ANALYZING HEALTH INSURANCE'S IMPACT ON PATIENT EXPERIENCE

A Thesis

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Lindsay Russell

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Department of Public Policy and Administration

Abstract

of

ANALYZING HEALTH INSURANCE'S IMPACT ON PATIENT EXPERIENCE

by

Lindsay Russell

My thesis addresses the research question: Does insurance type have a relationship with the experience that a patient has with their doctor? Specifically, I want to know if a patient's experience with their medical doctor, holding other possible causal factors constant, vary by whether the patient has private, public, or no medical insurance. To analyze this topic, I am retrieving data from the California Health Interview Survey. This subject remains pertinent in public policy because over the last ten years, healthcare policy has been shifting from a physician-centered to a patient-centered approach. There is a consensus that a patient's experience with their doctor plays a role in health outcomes, but there is little research on whether one's type of insurance impacts patient experience. By examining if patients are treated differently depending on their insurance coverage, this thesis relates both to our current public and private system operating under the Affordable Care Act, as well as to the single payer system that policymakers, especially in CA, have been discussing.

________________________, Committee Chair
Robert Wassmer, Ph.D.

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Date

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CHAPTER 1

INTRODUCTION

California is a policy trailblazer in multiple policy fields, including environmental, economic and health policy. However, California continues to struggle to address and reduce the well-documented health disparities that have persisted among its residents for decades. Health outcome disparities are present and intersectional, impacting individuals based on their race/ethnicity, sexual orientation, insurance type, and many other characteristics (California Association of Public Hospitals and Health Systems, 2018). Figure 1 depicts California's health disparities by insurance type, demonstrating that Californians' self-reported health status varies by insurance type. In this figure, a higher proportion of individuals with employer-based or individual health insurance have self-reported excellent health compared to those with Medi-Cal or no insurance. Similarly, a higher proportion of individuals with Medi-Cal or no insurance have self-reported poor health compared to those with employer-based or individual health insurance.

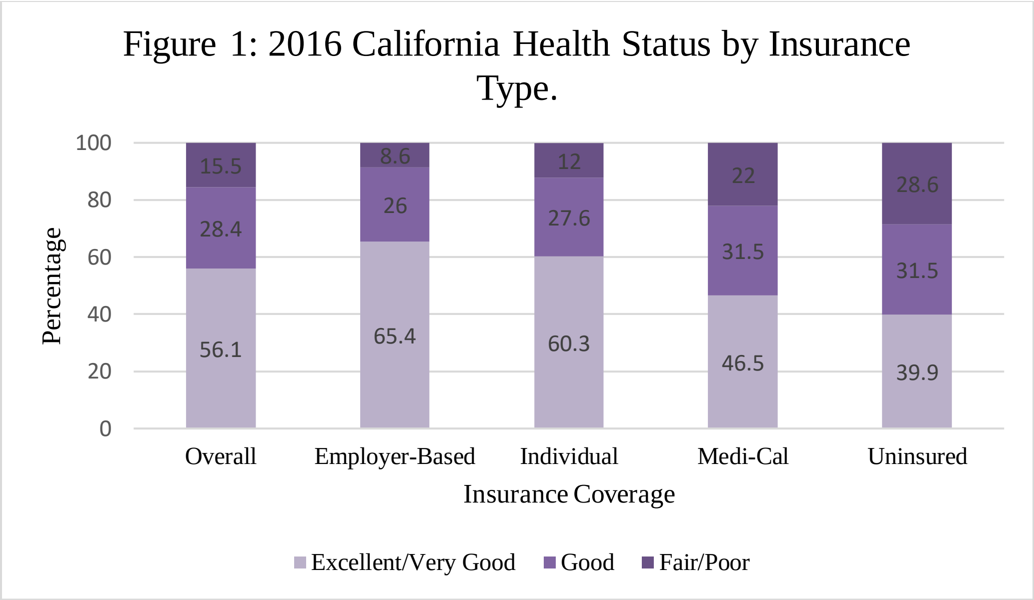


Figure 1: 2016 California Health Status by Insurance Type.

Source: Fronstin, P. (2018). 2018 Edition—California's Uninsured. California Health Care Foundation

Many factors contribute to health disparities, including insurance coverage and quality of care. Figure 2 illustrates the social determinants of health, organizing them within six categories: economic stability, neighborhood and physical environment, education, food, community and social context, and healthcare system. When discussing health disparities, it is important to distinguish between "health care" and "healthcare." "Health care" refers to actions patients and physicians take to improve individuals' health, while "healthcare" is the system that manages the administration and health care services for patients (Arcadia, 2014). My research will focus on the sixth category, the healthcare system. By enacting healthcare policies aimed to emphasize patient engagement, policymakers are changing the healthcare system. Healthcare is becoming more patient-centered, resulting in a change in hospital guidelines to remain compliant with federal mandates and incentives. Policymakers' push for patient-centered healthcare impacts all aspects of the healthcare system, ranging from hospitals' administrative policies to how physicians interact with their patients (Heath, 2016). There are multiple recent policies addressing the healthcare system's role in health outcomes, the most influential being the Affordable Care Act (ACA). The ACA has helped California reduce insurance-related health disparities and set a precedent to address concerns related to quality of care. However, quality of care disparities continues to persist, becoming more pertinent as the state adopts more patient-centered practices under the ACA and discusses adopting a single-payer healthcare system.

Figure 2: Social Determinants of Health

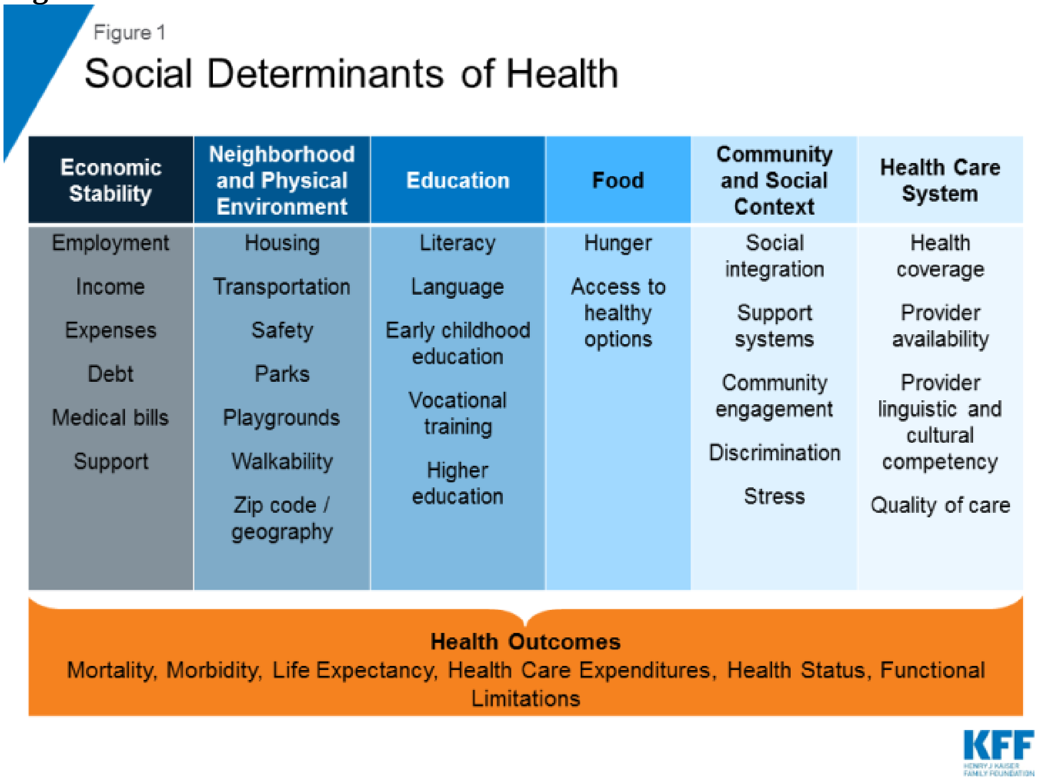


Figure 1

Social Determinants of Health

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education		Stress	
Support	Walkability				
	Zip code / geography				

Health Outcomes

Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

Source: Orgera, K. and Artiga, S. (2018). Henry J Kaiser Family Foundation.

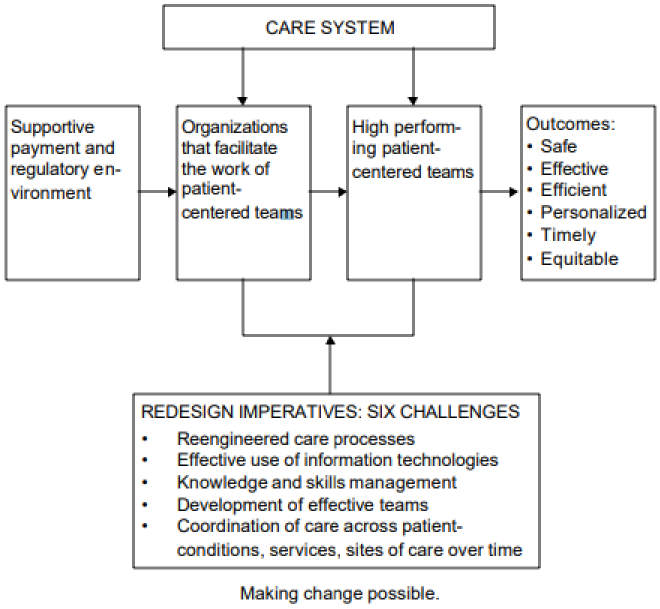
This study addresses the following question: *What are the ways in which insurance type may or may not influence the experience that a patient has with their doctor?* Health insurance is related to health outcomes, but I want to know if this relationship is in part caused by the patient-doctor relationship. This introductory chapter will focus on providing background on the topic, beginning with a historical overview of patient-centered practices in medicine. Next, I explain the significance of studying patient experience in terms of Munger's triangle. The following two sections explain the numerous ways that people are currently insured and the policy significance of studying this topic. Finally, my chapter will conclude by describing the remaining chapters in this paper.

Patient-Centered Practices in Medicine

Rise of Patient-Centered Approach

The Institute of Medicine (IOM, 2001) brought patient-centered healthcare to the forefront when it included "patient centeredness" as one of its six goals for the healthcare system in its landmark 2001 publication *Crossing the Quality Chasm: A New Health System for the 21st Century*. IOM defined patient-centered care as care that respects and responds to patients' preferences and values, as well as empowers patients to play a larger role in treatment decisions. Over the past eighteen years, healthcare organizations have adopted some of the IOM's recommendations, including developing quality measures and shifting to a more patient-centered approach. One of the most impactful results from this publication is the inclusion of incentives for patient-centered practices in the ACA (McKinney, 2011).

Figure 3: IOM's Recommendations for Redesign of Health System



Source: Institute of Medicine (2001).

The patient-centered incentives in the ACA reflect the goals highlighted in the IOM's 2001 report. In 2010, the ACA mandated that healthcare systems create measures for quality of care and repeatedly used patient-centered terminology throughout the bill (Heath, 2016). Some of the financial incentives include performance-based bonuses or penalties depending on patients' scores on a patient experience survey. This survey, called the Consumer Assessment of Healthcare Providers and Systems (CAHPS) serves as the foundation for measuring patients' healthcare experiences (Hooten and Zavadsky, 2014). Additionally, the ACA is implementing two new physician payment programs under the Medicare Access and CHIP Reauthorization Act this year, both of which include a version of the CAHPS Survey that will affect physicians' pay (Agency for Healthcare Research and Quality, 2018).

Relationship between Patient Experience and Health Outcomes

Improving patient experience is important due to its strong ties to health outcomes. Positive patient experiences are strongly associated with better health outcomes, as well as stronger adherence to treatment plans and preventative care (Agency for Healthcare Research and Quality, 2018; National Research Organization, 2017). Because the healthcare system is a social determinant of health, reducing the disparities in patient experiences gives providers an opportunity to address health disparities (Orgera and Artiga, 2018).

Defining Patient Experience

Patient experience is a crucial element of patient-centered care, and it is important to note that it is different from patient satisfaction. CAHPS defines patient experience as the interactions that patients have with the healthcare system, ranging from interactions with doctors and nurses to receiving timely appointments and appropriate information. Patient satisfaction, on the other hand, focuses on patients' expectations with their healthcare provider. When assessing patient experience, CAHPS wants to know if patients are receiving the quality care that physicians should be providing, whereas patient satisfaction ratings inform CAHPS if their provider met their expectations (Edgman-Levitan, 2017).

Why Study Relationship between Patient Experience and Health Insurance?

One way to illustrate the role of policy intervention in a market is through Munger’s Triangle. As demonstrated in Figure 4, Munger’s Triangle depicts the three types of policies—equity, efficiency and institutional reform—on the sides of the triangle and the three sources of wisdom in policymaking—markets, experts, and politics—on the corners. The sources on the same side of the triangle offer conflicting advice on how to intervene in a market, whereas the source of wisdom on the opposite side provides mitigating advice. Policies intervene in a market when there is a failure in one of the three types of policies. For instance, public policy would intervene using equity policies if income or wealth is not appropriately distributed. Public policy would use efficiency policies if the market experienced a market failure, such as an externality or information asymmetry, and would use institutional reform policies to change a market’s institutional design.

Figure 4: Munger's Triangle

Source: Munger (2000).

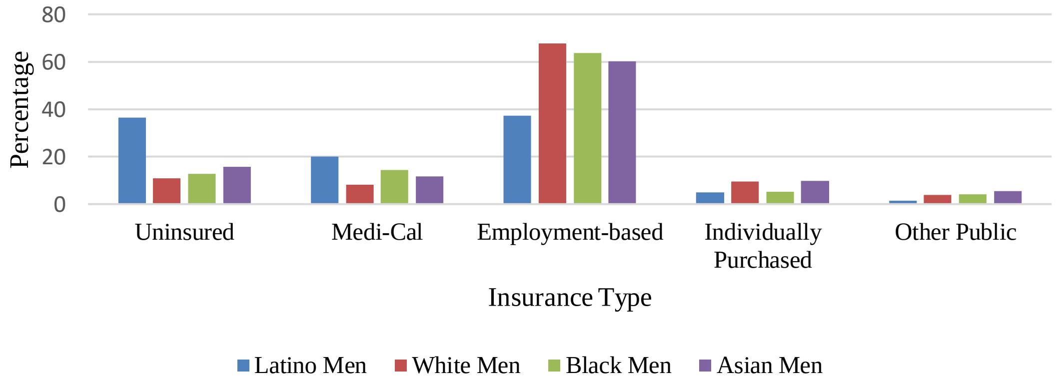
Efficiency

There is a possibility of an efficiency failure, which is located on the left side of Munger's Triangle. An efficiency failure in the health care market could occur due to information asymmetry occurring between patients and physicians if physicians do not provide adequate information or communicate it clearly. Politics could reconcile this efficiency failure to reduce information asymmetry.

Equity

There are also equity concerns regarding patient experience, located on the right side of Munger's triangle. If patients with different insurance coverage have different healthcare experiences, then that indicates healthcare inequity is present, further impacting health disparities. Californians' insurance coverage continue to vary between racial and gender categories, as depicted in Figures 5 and 6. As illustrated in Figures 5 and 6, Latinos are the most represented group in both the uninsured and Medi-Cal categories, indicating healthcare disparities are present. It is important for California policymakers to address healthcare disparities not only because they impact millions of Californians, but because these disparities are going to continue to increase as the income gap widens and California's population continues to shift. By 2050, it is predicted that people of color will represent over half of the United States' population and income gaps continue to grow. These communities are also understood to be the most likely to have poor health outcomes and the least access to health insurance (Orgera and Artiga, 2018). Therefore, they would also most likely be the communities with the worst patient experiences as well.

Figure 5: California's Men 2014 Insurance Coverage, by Race



Source: Charles, Becker, Jacobs, Pourat, Ebrahim, and Kominski. (2017).

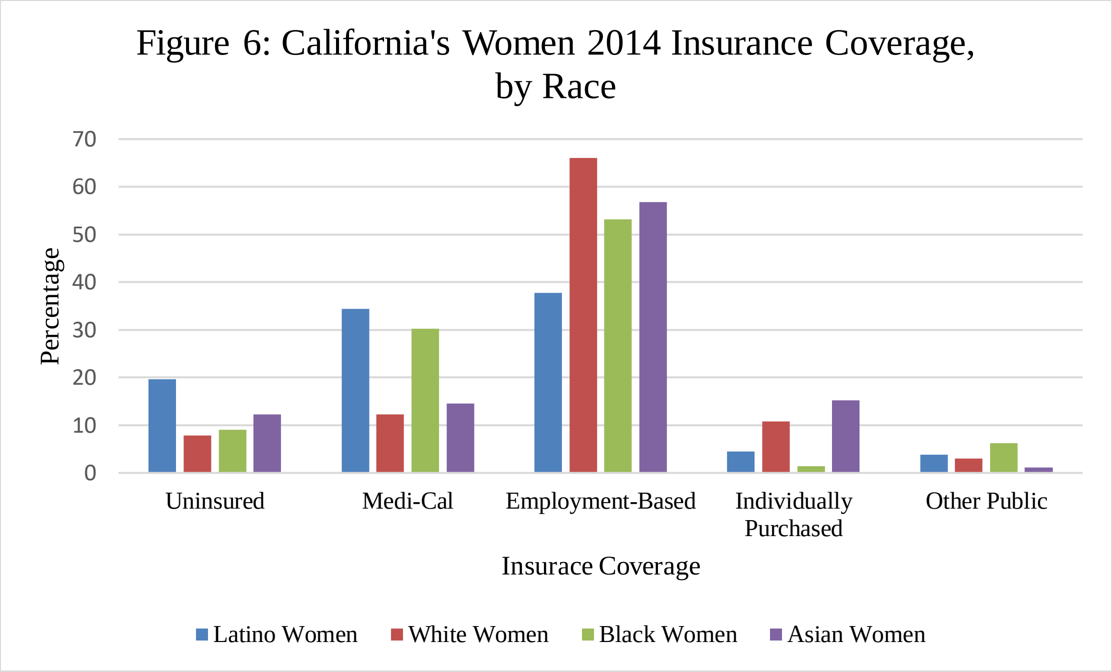


Figure 6: California's Women 2014 Insurance Coverage, by Race

Source: Charles, Becker, Jacobs, Pourat, Ebrahim, and Kominski. (2017).

Current Insurance Types

Figure 7 displays that California has a historically low uninsured rate, with less than 7 percent of the population lacking insurance (Aguilera, 2018). Within that 7 percent, Latinos were overrepresented in the population, as seen in Figure 8. Low-income Californians are also more likely to be uninsured, with individuals earning less than $25,000 comprising 35 percent of California’s uninsured population (Fronstin, 2018). There is little discrepancy between male and females’ insurance rates, for 12 percent of men are uninsured compared to 9 percent of women (Henry J Kaiser Family Foundation, 2019a).

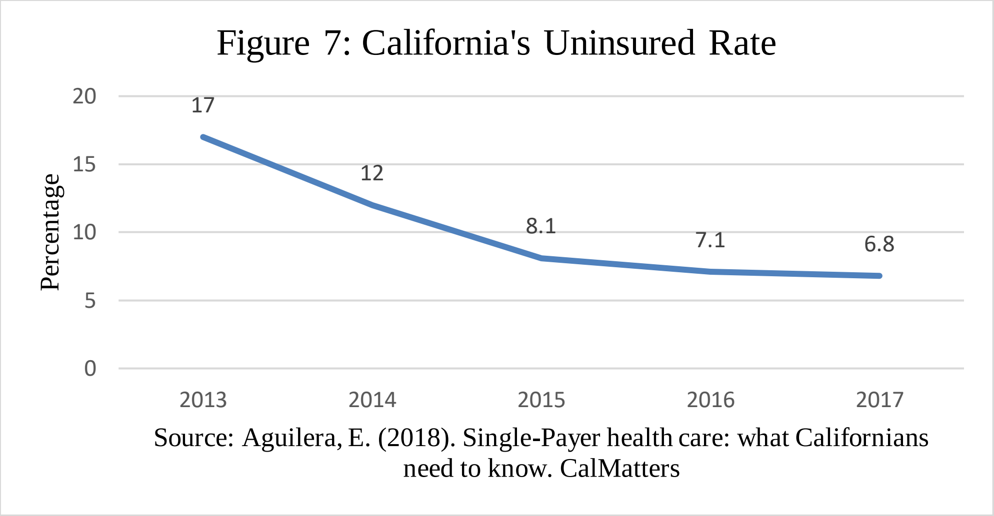
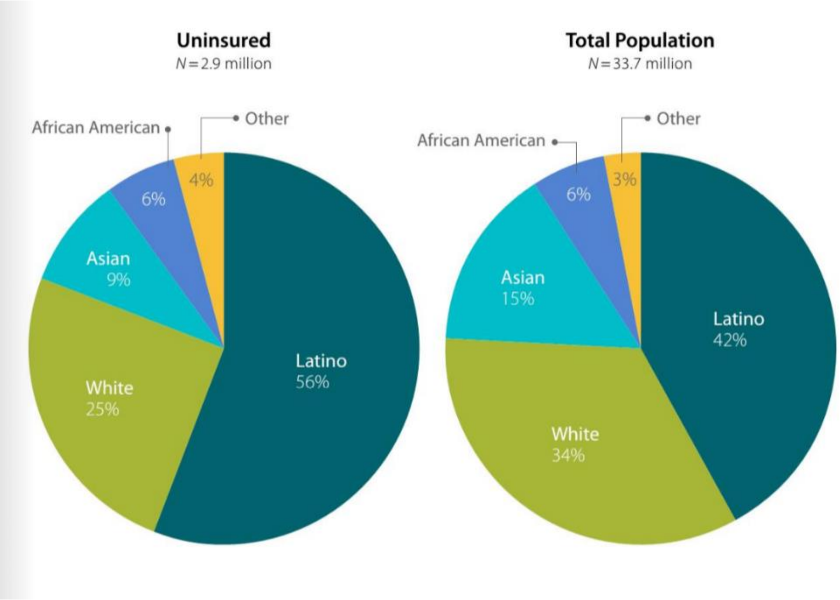


Figure 7: California's Uninsured Rate

Source: Aguilera, E. (2018). Single-Payer health care: what Californians need to know. CalMatters

Figure 8: California's 2016 Uninsured Population vs. Total Population



Source: Fronstin, P. (2018). 2018 Edition—California's Uninsured. California Health Care Foundation

Currently there are two types of insurance—public and private—but there are also discussions about implementing a single payer system.

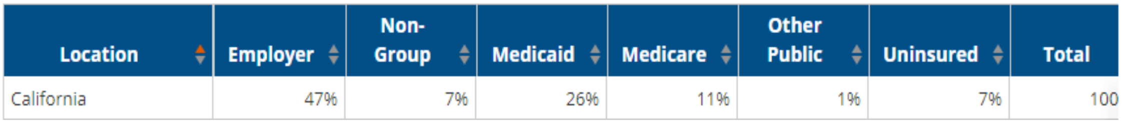
Single Payer Healthcare

There are both state-level and national conversations about implementing a single payer healthcare system. Single payer healthcare requires that a single public agency pays for healthcare for all users, meaning that everyone has the same health insurance plan and access to healthcare services. Supporters argue that this healthcare system would address inequity, particularly for the uninsured (Christopher, 2016). However, opponents assert that single payer healthcare will have significant implementation costs, reduce access to care and decrease the quality of care provided (Cunningham, 2019).

Private Health Insurance

Most Californians are privately insured, with 54 percent having employer-based healthcare or having purchased insurance directly (Henry J Kaiser Family Foundation, 2019). There are many ways to purchase private health insurance in California. Employers can purchase a group policy that provides healthcare coverage to their employees or be self-insured and contract insurance companies to manage their employees' health benefits. Consumers can also buy a Health Maintenance Organization (HMO) plan, in which patients' insurance coverage is limited to doctors that are within the HMO network or buy individual or family insurance outside of their employer (California Department of Insurance, 2019a; HealthCare).

Figure 9: 2017 Health Insurance Sources



Location	Employer	Non-Group	Medicaid	Medicare	Other Public	Uninsured	Total
California	47%	7%	26%	11%	1%	7%	100

Source: Henry J Kaiser Family Foundation. (2019b).

Public Health Insurance

Californians can also receive healthcare through Medicare or Medi-Cal, California’s federal Medicaid program. Medicare is a federally funded program for individuals that are at least 65 years old whereas Medi-Cal provides insurance for eligible low-income families or individuals (California Department of Insurance, 2019b). California also helps its residents purchase health insurance under the ACA through Covered California. Covered California uses federal funds to provide subsidies to eligible Californians wanting to purchase health insurance from approved companies (Covered California, 2019).

Why is this a critical issue for California?

California is overrepresented demographically in communities that tend to have poor health outcomes, such as communities of color and low-income communities (Orgera and Artiga, 2018). However, California’s policymakers also provide support to increase access to insurance and Governor Newsom is working on further expanding healthcare coverage for Californians. As previously explained, California currently has a historically low uninsured rate with over 90 percent of Californians having either public or private health insurance (Aguilera, 2018). Newsom aims to address the remaining 7 percent of uninsured Californians through various proposed policies. One of his proposed policies is that California provides subsidies to middle-income residents wanting to buy insurance. Another proposal is to implement a state mandate, incentivizing Californians to purchase insurance to avoid paying a fee. Thirdly, he plans to spend $260 million to expand Medi-Cal coverage to adults between 19 and 25 years old, with no exceptions based on immigration status (Aguilera, 2019; Health and Human Services, 2019). These policies are predicted to improve health outcomes but would fail to fully address the underlying factors behind health disparities. As previously noted, health coverage is not the only indicator of health outcomes. There are other factors that influence health disparities, including patients' experiences of the healthcare system. Until California addresses health outcomes in terms of patient-centered care, health disparities will continue to persist (Agency for Healthcare Research and Quality, 2018; National Research Organization, 2017; Orgera and Artiga, 2018). Therefore, California needs to intervene using efficiency and equity policies to better address health disparities through improving the doctor-patient relationship.

Study Approach and Framework

The following chapter contains a review of the literature that is relevant to completing a regression of insurance coverage's relationship to patient experience. Chapter three describes the methodology of my analysis and overview of my data. The fourth chapter presents my regression analysis. Finally, chapter five concludes by explaining my interview methodology, major findings, and suggestions for future research.

CHAPTER 2

LITERATURE REVIEW

Introduction

This chapter reviews the existing literature studying the variables identified to influence patient’s experiences with a medical doctor. The sources being discussed in this literature review conducted a regression analysis using variables that will be discussed in the sections of this chapter. Regression is a statistical analysis that measures the relationship between two variables and isolates the relationship by controlling for the effects of other variables (Gallo, 2015). I am focusing on regression-based studies to determine how others have rationalized the use of similar dependent variables that I plan to use. I have organized this chapter into three sections: a review of the previous literature that used a dependent variable similar to what I plan on using and the ways in which the roles of patient race, insurance status, and educational attainment influence these dependent variables.

Dependent Variables

For this project, I will be running two regressions to analyze how insurance status influences the patient-doctor relationship. My primary dependent variable is patient experience and my secondary dependent variable is perception of discrimination. In this section of the literature review I describe the similar dependent variables used in previous studies.

Defining Patient Experience

Based on this review of literature, I have identified four definitions for patient experience. I am using CAHPS as my theoretical framework for defining patient experience because the trends in the definitions I identified all fall within a section of CAHPS. The variables used to account for a patient's experience with a medical doctor varies within the literature and can be classified as the: Consumer Assessment of Healthcare Providers and Systems (CAHPS) definition, a combination of care and communication, solely care received, and solely physician communication.

CAHPS Patient Experience Definition

When studying patient experience, many studies use CAHPS data and subsequently have similar definitions of the concept. According to the Agency for Healthcare Research and Quality (2017), CAHPS defines patient experience in terms of interactions based upon respondents' experience with the healthcare system, ranging from administrative interactions to experiences with their physician. When using CAHPS surveys, researchers studying CAHPS data define patient experience within two main themes: care received and physician communication. "Care received" refers to the logistics of interacting with the healthcare system and includes items such as getting needed care, getting care quickly, and quality of customer service (Collins, Haas, and Elliott, 2017; Elliott, Haviland, Kanouse, Hambarsoomian, and Hays, 2009; O'Malley, Zaslavsky, Elliott, Zaborsky, and Clearly, 2005; Weech-Maldonado, Hall, Bryant, Jenkins, and Elliott, 2012; Weech-Maldonado, Elliott, Adams, Haviland, Klein, Hambarsoomian, Edwards, Dembosky, and Gaillot, 2015; White-Means and Osmani, 2017; Zaslavsky, Zaborski, Ding, Shaul, Cioffi, and Clearly, 2001). “Physician communication” focuses on how well respondents felt their doctors communicated with them, including listened to their needs, explained their care, and respected them (Collins et al., 2017; Elliott et al., 2009; Hasnain, Schwartz, Girotti, Bixby, Rivera, and UIC Experiences of Care Project Group, 2012; O’Malley et al., 2005; Weech-Maldonado et al., 2012; White-Means and Osmani, 2017; Zaslavsky et al., 2001). Most studies using CAHPS data used both themes to define patient experience, and summaries of these studies can be found within Table 1.

Combination of Care and Communication

Many studies that do not use the CAHPS data use a similar definition of patient experience, in that they consider care received and physician communication. However, non-CAHPS researchers define the concept of “care received” differently from one another. For example, many studies asked respondents to rate their overall experience with the healthcare system to measure the care received and asked more questions regarding physician communication. Table 1 provides a summary of sources that discuss patient experience using these definitions. For Ngo-Metzger, Legedza, and Phillips’ 2004 study those questions include, among others, how much respondents trusted their doctor, if their doctor practiced shared decision-making, and if respondents perceived discrimination due to their insurance status, language ability, race, or gender. Similarly, researchers conducting Finney Rutten, Agunwamba, Beckjord, Hesse, Moser, and Arora (2015) study eight questions focused on respondents’ experiences with patient-centered communication to measure physician communication. In contrast, Doyle, Lennox and

Bell (2013) did not ask respondents to rate their overall healthcare system, but rather asked a series of questions related to the logistics of receiving care. However, all three studies asked extensive questions for physician communication.

Care Received

Researchers solely using “care received” for the definition of patient experience have a similar definition for the concept as the non-CAHPS studies. Like researchers using both themes, researchers solely using the care respondents received to define patient experience focus on respondents’ overall interactions with the healthcare system. These studies asked respondents to rate their experiences with the healthcare system as a whole rather than specify aspects of care, and more information regarding these studies can be found on Table 1 (Shan, Li, Ding, Wu, Liu, Jiao, Hao, Han, Gao, Hao, Wang, Xu, and Ren, 2016; Sommers, McMurtry, Blendon, Benson, and Sayde, 2017).

Physician Communication

There is a difference in definitions of physician communication between studies using two themes to define patient experience and studies using one theme. Studies focusing solely on physician communication base their definition on respondents rating their doctor’s decision-making style, psychosocial talk and providing information. Studies focused solely on physician communication did not include topics such as feeling respected or listened to, nor did they include perceptions of discrimination or trusting their doctor (Cooper, Roter, Johnson, Ford, Steinwachs, and Powe, 2003; Peck and Conner, 2011). These studies are also included on Table 1 below.

Patient Experience Summary

There are many different factors to consider when discussing patient experience, so it is imperative to have an appropriate definition of the concept when conducting a study. Researchers agree that patient experience is an all-encompassing concept to understand a patient's interactions with the healthcare system. Given that the healthcare system includes both administrative and physician experiences, the CAHPS definition of patient experience and the non-CAHPS studies that look at both care received and physician communication appear to have the most inclusive definition of patient experience. It is important to distinguish between the two groups' definitions of "care received." While CAHPS studies ask multiple questions regarding specific logistic aspects of receiving care, the non-CAHPS studies ask respondents to rate their healthcare experience overall. Asking respondents to rate their experience overall increases the potential that respondents overlook important administrative aspects of the healthcare system. Therefore, the CAHPS studies' definition of patient experience appears to be the most appropriate definition in the literature.

Although my dataset from the California Health Interview Survey (CHIS) does not provide a definition of patient experience, there is a health care utilization and access section that includes a subsection on patient-centered care. The subsection is comprised of two questions: "How often does your doctor or medical provider listen carefully to you?" and "How often does your doctor or medical provider explain clearly what you need to do to take care of your health?" Other subsections in the utilization and access section include inquiries regarding physician communication and receiving timely care (California Health Interview Survey, 2017a).

Perception of Discrimination

When discussing factors impacting patient experience, many studies ask respondents about their experiences with discrimination in the healthcare system. These experiences include respondents encountering discrimination based on their race, language and insurance status. Researchers studying respondents' perception of discrimination all come to the same conclusion: experiencing discrimination has a strong relationship to respondents' patient experiences (Friedman, Anstrom, Weinfurt, McIntosh, Bosworth, Oddone, Bright, and Schulman, 2005; Han, Call, Pintor, Alarcon-Espinoza, and Simon, 2015; Lillie-Blanton, Brodie, Rowland, Altman, Henry J. Kaiser Family Foundation, McIntosh, and Princeton Survey Research Associates, 2000; Ngo-Metzger et al., 2004; Thorburn and Marco, 2010; Weech-Maldonado et al., 2012). More specifically, perceptions of discrimination are associated with lower patient experience ratings (Lillie-Blanton et al., 2000; Ngo-Metzger et al., 2004; Thorburn and Marco, 2010; Weech-Maldonado et al., 2012). Further information about these studies can be located on Table 1.

It is important to note that some individuals are more likely than others to experience healthcare discrimination. For example, Weech-Maldonado et al. (2012) concluded that when controlling for sex, age, education, and self-rated health, African Americans are 202 percent more likely than white patients to report racial discrimination. Additionally, White-Means and Osmani (2017) concluded that when controlling for socioeconomic status, insurance status, comorbidities and region of residence, physicians are 60 percent less likely to speak respectfully to African American patients than to white patients. However, race is not the only factor to consider when analyzing discrimination. Recent studies are now assessing the impact of insurance-based discrimination as well. When studying discrimination in prenatal care, Thorburn and Marco (2010) found that women on Medicaid were three times more likely to experience insurance-based discrimination than women with employer-based insurance. Similarly, Han and colleagues (2015) state that when controlling for demographics and self-reported health, uninsured and publicly insured adults are 5.75 and 4.4 times more likely, respectively, to report insurance-based discrimination than privately insured adults.

The relationship between perception of discrimination and patient experience ties back to the healthcare system's historical bias against minorities and individuals with low socioeconomic status. Minorities continue to face racial barriers that result in receiving less effective services and facing further racial health disparities, in turn making patients of color less trustful of the system (Friedman et al., 2005; Lillie-Blanton et al., 2000; Ngo-Metger et al., 2004). This relationship is also intersectional in that patients of color with low socioeconomic status face both financial and racial barriers in the healthcare system (Lillie-Blanton et al., 2000). One financial barrier is accessing insurance. Researchers agree that experiencing insurance discrimination is related to low socioeconomic status, in part due to the social stigma publicly insured and uninsured patients face when interacting with the healthcare system (Han et al., 2015; Lillie-Blanton et al., 2000; Thorburn and Marco, 2010).

Role of Race/Ethnicity

Apart from Zaslavsky et al.(2001), race consistently has a strong relationship with patient experience. The consensus within the literature is that there are racial disparities within patient experience ratings, with minority respondents more likely to report lower ratings than white respondents (Collins et al., 2017; Cooper et al., 2003; Hasnain et al., 2012; O'Malley et al., 2005; Sommers et al., 2017; Weech-Maldonado et al., 2015; White-Means and Osmani, 2017). For example, Sommers et al. (2017) found a 9.3 percent difference between the number of African Americans and whites reporting poor care, after controlling for insurance coverage. Additionally, a 2004 study concluded that after controlling for demographics, self-reported health, and health care experiences, Asian Americans are 64 percent less likely than whites to say they are very satisfied with their care (Ngo-Metzger et al.). Summaries of studies researching race/ethnicity's relationship to patient experience can be found on Table 1. When discussing their findings, researchers either recommend further exploration into the cause of these disparities or provide insight for possible explanations for the relationship.

The literature suggests that the healthcare system lacks critical interventions that could reduce these racial disparities. One intervention that studies recommend is cultural competency training, citing the healthcare system's historical biases and discrimination against minorities (Collins et al., 2017; Eli, Logan, and Miloucheva, 2019; Sommers et al. 2017; White-Means and Osmani, 2017). Similarly, researchers advocate for interventions that address patients' lack of trust in the system, also related to healthcare's history of bias (Sommers et al. 2017).

Insurance Status

Researchers have been studying insurance's relationship with patient experience throughout approximately the last decade and there is a consensus within the literature that insurance status has a positive relationship with patient experience. Summaries of these findings are displayed on Table 1. The literature focuses on comparing insured patients to uninsured patients and determined that insured patients have better healthcare experiences on average than uninsured patients. For example, Fenny, Enemark, Asante and Hansen's 2014 study in Ghana found that after controlling for age, education, healthcare facility, and satisfaction of care, insured patients are 43 percent more likely to be satisfied with their overall healthcare experience than uninsured patients.

However, it is important to note than none of the studies looked at insurance's relationship with physician communication. Instead, many studies focused on treatment and care received and had the same conclusion as Fenny and colleague's study. For example, Bolorunduro, Haider, Oyetunji, Khoury, Cubangbang, Haut, Greene, Chang, Cornwell III, and Siram (2013) determined that when controlling for age, sex, race, injury severity score, presence of shock, Glasgow Coma Scale motor score, cause of injury, intent of injury, present of severe pelvic or extremity injury, and year of admission, not only are uninsured respondents 75 percent more likely to die than insured patients, but they are also 32 percent less likely than insured patients to receive the same treatments for pelvic fractures, such as an abdominal CT. Similarly, Shi and Stevens (2007) found that when controlling for age, gender, race, poverty status, and education, Medicaid patients at community health clinics had an 87 percent chance of receiving counseling on smoking and drinking, whereas uninsured patients at community health clinics had a 72 percent chance of having the same experience. Some studies within the literature used variables that can serve as proxies for insurance. For instance, Chino, Peppercorn, Taylor, Lu, Samsa, Abernethy, and Zafar’s 2014 study focused on respondents’ financial burden rather than on insurance. Their research concluded that when controlling for age, income, and chemo treatment, presence of a financial burden is associated with respondents being unsatisfied with their care.

Educational Attainment

Throughout the past twenty years, researchers consistently find a strong relationship between education and patient experience (O’Malley et al., 2005; White-Means and Osmani, 2017; Zaslavsky et al., 2001). Studies have found that when controlling for other variables such as age and self-rated health, there is evidence that educational attainment has a negative relationship with patient experience. White-Means and Osmani’s (2017) study found that when controlling for socioeconomic status, insurance status, comorbidities and region of residence, respondents with a baccalaureate degree and respondents with a postbaccalaureate degree were 166 and 168 times less likely, respectively, to have doctors follow up with them after treatment, explain side effects of treatment, or explain the social effects of treatment, than respondents with a high school degree. White-Means and Osmani (2017) suggest that doctors provide less patient-centered communication to their more educated patients, specifically mentioning respondents with more educational attainment were less likely than less educated respondents to have doctors that discuss emotional needs. However, there could be more factors contributing to this finding than solely communication differences. Other researchers explain that respondents with more educational attainment tend to have more negative interactions with the healthcare system, such as being less satisfied with their medical plan, than their less educated counterparts (Zaslavsky et al., 2001).

Conclusion

After reviewing the literature, there appears to be consensus that patients' race and educational attainment have a relationship with their patient experience. More specifically, patients of color and patients with high educational attainment tend to have a more negative patient experience than their white and less educated counterparts. Another important factor in the patient experience is the healthcare system's historical bias against minorities and low-income patients, which reduces the trust patients have both in their physicians and the healthcare system overall. While the definition of patient experience varies amongst studies, researchers agree that physician communication and care received are important aspects of the concept. Table 1 below provides a summary of the definitions of patient experience within the literature as well as a summary of findings regarding the roles of race/ethnicity, insurance status, and education in respondents' patient experience and perception of discrimination.

Although there is information on the perception of insurance discrimination, there is limited literature on the relationship between insurance coverage and patient experience. There is also no California-specific research on this relationship using data after implementation of the ACA, nor after California reached its record-low uninsured rates. This is the gap in the literature I plan to address.

In this project, I plan to analyze the relationship between insurance coverage and patient experience through a regression using data from the 2016 California Health Interview Survey (CHIS). Chapter three explains the dataset I will be using, as well as my variables' operationalization and regression strategy.

Table 1: Literature Review Table				
Author	**Dependent Variables**	**Explanatory Variables**	**Control Variables**	**Findings**
Sommers, B. D., McMurtry, C. L., Blendon, R. J., Benson, J. M., & Sayde, J. M. (2017).	Self-reported quality of care [4 point scale, ranging from excellent, good, fair to poor], cost-related delays in care & emergency department use. (Overall, how would you rate the health care you receive?)	Ran 3 models of 2 separate regressions. One regression was for income and one was for race/ethnicity. Model 1 was unadjusted, Model 2 adjusted for health insurance and Model 3 included all covariates	age, sex, education, income, race/ethnicity (white, black, Latino, other), self-reported health status, status of residence, and health insurance	40% of income disparities in cost-related delays in care was explained by insurance. Low-income and minority groups were more likely than whites or high-income adults to say that the ACA helped them and that quality and affordability of care has improved.
Weech-Maldonado, R., Hall, A., Bryant, T., Jenkins, K. A., & Elliott, M. N. (2012)	National Consumer Assessments of Healthcare Providers and Systems (CAHPS) reports and ratings of care [10 questions measuring 4 domains of healthcare plan performance, all using a 4-point scale with 1 = never, 4 = always. These were transformed into a 100-point index with a high score indicating more positive perceptions of care]. The 4 domains were getting needed care, timeliness of care, communication with doctor, and health plan customer service.	Perceptions of racial or insurance coverage discrimination	sex, age, self-rated health, education	Black respondents are 202% more likely than white respondents to report racial discrimination. Patients reporting racial discrimination also rated patient experiences lower than those who did not report. Patients with an 8th grade education are 393% more likely than college graduates to report racial discrimination. Respondents who reported insurance discrimination also had lower average patient experience rating than those who did not report.

Table 1: Literature Review Table

Peck, B.M., and Conner, S. (2011)	Physician-dominated encounter. Operationalized by measuring ratios of patient communication patterns and physician communication patterns: patient biomedical information giving, patient psychosocial talk, patient question asking, physician biomedical information giving, physician psychosocial talk, physician question asking. Patient-centered encounters are defined by lower levels of biomedical talk and higher levels of psychosocial discussion.	Status characteristic differences between patient and physician, with a positive score indicating that the physician has a higher status and a larger score indicating a larger difference in that status. Race (white, non-white), gender, and socioeconomic status.	Age, income, health status and duration of the relationship	Almost half (43%) of the encounters were physician-centered and interactions were most physician-centered when doctors had higher race or gender status than patients. Race OR = 1.68
Weech-Maldonado, R., Elliott, M.N., Adams, J. L., Haviland, A. M., Klein, D. J., Hambarsoomian, K., Edwards, C., Dembosky, J. W., & Gaillot, S. (2015)	CAHPS and HEDIS measures for health plan performance. For CAHPS, it was getting needed care, getting care quickly, customer service, getting needed prescription drugs, and getting prescription drug information. For HEDIS, it was four diabetes care measures, two cancer screening measures, flu and pneumonia immunization, and one summary measure on monitoring patients who take 4 specific medications.	Race/ethnicity (white, black, Hispanic, Asian/Pacific Islander, other)	age, education, self-rated general health, self-rated mental health, proxy help	Found similar disparities in patient experience (CAHPS measures) and clinical performance (HEDIS measures) for a given racial/ethnic group. The biggest correlations between CAHPS and HEDIS measures disparities compared to whites are among Asian/Pacific Islander (r = 0.27) and Hispanics (r=0.219)
White-Means, S. I. and Osmani, A. R. (2017)	patient experience, using composite scores focusing on –whether 1-patient-provider interactions are respectful, 2-	Race/ethnicity (white, black and Hispanic)	age, marital status, education, insurance status, region of residence (northeast,	Hispanics' composite communication scores are 1.121 points lower than white respondents. For

Table 1: Literature Review Table

	providers are listening to patients, 3-providers provide adequate explanations of outcomes and treatment, and 4-providers spend adequate time in interacting with the Also looks at whether their doctor 1-ever discussed need for regular follow-up care and monitoring after completing treatment, 2-ever discussed long-term side effects of cancer treatment, 3-ever discussed emotional or social needs related to cancer, and 4-ever discussed lifestyle or health recommendations.		Midwest, south, west), comorbidities and income	Hispanics, the odds that their doctor will discuss the long-term side effects of their treatment in detail are 3.51 times higher than for whites. Adults with a college degree’s composite information sharing scores are 1.66 points lower than respondents with a high school education. Respondents with a post baccalaureate education's composite information sharing scores are 1.683 points lower than those with a high school education
Han, X., Call, K. T., Pintor, J. K., Alarcon-Espinoza, G., & Simon, A. B. (2015)	insurance-based discrimination [yes/no], and a qualitative gauge of how often these experiences occurred (sometimes, usually, always, never)	2 models: The first model's explanatory variable is insurance type (public, private, uninsured). The second model's explanatory variable is access to care—1. Lack of a usual source of care, 2. Lack of confidence in getting needed care, 3. Any care forgone because of cost, 4. Any provider-level barriers (yes/no).	gender, country of birth, age, race/ethnicity (white, Hispanic/Latino, Native American, Asian, black, other), household income, % of federal poverty guideline, education, marital status, employment status, self-reported health status	9.3% of respondents reported insurance-based discrimination. Uninsured adults were 5.75 times more likely to report insurance-based discrimination than privately insured adults. Publicly insured adults were 4.40 times more likely to report insurance-based discrimination than privately insured adults.
Ngo-Metzger, Q., Legedza, A. T. R., & Phillips, R. S. (2004)	Three regression models: 1. satisfaction with care received in last 2 years 2. How much trust respondent had in the doctor seen at the last visit 3.	race/ethnicity (white or Asian American), place of birth, length of time living in US, Asian ethnic subgroup, primary language at home,	age (<65 or >65), gender, income (<$50,000, >$50,000 or N/A), health status, marital status, access variables	Respondents who perceived that they were discriminated against based on their insurance status were 3.28 times more likely

Table 1: Literature Review Table

	Whether patients changed doctors or wanted to change doctors in the last 2 years because they were unsatisfied. Also looked at health care experiences in a model: if doctor a. spent enough time with them, b. treated them with respect, c. involved them in decisions about care. Respondents reported if they felt their doctors understood their background and values, and whether they have ever been judged unfairly because of the type of insurance they have, their English-language skills, their race/ethnicity, or gender.	education, health status, insurance status (yes/no), choice in place of care, racial concordance.		to change doctors than respondents who did not perceive insurance-based discrimination. Asians were 64% less likely than white respondents to say that they were very satisfied with their care.
Collins, R. L., Haas, A., Haviland, A. M., & Elliott, M. N. (2017)	Overall rating of health care, composite patient experience scores for: doctor communication, getting needed care, getting care quickly, customer service, and care coordination.	Race/ethnicity and language (white, Hispanic & English, Hispanic & Spanish, black, Asian/Pacific Islander, Native American, multiracial, other)	age, education, self-reported general and mental health rating, proxy status, health referral region, and dual eligibility for Medicare and Medicaid	Doctor communication had the strongest relationship with care ratings for non-Hispanic whites (r=0.23) and English-preferring Hispanics (r=0.22). Getting needed care had the strongest relationship for Asian/Pacific Islanders (r=0.17). Doctor communication and getting care quickly were strongest for African Americans (r=0.15)
Zaslavsky, A. M., Zaborski, L. B., Ding, L., Shaul, J. A., Cioffi,	Response on a survey item--health care rating. The NCQA survey used data from health	case-mix adjusters--current general health status, emotional well-being, age,	emotional status, general health status, age	Relationship between race and healthcare ratings was inconsistent in the data.

Table 1: Literature Review Table

M. J., & Clearly, P. D. (2001)	plans submitting HEDIS results. The Private Employer survey used the CAHPS adult core survey. The MHDI used a survey similar to the NCQA's Annual Member Health Care Survey. Washington State used the CAHPS adult core survey.	sex, race, education and income		There was no relationship with race in the NCQA data set. In MHDI and MCBS datasets, more educated respondents rated their care higher than those who were less educated. In the private employer and Washington datasets, those with more education tended to be less satisfied with their healthcare
Thorburn, S. and Marco, M. D. (2010)	perception of discrimination (asked about discrimination based on race, culture, English language ability, age, insurance status, neighborhood, religious beliefs, desire to have out-of-hospital birth)	race (Black, Native American/Alaska Native, Asian/Pacific Islander, Hispanic, white), topics covered during prenatal care, breastfeeding support actions, birth control support	income, type of care provider, homelessness, rural residence, education, marital status, mother’s age	Insurance-based discrimination is associated with various measures of prenatal care. Ex: women who reported insurance-based discrimination 21% less likely to receive more than average amount of breastfeeding support actions than women who did not report. Hispanic women are less likely to report insurance-based discrimination than white women
Chino, Peppercorn, Taylor, Lu, Samsa, Abernethy, and Zafar (2014)	Patient-reported financial burden	Two regressions: one IV is general satisfaction, one IV is technical quality of care	For general satisfaction regression: age, income, receiving chemo treatment. For technical quality regression: age, income, household size	Financial burden is negatively correlated with general satisfaction (r = -0.29) and with technical quality of care (r = -0.62)
Bolorunduro, Haider, Oyetunji, Khoury,	Diagnostic and therapeutic procedures administered	Insurance status [insured and uninsured]	Age, sex, race (white, black, Hispanic), injury	Uninsured patients 75% more likely to die than

Table 1: Literature Review Table

Cubangbang, Haut, Greene, Change, Cornwell III, & Siram (2013)			severity score, presence of shock, Glasgow Coma Scale motor score, cause of injury, intent of injury, presence of severe pelvic or extremity injury, year of admission	insured patients. Uninsured patients 32% less likely than insured to receive the same treatments

CHAPTER 3

DATA AND METHODS

Introduction

This chapter will explain my methodology for answering the question: What are the ways in which insurance type may or may not influence the experience that a patient has with their doctor? First, this chapter describes the California Health Interview Survey's (CHIS) methodology for collecting data. Secondly, I will describe the regression method my project uses to examine the CHIS dataset. Finally, I will describe the dependent, explanatory, and control variables I am using in the regression, as well as their expected effects on patient experience and perception of discrimination.

Data Source

I am using data from the CHIS 2016 Adult Questionnaire data to run my regression. The California Department of Public Health collaborates with the Department of Health Care Services and the University of California, Los Angeles Center for Health Policy Research to conduct CHIS. CHIS is a telephone survey that focuses on public health care access in California and is the largest statewide health survey in the United States. Researchers used random digit dialing to contact participants' cell phones and landlines between January and December 2016. The response rates for the 2016 Adult Questionnaire landline- and cell phone-based participants were 41.4 percent and 46.9 percent, respectively (California Health Interview Survey, 2017b). The landline response rate is lower than average but the cell phone response rate is sufficient, given that the average response rate for surveys is 52.7 percent (Baruch and Holtom, 2008).

Theoretical Model

As I explained in my literature review, besides insurance status, I expect a patient's race/ethnicity and educational attainment to influence how a patient evaluates their experience with a physician. I am including these variables in my regression, as well as variables related to respondents' sex, socioeconomic status, location, personal disposition, and age. The following theoretical model describes these regressions:

Patient experience = f (Socioeconomic Status, Insurance Status, Location, Personal Disposition);

where,

Socioeconomic Status= f(race/ethnicity, educational attainment, sex, age, income)

Regression

I am running multiple logistic regressions to assess the relationship between insurance status and perception of discrimination. Sperandei's (2014) article provides insight on logistic regression. I am using logistic regression because my dependent variable is binary and I can compare the effects of my explanatory variables to their reference variable. This regression technique removes the risk of confounding variables because it removes a variable to use as a reference rather than analyze all variables in the regression. The regression results in odds ratios, which measures the odds that an outcome will occur with an explanatory variable in comparison to the odds of that same outcome occurring with the reference variable. If the odds ratio equals 1, then there is no relationship between the two odds. However, if the odds ratio is less than 1, then the odds of the event occurring for the explanatory variable is less than it occurs for the reference variable. If odds ratio is over 1, then the odds of the event occurring for the explanatory variable is greater than it occurs for the reference variable.

Variables

Dependent Variables

My dependent variable is respondents' perception of discrimination. The CHIS question pertaining to perception of discrimination is "Over your entire lifetime, how often have you been treated unfairly when getting medical care?" I am using respondents' perception of discrimination as a proxy for their patient experience because patients' discrimination experiences are strongly related to their patient experiences (Lillie-Blanton et al., 2000; Ngo-Metzger et al., 2004; Thorburn and Marco, 2010; Weech-Maldonado et al., 2012). I define respondents' perception of discrimination based on their self-reported response, using "sometimes" and "often" as indicators of experiencing discrimination for use in the logistic regression. In my multinomial regression, I am using "never" as the base reference variable and "rarely", "sometimes" and "often" as the dependent variables.

Independent Variables

I have four categories of independent variables: socioeconomic status, insurance coverage, location, and personal disposition. Table 4 shows the correlation coefficient table for all my independent variables. A strong correlation between my independent variables can indicate multicollinearity. Multicollinearity is when two independent variables are highly correlated and can predict each other in regressions, skewing regression results. None of my correlation coefficients are above 0.8, indicating a low possibility of multicollinearity. I am also conducting a variance inflation factor test, which will also test for multicollinearity and will be discussed in chapter 4.

Socioeconomic status variables

Socioeconomic status variables include respondents' self-reported age, sex, race/ethnicity, educational attainment, and federal poverty guideline levels. All respondents are under 65 years old. Based on my review of the literature, I expect female respondents to have a positive effect on my discrimination variable and white respondents to have a negative effect. I predict that respondents in the highest federal poverty guideline group will have a negative effect on the dependent variable, but I am unsure about the other two groups. I am also unsure what to expect regarding educational attainment and age.

Insurance coverage variables

This set of variables pertains to respondents' self-reported insurance coverage. All the insurance categories are focusing on respondents under 65 years old. The insurance categories are public insurance and all other forms of insurance. The literature review explains that publicly insured patients tend to have worse patient experiences than privately insured patients but better experiences than uninsured patients, but I am unsure the effect of my variables because my reference variable is both privately insured and uninsured respondents.

Location variables

Location variables describe the location in which respondents reside. The location categories are all based on block groups, which are based on the Census Block. Block group location types include urban, 2nd city, suburban, and town/rural. “2nd City” refers to cities surrounding a large metropolitan city and are often large population cities. The literature review did not provide insight on the relationship between respondents’ locations and their patient experiences, so I am unsure what the effect will be.

Personal disposition variables

Personal disposition variables describe approximations of respondents’ personal disposition, which could impact their perception of their patient experience and discrimination. These variables include to what extent they trust their neighbors and if they volunteer in their community. However, these variables have a disposition against low income respondents and respondents of color (Musick, Wilson, & Bynum Jr., 2000; Smith, 2010). The literature review did not provide insight on the relationship between respondents’ personal dispositions and their patient experiences, so I am unsure what the effect will be.

Variable Information

I retrieved all my variables from the 2016 CHIS Adult Questionnaire. Table 2 illustrates the expected direction of my independent variables’ effects on my dependent variables. Because the effects are predicted to be the same for both dependent variables, this table applies to the effect on both patient experience and perception of discrimination. Variables that are labeled as dummy variables are valued 1 if true for a respondent and 0 if false. Due to the regression methods I am using, I need to exclude one variable from each variable group. Their effects are labeled "reference" to indicate that they are excluded from regressions.

Table 2: Expected Direction of Effect on Dependent Variable

Variable	**Description**	**Expected Effect**
Socioeconomic Status		
(Age 18-25)	Dummy variable, respondents ages 18-25	reference
Age 26-39	Dummy variable, respondents ages 26-39	?
Age 40-54	Dummy variable, respondents ages 40-54	?
Age 55-64	Dummy variable, respondents ages 55-64	?
(male)	Dummy variable, male respondents	reference
female	Dummy variable, female respondents	+
(Other race)	Dummy variable: self-reported "other race" respondents, including Hispanic, African American, Native American, and Asian	Reference
white, non-Hispanic	Dummy variable: self-reported white, non-Hispanic respondents	-
(Pre-Bachelor's education)	Dummy variable: respondents with no formal education, some high school education, some college education, an associate degree, and vocational degree	reference
Bachelor's degree+	Dummy variable: respondents with a bachelor's degree, master's degree and PhD	?
(FPG 0-138)	Respondents within 0-138% of Federal Poverty Guideline (dummy variable)	Reference
FPG 139-200	Respondents within 139-200% of Federal Poverty Guideline (dummy variable)	?
FPG 201-399	Respondents within 201-399% of Federal Poverty Guideline (dummy variable)	?
FPG 400+	Respondents over 400% of Federal Poverty Guideline (dummy variable)	-

Table 2: Expected Direction of Effect on Dependent Variable		
Location		
(Urban block group)	Respondents who live in urban area based on block group (dummy variable)	Reference
2nd city block group	Respondents who live in 2nd city area based on block group (dummy variable)	?
Suburban block group	Respondents who live in suburban area based on block group (dummy variable)	?
Town/rural block group	Respondents who live in a town or rural area based on block group (dummy variable)	?
Insurance Coverage		
(Non-public insurance coverage)	Respondents under 65 who have been private insurance or have been uninsured within the last year (dummy variable)	Reference
Medi-Cal coverage	Respondents under 65 who are insured through Medi-Cal (dummy variable)	?
Personal Disposition		
(Positive trust neighbors)	Respondents who strongly trust, trust, and distrust their neighbors (dummy variable)	Reference
Strongly distrust neighbors	Respondents strongly distrust their neighbors (dummy variable)	?
(Does not volunteer)	Respondents who do not volunteer in the community (dummy variable)	Reference
Volunteer	Respondents volunteer in community (dummy variable)	?

Descriptive Statistics

Table 3 illustrates my variables' descriptive statistics for my survey and weighted variables. The weighted variables estimate proportions for the California population. The following sections provide detailed information about the descriptive statistics. All variables except the patient experience variables have a minimum value of 0 and maximum value of 1. All means and standard deviations are percentages.

Table 3: Descriptive Statistics			
Variable	**Weighted Mean**	**Survey Mean**	**Survey Std. Dev.**
Dependent Variables			
Experience Discrimination	12.13	13.67	34.36
Explanatory Variables			
White	37.5	44.90	49.74
Age 26 - 39	30.78	22.2	41.56
Age 40 - 54	31.56	31.58	46.48
Age 55 - 64	19.7	31.18	46.32
Female	50.25	54.41	49.81
Bachelor+	37.69	36.52	48.15
FPG 139-200	11.26	11.29	31.65
FPG 201-399	23.16	21.75	41.25
FPG 400+	35.90	35.12	47.74
Block 2nd City	17.16	22.24	41.59
Block Suburb	22.1	20.18	40.14
Block Rural	10.53	20.05	40.04
Medi-Cal	25.05	27.36	44.58
Strongly Distrust Neighbors	3.02	3.32	17.92
Volunteer	10.86	12.06	32.57

Most survey participants are between 26 and 54 years old. Survey participants are about equally divided by sex, with female participants accounting for 54 percent of the survey population. Almost half (44 percent) of participants are white and 37 percent of respondents have at least a bachelor's degree. Thirty-five percent of survey participants have a federal poverty guideline level of at least 400. Within the block location variables, the largest category is urban, with 51 percent of survey respondents corresponding to this location. Twenty-seven percent of survey participants have public insurance. Three percent of respondents strongly distrust their neighbors, whereas 12 percent volunteer.

Chapter 4 will explain the results of my logistic and multinomial regressions. In explaining the regression results, I will also be describing the effects of the independent variables that I have predicted in Chapter 3. Additionally, I will explain the variance inflation test conducted to check for multicollinearity.

Table 4: Correlation Coefficients

	Age 26-39	Age 40-54	Age 55-64	Female	White	Bachelor+	FPG1	FPG2	FPG3	2nd City	Suburb	Rural	MediCal	Strongly Distrust Neighbors	Volunteer
Age 26-39	1														
Age 40-54	-0.36	1													
Age 55-64	-0.36	-0.46	1												
Female	-0.01	0.04	0.01	1											
White	-0.08	-0.01	0.17	-0.01	1										
Bachelor+	0.02	0.06	0.05	0.02	0.18	1									
FPG1	0.03	-0.04	-0.03	0	-0.06	-0.11	1								
FPG2	0.04	-0.01	-0.02	-0.01	0.01	-0.02	-0.19	1							
FPG3	-0.09	0.07	0.1	-0.06	0.2	0.39	-0.26	-0.39	1						
2nd City	0.03	-0.02	-0.02	0	0.01	-0.07	0.02	-0.02	-0.03	1					
Suburb	-0.04	0.02	0.02	0	0.06	0.11	-0.03	-0.01	0.13	-0.27	1				
Rural	-0.04	0	0.08	0.01	0.21	-0.07	0.02	0.02	-0.05	-0.27	-0.25	1			
MediCal	0.03	-0.01	-0.04	0.05	-0.17	-0.29	0.04	-0.11	-0.36	0.04	-0.1	0.01	1		
Strongly Distrust Neighbors	0.03	-0.01	-0.02	0.02	-0.01	-0.07	0.02	-0.01	-0.07	0	-0.03	0.01	0.09	1	
Volunteer	-0.03	0.02	0.02	0.03	0.03	0.12	-0.03	0	0.07	-0.03	0.03	0.05	-0.05	-0.01	1

CHAPTER 4

REGRESSION ANALYSIS

In this chapter, I will describe the test I conducted for multicollinearity, as well as explain the results of my logistic regression analyses analyzing the relationship between patient experience and insurance type.

Variance Inflation Factor

As previously mentioned in Chapter 3, I calculated my regression's variance inflation factor (VIF) to test for multicollinearity. Multicollinearity occurs when two explanatory variables are highly correlated and can make it difficult to predict each variable's effect on the dependent variable (SAS Institute). VIFs with a value of at least 5 suggest the presence of multicollinearity. All my VIF values were below 5, indicating that multicollinearity is not present in my analysis. Table 5 presents my explanatory variables' VIF values.

Table 5: VIF Values

Variable	**VIF**
White	1.18
Female	1.02
Age 26 - 39	1.97
Age 40 - 54	2.21
Age 55 - 64	2.24
Bachelor's +	1.29
Volunteer	1.02
Public Insurance	1.33
Strongly Distrust Neighbors	1.01
2nd City	1.27
Suburb	1.27
Rural	1.35
FPG 139 – 200	1.24
FPG 201 - 399	1.51
FPG 400+	2.01

Regression results

Tables 6 and 7 display the results of my logistic regressions. Because my regressions are two-tailed tests, any probability equal to or less than 0.1 is considered statistically significant with a 90 percent degree of confidence that the detected effect is different than zero. To better understand the meaning of the reported odds ratios in Tables 6 and 7, subtract the odds ratio values by one and then multiply by 100. For example, those with public insurance are 55.1 percent more likely to report unfair medical treatment than those that are uninsured or have private insurance, with all other variables held constant.

Insurance

Publicly insured individuals are more likely to report experiencing discrimination than the uninsured or privately insured, as well as report experiencing discrimination more often. With all other variables held constant, publicly insured individuals are 63.5% more likely to often experience discrimination, 55.1% more likely to often and sometimes experience discrimination, and 45.4% more likely to report that they often, sometimes, or rarely experience discrimination than their uninsured or privately insured counterparts. Similarly, publicly insured individuals are 31.2% less likely to say that they never experience discrimination and are 35.5% less likely to report never or rarely experiencing discrimination than the privately insured or uninsured.

Socioeconomic Status

In almost all regressions, sex is a predictor of patient experience. Females have an odds ratio of 1.228 in the first logistic regression, meaning that females are 22.8 percent more likely to report experiencing unfair medical treatment than men when all other variables are held constant. Females are 22.8 percent more likely than males to report that they often or sometimes experience discrimination and are 48.2 percent more likely to report that they often, sometimes, or rarely experience discrimination. Additionally, they are on average 32.5 percent less likely than men to report never experiencing discrimination. This contrasts with the literature, in that sex is typically not a predictor of patient experience (Zaslavsky et al., 2001; O'Malley et al., 2005).

Age is also a predictor of patient experience. Individuals ages 26 to 39, 40 to 54, and 55 to 64 are 49.1 percent, 75.2 percent, and 85.6 percent, respectively, more likely to report experiencing unfair medical treatment than individuals ages 18 to 25 with all other variables held constant. This is opposite Zaslavsky and colleagues' 2001 study, in which older adults reported higher satisfaction ratings with their experiences than younger respondents. Adults in the oldest age category are 51.9 percent more likely than 18 to 25 year olds to report that they often or sometimes experience discrimination, whereas adults ages 26 to 39 and adults 40 to 54 are 49.1 and 75.2 percent, respectively, more likely than 18 to 25 year olds to report the same frequency of discrimination. Similarly, adults between 55 and 64 years old are 40.1 percent less likely than 18 to 25 year olds, on average, to report never experiencing discrimination. Adults between 26 and 39 are 32.3 percent less likely than 18 to 25 year olds to report never experiencing discrimination, and adults 40 to 54 are 33.1 percent less likely to report never experiencing discrimination.

Income is not a constant predictor for patient experience because its statistical significance is not present in both regressions. Individuals that are 139 to 200, 201 to 399, and at least 400 percent above the federal poverty guideline are 31.2 percent, 32.7 percent, and 51.4 percent less likely than individuals within 1 to 138 percent of the federal poverty guideline to report experiencing unfair medical treatment, with all other variables held constant. Individuals within 139-200 percent above the federal poverty guideline are 60.4 percent less likely than individuals in the lowest income group to report that they often experience discrimination. Similarly, individuals that are over 400 percent above the federal poverty guideline are 53.1 percent more likely than those in the lowest income group to report that they never experience discrimination. This aligns with the literature, since many studies find that lower-income individuals report lower patient experience ratings than higher-income individuals (Sommers et al., 2017).

Personal Disposition

The logistic regression results indicated that individuals who volunteer are 68.1 percent more likely to report experiencing unfair medical treatment than those who do not volunteer with all other variables held constant. Individuals who volunteer are 63.9 percent more likely to report that they often, sometimes or rarely experience discrimination than those who do not volunteer. Additionally, volunteers are 39.1 percent less likely than non-volunteers to report that they never experience discrimination, with all other variables held constant.

Similarly, individuals who strongly distrust their neighbors are 115.1 percent more likely than those who trust their neighbors to report experiencing unfair medical treatment with all other variables held constant. Individuals who strongly distrust their neighbors are 48.5 percent less likely to report that they never experience discrimination than individuals who trust their neighbors.

Location

Consistent with the literature, people living in a second city are 45.8 percent more likely than those living in urban areas to report unfair medical treatment, with all variables held constant (Zaslavsky et al., 2001). Individuals living in a second city are 21.1 percent less likely to report never experiencing discrimination than those living in urban cities. This result contrasts with the literature, given that people living in urban areas are typically less likely to report unfair medical treatment than those living in less urban environments (Zaslavsky et al., 2001).

Table 6: Logistic Regression Results			
Variable	**Odds Ratio**	**(Odds Ratio-1)*100**	**P > t**
Public Insurance	1.551 *(0.28)*	55.1	0.02**
Socioeconomic Status			
White	0.912 *(0.15)*	-8.8	0.59
Female	1.228 *(0.12)*	22.8	0.04**
Bachelor+	1.020 *(0.16)*	2	0.89
Age 26-39	1.491 *(0.31)*	49.1	0.06*
Age 40-54	1.752 *(0.36)*	75.2	0.01***
Age 55-64	1.856 *(0.35)*	85.6	0.00***
FPG 139-200	0.688 *(0.14)*	-31.2	0.07*
FPG 210-399	0.673 *(0.16)*	-32.7	0.10*
FPG 400+	0.486 *(0.09)*	-51.4	0.00***
Personal Disposition			
Volunteer	1.681 *(0.25)*	68.1	0.00***
Strongly Distrust Neighbors	2.151 *(0.68)*	115.1	0.02**
Location			
2nd City	1.458 *(0.28)*	45.8	0.05**
Suburb	1.186 *(0.17)*	18.6	0.25
Rural	1.326 *(0.27)*	32.6	0.17
Statistical significance in a two-tailed test: * = 90-94.9% confidence, ** = 95-98.9% confidence, *** = 99% confidence			

Table 7: Logistic Regression Results for Frequency of Discrimination

	Often	Often & Sometimes	Often, Sometimes & Rarely	Never	Never & Rarely
Public Insurance	1.635 *(0.69)*	1.551*** *(0.28)*	1.454*** *(0.19)*	0.688*** *(0.09)*	0.645** *(0.12)*
Socioeconomic Status					
White	0.916 *(0.36)*	0.912 *(0.15)*	0.976 *(0.09)*	1.024 *(0.09)*	1.096 *(0.18)*
Female	1.08 *(0.30)*	1.228** *(0.12)*	1.482*** *(0.12)*	0.675*** *(0.05)*	0.814** *(0.08)*
Bachelor+	0.792 *(0.28)*	1.02 *(0.16)*	1.169 *(0.15)*	0.856 *(0.11)*	0.980 *(0.15)*
Age 26-39	1.017 *(0.46)*	1.491* *(0.31)*	1.476** *(0.26)*	0.677** *(0.12)*	0.671* *(0.14)*
Age 40-54	1.518 *(0.74)*	1.752*** *(0.36)*	1.494** *(0.26)*	0.669** *(0.12)*	0.571*** *(0.12)*
Age 55-64	1.519 *(0.83)*	1.856*** *(0.35)*	1.667*** *(0.28)*	0.599*** *(0.09)*	0.539*** *(0.10)*
FPG 139-200	0.396** *(0.18)*	0.688* *(0.14)*	0.814 *(0.14)*	1.229 *(0.21)*	1.452* *(0.29)*
FPG 210-399	0.62 *(0.37)*	0.673 *(0.16)*	0.965 *(0.15)*	1.036 *(0.16)*	1.485 *(0.36)*
FPG 400+	0.415* *(0.19)*	0.486*** *(0.09)*	0.653*** *(0.09)*	1.531*** *(0.23)*	2.056*** *(0.39)*
Personal Disposition					
Volunteer	1.427 *(0.49)*	1.681*** *(0.25)*	1.639*** *(0.19)*	0.609*** *(0.07)*	0.595*** *(0.09)*
Strongly Distrust Neighbors	4.221*** *(1.85)*	2.151*** *(0.68)*	1.943** *(0.56)*	0.515** *(0.15)*	0.465** *(0.15)*
Location					
2nd City	1.549 *(0.60)*	1.458** *(0.28)*	1.266* *(0.16)*	0.789** *(0.10)*	0.686** *(0.13)*
Suburb	1.031 *(0.45)*	1.186 *(0.17)*	1.063 *(0.13)*	0.941 *(0.11)*	0.843 *(0.12)*
Rural	1.708 *(0.77)*	1.326 *(0.27)*	1.182 *(0.19)*	0.845 *(0.13)*	0.75 *(0.15)*

Statistical significance in a two-tailed test: * = 90-94.9% confidence, ** = 95-98.9% confidence, *** = 99% confidence

CHAPTER 5

FINDINGS AND RECOMMENDATIONS

This thesis explored the relationship between the type of insurance a patient has and their opinion on experiences with their doctor(s). The regression results suggest that health insurance does have a relationship with patient experience. In this chapter, I will explain the policy implications from my regression analysis, my policy expert interview methodology, and the results of these interviews. I conclude with a discussion of my study's limitations and provide recommendations for future research.

Policy Implications from Regression Analysis

Health Insurance

Publicly insured individuals are more likely to report experiencing discrimination than the uninsured and privately insured, and they are also more likely to report these experiences at a higher frequency compared to the uninsured and privately insured. This points to the policy concern that that publicly insured patients are having worse patient experiences than the uninsured and privately insured, which indicates the possible existence of insurance-based discrimination in the healthcare system. If this is the case, what should and/or can be done about it?

Addressing Social Determinants of Health

As explained in my introductory chapter, one's socioeconomic status, housing, and level of community engagement are social determinants of health (Orgera and Artiga, 2018). In the regression analysis completed here, these factors were also used as explanatory variables necessary to isolate the independent effect of holding public insurance on perceived doctor discrimination in the delivery of health care. In addition, explanatory variables were included in the regression to help account for a patient's personal disposition variables toward community engagement, in that they measure a respondent's feelings towards their community and if respondents volunteer in their community. In addition to the primary finding that those who utilize public insurance are more likely to perceive physician discrimination, many of the regression findings related to the additional "control" explanatory variables align with earlier findings discussed in the previous literature review. For instance, sex, income, and age are predictors of patient experience in my regressions, as are both personal disposition variables. My regressions demonstrated that respondents who are female, low income, or at least 55 years old perceive greater discrimination than the base categories, which could indicate that hospitals should implement more cultural competency and sensitivity training to address these factors.

Policy Implications from Research

As state and federal policies continue to address patient experience, much of the conversation revolves around the healthcare system's role in patient experience and how authorities can ensure the healthcare system actively improves their patients' experiences. One potential policy reform includes hospitals addressing social determinants of health to improve both patient outcomes and experiences. Another policy recommendation is reforming Medicare’s P4P programs. The following section will describe these ideas in further detail.

Hospitals’ Role in Addressing Social Determinants of Health

Hospitals could take a more active role in addressing patients’ social determinants of health. For example, the American Medical Association recommends that hospitals offer resources that could assist low-income patients, such as providing a food pantry and circulating information for public transit vouchers (Bennett, Brown, Green, Hall, and Winkler, 2018). Therefore, state and local governments should consider funding hospitals to better address social determinants of health through providing more resources and implementing more cultural competency and sensitivity training. Another policy intervention recommendation is that policymakers could expand their focus when discussing patient experience. For example, policymakers could increase funding in social services to address these social determinants of health to address health disparities and in turn patient experience (Sommers et al., 2017).

Pay for Performance Programs

As previously discussed, the ACA created financial incentives for physicians and hospitals based on CAHPS results (Agency for Healthcare Research and Quality, 2018). Research indicates that these Pay for Performance programs, often referred to as P4P programs, can improve health care quality including patient experience. Many Medi-Cal plans currently have P4P programs but there is no statewide Medi-Cal P4P program (Lally and Yegian, 2015). P4P program effectiveness varies based on a variety of factors.

One practice that could improve patient experience is mandating that Medi-Cal P4P program leaders actively engage patient advocates when designing, implementing, evaluating and updating P4P programs. Additionally, policymakers should ensure that the financial incentives for Medi-Cal P4P programs are significant enough to effectively incentivize hospitals and physicians to improve their CAHPS scores or maintain their high ratings (Taylor, 2015). By engaging patient advocates throughout the Medi-Cal P4P program process, policymakers can actively address patient concerns and minimize the impact of the healthcare industry's historical biases. Physicians and hospitals may also be more willing to listen to patient advocates' viewpoint if they have appropriate incentives. This is especially important given that publicly insured patients are facing potentially discriminatory experiences when interacting with the healthcare system. Another policy implication is the potential need for a statewide Medi-Cal P4P program to address healthcare quality disparities across Medi-Cal programs.

Interviewee Perspectives on Policy Implications

I conducted semi-structured interviews with a small number of policy experts representing health policy analysts and a state agency that analyzes CAHPS scores and interacts with healthcare providers. In these interviews, we discussed topics related to the policy implications from my regression analysis and research. I began each conversation by asking their perception on the prevalence of insurance-based discrimination. I also asked their opinion on P4P programs, as well as their recommendations for how to address insurance-based discrimination. Finally, I provided interviewees with policy implications from my analysis and asked for their input. I conducted every interview over the phone and recorded each conversation. The following perspectives emerged from my interviews.

Prevalence of Discrimination

I received tentative answers when I asked about the prevalence of insurance-based discrimination. One tension I identified in my interviews related to policy experts' perception of available data on the prevalence of insurance discrimination. Not only did two interviewees say they do not have enough data to understand how widespread insurance-based discrimination is, but they also reported not knowing the degree to which a physician supply issue exists. While one interviewee provided various recommendations for potential policy interventions to address discrimination, the other two interviewees explained that they were hesitant to provide input on recommendations due to the lack of available data on the subject. However, they provided preliminary recommendations based on the assumption that insurance-based discrimination is a widespread problem. Therefore, one policy implication is that policymakers could invest more funds into researching this issue so they have a baseline for intervention recommendations.

Opinion on P4P Programs

Three of my interviews focused on discussing interviewees' opinions on P4P programs. This brought to light another tension related to interviewees' perception of incentives' and oversight's impact on P4Ps. All interviewees listed financial incentives for medical groups as a potentially effective intervention, but their other suggestions varied greatly. For example, two experts recommended strengthening oversight of managed care plans rather than offering more incentives. However, one interviewee suggested that some medical groups are already taking an active role in improving patient experience scores due to the influence of the CAHPS and HEDIS surveys. This interviewee explained that some medical groups already reach out to organizations that review these surveys, asking how to improve their scores and wanting a technical understanding of how reviewers measure the surveys. Therefore, this interviewee suggested that incentives could be more effective than increased oversight, given the medical groups' interest in improving their scores.

Policy Recommendations

Many of my interviewees shared a concern that past and current interventions to improve patient experience have not been evaluated. All interviewees expressed a desire to improve patients' access to providers but reported being unaware of whether the current interventions are working effectively. Therefore, all interviewees recommended evaluating the current interventions before implementing any other reforms. However, they also acknowledged that evaluations should not be implemented during a programs' first few years, so these interventions require a long-term investment.

Future Research

Future research should focus on evaluating the effectiveness of previous and current interventions, such as loan forgiveness programs and P4Ps. Policymakers have implemented various interventions to address healthcare quality, but it is unknown which of these policies are effective, if any. Additionally, I recommend future research assess if any participating medical groups' CAHPS and HEDIS scores have improved since becoming more involved in the technical grading process. These results could indicate which intervention would be more effective, financial incentives or increased oversight.

Additionally, future research could explore how hospital staffs' trainings are impacting patients' experiences. For example, future research could assess the impact of cultural competency training for Medi-Cal patients' experiences. Given that many hospitals currently implement cultural competency training based on patients' race, ethnicity, sex and age, researchers could analyze if any of these trainings improve Medi-Cal patients' CAHPS scores or if hospitals should create cultural competency training aimed specifically at Medi-Cal patients.

Another possible topic for future research is assessing the feasibility of implementing a statewide Medi-Cal P4P program. If implemented correctly, a statewide program could mitigate discrepancies in healthcare quality throughout California Medi-Cal programs. However, the current system could also lack the necessary training or infrastructure to implement such a program; administrative capacity would need to be assessed before restructuring this aspect of the healthcare system. Additionally, this topic should be explored after P4P programs are evaluated to ensure that the healthcare system is using state funds effectively.

Conclusion

This concluding chapter of my thesis presented my recommendations based on my literature review, regression analyses, and interviews. Given that patient experience is a relatively new area of research in healthcare literature, I am hopeful that my work has provided a contribution to the discussion. As the body of literature on patient experience continues to grow, the information within my thesis can be a reference for future research and analysis.

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