

# Racial Discrimination in Health Care and Utilization of Health Care: a Cross-sectional Study of California Adults

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**BACKGROUND:** Racial and ethnic discrimination in health care have been associated with suboptimal use of health care. However, limited research has examined how facets of health care utilization influence, and are influenced by, discrimination.

**OBJECTIVE:** This study aimed to determine if type of insurance coverage and location of usual source of care used were associated with perceptions of racial or ethnic discrimination in health care. Additionally, this study examined if perceived racial or ethnic discrimination influenced delaying or forgoing prescriptions or medical care.

**DESIGN:** Data from the 2015–2016 California Health Interview Survey were used. Logistic regression models estimated odds of perceiving racial or ethnic discrimination from insurance type and location of usual source of care. Logistic regression models estimated odds of delaying or forgoing medical care or prescriptions.

**PARTICIPANTS:** Responses for 39,171 adults aged 18 and over were used.

**MAIN MEASURES:** Key health care utilization variables were as follows: current insurance coverage, location of usual source of care, delaying or forgoing medical care, and delaying or forgoing prescriptions. We examined if these effects differed by race. Ever experiencing racial or ethnic discrimination in the health care setting functioned as a dependent and independent variable in analyses.

**KEY RESULTS:** When insurance type and location of care were included in the same model, only the former was associated with perceived discrimination. Specifically, those with Medicaid had 66% higher odds of perceiving discrimination, relative to those with employer-sponsored coverage (AOR = 1.66; 95% CI 1.11, 2.47). Race did not moderate the impact of discrimination. Perceived discrimination was associated with higher odds of delaying or forgoing both prescriptions (AOR = 1.97; 95% CI 1.26, 3.09) and medical care (AOR = 1.84; 95% CI 1.31, 2.59).

**CONCLUSIONS:** Health care providers have an opportunity to improve the experiences of their patients, particularly those with publicly sponsored coverage.

**KEY WORDS:** health insurance; race; discrimination; health care utilization.

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## INTRODUCTION

Experiencing or perceiving racial or ethnic discrimination is associated with negative health consequences, including mortality, mental illness, cancer, hypertension, cardiovascular disease, obesity, and risky health behaviors.<sup>1–6</sup> Reasons for these associations are multifaceted and involve cognitive, emotional, and biological processes.<sup>7</sup> Consequently, it is unsurprising that discrimination among minority groups is one of the reasons for the enduring patterns of racial and ethnic health disparities in the United States (US).<sup>8</sup>

Racial discrimination can impact health by leading to suboptimal use of health care.<sup>9</sup> Experiences of discrimination in the health care setting negatively impact the use of a variety of health services, including cancer screening,<sup>10</sup> pharmacy services,<sup>11</sup> and needed medical and mental health care.<sup>12</sup> Those who report racial or ethnic discrimination in health care are more likely to delay filling a prescription, but not more likely to delay obtaining medical care, relative to those not reporting discrimination.<sup>11</sup> Similarly, experiences of discrimination outside of the health care setting are associated with suboptimal use of health care.<sup>13</sup> Collectively, the negative impact of discrimination is not surprising when considering that individuals reporting discrimination in health care also report higher rates of problems with the care they receive than those who do not,<sup>14</sup> creating disincentives for continued use of care.

Previous experiences of racial discrimination erode trust in the health care system<sup>11</sup> and thus shape or discourage future interactions with the health care system. Overall, racial minorities have lower trust in the health care system, relative to non-Latino whites.<sup>15</sup> Extant research has shown that many different racial minority groups report higher rates of discrimination in the health care setting, than do non-Latino whites, even after accounting for a variety of confounders.<sup>16–19</sup> These patterns of discrimination are important because they account for racial differences in perceived quality of health care between blacks and whites<sup>20</sup> and differences in provider trust<sup>21</sup> suggesting that experiences of discrimination play a major role in the subjective evaluation of one's health care. Furthermore, those with previous experiences of racial discrimination have greater apprehension with providing race/ethnicity information to hospital staff,<sup>22</sup> thus potentially undermining our

understanding of racial and ethnic health disparities by hindering the collection of needed data. Given the importance of discrimination and utilization of health care, the present study had three overall objectives: (1) Examine which characteristics of health care utilization (particularly insurance type and location of usual source of care) are associated with perceiving discrimination in health care; (2) determine if these associations vary by race; and (3) examine if perceiving discrimination is associated with delays in receiving needed medical care.

Exposure to discrimination in health care varies by factors outside of race and ethnicity. For example, those who get their health care in a setting that is not a doctor's office (i.e., clinic, emergency room, etc.) are more likely to report discrimination in health care, relative to those receiving care in a doctor's office.<sup>23</sup> However, this research has not specifically examined how emergency room usage impacts reports of discrimination, since it categorized it with other sources of care. Additionally, there is a paucity of research examining how insurance type can impact exposure to racial and ethnic discrimination in health care. This is crucial as the Patient Protection and Affordable Care Act (ACA) has increased the percent of Americans with health insurance<sup>24</sup> through various mechanisms. In particular, Medicaid expansion extended eligibility to more Americans by expanding income eligibility thresholds and eliminating other barriers, and the ACA insurance exchanges allowed Americans to buy private insurance plans with the help of government subsidies.<sup>25–27</sup> However, changes to insurance offerings and coverage introduced by the ACA did not eliminate disparities in access to care by insurance type.<sup>28</sup> For example, one recent study noted the varying size of insurance plans under the law, and found that Latinos were disproportionately in narrower plans with less choice of providers.<sup>29</sup> Thus, the changing menu of insurance options and influx of newly insured patients into the health care setting make it important to determine how insurance type is associated with experiences of racial or ethnic discrimination in health care.

This study examined the California context, which is a racially diverse state and had a more generous expansion of Medicaid eligibility than other states.<sup>30</sup> Furthermore, there is mixed evidence on the ACA's ability to attenuate racial and ethnic disparities in health care utilization, suggesting considerable barriers to equitable care remain.<sup>31, 32</sup> As such, differences in perceived racial or ethnic discrimination of health care by insurance type or location of health care can reflect both differences in the populations served (in terms of their prior history with discrimination) and the quality of care they are receiving in the ACA era, both of which are important questions to consider when evaluating the quality of and access to health care. Finally, examining how perceived discrimination impacts the use of health care services can help us understand the extent to which these remained a barrier prior to any repeal of ACA provisions.

## METHODS

### Data Source

Data come from the 2015 and 2016 Adult California Health Interview Survey (CHIS). This annual telephone survey is administered to adults (18 and over), residing in households.<sup>33</sup> Respondents were obtained using random-digit dial of both cellphones and landlines as well as Korean and Japanese surname lists.<sup>33</sup> Surveys were administered in English, Cantonese, Korean, Mandarin, Spanish, Tagalog, and Vietnamese. Missing data for most variables was imputed by CHIS researchers.<sup>33</sup> A total of 42,089 respondents completed the CHIS. After excluding cases with missing data (i.e., missing in error, do not know, or refused) on any study variable, 41,950 respondents remained. The study was further restricted to the 39,171 who were currently insured. Of these, 132 interviews were completed by proxies on behalf of the respondent. The remaining interviews were completed by respondents.

### Variables

Two independent variables captured characteristics of a respondent's health care utilization. The first consisted of the respondent's current type of health insurance coverage. Types of insurance consisted of the following: (1) employer-sponsored coverage; (2) private insurance coverage purchased through Covered California (i.e., the health insurance exchange in California); (3) private insurance coverage not purchased through Covered California (i.e., the open-market/off-exchange); (4) Medicaid; (5) Medicare and Medicaid in combination; (6) Medicare alone or in combination with any other non-Medicaid insurance; and (7) other publically funded insurance programs. While employer-sponsored coverage is a type of private insurance, we separate it from privately purchased coverage obtained through the individual market, because different categories of private insurance coverage have been shown to differentially impact access to health care.<sup>28</sup> Employer-sponsored coverage served as the reference category in analyses because this insurance type is associated with fewer barriers to health care and is the most common insurance type among Californians.<sup>28</sup> The second variable captured where the respondent went for their usual source of health care. This was coded into five categories: (1) doctor's office, HMO, or Kaiser; (2) no usual source of care; (3) clinic, health center, or hospital clinic; (4) emergency room; or (5) other place or no one place.

Two dependent variables measured inability to get needed health care. The first was a dichotomous measure indicating if the respondent had delayed or forgone needed prescription drugs in the past 12 months for a reason other than costs or lack of insurance. The second was a dichotomous measure indicating if the respondent had delayed or forgone needed medical care in the past 12 months for a reason other than costs or lack of insurance.

Perceived racial or ethnic discrimination in health care functioned as an independent and dependent variable in analyses. Respondents were asked, "Was there ever a time when

you would have gotten better medical care if you had belonged to a different race or ethnic group?" Respondents who answered in the affirmative were coded as having perceived racial or ethnic discrimination. This coding scheme is consistent with previous research using the CHIS.<sup>17, 20</sup>

Several variables were included in multivariate analyses as potential confounders. Gender, educational attainment (bachelor's degree or above versus less than bachelor's degree), limited English proficiency (yes versus no) health status (excellent, very good, or good versus fair or poor), lifetime diagnoses of a chronic health condition (yes or no), and urban or rural residence were measured as dichotomous indicators. Lifetime diagnoses of chronic health condition was based on whether or not the respondent reported ever being diagnosed with asthma, diabetes, high blood pressure, or heart disease. Race/ethnicity (white, Latino, black, Asian, and other), citizenship status (US-born citizen, naturalized citizen, or non-citizen), age (18–29, 30–39, 40–49, 50–59, 60–69, or 70 and over), and income as a percent of the federal poverty level (FPL; 0–138%, 139–249%, 250–399%, and 400% or higher) were measured using categorical variables.

## Analyses

All analyses were conducted in Stata 14.2 and made use of jackknife replicate weights to yield robust standard errors and ensure estimates were representative of the underlying population. Univariate statistics were calculated for each of the study subsamples. Then, chi-squared tests were used to determine if the distribution of sample characteristic differed by perceived discrimination. Logistic regressions were used to calculate odds of reporting perceived discrimination, while accounting for potential confounders. In these models, insurance type and location of usual source of health care functioned as the independent variables. The variables were included in separate models, and then included in one model simultaneously. Post hoc tests examined differences between plans purchased through Covered California and those purchased off-exchange. In order to determine if any of these factors were dependent on respondent race, an interaction term between each independent variable and race was tested. Because no interaction terms were significant, only the summary of the test for interaction is presented.

Finally, logistic regression models were used to calculate odds of delaying or forgoing prescriptions or medical care in the past 12 months. In these models, perceived discrimination was the independent variable and all control variables, insurance type, and location of usual source of health care were accounted for.

## RESULTS

Table 1 shows the sample characteristics. Over 6% of respondents perceived racial or ethnic discrimination in healthcare. The plurality of respondents had health insurance coverage

through their employers. The plurality of respondents were non-Latino white, between the ages of 18 and 29, lived in households at or above 400% of the FPL, and had not been diagnosed with a chronic health condition or were in good health. The majority of respondents were US-born, proficient in English, female, had less than a bachelor's degree, or resided in an urban area.

Table 1 also shows the distribution of sample characteristics, by perceived discrimination. Insurance type, delaying or forgoing prescriptions, location of usual source of care, race/ethnicity, citizenship status, English proficiency, age, household income, urban or rural residence, and health status were each associated with perceiving racial or ethnic discrimination in health care.

Table 2 shows the odds of perceiving discrimination in health care. In model 1, those with Medicaid (AOR = 1.71; 95% CI 1.19, 2.60), Medicare and Medicaid (AOR = 1.83; 95% CI 1.06, 3.17), and Medicare alone or with other insurance (AOR = 1.72; 95% CI 1.02, 2.92) had higher odds of perceiving discrimination, relative to those with employer-sponsored coverage. In post hoc tests (not shown), those with private coverage purchased through Covered California did not differ in their odds of perceiving discrimination, when compared to those with private coverage purchased off-exchange (AOR = 2.01; 95% CI 0.76, 5.33). The interaction with race was not significant ( $p = 0.0635$ ). In model 2, reporting the emergency room as one's usual source of health care was associated with twice the odds of perceiving discrimination, relative to those with employer-sponsored coverage (AOR = 1.91; 95% CI 1.07, 3.42). The interaction with race was not significant ( $p = 0.6541$ ). In model 3, those with Medicaid (AOR = 1.66; 95% CI 1.11, 2.47), Medicare and Medicaid (AOR = 1.80; 95% CI 1.03, 3.14), and Medicare alone or with other insurance (AOR = 1.71; 95% CI 1.01, 2.89) had higher odds of perceiving discrimination, relative to those with employer-sponsored coverage. Location of usual source of care was not associated with discrimination in this model.

Table 3 shows the odds of delaying or forgoing prescriptions or medical care in the past 12 months, for reasons other than being uninsured or costs. Perceiving racial or ethnic discrimination in health care was associated with nearly twice the odds of delaying or forgoing prescriptions (AOR = 1.97; 95% CI 1.26, 3.09) and 84% higher odds of delaying or forgoing medical care (AOR = 1.84; 95% CI 1.31, 2.59) in the past 12 months.

## DISCUSSION

The present study highlighted important disparities in perceiving discrimination in health care. Consistent with previous work, non-whites are far more likely to report discrimination in health care.<sup>16–19</sup> Also, consistent with a prior study in California,<sup>23</sup> the location of usual source of health care is associated with perceived racial or ethnic discrimination in

Table 1 Sample Characteristics, CHIS 2015–2016 (N=39,171)

	All respondents			Experienced discrimination in health care				P value chi-squared
	N	%	SE	No		Yes		
				%	SE	%	SE	
Perceived racial or ethnic discrimination in health care								
No	37,022	93.7	0.28	–	–	–	–	
Yes	2149	6.3	0.28	–	–	–	–	
Type of insurance coverage								< .0001
Employer-sponsored coverage	13,420	46.14	0.54	46.51	0.56	40.64	2.47	
Medicaid	7108	24.45	0.53	23.41	0.53	39.94	2.74	
Private coverage, Covered California	1167	3.43	0.27	3.47	0.29	2.83	0.80	
Private coverage, off-exchange	1340	4.07	0.27	4.19	0.28	2.27	0.78	
Medicare and Medicaid	3649	6.04	0.22	6	0.22	6.56	1.36	
Medicare alone or with other insurance	12,004	14.41	0.21	14.93	0.24	6.71	0.99	
Other public-sponsored coverage	483	1.46	0.16	1.49	0.17	1.06	0.45	
Delayed or did not get needed prescription in past 12 months								0.019
No	36,793	93.97	0.27	94.18	0.28	90.97	1.58	
Yes	2378	6.03	0.27	5.82	0.28	9.03	1.58	
Delayed or did not get needed medical care in past 12 months								0.1204
No	36,296	92.72	0.37	92.85	0.39	90.88	0.13	
Yes	2875	7.28	0.37	7.15	0.39	9.12	0.13	
Location of usual source of care								0.0101
Doctor's office, HMO, or Kaiser	24,758	57.88	0.55	58.48	0.56	48.9	2.72	
No usual source of care	3553	12.5	0.39	12.34	0.39	14.91	2.06	
Clinic or health center	9927	26.88	0.5	26.53	0.5	32.21	2.48	
Emergency room	508	1.62	0.19	1.56	0.19	2.42	0.58	
Other or no one place	425	1.12	0.15	1.09	0.15	1.56	0.72	
Race/ethnicity								< .0001
White	22,720	43.94	0.24	46.01	0.33	13.23	0.24	
Latino	8755	32.39	0.29	31.6	0.36	44.13	0.29	
Black	2119	5.8	0.07	4.87	0.13	19.55	1.69	
Asian	4112	14.72	0.15	14.56	0.21	17.09	2.04	
Other	1465	3.15	0.08	2.96	0.1	6	0.95	
Citizenship status								0.0001
US-born citizen	30,053	68.38	0.44	69.01	0.5	59.04	2.26	
Naturalized citizen	5890	18.31	0.48	17.94	0.5	23.87	2.01	
Non-citizen	3228	13.31	0.45	13.06	0.46	17.1	1.71	
Limited English proficiency								0.0076
No	32,221	76.04	0.51	76.44	0.52	70.12	2.46	
Yes	6950	23.96	0.51	23.56	0.52	29.88	2.46	
Gender								0.4783
Male	16,700	47.63	0.24	47.74	0.28	45.85	0.24	
Female	22,471	52.38	0.24	52.26	0.28	54.15	0.24	
Educational attainment								0.1802
Less than bachelor's degree	22,930	60.66	0.47	60.43	0.47	64.06	0.26	
Bachelor's degree or above	16,241	39.34	0.47	39.57	0.47	35.94	0.26	
Age								< .0001
18–29	4804	21.1	0.2	20.94	0.26	23.44	2.04	
30–39	3720	17.59	0.21	17.37	0.24	20.82	2.06	
40–49	4434	17.04	0.2	16.91	0.23	19.04	1.82	
50–59	6958	16.37	0.31	16.14	0.32	19.83	1.69	
60–69	8832	15.31	0.34	15.59	0.38	11.15	1.16	
70+	10,423	12.59	0.19	13.05	0.21	5.72	1.09	
Household income (as % of federal poverty level (FPL))								< .0001
0–138% of FPL	9445	25.53	0.55	24.82	0.56	36.17	2.19	
139–249% of FPL	6608	16.77	0.47	16.6	0.48	19.31	1.66	
250–399% of FPL	6345	16.56	0.49	16.45	0.51	18.22	1.99	
400% or greater of FPL	16,773	41.13	0.57	42.13	0.61	26.29	2.29	
Urban or rural residence								0.0074
Rural	7232	9.89	0.26	10.11	0.26	6.54	1.06	
Urban	31,939	90.11	0.26	89.89	0.26	93.46	1.06	
Health status								0.0001
Excellent, very good, or good	30,300	79.33	0.47	79.7	0.5	73.72	0.15	
Fair or Poor	8871	20.67	0.47	20.3	0.5	26.28	0.15	
Chronic condition								0.5691
No	18,251	56.01	0.61	56.1	0.65	54.6	2.49	
Yes	20,920	43.99	0.61	43.9	0.65	45.4	2.49	
Survey year								0.6021
2015	19,561	49.64	0.22	49.56	0.29	50.82	2.22	
2016	19,610	50.36	0.22	50	0.29	49.18	2.22	

All frequencies and standard errors are weighted. Sample sizes are unweighted

health care. However, unlike prior research, we were able to show those receiving care in the emergency room had the

highest reports of perceived discrimination.<sup>23</sup> As the prior study relied on data that was released prior to ACA

Table 2 Logistic Regression Models for Odds of Perceiving Racial or Ethnic Discrimination (N=39,171)

	Model 1		Model 2		Model 3	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
Type of insurance coverage						
Employer-sponsored coverage	Reference		Reference		Reference	
Medicaid	<i>1.71</i>	<i>(1.19, 2.60)</i>	–	–	<i>1.66</i>	<i>(1.11, 2.47)</i>
Private coverage, Covered California	1.89	(0.90, 4.01)	–	–	1.86	(0.87, 3.96)
Private coverage, off-exchange	0.94	(0.49, 1.80)	–	–	0.93	(0.48, 1.78)
Medicare and Medicaid	<i>1.83</i>	<i>(1.06, 3.17)</i>	–	–	<i>1.80</i>	<i>(1.03, 3.14)</i>
Medicare alone or with other insurance	<i>1.72</i>	<i>(1.02, 2.92)</i>	–	–	<i>1.71</i>	<i>(1.01, 2.89)</i>
Other public-sponsored coverage	1.91	(0.52, 7.02)	–	–	1.85	(0.48, 7.03)
Location of usual source of care						
Doctor's office, HMO, or Kaiser	Reference		Reference		Reference	
No usual source of health care	–	–	1.25	(0.84, 1.88)	1.18	(0.79, 1.77)
Clinic or health center	–	–	1.13	(0.81, 1.56)	1.05	(0.76, 1.46)
Emergency room	–	–	<i>1.91</i>	<i>(1.07, 3.42)</i>	1.72	(0.94, 3.12)
Other or no one place	–	–	1.66	(0.68, 4.06)	1.58	(0.64, 3.90)
Race/ethnicity						
White	Reference		Reference		Reference	
Latino	<i>1.80</i>	<i>(1.17, 2.76)</i>	<i>1.75</i>	<i>(1.14, 2.70)</i>	<i>1.79</i>	<i>(1.16, 2.75)</i>
Black	<i>4.72</i>	<i>(3.00, 7.41)</i>	<i>4.75</i>	<i>(3.01, 7.48)</i>	<i>4.71</i>	<i>(2.98, 7.42)</i>
Asian	<i>1.66</i>	<i>(1.03, 2.68)</i>	<i>1.63</i>	<i>(1.01, 2.63)</i>	<i>1.66</i>	<i>(1.03, 2.68)</i>
Other	<i>2.63</i>	<i>(1.56, 4.44)</i>	<i>2.65</i>	<i>(1.57, 4.47)</i>	<i>2.64</i>	<i>(1.56, 4.46)</i>
Citizenship status						
US-born citizen	Reference		Reference		Reference	
Naturalized citizen	1.13	(0.69, 1.85)	1.11	(0.67, 1.82)	1.13	(0.69, 1.86)
Non-citizen	1.03	(0.64, 1.64)	1.01	(0.63, 1.63)	1.02	(0.63, 1.64)
Limited English proficiency						
No	Reference		Reference		Reference	
Yes	0.98	(0.65, 1.47)	0.97	(0.65, 1.46)	0.98	(0.65, 1.46)
Gender						
Male	Reference		Reference		Reference	
Female	1.17	(0.91, 1.51)	1.23	(0.96, 1.57)	1.20	(0.94, 1.53)
Educational attainment						
Less than bachelor's degree	Reference		Reference		Reference	
Bachelor's degree or above	1.24	(0.85, 1.82)	1.26	(0.83, 1.80)	1.25	(0.85, 1.83)
Age						
18–29	Reference		Reference		Reference	
30–39	1.15	(0.74, 1.78)	1.17	(0.76, 1.80)	1.17	(0.76, 1.80)
40–49	1.04	(0.69, 1.57)	1.04	(0.68, 1.61)	1.07	(0.70, 1.61)
50–59	1.00	(0.65, 1.56)	1.03	(0.67, 1.60)	1.04	(0.67, 1.61)
60–69	<i>0.68</i>	<i>(0.46, 0.99)</i>	<i>0.78</i>	<i>(0.55, 1.14)</i>	<i>0.70</i>	<i>(0.48, 1.03)</i>
70+	<i>0.31</i>	<i>(0.13, 0.77)</i>	<i>0.41</i>	<i>(0.17, 0.97)</i>	<i>0.32</i>	<i>(0.13, 0.81)</i>
Household income (as % of federal poverty level (FPL))						
0–138% of FPL	Reference		Reference		Reference	
139–249% of FPL	0.88	(0.60, 1.30)	0.80	(0.56, 1.15)	0.89	(0.61, 1.31)
250–399% of FPL	0.80	(0.48, 1.34)	0.68	(0.43, 1.05)	0.82	(0.49, 1.36)
400% or greater of FPL	<i>0.51</i>	<i>(0.32, 0.83)</i>	<i>0.40</i>	<i>(0.26, 0.60)</i>	<i>0.52</i>	<i>(0.32, 0.84)</i>
Urban or rural residence						
Rural	Reference		Reference		Reference	
Urban	1.18	(0.79, 1.78)	1.17	(0.78, 1.77)	1.19	(0.79, 1.80)
Health status						
Excellent, very good, or good	Reference		Reference		Reference	
Fair or poor	<i>1.65</i>	<i>(1.18, 2.30)</i>	<i>1.72</i>	<i>(1.24, 2.38)</i>	<i>1.64</i>	<i>(1.18, 2.28)</i>
Chronic condition						
No	Reference		Reference		Reference	
Yes	<i>1.36</i>	<i>(1.02, 1.81)</i>	<i>1.40</i>	<i>(1.06, 1.85)</i>	<i>1.38</i>	<i>(1.04, 1.83)</i>
Survey year						
2015	Reference		Reference		Reference	
2016	1.12	(0.85, 1.46)	1.12	(0.86, 1.47)	1.11	(0.85, 1.47)
Test for interaction with race	Type of insurance		Location of usual source of care			
	<i>F</i>	<i>P</i> value	<i>F</i>	<i>P</i> value		
	1.55	0.0635	0.83	0.6541		

Significant associations denoted in italics, at  $p < .05$ .

AOR adjusted odds ratio, 95%CI 95% confidence interval

implementation, it did not factor changing demand for emergency services. In particular, the overall rate of emergency department usage increased post-ACA and there was a shift towards Medicaid paying for this service.<sup>34</sup> Thus, the increasing use of emergency room care may have worsened overall

patient experience with health care in this setting, including experiences of racial or ethnic discrimination.

This study showed that patients with certain types of health insurance are more likely to perceive discrimination. Namely, those with insurance financed through federal programs (i.e.,

Table 3 Logistic Regression Models for Delaying or Forgoing Prescriptions or Medical Care in the Past 12 Months (N=39,171)

Outcome	Delayed or did not get needed prescription in past 12 months		Delayed or did not get needed medical care in past 12 months	
	AOR	95% CI	AOR	95% CI
Experienced racial or ethnic discrimination in health care				
No	Reference		Reference	
Yes	<i>1.97</i>	<i>(1.26, 3.09)</i>	<i>1.84</i>	<i>(1.31, 2.59)</i>
Type of insurance coverage				
Employer-sponsored coverage	Reference		Reference	
Medicaid	1.14	(0.79, 1.66)	1.16	(0.74, 1.82)
Private coverage, Covered California	1.01	(0.54, 1.89)	0.54	(0.32, 1.92)
Private coverage, off-exchange	0.93	(0.53, 1.61)	0.97	(0.59, 1.59)
Medicare and Medicaid	1.24	(0.74, 2.06)	1.03	(0.63, 1.69)
Medicare alone or with other insurance	0.81	(0.52, 1.25)	0.74	(0.49, 1.12)
Other public-sponsored coverage	0.73	(0.29, 1.80)	1.47	(0.75, 2.88)
Location of usual source of care				
Doctor's office, HMO, or Kaiser	Reference		Reference	
No usual source of health care	1.06	(0.71, 1.57)	1.17	(0.81, 1.70)
Clinic or health center	1.08	(0.81, 1.46)	1.28	(0.96, 1.71)
Emergency room	0.82	(0.42, 1.63)	<i>2.16</i>	<i>(1.26, 3.73)</i>
Other or no one place	2.36	(0.93, 5.99)	1.53	(0.63, 3.70)
Race/ethnicity				
White	Reference		Reference	
Latino	<i>0.60</i>	<i>(0.44, 0.82)</i>	<i>0.62</i>	<i>(0.46, 0.84)</i>
Black	<i>0.76</i>	<i>(0.52, 1.11)</i>	<i>0.50</i>	<i>(0.32, 0.78)</i>
Asian	<i>0.67</i>	<i>(0.45, 1.02)</i>	<i>0.58</i>	<i>(0.38, 0.89)</i>
Other	1.15	(0.74, 1.79)	0.80	(0.55, 1.17)
Citizenship status				
US-born citizen	Reference		Reference	
Naturalized citizen	1.02	(0.70, 1.47)	0.97	(0.68, 1.40)
Non-citizen	<i>0.58</i>	<i>(0.35, 0.97)</i>	0.67	(0.36, 1.25)
Limited English proficiency				
No	Reference		Reference	
Yes	0.66	(0.42, 1.03)	0.62	(0.38, 1.00)
Gender				
Male	Reference		Reference	
Female	<i>1.34</i>	<i>(1.07, 1.67)</i>	<i>1.32</i>	<i>(1.04, 1.69)</i>
Educational attainment				
Less than bachelor's degree	Reference		Reference	
Bachelor's degree or more	1.16	(0.91, 1.47)	<i>1.33</i>	<i>(1.05, 1.75)</i>
Age				
18–29	Reference		Reference	
30–39	0.77	(0.55, 1.09)	0.85	(0.59, 1.23)
40–49	0.95	(0.61, 1.47)	1.23	(0.86, 1.76)
50–59	0.85	(0.60, 1.21)	1.00	(0.63, 1.57)
60–69	0.72	(0.46, 1.12)	0.72	(0.48, 1.07)
70+	0.62	(0.34, 1.14)	<i>0.47</i>	<i>(0.28, 0.78)</i>
Household income (as % of federal poverty level (FPL))				
0–138% of FPL	Reference		Reference	
139–249% of FPL	0.95	(0.65, 1.38)	0.85	(0.61, 1.18)
250–399% of FPL	1.12	(0.75, 1.67)	1.10	(0.68, 1.78)
400% or greater of FPL	0.99	(0.68, 1.45)	0.91	(0.62, 1.35)
Urban or rural residence				
Rural	Reference		Reference	
Urban	1.18	(0.87, 1.59)	1.20	(0.89, 1.62)
Health status				
Excellent, very good, or good	Reference		Reference	
Fair or Poor	<i>1.62</i>	<i>(1.25, 2.10)</i>	<i>1.89</i>	<i>(1.46, 2.45)</i>
Chronic condition				
No	Reference		Reference	
Yes	<i>1.30</i>	<i>(1.03, 1.64)</i>	1.14	(0.93, 1.39)
Survey year				
2015	Reference		Reference	
2016	0.93	(0.76, 1.14)	0.97	(0.78, 1.22)

Significant associations denoted in italics, at  $p < .05$ .

AOR adjusted odds ratio, 95%CI 95% confidence interval

Medicare and Medicaid), relative to employer-sponsored coverage. This suggests that patients in these federal programs have either a higher prior burden of discrimination in health care or are exposed to more discrimination because of their federally funded coverage. Controlling for location of usual

source of health care did not impact this relationship. The disadvantage experienced by those with Medicaid and Medicare coverage may stem from a variety of factors, including having a harder time getting an appointment,<sup>28</sup> narrower provider networks, different services covered, longer patient wait-

times, cost-sharing between patient and insurance, and receiving poorer service from health care providers and their staff based on the insurance they utilize. Thus, both interpersonal and structural factors may be at play. However, with CHS data, we cannot gauge the motives or attributions of those perpetrating the unfair treatment, or determine if a respondent is attributing his or her unfair treatment to race when it is instead due to the features and limitations of their insurance coverage. In any case, our study suggests that providers should work to better understand the factors that lead to discrimination among their patients, particularly among those on publicly funded health insurance. This is important because experiences of racial or ethnic discrimination are associated with lower trust of health care providers, lower trust of the health care system, poorer medication adherence, and worse health.<sup>35-37</sup>

This study also examined the impact of insurance type and location of usual source of health care among different racial/ethnic groups. There were no significant interactions between either variable and race. This suggests that the impact of perceived discrimination matters, in the same way, irrespective of race. This is important in the case of type of insurance coverage since the ACA brought about new coverage options, with different access to provider networks. Specifically, those with insurance coverage purchased through Covered California have access to a narrower network of hospital providers<sup>38</sup>; however, evidence on the impact these narrower networks have had on quality of health care has been mixed.<sup>28, 38, 39</sup> Our findings suggest that new options offered under Covered California did not differentially expose different racial or ethnic groups to racial or ethnic discrimination, relative to private coverage purchased off-exchange. This is important because the Covered California exchanges will undertake efforts to improve quality, including paying hospitals in Covered California's network at lower rates for their services if they fail to meet quality standards, and eventually, eliminating poorer performing and costlier hospitals and providers from their networks.<sup>40, 41</sup>

Finally, this study showed that perceived racial or ethnic discrimination was associated with delaying or forgoing needed prescriptions or medical care in the past 12 months. Earlier work had only showed that perceived discrimination was associated with higher odds of delaying a prescription.<sup>11</sup> The discrepancy in findings may be due to several methodological differences between this and the prior study including a representative study design, racially diverse sample, and much larger sample size. Also, unlike prior work, the present study was able to specifically exclude costs and lack of health insurance as reasons for delaying or forgoing care. As a result, these potential reasons are accounted for. Therefore, we posit that experiences of racial and ethnic discrimination in health care make a person less likely to have a future interaction with health care, and thus less likely to fill a prescription or receive medical care.

Several limitations must be considered when interpreting the findings of the current study. First, because the data are

cross-sectional, temporality cannot be determined. Second, all measures are self-reported, which means reporting bias cannot be eliminated. Third, because the data come from only one state, results may not generalize to other states. Fourth, the measure of discrimination is based on perceptions of discrimination, which relies on respondent's subjective interpretation of events. Nonetheless, perceived discrimination is robustly associated with both physical and mental health, suggesting this measure is still important to consider.<sup>42</sup>

Overall, findings suggest the burden of discrimination is unequally distributed in the post-ACA landscape. In particular, those with publicly funded coverage are more likely to perceive discrimination in health care, suggesting that providers and insurers must adapt to deal with the increased burden among their patient pools and make efforts to reduce discrimination of patients they serve. This is particularly important because Medicare and Medicaid are designed to serve populations that are sicker or have lower incomes, respectively. As a result, experiences of discrimination in the health care setting may disproportionately impact those that are already otherwise disadvantaged. Furthermore, because those with prior discrimination are less likely to obtain care or prescriptions, these experiences can create a feedback loop that fuels health disparities.

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#### **Compliance with Ethical Standards:**

**Conflict of Interest:** The authors declare that they do not have a conflict of interest.

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