Journal of Biology, Agriculture and Healthcare
ISSN 2224-3208 (Paper) ISSN 2225-093X (Online)
Vol.12, No.16, 2022

The Impact of Healthcare Accessibility on Health Outcomes among Louisiana's Residents Following the Implementation of the Affordable Care Act (ACA) From 2011 To 2021

Sobotie Damijo Ekugbere Deborah
Department of Public Policy, Southern University and A & M College, Baton Rouge, Louisiana
d_sobotie@yahoo.com

Abstract
The purpose of this study is to examine the impact of healthcare accessibility on health outcomes among residents of the State of Louisiana following the implementation of the Patient Protection and Affordable Care Act (ACA) between 2011 and 2021 to inform public policy. The study made use of the following variables: mortality rates, morbidity rates, lack of access to either healthcare or adequate health insurance, access to primary care physician, and access to medical screening, indeed among other relevant factors. In the process of the study's very rigorous interrogative research, various relevant statistical analyses were carried out using descriptive summary, regression, and correlation. A sample size of 640 was used for the data analysis for the period of 10 years, which periodically ran from 2011 through 2021 (i.e. 2011-2021). The study has subsequently revealed that that for every 1% increase in the percentage of uninsured adults among the population of Louisiana, the State's mortality rate is likely to increase by 0.402 or 40.2%. Furthermore, the study revealed that, for every 1% increase in the access to primary care physician among the population of Louisiana, the State's mortality rate, and morbidity rate are likely to decrease by -0.426 or 42.6%, and -0.602 or 60.2%, respectively. Towards this end, the study revealed that about 59% variations in the mortality rate of Louisiana, and about 68% variations in Louisiana's morbidity rate are explained by the following variables: Illiteracy as well as Percentage of Uninsured Population (or Adults), lack of Access to Primary Care Physicians, Access to Mammography Screening, Access to Diabetic Screening, and Physical Inactivity.
Keywords: Healthcare, Accessibility, Morbidity, Mortality, Insurance, Physicians, Primary care, Minority, and Health
DOI: 10.7176/JBAH/12-16-02
Publication date: August 31st 2022

INTRODUCTION

Access to healthcare and the elimination of racial as well as ethnic differences in the context of access to healthcare are two sides of the same coin. For decades, the focus of the U.S. healthcare system has been to eliminate racial and ethnic inequalities in it because it is confronted with systemic racial bias and discriminatory practices, according to Feldstein (2012). For example, at the time that Medicare Bill was signed into law on July 30, 1965, the healthcare system was highly segregated. As a result, hospitals in the south complied with Jim Crow laws, which excluded Blacks Americans (now known as African Americans) from hospitals reserved for White Americans (Feldstein, 2012).

However, the very concept as well as understanding and the implementation of healthcare accessibility and utilization has changed across most of the advanced countries, with the exception of the United States (Feldstein, 2012). Yet, it is not very certain how much progress that has been made in the last two decades towards attaining the goal of universal access to health care, especially for minority ethnic populations (Krumholz et al., 2021). Meanwhile, it has been observed in the literature that the persistence of lack of access to healthcare among African Americans are rooted in such historic and contemporary inequities as legalized segregation and discrimination (White, Haas, & Williams, 2012). According to Nooman, Velasco-Mondragon and Wagner (2016), the fact that the African American population is the least healthy ethnic group in the USA is not due to either an accident or chance but, instead, as a result of historical incidents in racism. They have further argued that the first Africans were initially were brought to the USA in chains as slaves. The Cross-Atlantic transporting of the slaves itself from Africa to the so-called New World remains one of the best examples of the humiliating ways in which White traders in the slave trade sought to benefit from what Harvard University Sociology Professor Orlando Patterson and other scholars referred to as human cargo (Patterson, 1984); that was also the ability of one sector of humanity tried to destroy the other psychologically and otherwise. Nooman et al. (2016) have further argued in the available literature that African Americans were forced to live in very horrible physical and social conditions, in which it was obvious that their health had very little value. For more than 250 years, therefore, enslaved Africans or Blacks suffered physical, social, and mental brutalization, for which the end emancipation of the slaves did not end immediately for them to lead healthy and meaningful lives (Franklin & Higginbotham, 2022).

Historically, it has been established in the literature on access to high-quality healthcare that racial and ethnic minority populations have worse access to effective healthcare than do non-Hispanic Whites, (Waidmann & Rajan, 2000). As the authors have further confirmed, African Americans, in particular, are the most disadvantaged minority group population when it comes to most health measures, including health insurance coverage; availability of medical insurance coverage and the existence of usual source of care are, therefore, important for timely access to healthcare in general (Waidmann & Rajan, 2000). The Patient Protection and Affordable Care Act, otherwise referred to simply as the Affordable Care Act (ACA), was signed into law by President Barack Obama on March 23, 2010 as a landmark piece of legislation of the Obama Administration; according to Gruber (2011), "the most comprehensive reform of the U.S. medical system in at least 45 years". However, an emblematic case that has been observed over the past decade in the U.S. Congress is in respect to the implementation of the Patient Protection and Affordable Care Act (ACA), especially as it relates to expanding access to healthcare for the less privileged.

Among the many nationwide studies are those by Chen, Vargas-Bustamante, Mortensen, & Ortega, 2015; Sommers, Buchmueller, & Dekker et al., 2013; Sommers, Gunja, & Finegold et al., 2015); they have been conducted to underscore the fact that since the implementation of the ACA, the overall uninsured rate had declined between 2013 and 2014 (Buchmueller, Levinson, Levy, & Wolfe, 2016). Yet, the lack of healthcare access still persists. A lot more importantly, its impact on health outcome has not been fully examined following the implementation of the Affordable Care Act to inform public health policy. In addition, personal lifestyles and health behaviors do affect the quality and length of life. Maintaining a healthy weight through proper nutrition, for example, and physical fitness is an important measure of overall good health. Adhering to recommended fitness and nutrition guidelines throughout one's life course can help reduce the risk of obesity-related conditions like diabetes, stroke, heart disease or hypertension. In many cases, proper weight control techniques can also help with the management of chronic disease symptoms, which can keep conditions from worsening. Yet, such simple guidelines needed to achieve these positive health outcomes pose a real challenge for residents of Louisiana, most especially the African American and Hispanic populations.

Meanwhile, there is an overarching necessity to address access to physical and behavioral healthcare, social determinants of health, violence prevention, healthy lifestyles, and family health in order to avoid threats to both the quality and length of life expectancy in Louisiana. Under the Obama Affordable Care (or the ACA), health insurance premiums are perceived as being unaffordable (Williams, Lopez, Martin, & Armstrong, 2017), as well as considering it to be a critical source of barrier to healthcare access by residents of Louisiana. This simply meant that, for some people, the cost of the health insurance marketplace plans was too high, even for those with subsidies (Williams et al., 2017). The reported high infection rate with respect to diseases, hospitalization, and deaths in Louisiana, especially in the African American population, caused by the COVID-19 pandemic brings an increased interest for an examination of the impact of lack of healthcare access on health outcomes for residents of Louisiana following the implementation of the Affordable Care Act (ACA) from 2011 to 2021. Therefore, this study finds answers to the research questions: Does healthcare accessibility (i.e. access to physician, physical activities, insurance, medical screening, etc.) have a significant impact on health outcomes among residents of Louisiana following the implementation of the Affordable Care Act (ACA) between 2011 and 2021?

LITERATURE REVIEW

Global Concept of Access to Healthcare

Access to healthcare is a system, whereby every person would obtain access to the health services they need, when they need them, without facing healthcare costs that force them into financial hardship. It is a key topic of debate worldwide. Certainly, access to healthcare poses a challenge to many countries as they face increasing healthcare challenges. The COVID-19 pandemic has exacerbated the challenge and brought it to the forefront. With ageing populations, and rising numbers of patients with multiple chronic diseases, the need to provide access to healthcare is increasingly under the spotlight in most countries.

In 2016, London-based The Economist Intelligence Unit developed the Global Access to Healthcare Index, which is to be utilized to measure how healthcare systems across 60 countries are working to offer solutions to the most pressing healthcare needs of their populations. The index provides a total of 23 sub-indicators within two domains to evaluate whether citizens in each country have access to the appropriate health services (The Economist Intelligence Unit, 2017). The first domain is the accessibility index, which examines access to specific kinds of care, including child and maternal health services, care for patients with infectious diseases and non-communicable diseases, access to medicines, and the extent to which inequities in access exist. The second domain focuses on healthcare systems which measures the conditions that allow for good access to effective and relevant healthcare services, such as policy, institutions and infrastructure (The Economist Intelligence Unit, 2017). At the individual level, access to healthcare is assessed by ascertaining whether individuals have health insurance coverage and a usual source of care (Caraballo et al., 2020; Krumholz et al., 2021). A usual source of

care is a usual place an individual goes to whenever he or she is sick or needed health advice, (Krumholz et al., 2021).

History of the Patient Protection and Affordable Care Act (Obamacare)

The Patient Protection and Affordable Care Act (often styled as Obamacare, and otherwise also referred to as the Affordable Care Act (ACA), or simply as "federal health reform," was heralded and signed into law by President Barack Obama on March 23, 2010. In essence, it was a landmark piece of legislation of the Obama Administration and, according to Gruber (2011), "the most comprehensive reform of the U.S. medical system in at least 45 years".

Furthermore, Gruber (2011) did underscore the fact that the core of the ACA is a "three-legged stool," i.e. three fundamental provisions, designed to fix the broken non-employer insurance market in the United States and to expand health insurance coverage as a result. Prior to the implementation of the ACA, the small group and individual markets (whereby most small businesses and individuals without coverage through an employer purchased health insurance) were characterized by expensive and low-quality health plans that provided little coverage at a very high cost. The ACA included several mechanisms, three of which are described as "three-legged stool" to address this issue, including: 1) requirements that everyone buy health insurance (i.e., individual mandate, minimum essential coverage); 2) rules that prevent insurers from denying coverage or raising premiums based on preexisting conditions (guaranteed issue); and 3) subsidies to make health insurance affordable (i.e., advanced premium tax credits, cost sharing reductions) (Hardy, 2020).

Overall, the key federal provisions in the ACA are intended to 1) expand access to insurance coverage, 2) increase consumer insurance protections, 3) emphasize prevention and wellness, 4) improve health quality and system performance, 5) promote health workforce development, and 6) curb rising health care costs (Hardy, 2020). Gruber (2011), in a memorandum in August 2010, argued that the individual mandate was essential to balancing out the market failures that would otherwise result from requiring insurance companies to charge "analogous prices to people whether they were sick or healthy" (Hardy, 2020, p.1). Without any sort of mechanism that would require individuals to maintain health coverage, Gruber (2011) reasoned, that many healthy individuals would be less motivated to obtain coverage because their individual medical costs in a given year were likely much lower than the premium payments associated with a marketplace plan (Hardy, 2020). On the other hand, a lot of sicker individuals with higher medical costs, would make up a disproportionate share of the marketplace and, as a result, driving up the costs of plans and potentially driving more individuals, and plans, out of the market (Williams, Lopez et al., 2017; Hardy, 2020). The individual mandate, one leg of the "three-legged stool," was necessary to maintain the functionality of the Obamacare. In practice, according to Hardy (2020), the individual mandate has had the unintended consequence of making the entire law more vulnerable by signaling that repealing or striking it down would make the entire law inviable. In essence, critics of the ACA merely needed to kick out one "leg" to make the entire "stool" collapse (Hardy, 2020).

Under the ACA, various States have numerous roles and responsibilities to play, which include implementing new health insurance requirements to expanding their Medicaid programs. As it turned out, it became obvious that, in fact, too many American were either uninsured or underinsured. Furthermore, U.S. healthcare spending was high and unsustainable, and private insurance coverage was expensive, thereby driving up copays, and resulting in reduced benefits. According to the American College of Physicians (ACP), the Patient Protection and Affordable Care Act of 2010 (ACA) led to historic reductions in the number of uninsured persons, yet nearly 30 million remain uninsured, millions more are underinsured. African Americans and other minority category groups accounted for a disproportionate share of the uninsured and underinsured.

However, in a study carried out by Buchmueller et al. (2016), on how health insurance coverage changed for White, Black, and Hispanic adults after the Affordable Care Act (ACA) came into effect, they concluded that in "2013, 40.5% of Hispanics and 25.8% of Blacks were uninsured, compared with 14.8% of Whites. After the main ACA provisions went into effect in 2014, coverage disparities declined slightly as the percentage of adults who were uninsured decreased by 7.1 percentage points for Hispanics, 5.1 percentage points for Blacks, and 3 percentage points for Whites. Coverage gains were greater in states that expanded Medicaid programs. Based on the results, they concluded that "the ACA has reduced racial/ethnic disparities in coverage, although substantial disparities remain. Further increases in coverage will require Medicaid expansion by more states and improved program take-up in states that have already done so" (Buchmueller et al., 2016, p.1416).

Then followed a legal parlance: In NFIB v. Sebelius, the U.S. Supreme Court reviewed, and upheld, the constitutionality of the individual mandate and Medicaid expansion, but did not address the question as whether or not it was severable from the rest of the law. Instead, the Affordable Care (or Obamacare legislation) faced onslaughts, as Republican-controlled Congress attempted to repeal the ACA several times in the years immediately following the Supreme Court's decision in NFIB v. Sebelius. The republican-controlled Congress was unrelenting in trying to repeal the ACA, even though it lacked the votes to overcome then-President Obama's anticipated veto (Buchmueller et al., 2016). The dynamic changed after Trump was elected president in

2016. Congress unsuccessfully made several attempts to repeal the ACA during the first year of the Trump Administration. In a last-ditch effort after failing to repeal the ACA, the Republican-controlled Congress included a provision in the Tax Cuts and Jobs Act (TCJA) in 2017 to reduce the individual tax penalty to zero dollars beginning with 2019 calendar year.

In Texas v. Azar, a case brought by Texas and several other interested and like-minded States, a federal district court judge ruled and boldly struck down the entirety of the ACA in December of 2018. However, California, an alliance of Democratic States, and the House of Representatives appealed the case to the Supreme Court. Until the Supreme Court ruled, the individual mandate still exists in law, and the ACA remained a law of the land (Mangan, 2022; Hardy, 2020).

Health Insurance Distribution in the U.S.

The U.S. Bureau of Census's Current Population Reports, P60-274, titled "*Health Insurance Coverage in the United States: 2020*" provides a number of reports on health insurance coverage for the years 2018, 2019, and 2020. The following 2 reports summarize health insurance distribution in the U.S that are relevant to this study. The reports were published in September 2021 (see Table 1 and 2 for more details).

Table 1: Number and Percentage of People by Health Insurance Coverage Type in U.S. 2018 - 2020

Number and Percentage of People by Health Insurance Coverage Type: 2018 to 2020									
	2018			**2019**			**2020**		
		Margin of			Margin of			Margin of	
Coverage Type	Number	error (+/-)	Percent	Number	error (+/-)	Percent	Number	error (+/-)	Percent
Total ……	323,668	133	X	324,550	132	X	325,638	153	X
Any health plan ……	296,206	641	91.5	298,438	688	92.0	297,680	638	91.4
Any private plan ……	217,780	1,222	67.3	220,848	1,121	68.0	216,532	1,166	66.5
Employment-based ..	178,350	1,283	55.1	183,005	1,142	56.4	177,175	1,070	54.4
Direct-purchase …….	34,846	647	10.8	33,170	776	10.2	34,041	653	10.5
Marketplace Coverage	10,743	428	3.3	9,716	417	3.0	10,804	439	3.3
TRICARE	8,537	508	2.6	8,534	522	2.6	9,183	579	2.8
Any public plan ……	111,330	962	34.4	110,687	967	34.1	113,337	923	34.8
Medicare ……	57,720	401	17.8	58,779	409	18.1	59,844	393	18.4
Medicaid ……	57,819	891	17.9	55,851	927	17.2	57,921	893	17.8
VA or CHAMPVA ….	3,217	182	1.0	3,221	188	1.0	2,979	175	0.9
Uninsured ……	27,462	630	8.5	26,111	657	8.0	27,957	612	8.6

Source: U.S. Census Bureau Current Population Reports, P60-274, published September 2021 (Table 1).

NB:

1) *Numbers in thousands*
2) *Margin of error is a measure of an estimate's variability*
3) *The estimates by type are not mutually exclusive, people can be covered by more than one type of health insurance during the year.*
4) *Private insurance includes coverage provided through an employer or union, coverage purchased directly, or TRICARE.*
5) *Public health insurance coverage includes Medicaid, Medicare, CHAMPVA, and care provided by the department of Veterans Affairs and the military.*

The U.S. Census Bureau has provided the following key take-aways on health insurance from the foregoing report: 1) The percentage of people with health insurance coverage for all or part of 2020 was 91.4, 2) In 2020, 8.6 percent of people, or 28.0 million, did not have health insurance at any point during the year, and 3) In 2020, private health insurance coverage continued to be more prevalent than public coverage at 66.5 percent and 34.8 percent, respectively. Of the subtypes of health insurance coverage, employment-based insurance was the most common, covering 54.4 percent of the population for some or all of the calendar year, followed by Medicare (18.4 percent), Medicaid (17.8 percent), direct-purchase coverage (10.5 percent), TRICARE (2.8 percent), and Department of Veterans Affairs (VA) or Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA) coverage (0.9 percent), 4) Between 2018 and 2020, the evidence was that the rate of private health insurance coverage decreased by 0.8 percentage points to 66.5 percent, driven by a 0.7 percentage-

point decline in employment-based coverage to 54.4 percent; 5) Between 2018 and 2020, the rate of public health insurance coverage increased by 0.4 percentage points to 34.8 percent, and 6) In 2020, 87.0 percent of full-time, year-round workers had private insurance coverage, up from 85.1 percent in 2018. In contrast, those who worked less than full-time, year-round were less likely to be covered by private insurance in 2020 than in 2018 (68.5 percent in 2018 and 66.7 percent in 2020).

The percentage of people, with health insurance coverage status and type by selected characteristics in 2020 was reported as follows:

Table 2: **Percentage of People by Health Insurance Coverage Status and Type by Selected Characteristics in 2020**

Percentage of People by Health Insurance Coverage Status and Type by Selected Characteristics: 2020									
Characteristics	Total								
		Any Health Insurance						Uninsured	
				Private Health Insurance		Public Health Insurance			
	Number	Percent	Margin of error (+/-)	Percent	Margin of error (+/-)	Percent	Margin of error (+/-)	Percent	Margin of error (+/-)
2020 Total	325,638	91.4	0.2	68.5	0.4	34.8	0.3	8.6	0.2
Race and Hispanic Origin									
White	247,763	91.7	0.2	68.6	0.4	34.3	0.3	8.3	0.2
White, not Hispanic	194,230	94.6	0.2	73.9	0.4	33.8	0.4	5.4	0.2
Black	43,427	89.6	0.6	54.6	1.0	41.4	0.8	10.4	0.6
Asian	20,125	94.1	0.6	72.4	1.2	27.0	1.1	5.9	0.6
Hispanic (any race)	61,160	81.7	0.7	49.9	0.9	35.9	0.7	18.3	0.7
Age									
Under age 65	269,802	89.8	0.2	70.0	0.4	22.6	0.3	10.2	0.2
Under age 19	76,156	94.4	0.3	62.2	0.6	35.1	0.6	5.6	0.3
Aged 19 to 64	193,646	88.1	0.3	73.0	0.4	17.7	0.3	11.9	0.3
Aged 19 to 25	29,269	85.6	0.6	69.4	0.9	18.2	0.8	14.4	0.6
Aged 26 to 34	40,916	85.8	0.6	70.4	0.8	18.2	0.6	14.2	0.6
Aged 35 to 44	42,004	87.6	0.5	73.7	0.7	16.3	0.6	12.4	0.5
Aged 45 to 64	81,457	90.4	0.3	75.3	0.5	18.0	0.4	9.6	0.3
Aged 65 and older	55,836	99.0	0.1	49.6	0.8	93.6	0.3	1.0	0.1
Nativity									
Native-born	280,839	93.1	0.2	68.2	0.4	35.4	0.3	6.9	0.2
Foreign-born	44,799	80.7	0.7	55.8	0.9	30.9	0.7	19.3	0.7
Naturalized citizen	22,667	91.7	0.5	63.8	1.0	36.8	0.9	8.3	0.5
Not a citizen	22,132	69.4	1.2	47.5	1.3	24.9	1.0	30.6	1.2
Region									
Northeast	54,771	95.2	0.4	69.1	0.9	37.8	0.9	4.8	0.4
Midwest	67,436	93.8	0.4	71.7	0.8	33.5	0.7	6.2	0.4
South	125,396	88.2	0.4	63.4	0.6	33.6	0.5	11.8	0.4
West	78,035	91.8	0.3	65.0	0.7	35.7	0.6	8.2	0.3
State Medicaid Expansion status									
Lived in Medicaid expansion state	211,948	93.6	0.2	67.9	0.5	36.1	0.4	6.4	0.2
Did not live in Medicaid expansion state	113,690	87.4	0.4	63.8	0.6	32.5	0.5	12.6	0.4

Source: U.S. Census Bureau Current Population Reports, P60-274, published September 2021 (Table A-1).

Insurance and Health Outcome

In its comprehensive study of the health consequences of uninsurance, *Care without Coverage: Too Little, Too Late*, the Institute of Medicine (IOM) in 2002 found that uninsured adults in the United States have less access to recommended care, receive poorer quality of care, and experience worse health outcomes than insured adults do (IOM, 2002). Derived from a systematic review of a large body of research, the foregoing findings led to the conclusion that, in fact, providing health insurance coverage to uninsured adults, would likely improve their health status and reduce their risk of premature death. Since this report was published, the number of Americans with health insurance rose to 46 million in 2007, including 37 million, or 19.6 percent, of the nonelderly adult

population (DeNavas-Walt, Proctor, & Smith, 2008). If health insurance coverage indeed improves health, then the benefits of policies to expand coverage could be substantial.

Again, according to Hadley (2003), the Institute of Medicine's findings were extracted from consistent evidence provided by more than 130 research articles and substantiated by a subsequent rigorous literature review. Hadley further argued that these conclusions could not be stated with great certainty, however, and it is because they were based largely on observational studies that had fundamental design limitations. Most of these studies compared health-related outcomes of insured and uninsured adults and used statistical techniques to adjust for other predictors of health that may be related to health insurance status. Meanwhile, such comparisons are problematic for two principal reasons, according to Hardley (2003). First, insured and uninsured adults may differ greatly in their sociodemographic characteristics, environmental influences, clinical risk factors, health behaviors, preferences, or other predictors of health. It is virtually impossible to measure all systematic differences among these groups, some of which may be unobservable, let alone measure them all precisely. Moreover, comparisons of insured and uninsured adults often rely on data collected on a limited set of variables. Therefore, important differences may remain after statistical adjustments that explain observed differences in health between insured and uninsured adults. Econometricians commonly call this threat to validity the *omitted variables bias*; epidemiologists label it *unmeasured confounding*.

Second, health insurance status may not only affect health, but a health condition may also affect health insurance status. For example, health declines may lead to coverage gains through increased demand for either private insurance or eligibility for public insurance, or they may lead to uninsurance through job loss, income reductions, or selection behaviors by insurers. Therefore, cross-sectional associations between health insurance status and health may be due to the effects of health on health insurance, rather than the reverse. Longitudinal data would allow for prospective comparisons of outcomes among insured and uninsured adults, but adjusting for baseline health differences that may be either the cause or the result of coverage differences could bias estimates to unpredictable degrees.

Towards this end, the health consequences of non-insurance would ideally rely more heavily on experimental or quasi-experimental evidence (Levy & Meltzer, 2008). The RAND Health Insurance Experiment remains the only study in which features of coverage were randomly assigned, however, and ethical and practical considerations make future trials of its kind unlikely. This large-scale social experiment found that less cost-sharing by patients increased the utilization of both appropriate and inappropriate care, with no health benefits on average (Newhouse, 1993). However, these overall findings may not generalize to the current population of uninsured adults in the United States, for several reasons. The RAND study lacked a strictly uninsured group, as even subjects assigned 95 percent cost-sharing had a stop-loss provision in their coverage. Furthermore, subjects that did benefit from more extensive coverage, such as low-income adults with hypertension, more closely resembled adults who tend to be uninsured. Finally, advances in medical technology and the delivery system over the past three decades may have improved the net effectiveness of health care. In particular, many uninsured adults have chronic conditions (Wilper et al., 2008) for which there now are many beneficial therapies.

According to McWilliams (2009), because the health effects of health insurance presumably are mediated through health services, these effects should not be expected to be any less heterogeneous across demographic subgroups and clinical conditions than are the benefits of medical care. That is, if more health care is better for some patients than others, then the benefits of health insurance should vary accordingly. Therefore, the clinical appropriateness of research questions also should be considered when evaluating these studies. For example, an indiscriminate conclusion that coverage does not affect health would not be substantiated by a study limited to subjects with a condition for which few effective treatments are available or to outcomes that are incommensurate with clinical expectations.

The body of research on health insurance as well as HIV care and outcomes exemplify the importance of the preceding methodological and clinical considerations. The outcomes of adults, who have HIV infection, are exquisitely sensitive to the receipt of appropriate care, as there have been important advances in diagnosing, preventing, and treating opportunistic infections and preserving immunocompetence with antiretroviral therapy. Several observational studies have demonstrated that uninsured adults with HIV are less likely to receive regular care and drug treatment (IOM, 2002), suggesting substantial negative effects of uninsurance on health outcomes in this population. In contrast, similarly- designed comparisons of mortality have suggested that health insurance coverage significantly increases the risk of death for patients with HIV (Goldman et al., 2001). What is very likely driving this perverse association were unobserved differences in health between uninsured adults and adults, who became eligible for Medicaid or Medicare after experiencing disabilities related to advanced disease.

Above all, by using measures of State Medicaid eligibility restrictions and generosity of coverage as instrumental variables, Goldman and Colleagues (2001) conducted a quasi-experimental analysis of longitudinal data that robustly demonstrated that health insurance substantially reduced the risk of death within six months for adults with HIV. The foregoing estimates applied only to the marginal group of patients, whose insurance status was determined by state policies, but their consistency with observational findings for access to care and

receipt of therapies, does suggest that the health benefits of coverage generalize more broadly to HIV patients, who would be uninsured regardless of their state of residence. Thus, as this body of research matured, the use of quasi-experimental methods was crucial to addressing limitations of prior observational research as well as drawing valid conclusions about the importance of insurance coverage for this care-sensitive population, while its largely observational base guided research questions and provided grounds for generalization.

Physical Inactivity and Health Outcome

According to Larcom (2021), physical activity has numerous health benefits, including: cardiovascular and metabolic health, lung capacity, muscle strength, and immune system health. Physical inactivity is a risk factor for several chronic health conditions that also elevate the risk for more severe COVID-19 (World Health Organization, 2021; Larcom, 2021). Some previous evidence suggests a link between physical inactivity and higher odds of more severe COVID-19 outcomes.

A new study, published in the *British Journal of Sports Medicine,* found similar results. The study analyzed data on 48,440 Kaiser Permanente Southern California patients, who had tested positive for COVID-19 between January and October 2020 and who had at least three Exercise Vital Sign measurements in the two years preceding the pandemic. Exercise Vital Sign is a measurement of physical activity included in a patient's health records at Kaiser Permanente Southern California since 2009. The vital sign consists of a patient's weekly frequency and duration of moderate to strenuous exercise. Based on vital sign measurements, 6.4% of patients in the study were consistently active, 14.4% were consistently inactive, and the remaining 79.2% were inconsistently active. The participants, who were analyzed, had an average age of 47, a mean body mass index of 31.2 (which falls under the class I obesity range), and just under half had one (17.4%) or two or more (31.3%) comorbidities (*Sallis et al.,* 2021).

According to the findings from the *British Journal of Sports Medicine* conducted by *Sallis et al.*(2021), there is a strong association between physical inactivity and COVID-19 outcomes, and physical activity provided significant protection from more severe outcomes, including: hospitalization, ICU admission, and death. Being consistently inactive more than doubled the odds of hospitalization and death compared to being consistently active. The odds of ICU admission were 1.73 times higher. Even being less consistently active was associated with benefits, including 20% lower odds of death (*Sallis et al.*, 2021).

The key finding is that—aside from being over age 60 and having a history of a solid organ transplant—consistent physical inactivity was the most significant risk factor for COVID-19 death. These results would point to physical inactivity as the most significant *modifiable* risk factor for COVID-19 severity. Physical inactivity is a risk factor that almost anyone can improve in a shorter timeline—and can be more accessible than other risk factors such as weight loss. Considering the accessibility and importance of physical activity for physical and mental health, physical activity should be a priority in the ensuing months of recovery and reopening (*Sallis et al.*, 2021).

Towards the foregoing end, according to Larcom (2021), exercise is an important part of being able to manage rheumatoid arthritis (RA). Furthermore, aerobic activity can also lower cardiovascular risk, which can impact RA outcomes (Larcom, 2021). Research shows aerobic training has improved cardiovascular fitness and quality of life and reduced pain and disability in people with RA. The evidence is less conclusive when it comes to resistance training. A systematic review and meta-analysis, published in *Medicine* by Wen and Chai (2021), aims to determine the effect of resistance training on: pain, disease activity, functional capacity, quality of life (or morbidity), and structural damage in people with RA. The study is also to determine if adding resistance training to prescribed treatment is clinically beneficial. The review included 17 randomized and controlled trials involving 1,010 participants—512 persons participated in resistance training and 498 in controls. According to the findings, resistance training: Reduced disease activity, Reduced ESR—a measure of inflammation—and Improved patients' 50-foot walk test score. Above all, other similar studies have found resistance training improved grip strength, slowed disease progression, improved joint function, alleviated pain, and improved joint stiffness. Higher quality and more extensive research studies are still needed, and the authors recommend future studies look at exercise frequency and intensity (Larcom, 2021).

METHODOLOGY

This study is purely quantitative in nature. The study utilizes the correlational research design. The selection of this design is premised on the fact that the researcher seeks to investigate the impacts of lack of access to healthcare on health outcome among Louisiana residents by testing the PRECEDE-PROCEED theoretical framework to inform public health policy. This study utilized a secondary source of data on Louisiana Parishes' health rankings for the years between 2011 and 2021 provided by the United States Department of Health and Human Services (US DHHS) in conjunction with the Center for Disease Control and Prevention (CDC), and the National Center for Health Statistics (HCHS). Two health outcome variables are identified in the dataset, namely, mortality, and morbidity, which are otherwise referred to as the dependent variables in this study. The

Independent Variables are as well identified, namely, Uninsured Adults (representing lack of access to insurance variable), Lack of Access to Primary Care Physicians (PCP ratio), Preventable Hospital Stays (Ambulatory Care Sensitive Conditions), Diabetic Screening, Mammography Screening, Physical Inactivity, and Illiteracy. Data collected on each independent variable were analyzed to determine how each, and collectively, affects the two identified health outcomes among Louisiana's residents in the 10-years period from 2011 to 2021.

The model estimation is of the form:
The model estimate follows the general form as: **Y=f(X),** such that Y is a measure of each health outcome due to the combined effect of all of the covariates (independent variables) known to be related to Louisiana's health outcome. Because two health outcomes are identified, therefore, two regression equations are also stated and estimated. Therefore, the general and specific models for both mortality and morbidity can be stated as:
General Model for Mortality: $\mathbf{Y_1 = f(UNI, PCP, PHS, DBS, MAG, PHI, ILL)}$……..[Eqn.1]

$$\mathbf{Y_1 = \alpha_0 + \alpha_1\, UNI + \alpha_2\, PCP + \alpha_3\, PHS + \alpha_4\, DBS + \alpha_5\, MAG + \alpha_6\, PHI + \alpha_7\, ILL + U_t}$$

General Model for Morbidity**:** $\mathbf{Y_2 = f(UNI, PCP, PHS, DBS, MAG, PHI, ILL)}$……..[Eqn. 2]

$$\mathbf{Y_2 = \alpha_0 + \alpha_1\, UNI + \alpha_2\, PCP + \alpha_3\, PHS + \alpha_4\, DBS + \alpha_5\, MAG + \alpha_6\, PHI + \alpha_7\, ILL}$$

Where,
Dependent Variables: Health Outcomes

- Y_1 = Mortality; and Y_2 = Morbidity;

Independent Variables: Lack of Healthcare Access

- UNI=Uninsured Adults (or lack of access to health insurance)
- PCP=Lack of Access to Primary Care Physicians
- PHS=Preventable Hospital Stays
- DBS=Diabetic Screening
- MAG=Mammography Screening
- PHI=Physical Inactivity
- ILL=Illiteracy
- α_0= constant term
- U_t = Error term.
- $\alpha_1, \alpha_2, \ldots\ldots\ldots\ldots\alpha_7$= Coefficients of the explanatory variables (i.e. independent variables)

RESULTS AND ANALYSIS

Descriptive Analysis

Table 3: Summary Statistics of the Study Variables

Summary Statistics	Mean	Median	Standard Deviation	Range	Minimum Value	Maximum Value	Count
Mortality	0.0002	-0.0274	0.4952	3	-1.5	1.5	640
Morbidity	-0.0018	-0.0046	0.3809	2.4661	-1.0392	1.4268	640
Uninsured adults	19.2162	18.2916	7.8098	33.6502	6.5498	40.2	640
% of Access to Primary care physicians*	50.6648	42.7434	34.3784	178.9291	0	178.9291	640
Preventable hospital stays (Ambulatory Care Sensitive Conditions)	-0.0461	-0.2826	0.9239	4.2774	-1.2775	3	640
% of Diabetic screening	0.0657	0.1040	1.0475	6.4674	-3.4345	3.0330	640
Mammography screening	0.4696	0	7.5786	155.1951	-2.0686	153.1265	640
Physical inactivity	32.2170	32.3	2.9783	12.7	24.7	37.4	640
Illiteracy	18.4454	18.2	4.0682	21	8.2	29.2	640

Source: Data Output from Microsoft Excel

Table 3 shows the summary statistics for all the study variables. In all, 640 observations (64 parishes multiplied by 10 years period) were used for the analysis of the entire study. The summary statistics takes into account the following analysis— mean, median, standard deviation, and range. For the case of Mortality, the

average mortality rate between 2011 and 2021 in Louisiana was 0.0002, where the median was given as -0.0274, the standard deviation was 0.4952, and the range was 3.0, the highest level of mortality for Louisiana within this period was 1.50 while the lowest was -1.5 and the difference between them was 3.0. While, with respect to morbidity, the average rate between 2011 and 2021 in Louisiana stood at -0.0018, where the median was given as -0.0046, the standard deviation was 0.3809, and the range was 2.4661, the highest level of morbidity for Louisiana within this period was 1.4268 while the lowest was -1.0392 and the difference between them was 2.4661.

Independent Variables

For the case of lack of access to health insurance, the average percentage of uninsured adults in Louisiana between 2011 and 2021 was pegged at 19.2162, where the median was given as 18.2916, the standard deviation was 7.8098, and the range was 33.6502, the highest level of the percentage of uninsured adults for Louisiana within this period was 40.2 while the lowest was 6.5498 and the difference between them was 33.6502 (see Table 3 for more details). While, with respect to access to primary care physicians, the average percentage of access to primary care physicians between 2011 and 2021 in Louisiana was 50.6648, where the median was given as 42.7434, the standard deviation was 34.3784, and the range was 178.9291, the highest percentage of access to primary care physicians for Louisiana within this period was 178.9291 while the lowest was 0 and the difference between them was 178.9291 (see Table 3 for more details).

In relation to diabetic screening, the average access to diabetic screening between 2011 and 2021 in Louisiana was 0.0657, whereby the median was given as 0.1040, the standard deviation was 1.0475, and the range was 6.4674, indeed the highest level of access to diabetic screening for Louisiana within this period was 3.0330, while the lowest was -3.4345 and the difference between them was 6.4674. While, with respect to access to mammography screening, the average percentage of access to mammography screening between 2011 and 2021 in Louisiana was 0.4696, where the median was given as 0, the standard deviation was 7.5786, and the range was 155.1951, the highest percentage of access to mammography screening for Louisiana within this period was 153.1265, while the lowest was -2.0686 and the difference between them was 155.1951.

Towards the foregoing end, Table 3 further presents the summary statistics for physical inactivity. Table 5.1 reveals that the average value for physical inactivity for the period of 2011 through 2021 was 32.2170, while the median was 32.3, the standard deviation was given as 2.9783. The difference between the minimum value of 24.7 and the maximum value of 37.4 represent a range value of 12.7. While for the case of illiteracy, Table 5.1 reveals that the mean value for illiteracy for the period under review (2011-2021) was estimated as 18.4454. Standard deviation was 4.0682, while the median value was 18.2. The difference between the minimum value of 8.2 and the maximum value of 29.2 represent a range value of 21.

5.2 Correlation Analysis

Table 4: Correlation Analysis between Morbidity and All the Other Independent Variables

Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Morbidity	1							
2. Uninsured adults	0.606	1						
3. % of Access to Primary care physicians*	-0.667	0.010	1					
4. Preventable hospital stays (Ambulatory Care Sensitive Conditions)	-0.013	-0.289	0.331	1				
5. % of Diabetic screening	0.060	0.043	0.301	0.663	1			
6. Mammography screening	0.078	-0.173	-0.043	0.142	-0.377	1		
7. Physical inactivity	0.674	-0.057	-0.178	-0.135	-0.291	0.034	1	
8. Illiteracy	0.107	-0.003	-0.025	-0.058	-0.011	-0.052	-0.197	1

Source: Data Output from Microsoft Excel

Table 4 presents the correlation analysis between morbidity and all the independent variables, which include: illiteracy, percentage of uninsured population or adults, access to primary care physician, access to mammography screening, access to diabetic screening, and physical inactivity. Table 4 further reveals that the lack of access to health insurance variable has a positive moderate relationship or correlation with Louisiana's mortality rate, with a Pearson correlation coefficient value of 0.606, while the access to primary care physician

variable has either negative moderate relationship or correlation with Louisiana's morbidity rate, with a Pearson correlation coefficient value of -0.667. Table 4 reveals also that physical inactivity has a moderate positive correlation with Louisiana's morbidity rates, with a Pearson correlation coefficient value of 0.674 for physical inactivity. Above all, the remaining variables which includes— illiteracy, access to mammography screening, access to diabetic screening, etc. have either a weak positive relationship or correlation with Louisiana's morbidity rate.

Table 5: Correlation Analysis between Mortality and All the Other Independent Variables

Variables	*1*	*3*	*4*	*5*	*7*	*8*	*9*
1. Mortality	1						
2. Uninsured adults	0.517						
3. % of Access to Primary care physicians*	-0.554	1					
4. Preventable hospital stays (Ambulatory Care Sensitive Conditions)	0.043	-0.068	1				
5. % of Diabetic screening	0.088	-0.190	0.119	1			
6. Mammography screening	0.014	-0.029	-0.015	-0.006	1		
7. Physical inactivity	0.156	-0.178	0.103	0.010	0.050	1	
8. Illiteracy	0.125	-0.025	0.111	0.110	-0.010	0.196	1

Source: Data Output from Microsoft Excel

Table 5 presents the correlation analysis between mortality and all the control and independent variables, which include: illiteracy, percentage of uninsured population or adult, access to primary care physician, access to mammography screening, access to diabetic screening, and physical inactivity. Table 5 reveals that the lack of access to health insurance variable has a positive moderate relationship or correlation with Louisiana's mortality rate, with a Pearson correlation coefficient value of 0.517, while the access to primary care physician variable has negative moderate relationship or correlation with Louisiana's mortality rate, with a Pearson correlation coefficient value of -0.554. The remaining variables which includes— illiteracy, access to mammography screening, access to diabetic screening, physical inactivity, etc. have a weak positive relationship or correlation with Louisiana's mortality rate.

Regression Output for Mortality & Morbidity Equations

Table 6: Predicting the Determinants of Louisiana's Mortality Rate & Morbidity

Variables	**Mortality Model**		**Morbidity Model**	
	B	Beta	B	Beta
Percentage of Uninsured Population or Adult	0.402** (0.112)	0.331	0.410** (0.182)	0.325
Access to Primary Care Physician	-0.426** (0.184)	-0.333	-0.602 (0.231)	-0.539
Access to Diabetic Screening	0.013 (0.013)	0.027	0.413** (0.190)	0.336
Access to Mammography Screening	0.001 (0.002)	0.019	0.000 (0.001)	0.009
Physical Inactivity	0.004 (0.004)	0.023	0.501** (0.130)	0.412
Illiteracy	0.004 (0.003)	0.031	0.001 (0.002)	0.016
Constant	0.071 (0.156)		0.057 (0.107)	
F-statistics	89.670***		130.434***	
R^2	0.588		0.675	
Adjusted R^2	0.581		0.669	

Source: Data Output from SPSS

Table 6 presents the results for the coefficient diagnostic test for predicting the determinants of Louisiana's mortality rate and morbidity rate. Table 6 reveals that the following independent variables are statistically significant at 5% (0.05) significance level: Percentage of Uninsured Population or Adult, and Access to Primary

Care Physician. Also, in the case of lack of access to health insurance, Table 6 reveals positive significant coefficient value of 0.402 with an associated p-value of 0.000. This implies that for every 1% increase in the percentage of uninsured adults among the Louisiana population, the Louisiana's mortality rate is likely to increase by 0.402. This finding is consistent with the study conducted by the Institute of Medicine (2002). The Institute of Medicine research findings led to the conclusion that providing health insurance coverage to uninsured adults would likely improve their health status and reduce their risk of premature death. Above all, For the case of access to primary care physician, Table 6 reveals a negative significant coefficient value of -0.426 with an associated p-value of 0.040. This implies that for every 1% increase in the access to primary care physician among the Louisiana population, the Louisiana's mortality rate is likely to decrease by -0.426.

For the case of morbidity, Table 6 reveals that the following independent variables are statistically significant at 5% (0.05) significance level: Percentage of Uninsured Population or Adults, Access to Primary Care Physician, and Physical Inactivity. For the case of lack of access to health insurance, Table 6 reveals positive significant coefficient value of 0.410 with an associated p-value of 0.030. This implies that for every 1% increase in the percentage of uninsured adults among the Louisiana population, the Louisiana's morbidity rate is likely to increase by 0.410. This finding is consistent with the study conducted by the Institute of Medicine (2002). The Institute of Medicine research findings led to the conclusion that providing health insurance coverage to uninsured adults would likely improve their health status and reduce their risk of premature death.

Also, for the case of physical inactivity, Table 6 does offer a negative significant coefficient value of 0.501 with an associated p-value of 0.004. This implies that for every 1% increase in the physical inactivity among the Louisiana population, the Louisiana's morbidity rate is likely to increase by 0.501. Above all, For the case of access to primary care physician, Table 6 also confirms a negative significant coefficient value of -0.602 with an associated p-value of 0.042. This implies that for every 1% increase in the access to primary care physician among the Louisiana population, the Louisiana's morbidity rate is likely to decrease by -0.602

CONCLUSION AND POLICY RECOMMENDATIONS

In conclusion, the study reveals that there is a significant relationship between healthcare accessibility and health outcomes among Louisiana's residents following the implementation of the Affordable Care Act between 2011 and 2021. The causes of the lack of healthcare access are multidimensional and systemic in nature, ranging from such predisposing factors as personal health behaviors (i.e. physical inactivity), to enabling factors such as prevalence of uninsured population or adults, lack of access to primary care physician, medical screening such as diabetic, and mammography screenings. The foregoing factors were further reinforced by lack of physical exercise, and unacceptable illiteracy rate. The following factors—prevalence of uninsured population or adults, lack of access to primary care physician, medical screening such as diabetic, and mammography screenings are all identified from the 640-secondary source of data in the 64 parishes of Louisiana, individually and collectively, had effect on the mortality, and morbidity rates among its residents following the implementation of the ACA from 2011 to 2021.

Based on the findings from this study and giving the political will of the policymakers, the elected officials as well as public health advocates and officials, the implementation of the underlisted policy suggestion will go a long way to impact the health of the residents of Louisiana. Some of the policy suggestions and implications are listed and discussed below:

- Creation of more social inclusion policies to ensure equal opportunities for all citizen, irrespective of race, ethnicity or color, will go a long way to help in minimize health disparities among Louisiana's residents. The creation of a lot of more social inclusion policies, indeed to ensure equal opportunities for all citizens in order to help achieve their full potential, will help the state to minimize mortality and morbidity among the less privileged and disadvantaged populations. Given equal opportunity for all citizens in the area of employment, scholarship, education, leadership etc. will, in the long-run, lead to minimization in mortality, and morbidity among the residents of Louisiana.
- Enact laws and regulations that will promote and increase access to health care in the country, particularly in the State of Louisiana. This is because the study findings reveal that there is a need for more policies, programs, and regulations that will support the low income, distressed communities in the various Parishes of Louisiana to expand access to healthcare in the areas of medical screening, access to primary care physician, access to health insurance, etc. The foregoing particular initiatives, with bi-partisan support from both the Democrats and the Republicans of the State, will go a long way to minimize morbidity and mortality in the State of Louisiana.
- Creation of infrastructure that will bridge the social & economic gap in the State of Louisiana. It was observed from findings that both mortality and morbidity are influenced positively by the social and economic gap that has created health disparities among the Louisiana's residents. Therefore, it is expected that the government, and the political leaders should put in place infrastructure that will improve the quality-of-life of residents of Louisiana via empowerment through investment in job

creation, promoting diversity and inclusion at workplace environment, etc. Above all, enforcing policies, and laws that are aimed at ensuring all citizens to have at least high school certificates will go a long way to minimizing the social and economic gap among the Louisiana's residents.

REFERENCES

Buchmueller, T.C., Levinson, Z.M., Levy, H.G., Wolfe, B.L., (2016). Effect of the PRECEDE-PROCEED Model's Affordable Care Act on racial and ethnic disparities in Health insurance coverage. *American Journal of Public Health*.

Carabello, C., Valero-Elizondo, J., Khera R. (2020). Burden and consequences of Financial hardship from medical bills among nonelderly adults with diabetes mellitus in the United States. *Circ Cardiovasc Qual Outcomes.* 2020;13(2):e006139 Doi:10.1161/CIRCOUTCOMES.119.006139

Chen, J., Vargas-Bustamante, A., Mortensen, K., & Ortega, A.N. (2015). Racial and Ethnic disparities in health care access and utilization under the affordable care act. *Medical Care.* Volume 54, Number 2, February 2016. 140-146 DOi: 10.1097/MLR.0000000000000467

DeNavas-Walt, C., Proctor B. D., & Smith J. C. (2008). Income, poverty, and health insurance coverage in the United States: 2008. *U.S. Census. Bureau. Current population*.

Feldstein, P.J. (2012). *Health care economics,* Seventh Edition, Delmar, Cengage Learning, NY.

Franklin, J. & Higginbotham, H. (2022). *From Slavery To Freedom.* New York: McGraw Hill.

Gruber, J. (2011). The impact of the affordable care act: how reasonable are the projections? *National Bureau of Economic Research*, Working Paper 17168 DOi 10.3386/w17168 Retrieved from: https://wwww.nber.org/papers/w17168

Hamel, L., Lopes, L., Wu, B., Brodie, M., Aliferis, L., Stremikis, K. and Antebi, E. (2019). Low-income Californians and healthcare. *Kaiser Family Foundation*.

Hardley, J. (2003). Sicker and poorer- The consequences of being uninsured: A review of the research on the relationship between health insurance, medical care use, health, work, and income. *Research Gate.* June 1, 2003. https://doi.org/10.1177/1077558703254101

IOM. (2002).Care without coverage: too little, too late. US Committee On Consequences of Uninsurance. Washington (DC): National Academies Press (US). PMID: 25057604. Bookshelf ID: NBK220639. DOI: 10.17226/10367.

Krumholz, H.M., Annapureddy, A.R., Roy, B., Riley, C., Murugiah, K., Onuma, O., Nunez-Smith, M., Forman, H.P., Nasir, K., & Herrin, J., (2021). Trends in differences in health status and health care access and affordability by race and ethnicity in the United States,1999-2018. *Journal of American Medical Association.* August 17, 2021. Vol. 326, Number 2.

Larcom, A. B. (2021). Physical inactivity a top predictor of severe COVID-19 outcomes. *The Global Health & Fitness Association.* Physical Inactivity a Top Predictor of Severe COVID-19...I IHRSA

Levy, H. and Meltzer, D. (2008). The Impact of Health Insurance on Health. *Annual Review of Public Health*, 29, 399-409. https://doi.org/10.1146/annurev.publhealth.28.021406.144042

Mangan, D. (2022). Obamacare enrollment hits record high after Biden makes post-Trump Tweaks to health insurance program. *CNBC*. January 18, 2022. https://www.cnbc.com. 2022/01/18> Obamacare-enrollment.

McWilliams, M.J. (2009). Health consequences of uninsurance among adults in the United States: recent evidence and implications. *National Library of Medicine*. DOI: 10.1111/j.1468-0009.2009.00564.x

Nooman, S.A., Velasco-Mondragon, E.H., & Wagner, A. F. (2016). Improving the health of African Americans in the USA: an overdue opportunity for social justice.*Public Health Rev.* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5810013/

Patterson, Orlando. 1982. *Slavery And Social Death: Comparative Slavery.* Cambridge, MA: Harvard University Press.

Sallis, R., Young, D. R., Tartof, S. Y., Sallis, J. F., Sall, J., Li, Q., Smith, N. G., & Cohen, A. D. (2021). Physical inactivity is associated with a higher risk for sever COVID-19 outcomes: a study in 48440 adult patients. *Bristish Journal of Sports Medicine.* Volume 55, Issue 19. Physical inactivity is associated with a higher risk for severe COVID-19 outcomes: a study in 48 440 adult patients | British Journal of Sports Medicine (bmj.com)

Sommers, B.D., Buchmueller, T., & Decker, S.L. (2013). The Affordable Care Act has led to significant gains in health insurance and access to care for young adults. *Health Affairs (Millwood).* 2013; 32: 165-174.

Sommers, B.D., Gunja, M.Z., & Finegold, K. (2015). Changes in self-reported Insurance coverage, access to care, and health under the Affordable Care Act. *JAMA.* 2015; 314: 366-374.

The Economist Intelligence Unit, (2017). Global access to healthcare. Building Sustainable Health Systems.

Waidmann, T.A., & Rajan, S. (2000). Race and ethnic disparities in healthcare access and utilization: An examination of state variation. Medical Case research and Review. Vol. 57 Supplement 1, (2000), 55-84.

Wen, Z., & Chai, Y. (2021). Effectiveness of resistance exercise in the treatment of rheumatoid arthritis.

Medicine. doi: 10.1097/MD.0000000000025019

White, K., Haas, J.S., & Williams, D.R. (2012). Elucidating the role of place in health care disparities: the example of racial/ethnic residential segregation. *Health Services Research*. Health Research and Educational Trust. DOI: 10.1111/j.1475-6773.2012.01410.x

Williams, M.V., Lopez, C., Martin, L.T. & Armstrong, C. (2017). Assessing the role of State and local public health in outreach and enrollment for expanded coverage. A case Study on New Orleans, Louisiana. *Rand Health Quarterly.*2017 January. 6(4):3 Published online 2017 Jan.1.

Wilper, A. P., Woolhandler, S., Mccormick, D., Lasser, K. E., Bor, D.H., & Hlmmelstein, D .U. (2008). A National Study of Chronic Disease Prevalence and Access to care in uninsured U.S. Adults. *Annals of Internal Medicine*. August. 149(3):170-6 DOI:10.7326/0003-4819-149-3-200808050-00006. Source: PubMed