

2020

## Access to Healthcare for American Indians Residing in the Northeast United States

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# Walden University

College of Health Sciences

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Kristine D. Thomas-Jones

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2020

Abstract

Access to Healthcare for American Indians Residing in the Northeast United States

by

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MS, Quinnipiac University, 2011

BS, University of Rhode Island, 1987

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Walden University

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## Abstract

Urban American Indians/Alaskan Natives (AIs/ANs) have limited access to health care in comparison to non-Hispanic Whites (NHWs), which furthers health disparities for indigenous communities. The purpose of this quantitative, nonexperimental study, which was guided by the socioecological model, was to examine the relationship between access to health care and healthcare utilization among urban AIs/ANs and urban NHWs in the Northeast United States. The research questions addressed the difference in access to healthcare based on health insurance, difference in healthcare utilization, and whether there is an association between health care access and health care utilization for AIs in the Northeast United States. Additionally, the study addressed whether race, gender, age, income, and education status predict access to healthcare. Secondary datasets from the Research Data Center/Centers for Disease Control and Prevention were used. Dataset samples were retrieved based on race (AI/NHW), age (18- 85 years old) and demographics (Northeast United States). Statistical analysis included chi-square test and logistic regression. Results led to rejecting all the null hypotheses ( $p < 0.05$ ), indicating a moderate association between healthcare access and utilization for urban AIs and higher health care access for NHWs (73%) compared to AIs/ANs (43%). Age and earnings predictors for healthcare access indicated a 50/50 chance of having access to health care. Social change implications for this study include encouraging public policies to combat access to health care issues for indigenous communities in the Northeast United States.

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## Dedication

I dedicate this dissertation to the creator my lord and savior Jesus Christ. I would also like to thank and dedicate this dissertation to my family, my parents Carol and Carter Thomas, for their neverending love and support in my educational journey and my husband, Bobby Thunderhawk Jones, for his love and support during this journey.

In addition, I would also like to dedicate this dissertation to my ancestors who have passed that includes my nana, Esther (Weeden) Guy, a strong Native American woman from the Northeast who taught me always to embrace my heritage and never forget my family and ancestors that includes cousin Princess Redwing of the Seven Crescents and my fourth great grandfather Simeon Simonds a strong Indian from Putnam Connecticut who was in the American Revolutionary War. I also dedicate this to my grandfather Clifford Guy a strong and loving Wampanoag Indian who lived life to the fullest.

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## Chapter 1: Introduction to the Study

American Indians and Alaska Natives (AI/ANs) in the United States have endured health disparities and inadequate health care (Espey et al., 2014). Although health care is a legal right for members of federally recognized tribes, this population still suffers from many disparities associated with health status and access to health care (Willging et al., 2018). Indian Health Services (IHS) has, in previous decades, provided improvements in health for many AI/AN communities by controlling many infectious diseases affecting many Native American populations (Espey et al., 2014). However, presently obesity and chronic diseases have prevailed within this community (Espey et al., 2014). Native Americans also continue to suffer from higher rates of illnesses in comparison to non-Hispanic Whites (NHWs) like diabetes mellitus, heart disease, and hypertension (Willging et al., 2018). Additionally, fewer individuals are likely to have health care insurance coverage, access to health care, and the ability to see a medical doctor (Willging et al., 2018). Barriers that impede this community's access to care include accessibility and financial barriers (Davy et al., 2016; Kullgren et al., 2012). For instance, there has been an unequal amount of health services for specific communities (Von dem Knesebeck, 2015). This inequality can lead to Native American communities becoming vulnerable to further illnesses and diseases that could have initially been treated (Rutman, Phillips, Sparck, 2016).

Access to healthcare is a critical issue for the Native American community. It is also imperative to further review and explore health care access and utilization association with health outcomes to further determine adverse health conditions related to

these issues (Rutman et al., 2016). This study was focused on AI access to health care and health care utilization in the Northeast United States. This study can enable further awareness and a positive perspective for future policies and guidelines for the native community to enable healthier outcomes and education for future generations.

### **Background**

Access to healthcare is essential for AI/AN communities to prosper, reduce the risk factors associated with chronic illnesses, and develop policies for improved health care access within urban AI communities. Examining access to healthcare and health care utilization can help decrease health care costs, provide health care services to vulnerable communities, and improve health outcomes (Rutman et al., 2016). The journal articles reviewed for this study relate to health access, health care utilization, chronic illnesses, and accessibility for health services and utilization for urban AI communities and urban NHW communities. For instance, the literature provided information pertaining to health service needs for urban AIs/ANs and the development aspects for cultural competency (Dennis & Momper, 2016). The literature also revealed disparities in the mortality rate for chronic illnesses like diabetes for AIs/ANs compared to NHWs (Cho et al., 2014). The literature also highlighted AI/AN accessibility to health care and urban health utilization, barriers to health access, and accessibility to IHS offices in prevalent regions of the United States such as the western and plain regions compared to northeast areas of the United States (Jim et al., 2014; Rutman et al., 2016).

Additional literature provided insight into a gap in the literature related to Northeastern AIs, which was further explored in this research. Research used for this

study was focused on health disparities and utilization for AI/AN and comparing them between urban AI/AN and urban NHWs and the health outcomes for this population (Kruse et al., 2016; Von dem Knesebeck, 2015). Research that was also incorporated focused on chronic diseases for AIs/ANs and risk factors and the psychosocial and behavioral perspectives (Scarton, de Groot, 2017; Schmittdiel et al., 2014). Health access and utilization is needed for treating chronic illnesses. Therefore, it was important to examine health disparities, socioeconomic aspects, and individual behavior associated with susceptibility to chronic illnesses, which can help provide healthier outcomes for indigenous populations.

### **Problem Statement**

A wide range of health disparities persist between AIs/ANs and NHWs, which is possibly due to variations in access to health care (Rutman et al., 2016). AIs/ANs within their tribal populations have experienced lower health status in comparison with other Americans (IHS, 2019). Lower life expectancy and a disproportionate disease burden for AIs/ANs is perhaps interrelated to inadequate education, disproportionate income, health services discrimination, and cultural variations (IHS, 2019). Further, indicators or life changes include education and occupation, which are used to measure social inequalities that impact health access and utilization to health care (Von dem Knesebeck, 2015).

Access to health care for Indians is limited for individuals residing in urban areas in comparison to those in rural regions (Rutman et al., 2016). There is also an increase of AIs/ANs relocating from rural regions to urban regions in the United States (Rutman et al., 2016). For instance, since 2010, 70% of approximately 5 million natives have moved

from rural to urban areas for better quality of education, housing, and employment opportunities (Rutman et al., 2016). However, urban AI/ANs' access to health care and health utilization is lower (Rutman et al., 2016). Urban AI/ANs are unable to afford physician visits and are less apt to have a primary care physician both due to health care costs and lack of health insurance coverage (Rutman et al., 2016). Urban AI/ANs also experience poor health outcomes due to racial and social inequities, high unemployment rates, historical trauma, and limited social, health, and cultural resources (Dennis & Momper, 2016). More health insurance coverage can affect health outcomes by improving health care access, preventative treatments, health care screenings, and regular care for chronic illnesses (Rutman et al., 2016).

Additionally, federally recognized AI/AN tribes receive health care from IHS, but unrecognized tribes are limited to access to health care due to their ineligibility for IHS services (Jim et al., 2014). However, AI/ANs who receive care from IHS may still lack proper health access because of limited medical specialists (Jim et al., 2014). There are fewer IHS offices in the Northeast United States due to the lack of federal tribes within this region, which further reduces health care access for AI communities (Jim et al., 2014). A reduction in health care can be critical, especially if individuals suffer from chronic illnesses, as fewer treatment options can accelerate health complications (Schmittiel et al., 2014). Therefore, this study was necessary to address healthcare access for AI/ANs in the Northeast United States.



### **Purpose of the Study**

The purpose of this study was to examine the relationship between access to health care and healthcare utilization among urban AIs/ANs and urban NHWs in the Northeast United States. Identifying access to health care and health care utilization may help further develop policies to improve health access and assist indigenous communities toward improved treatment options. These options are important for managing chronic diseases, preventative measures for diseases, improving health outcomes, managing health costs, and improving mortality rates for this community (Rutman et al., 2016). Presently, there is a gap in research for AIs within the Northeastern United States regarding health access, urban health utilization, health outcomes, social inequalities, and socioeconomic issues associated with access to healthcare and urban AI utilization. Further research is warranted to address healthcare access, social inequalities, socioeconomic issues, health outcomes, and the demographics associated with this community.

### **Research Questions and Hypotheses**

Research Question 1: What is the difference in access to healthcare (health insurance) between urban American Indians and urban non-Hispanic Whites who reside in the Northeast United States?

$H_0$ 1: There is no difference in access to healthcare between urban American Indians and urban non-Hispanic Whites residing in the Northeast United States.

$H_a$ 1: There is a difference in access to healthcare between urban American Indians and urban non-Hispanic Whites residing in the Northeast United States.

Research Questions 2: What is the difference in healthcare utilization between urban American Indians and urban non-Hispanic Whites who reside in the Northeast United States?

$H_02$ : There is no difference in healthcare utilization between urban American Indians and urban non-Hispanic Whites residing in the Northeast United States.

$H_a2$ : There is a difference in healthcare utilization between urban American Indians and urban non-Hispanic Whites residing in the Northeast United States.

Research Question 3: Is there an association between health care access (health insurance) and health care utilization and being an urban American Indian in the Northeast United States?

$H_03$ : There is no association between health care access and utilization in urban American Indians in the Northeast United States.

$H_a3$ : There is an association between health care access and utilization in urban American Indians in the Northeast United States.

Research Question 4: Does race, gender, age, income, and education status predict access to healthcare?

$H_04$ : None of the variables predict access to healthcare.

$H_a4$ : At least one of the variables predict access to healthcare.

This study will include a descriptive statistical analysis for the demographics of the participants. Further statistical analysis for this study will also include bivariate analysis, chi-square, and multivariate logistic regression.

## Conceptual Framework

This study was guided by the socioecological model (SEM) by Bronfenbrenner (Henderson & Baffour, 2015). This theory includes multiple levels of interaction including individual, interpersonal, community, and policy levels (Centers for Disease Control and Prevention [CDC], 2020). The SEM was used to examine the relationship between access to healthcare and utilization among urban AIs in the Northeast United States. The policy level of this model can be interrelated to AIs who are affected by health access and utilization that may be associated with federal, state, and local organizations that influence policies for individuals within this population. In addition, studying the demographics for Native population included age, gender, education status, and income level, which were used in determining the relationship between these factors and health access and utilization for the native population and community.

Another band of SEM is the community band that can be correlated with community organizations like urban health centers that may serve as facilities for Native individuals to change their behavioral choices for improving access to health and healthier outcomes for Native communities (CDC, 2020). Chronic illnesses like diabetes, obesity, and heart disease are prevalent in the Native American community, and increased risk of cancer mortality is also associated with chronic illnesses like diabetes (Best et al., 2015). Addressing the diseases within this community could include future supportive organizations (Best et al., 2015). For instance, health facilities can evaluate behavioral changes for urban native communities and work on improving policies related to preventative measures for healthier outcomes (Best et al., 2015; CDC, 2020). The

adaptation of policies that support preventive care is a positive step for communities that suffer from this disorder (CDC, 2020). This model has been used to discuss preventative measures associated with the reduction of chronic illnesses, including diabetes, a consideration in reducing the mortality rate within this population related to illnesses (Best et al., 2015). Individuals can, therefore, further facilitate the design of more effective diabetes prevention strategies that are beneficial and moving toward healthier outcomes for this community (Hu et al., 2015).

### **Nature of the Study**

The nature of this research study consisted of a quantitative method. The research approach included a correlation concerning the relationships between access to healthcare for AIs in the Northeast United States. Descriptive statistics were also used to identify the demographics of the research participants (see Rutman et al., 2016). Additionally, a bivariate analysis was used to compare health care access and health care utilization between the two groups (AIs and NHWs), and binomial logistic regression was used to analyze the association between healthcare access and coverage (dependent variable) and AI and NHWs (independent variable; Rutman et al., 2016). This approach helped provide a better insight concerning health access and healthcare utilization for this community in the Northeast United States.

The research method for this study is a quantitative nonexperimental design. This design helped examine the natural relationship between variables with no research manipulation (Burkholder, Cox, & Crawford, 2016). This study consisted of secondary data collected by randomized experimental design that includes a control group design to

analyze and further determine causal inferences from the results of the analysis by data collection with experimental control and random assignment (Burkholder et al., 2016). The sources for the secondary datasets are from the Research Data Center (RDC) branch of the CDC—specifically National Health Interview Survey data from the CDC. This study included data to review the research questions that includes demographics, health status, and accessibility, and utilization.

### **Definitions of Terms**

*Access to healthcare:* Has several dimensions that include service availability, use of services, and the relevance of services (Sakellariou & Rotarou, 2017).

*American Indian/Alaskan Native (AI/AN):* Refers to an individual who has origins in any of the original peoples of North and South America (including Central America) and maintains tribal affiliation or community attachment (U.S. Census Bureau, 2012). AI/AN populations include individuals who marked the “American Indian or Alaska Native” checkbox or reported entries (U.S. Census Bureau, 2012).

*Bureau of Indian Affairs (BIA):* A governmental agency under the Department of Interior and was first established in 1824 with a principal role in the relationship between the US federal government and AIs and AI and AN tribes (U.S. Department of the Interior Indian Affairs, n.d.a.).

*Contact health service delivery area:* For AI/AN to receive IHS services, they must live either on a federally recognized reservation or within a contract health service delivery area county (Bhaskar & O’Hara, 2017). These counties include all or part of a

reservation and counties with common boundaries within the reservation counties (Bhaskar & O'Hara, 2017).

*Department of Interior:* Congress passed a bill on March 3, 1849 to create the Department of Interior that oversees nations internal affairs and includes various branches like the BIA (U.S. Department of Interior, n.d.).

*Indian Health Services (IHS):* Program that was established in 1955 that services approximately 2.1 million members of federally recognized tribes. IHS have also provided services that include primary care, lab services, x- rays, pharmaceutical services, and specialty doctor visits, health centers, and stations or through contract service providers (Bhaskar & O'Hara, 2017).

*Indian Self-Determination and Education Assistance Act:* This law was acted in 1975 affecting how health services are provided to AI/AN tribes (Warne, & Frizzell, 2014). This act serves as the basis for authorizing tribes to assume the management of both the BIA and IHS programs, and it directs secretaries for the Department of Interior and Health and Human Services to enter into self-determination contracts via the request of AI/AN tribes (Warne, & Frizzell, 2014).

*Indian Health Care Improvement Act:* According to Centers for Medicare and Medicaid (n.d.), in 1976, the Indian Health Care Improvement Act amended the Social Security Act to allow reimbursement by Medicare and Medicaid for services provided to AI/ANs in IHS and tribal health care facilities. Congress also recognized that many Indians who reside in rural locations were eligible due to lacking access to Medicaid and Medicare services without traveling many miles to providers on the reservations (Centers

for Medicare and Medicaid, n.d.). The Indian Health Care Improvement Act enables full reimbursement for Medicaid services that were provided through IHS Centers for Medicare and Medicaid, n.d.). Indian Health Care Improvement Act was made permanent under the Affordable Care Act on March 23, 2010.

*Federally recognized tribes:* AI/AN tribal entity that is recognized as having a government-to-government relationship with the United States and includes the responsibilities, powers, limitations, and obligations with this designation, including eligible for funding and services through the BIA (U.S. Department of the Interior Indian Affairs, n.d.b.). The BIA also regulates the governing of federal recognition of Indian tribes, and they require that tribes consist of individuals who descend from a historical Indian tribe (Ablavsky, 2018).

*State-recognized tribes:* Includes state-recognized tribes, which are Indian tribes and heritage groups recognized by an individual state(s) for their various internal state government purposes (Administration for Native Americans, 2014).

*Title I (638):* Title I consists of federally recognized tribes or tribal organizations that contract or contracts with IHS to plan, conduct, and administer programs, functions, services, or activities under Public Law 93-638 and includes construction of programs that IHS provides for Indians due to their status as Indians (U.S. Department of Health and Human Services [U.S. DHHS], n.d.a.). Public Law 93-638 is also part of the Indian Self-Determination and Education Assistance Act and authorizes AI/AN tribes and tribal organizations to contract for the administration and operation of specific federal programs that provide services to AI/AN tribes and their members (U.S. DHHS, n.d.a.).

*Title V:* A federally recognized tribe can assume control over health care programs and services that IHS would otherwise provide (U.S. DHHS, n.d.b.). A tribe may redesign or consolidate program, services, functions, and activities and reallocate or redirect funding without IHS approval in accordance with the Indian Self-Determination and Education Assistance Act (U.S. DHHS, n.d.b.)

*Type II diabetes:* A disease due to the development of adipose cells that become insulin resistant that can lead to type II diabetes (Marieb & Katja, 2016).

*Urban Indians:* AIs and ANs living in urban areas (U.S. DHHS, 2017).

*Urban Indian health centers:* Facilities that are designated as federally qualified health centers that provide health care and related services to AIs and ANs (Health Resources & Services Administration, 2018). They are owned or leased by urban Indian organizations that receive grants and contracts funding through Title V of the Indian Health Care Improvement Act (Health Resources & Services Administration, 2018).

### **Assumptions**

Researchers' beliefs and assumptions help to shape their research (Kirkwood & Price, 2013). For this study, it was assumed that access to healthcare for an indigenous population is an issue that needs further examination to work toward making access to health care more feasible and affordable for this population. The assumptions also centered around various aspects to access to healthcare like affordability as well as structural, cultural, and socioeconomic barriers associated with healthcare.

It was assumed that healthcare access for this population is interrelated with chronic illnesses that are dependent on quality healthcare to manage illnesses.



Assumptions were made that indigenous populations in urban regions of the United States have limited healthcare access because federal tribes within certain regions of the United States have restricted access to healthcare at IHS facilities, so individuals may become more susceptible to adverse effects of unmanaged chronic illnesses. Additionally, it was assumed that Native Americans in the Northeast United States are limited by IHS offices, including urban health centers, so they are not able to receive healthcare services within urban regions where they live.

In addition, it was assumed that research concerning access to healthcare for indigenous communities in the Northeast United States and research findings could demonstrate a need for quality healthcare services for these communities. Data can further reflect on developing a comprehensive approach for implementing policies and procedures within local, state, and federal institutions for Native American communities that have been limited to health care access. It was assumed that secondary data sources used in this research consist of truthful and accurate information.

### **Scope and Delimitations**

The scope of this study consisted of AIs' data from national governmental databases. This study included AIs who reside in the Northeast United States and are recognized as Native Americans from the local, state, and or federally levels of government. The study is limited to datasets for AIs from a 1-5-year basis from the CDC. Participants for this study included adult males and females over the age of 18 and who identified as indigenous individuals from the secondary data sets. Only secondary datasets for AIs from the Northeast United States will be included in this study. The study

is exclusive to this region of the United States due to a gap in research for indigenous communities within this region of the United States.

### **Limitations**

A limitation for this study concerns some aspects of the populations that may not be included in the secondary datasets. For instance, certain Native Americans could have been left out of the census or misclassified into another ethnic category, which excludes them from the data set. However, this study consists of various data sets to include a substantial sample size for indigenous populations within the Northeast United States for the determination of access to healthcare for these communities to provide recommendations for further studies and analysis. The delimitation of location may limit the generalizability of the results.

### **Significance of the Study**

This study will fill a gap in the literature relative to access to health care, urban AI health utilization, social inequalities, socioeconomic issues, health outcomes, and demographics for AIs residing in the Northeast United States. Studies have shown that social inequality indicators like education and income have an impact on health access and utilization of health care in various health care systems like urban Indian health systems (Von dem Knesebeck, 2015). But there is a limited amount of studies on access to health care and health care utilization patterns among urban AIs/ANs (Rutman et al., 2016). Thus, this study is distinctive because it addressed a lack of research related to AIs within this region of the United States (Jim et al., 2014). Studies have been done that researched health access and urban AIs/ANs utilization compared to NHWs, but the

research did not include specific AI of the Northeast United States. This research can further lead to positive social change and outcomes and further research for these communities to enhance positive health outcomes and improve health policies in the future.

### **Social Change Implications**

It is imperative that individuals have access to health care because, which can improve quality of life and health outcomes (Davy et al., 2016). This study was focused on access to healthcare within indigenous communities, which have had many issues with health disparities associated with healthy outcomes (Rutman et al., 2016). The interest for this study was to further study this population to increase awareness to this issue, especially in the Northeast United States, which has had a gap in the research for AI communities and populations. This study can also serve as a tool for social change implications by showing a need for intervention. In addition, this study may lead to implementing improved policies and procedures to improve health outcomes for indigenous populations within the Northeast United States.

### **Summary and Transition**

In summary, this study was focused on access to health care and utilization for indigenous communities in the Northeast United States, which can address socioeconomic issues and their negative effects on chronic illnesses. Urban Indians are more susceptible to poorer health outcomes than NHWs. Urban Indians have relocated from rural to urban regions for improved life changes, but access to health is still a challenge.

This research was focused on indigenous populations in a specific region and included secondary databases to analyze this issue. The research questions were focused on urban AIs' access to health care in comparison to NHWs. The SEM guided the study because it incorporates individuals, communities, interpersonal, and policies. In addition, the research approach included a bivariate analysis and binomial logistic regression to access the correlation between health care access and AIs and NHWs.

This research may lead to further investigations and further policy changes for the betterment of this population. Although there are some limitations that are associated with misclassification of native individuals, this research adds to the literature. Moreover, the social implications of this study include improving health accessibility and health outcomes. The next chapter of this research will include a literature review on the specific background of Native Americans, federal laws, policies, and the establishment of federal Indian organizations associated with Indian health services, urban health, and various barriers linked to health care for AIs/ANs.

## Chapter 2: Literature Review

### **Introduction**

AIs/ANs suffer from disparities such as access to health care services and health care utilization (Rutman et al., 2016; Willging et al., 2018), which is disproportionate compared to NHWs (Rutman et al., 2016; Von dem, Knesebeck, 2015). These disparities exist despite AIs/ANs having a legal right to health care due to being members of federally recognized tribes (Willging et al., 2018). This population is also suffering from a higher rate of diseases, substance abuse issues, and mental health distress in comparison to other populations within the United States (Willging et al., 2018). The purpose of this study was to examine the relationship between access to health care and healthcare utilization among urban AIs/ANs and urban NHWs in the Northeast United States.

Chapter 2 will begin with the conceptual framework model: the SEM. The next aspect of the review will consist of the background information of IHS and urban Indian health centers for AIs/ANs. The literature review will continue with an introduction of the funding of IHS for urban Indians and access to health care and utilization for AIs. In addition, health disparities and health inequalities will also be presented with a focus on urban AIs/ANs and health disparities, mortality rates, and their association with chronic illnesses and diseases within Native American communities. Information will also be presented concerning the life expectancy and socioeconomic issues of AIs and how it is associated with access to health care. Lastly, health outcomes and socioeconomic issues will be further analyzed as they are associated with chronic diseases that include diabetes, heart disease, and obesity for Native American individuals and communities.

### **Literature Search Strategy**

The journal articles for this review were analyzed and reviewed based on subject matters that included AI/AN health and access to health care, health utilization, IHS, DHHS, urban Indian health, BIA, indigenous health, socioeconomic issues, health disparities, social epidemiology, and chronic diseases and illnesses for Indigenous populations and communities. Scholarly databases from academic resources were used to search for peer-reviewed journal articles that pertained to the subject matter. I used ProQuest health and medical databases along with Google Scholar for finding articles. Government websites were a resource for further analyzing and gathering background information concerning the history of laws and treaties, the BIA, IHS, and the DHHS.

### **Conceptual Framework: Social-Ecological Model**

The SEM is a multi-band theory that includes individual, relationship, community, and societal factors (CDC, 2020). This model depicts the dynamic relationships among individuals, groups, and their environments that impact individuals based on individuals and organizations they interact with, available resources and organizations, and societal norms and guidelines (Golden et al., 2015). The model's layers also stem from an individual to environmental levels (Solmon, 2015). The interpersonal aspects consist of family, organizations, institutions, and the relationships of communities among organizations (Solmon, 2015). The outer layer of this model coincides with society, public policy at the state, national, and local laws, and regulations (Solmon, 2015). This model coincides with AI/AN individuals within their community and their accessibility to health services within an urban environment.

Public policy, laws, and regulations are the focus on the societal level of this model (Solmon, 2015). The policy level of this model can be interrelated to AIs who are affected by health access and utilization associated with federal, state, and local organizations that influence policy for individuals within this population. Studying the demographics of the Native American population also includes variables such as age, gender, education status, and income level, which is instrumental in determining factors to access further the relationship between these factors and health access and utilization for native populations and community.

The community band within the SEM may be associated with community organizations that include urban health centers that may serve as facilitates for native individuals to change their behavioral choices for improving access to health and healthier outcomes for Native American communities (CDC, 2020). Chronic illnesses like diabetes, obesity, and heart disease are prevalent in the Native American community, and increased risk of cancer mortality is also associated with chronic illnesses like diabetes (Best et al., 2015). Consequently, further research and studies that focus on chronic illnesses and diseases within this community could include future organizations like health facilities that evaluate behavioral changes for urban native communities to help improve policies relating to preventative measures for healthier outcomes (Best et al., 2015; CDC, 2020). Adapting and providing policies that support preventive care is a positive step for communities that suffer from chronic illnesses and diseases (CDC, 2015).

The SEM may be used to further analyze and discuss preventative measures associated with the reduction of chronic illnesses that include diabetes, a vital consideration to reducing mortality rate within AI/AN populations that is tied to chronic illnesses (Best et al., 2015). For instance, the SEM has been used in health promotions to improve physical activity, including community -based physical activity (Solmon, 2015). SEM is also essential for health care providers to further assist in facilitating the design for more effective prevention strategies for healthy outcomes (Hu et al., 2015).

### **Literature Review Related to Key Concepts**

#### **History of American Indian/Alaskan Natives' Health Services**

For over 100 years, federal health services for AI/ANs has transformed, with each having an imprint on public health practices for indigenous populations (Rhoades & Rhoades, 2014). Health services for AIs/ANs often were established by treaties and the government's legislation process (Rhoades & Rhoades, 2014). Health care programs initially were developed for AIs/ANs during three periods: the U.S. Department of War in the early to mid-1800s, the BIA during the late 1800s to mid-1900s, and IHS between the mid-1900s to present (Rhoades & Rhoades, 2014).

The U.S. Department of War was the cornerstone for Indian affairs in the early to mid-1800s, which initially focused on trade and maintenance of peace (Rhoades & Rhoades, 2014). From the initial stages of this department, AIs/AN health was not under the attention of the U.S. Department of War, but with the affliction of infectious diseases like smallpox led to the lobbying of many AI/ANs for national intervention, which led to vaccinations for indigenous communities (Rhoades & Rhoades, 2014). Infectious disease



endemics also included measles, scarlet fever, flu, chickenpox, bubonic plague, the mumps, and whooping cough, which led to mortality rates of over 50%-90% just among New England Indians (Lipman, 2011). But it was not until 1832 that Congress appropriated \$12,000 for smallpox vaccination programs for AI/AN tribes from the upper Midwest and lower Missouri River region and Native Americans who were undergoing removal to Indian Territories (Rhoades & Rhoades, 2014). Further funding was also appropriated during the mid-1800s for the vaccinations for over 35,000 individuals, which led to the initial stages of federal health care for AI/AN individuals (Rhoades & Rhoades, 2014).

The BIA time frame lasted about a century and consisted of two stages: the reservation between the mid-1800s to 1900 and the post allotment period from the early to mid-1900s (Rhoades & Rhoades, 2014). This period included an increase in public health services for AI/AN communities and led to the development of the IHS, which is still in existence (Rhoades & Rhoades, 2014). Also, during this time frame, it was credited for increasing public health awareness, especially for the AI/AN populations in the United States (Rhoades & Rhoades, 2014).

The reservation period consisted of treaties that ensured the responsibilities of the federal government for IHS, an office that represented health administration (Rhoades & Rhoades, 2014). The post-allotment period also included Congress appropriating \$40,000 for health care for Native American populations, as during this time infectious diseases were causes of morbidity and mortality rates for AI/AN communities (Rhoades & Rhoades, 2014).

## **History of Indian Health Services**

In 1955 the Department of Interior shifted its federal responsibilities to the Department of Health, Education, and Welfare and included the IHS agency under this department (Rhoades & Rhoades, 2014). IHS is responsible for the overseeing of health services for AIs/ANs (U.S. DHHS, 2017). Health education and welfare health services are provided to AIs/ANs who are members of federally recognized tribes, which is due to a unique government to government relationship between Indian tribes and the Federal Government, though Native Americans who are not members of a federally recognized tribes are ineligible for IHS services (IHS, n.d.a.; U.S. DHHS, 2017).

In addition, the government to government relationship between federal tribes and the U.S. federal government was established in 1787 from Article I, section 8 of the U.S. Constitution, and continually developed through many treaties, laws, court decisions, and executive orders (IHS, n.d.a.). For example, the Indian Health Care Improvement Act and the Snyder Act were statutes that provided IHS with the governing authority to provide health services to AI/AN populations (U.S. DHHS, 2010). The Indian Health Care Improvement Act was established in 1976, and the Snyder Act was from 1921, and they both gave legal authorization to Congress to appropriate funds for AI/AN health care for tribal members of federally recognized tribes (Ross, Garfield, Brown, & Raghavan, 2015). Tribal members must, however, reside either on or near the tribal reservation to receive health care from IHS (Ross et al., 2015). Presently, these health services are provided to approximately 2.2 million AIs/ANs who are members of federally recognized tribes (U.S. DHHS, 2017). Indian Health System delivers health services to AI/AN

through IHS, and they are tribally operated facilities and urban health facilities, which are known as IHS/tribal/urban (Ross et al., 2015). IHS presently consists of 12 areas that provide health care services with a system that services 35 states and includes hospitals, health facilities, and clinics (Ross et al., 2015). IHS also serves over 40,000 inpatient visits and over 13 million outpatient visits annually, but the agency is under-funded (Ross et al., 2015).

## **History of Urban Indians, Urban Indian Health, and Indian Health Services**

### **Funding**

In the 1940s, only 8% of AIs/ANs resided in urban regions, and many native Americans predominately resided in rural Indian reservations (U.S. DHHS, 2017). However, in the 1950s and 1960s due to the federal government's termination policy and Indian Relocation program, there was an increase of AI/AN's individuals and families who were relocated to urban regions of the United States (U.S. DHHS, 2017). During this time, the BIA relocated over 16,000 AIs/ANs to preselected urban centers throughout the United States (IHS, n.d.b.). AIs/ANs who were relocated to urban areas were promised improved employment opportunities, improved housing, health care, and social-economic assistance while residing in an urban setting (U.S. DHHS, 2017). This program enabled natives to leave poorer socioeconomic living conditions on rural Indian reservations for improved socioeconomic opportunities in urban regions (U.S. DHHS, 2017). The population of AIs/ANs, therefore, grew in urban areas as reported by the U.S. 1970 census, which reported that an increase of 38% of AIs/ANs resided in urban regions (U.S. DHHS, 2017). In 1994, the updated census reported that over 1 million (58%) of

AIs/ANs were residing in urban areas (IHS, n.d.b.). The 2010 census reported that 71% of AI/AN populations reside in urban regions within the United States (Yuan et al., 2014).

During the late 1960s, the urban Indian community leaders were advocating both the state and federal government agencies for culturally appropriate health care programs that related to Native American culture and health care needs for urban Indians residing in urban regions of the United States (IHS, n.d.b.). Programs were developed that targeted health and outreach services, and Congress also acted by appropriating funds to research and study the unmet needs of urban Indian health (IHS, n.d.b.). But there were economic, cultural, and access to health care barriers, which caused the enactment of the Snyder Act to support Urban Indian Clinics in BIA relocation cities that included Seattle, San Francisco, Tulsa, and Dallas (IHS, n.d.b.). Additionally, Title V of the Indian Health Care Improvement Act provided funding for developing programs for AIs/ANs who reside in urban areas in the United States (IHS, n.d.b.). Over the years, Title V has continued to improve urban health Indian programs by expanding medical, alcohol and mental health, HIV services, and promoting health and wellness with preventative services (IHS, n.d.b.).

IHS urban Indian health programs provide health services for urban AIs/ANs living outside their service areas and tribal reservations through urban health centers—nonprofit organizations in over 50 locations within the United States (Ross et al., 2015). The services that urban Indian health programs provide range from ambulatory health care and referral services and funding resources for these services through IHS, Title V of

Indian Health Care Improvement Act, and state, federal, local and, private sources (Ross et al., 2015). Over 40% of the urban Indian health programs also receive Medicaid reimbursement as a federally qualified health center (Ross et al., 2015).

Though over 5 million of AIs/ANs reside in urban areas and over 2 million AI/AN receive IHS services, less than 1% of the funding from the federal government for health care services for AI/ANs is for contracts for services to urban Indians and grants (U.S. DHHS, 2013). There has also been a long history of health services for AI/AN being underfunded (Warne, & Frizzell, 2014). For instance, during the early and mid-90s, IHS funding that was appropriated for health services was increased by only 8%, but medical inflation increased by 20% (Warne, & Frizzell, 2014). From this data, researchers also found an increase in the AI/AN population, and based on the population increase, there was an 18% decrease per capita that was appropriated for IHS during this time frame (Warne, & Frizzell, 2014). In addition, a study in 1998 showed that there was a shortfall of 46% in the funding for Native Americans receiving care through the IHS program (Warne, & Frizzell, 2014). However, programs were developed within targeted regions to identify further access barriers to health services for Indians residing in urban regions and raise awareness of the unmet health needs of these natives (U.S. DHHS, 2017). For example, Congress provided funding for urban Indian health needs in Minneapolis for establishing programs for urban Indian health in the cities that were used for the relocation program in the cities of Tulsa, Oklahoma, Seattle, Washington, and San Francisco, California (U.S. DHHS, 2017).

### **Barriers to Healthcare Access for American Indian/Alaskan Natives**

Accessibility and acceptability are barriers that are nonfinancial and can be addressed by policymakers (Kullgren et al., 2012). Acceptability may be addressed with telemedicine and transportation services for individuals who live in rural areas that are far from health facilities (Kullgren et al., 2012). For instance, Native Americans who live in rural regions have less access to healthcare services in comparison to NHWs (Kruse, Bouffard, Dougherty, & Parro, 2016). Telemedicine is an option for Native Americans in rural regions to access quality health care at a reduced cost and increase access to healthcare within their rural reservation communities (Kruse et al., 2016).

Access to comprehensive, high-quality health care is essential for the promotion and maintenance of overall good health (U.S. DHHS, 2018). Quality health care can also be used for preventative measures and management of acute and chronic diseases (U.S. DHHS, 2018). Health access can decrease ~~of~~ disabilities and premature deaths (U.S. DHHS, 2018). Access to health includes main components of care such as insurance coverage, health services, and the timeliness for care (U.S. DHHS, 2018). Health utilization is also associated with health access and includes individuals having a primary care physician, other health care providers, and health specialist who is critical to positive health outcomes and preventative measures (U.S. DHHS, 2018).

For AIs/ANs, IHS provides care for approximately 1.9 million adult natives out of a total of 4.3 million natives who reside in the United States (Towne, Smith, & Ory, 2014). This gap for health care services affects over half of AI/AN individuals who reside in the United States (Towne et al., 2014). These healthcare gaps are also associated with a

low-level of funding to IHS and eligibility for IHS services (Towne et al., 2014). IHS services also have variations between tribes and qualifications for adult natives to have IHS health coverage (Town et al., 2014). Researchers have also discussed other factors associated with a lack of health access, like the availability and accessibility to IHS offices and the high cost of health care (Davy, Harfield, McArthur, Munn, & Brown, 2016; Town et al., 2014;). There is also a low presence for IHS offices in Northeast regions of the US, where there is a limited amount of federally recognized tribes (Jim et al., 2014). The decreased number of federal tribes in the northeast also leaves a portion of AI/ANs from state tribes and other native communities not eligible and excluded from IHS health services and access to health services (Jim et al., 2014).

**Financial barriers.** Vulnerable populations that included indigenous populations are susceptible to high health care costs, experiences of discrimination, lack of communication with healthcare providers (Davy et al., 2016). Jim et al (2014) also reported how eligible AI/AN individuals could receive health care at any IHS facility, but complex rules can restrict how contract health services are given to AI/AN. Examples of health care restrictions may include a lack of accessibility for AI/ANs to receive specialty medical services at IHS (Jim et al., 2014). Additional health care restrictions causing Native Americans to become vulnerable to health care services and costs are ineligible for IHS services or living outside the contact area for IHS services (Jim et al., 2014). A study has also found that exposed populations who lack health care coverage who are uninsured or underinsured face financial barriers that can lead to adverse effects, including less access to preventative care for chronic illnesses (Parikh et al., 2014).

Urban Indians are more apt to not have a primary care doctor and regular health care due to health care costs (Rutman et al., 2016). Urban AIs/ANs financial barriers are also higher among this group with cost barriers affecting their ability to see a physician (20.7%) in comparison to urban NHW's (12.7%) who are less apt to visit a physician due to health care costs (Rutman et al., 2016). In addition, Carrillo et al. (2011) also found that Latinos and African Americans are limited to access to physicians when ill, and unable to afford recommended tests and procedures. Other uninsured populations may also include undocumented immigrants, who are less apt to have health care coverage from the federal or state government and one study pointed out that uninsured populations included 20- 30% for Latinos and African Americans while NHWs was 12.5% (Carrillo et al., 2011).

Over 40 million Americans lack health insurance, with an estimated 11.4 million who suffer from chronic illnesses that include diabetes and coronary heart disease (Parikh et al., 2014). Access to health services is even more critical for indigenous populations who live with high rates of chronic illnesses (Davy et al., 2016). Increased health care costs can also lead to uninsured individuals who can suffer from health impairments that include lack of access to preventative care, undiagnosed chronic diseases, insufficient control of chronic conditions like hypertension, diabetes, underuse of prescription medications and increased mortality rates (Parikh et al., 2014).

Dickman, Himmelstein, & Woolhandler (2017) also found that income-related disparities are on the rise in accessing health care and higher in the US in comparison to other wealthy nations. Individuals in the US who had below-average income levels were



not seeing a physician for health issues due to healthcare costs in comparison to Canadians and the United Kingdom citizens (Dickman et al., 2017). Inequality in accessing health care is increasingly high in areas of the US that include southern states like Texas, Mississippi, and Florida, where NHWs are twice as likely to face cost barriers than a northeastern state like Maine and Massachusetts (Dickman et al., 2017). Moreover, the uninsured are less likely to seek medical procedures and care due to health care costs due in part to their low income and inaccessibility to care due to cost barriers (Dickman et al., 2017).

**Structural barriers.** Structural barriers are another health care barrier that is associated with the interior or exterior proximity of health care facilities (Carrillo et al., 2011). The structural barrier may coincide or act independently from financial barriers for individuals who lack health care coverage (Carrillo et al., 2011). These barriers may also include internal accessibility that includes long waiting periods in a health facility which may influence individuals seeking health services which may further alienate them and cause distress (Carrillo et al., 2011)

Structural barriers are also associated with health care facilities availability and local proximity for individuals, an issue often seen in rural and some urban settings (Carrillo et al., 2011). For instance, IHS clinics for AI/ANs are less prevalent in the Northeast regions of the US, and Native American populations need to also reside within their IHS Contract Health Service Delivery Area for their tribes that they are members of otherwise individual Native Americans are not eligible to receive health care services (Jim et al., 2014). Yuan, Bartgis & Demers (2014) also found that IHS that funds Urban

Indian Health Centers provides health care access services for over 50,000 urban AI/AN individuals who lack access to tribal IHS facilities because they reside in urban regions where there are less Urban Indian Health Center locations. For example, there are only 34 Urban Indian Health Offices within only 41 sites of the US for urban AIs/ANs and mainly located in the western part of the US, and the urban health facilities are underfunded (Yuan et al., 2014). This is an example of structural barriers for urban AIs/ANs that lack locations especially in the northeast region of the US, and inadequate funding for these facilities, further sustaining a gap in health care services for urban AIs/ANs.

### **American Indian/Alaskan Native Socioeconomic and Health Disparities and Inequalities**

Native American communities exhibit a lower life expectancy in comparison with NWHs due in part to socioeconomic issues leading to poor health outcomes and chronic illnesses (IHS, 2019). Studies have found that AI/ANs have increasingly moved from rural communities to urban areas throughout the United States over the years, especially during the 1950s and 1960s (Rutman et al., 2016, U.S. DHHS, 2017). Further research has also reported that in 2010, approximately 71% of 5 million self-identified AI/ANs reside in urban areas in the US, which is over 30% from the year 2000 (Rutman et al., 2016). The many contributing factors for AIs who continue to move to urban regions are associated with better opportunities for education, employment, health care utilization (Rutman et al., 2016). While health disparities for Native communities in the US have been associated with health care utilization related to health care costs and Urban AIs are

more susceptible to a lack of research data that focuses on the needs of this population because they often are transient with a small sample size for researchers (Rutman et al., 2016). A lack of research is pragmatic for Urban AIs because a lack of data leads to a decrease in evaluating and discussing the needs of the community, and in turn, it is overlooked at the national level (Rutman et al., 2016).

Social epidemiology concentrates on social characteristics that can affect the pattern of diseases and health distribution within society (Von dem Knesebeck, 2015). An analysis of social factors is instrumental for research in health services and the quality of healthcare (Von dem Knesebeck, 2015). While the social characteristics also influence the disease pattern and the health distribution within society to better understand the driving factors (Von dem Knesebeck, 2015). Social factors include social inequality, which is the unequal distribution of services and goods along with opportunities within a community (Von dem Knesebeck, 2015). For the AI/AN community, some forms of unequal distribution of health services appear to be associated with federal guidelines that make some native's ineligible for IHS services in addition to the distribution of funding for IHS which has also been reduced for health services for federally recognized AI/ANs (Warne, & Frizzell, 2014; Jim et al., 2014).

Social epidemiology also discussed indicators that comprise "life changes" and include education and employment opportunities and income (Von dem Knesebeck, 2015). These life changes were used as incentives for urban AIs/ANs to move to urban regions, and they may be used to analyze and measure social inequality (Von dem Knesebeck, 2015). Also, a high magnitude of AI/ANs lacks health care due to the

incurred costs (Rutman et al., 2016). That is pragmatic for natives because it makes them vulnerable to acute and chronic illnesses and less likely to receive preventative care (Rutman et al., 2016). Rutman et al. (2016) also found that cost continues to be a barrier for urban AIs/ANs in comparison to NHWs despite health care coverage and a higher income. Studies have also shown that a lower socioeconomic status will predispose an individual to poorer health outcomes, and health inequalities are due to the external environment and conditions that are outside an individual's control (Von dem Knesebeck, 2015). AI/AN individuals and communities have been found to have lower health outcomes in comparison to Americans with no AI descent (IHS, 2019). Also, AI/AN communities have lower life expectancy associated with lower life changes in a positive characteristic, which leads to lower socioeconomic and health disparities (IHS, 2019).

### **Diabetes Within American Indian Populations**

Native Americans are a health disparity community that suffers from an increased rate of morbidity and mortality due to chronic illnesses that include diabetes and the adverse complications associated with this disease (Henderson & Carson, 2014). Research has also found that there is a constant between racial/ethnic disparities in access to health care access and the use of health care services for a variety of chronic conditions (Chandler & Monnat, 2015). Chandler & Monnat (2015) further reported that health disparities for health services for diabetes management in a large data set for various ethnic groups that include Native Americans diagnosed with diabetes and examined specific types of health care provider's diabetes management use. AI/AN who are served by IHS have an increased rate of being diagnosed with diabetes than any ethnic group

during 2010 (Kelly et al., 2015; Town et al., 2017). Researchers have found that AIs often experience many risk factors associated with diabetes complications, and they are three times more likely to perish from diabetes than NHWs (Kelly et al., 2015; Towne et al., 2017). AIs who suffer from chronic diabetes have a higher prevalence of other disorders like hypertension, cerebrovascular disease, lower extremity amputations, mental health disorders, and liver disease (Kelly et al., 2015). Native communities experience higher comorbidities and more severe complications associated with diabetes, which leads to premature mortality rates for the Native communities (Kelly et al., 2015). AIs who are over the age of 25 are less apt to have a higher level of education like a college degree, while 77% of AIs have a high school diploma when compared with 91% of NHWs with a high school diploma (Kelley et al., 2015). Indigenous individuals also suffer from a higher level of unhealthy lifestyle choices such as smoking, obesity, and unhealthy dietary choice, which increases the risk factors associated with diabetes and increased mortality rates associated with this disease (Kelley et al., 2015). They also experience lower income levels in comparison to NHWs, and a lower income level is associated with increased poverty conditions, which are further linked to increased mortality rates for the AI community (Kelley et al., 2015).

Cultural losses are essential significant in the lives of AIs communities, and physical and mental morbidities are triggered by diabetes (Henderson & Carson, 2014). This community also suffers from advanced disease and death rates in comparison to the majority population (Henderson & Carson, 2014). Increased rates of disease and mortality rates are referred to epidemiologically as excessive morbidity and mortality

(Henderson & Carson, 2014). Health disparities within a population such as the AIs groups incur numerous individual and community expenses that include an adverse effect on the physical, spiritual, and dignity of people within their communities (Henderson & Carson 2014). These adverse consequences lead to personal depression, and acceptance of a disorder as normal, and cause an impediment for community vivacity (Henderson & Carson, 2014).

### **Cultural Barriers and Diabetes Management**

Native Americans often identify themselves as being related to a specific cultural group, and they strive towards keeping their culture, traditions, and social, economic, and political institutions separate from the mainstream culture and society (Davy et al., 2016). If a Native American is living outside of their cultural traditions and receive health care from facilities that lack an understanding of their culture, they are less apt to continue their treatment and health services (U.S. DHHS, 2017). It is, therefore, essential that health care programs include culturally competent care for Native Americans. For instance, urban Indians need to have access to health care that includes culturally competent care at urban health centers (U.S. DHHS, 2017). Including cultural sensitivities for AIs/ANs, at UICs is critical for urban Indians because it enables them to interact within their culture at the centers that otherwise may be absent in the daily activities while living in an urban setting (U.S. DHHS, 2017). The Urban Indian Offices (UIOs), can provide a crucial connection to their Indian culture (U.S. DHHS, 2017). Cultural sensitivity's that are available at urban health centers may work towards inspiring urban Indians to pursue required health care services and preventative measures

further as well as being compliant in their health care treatment plans in a healthy, welcoming, and acceptable environment (U.S. DHHS, 2017). Urban Indians from the community may also view Urban Indian Health Offices as a place to interact with other AI/AN individuals and cultivate their AI/AN identity and culture within the community (Yuan et al., 2014). Furthermore, Urban Indian Health Offices play a critical role in preserving AI/AN culture and encouraging their engagement and partnerships with other natives while being serviced by the Urban Indian Health Offices (Yuan, et al., 2014).

According to Henderson & Carson (2014), they have found that biocultural approaches are vital for the prevention of diseases like diabetes among non-majority populations because the culture has a role as to how individuals interpret health and diseases and the management and treatments of the disorders. For instance, if diabetes is prevalent within a population, it could be accepted by individuals and communities as being normal (Henderson & Carson, 2014). This may lead to avoiding treatment options because the individual's belief may perceive the disease as a natural part of life within the population (Henderson & Carson, 2014). Therefore, it is essential to culturally develop sensitivities that are interrelated to the culture and perception of the population to enable a treatment option that can be accepted within that community and population. For instance, culturally tailored diabetes management materials which include developed nutritional support concept that is culturally sensitive and related to an Indigenous culture (Henderson & Carson, 2014). Also, according to Henderson & Carson (2014), they discussed culturally relevant questionnaire to assess the relationship between family nutritional support and metabolic outcomes for Native American individuals. Scarton, de

Groot (2017) also found cultural relevant material for this community that included storytelling with traditional foods and video demonstrations for healthy lifestyle choices. The findings for these approaches suggested that Native Americans with type 2 diabetes (T2D) using these techniques showed favorable results with improvements in glycemic control (Scarton, de Groot, 2017).

### **Food Environmental Barriers**

Another vital factor to consider is dietary needs and improved food environment that is a critical factor concerning chronic illnesses for AI/AN. Studies have focused on the food environment and examining changes in food acquisition behaviors in the retail and subsistence aspects (Chaudhari, Begay, & Schulz, 2013). A healthy environment that includes fulfilling dietary needs is significant for Indigenous populations who continue to shift to a westernized lifestyle with their inheritance of increased rates of type 2 diabetes (T2D) and obesity (Chaudhari et al., 2013). Stressors have also been associated with poor diet adherence that includes diabetes distress, family criticism, daily hassles, and adverse financial events (Walls et al., 2017).

According to Cho et al (2014) mortality is a vital factor and examining AI/AN mortality databases can help to determine diabetes-related mortality variations amongst AI/AN and NHW populations. In addition, AI/AN Mortality Database (AMD) have served as accurate data to determine diabetes-related mortality variations between these populations (Cho et al., 2014). Environmental issues have also been associated with diabetes and environmental issues associated with diabetes and socioecological perceptions that include social and environmental factors affecting the risks (Hill et al.,



2013). While changes in Indigenous food environments have moved towards more developed countries (modernization), but it is still mediated by culture and Indigenous influences on food systems (Chaudhari, Begay, & Schulz, 2013).

### **Summary**

The history of AI/AN in the US has included a detailed outline that shows a history of social, economic issues associated with Native American's access and utilization to health care. Although the US government has, through the years, funded health programs such as IHS for indigenous populations, critical issues remain amongst many indigenous communities and populations. It appears that initial funding for many of these programs are underfunded, lack accessibility, and have numerous regulating restrictions for health services to be accessible and available for Native communities (U.S. DHHS, 2017). For instance, indigenous populations and communities who are ineligible for IHS services due to state or local recognition status are more apt to lack health services (Jim et al., 2014). Federally recognized tribes are eligible for health care services, but eligibility includes tribal members residing within the tribal health facility for IHS services (Jim et al., 2014). In addition, urban AIs/ANs who have relocated to urban regions from rural settings continue to suffer from adequate health facilities that are reflective of the increased urban Indian population in the US (U.S. DHHS, 2017; Yuan et al., 2014).

Furthermore, access to health and health care utilization for minority populations like indigenous communities are more vulnerable to health disparities and socioeconomic disparities that include lower income levels, less education, and lower employment

opportunities which increases their susceptibility to chronic illnesses associated with adequate and accessible health care facilities (Dennis, Momper, 2016). Many chronic illnesses that indigenous populations may incur could be better managed and preventable if health services were provided to many of these populations (Rutman et al., 2016).

Another important consideration is the gap in the research noted for Northeastern AIs and health services information. While colonial history is available concerning the history of infectious diseases and tribal migration (Lipman, 2011). There remains a gap in the literature concerning access to health care services, utilization, IHS health facilities, health disparities, and chronic illnesses for these Native American communities in the Northeast region of the US (Jim et al., 2014). Hopefully, this research can increase awareness and research for these indigenous communities within the Northeast regions of the US.

## Chapter 3: Research Method

### **Introduction**

The purpose of this study was to examine the relationship between access to health care and healthcare utilization among urban AIs/ANs and urban NHWs in the Northeast United States. Further reviewing access to health care can encourage the development of more policies that can increase access to health care to enable native communities to have better treatment options. Improved treatment options are necessary for the management of many chronic illnesses, which includes preventative care for improved health outcomes and decreasing health care costs and mortality rates for indigenous communities (Rutman et al., 2016). There is also a gap in the literature for indigenous populations located in the Northeast United States concerning health care access with insurance, health outcomes, socioeconomic issues, and inequalities that may be associated with health care access for this population's utilization of health care. Therefore, further research is needed to further analyze many of these issues for AIs, including the demographics for these communities.

Chapter 3 will consist of the research design and the rationale for this study. In addition, the Methodology section includes the following: defining the target population, sampling, and sampling procedures as well as justifying the sampling strategy and the inclusion and exclusion criteria along with the power analysis and the procedures for gaining access to data sets. This chapter will also include threats to validity that includes internal and external validity and statistical conclusion validity of the research. Lastly,

this chapter will include ethical considerations that are appropriate for using secondary data sets.

### **Research Design and Rational**

To understand the health disparities associated with health access for indigenous populations within the Northeast United States, this study addressed access to health for urban AIs in the Northeastern United States compared to urban NHWs. Health disparities may be due to variations in access to health care for AIs/ANs and an elevated percentage of AIs/ANs affected by access to health care reside in urban regions with variations among other populations within the same region (Rutman et al., 2014). The study variables for this study included access to health and covariates that included the sociodemographic variables gender, age, income, and level of education (Rutman et al., 2016).

The research design for this study was a quantitative analysis and nonexperimental design. This method was chosen because of its strengths that enable an understanding of the nature of the relationship or association between variables that cannot be manipulated (Burkholder et al., 2016), which is also associated with the research questions. In addition, the design fits the research questions because the key variables for this design are measured and not changed (Burkholder et al., 2016).

### **Methodology**

#### **Study Population and Sampling Procedures**

The study population consists of urban AI/AN and urban NHW adults 18 and over. The population sample size consists of the following: urban AIs/ANs who reside in

the Northeast United States, individuals who identify themselves as AIs only as their main race, and urban NHWs who reside in the Northeast United States. The population size for AIs who self-identify as AI in the Northeast is 156, 051(U.S. Census Bureau, 2016). Because the sample population is a large sample size, simple random sampling was used, which encompasses random number generators from SPSS software (Burkholder et al., 2016).

The study population was from secondary data sets through the CDC. Samples were drawn based on the race, region, and demographics. Although the specific sampling frame inclusion included race (i.e., AIs/ANs and NHWs), the region was specifically the Northeastern areas of the United States, and age was between 18 and 85 years of age. Exclusion criteria for the sample included races that are not Native American and Caucasian, individuals who are under the age of 18 and over the age of 85, and samples from other regions of the United States.

G\*power is used for determining the appropriate sample size. For this study, the analysis involved a Z test and logistic regression, a priori, with computer required sample size-given  $\infty$ , power, and effect size. The variable for the input parameters included two tails, 1.3 odds ratio, PR of .05, alpha error prob of .05, power (1-beta err prob) was .95,  $R^2$  other X was "0," and the x distribution was normal. The G\*power 3.1.9.2 calculated critical z was 1.95, with the total sample size of 777 and the actual power of .95. Therefore, based on the G\*power analysis, the sample size needed to include 777 individuals for the study.

## **Archival Data**

The secondary data centers came from a governmental website provided by the CDC. The governmental data sets are accessible online to download into zip files and include survey data, codebooks, and SPSS output. The National Health Interview Survey is provided by the CDC and a secondary data that comes from an annual household-in-person survey that was conducted by the CDC from a statistical representative sample of the US civilian population (Rutman et al., 2016). This data is also available with no fees or registration.

## **Threats to Validity**

### **Internal Validity**

Research validity refers to the extent to which an empirical measure adequately reflects the true meaning of the concept that is being studied or how sound the research is (Babbie, 2017). Thus, the current study focuses on two races to compare their variations and relationship to determine health access and the contributing factors related to this issue. While the experimental design validity framework focuses on validity in relation to the experimental designs (Burkholder et al., 2016). This framework also consists of two components internal and external validity (Burkholder et al., 2016).

### **External Validity**

External validity refers to the ability to generalize study findings to a population of individuals with similar characteristics represented in the sample of a study (Salazar, Crosby, & DiClemente, 2015). External validity threats are critical considerations in

research design quality as could be seen if a high internal validity threats are prevalently seen and lead to further analysis of external validity (Burkholder et al., 2016).

While external validity threats can be further reviewed by two strategies, the first consists of building upon other research studies and engaging in thorough literature reviews (Burkholder et al., 2016). Reviewing the literature can also show a gap in the literature that can justify a specific focus that is seen within an existing framework of the research study (Burkholder et al., 2016).

Validity is critical in non-experimental research with concerns related to the validity of the measurements, rather than the validity of the effects (Statistics solutions, 2018). Threats to external validity consist of factors within a study that decreases the generality of the results, and major threats to external validity also comprise of selection bias (Lund Research, 2012). Selection bias for my research study will be addressed by choosing files that had individuals who originated from the same population (Pannucci & Wilkins, 2010). Specifying the number of participants during sampling can also reduce selection bias and power analysis,  $G^*$  power to estimate the population size and further analyze differences between variables, and the sample size is a critical determinant (Salazar et al., 2015). In addition, generalizability of a data method requires random selection from a larger population like the Northeast region, and thus the study results will be generalized according to the larger population (Stat Trek, 2019).

### **Statistical Conclusion Validity**

Statistical conclusion validity refers to the extent that data from a research study can be regarded as a link between independent and dependent variables in relation to

statistical issues, and statistical conclusion validity can also be interpreted as how reasonable research or experimental conclusion is (García-Pérez, 2012; Statistics how to, 2019).

For this study the threats that can be avoided concerning incorrect conclusions involve using a high statistical power analysis for the sample size that gave sufficient information, using statistical tests that gave correct analysis that gave statistically significant results for data that didn't need to rerun the tests, estimates and ranges for the populations studies to have a sufficient range for the population size to properly analysis the relationship between variables for my study (Statistics how to, 2019). Another threat to avoid making incorrect conclusions is not violating the assumptions for the statistical tests. Logistic regressions assumptions will not be violated. For instance, assumption one states that your dependent variable should be measured on a dichotomous scale which will be addressed by ensuring that the variables are listed properly in SPSS and include variables like gender (male, females) and race AI/AI (yes, no) (Lund Research, 2018). Also, another example of an assumption that will not be violated includes having one or more independent variables that my research study has, which is gender, race, and income (Lund et al., 2018).

### **Ethical Procedures**

Ethical issues in relation to the secondary use of data include potential harm to individual subjects and issues of consent (Tripathy, 2013). This research study is using secondary data from governmental websites that have followed many of these prerequisites and requirements associated with consent. In addition, if the secondary data



has no identifying information and has been appropriately coded, so researchers don't have access to the codes, then there are no requirements for a full review by the ethical board (Tripathy, 2013). The secondary data sets for my research fulfill this requirement as it not identifiable, and thus it protects the participant's identity.

### **Summary**

Chapter 3 gave an introduction into my research method for this study. The study consists of a quantitative analysis and a non-experimental research design that have variables that cannot be manipulated. The main variables include access health care and insurance coverage and utilization for indigenous populations in the Northeast in comparison to NHWs in the same region. While other variables coincided with socioeconomic demographics to further align with the study variables. The secondary data sets for this study consists of mainstream governmental websites like the CDC that had many tools to sample and review the data for further statistical analysis. During the sampling process, it is critical to include the inclusive and exclusive criteria that encompass the protocol for the retrieval of data for the research. While the research questions are established to guide the research with statistical testing to compute the predictors. The methodology section focuses on the study population and sampling procedures that focuses on the variables that include race, age, income, education access, and a region. And the secondary data is from archival data that provides a large enough sample size and will be further analyzed with  $G^*$  power for the appropriate size for the research study. Threats to validity include internal and external validity. External validity stresses the importance of generalizing study findings, and avoiding threats include

reviewing the literature for gaps and specificity for the number of participants used in a study. In conclusion, this chapter, therefore, focuses on the research approach and design while the next chapter will focus on the results of the statistical analysis tests.

## Chapter 4: Results

### **Introduction**

The purpose of this study was to examine the relationship between access to health care and healthcare utilization among urban AIs/ANs and urban NHWs in the Northeast United States. The study addressed four research questions related to the difference in access to healthcare between AIs/ANs and NHWs, the difference in healthcare utilization between AIs/ANs and NHWs, the association between healthcare access and utilization for AIs, and whether race, gender, age, income and education status predict access to healthcare. This chapter presents the data collection process for this study that includes the time frame for collecting data, any discrepancies associated with this process, and a description of the sample population and the covariates that were utilized in this study. This chapter will also include the findings from the statistical tests that include chi-square and logistic regression. The results from these statistical tests will be presented and analyzed to coincide with the research questions and the hypotheses. Further statistical analyses will also be presented that include frequency and descriptive statistical tables. This section will conclude with a summary that includes answers to the research questions and transition to the next chapter.

### **Data Collection**

The data collection time frame was a prolonged period due to the restricted variables that were at the RDC, a branch of the CDC. A proposal to the RDC was submitted for access to the RDC's restricted variables. The approval from the RDC had a period of 8 to 11 weeks and required travel to the RDC to review the data and complete

the statistical analysis onsite. Once the RDC approved the proposal, then it took another 2 weeks to receive confidentiality approvals from the RDC that consisted of completing a confidentiality module and signing confidentiality forms and submitting it to the RDC. In addition, other steps that prolonged that data collection process consisted of the RDC analyst merging the restricted variables with the public variables and then e-mailing the merged file for review. Once the confidentiality and review process were completed, then the merged data was available at the RDC. The data also had to be reviewed inhouse at the RDC, which included using statistical tests like the frequency and descriptive tables, chi-square analysis, and binomial logistic regression. Once these statistical tests were performed, then the SPSS output was given to the RDC analyst to be reviewed for confidentiality. After a week, the RDC analyst e-mailed the SPSS output. Once the output was received by e-mail, then the output was further analyzed and formatted into APA format. In addition, the data collection process was strictly from the CDC/RDC. Although IRB approved the CDC and U.S. Census Bureau, data were only used and needed from the CDC/RDC, as there was a large amount of data at this governmental secondary database from the survey.

### **Demographic Sample Size**

The sample size for this study consisted of 7,170 individuals, with 7,000 representing urban NHWs and 170 representing urban AIs/ANs from the Northeast United States. The sample size for the Chi-Square included 7,170, which included 97.6 % NHWs and 2.4 % AIs/ANs (see Table 1). This sample was taken over a 5-year period from 2014-2018, though the sample size for the logistic regression includes the sample

size for only the year 2018 as the most current year. In addition, the sample size for logistic regression consisted of 862, 12% of the sample size, which included the sample size race of 853 NHWs and 9 AIs/ANs. Although the G\*power analysis for the sample size was 777 individuals, the sample size consisted of 862 for logistic regression, which fit the requirement.

### **Results**

Table 1 shows data for nominal variables including gender, race, urban/region, health care access, healthcare utilization for 2014-2018. There was a higher number of females (53.4%) versus males (46.6 %) for this study and a higher frequency rate for NHWs (97.6%) than AIs/ANs (2.4%). Data for the region coincided with the population sample size. Healthcare access (health insurance) in the table shows the frequency for both populations having private health care insurance. There is also a higher amount of the sample size and percentage rate for *yes* for private insurance. The variable healthcare utilization shows a frequency lower for utilization and higher for no utilization of care during this period.

Table 1

*Frequency of Gender, Race, Region, Healthcare Access, and Healthcare Utilization  
2014-2018*

Gender/Sex	Frequency	Percent	Valid %	Cumulative %
Female	3,829	53.4	53.4	53.4
Male	3,341	46.6	46.6	100.0
Total	7,170	100.0	100.0	
Race- AI/AN NHW				
NHWs	7,000	97.6	97.6	97.6
AI/ANs	170	2.4	2.4	100.0
Urban/Region				
Urban	7,170	100.0	100.0	100.0
Northeast	7,170	100.0	100.0	100.0
Healthcare Access (Health Insurance)				
Yes	5,185	72.3	72.3	72.3
No	1,985	27.7	27.7	100.0
Healthcare Utilization (Did you receive care)				
Yes	1,034	14.4	14.4	14.4
No	6,136	85.6	85.6	100.0

Table 2 includes the scale variables for earnings (2018), education, and age (2014-2018) from the urban Northeast United States. The earnings included 862 with a minimum of 35 and maximum earnings of \$800,000. The mean value was \$66,891.83 for earnings, with a standard deviation of \$7,5651.886. The scale variables for age ranged from 18 to 85, with a standard deviation of 18.401. Though the rate for education included a range between 0 to 99, the actual scale is 0 to 21 for the highest level of education completed with “99” that indicates *do not know* in the National Health Interview Survey and a standard deviation of 8.247.

Table 2

*Earnings, Age, and Education of American Indian/Alaskan Natives and Non-Hispanic Whites*

Earnings	N	Minimum	Maximum	Mean	SD
Total Earnings in the last year 2018	862	35	800000	66891.83	75651.886
Age 2014-2018	7170	18	85	50.79	18.401
Highest level of school completed 2014-2018	7170	0	99	16.49	8.247

**Chi-square Assumptions**

The chi-square test consists of three assumptions. Assumption 1 requires that categorical variables are used in the analysis and all the variables in the tests are categorical, and include race (NHWs, AI/AN), healthcare access (*yes, no*), and healthcare utilization (*yes, no*; Laerd Statistics, 2018b). Assumption 2 requires independence of observation with no relationship seen amongst the observations in the group (Laerd, 2018b). The CDC (2019) administered the National Health Interview Survey from one sample adult family and is randomly selected, and information is collected with the sample adult core for the questionnaires. The CDC survey meets Assumption 2 for the independence of observation with no relationship seen with the observed group as they were randomly selected. Assumption 3 requires that all cells should have expected counts greater than 5 that is shown in the crosstabulation tables.

**Results for Research Question 1**

Research Question 1: What is the difference in access to healthcare (health insurance) between urban American Indians and urban non-Hispanic Whites who reside in the Northeast United States?

$H_0$ 1: There is no difference in access to healthcare between urban American Indians and urban non-Hispanic Whites residing in the Northeast United States.

$H_a$ 1: There is a difference in access to healthcare between urban American Indians and urban non-Hispanic Whites residing in the Northeast United States.

**Chi-square for access to healthcare between American Indian/Alaskan Natives and Non-Hispanic Whites.** Table 3 depicts the variables for access to healthcare for NHWs and AIs/ANs in 2014-2018. It also provides the frequency for the observed and expected variables for private healthcare access according to race. The data show that there was a total of 5,185 total respondents for healthcare access—5,111 respondents for access were NHWs and 74 were AIs/ANs. Regarding healthcare access, 98.6% of NHWs had private health insurance, but 1.4% of AIs/ANs reported having private health insurance. However, NHWs who did not have access to healthcare totaled 1,889 compared to 96 AIs/ANs who did not have access to healthcare. Further, 73% of NHWs reported that they had health insurance coverage, compared to only 43.5% of AIs/ANs with health insurance.

The expected cells were used to check for Assumption 3. The expected variable *yes* for access to healthcare is 5,062.1 for NHWs and 122.9 for AIs/ANs. The expected count variable *no* for access to healthcare is 1,937.9 for NHWs and 47.1 for AIs/ANs. Therefore, based on these results, Assumption 3 is met because the expected count is greater than five for each of the four cells.



Table 3

*Access to Healthcare and Health Insurance Coverage Cross-Tabulation 2014-2018*

Health Insurance Coverage		Race AI/AN NHW		Total
		NHWs	AI/AN	
Yes	Count	5111	74	5185
	% within Private health insurance	98.6%	1.4%	100.0%
	% within Race AI/AN NHW	73.0%	43.5%	72.3%
No	Count	1889	96	1985
	% within Private health insurance	95.2%	4.8%	100.0%
	% within Race AI/AN NHW	27.0%	56.5%	27.7%
Total	Count	7000	170	7170
	% within Private health insurance	97.6%	2.4%	100.0%
	% within Race AI/AN NHW	100.0%	100.0%	100.0%

Table 4 shows the chi-square test results for access to healthcare. The Pearson test shows the significant value is .000, which indicates that the  $p$ -value is less than .05; thus, the null hypothesis is rejected. This means that there is a statistical difference in access to healthcare (health insurance) between urban AIs and urban NHWs residing in the Northeast United States.

Table 4

*Chi-Square Tests for Access to Healthcare Between American Indians/Alaskan Natives and Non-Hispanic Whites from Urban United States 2014-2018*

Tests and cases	Asymp. Sig. (2-sided)		
	Value	df	
Pearson Chi-Square	72.070 <sup>a</sup>	1	.000
N of Valid Cases	7170		

*Note.* a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 47.06. b. Computed only for a 2x2 table

The value for the Cramer's V test indicated the strength of the association between the variables. The value of Cramer's V was .100, which is a weak association between access to healthcare and race. So although there was a statistical significance

association for access to healthcare between AIs/ANs and NHWs,  $X^2(1) = 72.070$ ,  $p < .0001$ , the Cramer's V value indicates a weak association between access to healthcare and race (AIs/ANs vs. NHWs).

### **Research Results for Research Question 2**

Research Questions 2: What is the difference in healthcare utilization between urban American Indians and urban non-Hispanic Whites who reside in the Northeast United States?

$H_0$ 2: There is no difference in healthcare utilization between urban American Indians and urban non-Hispanic Whites residing in the Northeast United States.

$H_a$ 2: There is a difference in healthcare utilization between urban American Indians and urban non-Hispanic Whites residing in the Northeast United States.

**Chi-square for healthcare utilization between American Indian/Alaskan Natives and Non-Hispanic Whites.** Table 5 depicts the variables for utilizing healthcare for NHWs and AIs/ANs. It also provides the frequency for the observed and expected variables for utilizing healthcare according to race. The data show that there was a total of 1,034 respondents for healthcare utilization—991 respondents for utilization were NHWs and 43 were AIs/ANs. Although 95.8% of NHWs did receive care, 4.2% of AIs/ANs reported that they received care. But 14.2% of NHWs utilized healthcare in comparison to 25.3% of AIs/ANs. Additionally, NHWs who did not have healthcare utilization was 6,009 compared to 127 AIs/ANs who did not have healthcare utilization and 85.8% of NHWs did not receive healthcare utilization compared to 74.7% of AIs/ANs who did not receive healthcare utilization.

The expected cells are used to check for Assumption 3. The healthcare utilization expected count variable for *Yes* is 1009.5 for NHWs and 24.5 for AIs/ANs. The expected count of 5990.5 for NHWs *No* and the expected count of 145.5 for AIs/ANs. Therefore, based on these results, Assumption 3 is met because the expected count is greater than five for each of the four cells. In addition, 14.2% of NHWs reported that they received health care, compared to 25.3% of AIs/ANs that reported.

Table 5

*Healthcare Utilization Versus Race Cross-tabulation 2014-2018*

Healthcare Utilization			Race AI/AN NHW		Total
			NHWs	AI/AN	
Did you receive care	Yes	Count	991	43	1034
		% Race AI/AN NHW	14.2%	25.3%	14.4%
	No	Count	6009	127	6136
		% within Race AI/AN NHW	85.8%	74.7%	85.6%
Total		Count	7000	170	7170
		% Race AI/AN NHW	100.0%	100.0%	100.0%

Table 6, shows the results to determine if the chi-square association is statistically significant can be determined with the Pearson test that shows the significant value is .000, which indicates that the *p*-value is less than .05, thus the null hypothesis is rejected. There is a statistical difference in healthcare utilization between urban AIs and urban NHWs residing in the Northeast.

Table 6

*Chi-Square Tests for Healthcare Utilization Between American Indians/Alaskan Natives and Non-Hispanic Whites from Urban Northeast United States 2014-2018*

Test and Cases	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.680 <sup>a</sup>	1	.000
N of Valid Cases	7170		

*Note.* a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 24.52. b. Computed only for a 2x2 table

The value for the Cramer's V test indicates the strengthen of the association between the variables. The value of Cramer's V is .048, which is a very weak association between healthcare utilization and race. So, although there was a statistically significance association for healthcare utilization between AIs/ANs and NHWs from the Urban Northeast, USA,  $X^2(1) = 16.680$ ,  $p < .0001$ , but Cramer's V value, .048 indicates a very weak association between healthcare utilization and race.

### **Results for Research Question 3**

Research Question 3. Is there an association between health care access (health insurance) and health care utilization and being an urban American Indian in the Northeast United States?

H<sub>30</sub>: There is no association between health care access and utilization in urban American Indians in the Northeast United States.

H<sub>3A</sub>: There is an association between health care access and utilization in urban American Indians in the Northeast United States.

### **Chi-square for access and utilization for American Indian/Alaskan Natives.**

Table 7, crosstabulation depicts the variables for healthcare access (health insurance) and

healthcare utilizing (receiving healthcare) for AI/AN, from the urban Northeast United States in 2014-2018. It also provides the frequency for the observed and expected variables for utilizing healthcare according to race. This table shows from the data that there was a total of 74 AI/AN response for healthcare access and utilization and 11 of which had health access (insurance) and utilized healthcare. Also, this table shows that 14.9% of urban AI/AN with health insurance reported that they received healthcare utilization compared to 33.3% of AI/AN who did not have health insurance and over 33% did not have healthcare utilization. This difference in health care utilization is significant. In addition, urban AIs with healthcare coverage showed that 85.1 % did not utilize healthcare, compared to 66.7% of AIs/ANs with no healthcare coverage and healthcare utilization. Therefore, showing that having health insurance reduced utilization of healthcare in high frequency.

The expected cells are also used to check for Assumption 3. Health access and utilization for urban AIs/ANs expected count is 18.7 for *Yes* and 55.3 for *No*. The expected count of 24.3 for *No* health insurance and *Yes* for healthcare utilization and the expected count of 71.7 for *No* healthcare insurance and utilization. Therefore, based on these results, Assumption 3 is met because the expected count is greater than five for each of the four cells.

Table 7

*Cross-tabulation of Healthcare Access, Healthcare Insurance, and Healthcare Utilization for American Indian/Alaskan Natives from Urban Northeast United States 2014-2018*

Healthcare Access			Healthcare Utilization		Total
			Did you receive care		
			Yes	No	
Health insurance	Yes	Count	11	63	74
		% within Private health insurance	14.9%	85.1%	100.0%
		% within Did receive care	25.6%	49.6%	43.5%
	No	Count	32	64	96
		% within Private health insurance	33.3%	66.7%	100.0%
		% within Did receive care	74.4%	50.4%	56.5%
Total	Count	43	127	170	
	% within Private health insurance	25.3%	74.7%	100.0%	
	% within Did receive care	100.0%	100.0%	100.0%	

Table 8, chi-square tests for healthcare access health insurance and healthcare utilization for AI/AN from the urban Northeast, USA in 2014-2018. The results to determine if the chi-square association is statistically significant can be determined with the Pearson test that shows the significant value is .006, which indicates that the  $p$ -value is less than .05, thus the null hypothesis is rejected. There is a statistical difference in the association between access to healthcare (health insurance) and utilization for UAIs residing in the Northeast.

Table 8

*Chi-Square Tests for Healthcare Access, Healthcare Insurance, and Healthcare Utilization for American Indian/Alaskan Natives from Urban Northeast United States 2014-2018*

Test and Cases	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.543 <sup>a</sup>	1	.006
N of Valid Cases	170		

*Note.* a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.72.

b. Computed only for a 2x2 table

The value for the Cramer's V test indicates the strengthen of the association between the variables. The value of this test shows Cramer's V is .211, which is a moderate association between healthcare access and utilization in AI/ANs in the Northeast. There was a statistically significance association for healthcare access (health insurance) and healthcare utilization for AIs/ANs residing in the Urban Northeast, USA.,  $X^2(1) = 7.543, p = .006$ , and Cramer's V indicates a moderate association between healthcare access and utilization in AIs/ANs from Urban Northeast, USA. This is a critical part of the analysis that shows that there is a moderate association between having health insurance and healthcare utilizing for AIs/ANs who reside in the Urban Northeast, USA. Which indicates that AIs/ANs have health insurance, but they are not utilizing the healthcare.

#### **Results for Research Question 4**

Research Question 4. Does race, gender, age, income, and education status predict access to healthcare?

H<sub>40</sub>: None of the variables predict access to healthcare.

H<sub>4A</sub>: At least one of the variables predict access to healthcare.

### **Logistic regression and dependent and independent variables.**

Logistic regression is a mathematical model that includes a set of processes that focuses on the relationships between dependent and independent variables (Chiu et al., 2019). The statistical model binomial logistic regression was used for research question four. This model serves as an analysis for dichotomous dependent variables and it reviewed the relationships between the dependent variable and the independent variables (Statistics Solutions, 2020). The variables for logistic regression analysis consist of healthcare access (dependent variable) and race, gender, age, income, and education (all independent variables).

### **Logistic regression assumptions.**

There are also assumptions for logistic regression. Assumption 1 requires that there is one dependent variable that is dichotomous (Laerd, 2018a). This assumption is met with the dependent variable healthcare access that is dichotomous. Assumption 2 requires that one or more independent variables are measured on a continuous or nominal scale (Laerd, 2018a). This is met as the predictor variables that are nominal (race, gender) and continuous (age, income, and education). Assumption 3 requires an independence of observations and the categories, which means that there is no relationship between the observation in the categories (Laerd, 2018a). This Assumption is met as the CDC conducted the National Health Interview Survey administrated randomly selected for one sample adult family (CDC, 2019). And Assumption 4 requires a minimum of 15 cases per independent variable; this has been met as the sample size is above 862 (Laerd, 2018a).



#### Logistic regression model and results for Research Question 4.

Logistic regression analysis was used for RQ 4 to determine if gender, race, education, age, and earnings (income) (all independent variables) could predict healthcare access (dependent variable). For this research, the logistic regression model was statistically significant,  $X^2(6) = 115.26, p < .05$  (Laerd, 2018a). This model also included 20.9 % (Nagelkerke  $R^2$ ) of the variance in access to healthcare and correctly classified 83.9% of cases and sensitivity was 99.3%, specificity was 8.8% (Laerd, 2018a).

The variables in the equation from table 9 include the significant variable ( $\alpha = .05$ ), for determining statistical significance,  $\beta$  coefficient for predicting probability,  $\text{Exp}(\beta)$  for the odds ratio, and 95% confidence interval (CI) for the odds ratio. From this table, the significance column shows that gender, race, and education are not statistically significant  $p > .05$ , while age, and earnings are statistically significant  $p < .05$ . The null hypothesis is rejected because at least one of the variables, age, and earnings, are statistically significant.

Table 9

#### *Logistic Regression for Healthcare Access*

	$\beta$	SE	Wald	Sig.	Exp (B)	95% CI for Exp (B)	
						Lower	Upper
Gender	-.145	.200	.530	.467	.865	.5844	1.280
AI/AN or NHW	-.938	.708	1.753	.185	.391	.0977	1.567
Education	-.045	.038	1.418	.234	.956	.88738	1.0299
Age	.020	.006	10.560	.001	1.020	1.008	1.0322
Earnings Year	.000	.000	17.519	.000	1.000	1	1
Constant	.877	.933	.883	.347	2.403		

For the logistic regression model, age and earnings were the only ones associated with access to healthcare (having healthcare insurance). In addition, the variable 1 indicates not having insurance so, if the odds ratio (OR) is greater than 1 ( $OR > 1$ ) it indicates there is no health access and less than 1 ( $OR < 1$ ) indicates that they are more likely to have health access. Age and earnings have an odds ratio value close to 1, which indicates no relationship or a 50/50 chance of having or not having access to health care. The 95% confidence interval (CI) shows that the odds ratio for age for the population will fall between 1.008 and 1.0322. The 95% CI indicates that the odds ratio for earnings for the population will fall between 1 and 1 or a 50/50 chance.

### **Summary**

For research question one that includes the following, what is the difference in access to healthcare (health insurance) between urban AIs and urban NHWs who reside in the Northeast United States? The results show that there is statistically significant difference in health insurance coverage between urban AIs and urban NHWs residing in the Northeast. And 73% of NHWs reported that they had health insurance coverage, compared to only 43.5% of AIs/ANs with health insurance. But although there is a statically difference, there is a weak association between healthcare access and race.

Research question two includes the following, what is the difference in healthcare utilization between urban AIs and urban NHWs residing in the Northeast United States? The results showed that 14.2% of NHWs reported that they received health care, compared to 25.3% of urban AIs who reported. The results also showed that there is statistically significant differences in healthcare utilization between urban AIs and urban

NHWs residing in the Northeast but there is a very weak association between healthcare utilization and urban AIs and NHWs.

For research question three that includes the following, is there an association between healthcare access (health insurance) and healthcare utilization and being urban AI in the Northeast United States? Urban AIs who mentioned having healthcare coverage had a reduced amount of utilization for healthcare visits. The results also show that there was statistical significance for the association between health care access and healthcare utilization and being a UAI that resides in the Northeast. In addition, there is a moderate association between healthcare access and utilization for UAIs residing in the Northeast.

For research question four includes the following, does race, gender, age, income, and education status predict access to healthcare? The results show that only age and earnings were associated with access to healthcare and both have an odds ratio close to 1, which indicates a 50/50 chance of having or not having access to health care (health insurance). Also, the 95% CI shows that the odds ratio for age for the population will fall between 1.008 and 1.0322 and, 95% CI for earnings for the population will fall between 1 and 1.

The next section includes chapter 5 that will consist of an in-depth discussion of the interpretations of the results. Also, study limitations will be discussed in the upcoming chapter, along with recommendations for further research. Furthermore, implications will be presented with a focus on positive social change and the conclusion for this chapter.

## Chapter 5: Discussion, Conclusions, and Recommendations

### **Introduction**

The purpose of this study was to examine the relationship between health care access and healthcare utilization among urban AIs/ANs and urban NHWs in the Northeast United States. Evidence shows that AIs/ANs have suffered from health disparities including insufficient health care, and this population still suffers from disparities that are related to health status and healthcare access (Espey et al., 2014; Willging et al., 2018). This study shows an association between access to healthcare and utilization in relation to race, but some aspects of this research had challenges that will be noted in this chapter with the findings. This chapter will also include interpretations of the findings for the statistical analysis results and the conceptual framework in relation to the study's findings. Limitations will also be discussed, including generalizability related to the population's sample size. Recommendations will also be presented for further research connected with the literature review to enable positive, healthy outcomes in the foreseeable future.

### **Interpretation of the Findings**

The relationship between access to healthcare and healthcare utilization for urban AIs/ANs and urban NHWs from the Northeast United States was examined in this study. Most AIs/ANs reside in urban settings, which was reflected in the findings of this study. The results also showed a higher sample size for private insurance based on a chi-square test where private health insurance was compared to race, which related to healthcare

access. But the results for logistic regression that examined variables like education was not substantiated with some of the predictor variables to determine healthcare access.

### **Access to Healthcare and Urban American Indian/Alaskan Natives and Urban Non-Hispanic Whites (Race)**

Chi-square analysis was used to answer Research Question 1 along with cross-tabulation testing and a Pearson test to analyze the first hypothesis further. The results showed that a higher proportion of NHWs (73%) reported that they had access to health insurance in comparison to a lower amount of AIs/ANs (43.5%) reporting access to healthcare insurance. The results also showed that NHWs (98.6%) had more access to private insurance than AIs/ANs (1.4%). These results are like previous research reporting that 74% of NHWs had health insurance in comparison to 35.9% AIs/ANs, and fewer AIs/ANs had private insurance (36%) in comparison to NHWs (74%; Rutman, 2016). This disproportionate health insurance has been associated with barriers that include healthcare costs and affordability for acquiring health care insurance for AIs/ANs (Rutman, 2016). Additionally, the inability for AIs/ANs to have accessibility to urban health facilities is due to the lack of urban health facilities in the Northeast United States (Jim et al., 2014). However, the SEM's community-level provides a positive approach for urban AI communities to work toward positive health outcomes by enabling more urban health centers in their communities. Urban AIs/ANs prefer community urban health centers because they provide a cultural center for health services with healthcare providers that serve the community according to their cultural beliefs and address diseases that are susceptible within the community (Rutman et al., 2016).

Further, results for Cramer's  $V$  showed a weak relationship between access to health care and race even though there was statistical significance  $p < .05$ . Additionally, the  $p$ -value does not provide the magnitude of the difference between the variables (Spurlock, 2017). Therefore, the results from Cramer  $V$  depicted a relationship that was too weak to make any predictions or further recommendations on this association. This may have been in part due to some data collection restrictions at the CDC and the sample size for comparing healthcare access with race. The AI sample size was small for some of the health insurance services and were not able to be used for the study. In addition, Indian Health Service (IHS) urban health centers are limited within the Northeast region with approximately four urban health centers (Jim et al., 2014).

### **Health Care Utilization and Urban American Indian/Alaskan Natives and Urban Non-Hispanic Whites (Race)**

Chi-square analysis was used for Research Question 2 along with crosstabulation testing and a Pearson test to analyze the hypothesis further. The results showed a higher amount of AIs/ANs (25.3%) utilizing care in comparison with a lower frequency for NHWs (14.2%). There was also a higher amount of NHWs (85.8 %) who did not utilize care in comparison to AIs/ANs (74.7%). These results may have been due to the National Health Interview Survey question, which included data for participants utilizing care ten times over a 12-month period (CDC, 2019). In addition, higher utilization for AIs/ANs may also be due to utilizing urban IHS offices located in urban cities that are funded through Title V of the Indian Health Care Improve Act (IHS, n.d.c.). IHS also funds 41 Indian health organizations in urban regions for urban AIs/ANs in the United States (IHS,

n.d.c.). The urban clinics provide primary care clinics, outreach programs to underserved urban off- reservation populations, so AIs/ANs may utilize these healthcare services that are funded by IHS (IHS, n.d.c.).

Moreover, the SEM model includes individual and interpersonal levels. For the individual layer of the social-ecological model interrelated to factors associated affecting behavior choices through the interaction between individuals and the environment (Solmon, 2015). For instance, behavior and beliefs associated with utilizing healthcare services could be an influence on whether an individual seeks healthcare at healthcare facility that does not include urban IHS. While interpersonal layer of the SEM includes family, organizations, institutions, and relationships of communities amongst organizations (Solmon, 2015). This layer includes social and community networking that may be associated with the utilization of urban IHS offices for AIs/ANs to interact within a community that adheres to their cultural beliefs and enables interaction between peers within their communities

Further, the effect size measures the strength of the association between variables (Valladares-Neto, 2018), which included utilization and race. The results for Chi-square showed a statistically significant relationship between race and health care utilization, but Cramer's V, which measures the association between variables, showed a weaker relationship between utilization and race. The relationship between these variables is too weak to make any prediction and or further recommendations. This may be due to the sample size for urban AIs/ANs not including specific healthcare providers for this

population. Research has shown that urban AIs/ANs are more likely to not report having a primary healthcare provider compared to urban NHWs (Rutman et al., 2016).

### **Healthcare Access and Healthcare Utilization for Urban American Indians**

Chi-square analysis was used to answer Research Question 3 along with cross-tabulation testing and a Pearson test to analyze the hypothesis further. The results for accessing health care and utilization were only for urban AIs with a smaller sample size in comparison to the other to chi-square tests. The results indicated that urban Indians with healthcare benefits included a high number of Indians not utilizing healthcare (85.1%). This result could be associated with private insurance out of pocket costs like co-pays, high deductibles, or high costs for specialized services or long wait time (Talmage, Figueroa, & Wolfersteig, 2018). Moreover, studies have also found that low utilization may be related to barriers for AIs like distrust, not knowing the healthcare provider, dissatisfaction with traditional medicine, or discrimination when living within a urban dense concentration of non-Indigenous populations (Kitching et al., 2020; Talmage et al., 2018). Moreover, the results from this study indicated a moderate association between healthcare access and utilization for AIs/ANs, which may be used for comparison and estimates between various studies (see Valladares-Neto, 2018).

### **Income and Age to Predict Healthcare Access**

The logistic regression results for Research Question 4, found that only income and age are predictors for health access for urban AI/ANs. The results also found that although income was a predictor in this study there is a 50-50 chance that it may be used as a predictor for health care access. Governmental agencies like the CDC (2017) have



reported that 28.6% of AIs/ANs under the age of 65 lack health insurance. The results from this study may have lacked results for age as a predictor for healthcare access possibly due to the small sample size used for this study. While results from other studies have found that there are more AIs/ANs lacking healthcare insurance due to high costs compared to NHWs regardless of high incomes (Rutman et al., 2016). However, this study's results may not have indicated these same results due to primarily using a reduced sample size from the Northeast and only including one year for this study. While research studies like Rutman (2016) included merging 4 years to increase the sample size and they included urban AIs/ANs and urban NHWs in the Northeast, Midwest, South, and West regions of the US.

Income results only predicted a 50/50 chance, but other research has found that it is a key role for healthcare affordability, and unaffordable care decreases healthcare accessibility (Rutman et al., 2016). The income results which did not indicate the predictor may be due to a lack of aggregating the results over a period of four years and a limited sample size for AIs/ANs. While another study found that low-income noninsured AIs/ANs are less likely to report care due to cost in comparison to NHWs (Rutman et al., 2016). While other aspects of healthcare not being utilized due to costs are also associated with prescription drugs, specialty providers, and dental care (Rutman et al., 2016). Access to healthcare is also critical due to high amounts of chronic illnesses and high comorbidities within Native communities which leads to premature mortality rates (Kelly et al., 2015). Moreover, from the aspects of the SEM it would be beneficial to

include policy measures to include preventative measures for chronic illnesses which are prevalent within the AIs community.

### **Conclusion for Chi-Square and Logistic Regression Results**

In conclusion, logistic regression was used for RQ 4 to determine if gender, race, age, education, and income could be used to predict access to healthcare (Table 9). The null hypothesis was rejected and at least one of the variables were used (age, earnings) to predict access to healthcare in the research question. These findings may be consistent with chapter 2. The odds ratio values for age and income were close to 1 which indicates there is a 50-50 chance of health access predicted by age and earnings/income. On the other hand, if the odds ratio included a higher value then it would have a greater indication that the predictors could have influenced healthcare access. Furthermore, health access for AIs/ANs could be impeded by health care costs, and the lack of urban healthcare facilities in the Northeast specifically for AIs when comparing to NHWs. Native Americans may have less healthcare visits (utilization) due to a lack of specialized healthcare provides for their population in comparison to NHWs. Moreover, healthcare access that is increased for Native Americans with reduced utilization may be associated with private insurance healthcare costs, cultural differences between AIs and health care providers, lack of trust for the healthcare provider or traditional medicine and discrimination in an urban setting. In addition, the CDC (2017) has reported that healthcare for 28% of AIs under the age of 65 lack health insurance. Income is also critical for the affordability of health care as well as decreasing delays in health care

visits and procedures. Healthcare visits for AIs are pertinent to treatment and manage chronic illness to decrease other comorbidities from a lack of healthcare accessibility.

In addition, community and policy aspects of the SEM coincides with accessibility to access healthcare and healthcare utilization. SEM community considerations are critical for AIs in urban settings to promote positive health outcomes. Public health policies are also essential to combat comorbidities of chronic illnesses like diabetes and heart disease that are prevalent in this population.

### **Limitations of the Study**

The lack of generalizability can be noted by the population density for AIs/ANs in the Northeast as lower, in comparison to higher density populations of AIs/ANs in Alaska, Southwest, and the Northern Plains (Jim et al., 2014). Therefore, the proportions of urban AIs in the Northeast United States are lower in comparison to the other regions like the Southwest United States and, therefore, limited generalizability (Jim et al., 2014).

Also, limitations for this research study coincided with restricted datasets from the CDC. These restricted variables included urban and income. A proposal was also sent to RDC, a department within the CDC. This process took 8-12 weeks, along with having the RDC analyst merged the restricted variables with the public variables. Once the data was available, it was required to travel to the CDC/RDC to review and clean the data and run the statistical tests and output at the RDC. It would have been easier if this data were more accessible securely online rather than having to travel to a location and review the data inhouse and wait to receive the output to analysis and include in the research study. Because if the data was not included in the initial visit to RDC then it was pragmatic to

go back because the facility is now closed due to the Coronavirus. This was a limitation because the 95% CI was not included in the output, so it was manually calculated because the RDC is closed due to the pandemic.

The next limitation included a small sample size for AIs/ANs. The years were aggregated into five years, 2014-2018, to compensate for the limited sample size for the Native population. The five years merged files were used for the frequency tables, description tables, and the chi-square tests. While due to some restrictions at the RDC with certain variables, only the most current year, 2018, was used for logistic regression. Employment was not used in logistic regression because by utilizing one year, 2018 for this analysis, the variable was read by SPSS as a constant and only picked one set of variables for this variable.

The last limitations include the amounts of IHS offices in the northeast regions in the US, where federally recognized tribes are also limited, not to mention that there are limited urban Indian health centers (in Boston, New York, and Baltimore) in the Northeast United States (Jim et al., 2014). This was also an issue in terms of collecting any data that included sample populations mentioning they had coverage from IHS. And due to the small sample size, the CDC did not allow the results to be included in the output information for the data collection process.

### **Recommendations**

Recommendations for further research studies that are associated with this study may include focusing on some of the limitations as well as information that was presented in chapter two. For instance, some of the limitations of this study were

associated with the sample size of AIs and data related to IHS health access. This limitation could be addressed in future research by including the entire east coast and all AIs from all regions (urban and rural) which could increase the sample size for AIs because it is a broader population region and adds more data for this population's access to health at IHS. Another recommendation could include aggregating for all the years of study for logistic regression to increase the sample size, which can be accomplished with more resources and time to do inhouse research at the RDC. Another recommendation is to include employment history in a future research study to determine if employment is related to health access and health utilization. And for future logistic regression studies other predictor variables could have included like marital status as married individuals are healthier than unmarried individuals as it is measured in many health outcomes (U.S. DHHS, n.d.d.).

Chapter 2 also provides information relating to financial and structural barriers that could be used for future studies. For instance, financial barriers are associated with health care costs and the inability to have access to preventative care to reduce chronic illnesses within native communities. Future research that includes structural barriers may also be addressed relating to long wait times and accessibility to a structural facility specifically for native communities. Further recommendations could also include analyzing cultural variations for care between healthcare providers and participants for AIs to determine health access and utilization. In conclusion, these recommendations are future opportunities to provide further studies to address health care access and utilization for indigenous populations within the United States.

### **Social Change Implications**

The implications for social change for this study are associated with a history of public health issues for this population. This study had results for many of the statistical tests that are related to a deficiency of healthcare access and utilization for native populations in the United States. And there is still a need to improved public policies and resources for AIs/ANs. Health policies are essential for individuals, populations, and communities to address the adverse effects that are associated with access and utilization. This study focused on health access and utilization for native communities in the United States. This study also focused on improving public health policies to enable more access and utilization for this population. The SEM discusses policy, and they do have an impact on populations, communities, families, and individuals. Therefore, it is critical to promote improved public health policies to enable more resources and benefits to communities, populations, and individuals who are AI/AN.

### **Conclusions**

This research study presented information that focused on access to healthcare and healthcare utilization for Native Americans verses NHWs within the urban Northeast regions of the United States. It also enabled research to be presented in a region for a population (AIs) that lacks research studies because there is a gap in the research. The research results showed that there is a variation in healthcare access and utilization for AIs in comparison to NHWs in urban areas in the Northeast, United States. This research could hopefully lead to further studies that focus on these populations in urban regions because there is a denser population for natives within these regions. Access to healthcare

and utilization should also be a right, and there are provisions in the United States Constitution for federal tribes and healthcare, but it should also include all indigenous populations in the United States, especially in the Northeast. Healthcare access and utilization enable individuals to have less susceptibility to chronic illnesses, so it should be only natural to provide healthcare access and utilization to indigenous communities in the United States.

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## Appendix: SPSS Tables

## Frequency Table

	Frequency	%	Valid %	Cumulative %
Valid Sex				
Female	3,829	53.4	53.4	53.4
Male	3,341	46.6	46.6	100.0
Total	7,170	100.0	100.0	
Race				
NHWs	7,000	97.6	97.6	97.6
AI/AN	170	2.4	2.4	100.0
Total	7,170	100.0	100.0	
Urban	7,170	100.0	100.0	100.0
Health insurance				
Mentioned	5,185	72.3	72.3	72.3
Not mentioned	1,985	27.7	27.7	100.0
Total	7,170	100.0	100.0	
Did receive care 10+ times, 12m				
Yes	1,034	14.4	14.4	14.4
No	6,136	85.6	85.6	100.0
Total	7,170	100.0	100.0	
Did see a health professional in office, etc., 2 wk				
Yes	1,665	23.2	23.2	23.2
No	5,505	76.8	76.8	100.0
Total	7,170	100.0	100.0	
Region				
Northeast	7,170	100.0	100.0	100.0

## Descriptive Table

	<i>N</i>	Minimum	Maximum	Mean	<i>SD</i>
Total Earnings in the last year 185	862	35	800000	66891.83	7,5651.886
Age	7,170	18	85	50.79	18.401
Highest level of school completed	7,170	0	99	16.49	8.247
Valid <i>N</i> (listwise)	0				

## Health Insurance and Race AI/AN NHW Crosstabulation

			Race AI/AN NHW		Total
			NHWs	AI/AN	
Private health insurance	Mentioned	Count	5111	74	5185
		Expected Count	5062.1	122.9	5185.0
		% within Private health insurance	98.6%	1.4%	100.0%
		% within Race AI/AN NHW	73.0%	43.5%	72.3%
		Residual	48.9	-48.9	
	Not Mentioned	Count	1889	96	1985
		Expected Count	1937.9	47.1	1985.0
		% within Private health insurance	95.2%	4.8%	100.0%
		% within Race AI/AN NHW	27.0%	56.5%	27.7%
		Residual	-48.9	48.9	
Total	Count	7000	170	7170	
	Expected Count	7000.0	170.0	7170.0	
	% within Private health insurance	97.6%	2.4%	100.0%	
	% within Race AI/AN NHW	100.0%	100.0%	100.0%	

## Health Insurance and Race AI/AN NHW Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	72.070 <sup>a</sup>	1	.000		
Continuity Correction <sup>b</sup>	70.605	1	.000		
Likelihood Ratio	63.458	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	72.060	1	.000		
N of Valid Cases	7170				

Note. a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 47.06.

b. Computed only for a 2x2 table

## Health Insurance and Race AI/AN NHW Symmetric Measure

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Nominal by	Phi	.100			.000
Nominal	Cramer's V	.100			.000
Interval by	Pearson's R	.100	.014	8.531	.000 <sup>c</sup>
Interval					
Ordinal by	Spearman	.100	.014	8.531	.000 <sup>c</sup>
Ordinal	Correlation				
N of Valid Cases		7170			

Note. a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

## Did Receive Care 10+ times, 12m and Race AI/AN NHW Crosstabulation

			Race AI/AN NHW		Total
			NHWs	AI/AN	
Did - - receive care 10+ times, 12m	Yes	Count	991	43	1034
		Expected Count	1009.5	24.5	1034.0
		% within Did - - receive care 10+ times, 12m	95.8%	4.2%	100.0%
		% within Race AI/AN NHW	14.2%	25.3%	14.4%
		Residual	-18.5	18.5	
No	No	Count	6009	127	6136
		Expected Count	5990.5	145.5	6136.0
		% within Did - - receive care 10+ times, 12m	97.9%	2.1%	100.0%
		% within Race AI/AN NHW	85.8%	74.7%	85.6%
		Residual	18.5	-18.5	
Total		Count	7000	170	7170
		Expected Count	7000.0	170.0	7170.0
		% within Did - - receive care 10+ times, 12m	97.6%	2.4%	100.0%
		% within Race AI/AN NHW	100.0%	100.0%	100.0%

## Did Receive Care 10+ times, 12m and Race AI/AN NHW Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	16.680 <sup>a</sup>	1	.000		
Continuity Correction <sup>b</sup>	15.790	1	.000		
Likelihood Ratio	14.205	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	16.678	1	.000		
N of Valid Cases	7170				

Note. a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 24.52.

b. Computed only for a 2x2 table

## Did Receive Care 10+ times, 12m and Race AI/AN NHW Symmetric Measures

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Nominal by	Phi	-.048			.000
Nominal	Cramer's V	.048			.000
Interval by Interval	Pearson's R	-.048	.015	-4.088	.000 <sup>c</sup>
Ordinal by Ordinal	Spearman Correlation	-.048	.015	-4.088	.000 <sup>c</sup>
N of Valid Cases		7170			

Note. a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

## Did See Health Professional in Office, etc., 2wk and Race AI/AN NHW Crosstabulation

		Race AI/AN NHW			
		NHWs	AI/AN	Total	
Did - - see health professional in office, etc, 2wk	Yes	Count	1622	43	1665
		Expected Count	1625.5	39.5	1665.0
		% within Did - - see health professional in office, etc, 2wk	97.4%	2.6%	100.0%
		% within Race AI/AN NHW	23.2%	25.3%	23.2%
		Residual	-3.5	3.5	
	No	Count	5378	127	5505
		Expected Count	5374.5	130.5	5505.0
		% within Did - - see health professional in office, etc, 2wk	97.7%	2.3%	100.0%
		% within Race AI/AN NHW	76.8%	74.7%	76.8%
		Residual	3.5	-3.5	
Total	Count	7000	170	7170	
	Expected Count	7000.0	170.0	7170.0	
	% within Did - - see health professional in office, etc, 2wk	97.6%	2.4%	100.0%	
	% within Race AI/AN NHW	100.0%	100.0%	100.0%	

## Did See Health Professional in Office, etc., 2wk and Race AI/AN NHW Chi-Square

## Tests

	Value	df	Asymp. Sig. (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	.419 <sup>a</sup>	1	.517		
Continuity Correction <sup>b</sup>	.309	1	.578		
Likelihood Ratio	.411	1	.521		
Fisher's Exact Test				.520	.286
Linear-by-Linear Association	.419	1	.517		
N of Valid Cases	7170				

Note. a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 39.48.

b. Computed only for a 2x2 table

## Private Health insurance \* Did Receive Care 10+ times, 12m Crosstabulation

		Did - - receive care 10+ times, 12m		Total	
		Yes	No		
Private health insurance	Mentioned	Count	11	63	74
		Expected Count	18.7	55.3	74.0
		% within Private health insurance	14.9%	85.1%	100.0%
		% within Did - - receive care 10+ times, 12m	25.6%	49.6%	43.5%
		Residual	-7.7	7.7	
	Not Mentioned	Count	32	64	96
		Expected Count	24.3	71.7	96.0
		% within Private health insurance	33.3%	66.7%	100.0%
		% within Did - - receive care 10+ times, 12m	74.4%	50.4%	56.5%
		Residual	7.7	-7.7	
Total	Count	43	127	170	
	Expected Count	43.0	127.0	170.0	
	% within Private health insurance	25.3%	74.7%	100.0%	
	% within Did - - receive care 10+ times, 12m	100.0%	100.0%	100.0%	

## Private Health insurance \* Did Receive Care 10+ times, 12m Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.543 <sup>a</sup>	1	.006		
Continuity Correction <sup>b</sup>	6.597	1	.010		
Likelihood Ratio	7.861	1	.005		
Fisher's Exact Test				.007	.005
Linear-by-Linear Association	7.499	1	.006		
N of Valid Cases	170				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.72.

b. Computed only for a 2x2 table

## Private Health insurance \* Did Receive Care 10+ times, 12m Symmetric Measures

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Nominal by Nominal	Phi	-.211			.006
Nominal by Nominal	Cramer's V	.211			.006
Interval by Interval	Pearson's R	-.211	.071	-2.793	.006 <sup>c</sup>
Ordinal by Ordinal	Spearman Correlation	-.211	.071	-2.793	.006 <sup>c</sup>
N of Valid Cases		170			

Note. a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.



## Logistic Regression

Dependent Variable Encoding	
Original Value	Internal Value
Mentioned	0
Not Mentioned	1

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	115.261	6	.000
	Block	115.261	6	.000
	Model	115.261	6	.000

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	69.670	8	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	672.144 <sup>a</sup>	.125	.209

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Classification Table <sup>a</sup>				
		Predicted		Percentage Correct
		Mentioned	Not Mentioned	
Step 1	Private health insurance	Mentioned	710	5
		Not Mentioned	134	13
Overall Percentage				83.9

Note. a. The cut value is .500

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Gender(1)	-.145	.200	.530	1	.467	.865
	AIANNHW(1)	-.938	.708	1.753	1	.185	.391
	EDUC1	-.045	.038	1.418	1	.234	.956
	AGE_P	.020	.006	10.560	1	.001	1.020
	ERNYR_185_I	.000	.000	17.519	1	.000	1.000
	PovratI3185_I	-.182	.043	18.319	1	.000	.834
	Constant	.877	.933	.883	1	.347	2.403

Note. a. Variable(s) entered on step 1: Gender, AIANNHW, EDUC1, AGE\_P, ERNYR\_185\_I, PovratI3185\_I.