy that addresses the needs of its current population.

Existing bodies of research provide evidence that during economic contraction, health behaves in both a countercylical and procyclical manner. This study hypothesizes that overall improvements in general population health will outweigh the negative health effects of an economic recession. In particular, higher rates of unemployment provide people with more time to spend on improving their health. Positive health effects as a result of unemployment will be shown by improvements in health behavior measures in 2012 when compared to 2006. This study expects to find better general health outcomes during time periods after the conclusion of the economic recession.

II. Literature Review

Procyclical vs. Countercyclical

Current literature regarding economic recessions and population health focuses primarily on two opposing arguments, whether overall health is countercyclical or procyclical relative to economic decline. Procyclical health is defined as declines in health during an economic recession. Countercyclical is defined as improvements in health during an economic recession.

Procyclical literature suggests that health declines during economic downturn and improves during economic growth. This argument states that a recession takes money and time away from households, causing them to reduce investment in their own health. Procyclical literature suggests that economic recession create more stress regarding one's job and finances. Both bodies of literature are well founded and it is difficult to ascertain which effect dominates in many scenarios. A study examining health effects at the aggregate level, show that overall health improves during economic downturn (Bezruchka, 2009). Due to higher rates of unemployment, it is believed that individuals now have more free time available to devote to activities that benefit their health. Poorer undeveloped countries will typically see improvements

in health with economic growth, however once a country reaches $5,000 to $10,000 GNP per capita, there is little benefit in health (Bezruchka, 2009). Therefore, a developed nation like the U.S. will not see the same large benefits toward health with economic growth.

National Health Care Expenditures

According to the Kaiser Family Foundation (KFF), health spending grew at the lowest rate ever at 3.9% from 2009 to 2011, after the recession (Levitt et al., 2013). KFF also found a relationship between growth in real GDP and increases in health spending (Levitt et al., 2013). The decline in real GDP during the recession was accompanied by a decrease in spending on health care (Levitt et al., 2013). Cutting back on health spending resulted in lower utilization of medical services for many Americans (Levitt et al., 2013). Additionally, employers cut back on health spending by reducing health coverage (Levitt et al., 2013). For both of these reasons, many individuals were forced to forego nonessential medical services as a result of the recession. Health spending growth was 4.3% in 2012, showing growth for the first time since the recession (Levitt et al., 2013). This growth in health spending, indicates that the effects of the recession may have begun to lessen in 2012, as consumer confidence improved.

KFF also examined the possible role of structural health care reforms and their effects on spending (Levitt et al., 2013). These changes, driven by federal and state wide budget cuts to Medicaid and Medicare programs, would contribute to the slow growth in health care spending. KFF worked together with Altarum Institute's Center for Sustainable Health to develop a statistical model to assess how much of the slowdown in spending could be contributed to economic conditions as compared to health care reforms (Levitt et al., 2013). They examined how health care spending growth changed depending on macroeconomic variables. Inflation in the current year, as measured by the GDP deflator, and growth in real GDP in the current year

and prior five years, both were highly predictive of health spending. Both of these variables were able to explain 85% of variation in health care spending growth rates between 1965 and 2011. A 1% decrease in GDP yielded a 1.5% decrease in health expenditures (Levitt et al., 2013).

Financial Constraints

Reductions in "excess" health care costs have also been noted as a possible contributing factor to the slowdown in growth. These are costs of medical services that are deemed to be nonessential. KFF believes the slowdown in growth can be partially attributed to increases in cost-sharing for patients (Levitt et al., 2013). This research emphasizes the importance of examining economic conditions and their implications on health spending and health behaviors. KFF makes these assessments from a public policy perspective looking at how to best address structural changes in healthcare (Levitt et al., 2013).

A study conducted by the Robert Wood Johnson Foundation (RWJF) provided additional evidence regarding the recession and reductions in health care spending in the United States (2009). Individuals facing financial difficulties were found to cut back on preventative medical screenings and discontinue prescriptions to save money. Individuals with illnesses that require medication and frequent follow-ups, such as diabetes, would be most impacted by this behavior. Long-term health consequences can arise from failure to follow through with proper disease prevention and management. The study from RWJF also indicates that people don't just reduce health spending; they also reduce spending on alcohol and tobacco (2012). Reduction in harmful health behaviors would yield a positive outcome for health. RWJF emphasizes the difficulty in assessing which effect dominates.

The amount spent on health care is one aspect of what is known as the budgeting effect (Catalano et al., 2011). Individuals have limited time and resources, and have different preferences as to how they want to spend them. A declining economy reduces household income and forces individuals to carefully manage how they budget and invest their time. Individuals who rank things like exercise, medication, and good nutrition towards the bottom of their preferences, will have worse health behaviors when their resources become strained. During bad economic times these individuals will reduce their investment in these behaviors and increase their risk of illness. Opposing this viewpoint, is the idea that a reduction in work actually increases time available to devote to these varying needs. Even if an individual ranks positive health behaviors toward the bottom of their own hierarchy, the additional time will allow them to still work towards them (Catalano et al., 2011).

Health Behaviors

Countercyclical literature suggests that higher unemployment causes improvements in health. Evidence shows that the recession has contributed to lower accident rates, as a result of the decreased number of individuals commuting to work. A study conducted by Burgard et al., (2013) found that increases in unemployment levels have had beneficial impacts on the environment as a result of lower traffic, reduced manufacturing, and fewer pollution emissions. Studies using individual level data have indicated higher rates of stress and related health issues for some people. According to Catalano et al. (2011), work is the primary cause of stress in an individual's life, and an increase in unemployment will reduce stress and related health issues.

Research has also found contradictory evidence regarding substance abuse and antisocial behaviors, known as the frustration-aggression effect (Catalano et al., 2011). Evidence has been found supporting the idea that individuals who fear job loss are less likely to engage in risky

behaviors (Catalano et al., 2011). Also called the inhibition effect, these individuals make improved health decisions to reduce their chance of being fired or laid off. Opposing this viewpoint is the idea that some individuals turn to substance abuse and antisocial behavior as a means of coping with stressful situations. Self-reported data from adult males showed that individuals experiencing > 20 weeks of unemployment, on average, doubled their level of alcohol consumption (Catalano et al., 2011). Aggregate level studies show a general reduction in alcohol consumption as a result of decreased income. Such stressful situations could be brought on as a direct result of the recession, or in anticipation of possible consequences.

Mental Health

The Stress mechanism is the most highly researched factor regarding job loss and mental health (Catalano et al., 2011). Increased rates of prolonged unemployment have been associated with a higher prevalence of mental illnesses, such as anxiety and depressions. These illnesses have been shown to have negative long-term consequences on health. Economic recession does not just have direct effects on mental health; mental illness also increases due to anticipation of job loss and fear of losing financial security. These psychological effects of the recession have also been linked to increased suicide rate. Between 2007 and 2010 there were an estimated 4,750 additional suicide deaths as a result of the recession (Reeves et al., 2012).

Literature also examines the physical manifestation of mental illness as a result of the recession. High rates of stress have been linked to lowered immune response, making individuals more susceptible to illness; as well as decreased cardiovascular functioning (Catalano, 2011). Looking at data from the U.S. Health and Retirement Survey, individual-level studies showed evidence that job loss resulted in increased rates of stroke and heart attack years after economic contraction (Catalano, 2011). The net effect on general mortality during and after

a recession is extremely complicated to assess, due to the multitude of contributory causes, and conflicting effects.

Health Disparities

A special area of interest is the impact of economic decline on health disparities. While sources agree that there is an overall improvement in health during economic downturns, studies have shown that might mask a decrease in health for smaller groups within the population. found that aggregate improvements in health may mask an increase in health disparities of subgroups that fall into lower income levels (Burgard et al., 2013) Both racial minorities and elderly individuals are more likely to be impacted by extended unemployment (Burgard, 2014). Individuals over the age of 50 were shown to be at higher risk of stroke and heart disease as a result of the economic crisis (Levitt et al., 2013). Disadvantaged groups are also more likely to be working fewer hours (Burgard, 2014). These individuals will benefit less from the positive aspects of unemployment. They won't gain the same amount of time to devote to health improvements as individuals working more hours (Burgard et al., 2014). According to Huang et al. (2014), there was a significant association with job less and health needs going unmet. Individuals with lower income experienced greatde unmet health need. However, negative impacts on health were larger for middle and higher income unemployed, than lower income individuals (Huang et al., 2014).

International Comparisons

While there is limited literature on the effect of the recession on mental health in the United States, there are a number of studies available from other developed nations. The World Health Organization (WHO) focused on the psychological impact of the recent global recession on 53 European countries (Impact of Economic Crises on Mental Health, 2011). . According to

research done by WHO, the recession resulted in secondary mental health effects including higher suicide rate and alcohol related deaths (Impact of Economic Crises on Mental Health, 2011). This study found that these mental health effects can be counteracted by welfare programs and increasing the price of harmful substances such as tobacco and alcohol. Researchers found increases in both depression and anxiety in the United Kingdom. Additionally, poor health status increased from 25.7% in July of 2009 to 29.5% by December 2010 (Astell-Burt et al., 2013). Studies conducted in Northern Europe do not find the same increase rate of heart attack and stroke that is found in the United States (Astell-Burt et al., 2013). The difference in cardiovascular disease between the United States and other nations, indicates that the relationship between economic recession and increased risk is complicated.

Gender Differences

Gender plays an important role in the interpretation of the impact of the Great Recession. A study by Oynes et al. (2012), points out the gender-based difference in cyclical responsiveness of the unemployment rate. On average, men will experience the discouraged worker effect, while women will be more likely to act as added workers (Oynes et al., 2012). Added workers increase labor force participation during economic contraction, while discouraged workers decrease participation. Women are more likely to be considered added workers, due to the marriage and gender norms typically adhered to. Women are more likely to be the stay-at-home-parent and provide a supplementary income. Hispanic women, who have a higher rate of marriage, are more likely to exhibit the added worker effect during a recession (Oynes et al., 2012). Additionally, male dominated fields, such as construction and manufacturing, were hit harder than female dominated fields, such as the service industry. The effects of the Great Recession impacted labors markets more for men, blacks, Hispanics, and less educated individuals, when compared

to women, whites, and those with higher levels of education. These varying implications of the Great Recession play a significant role in mental health and health care utilization among men and women. According to the results of a study conducted by Chen & Dagher (2014), females in general have higher mental health care utilization when compared to men in the United States. As a result of the latest financial crisis, both men and women exhibited increases in anti-depressant and anti-anxiety medications (Chen & Dagher, 2014). It is important to fully understand gender differences in psychological, behavioral, and physical wellbeing as a result of economic contraction. Information regarding changes in health among men and women can contribute to more informed public health policy to promote better population health.

III. Data & Methods

Data Sources

This study compares data collected in 2006, prior to the start of the economic recession, with data from 2012, collected after the official end of the recession. The original data used in this study comes from the National Health and Interview Survey (NHIS) series published by the National Center for Health Statistics (NCHS), as a part of the Centers for Disease Control and Prevention (CDC). The U.S. Census Bureau collects the data via surveys, via telephone. The Integrated Health Interview Series (IHIS) system retrieves data from these surveys and provides access for approved research purposes. The IHIS is a project funded by the National Institute of Child Health and Human Development, and offers customized data extractions of particular variables from specified years, which allows for easier access and comparisons (IHIS, 2014). The data analyzed in this study have been taken from the IHIS.

The NHIS started in 1957 and is conducted annually. Its primary purpose is to examine the health of the United States population through the collection of personal data. Data from the

NHIS includes a broad range of health related variables, and are used to monitor the prevalence of illness and disability in the United States. A primary strength of this survey is its extensive collection of demographic and socioeconomic characteristics. The NHIS takes into account demographic differences including educational attainment, race, age, and sex (CDC, 2012).

The NHIS is a nationally representative cross-sectional household interview survey. The survey is done both in person and on the phone, interviewing approximately 35,000 households or 87,500 persons with each annual round of surveys (NHIS, 2014). The NHIS follows a design plan that ensures an accurate representative national sampling of households. Sampling and interviewing is completed continuously throughout the duration of each year. The sampling plan is redesigned every ten years, with the most recent redesign in 2006. Both years examined in this study follow the same sampling design. Prior to the 2006 sample redesign, the NHIS sample design included oversampling of Black and Hispanic persons. The 2006 sample redesign has introduced oversampling of Asian persons as well (NHIS, 2014).

The format of the questionnaire used by the NHIS was last updated in 1997. It consists of two basic parts: core questionnaire and a supplement. The core questionnaire covers basic health and demographic items, while the supplement contains questions regarding relevant health topics. The core questionnaire is updated very little year to year. The supplemental questions are adjusted annually in response to current public health concerns (NHIS, 2014).

Dependent Variables

Dependent variables include different physical, psychological, and behavioral measurements of health. Physical measurements include prevalence of diseases and specific conditions, as well as general health status indicators. Body Mass Index (BMI) is a measure of body fat based on self-reported height and weight. It is calculated by dividing weight by

height^2. Overall health status was collected as a self-assessment in the survey, with possible answers ranging from 1 (“Excellent”) to 5 (“Poor”). This variable was modified into a dichotomous indicator for good health (equal to 1), combining together responses “excellent,” “very good,” and “good” to indicate positive self-assessment of health. Responses “fair” and “poor” (equal to 0) both indicate negative self-assessment of health and therefore were combined.

Two variables measuring psychological health have been included in this study. The NHIS survey includes six variables that evaluate psychological distress to the respondent within the last 30 days. This combination of variables was developed by Ronald C. Kessler, and it is known as the Kessler 6 Scale (K6). The K6 can be used as an evaluation of individual mental wellness and psychological well-being. The variables that comprise the K6 are feelings of depression, feelings of anxiety, restlessness, hopelessness, feeling worthless, and decreases in motivation and effort towards daily activities. The two variables used in this study measure the presence of anxious or depressive feelings within the most recent month. Respondents were asked if they felt “so sad that nothing could cheer [them] up” within the last 30 days (IHIS, 2015). The available responses include “none of the time,” “a little of the time,” “some of the time,” “most of the time,” and “all of the time.” This variable was transformed into a dummy variable to capture if the respondent was depressed, where DEPRESSED=0 if “none of the time,” indicating no presence of depressive feelings. The remainder of the responses were combined, indicating the presence of depressive feelings within the past 30 days (DEPRESSED=1). The second psychological variable included in the study assesses feelings of anxiety. Respondents were asked how frequently they felt nervous within the past 30 days. The possible responses were the same as the variable for depression, ranging from “none of the

time," to "all of the time." This variable was transformed into a dummy variable to capture if the respondent was anxious, where ANXIOUS=0 if "none of the time," indicating no feelings of nervousness or anxiety. The other responses were combined, indicating the respondent did have feelings of anxiety within the past 30 days (ANXIOUS=1).

The implications of health behaviors on individual well-being is also being examined in this study. Data regarding alcohol consumption and tobacco usage have been included in order to assess changes in health behaviors through substance usages. Alcohol consumption is measured by the number of days within the past year that the respondent has consumed five or more alcoholic beverages. Possible responses range from none to 365. Individuals under 21 years old are not legally able to purchase or consume alcohol, which could have an effect on the frequency and amount of consumption. The variable SMOKER identifies a respondent as a current smoker or nonsmoker.

Independent Variables

The independent variables include demographic and socioeconomic characteristics. The analysis controls for age, sex, marital status (*married,* widowed, divorced, separated, never married), race (*white*, black, Alaskan native/native American, Chinese, Filipino, Asian Indian, other Asian, other/not specified) Hispanic ethnicity, and educational attainment (none/kindergarten, less than high school, *high school*, GED, some college, associates degree technical, associates degree academic, bachelors degree, masters degree, professional degree, doctorate degree*).*[1]

[1] Italicized variables refer to reference group

Due to educational completion, respondents under the age of 25 were dropped from the study. The sample size was 45,096 in 2006 and 68,525 in 2012. The sample sizes for particular dependent variables are smaller.

Methods

Ordinary Least Squares (OLS) models are used for continuous variables to assess changes from 2006 to 2012. The continuous variables were BMI, which measures body fat of the respondent. An OLS model was also used to look at alcohol consumption, as measured by the number of days in the last year that the respondent consumed more than five alcoholic beverages. Probit models are used to estimate the dichotomous variables including presence of depression, presence of anxiety, smoking status of the respondent, and overall self-reported wellbeing. STATA version 13.1 was used for data management and analysis.

Overall health is assessed through physical, behavioral, and psychological health. Two dependent variables were selected from each category, in order to observe changes in health from a comprehensive perspective. In order to assess changes from 2006 to 2012, the dummy variable Year2012 was created. The coefficient of this dummy variable is a rough estimate of the changes in the health as a result of the Great Recession between these two years. The equation used to measure health is as follows.

$$\text{Health} = f(\text{Sex}, \text{Age}, \text{Race}, \text{Hispanic Ethnicity}, \text{Education}, \text{Marital Status}, \text{Year2012})$$

In other words, the measures of health are a function of the control variables and the dummy variable for 2012. The dependent variables BMI and alcohol consumption were both estimated using OLS models. Depression, anxiety, smoking status, and self-reported health, were estimated using Probit models.

IV. Results

This study examines the effects of the Great Recession on population health in the United State.

[Insert Table 1.]

Table 1. provides a description of the summary statistics of selected variables of this dataset. The dependent variables are listed first, followed by the independent variables.

Physical Health

The first measure of physical health is BMI. Controlling for everything else, the OLS regression results show that changes in BMI from 2006 to 2012 are not significant overall. When broken up by gender, change in BMI is significant for women at the .05 significance level, with an increase of 0.441 from 2006 to 2012**.**

[Insert Table 2.]

Self-reported health is the second variable used to assess changes in physical health. Overall, the number of people self-reporting good overall health decreased by 5.4 percentage points according to Probit estimation. Both genders experienced decreases in self-reported health, however women saw a larger increase in those reporting worse off health. Larger increases in self-reported health were observed as an individual's educational attainment increased. Self-reported health improved for men with at least a Bachelor's degree between 2006 and 2012. Women with professional and doctorate degrees reported lower rates of self-reported health compared to men.

[Insert Table 3]

Psychological Health

The overall impact of economic recession has conflicting impacts on mental health. While some mental health measurements may show a negative impact from the recession, other

psychological conditions may become better. Rate of reported depression decreased by 2.9 percentage points from 2006 to 2012. The difference for males, overall, is not significant. Overall, females experienced a 3.3% decrease in rate of reported depression from 2006 to 2012. This is in agreement with literature that suggests work and work-related stressors can be the cause of cause of depression (Burgard et al., 2014). Additionally, women in the United States exhibit higher rates of mental illness, including depression and anxiety, in comparison to men (Altemus et al., 2014). Increased time as a result of joblessness can create opportunity to reduce feelings of sadness and despair (Burgard et al., 2014). Males with educational attainment below a college degree showed increases in rate of depression, while women with the same level of educational attainment showed decreases in rate of depression.

[Insert Table 4.]

While self-reported depression decreased as a result of the Great Recession, rates of self-reported anxiety increased. These contrasting results regarding rates of anxiety and depression reflect prior research. The recession creates conflicted affects on psychological health. There was a 5.4% increase in self-reported anxiety amongst men from 2006 to 2012. Women experienced a slightly smaller increase of 4.8%. Despite the larger increase for men, overall men experience lower rates of anxiety compared to men. Men are 0.264 times less likely than women to self-report as having anxiety. These increases in anxiety could be a result of becoming unemployed, financial difficulties, and stress associated with finding a job.

[Insert Table 5.]

Behavioral Health

According to OLS regression the number of days in the past year individuals consumed five or more alcoholic beverages there was no significant change from before the recession compared to after the recession, when examining data from 2006 and 2012

The rate of individuals who identified as smokers decreased from 2006 to 2012, indicating an improvement in some health behaviors as a result of the latest economic recession. Smoking status decreased more for men when compared to women. This is most likely a result of lower income as a result of joblessness. Individuals have less disposable income to spend on nonessential items like tobacco. Additionally, this could be a result of the inhibition effect in an attempt to make improved health decisions for continued employment. As level of educational attainment increases, smoking status decreases. However, an interesting observation is the increase in smoking status among women with doctoral degrees. It increased from -1.013 to -0.755.

[Insert Table 6.]

Future Research

A primary drawback of the design of this survey is the lack of geographic identifiers. In order to ensure the privacy of survey respondents, data regarding specific location is unavailable to researchers. Individual states and cities are kept confidential to protect the identities of survey respondents. The unavailable geographic information limits the inclusion of geographically related variables such as pollution or crime rate, which could be used in combination with this data. Additionally, analysis of health by comparing urban versus rural areas is not possible.

A secondary concern regarding the NHIS is that it is primarily self-reported. Inconsistencies can arise between true data and self-reported data. Survey respondents may not

fully understand the confidentiality promised, and be disinclined to accurately report personal data. Because data collection is retroactive, accuracy is dependent upon the respondents' memory. Inaccurate reports of weight or height, will affect the calculation of BMI.

Due to these limitations, there are multiple opportunities for future research. The primary opportunity is the use of geographic variables. Due to the limited nature of the data, geographic trends could not be included and controlled for in this study.

Additional research can be done to look at the impact of income level on behavioral, psychological, and physical health, as a result of the Great Recession. As established in the literature review, income brackets were affected differently by the recession. Examining the relationship between income, recession, and overall wellbeing, would offer insight into ways of managing future economic contractions.

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Table 1. Summary Statistics

Combined Years		All				Male				Female			
	N	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
BMI	113,621	30.403	14.616	11.23	99.99	31.437	17.296	11.23	99.99	29.090	10.099	11.23	99.99
Smoker	113,621	0.088	0.284	0	1	0.082	0.274	0	1	0.096	0.294	0	1
Alcohol Cons	30,453	11.121	44.243	0	365	4.219	23.522	0	365	18.283	57.569	0	365
Health	113,621	0.853	0.354	0	1	0.845	0.362	0	1	0.862	0.345	0	1
Depression	51,284	0.248	0.432	0	1	0.287	0.452	0	1	0.199	0.399	0	1
Anxiety	51,281	0.323	0.468	0	1	0.363	0.481	0	1	0.272	0.445	0	1
Age	113,621	49.424	15.727	25	99+	49.777	15.999	25	99+	49.026	15.404	25	99+
White	87,261	0.768	0.422	0	1	0.755	0.430	0	1	0.783	0.412	0	1
Black	16,589	0.146	0.353	0	1	0.159	0.365	0	1	0.131	0.337	0	1
Alaskan	1,250	0.011	0.105	0	1	0.011	0.104	0	1	0.012	0.107	0	1
Chinese	1,591	0.014	0.119	0	1	0.014	0.119	0	1	0.014	0.119	0	1
Filipino	1,932	0.017	0.129	0	1	0.018	0.133	0	1	0.016	0.124	0	1
Asian Indian	1,363	0.012	0.111	0	1	0.011	0.106	0	1	0.014	0.116	0	1
Other Asian	3,068	0.027	0.161	0	1	0.028	0.164	0	1	0.026	0.158	0	1
Race (Other)	568	0.005	0.071	0	1	0.005	0.070	0	1	0.005	0.073	0	1
Hispanic	21,361	0.188	0.391	0	1	0.186	0.389	0	1	0.191	0.393	0	1
High School	28,519	0.251	0.434	0	1	0.249	0.433	0	1	0.253	0.435	0	1
GED	3,295	0.029	0.167	0	1	0.027	0.162	0	1	0.031	0.173	0	1
Some College	19,088	0.168	0.374	0	1	0.173	0.378	0	1	0.162	0.368	0	1
AA Technical	7,726	0.068	0.252	0	1	0.071	0.257	0	1	0.065	0.246	0	1
AA Academic	4,090	0.036	0.187	0	1	0.042	0.200	0	1	0.030	0.171	0	1
Bachelors	19,997	0.176	0.381	0	1	0.175	0.380	0	1	0.177	0.382	0	1
Masters	8,067	0.071	0.258	0	1	0.074	0.261	0	1	0.069	0.253	0	1
Professional	1,477	0.013	0.112	0	1	0.009	0.093	0	1	0.017	0.130	0	1
Doctorate	1,363	0.012	0.108	0	1	0.008	0.089	0	1	0.016	0.127	0	1
Married	70,331	0.619	0.486	0	1	0.579	0.494	0	1	0.665	0.472	0	1
Widowed	7,613	0.067	0.251	0	1	0.101	0.301	0	1	0.029	0.169	0	1
Divorced	13,407	0.118	0.323	0	1	0.131	0.338	0	1	0.103	0.304	0	1
Separated	3,068	0.027	0.163	0	1	0.033	0.179	0	1	0.021	0.143	0	1
Never Married	19,088	0.168	0.374			0.156	0.363			0.182	0.385	0	1

Table 2. BMI OLS: Coefficient Estimates

	All	Male	Female
	Combined Years	Combined Years	Combined Years
Male	**-2.469*** **		
Age	0.001	0.009	**-0.010***
Black	**1.200*** **	**1.792*** **	0.145
Alaskan	**1.772****	**2.432***	1.002
Chinese	**-4.083*** **	**-5.431*** **	**-2.527*** **
Filipino	**-2.013*** **	**-2.758****	-1.081
Asian Indian	**-3.271*** **	**-3.174****	**-3.579*** **
Other Asian	**-4.296*** **	**-5.994*** **	**-2.278*** **
Race (other)	-0.751	-1.587	0.225
Hispanic	0.221	-0.322	**0.846*** **
< High School	**0.529***	**0.657***	0.367
GED	0.257	-0.089	0.657
Some College	-0.164	-0.302	-0.073
AA Technical	**-0.758****	**-1.012***	-0.463
AA Academic	**-1.046****	**-1.403****	-0.637
Bachelors	**-1.585*** **	**-2.180*** **	**-0.869*** **
Masters	**-2.176*** **	**-2.950*** **	**-1.194*** **
Professional	**-2.374*** **	**-3.179****	**-1.784*** **
Doctorate	**-1.478***	-2.261	-1.025
Widowed	**-1.994*** **	**-2.418*** **	**-1.051****
Divorced	**-0.410***	-0.315	**-0.509****
Separated	-0.626	-0.539	-0.694
Never Married	0.048	0.534	**-0.574****
BMI	0.172	-0.002	**0.441****
N	51587	28858	22729
R^2	0.0171	0.0135	0.0112

Table 3. Self Reported Health OLS: Coefficient Estimates

	All		Male		Female	
	2006	2012	2006	2012	2006	2012
Male	0.031	**0.050*** **				
Age	**-0.023*** **	**-0.020** **	**-0.027** **	**-0.023** **	**-0.019*** **	**-0.017** **
Black	**-0.254*** **	**-0.290** **	**-0.220** **	**-0.259** **	**-0.278*** **	**-0.310** **
Alaskan	**-0.182***	**-0.297** **	**-0.280***	**-0.254** **	-0.095	**-0.341** **
Chinese	**0.239** **	0.052	0.22	0.057	**0.264***	0.05
Filipino	0.01	0.011	0.063	-0.009	-0.031	0.022
Asian Indian	-0.057	-0.012	-0.056	-0.055	-0.059	0.031
Other Asian	-0.065	-0.028	**-0.173***	-0.03	0.023	-0.028
Race (other)	-0.057	-0.146	-0.045	-0.1	-0.052	-0.182
Hispanic	**-0.090*** **	**-0.066** **	**-0.078***	-0.028	**-0.105*** **	**-0.098** **
< High School	**-0.410*** **	**-0.406** **	**-0.402** **	**-0.385** **	**-0.412*** **	**-0.417** **
GED	**-0.372*** **	**-0.302** **	**-0.408** **	**-0.288** **	**-0.331*** **	**-0.303** **
Some College	**0.058***	**0.076*** **	0.014	**0.092** **	**0.101** **	**0.072** **
AA Technical	**0.121*** **	**0.116*** **	**0.141** **	**0.152*** **	**0.113***	**0.097** **
AA Academic	**0.211*** **	**0.267*** **	**0.031**	**0.321*** **	**0.331*** **	**0.244*** **
Bachelors	**0.401*** **	**0.528*** **	**0.399*** **	**0.537*** **	**0.418*** **	**0.534*** **
Masters	**0.593*** **	**0.597*** **	**0.529*** **	**0.559*** **	**0.661*** **	**0.644*** **
Professional	**0.690*** **	**0.616*** **	**0.678*** **	**0.737*** **	**0.774*** **	**0.495*** **
Doctorate	**0.579*** **	**0.553*** **	**0.520*** **	**0.575*** **	**0.762*** **	**0.592*** **
Widowed	0.027	-0.018	0.025	-0.033	-0.017	**-0.059***
Divorced	**-0.296*** **	**-0.275** **	**-0.341** **	**-0.247** **	**-0.273*** **	**-0.301** **
Separated	**-0.336*** **	**-0.377** **	**-0.291** **	**-0.284** **	**-0.343*** **	**-0.422** **
Never Married	**-0.231*** **	**-0.215** **	**-0.304** **	**-0.226** **	**-0.178*** **	**-0.215** **
Health	**-0.054*** **		**-0.037***		**-0.069*** **	
N	45,096	68,525	21.174	32,174	23,922	36,351
R^2	0.1172	0.1102	0.1261	0.1122	0.1124	0.1097

Table 4. Depression Probit: Coefficient Estimates

	All		Male		Female	
	2006	2012	2006	2012	2006	2012
Male	**-0.269*** **	**-0.252** **				
Age	0.001	-0.001	**0.003** **	0	-0.002	**-0.002***
Black	0.02	-0.019	0.053	-0.017	-0.007	-0.014
Alaskan	0.173	0.055	0.234	-0.053	0.124	0.135
Chinese	0.042	**0.233** **	-0.043	**0.296** **	0.106	**0.186***
Filipino	0.188*	0.059	0.121	0.159	**0.242***	-0.004
Asian Indian	0.017	**0.282*** **	0.133	**0.283** **	-0.129	**0.277***
Other Asian	0.085	-0.038	0.151	-0.05	0.037	-0.027
Race (other)	0.189	0.047	0.15	0.244	0.222	-0.126
Hispanic	-0.016	**0.072** **	-0.051	0.021	0.008	**0.112*** **
< High School	**0.215*** **	**0.243*** **	**0.169*** **	**0.266*** **	**0.243*** **	**0.226*** **
GED	**0.285*** **	**0.236*** **	**0.203***	**0.217** **	**0.333*** **	**0.249*** **
Some College	0.013	-0.008	0.016	0.008	0.003	-0.02
AA Technical	-0.044	-0.032	-0.037	-0.012	-0.056	-0.047
AA Academic	-0.086	**-0.116** **	0.031	0.024	**-0.144***	**-0.197** **
Bachelors	**-0.278*** **	**-0.301** **	**-0.274** **	**-0.275** **	**-0.293*** **	**-0.320** **
Masters	**-0.355*** **	**-0.312** **	**-0.314** **	**-0.277** **	**-0.390*** **	**-0.333** **
Professional	**-0.452*** **	**-0.350** **	**-0.404** **	**-0.341** **	**-0.545*** **	**-0.359** **
Doctorate	**-0.478*** **	**-0.468** **	**-0.456** **	**-0.502** **	**-0.541** **	**-0.435** **
Widowed	**0.245*** **	**0.291*** **	**0.371*** **	**0.336*** **	**0.242*** **	**0.283*** **
Divorced	**0.366*** **	**0.340*** **	**0.347*** **	**0.353*** **	**0.385*** **	**0.329*** **
Separated	**0.480*** **	**0.556*** **	**0.506*** **	**0.660*** **	**0.462*** **	**0.492*** **
Never Married	**0.242*** **	**0.276*** **	**0.268*** **	**0.335*** **	**0.235*** **	**0.230*** **
Depression	**-0.029***		-0.023		**-0.033***	
N	20,729	30,555	9,072	13,516	11,657	17,039
R^2	0.0419	0.0424	0.0322	0.0381	0.0339	0.0333

Table 5. Anxiety Probit: Coefficient Estimates

	All		Male		Female	
	2006	2012	2006	2012	2006	2012
Male	**-0.270*** **	**-0.264** **				
Age	**-0.005*** **	**-0.007** **	**-0.004** **	**-0.008** **	**-0.005*** **	**-0.007** **
Black	**-0.252*** **	**-0.299** **	**-0.237** **	**-0.240** **	**-0.262*** **	**-0.330** **
Alaskan	-0.118	0.006	-0.129	0.102	-0.111	-0.078
Chinese	**-0.197***	**-0.184** **	-0.16	-0.141	**-0.224***	**-0.222***
Filipino	0.019	**-0.298** **	0.025	**-0.328** **	0.007	**-0.277** **
Asian Indian	**-0.473*** **	**-0.403** **	**-0.382** **	**-0.365** **	**-0.612*** **	**-0.467** **
Other Asian	**-0.153***	**-0.357** **	**-0.052**	**-0.362** **	**-0.251** **	**-0.358** **
Race (other)	0.11	-0.137	0.166	-0.264	0.074	-0.041
Hispanic	**-0.171*** **	**-0.192** **	**-0.160** **	**-0.184** **	**-0.179*** **	**-0.198** **
< High School	**0.169*** **	**0.206*** **	**0.157*** **	**0.204*** **	**0.179*** **	**0.212*** **
GED	**0.171** **	**0.248*** **	0.123	**0.258*** **	**0.207** **	**0.250*** **
Some College	**0.095** **	**0.081*** **	**0.122** **	**0.126*** **	**0.074***	0.052
AA Technical	0.041	0.078*	0.114	0.110*	-0.012	0.056
AA Academic	0.049	0.01	0.201*	0	-0.034	0.014
Bachelors	0.022	0.011	0.102*	0.05	-0.04	-0.015
Masters	-0.04	0.044	0.018	0.130**	-0.081	-0.01
Professional	-0.079	0.02	-0.051	0.016	-0.095	0.057
Doctorate	-0.022	0.129	0.076	0.148	-0.169	0.144
Widowed	**0.072***	**0.089** **	0.154*	0.002	0.041	**0.095** **
Divorced	**0.178*** **	**0.216*** **	**0.177*** **	**0.229*** **	**0.180*** **	**0.207*** **
Separated	**0.356*** **	**0.359*** **	**0.316*** **	**0.487*** **	**0.373*** **	**0.279*** **
Never Married	**0.161*** **	**0.187*** **	**0.188*** **	**0.237*** **	**0.139*** **	**0.147*** **
Anxiety	**0.049*** **		**0.054** **		**0.048** **	
N	20,721	30,560	9069	13519	11,652	17,041
R^2	0.0200	0.0266	0.0123	0.0237	0.0131	0.0179

Table 6. Smoking Status Probit: Coefficient Estimates

	All		Male		Female	
	2006	2012	2006	2012	2006	2012
Male	**0.149*** **	**0.122*** **				
Age	**-0.009*** **	**-0.008** **	**-0.006** **	**-0.006** **	**-0.013*** **	**-0.010** **
Black	**-0.083*** **	**-0.114** **	-0.017	-0.021	**-0.164*** **	**-0.207** **
Alaskan	0.122	-0.02	0.107	0.02	0.137	-0.073
Chinese	**-0.403*** **	**-0.459** **	-0.095	**-0.211***	**-1.027*** **	**-0.801** **
Filipino	**-0.180***	**-0.205** **	0.075	-0.085	**-0.585*** **	**-0.319** **
Asian Indian	**-0.347** **	**-0.340** **	-0.061	-0.006	**-1.018*** **	**-1.129** **
Other Asian	**-0.356*** **	**-0.250** **	-0.089	-0.006	**-0.727*** **	**-0.527** **
Race (other)	-0.088	-0.028	0.043	-0.022	-0.257	-0.036
Hispanic	**-0.481*** **	**-0.501** **	**-0.312** **	**-0.351** **	**-0.677*** **	**-0.670** **
< High School	**0.165*** **	**0.147*** **	**0.146*** **	**0.115*** **	**0.185*** **	**0.182*** **
GED	**0.418*** **	**0.308*** **	**0.339*** **	**0.284*** **	**0.496*** **	**0.336*** **
Some College	0.034	-0.03	0.035	-0.054	0.025	-0.01
AA Technical	-0.013	**-0.068***	0.069	**-0.106***	-0.098	-0.039
AA Academic	-0.078	**-0.181** **	-0.072	**-0.261** **	-0.097	**-0.124***
Bachelors	**-0.416*** **	**-0.447** **	**-0.401** **	**-0.454** **	**-0.444*** **	**-0.447** **
Masters	**-0.516*** **	**-0.560** **	**-0.472** **	**-0.585** **	**-0.576*** **	**-0.554** **
Professional	**-0.530*** **	**-0.778** **	**-0.697** **	**-0.807** **	**-0.312***	**-0.754** **
Doctorate	**-0.657*** **	**-0.714** **	**-0.552** **	**-0.705** **	**-1.013*** **	**-0.755** **
Widowed	**0.408*** **	**0.397*** **	**0.394*** **	**0.444*** **	**0.468*** **	**0.405*** **
Divorced	**0.726*** **	**0.680*** **	**0.764*** **	**0.714*** **	**0.716*** **	**0.659*** **
Separated	**0.706*** **	**0.667*** **	**0.763*** **	**0.706*** **	**0.694*** **	**0.647*** **
Never Married	**0.411*** **	**0.477*** **	**0.377*** **	**0.492*** **	**0.477*** **	**0.480*** **
Smoking	**-0.066*** **		**-0.079*** **		**-0.053*** **	
N	45,096	68,525	211,74	32,174	23,922	36,351
R^2	0.0869	0.0878	0.0768	0.0853	0.1055	0.0953

Appendix

Definition of Data

Independent Variables:

Demographic—

AGE	Individual's age
SEX	Binary variable for male or female
MARSTAT	Legal marital status
RACEA	Primary racial background. Options include white, black, alaskan native, American Indian, Asian Indian, Chinese, and Filipino.
HISPETH	Identifies and classifies persons of Hispanic/Spanish/Latino origin or ancestry
EDUC	Educational attainment

Dependent Variables:

Overall Health—

HEALTH	Self reported health status as measured on a scale from excellent (1) to poor (5), including an option for unsure.
HEALTH_EVGG	Dummy variable for *HEALTH*
BMI	Body mass index calculated from self-reported height and weight

Mental Health —

ASAD	Feelings of sadness or hopelessness in last 30 days
DEPRESSED	Dummy variable for *ASAD*
ANERV	Feelings of anxiety in the last 30 days
ANXIOUS	Dummy variable for *ANERV*

Health Behavior—

ALCOHOL5	Days had 5+ drinks in past year
SMOKER	Dummy variable for smoking status