Which patient experiences are you capturing? Investigating differences in patient experience drivers by race/ethnicity and survey mode

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Cover Page Footnote

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Abstract

To address existing disparities in healthcare for underserved populations, healthcare providers and policymakers need to understand how the experiences of these patients differ to take meaningful action. In this study, we examine whether drivers of patient experiences (PX) for underserved populations vary. Using data from the 2018 and 2019 CAHPS Adult PCMH/Adult Primary Care 6 Month (n = 166,349), we examine differences in the importance of PX drivers - effective communication, helpful and courteous staff, timely appointments, and providers' use of information - across underserved patients. We further examine whether different survey modes compound the observed differences. The findings show that there is significant variation in PX drivers across underserved patients, such that Asian American patients place less importance on effective communication and timely appointments but more emphasis on helpful and courteous staff than the average patient. In contrast, Black or African American patients place a higher importance on timely appointments. We observe additional differences when survey modes are taken into consideration, implying that for underserved populations the way in which patient feedback is collected matters. Taken together, the results from this study highlight the need to not only examine the overall PX for patients of underserved populations but understand which drivers matter. Moreover, our findings imply the need to make various survey modes available to capture patient feedback in a way that is responsive to the needs of each of these populations so that a representative sample is collected as survey mode significantly moderates the PX captured.

Keywords

Patient experience, survey methods, equitable listening, underserved populations, CAHPS

Introduction

Disparities in healthcare in the United States for patients of underserved populations are vast - Black or African Americans, Asian Americans, Hispanic or Latino Americans, or Native Hawaiian or Pacific Islander Americans are more likely to be uninsured, suffer from chronic health conditions such as obesity or diabetes, have higher mortality rates for several diseases including cancer and are less likely to receive treatment for mental health conditions.[1]

Contributing to these disparities are systemic marginalization of these patient groups, resulting in a lack of access and distrust in the healthcare system.[1,2] To date, researchers have inquired into how patients of different races and ethnicities respond to patient experience (PX) surveys, such as Consumer Assessment of Healthcare Providers (CAHPS).[3-11] These studies have primarily focused on racial and ethnical differences in mean responses or response styles, or underlying assumptions of the measurement itself, such as measurement equivalency.

While these efforts can highlight where improvements in PX for underserved populations are needed, they do not tell us how the PX itself is different for these patients. These studies assume that the extent to which different PX drivers are important to patients of different races and ethnicities is the same. But is communication - a previously identified core driver of PX - as important for Black American or Asian American patients than it is for White or Caucasian patients? Are there other dimensions that are more critical for the PX of underserved populations?

Understanding the importance of PX drivers for different patient populations - especially those that are underserved - is crucial to developing solutions that improve their patient experience and ultimately trust in the healthcare system. We define patients of underserved populations in this research as patients of a non-White or Caucasian background, with a focus on Black or African American, Asian, and Hispanic patients. Therefore, this present research formally addresses the following research question: Does the importance of PX drivers differ across underserved patient populations and those that are not?

Further, we examine whether these patient experiences are captured in a representative manner across different survey modes to understand whether healthcare providers are listening equitably. Equitable listening refers to *the process of capturing and understanding information, and responding in a way that is fair, impartial, and representative of those served.* We focus on two dimensions of equitable listening. Using data from the 2018 and 2019 CAHPS Adult PCMH/Adult Primary Care 6 Month Combined dataset, we first shed light onto the different PX in the aggregate; that is, we examine the differences in weights of PX drivers across different races and ethnicities. We then delve deeper into the differences in PX based on survey methods to understand how these methods result in capturing different experiences.

Understanding such differences in PX drivers has strong implications for creating and managing better patient experiences, especially for populations that are currently underserved in healthcare and whose voice is often crowded out by the majority; for example, by research strategies and designs that are not sensitive to highlighting differences across these populations. Yet, understanding PX drivers and how they vary for underserved patient populations can allow prioritizing actions for specific patient populations by highlighting the drivers where investments matter the most.

While studies have examined differences in mean responses or response rates by survey method for patients across different racial and ethnic backgrounds,[12-15] researchers have not focused on differences in the actual experience drivers themselves. Prior research shows that experience drivers can be idiosyncratic and vary across populations. For example, research has found a strong correlation between gender and relationship preference.[16] Female patients place a greater emphasis on relationships with nurses while male patients place a greater weight on their relationship with the doctor, highlighting that organizations serving a larger proportion of female patients should allocate more resources to nursing care than those that serve a larger proportion of male patients to improve PX.

Further, this present research makes important contributions to equitable listening in a healthcare context by shedding light on how different survey methods can impact the overall PX for different underserved populations, therefore adding to the important conversation of how to best measure PX.[17] In short, this present research seeks to broaden our understanding of the PX of populations that are underserved in the current healthcare system, often due to systemic barriers. By illuminating how PX drivers vary across these populations and across different methods used to capture these experiences, we seek to contribute to theory and practice geared towards improving healthcare access and outcomes for underserved populations.

Methodology

Sample and Measures
We focus our analysis on data collected from the Consumer Assessment of Healthcare Providers and Systems, specifically the 2018 and 2019 CAHPS Adult PCMH/Adult Primary Care 6 Month Combined dataset administered by Westat. We analyzed the data for both years across a total number of 166,349 respondents. Table 1 shows the demographic profile of this dataset by race and ethnicity, which is the focus of our analysis. While the vast majority of this dataset pertains to White patients (62%), other races and ethnicities are represented. These statistics already highlight the importance of more in-depth analyses as the averages across the patient population will skew in favor of White patients, who make up by far the largest share of patients.

For this analysis, we used the established survey measures included in the CAHPS survey. Specifically, we used information about how the patient rated their provider as our focal dependent variable (all key measures can be found in Table 2). Our key PX drivers are composite measures reflecting the extent to which the provider was communicating well with the patient (Effective Communication) and staff was respectful, helpful, and courteous (Helpful & Courteous Staff). Further, we included the extent timely (Timely Appointments) and coordinated care (Providers' Use of Information) was provided. While all of these dimensions are important to PX, some of these dimensions may be particularly relevant for underserved populations, such as encountering respectful staff and timely care, as these populations are often marginalized and their health issues are often overlooked in the current system. In line with prior research, we used means to aggregate the questions associated with each of the measures.[18-23]

We further controlled for the length of time spent with this provider (five categories ranging from "less than 6 months" to "5 years or more"), gender (male, female), age (whether the respondent was over 75 years), and education (whether the respondent had completed their high school diploma or GED). Dummies indicating race (Black, Asian) and Hispanic ethnicity were included in all aggregate models as well. Finally, we control for survey mode - mail, phone, IVR (interactive voice response), or internet.

Statistical Analysis
We used linear regression models to understand the overall patient experiences and then the experience with each of our underserved populations of focus, separately. For this purpose, we first estimated an ordinary least squares regression using all observations and included interaction terms with race or ethnicity and each of the PX drivers. The objective of this model is to understand whether race

Table 1. Sociodemographic Characteristics of Respondents

	Overall	Black or African American	Asian	Hispanic or Latino
Gender				
Male	64,621 (39%)	2,805 (35%)	5,728 (37%)	10,075 (36%)
Female	98,564 (59%)	5,118 (64%)	9,596 (62%)	17,691 (63%)
Age (in years)				
18-24	4,582 (3%)	264 (3%)	563 (4%)	1,366 (5%)
25-34	14,200 (9%)	670 (8%)	1,746 (11%)	3,403 (12%)
35-44	18,069 (11%)	965 (12%)	2,270 (15%)	4,346 (16%)
45-54	27,270 (16%)	1,457 (18%)	3,054 (20%)	6,245 (22%)
55-64	49,390 (30%)	2,487 (31%)	4,629 (30%)	8,388 (30%)
65-74	29,838 (18%)	1,343 (17%)	2,052 (13%)	2,858 (10%)
75 and older	18,653 (11%)	734 (9%)	1,037 (7%)	1,132 (4%)
Education				
8th Grade or Less	3,412 (2%)	61 (1%)	498 (3%)	2,514 (9%)
Some high school, but did not graduate	4,469 (3%0	245 (3%)	461 (3%)	2,302 (8%)
High school graduate or GED	22,404 (13%)	1,106 (14%)	1,382 (9%)	6,130 (22%)
Some college or 2-year degree	45,728 (27%)	2,954 (37%)	3,108 (20%)	8,840 (32%)
4-year college graduate	32,384 (19%)	1,538 (19%)	4,910 (32%)	3,711 (13%)
More than 4-year college	41,065 (25%)	1,830 (23%)	4,741 (31%)	3,700 (13%)
Race/Ethnicity				
White	102,905 (62%)			
Black or African American	7,952 (5%)			
Asian	15,383 (9%)			
Hispanic or Latino	27,880 (17%)			
Other	22,291 (13%)			

or ethnicity had an impact on any of the PX drivers. For ease of illustration, we then ran a separate regression model for each of the underserved populations.

To delve deeper into the data and to answer our second research question, we then estimated - for each underserved population - a regression model including the interactions between PX drivers and survey mode. We used mail surveys - the most common administration method - as the baseline. Therefore, interactions in this model reflected the deviations from the relationship between PX drivers and provider ratings captured through mail surveys. Similar to our previous analysis approach, we estimated a separate regression model for each survey method to illustrate how each PX driver varies across different survey modes. Therefore, our analysis approach incorporates a model testing the statistical differences of PX driver strength across different contexts (e.g., race/ethnicity, survey mode) and then additional models

to illustrate the actual weight of each driver in these contexts. All regression models are estimated with robust standard errors.

Results

Sample Characteristics
Table 2 presents the mean responses by survey item. These statistics show that, overall, patients rate their providers highly on these four PX drivers with all means being above 3, meaning that the provider "usually" engages in this behavior.

Table 3 shows the distribution of responses by survey mode. Overall, IVR and mail are the most represented survey modes with 32.8% and 31.4%, respectively. 21.9% responses in our dataset were completed using a web survey and, finally, 13.9% responses came from phone interviews. This table further reveals some differences in

Table 2. Measures and Summary Statistics

Item	n	Mean	S.D.
Dependent Variable Scale: Worst Provider Possible (1) - Best Provider Possible (10)			
Rating of Provider	153,996	8.99	1.83
Independent Variables Scale: Never (1), Sometimes (2), Usually (3), Always (4)			
How Well Providers Communicate With Patients (Effective Communication)			
Provider explained things clearly	160,904	3.79	.56
Provider listened carefully	160,764	3.79	.57
Provider showed respect	160,214	3.83	.53
Provider spent enough time	159,455	3.73	.62
Helpful, Courteous, and Respectful Office Staff (Helpful & Courteous Staff)			
Office staff was helpful	154,791	3.64	.67
Office staff courteous and respectful	154,810	3.80	.52
Getting Timely Appointments, Care, and Information (Timely Appointments)			
Got appointment for urgent care as soon as needed	68,957	3.44	.84
Got appointment for check-up or routine care as soon as needed	110,022	3.54	.74
Got answer to question during regular office hours on same day	69,055	3.34	.90
Providers' Use of Information to Coordinate Patient Care (Providers' Use of Information)			
Provider knew important information about your medical history	159,257	3.68	.67
Provider's office followed up with test results	106,504	3.44	.98

mode distribution based on race and ethnicity. Mail surveys make up a greater share for Asian (52%) and Hispanic (44%) patients, whereas phone surveys are more common for Black or African American (18.4%) and Hispanic or Latino (26.7%) patients. IVR appears to be unpopular for both Asian and Hispanic or Latino populations.

Differences in Provider Rating Drivers by Race

The objective was to understand whether there are meaningful differences in provider rating drivers - effective communication, helpful and courteous staff, timely appointments and providers' use of information - based on race or ethnicity. For this analysis, we first ran a regression model including all provider rating drivers and interactions with race/ethnicity dummies to understand where statistically significant differences from White

Table 3. CAHPS Survey Respondents by Race and Survey Mode

	Overall		Black or African American		Asian		Hispanic or Latino	
Mail	52,194	31.4%	2,688	33.8%	8,004	52.0%	12,265	44.0%
Phone	23,089	13.9%	1,459	18.4%	1,875	12.2%	7,442	26.7%
IVR	54,613	32.8%	2,405	30.2%	2,403	15.6%	4,233	15.2%
Web/Internet	36,453	21.9%	1,400	17.6%	3,101	20.2%	3,940	14.1%
Total	166,349		7,952		15,383		27,880	

patients exist. We then ran a separate regression for each of the different races/ethnicities under investigation to estimate each driver's regression coefficient to illustrate the differences (Table 4).

Our results show that there are meaningful differences in overall patient experience both for Black or African American and Asian patients. For Black or African American patients, relative to the "average" patient, receiving timely care has a greater weight and is thus more influential in determining provider ratings ($beta_{Timely, Black}$ = .21 vs. $beta_{Timely, average}$ = .16, p =.05). We find additional differences for Asian patients where effective communication and timely appointments play a less influential role than it does for the average patient ($\Delta_{Communication}$ = -.45, $p < .05$; Δ_{Timely} = -.06, $p < .01$)). However, helpful and courteous staff has a greater weight in determining provider ratings for these patients than it does for White ones ($beta_{Respectful, Asian}$ = .22 vs. $beta_{Respectful, average}$ = .16, $p < .01$). No differences in PX drivers were found for Hispanic patients.

Together these results provide an initial understanding of differences in patient experiences, highlighting the need to capture and analyze data from different populations,

especially those that are generally underserved in the current system.

Differences in Provider Rating Drivers by Race and Survey Mode

We further sought to understand whether different survey modes interact with each of the drivers to see whether there are additional differences in experiences based on how they are captured and collected. As Table 3 already shows, there are key differences between the preferred survey mode and race/ethnicity. Since equitable listening assumes fair and representative capture of patient voices, it is possible that survey mode is associated with different types of experiences that are voiced. Moreover, prior research highlights the intersecting role of type of patient population. Research investigating the experience of hospital patients,[24] for instance, shows that phone and IVR capture more positive PX than mail. In contrast, for hospice primary caregivers, experiences captured by phone are more negative than those captured by mail.[25]

Similar to our previous analysis approach, we first ran a regression model with interactions between provider rating drivers and survey mode for each race or ethnicity,

Table 4. Patient Experience Rating Drivers by Race

	Overall		Black or African American		Asian		Hispanic or Latino	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Effective Communication	2.06	.01***	2.04	.06***	1.69	.04***	1.95	.03***
Helpful & Courteous Staff	.16	.01***	.13	.04***	.22	.03***	.16	.02***
Timely Appointments	.16	.01***	.21	.03***	.10	.02***	.18	.01***
Providers' Use of Information	.35	.01***	.36	.03***	.37	.02***	.37	.02***
Time with Provider	.05	.00***	.06	.01***	.06	.01***	.06	.00***
Gender	.04	.01***	-.01	.03	-.05	.02**	.07	.01***
Over 75 years	.16	.01***	.09	.05*	.30	.05***	.05	.04
No GED	.23	.02***	.12	.07*	.41	.058**	.20	.02***
Dummies for Race	Included		N/A		N/A		N/A	
Dummies for Survey Mode	Included		Included		Included		Included	
Observations	103,563		5,988		12,420		21,744	
Adj. R²	.64		.60		.58		.64	
Notes: *$p > .10$, **$p > .05$, ***$p > .01$; robust standard errors.								

separately. We then ran a separate regression model for each survey mode to illustrate the regression coefficients, or weights. Table 5 presents the results for Black or African American patients (Panel A), Asian patients (Panel B), and Hispanic or Latino patients (Panel C). We coded mail surveys as the baseline survey mode from which we measured deviations from this primary CAHPS administration method.

For Black or African American patients (Table 5, Panel A), we found significant differences in the importance of effective communication as a PX driver based on survey mode. Experiences captured by phone, for instance, reflect a lower importance of effective communication ($beta_{Communication, Phone} = 1.86$ vs. $beta_{Communication, Mail} = 2.06$, $p < .05$) while no differences were found for mail, IVR, and web/internet surveys. In contrast, experiences captured through IVR are not significantly impacted by helpful staff ($beta_{Helpful, IVR} = -.07$, S.E. $= .08$, $p > .10$) whereas this driver is significant for other survey modes. Further, how the provider uses the patient's information has a lower importance relative to those experiences captured by mail surveys ($beta_{InfoUse, IVR} = .24$ vs. $beta_{InfoUse, Mail} = .38$, $p < .05$).

In contrast, for Asian patients (Panel B), IVR captures an experience that varies greatly from the one captured by other modes, especially mail. This finding is interesting as IVR is a disproportionately unpopular method for this underserved population (see Table 3). Experiences captured through IVR reflect lower importance of effective communication ($beta_{Communication, IVR} = 1.38$ vs. $beta_{Communication, Mail} = 1.63$, $p < .05$), helpful and courteous staff ($beta_{Helpful, IVR} = .11$ vs. $beta_{Helpful, Mail} = .26$, $p < .05$), but higher importance of timely care ($beta_{Timely, IVR} = .22$ vs. $beta_{Timely, Mail} = .07$, $p < .01$).

Finally, looking at the weight of PX drivers across different survey modes for Hispanic or Latino patients (Panel C), we see a lot of variation for these patients. Experiences captured through phone and IVR show a lower importance of effective communication ($beta_{Communication, Phone} = 1.57$ vs. $beta_{Communication, Mail} = 2.06$, $p < .01$; $beta_{Communication, IVR} = 1.85$ vs. $beta_{Communication, Mail} = 2.06$, $p < .01$). In contrast, internet surveys capture experiences that place a greater weight on effective communication ($p < .01$). This survey modality also records experiences reflecting a greater importance on helpful and courteous staff, relative to mail surveys ($beta_{Helpful, Internet} = .22$ vs. $beta_{Helpful, Mail} = .14$, $p = .05$) but a lower importance of provider's use of patient information ($p < .10$). Finally, IVR is also associated with lower weights of timely appointments and provider's use of information (both differences significant at $p < .05$).

Discussion

The objective of this research was to address the following research questions: Are there differences in the importance of PX drivers for underserved patient populations relative to those that are not, and do various survey modes capture different experiences of these populations? We investigated data from the 2018-2019 CAHPS Adult PCMH/Adult Primary Care 6 Month Combined surveys to shed light onto these issues. The results from our research demonstrate that there are meaningful differences in patient experiences and their drivers for these populations.

Taken together, our findings suggest that the "average" patient experience is misleading - healthcare professionals and researchers need to focus explicitly on further analyzing patient experience data by different racial and ethnic patient backgrounds to uncover the experiences of those that are underserved and are facing healthcare inequities and inequalities. Not considering these differences allows investments and PX improvements to focus on the population that represents the majority (i.e., White patients) as their influence on traditional summary statistics and analyses overpowers the influence of underserved populations.

Moreover, survey modalities need to be factored in when examining patient experiences. To date, researchers have primarily investigated differences in mean responses across survey modes and racial/ethnic backgrounds but these studies do not acknowledge that different survey modalities may also reach patients with a diverse set of priorities, reflected in the weight they assign experience drivers. By limiting survey modalities, important experiences may not be captured. For example, our study revealed that Hispanic patients disproportionally respond to phone surveys but are only half as likely as the average patient to respond to IVR. The latter was especially found to capture experiences for underserved populations that differ from those captured through other methods. That is, the importance of experience drivers identified in surveys collected through IVR varied from those captured through other modes.

Implications for Healthcare Research and Practice

The findings from this present research have several important implications for healthcare researchers and practitioners regarding the administration and use of patient surveys. The first finding - that experience drivers vary by patient population based on racial and ethnic background - highlights the urgency to take these demographics into account when analyzing patient data to take action. If these demographics are not taken into consideration, researchers and practitioners are likely to fail to identify opportunities to improve PX for traditionally underserved populations. Based on whether a

Table 5. Provider Rating Drivers by Race and Survey Mode

Panel A: Black or African American Patients

	Mail		Phone		IVR		Web/Internet	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Effective Communication	2.06	.06***	1.86	.08***	1.92	.11***	2.17	.07***
Helpful & Courteous Staff	.20	.05***	.13	.06**	-.07	.08	.13	.06**
Timely Appointments	.17	.04**	.26	.04***	.22	.05***	.19	.04***
Providers' Use of Information	.38	.04***	.38	.06***	.24	.06***	.41	.05***
Control Variables	Included		Included		Included		Included	
Observations	2,232		1,157		1,466		1,133	
Adj. R²	.65		.61		.32		.70	

Panel B: Asian Patients

	Mail		Phone		IVR		Web/Internet	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Effective Communication	1.63	.03***	1.56	.07***	1.38	.09***	2.07	.05***
Helpful & Courteous Staff	.26	.03***	.14	.06**	.11	.06*	.23	.04***
Timely Appointments	.07	.02***	.12	.04***	.22	.04***	.10	.03***
Providers' Use of Information	.36	.03***	.44	.05***	.45	.06***	.31	.04***
Control Variables	Included		Included		Included		Included	
Observations	6,872		1,464		1,379		2,705	
Adj. R²	.58		.51		.37		.67	

Panel C: Hispanic or Latino Patients

	Mail		Phone		IVR		Web/Internet	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Effective Communication	2.06	.03***	1.57	.04***	1.85	.07***	2.25	.04***
Helpful & Courteous Staff	.14	.02***	.15	.03***	.15	.05***	.22	.03***
Timely Appointments	.17	.02***	.22	.02***	.09	.03***	.15	.02***
Providers' Use of Information	.38	.02***	.42	0.03***	.30	.04***	.31	.03***
Control Variables	Included		Included		Included		Included	
Observations	10,227		5,706		2,342		3,469	
Adj. R²	.68		.57		.43		.74	

Notes: *$p > .10$, **$p > .05$, ***$p > .01$; robust standard errors; control variables include time with provider, gender, whether the respondent has a GED or high school diploma and is over 75 years old.

healthcare provider serves a large proportion of patients from one of the underserved populations investigated in this research, they should consider allocating their resources differently. For example, if the provider serves a largely Black or African American population, they should focus on improving access to timely care - a PX driver that plays a more dominant role for this patient population in whether they are satisfied with the care they receive.

Ultimately most of the research to date examining whether underserved populations are responding differently to the CAHPS instrument in terms of their mean responses falls short of explaining which parts of the PX matter to these populations. Therefore, a combination of both approaches - understanding the importance of PX drivers and performance on those drivers - is needed to make resource allocation decisions to improve outcomes for those that are underserved. For example, investments into an important and underperforming experience driver should take precedence over investments into one that is underperforming but not as important. By factoring both the importance (reflected in the regression coefficient) and performance (reflected in the mean response) of the experience driver, providers can prioritize investments for different patient populations based on a 2x2 matrix (importance: high vs. low; performance: high vs. low).

Interestingly, we find that underserved populations tend to place equal or less weight on effective communication but generally more emphasis on respectful, helpful and timely care. From a broader perspective, these two drivers are related to the patient and human experience deserving respect and urgency in care. Dehumanization is an important topic in healthcare that needs addressing, especially for underserved and often marginalized populations.[26,27] As a result, the factors that create their patient experience seem to focus less on how the provider communicates with the patient but whether they treat the patient as a human deserving of care.

The differences in experiences captured based on race and ethnicity highlighted in this manuscript demonstrate the importance of equitable listening: To draw better and more inclusive, equitable conclusions, healthcare providers must ensure that underserved populations have the ability to share their feedback in a way that is accessible to them to obtain impartial and representative information about their experience. While prior research has examined differences in responses across races and ethnicities, we were interested in the importance underserved populations place on different drivers. By focusing on the weight - or importance - that each of the PX drivers receive, healthcare providers can better allocate resources to improve the drivers - whether it is effective communication, helpful staff, or timely appointments and how they are using the patient's information - that matter most to each underserved population.

Our analysis uncovers important differences between the various survey modes and race/ethnicity and how different survey modes capture different patient experiences. An interesting finding is that for phone and IVR, effective communication had a lower weighting or importance than in mail surveys for underserved populations (phone for Black or African American and Hispanic or Latino patients, IVR for Asian and Hispanic or Latino patients). Prior research has found that these two modes of survey administration can result in more positive reported experiences, relative to mail surveys[28]; however, a study using a different sample[29] already suggests that there are population-specific differences that must be considered when using various survey modes. The authors advocate that surveys need to be adjusted for differences in reporting; however, this adjustment still neglects the fact that experience can vary based on the importance weightings for each experience driver.

The findings from this present research also highlight the importance of collecting data from different patient populations in a way that acknowledges different preferences for these populations. While CAHPS uses a multi-modal approach to collecting PX data, organizations may rely on a single, or several, survey mode(s) which - as our results show - may not capture an experience representative of the underserved population. In some ways, our findings highlight the pervasive issue of access for underserved populations in the healthcare system. Beyond access to quality care, our study suggests that underserved populations also need to have adequate access to different ways to voice feedback. We find that different underserved populations use the current CAHPS modalities to a varying degree, some showing a stronger preference for mail while others show a stronger preference for phone. Given that underserved populations are often subject to intersectionalities, such as education, income, or citizenship, survey modes used should consider whether they are convenient (e.g., can be used outside of traditional 9-5 work hours) and accessible (e.g., technology or skill required).

For healthcare professionals, our findings highlight the importance of making multiple survey modalities available to patients so that they can provide feedback in a way that is accessible and inclusive. Ultimately, the objective should be to listen equitably - that is, being able to capture feedback from a representative patient population which is especially important for those that are already underserved and whose voice is often drowned out by a focus on aggregate data. Collecting patient feedback in a multi-modal way is echoed by prior research[30] exploring which methods can adequately capture patient voices. The study's findings imply that various methods of collecting data, structured and unstructured, through open- and closed-ended questions is ultimately needed to fully capture and understand the patient experience.

Limitations and Future Research

While our research offers novel insights into patient experiences of underserved patient populations with important implications for policy and practice, it does not come without limitations. The cross-sectional nature of the CAHPS data does not allow us to make inferences about causality, a limitation that has been acknowledged in prior research using this type of data.[31] Further, we would like to recognize the complexity associated with the measurement of PX in the current CAHPS instrument. In line with prior research, we used methods relying on the assumption of a normal distribution to analyze the data, and future research should address this assumption and implication for research and practice in more depth. We conducted additional robustness checks to relax this assumption and generally find support for our key findings.

For this purpose, it is important to understand how these patient populations prefer to voice their feedback - via mail or phone surveys, IVR, or web surveys. Table 3 suggests that there are different preferences across populations, and future research should delve deeper into understanding why patients select each method. Newer ways to collect data such as through text messages or apps should be examined further in how they can enable underserved populations to provide convenient feedback and thus gain more access to participate in the healthcare system. Research has looked at the near-time administration of surveys to capture patient feedback to obtain responses from a larger share of the population[32]. Furthermore, examining methods that can capture feedback in a more timely manner will be important for data accuracy[33] - an important consideration for underserved populations given the often limited information available.[34]

Given that there is variation in reported experiences based on survey mode, adding qualitative feedback to closed-ended survey responses could also provide better context in which to interpret these survey responses. Further research can therefore explore how open-ended comments further help explain patient experience and provide insights into barriers for underserved populations. Research notes that differences across underserved populations are inconsistent and likely need better contextualization.[35] For example, research shows the value of adding open-ended questions - the information contained in responses to these questions can explain up to 10% of variance in patient experience for sicker patients.[36] Similarly, unstructured ways of capturing data - whether it is through text, speech, or video - can improve information captured from populations where listening is important due to their marginalized experiences.

Conclusion

Listening equitably to patients - providing a fair, impartial and representative method to capturing, analyzing and acting on patient information - is crucial to overcoming systemic barriers in healthcare faced by underserved populations and gaining trust of this population in the healthcare system. This can only be achieved by understanding the idiosyncratic experiences of patients with different backgrounds, both by accounting for these differences when collecting and analyzing patient data, making multiple means of capturing feedback available that allow each population to share their voice in a manner that is accessible and convenient to them.

Acknowledgement

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