University of Kentucky
UKnowledge

Theses and Dissertations--Public Health (M.P.H. & Dr.P.H.)

College of Public Health

2017

Risk Factors for Self Reported Health Status in the National Health Interview Survey

Kayla Rhea Talbott
University of Kentucky, kayla.talbott@uky.edu

Follow this and additional works at: https://uknowledge.uky.edu/cph_etds

 Part of the Public Health Commons

Right click to open a feedback form in a new tab to let us know how this document benefits you.

Recommended Citation

Talbott, Kayla Rhea, "Risk Factors for Self Reported Health Status in the National Health Interview Survey" (2017). *Theses and Dissertations--Public Health (M.P.H. & Dr.P.H.)*. 172.
https://uknowledge.uky.edu/cph_etds/172

This Graduate Capstone Project is brought to you for free and open access by the College of Public Health at UKnowledge. It has been accepted for inclusion in Theses and Dissertations--Public Health (M.P.H. & Dr.P.H.) by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

STUDENT AGREEMENT:

I represent that my capstone and abstract are my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained needed written permission statement(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine) which will be submitted to UKnowledge as Additional File.

I hereby grant to The University of Kentucky and its agents the irrevocable, non-exclusive, and royalty-free license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless an embargo applies.

I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's capstone including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Kayla Rhea Talbott, Student

Steve Browning, PhD, Committee Chair

Corrine Williams, ScD, MS, Director of Graduate Studies

Risk Factors for Self Reported Health Status in the National Health Interview Survey

Capstone Project Paper

A paper submitted in partial fulfillment

Of requirements for the degree of

Master of Public Health

In the

University of Kentucky College of Public Health

By

Kayla Rhea Talbott

Albany, KY

July 11, 2017

Steve Browning, PhD, Committee Chair

Lorie Chesnut, DrPH, Committee Member

Glyn G. Caldwell, MD, Committee Member

Table of Contents

Abstract

Purpose: The aim of this study was to gain a better understanding of how individuals view and analyze their health by evaluating the relationship between self-reported health (SRH) status and several variables representing health and lifestyle characteristics. Assessing the ability of self-reported health status to measure overall health was an additional objective of the study.

Methods: A secondary, cross-sectional study was conducted using information from the 2014 National Health Interview Survey for adults 18 and older. Data were stratified and compared based on a self-rated health status of either excellent or very good, good, or fair and poor, yielding a final sample of 83,812 respondents. Basic statistical frequency analysis were performed, followed by the calculation of odds ratios and associated confidence intervals to further explore the relationship between SRH and influential sociodemographic and health conditions. Logistic regression enabled the odds of reporting a lower health status to be estimated, adjusting for several key variables included in the analysis.

Results: The unadjusted odds of reporting poor SRH compared to excellent were significantly higher for respondents suffering from at least one chronic condition causing a limitation of activity (OR: 5.48, 95%CI: 3.68, 8.16). A finding that remained significant even after the model was fully adjusted (OR: 2.49, 95%CI 1.17, 5.29). An inverse gradient was observed between education level and poor SRH with individuals lacking a diploma being three times as likely to report poor SRH (OR: 3.05, 95%CI: 1.73, 5.39).

Conclusions: The consistent relationship observed between chronic condition limitation and a lower SRH ranking further elucidates the impact disease burdens have on quality of life and day-to-day activities. Although SRH is a broad and widespread measure of health, results suggest that it might be more reliable indicator for specific subgroups. This study found that those with specific limitations due to weight, diabetes, lung and breathing problems, and heart ailments reported poorer health. The nature of SRH data limited the study by response bias and varying definitions of health at each level varying from excellent to poor. Although the cognitive mechanism of health ratings remains unclear, it is evident that men and women of varying ages process information about health differently.

Keywords: self-reported health, self-rated health, self-assessed health, self-evaluated health, and self-perceived health

Introduction:

"How would you rate your health?" Researchers in an array of fields ranging from medical research to economics (Saunders, 1996) examine self-reported health (SRH) by using this single question in which an individual is asked to rank their current health along a four or five point scale from very poor to excellent. Demographic, socioeconomic, behavioral, psychosocial and disease-related factors are a few determinants of SRH that have been identified in prior research (Damian, et al., 1999; McFadden, et al., 2008; Kunst, et al., 2005; Kasmel, et al., 1982; Knesebeck and Geyer, 2007; Pappa and Niakas, 2006). The focus of this study is to further explore the association between SRH and a number of these components of health and illness.

Identifying measures of health that can be readily assessed from large numbers of individuals using minimal expenditure of resources is a continuing goal for public health practitioners. Interviewer time and training, respondent comprehension, and logistic and analytic complexity are arduous, costly components of health assessment (Kuhn, Rahman, and Menken, 2006).

In addition to being simple and cost efficient to collect, SRH captures a holistic view of health. Idler and Benyamini's (1997) review of SRH and mortality found that SRH included multiple faces of health such as physical disability, functional or activity limitations, chronic and acute morbidity, self-assessment of severity, awareness of comorbidity, and past health trajectory. Their results also imply that in addition to incorporating an array of illnesses when rating health, respondents are potentially influenced by symptoms of undiagnosed disease as well.

While using the strengths of SRH, this study will ultimately be limited by the nature of individual reported data. In addition to information and recall bias (Darviri, et al., 2011) researchers cannot control or assess what aspects of health the individual emphasizes when evaluating health (Kuhn, Rahman, and Menken, 2006). Individual norms and expectations also play a role in health rating habits; therefore, it is important to distinguish these types of influences on SRH from true health differences (Dowd and Zajacova, 2007).

Project goals are to further explore the individual process of SRH by focusing on how lifestyle characteristics, social determinants of health, and pre-existing health conditions influence self-assessed health status within the United States (U.S.) population. Additionally, identifying which factors and comorbidities are more likely to be associated with lower SRH is a specific aim. This study also focuses on the strength of the association between SRH and various demographic groups and the degree to which SRH changes when certain covariates are controlled. Seeking answers to these questions add validity to the existing body of work supporting SRH as a tool for assessing general health.

The study expects to find that individuals of higher socioeconomic status, measured by either education level or employment, would report better health as earlier works have illustrated (House et al., 1994). However, research detailing other dimensions of SRH such as age and chronic conditions is more conflicting. One might expect to observe lower health status rankings with increasing age; however, researchers have found that older respondents give disproportionately positive health assessments (Idler, 1993). As the age of the population advances, monitoring

trends in SRH will continue to provide public health practitioners insight into individuals' quality of health as well as predicting morbidity and mortality outcomes (Dowd and Zajacova, 2007).

The first chapter provides a general overview of the SRH and investigates the findings of prior work, which were used to frame the foundation of the study. The next chapter explains the steps taken to select and obtain a data source, as well as the process of data collection. This chapter details the variables chosen to study in association with SRH, and the framework of analysis. The results are presented in the subsequent chapter, followed by a discussion of findings and interesting themes in the concluding chapter.

Background:

The focus of the literature review was to obtain pertinent information on defining SRH, understanding the respondent's assessment process, and establishing demographic and health characteristics that influence self-evaluation. In addition to epidemiology, important concepts in this chapter are derived from a number of disciplines including psychology, sociology, gerontology, and clinical medicine due to the broad scope of SRH. Key terms and phrases included in the background search were self-rated health, self-assessed health, self-evaluated health, and self-perceived health and were used interchangeably throughout the report. However, it is important to distinguish that although similar these terms are not synonymous.

Evolution of SRH

Since the 1950s sociological researchers began using the simple question of rating one's health on an ordinal scale as a widespread indicator of overall health (Garrity, Somes, and Marx, 1978; Maddox, 1962, and Suchman, Phillips, and Streib, 1958). Subsequently, investigators began to observe that SRH encompassed more than just objective health measures like a physician diagnosis or biological specimen analysis. In 1983, George Kaplan suggested that poor perceived health might be connected to subjective factors such as social isolation, challenging life events, depression, job stress, and other adverse psychosocial situations that are more difficult to ascertain and evaluate (Kaplan and Comacho, 1983).

The validity of SRH as reliable health measure as been repeatedly questioned and analyzed; however, its association with mortality has been well demonstrated

(Singer, et al., 1976; Mossey and Shapiro, 1982; and Kaplan and Camacho, 1983). Numerous studies (Idler and Benyamini, 1997; Benyamini and Idler, 1999; Kaplan and Baron-Epel, 2003; Ferraro and Farmer 1999; Idler and Benyamini 1997; Kaplan and Camacho 1983; Schnittker, 2005) illustrate the predictive power of SRH for future health outcomes such as survival, functional decline (Idler and Kasl, 1995; Ferraro et al., 1997), subsequent chronic disease (Shadbolt, 1997), and recovery from major medical events (Wilcox, Kasl, and Idler, 1996). Studies have progressed towards targeting the mechanisms underlying the SRH-mortality connection to better understand how different individual and environmental characteristics influence each level of health ratings.

Cognitive Process

The mental progression of self-rating health begins as each individual recognizes a general definition of ''health''. Unlike research and clinical practice, this process is not structured by formal rules and definitions. Yet it is still heavily influenced by objective information such as medical diagnoses, functional status, and formal signs of illness such as prescribed drugs, sick leave, and disability pension. Jylhä (2009) denoted other influences and signals from a person's mind and body- pains, aches, fatigue, dizziness, and low spirits, which are only sensed and accessed by that individual. Allowing respondents to choose which aspects of health to prioritize and evaluate increases the measure's sensitivity to how each respondent views health (Bjorner, Fayers, and Idler, 2005).

Next, individuals must consider which factors are included as "my health status" and how these components will be mentally weighed and evaluated. During this process individuals are likely to consider life expectancy at certain ages, disease-specific morbidity, and functioning and quality of life. Previous health experiences, cultural conventions and future health expectations are additional factors likely to be considered by respondents. A mental teeter-totter between reasoning and negotiation often transpires before respondents are able to fit this multidimensional phenomenon of "my health" into a preset scale (Jylhä, 1994).

Often times personal traits such an optimistic or pessimistic disposition alter the cognitive framework of health assessment (Brissette, Leventhal, & Leventhal, 2003). Components of health, such as depression, impact mental evaluations of self-ratings and may lead to more negative interpretations (Schnittker, 2005; Han and Jylhä, 2006; and Jylhä, 2009).

Associated Influences

A multitude of studies (Benyamini et al., 2003, Kaplan and Baron-Epel, 2003, Krause and Jay, 1994, Shooshtari, Menec, and Tate, 2007, Simon et al., 2005 and Smith, Shelly, and Dennerstein, 1994) have explored different individual rationales and found that the reasons that lead one person to rate his or her health as poor do not necessarily reflect the reasons why another person rates his or her health as good.

Potential confounders likely to influence health evaluations include demographic features, socioeconomic factors, physical health status, functional

health status, family health history, and psychosocial factors. Leisure time exercise, smoking and alcohol consumption, and risk factors, such as obesity, are health behaviors previously found to be associated with self-assessment (Fylkesnes and Forde, 1991; Schulz et al., 1994). These measures are included in most health survey research because they are easy to collect, provide pertinent information about basic characteristics, and may capture unique dimensions of ill health (Kuhn, Rahman, Menken, 2006). The work of Manderbacka, Lundberg, and Martikainen (1999) points out that social and health characteristics of respondents do not directly describe health status; however, these factors are likely to show a statistical link with SRH because they impact the likelihood of different objective health conditions being used as a basis for self-ratings.

Previous findings have shown that socioeconomic factors such as social class, education, standard of living, social networks, social capital, and the quality of the neighborhood are taken into account by respondents when rating health (Kawachi et al., 1999, Krause, 1996, Mansyur et al., 2008, Schultz et al., 2008 and Singh-Manoux et al., 2006). Although a higher socioeconomic status level generally brings greater happiness, Travers and Richardson found that it is only by a small margin (1993, p.126). They also reported non-material dimensions of life, such as support and company, health, social standing, marriage, and not being worse off than previously to be important influences (1993, p.131). Similarly, Headey and Wearing conclude from their analysis that income and status are not of paramount importance to subjective well-being and psychological distress (1992, p.80).

Jylhä, et al. (2001) considered the effect of chronic diseases on SRH and concluded that chronic conditions and disability do not increase proportionately with advancing age. In follow-up studies with the same respondents, Leinonen, Heikkinen, and Jylhä (1998) discovered that even if the direct question about change in health status implied a worsening state that individuals' SRH may remain the same. These findings further illustrate the gap between objective health indicators and subjective information used by respondents while rating health.

Women and men have different definitions of health based on what comorbidities their gender is more likely to experience. Even though mortality rates are significantly higher for men, women experience higher rates of morbidity, disability, and health service use. Although women are prone to have more objective problems than men, research has historically found that among older adults women tend to provide more positive self-assessments of their health (Ferraro, 1980; Fillenbaum, 1979).

Deeg and Kriegsman (2003) summarized that men's SRH tendencies account for the fatality of diseases, whereas women focus on the disability associated with disease. Thus, on average when an elderly man reviews his health as poor, he is more likely to be closer to his death than a woman of the same age and health ranking (Benyamini, et al. 2003). Each gender may also be swayed in health assessment based on current social conditions with respect to marital status, living arrangements, socioeconomic status, past or present labor market experience, social activities, and life style (Lane and Cibula, 2000).

Prior studies found that older adults usually assess their health more positively than their younger counterparts (Ferraro, 1980). Other findings (Fylkesnes and Fùrde, 1991 and Krause and Jay, 1994) reported health behaviors to be especially imperative in young people's self-rating of health, while limitations in functional abilities are more impactful among the elderly (Moum, 1992). Recent studies imply that younger cohorts account for health behaviors during health evaluations because they are becoming increasingly aware that habits are not only risk factors, but also direct components of health status (Chen, Cohen and Kasen, 2007; Manderbacka, Lundberg and Martikainen, 1999; and Jylhä, 2009).

Numerous studies have illustrated that with age the correspondence between objective and subjective health weakens (Borchelt, et al, 1999 Idler, 1993; Pinquart, 2001). This could partially explain why recent studies have revealed that SRH seems to be a stronger predictor of mortality in younger than in older age groups (Benyamini et al., 2003 and Franks, Gold and Fiscell, 2003).

Comparison Theories

Another complex issue related to the evaluation of SRH is the inevitable process of comparison (Fienberg, Loftus, and Tanur, 1985). For older adults this generally involves negotiation between an ideal, non-problematic category of "good" health versus actual, experienced problems in health and functioning. Elderly persons' positive health assessments even when confronting illness are often described by reference group theory, which assumes that subjective assessment of

health depends on the individual's comparison group (Festinger, 1954 and Merton, 1957).

Thus, it is not surprising that older adults more often base their self-assessments of health on social and temporal comparisons to earlier health, future expectations, or on comparisons with age peers (Cheng, Fung, and Chan, 2007; Fayers et al., 2007; Idler et al., 200; Suls, Marco, and Tobin, 1991 and Tissue, 1972). Comparing oneself with specific people, including deceased members an individual's birth cohort or with negative stereotypes of old age, leads to a lower aspiration level of "good" health and a disproportionate SRH score. (Tornstam, 1975 and Jylhä, 2009).

An earlier report by Singer (1974) wrote that Parkinson's patients seemed to choose others of their own age, instead of others with the same illness, as a comparative reference group. Successive findings yielded similar results for other maladies of comparable or lesser severity (Affleck et al. 1988; DeVellis et al. 1990; Helgeson and Taylor 1993). Wood, Taylor, and Lichtman (1985) took a deeper look at comparisons made by other chronically afflicted persons, specifically women with breast cancer. They revealed that when asked to judge the severity of their condition, respondents were more likely to compare themselves with women whose illness was worse than their own than with women whose condition was better.

One of Idler's (1993) many discoveries on the topic of SRH found that when using open-ended interviews many elderly report having good overall health. However, these individuals quickly followed by stating their health to be good despite some limitations. Similarly, other quantitative studies discovered that even

though limitations are more predominant with advancing age, the association between functional limitations and SRH weakened later in life (Hoeymans et al. 1997; Levkoff, Cleary, and Wetle 1987; Schnittker, 2005).

Summary & Implications

Studies repeatedly highlight the deficient and fragmentary understanding of the nature of SRH as an indicator of health. Jylhä (2009) found that people with the same reported conditions, symptoms, and limitations rate their health differently. Potential explanations of this divergence are differences in comprehensive and accurate health information, variation in the evaluative frameworks, or individual bias in the response adjectives. These gaps must be further explored to better understand what exactly SRH measures and why it continues to have such a strong and constant association with mortality.

Public health practitioners constantly strive to gain insight on how the population is affected by chronic disease and accompanied symptoms. By examining the associations between SRH, various health indicators, and how these relationships change with age, this study contributes to the plethora of epidemiological and clinical research surrounding this topic. As health care needs are constantly evolving, it is vital to better understand the basis for aged self-evaluations.

Using a wide range of diseases, this study focuses on identifying the conditions with the largest contributions to ill health for adults. Prior studies have shown that older men more often suffer from heart and lung conditions, whereas

older women usually suffer from every other condition, comorbidity, and disability (Deeg, Portrait, & Lindeboom, 2002). Therefore, in order to enable comparisons to earlier studies a set of similar covariates, including the aforementioned health characteristics as well as demographic information, are used as a model.

Methods:

The National Health Interview Survey (NHIS) provides an excellent resource to obtain and analyze SRH data based on demographic information, socioeconomic characteristics, and an array of health conditions portraying physical and mental limitations. Understanding the sampling design and interview techniques of the NHIS plays a key role in beginning to define the survey population. In order to shape an analytical model that will detail the association between SRH and influencing health indicators, appropriate descriptive variables must be identified and selected based on prior literature. These covariates represent three levels of interest: socio-demographic, socioeconomic, and health conditions or diseases resulting in functional limitations. Calculating the frequency and percentage values of the selected variables provides a quantitative description of the sample. Next, odds ratios and their associated confidence intervals are calculated to enable the relationship between SRH and the independent variables to be assessed. Finally, logistic regression analysis allows a statistical model to be generated thus predicting the probability of reporting lower or higher SRH based on determinants of health status.

Survey Process and Design

The NHIS is a cross-sectional survey that occurs face-to-face in the respondents' homes via an interviewer from the U.S. Census Bureau. The target population for the NHIS includes noninstitutionalized, civilians residing in the U.S. at the time of the interview. Excluded from the survey are persons in long-term care facilities, correctional institutions, and U.S. nationals living in foreign countries. Active-duty Armed Forces personnel are also excluded from the survey, unless at least one other family member is a civilian eligible for the survey (Parsons et al., 2014).

Data are collected continuously throughout the year using computer-assisted personal interviewing (CAPI) and follow-up interviews may be completed over the phone. The computer program guides the interviewer through the questionnaire, automatically providing the interviewer with appropriate questions based on answers to previous questions. Interviewers enter survey responses directly into the computer, and the CAPI program determines if the selected response is within an allowable range, checks it for consistency against some of the other data collected during the interview, and saves the responses into a survey data file.

Interviewers pose both core and supplemental questions to obtain data on health history and demographic characteristics. The four main components encompassing the core are Household, Family, Sample Adult, and Sample Child. This study used the Household and Family portions of the questionnaire. Limited demographic information was collected in the Household Core, then verified and

expanded upon in the Family Core. Topics including socio-demographic characteristics, basic indicators of health status, activity limitations, injuries, healthcare access and utilization, health insurance, and income and were addressed in the Family Core section. Supplemental questions yield more in depth information about current health topics and better characterize individuals based on their health behaviors.

The publicly released data files for the 2014 NHIS contained data for 44,552 households containing 112,053 persons in 45,597 families. The total household response rate was 73.8%. Once respondents aged 17 and younger were removed from the analysis, the study focused on 83,812 adult responses.

Explanatory Indicators of Health

The dependent variable in the model was SRH. It is examined using the question, "Would you say your health in general is excellent very good, good, fair, or poor)?" Initial coding ranged from excellent to poor; however, the response categories were recoded into three groups- excellent or very good, good, and fair or poor. Responses categorized as refused, don't know, or not ascertained were coded as missing and were not included in calculations.

Socio-demographic variables

Age was recorded in single years at the time of the last birthday for each person. In order to assess SRH across age groups the following six categories were

created: 18-24, 25-44, 45-64, 65-74, 75-84, and 85+. Gender was dichotomously classified as female or male.

In the geographic classification of the U.S. population, states were grouped into four regions used by the U.S. Census Bureau: Northeast, Midwest, South, and West. The Northeast was represented by Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania. The Midwest consisted of Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Kansas, and Nebraska. Delaware, Maryland, District of Columbia, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Oklahoma, Arkansas, and Texas comprised the South. States in the West were Washington, Oregon, California, Nevada, New Mexico, Arizona, Idaho, Utah, Colorado, Montana, Wyoming, Alaska, and Hawaii.

Five initial categories were possible for reported marital status- married, widowed, divorced or separated, never married, or living with a partner. Marital status was recoded and subdivided based on three condensed groups: married, previously married, or never married.

Hispanic or Latino origin and race was divided into Hispanic and Not Hispanic. Hispanic includes the subset Mexican or Mexican American. Not Hispanic was further divided into White, Black or African American, Asian, and all other race groups. Persons in these categories were reported to be of only a single race group.

Socioeconomic Variables

Highest level of education obtained and full-time employment status provided some insight on socioeconomic status among the sample. Categories of education were based on years of school completed or highest degree obtained for adults aged 25 and over. Education was recoded and categorized into four groups: bachelor's degree or higher, associate degree or some college, high school diploma or General Education Diploma (GED), or less than a high school degree. For full-time employment status, respondents either selected yes or no when asked if they usually worked full time.

Chronic Conditions Limiting Functionality

Comorbidities and diseases related to self-related health were identified in the literature and represented in the project by questions pertaining to weight, cancer, hypertension, diabetes, stroke, heart, and lung/breathing problems. Each of these topics were posed in two parts and coded as either mentioned or not mentioned as a limitation due to the condition at hand. For example, respondents would be asked, "How long have you had cancer" for the first part of the question, and would then be instructed to "enter time period with cancer" to complete the second portion. Chronic condition status was another variable capable of describing daily limitations. Responses were recoded as either having at least one chronic condition or no chronic condition causing limitation of activity. The only variable representative of mental health limitations pertained to respondents who reported suffering from depression, anxiety, or emotional problems.

Statistical Framework

Frequency counts and percentages were obtained using IBM SPSS Statistical Software version 23 and tabulated in Microsoft Word 2010 version 14.6.6. Next, contingency tables generated with OpenEpi version 3.01 allow for the association between self-rated health and the aforementioned independent variables to be evaluated. This analysis only used the odds ratios and associated confidence intervals to compare the unadjusted associations between the subcategories of the dependent variable and the independent covariates discussed. Regression analysis was completed through IBM SPSS Statistical Software version 23.

Multiple logistic regression analysis was used to further explain the quantitative relationship between excellent versus poor SRH and each covariate by adjusting for all variables in the model. Initially, the model included all covariates; however, variables were gradually removed using backward, stepwise elimination to find the model of best fit. Statistical significance for all p-values was set at an alpha level of 0.05. Adjusted odds ratio values and their associated confidence intervals were based on the coefficients from the logistic model in the typical manner of exponentiating the estimated logistic coefficients.

Results

The covariates detailed in the prior chapter were explored in terms of their impact on SRH. As previously noted, in the initial analysis responses were grouped based on a reported health status of excellent, very good, good, fair, or poor. The responses were condensed into three categories and stratified by a reported health status as excellent or very good, good, or fair and poor because of the distribution levels of the sample and the aims of the study.

Demographic Characteristics

The sample's demographic profile includes information on gender, age, race, highest education level obtained, geographic location of residence, marital status, and employment standing are given in Table 1. The frequency distribution and associated column percentages describe the sample quantitatively for adults aged 18 and older for each categorical variable. Of the 83,812 NHIS respondents who comprised the sample, approximately half were female (53%) and the other half male (47%). The majority of these participants either fell in the 25 to 44 (35%) or 45 to 64 (35%) age range.

Over half of the sample reported being currently married (54%) and identified their ethnicity as non-Hispanic white (60%), followed by Hispanic (19%), Black (13%), Asian (7%) races respectively. A higher percentage of collected responses came from those residing in the South (35%) and the West (29%). Although the majority of the sample (83%) had obtained at least a high school

diploma, GED, or advanced degree, only 23% of respondents reported that they usually worked full-time.

Health Characteristics

Table 2 examines the sample in more detail by focusing on a general health synopsis of the study sample. A vast majority of participants (97%) reported that at least one condition causing a limitation of activity was chronic. When specifically asked if each health condition caused a limitation, participants reported higher frequencies for hypertension or high blood pressure (13%), diabetes (12%), heart problems (12%), or depression, anxiety, or emotional problems (14%). Fewer people in the sample reported suffering from ailments due to weight (4%), cancer (4%), stroke (5%), and lung or breathing problems (10%). As SRH decreased from excellent to poor, the frequency of responses increased for each health covariate.

Odds Ratio and Logistic Regression Findings

The unadjusted odds ratios produced from two by two table analysis can be found in Table 3a and 3b. Several demographic variables showed a significant effect on the odds of reporting a lower health status of good or poor compared to those reporting to be in excellent health. Based on the results in Table 3a, older respondents showed a substantial increase in odds of reporting lower health ratings. Notably, an increase in the odds of reporting poor SRH compared to excellent SRH was evident for those aged 75 to 84 who showed an 11 (95% CI: 9.84, 12.66) fold higher odds, followed by those aged 85 and above who experienced an

almost 18 (95% CI: 15.4, 20.92) times higher odds compared to the referent age group- those aged 18-24.

Findings showed that males, in comparison to females, were slightly more likely to report higher self-health ratings, having 7% (95% CI: 0.90-0.96) lower odds of good SRH compared to excellent SRH and 14% (95% CI: 0.82-0.90) lower odds of reporting poor health compared to excellent SRH. Not surprisingly, an increase in odds of reporting lower SRH resulted for those with education levels of less than a Bachelor's degree. This was especially true for both those having a high school diploma or GED who were 4 (95% CI: 3.79, 4.35) times as likely to report poor SRH, as well as for those with less than a high school diploma who were almost 9 (95% CI: 8.28, 9.57) times as likely to report poor SRH compared to those with a Bachelor's degree or higher.

Increased odds were found to be associated with Hispanic (OR: 1.35, 95% CI: 1.30-1.40), Black (OR: 1.53, 95% CI: 1.46-1.61), or any other classified race group (OR: 1.81, 95% CI: 1.57-2.08) when compared to non-Hispanic Whites. Prior work (Hummer, Benjamins, & Rogers, 2004) observed that when comparing the non-Hispanic White population to all other racial/ethnic groups, the expectation of poorer health for the latter category is generally observed. However, Asian ethnicities were found to be 25% less likely to report poor SRH (95%CI: 0.68-0.83) than their non-Hispanic White counterparts suggesting a somewhat protective effect.

Additional studies have shown a particular health disadvantage among those in the South (Lin and Zimmer, 2002; Pickle, et al., 1996; Porell and Miltiades, 2002)

and the findings of this study did not diverge. Respondents living in the South (OR: 1.10, 95% CI: 1.05-1.16) and the West (OR: 1.11, 95% CI: 1.06-1.17) were more likely to report lower self-health ratings of good compared to excellent SRH. Additionally, Southern participants had 44% (95% CI: 1.35-1.53) higher odds of rating their health as poor in comparison to excellent SRH, while those living in the West were only at a 10% (95% CI: 1.03-1.17) increase in odds of reporting the same.

Being married has been found to be associated with lower mortality, at least through reproductive ages (Goldman, 1993), and researchers generally have found that it confers health benefits (Waite & Gallagher, 2000). However, the positive association of general health status and marriage may not be reflective among women and people experiencing marital transitions (Williams & Umberson, 2004). When this study compared marital status among the sample respondents, those who were previously married (widowed, separated, or divorced) were almost 3 (95% CI: 2.74, 3.03) times as likely to report poor SRH than those who were currently married. However, those who had never been married were found to have slightly higher odds of reporting a more favorable health status in comparison to married individuals.

Respondents who reported that at least one chronic condition caused a limitation of activity were more than 5 (95% CI: 3.68, 8.16) times as likely to rate their health as poor. Specifically, being limited by activity due to cancer or stroke tripled the chances of a poor self-health rating while hypertension (high blood pressure) or heart problems quadrupled the chances of poor SRH. Respondents

were almost 5 times as likely to report a poor SRH if they mentioned being limited by lung (breathing problems) conditions or diabetes, and more than 5 times as likely to report the same if they mentioned being limited by a weight condition (OR: 5.57, 95%CI: 3.68-8.44). All of the health conditions included increased the odds of a lower health rating; however, those who mentioned weight or lung (breathing problems) conditions were twice as likely to choose a lower SRH of good in comparison to excellent.

The results of the logistic regression analysis are shown in Table 4 in which the odds of having excellent SRH are compared to those with poor SRH among multiple variables. The final model included several demographic and health variables that were found to be statistically associated with reporting lower SRH when controlling for all other variables. Individuals aged 45 to 64 had twice (OR: 2.06, 95%CI: 1.23-3.46) the odds of reporting a lower SRH status of poor compared to excellent. Not surprisingly, the relationship between education and increased odds of reporting poor health was significant at each level of stratification. Having obtained a GED or high school diploma more than doubled (OR: 2.36, 95%CI: 1.55-3.57) the odds of reporting poor SRH, while not having a diploma tripled (OR: 3.05, 95%CI: 1.73-5.39) the odds in comparison with excellent SRH.

Individuals who responded to having at least one chronic condition causing a limitation of activity were significantly associated with a 2.49 (95%CI: 1.17, 5.29) increased odds ratio of reporting poor SRH in comparison to those ranking their SRH as excellent. Respondents suffering from specific limitations due to weight,

diabetes, lung and breathing problems, and heart ailments were all shown to have statistically significantly increased odds of reporting poor SRH.

Discussion

The general aim of this project was to explore a variety of demographic, socioeconomic, and health determinates pertaining to SRH in survey research. Specifically, focusing on identifying which lifestyle characteristics and chronic conditions are more strongly correlated with reporting poor SRH, and how these associations vary among different groups. The study found SRH to be predominantly associated with age, education level, and limitations due to chronic conditions including weight, diabetes, lung, and heart ailments.

Respondents aged 45 to 64 were the only significant age strata linked to an increase in reporting poor SRH. One potential explanation is the increase in health literacy observed in more recent birth cohorts. A more accurate understanding of one's health could lead to a lower health rating as disease onset and illness limitations become present with age. This finding might partly be attributed to common life stressors often encountered around this age range such as loss of a parent or occupational transitions. Additionally, this age range encompasses a time in which many experience symptoms related to cardiovascular disease- another health covariate found to significantly impact poor self-rated health in this study.

Older age groups were not found to have a significant connection to reporting lower SRH. This finding has been reported in other studies dating back to the 1960s when early gerontologists (Maddox, 1962; Peck, 1968; Shanas et al.,

1968) first documented inconsistencies between older adults' global evaluations of their health and more objective health indicators- chronic conditions, sick days, medications, and functional limitations (Borawski, et al. 1996). The validity of SRH as an indicator for health of older adults may be less reliable and deems more cautious analysis. The strength of this association might be weaker due to poor self-awareness of their own diagnoses or being less discriminatory during health judgments.

The analysis revealed that a large portion of information regarding full time working status of the sample was unavailable; hence, socioeconomic impact was only assessed and measured by number of years of education. The vast amount of missing data (n=72077) could have stemmed from how the questions were ordered and prompted to the interviewer, or the method of data entry. Results mirrored the multitude of earlier studies that have established SRH status to be linked with socioeconomic status as measured by education level. A strong gradient between socioeconomic status and SRH was evident as a drastically higher percentage of those with lower education levels reported poor health than did those with higher levels.

The increased influence of limitations due to chronic conditions was widely observed in this study. The high symptomatic burden and functional disability associated with long-lasting conditions no doubt impacts an individual during health assessment. Poor SRH correlated with lung and breathing disorders, which is not surprising given the fatigue and disease severity associated disorders like Chronic Obstructive Pulmonary Disease (COPD) and emphysema.

Results showed that adults with diabetes experience an increase in the likelihood of reporting poor SRH, further elucidating the effects of diabetes and its complications on quality of life. For example, diabetes-related complications such as lower extremity amputation, blindness, kidney failure, and cardiovascular disease could easily contribute to a lower health rating. Weight was another health outcome linked to higher prevalence of poor SRH. A finding that is consistent with previous literature suggesting that obesity influences disability through its association with osteoarthritis and vascular disease (National Heart, Lung and Blood Institute, 1998)

Several strengths and limitations must be kept in mind during the analysis of results. First and foremost, the subjective nature of SRH may lead to different interpretations across sub-populations (Case and Paxson, 2005; Huisman, van Lenthe, & Mackenbach, 2007; Idler, 1993). Self-reported data in general are particularly sensitive to certain biases, including social desirability bias and recall bias. However, some studies suggest that the increased emphasis on technological medicine have devalued the importance of what patients say (Kaplan et al., 1996) From this perspective, self-reported information can be used to capture unique dimensions of health missed by other means of measurement.

The quality of the data source and broad range of health information captured across various U. S. populations all lend strength to the study. However, because the study was a secondary cross-sectional analysis, any inferences must be excluded due to the potential of a mixture of causal effects. Another weakness was the large number of missing values for specific health outcomes resulting in functional limitations. Although survey responses included refused, not ascertained,

or don't know as categories, a high volume of missing responses still resulted (n=71409). With approximately 85% of the initial sample being unavailable for inclusion in the final analysis, the power of the study inevitably suffered. Not only did the absent data impede the extension of statistical testing, it also inhibited the generalization of results to the overall population.

This study chose to focus on general, demographic characteristics and health variables of interest in relation to self-assessed health. Other factors including health behaviors and societal features such as income level and insurance coverage were not examined, but would provide valuable information to prospective studies. However, results of the study echo the established link between health and socioeconomic status assessed here by education level.

Because findings pertaining to persons aged 45-64 were of statistical interest, future SRH studies would benefit from the inclusion of variables representing access to private insurance. Individuals in this age strata are beginning to experience health problems due to aging; however, they do not yet meet the age requirement to have universal access to healthcare via Medicare. Generational differences within this particular age group may have also been masked in this study and could be further explored. Health practitioners should be cautious when using SRH to determine and compare the overall health status of older adult populations based on findings.

Interesting variables for future studies to consider are those pertaining to musculoskeletal disorders, arthritis, and back and neck issues. Depending on which specific health conditions are of interest, other variables of measurement could be

utilized. For example, if the focus was on limitations due to weight, Body Mass Index (BMI) could be employed to stratify weight groups. If the weight category excluded some persons who were actually obese, then the impact of weight on disability and health status may have been underestimated.

Using only one question as an overall prognostic indicator of health might have limited reliability. Indeed, it is problematic to interpret and compare SRH when individuals understand and respond to a given question in different ways. However, the analysis supported SRH as a single-question health measurement capable of predicting poor health in specific groups, namely those with lower education levels, aged 45 to 64, or suffering from limitations due to chronic illness. For the broad purposes of this study condensing SRH responses was the logical choice. Prospective studies could target explicit differences in fair and poor health by keeping response categories expanded.

Even with limitations this study contributes further validity to using SRH as a practical instrument for assessments in large, epidemiological studies. Additionally, these findings highlight the impact education, age, and chronic complaints have on the overall health of population groups. Although this study did not allow for the analysis of qualitative responses, it could be of interest to future studies to investigate the rational of individual self-health ratings.

Conclusion

Overall, findings showed that SRH captures different perspectives of health based on a variety of variables and groups. Discoveries indicated that SRH was an

accurate indicator of poor health for certain populations, such as the middle aged and those suffering from chronic conditions. A result that is not surprising given the prolonged nature, greater impact on daily life, and higher plausibility of death associated with chronic illness. Analysis showed that conditions with a more prolonged nature like lung and weight limitations had a stronger association with poor SRH than more aggressive types of disease with a worse prognosis such as cancer, or those with a silent course of action like high blood pressure or stroke.

Results suggest that perceived health levels mainly reflect underlying disease burden, particularly for those limited by their health condition. Thus, information illustrating symptom onset, duration of symptoms, and symptom severity would be beneficial. Considering the incurability of chronic conditions, interventions should focus on improving patients' perceptions of their health, as well as symptom management. Continuing to explore the morbidity associated with specific diseases will provide more insight as to why some conditions are more closely linked to poor SRH.

Monitoring SRH is important as definitions and standards of "good" health are constantly changing over time. The U.S. population is experiencing longer life but worsening health due in large part to chronic ailments and functional limitations. SRH studies are fundamental for further informing discussions of public health and aid in tracking progress towards achieving national health objectives.

Appendix:

Table 1: Distribution of SRH status among 2014 NHIS sample aged 18 and over by demographic characteristics N=83939

Characteristic	Current health status among adults aged 18 and over			
	Excellent or Very Good (n=49698)	**Good (n=23245)**	**Fair or Poor (n=10869)**	**Total (N=83812)**
Gender				
Male	24068 (48.4)	10813 (46.5)	4851 (44.6)	39732 (47.4)
Female	25630 (51.6)	12432 (53.5)	6018 (55.4)	44080 (52.6)
Age (years)				
18-24	7434 (15.0)	1997 (8.6)	394 (3.6)	9825 (11.7)
25-44	19966 (40.2)	7179 (30.9)	2192 (20.2)	29337 (35.0)
45-64	15513 (31.2)	8777 (37.8)	4787 (44.0)	29077 (34.7)
65-74	4341 (8.7)	2906 (12.5)	1835 (16.9)	9082 (10.8)
75-84	1847 (3.7)	1697 (7.3)	1093 (10.1)	4637 (5.5)
85+	597 (1.2)	689 (3.0)	568 (5.2)	1854 (2.2)
Race/Ethnicity				
Hispanic	8996 (18.1)	4971 (21.4)	2315 (21.3)	16282 (19.4)
Non-Hispanic				
White	31335 (63.1)	12848 (55.3)	5879 (54.1)	50062 (59.7)
Black	5410 (10.9)	3395 (14.6)	2013 (18.5)	10818 (12.9)
Asian	3475 (7.0)	1674 (7.2)	489 (4.5)	5638 (6.7)
All other groups	482 (1.0)	357 (1.5)	173 (1.6)	1012 (1.2)
Education				
Less than a high school diploma	5122 (10.3)	4245 (18.3)	3310 (30.5)	12677 (15.1)
High School Diploma or GED	11823 (23.8)	7376 (31.7)	3486 (32.1)	22685 (27.1)
Associate Degree or Some College	15417 (31.0)	6671 (28.7)	2651 (24.4)	24739 (29.5)
Bachelor's Degree or higher	16746 (33.7)	4503 (19.4)	1216 (11.2)	22465 (26.8)
Unknown	590 (1.2)	450 (1.9)	206 (1.9)	1246 (1.5)
Region				
Northeast	8596 (17.3)	3774 (16.2)	1589 (14.6)	13959 (16.7)
Midwest	10332 (20.8)	4501 (19.4)	1998 (18.4)	16831 (20.1)
South	16552 (33.3)	8021 (34.5)	4399 (40.5)	28972 (34.6)
West	14218 (28.6)	6949 (29.9)	2883 (26.5)	24050 (28.7)
Marital Status				
Currently Married	27664 (55.7)	12410 (53.4)	5090 (46.8)	45164 (53.9)
Previously Married	6217 (12.5)	4469 (19.2)	3295 (30.3)	13981 (16.7)
Never Married	15696 (31.6)	6289 (27.1)	2443 (22.5)	24428 (29.1)
Unknown	121 (0.2)	77 (0.3)	41 (0.4)	239 (0.3)
Employment[†]				
Yes	1737 (22.5)	817 (24.2)	214 (20.2)	2768 (22.8)
No	5817 (75.3)	2457 (72.9)	820 (77.2)	9094 (74.8)
Unknown	168 (2.2)	97 (2.9)	28 (2.6)	293 (2.4)

[†] Indicates high number of missing values (n=72077), which were not included in subsequent analysis

Table 2: Distribution of SRH status among 2014 NHIS sample aged 18 and over by chronic conditions and activity limiting diseases

Characteristic‡	Current health status among adults aged 18 and over			
	Excellent or Very Good (n=49698)	**Good (n=23245)**	**Fair or Poor (n=10869)**	**Total (N=83812)**
Weight				
Yes	24 (1.2)	103 (2.5)	393 (6.2)	520 (4.2)
No	2013 (97.6)	3952 (96.5)	5914 (92.8)	11879 (94.8)
Unknown	25 (1.2)	41 (1.0)	65 (1.0)	131 (1.0)
Cancer				
Yes	41 (2.0)	127 (3.1)	417 (6.5)	585 (4.7)
No	1996 (96.8)	3928 (95.9)	5890 (92.4)	11814 (94.3)
Unknown	25 (1.2)	41 (1.0)	65 (1.0)	131 (1.0)
Hypertension/High Blood Pressure				
Yes	98 (4.8)	354 (8.6)	1207 (18.9)	1659 (13.2)
No	1939 (94.0)	3701 (90.4)	5100 (80.0)	10740 (85.7)
Unknown	25 (1.2)	41 (1.0)	65 (1.0)	131 (1.0)
Diabetes				
Yes	90 (4.4)	303 (7.4)	1138 (17.9)	1531 (12.2)
No	1947 (94.4)	3752 (91.6)	5169 (81.1)	10868 (86.7)
Unknown	25 (1.2)	41 (1.0)	65 (1.0)	131 (1.0)
Stroke				
Yes	45 (2.2)	173 (4.2)	455 (7.1)	673 (5.4)
No	1992 (96.6)	3882 (94.8)	5852 (91.8)	11726 (93.6)
Unknown	25 (1.2)	41 (1.0)	65 (1.0)	131 (1.0)
Heart Problem				
Yes	99 (4.8)	356 (8.7)	1056 (16.6)	1511 (12.1)
No	1938 (94.0)	3699 (90.3)	5251 (82.4)	10888 (86.9)
Unknown	25 (1.2)	41 (1.0)	65 (1.0)	131 (1.0)
Lung/Breathing Problem				
Yes	68 (3.3)	285 (7.0)	905 (14.2)	1258 (10.0)
No	1969 (95.5)	3770 (92.0)	5402 (84.8)	11141 (88.9)
Unknown	25 (1.2)	41 (1.0)	65 (1.0)	131 (1.0)
Depression/Anxiety/Emotional Problem				
Yes	200 (9.7)	498 (12.2)	1095 (17.2)	1793 (14.3)
No	1837 (89.1)	3557 (86.8)	5212 (81.8)	10606 (84.6)
Unknown	25 (1.2)	41 (1.0)	65 (1.0)	131 (1.0)
Chronic Condition Limitation				
At least one chronic condition	1959 (95.0)	3959 (96.7)	6248 (98.1)	12166 (97.1)
No chronic condition	67 (3.2)	82 (2.0)	39 (0.6)	188 (1.5)
Unknown	36 (1.7)	55 (1.3)	85 (1.3)	176 (1.4)

‡ Indicates high number of missing values (n=71409), which were not included in subsequent analysis

Table 3a: Unadjusted odds ratios comparing SRH and demographic characteristics for 2014 NHIS sample aged 18 and over

Characteristic	Good v. Excellent OR (95% CI)[§]	Poor v. Excellent OR (95% CI)
Gender		
Female	1.0	1.0
Male	0.93 (0.90, 0.96)*	0.86 (0.82, 0.90)*
Age		
18-24	1.0	1.0
25-44	1.3 (1.34, 1.42)	2.07 (1.86, 2.31)*
45-64	2.11 (2.0, 2.23)*	5.82 (5.24, 6.48)*
65-74	2.49 (2.33, 2.67)*	7.98 (7.11, 8.95)*
75-84	3.42 (3.15, 3.71)*	11.17 (9.84, 12.66)*
85+	4.30 (3.81, 4.85)*	17.95 (15.4, 20.92)*
Race/Ethnicity		
Non-Hispanic, White	1.0	1.0
Non-Hispanic, Asian	1.18 (1.10, 1.25)*	0.75 (0.68, 0.83)*
Hispanic	1.35 (1.30, 1.40)*	1.37 (1.30, 1.45)*
Non-Hispanic, Black	1.53 (1.46, 1.61)*	1.98 (1.87, 2.10)*
Non-Hispanic, all other race groups	1.81 (1.57, 2.08)*	1.91 (1.60, 2.28)*
Education Level		
Bachelor's degree or higher	1.0	1.0
Associate degree or some College	1.61 (1.54, 1.69)*	2.37 (2.21, 2.54)*
High School diploma or GED	2.32 (2.22, 2.42)*	4.06 (3.79, 4.35)*
Less than a high school diploma	3.08 (2.93, 3.25)*	8.9 (8.28, 9.57)*
Region		
Northeast	1.0	1.0
Midwest	0.99 (0.94, 1.05)	1.05 (0.97, 1.12)
South	1.10 (1.05, 1.16)*	1.44 (1.35, 1.53)*
West	1.11 (1.06, 1.17)*	1.10 (1.03, 1.17)*
Marital Status		
Married	1.0	1.0
Previously Married	1.60 (1.53, 1.67)*	2.88 (2.74, 3.03)*
Never Married	0.89 (0.86, 0.93)*	0.85 (0.80, 0.89)*
Employment		
Yes	1.0	1.0
No	0.90 (0.82, 0.99)*	1.14 (0.98, 1.34)

[§] OR- Odds Ratio,
CI- Confidence Interval
*Indicates statistical significant at **p < 0.05**

Table 3b: Unadjusted odds ratios comparing SRH and chronic conditions for 2014 NHIS Sample aged 18 and over

Characteristic	Good v. Excellent OR (95% CI) **	Poor v. Excellent OR (95% CI)
Weight		
Not Mentioned	1.0	1.0
Mentioned	2.19 (1.40, 3.42)*	5.57 (3.68, 8.44)*
Cancer		
Not Mentioned	1.0	1.0
Mentioned	1.57 (1.10, 2.25)*	3.45 (2.49, 4.77)*
Hypertension/High Blood Pressure		
Not Mentioned	1.0	1.0
Mentioned	1.89 (1.50, 2.38)*	4.68 (3.79, 5.79)*
Diabetes		
Not Mentioned	1.0	1.0
Mentioned	1.75 (1.37, 2.22)*	4.76 (3.82, 5.94)*
Stroke		
Not Mentioned	1.0	1.0
Mentioned	1.97 (1.42, 2.75)*	3.44 (2.52, 4.70)*
Heart Problem		
Not Mentioned	1.0	1.0
Mentioned	1.88 (1.50, 2.37)*	3.94 (3.18, 4.87)*
Lung/Breathing Problem		
Not Mentioned	1.0	1.0
Mentioned	2.19 (1.67, 2.87)*	4.85 (3.77, 6.24)*
Depression/Anxiety/Emotional Problem		
Not Mentioned	1.0	1.0
Mentioned	1.29 (1.08, 1.53)*	1.93 (1.65, 2.26)*
Chronic Condition Limitation		
No condition causing limitation of activity is chronic	1.0	1.0
At least one condition causing limitation of activity is chronic	1.65 (1.19, 2.29)*	5.48 (3.68, 8.16)*

** OR- Odds Ratio,
CI- Confidence Interval
*Indicates statistical significant at **p < 0.05**

Table 4: Logistic regression analysis predicting the probability of poor SRH and characteristics for 2014 NHIS sample aged 18 and over (N=1070)[††]

Characteristic	Odds Ratio	95% CI	p-value
Weight	5.52	1.29, 23.59	.021*
Diabetes	18.52	2.53, 135.76	.004*
Lung/Breathing	5.58	1.69, 18.40	.005*
Heart	3.99	1.54, 10.35	.004*
Age 18-24	Reference		
Age 25-44	1.57	.91, 2.69	.105
Age 45-64	2.06	1.23, 3.46	.006*
Age 65-74	1.33	.73, 2.44	.354
Age 75-84	.92	.40, 2.08	.833
Age 85+	.64	.18, 2.28	.491
Education (At least a college degree)	Reference		
Education (Associate degree or some college)	1.58	1.06, 2.35	.024*
Education (GED or high school diploma)	2.36	1.55, 3.57	.000*
Education (No diploma, 0-12 grade)	3.05	1.73, 5.39	.000*
No Chronic condition limiting	Reference		
Chronic Condition limiting	2.49	1.17, 5.29	.018*

[††] CI- Confidence Interval

N=1070 Observations were included in this analysis. Excellent/very good SRH comparison is to less than good SRH categories (fair/poor).

*Indicates statistical significant at **p < 0.05**

References:

Affleck, G., Tennen, H., Pfeiffer, C., & Fifield, J. (1988). Social comparisons in rheumatoid arthritis: Accuracy and adaptational significance. *Journal of Social & Clinical Psychology*, 6, 219-234.

Bath, P.A. (2003). Differences between older men and women in the self-rated health-mortality relationship. *Gerontologist, 43*, 387–395.

Benyamini, Y., & Idler, E. L. (1999). Community studies reporting association between self-rated health and mortality. *Research on Aging, 21,* 393–401.

Benyamini, Y., Blumstein, T., Lusky, A., Modan, B. (2003). Gender differences in the self-rated health–mortality association: is it poor self-rated health that predicts mortality or excellent self-rated health that predicts survival? *The Gerontologist, 43(3),* 396-405.

Bjorner, J.B., Fayers, P., Idler, E. (2005). Self-rated health. In: Fayers P, Hays R, editors., editors. Assessing Quality of Life in Clinical Trials. Oxford: *Oxford University Press*. p. 309–23

Blaxter, M. (1990). Health and Lifestyles. London: Tavistock/Routledge.

Borawski, E.A., Kinney, J.M., Kahana, E. (1996). The meaning of older adults' health appraisals: congruence with health status and determinant of mortality, *Journals of Gerontology Series B- Psychological Sciences and Social Sciences, 51 (3),* S157-S170.

Borchelt, M., Gilberg, R., Horgas, A. L., & Geiselmann, B. (1999). On the significance of morbidity and disability in old age. In P. B. Baltes & K. U. Mayer (Eds.), The Berlin aging study: Aging from 70 to 100. 403–429. Cambridge, England: Cambridge University Press.

Brissette, I., Leventhal, H., & Leventhal, E.A. (2003). Observer ratings of health and sickness: can other people tell us anything about our health that we don't already know? *Health Psychology, 22 (5),* 471-478.

Brook, R.H., Ware, J.E., Davies-Avery, A., Stewart, A.L., Donald, C.A.,, Rogers, W.H., Wlliams, K.N., Johnston, S.A. (1979). Overview of adult health measures fielded in Rand's health insurance study. *Medical care, Vol.17(7 Suppl).*

Case, A., Paxson, C. (2005). Sex differences in morbidity and mortality. *Demography, 42, (2),* 189-214.

Chen, H., Cohen, P., & Kasen, S. (2007) Cohort differences in self-rated health: evidence from a three-decade, community-based, longitudinal study of women. *American Journal of Epidemiology, 166 (4),* 439-446.

Cheng, S., Fung, H., Chan, A. (2007) Maintaining self-rated health through social comparison in old age. *Journals of Gerontology Series B- Psychological Sciences and Social Sciences, 62 (5),* 277-285.

Damian L, Ruigomez A, Pastor V, Martin-Moreno J. (1999). Determinants of self-assessed health among Spanish older people living at home. *J Epidemiol Community Health, 53(7),* 412–416.

Darviri, C., Artemiadis, A. K., Tigani, X., & Alexopoulos, E. C. (2011). Lifestyle and self-rated health: a cross-sectional study of 3,601 citizens of Athens, Greece. *BMC Public Health*, *11*, 619.

Deeg, D.J.H., Kriegsman, D.M.W. (2003). Concepts of self-rated health: Specifying the gender difference in mortality risk. *Gerontologist, 43,* 376–386.

Deeg, D.J.H., Portrait, F., & Lindeboom, M. (2002). Health profiles and profile-specific health expectancies of older women and men: The Netherlands. *Journal of Women and Aging.* 14, 27-46.

Dening, T.R., Chi, L.Y., Brayne, C., Huppert, F.A., Paykel, E.S., & O'Connor, D.W. (1998). Changes in self-rated health, disability and contact with services in a very elderly cohort: a 6-year follow-up study. *Age and Ageing, 27 (1),* 23-33.

DeVellis, R. F., Holt, K., Renner, B. R., & Blalock, S. J. (1990). The relationship of social comparison to rheumatoid arthritis symptoms and affect. *Basic and Applied Social Psychology,* 11 (1), 1-18.

Dowd, J.B., & Zajacova, A. (2007). Does the predictive power of self-rated health for subsequent mortality risk vary by socioeconomic status in the US? *International Journal of Epidemiology, 36 (6),* 1214-1221.

Fayers, P. M., Langston, A. L., Robertson, C., & PRISM Trial Grp. (2007). Implicit self-comparisons against others could bias quality of life assessments. Journal of Clinical Epidemiology, 60(10), 1034–1039.

Ferraro, K. (1980). Self-ratings of health among the old and the old-old. *Journal of Health and Social Behavior, 21,* 377-383.

Ferraro, K. F., Farmer, M. M., & Wybraniec, J. A. (1997). Health trajectories: Long-term dynamics among black and white adults. *Journal of Health and Social Behavior, 38,* 38–54.

Ferraro, K.F., and Farmer, M.M. (1999). Utility of Health Data from Social Surveys: Is There a Gold Standard for Measuring Morbidity? *American Sociological Review 64*, 303–15.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117-140.

Fienberg, S.E., E.F. Loftus, and J.M. Tanur. (1985). Cognitive Aspects of Health Survey Methodology: An Overview. *Milbank Memorial Fund Quarterly/Health and Society 63(3)*, 547-64.

Fillenbaum, G.G. (1979). Social content and self-assessment of health among elderly. *Journal of Health and Social Behavior*, 20, 45-51.

Franks, P., Gold, M.R., & Fiscella, K. (2003). Sociodemographics, self-rated health, and mortality in the US. *Social Science & Medicine, 56 (12)*, 2505-2514

Fylkesnes, K. & Forde, O.H. (1991). The Tromso Study: Predictors of self-evaluated health—Has society adopted the expanded health concept? *Social Science & Medicine*, 32, 141–146.

Garrity, T.F., Somes, G.W., & Marx, M.B. (1978). Factors influencing self-assessment of health. *Social Science & Medicine, 12*, pp. 77–81.
Gerontologist, 43 (3), 396–405.

Goldman, N. (1993). Marriage selection and mortality patterns: Inferences and fallacies. *Demography, 30*, 189-208.

Han, B., Jylhä, M. (2006). Improvement in depressive symptoms and changes in self-rated health among community-dwelling disabled older adults. *Aging & Mental Health, 10 (6)*, 599-605.

Headey, B. & Wearing, A. (1992). Understanding Happiness: A Theory of Subjective Well-Being, Longman Cheshire, Melbourne, 80

Helgeson, V. S., & Taylor, S. E. (1993). Social comparisons and adjustment among cardiac patients. *Journal of Applied Social Psychology, 23*, 1171-1195.

Hoeymans, N., Feskens, E.J., Kromhout, D., van den Bos, G.A. (1997). Ageing and the Relationship between Functional Status and Self-Rated Health in Elderly Men. *Social Science and Medicine, 45*, 1527–36.

House, J. S., Lepkowski, J. M., Kinney, A. M., Mero, J. P., Kessler, R. C., & Herzog, A. R. (1994). The social stratification of aging and health. Journal of Health and Social Behavior, 35, 213-234.

Huisman, M., van Lenthe, F., Mackenbach, J. (2007). The predictive ability of self-assessed health for mortality in different educational groups. *International Journal of Epidemiology, 36 (6),*1207-1213.

Hummer, R. A., Benjamins, M. R., Rogers, R. G. (2004). Racial and ethnic disparities in health and mortality among the U.S. elderly population. In N. B. Anderson, R. A. Bulatao, & B. Cohen (Eds.), *Critical perspectives on racial and ethnic differences in health in late life* (pp. 53–94). Washington, DC: National Academies Press.

Idler, E. L. (1993). Age differences in self-assessments of health: Age changes, cohort differences, or survivorship*? Journal of Gerontology: Social Sciences, 48 (6),* S289-S300.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior, 38 (1),* 21–37.

Idler, E., Leventhal, H., McLaughlin, J., Leventhal, E., (2004). In suckness but not in health: self-ratings, identity, and mortality. *Journal of Health and Social Behavior, 45 (3),* 336-356.

Idler, E.L. (2003). Discussion: Gender differences in self-rated health, in mortality, and in the relationship between the two. *Gerontologist, 43,* 372–375.

Idler, E.L. and Kasl, S.V. (1995) Self-ratings of health: do they also predict change in functional ability? *Journals of gerontology. 50(6),* S344-S353

Jylhä, M. (1994). Self-rated health revisited: exploring survey interview episodes with elderly respondents. *Social Science & Medicine, 39 (7),* 983–990.

Jylhä, M. (2009). What is self-rated health and why does it predict mortality? Towards a unified conceptual model. *Social Science & Medicine. 69 (3).* 307-316

Jylhä, M., Guralnik, J.M., Balfour, J., & Fried, L.P. (2001). Walking difficulty, walking speed, and age as predictors of self-rated health: the Women's Health and aging Study. *Journals of Gerontology Series A- Biological Sciences and Medical Sciences, 56 (10),* M609-M617.

Kaplan, G., Baron-Epel, O. (2003). What lies behind the subjective evaluation of health status? *Social Science & Medicine, 56(8),* 1669-76.

Kaplan, G.A., & Camacho,T. (1983). Perceived health and mortality: a nine-year follow-up of the human Population Laboratory Cohort. *American Journal of Epidemiology, 89 (8),* 1187-1193

Kaplan, G.A., Goldberg, D.E., Everson, S.A., Cohen, R.D., Salonen, R., Tuomilehto, J., Salonen, J. (1996). Perceived health status and and morbidity and mortality: evidence from the Kuopio Ischaemic Heart Disease Risk Factor Study. *International Journal of Epidemiology, 20,* 239-245.

Kasmel, A., Helasoja, V., Lipand, A., Pratala, R., Klumbiene, J., Pudule, I. (2004) Association between health behavior and self-reported health in Estonia, Finland, Latvia and Lithuania. *Eur J Public Health, 14(1),* 32–36.

Kawachi, I. Kennedy, B.P., Glass, R. (1999). Social capital and self-rated health: a contextual analysis. *American Journal of Public Health, 89 (8),* 1187–1193.

Knesebeck, O., Geyer, S. (2007). Emotional support, education and self-rated health in 22 European countries. *BMC Public Health, 7*, 272.

Krause, N. (1996). Neighborhood deterioration and self-rated health in later life. *Psychology and Aging, 11 (2), 342-352.*

Krause, N.M., Jay, G.M. (1994). What do global self-rated health items measure? *Medical Care, 32 (9),* 930-942.

Kuhn, R., Rahman, O., Menken, J. (2006). Survey Measures of Health: How Well Do Self-Reported and Observed Indicators Measure Health and Predict Mortality? In: National Research Council (US) Committee on Population; Cohen B, Menken J, editors. Aging in Sub-Saharan Africa: Recommendation for Furthering Research. Washington (DC): *National Academies Press (US);* 2006. 10.

Kunst, A.E., Bos, V., Lahelma, E., Bartley, M., Lissau, I., Regidor, E., Mielck, A., Cardano, M., Dalstra, J.A., Geurts, J.J., Helmer, U., Lennartsson, C., Ramm, J., Spadea, T., Stronegger, W.J., Mackenbach, J.P. (2005). Trends in socioeconomic inequalities in self-assessed health in 10 European countries. *Int J Epidemiol, 34(2),* 295–305.

Lane, S.D., & Cibula, D.A. (2000). Gender and Health. In *Handbook of Social Studies in Health and Medicine* (S. Scrimshaw and G. Albrecht eds.). London: Sage, 136-153.

Leinonen, R. Heikkinen, E., & Jylhä, M. (1998). Self-rated health and self-assessed change in health in elderly med and women- a five year longitudinal study. *Social Science & Medicine, 46 (4-5),* 591-597.

Levkoff, S.E., Cleary, P.D., & Wetle, T. (1987). Differences in the appraisal of health between aged and middle-aged adults. *Journal of Gerontology, 42 (1),* 114-120.

Lin, G., Zimmer, Z. A. (2002). A geographical analysis of spatial differentials in mobility and self-care limitations among older Americans. *International Journal of Population Geography, 8,* 395-408.

Maddox, G. (1962). Some correlates of differences in self-assessment of health among the elderly. *Journal of Gerontology, 17 (2),* pp. 180–185.

Manderbacka, K., Lundberg, O., Martikainen, P. (1999). Do risk factors and health behaviours contribute to self-ratings of health? *Social Science & Medicine, 48 (12),* 1713-1720.

Mansyur, C., Amick, B.C., Harrist, R.B., Franzini, L. (2008). Social capital, income inequality, and self-rated health in 45 countries, *Social Science & Medicine, 66 (1),* 43-56.

McFadden, E., Luben, R., Bingham, S., Wareham, N., Kinmonth, A., Khaw, K. (2008). Social inequalities in self-rated health by age: Cross-sectional study of 22457 middle-aged men and women. BMC Public Health ,8:230.

McGee, D.L., Liao, Y., Cao, G., & Cooper, R.S. (1999). Reported Health Status and Mortality in a Multiethnic US Cohort. American Journal of Epidemiology, 149 (1), 41-46.

Merton, R.K. (1957) Social theory and social structure. *The Free Press, Glencoe, IL*.

Mossey, J.M., & Shapiro, E. (1982). Self-rated health: a predictor of mortality among the elderly.
American Journal of Public Health, 72 (8). 800-808.

Moum, T. (1992). Self-assessed health among Norwegian adults. *Social Science & Medicine, 35,* 935-947.

National Heart, Lung, and Blood Institute. (1998) *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: the Evidence Report. September*. NIH Publication No. 98-4083. Bethesda, MD: National Institute of Health.

Nolte, E., McKee, M. (2004). Changing health inequalities in East and West Germany since unification. *Soc Sci Med, 58(1),* 119–136.

Parsons VL, Moriarity C, Jonas K, et al. (2014). Design and estimation for the National Health Interview Survey, 2006–2015. *National Center for Health Statistics. Vital Health Statistics, 2(165). 2014.*

Pappa E, Niakas D. (2006). Assessment of health care needs and utilization in a mixed public-private system: the case of the Athens area. *BMC Health Serv Res, 6,* 146.

Pickle, L. W., Mungiole, M., Jones, G., White, A. A. (1996). *Atlas of United States mortality*. Hyattsville, MD: *National Center for Health Statistics*.

Pinquart, M. (2001). Correlates of subjective health in older adults: A metaanalysis. *Psychology and Aging*, 16, 414–426.

Porell, F. W., Miltiades, H. B. (2002). Regional differences in functional status among the aged. Social Science and Medicine, 54,1181-1198. *Psychology, 11*, 1-18.

Saunders, P. (1996). Income, Health and Happiness. *Australian Economic Review, 29 (4)*, 353-366.

Schneider, E.L., Brody, J.A. (1983). Aging, natural death and the compression of morbidity: another view. New England Journal of Medicine, 309, 854–857.

Schnittker, J. (2005). When mental health becomes health: age and the shifting meaning of self-evaluations of general health. *The Milbank quarterly, Vol.83 (3),* 397-423.

Schultz, J., ÓBrien, A.M., Tadesse, B. (2008). Social capital and self-rated health: results from the US 2006 social capital survey in one community. *Social Science & Medicine, 67,* 606-617.

Schulz, R., Mittelmark, M., Kronmal, R., Polak, J.F., Hirsch, C.H., German, P., Bookwala, J. (1994). Predictors of perceived health status in elderly men and women. The Cardiovascular Health Study. *Journal of Aging Health, 6 (4),* 419-47.

Shadbolt, B. (1997). Some correlates of self-rated health for Australian women. *American Journal of Public Health, 87 (6),* 951-956.

Shapiro, E. (1982). Self-rated health: a predictor of mortality among the elderly. Am *J Public Health, 72(8),* 800–808.

Shooshtari, S., Menec, V., & Tate, R. (2007). Comparing predictors of positive and negative self-rated health between younger (25–54) and older (55+) Canadian adults – a longitudinal study of well-being**.** *Research on Aging, 29 (6),* 512–554.

Simon, J.G., DeBoer, J.B., Joung, I.M.A., Bosma, H., &Mackenbach, J.P. (2005). How is your health in general? A qualitative study on self-assessed health. *European Journal of Public Health, 15 (2),* 200–208.

Singer, E. (1974). The effect of treatment with levodopa on Parkinson patients' social functioning and outlook on life. *J Chronic Dis. 27(11-12),* 581-94.

Singer, E., Garfinkel, R., Cohen, S.M., & Srole, L. (1976). Mortality and mental health: evidence from the Midtown Manhattan restudy. *Social Science & Medicine, 10 (517),* 525

Singh-Manoux, A., Martikainen, P. Ferrie, J., Zins, M., Marmot, M., Goldberg, M. (2006).What does self-rated health measure? Results from the British Whitehall II and French Gazel cohort studies. *Journal of Epidemiology and Community Health,* 60 (4), 364-372.

Sprangers, M.A., de Regt, E.B., Andries, F., van Agt, H.M., Bijl, R.V., deBoer, J.B., Foets, M., Hoeymans, N., Jacobs, A.E., Kempen, G.I., Miedema, H.S., Tijhuis, M.A., deHaes, H.C. (2000). Which chronic conditions are associated with better or poorer quality of life? *Journal of Clinical Epidemiology, 53,* 895-907.

Suchman, A., Phillips, B.S., Streib, G.F. (1958). Analysis of the validity of health questionnaires. *Social Forces, 36,* 223–232.

Suls, J., Marco, C.A., Tobin, S. (1991). The role of temporal comparison, social-comparison, and direct appraisal in the elderly self-evaluations of health. *Journal of Applied Social Psychology, 21 (14),* 1125-1144.

Tissue, T. (1972). Another look at self-rated health among the elderly. *Journal of Gerontology, 27,* pp. 91–94.

Tornstam, L. (1975). Health and self-perception. *The Gerontolgoist, 15,* 264-270.

Travers, P. & Richardson, S. (1993). Living Decently: Material Well-Being in Australia. *Oxford University Press.* Melbourne.

Verbrugge, L.M. (1984). Longer life but worsening health? Trends in health and mortality of middle-aged and older person. Milbank Mem Fund Q Health Soc ,62, 475–519.

Waite, L. J., Gallagher, M. (2000). The case for marriage. New York: Doubleday.

Wilcox, V.L., Kasl, S.V., & Idler, E.L. (1996). Self-rated health and physical disability in elderly survivors of a major medical event. *Journal of Gerontology, 51B,* S96–S104.

Williams, K., Umberson, D. (2004). Marital status stability, marital transitions, and health: A gendered life course perspective. *Journal of Health and Social Behavior, 45,(1),* 81-98.

Wood, J. V., Taylor, S. E., & Lichtman, R. R. (1985). Social comparison in adjustment to breast cancer. *Journal of Personality and Social Psychology, 49,* 1169-1183.

Acknowledgements:

It is with a heart full of gratitude and eyes brimming with tears that I offer thanks to the following individuals who chose not to jump ship. I know that I am a special, sometimes challenging bird to work with, so I deeply appreciate those who facilitated to my unique style of learning. All of you are truly salt of the earth people, and I am better for having known you.

To my committee three, Dr. Browning, Dr. Chesnut, and Dr. Caldwell:

Thank you for your unequivocal support, guidance, and influence throughout this journey. I am so fortunate that you comprised the team that saw this capstone to fruition.
Dr. Chesnut, you have been a beacon of kindness, compassion, and understanding. There were many months where the only fuel that kept me burning was your belief in me to finish. Your example inspires me to not only be a better professional, but a better human.
Dr. Caldwell, you have been such a pleasure to collaborate with! You slashed my capstone drafts and made them bleed, and for that I am truly thankful. Your perspectives and insight have proven invaluable, as well as your sense of humor for which I am also appreciative.
Dr. Browning, thank you will never be enough to depict the role you have played. You have mentored and coached me through years of milestones and deadlines, and brought so much joy to an otherwise daunting process. You made it possible for me to stay the course by embodying a compass of unending patience and direction.

I would like to give an honorable mention to Ms. Laverne Carter and Ms. Andrea Perkins for being two pillars of the College of Public Health. Thank you both for all you have done towards helping me inch closer to completion. The countless calls, emails, and occasional unannounced visits that you accepted on my behalf have been appreciated more than you know.

To my Circus:

Thank you for accepting and loving me just as I am, regardless of degrees and accolades. Even when faced with seemingly insurmountable obstacles such as the complete breakdown of my vehicle or theft of my laptop, you all encouraged me to persevere. Thank you Mother, Daddy, and Mawmaw for always being my tripod of encouragement and agape love. Your time, energy, and sacrifices have made this dream possible, and I am so blessed that we can share it together.

In order to focus on finishing my MPH, I have adopted a somewhat nomadic, gypsy lifestyle commuting two and half hours one-way to and from Lexington. This would not have been possible without all the hospitable folks who have provided me shelter, food, and support, especially my sister. Thank you from the depths of my heart.

Thank you to the strong, inspiring women who I have met while training contemporary circus arts. While aerial exercise has made my body strong, you ladies have helped me build self-confidence, bravery, and pride in myself. Thank you for cheering me on through all of life's peculiar adventures, whether it be tackling a Masters' or breathing fire for the first time.

Thank you now, thank you always..

Biography:

Kayla Rhea Talbott was raised in Albany, Kentucky, a small, rural town in the foothills of the Appalachian Mountains. In the fall of 2006 she traveled to Lexington to begin her quest at the University of Kentucky (UK). She majored in Agricultural Biotechnology and received her Bachelor of Science in the spring of 2010. During her time as an undergraduate, she was a member of the Delta Gamma sorority and served as Vice President of Foundation. She was very passionate about DanceBlue (a 24 hour no sitting, no sleeping dance marathon which raises money for the Pediatric Oncology/Hematology Clinic at UK), and was fortunate enough to participate as a dancer, committee member, and Family Relations Chair. She was an Ambassador for the College of Agriculture, as well as an Amstemm Peer Mentor to fellow students. While completing her degree, she studied in the Internal Medicine research lab of Dr. Nancy Webb where she focused on the mechanisms surrounding cardiovascular disease. She was privileged to learn from her adored mentor, Dr. Preetha Shridas, and honored to be a co-author on one of her journal publications. Continuing her education at UK, she joined the College of Public Health in fall 2010 where she pursued a Master's of Public Health degree with a concentration in Epidemiology. As a means to stay motivated to complete her graduate work, she invested her spare time towards training aerial arts (i.e., fabric, sling, lyra, trapeze, rope). What started as a hobby quickly became an obsession, and she is now a member of a professional, contemporary circus company (Sora Aerial Arts) in Lexington. If you are unable to find her at the nearest big top, she may be reached at (859) 321-8033, or e-mail: kayla.talbott@uky.edu. Her mailing address is 112 Brown Street Albany, KY, 42602.