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2-6-2024

# The Association Between Cognitive Dysfunctions and Cardiovascular Disease of Minority and LGBTQ+ Communities in the United States

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Walden University
2024

Abstract

The Association Between Cognitive Dysfunctions and Cardiovascular Disease of

Minority and LGBTQ+ Communities in the United States

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Doctoral Study Submitted in Partial Fulfillment

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Doctor of Public Health

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February 2024

Abstract

Dementia, the loss of cognitive acuity is an umbrella term of neuro-degenerative

symptoms that impact an estimated 6.5 million Americans, and amid heart disease,

cancers, and emerging viruses, such as COVID-19, has reportedly increased in

prevalence. A cross-sectional study of secondary data from the National Health and

Nutrition Examination Survey (NHANES) was conducted to analyze minority and non-

heterosexual experiences of health risks found higher in prior studies of distress rates in

LGBTQ+ adults. The socio-ecological framework was used to interpret the competing

ecologies of social health determinants in natural and social settings. Literature reviews

on cognitive dysfunction and other vascular conditions were formed into a matrix of the

physical, relational, and behavioral factors of cognitive-related illnesses. Multiple logistic

regression was used to address whether cognitive disease and coronary heart disease were

associated while controlling for covariates in 14,332 cases from 30 geographic regions.

Results showed that cognitive diseases and coronary heart diseases (OR = 1.01; p = 0.69),

and cognitive dysfunction and myocardial infarction (OR = 1.64; p = 0.18) were not

statistically associated after adjusting for demographic variables such as age, gender,

poverty-income-ratio, and ethnicity. Designed by the conditional disparities between

communities demographically isolated, an opportunity for positive social change is found

in the ability to evaluate health influencers of cognitive decline to stabilize personal and

population health. Identifying health costs, supportive care needs, and varying levels of

health identity necessary to sustain a modeled response to rising cognitive impairments.

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Dedication

I dedicate this manuscript of professional writing to the memories and lives of Mr. Leroy

Anderson Sr., Mrs. Irene S. DeShields, Mrs. Bertha L. Anderson, and Mr. George A.

DeShields Sr. Each of you have contributed in ways that I cannot begin to fantom to live

without, I express my deepest gratitude, my dearest appreciation, and humblest of love to

you.

Acknowledgments

A heart-felt and hardy thanks to the following people.

Dr. Banerjee, your encouragement has been crucial in my completion of this stage in my life, I cannot thank you enough for taking my calls at three in the afternoon and calling me back at three in the morning. You are an amazing chair and fine human being, sir.

Dr. Jimenez, thank you for the amount time you have dedicated in helping me completing this volume of my work, it has been an unequivocal testament to your professionalism and patience. I am grateful for your considerate communications.

Dr. Sumner & Dr. Gold, thank you for your time and incitement to do a hard thing well, it was important to me to get this right. I will always try to write better because of you.

To my committee, and university, I am grateful for the experience you have chaired, and I am a better person because of it.

To Dr. Tanja Lee, thank you for listening when you were not really listening, but also hearing me when I needed to be heard.

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**Introduction**

Over six million Americans have an increased cognitive health burden, dementia, which is an umbrella of the degenerative neurological disease family. In 2021, the Alzheimer's Association reported the COVID-19 pandemic had increased in the number of occurrences of Alzheimer's disease, an estimated (17%) increase in the disease's pre-pandemic prevalence. The aging population growth and increased number of occurrences of dementia related diseases have risen considerably as longevity in the United States climbs. Cognitive dysfunction features the decay of healthy mental development, retention, and the formation of memories, and the types of dementias have expanded in scale and scope. Newer forms of dementia are being discovered continuously as unique pathologies are uncovered in mental health. A 2022 report on Alzheimer's disease estimated that by 2030, the number of persons living with dementia worldwide will reach an approximate 70 million, and by 2060, there will be nearly 14 million persons with dementia living in the United States (AA, 2022). Concurring disease types, coronary heart diseases (CHD) and myocardial infarctions, share a fluency in ecologies. A heightened health burden in minority and LGBTQ populations is experienced through an elevated rise of associated health risks, age, racial/ethnic, socioeconomic, and sex/gender groups, and formative supportive care is challenging in these populations. A summary understanding on the scientific method gives a greater variety of treatment strategies when addressing cognitive dysfunctions. Approaches particularly lacking in cultural content generally fail at early-stage treatment intervention adoption. By incorporating a

decision-making strategy that envelopes a person living with dementia (PLWD) within a community, expected higher health standards have been linked to positive health attainments. Studies relating to minority and LGBTQ communities deserve interventions that are defined by cultural beliefs and benefit from the unique circumstance a pro health attainment environment.

Health related services in the United States have received greater public scrutiny in the examination of unethical practicality in context. When addressing social inequities in agreement, transparency requires health inequalities to be delivered in the presence of a disease management tool. In the study, I observed the factors of dementia to interpret the currency of supportive care in minority communities and monitor sexual orientation. It is important to note that I paralleled heart disease, the leading cause of death for people of most racial and ethnic groups in the United States, including African American, American Indian, Alaska Native, Hispanic, and White men (CDC, 2021). Both diseases encompass health risks surrounding the heart vessels, and the profusion of the vascular system. Heart disease is only secondary to cancer in women, and coronary artery diseases is the most common type of heart disease (Heron, 2017). The associated health risks affiliating heart disease is a predilection of hypertensive arrest, led me observing the factors influencing dementias. Health risk, including a lack of physical activity, accessibility to health services, and culturally disproportionate programming, are not exclusive to those diseases but feature approaches to the health outcomes, not consistently applied to cognitive dysfunctions.

As of date, no treatment can cure dementia, cognitive disfunctions are a disparaging disease set of possible genetic, traumatic, and environmental implications. Impacting nearly every American's future, modeling cognitive dysfunction whether through a biochemical essay, or the understanding pharmaceutical approaches, demands the need of targeting conditional subsets as an aim of addressing mental health risks. This study possessed the capability of observing the success of ongoing approaches in CHD to inform, motivate, and dispel the myths propagating on cognitive health treatments. In 2019, multiyear public survey was conducted and resulted with one out of four or roughly 28% of participants actively evaded care due to miss understanding of their coverage limitations (Ma, 2019). An understanding of the underlying mechanisms of cognitive dysfunction, be it rare or undiagnosed, means a better understanding of health compulsions impacting the population.

In that survey, nearly 20% of respondents skipped treatments entirely, suggesting that even with improvements in health transparency, without improving health literacy the services will continue to go underutilized (Ma, 2019). Those with little to no understanding of the growing risks are those generally in the greatest need of protection. National plans to increase health literacy or the capacity, retention, and execution of health information to American decision-makers, is a long-lived objective of the Healthy People initiative (OASH, 2022). Current day literature on cognition diseases can be unintelligible in terms of health research enabling citizen scientists to make informed decisions, engage health professionals with a platform that raises the topic of mental health, and improves on the improvisation of public health treatment strategies. The U.S.

Department of Health and Human Services (HHS) defined health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions" (ODPHP, 2020). The study's findings may be used by practitioners and public policy makers to contribute to the normalization of diagnosing cognitive dysfunctions and integrating services to healthcare development. By increasing the content and interest, the literacy on cognitive health improves the understanding of the health risks and bridges gaps in mental healthcare formally lacking in treatment strategies, comprehensive patient approaches, and community centered health developments.

## Background

### Dementia in the United States

The most common forms of dementias, Alzheimer's disease (AD), Frontotemporal dementia (FD), Lewy Body dementia (LBD), and Vascular dementia (VD), overlap or present in concert of an interrelated symptomology spanning a genetic component to a traumatic occurrence. Maxfield et al. (2021) characterized a progressive decline in cognitive abilities is anticipated after the age of 65, but the rate and assumption of aging equitably occurring naturally in one ethnicity or sex is disproportional to the number of risks. Healthy People 2020 reported discrimination against LGBTQ people shares a higher risk of psychiatric disorders, substance abuse, and suicides (Joszt, 2018). Studies on risk factors by race and ethnicity are lacking in prognostic potency, leaving medical professionals unconfident in their decisions. The risks of dementias carry a

significant association to other progressive diseases forms and have similar symptomologies that are selective when subjected to environmental influences.

An observable increase in the number of health risks will indicatively assess an abnormal number of occurrences related to the decline in cognitive disposition as well as cardiovascular health. Cardiovascular disease and dementia types are termed as umbrella conditions because of their resulting pathological inclusive diagnostic patterns. CVD interrelates illnesses effecting the heart and blood vessels and house several behavioral concerns as it progresses. Dementia and cognitive dysfunctions are used complementary as interchangeable conditions throughout this analysis because of their high similarities. The decreased cardiac response and/or an inferior quality of adequate blood flow throughout the blood vessels impact multiple systems can be an assault relating both CVDs and dementias. The cognitive changes affecting memory, language, thinking, behavior, problem-solving, and multitasking capabilities, proceed most diagnostic conclusions and for the purpose of this study, are occasionally used interchangeably.

**A Gap in Knowledge**

In a 2020 Alzheimer's survey of primary care providers, nearly 82% expressed a lacking presence on the frontline, and only 27% feel comfortable answering questions on dementia care. The Alzheimer's Association reported, between 2000 and 2018, the number of strokes, human immunodeficiency virus and heart disease related deaths all decreased, while reported deaths from Alzheimer's Disease increased 146.2%. The 2022 Vital Statistics report clarifies the rise in dementia among Americans over 65 has nearly tripled. The report features that the number of caregivers (48%) were unpaid family

members and friends, who were dwindling as they too regressed with chronic diseases of their own. The tertiary concern is the projected cost associated with the care, treatment, and administration of dementia will dramatically increase in the immediate future as services and demand rise (Alzheimer's Ass., 2022). Escalating the need for the development of dementia research for frontline providers is uniquely in demand to channel the health of the U.S. population.

<div align="center">**Problem Statement**</div>

In 2021, about 11.3% (6.2 million) Americans ages 65 and older were living with Alzheimer's dementia, out of which 72% were age 75 or older (Alzheimer's Association, 2021). An aim of the study was the observation of health risks found between dementias and heart diseases with the belief that treatment ecologies can informatively coordinate disease management policies impacting aging minority and LGBTQ populations living with dementia. I could find no concise empirical literature that outlined diagnostic assessment strategies along with test assessments and examines that illustrate the dementia pathology consistently in use of policy development. Few studies have attempted measuring cognitive dysfunctions among coronary heart diseases or myocardial infarction events addressing minority communities or sexual orientation have been published. In a 2020 special report, the Alzheimer's Association approximated the health of 910,000 people ages 65 or older developed Alzheimer's dementia in the United States in 2011, but higher estimates are expected as the number of incidences recorded in 2022 are assembled (Alzheimer's Association, 2020). The increasing number of advanced aged living population has grown while a declining number of qualified

caregivers has not increased to address supportive frontline care. Dementia is a crippling neurological disease; the growing health cost, limited public understanding, and elongated lack of logical extraction on the disease threatens the stability of the national population.

The nearly 83% of family caregivers performing informal care are unpaid, suggesting an estimated 18.6 billion hours of non-paid assistance valued at $244 billion in the United States goes unrequited. Per the Alzheimer's Association (2021), governmental funding for dementias is consistently underfunded, but the treatment and associated care cost are significantly higher when compared to other chronic or debilitating diseases. Caregivers are also aging, as 30% are 65 or older and will experience a chronic disease in the process of being a provider (Alzheimer's Association, 2020). Projected concerns being the number of qualified caregivers available will be exceeded by the number of dementia related cases. Kazawa et al. (2020) highlighted the valuable demand for caregiver alignment, the decision-making processes, in regard of care priorities, authors a "reaffirmation of trust" and "strengthening of intimate relationships" in a post COVID-19 world. The demand for skilled and trained caregivers that incorporate health alignment strategies are projected to dissipate in the aging job market.

Dementia related diseases and heart diseases have a significantly higher likelihood of occurrence among minority groups and LGBTQ communities. The prevalence of cognitive impairment is higher among sexual minority older adults than among heterosexual older adults when sociodemographic factors are adjusted for (Hsieh

et al., 2021). Minority communities possess many missed opportunities to further research and development on policies that would result in mitigating cases of cognitive dysfunction. Matthew et al. (2019) found Hispanic and African Americans in the United States are posed to see the largest increases of incidents of Alzheimer's disease and other related dementias between 2015 and 2060. The circumstances of minority groups are not normally explored from region to region, nor are these groups researched in context linking societal ecosystems as an assessment gap.

Despite a substantial increase in the number of older lesbians, gay people, and bisexual (LGB) adults and the disproportionate number of older women, there is little research on the unique aging experiences of older sexual minorities and women (Chrisler et al., 2016; Lytle et al., 2018). Sexual identity has historically been linked to discrimination and practices in institutional health when addressing lesbian, gay, bisexual, transgender, non-cisgender, non-straight, and queer groups have failed to comprehend the barriers to health attainment. The incorporation of research supporting information on elder health and sexual identity lacks the direct content on dementia care and chronic conditions. Sexual orientation has been underexplored in the context of cognitive illness and the risk of co-curing cardiovascular diseases. Only 4.0% of all National Institutes of Health–funded studies on LGBTQ health between 1989 and 2011 focused on CVD or CVD risk factors e.g., diet, diabetes, and obesity (Caceres et al., 2019). Both diseases have been invasively problematic, as diagnosing has been complicated to identify in their earlier forms. Undiagnosed dementias in the United States have seen growth in occurrence and scope, while the number of persons living with

dementias are expanding. The number of caregivers providing care are under supported and a lack standard formal training, broaden by health disparities across minority and LGBTQ communities. Experience in the disease occurrence and the variations of dementias are increasingly less prioritized but increase in contextual fluency in the aging population.

## Purpose of the Study

The purpose of the study was to explore the statistical influences between (independent variable) cognitive dysfunctions, and (dependent variable) coronary heart diseases, and the (independent variable) cognitive dysfunction and (dependent variable) myocardial infarctions, while controlling covariate variables and monitoring for the classification of sexual orientation. The National Health and Nutrition Examination Survey (NHANES) is a continuous survey of adult and child health that begun in the 1960s to monitor the continued health of population groups in the United States. The study incorporated the secondary analysis of continuously collected data from 2013 to 2014 nutritional health survey who underwent examinations in 30 geographic regions in the United States. The survey selected 14,332 persons, of which 10,175 interviews and 9,813 participants underwent examinations, a total of 5,003 females and 5,175 males. According to the National Center for Health Statistics (NCHS), responses rates were a by-product of previous years' prediction using a linear regression model and applied to the targeted number of predicted number of samples required in each location. An aim of the study was to provide insights for practitioners and the public seeking an understanding of the stressors experienced in a modern-day context.

As an economy of health risks rise it is important to identify how impairments and diseases interact by their environmental influences. I considered the physical health of the environment as a manageable ecosystem to concur relatable policies on treatment strategies. A demographic impression, neurological disposition, and the physical health information collected by the NCHS pinpoints casual connections by measuring rates of frequency, totality, and the health of interventions earlier on in the improvement of prolonged health.

Dementias are defined by forms of deterioration impacting the functionality of neuronal tissue in the nervous system. They inhibit the brain's communication, disrupt daily activities, and shorten life expectancy. Diagnostically unique in etiology, the changes to the frontal, parietal, temporal, and occipital lobes affect motor control, behavior, and impact physiological forms. Without visiting the causal physiology in relation to the associated disease, they are significantly difficult to diagnosis, treat, or prevent. By 2030, the number of persons living with dementia worldwide will approximate 70 million, and by 2060, there will be 14 million persons with dementia living in the United States. Concurrent dementia related diseases and CHD have been seen to have a higher number of negative health impacts in minority populations and members of the LGBTQ community. Risk assessment tools are comprehensively developed to measure attributive behaviors, physical limitations, and neurological restrictions that compliment a range of rational disadvantages. The concerns explored through this research are the gaps between the diagnostically recognized physiological properties and the underling cognitive apparitions of related diseases. By highlighting the

increasing number of dementia cases in the United States, I examined the cost of care and the growth of dementias in order to highlight frontline providers educational concerns and inform on key disparities.

The study explored similar health factors adjacent to dementia and heart diseases. Attributes that supported coordination of coronary heart diseases were observed in context of treatment protocols, policy management, care providers, and underserved communities. My intent was to offer research practitioners, clinicians, caregivers, and family members a perspective that challenges the factors that influence the escalation of mental health disorders. When investigating factors influencing health beliefs on dementia preventing behaviors and lifestyle changes, age was positively correlated with several health belief factors (Akyolo et al., 2020). But factors can be fragmented by their ecology and the environment they are assessed in. The dementias viewed in context of individual interactions, relational values, communal beliefs, and societal forums inform on how social support, care guidelines, and treatment strategies are supported. Those fragments are then magnified by demographic type, age, gender, educational years, memory complaints, presence of a family history, prior event exposure, and a willingness to inform on their risks. These were all factors I considered relevant to the dementia resistance ecology.

The study informed conditional disparities that occur between communities demographically isolated or attuned to a lower sensitivity of the surveyed health risks. Common chronic diseases stem from a variety of risks factors, some modifiable, and others static, but evidence supports the management of risk factors greatly improves

positive health attainment. Aging brings about an uneven increase in common illnesses such as degenerative disorders, stroke, cancer, dementia, and related disabilities (Iranagh et al., 2016). Beliefs and attitudes become established behaviors, while informed demand adaptive interventions catering to a patient-centered approach.

Structural and social components of the health compendium attribution were reviewed over an extensive period of education and experience. Factual, preferential, and ideological based beliefs were considered as self-efficacy can add communal and societal values that confirm ideologies. Self-efficacy also has a positive effect on nutritional recruiting, behaviors that develop under practices are secondary educational reforms. Implementation of behavioral change theories into health education is fundamental for achieving desired behavioral changes leading to positive health outcomes (Iranagh et al., 2016). One the leading cause of death in the United States dementia has grown in mortality and morbidity, beyond the heart related diseases.

A remaining intent of this study was the greater understanding of dementia's casual affront on frontline providers. A 2020 report, written by the Alzheimer's Association, found frontline workers and primary care providers self-reported two out of five or 39% were "never" or only "sometimes comfortable" when answering patient questions about Alzheimer's or other dementias. About a third or 29% commented that they "never" or only "sometimes comfortable" answering patient questions, and a total of 22% of all respondents identified as having no residency training in dementia diagnosis and care (Alzheimer's Association, 2022). The analysis was an approach to gathering insight on influences that deter dementia disease types and expand public health literacy

through relevant experiences. A regression analysis of the health indicators and risk examines patterns associated within both disease ecologies. The resulting analysis found groupings in between dependent, independent, and monitored variables to ascertain a predictive linear application of the socio-ecological model (SEM) to underpin a linear expression. Numerical assumptions presumed the influencing gaps would be observed in variations that were filtered by demographic qualities. Higher variabilities in the data required greater levels of syn-chronology with the other elements to define the correlational influence of a detectable expression.

Research directed at disease definitions must decipher an associated paradigm as a form of preventative disease growth. A common assumption of research is the value of historical health risks to inform on attributing health factors to produce decision-making strategies. Thus, the pathological behaviors progress in patterns that assume other health mechanisms. Here nurological degenerative diseases imminent from a similar mechanism or instrumental cause that is relative the treatment strategies of heart related diseases. Akyolo et al. (2020) cited the development and occurrence of AD are perceived as potentially avoidable even for individuals at increased risk. Studies taken in context assures researchers consider the disease mechanism as a protagonist and the environment factors, or genetic components, or a family history of dementia, or a traumatic trigger, as an antagonistic environment in need of intervening responders. Each rise in health risk factors a concession to the attainment of health and is a modifiable element to develop change.

**Disease Classification**

A disease classification is a logic path of a projected clinically recognizable symptomologies, signs, complaints, and findings, which are diagnostically unique to the disease management profile. Dementia's classifications are a combination of symptomologies, according to the International Classification of Disease 10th revision (ICD-10); it is the frequent occurrence of unspecified mental, behavioral, and neurodegenerative disorders. A direct manifestation of patterns and related findings, the classification proceeds the primary anatomical location affected. The pathophysiology of specific dementias has a variety of origins and mechanisms, but anatomical manifestations generally occur in the brain's cortical and sub-cortical cerebral body. The cerebral cortex houses the outermost layer of the brain's grey matter, where clusters of neuronal bodies, enveloping the right and left hemispheres are found. The two to four mm thick body of complex nerve cells appear as elevated ridges, gyri, and descending furrows named sulci. The inner mass of myelinated axons is white matter, a sheath of proteins and lipids that protect the conduction of propagating electrical signals across the axon, can all objectively infected or degraded by a corresponding dementia. Alzheimer's disease involves the buildup of amyloid plaques and neurofibrillary tangles that disrupt neuroaxonal transport. Vascular dementia occurs when multiple infarcts or a series of ischemic necrotic properties impair the circulation of health material exchange. Parkinson's disease (PD) is the abnormal accumulation of alpha-synuclein at sites of Lewy-body fibrils (see synucleinopathies). Huntington's disease (HD) is attributed to caudate degeneration; it receives visuospatial data and controls movement. Creutzfeldt-

Jakob disease (CJD) is a rapidly progressive, invariably fatal neurodegenerative disorder believed to be caused by an abnormal isoform of a cellular glycoprotein known as the prion protein (CDC, 2021). Pseudodementia masquerades as a form of true dementia and has psychiatric roots that enable the debilitating disability.

**Demographic Description**

Arranging the prominent health risk of cognitive dysfunctions and cardiovascular diseases in a quantitative analysis can produce a physiological profile. The study used a risk matrix to catalog physical, cognitive, and behavioral factors by their presence of cognitive-related illnesses and cardiovascular diseases. Risk from the NHANES was used to conceptualize the geographic health of persons living in the United States. The survey is a continuous assessment of multi-staged health samples of the noninstitutionalized U.S. civilian population residing in the fifty states and the District of Columbia. Through personal interviews and medical evaluations, trained technicians, physicians, and other medical personnel collected responses on the nutritional and physical health status in each corresponding region.

The survey serves as a continued health supplement on communal disease prevalence and ongoing health risks for many studies. Lifestyle practices such as physical fitness, sexual behavior, alcohol consumption, and other dominant features are recorded electronically. Health indicators associated with existing diagnoses or health illness are recorded through associated medical examinations including their characteristics. New or updated guidelines should consider how protected characteristics impact experiences of dementia within a population (James et al., 2022). By linking risk factors of cognitive

disorders and cardiovascular diseases, a demographic profile creates a formative perspective to incorporate in disease management practices.

**Research Questions and Hypotheses**

**(The Null and Alternate Hypothesis)**

RQ1: What is the association between cognitive dysfunction (MCQ380 & MCQ084) and coronary heart disease (MCQ160c & MCQ180c) while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke (MCQ160f & MCQ180f)? In Table 1, Research Question 1 (RQ1), the independent variable, cognitive dysfunction, and the dependent variable, coronary heart disease, was explored to observe the ecological dynamics while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

$H_0 1$: There is not a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

$H_a 1$: There is a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, marital status, social support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

**Table 1**

*Cognitive Disfunction (COG) and Coronary Heart Disease (CHD)*

| Variable name | Description | Value description |
|---|---|---|
| Cognitive dysfunction | MCQ380 | Past 7 days, had trouble remembering |
|  | MCQ084 | Difficulties in thinking or remembering |
| Coronary heart disease | MCQ160c | Ever told you had coronary heart disease |
|  | MCQ180c | Age when told had coronary heart disease |

RQ2: What is the relationship between cognitive dysfunction (MCQ380 & MCQ084) and myocardial infarction (MCQ160e & MCQ180e) status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke (MCQ160f & MCQ180f)? In Table 2, Research Question 2 (RQ2), cognitive dysfunction, and myocardial infarction, was explored to observe the ecological dynamics while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

$H_0 2$: There is not a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

$H_a 2$: There is a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

**Table 2**

*Cognitive Disfunction (COG) and Myocardial Infarction (MI)*

| Variable name | Description | Value description |
|---|---|---|
| Cognitive dysfunction | MCQ380 | Past 7 days, had trouble remembering |
|  | MCQ084 | Difficulties in thinking or remembering |
| Myocardial Infarction | MCQ160c | Ever told you had heart attack |
|  | MCQ180c | Age when told had heart attack |

RQ3: To what extent does sexual orientation significantly modify influence a relationship between cognitive dysfunction (MCQ380 & MCQ084) and myocardial infarction (MCQ160e & MCQ180e) while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke (MCQ160f & MCQ180f)? In Table 3, Research Question 3 (RQ3), the monitoring variable, sexual orientation (SXQ294 & SXQ292), presents between the independent variable, cognitive dysfunction, and the dependent variable, myocardial infarction was observed while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

$H_0$3: Sexual orientation significantly influences a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke.

$H_a$3 Sexual orientation does not significantly influencing a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke.

**Table 3**

*Cognitive Disfunction (COG) and Myocardial Infarction (MI)*

| Variable name | Description | Value description |
|---|---|---|
| Cognitive dysfunction | MCQ084 | Past 7 days, had trouble remembering |
|  | MCQ380 | Difficulties in thinking or remembering |
| Myocardial Infarction | MCQ160c | Ever told you had heart attack |
|  | MCQ180c | Age when told had heart attack |
|  | SXQ294 (female) | Heterosexual or straight (that is, sexually attracted only to women) |
|  |  | Heterosexual or straight (that is, sexually attracted only to men |
|  |  | Homosexual or gay (that is, sexually attracted only to men) |
|  | SXQ292 (male) | Homosexual or lesbian (that is, sexually attracted only to women) |
|  |  | Bisexual (that is, sexually attracted to men and women) |
|  |  | Something else |
|  |  | Not sure |

## Cognitive Measurement Instrument

In a self-reported cognitive assessment, NHANES gauges impairments in areas of language, visuospatial abilities, memory and recall, and abstract thinking, by use of the Digit Symbol Substitution test (DSST). The performance measures the global cognitive functionality of participants is completed by the Cognitive Functioning questionnaire (CFQ). The NHANES MCQ questionnaire section is modeled on the "Medical Conditions" questionnaire section of the U.S. National Health Interview Survey (CDC, 2021). Administered during the household interview, the test consists of 133 boxes corresponding to nine unique numbers paired to symbols. The exercise is offered to participants' 60 years of age. Participants have 2 minutes to match the symbols to the corresponding numerical sequence and is a performance module from the Wechsler Adult

Intelligence Scale (WAIS III). The score is generated from the total number of correct

matches. The measure assesses the complexity of short-term memory, visuospatial skills,

executive function, attention and concentration, language, and orientation.

## Theoretical Framework

The SEM is a framework that compiles competing influences in an interplaying

economy to observe the health complements in context of health detriments. Different

authors have pointed out that interventions often address only personal and psychological

factors (e.g., motives or attitudes), and the environment (e.g., the built or social

environment) is less likely to be considered (Hansen et al., 2017).  I used the model as a

lens on the competing perspectives that drive or derails treatment strategies by way of the

specific health behaviors, can challenge health phenomena development through

prevention. The adaptive framework illustrated indicators in the context of their rational

causal incidence when assessing the disease's probably risk of occurrence. By framing

the risks into ecologies, barriers , communal norms, individual commitments, societal

services a dialog on the values and beliefs can be attained into the health ideology of the

impaired.  Normalizing a health ecology's inputs increase the supportive mechanisms

resistant to diseases by assigning health attributes scaled to the level of an individual's

health behavior. Scaling personal health traits into physical and social environments

remains a complicated concern amongst clinicians and caregivers.

These trait indicators have similar pathological motives that share similar values

attached to influence from health risks. Age is a common indicator of the onset of

dementia and risk of cardiovascular disease, but its influence is subjective to the

environment that it presides. Publicly observable traits can be uniquely perceived as circumstantial anomalies to a situational condition. In similar states indicators are perceived by their conventional meaning on health attainment and offer a path to the ecosystem they stem from. The SEM will offer a relevant consideration to the interplaying boundaries relationally shared when expressed on the disease formation. The model's interactive value places a disproportionate ecology in terms of disparity, inequity, and resource management.

At the individual level, the greatest proximity of self-adherence and personal health accountability can be found. A health attachment that dictates an individual's sustainment to healthy behaviors and likelihood to maintain an attachment through adhesion to personal healthy adaptations. Factors such as age, nutritional habits, education, and substance abuse are predicators to riskier health patterns. Genetic components or a predisposed health condition, are also factors of an indicator that is organic to the person's personal health identity. The unique proximity for individual influence is limited in factorial pressure as it is shaped by the perception of combining risk in layers from existing levels. By modeling outcomes health professionals can facilitate health adhesion in supporting individual health rehabilitation in an ecology that can proceed to self-actualize commitments internally to a health positive accountability.

At the relational level, a shared value between individuals creates an economy of perceived health beliefs through positively viewed health traits to form a common ecology. Individual behaviors and risks are fostered by the feedback of external relationships. Traits in this biome can form conditional abstractions to strengthen the

bonds of positive groupthink. Dementia is particularly active in fracturing social cohesion that supports positive interactions between individual support systems. Partners, closed peer groups, colleagues are examples of positive relations that reinforce behavior by tactile involvement. A component of a caregiver's involvement is the tactical adhesion of personal health. A symbiotic involvement, it maneuvers relationships to obtain group goals shared by the external belief supporting others. Kazawa, et.al., 2020 highlights the valuable demand for caregiver alignment, the decision-making processes, regarding care priorities, authors a "reaffirmation of trust" and "strengthening of intimate relationships" in a post Covid19 world. A caregiver may also be a close neighbor, a colleague or even a part of a shared group. This level of attainment can mean an intimate collection of a guardian' conservatorship is designed around the interest of person's beliefs.

At the communal or community sourced level, health attainment goes beyond individual relationships to recruit venues for health support. Schools, work, community health offices, and religious places of worship can all function as trusted social settings that incorporate disease management strategies within a contained environment. The incorporation of environments for safe learning attainment is a valuable indicator of health literacy and continuity of health practice. The communal biospheres influence the willingness of groups that share an interest to attain an overall health goal. A retraction from these settings can also indicate instability, and a need for greater guided interventions at any of the existing levels.

I entertained the Health Belief Model (HBM) to guide widespread failure of people to participate in programs to prevent and detect disease (Glanz,et.al., 2018). By

integrating interventions and new services, public health practitioners can measure cognitive function in relation to the environment with the systematic use of HBM and other models. When investigating factors influencing health beliefs on dementia preventing behaviors and lifestyle changes, age was positively correlated with several health belief factors. (Akyolo, et.al, 2020) The HBM is valuable when isolating a recruitment strategy but lacks the ability to outline limits on its own. The SEM theology has both interventional value in terms of subscriber participation but also adds perspective on the environmental boundaries or biotic factors in the ecologies that hold them intact. There are six concepts which comprise the HBM which include perceived susceptibility; perceived severity; perceived benefits; perceived barriers; cues to action; and self-efficacy.

The societal factors are traits of shared resources systematically made accessible to groups with mutually shared interest. At this level a climate of acceptable behaviors is encouraged by exhibiting resources for guided decision making. The biosphere that interplays communal values, relationships motivations, and individual health beliefs in the attainment of established social amenities. Healthcare facilities, social services, private offices, and educational institutes are all incorporated when connecting shared resources such as respite, treatment, and fund. Policy creation at these levels is formed to facilitate and strengthen efforts that serve the entire continuum of mutually shared resources.

**Nature of the Study**

The study was a quantitative analysis using logistic regression design to explore the statistical relationships between dementia diseases, and coronary heart diseases, and cognitive dysfunctions and myocardial infarctions, while controlling covariate variables and monitoring for the classification of sexual orientation. Regression was selected to feature the underlying health risks as modifiable inputs of cognitive dysfunctions, coronary heart diseases, or myocardial infarctions. The behaviors/risks were translating positive and negative conditions and could later be statistically eliminated to observe outcomes against other criteria. Dementia can be a sophisticated topic on numerous variables, biophysical trauma, neuropsychological impairments, genetics, and influenced by the complex spectrum of social health deficits that follow daily activities, are each interactive to another. A logistic regression explored the similar health risks found between dementia types and heart diseases to ascertain its presence in an ecology.

IBM's Statistical Package for Social Sciences (SPSS) was the modeling software that creates statistical patterns and equates trends to accurately forecast anomalies of progression. A calculation of the means, modes, medians, and standard deviations were used to describe the statistical characteristics. For each statistical pairing a description entailing the age, gender, ethnicity/race, education, reported cognitive health, marital status, income, and sexual orientation will be produced into sample size, mean, standard error, p-value, and percentile scores. *T-tests* for two-level variables were completed by population characteristics. Cognitive performance was measured using the digit symbol substitution test (DSST), collected from a Cognitive Functioning questionnaire resulting

in the (CFQ_H) naming convention. Participants scoring in the lowest 25th percentile of

a cognitive assessment and participants above 25th percentile indicating not low

cognitive performance will be evaluated by two-sided t tests at the 0.05 level. *P-values*

less than 0.05 as assessed by the two-sided t test.

## Definition of Terms

*Alzheimer's disease*: (AD) is the most common dementia diagnosis among older

adults. It is caused by changes in the brain, including abnormal buildups of proteins,

known as amyloid plaques and tau tangles (NIA, 2021).

*Argyrophilic grain disease: (AGD) is* a common, late-onset degenerative disease

(NIA, 2021).

*Chronic traumatic encephalopathy:* (CTE) is caused by repeated traumatic brain

injury (NIA, 2021).

*Core Outcome Sets:* COS is a standardized collection of outcome domains that

should be reported in all controlled trials within a research area (Kirkham, et.al., 2017).

*Coronary Heart Disease:* CHD is a broad disease category and consists of several

conditions with myocardial infarction (MI) and angina pectoris (AP) being the most

prevalent ones (Deckers, et.al., 2017).

*Creutzfeldt-Jakob disease*: (CJD) is a rare brain disorder.

*Delphi Method:* The Delphi technique is a research design, usually considered a

qualitative method, which was designed to forecast viable solutions to problems where

data was missing or incomplete (Nasa, et.al., 2021).

*Dementia:* Dementia refers to a collection of symptoms caused by syndromes that affect the brain and cause a decline in cognitive function (NIA, 2021).

*Frontotemporal dementia*: (FD)is a rare form of dementia that tends to occur in people younger than sixty. It is associated with abnormal amounts or forms of the proteins; tau and TDP-43 (NIA, 2021).

*HIV-associated dementia*: (HaD) is a rare disease that occurs when the human immunodeficiency virus (HIV) spreads to the brain.

*Huntington's disease:* (HD) is an inherited, progressive brain disease

*Lewy body dementia*: (LBD) is a form of dementia caused by abnormal deposits of the protein alpha-synuclein, called Lewy bodies (NIA, 2021).

*Lesbian, Gay, Bisexual, Transgender, and Queer: (LGBTQ)* is a communal term used to include intersexual and asexual identities that characterize the categorization of societal expectations (UCSF, 2022).

*Mobile Evaluation Centers: (MEC)* notation is a person(s) agreeing to complete both the in-home interview and an examination in a mobile examination center (MEC) are considered "MEC participants" (Chun Tie, et.al., 2020).

*Mixed dementia*: mixed dementia is a combination of two or more types of Dementia (NIA, 2021).

*Synucleinopathies*: the term references a group of neurodegenerative disorders characterized by fibrillary aggregates of alpha-synuclein protein in the cytoplasm of selective populations of neurons and glia. (Mavroeidi, et.al., 2021).

*Vascular dementia*: (VaD) is a form of dementia caused by conditions that damage blood vessels in the brain or interrupt the flow of blood and oxygen to the brain (NIA, 2021).

## Assumptions

**Assumption (1) –** *Cognitive impairments will have a demographic type like CVD's when accessing health services and preventing early detection.* As Darlington, et.al. 2018, explains a setting change in a socio-ecological model (SEM) seeks to standardize an approach across a variety of contexts by not replicating standard interventions but incorporating compliment services with similar treatments. In which case an outcome can be addressed in a standardized approach when addressing the demographic type in conventional health risks. The readied response aide in disentangling the extraneous economic factors in concert of the health status supporting early detection and preventative measures. Conventional medical interventions that do not adopt social and psychological strategies in parallel circumvent the self-replicating ecologies, and risk offending or confronting the symbiotic relationship as a benefactor.

**Assumption (2) –** *An assessment strategy can produce a higher positive health outcome when comparing ADRD's and CVD's health risk earlier on***.** A disease's perceived stressors are highlighted in ecologies but are unable to choreograph a response if the specific environment changes in concert of another. Strategies to improve the precursor characteristics may remain the same but the corresponding health environment can degrade by the number of negative increasing health deficits. Environmental influences, not affixed to the disease's occurrence level, are adjacent to a community's

acquiescence of equitable health attainment. Dementias and CHDs having higher rates of risks require approaches that address health factors when simultaneously planning an outcome.

**Assumption (3) –** *Minority and LGBTQ members will require a formative health assessment process designed to incorporate their cultural identities, practices, and beliefs.* The socio ecological model curated the health risk germane to the environment and the corresponding cultural cues. It exhibited the disease progression with indicators reacting within expected biotic proximities. In a 2019 study, Hispanic and African Americans in the United States will see the largest increases in Alzheimer's disease and related dementias between 2015 and 2060 (Matthews, et.al., 2019). Ethnicity and sexual orientation are identities that experience a higher disease burden in the United States but lack consistency in health literature on managing approaches on the formative properties.

The co-curing disease progression and the degree of cognitive impairment related to the degree of factors influencing a person's lifestyle while living with dementia rather than anticipating the disease outcome. Constant comparative analysis generates increasingly more abstract concepts and theories through inductive processes (Chun Tie, et.al., 2019). Addressing cardiovascular disease in tandem assessed the presence of myocardial infarction and coronary heart disease occurrence as a conflated value of cognitive distress or an approximation of ADRD minus a stroke event. In a comparative process the relational distinction of this study will take cultural identities into consideration when working in communities sharing minority ownership. Almost two-thirds of Americans with Alzheimer's disease are women. Currently cognitive

impairments are definitively diagnosable postmortem but studies assessing preventative approaches lack community representation.

The NHANES demographic data is adjustable to the resources facilitating the overlapping health concerns, making it practical in application when meeting dynamic health concerns. Recent significant contributions to the understanding of socioeconomic disparities in health have concentrated on the identification of causal effects but have stopped short of uncovering the underlying mechanisms that produce the causal relationships (Galama, et.al., 2019). Previous findings on co-curing diseases indicated that the higher the number of demographic factors impacted would dictate the greater volatility of the intervention's success. Serious psychological stressors are much higher among low-income people living with chronic and behavioral health problems (29%), when compared to higher-income people with similar health conditions (7%) (Cunningham, 2018). It is assumable that lowered health outcomes are interrelated with reduced or diminished resources raising the risk of susceptibility to a quasi-health subculture.

The framework supplemented the research topic by providing formative predications to variable movement, an approach that has accurately been deployed in disease studies historically. Sexual orientation functioned to address the changing complexity of participants with fewer health detriments leaving them to make concessions in the modeled prevention and intervention healthcare. The most meaningful scientific extractions are portable, they address the hypothesis' fidelity, and ability to withstand varying contradictions while making accurate deductions. Extractions are

statistical assumptions making meaningful connections to the sensitivity of dementia types but also to the development of the data formatting useful to the SEM methodology. Data existing between the type of assessment variables and influencing disease can differentiate the outcome. Unusual indicators are meant to drive improvements and develop positive patient-centered outcomes.

In research question one (RQ1), What is the association between cognitive dysfunction and coronary heart disease while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke? Research question one (RQ1), the independent variable, cognitive dysfunction, and the dependent variable, coronary heart disease, was explored to observe the ecological dynamics while controlling for; marital status, social support, age, gender, poverty-income-ratio, and ethnicity. Research question one (RQ1) married the stages of socio-ecological model significance as the variables on the individual, the interpersonal level, communal level, and the societal level are nominally accountable for occurrences at progression of disease health.

In research question two (RQ2), What is the relationship between cognitive dysfunction and) myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke? The question (RQ2) paralleled the stage of a cognitive disease and the presence of a known pre-existing myocardial disease diagnosis. The model assessed comprehension of a concurring disease presence and the health risks' relational influence they propose on the

individual, the interpersonal level, communal level, and the societal level as an interventional approach.

In research question three (RQ3), To what extent does sexual orientation significantly modify influence a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke? The question, (RQ3) spoke specifically to the stage of a cognitive disease and the presence of a known pre-existing heart condition. The socio-ecological model aided in anticipating the perpetual dynamic of variables at the individual level compounding concerns at the interpersonal level, interpersonal concerns impacting the communal level, and communal influences on the societal level. When concurrent diseases such as cardiovascular disease, and cognitive related illnesses compare, major factors such as culturally related health risk are unique considerations. The model contributed to the scaling of health behaviors in the physical and social environments by their simultaneous effect on optimal health attainment. Traits from similar pathological mechanisms and health behaviors share similar health risks. Age is a common indicator of the onset of dementia and risk of cardiovascular disease, but its influence in the perceived ecological perspective is adapted to differently in multiple environments.

## Literature Search Strategy

Literature was retrieved by a summary of professional scholarly sources from both digital and printed publications. Walden University Library, MEDLINE(PubMed), EMBASE, Google Scholar, ResearchGate.net, and the Alzheimer's Association.org, the

New England Journal of Medicine, the Lancet, Acedemia.edu, MedMastery, and the

Journal of American Medical Association (JAMA) provided as excellent sources in

advancing the study's critical understanding. The National Health, and Nutrition

Examination Survey (NHANES) was the source of data selected and the numerous details

outlining data production were made available by the Centers of Disease Control and

Prevention (CDC), and the National Center for Health Statistics (NCHS). The key search

terminology was guided by reviewing journals, scientific papers, media reports, and

articles relating to cognitive dysfunctions in the US. More recent papers highlighted the

connection of chronic diseases and prompted my interest in the similarities found

between cognitive dysfunction and heart diseases, aiding in the selection of the topic of

this analysis. Below the are terms used when searching online platforms to contrast the

key assumptions and the hypotheses that courted the research questions.

| Key Search Terms | | | |
|---|---|---|---|
| Coronary Heart Disease | Cardiovascular Disease | Cognitive Dysfunction | Heterosexual populations |
| CHD | Alzheimer's Disease | Cognitive Disfunction | Dysregulation of physiological systems |
| Cognitive impairment | AD | Brain Disease | |
| Neurological Impairment | Cardio Infarction | Cerebrovascular Disorders | Vascular Disease |
| Dementia | Myocardial Infarctions | Cognitive health disparities | VD |
| Mild Cognitive Impairment | Cognitive Deficit | Sexual minority(s) | |
| MCI | Angina Pectoris | | |
| | Heart Disease | | |

Example of search terms were as follows: ('coronary heart disease' OR

'myocardial infarction' OR 'angina pectoris') AND ('dementia' OR 'cognitive deficits'

OR 'cognitive dysfunction' OR 'cognitive impairment' OR 'Alzheimer's disease').

Cognitive impairment, neurodegenerative impairment, mental deficits, and other terms

are examples of how narrowing the data took shape in a logical progression of the disease language and fluency of terms when researching dementias.

Literature including a wide scope of academic and synthesized articles pertaining to the last five years prior to this study, were used to complement a rationale study. Interrelated fields of science incorporated financial burdens as critical areas leading the decision of the study's subtopics. Socioeconomic factors further advanced the selection of literature on disparities in age, gender, race/ethnicity, and sexual orientation. While many analyses were featuring these factors fewer focused on race/ethnicity and sexual orientation as risk to the ecological health attainment needed to foster disease management plans.

## Theoretical Foundation

The theoretical foundation is taken in part from the SEM identities that interact as rationale behaviors, resources, and health attainment beliefs by observing the enveloping environment. Developed in the 1970s by Urie Bronfenbrenner, the model embodies a sphere of influential interactions that explain human development through the entangled interactions of various systems. Its strengths emanate from the variety of application of hierarchical levels of evidence-based practices serving difficult relational topics. Current health strategies indicate risk factors are modifiable and by equipping researchers connect behaviors to outcomes. An environment includes the awareness, attitude, skills, and abilities of a person conducting their behaviors. The model guides the sensitivity of demographic criteria in a statistical form by determining the significance of the indicator and the realm that it is found. The model also aids in surmising the level of encounters for

a health campaign. Dementia's global distribution of cognition means the impairments are settled on individuals at various times, environments, states of their health, and transgresses their person in a variety of manifestations.

A 2019 report found that by reviewing the grounded theory (GT), an outlook that questioned the view of quantitative methodology is the only valid, unbiased way to determine truths about the world (Chun Tie, et.al., 2019). A revelation on the late-life decisions that imply that the general natural of aging, gender, race, sexual orientation, brain injury, heart diseases and cerebrovascular disorders, are a summary of our collective composition. A complimentary explanation of the influential factors being grounded in the terms of the model's identity, the SEM is reliable servant to other ideologies.  Grounded Theory studies can commence with a variety of sampling techniques; many commence with purposive sampling. The SEM followed a concurring generation of factors to analysis through various stages of ecologies. The theory undertakes comparative analysis by way of theoretical sampling or memoing, making it a static process (Chun Tie, et.al., 2019). Treating the assumptions as estimations of the concurring disease phenomenon offers a higher affinity between the independent variable dependent variables. I offer that data values pronounced in the association of cognitive impairment will cycle prominent health risks reflectively in a pattern of disease occurrence.

In the study I ascertained that the cognitive performance was impaired in low performing cognitive environments and respond differently to extenuating changes or events. Per Chun Tie, et.al., grounded theoretical research is a remarkably valuable

complement to the socio-ecological model due to design features varying risk in scales. Theories are useful in their predictive abilities, in testing generalities, and explaining motives. Consistency and incongruency to a theory can address planning, development, deployment, or rectification of a health intervention (Chun Tie, et.al, 2019). To produce quality responses in cognitive health, public health interventions must be designed with intentional intelligence. We must build specific features into interventions with research to resolve or escalate the public needs as they change. Prior studies have found that diseases or injuries that damage the heart and blood vessels, such as heart disease, hypertension, stroke, and diabetes, are linked to a higher risk of dementia (Ma, et.al., 2020). Incorporating the socio-ecological model is an expansion of the disease health risk and the demographic profile to devise programing that is applicable to all populations in a uniformly powerful structure.

Identifying an escalation process is a useful risk mitigation practice and addressing the necessary interventional treatments by strategic approaches markets the unique invention efforts to a community of targeted subscribers. Higher risk subjects are formatively assessed to a baseline of cognitive health and socioecological modifications will use a metric tied sequential changes. Based on the Behavioral Risk Factor Surveillance System data collected from twenty-one states, Seelman (2019) found that older bisexual women had higher odds of reporting difficulty concentrating, remembering, or making decisions than older straight women, but older lesbian women rated their cognitive health similarly to older straight women. Chronic co-curing conditions, as in the case of coronary heart disease and cognitive impairment, can frame

the social modifiers, age groups, ethnicity makeup, gender identity, and sexual orientation. By employing indicators, a useful and purposeful counterweight of the demographically underserved is internalized by variable influence. The burden of CVD in the United States is disproportionately high among African Americans as compared to Whites (Lewis, et.al., 2018). Factors that provide the realities of health risks for potential co-curing impairments, can reduce health stigmas and barriers that exhaust natural defense systems.

Epidemiological surveys on dementia have two basic points to analyze: the descriptive point, where ratios are calculated for communities and populations included in the study; the analytic point, which attempts to explain phenotypic variations observed by the identification of risk factors (Rizzi, et.al., 2014). Because few topics uniformity cover diseases acting in concert, it is important to articulate interventional alignment in scientific research. A variation of disease profiling dementia around the world can lead cultural and socio-economic changes that resemble regional beliefs. Aligning the various health concerns by attributive disease risk considers the associated cost of cognitive impairments. Gavelin, et.al., 2020, highlights the functional consequences of cognitive impairment in aging, and the subsequent personal identity, societal, and financial costs, development of effective interventions that could maintain levels of cognitive functioning and delay cognitive onset.

Patients and caregivers that identify important management issues of disease diagnosis and health disclosure, are supporting community resources through information gathering, disease management practices, and training efforts. Suppression of these

common factors, e.g., culture, financial, medications, and behavior attributes, set aside

tolerable distractions that remain germane to an efficient diagnosis. A 2017 review,

Snowden, et.al, found co-occurring chronic conditions (CCs) identifiers increase when

paired with moderate-to-severe cognitive impairments (including both diagnosed health

conditions and undiagnosed cognitive dysfunctions). Mortality rates in the presence of

co-occurring chronic conditions are significantly higher. Noneffective treatments often

increase the length of stay in institutional settings and decrease the effectiveness of

functional support services.

Primary physicians (often with the help of specialists such as neurologists,

neuropsychologists, geriatricians, and geriatric psychiatrists), rely on the use a variety of

approaches and tools to determine a diagnosis but have limited understanding on the

cultural patterns. Black/African Americans, Hispanics/ Latinos, Asian Americans/Pacific

Islanders, and Native Americans, are lacking representation in dementia disease studies.

Anderson, et.al, 2021, suggests that an assessment of the characteristics and psychosocial

stressors identified through the sexual orientation of sexual gender minority (SGM)

member is no more expansive than current examines but regularly unaddressed. Patient

examinations alongside caregivers of aging minority members add to the contextual

understanding of the roles and perceived partnerships. Experiences vary in the level of

perceived care, depression, disabilities, victimization, and discrimination are all stressors

that append to health attachments. Caregivers experiencing chronic high stress experience

an associated lower quality of life and higher risk of poor health outcomes. There is

transference in the administration of person-centered care, assessing the caregiver's cognitive fluency and capabilities is an invaluable practice.

Addressing cognitive illness, Singleton, et.al., a 2017 qualitative study, explained the experiences of persons and caregivers of dementia care, by assessing multifactorial indicators of social adhesion. People with dementia and carers who attribute social changes to dementia frequently describe more acceptance and making adjustments that maximized their social function (Singleton, et.al., 2017). Common symptomologies, e.g., agitation, apathy, aggression, psychosis, hallucinations and delusions, and under-recognized symptomologies, e.g., wandering, hoarding, inappropriate behaviors, e.g., sexual disinhibition, eating inappropriate objects, repetitive behavior, and restlessness, require uniquely prescribed interventions. Assessment scales that have been developed for dementia in the domains of cognition, function, behavior, quality of life, depression, caregiver burden, and severity of illness but lack a cultural component. A link between perceived stressors, as specified to caregivers and persons diagnosed with a form of dementia, influences the use of varying ecologies to create interventions in public health is necessary.

The socioecological model deals with the "person × environment interaction" (Hansen, et.al. 2017). The alignment potential provides conservative feedback from the risk factors' level of influences. A sympathetic response exploits the feedback of the indicator's movements to create reactionary patterning that mirrors a phenomenon's impact at the corresponding level. A 2019 study explored the use of sociological modeling as a potential explanation of the production of health amongst disparity

populations. Integrating the roles of proposed mechanisms and their long-term effect into

a theoretical framework allows researchers to disentangle the differential patterns of

causality and assess the interaction between mechanisms (Galama, et.al., 2019). The

influencing interaction demands an influx of traits whether negatively or positively,

influences health behaviors demand supportive feedback or in the absence of care,

negative escalating health deficits.

**Assumption (1) –** *Cognitive impairments will have a demographic type like*

*CVD's when accessing health services and preventing early detection.* As Darlington,

et.al. 2018, explains a setting change in a socio-ecological model (SEM) seeks to

standardize an approach across a variety of contexts by not replicating standard

interventions but incorporating compliment services with similar treatments. In which

case an outcome can be addressed in a standardized approach when addressing the

demographic type in conventional health risks. The readied response aide in

disentangling the extraneous economic factors in concert of the health status supporting

early detection and preventative measures. Conventional medical interventions that do

not adopt social and psychological strategies in parallel circumvent the self-replicating

ecologies, and risk offending or confronting the symbiotic relationship as a benefactor.

**Assumption (2) –** *An assessment strategy can produce a higher positive health*

*outcome when comparing ADRD's and CVD's health risk earlier on***.** A disease's

perceived stressors are highlighted in ecologies but are unable to choreograph a response

if the specific environment changes in concert of another. Strategies to improve the

precursor characteristics may remain the same but the corresponding health environment

can degrade by the number of negative increasing health deficits. Environmental influences, not affixed to the disease's occurrence level, are adjacent to a community's acquiescence of equitable health attainment. Dementias and CHDs having higher rates of risks require approaches that address health factors when simultaneously planning an outcome.

Assumption (3) – *Minority and LGBTQ members will require a formative health assessment process designed to incorporate their cultural identities, practices, and beliefs.* The socio ecological model curates the health risk germane to the environment and the corresponding cultural cues. It exhibits the disease progression with indicators interacting within the community. In a 2019 study, Hispanic and African Americans in the United States will see the largest increases In Alzheimer's disease and related dementias between 2015 and 2060 (Matthews, et.al., 2019). Ethnicity and sexual orientation are identities that experience a higher disease burden in the United States but lack in managing approaches during the formation.

The co-curing disease had similar progressions and the severity of cognitive impairment that related to factors influencing a person's lifestyle while living with dementia rather than anticipating the disease outcome. Constant comparative analysis generates increasingly more abstract concepts and theories through inductive processes (Chun Tie, et.al., 2019). Addressing cardiovascular disease in tandem assessed the presence of myocardial infarction events and coronary heart disease occurrence as not to conflate the severity of cognitive distress or an approximation of ADRD minus a stroke event. While NHANES has severity components that relate to cognitive dysfunction, I

elected to establish the presence of dysfunction. In a comparative process the relational distinction of this study took cultural identities into consideration when working in communities sharing minority ownership. Almost two-thirds of Americans with Alzheimer's disease are women. Currently cognitive impairments are definitively diagnosable postmortem but studies assessing preventative approaches lack community representation.

The NHANES demographic data was adjustable to the overlapping health concerns, making it practical when assessing the dynamic health concerns. Recent significant contributions to the understanding of socioeconomic disparities in health have concentrated on the identification of causal effects but have stopped short of uncovering the underlying mechanisms that produce the causal relationships (Galama, et.al., 2019). Previous findings on co-curing diseases indicated that the higher the number of demographic factors impacted would facilitate a greater volatility of the intervention's success. Serious psychological stressors are much higher among low-income people living with chronic and behavioral health problems (29%), when compared to higher-income people with similar health conditions (7%) (Cunningham, 2018). It was assumable that lowered health outcomes were interrelated by the reduced or diminished health resources lowering in proxy and the risk to quasi-health elements.

The framework supplements the research by providing a formative narration of the modifying variables, an approach that has accurately been refined in historical assays. The variable for sexual orientation functioned to address the greater complexity of respectfully identifying participants with health risks associated to their identity to

modeled prevention attributes and intervention strategies. The most meaningful scientific extractions are portable, they address the hypothesis' fidelity, but withstand scrutiny when placed in contradicting behaviors. Extractions are statistical assumptions that make meaningful connection in sensitivity. In my study the sensitivity was measured in proximity and number of occurrences of dementia by type but also used to the develop the data format into a useful understanding of the methodology. Data existing between the type of assessment variables and the influencing disease can differentiate in outcome. Unusual indicators were examined to track disease development.

In research question one (RQ1), What is the association between cognitive dysfunction and coronary heart disease while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke? Research question one (RQ1), the independent variable, cognitive dysfunction, and the dependent variable, coronary heart disease, was explored to observe the ecological dynamics while controlling for; marital status, social support, age, gender, poverty-income-ratio, and ethnicity. Research question one (RQ1) married the stages of socio-ecological model in ecologies that affect variables. On the individual, the interpersonal level, communal level, and the societal level changes to the number of occurrences related to symptomatology were accounted for the progression of disease effected the overall health of the ecology.

In research question two (RQ2), What is the relationship between cognitive dysfunction and) myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke? The

question (RQ2) paralleled the event of a cognitive disease in the presence of a known pre-existing myocardial occurrence. The model assessed the comprehension of disease present with the reported health risks in relational to the influence they propose on the individual, the interpersonal level, communal level, and the societal level as an interventional approach.

In research question three (RQ3), To what extent does sexual orientation significantly modify influence a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke? The question, (RQ3) spoke specifically to the ecology of cognitive dysfunction and heart condition may have affecting the health of the respondent by population. The socio-ecological model aided in anticipating the perpetual dynamic of the variable on the individual level, the interpersonal level, the communal level, and the societal level. Concurrent accounts on disease such as cardiovascular disease, and cognitive related illnesses impair factors such as cultural, health, and economy in the socioeconomic model. The model contributed to scaling health behaviors into physical and social environments that effect optimal health attainment. Behavioral traits from similar studies account for the implementation of pathological mechanisms and health amalgamizes sharing similar health demography. Age is a common indicator of the onset of dementia and risk of cardiovascular disease, but its influence in the perceived ecological perspectives has been adapted into multiple types of health ecologies.

**Literature Review Related to Key Variables and/or Concepts**

The purpose of the study was a quantitative analysis exploring the statistical influences between cognitive dysfunctions, and coronary heart diseases, and the cognitive dysfunction and myocardial infarctions, while controlling covariate variables and monitoring for the classification of sexual orientation. Vascular Dementia (VD), Lewy Body Dementia (LBD), Parkinson's Disease (PD), Frontotemporal Dementia (FTD), Huntington's Disease (HD), Creutzfeldt-Jakob Disease (CJD), Normal Pressure Hydrocephalus (NPH), and Wernicke-Korsakoff Syndrome (WKS), are all forms of neurological impairments. Their unique characteristics preside in diminishing healthy brain activity while remaining diagnostically unique. Key concepts linking cognitive diseases and heart diseases shorten life expectancy by deteriorating emotional and social aptitude. Composing health risks of both disease types would create distinguishable gerontological occurrences to fulfill gaps in health attainment.

There are knowledge gaps in between dementia and public health services used to prognosis, treat, inform, and rehabilitate cognitions. The absence of culturally attributed content hinders minorities and LGBTQ communities from receiving sustained long-term affordable health care. The SEM scales the perspective by overlapping risks in fluency of the social environment directing actions. Individual actions within cultivated environments respond differently to extenuating changes or events. Per Chun Tie, et.al., 2019 article explains grounded theoretical research, was remarkably valuable compliment to the socio-ecological model due to design features varying risk in scales. Theories are useful because of their ability to justify relationships, evaluate generalities and explain

concept's consistency or incongruency; theories can be addressed during the pre-planning, development, deployment, or rectification of a health intervention (Chun Tie, et.al, 2019). To produce quality responses in cognitive health, public health interventions must be designed with intentional intelligence.

We must build specific features into interventions with research to resolve or escalate the public needs as they change. Prior studies have found that diseases or injuries that damage the heart and blood vessels, such as heart disease, hypertension, stroke, and diabetes, are linked to a higher risk of dementia (Ma, et.al., 2020). Incorporating the socio-ecological model was an expansion of the disease health risk and the demographic profile to devise programing that was applicable to all populations in a uniformly powerful structure. Identifying an escalation process was useful in risk mitigation and addressing the necessary interventional treatments by strategic approaches germane to unique community subscribers. Higher risk subjects are formatively assessed to a baseline of cognitive health and socioecological modifications will use a metric tied sequential changes. Based on the Behavioral Risk Factor Surveillance System data collected from twenty-one states, Seelman 2019, found that older bisexual women had higher odds of reporting difficulty concentrating, remembering, or making decisions than older straight women, but older lesbian women rated their cognitive health similarly to older straight women. Chronic co-curing conditions, as in the case of coronary heart disease and cognitive impairment, can frame the social modifiers, age groups, ethnicity makeup, gender identity, and sexual orientation.

By employing indicators, a useful and purposeful counterweight of the demographically underserved was internalized by variable influence. The burden of CVD in the United States is disproportionately high among African Americans as compared to Whites (Lewis, et.al., 2018). Factors that provide the realities of health risks for potential co-curing impairments, can reduce health stigmas and barriers that exhaust natural defense systems. Epidemiological surveys on dementia have two basic points to analyze: the descriptive point, where ratios are calculated for communities and populations included in the study; the analytic point, which attempts to explain phenotypic variations observed by the identification of risk factors (Rizzi, et.al., 2014). Because few topics uniformity cover diseases acting in concert, it was important to articulate interventional alignment to modern scientific research. A variation of disease profiling dementia around the world can lead cultural and socio-economic changes that resemble regional beliefs. Aligning the various health concerns by attributive disease risk considers the associated cost of cognitive impairments. Gavelin, et.al., 2020, highlights the functional consequences of cognitive impairment in aging, and the subsequent personal identity, societal, and financial costs, development of effective interventions that could maintain levels of cognitive functioning and delay cognitive onset. Patients and caregivers that identify important management issues of disease diagnosis and health disclosure, are supporting community resources through information gathering, disease management practices, and training efforts.

Suppression of these common factors, e.g., culture, financial, medications, and behavior attributes, set aside tolerable distractions that remain germane to an efficient

diagnosis. A 2017 review, Snowden, et.al, found co-occurring chronic conditions (CCs) identifiers increase when paired with moderate-to-severe cognitive impairments (including both diagnosed health conditions and undiagnosed cognitive dysfunctions). Mortality rates in the presence of co-occurring chronic conditions are significantly higher. Noneffective treatments often increase the length of stay in institutional settings and decrease the effectiveness of functional support services. Primary physicians (often with the help of specialists such as neurologists, neuropsychologists, geriatricians, and geriatric psychiatrists), rely on the use a variety of approaches and tools to determine a diagnosis but have limited understanding on the cultural patterns. Black/African Americans, Hispanics/ Latinos, Asian Americans/Pacific Islanders, and Native Americans are lacking representation in dementia disease studies.

Anderson, et.al, 2021, suggests that an assessment of the characteristics and psychosocial stressors identified through the sexual orientation of sexual gender minority (SGM) member is no more expansive than current examines but regularly unaddressed. Patient examinations alongside caregivers of aging minority members add to the contextual understanding of the roles and perceived partnerships. In addressing data limitations, the best approach is often to develop a broadly defined area of inquiry, and then identify a handful of datasets that are well-suited to that focus (SGIM, n.d.a.). A good hypothesis fed the study's framework allowing specificity and focus on the research topic. Amongst subsets of populations experiences vary in the level of perceived care, depression, disabilities, victimization, and discrimination, all are stressors that append to health attachments but are needing a greater understanding. Caregivers experiencing

chronic high stress experience an associated lower quality of life and higher risk of poor health outcomes. There was transference in the administration of person-centered care, assessing the caregiver's cognitive fluency and capabilities is an invaluable practice.

Addressing cognitive illness, Singleton, et.al., in a 2017 qualitative study, explained the experiences of persons and caregivers of dementia care, by assessing multifactorial indicators of social adhesion. People with dementia and carers who attribute social changes to dementia frequently describe more acceptance and making adjustments that maximized their social function (Singleton, et.al., 2017). Common symptomologies, e.g., agitation, apathy, aggression, psychosis, hallucinations and delusions, and under-recognized symptomologies, e.g., wandering, hoarding, inappropriate behaviors, e.g., sexual disinhibition, eating inappropriate objects, repetitive behavior, and restlessness, require uniquely prescribed interventions. Assessment scales that have been developed for dementia in the domains of cognition, function, behavior, quality of life, depression, caregiver burden, and severity of illness but lack a cultural component. A link between perceived stressors, as specified to caregivers and persons diagnosed with a form of dementia, influences the use of varying ecologies to create interventions in public health is necessary.

**Scope of the Study**

The purpose of the study was a quantitative analysis exploring the statistical influences between cognitive dysfunctions, and coronary heart diseases, and the cognitive dysfunction and myocardial infarctions, while controlling covariate variables and monitoring for the classification of sexual orientation. Health disparity and cultural

competency are interrelated by their inexplicable influence on the quality of life; the level

of social distortion, the economic and/or environmental parameters that foster health. The

Alzheimer's Association released a nationally representative study of (416) Black and

Hispanic participants in 2022, the participants had poorer health prior to becoming a

caregiver for a spouse with dementia than those of similar race/background who did not

become caregivers; such differences were not apparent among White caregivers

(Alzheimer's Association, 2022). Dementia research in minority populations has

significantly declined making a timely diagnosis and strategic treatment plan in these

communities more critical in prevention strategies. Joszt 2018, reports health disparities

in these communities are historically disproportionately served, fiscally underserved, and

underrepresented in public health studies remaining chronically overlooked. In fact,

understanding the gap of racially diversified communities of older adults is a substantial

missed component in developing public disease management strategies. A lapse in

research undermines the improvement of communities as the quality of life of those

currently and potentially living with dementia appends into other vulnerable groups.

The prevalence of cognitive impairment is significantly higher among sexual

minority older adults than among heterosexual older adults when sociodemographic

factors are adjusted for (Hsieh, et.al., 2021). Several health and social factors more

prevalent among older SGM populations should be considered in future research, such as

social isolation, depression, functional limitations, the role of aging with HIV/AIDS,

reluctance to access health care and social services due to fear of discrimination, and the

lack of access to informal caregiving and aging-related supports for SGM people living

with cognitive impairment (Flatt, et.al., 2021). Studies on sexual identity have received similar appreciation in the public health sector when addressing cognitive diseases. Living alone with dementia may be a particular challenge for certain subgroups, such as lesbian, gay, bisexual, and transgender (LGBT) individuals, who may experience greater isolation for reasons ranging from social stigma to a diminished social network of available family or friend caregivers (Alzheimer's Association, 2022). Dementia related diseases among vulnerable segments of the population face a greater lapse in support care initiatives. Formal training, and caregivers are growing at a unprecedent rate as the number of caregivers understanding supportive care transitions into their advanced age stage.

Both groups, the aging, and the caregivers, will see an incline of dementia related occurrences and cardiovascular diseases as vulnerability is increasing in each. The lack of knowledge on the diseases separately and uniquely in concert of health disparities will undoubtedly delay care. Stopgaps and shortfalls found in previous research corroborate the importance of understanding health populations to postulate health risks as influencing change in these areas but has lacked formative research to support. In general, population groups that suffer the worst health status are also those that have the highest poverty rate and least education (Lee, et.al., 2003). Health gaps can also be influenced by how the content assessing the policy is distributed, prioritizing an issue, marketing the political relevance, dictating a prescribed outcome that consist with the cost of generating a resolution requires validating claims.

Systematic reviews require judgments as do all scientific activities; they are not

themselves perfect; and they cannot compensate for all the weaknesses or gaps in primary

literature (Sweet & Moynihan, 2007). All available information must be weighed:

assessment data on the magnitude of the problem, epidemiologic data on determinants,

stakeholder opinion on the nature of the problem and acceptable solutions, existing

practices and traditions, less robust yet promising intervention evaluations, program

options within budgetary constraints, legal considerations such as privacy laws and the

political will to address the issues (Anderson, et.al., 2021). By exposing propagandized

research and reviews from biased surveys; creating media that uses language and graphic

descriptions that incite behavioral changes in health seeking practices.

## Delimitations

The study incorporated secondary data for analysis from a survey that employs a

suite of complex health and nutritional exams of segmented US populations. I am not the

original creator nor owner of the survey or datafiles and must accept certain delimitations

of the survey's scope in scale and quality. For small population groups and less prevalent

conditions and diseases, data must be accumulated over several years to provide adequate

estimates (NCHS, 2022). NHANES intermittently changed over the period of surveying

cycles. Both in the scope of their examines and the altered measures used in the analysis,

were impacted by some data weighting, shifts in demography of respondents, and the

changes to examines, techniques, and instruments from one period to the next. Between

NHANES 2007-2010 and NHANES 2011-2014 was that Asians were also oversampled

in addition to the ongoing oversample of Hispanics, non-Hispanic blacks, older adults,

and low income white and other persons. (NCHS, 2013). In black, Hispanic, Asian, or

low-income white and other persons probabilities proportionate to subgroup's measure of

size (MOS) were calculated to give a relatively higher proportions to subgroupings.

## Limitations

A few important limitations were acknowledged when developing this analysis

and are addressed to minimize the effects of unintelligible or missing information**.**

### Data Collection 2013 – 2014

Secondly, while access has been made public there are several files that are

redacted and limit additional inquiry on topics of interest to the scientific community.

Data collected from 2013 to 2014 recorded 14,332 applications were completed, 10,175

underwent interviews, 9,813 performed medical examinations, 5,003 participants were

female, and 5,175 participants were male. According to data from the CDC the response

rates from this time would have been 71% interviewed and 68.5% examined (CDC,

2021). Reporting during the time of the selected datasets, 2013 – 2014, was challenged

by many issues but the survey content remained reflective of the populational concerns

established in 1999. Since the United States has experienced dramatic growth in the

number of older people during this century, the aging population has major implications

for health care needs, public policy, and research priorities.

Health measurements were specifically designed around those sensitive

partnerships between community needs and national demands. Breaks in data collection

created limitation in continuity, the survey's changed forms of terminologies around

sexual orientation in 2008, lacked reporting on cognition just prior to 2012 survey, and

changed measurement tools between 2014 - 2019. The norovirus pandemic of 2020 is a

disruption that impeded the feedback of responders and collectors alike as targeted health measures changed around the arrival of greater concerns.

**Self-Reporting Errors**

The survey relied on self-reporting schema for some health and identity attributes not diagnosed or interpreted by the collecting team. Self-reporting of diagnosed or the perceived health outcome was not confirmable using the secondary data as a prime source and open to biasing. The lack of precision in the complex survey of this type has been considered post fact. Bias management of self-reporting can be better addressed in a secondary analysis of the questionnaire/interviewee validity but in this case the study is reliant on the training and credibility of the interviewers.

<div align="center">

**Significance**

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The study's potential contribution is useful in the creation of public policies, developing approaches that envelope sexual orientation, and align specificity to patient-centered care strategies for cognitive health. Health factors including informal-care, out-of-pocket expenses, and medical services are unsubstantially increasing. Modernizing methodologies that use assessment strategies to incorporate policy creation is essential. Understanding the goals, outcomes, impacts, process objectives, steps, responsibilities, through a timeline holds a key to meeting community health and means substantial changes to gerontologic care through governance. Logic models guide inputs to outputs, making approaches to the use of risks by designing visibly guided inquires around the ecology supporting, planning, and highlighting the health of relationships.

Advancing the needs of minority health and protecting vulnerable populations remain largely under addressed in national dementia planning. A 2020 study from Akyol, et.al., insisted that perceived susceptibility and severity of a developing health problem is preeminent of a likely occurrence in people living with dementia. The following is correct when addressing their caregivers and family's needs. A demand for a comprehensively progressive policy creation is needed. Society is keen to marginalize relationships and the significance they play in our health and emotional continuity.

One's sexual orientation has a plethora of characteristics that are only now being addressed as healthcare providers are more recently beginning to acknowledge groups such as the LGBT culture seriously. Additional recent studies using data from the Health and Retirement Study and the National Social Life, Health, and Aging Project have found higher rates of objective cognitive impairment among same-sex couples and sexual minorities compared to opposite-sex and heterosexual adults, respectively (Flatt, et.al., 2021).  Data from the National Alzheimer's Coordinating Center has been used to examine the risk of objective cognitive impairment (MCI and dementia) for same-sex couples compared to opposite-sex couples. My research has noted several studies preview limitations in terms of recruitment bias, non-probability sampling, and potential biases in reporting and ascertainment.

The adaptation of practices that are tailored to individual beliefs consider behaviors as recruitment of socio familiar meta structures or normative elemental identity. Increasing a person's socio normative structure through familiar structures forms culturally sensitized healthcare attributes. Groups like the LBGTQ community are met at

their level of consideration respective and with the intention of health as a priority. A recommendation for further study is community's health interest serviced through para psychosocial vehicles when confronting diversity in medicine. It was an immensely controversial area of interest, listing research in the area as not uniform with current health interest and has a means of quality improvement.

## Social Impact

The study's potential for positive social change is in the core tenets of informing on narrow health pathways, my hope is the research aids in bridging clinical approaches to cognitive diseases by acknowledging the need of health readiness for all. Social change means to embrace disease prevention, and intervention, through the means of improving health, be it through comforting a love one or fighting off disease. The early detection of dementia is a preventative practice used to fortify the health of the newly aging communities and the development of critical health concepts used in the care of disparaged community members. For persons with dementia related diseases, the study accounts for the ever-changing spectrum of cognitive decline and public health. The increasing number of dementia related cases threatens social adhesion designed to incorporate communal health outcomes aimed at the preservation of health services supporting aging. The study was aimed to positively inform US communities on the stressors and complications that are dramatically reshaping cognitive dysfunctions and dementia related diseases.

Rates on serious psychological stressors are much higher among low-income people with chronic and behavioral health problems (29%) compared to higher-income

people with similar health conditions (7%) (Cunningham, 2018). By pinpointing the areas

with the greatest sensitivity, I called concern to populations with the greatest predilection

of health care. Underserved populations are assessed through the weight of health risks

and the number of health services needed to stimulate public involvement. While disease

research has continued to make progress in linking the changes in brain chemistry as we

age, it insufficiently accounts for the number of health gaps in US communities.

Stimulating public awareness on the presence of dementia cases in disenfranchised

communities demand education of minority and LGBTQ communities. Black/African

Americans, Hispanics/ Latinos, Asian Americans/Pacific Islanders and Native Americans

are groups gravely lack in community health developed with cultural attunement.

By shifting  social elements that foster transparency in-between cultural

indifferences and relational ideals, thoughtful disease practices are applied to a

community's health. Cultural enhancement at community-based engagements increases

positive social change significantly when the sensitivity of disease occurrences in the

population is attuned to the health. Monitoring casual indicators and stakeholders is a

formatively designed strategy that combines statistical assessments with individual health

beliefs and community attributes. Institutional support, to alleviate long-term health

deterioration, is further cultivated by assuming the disease rate of exposure rate under

self-reported environmental influences. Providers can consider the rate of exposures in a

formative assessment that compliments current assessment tools. Population growth and

life expectancy can be comparatively assessed by providers and community members, as

the number of caregivers available and the number of dementia related diseases cases change in the region.

## Summary and Conclusion

In section one I outlined the study's framework and corresponding approaches, addressing the health outcomes of minority community members and their affiliated caregivers. According to the CDC, among people ages 65 and older, African Americans have the highest prevalence of Alzheimer's disease and related dementias (13.8 percent), followed by Hispanics (12.2 percent), and non-Hispanic whites (10.3 percent), American Indian and Alaska Natives (9.1 percent), and Asian and Pacific Islanders (8.4 percent), (CDC, 2018). In a 2021 report, Amidei, et.al., links the association of a diabetic onset and cognitive decline as a diagnostic management tool. Neurodegenerative disease outcomes are found in a higher associated risk of subsequent dementias related to participants at younger ages. Alzheimer's disease and CHD share many risk factors and etiological similarities. In a 2017 British Journal of General Practice, Bleckween, et.al., proposed in cases where an impact of CHD on cognitive decline has been detected, cardiovascular prevention is an opportunity to reduce the progression of dementia, thereby signifying a relational exchange yet not fully explored.

A knowledge gap in the lack of research directed to understanding sexual orientation as a disease factor in cognitive health. LGBT older adults face risk factors (many modifiable) that are known to increase cognitive impairment and dementias, such as limited social and caregiver support, social isolation, discrimination, and chronic medical conditions including higher rates of cardiovascular disease, hypertension,

diabetes, heavy smoking and alcohol use, and depression. A 2021 report on Healthy People.gov website identified the growing number of aging LGBTQ community members lacking documented research addressing factors from health-related surveys including sexual orientation and gender information (SOGI). The report cites social disparities rooted from stigmas such as discriminations and socio-economic barriers, are presenting in an accumulation of stressors over time, attributing to the physical manifestation of mental health disorders.

Addressing a knowledge gap on the theoretical implications of dementia in a loop cycle, I presented the SEM to measure the impact of various public health elements in a proactive casual loop form. The loop model summarizes leadership gaps that contrast chronic health risks when abated and unabated. I explained the use of data driven approaches to solve health disparities in public health. I clarified the rising frequency of overlapping indicators that cross pollenate dementia cases and cardiovascular diseases as a disease management approach. The Dementia and Public Health Casual Loop (DPHCL) figure 2 on page 153, accounts for changes in the sensitivity of intentional health care and disease prevention. The research has a practical application as an asset-based management approach where the health indicators and casual outcomes are fed into health services. The loop identifies the multi-sectoral services and relationships that are called on for a collaborative health impact. Wallerstien, et.al., 2018, supported the application of loop theory by ascertaining public relief thorough community partnerships to facilitate the participatory process. It is an expansion of community priorities and issues engaging health indicators as self-subscribing outcome managers.

Through the acumination of co-curing causal indicators, the presiding health risk will inexplicably overlap substructures that impact the overall health. Given the projected worldwide increase in the number of people affected by coronary heart diseases and dementia, insight into causal mechanisms or common pathways underlying the heart-brain connection is needed (Decker, et.al, 2017). This analysis of the prominent risk indicators cross tabulates cognitive dysfunctions and cardiovascular diseases by measuring the common characteristics of their pathologies. In this study a potential opportunity to preserve cognitive health by treating risk factors with lifestyle modifications aimed at improving cardiovascular health (Tini, et.al., 2020). By studying the underlying mechanisms of the associated risk health scientists can accurately narrow health pathways by designing preventions that are affixed to clinical metrics. An examination of the physiological markers of mental health are therefore directly aligned to the physical health of the vascular system.

**Section 2: Research Design and Data Collection**

**Introduction**

This study was a quantitative analysis exploring the statistical influences between cognitive dysfunctions, coronary heart diseases, and the cognitive dysfunction and myocardial infarctions, while controlling covariate variables and monitoring for the classification of sexual orientation. I took a quantitative analysis to systematically comparing the health risk shared by the family of neurodegenerative diseases and cardiovascular diseases. The National Health and Nutrition Examination Survey, from 2013 to 2014 provides a distinct geographical observation of cognitive health, and cardiovascular disease in the United States. NHANES is a survey of health generalizations that features risks that relate to neurological impairments, health status, behaviors, and nutritional factors. The survey samples the national health standards in the United States by a continuous concession of yearly data collections. The survey features one-on-one interviews and physical examinations conducted by physicians, trained technicians, and medical personnel both remotely and face-to-face. A formative survey of the civilian health of the non-institutionalized U.S. population, the survey is an elaborate yet statistically stable framework.

**Research Design and Rationale**

In this quantitative analysis, I studied the regression of the significance between the (independent variable) cognitive dysfunction and (dependent variable) coronary heart disease, while controlling for (covariate variables), to measure the influence of co-curing health risks associated with the disease presentation. Significance between (independent

variable) cognitive dysfunction and (dependent variable) myocardial infarction status was established while controlling for (covariate variables) to measure the quantities of incidents and if a significance relationship between the (monitoring variable) sexual orientation, is modified by the relationship between (independent variable) cognitive dysfunction and (dependent variable) myocardial infarction.

The quantitative view is described as being "realist" or sometimes "positivist," while the world view underlying qualitative research is viewed as being "subjectivist" (Balnaves et al., 2014). It is a logically pragmatic approach when addressing findings that will be practically applied to support social structures. The descriptive design was used to attain a greater objectivity of the inferences and ecology of the diseases affecting people under observable circumstances. Experiential realism claims, as do anti-positivist positions, that we cannot observe the world in a purely objective way, as our perception itself influences what we see and measure (Balnaves et al., 2014). Simply put, even the best scientific research must be formed around assumptions that frame the subjectivity in order for the data to have meaning and give birth to change.

The logistical regression was selected based on the type of variables made available, categorical inputs are used in the analysis to assess the targeted population's circumstance on a whole. The approach is by modifying inputs we can change the outputs and thus design outcomes in a formatively tunable intervention. The statistical significance between the type of assessment variables (health risk/indicators), the disease presence (diseases co-curing), and the severity of the conditions impacted by the cognitive impairment operates, has an impactful pattern to process disease management

policies. In the study, cardiovascular disease is assessed as a presence of coronary heart disease when examining cognitive status. It instructs the level of cognitive illnesses, an approximate measure for ADRD impairment filtered under socio-ecological factors in the existing environment. The significance between the (independent variable) dementia type, and (dependent variable) coronary heart disease, while controlling for (covariate variables), to measure the influence of co-curing health risks associated with the disease presentation.

In RQ1, the independent variable, cognitive dysfunction, and the dependent variable, coronary heart disease, were explored, observing the ecological dynamics while controlling for; marital status, age, gender, educational level, sexual orientation, and racial/ethnicity. In Table 1 page 17, the MCQ380 - Past 7 days, had trouble remembering, MCQ084 - Difficulties in thinking or remembering?, MCQ160c - Ever told you had coronary heart disease, MCQ180c - Age when told had coronary heart disease.

RQ2 observed the relationship between cognitive dysfunction and myocardial infarction status after controlling for age, gender, educational level, sexual orientation, and racial/ethnicity in those individuals who have not experienced a stroke. The significance between (independent variable) cognitive dysfunction and (dependent variable) myocardial infarction status is established while controlling for (covariate variables) to measure the quantities of disease incidents that overlap the participants' self-identifying factors. In Table 2, the MCQ160f/MCQ180f. MCQ160e - Ever told you had heart attack, MCQ180e - Age when told you had heart attack.

RQ3, to what extent does sexual orientation significantly modify influence a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, educational level, sexual orientation, and racial/ethnicity in those individuals who have not experienced a stroke plays a role in positive health attainment. In Table 3, the SXQ294 – sexual orientation (female) and SXQ292 – sexual orientation (male) was added and used to assess the participants response.

The targeted population consisted of the noninstitutionalized U.S. civilian population residing in fifty states and the District of Columbia, ages 60 years or greater, who have completed the NHANES survey from 2013 – 2014, an estimated 53 million respondents. NAHNES samples are selected from participants at different rates of characteristic identifiers (age, sex, race and Hispanic origin, and income) to ensure a representative sample and to provide sufficient sample sizes for smaller groups to obtain reliable survey estimates. The weighting of data sets is an offset of underrepresented populations during the data collection process. A complex sample strategy, the collection of health risk throughout the survey is implemented by use of a variety of techniques. Randomly selected, the geographic sections were purposefully staggered in areas representative of the U.S. civilian population. Clustering is performed to address heavily populated areas with varying characteristics from subgroups presenting unusually difficult data collection areas at a more representative pace.

A cluster analysis is a statistical technique to find similar groups of cases in a data set and is particularly useful in the development of a classification or conceptual scheme (Hargett, et.al., 2017). The NHANES survey follows the NCHS normal protocols for

producing analytical products that are design-based with statistical quantitative methodology incorporated. Weighting considerations included the differential probabilities of selection for the individual domains described above, non-response to survey instruments, and differences between the final sample and the U.S. civilian non-institutionalized population (NHANES, 2021). Weighting systematically uses steps to compensate unequal probabilities of selection criteria and are post-stratified to the match the non-institutionalized population from the U.S. Census Bureau. Adjustments to the data collection process occurred pre-study and are inherited by design of the data collectors.

Missing data resulting from non-participatory or non-acknowledgment were either coded ignorable or with in a similar characteristic of corresponding respondents. Adjustments made to the sample weights for survey non-response account only for interview or MEC exam non-response, but not for component/item non-response which can occur at the household interview or the exam (e.g., a participant declined to have their blood pressure measured in the examination component but completed all other examination components (CDC, 2018). Coding missing data consisted as follows; "refusal" (7), (77), or (777), and "don't know" (9), (99), (999). Failing to identify these other types of missing data and treating the assigned values for "refused" or "don't know" as numerical values, may distort analysis results; for categorical results, tabulating the number or percentage missing may be part of the analysis (CDC, 2018). Weighting was designed to address geographic imbalances, inclusions/exclusions, and combining missing criteria.

Sampling procedures for the survey consisted in soliciting the resulting 14,332

participants from 30 primary sampling units geographically around the United States. The

selected domains resulted in 10,175 interviews and 9,813 examinations. Data collected by

the NCHS Vital Statistics team from 2013 to 2014 recorded respondents 10,175

underwent interviews, 9,813 performed medical examinations, 5,003 participants were

female, and 5,175 participants were male. According to data from the CDC, the response

rates from this time would have been 71% interviewed and 68.5% examined (CDC,

2021). The rates are adjusted to account for sample losses at the screener level, an

adjusted response rate less than 98% of the sample screener size was incorporated.

Unweighted response rate = [(Unweighted sample size) / (Screener sample size)] × (The

screener response rate: 90.9%). Oversampling in some areas increased the workability of

the sample sizes. In the six geographical areas weighting added reliability and precision

of health indicators. The preferred method was to limit the correlation in participating

sample size to produce a complex sample that adequately represents the four stages of

communities.

Stage 1 occurs in the counties, Stage 2 are the neighborhoods, Stage 3, the

households, and Stage 4, the persons selected. Counties separated into 15 groups shared

similar selection criteria from previous survey years. Within the counties, between 20 and

24 neighborhoods participated by segmented geographic groups. In Stage 3, households

within the neighborhoods result in approximately 30 households per grouping. Personal

interviews, physical examinations, laboratory tests, nutritional assessment, DNA

repository along with the lifestyle practices, e.g., physical fitness, sexuality, alcohol

consumption, and others collected through health evaluations and interviews detailing

prevailing health conditions. Household screeners performed personal interviews and

medical evaluations and received cultural competency training in conjunction of their

training as survey technicians and medical personnel.

Conventional theory suggests an increase in the number of occurrences in

coronary heart disease or myocardial infarctions could predicate or increase in the

number of events involving cognitive dysfunction. Data provided from the NHANES

surveys collect, code, and collate indicators into categories and rates of sensitivity.

Nominal extractions observations occur as elements undergoing dynamic changes

respond to a rate change. The growth of any one variable specifically sees a

corresponding growth from the pre-existing sampling criteria and categorical settings of

the NCHS RDC team.

As a nationally representative survey of the civilian noninstitutionalized U.S.

population, the NHAHES is designed as an elaboration to inform statistical studies in

several parts of the country to grade the prevalence of health change. The NHANES

survey developed a probable portion of size when selecting persons at randoms,

comparing primary sampling units the sample design had fourteen major strata, each with

four minor strata. Census blocks and dwelling units outlining the geographic barriers

establish each  of the primary sampling units to maintain a consistency to the

stratification scheme. The selection of persons for interview and examination were from

the DUs or smaller groupings when developing household interview schedules.

By design oversampling was completed to in the following subgroups: Hispanic persons, non-Hispanic Black persons, non-Hispanic Asian persons, non-Hispanic White and other persons at or below 185% of the Department of Health and Human Services poverty guidelines; and non-Hispanic White and other persons aged 80 years and older. A low-income oversampling was changed from ≤ 130% to ≤ 185% of the HHS poverty guidelines starting in a 2015 adjustment. The poverty guidelines are updated each year by the U.S. Census Bureau as measures statistically determining financial eligibility in federally funded programs. For instance, the populations in 2013 – 2014 used 185% determinability in establishing eligibility for programs such as Head Start, the Supplemental Nutrition Assistance Program (SNAP), the National School Lunch Program, the Low-Income Home Energy Assistance Program, and the Children's Health Insurance Program. These are meaningful to the nutritional content collected on the household overall health in the beginning of the analysis.

The use of secondary data in this analysis is publicly available online at NHANES 2013-2014 Overview (cdc.gov). It is free of personal identifiers, ethically produced through a standard collection policy, and I anticipated little difficulty in achieving the Institutional Review Board (IRB) approval. All participants or proxies provided informed consent in writing. Protocols adhering to Public Health Service Act (42 USC 242k) authorizes data collection and Section 308(d) of that law (42 USC 242m), the Privacy Act of 1974 (5 USC 552A), and the Confidential Information Protection and Statistical Efficiency Act (PL 107-347) prohibit NCHS from releasing information that may identify any respondent or group of respondents (CDC, 2018). The NHANES is designed to be a

complex, multistage, probability cluster of behavioral risk factors, socioeconomic status, which include preexisting diseases. The complexity of several of the variables is incorporated in the sampling features. Multistage collection, stratification, clustering, or phasing identification selection were all used to limit the possibility of biasing.

A two-year data cycle has statistically greater reliability of estimates and the lowered sampling errors found in responses. The interviews consist of habits, health problems and recent hospital visits. A home examination consisted of weigh and waist measurements, blood pressure recording, feeling and tenure in the extremities, a urine sample, and a blood panel sample. Additional follow-up questions were collected using handcards and integrated interviews. The mobile examination center dietary tools assisted the respondents in volume and dimension for consumption descriptors and the dietary constrictions are available in examine rooms. The assessment of diseases and undiagnosed conditions in concert are valuable to the perceived health outcome.

The statistical analysis of quantitative data involves arranging raw risk values in a structure observant of the meaningful associations. Data preparation will involve adding transparency to missing data parameters and isolating the independent variable from random data loss, to reduce statistical power loss. The creation of an observable topology at a univariate stage will involve manual data imputation to account for missing variables, unusable criteria, or corrupted values. A commonly used methodology is the use of multiple imputation, this takes a set of randomly selected plausible values from the modeled construct and pooled creating multiple datasets with identical parameters and weights. The benefit of the multiple imputation is that in addition to restoring the natural

variability of the missing values, it incorporates the uncertainty due to the missing data, which results in a valid statistical inference (Roy, 2019). I selected this plan to take advantage of the dexterity in SPSS software in  developing tonal consistency when addressing a specific topic, an apple to apples not apple to cars approach.

In a mean substitution, the mean value of a variable is used in place of the missing data value for that same variable (Roy, 2019). Observing the remaining data has value in the characteristics that are germane to the study's topic and frames the steps taken in replacing averages of previous variables from other datasets recorded from other participant averages. Outliers beyond manual observation will be identified through a scatter plot designed in Microsoft Excel to sort and filter out statistically improbable cases as identified. The removal of errors and inconsistencies from the raw data sample to prevent distortion of my findings were acknowledged in my delimitations assessment strategy and data plan.

Considering the relationships of multiple parameters, the priori power is the statistical power selected to detect a meaningful effect on human participants at a desirable outcome from the sample size. For the architecture of the minimum effective sample size, I used an online G Power calculator version 3.1.9.7, Universität Düsseldorf: G*Power (hhu.de), to determine the sample effect size and fit. The parameter for my analysis requires I assume an acceptable significance level, and a type of statistical analysis for study, and the amount of resulting data migrating into the analysis. Discrepancies, missing, duplicated, or incomplete datasets will be removed from the analysis during the data cleaning stage for consistency in the targeted sample. Reduction

in a data set in a consistent manner develops a complete analysis' power, resulting in the accumulation of the finding's viability, predictive credibility, and feasible portability.

## Cognitive Measurement Instrument

The NHANES captured impairments in areas of language, visuospatial abilities, memory and recall, and abstract thinking, by use of the digit symbol substitution test (DSST). The performance measures the global cognitive functionality of participants is completed by the Cognitive Functioning (CFQ) questionnaire. The NHANES MCQ questionnaire section is generally modeled on the "Medical Conditions" questionnaire section of the U.S. National Health Interview Survey (CDC, 2021). Administered during the household interview, the test consists of 133 boxes corresponding to nine unique numbers paired to symbols. The exercise is offered to participants' 60 years of age. Participants have 2 minutes to match the symbols to the corresponding numerical sequence and is a performance module from the Wechsler Adult Intelligence Scale (WAIS III). The score is generated from the total number of correct matches. The complexity of short-term memory, visuospatial skills, executive function, attention and concentration, language, and orientation, had additional physical evaluations along with the exam.

## Methodology

The National Center for Health Statistics (NCHS) reported responses rates as a by-product of the previous year's respondent participation by using a linear regression model. The NCHS applied targeted weights to align the predicted number of samples in each location with an estimation of the demographic reported from the US Census

Bureau. For small population groups and less prevalent conditions and diseases, data must be accumulated over several years to provide adequate estimates (NCHS, 2022). NHANES intermittently changed the scope of their examines and alternated the measures by weighting data to accommodate shifts in interest of the demography on hand. Randomly selected, the 30 geographic sections were purposefully staggered in areas representative of the US civilian population.

**Population**

The targeted population consisted of the noninstitutionalized U.S. civilian population residing in the fifty states and the District of Columbia, ages 60 years or greater, who have completed the NHANES survey from 2013 – 2014, an estimated 53 million respondents. NAHNES samples are selected from participants at different rates of characteristic identifiers (age, sex, race and Hispanic origin, and income) to ensure a representative sample and to provide sufficient sample sizes for smaller groups to obtain reliable survey estimates. The Research Data Center (RDC) is a component of the NCHS's efforts to protect confidential information while preserving the integrity of the study, subjects and institutions involved age at screening was conducted for all participants and was classified as "age in years" or "age in months". Place of birth contained three categories: "Born in 50 U.S. States or Washington, DC," "Born in Mexico," and "Others", with 2011 addition of "Born in 50 U.S. States or Washington, DC". A two-year data cycle adoption produced statistically greater reliable estimates and smaller sampling errors.

The NHANES is designed to be a complex, multistage, probability cluster of behavioral risk factors, socioeconomic status, which include preexisting diseases. The complexity of several variables is incorporated in the sampling features. Multistage collection, stratification, clustering, or phasing identification selection were all used to limit the possibility of biasing. Weighting was designed to address changes, inclusions/exclusions, and combined criteria. Missing data resulting from non-participatory or non-acknowledgment were either coded ignorable or with in a similar characteristic of corresponding respondents. Weighting was designed to address geographic imbalances, inclusions/exclusions, and combining missing criteria. Missing data resulting from non-participatory or non-acknowledgment were either coded ignorable or with in a similar characteristic of corresponding respondents. Adjustments made to the sample weights for survey non-response account only for interview or MEC exam non-response, but not for component/item non-response which can occur at the household interview or the exam (e.g., a participant declined to have their blood pressure measured in the examination component but completed all other examination components) (CDC, 2018). Coding missing data consisted as follows; "refusal" (7), (77), or (777), and "don't know" (9), (99), (999). Failing to identify these other types of missing data and treating the assigned values for "refused" or "don't know" as numerical values, may distort analysis results; for categorical results, tabulating the number or percentage missing may be part of the analysis (CDC, 2018).

**Sampling and Sampling Procedures**

Sampling procedures for the survey consisted in soliciting 14,332 participants from thirty primary sampling units geographically around the United States. The selected domains resulted in 10,175 interviews and 9,813 examinations. Data collected by the NCHS Vital Statistics team, from 2013 to 2014 recorded respondents 10,175 underwent interviews, 9,813 performed medical examinations, 5,003 participants were female, and 5,175 participants were male. According to data from the CDC the response rates from this time would have been 71% interviewed and 68.5% examined (CDC, 2021). The rates are adjusted to account for sample losses at the screener level, an adjusted response rate less than 98% of the sample screener size was incorporated. Unweighted response rate = [(Unweighted sample size) / (Screener sample size)] × (The screener response rate: 90.9%). Oversampling in some areas increased the workability of the sample sizes. In the six geographical areas weighting added reliability and precision of health indicators. The preferred method was to limit the correlation in participating sample size to produce a complex sample that adequately represents the four stages of communities.

Stage one occurred in the counties, stage two was in the neighborhoods, stage three the households, and stage four the persons was selected. Counties separated into fifteen groups shared similar selection criteria from previous survey years. Within the counties between 20 and 24 neighborhoods participated by segmented geographic groups. In stage three households within the neighborhoods result in approximately thirty households per grouping. Personal interviews, physical examinations, laboratory tests, nutritional assessment, DNA repository along with the lifestyle practices, e.g., physical

fitness, sexuality, alcohol consumption, and others collected through health evaluations and interviews detailing prevailing health conditions. Household screeners performed personal interviews and medical evaluations and received cultural competency training in conjunction of their training as survey technicians and medical personnel.

An increase in the number of occurrences in both coronary heart disease and myocardial infarctions was expected to follow the increasing number of cognitive dysfunction cases. Data provided from the NHANES surveys collect, code, and collate indicators into categories and rates of sensitivity. Health elements undergo dynamic changes at a compensatory rate in response to the continuously changing environment. The growth of any one variable can specifically see a corresponding change in growth of a pre-existing sampling criteria or categorical setting, as described by the NCHS RDC team.

A nationally representative survey of the civilian noninstitutionalized U.S. population, the NHAHES is designed as an elaboration to inform statistical studies in several parts of the country to grade the prevalence of health change. The NHANES survey developed a probable portion of size when selecting persons at randoms, comparing primary sampling units (PSU), the sample design had fourteen major strata, each with four minor strata. Census blocks and then dwelling units (DU) outlining the geographic barriers establish each PSU to maintain a consistency to the stratification scheme. The selection of persons for interview and examination were from the DUs or smaller groupings when developing household interview schedules.

By design oversampling was completed to in the following subgroups: Hispanic persons, non-Hispanic black persons, non-Hispanic Asian persons, non-Hispanic white and other persons at or below 185 percent of the Department of Health and Human Services (HHS) poverty guidelines; and non-Hispanic white and other persons aged 80 years and older. A low-income oversampling was changed from ≤ 130% to ≤ 185% of the HHS poverty guidelines starting in a 2015 adjustment. The poverty guidelines are updated each year by the U.S. Census Bureau as measures statistically determining financial eligibility in federally funded programs. For instance, the populations in 2013 – 2014 used 185 percent determinability in establishing eligibility for programs such as Head Start, the Supplemental Nutrition Assistance Program (SNAP), the National School Lunch Program, the Low-Income Home Energy Assistance Program, and the Children's Health Insurance Program. These are meaningful to the nutritional content collected on the household overall health in the beginning of the analysis.

## Data Collection

Gaining access, the use of secondary data in this analysis was made publicly available online at NHANES 2013-2014 Overview (cdc.gov). It was free of personal identifiers, ethically produced through a standard collection policy, once approval from the Institutional Review Board (IRB) is met sufficient access is gained. All participants or proxies provided informed consent in writing. Protocols adhering to Public Health Service Act (42 USC 242k) authorizes data collection and Section 308(d) of that law (42 USC 242m), the Privacy Act of 1974 (5 USC 552A), and the Confidential Information Protection and Statistical Efficiency Act (PL 107-347) prohibit NCHS from releasing

information that may identify any respondent or group of respondents (CDC, 2018). The

NHANES is designed to be a complex, multistage, probability cluster of behavioral risk

factors, socioeconomic status, which include preexisting diseases. The complexity of

several variables is incorporated in the sampling features. Multistage, stratification,

clustering, phasing identification selection are all collection techniques used to limit the

possibility of biasing.

The use of an online G Power calculator version 3.1.9.7 was used to determine

the sample effect size, data fit for study, and the amount of resulting data migrating into

the analysis. Missing data reduces the power of a model (Roy, 2019). Discrepancies,

missing, duplicated, or incomplete datasets were removed from the analysis during the

data cleaning stage for consistency in the targeted sample. Reduction in a data set in a

consistent manner develops a complete analysis' power, resulting in the accumulation of

the finding's viability, predictive credibility, and feasible portability. High variability will

be represented by high correlation influences and a predictable expression. The statical

software allows for merging variables, transforming them, coding, and locating missing

values not previously discovered. Statistical calculations require a predication of the,

"…(1) formulation of the null and one- or two-tailed research hypothesis, (2) the search

for the appropriate statistical test, (3) effect size (and in some cases, variability), (4) the

desired level of statistical significance for a one- or two-tailed test and the desired

probability of failing to reject the null hypothesis when it is actually false, and (5) use of

the appropriate table or formula for estimating the sample size" (Merrill, 2019), exist and

are fully exercised. Observing outcomes further, the association between predictor

variables and disease outcome, a logistic regression to determine a ratio of two probabilities of dementia disease and heart disease occurring simultaneously with similar relative health risk.

As a two-year data cycle, a statistically greater reliability of the estimates suggests smaller sampling errors. The interviews consisted of habits, health problems and recent hospital visits. A home examination consisted of weigh and waist measurements, blood pressure recording, feeling and tenure in the extremities, a urine sample, and a blood panel sample. Follow-up questions were collected using handcards and a selection of integrated interviews. MEC dietary tools to assess the respondent in volume and dimension of consumption used descriptors and dietary constrictions available in examine rooms. The assessment of diseases and undiagnosed conditions in concert of overall health were captured via examines and questionnaires assessing the perceived health outcome.

The Research Data Center (RDC) was the main component of the NCHS's efforts to protect confidential information while preserving the integrity of the study, subjects and institutions are continuously tasked with preventing deception, exaggeration, or misleading participants on the possible use of the information being gathered. It is the duty of an ethical analyst to also take protective actions to inhibit the misuse of their data development outside of the survey's mission. The study assumed a statically significant association between heart diseases and dementia related diseases exist and was demographically insolate. Reliability speaks to the quality of performing well and consistent over time. Per Merrill, 2019, health indicators rely on the data sample size,

representativeness of the sample, response rate, and differentiating changes reported over time. The NAHNES survey samples selected participants at different rates of characteristic identifiers (age, sex, race and Hispanic origin, and income) to ensure a representative sample and to provide sufficient sample sizes for smaller groups to obtain reliable survey estimates.

**Reliability**

The design was created to identify a reliable association of health risk by framing the data in a regressive model. I aimed to measure the relational value of valid statistical associations to provide an informed reliable judgement on the causal health effects commonly found in heart diseases and dementias.

Assumption (1) – Cognitive impairments will have a demographic type like CVD's when accessing health services and preventing early detection.

Assumption (2)– An assessment strategy can produce a higher positive health outcome when comparing ADRD's and CVD's health risk earlier on.

Assumption (3) – Minority and LGBTQ members require a formative health assessment process designed to incorporate their cultural identities, practices, and beliefs.

**Validity**

The validity spoke to the accuracy or truth of the studies measured assessment value, asking if the study was accurately representative of the measures and the operational variable. Proper selection of the measures mitigated the loss of value in the study, the amount of the variability a particular measure had above other predictors can skew the value of the measure as it related to the study. Internal validity was defined as

the extent to which the observed results represent the truth in the population we are studying and, thus, are not due to methodological errors (Patino, et.al., 2018). Studies designed with defined specifications which remain applicable to the trials, maintain a high degree of sample selection integrity, and seek to continuously eliminate extraneous influences diminish the effects of external and internal validity defining its worth. External validity refers to the extent to which the results of a study are generalizable to patients in our daily practice, especially for the population that the sample is thought to represent (Patino, et.al., 2018). Modeling the type of research that is time intensive and desirable, a fixed progression from theory to a proper summary of the intervention's rate of adoption was a crucial step. A problematic threat to validity, and worth, research's subjective nature of speculation from the ill-informed demands that scientific strategy refute abuse. Logical fallacies are modern day inconsistencies assuaging the use of sound and clear scientific doctrine to factualize data into belief. Research challenged with a designed hypothesis and assumptive outcome, persist in validating logical interventions.

**Operationalized Variables**

Clinical prediction is a measure of frequency and presence, to describe the appropriate relational value between onset and outcome of a phenomenon. Selection techniques are useful in forecasting the proposed outcome within a modeled fit to address errors. But modeling is the development of statistical settings, operational establishes framing sets parameters for the inputs to frame the outputs. A logical and sequential progression of data cleaning of the NHANES descriptors was narrowed into 11 reflective indicators that theoretically compose a shared relationship between cognitive health and

cardiovascular conditions. In this case, explanatory variables corresponding to responding variables were fitted to account for random errors or known behaviors that statistically arise. There were 11 medically related responses to the medical conditions' questionnaire (MCQ_*), the listed indicators into the major topics of interest from the US National Health Interview Survey.

Table 4

*Operationalized Variables*

| Variable Family | Variable Type | Variable Name | ICD-10 | Range | Value Description |
|---|---|---|---|---|---|
| Cognitive Dysfunction | COG | MCQ084 | I23 -I28 | yes or no | Difficulties in thinking |
| | | MCQ380 | | | Past 7 days, had trouble remembering |
| Myocardial Infarction | MI | MCQ160e | I21-I22 | yes or no | Ever told you had heart attack |
| | | MCQ180e | | | Age when told you had heart attack |
| Cognition Score | CFFDS | MCQ180 | | 0 - 133 | Digit Symbol: Score |
| Coronary Heart Disease | CHD | MCQ160c | I20 - I25 | yes or no | Ever told you had coronary heart disease |
| | | MCQ180c | | | Age when told had coronary heart disease |
| Stroke | STK | MCQ160f | I60 -I69 | yes or no | Ever told you had a stroke |
| | | MCQ180f | | | Age when you had a stroke |

*MCQ084 - Difficulties in thinking*

Difficulties in thinking was an assessment of the participant's cognitive ability whether thinking or creating new memories in everyday activities. Occasional forgetfulness or a lapse in sequential knowledge is not referred here but a progressive onset, confusion or loss of memory is the complication when thinking. An example of the questioning, "During the past 12 months, {have you/has she/has he} experienced confusion or memory loss that is happening more often or is getting worse?", acclimates and considers the participant's personal account.

*MCQ180e - Age when told you had heart attack*

Age when told of the presence of a heart attack, subscribes to the participant's age when told they experienced a heart attack. Conditional statement, "How old {were you/was SP} when {you were/s/he was} first told {you/s/he} . . .had a heart attack (also called myocardial infarction)?".

*MCQ160e - Ever told you had heart attack*

The respondent's inquiry of ever told you had heart attack, follows the participant's acknowledgement of a known cardiac event. Conditional statement, "Has a doctor or other health professional ever told {you/SP} that {you/s/he} . . .had a heart attack (also called myocardial infarction (my-o-car-dee-al in-fark-shun))?", inquires the participant's personal health knowledge of a heart attack.

*MCQ180c - Age when told had coronary heart disease*

How old {were you/was SP} when {you were/s/he was} first told {you/s/he} . . .had coronary heart disease?

*MCQ380 - Past 7 days, had trouble remembering*

Participants are asked of the recent health event. The conditional statement, "During the past 7 days, how often {have you/has SP} had trouble remembering where {you/he/she} put things, like {your/his/her} keys or {your/his/her} wallet? Would you say...".

*MCQ180f - Age when told you had a stroke*

Age when told you had a stroke identifies the participants awareness of a stroke. The conditional statement is, "How old {were you/was SP} when {you were/s/he was} first told {you/s/he} . . .had a stroke?".

*MCQ160f - Ever told you had a stroke*

The conditional statement is, "Has a doctor or other health professional ever told {you/SP} that {you/s/he} . . .had a stroke?".

Table 5

*Operationalized Variables (Modifiers Sexual Orientation)*

| Variable Name | Description | Value Description |
|---|---|---|
| Sexual Orientation | | Heterosexual or straight (that is, sexually attracted only to women) |
| | | Heterosexual or straight (that is, sexually attracted only to men) |
| | SXQ294 (female) | Homosexual or gay (that is, sexually attracted only to men) |
| | SXQ292 (male) | Homosexual or lesbian (that is, sexually attracted only to women) |
| | | Bisexual (that is, sexually attracted to men and women) |
| | | something else |
| | | not sure |

*SXQ292 – Do you think of yourself as…*

Describe sexual orientation renders the participants sexual self-identify as across Heterosexual (1), Homosexual (2), and Bisexual (3). The condition statement is, "Do you think of yourself as…? Note the remaining values 4 – missing do not identify the orientation further than a presence, refusal, don't know, or missing and are not included in this study.

*SXQ294 – Do you think of yourself as…*

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The study's demographic profile e.g., marital status, age, gender, education level, sexual orientation, and race/ethnicity, as an arrangement of the frequency to the medically coded qualifiers self-reported in the NHANES survey.

Table 6

*Covariate Variables (Demography)*

| Variable | Variable Family | Variable Description | Range |
|---|---|---|---|
| RIAGENDR | GND | Assigned gender | male or female |
| RIDAGEYR | AGE | Age at year of occurrence | 18 to 999 |
| RIDRETH3 | R/E | Race/Hispanic origin w/ NH Asian | Non-Hispanic White<br>Non-Hispanic Black<br>Mexican American<br>Non-Hispanic Asian<br>Other Hispanic<br>Other Race - Including Multi-Racial |
| DMDEDUC2 | EDU | Number of years of education recorded education at time of survey | 0 to 99 |
| DMDMARTL | M/S | Marital status at time of survey | Never married, Single, Married, Divorced, Widower |

An article presented by the NIH, Chowdhury, et.al., 2020 assesses the rapid digitalization accession in big data is growing in complexity and exponentially to the merging use in healthcare. Healthcare is a critical source of public health measures that make precise exercises int the collection of data driven approaches necessary. The medical qualifiers are indicators that are unique to the clinical presentation of dementias and accurately related to the socioecology reported. Interweaving the environment with behavior, the SEM is a responsible adaptation to the intrapersonal, communal, organization, and societal domains influencing cognitive health.

## Data Analysis Plan

IBM's Statistical Package for Social Sciences (SPSS) is the modeling software that creates statistical patterns and equates trends to accurately forecast anomalies of

progression. A numerical measure of the presumed gaps of unobserved and observed variations will be gathered through SPSS software package enabling coding and other functionalities. High variability was represented by the presence of high correlation influences and a predictable expression. The statical software allowed for merging variables, transforming them, coding, and locating missing values not previously discovered. Statistical calculations require a predication of the, "…(1) formulation of the null and one- or two-tailed research hypothesis, (2) the search for the appropriate statistical test, (3) effect size (and in some cases, variability), (4) the desired level of statistical significance for a one- or two-tailed test and the desired probability of failing to reject the null hypothesis when it is actually false, and (5) use of the appropriate table or formula for estimating the sample size" (Merrill, 2019), exist and are fully exercised. Observing outcomes further, the association between predictor variables and disease outcome, a logistic regression to determine a ratio of two probabilities of dementia disease and heart disease occurring simultaneously with similar relative health risk.

The data design was created to draw indicators on the affecting influences of dementia disease, cognitive health, and heart disease respectfully (coronary heart disease and myocardia heart disease) and is a regression analysis. Regression is a valuable extraction of casually production, naturally occurring relationships (not manipulated), that achieve a statistical significance when compared to their counterparts. There were five steps in processing the statistical hypotheses, (1) Making assumptions, (2) Stating the research and null hypothesis and selecting alpha, (3) Selecting the sampling distribution and specifying the test statistic, (4) Computing the test statistic and (5) Making a decision

and interpreting the results (Frankfort, et.al., 2018). Working from the null hypothesis is a default practice used commonly in research, a "true" hypothesis is an established premise and is challenged by an alternative hypothesis of the "research". A probability of the research is either rejected, rejecting the current hypotheses, or failing to reject the hypotheses, solidifying that a point of contention exists, violating the current hypothesis.

**My null and alternate hypothesis are:**

**Ho**: There is not a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

**Ha**: There is a significant relationship between (independent variable) cognitive dysfunction and (dependent variable) coronary heart disease while controlling for (covariate variables); against the demographic profile of age, gender, marital status, social support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

**Ho**: There is not a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

**Ha**: There is a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

**Ho**: Sexual orientation significantly modifies the relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke.

**Ha**: Sexual orientation does not significantly modify the relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke.

The rationale of the analysis is a predicted pattern for the outcomes between (independent variable) cognitive dysfunction and (dependent variable) myocardial infarction status while controlling for (covariate variables) as health risks between the (monitoring variable) sexual orientation, will be observed when health risks increase. It is a rationalization that PCPs are challenged when addressing unique health indicators in an unfamiliar environment. A rising disease prevalence signals a disease progression which forms into a predictable diagnostic pattern. When diagnosing MCI due to Alzheimer's disease, top challenges cited by PCPs include lack of specialists/ facilities to perform diagnostic testing (51%), patient reluctance to pursue follow-up testing (49%) and PCP reluctance to diagnose a condition that has limited treatment options (47%) (Alzheimer's Association, 2021). My assumption, for using logistic regression was the outcome of binary inputs (independent variable) dementia type, and (dependent variable) coronary heart disease, while controlling for (covariate variables), will form a significant pathological health ecology for disease management strategies.

Special cleaning considerations when reporting the NHANES data should be paid when assuring research participants are properly informed on consent and use of public

data. The Public Health Service Act (42 USC 242k) authorizes data collection and

Section 308(d) of that law (42 USC 242m), the Privacy Act of 1974 (5 USC 552A), and

the Confidential Information Protection and Statistical Efficiency Act (PL 107-347)

prohibit NCHS from releasing information that may identify any respondent or group of

respondents (CDC, 2018). Protection and privacy are captured before and throughout the

data's collection to assure the confidentiality of individuals is met. Additionally, the

outcome of the analysis should refrain from hindering, isolating, or harming the

participants post analysis. The Research Data Center (RDC) is the main component of the

NCHS's efforts to protect confidential information while preserving the integrity of the

study, subjects and institutions are continuously tasked with preventing deception,

exaggeration, or misleading participants on the possible use of the information being

gathered. It is the duty of an ethical analyst to also take protective actions to inhibit the

misuse of their data development outside of the survey's mission. In this analysis the key

predictors were sorted by their relevance and ability to inform on the participant's health.

      The statistical analysis involved arranging quantitative data from raw risk values

into a structure of observable and meaningful associations. Data preparation involved

adding transparency to missing data parameters and isolating the independent variable

from random data loss, to reduce statistical power loss. The creation of an observable

topology at a univariate stage involved manual data imputation to account for missing

variables, unusable criteria, or corrupted values. Imputation strategies are commonly used

methods when addressing multiple imputation in big data. The method took a set of

randomly selected plausible values from the modeled construct and pooled creating

multiple datasets with identical parameters and weights. The benefit of the multiple imputation is that in addition to restoring the natural variability of the missing values, it incorporates the uncertainty due to the missing data, which results in a valid statistical inference (Roy, 2019). I selected this plan to take advantage of the dexterity in the variable selection and it seems to offer tonal consistency when addressing a specific topic, apples to apples not apples to cars.

In a mean substitution, the mean value of a variable is used in place of the missing data value for that same variable (Roy, 2019). I observed the remaining data has some characteristics that are valuable to the study's topic and take the appropriate steps in replacing averages of previous variables from other datasets recorded from other participant averages. Outliers beyond manual observation will be identified through a scatter plot designed in Microsoft Excel to sort and filter out statistically improbable cases as identified. The removal of errors and inconsistencies from the raw data sample to prevent distortion of the findings as properly acknowledged in my delimitations assessment and data plan.

**RQ1**: What is the association between cognitive dysfunction and coronary heart disease while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke? Research question one (RQ1), the independent variable, cognitive dysfunction, and the dependent variable, coronary heart disease, was explored to observe the ecological dynamics while controlling for; marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

**RQ2:** What is the relationship between cognitive dysfunction and) myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke? Research question two (RQ2), cognitive dysfunction, and myocardial infarction, was explored to observe the ecological dynamics while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

**RQ3**: To what extent does sexual orientation significantly modify influence a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke? Research question three (RQ3), the monitoring variable, sexual orientation, presents between the independent variable, cognitive dysfunction, and the dependent variable, coronary heart disease, was observed while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

A statistical test of the relationship between dependent and independent variables resulted in a total number of case occurrences in each, the mean, and a standard deviation, and confidence intervals. A significance level of 0.05 was adapted as I accepted a 5% margin in the results supporting the hypothesis *Ha* is correct is untrue or not representative of the entire population and the null *Ho* is true. The alpha can be seen as the likelihood of rejecting *Ho* despite it being true. Lower value alphas may be higher in accuracy but can isolate a domain of behavior is not consist within the study's framework and challenge the parameter or limitations of the assumptions. The confidence interval (CI) is the expression of an unknown population parameters, the CI is a range

that estimates the parameters in relation to a pre-determined point, generally the mean

value is an approximation relative to a population's sample. The CI attempts to define to

a certainty, the accuracy of the sample as it relates to the sampled population's parameter.

The levels of confidence vary, bracketing the possible intervals of the samples as they

fixate to the most accurate population parameter. A range of 95% confidence level

encapsulates the number of possible parameters containing 95% of the population's

means within its interval.

Advancing into the analysis of variance (ANOVA) the assumptions of the test are

the generally conclusive indicators met by the population, that a normal distribution is

expected, a homogeneity or grouping carrying the same variance (see Levene Statistic),

linearity of data is present and independence of the collection of the data act as criteria

that the research is intact and precludes without violation. The Levene Statistic testes the

homogeneity of variance, in this study the significance of the test is (.000) meaning p is

less than .001, within the grouping there are variances that are homogenous suggesting a

statistically significant difference does exist. Commonly testing assumes a null

hypothesis is retained/accepted or rejected/disproved; the value of the data precludes a

certainty.

"When testing for differences between means when the population variance(s)

are unknown, we use the (t) statistic and the (t) distribution" (Frankfort-Nachmias, C., &

Leon-Guerrero, et.al., 2018). By doing so the research is formative, standing on its own

merit adding influential assertions through an informed knowledge base.

Assuming the null hypothesis is true, the means will deviate from one another significantly from prior years ($Ho^2$ $U_{A>}U_B$), suggesting change has occurred in the perception of democracy after the series of reforms have been put in place. The alternate hypothesis being that the current means has not changed from the previous findings ($H_{A=}U_{A=}U_B$), suggesting a perception shift has not occurred, in this case, the means are equal to or possibly less than. The  distinguishing value was scaled from (0 to 10), making any finding greater than (6) a measure for the regional leaders to determine whether a significant social change has occurred or not. If the null hypothesis is true the equation will be assumed ($Ho^2$ $U_{A>}U_B$) and ($Ho^2(U_A - U_B) > 6$), then perceptions of the respondents view toward the level of democracy have significant changed to a degree of confidence among leadership.

*Assumption (1)* – Cognitive impairments will have a demographic type like CVD's when accessing health services and preventing early detection.

*Assumption (2)* – An assessment strategy can produce a higher positive health outcome when comparing ADRD's and CVD's health risk earlier on.

*Assumption (3)* – Minority and LGBTQ members require a formative health assessment process designed to incorporate their cultural identities, practices, and beliefs.

The underutilization of confidence intervals is attributed to the utility of definitive experimentation but as for certainty in defined testing, the scale deteriorates as the inferential analysis increases in value. If the study can withstand the infusion of statistical inference, the increased use of confidence intervals will be used to interpret the

number of occurrences as they are sampled. The resulting post-hoc tests, Tukey and Games-Howell, will be considered once data production has been ran and interpreted.

## Threats to Reliability and Validity

### Reliability

The study assumed a statically significant association between heart diseases and dementia related diseases exist and was demographically insolate. Reliability spoke to the quality of performing well consistently over time. Per Merrill, 2019, health indicators rely on the data sample size, representativeness of the sample, response rate, and differentiating changes reported over time. The NAHNES survey samples selected participants at different rates of characteristic identifiers (age, sex, race and Hispanic origin, and income) to ensure a representative sample and to provide sufficient sample sizes for smaller groups to obtain reliable survey estimates. The design was created to identify a reliable association of health risk by framing the data in a regressive model. In this study I aim to measure the relational value of valid statistical associations to provide an informed reliable judgement on the causal health effects commonly found in heart diseases and dementias.

*Assumption (1)* – Cognitive impairments will have a demographic type like CVD's when accessing health services and preventing early detection.

*Assumption (2)* – An assessment strategy can produce a higher positive health outcome when comparing ADRD's and CVD's health risk earlier on.

*Assumption (3)* – Minority and LGBTQ members require a formative health assessment process designed to incorporate their cultural identities, practices, and beliefs.

**Validity**

  The validity addressed the accuracy or truth of the studies measured assessments, asking if the study was accurately representative of the measures and the operational variable. Proper selection of the measures would mitigate the loss of value in the study, the amount of the variability a particular measure has above other predictors can skew the value of the measure as it relates to the study. Internal validity was defined as the extent to which the observed results represent the truth in the population we are studying and, thus, are not due to methodological errors (Patino, et.al., 2018). Studies designed with defined specifications which remain applicable to the trials, maintain a high degree of sample selection integrity, and seek to continuously eliminate extraneous influences diminish the effects of external and internal validity defining its worth. External validity refers to the extent to which the results of a study are generalizable to patients in our daily practice, especially for the population that the sample is thought to represent (Patino, et.al., 2018). Modeling the type of research that is time intensive and desirable, a fixed progression from theory to a proper summary of the intervention's rate of adoption was a crucial step. A problematic threat to validity, and worth, research's subjective nature of speculation from ill-informed demand scientific strategies to refute abuse. Logical fallacies are modern day inconsistencies assuaging the use of sound and clear scientific doctrine to factualize data into belief. Research challenged with a designed hypothesis and assumptive outcome, persist in validating logical interventions.

## Ethical Procedures

The National Center for Health Statistics (NCHS) ethics review board (ERB) has authority to review regulatory projects sponsoring the protection of human subjects. In accordance with Common Rule 45 CFR46.102(1)(2), the internal review board would need to verify the requirements of the rule of privacy met the ERB approval (Chun Tie, et.al., 2020). The Privacy Rule specifies that in providing information to public agencies, such as CDC, you may rely on our representation that the request constitutes the minimum necessary information required. Participants were informed of disclosure use, content, and the expressed accounting practices of the data collected for the explicit act of public health attainment was ethically protected. While the data collection was not a product of my doing, selecting, coding, mitigating the research's shortcomings, and narrating the expectations into a consumable by-product will be carefully and purposefully conducted. Context, how and what constraints of the data collected was impacted was a relative operation to the data's use. The National Health and Nutrition Examination Survey (NHANES) is administered through one-on-one interviews and physical examinations by physicians, trained technicians, and medical personnel. Interviews and examinations performed by experienced facilitators has qualitative impressions. The NHANES survey is extensively useful as a resource for a quantitative analysis of health factors associated to a hypertensive risk. As the researcher of this analysis, I took great strides to allocate the testing criteria, develop a useful hypothesis to be challenged, and present the findings in a context to address the problem statement.

Methodologies in data collection, interviews, examinations, questionaries, and surveys, structure inquires designed to strategically extract responses with fidelity. Data is only useful when accurately recorded, the instruments used in the NHANES survey provide valid responses in a formative process. Rigorous, the survey speaks to the instruments' alignment, flexibility, and limitations in data collection. The survey's formative ability also speaks to the ethical considerations installed during the data collection development; it is the benefit of a well-regulated assessment to inform on the population's health. Addressing the ethical alignment, I reviewed the layers of protocols and policies outlined on the NCHS website for congruency between the claims and the outcomes as a means of detecting fidelity.

Under the 2010 Equity Act, the age, disability, gender identity, marital status, pregnancy, race, religion, and sexual orientation, assessed the survey to determine the rights of participants remain preserved. Age screening conducted for all participants classified age as "age in years" or "age in months." Place of birth contained three categories: "Born in 50 U.S. States or Washington, DC," "Born in Mexico," and "Others", with 2011 addition of "Born in 50 U.S. States or Washington, DC". A two-year data cycle adoption produced statistically greater reliable estimates and smaller sampling errors. Weighting, designed to address changes underrepresented geographies combine the observed criteria growth and contractions move in a uniform scale.

Other ethical issues to consider consisted on when reporting the NHANES data should be paid when assuring research participants are properly informed on consent and use of public data. The Public Health Service Act (42 USC 242k) authorizes data

collection and Section 308(d) of that law (42 USC 242m), the Privacy Act of 1974 (5 USC 552A), and the Confidential Information Protection and Statistical Efficiency Act (PL 107-347) prohibit NCHS from releasing information that may identify any respondent or group of respondents (CDC, 2018). Protection and privacy are captured before and throughout the data's collection to assure the confidentiality of individuals is met. Additionally, the outcome of the analysis should refrain from hindering, isolating, or harming the participants post analysis. The Research Data Center (RDC) is the main component of the NCHS's efforts to protect confidential information while preserving the integrity of the study, subjects and institutions are continuously tasked with preventing deception, exaggeration, or misleading participants on the possible use of the information being gathered. It is the duty of an ethical analyst to also take protective actions to inhibit the misuse of their data development outside of the survey's mission.

## Transition and Summary

In Section 2, consideration of the criteria for the variable selections were distinguished in terms of participants. How the data variables were identified was cemented by the logical association of a common factor. Cognitive dysfunctions and CHD share a significantly high influence by association of shared health risk when related to chronic disease conditions. A numerical measure was used to presume the value of the traits' outcome and predict the unobserved/observed unique variability's relationship to one another. High variability will be represented as a higher correlation influence, lowered variability suggests a limited entanglement is in play, and a predictable mathematical expression can be designed within rational approximation.

I further considered the participant criteria and the data collection process in framing the study's problem statement. Articles summarizing the first-hand accounts of patients and families receiving delayed improvised care due to a lengthy diagnostic process, are used to paraphrase their confounding factors of influence (Frank, et.al., 2017). The use of personal interviews, physical examinations, laboratory tests, nutritional assessments, and DNA repository was used in the assessment of participant eligibility. The selected domains consisted of 10,175 interviews and 9,813 examinations. According to data from the CDC the response rates from this time would have been 71% interviewed and 68.5% examined (CDC, 2021). Reporting during the time of the selected datasets, 2013 – 2014, was challenged by many issues but the survey content remained reflective of the populational concerns established in 1999.

The overall collection of participants accepted into the survey given each was approximately 10,000, in 2011 – 2012 there were a total number of applicants interviewed were 9,756 (72.6%) and examined 9,338 (69.5%) from the corresponding years response rates. Between the continuous 2-year cycle of 2013 to 2014, the survey consisted of 14,332 participants from 30 different survey locations. The selected domains consisted of 10,175 interviews and 9,813 examinations. Relationships that are diagnostically useful in determining concurrence through the inference of health risk are valuable to the treatment of cardiovascular diseases and dementia related illnesses, regardless of the population. It is an understanding of the level of sensitivity as a disruptive component  created by key strategic steps to render a healthy outcome.

The purpose of the study was a quantitative analysis exploring the statistical influences between cognitive dysfunctions, and coronary heart diseases, and the cognitive dysfunction and myocardial infarctions, while controlling covariate variables and monitoring for the classification of sexual orientation. The study supports its readers by guiding the risk of tangible risks and bridging gaps in gerontology identities. Mental health in minority groups in the United States have some of the highest stigmatization at individual and institutional levels. Findings from two national surveys conducted by the Alzheimer's Association show that Black Americans reported the highest level of discrimination in dementia health care followed by Native Americans, Asian Americans, and Hispanic Americans (CDC, 2021). Disparity by design insists that the stigmas are divisibly greater at the higher levels of influence that affect how lower levels of influences are perceived. When compared with White caregivers, Black caregivers are more likely to provide more than 40 hours of care per week (54.3% versus 38.6%) and are also more likely to care for someone with dementia (31.7% versus 11.9%) (Alzheimer's Association, 2021). Health awareness represents major factors influencing interventional and clinical decisions but unless they are adequately explored the complexities will remain unsolved.

Summations of research attenuated to understand underserved motivations and disease occurrences are demanding modifiable steps to act in a formatively defined approach. The analysis will be critical in designing health policies, creating awareness programs, education curriculum, developing risk reduction efforts, supporting clinical interventions, and many other robust treatment strategies. Culturally enhanced

community-based health strategies approach the health issue from a separate perspective,

by monitoring casual indicators, and sponsoring formal designs around health attributes

and ideals engrained in the community belief structure. Immediate aging communities

addressing dementia have debilitating health burdens that encircle health risks in

physical, emotional, and financial presentations. It is a positive social outcome that

impacts disease management practice among millions of Americans.

Section 3: Presentation of the Results and Findings

**Introduction**

The purpose of the study was to explore statistical influences between the independent variable (cognitive dysfunction), and the dependent variable (coronary heart diseases), and the independent variable (cognitive dysfunction) and the dependent variable of (myocardial infarctions). I controlled a series of covariates, e.g., race, age, gender, etc., and the sexual orientation characteristics of the LGB community, using a secondary analysis of the 2013-2014 National Health and Nutrition Examination Survey. In Section 3, I concluded the statistical properties characterizing the samples offering validity for my assumptions, and the appropriateness of the study of cognition dysfunction, coronary heart disease, and myocardial infarction in the United States warrants further research. I further make a recommendation for future research in the compelling relationship between cognitive dysfunction and gender.

**Research Questions and Null Hypotheses**

RQ1: What is the association between cognitive dysfunction and coronary heart disease while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke? In RQ1, the independent variable, cognitive dysfunction, and the dependent variable, coronary heart disease, are explored to observe the ecological dynamics while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

$H_0$1: There is not a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

$H_a$1: There is a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, marital status, social support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

RQ2: What is the relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke? In RQ2, cognitive dysfunction and myocardial infarction are explored to observe the ecological dynamics while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

$H_0$2: There is not a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

$H_a$2: There is a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

RQ3: To what extent does sexual orientation significantly influence a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke? In RQ3, the monitoring variable, sexual orientation, presents between the

independent variable, cognitive dysfunction, and the dependent variable, coronary heart disease, are observed while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity.

$H_0$3: Sexual orientation significantly influences a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke.

$H_a$3: Sexual orientation does not significantly influence a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke.

Cognitive dysfunctions encompass a collection of symptomologies attributed to the occurrence of mental disorders that degrade the daily activities of individuals, families, and communities. A growing public health concern, cognition related dysfunctions contribute to the fifth leading cause of death in adults over the age of 65, dramatically affecting the quality of life, and increasing the continued cost of medical care in the United States. The survey is a complex, multistage, probability clustering of nutritional habits, behavioral risk factors, socioeconomic statuses, and preexisting conditions of adult and child health. Data that was formatively collected continuously throughout the survey's conception was narrowed to participants that responded between 2013 to 2014. Out of the 30 geographic regions in the United States, the assay comprised a total of 14,332 persons, of which 10,175 interviews were gathered, and 9,813 participants underwent medical examinations requiring specialized testing.

In RQ1, I explored the association between cognitive dysfunction (MCQ380 & MCQ084) and coronary heart disease (MCQ160c & MCQ180c), to observe the ecological characteristics affecting the relational value while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity, of those not reporting an experience of stroke. The null hypothesis states, ($H_0$1), "There is a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke." The alternative hypothesis ($H_a$1) stated, "There is a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, marital status, social support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke" and was set to contrast the parodies of relational values found between the corresponding disease's variable. In RQ2, I explored the relationship between cognitive dysfunction (MCQ380 & MCQ084) and myocardial infarction (MCQ160e & MCQ180e) status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke. The research question sought to observe the ecological dynamics that are characteristically carried between the presence of cognitive decline while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity. The null hypothesis ($H_0$2): "There was a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke," was meant to develop the opposing or unobserved disease prevalence for

cognitive decline. The alternative hypothesis ($H_a2$) stated there was a significant

relationship between cognitive dysfunction and myocardial infarction while controlling

for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not

experienced a stroke. The question was designed to isolate recurring characteristics that

had been identified through previous literature as prevailing health concerns when

addressing the decline of cognition.

In RQ3, I asked "To what extent does sexual orientation significantly modify

influences in a relationship between cognitive dysfunction (MCQ380 & MCQ084) and

myocardial infarction (MCQ160e & MCQ180e), while controlling for age, gender, and

poverty-income-ratio in those individuals who have not experienced a stroke (MCQ160f

& MCQ180f)?" I observed the relational values of sexual orientation (SXQ294 &

SXQ292). The independent variable, cognitive dysfunction, and the dependent variable,

myocardial infarction, were observed while controlling for marital status, social support,

age, gender, poverty-income-ratio, and ethnicity. The null hypothesis ($H_03$), sexual

orientation significantly influences a relationship between cognitive dysfunction and

myocardial infarction while controlling for age, gender, and poverty-income-ratio in

those individuals who have not experienced a stroke, was paralleled with the alternate

hypothesis. The alternative hypothesis ($H_a3$), sexual orientation is not significantly

influenced by a relationship between cognitive dysfunction and myocardial infarction

while controlling for age, gender, and poverty-income-ratio in those individuals who

have not experienced a stroke, was to conclude the extent of influences from sexual

orientation. In this section, I review the findings, extrapolated the discoveries, and described the unique factors surrounding the analysis of cognition dysfunctions.

**Accessing the Data Set for Secondary Analysis**

From 2013 to 2014, a recorded 14,332 applications were completed, of which 10,175 underwent interviews, 9,813 performed medical examinations, resulting in 5,003 female participants and 5,175 male participants. The National Center for Health Statistics responses rates are a by-product of the previous year's predictions. By using a linear regression model, researchers applied a desirable number of predicted samples from each location as a targeted segment of the U.S. population. Regression analysis is the statistical method used to determine the structure of a relationship between two variables (single linear regression) or three or more variables (multiple regression; Cote, 2021). During this specific survey cycle, the response rates resulted in 71% interviews and 68.5% examined participants. Challenges to the reporting process showed systemic issues addressed in the 2013-2014 datasets production. Some of the survey content, created in 1999, remained reflective of the health concerns of the U.S. population in previous years. It should be noted that in 2011 the primary sampling design was changed to accommodate an increase of interest in Non-Hispanic Asian communities. In both reliability and precision, health estimates of the datasets were weighted to position populations of non-Hispanic Asians, Hispanic Americans, non-Hispanic Blacks, older adults, and low-income Whites.

The NHANES samples are selected from participants at different rates of characteristic identities (age, sex, race and Hispanic origin, and income) to ensure a

reliably represented sample that sufficiently supplies insight on smaller group estimates. During this time Asians and Mexican Americans comprise approximately (11 and 17) percent respectively, of the un-weighted examine sample during the NHANES 2013-2014 survey cycle. Experiencing dramatic growth in the United States during this century, aging populations report major health implications for health care needs, health policies and research priorities. Health measurements were specifically designed to incorporate sensitive partnerships featuring aging community needs and national health concerns. Artifacts are remnants of data that also affect data collection methods and create limitations affecting how the continued collection of health components from instruments and measures previously in use are produced.

Regularly reviewed, changes in the survey are taken to inform on the criteria around sexual orientation. Terminologies in sexual orientation were revisited in 2008, and measurement tools reporting on cognitive health states were introduced in the 2012 survey, appeared in the 2014 – 2019 surveys. The norovirus outbreak occurring in 2019 disrupted the immediate feedback from responders and collectors alike. While targeted health measures are changed to remain relevant, collection gathering efforts from time to time are disrupted out of the greater concern of present-day public health interest.

## Results

The purpose of the study was a quantitative analysis exploring the set of statistical influences between the independent variable (cognitive dysfunction), and the dependent variable (coronary heart diseases), and the independent variable (cognitive dysfunction) and the dependent variable of (myocardial infarctions). I hypothesized that the statistical

significance between the dependent and independent variables would be positively correlated. Through the National Health and Nutrition Examination Survey, a secondary regression of the health indicators and risks was examined to pattern the associated disease ecologies. The following analysis found groupings in between the dependent, the independent, and the monitored variables, to learn a predictive linear path. The application of the socioecological framework was modeled to identify the changes in linear expressions  assumptive to the health and behaviors of the demography. Numerical assumptions presume gaps between variables influence prognostic outcomes and can be seen as variations filtering demographic criteria by uniqueness into the frequency of the disease occurrence. A systematic arrangement of disease events will see higher fluctuations in data's chronology, but it is difficult to define a correlational influence from a detectable expression to a causative effect of health outcomes.

The following research questions guided the study in tandem of a comprehensive data analysis plan:

RQ1: What is the association between cognitive dysfunction and coronary heart disease while controlling for marital status, social support, age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke?

$H_0 1$: There is not a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

$H_a 1$: There is a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, marital status, social

support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

RQ2: What is the relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke?

$H_0$2: There is not a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.

$Ha$2: There is a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke. RQ3: To what extent does sexual orientation significantly modify the relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke?

$H_0$3: Sexual orientation significantly influences a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke.

$H_a$3: Sexual orientation does not significantly influence a relationship between cognitive dysfunction and myocardial infarction while controlling for age, gender, and poverty-income-ratio in those individuals who have not experienced a stroke.

The specific findings are discussed in detail in the following section, after a concise but detailed review of the collection, cleaning, weighting, and sample selection criteria used in the analysis.

## Data Collection

The NHANES was designed to be a complex, multistage, probability cluster of behavioral risk factors, socioeconomic status, which include preexisting diseases. The complexity of several variables was incorporated in the sampling features found in predetermined regions of interest. The dataset is free of personal identifiers, ethically produced through a standard collection policy, that I upheld and achieved approval from Walden University's Institutional Review Board (IRB) on October 10, 2022. Upon final approval granted from my committee chair was received, an electronic data wrangling process was begun. Adhering to Public Health Service Act (42 USC 242k) authorizes data collection and Section 308(d) of that law (42 USC 242m), the Privacy Act of 1974 (5 USC 552A), and the Confidential Information Protection and Statistical Efficiency Act (PL 107-347), I selected variable from the group of respondents that adhered to the analysis criteria.

## Coding and Data Cleaning

In IBM's Statistical Package for Social Sciences (SPSS) version 28.0 was used in modeling statistical patterns and equating trends that forecast anomalies of progressing measures. A numerical measure of the presumed gaps of unobserved and observed variations, through the SPSS software required encoding and cleaning to operationalize the features that addressed the research design. The software allows you to complete

several statistical procedures including measures of central tendency, measures of variability around the mean, measures of deviation from normality, and information concerning the spread of the distribution (SPSS, n.d.). In a normal distribution the mean is (0) and the standard deviation is (1), the closer to (0) the data is not normally distributed with a larger suggestion it is normally distributed. Cognitive dysfunction (MCQ084) was identified as the value that most relevantly relates to the presence of cognitive impairment, the variables conditional values were 1 – Yes, 2 – No, 7 – Refused, 9 – Don't Know, and (.) – Missing. An imputation strategy negating the Refused, Don't Know, and Missing responses to account for distortion, anomalies that affect the distribution of the data.  Also, to retain the integrity of most of the responses, an implicit adaptation of them was adopted, and I excused data that was untenable, applying a standard imputation approach. For example, the age of the participants was included to participants of age 18years and older. Data cleaning measures involving removing or encoding missing values or labeling values to reflect their ordinal characteristics were also captured in the SPSS syntax dialog. Data imputation allowed retention of most of the data while addressing missing units that had quantities negligible to the analysis or recorded outside of their corresponding definitions. The same methodology was employed for the (dependent variable) coronary heart disease, (dependent variable) myocardial infarction, and the (monitoring variable) sexual orientation.

## Weighting

From time to time the NHANES health survey must consider generalizations that fail to visit the health risks related to the community's composition. Routinely the

impairments, health statuses, behaviors, and nutritional factors are carried forward from the previous years but when acute health issues arise, or shortcomings in the survey's design are discovered, it should be accurately realigned to reflect the public's health concerns. Producing a complex sample representative of the U. S. population requires a selection of the most appropriate sampling estimates collected during the collection period, of the appropriate weight for the 2-year survey cycle. A sample representative of the civilian population accounts for differential probabilities the sampling domains may not offer. This could be a result of nonresponsive survey instruments, or the sample characteristics not represented in the population of the data period**.** The NHANES data is commonly released to the public in 2-year data cycles. For this analysis, the 2013 to 2014 was selected using the combination of demographic data and the WTMEC2YR variable created from the mobile examination center collection rather than the WTINT2YR household interview collection. In doing so, the demographic variables and sample weighted data for the survey period matches a unique geometric means and percentile profile to limit the unequal probability of possible bias in the sample.

**Findings**

Of the 14,332 applications completed between the 2013 – 2014 survey cycle, 10,175 underwent interviews, 9,813 performed medical examinations, 5,003 participants were female, and 5,175 participants were males. In Table 7, the model was a distribution of 1,840 reported cases of cognitive impairment, and the 1,084 cases reporting on coronary heart disease and myocardial infarctions. In the sample size, males represented 928 (50.4%), while females represented 912 (49.6%). The ages of the respondents seen at

time of screening resulted in ($M = 49.22$, $SD = 16.95$), ranging from 18 to 80 years of age

without winsorization. Disease subsample sizes consisted of 202 (11%) cases of

respondents responding 'yes' to indicate occurrences of cognitive dysfunction (COG), 54

(5%) cases of respondents responding 'yes' to indicate occurrences of coronary heart

disease (CHD), 43 (4%) cases of respondents responding 'yes' to Myocardial Infarctions

(MI), and 36 (2.2%) cases of respondents responding yes to Stroke (STK). Sexual

orientation (was reported in genres of sexual identity, (33.3%) identified as Heterosexual

or straight, (0.7%) identified as Homosexual or gay, (1.4%) identified as Bisexual, and

(0.5%) identified as something else. Respondents reported their racial/ethnic make-up as;

Mexican American (17%), other Hispanic (9%), White, non- Hispanic (36.3%), Black,

non-Hispanic (22.5%), Asian, non-Hispanic (10.6%), and other races, including multi-

racial (4.7%). The respondents described their educational attainment in segments of

Table 7. The Association Between Cognitive Dysfunctions and Cardiovascular Diseases in Minority and LGBTQ Communities in the United States.

| Variables | | Frequency | Percentile | Odds Ratios | 95% CI | Mean(s) | <p |
|---|---|---|---|---|---|---|---|
| Cognition (COG) | | 318 | 17.3% | 1.007 | [0.36, 2.85] | 1.83 | <.001 |
| Coronary Heart Disease (CHD) | | 55 | 17.3% | | | 1.95 | <.001 |
| Cognition (COG) | | 202 | 11% | 1.644 | [0.80, 3.39] | 1.83 | <.001 |
| Myocardial Infarction (MI) | | 45 | 4% | | | 1.97 | <.001 |
| Stroke (STK) | | 36 | 2.2% | | [0.98, 1.14] | | |
| Age(s) | COG | 1840 | | | | 47 | |
| | CHD | 1084 | | | [-0.02, 0.19] | 58 | <.001 |
| | MI | 1084 | | | | 56 | |
| Gender(s) | Males | 928 | 50.4% | 1.039 | [0.68, 1.58] | | <.001 |
| | Females | 912 | 49.6% | | | | |
| Sexual Orientation(s) | Heterosexual or straight | 614 | 91.4% | | [92.6, 97.0] | | |
| | Homosexual or gay | 13 | 1.9% | | | | |
| | Bisexual | 26 | 3.9 % | | | | |
| | Something else | 9 | 1.7% | | | | |
| Race/Ethnicity(s) | Mexican American | 312 | 17.0% | 1.375 | | | |
| | Other Hispanic | 165 | 9.0% | 1.359 | | | |
| | Non-Hispanic White | 668 | 36.3% | 1.596 | | | |
| | Non-Hispanic Black | 414 | 22.5% | 1.413 | [7.0, 16.9] | | |
| | Non-Hispanic Asian | 195 | 10.6% | | | | |
| | Other Race - Including Multi-Racial | 86 | 4.7% | | | | |
| Education Levels (EDU) | Less than 9th grade | 81 | 7.5% | | | | |
| | 9 - 11th grade (Includes 12th grade with no diploma) | 152 | 14.0% | | | | |
| | High school graduate/GED or equivalent | 245 | 22.6% | | [2.6, 4.7] | Some College or AA degree | |
| | Some college or AA degree | 328 | 30.3% | | | | |
| | College graduate or above | 277 | 25.6% | | | | |
| Marital Status (MAR) | Married | 574 | 53.0% | | | | |
| | Widowed | 84 | 7.7% | | | | |
| | Divorced | 123 | 11.3% | | [52.1, 61.8] | Married | |
| | Separated | 25 | 2.3% | | | | |
| | Never Married | 207 | 11.5% | | | | |
| | Living with partner | 69 | 6.4% | | | | |
| Annual household incomes (AHI) | 0 to $4,999 | 49 | 2.7% | | | | |
| | $5,000 to $9,999 | 65 | 3.6% | | | | |
| | $10,000 to $14,999 | 117 | 6.4% | | | | |
| | $15,000 to $19,999 | 117 | 6.4% | | | | |
| | $20,000 to $24,999 | 167 | 9.2% | | | | |
| | $25,000 to $34,999 | 224 | 12.3% | | | | |
| | $35,000 to $44,999 | 151 | 8.3% | | | $100,000 and over | |
| | $45,000 to $54,999 | 153 | 8.4% | | | | |
| | $55,000 to $64,999 | 90 | 4.9% | | | | |
| | $65,000 to $74,000 | 69 | 3.8% | | | | |
| | $20,000 and over | 63 | 3.5% | | | | |
| | Under $20,000 | 26 | 1.4% | | | | |
| | $75,000 to $99,999 | 160 | 8.7% | | | | |
| | $100,000 and over | 312 | 17.1% | | | | |
| Ratio of family income to poverty (RFIP) | | | | 1.042 | [0.91, 1.96] | | |

educational pursuits, the levels; less than 9th grade (7.5%), 9 – 11th grade (14%), High

School Diploma or GED certificate or equivalent (22.6%), some college or AA degree

(30.3%), and college graduate or above (25.6%), with the mean having obtained some

college or an AA degree. Marital status was reported by proxy of partnership, with the

meaning of being married. The number of participants Married (53%), Widowed (7.7%),

Divorced (11.3%), Separated (2.3%), Never Married (11.5%), and Living with partner

(6.4%). Economic indicators were channeled into two domains, the annual household

income (AHI) and the ratio of family income to poverty (RFIP). The AHI ranged from 0

USD to 100,000 and over USD; respondents identifying an income of 0 to $4,999 (2.7%),

$5,000 to $9,999 (3.6%), $10,000 to $14,999 (6.4%), $15,000 to $19,999 (6.4%),

$20,000 to $24,999 (9.2%), $25,000 to $34,999 (12.3%), $35,000 to $44,999 (8.3%),

$45,000 to $54,999 (8.4%), $55,000 to $64,999 (4.9%), $65,000 to $74,000 (3.8%),

$20,000 and over (3.5%), Under $20,000 (1.4%), $75,000 to $99,999 (8.7%), and

$100,000 and over (17.1%), with $100,000 and over being the mean income identified.

The association between cognitive impairments and coronary heart diseases

were shared by the similarities in their corresponding demographic characteristics and

predictors. When compared, the number of valid samples ($N$ = 1084) a mean, the

estimated probability of co-occurrence, CHD $M$ = 1.96 and COG $M$ = 1.83, was found.

Statistical similarities in the distance from the mean of CHD $SD$ = 0.374 and COG $SD$ =

0.380, were found. Measuring the strength of linearity that both variables shared, the

correlation's $Sig.$= 0.346. The correlation coefficient (0.012) details the strength of the

linear relationship between the variables as a positive proportional variance between

CHD and COG. The One-Sample *t-Test* resulted in a $t = 0.192$ and a mean difference of $M = 0.002$.

The significance, per the *one-tailed test* was (0.346), in comparison to the level of significance (0.05) alpha, selected earlier on when defining a statistical finding. In the model summary table, $R = 0.012^{a}$ was found and indicates the amount of variance in the dependent variable that is explainable in the independent variable, $R^2 = (0.000)$, with a *Std Error* $= 0.374$. The analysis of variance (ANOVA) was performed, the predictor (COG) and the dependent variable (CHD) resulted in a Pearson Chi-square *Sig.* $= 0.692$, resulting in a non-rejection of the *Ha* in research question one: *There is a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, marital status, social support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke* (see Table 4).

$$H_0\text{:u </- 0.692}$$

A comparison of the means of COG population and CHD population resulted in an *F*-value $= 0.157$. The ratio of the probabilities of dementia related disease and a heart disease co-curing simultaneously was statistically similar in comparison to the rise in the health risks in either group. A *Cohen's d* test was a measure between the effect size of the two means resulted in a *Point Est.* $= 0.006$. In Table 8. I measured the association of events occurring concurrently with cognitive dysfunction and myocardial infarction *odds ratio* $= 1.007$ with a 95% *CI* $= 0.356$ to $2.849$ a *Sig.* $= 0.05$.

Table 8

*COG and CHD Odds Ratios*

| | CHD | | Odds Ratio | 95% Confidence Interval | |
|---|---|---|---|---|---|
| | | | | Lower | Upper |
| COG | 1.00 vs. 2.00 | 1 | 1.007 | 0.356 | 2.849 |

Dependent Variable: CHD (reference category = 2.00)
Model: (Intercept), COGa
a. Factors and covariates used in the computation are fixed at the following values: COG = 2.00

The association between cognitive impairments and myocardial infarction diseases were shared by the similarities in their corresponding demographic characteristics and predictors. When compared, the number of valid samples ($N$ = 1084) a mean, the estimated probability of co-occurrence, MI's mean $M$ = 1.96 and COG's mean $M$ = 1.83, was found. Statistical similarities in the distance from the mean of MI $SD$ = 0.293 and COG $SD$ = 0.380, were found. Measuring the strength of linearity that both variables shared, the Pearson *Sig.*= 0.178. The Pearson's correlation coefficient (0.028) details the strength of the linear relationship between the variables as a positive proportional variance between MI and COG. The One-Sample *t-Test* resulted in a $t$ = 0.557 and a mean difference of $M$ = 0.005.

The significance, per the *one-tailed test* was (0.178), in comparison to the level of significance (0.05) alpha, selected earlier on when defining a statistical finding. In the model summary

**Figure 2. The Dementia and Public Health Casual Loop (DPHCL)**



Leadership Gaps in Dementia and Public Health
Causal Loop Theory

,
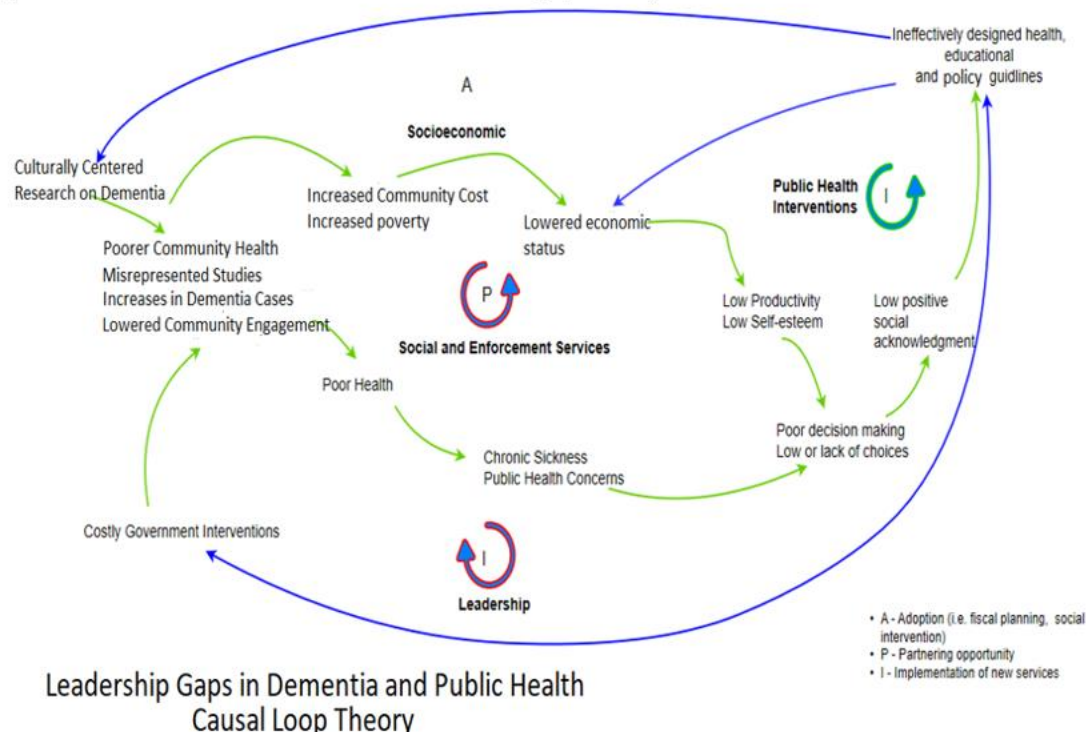
$R = 0.028^a$ was found and indicates the amount of variance in the dependent variable that was explainable in the independent variable, $R^2 = (0.001)$, with a *Std Error* = 0.293. The analysis of variance (ANOVA) was performed, the predictor (COG) and the dependent variable (MI) resulted in a *Sig.* = 0.356, resulting in a non-rejection of *Ha*, research questions 2: *There is a significant relationship between cognitive dysfunction and myocardial infarction status while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.*

$$H_0 : u </- 0.178$$

A comparison of the means of COG population and MI population resulted in an

$F$-value = 0.853. A ratio of the probabilities of dementia related disease and a heart

disease co-curing simultaneously was statistically similar relative to the rise in the health

risks in either group. A Cohen's *d* test was a measure between the effect size of the two

means and resulted in a *Point Est.* = 0.017. In Table 9, I measured the association of

events occurring concurrently with cognitive dysfunction and myocardial infarction *odds*

*ratio* = 1.644 with a 95% *CI* = 0.798 to 3.389 a *Sig.* = 0.05 (see Table 9).

Table 9

*COG and MI Odds Ratios*

|  |  | MI | Odds Ratio | 95% Confidence Interval | |
|---|---|---|---|---|---|
|  |  |  |  | Lower | Upper |
| COG | 1.00 vs. 2.00 | 1 | 1.644 | 0.798 | 3.389 |

Dependent Variable: MI (reference category = 2.00)
Model: (Intercept), COGa
a. Factors and covariates used in the computation are fixed at the following values: COG = 2.00

A regression analysis, the Odds Ratios (OR) test results are the same when stratified by

the sexual orientation, estimating if the effect modification has association with one

group over the other. Findings indicate there was no difference in sexual orientation as it

pertains to the relationship between cognitive dysfunction and myocardial infarction.

**Research Question 1**

The first research question was aimed to explore the known health predictors and risk

indicators of coronary heart disease and cognition dysfunctions of residents in the United

States. As a secondary analysis, the regression of categorical variables observed the

influences shared between the independent and dependent variables interpret the

relational dynamics of health influences of cognitive and coronary disease. Observations

of the assumptions were assessed by way of a complex sample design of the variables

facilitating a chi-square, one way analysis of variance (ANOVA), and a *t*-Test. Through

the observation of a chi-square (see Table 10), I measured the difference of the observed

and expected frequencies for the number of dependent and independent events. The

Likelihood Ratio *value = 0.817* and *p-value = 0.665* was larger than my level of

significance 0.05, failing to reject my *Null Hypothesis.* There was a significant

relationship between cognitive dysfunction and coronary heart disease while controlling

for age, gender, poverty-income-ratio, and ethnicity in those individuals who have not

experienced a stroke.

Table 10

*Chi-Square Tests*

|  | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | .472[a] | 2 | 0.790 |
| Likelihood Ratio | 0.817 | 2 | 0.665 |
| Linear-by-Linear Association | 0.157 | 1 | 0.692 |
| N of Valid Cases | 1084 |  |  |

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .35.

**Research Question 2**

The second research question was aimed to explore the known health predictors and risk

indicators of myocardial infarctions and the cognition dysfunctions of residents in the

United States. As a secondary analysis, the regression of categorical variables observing

the influences shared between the independent and dependent variables interpret the

relational fluidity of health influences of cognitive and myocardial disease. Observations

of the assumptions were assessed by way of a complex sample design of the variables

facilitating a chi-square, one way analysis of variance (ANOVA), and a *t-Test*. Through

the observation of a chi-square test (see Table 11), I measured the difference between the

observed and expected frequencies comparing the number of dependent and independent

events. The Likelihood Ratio *value = 1.081* and *p-value = 0.583* was larger than my level

of significance 0.05, accepting my $H_0$: There was a significant relationship between

cognitive dysfunction and myocardial infarction status while controlling for age, gender,

poverty-income-ratio, and ethnicity in those individuals who have not experienced a

stroke.

Table 11

*Chi-Square Tests*

|  | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | .954[a] | 2 | 0.621 |
| Likelihood Ratio | 1.081 | 2 | 0.583 |
| Linear-by-Linear Association | 0.853 | 1 | 0.356 |
| N of Valid Cases | 1084 |  |  |

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .17.

**Research Question 3**

The third research question was aimed to explore the extent of influence that sexual

orientation has between cognitive dysfunction and myocardial infarction of respondents

from the United States. A secondary analysis, the regression observed the pattern of

influences between the independent and dependent variables to interpret a health outcome

leading to declines in cognitive health, while monitoring sexual orientation. Observations

of the assumptions were assessed by way of a Complex Samples design, facilitating a

chi-square, one way analysis of variance (ANOVA), and a *t-Test*. These are the tests of

the initial bivariate analysis that were conducted to determine the strength of a connection

if one is present. Through observations, a chi-square (see Table 11), I measured the

difference between the observed and expected frequencies to compare the number of

dependent and independent events. The Likelihood Ratio *value = 1.081* and *Sig. = 0.583*

which was larger than my level of significance 0.05, accepting my $H_0$: There was a

significant relationship between cognitive dysfunction and myocardial infarction status

while controlling for age, gender, poverty-income-ratio, and ethnicity in those individuals

who have not experienced a stroke. In Table 12, of the 680 responses to sexual

orientation, males (343) reported a mean value $M = 1.181$ and a $SD = 0.902$, and females

(337) reported a mean value $M = 1.38$ and a $SD = 1.152$ (see Table 12).

Table 12

*Population Descriptive Statistics of MI and COG*

|  | N | Pop. Percentage | Std. Deviation | Variance |
|---|---|---|---|---|
| MI | 1084 | 4% | 0.2 | 0.04 |
| COG | 1840 | 5% | 0.378 | 0.143 |
| Sexual Orientation (male) | 343 | 18% | 0.902 | 0.813 |
| Sexual Orientation (female) | 337 | 32% | 1.152 | 1.328 |
| Valid N (listwise) | 0 |  |  |  |

Std. Deviation and Variance use N rather than N-1 in denominators.

**Summary**

In this regression the association between cognitive dysfunction (COG) and coronary heart disease (CHD) shared a clear involvement, cognitive impairments and heart diseases related to a coronary illness held a predictive value when comparing their health risks. . The Likelihood Ratio *value = 0.817* and *p-value = 0.665* was larger than my level of significance 0.05, failing to reject my *Null Hypothesis.* The health risks that parody marital status, social support, age, gender, poverty-income-ratio, and ethnicity are decisively higher in likelihood of concurrent prevalence, after controlling for stroke. Equally in this regression of the association between cognitive dysfunction (COG) and myocardial infarctions (MI) it was clear that cognitive impairments and heart diseases related to infarctions share a predictive value in their health risks, after controlling for stroke. While cognitive dysfunctions and myocardial infarctions did display a significant relationship to one another the health risks that parody marital status, social support, age, gender, poverty-income-ratio, and ethnicity was decisively higher in likelihood of concurrent prevalence. In this regression of cognitive dysfunction and myocardial infarctions the results suggest a significant relationship to one another when monitoring sexual orientation. In Section 3, I concluded the statistical properties characterizing the samples offer validity for my assumptions, and the appropriateness of the study of cognition dysfunction, coronary heart disease, and myocardial infarction in the United States warrants further research.

**Section 4: Application to Professional Practice and Implications for Social Change**

My study was a quantitative analysis formatively exploring the statistical influences between cognitive dysfunction and coronary heart diseases, and cognitive dysfunction and myocardial infarctions. I controlled for series of covariate variables, e.g., race, age, gender, etc., and monitored the classification of sexual orientation characteristic of the LGB community, by use of a secondary analysis of the National Health and Nutrition Examination Survey. Through the study, I measured the associations of health risk and predictors to the causal health effects commonly found in heart diseases and dementias. I measured the regression of participant data on their association of health risks by the number of occurrences of cognitive impairment, coronary heart disease, and myocardial infarction. Regression analysis was the statistical method used to determine the structure of a relationship between two variables (single linear regression) or three or more variables (multiple regression; Cote, 2021). Through IBM's Statistical Package for Social Sciences (SPSS) version 28.0 modeling software, I created statistical patterns and equated trends to closely forecast anomalies of the affiliated disease progression in context of sociodemographic indicators. I assumed the expected outcomes of cross tabulating by conducting a literature review and cataloging the health risks as reported in recent studies. Defining numerical measures of presumptive gaps in research, I selected data sets from the NHANES biannually aligned survey to address the gap in research and aligned a suitable analysis plan to assess the unobserved and observed variations of coding functionalities through statistical software.

The data sets in the secondary analysis of NHANES data from 2013 to 2014 were publicly obtained and accessed once granted permission from my institution and committee members, and resulted in the observable relationships between cognitive dysfunction, coronary heart disease, and myocardial infarctions in the United States. I assessed the cognitive health risks and reported the health states used to collate the common demography of age, socio-economic criteria, and sexual orientation of specific health outcomes. In observation, the (independent variable) cognitive dysfunctions, and (dependent variable) coronary heart diseases, and the (independent variable) cognitive dysfunction and (dependent variable) myocardial infarctions, while controlling covariate variables, e.g., race, age, gender, etc., and monitor the classification of sexual orientation characteristic of the LGBTQ community for the classification of sexual orientation. Per Merrill (2019) and Frankfort-Nachmias et al. (2018), an increase in the number of variables will be represented by a higher correlational relationship represented in a predictable expression. But through a literature review of the topic, these indicators were age, gender, poverty-income-ratio, ethnicity, and sexual orientation, are held in concert to measure the increased occurrence of health-related risks to the dependent and independent variables.

In a comparison of the means of COG population and CHD population resulted in an $F$-value $= 0.157$. A ratio of the probabilities of a dementia related disease and a heart disease co-curing simultaneously is statistically similar relative to the rise in the health risks in either group. A *Cohen's d* test was a measure between the effect size of the two means and resulted in a *Point Est.* $= 0.006$. In Table 2, I measured the association of

events occurring concurrently with cognitive dysfunction and coronary heart disease *odds ratio* = 1.007 with a 95% *CI* = 0.356 to 2.849 a *Sig*. = 0.05. In the regression of the indicators, the predictive indicators of cognitive impairment and coronary heart disease, *OR* = 1.01 or in another way, the outcome of cognition impairment after exposure are 1.01 times greater occur in the exposure of coronary heart disease.

A comparison of the means of COG population and MI population resulted in an *F*-value = 0.853. A ratio of the probabilities of a dementia related disease and a heart disease co-curing simultaneously is statistically similar relative to the rise in the health risks in either group. A Cohen's *d* test was a measure between the effect size of the two means and resulted in a *Point Est.* = 0.017. In Table 3, I measured the association of events occurring concurrently with cognitive dysfunction and myocardial infarction *odds ratio* = 1.64 with a 95% *CI* = 0.798 to 3.389 a *Sig*. = 0.05. In the regression of the indicators, the predictive indicators of cognitive impairment, and myocardial infarction, an *OR* = 1.64 or in another way, the outcome of cognition impairment after exposure are 1.644 times greater to occur in the exposure of a myocardial infarction.

## Interpretation of the Findings

The results of this study indicated the association between cognitive dysfunction and coronary heart disease does share a significant relationship based on the summary of events concluding in the following regression analysis. While regression analysis provides insights into relationships between variables, it does not prove causation (Cote, 2021). In previous papers, sociodemographic criteria and health risks are influentially tied as predictors of an increase in occurrence of the rise of risk of cognitive dysfunction.

Diagnosing dementia requires a history evaluating for cognitive decline and impairment

in daily activities, with corroboration from a close friend or family member, in addition to

a thorough mental status examination by a clinician to delineate impairments in memory,

language, attention, visuospatial cognition such as spatial orientation, executive function,

and mood (Arvaitakis et al., 2019). In my original proposal, I assumed a predictive

pattern between cognitive outcomes and coronary heart disease would arise as a

significant relationship shared between two variables, leaving a demographic pattern. In

an *F-value* we attempt to distinguish between a group of variables and whether their

significance was supported or rejected. My *F-critical* was presumed at 0.05 and isolates

the likelihood of the means occurring by chance. In a comparison of the means of COG

population and CHD population resulted in an *F*-value = 0.157 and a *Sig.* = 0.692. A ratio

of the probabilities of a dementia related disease and a coronary heart event having

concurred was statistically similar relative to the rise in the health risks in either group.

I further examined the odds ratios for comparison of the relative odds of

occurrence between cognitive dysfunction and coronary heart disease. The presumption

being a statistical measure is assigned to the given disease event to respond to specific

health characteristic. I measured the association of events occurring concurrently with

cognitive dysfunction and coronary heart disease *odds ratio* = 1.01 with a 95% *CI* =

0.356 to 2.849 and a *Sig.* = 0.05 (see Table 2). In the regression of the indicators, the

predictive indicators of cognitive impairment and coronary heart disease, *OR* = 1.01

suggesting the outcome of cognition impairment after exposure are 1.007 times greater

occur in the exposure of coronary heart disease. This would entail dementia and coronary

heart disease health risk rise when in the presence of a particular diagnostically relevant health event, by a measure of magnitude of the influence of the factors by type. A precision of estimation, a 95% *CI* = 0.356 to 2.849 a *Sig.* = 0.05, further informs my interpretation as to reject the null hypothesis. This indicated a non-rejection of the ***Ha*** in RQ1: *There was a significant relationship between cognitive dysfunction and coronary heart disease while controlling for age, gender, marital status, social support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.*

The results of this study indicated the association between cognitive dysfunction and myocardial infarctions does share a significant relationship based on the summary of events concluding in the following regression analysis. In my original proposal, I assumed a predictive pattern between cognitive outcomes and myocardial infarction events would arise as a significant relationship shared between two variables, leaving a demographic pattern. A comparison of the means of cognitive dysfunction and the myocardial infarctions the probabilities of a dementia related disease and myocardial infarction events co-curing was statistically similar relative to the rise in the health risks in either group. A comparison of the means of COG population and MI population resulted in an *F*-value = 0.853 with and a *Sig.* = 0.356. A ratio of the probabilities of a dementia related disease and myocardial infarction events in a statistically similar pattern relative to the rise in the health risks in either group.

I measured the association of the events occurring with cognitive dysfunction and myocardial infarction at an *odds ratio* = 1.644 with a precision of 95% *CI* = 0.798 to 3.389 a *Sig.* = 0.05 (see Table 3). The predictive indicators of cognitive impairment, and

myocardial infarction had an *OR* = 1.64 suggesting the outcome of cognition impairment after exposure are 1.644 times greater to occur in the exposure of a myocardial infarction event. This would entail that specific risk factors of dementia and myocardial infarction rise when in the presence of a particular diagnostically relevant health risks, by a measure of magnitude of the influence of the factors by type. A precision of estimation, a 95% *CI* = 0.798 to 3.389 a *Sig.* = 0.05, further informs my interpretation as to reject the null hypothesis. This resulted in a non-rejection of the *Ha* in RQ1: *There was a significant relationship between cognitive dysfunction and myocardial infarctions while controlling for age, gender, marital status, social support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke.*

The results of this study indicated the association between cognitive dysfunction and myocardial infarctions does share a significant relationship based on the summary of events concluding in the following regression analysis. In my original proposal, I assumed a predictive pattern between cognitive dysfunction and myocardial infarctions would surmise in a significant relationship of an outcome, sexual orientation. In a comparison of the means of cognitive dysfunction and the myocardial infarctions, the probabilities of a dementia related disease and myocardial infarction events co-curing was statistically similar relative to the rise in the health risks in either group. The COG population and MI population resulted in an *F*-value = 0.853 with and a *Sig.* = 0.36. A ratio of the probabilities of a dementia related disease and myocardial infarction events in a statistically similar pattern relative to the rise in the health risks in either group. An associated of sexual orientation connect the rise of risk factors attributed to the patterned

outcomes. This would entail that specific risk factors of dementia and myocardial infarction events to rise when in the presence of a particular diagnostically relevant health risks. A precision of estimation, a 95% *CI* = 0.798 to 3.389, was observed at a *Sig.* = 0.05, informing my interpretation as to reject the null hypothesis. This meant a non-rejection of the *Ha* in RQ1: *There was a significant relationship between cognitive dysfunction and myocardial infarctions while controlling for age, gender, marital status, social support, poverty-income-ratio, and ethnicity in those individuals who have not experienced a stroke*.

This study's findings support the need for research in the presence of decreasing cognitive health in the context of health domains. By reporting on the associated demography between cognitive dysfunction and coronary heart disease, the socio ecological framework models health disadvantages that correlate in areas of disparity and risks. Respondents having experience cognitive disparities should have a greater affinity to health risks associated in coronary heart illnesses, and myocardial infarction events. In this study, the health circumstances, and sociological attributes at the intrapersonal, communal, organizational, and societal level served as influencers reflective by the nature of the disparity in CHD and MI occurrences.

At the intrapersonal level, the number of cases eligible for analysis between cognitive impairment and CHD, rendered 318 unique outcomes of socioecological connections to examine. Previous studies found marital status as an indicator of health concerns involving cognitive impairments. The number of valid cases of marital status are identified as married (56%), widower (8%), divorced (10%), separated (3%), never

married (19%), and living with partner (5%). Evidence that the high rate of aging

caregivers in the United States and the need of caregivers facilitating support of persons

with cognitive impairments, are an exponential component of disparity. Nearly 83% of

family caregivers are unpaid, an estimated 18.6 hours of non-paid assistance valued at

$244 billion in the United States.

At a communal level socially, complicated beliefs are normally learned over an

extensive period, making the educational experience an intentional social activity to be

assessed in a community setting. Educational levels are commonly used as indicators for

a corresponding health detriment between cognitive impairments and CHD. In this study,

the 1,083 cases reporting on education levels found respondents experiencing CHD

described educational attainment, are described as: less than ninth grade (7.9%), ninth –

11th grade (14.8%), high school diploma or GED certificate or equivalent (20.1%), some

college or AA degree (32.8%), and college graduate or above (24.3%). Schools, work,

community health offices, and religious places of worship can all function as trusted

social settings that incorporate disease management strategies within a contained

environment.

Societal factors, such as economic indicators on household incomes, account for

vulnerabilities when arresting risks to health attainment goals. Economic indicators are

useful characterizations as they describe the financial factors impacting health thresholds

contained in cognitive impairments. Household income remains a thriving factor of one

of the most relevant mechanisms used when directly effecting health attainment. My

previous assumption being household incomes with the highest reported cognition

declines and number of CHD would occur in the highest economic association with household's earnings falling between $10,000 and $14,999. But the singular occurrence of greatest cognition decline and CHD fell between the $100,000 and over grouping. This query led me to a greater revelation on classifying financial frigidity in groups and in the 2023 report on *Income in the United States* by U.S. Census Bureau, the median household income was an estimated $74,580USD. But in 2013 the U.S. Census Bureau reported the median household income as an estimated $51,939USD.

The number of cases that were either at the threshold of deficit incomes or below a surplus of healthy replenishment would have been 8 of the 14 economic indicators. Approximately 1043 or (74.5%) of the cases being adversely economically impacted according to the cost-of-living expectation. The ratio of family income to poverty describes the financial resources affecting the national income of cognitively impaired population that experienced CHD. Of the 55 cases, CHD respondents indicate a mean difference income of $505.54. Here a deficit was compared to purport the respondents' household income referenced to poverty and cognitive impairment in the United States.

By reporting on the associated demography between cognitive dysfunction and myocardial infarction, the socio ecological framework models health disadvantages that correlate in areas of disparity and risks. This study found the number of valid cases of marital status were identified as married (58%), widower (7%), divorced (10%), separated (2%), never married (19%), and living with partner (4%). In a 2021 analysis review, sexual and gender minority adults sustain numerous challenges as compared to non-SGM adults, they are less likely to be married (62% vs 38%), more likely to live

alone (33% vs 24%), and a lower household income of less than $20,000 of their

counterparts. At the communal level of education, found respondents with an experience

of MI described educational attainment, are described as: less than ninth grade (8%),

ninth – 11th grade (15%), high school diploma or GED certificate or equivalent (20%),

some college or AA degree (33%), and college graduate or above (24%).  At the societal

level, household income between reported cognition declines and MI occurrence in the

highest economic association of households earning $100,000 and over. Of the 45 cases,

MI respondents indicate a mean difference income of $532.98 in comparing the family to

poverty income amounts.

## Limitations

Limitations in this secondary analysis can be found in data recruitment, design

limits, and observable and unobservable bias when outcomes are repartitioned for

exploration. The survey, NHANES is a robust and formatively well-structured source, but

there are topics that remained elusive by its design. The interviews, tests, and medical

evaluations are designed for the NHANES intended health tracking scheme. My study's

specific questions, observations, and ultimately outcomes are formed and then shaped for

the context of my study's purpose. Specific characteristics to the demographic panel of

the respondents were keyed to detail the sexual identity to include orientation but the

survey would later not encompass identities beyond heterosexual, homosexual, and

bisexual. Alternative identities, trans, cis, or queer, were left as outliers that may or may

not have been considered terms during the initial conception of the survey. . The surveys

are broken into two-year cycles and when concluded in 2014 the common form of the

terminologies evolving around sexual orientation did not include various branching

identities in sexuality.

**Biasing**

Social desirability is a type of bias affecting a respondent's behaviors to save

face or preserve a mutually beneficial social perception. The tendency to misreport

depends greatly on the sensitivity of the context, and the magnitude of its confounding

effect therefore varies (Teh, et.al., 2023). Respondents can misreport or underreport to

obtain a desirable or an undesirable trait causing a misrepresentation of the findings.

Given the secondary analysis I was unable to distinguish the validity of the motivations

of the respondents to discern the level of consistency with the responses in respect to

respondent's openness or receptivity. The tendency to misreport depends greatly on the

sensitivity of the context, and the magnitude of its confounding effect therefore varies

(Teh, et.al., 2023). The motivations of respondents lacking in consistency to their outlook

or perception can misconstrue their responses to certain perceived favorable criteria, e.g.,

age, sexual orientation, and gender are a few commonly perceived sensitive topics.

Socially desirable bias can be assessed through a fine tuning the instrument used to

measure the respondent's responses.

Recall biasing is the perspective of the respondents conscious or unconscious

ability to accurately respond to the survey's self-reporting. In acknowledgement to recall

bias, respondent's ability to properly outline past events in retrospective account may be

challenging, difficult or deemed unreliable. Memory decay can be further exacerbated in

elderly populations where cognitive ability, such as memory impairment, can lead to

inaccurate reporting of events (Khare, et. al., 2019). The syntax of responses can be questionable, as respondents are recalling exposures or events through details, or a sequence of credible outcomes. Frequency of events can also be overestimated in a recall bias known as forward telescoping where events that occurred *before* the period of interest are remembered to have occurred *within* the period of interest (Khare, et.al., 2019). The survey had attributes designed to address the retrospective collection of details, but they run co-current to the questionnaire possibly causing conflicting first-hand accounts.

**Data Decay**

Imputation is one of the strategies I used to account for distortions, by negating responses that were too inconclusive e.g., Refused, Don't Know, and Missing responses. I removed elements that threaten the validity in order to preserve the quality of the response prior to being added to the statistical software. By retaining the integrity of the majority of the responses an implicit generalization was fitted to inconsistent responses. I routinely excluded data that was untenable to the respondents' earlier replies. An example, the age of the participants selected for my study was restricted to participants of age 18 and older. It is implied that the accuracy of the coding of the health conditions were assessed with rigor, but I am not the originator, nor did I conduct the direct collection of these responses. I am aware of interviewing etiquettes and study protocols were designed to ascertain specific information to reduce biasing. The NHANES two-year cycle intermittently changed in scope and the examinations and alternated

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measures used in the analysis were subjected to  weighting strategies to properly adjust the samples representation.

Data collection was completed to accommodate shifts in demography from respondents, and changes to tools, techniques, and instruments arose. Data collected from 2013 to 2014 recorded 14,332 applications were completed, 10,175 underwent interviews, 9,813 performed medical examinations, 5,003 participants were female, and 5,175 participants were male. According to data from the CDC the response rates from this time would have been 71% interviewed and 68.5% examined (CDC, 2021). Reporting during the time of the selected datasets, 2013 – 2014, was challenged by the demand of health content to remain reflective of the population's demography established in 1999. The United States has experienced dramatic growth in many regions, and the number of aging Americans during this century has increased significantly forecasting a major shift in demographic concerns.

<center>**Recommendations**</center>

The findings resulted those statistically significant relationships between the sociodemographic factors; age, gender, poverty-income-ratio, ethnicity, and sexual orientation, persist surveys and clinical engagements. Recommendations for future research lie in the critical area of the  relationships between cognitive dysfunction and gender. As evidence in this study and others indicate lowered partnerships amongst aging persons I the United States. An argument could be made that the boundaries of the study's original design are exceeded if speculation on cognition and gender are formatively affiliated with the current study. This study showed significant relationships

between the genders (*Sig.* = 0.85) of the respondents and sociodemographic features specifically the statistical economic findings of aging Americans do exist. In Table 13, a comparison between COG population and engendered populations produced an odds ratio = 1.039. The ratio of the probabilities of dementia related disease and gender co-curing simultaneously is statistically similar in comparison in the rise in the health risks in either group.

Table 13

*Gender and Cognitive Dysfunctions Odds Ratios*

| | COG | Odds Ratio | 95% Confidence Interval | |
|---|---|---|---|---|
| | | | Lower | Upper |
| Gender | Male vs. Female | 1 | 1.039 | 0.683 | 1.579 |

Dependent Variable: COG (reference category = 2.00)
Model: (Intercept), Gender, Race/Hispanic <origin>, CHD, Age, Ratio of family income to poverty (RFIP)a
a. Factors and covariates used in the computation are fixed at the following values: Gender=Female; Race/Hispanic <origin>=Other Race - Including Multi-Racial; CHD=2.00; Age=48.37; Ratio of family income to poverty (RFIP)=2.8523

As a recommendation on researching cognitive dysfunction in the future, sociodemographic factors can be independently isolated then statistically compared to the disease component to produce a greater contrast of the roles that health risks hold when influencing cognition dysfunctions. The impact of atherosclerotic disease, such as coronary heart disease, on the cognitive decline of dementia has been little investigated (Bleckwenn, et.al., 2021). When coupled with the increases in longevity, population growth, a decline in the number of qualified caregivers, a crippling neurological disease, growing health cost, a limited public understanding on dementias, and the logical extraction is a disease precedent that threatens the stability of the national population.

Additional factors isolating caregiving, care recipient participation, and the psychological impacts of long-term convenorship to determine in-group and between group quality of care as effective casual controls for age related diseases. The 2022 Vital Statistics report from the Alzheimer's Association clarifies the rise in dementia among Americans over 65 has nearly tripled. The report features that the number of caregivers (48%) were unpaid family members and friends, who were dwindling as they too regressed with chronic diseases of their own. The tertiary concern is the projected cost associated with the care, treatment, and administration of dementia will dramatically increase in the immediate future as services and demand rise (Alzheimer's Ass., 2022). Escalating dementia research is necessary for the immediate health of future populations.

## Implications for Professional Practice

An aim of this research was that findings might aid in the development of evidence-based formative interventions on the topic of dementia, in the hopes that health professionals, policymakers, and educators can positively change disenfranchised communities. The value of regression analysis is the strategic and structural measures in analytical trends to develop forecast and magnitudes when developing decisions. The findings of this study can be useful to practitioners of health services, private health corporations, and public policymakers in the context of creating a health ecology that enriches communities that have socio-economic traits similar to the ones in this study. In cases where an impact of CHD on cognitive decline has been detected, cardiovascular prevention is an opportunity to reduce the progression of dementia (Bleckwenn, et.al.,

2021). In doing so, evading common cognitive dysfunction traits, and integrating health services into public sectors that are underserved. A knowledge gap of the racially diversified communities of older adults plays a substantial role in the development of disease management strategies undermine the improvement of quality of life and the extension of life with complex health issues (Deckers, et.al., 2017). In addressing the gap of the health implications surrounding dementia, the SEM framework guided the organization of observable changes in a public health environment to frame, changes in the population, cost, caregiver training, discrimination, and sexual orientation. Forming an initiative-taking causal association between diseases opens interventions to chronic health risks by affecting the mechanisms of health used by millions of aging Americans. There is no health without brain health, which is threatened by rising curves of stroke, ischemic heart disease, and dementia (the triple threat) (Hachinski, 2021). The study names the abated and unabated decreases in health literature on cognitive health risks, the gaps in unsustainable mental health interventions, treatment strategies, and comprehensive patterning of the health inequities of discrimination. Terms related to cardiovascular diseases and cognitive impairments suggested a high prevalence of disease mechanisms that were shared by both topics (Tini, et.al., 2020). This study noted underlying mechanisms when narrowing health pathways as designing the clinical pathways of coronary heart disease and myocardial infarction as precursors to cognitive health events. The examination of the physiological markers of dementia are more directly aligned to the health of the vascular system in an umbrella of health readiness.

**Positive Social Change**

As an empirical analysis of formatively developed research, evidence-based studies on

cognitive diseases fall short in readiness and culture. Specifically, attachments to

minority populations, such as the elderly and including members of the LGBTQ+

community need steps designed to address co-curing health risk in the United States in

the form of precautions that are inclusive to the spectrum of diseases affecting all

Americans. Lifetime discrimination and internalized heterosexism, or the turning inward

of society's negative views toward non-heterosexual experiences, are strongly associated

with mood disorders and psychological distress among LGBTQ+ adults and older adults

(Manaca, et.al., 2022). Cognition diseases stay difficult to diagnose and in later stages

due to its effects on memory loss, judgement, and confusion, is difficult to treat positive

social change is in the core tenets of informed disease management and pre-designed

health strategies. Evaluating the vulnerabilities of communal socio-ecologies we frame

the individual experience as they experience the decline in health stability in the context

of related cost, supportive care, and health education to prevent marginalization.

Potentially positive adoption of disease prevention, intervention, and the longevity of

good health are adopted in the increase of disease awareness. The early detection of

dementia is a preventative practice used to fortify the health of the newly aging

communities and the development of critical health concepts used in the care of

disparaged community members.

For persons with dementia related diseases, the study accounts for the ever-

changing spectrum of dementia and public health. The increasing number of dementia

related cases threatens social adhesion designed to incorporate communal health and the preservation of aging health services. Distinguishing normal circumstances from region to region requires the context of other occurring diseases in established ecologies to link health systems to assessment tools that are pragmatic and durable. Studies such as this one adds to knowing how sociodemographic factors influence equality, cultural identity, and health transparency of difficult the terrains supporting caregiver guidelines, and health practices that support dementia treatments. Potentially standard assessments strategies for dementia disorders are adopted and demanding, confusing, and under-utilized services are replaced with access to an environment that the affected person living with dementia are capable to navigate.

<div align="center">**Conclusion**</div>

Disparity by design insists that stigmas are divisibly greater to resolve at higher levels of influence than effecting lower levels of influences. It is necessary to ascertain health goals in domains of influence than to accommodate them in scoping resolutions. Undiagnosed dementias in the United States have seen a sustained growth in occurrence and scope. The number of persons living with dementia is expanding, and the variations of those dementias are increasing in frequency. According to the 2022 Alzheimer's Disease Special Report, an estimated 910,000 people (about half the population of Idaho) ages sixty-five or older, developed Alzheimer's dementia in the United States in 2011.but an estimated higher number of incidences on recorded are expected to exist. An observable disease progression suggests two outcomes, the first being the lack of disease surveillance of dementia disease has become uncommonly common. By accepting the presence of a cognitive dysfunction

along a disease, normative behaviors can undo public health measures, and possibly cripple millions of Americans beyond conception.

The second greater understanding of vulnerable populations is necessary to effective constitution of a public health organization. The study was aimed to positively inform US communities on the stressors and complications that are dramatically reshaping the umbrella of diseases falling under cognitive dysfunction and dementia related disease. Monitoring casual indicators, and stakeholders is a formally designed strategy that combines individual health beliefs and community attributes. In both economic and social forms, discrimination can internalize social taboos, dismissing them as behavioral forms. Contributions understanding socioeconomic disparities in health have concentrated on the identification of causal effects but have stopped short of uncovering the underlying mechanisms that produce the causal relationships (Galama, et.al., 2019). Institutional support, to alleviate long-term health deterioration, is further cultivated by assuming the disease rate of exposure is underreported to environmental domains. In essence we can design health awareness strategies that are representative and informed by the factors germane to health preservation and accurate in clinical exercise. We are adequately exploring health with context, and complexity.

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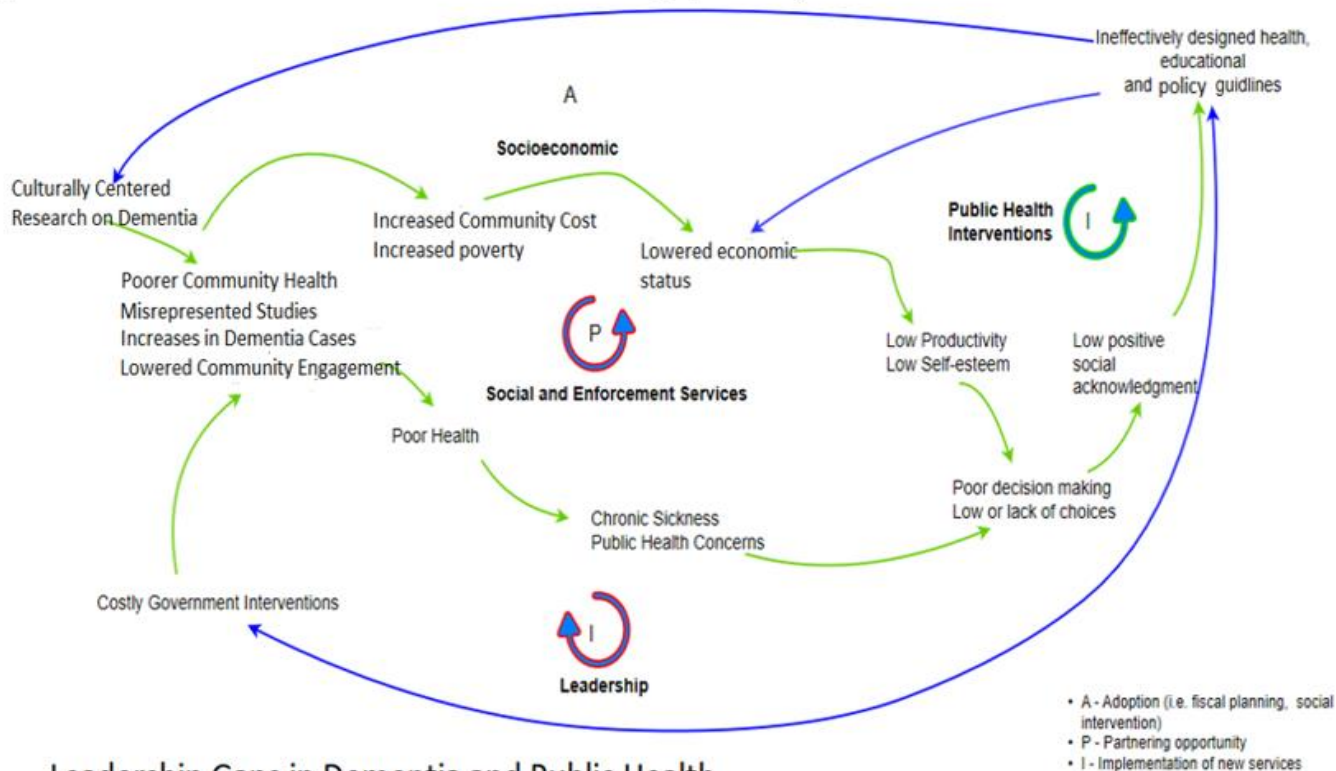
# Appendix: ABCD Ecologies



| Age | Age at time of image acquisition (years) |
|---|---|
| Sex | Sex (M or F) |
| Education | Years of education |
| SES | Socioeconomic status as assessed by the Hollingshead Index of Social Position and classified into categories from 1 (highest status) to 5 (lowest status) (Hollingshead, 1957) |
| MMSE | Mini-Mental State Examination score (range is from 0 = worst to 30 = best) (Folstein, Folstein, & McHugh, 1975) |
| CDR | Clinical Dementia Rating (0 = no dementia, 0.5 = very mild AD, 1 = mild AD, 2 = moderate AD) (Morris, 1993) |
| ASF | Atlas scaling factor (unitless). Computed scaling factor that transforms native-space brain and skull to the atlas target (i.e., the determinant of the transform matrix) (Buckner et al., 2004) |
| eTIV | Estimated total intracranial volume (cm3) (Buckner et al., 2004) |
| nWBV | Normalized whole-brain volume, expressed as a percent of all voxels in the atlas-masked image that are labeled as gray or white matter by the automated tissue segmentation process (Fotenos et al., 2005) |

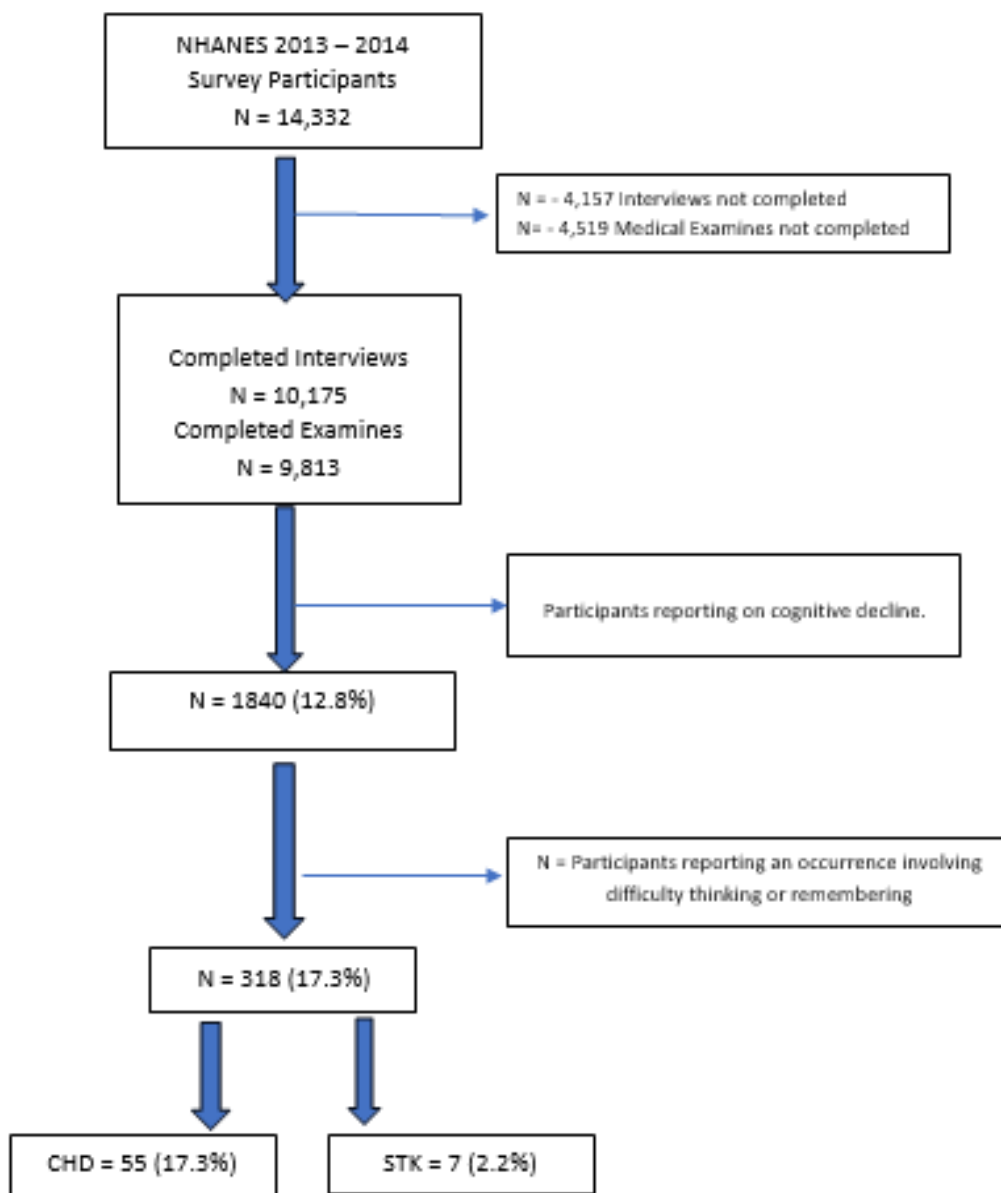**Figure 2. The Dementia and Public Health Casual Loop (DPHCL)**



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Causal Loop Theory

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| Theoretical Framework | Proposed Study Title: | Variable Nature/Coding Scheme |
|---|---|---|
| Title: Socio-Ecological Model (SEM) - The purpose of the study is a quantitative analysis exploring the statistical influences between cognitive dysfunctions, and coronary heart diseases, and the cognitive dysfunction and myocardial infarctions, while controlling covariate variables and monitoring for the classification of sexual orientation. | Association Between Cognitive Dysfunctions and Cardiovascular Disease, in Minority Groups of the United States | ` |
| 1 - Individual Level | 1 – Poverty Income Ratio – Independent variable | Nominal categorical variable Yes = 1, No = 0 |
| 2 - Individual Level | 2 -Age – Independent variable | Nominal categorical variable Yes = 1, No = 0 |
| 3 - Individual Level | 3 – Gender (as identified) – Independent variable | Nominal categorical variable Yes = 1, No = 0 |
| 4 - Individual Level | 4 – Ethnicity – Independent variable | Nominal categorical variable Ethnicity: White = 1, Black = 2, Asian = 3, Hispanic = 4, Native American = 5, Pacific Islander = 6, other = 7 |

| | | |
|---|---|---|
| 5 - Individual Level | 5 - Years of Education – Independent variable | Nominal categorical variable<br><br>Years of education: "High school" is 12 years = 1, "Bachelor of Arts/Bachelor of Science (BA/BS)" is 16 years = 2, and "Master's/PhD" is 18 years and above = 3 |
| 6 – Interpersonal Level | 6 – Marital Status – Independent variable | Nominal categorical variable<br><br>1 = Cohabitant, 2 = Living independently, 3 = None of the above |
| 7 – Communal Level | 7 – Social Support – Independent variable | Nominal Categorical Variable Yes = 1, No = 0 |
| 8 – Societal Level | 8 – Dependent (Positive for Cognitive Diagnosis) | Nominal Categorical Variable Yes = 1, No = 0 |

**Key Search Terms**

| | | | |
|---|---|---|---|
| Coronary Heart Disease | Cardiovascular Disease | Cognitive Dysfunction | Heterosexual populations |
| CHD | Alzheimer's Disease | Cognitive Disfunction | Dysregulation of physiological systems |
| Cognitive impairment | AD | Brain Disease | Vascular Disease |
| Neurological Impairment | Cardio Infarction | Cerebrovascular Disorders | VD |
| Dementia | Myocardial Infarctions | Cognitive health disparities | |
| Mild Cognitive Impairment | Cognitive Deficit | Sexual minority(s) | |
| MCI | Angina Pectoris | | |
| | Heart Disease | | |

Figure 1. Flow diagram displaying the number of cognitively impaired participants from survey to outcome.

**Table 7. The Association Between Cognitive Dysfunctions and Cardiovascular Diseases in Minority and LGBTQ Communities in the United States.**

| Variables | | Frequency | Percentile | Odds Ratios | 95% CI | Mean(s) | <p |
|---|---|---|---|---|---|---|---|
| Cognition (COG) | | 318 | 17.3% | 1.007 | [0.36, 2.85] | 1.83 | <.001 |
| Coronary Heart Disease (CHD) | | 55 | 17.3% | | | 1.95 | <.001 |
| Cognition (COG) | | 202 | 11% | 1.644 | [0.80, 3.39] | 1.83 | <.001 |
| Myocardial Infarction (MI) | | 45 | 4% | | | 1.97 | <.001 |
| Stroke (STK) | | 36 | 2.2% | | [0.98, 1.14] | | |
| Age(s) | COG | 1840 | | | [-0.02, 0.19] | 47 | <.001 |
| | CHD | 1084 | | | | 58 | |
| | MI | 1084 | | | | 56 | |
| Gender(s) | Males | 928 | 50.4% | 1.039 | [0.68, 1.58] | | <.001 |
| | Females | 912 | 49.6% | | | | |
| Sexual Orientation(s) | Heterosexual or straight | 614 | 91.4% | | [92.6, 97.0] | | |
| | Homosexual or gay | 13 | 1.9% | | | | |
| | Bisexual | 26 | 3.9 % | | | | |
| | Something else | 9 | 1.7% | | | | |
| Race/Ethnicity(s) | Mexican American | 312 | 17.0% | 1.375 | [7.0, 16.9] | | |
| | Other Hispanic | 165 | 9.0% | 1.359 | | | |
| | Non-Hispanic White | 668 | 36.3% | 1.596 | | | |
| | Non-Hispanic Black | 414 | 22.5% | 1.413 | | | |
| | Non-Hispanic Asian | 195 | 10.6% | | | | |
| | Other Race - Including Multi-Racial | 86 | 4.7% | | | | |
| Education Levels (EDU) | Less than 9th grade | 81 | 7.5% | | [2.6, 4.7] | Some College or AA degree | |
| | 9 - 11th grade (Includes 12th grade with no diploma) | 152 | 14.0% | | | | |
| | High school graduate/GED or equivalent | 245 | 22.6% | | | | |
| | Some college or AA degree | 328 | 30.3% | | | | |
| | College graduate or above | 277 | 25.6% | | | | |
| Marital Status (MAR) | Married | 574 | 53.0% | | [52.1, 61.8] | Married | |
| | Widowed | 84 | 7.7% | | | | |
| | Divorced | 123 | 11.3% | | | | |
| | Separated | 25 | 2.3% | | | | |
| | Never Married | 207 | 11.5% | | | | |
| | Living with partner | 69 | 6.4% | | | | |
| Annual household incomes (AHI) | 0 to $4,999 | 49 | 2.7% | | | $100,000 and over | |
| | $5,000 to $9,999 | 65 | 3.6% | | | | |
| | $10,000 to $14,999 | 117 | 6.4% | | | | |
| | $15,000 to $19,999 | 117 | 6.4% | | | | |
| | $20,000 to $24,999 | 167 | 9.2% | | | | |
| | $25,000 to $34,999 | 224 | 12.3% | | | | |
| | $35,000 to $44,999 | 151 | 8.3% | | | | |
| | $45,000 to $54,999 | 153 | 8.4% | | | | |
| | $55,000 to $64,999 | 90 | 4.9% | | | | |
| | $65,000 to $74,000 | 69 | 3.8% | | | | |
| | $20,000 and over | 63 | 3.5% | | | | |
| | Under $20,000 | 26 | 1.4% | | | | |
| | $75,000 to $99,999 | 160 | 8.7% | | | | |
| | $100,000 and over | 312 | 17.1% | | | | |
| Ratio of family income to poverty (RFIP) | | | | 1.042 | [0.91, 1.96] | | |

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CHART 8 DEMOGRAPHICS AND RISK FACTORS BASED ON COGNITIVE IMPAIRMENTS AND CORONARY HEART DISEASES 2013−2014



Chart 18 Demographics and risk factors based on Cognitive Impairments and Myocardial Infarctions NHANES data 2013–2014.
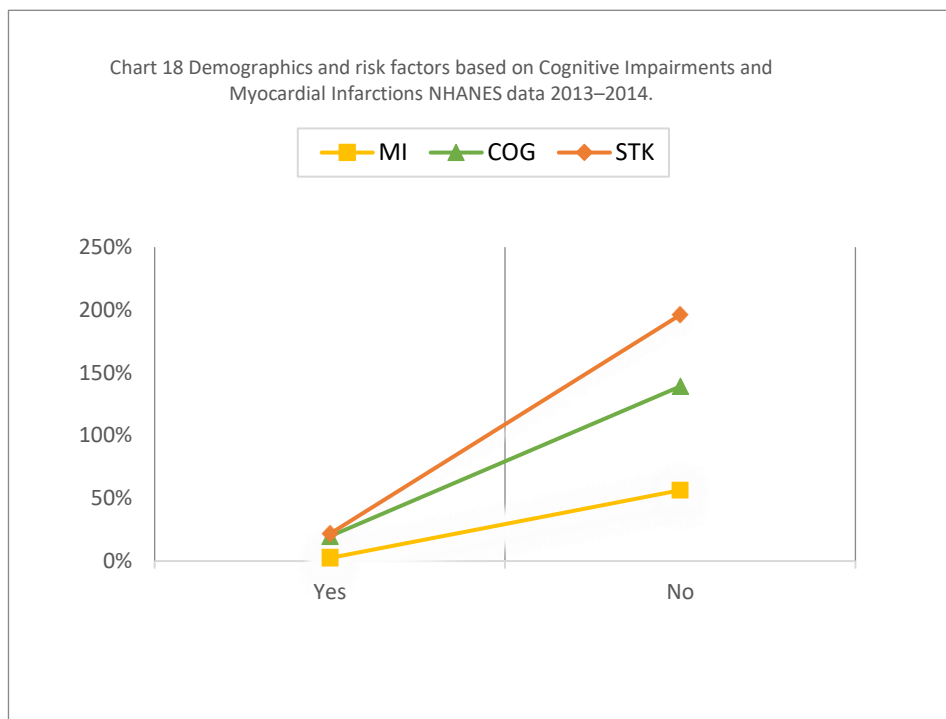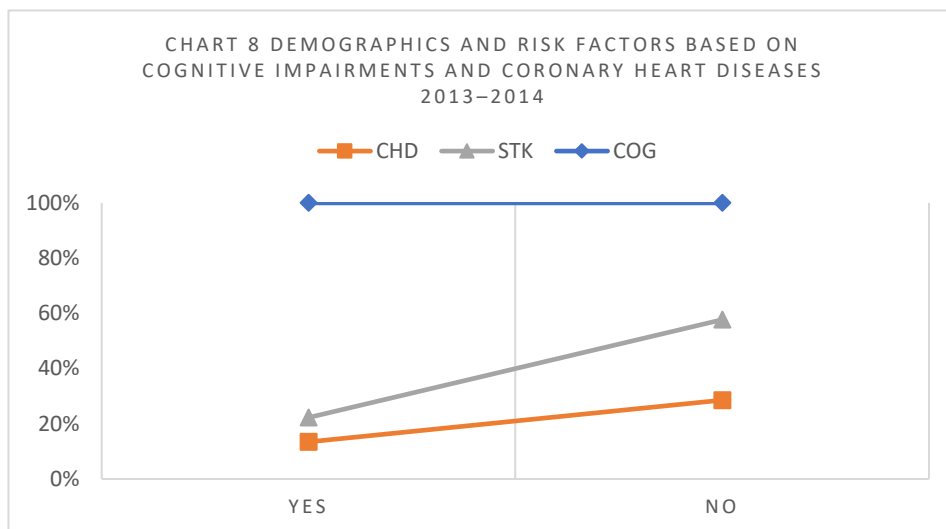
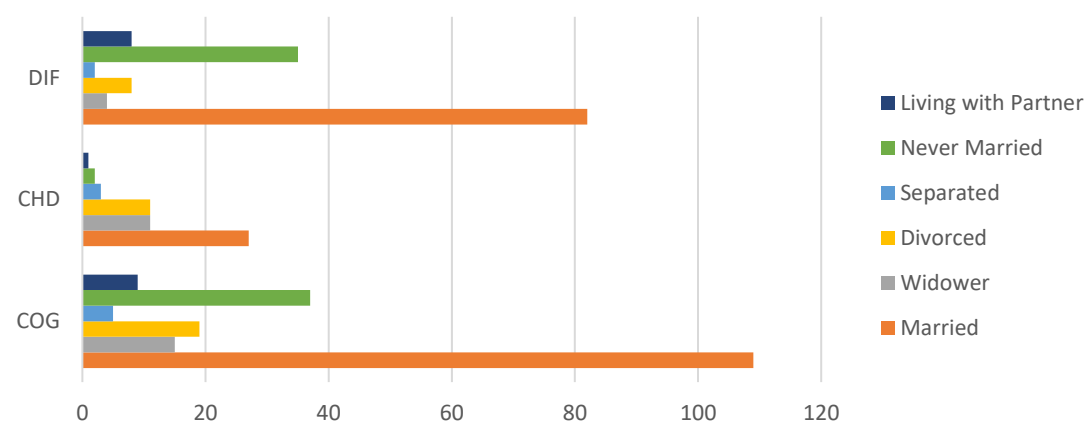Chart 11. Marital risk factors based on Cognitive Impairments and Coronary Heart Disease 2013–2014.



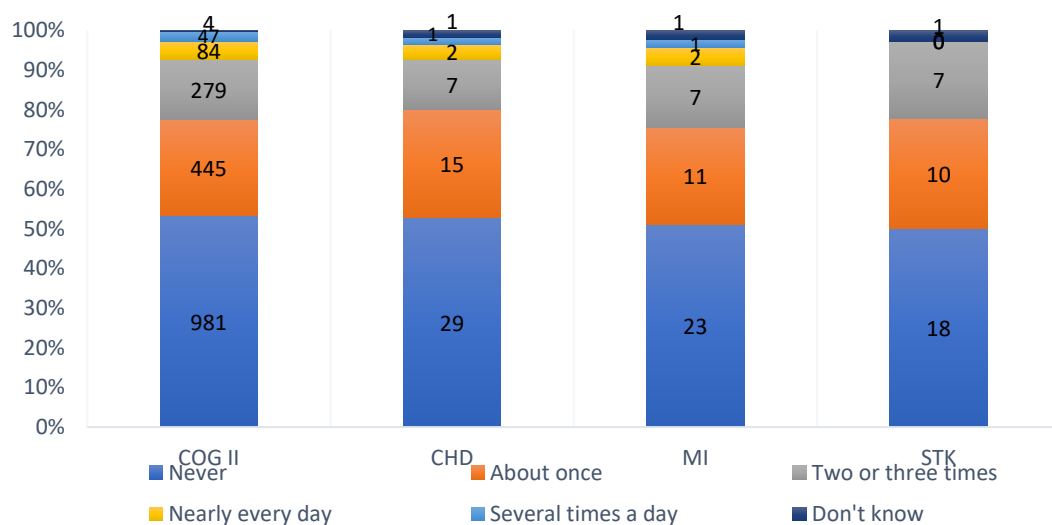Chart 14 Assumption (2) - Cognition in comparison to CVD health.

## Chart 15 - Assumption 2, assumes a percentage of cognitive occurences reported by CVD are related to cognition loss.
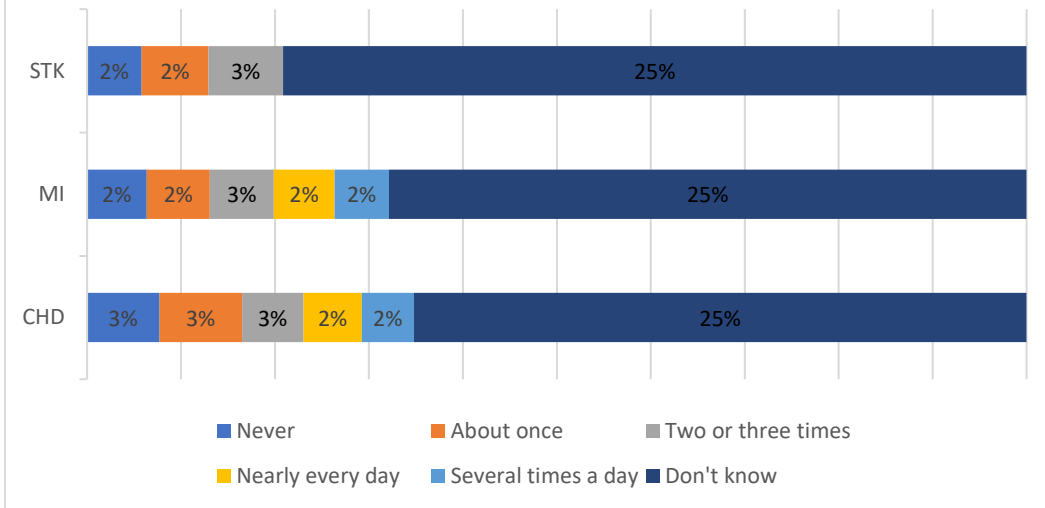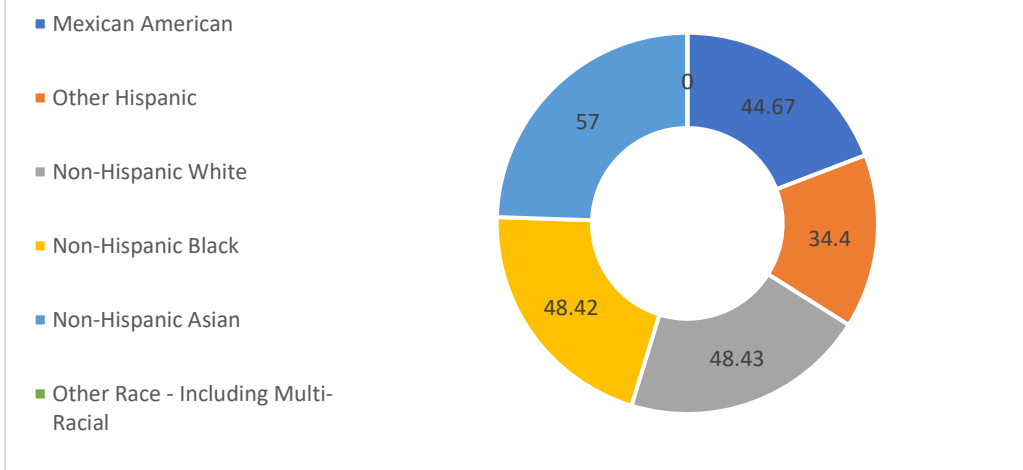
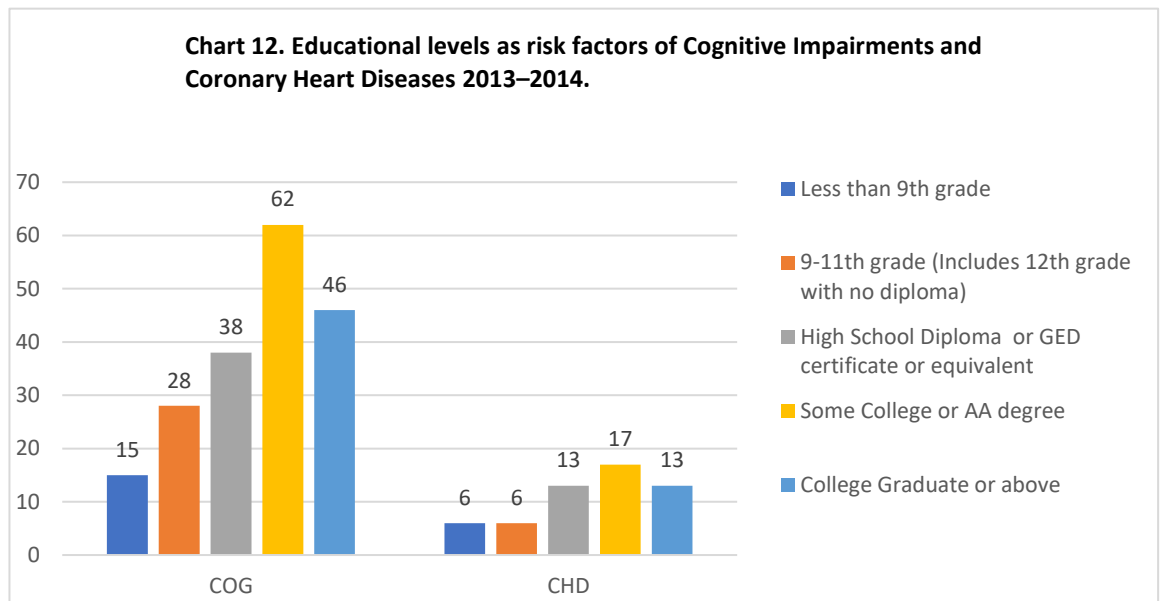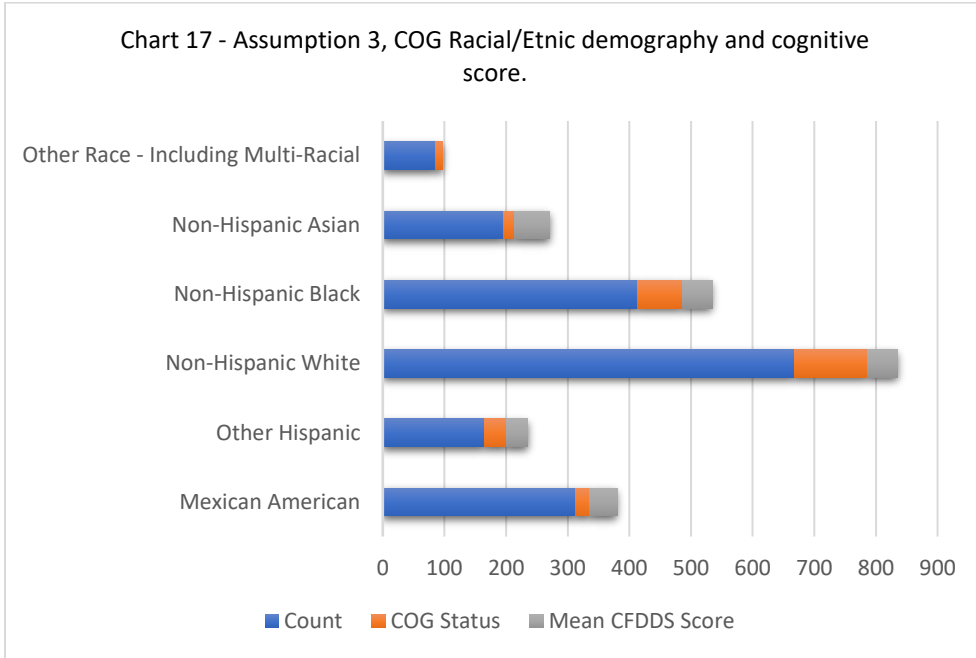| | Never | About once | Two or three times | Nearly every day | Several times a day | Don't know |
|---|---|---|---|---|---|---|
| STK | 2% | 2% | 3% | | | 25% |
| MI | 2% | 2% | 3% | 2% | 2% | 25% |
| CHD | 3% | 3% | 3% | 2% | 2% | 25% |

Legend:
- Never
- About once
- Two or three times
- Nearly every day
- Several times a day
- Don't know

## Chart 16 - Assumption 3, Mean CFDDS Scores

- Mexican American
- Other Hispanic
- Non-Hispanic White
- Non-Hispanic Black
- Non-Hispanic Asian
- Other Race - Including Multi-Racial

Values: 44.67, 34.4, 48.43, 48.42, 57, 0

Chart 17 - Assumption 3, COG Racial/Etnic demography and cognitive score.



Chart 12. Educational levels as risk factors of Cognitive Impairments and Coronary Heart Diseases 2013–2014.

G Power Calculator version 3.1.9.7