Health Affairs Scholar, 2024, **2**(5), qxae057
https://doi.org/10.1093/haschl/qxae057
Advance access publication: May 3, 2024
Research Article

Health Affairs Scholar
EMERGING & GLOBAL HEALTH POLICY
OXFORD

Disparities in telemedicine use among Native Hawaiian and Pacific Islander individuals insured through Medicaid

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Abstract

States have implemented policy changes to increase access to telemedicine services for individuals receiving Medicaid benefits. Native Hawaiian and Pacific Islander (NHPI) individuals experienced disproportionate harms from COVID-19 and have long experienced disparities in health care access compared with other racial and ethnic groups, making the issue of telemedicine access particularly salient for NHPI individuals on Medicaid. Utilizing 100% 2020–2021 Medicaid claims, we compared trends in telemedicine use between NHPI and non-Hispanic White individuals on Medicaid in Washington State and conducted a decomposition analysis to identify drivers of underlying disparities. In both years, NHPI individuals were 38%–39% less likely to use any telemedicine than White individuals after adjusting for patient- and area-level characteristics. Decomposition analysis revealed that most of this difference was due to differential effects of characteristics, rather than group differences in characteristics. Namely, several characteristics that were associated with increased telemedicine use had more muted associations for NHPI vs White individuals, such as English as the primary spoken language and female sex. These findings suggest the presence of limited acceptability of or group-specific barriers to telemedicine for NHPI individuals, including potential discrimination in being offered telemedicine visits. These issues should be understood and mitigated through close collaboration between health care leaders and NHPI communities.

Key words: telemedicine; health equity; racial disparities; health care access.

Introduction

In response to COVID-19, many states implemented policy changes to increase access to and availability of telemedicine services for individuals receiving Medicaid benefits.[1,2] In Washington State, these policies included patient- and provider-oriented investments in telemedicine-related technology, as well as payment parity between audio-only telemedicine, audio-visual telemedicine, and in-person visits.[2] For example, the Washington State Health Care Authority provisioned cell phones to 6000 Medicaid beneficiaries and directly provisioned telehealth platform licenses to a number of safety-net providers that lacked resources for their own telemedicine platforms.[1] Medicaid beneficiaries who received cell phones included tribal members, patients receiving care from behavioral health providers, elderly individuals, and homeless individuals.

While relevant for all Medicaid beneficiaries, telemedicine policy changes are particularly salient for Native Hawaiian and Pacific Islander (NHPI) individuals, or descendants from any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands, due to health inequities faced by this population.[3] Washington is home to the third largest population of NHPI individuals in the United States, at 0.6% of the state's population, yet only 0.3% of physicians in the state identified as NHPI in 2020.[3,4] NHPI communities have experienced significant harms from COVID-19 and experienced disproportionately higher case and death rates compared with White individuals nationally.[5,6] Part of these differences stem, in part, from persistent disparities in health care access experienced by NHPI compared with other racial and ethnic groups.[7] For instance, NHPI individuals face disparities in access to person- and family-centered care, home health care, and language assistance.[8] Nationally, NHPI individuals insured by Medicaid have been shown to have worse access to care and timely access to a checkup than White individuals insured by Medicaid.[7] In 2019, 34% of NHPI individuals were enrolled in Medicaid, compared to 34.3% of non-Hispanic White individuals according to US Census Bureau estimates.[9]

In addition to directly contributing to health inequities, these factors can potentially impede the ability for NHPI populations to obtain telemedicine services. Continuity with a clinician may play an important role in the acceptability of telemedicine for NHPI patients, and prior work has demonstrated that desire for, and satisfaction with, telemedicine may be lower for NHPI individuals compared with those from other racial groups.[10-12] However, there is a paucity of evidence describing the magnitude of differences in telemedicine

Received: February 1, 2024; Revised: April 11, 2024; Accepted: April 30, 2024

use between NHPI and non-NHPI communities. Differences in the use of audio-video and audio-only telemedicine have been described for other racial and ethnic minorities, such as Black and Hispanic individuals, but not among NHPI individuals.[13,14] Due to sample size concerns, NHPI individuals are often omitted from analyses, grouped together with other groups (often Asian individuals), or categorized into an "Other" category.[15] Even if unintended, these issues represent methodological forms of racial erasure and misclassification that may leave inequities unexamined.

Another important evidence gap relates to scientific insights on the drivers of potential differences in telemedicine use between NHPI vs other racial or ethnic communities. Some of these drivers (eg, different rates of higher chronic disease) may be identifiable from available data, while others (eg, broader social or economic inequities or cultural preferences) may be less so. Connecting differences in telemedicine use to both types of factors can help inform health policy solutions to improve telemedicine accessibility and equity. In addition, evidence on telemedicine use among NHPI patients in Washington State can offer salient insight about the broader inequities faced by these communities. To address this knowledge gap, this study characterized differences in telemedicine use between NHPI vs non-Hispanic White individuals enrolled in Medicaid and sought to identify drivers of potential differences in telemedicine use.

Data and methods

Data source, study period, and study population

This study used 100% 2020–2021 Washington State Medicaid claims, which included self-reported (personal communication, Christopher Chen, July 24, 2023) race and ethnicity data and dedicated NHPI categories. From these data, we identified 1.1 million individuals enrolled in Washington State Medicaid for at least 11 months in 2020 or 2021 who were 18 years of age or older as of the first enrollment date in a given year. Medicaid enrollees included both those enrolled in fee-for-service or Medicaid Managed Care Organization (MCO) plans. We limited the sample to individuals who self-identified as either NHPI or non-Hispanic White to focus our comparison of NHPI against the majority racial group.

Race and ethnicity are optionally self-reported upon Medicaid enrollment (personal communication, Christopher Chen, July 24, 2023). Race was missing or not provided in 3.5% of adults enrolling from 2019–2021. While individuals are able to select multiple races upon enrollment, these individuals are categorized within the "Other" category; thus, we were only able to identify individuals selecting NHPI or White as their sole racial identity rather than multiracial individuals with NHPI or White as 1 of their racial identities. A total of 9.9% of individuals were in the "Other" category of race from 2019–2021, without the ability to disaggregate data from "Other." Given the significant changes in health care utilization wrought by the COVID-19 pandemic, each cohort was analyzed separately for 2020 (January to December) and 2021 (January to December).

Outcomes

We assessed telemedicine use, defined as real-time audio-only or audio-video patient visits. Qualifying visits were those with claims that included qualifying Current Procedural Terminology (CPT) codes, CPT code modifiers, or place of service codes that designated telemedicine, as identified in prior research.[16,17] A complete list of codes is included in Appendix A. Using identified visits, we constructed 2 outcomes. The first was a binary measure denoting whether an individual had any telemedicine use in a year. The second was a count measure denoting number of telemedicine visits in a year.

Patient and area-level characteristics

We included a set of observable patient and area-level variables available in data that could explain differences in telemedicine use. Patient characteristics included age, sex, preferred spoken language, homelessness (defined as being homeless for at least 1 month out of the past 12 months), history of comorbid conditions, and clinical complexity (defined by the Charlson Comorbidity Index [CCI]).[18] Comorbid condition indicators were constructed using diagnosis codes from Medicaid claims in the 12 months prior to the index date.

Area-level characteristics included average household access to broadband Internet, average household access to a cellphone, average lack of access to a car for those over age 16 years, Area Deprivation Index (ADI),[19] residence in an urban area (defined by Rural-Urban Commuting Area score),[20] and residence in a Primary Care Shortage Area. The ADI is a composite measure of neighborhood socioeconomic disadvantage that incorporates census block group-level income, employment, housing quality and crowding, and access to transportation. The ADI was selected because it is the only composite measure available at the census block group level,[21] was designed for use in analyzing mortality[22] and health care outcomes,[19] and has been associated with inequities in telemedicine utilization.[23] An important caveat of composite, census-based measures, such as the ADI, is that prior research evaluating California's "Healthy Places Index" composite measure (which has many similarities with ADI) indicated that this index underrepresented NHPI populations,[24] but there has not, to our knowledge, been a specific measure of neighborhood disadvantage developed and validated for NHPI populations. The Social Vulnerability Index, which includes a measure of race and ethnicity, was not selected because it was designed for disaster management and for larger geographic levels.[25] More information about the area-level characteristics, data sources, and their respective geographic scales can be found in Appendix B.

Analysis

Univariate and multivariate generalized linear models, adjusted for patient and area-level characteristics, were used for our outcomes of any telemedicine use (logistic regression) and telemedicine visit counts (negative binominal). Standard errors for regression models were heteroskedastic robust. For inference in binary models, we calculated adjusted odds ratios (aORs), which reflect the relative odds of receiving any telemedicine given exposure to a covariate of interest. Similarly, for count models, we calculated adjusted incidence rate ratios (aIRRs), which reflect the relative difference in telemedicine visits given exposure to a covariate of interest.

To analyze contributors of differences in telemedicine use between NHPI and non-Hispanic White individuals, we applied Blinder-Oaxaca decomposition analysis.[26] This technique, which has been used in prior health disparities research,[27,28] identifies the extent to which any differences in

outcomes were attributable to 3 components: (1) differences in levels or rates of the identifiable characteristics between NHPI and non-Hispanic White individuals ("group differences in characteristics"), (2) differences in the association between characteristics and telemedicine use between groups ("differential effects of characteristics"), and (3) the interaction between (1) and (2)—heretofore described as "interactions."[27] By quantifying the contributions from these components, the Blinder-Oaxaca decomposition analysis provides additional insight above and beyond a traditional regression model. A detailed description of the Blinder-Oaxaca decomposition analysis is included in Appendix C.

A key benefit of this approach is to characterize differences in outcomes between groups, even when they possess similar rates of a characteristic. For example, 2 groups may have equal rates of high school education, but that education may differ in quality between groups (eg, due to discrimination or underinvestment in public education) in ways that influence health outcomes that are not identifiable from information about high school education rates alone. Thus, the Blinder-Oaxaca decomposition captures differences in outcomes due to the differential effects of characteristics in each group.

The primary analysis estimated decomposition components using linear probability models. We also conducted sensitivity analysis estimating analogous decomposition estimates using binary choice models. We report point estimates and 95% CIs for covariate-level decomposition estimates and used a nominal *P* value of .05 to determine statistical significance. Individual- or area-level covariates had very low levels of missingness (<3%), and thus a complete case analysis was conducted with the regression models and Blinder-Oaxaca decomposition. All analyses were conducted in R statistical software (version 2022.02.0+443; R Foundation for Statistical Computing) and SAS version 9.4 (SAS Institute). The study was approved by the University of Washington Institutional Review Board.

Results

Baseline characteristics and overall telemedicine use

Our 2020 cohort included 26 868 NHPI individuals on Medicaid and 496 300 non-Hispanic White individuals (Table 1). Overall, NHPI individuals had a mean age of 42 years compared to 44 years for non-Hispanic White individuals (standardized mean difference [SMD] = −0.10) and were 62% female vs 56% female, respectively (SMD = 0.11). NHPI individuals were 7.9% Hispanic. English as the primary spoken language was reported by 96.3% of NHPI and 98.3% of White individuals (SMD = −0.12).

Compared with non-Hispanic White individuals, NHPI individuals were less likely to be homeless (4.7% vs 7.8%; SMD = −0.13) and more likely to live in areas with household broadband access (91% vs 89%; SMD = 0.67), household cellular phone access (83% vs 79%; SMD = 0.70), and urban areas (95% vs 83%; SMD = 0.42). NHPI individuals were less likely to live in areas of the highest quintile of state-level ADI—that is, highest deprivation quintile (65% vs 71%; SMD = −0.15). The mean Federal Poverty Level (FPL) was similar in NHPI and White individuals (43% vs 44%; SMD = −0.02), but per capita income was higher among NHPI individuals at $43 673 vs $37 508 (SMD = 0.67). NHPI individuals were more likely to live in areas with workers in the household with no vehicle (7.2% vs 6.2%; SMD = 0.42).

NHPI and White individuals had similar overall clinical complexity (CCI: 0.43 vs 0.36; SMD = 0.07). Although rates of most conditions were similar between groups, NHPI individuals had lower rates of chronic pulmonary disease (4.1% vs 6.8%; SMD = −0.12) and higher rates of diabetes with (5.0% vs 2.9%; SMD = 0.11) and without (10.4% vs 6.6%; SMD = 0.14) complications. The mean number of outpatient (1.9 vs 2.7; SMD = −0.20) and telemedicine (0.7 vs 1.1; SMD = −0.19) visits was lower among NHPI individuals compared with White individuals. Mean inpatient visits were similar between NPHI and White individuals (0.33 vs 0.28; SMD = −0.01). The overall pattern of characteristics was similar for the 2021 cohort (Table S1).

In 2020, 25.6% of NHPI individuals used any telemedicine vs 33.0% of non-Hispanic White individuals (Table S2). Both groups experienced a slight decrease in use in 2021, with 22.0% and 29.0% of NPHI and White individuals using telemedicine, respectively, maintaining a 7 percentage point difference in use between groups. Similarly, the mean numbers of telemedicine visits in 2020 and 2021 were lower by 0.4 visits for NHPI individuals vs non-Hispanic White individuals (Table S2).

Characteristics associated with telemedicine use in multivariable generalized linear models

In adjusted analysis, we found that NHPI individuals had a 38% lower odds of any telemedicine use than non-Hispanic White individuals (aOR = 0.62; 95% CI, 0.60–0.64) in 2020 (Table 2). In 2020, several characteristics were associated with a greater odds of any telemedicine use. These included enrollment in a Medicaid MCO plan (aOR = 2.69; 95% CI, 2.64–2.75), female sex (aOR = 1.59; 95% CI, 1.57–1.61), English as the preferred spoken language (aOR = 1.39; 95% CI, 1.33–1.46), most comorbid health conditions except for dementia, and urban residence (aOR = 1.39; 95% CI, 1.36–1.41). Lack of vehicle access for households with workers had a very small association with telemedicine use (aOR = 1.01; 95% CI, 1.01–1.01). Individuals experiencing homelessness (aOR = 0.96; 95% CI, 0.94–0.98) and those living in an above median ADI area (aOR = 0.94; 95% CI, 0.93–0.96), an area with above median household broadband access (aOR = 0.94; 95% CI, 0.93–0.96), in a whole-county Primary Care Shortage Area (aOR = 0.74; 95% CI, 0.72–0.76), or at 0% of the FPL (aOR = 0.91; 95% CI, 0.90–0.92) had lower odds of telemedicine use. The medians were determined for our own data (rather than statewide data). Similar associations were observed in 2021, as shown in Table 2.

The adjusted number of telemedicine visits was also significantly lower for NHPI vs non-Hispanic White individuals (aIRR = 0.56; 95% CI, 0.55–0.58) in 2020 and was similar in 2021 (Table S3). Several characteristics were associated with greater telemedicine visit counts, including enrollment in a Medicaid MCO (aIRR = 1.95; 95% CI, 1.91–1.98 in 2020), female sex (aIRR = 1.38; 95% CI, 1.36–1.40), English as the preferred spoken language (aIRR = 1.62; 95% CI, 1.54–1.70), homelessness (aIRR = 1.16; 95% CI, 1.13–1.18), and most comorbid health conditions. Residence in primary care shortage areas in 2020 and in urban areas in 2020–2021 was also associated with higher telemedicine visit

Table 1. Baseline characteristics of Native Hawaiian/Pacific Islander (NHPI) vs non-Hispanic White individuals receiving Medicaid in 2020 (2021 data shown in Table S1).

Variable (2020)	Non-Hispanic White ($n = 496\,300$)	NHPI ($n = 26\,868$)	White vs NHPI, SMD
Insured by a Managed Care Organization, *n* (%)	396 166 (79.8)	22 022 (81.96)	0.05
Age, mean ± SD, y	43.84 ± 16.83	42.03 ± 18.80	−0.10
Female, *n* (%)	279 400 (56.3)	16 641 (61.94)	0.11
Hispanic, *n* (%)	—	1956 (7.9)	—
English as preferred spoken language, *n* (%)	478 034 (98.3)	25 145 (96.3)	−0.12
ADI, mean ± SD	8.31 ± 1.46	8.14 ± 1.58	−0.11
Grouped ADI deciles			
1/2	8633 (1.77)	556 (2.08)	
2/3	6953 (1.43)	339 (1.27)	
5/6	33 192 (6.81)	2533 (9.47)	
7/8	90 590 (18.59)	6110 (22.83)	
9/10	347 885 (71.4)	17 221 (64.36)	
Homeless, *n* (%)	38 616 (7.8)	1252 (4.7)	−0.13
Federal Poverty Level, mean ± SD	43.90 ± 53.06	43.02 ± 53.44	−0.02
Weighted Charlson score, mean ± SD	0.36 ± 0.91	0.43 ± 1.04	0.07
Myocardial infarction, *n* (%)	2446 (0.49)	154 (0.57)	0.01
Cancer, *n* (%)	9386 (1.89)	466 (1.73)	−0.01
Cerebrovascular disease, *n* (%)	7775 (1.57)	407 (1.51)	< −0.01
Chronic pulmonary disease, *n* (%)	33 949 (6.84)	1111 (4.14)	−0.12
Congestive heart failure, *n* (%)	10 043 (2.02)	640 (2.38)	0.02
Dementia, *n* (%)	3451 (0.70)	138 (0.51)	−0.02
Diabetes mellitus with complications, *n* (%)	14 238 (2.87)	1332 (4.96)	0.11
Diabetes mellitus without complications, *n* (%)	32 889 (6.63)	2805 (10.44)	0.14
Hemiplegia paraplegia, *n* (%)	2438 (0.49)	113 (0.42)	−0.01
Mild liver disease, *n* (%)	10 117 (2.04)	361 (1.34)	−0.05
Peptic ulcer, *n* (%)	1251 (0.25)	63 (0.23)	< −0.01
Peripheral vascular disease, *n* (%)	5422 (1.09)	203 (0.76)	−0.04
Rheumatic disease, *n* (%)	3677 (0.74)	161 (0.60)	−0.02
Moderate/severe liver disease, *n* (%)	1012 (0.20)	16 (0.06)	−0.03
% Households with broadband access, mean ± SD	88.98 ± 3.80	91.06 ± 2.25	0.67
% Households with cellular plan, mean ± SD	79.27 ± 6.70	83.14 ± 3.95	0.70
Primary care shortage area, *n* (%)			
1 = Whole county has shortage	36 411 (7.34)	2034 (7.57)	0.009
2 = ≥1 Part of county has shortage	459 854 (92.6)	24 832 (92.43)	
Per capita income, mean ± SD, $	37 508 ± 8838.94	43 673 ± 9679.90	0.67
% Households with no vehicle for workers age ≥16 y, mean ± SD	6.19 ± 2.20	7.22 ± 2.72	0.42
Primary RUCA code, *n* (%)			
Urban	409 572 (82.5)	25 611 (95.32)	0.42
Rural	86 723 (17.5)	1257 (4.67)	
No. of outpatient visits, mean ± SD	2.67 ± 4.32	1.91 ± 3.45	−0.20
No. of telemedicine visits, mean ± SD	1.11 ± 2.79	0.67 ± 1.79	−0.19
Telemedicine visit (yes/no), *n* (%)	163 887 (33.0)	6883 (25.62)	−0.16

Abbreviations: ADI, Area Deprivation Index; RUCA, Rural-Urban Commuting Area; SMD, standardized mean difference.

counts. Increasing age, above median ADI, and 0% of FPL were associated with lower telemedicine visit counts in 2020–2021, as well as above median household broadband access in 2020.

Contributors to differences in telemedicine use in Blinder-Oaxaca decomposition analysis

In 2020, we identified an adjusted difference of 7.5% between non-Hispanic White and NHPI individuals' telemedicine use, with higher use among White individuals. Based on the decomposition analysis, group differences in characteristics, differential effects of characteristics, and interactions contributed −0.66%, 9.3%, and −1.1%, respectively, to the overall 7.5% difference.

The net negative effect of group differences in characteristics indicated that the percentage of NHPI individuals using telemedicine would have been 0.66 percentage points lower (leading to a greater difference in use between NHPI and White individuals) if the NHPI group had the same covariate levels as White individuals. Detailed covariate-level decomposition estimates of the effects of group differences in characteristics (Figure 1) demonstrated that this net negative effect was driven by several significant factors, including diabetes (−1.3%; 95% CI, −1.4% to −1.1%), urban residence (−0.5%; 95% CI, −0.8% to −0.2%), and insurance through an MCO (−0.5%; 95% CI, −0.5% to −0.4%), while being offset by broadband access (1%; 95% CI, 0.6% to 1.6%), chronic pulmonary disease (0.6%; 95% CI, 0.5% to 0.7%), and age (0.3%; 95% CI, 0.2% to 0.3%).

Most of the difference in telemedicine use between NHPI and non-Hispanic White groups was attributable to a net 9.3% differential effect of characteristics. Positive differential effects were largest for English as the primary spoken language (9%; 95% CI, 6% to 13%), female sex (3%; 95% CI, 2.4% to 3.8%), and household broadband access (1.8%; 95% CI,

Table 2. Multivariable binary model of telemedicine use (yes/no) for Native Hawaiian/Pacific Islander (NHPI) vs non-Hispanic White individuals receiving Medicaid from 2020–2021.

Variable	OR (95% CI) in 2020	*P*	OR (95% CI) in 2021	*P*
NHPI vs non-Hispanic White	0.62 (0.60,0.64)	<.01	0.61 (0.60,0.63)	<.01
Insured by a Managed Care Organization	2.69 (2.64,2.75)	<.01	2.48 (2.43,2.53)	<.01
Age	1.00 (1.00,1.00)	.07	0.99 (0.99,1.00)	<.01
Female	1.59 (1.57,1.61)	<.01	1.62 (1.60,1.64)	<.01
English as preferred spoken language	1.39 (1.33,1.46)	<.01	1.39 (1.33,1.46)	<.01
Homeless	0.96 (0.94,0.98)	<.01	1.02 (1.00,1.05)	.05
History of comorbid conditions				
Myocardial infarction	1.59 (1.45,1.74)	<.01	1.34 (1.24,1.46)	<.01
Cancer	2.51 (2.40,2.62)	<.01	2.19 (2.10,2.28)	<.01
Cerebrovascular disease	1.61 (1.53,1.69)	<.01	1.60 (1.53,1.68)	<.01
Congestive heart failure	1.66 (1.59,1.74)	<.01	1.47 (1.41.1.53)	<.01
Chronic pulmonary disease	2.61 (2.55,2.67)	<.01	2.37 (2.32,2.43)	<.01
Dementia	0.93 (0.86,1.02)	.11	0.98 (0.90,1.07)	.62
Any diabetes	2.83 (2.76,2.89)	<.01	2.25 (2.20,2.30)	<.01
Hemiplegia	2.37 (2.17,2.58)	<.01	2.15 (1.98,2.34)	<.01
Mild liver disease	2.93 (2.80,3.06)	<.01	2.71 (2.60,2.82)	<.01
Peptic ulcer	2.57 (2.27,2.90)	<.01	2.24 (2.00,2.51)	<.01
Peripheral vascular disease	1.67 (1.57,1.77)	<.01	1.55(1.47,1.64)	<.01
Rheumatic disease	4.13 (3.83,4.45)	<.01	3.03 (2.83,3.23)	<.01
Moderate/severe liver disease	1.18 (1.02,1.37)	.03	1.19 (1.03,1.36)	.02
ADI at census block group, above median vs below median	0.94 (0.93,0.96)	<.01	0.90 (0.89,0.91)	<.01
% Households with broadband access,[a] above median vs below median	0.99 (0.99,1.00)	.73	—	—
% Households with no vehicle for workers age ≥16 y[a]	1.01 (1.01,1.01)	<.01	—	—
Residence in primary care shortage area,[a] whole county vs ≥1 part	0.74 (0.72.0.76)	<.01	—	—
Primary RUCA code, urban vs rural	1.39 (1.36,1.41)	<.01	1.41 (1.39,1.44)	<.01
Federal Poverty Level, 0% vs all other	0.91 (0.90,0.92)	<.01	0.94 (0.92,0.95)	<.01

Abbreviations: ADI, Area Deprivation Index; OR, odds ratio; RUCA, Rural-Urban Commuting Area.
[a]Data not available for year 2021.

0.5% to 3%). Negative differential effects were observed for age (−4.9%; 95% CI, −6.4% to −3.3%), poverty (−0.7%; 95% CI, −1.3% to −0.3%), and diabetes (−0.6%; 95% CI, −0.9% to −0.4%).

Similar patterns were seen for the decomposition analysis of telemedicine use in analysis of 2021 data (Figure 2). Most of the 7.0% difference in any telemedicine use between groups in that year was attributable to differential effects of characteristics (9.0%). The significant differential effects, in order of decreasing magnitude, were from English as the primary spoken language, urban residence, and female sex, while being offset by age, poverty, ADI, and diabetes. Sensitivity analyses estimating decomposition components using binary choice models yielded similar results in both years (Table S4).

Discussion

In a large, statewide, retrospective cohort study, we examined potential disparities in telemedicine use between NHPI and non-Hispanic White Washingtonians insured through Medicaid. This study addresses the gap in evidence related to the magnitude and drivers of telemedicine use differences between NHPI and White populations during the time period coinciding with the COVID-19 pandemic. We found lower rates and intensity of telemedicine use among NHPI compared with non-Hispanic White individuals. This important difference in health care utilization coincides with prior findings showing barriers to preventive, ambulatory care, and timely care experienced by NHPI populations.[7,8]

Notably, telemedicine use was 7.5% lower among NHPI than non-Hispanic White individuals despite the former having slightly lower rates of poverty, homelessness, and area-level lack of broadband and cellphone access—characteristics that one might expect to be associated with increased access to and use of telemedicine among NHPI individuals. Lower use among NHPI individuals persisted after adjusting for these and other patient and area-level characteristics.

Importantly, regression decomposition analysis showed that very little of the observed difference in telemedicine use was due to these differences in observed patient and area-level characteristics. Instead, the majority of the difference was attributable to the differential effects of characteristics on each group (specifically, English as the preferred spoken language, female sex, age, household broadband access in 2020, and urban residence in 2021). In other words, these variables appear to impact NHPI individuals differently than non-Hispanic White individuals in terms of their telemedicine use, and this impact may, in part, be mediated by discrimination. Using preferred spoken language as an example, our results indicate that the overall association between English as the preferred spoken language and increased likelihood of telemedicine use was more muted in NHPI than in White individuals. As 1 potential explanation for NHPI English speakers, varying levels of comfort with the English language could impact one's confidence in addressing a health concern via telemedicine as a digital modality rather than via in-person settings.

However, even when NHPI individuals speak English comfortably, they may face other barriers to the acceptability of

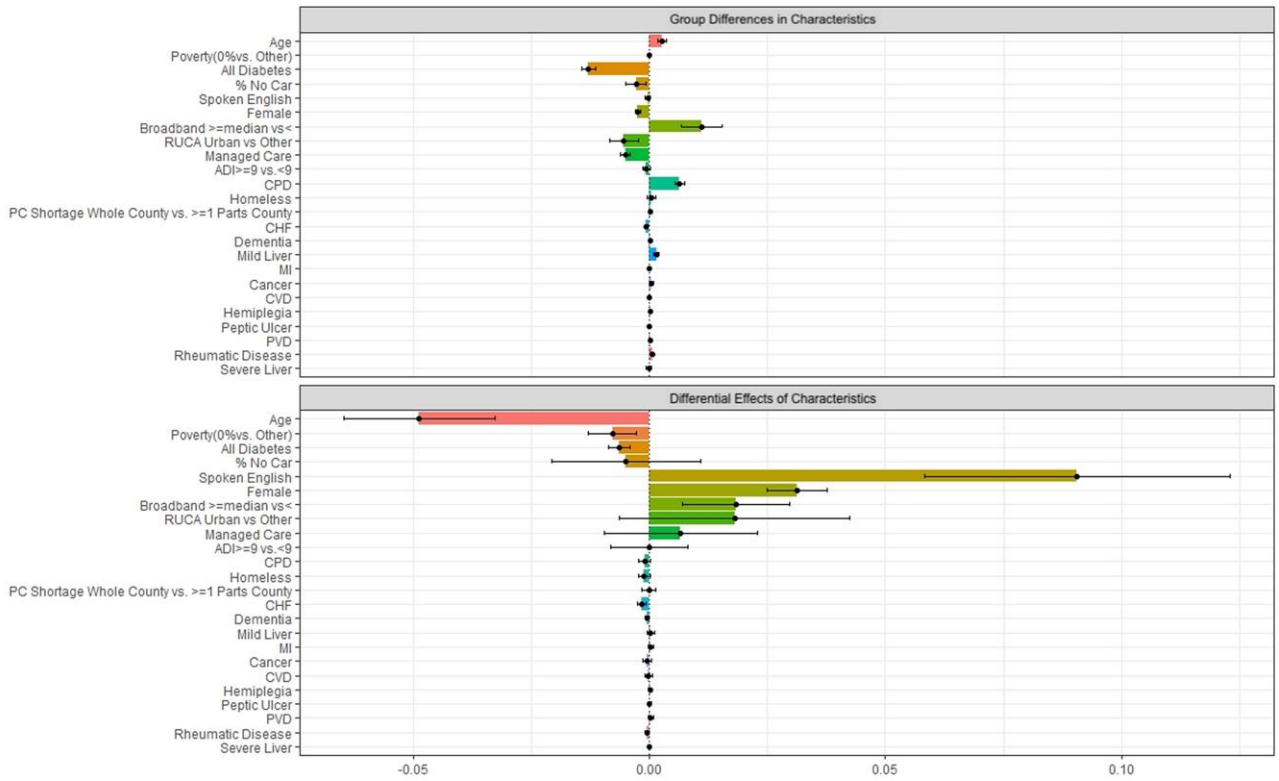

Figure 1. Blinder-Oaxaca decomposition analysis for any telemedicine use for White versus Native Hawaiian or Pacific Islander (NHPI) Medicaid patients in 2020. Most of the 7.5% difference in telemedicine use between NHPI and White individuals was due to a net 9.3% differential effect of characteristics. Positive differential effects were significant for English as the primary spoken language, female sex, and household broadband access, meaning that a characteristic that had a positive overall association with telemedicine use (such as female sex) was more muted in the NHPI population. Negative differential effects were significant for age, poverty, and diabetes, meaning that a characteristic with a positive overall association with telemedicine use (such as diabetes) was more pronounced in the NHPI population. Abbreviations: ADI, Area Deprivation Index; CHF, congestive heart failure; CPD, chronic pulmonary disease; CVD, cerebrovascular disease; MI, myocardial infarction; PC, primary care; PVD, peripheral vascular disease; RUCA, Rural-Urban Commuting Area.

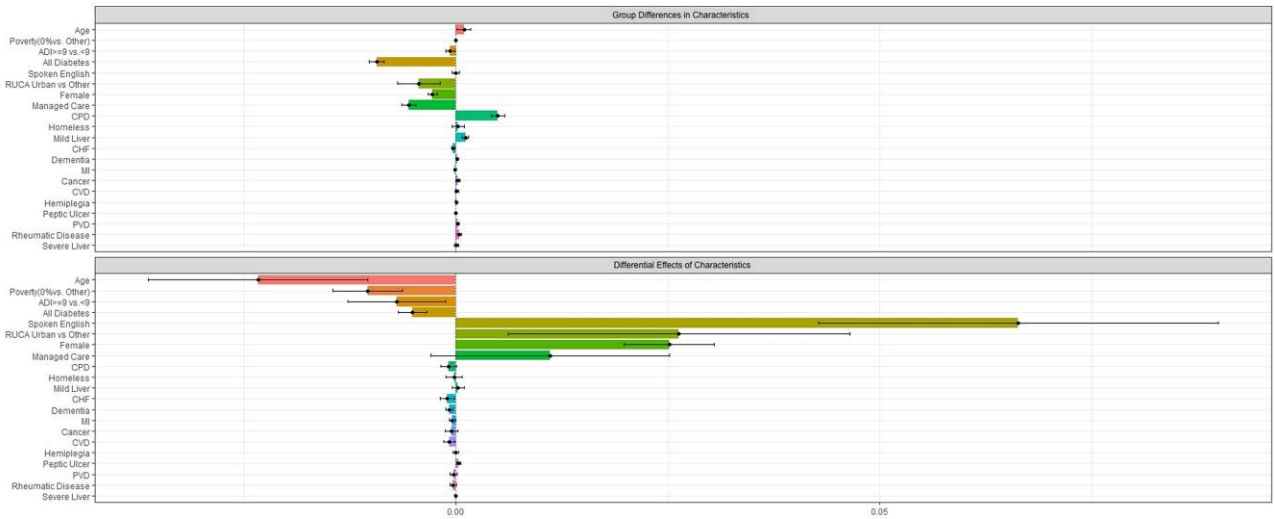

Figure 2. Blinder-Oaxaca decomposition analysis for any telemedicine use for White versus Native Hawaiian or Pacific Islander (NHPI) Medicaid patients in 2021. Most of the 7.0% difference in telemedicine use between NHPI and White individuals in 2021 was due to a net 9.0% differential effect of characteristics. Positive differential effects were significant for English as the primary spoken language, female sex, and urban residence. Negative differential effects were significant for age, poverty, ADI, and diabetes. Abbreviations: ADI, Area Deprivation Index; CHF, congestive heart failure, CPD, chronic pulmonary disease; CVD cardiovascular disease; MI, myocardial infarction; PVD, peripheral vascular disease; RUCA, Rural-Urban Commuting Area.

communication via telemedicine or, importantly, to being offered a telemedicine visit even when they have access—a way in which external discrimination may play a role in shaping telemedicine disparities. In terms of acceptability, prior research has emphasized the importance of the patient–provider relationship among Native Hawaiians,[10] and studies have found reduced satisfaction in provider communication during telemedicine compared with in-person care among Asian and NHPI patients with cancer.[11,12] These barriers to acceptability and satisfaction for English speakers and non–English speakers alike could include the inability for more advanced forms of nonverbal communication and cues during telemedicine care that can help build trust and rapport. Use-testing of digital health with NHPI individuals could investigate how to render these platforms more appealing to NHPI communities. Future work should also ensure that telemedicine visits are being offered equitably to patients, rather than relying on assumptions of who may be able to or want to complete a telemedicine visit.

Similarly, Blinder-Oaxaca decomposition results demonstrated that the overall association between female sex and increased likelihood of telemedicine use was more muted in NHPI than in White individuals. This suggests the potential existence of sex-specific barriers to acceptability of telemedicine or, again, external discrimination in terms of offering and supporting telemedicine care. Qualitative work is needed to better understand these potential barriers and experiences with accessing health care via telemedicine. Collectively, findings from the decomposition analysis suggest that measures to diffusely address telemedicine access barriers alone, such as increasing broadband access, may be insufficient by themselves to reduce this disparity in telemedicine use among NHPI individuals. Instead, successful interventions likely need to be tailored specifically to particular communities and their concerns. Future work should be done to qualitatively and quantitatively identify community needs and concerns and use them to design tailored interventions, and this work should be undertaken in partnership with NHPI community leaders.

Given the potential for telemedicine to save time for patients in traveling to and waiting at clinics and to provide closer continuity of care between in-person visits, dedicating attention to better understanding and addressing barriers to telemedicine use is a worthwhile health equity priority. Now, with the widespread return to in-person care, some might argue that NHPI individuals may be pursuing a higher ratio of in-person to telemedicine care than White individuals without an overall detriment to health care access; however, acknowledging the caveat that we lack data from 2022, our data suggest that this is unlikely given the lower level of mean outpatient visits observed for NHPI individuals compared with White individuals despite a similar level of overall clinical complexity. Thus, consistent with concerns raised by others, the lower level of telemedicine care may be a symptom of larger gaps in overall health care access rather than a telemedicine-specific gap.[8]

One limitation of this study was that the observed differential effects of characteristics driving differences in telemedicine use may reflect the influence of unobserved variables that were not available in our data. Such variables could include measures of cultural preference, patient–physician trust, or clinician-level variables such as clinicians' propensity to offer telemedicine visits. Clinician-level variables are likely an important predictor of telemedicine use given that NHPI vs White individuals on Medicaid may access different health care systems and clinicians based on area of residence, cultural concordance, or word-of-mouth recommendations. Additional limitations include the use of area-level measures of individuals' cellphone, broadband, and vehicle access, as well as the fact that identifying comorbidities relies on having a diagnostic code, which occurs in the context of a visit. Thus, if a patient had comorbidities but did not have a visit in the prior year, then that patient would not be considered as having comorbidities. This is relatively unlikely given that most patients with comorbidities are seen multiple times per year. Next, due to data limitations, we were unable to include multiracial individuals in this analysis and were unable to disaggregate data further in order to identify potential differences in telemedicine use between NHPI people. Additionally, given that our analysis reflects differences in Washington State, our results may also not be generalizable to other states. Last, evaluating downstream utilization or quality outcomes after telemedicine use was beyond the scope of this analysis, limiting our ability to discern the proportions of telemedicine use by racial and ethnic group that may have been unnecessary, duplicative, or ineffective. Nonetheless, strengths of this analysis include granular, race-inclusive data for NHPI and other groups, variables often unavailable in other administrative data (eg, preferred spoken language, homelessness), and use of a decomposition analysis to identify dynamics underlying differences in telemedicine use. Together, these features enabled the analysis to generate unique and valuable insight on disparities in telemedicine use for this particular population.

Conclusion

This analysis compared telemedicine use among NHPI vs non-Hispanic White individuals insured through Medicaid in Washington. It identified drivers underlying differences in use, with lower use among NHPI individuals largely driven by differential effects of key predictors of telemedicine use, including English as the primary spoken language, female sex, age, broadband access, and urban residence, wherein differential effects may reflect discrimination in terms of being offered telemedicine. These differential effects also point to the influence of other variables not widely observed in administrative data. Characterizing differential effects and capturing variables that affect telemedicine use are major areas for future research. Policies seeking to promote telemedicine use should consider these dynamics—and the distinct, local perspectives of different racial and ethnic populations.

Acknowledgments

Oral abstract of this work was accepted to the Society of General Internal Medicine conference in Boston, MA for presentation on May 17, 2024.

Supplementary material

Supplementary material is available at *Health Affairs Scholar* online.

Funding

This work was supported by a Population Health Initiative grant from the University of Washington. Dr. Morenz is supported by the National Institute of Diabetes and Digestive and

Kidney Diseases of the National Institutes of Health under award number T32DK070555. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Conflicts of interest

Please see ICMJE form(s) for author conflicts of interest. These have been provided as supplementary materials.

Notes

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