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A QUANTITATIVE ANALYSIS OF SUBJECTIVE MEASURES OF WELL-BEING AMONG
UNINSURED AND INSURED CANCER PATIENTS AND CANCER SURVIVORS

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ABSTRACT

Purpose: Recent years have seen considerable progress in efforts to identify and treat cancer. Yet, cancer rates remain extremely high compared to other diseases and greatly impact the lives of patients. In an effort to capture more fully how cancer impacts individuals, this study seeks to quantify and examine subjective measures of well-being in cancer patients and survivors. The study compares uninsured and insured cancer patients and cancer survivors over six years to identify significant differences in subjective measures of well-being.

Methods: Data were examined from the 2009 and 2015 Medical Expenditure Panel Survey (MEPS). Subjective measures of well-being were measured using Ryff's psychological scale of well-being to better assess the complete picture of health for participants.

Findings: Compared to their insured counterparts, uninsured cancer patients and survivors, on average, reported worse feelings of perceived health, perceived mental health, interference with social activities, and predisposition towards a mental disability in 2009 and 2015. Uninsured cancer patients and survivors reported, on average, higher feelings of ability to overcome illness without the help of a medical professional and fewer limitations in moderate daily activities.

Conclusion: Uninsured cancer patients and cancer survivors reported worse feelings for some of the selected subjective measures of well-being both before and after the implementation of the Affordable Care Act. This can perhaps explain a relationship with insurance status and psychological health. While worse scores were seen for subjective measures related to outlook on life for the uninsured, heightened scores were seen for subjective measures related to autonomy. This can perhaps be of importance for future policy aimed at a growing cancer survivor demographic.

TABLE OF CONTENTS

| | |
|------------------------------|-----|
| LIST OF FIGURES | iii |
| ACKNOWLEDGEMENTS | v |
| Chapter 1 Introduction | 1 |
| Chapter 2 Methods | 7 |
| Chapter 3 Results | 16 |
| Chapter 4 Discussion | 32 |
| BIBLIOGRAPHY..... | 36 |

LIST OF FIGURES

| | |
|---|----|
| Figure 1. Conceptual Framework | 6 |
| Figure 2. 2009 Uninsured scope regression | 26 |
| Figure 3. 2009 Insured scope regression..... | 27 |
| Figure 4. 2015 Uninsured scope regression | 28 |
| Figure 5. 2015 Insured scope regression..... | 29 |
| Figure 6. 2009 Insured K6SUM..... | 19 |
| Figure 7. 2009 Uninsured K6SUM..... | 20 |
| Figure 8. 2015 Insured K6SUM..... | 24 |
| Figure 9. 2015 Uninsured K6SUM..... | 25 |

LIST OF TABLES

| | |
|---|----|
| Table 1. 2009 Insurance Status for cancer patients/survivors..... | 15 |
| Table 2. 2009 Insurance Status for cancer patients/survivors..... | 15 |
| Table 3. 2009 MNHLTH & RTHLTH | 16 |
| Table 4. 2009 ADSOCA | 17 |
| Table 5. 2009 ADOVER..... | 18 |
| Table 6. 2009 ADDAY | 19 |
| Table 7. 2015 RTHLTH & MNHLTH | 21 |
| Table 8. 2015 ADSOCA..... | 22 |
| Table 9. 2015 ADOVER..... | 23 |
| Table 10. 2015 ADDAY | 23 |

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Chapter 1

Introduction

Background

Recent years have seen tremendous achievements in the ability to detect, treat, and manage cancer and effects of cancer. Many of these successes have been attributed to not only technology, but also preventive services and the ability to medically intervene before serious adverse health events take place (Soni, Simon, Cawley and Sabik, 2018). Of course, lower utilization of health services leads to lower costs associated with the already large percentage of the GDP spent on health care (Glied and Jackson, 2017). As a result, many policies have been implemented in an effort to improve quality health care outcomes as well as reduce the burden of cost.

Perhaps most notable among health policy initiatives is the Patient Protection and Affordable Care Act (ACA). Enacted in 2010, the goal of the ACA, among others, was to increase access of health insurance to Americans. Only four years after its inception, the ACA demonstrated an increase in insurance coverage for over 16 million Americans (Nikpay, Tebbs and Castellanos, 2018). As the literature suggests, the enactment of the ACA, via its removal of pre-existing conditions, also provided health insurance coverage to cancer patients who would have otherwise been unable to obtain coverage. Jemal et al. (2017) successfully exhibited how the percentage of uninsured Americans aged 18-64 who have been recently diagnosed with cancer substantially declined after the implementation of the ACA. Furthermore, the largest decrease in the uninsured population was seen among low-income individuals who lived in states

that elected to expand their Medicaid coverage. Being afforded insurance coverage has resulted in tremendous impacts on indicators for cancer patients and cancer survivors.

Above else, having insurance coverage for cancer patients is critical in obtaining access to health care services. These services range from the screening and detection of cancer, treatment and management of symptoms, as well as follow-up care and medication prescription. Without insurance, individuals are much less likely to seek care in a health care setting (CDC, 2017). Previous work has shown that uninsured individuals who have been diagnosed with cancer exhibited poorer clinical outcomes, increased financial burden, and higher mortality rates (Walker et al., 2014). Additionally, insurance status appears to be associated with the stage and severity of cancer diagnosed. As it relates to Medicaid expansion, a 2.7% increase in Stage I diagnoses were seen for patients aged 19-25 compared to a control group unaffected by the Medicaid expansion (Xuesong et al., 2016). Meanwhile, other research shows uninsured individuals are much more likely to be diagnosed with advanced stages of cancer when compared to individuals with private insurance coverage (Chen et al., 2007). Given these findings, it should not be surprising that new health policy places such an emphasis on coverage rates and insuring Americans. While clinical outcomes and financial burden can be quantified and measured for cancer survivors, it is more difficult to assess how these patients internally perceive their circumstances and how this psychological gauge impacts their overall well-being.

To date, research has been conducted on the relationship between cancer and quality of life. For example, Kenzik et al. (2015) quantified and evaluated the health-related quality of life (HRQOL) of lung and colorectal cancer patients. The results of this study demonstrate how symptoms of these cancers contributed to poorer HRQOL, and that supportive care (regardless of the stage of cancer) had the potential to improve HRQOL through symptom management. Other

studies have been able to isolate specific aspects in which cancer has affected a patient's well-being. For example, as it relates to financial well-being, Kale et al. (2016) conducted a study exploring the relationship between self-reported financial burden of cancer care and effects on physical and mental quality of life for cancer survivors. The study concluded that reporting an increased level of financial burden from cancer care was associated with lower quality of life, having a more depressed mood, and heightened worrying about being re-diagnosed with cancer. Despite these studies, it has been harder to examine a more comprehensive view of a patient's well-being. In other words, there is a dearth of literature detailing how to assess a patient's overall well-being beyond a few isolated measures. Filling this knowledge gap forms the basis for the conceptual framework of this study as it seeks to explore a more "complete" representation of cancer patient's subjective well-being.

It should be of interest to policymakers and health care providers to consider the long-term impacts of initiatives, such as increased insurance coverage for Americans and improved cancer care. The most current research states one out of every three women and one out of every two men will develop cancer at some point in his or her life (Siegel et al., 2012). Despite this alarming prevalence, technology and care measures have allowed for much higher survival rates and life spans for cancer patients. While these rates certainly vary by cancer type, in general the current trend suggests longer average survival years. For example, according to the CDC, "at least 80% of women who got breast cancer, men who got prostate cancer, and children who got acute lymphoblastic leukemia lived at least five years after diagnosis" (Centers for Disease Control and Prevention, 2017). As of 2012, 13.7 million Americans were estimated to be alive who had a history of cancer. By January 1, 2020, there will be an estimated 18 million individuals alive with a history of cancer (Siegel et al., 2012). This is a growing percentage of

the population that cannot be overlooked especially as it relates to health care needs of this demographic. Thus, it will be of importance to policymakers to consider the growing population of cancer survivors and for health care providers to take into account a different demand of services that would work to improve the quality of life for cancer survivors.

Ryff's Scale

As it relates to overall health, the World Health Organization defines the word “health” as: “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 2020). While it is much clearer to measure the physical aspect of health (diagnosis of a disease, for example), it is much more difficult to gauge mental and social well-being. Empirical research in the field of psychology gained traction in the 1980s, but failed to understand the underlying causes of what constituted an individual’s “well-being” (Ryff, 2013). Just over 25 years ago Ryff was successfully able to create a conceptual framework creating a basis for measuring a comprehensive scope of psychological well-being. Today, that scale is still used and praised for its success in encompassing the “mental” and “social” aspects of overall health. The idea of the scale is to factor together six different components: autonomy, environmental mastery, personal growth, positive relations with others, and purpose in life. These components represent broader facets which include: self-acceptance, the establishment of quality ties to others, a sense of autonomy in thought and action, the ability to manage complex environments to suit personal needs and values, the pursuit of meaningful goals and a sense of purpose in life, and continued growth and development as a person (Seifert, 2005). Ryff’s scale has been touted for being able to capture the dynamic aspect of psychological well-being; in other words, the inclusion of subjective, social, and psychological as well as a physical component of health (Seifert, 2005).

Theoretical Framework

In an effort to address the current gaps in knowledge revolving around psychological well-being for cancer patients and cancer survivors, the theoretical framework of this study was grounded on Ryff's psychological scale of well-being (see Figure 1: Conceptual Framework). Cancer patients and cancer survivors were asked questions in the Medical Expenditure Panel Survey (MEPS) Household component that were intentionally matched to reflect Ryff's scale. The variables that reflect this particular scale for well-being are described under "Variables of Interest" in the methods section of the study.

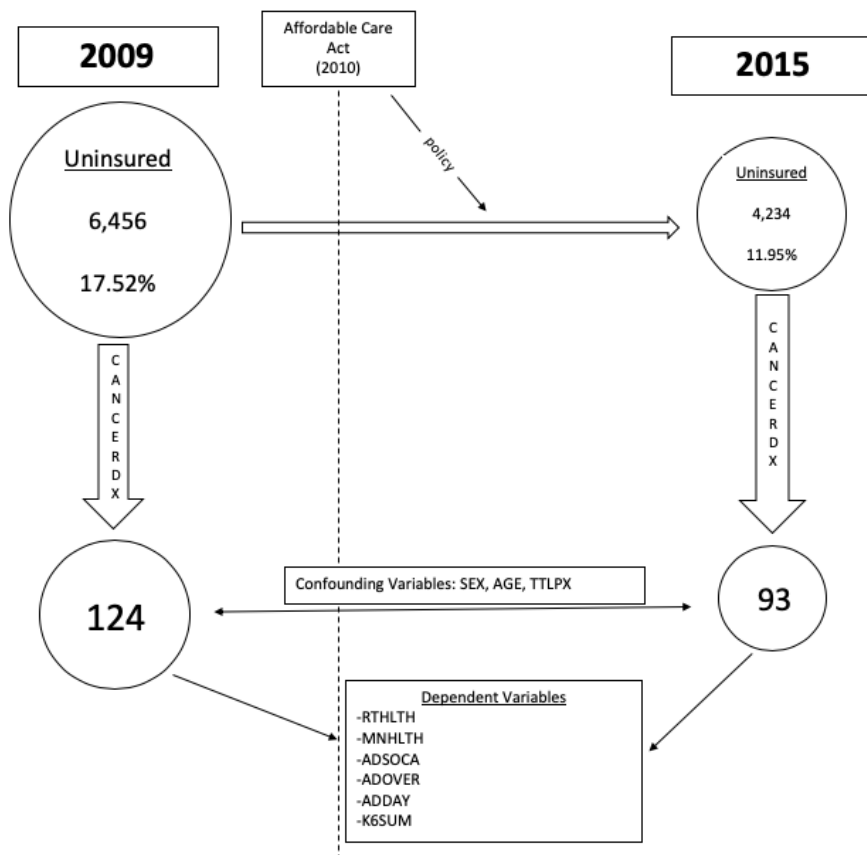
Hypotheses

Based on the existing literature, this study tests three hypotheses:

Hypothesis 1: More uninsured individuals having ever reported being diagnosed with cancer would be prevalent in 2009 compared to 2015.

Hypothesis 2: Uninsured cancer patients and survivors would experience worse indicators in regards to their subjective measures of well-being when compared to their insured counterparts.

Hypothesis 3: Individuals reporting ever being diagnosed with cancer (both uninsured and insured) in 2015 would have overall better subjective measures of well-being compared to those ever being diagnosed with cancer (uninsured and insured) in 2009.

Figure 1. Conceptual Framework

Chapter 2

Methods

Data

For this study, data were obtained from the Medical Expenditure Panel Survey (MEPS). MEPS is a large-scale questionnaire that surveys a nationally representative sample of the noninstitutionalized population in the United States. Each survey is administered over two calendar years in a series of five rounds of questionnaires. MEPS provides publicly available data stemming from surveys conducted on families and individuals, medical providers, and employers in the United States. According to the Agency for Healthcare Research and Quality (AHRQ), “MEPS is the most complete source of data on the cost and use of health care and health insurance coverage” (Agency for Healthcare Research and Quality, 2020).

MEPS is composed of two main components: The Household Component and the Insurance Component. While the Insurance Component offers information on various public and private insurance enrollment, this study uses the Household Component because of its more comprehensive scope. In addition to insurance status, the Household Component provides greater detail on demographic and financial information, individual attitudes towards health care, and reported subjective well-being of respondents. Because the survey spans two calendar years, The Household Component thus identifies any changes in an individual’s employment or insurance status over this period, for example. These observations can be made on both the individual and family-level.

Other datasets were considered for analysis in this study. First, the National Health and Nutrition Examination Survey (NHANES) was considered. NHANES is a nationally representative interview that examines demographic and socioeconomic data, as well as health-

related questions. NHANES was considered due to additions of physical examination data of participants which provides value for disease diagnosis. Secondly, the National Cancer Database was considered. The National Cancer Database is a dataset containing health-related information reported from clinical registry systems. The main strength of the National Cancer Database is tracking of clinical information for cancer patients. These datasets were eliminated because the Household Component of MEPS provided the most comprehensive scope of both data related to insurance coverage, individual-level information, and subjective measures of well-being extending beyond diagnoses.

Study Sample

In an effort to identify possible policy implications of the Affordable Care Act, data was straddled over the year of implementation (2010) and recorded in 2009 and 2015. Having a six-year break in data allows for analyses of differences that can more likely be attributed to the outcomes of the Affordable Care Act versus an isolated incident with significant ramifications. One such example would be the prohibition of excluding individuals from obtaining insurance because of pre-existing medical conditions in 2014. While the Affordable Care Act itself was enacted in 2010, policies such as the exclusion of pre-existing conditions were not implemented until later. Analyzing 2015 data gives a more complete picture of the effects the Affordable Care Act had on the relationship between insurance status and the subjective measures of well-being for cancer patients.

Coding of Variables

All data used in the scope of the study were obtained by coding/recoding existing MEPS variables. Many variables in the 2009 and 2015 MEPS datasets are presented as coded answers to specific questionnaire surveys. For example, an individual may be asked if he or she has ever

been diagnosed with cancer. Responding ‘no’ to this question would record a corresponding numerical value of 0, while responding ‘yes’ to this question would record a corresponding numerical value of 1. Other responses such as “don’t know,” “not applicable,” and missing data are recorded as other numerical values (e.g. 6, 7, and 8, respectively). The independent variables used in this study were recoded values reflecting those definitively in a specific category. In other words, missing values and values not ascertained were excluded from the overall sample in order to focus on the variables of interest and to eliminate a variety of ambiguous, confounding variables outside the scope of the study. Dependent variables examined in this study were coded mainly using linear scales. For example, when asked about perceived mental health status, responses included “excellent, very good, good, fair, and poor” which were numerically represented as numerical scores of 1, 2, 3, 4, and 5, respectively. Other responses mirrored the yes/no independent variables and included responses such as “don’t know” and “not applicable.” These responses were also excluded from this study to focus on definitive responses and feelings representative of a respondent.

Description of 2009 Sample

The MEPS 2009 Full-Year Consolidated Household file was used to capture the scope of the population of interest before any policies of the Affordable Care Act were introduced. Essentially, the 2009 data was used as a ‘baseline’ to gauge the independent variables of interest: insurance status and prevalence of cancer. The 2009 Household file is a nationally representative sample of 13,875 families or 36,855 individuals. The variable INSCOV09 (summarized health insurance coverage for an individual in 2009) was used to determine an individual’s health insurance status. The MEPS questionnaire asked several questions on insurance status in which respondents are able to select multiple options to best describe their individual type of insurance

status for the year. MEPS summarizes these responses (coded as variables PRVEV09-UNINS09) as the constructed variable INSCOV09 with three potential values: 1 = ANY PRIVATE (Person had any private insurance coverage [including TRICARE/CHAMPVA] any time during 2009), 2 = PUBLIC ONLY (Person had only public insurance coverage during 2009), or 3 = UNINSURED (Person was uninsured during all of 2009). Of the 36,855 individual respondents in 2009, 19,935, or 54.09%, were recorded as being covered by any type of private insurance (including TRICARE/CHAMPVA) during the year. 10,464 individuals, or 28.39%, were recorded as being covered by only public insurance during the year. 6,456 individuals, or 17.52%, were recorded as being uninsured for all of 2009. Following insurance status, the next independent variable of interest in this study is the prevalence of cancer. To account for this in the population, the variable CANCERDX was utilized.

The CANCERDX variable was only applicable to individuals 18 years or older and had a corresponding value for a general cancer diagnosis. CANCERDX signifies “whether the person had ever been diagnosed as having cancer or a malignancy of any kind.” Although participants would be subsequently asked for a specific type of cancer diagnosis, this study seeks to analyze an individual diagnosed with any type of cancer. It is important to note the types of cancer classified by MEPS include: bladder, blood, bone, brain, breast, cervix, colon, esophagus, gallbladder, kidney, or larynx; leukemia; cancer of the liver or lung; lymphoma or melanoma; cancer of the mouth/tongue/lip, other type of cancer, cancer of the ovary, pancreas, prostate, rectum, skin; soft tissue, muscle, or fat; stomach, testis, throat, thyroid, or uterus. After classifying an individual’s insurance status, the CANCERDX variable was utilized to identify which individuals reported a cancer diagnosis in each subgroup. Of the 19,935 individuals covered by private insurance, 118 reported having ever been diagnosed with cancer. Of the

10,464 individuals covered by only public insurance, 713 reported having ever been diagnosed with cancer. Of the 6,456 uninsured individuals, 1,235 reported having ever been diagnosed with cancer.

Description of 2015 Sample

The MEPS 2015 Full-Year Consolidated Household file was used to compare the same variables after a more extensive implementation of the Affordable Care Act. In an effort to examine improved access to health insurance, the year 2015 was selected for two main reasons. First, this is one year after the removal of prohibiting those with pre-existing conditions from acquiring insurance coverage; something that was previously a barrier for coverage. Secondly, an examination six years after the implementation of the Affordable Care Act allows the policy to gain popularity and rollout in its intended measures. As the literature suggests, the rate of uninsured Americans began to drop following the Affordable Care Act, but only after a short spike in the uninsured population (Glied and Jackson, 2017). Thus, 2015 accounts for the longer-term trend the Affordable Care Act had on insurance rates rather than an immediate trend.

The 2015 Full-Year Consolidated Household file is a nationally representative sample of 13,800 families comprised of 35,427 individuals. The variable INSCOV15 (summarized health insurance coverage for an individual in the 2015) was used to determine an individual's health insurance status. This variable, as well as the following variables, represent the same coding and classifications as the corresponding 2009 variables. In other words, the only difference between the 2009 and 2015 variables are the year and respondent. Of the 35,427 individuals, 18,777, or 53.00%, were recorded as being covered by any type of private insurance (including TRICARE/CHAMPVA) during the year. 12,416 individuals, or 35.05%, were recorded as being covered by only public insurance during the year. 4,234 individuals, or 11.95%, were recorded as

being uninsured for all of 2015. The main contrast between 2009 and 2015 in regards to type of insurance is the uninsured rate. As expected with the Affordable Care Act, the rate of uninsured individuals dropped by 5.57%, comparatively. Conforming to 2009 variables, CANCERDX was used to measure individuals who have ever been diagnosed with cancer within the sample. Of the 35,427 individuals covered by private insurance, 87 reported having ever been diagnosed with cancer. Of the 12,416 individuals covered by only public insurance, 849 reported having ever been diagnosed with cancer. Of the 4,234 uninsured individuals, 1,261 reported having ever been diagnosed with cancer.

Variables of Interest

Independent/Dependent Variables

As demonstrated by the conceptual model in *Figure 1*, the independent variables in this study are insurance status and prevalence of cancer. The model shows how to arrive at the population of interest: those uninsured in 2009 and 2015 who have also reported a cancer diagnosis (CANCERDX). These independent variables are examined to see if there is a correlation with the dependent variables of focus. The term “subjective well-being” is used for simplicity throughout the study but represents the MEPS variables shown in *Figure 1*. The study ultimately seeks to examine if there is correlation between insurance status, cancer diagnosis, and subjective measures of well-being. In order to define “subjective measures of well-being,” an established psychological framework was mimicked to best measure these outcomes in a quantitative manner. In this instance, Ryff’s scale can systematically quantify the difference in an individual’s overall well-being in 2009 and compare these results to 2015 indicators. Ryff’s psychological scale utilizes the following measures as indicators: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth.

Previous work surrounding psychological scaling has been described as “narrow-focused,” mainly because emphasis has been placed on short-term well-being such as happiness. Yet, Ryff’s psychological scale addresses “the life course patterning of multiple aspects of positive psychological functioning.” There are some limitations to this framework. For example, a study mentions Ryff’s definition falls under the perspective of middle-class values. In other words, this “norm” used as a baseline may be unattainable for certain social groups.

In an effort to reflect Ryff’s psychological scale to measure subjective well-being, variables available in MEPS were used to parallel each unique indicator. The variables RTHLTH (self-reported perceived health status) and MNHLTH (self-reported perceived mental status) align with the self-acceptance indicator. Defined as awareness of one’s strengths, weaknesses, and capabilities, self-acceptance can be determined by how an individual rates their mental and physical well-being compared to what they believe other individuals to be. In other words, the gap between where individuals want their mental and physical health to be, and where they believe they are actually fall on that spectrum. The variable ADSOCA (during past four weeks, has the participants experienced any physical or emotional problems that have interfered with social activities) was paralleled with having positive relations with others; both of which focus on an individual’s reluctance to engage in typical social activities. To address a respondent’s level of autonomy, the variable ADOVER was used. ADOVER measures the ability to overcome illness without help from a medically trained person. This variable in particular captures autonomy in the sense of making appropriate decisions about one’s health leading to desirable outcomes. Environmental mastery was gauged by the variable ADDAY. ADDAY measures a respondent’s limitations in moderate activities. Of course, many limitations in moderate activities would be associated with poorer environmental mastery. Finally, purpose in life and

personal growth were measured using the summed MEPS variable K6SUM. K6SUM is a measure of Kessler's Index. Kessler's index is a combined variable capturing the summation of six variables the respondent felt in the past 30 days: feeling nervous, feeling hopeless, feeling fidgety, feeling an inability to be cheered up, feeling everything was an effort, and feeling hopeless. A higher score on Kessler's Index indicates an increased likelihood of a mental disability. The K6SUM variable is thus able to assess whether an individual is currently experiencing a crisis in his or her life and whether they have a positive outlook on life based on their current assessment.

Confounding Variables

Other variables of interest arose that could potentially prove to be confounding, or influence both the independent and dependent variables. The variable SEX was used to determine a respondent's sex in both 2009 and 2015. In 2009, 17,013 (48.02%) individuals were recorded as males while 18,414 (51.98%) were recorded as female. In 2015, 17,621 (47.81%) individuals were recorded as males while 19,234 (52.19%) were recorded as female. Although the split is similar for both years of data, the male/female ratio in the scope of the study (i.e. the uninsured population reporting a cancer diagnosis) is not as evenly split. Age was restricted to include individuals over the age of 18 and under the age of 85 in both years of data. This age range was selected due to limitations in the MEPS datasets used. MEPS only asked questions about cancer to those 18 years of age and older. Anyone under the age of 18 was coded as "Inapplicable" in the datasets used. The datasets used top-coded the age for CANCERDX at 85. Top-coding the age of individuals at 85 would additionally remove the "oldest-old" population, which have been shown to demonstrate a higher use of health care and insurance (Lee et al., 2018). It is worth noting the scope of the study did include individuals covered by Medicare.

There has been extensive research done on policy implications of the Affordable Care Act in regards to Medicare. However, the research questions do not seek to isolate Medicare (or any correlation with Medicare) as an insurance type. As a result, and for the purposes of this study, these individuals are covered under the broader “public insurance type” category. Finally, person-level total income was measured and recorded in both years using the variables TTLP09X and TTLP15X, respectively. In 2009, the mean income of the population was \$44,759.27. In 2015, the mean income of the population was \$49,222.49.

Table 1. 2009 Insurance Status for cancer patients/survivors

| | <i>Private Insurance</i> | <i>Public Insurance</i> | <i>Uninsured</i> |
|-------------------------|--------------------------|-------------------------|------------------|
| | 19,935 | 10,464 | 6,456 |
| Cancer diagnosis | 1,251 | 738 | 124 |

Table 2. 2015 Insurance Status for cancer patients/survivors

| | <i>Private Insurance</i> | <i>Public Insurance</i> | <i>Uninsured</i> |
|-------------------------|--------------------------|-------------------------|------------------|
| | 18,777 | 12,416 | 4,234 |
| Cancer diagnosis | 1,277 | 876 | 93 |

Chapter 3

Results

2009 Uninsured vs Insured

To best describe differences in 2009, the subjective measures of well-being were compared between the insured group and uninsured. Two new variables were created to capture insurance status of participants. The variable “insured_scope” was created to include those within the age range of 18-85, having ever reported a cancer diagnosis, and reported as either being covered by public or private insurance in 2009. The variable “uninsured_scope” was created to include those within the age range of 18-85, having ever reported a cancer diagnosis, and reported no insurance or being uninsured in 2009. The results for perceived health status (RTHLTH) and perceived mental health status (MNHLTH) can be seen in the table below for both the uninsured and insured groups.

Table 3. 2009 MNHLTH & RTHLTH

| Uninsured | Excellent | Very Good | Good | Fair | Poor |
|------------------|-----------------|-----------------|-----------------|-----------------|----------------|
| RTHLTH | 14 (12.39%) | 17 (15.04%) | 31 (27.43%) | 34 (30.09%) | 17 (15.04%) |
| MNHLTH | 24 (21.24%) | 29 (25.66%) | 43 (38.05%) | 14 (12.39%) | 3 (2.65%) |
| Insured | | | | | |
| RTHLTH | 292 (15.07%) | 481 (24.83%) | 619 (31.96%) | 363 (18.74%) | 182 (9.40%) |
| MNHLTH | 618 (31.91%) | 538 (27.77%) | 549 (28.34%) | 186 (9.60%) | 46 (2.37%) |

The majority (56.79%) of respondents in the insured category reported their perceived health status as “very good” or “good” with a mean score of 2.8255 while the majority (57.52%) of respondents in the uninsured category reported their perceived health status as “good” or “fair” with a mean score of 3.2035. The majority (59.68%) of respondents in the insured category reported their perceived mental health status as “very good” or “good” with a mean score of 2.2277 while the majority (84.95%) of respondents in the uninsured group believed their mental health status was “excellent/very good/good.” The mean scores were calculated given the linear scale used to quantify responses. The numerical values 1, 2, 3, 4, and 5 correspond with the responses excellent, very good, good, fair, and poor, respectively.

The next variable measured was the level of extent in which a respondent has experienced any physical or emotional problems that have interfered with social activities during the past four weeks. The results are summarized in the below table for both the “insured_scope” and “uninsured_scope” groups.

Table 4. 2009 ADSOCA

| Uninsured | Interference all the time | Interference most of the time | Interference some of the time | Interference a little of the time | Interference none of the time |
|------------------|------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|
| ADSOCA | 4 (3.70%) | 16 (14.81%) | 26 (24.07%) | 18 (16.67%) | 44 (40.74%) |
| Insured | | | | | |
| ADSOCA | 67 (3.77%) | 146 (8.21%) | 298 (16.75%) | 323 (18.16%) | 945 (53.12%) |

The majority (53.12%) of respondents in the insured category reported physical or emotional problems interfering with social activities “none of the time” during the past four weeks with a mean score of 4.0866 while the mean score for the uninsured subgroup was 3.7593.

Next, a respondent’s ability to overcome illness without help from a medically trained person was explored for the 2009 insured and uninsured groups. This question was posed and respondents were asked to select how much they agree/disagree. The results for both groups are summarized in the below table.

Table 5. 2009 ADOVER

| Uninsured | Strongly agree | Somewhat agree | Uncertain | Somewhat disagree | Strongly disagree |
|------------------|----------------|-----------------|----------------|-------------------|-------------------|
| ADOVER | 6 (5.77%) | 21 (20.19%) | 10 (9.62%) | 14 (13.46%) | 53 (50.96%) |
| Insured | | | | | |
| ADOVER | 49 (2.77%) | 193 (10.90%) | 125 (7.06%) | 302 (17.05%) | 1,102 (62.22%) |

The majority (62.22%) of insured respondents in this category “strongly disagree” they can overcome illness without the support of a medically trained person with a mean score of 1.7492 while the majority (50.96%) of uninsured respondents “strongly disagree” that they can overcome illness without the help of a medically trained person with a mean rating of 2.1635

Limitations in moderate activities on a typical day were also explored for the 2009 insured and uninsured groups. Participants were asked to report the extent in which they were limited in moderate activities The results are summarized in the table below.

Table 6. 2009 ADDAY

| Uninsured | Limited a lot | Limited a little | Not limited |
|------------------|---------------|------------------|--------------|
| ADDAY | 20 (18.52%) | 32 (29.63%) | 56 (51.85%) |
| Insured | | | |
| ADDAY | 389 (21.40%) | 529 (29.10%) | 900 (49.50%) |

Lastly, Kessler's Index, the summarized MEPS variable K6SUM, was explored for the 2009 insured and uninsured groups. Respondents could answer on a scale ranging from 0-24 to score an overall rating of feelings in the last 30 days. The higher the score, the more likely an individual is to have a mental disability. Individual results and the group's percentages can be seen in *Figure 6* and *Figure 7*, respectively.

| KSUM2 | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 0 | 419 | 23.79 | 23.79 |
| 1 | 221 | 12.55 | 36.34 |
| 2 | 232 | 13.17 | 49.52 |
| 3 | 168 | 9.54 | 59.06 |
| 4 | 124 | 7.04 | 66.10 |
| 5 | 94 | 5.34 | 71.44 |
| 6 | 73 | 4.15 | 75.58 |
| 7 | 59 | 3.35 | 78.93 |
| 8 | 59 | 3.35 | 82.28 |
| 9 | 43 | 2.44 | 84.72 |
| 10 | 45 | 2.56 | 87.28 |
| 11 | 34 | 1.93 | 89.21 |
| 12 | 35 | 1.99 | 91.20 |
| 13 | 21 | 1.19 | 92.39 |
| 14 | 24 | 1.36 | 93.75 |
| 15 | 21 | 1.19 | 94.95 |
| 16 | 12 | 0.68 | 95.63 |
| 17 | 10 | 0.57 | 96.20 |
| 18 | 16 | 0.91 | 97.10 |
| 19 | 18 | 1.02 | 98.13 |
| 20 | 9 | 0.51 | 98.64 |
| 21 | 5 | 0.28 | 98.92 |
| 22 | 7 | 0.40 | 99.32 |
| 23 | 4 | 0.23 | 99.55 |
| 24 | 8 | 0.45 | 100.00 |
| Total | 1,761 | 100.00 | |

Figure 6. 2009 Insured K6SUM

| KSUM | Freq. | Percent | Cum. |
|------|-------|---------|-------|
| 0 | 20 | 19.42 | 19.42 |
| 1 | 5 | 4.85 | 24.27 |
| 2 | 12 | 11.65 | 35.92 |
| 3 | 9 | 8.74 | 44.66 |
| 4 | 6 | 5.83 | 50.49 |
| 5 | 5 | 4.85 | 55.34 |
| 6 | 6 | 5.83 | 61.17 |
| 7 | 7 | 6.80 | 67.96 |
| 8 | 3 | 2.91 | 70.87 |
| 9 | 2 | 1.94 | 72.82 |
| 10 | 4 | 3.88 | 76.70 |
| 11 | 3 | 2.91 | 79.61 |
| 12 | 3 | 2.91 | 82.52 |
| 13 | 6 | 5.83 | 88.35 |

2009 Data Friday November 15 14:26:48 2019 Page 6

| | | | |
|-------|-----|--------|--------|
| 14 | 3 | 2.91 | 91.26 |
| 15 | 4 | 3.88 | 95.15 |
| 17 | 3 | 2.91 | 98.06 |
| 19 | 1 | 0.97 | 99.03 |
| 24 | 1 | 0.97 | 100.00 |
| Total | 103 | 100.00 | |

Figure 7. 2009 Uninsured K6SUM

2015 Uninsured vs Insured

The same variables used in 2009 to measure respondent's subjective measures of well-being were used to analyze respondents in 2015. Again, the variable "insured_scope" was created to capture 2015 respondents aged 18-85, who reported ever being diagnosed with cancer, and reported being covered by any type of public or private insurance during the year. The variable "uninsured_scope" was created for individuals diagnosed with cancer and reported no insurance or being uninsured in 2015. Paralleling 2009 data, the results for perceived health status (RTHLTH) and perceived mental health status (MNHLTH) for 2015 respondents can be found in the table below.

Table 7. 2015 RTHLTH & MNHLTH

| Uninsured | Excellent | Very Good | Good | Fair | Poor |
|------------------|-----------------|-----------------|-----------------|-----------------|----------------|
| RTHLTH | 12 (14.46%) | 17 (20.48%) | 23 (27.71%) | 15 (18.07%) | 16 (19.28%) |
| MNHLTH | 26 (31.33%) | 23 (27.71%) | 19 (22.89%) | 14 (16.87%) | 1 (1.20%) |
| Insured | | | | | |
| RTHLTH | 326 (15.65%) | 587 (28.18%) | 610 (29.28%) | 380 (18.24%) | 180 (8.64%) |
| MNHLTH | 644 (30.87%) | 593 (28.43%) | 582 (27.90%) | 202 (9.68%) | 65 (3.12%) |

The majority (57.46%) of respondents in the insured category reported their perceived health status as “very good” or “good” with a mean score of 2.7604 while no two scores composed a majority (>50%) of respondents in the uninsured group (mean 3.0723). The majority (59.30%) of respondents in the insured category reported their perceived mental health status as “very good” or “good” with a mean score of 2.2574 while the majority (59.04%) of uninsured respondents in this category reported their perceived mental health status as “very good” or “good” with a mean score of 2.2892.

Following perceived mental health status, the variable ADSOCA, the level of extent in which a respondent has experienced any physical or emotional problems that have interfered with social activities during the past four weeks, was measured. Results for both insurance groups can be seen in the table below.

Table 8. 2015 ADSOCA

| Uninsured | Interference all the time | Interference most of the time | Interference some of the time | Interference a little of the time | Interference none of the time |
|------------------|------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|
| ADSOCA | 2 (2.86%) | 9 (12.86%) | 13 (18.57%) | 17 (24.29%) | 29 (41.43%) |
| Insured | | | | | |
| ADSOCA | 91 (4.89%) | 141 (7.57%) | 310 (16.65%) | 330 (17.72%) | 990 (53.17%) |

The majority (53.17%) of respondents in the insured category reported physical or emotional problems interfering with social activities “none of the time” during the past four weeks with a mean score of 4.0671 while the majority (65.72%) of uninsured respondents in this category reported physical or emotional problems interfering with social activities “none of the time” or “a little of the time” during the past four weeks with a mean score of 3.8857.

The next subjective measure of well-being analyzed for the 2015 insured and uninsured group was a respondent’s ability to overcome illness without help from a medically trained person. The below table shows results of respondents when asked how much an individual agrees or disagrees with the statement.

Table 9. 2015 ADOVER

| Uninsured | Strongly agree | Somewhat agree | Uncertain | Somewhat disagree | Strongly disagree |
|------------------|----------------|-----------------|----------------|-------------------|-------------------|
| ADOVER | 4 (5.97%) | 14 (20.90%) | 8 (11.94%) | 9 (13.43%) | 32 (47.76%) |
| Insured | | | | | |
| ADOVER | 38 (2.10%) | 187 (10.31%) | 146 (8.05%) | 325 (17.93%) | 1,117 (61.61%) |

The majority (61.61%) of respondents in the insured category “strongly disagree” they can overcome illness without the support of a medically trained person with a mean score of 1.7336 while the majority (61.19%) of the uninsured respondents “strongly disagree” or “somewhat disagree” they can overcome illness without the support of a medically trained person with a mean score of 2.2388.

Limitations in moderate activities on a typical day were also examined further for the 2015 insured and uninsured groups. The results are summarized in the below table.

Table 10. 2015 ADDAY

| Uninsured | Limited a lot | Limited a little | Not limited |
|------------------|---------------|------------------|--------------|
| ADDAY | 12 (17.14%) | 15 (21.43%) | 43 (61.43%) |
| Insured | | | |
| ADDAY | 411 (22.03%) | 497 (26.63%) | 958 (51.34%) |

The mean score for the insured scope of this group was 2.2931 while the uninsured mean score for the scope of this group was 2.4429

Kessler's Index for overall rating of feelings was analyzed for 2015 uninsured and insured individuals and can be found in *Figure 8* and *Figure 9*, respectively. As shown, the mean Kessler Index for the 2015 insured group is 3.8513 while the uninsured group is 4.0746

107 . tab KSUM2 if insured_scope==1

| KSUM2 | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 0 | 550 | 30.74 | 30.74 |
| 1 | 211 | 11.79 | 42.54 |
| 2 | 209 | 11.68 | 54.22 |
| 3 | 169 | 9.45 | 63.67 |
| 4 | 102 | 5.70 | 69.37 |
| 5 | 81 | 4.53 | 73.90 |
| 6 | 90 | 5.03 | 78.93 |
| 7 | 68 | 3.80 | 82.73 |
| 8 | 46 | 2.57 | 85.30 |
| 9 | 33 | 1.84 | 87.14 |
| 10 | 33 | 1.84 | 88.99 |
| 11 | 35 | 1.96 | 90.94 |
| 12 | 38 | 2.12 | 93.07 |
| 13 | 21 | 1.17 | 94.24 |
| 14 | 16 | 0.89 | 95.14 |
| 15 | 14 | 0.78 | 95.92 |
| 16 | 11 | 0.61 | 96.53 |
| 17 | 15 | 0.84 | 97.37 |
| 18 | 16 | 0.89 | 98.27 |
| 19 | 7 | 0.39 | 98.66 |
| 20 | 6 | 0.34 | 98.99 |
| 21 | 2 | 0.11 | 99.11 |
| 22 | 7 | 0.39 | 99.50 |
| 23 | 2 | 0.11 | 99.61 |
| 24 | 7 | 0.39 | 100.00 |
| Total | 1,789 | 100.00 | |

Figure 8. 2015 Insured K6SUM

```
87 . tab KSUM if uninsured_scope==1
```

| KSUM | Freq. | Percent | Cum. |
|-------|-------|---------|--------|
| 0 | 20 | 29.85 | 29.85 |
| 1 | 9 | 13.43 | 43.28 |
| 2 | 6 | 8.96 | 52.24 |
| 3 | 7 | 10.45 | 62.69 |
| 4 | 3 | 4.48 | 67.16 |
| 5 | 3 | 4.48 | 71.64 |
| 6 | 3 | 4.48 | 76.12 |
| 8 | 6 | 8.96 | 85.07 |
| 9 | 1 | 1.49 | 86.57 |
| 10 | 1 | 1.49 | 88.06 |
| 11 | 1 | 1.49 | 89.55 |
| 13 | 3 | 4.48 | 94.03 |
| 14 | 1 | 1.49 | 95.52 |
| 16 | 2 | 2.99 | 98.51 |
| 23 | 1 | 1.49 | 100.00 |
| Total | 67 | 100.00 | |

```
88 . sum KSUM if uninsured_scope==1
```

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|----------|-----|----------|-----------|-----|-----|
| KSUM | 67 | 4.074627 | 4.991852 | 0 | 23 |

Figure 9. 2015 Uninsured K6SUM

Regression Analyses

2009

Further analyses were conducted to examine the differences in subjective measures of well-being for the different insurance classifications of individuals. In regards to the 2009 uninsured cancer patients and survivors, the strongest coefficient was perceived health status (RTHLTH) followed by a negative correlation with perceived mental health status (MNHLTH) as shown in *Figure 2*. In other words, for the 2009 uninsured cancer patients and survivors, being uninsured had the greatest positive impact on overall perceived health status and the greatest negative impact on overall perceived mental health status.

```
110 . reg uninsured_scope RTHLTH31 MNHLTH31 ADSOCA42 ADOVER42 ADDAYA42 K6SUM42
```

| Source | SS | df | MS | Number of obs | = | 36,855 |
|----------|------------|--------|------------|---------------|---|--------|
| Model | .292240175 | 6 | .048706696 | F(6, 36848) | = | 15.04 |
| Residual | 119.317039 | 36,848 | .003238087 | Prob > F | = | 0.0000 |
| | | | | R-squared | = | 0.0024 |
| | | | | Adj R-squared | = | 0.0023 |
| Total | 119.60928 | 36,854 | .00324549 | Root MSE | = | .0569 |

2009 Data Friday November 15 14:26:48 2019 Page 9

| uninsured-pe | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|--------------|-----------|-----------|-------|-------|----------------------|----------|
| RTHLTH31 | .0016678 | .000339 | 4.92 | 0.000 | .0010033 | .0023322 |
| MNHLTH31 | -.0006636 | .0003621 | -1.83 | 0.067 | -.0013734 | .0000462 |
| ADSOCA42 | .0002361 | .0001681 | 1.40 | 0.160 | -.0000934 | .0005656 |
| ADOVER42 | -.0000928 | .000176 | -0.53 | 0.598 | -.0004378 | .0002523 |
| ADDAYA42 | -.0000377 | .0002713 | -0.14 | 0.889 | -.0005695 | .0004941 |
| K6SUM42 | .0003738 | .0000784 | 4.77 | 0.000 | .0002201 | .0005275 |
| _cons | -.0000229 | .0005945 | -0.04 | 0.969 | -.0011882 | .0011424 |

Figure 2. 2009 Uninsured scope regression

For subjective measures of well-being for the 2009 insured group, regression analyses were conducted for the same variables. Controlling for “insured_scope,” the 2009 insured group demonstrated similar correlation with the subjective measures of well-being. The strongest overall positive correlation was perceived health status (RTHLTH) while the strongest negative overall correlation remained perceived mental health status (MNHLTH) as shown in *Figure 3*. Together, these analyses demonstrate how the 2009 cancer patients and survivors had similar subjective measures of well-being.


```
111 . reg insured_scope RTHLTH31 MNHLTH31 ADSOCA42 ADOVER42 ADDAYA42 K6SUM42
```

| Source | SS | df | MS | Number of obs | = | 36,855 |
|----------|------------|--------|------------|---------------|---|--------|
| Model | 50.022674 | 6 | 8.33711233 | F(6, 36848) | = | 171.14 |
| Residual | 1795.01425 | 36,848 | .048714021 | Prob > F | = | 0.0000 |
| Total | 1845.03693 | 36,854 | .05006341 | R-squared | = | 0.0271 |
| | | | | Adj R-squared | = | 0.0270 |
| | | | | Root MSE | = | .22071 |

| insured_s~pe | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] |
|--------------|-----------|-----------|-------|-------|----------------------|
| RTHLTH31 | .0221095 | .0013149 | 16.81 | 0.000 | .0195323 .0246868 |
| MNHLTH31 | -.0075258 | .0014046 | -5.36 | 0.000 | -.0102789 -.0047727 |
| ADSOCA42 | .0062843 | .000652 | 9.64 | 0.000 | .0050063 .0075623 |
| ADOVER42 | -.0038589 | .0006828 | -5.65 | 0.000 | -.0051972 -.0025206 |
| ADDAYA42 | .000223 | .0010524 | 0.21 | 0.832 | -.0018397 .0022857 |
| K6SUM42 | .0033279 | .0003042 | 10.94 | 0.000 | .0027317 .0039241 |
| _cons | .0042681 | .002306 | 1.85 | 0.064 | -.0002518 .008788 |

Figure 3. 2009 Insured scope regression

2015

Controlling again for “insured_scope” and “uninsured_scope,” the regressions were analyzed for individuals in 2015 who reported ever being diagnosed with cancer against the same six subjective measures of well-being. For the uninsured population of interest, the strongest overall positive correlation was perceived health status (RTHLTH) while the strongest negative correlation was again perceived mental health status (MNHLTH) as shown in *Figure 4*.

```
112 . reg uninsured_scope RTHLTH31 MNHLTH31 ADSOCA42 ADOVER42 ADDAYA42 K6SUM42
```

| Source | SS | df | MS | Number of obs | = | 35,427 |
|----------|------------|--------|------------|---------------|---|--------|
| Model | .10696383 | 6 | .017827305 | F(6, 35420) | = | 7.20 |
| Residual | 87.6744458 | 35,420 | .002475281 | Prob > F | = | 0.0000 |
| Total | 87.7814097 | 35,426 | .002477881 | R-squared | = | 0.0012 |
| | | | | Adj R-squared | = | 0.0010 |
| | | | | Root MSE | = | .04975 |

| uninsured_~e | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|--------------|-----------|-----------|-------|-------|----------------------|-----------|
| RTHLTH31 | .0015739 | .000297 | 5.30 | 0.000 | .0009918 | .002156 |
| MNHLTH31 | -.0008631 | .0003132 | -2.76 | 0.006 | -.001477 | -.0002491 |
| ADSOCA42 | -.000135 | .0001992 | -0.68 | 0.498 | -.0005255 | .0002554 |
| ADOVER42 | .0000148 | .0001612 | 0.09 | 0.927 | -.0003012 | .0003308 |
| ADDAYA42 | .0003295 | .0002746 | 1.20 | 0.230 | -.0002088 | .0008678 |
| K6SUM42 | .0001078 | .0000732 | 1.47 | 0.141 | -.0000357 | .0002512 |
| _cons | .0005626 | .0005398 | 1.04 | 0.297 | -.0004954 | .0016206 |

Figure 4. 2015 Uninsured scope regression

As it relates to the 2015 insured cancer patients and survivors, regression analyses demonstrated a similar strongest positive correlation, but different negative correlation when controlling for “insured_scope.” The strongest overall positive correlation for this population was, again, perceived health status (RTHLTH), while the next greatest correlation (positive or negative) was the level of extent in which a respondent has experienced any physical or emotional problems that have interfered with social activities during the past four weeks (ADSOCA). The strongest overall negative correlation for this group was a respondent’s ability to overcome illness without help from a medically trained person (ADOVER) as shown in *Figure 5*.

```
113 . reg insured_scope RTHLTH31 MNHLTH31 ADSOCA42 ADOVER42 ADDAYA42 K6SUM42
```

| Source | SS | df | MS | Number of obs | = | 35,427 |
|----------|------------|--------|------------|---------------|---|--------|
| Model | 52.6366517 | 6 | 8.77277528 | F(6, 35420) | = | 160.86 |
| Residual | 1931.69366 | 35,420 | .054536806 | Prob > F | = | 0.0000 |
| Total | 1984.33031 | 35,426 | .056013389 | R-squared | = | 0.0265 |
| | | | | Adj R-squared | = | 0.0264 |
| | | | | Root MSE | = | .23353 |

| insured_s~pe | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|--------------|-----------|-----------|-------|-------|----------------------|-----------|
| RTHLTH31 | .0178185 | .001394 | 12.78 | 0.000 | .0150862 | .0205508 |
| MNHLTH31 | -.0027052 | .0014703 | -1.84 | 0.066 | -.0055869 | .0001766 |
| ADSOCA42 | .0120086 | .000935 | 12.84 | 0.000 | .010176 | .0138412 |
| ADOVER42 | -.0070978 | .0007568 | -9.38 | 0.000 | -.0085812 | -.0056145 |
| ADDAYA42 | -.0047713 | .0012891 | -3.70 | 0.000 | -.007298 | -.0022447 |
| K6SUM42 | .0040017 | .0003436 | 11.65 | 0.000 | .0033283 | .0046751 |
| _cons | .0072492 | .0025337 | 2.86 | 0.004 | .0022831 | .0122153 |

Figure 5. 2015 Insured scope regression

When the regressions of the two groups (uninsured and insured) are compared with the same subjective measures of well-being, certain observations are noted. First, the strongest overall correlation (either positive or negative) was perceived health status for the 2009 insured group. In other words, being insured resulted in the largest increase or decrease in perceived health status out of the six subjective measures of well-being analyzed. The next greatest overall positive correlation was perceived health status for the 2015 insured group. The strongest overall negative correlation was less telling; the 2009 insured group had the strongest overall correlation which was in relation to perceived mental health status (MNHLTH). Meanwhile, the next strongest overall negative correlation was the 2015 insured group as it relates to a respondent's ability to overcome illness without help from a medically trained person (ADOVER).

*Differences between Uninsured and Insured Groups*2009

Interestingly enough, there were certain variables that showed telling differences between insurance status and years observed. As the hypotheses predicted, many of the subjective measures of well-being had a stronger positive correlation when measured in the insured population compared to the uninsured counterparts. Most notable in 2009 was the increase in overall positive correlation to perceived health status for the insured compared to the uninsured. This increase in a positive correlation, or increase in the measure of subjective well-being, was also seen for the level of extent in which a respondent has experienced any physical or emotional problems that have interfered with social activities during the past four weeks. The most prominent difference in correlation between the 2009 uninsured versus insured groups was limitations in moderate daily activities. For the uninsured group, this correlation was negative compared to a positive correlation in the insured group. This was the only variable that produced a negative correlation for the uninsured population and a positive correlation for the insured population in 2009, perhaps suggesting that “insured_scope” was the greatest indicator of limitations (or lack thereof) in moderate daily activities. The regression for Kessler’s Index was relatively constant for both groups, meaning an indication towards having a mental disability was the same for both the uninsured and insured groups. A decrease in overall negative correlation was seen for insured individual’s perceived mental health status compared to the uninsured, as well as a respondent’s ability to overcome illness without help from a medically trained person.

2015

After reviewing differences in correlations among the 2015 insured and uninsured populations, mixed results were noted compared to the 2009 groups. The strongest correlation supporting the hypotheses in 2015 was the level of extent in which a respondent has experienced any physical or emotional problems that have interfered with social activities during the past four weeks. For the uninsured group, there was a negative correlation for respondents experiencing physical/emotional problems interfering with social activities during the past four weeks while the insured group saw the second greatest overall positive correlation for the same variable. The next greatest overall positive increase in correlation was Kessler's Index followed by perceived health status for individuals insured compared to the uninsured counterparts. This means that having "insured_scope" in 2015 was correlated with less likelihood of predisposition towards having a mental disability as well as an increased level of perceived health status. Perceived mental health status showed a negative correlation for the 2015 uninsured group but had less of a negative correlation for the insured group. Contrary to the hypotheses, two subjective measures of well-being showed positive correlations for the uninsured while the insured population had negative correlations. This was true of a respondent's ability to overcome illness without help from a medically trained person (which had the strongest overall negative correlation for 2015), as well as limitations in moderate activities during a typical day. These results perhaps suggest, for those ever diagnosed with cancer, being insured resulted in less of an ability to overcome illness without help from a medically trained person as well as more limitations in moderate activities during a typical day.

Chapter 4

Discussion

While this study attempts to address a current knowledge gap of cancer research, it also demonstrates the difficulty in quantifying feelings of well-being. Diagnostic rates, survivorship rates, and lab results produce much more data that can be codified and analyzed by researchers. Yet, feelings of well-being and measures of subjective feedback can prove to be difficult in creating useful scales and comparative statistics. Nonetheless, if cancer research truly aims to capture the “comprehensive picture of health,” the psychological aspects of cancer treatment and cancer survivorship must be accounted for and more fully understood. Unfortunately, cancer appears to be a lingering chronic condition in the health care system. According to the American Cancer Society, cancer survivorship is projected to increase to over 22 million individuals in the United States by 2030, compared to the estimated 17 million cancer survivors in 2019. Despite the projected increase of cancer survivors, the American Cancer Society also reports identifying “several persistent gaps in the funding of survivorship research for cancer types other than female breast, as well as for older survivors and racial/ethnic minorities” (American Cancer Society, 2019). While there has been tremendous ambition to find the “cure” for cancer in the field of research, caring for the actual patient needs has perhaps been overlooked. As a result, the health of cancer patients and survivors has suffered and will most likely continue to suffer with lack of emphasis placed on caring for an increasing number of cancer survivors. It is important for not only researchers, but also policymakers to anticipate these trends to make informed decisions about chronic diseases.

Policy Implications

As seen by the analyses in this study, the hypothesis stating “more uninsured individuals having ever reported being diagnosed with cancer would be prevalent in 2009 compared to 2015” was supported. This hypothesis was grounded in the belief of the long-term impacts of the Affordable Care Act. The ACA was the most impactful health policy initiative enacted during the years of focus and its subsequent impacts were seen. According to CDC estimates, in 2009 there were 58.5 million (19.4%) Americans uninsured for at least part of the year. This contrasts 2015 estimates in which 29 million (9.1%) Americans were uninsured (Centers for Disease Control and Prevention, 2015). These figures reflect the patterns examined in the analyses of 2009 and 2015 MEPS figures. As seen with the nationally representative population studied in this study, 17.52% of the participants were uninsured in 2009 and 11.95% of respondents reporting being uninsured in 2015. These parallels are important for health services research because it allows examination of insurance status and correlation with other aspects of health. Being able to measure the effect(s) of insurance status on various health conditions enable assessment of a policy. It is clear that one of the main ideals of the Affordable Care Act was to reduce the number of uninsured Americans. While initiatives such as these are often rooted in empirical aims (e.g. associations between uninsured individuals and socioeconomic status), it cannot as easily be predicted other areas the policy will impact.

As seen in the results, mixed data were observed in this study for cancer patients and survivors and their subjective measures of well-being. While the majority of regressions supported the hypothesis “uninsured cancer patients and survivors would experience worse indicators in regards to their subjective measures of well-being when compared to their insured counterparts,” some measures indicated the opposite. For example, overcoming illness without a

medically trained person and limitations in moderate activities actually had better indicators than the insured counterparts in 2015. While these two measures of well-being do not entirely encompass an individual's comprehensive "health," it certainly sheds light on the population of study and raises further questions. For example, one might find these cancer survivors experienced great difficulty in their treatment and, as a result, have become more independent and conscious of self-care. The same idea might also be applicable to ill/uninsured individuals; perhaps enduring great difficulty that has led to more resilience and a feeling of normalcy with their condition that results in better perceptions about their health relative to insured individuals who might have a history of better health.

Limitations

Because the study relies on a survey with participant responses, there is a potential for reporting bias and misinterpretation. Many of the responses observed in this study relate to psychological feelings, something that is both uncomfortable sharing as well as volatile. Reporting these feelings on a linear scale can show slightly different feelings for participants "in-between" two responses. Additionally, Ryff's scale contains several different components of psychological health, but framing a study with one existing model presents its own limitations. Participants' psychological well-being was assessed only according to this framework and is subject to the limitations of Ryff's scale.

Implications for Future Research

As mentioned, there still remains a gap in research knowledge surrounding quantitative analyses of subjective feelings. Without understanding this aspect, a holistic view of health for cancer patients and cancer survivors cannot be fully determined. Future research should be aimed at quantifying psychological aspects of health for cancer patients and survivors as it relates to

specific scenarios. For example, understanding how a breast cancer patient undergoing chemotherapy differs from a skin cancer patient who has been in remission for years. The study includes all different types of cancer and does not distinguish between type of cancer or the associated phase of cancer diagnosis/treatment the patient is in. Thus, it would be of use to know different trends and different patterns as they pertain to different scenarios. Of course, qualitative studies would be of importance to capture anecdotal accounts of psychological and mental health, but quantitative studies could help reveal trends and more prevalent trends.

Conclusion

Cancer care and treatment remains one of the biggest focuses of the American health care system. It is important to more fully understand how the well-being of cancer patients and cancer survivors is affected by their condition. As seen by this study, many uninsured individuals have worse indicators of subjective measures of well-being compared to insured counterparts. While this does not tell the complete story, it can serve as a starting point to more clearly portray the picture of health for these patients. Understanding risk for conditions such as predisposition towards having a mental health condition can allow health care providers to make more informed decisions about patient care. While insurance status may be correlated with certain health conditions and certain demographic populations, this study can help identify other potential relationships with psychological feelings of well-being.

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ACADEMIC VITA

EDUCATION

Pennsylvania State University Schreyer Honors College - State College, PA

May 2020

Bachelor of Science

Major: Health Policy and Administration

Minor: Information Sciences and Technology

AWARDS & ACHIEVEMENTS

- Dean's List: Fall 2016 – Spring 2020
- PSU Provost Scholarship
- Society of Distinguished Alumni Trustee Scholarship
- Dave McClung Award in the College of Health & Human Development

VOLUNTEER AND WORK EXPERIENCE

Catalent Pharma Solutions – Philadelphia, PA

June 2019 – August 2019

Project Management Intern

- Served as a customer liaison through the coordination and direction of activities ranging from quote initiation to production and delivery of drug and drug supplies in the Clinical Supply Services department
- Created project timelines to assign tasks and coordinate with various departments to ensure completion of projects in a timely and effective manner
- Delivered final Capstone presentation to demonstrate metrics and improved process flow during the program

Healthwatch Hackney – London, UK

January 2019 – April 2019

Student Volunteer

- Supported company efforts to streamline service user involvement processes and integrate with Healthwatch England

DaVita Kidney Care – Malvern, PA

June 2018 – August 2018

Guest Service Specialist

- Coordinated dialysis placement requests for travel and emergency situations for approximately 60 customers daily
- Professionally answered all general inquiries, documented feedback, and swiftly handled client emergencies
- Exceeded quality assurance standards each month

CLUBS & ORGANIZATIONS

Alpha Chi Chapter of Sigma Chi International Fraternity – University Park, PA

November 2017 – December 2018

President

- Served as Executive Board Chairman overseeing 112 active members
- Philanthropic fundraising totaling over \$170,000 for THON Dance Marathon and the Huntsman Cancer Institute