Evaluation of Access to Potential & Actual Health Care Along the Health Insurance Continuum in the United States

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Abstract— Health insurance coverage and access to health care have long been of concern in health-policy formulation in the United States. Understanding the effect of health insurance coverage on access to potential care (access to physicians) and actual care (basic & specialized care) is critically important in efforts to develop and implement effective health care programs. Socially, economically, and ethnically diverse Americans are likely to exhibit different insurance coverage gradients and varying experiences when accessing health care, yet the literature and empirical finding on the topic remains inconclusive. This study assessed the effect of six different types of insurance coverage on access to potential care – access to physicians and access to actual care – basic and specialized care in the United States. Overall, insurance coverage improves access to potential and actual care, however, variations exist regarding the demographic variables that predict access to potential and actual care. This finding provides both theoretical and practical implications to access to health care in the United States.

Index Terms—Health Insurance, Potential care & Actual care

1 Introduction

Health insurance is a primary means for financing a person's health care expenses. In the United States the majority of people have private health insurance coverage, primarily through an employer, while many others obtain health insurance through programs offered by the government. Other individuals do not have health insurance coverage at all making them ineligible to access health care [1, 2, 3]. The Current Population Survey - Annual Social and Economic Supplement (CPS ASEC), defines health insurance as comprehensive coverage during the calendar year for the civilian, noninstitutionalized population [3]. CPS ASEC, also classifies health insurance coverage in the United States into private and public insurance. Private health insurance includes coverage provided through an employer or a union or purchased by an individual from a private company [2, 3]. Public or government health insurance coverage includes federal programs such as Medicare, Medicaid, the Children's Health Insurance Program (CHIP), individual state health plans, TRICARE, CHAMPVA (Civilian Health and Medical Program of the Department of Veterans Affairs), as well as care provided by the Department of Veterans Affairs and the military [2, 3]. In 2013, Smith and Medalia [2], identified that 86.6% of Americans had health insurance coverage in contrast to 13.4% of Americans who did not have coverage. Private insurance coverage constituted 64.9% of those who had coverage while public insurance coverage was 34.3%. Private insurance coverage in 2013 includes 53.9% for employment-based coverage and 11.0% for direct purchase coverages. Public insurance coverage in 2013 was made up of largely Medicaid (17.3%) and Medicare (15.6%). A more recent overview of health insurance coverage in the United States by Berchick, Hood, and Barnett [3] suggests that 91.5% of Americans have coverage in contrast to 8.5% without coverage. Private and public insurance coverage in 2018 were both respectively at 67.3% and 34.4%. Under private coverage, employment-based coverage was the most common at 55.1% compared to direct purchased coverages. Public coverage includes Medicaid coverage at 17.9% and Medicare coverage at 17.8% [3]. Logically, it can be deduced that the majority of Americans have some type of insurance coverage with the majority of them having private coverage. Though public insurances like Medicaid and Medicare also covers over 30% of Americans that meet the program requirements. Based on these statistics, intuitively it is expected that access to health insurance coverage would significantly improve access to health care - potential and actual care.

Previous studies have provided a lot of empirical support for this intuition - access to insurance coverage improves access to health care [4, 5, 6, 7], however, the gap and rupture in the literature about health insurance coverage and access to health care has to do with this question: what is the variation effect of different types of insurance coverage on access to health care? Different types of health insurance coverage affect access to health care differently dependent on the socio-demographic characteristics of individuals and the type of care being accessed [8, 9, 10]. To answer the research question proposed above: what is the variation effect of different types of insurance coverage on access to health care? This study utilizes an individual-level data obtained from the Health Reform Monitoring Survey, or HRMS with a total sample of 137,060 from 2013 – 2019 which provides data on health insurance coverage, access to and use of health care, health care affordability, and self-reported health status. The study assesses the effect of six (6) different types of health insurance coverage (employment-based, self-insured/direct-purchase, Medicare, Medicaid/MA/CHIP, Tricare/VA/Military & Others) on three (3) different types of health care variables - access to physicians (potential care), access to basic & specialized care (actual care). This study is valuable both to theory and practice. Theoretically, this study adds to existing knowledge about health insurance coverage and access to health care. Also, this study addresses a gap in the existing literature on insurance coverage and access to health care by assessing the effect of different

types of insurance coverage on different types of health care. This provides the much-needed nuance that the literature needs to help in practice - policy making, implementation and evaluation. Practically, this study set off a debate and a policy argument for policy makers and stakeholders to consider the nuance and variance of the effect that different types of insurance coverage have on access to health care and develop policies that are specific to each type of care (potential & actual) to improve access to care.

2 Literature Review

Although health insurance coverage may seem as if it has been ever-present in the United States, no health insurance existed in the United States about 120 years ago because there was arguably little or no use for it. Employment-based insurance coverage started not more than 60 years ago in the U.S. [4, 11]. The 19th century was characterized by the gradual growth of medicine as a discipline and a field of practice in America. Medical practitioners did not receive the same respect and attention they are given today. Hence patronage of physicians, hospitals and health care was much lower than we see today [4, 11]. However, this phenomenon changed overtime and physicians, hospitals and the health care system in the United States attracted more patients. The increase in demand for health care services and professionals lead to high delivery costs which meant difficulty in accessing health care for low-income families. This new development led to the creation of health insurance coverage as a viable option to access health care in the U.S. [4, 11]. Several means of financing and/or accessing health care began to develop, though many were short-lived or occurred only on a small scale. For example, businesses hired physicians that attended to their workers and some physicians offered general medical care to members of benevolent or fraternal organizations at a capitated rate. These examples among others established a blueprint that gave rise to the first hospital-based health insurance program in 1929, in which a Dallas hospital offered up to twenty-one days of hospital care (in its facility alone) to 1500 Dallas school-teachers in exchange for a premium (or "prepayment") of $6 per year [11]. This type of system allowed hospitals and patients to have a mutual arrangement that provided them with mutual benefits. However, the advent of the Great Depression led to disruptions in this mutual arrangement because hospitals experienced decreases in their income. To address the challenges the great depression created for hospitals, health care professionals and patients, the association of hospitals created the Blue Cross system, and the association of physicians created the Blue Shield plans. The former allowed patients to choose from the different hospitals associated with it while the latter allowed patients to pay physicians for their services [4, 12, 11, 13].

These initial attempts to provide health insurance coverage to most Americans to improve access and utilization of health care led to the creation of the current types of insurance coverage that exist in the U.S. [2, 3, 11]. As noted earlier in the introduction, health insurance in the U.S. can be broadly classified into private and public insurance. Private health insurance as a plan includes coverage provided through an employer or a union or purchased by an individual from a private company (see. Table 1 below). Public or government health insurance coverage includes federal programs such as Medicare, Medicaid, the Children's Health Insurance Program (CHIP), individual state health plans, TRICARE, CHAMPVA (Civilian Health and Medical Program of the Department of Veterans Affairs), as well as care provided by the Department of Veterans Affairs and the military (see Table 1 below). Table 1 below provides an overview of the types of health insurance coverage that exist in the United States categorized into private and public insurance.

Table 1: Types of Insurance in the United States Grouped into Private & Public Insurance Coverage [2, 3]

Private Insurance Coverage	Public Insurance Coverage
·**Employment-based:** Plan provided through an employer or union. ·**Direct-purchase:** Coverage purchased directly from an insurance company or through a federal or state marketplace (e.g., healthcare.gov).	·**Medicare:** Federal program that helps to pay health care costs for people aged 65 and older and for certain people under age 65 with long-term disabilities. ·**Medicaid:** Medicaid, the Children's Health Insurance Program (CHIP), and individual state health plans. · **CHAMPVA or VA:** Civilian Health and Medical Program of the Department of Veterans Affairs, as well as care provided by the Department of Veterans Affairs and the military. ·**TRICARE:**Coverage through TRICARE, formerly known as Civilian Health and Medical Program of the Uniformed Services.

Previous studies have suggested variation in access to health care due to the type of access, the type of insurance coverage and the demographic characteristics of Americans. For example, earlier studies have reported associations between public coverage and worse access to outpatient specialist services and higher usage of inpatient services [14, 15, 16]. On the other hand, private coverage is associated with worse access to trauma facilities, as compared with public coverage [17, 16]

and unmet mental health care needs are reportedly higher for individuals with private coverage [16, 18] with some data showing their unmet needs nearly equivalent to the uninsured [19]. Furthermore, public coverage has been associated with less out-of-pocket expense than private coverage, and total medical spending with public coverage is lower compared with the cost of care for privately insured individuals [21, 22, 23]. Although some earlier studies have found differences in unmet need when comparing types of coverage, no clear patterns have emerged. In some, univariate differences disappeared after adjusting for covariates such as age, sex, ethnicity, residential area, family income, family composition, household size, and child's health status [23, 24, 25, 26, 27]. The inconclusiveness of these studies creates a gap in the literature. This study seeks to address or better still add to the debate on the effect of different types of health insurance coverage on access to health care in the United States.

3 METHODS

3.1 Data Source

The individual-level data used in this study were obtained from the Health Reform Monitoring Survey, or HRMS with a total sample of 137,060 respondents from 2013 - 2019 collected by the Robert Wood Johnson Foundation and the Urban Institute. The HRMS provides data on health insurance coverage, access to and use of health care, health care affordability, and self-reported health status. Where possible, its questions are based on questions used in federal government surveys—including the American Community Survey, the Behavioral Risk Factor Surveillance System, the Annual Social and Economic Supplement to the Current Population Survey, and the National Health Interview Survey—and the data collected are benchmarked against those federal data.

3.2 Variables

3.2.1 Dependent Variables

The dependent variable for the study is access to health care which is divided into two major categories: potential care and actual care. Potential care was measured by access to physicians while actual care was measured by access to basic and specialized care. Potential care (access to physicians) was measured by combining four questions: (a) did you have trouble finding a doctor or other health care provider, (b) were you told by a doctor's office or clinic that they would not accept you as a patient, (c) were you told by a doctor's office or clinic that they do not accept our health insurance and (d) did you have trouble getting an appointment at a doctor's office or clinic as a patient. Access to physicians was coded as 0 = No and 1 = Yes, for easy statistical analysis. Additionally, for actual care, access to basic care was measured by combining the following questions: (a) did you have any difficulty accessing prescription drugs, (b) difficulty accessing medical care, (c) difficulty accessing a general doctor and (d) difficulty accessing medical tests, treatment, or follow-up care. For the purpose of statistical analysis, access to basic care was coded as 0 = No and 1 = Yes. Finally, access to specialized care (actual care) was measured using three questions: (a) difficulty accessing a specialist doctor, (b) difficulty accessing dental care and (c) difficulty accessing mental health or counselling. Access to specialized care was coded as 0 = No and 1 = Yes for easy statistical analysis.

3.2.2 Independent Variables

Types of health insurance coverage was used as the independent variable of this study and its effects on the dependent variable - access to health care was assessed. This study examines the effect of six different types of health insurance coverage on access to health care. The six types of insurance and how they are coded are presented below: (1) Employment-based insurance coverage (0 = not covered & 1 = covered), (2) Self-insured or direct purchase of insurance (0 = not covered & 1 = covered), (3) Medicare insurance coverage (0 = not covered & 1 = covered), (4) Medicaid/CHIP/MA insurance coverage (0 = not covered & 1 = covered), (5) TRICARE or other military health care, including VA health care (0 = not covered & 1 = covered) and (6) any other type of insurance coverage (0 = not covered & 1 = covered).

3.2.3 Control Variables

For the purpose of statistical analysis, several control or demographic characteristics of the surveyed population were included in this study. Gender was measured as 0 = female and 1 = male; age was measured in actual years at the time of survey administration. Marital status was measured as 1 = Married, 2 = Divorced/Widow/Separated, 2 = Single. Education was measured as 1 = Less than high school, 2 = High school, 3 = Some college and 4 = Bachelor's degree or higher. Race is measured as 1 = White, 2 = Black, 3 = Other, 4 = Hispanic, 5 = 2+ Races. Employment status of respondents was measured 0 = Employed and 1 = Unemployed. Income was measured as 1 = Less than $5,000 - $24,999, 2 = $25,000 - $49,999, 3 = $50,000 - $74,999, and 4 = $75,000 - $100,000; 5 = $100,000+. Family size was measured from 1 family member to 8 or more family members. Insurance coverage is coded as 0 = Yes and 1 = No. Sexual orientation (LGBT) is coded as 0 = Yes and 1 = No. Health status of respondents was coded as 1 = Excellent, 2 = Good and 3 = Poor. Citizenship was coded as 0 = U.S. Citizen and 1 = Non-U.S. Citizen. The rural-urban status variable was coded as 0 = rural and 1 = urban.

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3.2.4 Plan of Analysis

This study conducted several analyses to examine the effects of each type of insurance coverage on the dependent variable - access to health care (accessing physicians, basic care, and specialized care). Descriptive analysis was conducted to assess the distribution of scores across the variables in this study. The descriptive scores are presented in Table 2 below. Moreover, we assessed the presence of collinearity in our data by conducting a multicollinearity analysis. The results of this analysis showed the lack of collinearity because none of the VIF values were greater than 10 and none of the tolerance statistics were closer to zero. We also conducted a correlation analysis in addition to the collinearity test before starting the various regression analysis. For our regression analyses, first, we assessed the effect of each type of insurance coverage on the dependent variable – access to physicians (see Table 3) while controlling for demographic characteristics of the surveyed population. Second, we also assessed each type of insurance coverage on the dependent variable – access to basic care while controlling for demographic characteristics of the surveyed population in (see Table 4). Finally, we assessed the effect of each type of insurance coverage on the dependent variable – access to specialized care while controlling for demographic characteristics of respondents in (see Table 5). Through these separate analyses we seek to unearth the nuances regarding the effect of different types of insurance coverage on different types of health care access across different demographic gradients.

4 RESULTS

The descriptive statistics for the variables used in this study are shown in Table 1 below. Based on these statistics, it is logical to argue that most of the study respondents were females (50.85%), between the ages of 18 - 64+ years with a mean age of 45 years and majority of them are married (64.42%), live-in urban America (86.37%) in contrast to the 13.63% of respondents who live in rural America, possess at least a bachelor's degree or higher (36.71%), and racially are white (70.30%) and U.S. citizens (94.60%). About 21.88% of the respondents were single compared to 13.70% who are divorced/widowed/separated. Majority of the respondents were employed (69.91%) as compared with unemployed respondents that constituted 30.09%. Furthermore, 30.77% of the respondents have some college degree as compared to 24.82% who have a high school degree and 7.70% who have less than a high school degree. About 19.77% of the respondents earned income Less than $5,000 - $24,999. However, 20.70% of the respondents earned income between the range of $25,000 - $49,999 compared to 18.08% of respondents earning $50,000 - $74,999. 14.70% and 26.75% of the respondents earned $75,000 - $100,000 and $100,000+ respectively. Logically, we can argue that income is fairly distributed in the data set. Racially, 9.06% of the respondents were black, 14.07% were Hispanic, 3.75% were of other race and 2.83% of the respondents identified as mixed race. For household or family size, the majority of the respondents had household sizes ranging from 1 - 5 (94.73%) in contrast to household size above 5 people constituting (5.27%). The perceived health status of the respondents was distributed as follows: 50.72% argue they have excellent health while 46.92% argued they have good health and 2.36% argued they have poor health. Regarding the sexual orientation of respondents, 92.03% of the respondents were straight while 7.97% identified as not straight.

With the dependent variable (access to health care) the distribution is as follows: first, access to physicians had 98% of respondents answering they had no difficulty in accessing a physician in contrast to 2% who had difficulty accessing a physicians; second, access to basic care had 92.29% of respondents who answered they had no difficulty compared to 7.71% of respondents who had difficulty accessing basic care and third, access to specialized care had 94.52% of respondents who had no difficulty in contrast to 5.48% of respondents who had difficulty accessing specialized care. Access to health care generally in the United States is strong with all three types of care utilized in this study scoring above 90%. However, logically, we can conclude that it is easier to access physicians (potential) than basic & specialized care (actual care). Intuitively, we can argue that access to physicians in the United States is higher at 98%, however, translating this access into both basic and specialized care (actual care) needs more attention from stakeholders since both are respectively lower at 92.29% and 94.52%. Furthermore, the breakdown for the independent variable - types of insurance coverage is as follows: employment-based coverage (58.04%), self-insured or directly purchase coverage (11.70%), Medicaid/CHIP/MA coverage (12.66%), Medicare coverage (7.09%), Tricare/VA/Military coverage (4.88%) and other types of coverage (5.28%). The distribution of types of insurance coverage in the data is consistent with findings of previous studies [2, 3].

Table 2: Descriptive statistics for study variables (N = 137,060)

Variable Name	N	Valid%	Mean	St. Dev.
Dependent Variable				
Difficulty Accessing Physician				
No	108,936	98		
Yes	2,223	2		
Difficulty Accessing Basic Healthcare				
No	37,769	92.29		
Yes	3,154	7.71		

Difficulty Accessing Specialized Healthcare				
No	34,965	94.52		
Yes	2,026	5.48		
Independent Variable				
Employer Sponsored	82,767	58.04		
Self-Insured	16,578	11.70		
Medicare	10,046	7.09		
Medicaid/CHIP/MA	17,949	12.66		
Tricare/VA/Military	6,919	4.88		
Others	7,477	5.28		
Control Variables				
Income				
Less than $5,000 - $24,999	26,345	19.77		
$25,000 - $49,999	27,576	20.70		
$50,000 - $74,999	24,089	18.08		
$75,000 - $100,000	19,581	14.70		
$100,000+	35,640	26.75		
Marital Status				
Married	88,300	64.42		
Divorced/Widow/Separated	18,774	13.70		
Single	29,986	21.88		
Employment Status				
Employed	95,816	69.91		
Unemployed	41,244	30.09		
Health Status				
Excellent	69,375	50.72		
Good	64,177	46.92		
Poor	3,235	2.36		
Rural-Urban Residency				
Rural	15,494	13.63		
Urban	98,210	86.37		
Sexual Orientation (LGBT)				
No	59,401	92.03		
Yes	5,143	7.97		
Age			45.05	13.08
18 – 29	23,837	17.39		
30 – 44	38,421	28.03		
45 – 59	53,679	39.16		
60+	21,123	15.41		
Educational Status				
Less than high school	10,547	7.70		
High school	34,023	24.82		
Some college	42,175	30.77		
Bachelor's degree or higher	50,315	36.71		
Race				
White	96,347	70.30		
Black	12,420	9.06		
Other	5,139	3.75		
Hispanic	19,281	14.07		
2+ Races	3,873	2.83		
Gender				
Male	67,365	49.15		
Female	69,695	50.85		
Household Size				
1	23,563	17.19		
2	46,404	33.86		
3	26,395	19.26		
4	22,818	16.65		
5	10,653	7.77		
6	4,353	3.18		
7	1,601	1.17		
8 or more	1,273	0.93		
Citizenship Status				
US Citizen	126,328	94.60		
Not a US Citizen	7,218	5.40		

4.1 Regression Analysis

The regression analyses are presented in Table 3, Table 4, and Table 5. These tables present estimates of the independent variable – types of health insurance coverage on the dependent variable – access to health care, while controlling for the demographic variables of the surveyed population. First, Table 3 below, estimates the effect of the six different types of health insurance coverage on the dependent variable – access to physicians (potential care) while controlling for the demographic characteristics of the respondents. Second, Table 4 below, estimates the effect of the six different types of health insurance coverage on access to basic care (actual care) while controlling for the demographic characteristics of respondents. Third, Table 5 below, estimates the effect of the six different types of health insurance coverage on the dependent variable – access to specialized care (actual care) while controlling for the demographic characteristics of the respondents. Running these separate models provides a unique insight about how the in-

dependent variable – types of health insurance coverage interact and influence each type of access, i.e., potential care (access to physicians) and actual care (access to basic & specialized care).

4.2 The Effect of Health Insurance on Access to Physicians

Table 3a & 3b (Model 1 - 6), estimated the effect of the six different types of health insurance coverage on access to physicians. Each individual model for each type of insurance coverage was significant as follows: employment-based coverage was significant at ($F(13, 38946) = 49.08$, $p<0.001$), self-insured or direct-purchase coverage was significant at ($F(13, 37906) = 42.55$, $p<0.001$), Medicare coverage was significant at ($F(13, 37736) = 44.44$, $p<0.001$), Medicaid/CHIP/MA coverage was significant at ($F(13, 37780) = 66.97$, $p<0.001$), Tricare/VA/Military coverage was significant at ($F(13, 37811) = 42.49$, $p<0.001$) and finally all other types of insurance coverage was significant at ($F(13, 37756) = 43.57$, $p<0.001$). Overall access to any of the six types of insurance coverage was found to predict access to physicians and the predicted effect of each type of insurance is as follows: employment-based coverage ($\beta = -0.016$; $p<0.001$), self-insured or direct-purchase coverage ($\beta = 0.008$; $p<0.001$), Medicare coverage ($\beta = 0.018$; $p<0.001$), Medicaid/CHIP/MA coverage ($\beta = 0.043$; $p<0.001$), Tricare/VA/Military coverage ($\beta = 0.011$; $p<0.001$) and other types of coverage ($\beta = 0.015$; $p<0.001$). Employment-based coverage is much better at reducing the challenge and difficulty in accessing physicians in the U.S. These findings are consistent with previous studies that show variations in access to physicians in the United States for different types of health insurance coverage [14, 28, 15, 16]. Furthermore, for all the six different types of insurance coverage the following demographic variables were found to predict access to physicians with significant variations (see Table 3a & 3b below). The significant demographic variables are income, employment, health status, sexual orientation (LGBT), age, race, education, and household size, however citizenship, rural-urban status and marital status were not predictors of access to physicians irrespective of the coverage type. Previous studies about access to physicians have identified some of these demographic characteristics to predict access to physicians [23, 24, 25, 26, 27].

Table 3a: Regression Analysis Estimating the Effect of Different Types of Health Insurance Coverage on Access to Physicians in the United State

	Access to Physicians		
Independent Variable	**Model 1 B(SE)**	**Model 2 B(SE)**	**Model 3 B(SE)**
Employment-base **(Model 1)**	-0.016*** (0.001)		
Self-Insured **(Model 2)**		0.008*** (0.002)	
Medicare **(Model 3)**			0.018*** (0.002)
Control Variables			
Income	-0.003*** (0.000)	- 0.005*** (0.000)	- 0.004*** (0.000)
Marital status	-0.001 (0.000)	-0.001 (0.000)	-0.001 (0.000)
Employment	0.003* (0.001)	0.006*** (0.001)	0.004* (0.001)
Health Status	0.016*** (0.001)	0.017*** (0.001)	0.016*** (0.001)
Citizenship	-0.006 (0.003)	-0.004 (0.003)	-0.003 (0.003)
Sexual Orientation (LGBT)	0.015*** (0.002)	0.016*** (0.002)	0.016*** (0.002)
Age	-0.000*** (0.000)	- 0.000*** (0.000)	- 0.000*** (0.000)
Education	0.003*** (0.000)	0.0023** (0.000)	0.002** (0.000)
Race	0.000 (0.000)	0.001 (0.000)	0.001 (0.000)
Gender	0.003** (0.001)	0.003** (0.001)	0.004** (0.001)
Household Size	0.001** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Rural-Urban Status	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)
_cons	0.010 (0.007)	-0.000 (0.007)	0.001 (0.007)
N	**38960**	**37920**	**37750**
R-square	0.016	0.014	0.015

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 3b: Regression Analysis Estimating the Effect of Different Types of Health Insurance Coverage on Access to Physicians in the United State

	Access to Physicians		
Independent Variable	**Model 4 B(SE)**	**Model 5 B(SE)**	**Model 6 B(SE)**
Medicaid/CHIP/MA **(Model 4)**	0.043*** (0.002)		
Tricare/VA/Military **(Model 5)**		0.011*** (0.003)	
Others **(Model)**			0.015*** (0.003)
Control Variables			
Income	-0.003*** (0.000)	-0.005*** (0.000)	-0.005*** (0.000)
Marital status	-0.001 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Employment	0.002 (0.001)	0.006*** (0.001)	0.006*** (0.001)
Health Status	0.015*** (0.001)	0.017*** (0.001)	0.017*** (0.001)
Citizenship	-0.002 (0.003)	-0.003 (0.003)	-0.004 (0.003)

Sexual Orientation (LGBT)	0.015*** (0.002)	0.016*** (0.002)	0.016*** (0.002)
Age	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Education	0.003*** (0.000)	0.002** (0.000)	0.002** (0.000)
Race	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Gender	0.003* (0.001)	0.004** (0.001)	0.003** (0.001)
Household Size	0.001** (0.000)	0.001*** (0.000)	0.002*** (0.000)
Rural-Urban Status	0.002 (0.001)	0.002 (0.001)	0.001 (0.001)
_cons	-0.003 (0.007)	-0.001 (0.007)	-0.001 (0.007)
N	**37794**	**37825**	**37770**
R-square	0.023	0.014	0.015

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

4.2 The Effect of Health Insurance on Access to Basic Care

Table 4a & 4b (Model 1-6), below estimated the effect of the six different types of health insurance coverage on access to basic care. Each individual model for each type of insurance coverage was significant as follows: employment-based coverage was significant at (F(13, 39472) = 183.83, p<0.001), self-insured or direct-purchase coverage was significant at (F(13, 34726) = 149.85, p<0.001), Medicare coverage was significant at (F(13, 38240) = 164.85, p<0.001), Medicaid/CHIP/MA coverage was significant at (F(13, 38309) = 165.11, p<0.001), Tricare/VA/Military coverage was significant at (F(13, 38329) = 165.35, p<0.001) and finally all other types of insurance coverage was significant at (F(13, 38290) = 178.65, p<0.001). As observed from the results, employment-based coverage is much better at reducing the challenge and difficulty in accessing basic care in the U.S. compared to the other types of insurance coverage. Overall access to any of the six types of coverage was found to predict access to physicians and the predicted effect of each type of insurance is as follows: employment-based coverage (β = -0.044; p<0.001), self-insured or direct-purchase coverage (β = 0.050; p<0.001), Medicare coverage (β = 0.026; p<0.001), Medicaid/CHIP/MA coverage (β = 0.016; p<0.001), Tricare/VA/Military coverage (β = 0.024; p<0.001) and other types of coverage (β = 0.081; p<0.001). These findings are consistent with previous studies that show variations in access to basic care in the United States for different health insurance coverage [17, 16]. Furthermore, for all the six different types of insurance coverage the following demographic variables were found to predict access to basic care with significant variations. The significant demographic variables are income, marital status, employment, health status, sexual orientation (LGBT), age, race, education, and household size, however rural-urban status was not a significant predictor of access to basic care across all the types of insurance coverage. Previous studies about access to basic care have identified some of these demographic characteristics to predict access to basic care [23, 24, 25, 26, 27].

Table 4a: Regression Analysis Estimating the Effect of Different Types of Health Insurance Coverage on Access to Basic care in the United State

	Access to Basic care		
Independent Variable	**Model 1 B(SE)**	**Model 2 B(SE)**	**Model 3 B(SE)**
Employment-base **(Model 1)**	-0.044*** (0.003)		
Self-Insured **(Model 2)**		0.050*** (0.004)	
Medicare **(Model 3)**			0.026*** (0.005)
Control Variables			
Income	-0.020*** (0.001)	-0.024*** (0.001)	-0.024*** (0.001)
Marital status	-0.010*** (0.001)	-0.009*** (0.001)	-0.009*** (0.001)
Employment	-0.011*** (0.003)	-0.004 (0.003)	-0.006* (0.003)
Health Status	0.058*** (0.002)	0.064*** (0.002)	0.061*** (0.002)
Citizenship	-0.013* (0.006)	-0.009 (0.006)	-0.008 (0.006)
Sexual Orientation (LGBT)	0.042*** (0.005)	0.044*** (0.005)	0.044*** (0.005)
Age	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Education	-0.002 (0.001)	-0.005** (0.001)	-0.004** (0.001)
Race	0.005*** (0.001)	0.006*** (0.001)	0.006*** (0.001)
Gender	0.015*** (0.002)	0.014*** (0.002)	0.015*** (0.002)
Household Size	0.006*** (0.001)	0.007*** (0.001)	0.007*** (0.001)
Rural-Urban Status	-0.005 (0.003)	-0.004 (0.003)	-0.005 (0.003)
_cons	0.123*** (0.014)	0.090*** (0.014)	0.095*** (0.014)
N	**39486**	**38436**	**38254**
R-square	0.057	0.057	0.053

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 4b: Regression Analysis Estimating the Effect of Different Types of Health Insurance Coverage on Access to Basic care in the United State

	Access to Basic Care		
Independent Variable	**Model 4 B(SE)**	**Model 5 B(SE)**	**Model 6 B(SE)**

Medicaid/CHIP/MA	0.016***		
(Model 4)	(0.004)		
Tricare/VA/Military		0.024***	
(Model 5)		(0.005)	
Others			0.081***
(Model)			(0.006)
Control Variables			
Income	-0.024***	-0.024***	-0.024***
	(0.001)	(0.001)	(0.001)
Marital status	-0.009***	-0.008***	-0.009***
	(0.001)	(0.001)	(0.001)
Employment	-0.005	-0.004	-0.003
	(0.003)	(0.003)	(0.003)
Health Status	0.061***	0.062***	0.062***
	(0.002)	(0.002)	(0.002)
Citizenship	-0.010	-0.007	-0.010
	(0.006)	(0.006)	(0.006)
Sexual Orientation (LGBT)	0.045***	0.044***	0.044***
	(0.005)	(0.005)	(0.005)
Age	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
Education	-0.004*	-0.004**	-0.004**
	(0.001)	(0.001)	(0.001)
Race	0.006***	0.006***	0.006***
	(0.001)	(0.001)	(0.001)
Gender	0.014***	0.015***	0.014***
	(0.002)	(0.002)	(0.002)
Household Size	0.007***	0.007***	0.007***
	(0.001)	(0.001)	(0.001)
Rural-Urban Status	-0.006	-0.006	-0.005
	(0.003)	(0.003)	(0.003)
_cons	0.092***	0.087***	0.089***
	(0.014)	(0.014)	(0.014)
N	**38323**	**38343** 0.053	**38304**
R-square	0.053		0.057

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

4.3 The Effect of Health Insurance on Access to Specialized Care

Table 5a & 5b (Model 1-6) below estimated the effect of the six different types of health insurance coverage on access to specialized care. Each individual model for each type of insurance coverage was significant as follows: employment-based coverage was significant at (F(13, 35699) = 155.52, p<0.001), self-insured or direct-purchase coverage was significant at (F(13, 34726) = 149.85, p<0.001), Medicare coverage was significant at (F(13, 34559) = 151.65, p<0.001), Medicaid/CHIP/MA coverage was significant at (F(13, 34597) = 148.55, p<0.001), Tricare/VA/Military coverage was significant at (F(13, 34658) = 144.44, p<0.001) and finally all other types of insurance coverage was significant at (F(13, 34599) = 154.53, p<0.001). As observed from the results, employment-based coverage is much better at reducing the challenge and difficulty in accessing specialized care in the U.S. in contrast to the other types of insurance coverage. Overall access to any of the six types of coverage was found to predict access to specialized care and the predicted effect of each type of insurance is as follows: employment-based coverage (β = -0.038; p<0.001), self-insured or direct-purchase coverage (β = 0.045; p<0.001), Medicare coverage (β = 0.074; p<0.001), Medicaid/CHIP/MA coverage (β = 0.054; p<0.001), Tricare/VA/Military coverage (β = 0.050; p<0.001) and other types of coverage (β = 0.082; p<0.001). These findings are consistent with previous studies that show variations in access to specialized care in the United States for different types of health insurance coverage [18, 16]. Furthermore, for all the six different types of insurance coverage the following demographic variables were found to predict access to specialized care with significant variations. The significant demographic variables are income, marital status, employment, health status, sexual orientation (LGBT), age, race, education, and household size, however rural-urban status was not a significant predictor of access to specialized care across different types of insurance coverage. Previous studies about access to physicians have identified some of these demographic characteristics to predict access to physicians [23, 24, 25, 26, 27].

Table 5a: Regression Analysis Estimating the Effect of Different Types of Health Insurance Coverage on Access to Specialized care in the United State

	Access to Specialized care		
Independent Variable	**Model 1 B(SE)**	**Model 2 B(SE)**	**Model 3 B(SE)**
Employment-base	-0.038***		
(Model 1)	(0.002)		
Self-Insured		0.045***	
(Model 2)		(0.003)	
Medicare			0.074***
(Model 3)			(0.005)
Control Variables			
Income	-0.015***	-0.019***	-0.018***
	(0.001)	(0.001)	(0.001)
Marital status	-0.005***	-0.004**	-0.004*
	(0.001)	(0.001)	(0.001)
Employment	0.002	0.008**	0.002
	(0.002)	(0.002)	(0.002)
Health Status	0.051***	0.055***	0.050***
	(0.002)	(0.002)	(0.002)
Citizenship	-0.020***	-0.016*	-0.013*
	(0.006)	(0.006)	(0.006)
Sexual Orientation (LGBT)	0.038***	0.039***	0.038***
	(0.004)	(0.004)	(0.004)
Age	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)
Education	0.003*	0.001	0.002
	(0.001)	(0.001)	(0.001)
Race	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)
Gender	0.012***	0.011***	0.013***
	(0.002)	(0.002)	(0.002)

Household Size	0.002**	0.003**	0.003***
	(0.000)	(0.000)	(0.000)
Rural-Urban	0.004	0.006	0.004
Status	(0.003)	(0.003)	(0.003)
_cons	0.083***	0.051***	0.061***
	(0.013)	(0.013)	(0.013)
N	**35713**	**34740**	**34573**
R-square	0.054	0.053	0.054

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 5b: Regression Analysis Estimating the Effect of Different Types of Health Insurance Coverage on Access to Specialized care in the United State

	Access to Specialized Care		
	Model 4	**Model 5**	**Model 6**
Independent Variable	**B(SE)**	**B(SE)**	**B(SE)**
Medicaid/CHIP/MA	0.054***		
(Model 4)	(0.004)		
Tricare/VA/Military		0.050***	
(Model 5)		(0.005)	
Others			0.082***
(Model)			(0.005)
Control Variables			
Income	-0.017***	-0.019***	-0.019***
	(0.001)	(0.001)	(0.001)
Marital status	-0.004**	-0.002	-0.003*
	(0.001)	(0.001)	(0.001)
Employment	0.004	0.008**	0.009***
	(0.002)	(0.002)	(0.002)
Health Status	0.051***	0.053***	0.053***
	(0.002)	(0.002)	(0.002)
Citizenship	-0.015*	-0.013*	-0.017**
	(0.006)	(0.006)	(0.006)
Sexual	0.039***	0.040***	0.039***
Orientation	(0.004)	(0.004)	(0.004)
(LGBT)			
Age	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)
Education	0.003*	0.001	0.002
	(0.001)	(0.001)	(0.001)
Race	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)
Gender	0.011***	0.013***	0.011***
	(0.002)	(0.002)	(0.002)
Household Size	0.002**	0.003***	0.003***
	(0.000)	(0.000)	(0.000)
Rural-Urban	0.003	0.005	0.004
Status	(0.003)	(0.003)	(0.003)
_cons	0.049***	0.045***	0.048***
	(0.013)	(0.013)	(0.013)
N	**34611**	**38343**	**34613**
R-square	0.053	0.053	0.055

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

5 DISCUSSION & CONCLUSION

Health insurance is a primary means for financing a person's health care expenses. In the United States the majority of people have private health insurance coverage, primarily through an employer or a union, while many others obtain health insurance through programs offered by the government. Other individuals do not have health insurance coverage at all making them ineligible to access health care [1, 2, 3]. Private health insurance as a plan includes coverage provided through an employer or a union or purchased by an individual from a private company [2]. Public or government health insurance coverage includes federal programs such as Medicare, Medicaid, the Children's Health Insurance Program (CHIP), individual state health plans, TRICARE, CHAMPVA (Civilian Health and Medical Program of the Department of Veterans Affairs), as well as care provided by the Department of Veterans Affairs and the military [2, 3].

Previous studies have suggested variation in access to health care due to the type of access, the type of insurance coverage and the demographic characteristics of Americans. Some earlier studies have reported associations between public coverage and worse access to outpatient specialist services and higher usage of inpatient services [14, 28, 15, 16]. On the other hand, private coverage is associated with worse access to trauma facilities, as compared with public coverage; [14, 16] and unmet mental health care needs are reportedly higher for individuals with private coverage,[16, 18] with some data showing their unmet needs nearly equivalent to the uninsured [19]. Public coverage has been associated with less out-of-pocket expense than private coverage, and total medical spending for children with public coverage is lower compared with the cost of care for privately insured individuals [20, 21, 22]. Although these earlier studies have found differences in unmet health care needs when comparing types of coverage, no clear patterns have emerged. In some, univariate differences disappeared after adjusting for covariates such as age, sex, ethnicity, residential area, family income, family composition, household size, and child's health status [23, 24, 25, 26, 27]. To add to this debate, this study examines the effect of six different types of health insurance coverage on access to three types of care in the United States. They study made a distinction between access to physicians (potential care) and access to basic and specialized care (actual care) to allow for nuance in understanding how all the types of insurance coverage used in the study affect access to care. Also, through description analysis the distribution of scores for the variables included in the study was examined and presented in Table 2 above. The study also tested for multicollinearity in the data set by running a collinearity test, results showed the lack of collinearity because none of the VIF values were greater than 10 and none of the tolerance statistics were closer to zero. In addition to the collinearity test, a correlation test to establish the correlation between

variables. Finally, we estimated the effect of the six types of insurance coverage on access to health care - physicians, basic and specialized care in different regression models. Based on the analysis and the results prevented above the following observations can be made: first, overall access to any type of health insurance coverage improves access to any type of care - access to physicians, basic and specialized care. However, employment-based insurance coverage in contrast to other types of coverage, is better at reducing challenges and difficulties in accessing physicians, basic and specialized care. This contradicts some previous findings that indicate that the high out-of-pocket costs associated with private coverages like employment-based insurance serves as disincentives for access to health care [20, 21, 22]. Specific results from this study identified that various demographic variables predict access to care dependent on the type of care being accessed and the type of insurance coverage being utilized. Access to physicians indicates that irrespective of the type of insurance coverage demographic variables like income, employment, health status, sexual orientation (LGBT), age, race, education, and household size are predictors of access to physicians. However, citizenship, rural-urban status and marital status were not predictors of access to physicians irrespective of the coverage type. With access to basic care the following demographic variables (income, marital status, employment, health status, sexual orientation (LGBT), age, race, education, and household size) were found to predict access except for rural-urban status. Finally, with access to specialized care the following demographic variables (income, marital status, employment, health status, sexual orientation (LGBT), age, race, education, and household size) were found to predict access except for rural-urban status. The demographic variables identified in this study to predict access to health care is consistent with observations made from previous studies [23, 24, 25, 26, 27]. Logically, it can be argued that more demographic variables predict access to basic and specialized care (actual care) compared to access to physicians (potential care). For example, though citizenship and marital status did not predict access to physicians (potential care), these two variables predicted access to basic and specialized (actual care). Future studies can further examine why these two variables are predictors of actual care (basic & specialized care) as opposed to potential care (access to physicians) as a more specific research topic. However, a broader research question for future studies to consider is; why more demographic variables predict access to actual care than potential care and its implication for theory and practice.

Despite these important observations, this study is not without limitations, and as a result, we would caution readers against further interpretation of the study's findings. We acknowledge the possibility of desirability bias influencing the results of this study because the data were self-reported by citizens. During the survey, respondents may provide responses to questions that will make them look good and credible. Again, using citizens' self-reported data about their access to health care and health status does not accurately measure the study variables of this study. Furthermore, Medicaid as a type of insurance coverage was initially measured in the survey to include Medicaid, the Children's Health Insurance Program (CHIP) and Medical Assistance (MA). Though these programs share some similarities they can be studied as unique and separate programs. The study was unable to account for how combining Medicaid/CHIP/MA can lead to overestimation of Medicaid coverage, though as noted by Berchick, Hood, and Barnett [3], the percentage of Medicaid coverage in this study is below the 17.9% recorded in their estimates in 2018. Finally, the access to physician models for each type of insurance only explains between 14% to 23% of the variation in the data set. Therefore, the results and findings are not representative as the basic and specialized care models that explain between 53% to 57% of the variations in the data set.

Despite the above limitations, this study reveals some interesting and compelling findings that have implications for both theory and practice. Theoretically, the findings provide further nuance to understanding of the factors that influence access to health care in the United States for different types of insurance coverage. Specifically, it provides understanding and nuance regarding the predictors of potential care (access to physicians) and actual care (access to basic & specialized care). This allows for further examination and discussion of predictors of access to potential and actual care to influence practice as well. Practically, this study set off a debate and a policy argument for policy makers and stakeholders to consider the nuance and variance of the effect that different types of insurance coverage have on access to health care. More specifically, to narrow health care in potential and actual care and develop policies that are specific to each type of care.

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