



2024 National Impact Assessment of the Centers for Medicare & Medicaid Services (CMS) Quality Measures Report Appendices

Prepared for CMS by Health Services Advisory Group, Inc. (HSAG)

Suggested citation: Centers for Medicare & Medicaid Services. *2024 National Impact Assessment of the Centers for Medicare & Medicaid Services (CMS) Quality Measures Report Appendices*. Baltimore, MD: U.S. Department of Health and Human Services; 2024. Available at: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityMeasures/National-Impact-Assessment-of-the-Centers-for-Medicare-and-Medicaid-Services-CMS-Quality-Measures-Reports>

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Appendix A – Acknowledgments

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CMS and HSAG would also like to extend our deepest gratitude to the following TEP and FASC members whose tenure concluded before the publication of the 2024 Impact Assessment Report. We thank each of you for contributing your time, expertise, and commitment to the Impact Assessment project:

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Appendix B – CMS Measures Included in the 2024 Impact Assessment Portfolio Analysis

Please see the Excel workbook.

Appendix C – Methods and Results for Focus Groups Convened to Explore Drivers of Health Care Disparities

Background

The Centers for Medicare & Medicaid Services (CMS) is dedicated to providing high-quality services to its beneficiaries through patient-centered programs. Those programs use performance measurement to gauge quality, accessibility, and equity in care. Every three years, CMS assesses the impact of its endorsed quality and efficiency measures¹ in the National Impact Assessment of CMS Quality Measures Report. Impact for this report is defined as progress supporting the CMS National Quality Strategy,¹ including the health care quality priorities, goals, and objectives of the Cascade of Meaningful Measures 2.0 framework.² The CMS National Quality Strategy includes a goal to advance health equity and whole-person care, and Equity is a key priority of the Meaningful Measures Initiative.

CMS defines health equity as follows:

*The attainment of the highest level of health for all people, where everyone has a fair and just opportunity to attain their optimal health regardless of race, ethnicity, disability, sexual orientation, gender identity, socioeconomic status, geography, preferred language, or other factors that affect access to care and health outcomes.*³

The 2021 National Impact Assessment Report⁴ identified statistically significant disparities in quality measure performance affecting low-income earners, residents of rural America, and other historically underserved population groups (Black or African American, Asian/Native Hawaiian or Other Pacific Islander, Hispanic or Latino, and American Indian/Alaska Native). HSAG contracted with Qualitative Health Research Consultants (QHRC) to convene focus groups to seek input on the root causes of disparities analyzed in the 2021 National Impact Assessment Report and inform the development of quality measures.

Methods

Project Design

The team sought to answer three related questions:

1. How do disparities in quality measure results reflected in the 2021 report reflect the lived experiences of individuals in underserved communities?
2. From the community perspective, what are the drivers of those disparities?
3. From the community perspective, what might be some ways to reduce those disparities?

The team convened nine focus groups representing perspectives from each targeted population. At each focus group, moderators presented an orientation to quality measures and examples of reported disparities. Then they prompted participants to discuss the impact on their communities of health disparities revealed by each quality measure. The resulting exchanges of views provide the data for this report.

An institutional review board (WCG® IRB) examined all outreach and recruitment documents, data collection scripts, and slides and deemed these activities exempt from IRB review.ⁱⁱ

ⁱ For completeness, the report includes analyses of both endorsed and non-endorsed measures in CMS programs.

ⁱⁱ WCG IRB exemption approved on July 27, 2021 (D2-Exemption-Macdonald 07-26-2021)

Participants were informed of the confidential, voluntary nature of the focus groups and of their rights as participants to refuse to answer any questions or to leave their group at any time.

Sampling Method

Participants

The team invited individuals to participate who work at the local level to address health care–related problems in underserved communities. In their roles as community health workers, health navigators, and staff of local community-based organizations, participants assist community members in solving problems relating to health, access to health care, and access to health insurance. This approach was chosen for two reasons: First, in their dual roles as community members and local resources for health care information, these individuals could contribute a system-level view of health care delivery in addition to individual insights into health care–related concerns. Second, given that these individuals work day to day within their communities, they could recount not only their own experiences and those of family members, but stories of health care successes and failures from the hundreds of individuals they serve.

Purposive Sample

A stratified, purposive sampling design was used to recruit participants from each of the six subpopulations for a total of nine focus groups to be convened over two years. This project sought representation from all U.S. Census regions and variation across the rural/urban continuum. The team sought to overrepresent low-income patients across all groups because of their unique challenges. (See Table C-1 for the demographics of the focus groups convened.)

Inclusion Criteria

Inclusion criteria were developed at the individual and organization levels to ensure that participants could speak from the perspective of patients in targeted communities. The team screened organizations into the sample if they (a) provided services to a community that was the focus of a group, (b) were nonprofit or community-based organizations, (c) operated at the local rather than state or federal level, (d) helped individual community members solve problems related to health care as part of their mission, or (e) served a Medicare-aged population. Screening criteria for individuals included that they (a) worked day to day with individuals and families from their community to solve problems relating to health care, and (b) were themselves members of the community their organization served.

Outreach

Organizations were identified using internet searches. Keyword searches combined terms involving the targeted population with terms describing services provided. Churches that supported pastoral care programs, community centers, and community-based affinity groups were included. The 2020 Census Demographic Map Viewer was used to focus recruitment efforts on cities or counties with substantial populations of the selected racial/ethnic groups.⁵

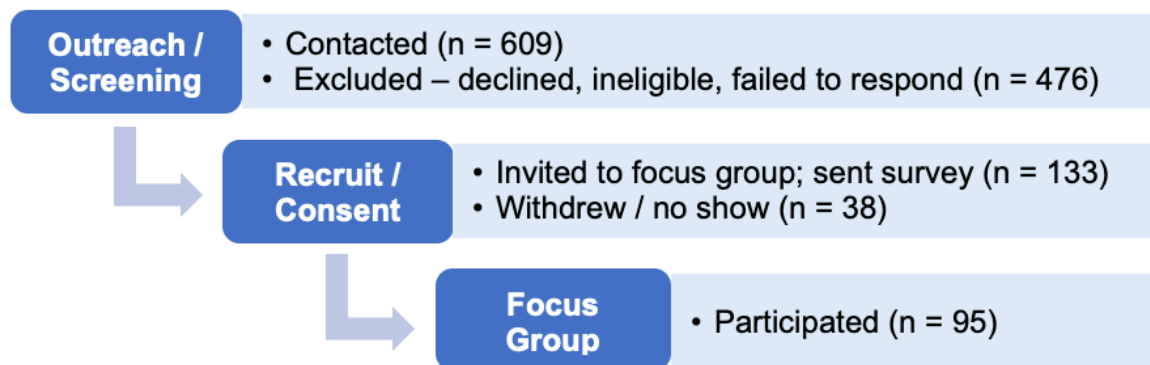
The outbreak of the delta variant of SARS CoV-2 had a devastating impact on many of the communities that potential participants served. Through outreach attempts, the team found that many organizations were no longer answering their phones or that potential participants were too busy addressing community-level crises to participate. Therefore, outreach was expanded to a second phase based on leveraging known national organizations and existing contacts, including members of the Impact Assessment Technical Expert Panel and Federal Assessment Steering Committee. Outreach to national organizations included contacting affinity groups within the

American Public Health Association, the National Association of Social Workers, and the National Association of Community Health Centers. Broadening the inclusion criteria added community health workers performing outreach roles in federally qualified health centers, social workers in nonclinical roles at rural hospitals, and state health insurance plan counselors.

Recruitment and Screening

Once qualified individuals were identified, a project coordinator held a screening and recruitment call to review eligibility criteria and expectations for participation with potential participants. If individuals met criteria and indicated interest in participation, they were sent a link to an online screener for demographic information, consent documents informing them of privacy and security protections, and a conflict-of-interest form. To assure confidentiality, each participant was assigned a unique identifier. Figure C-1 describes the outreach and recruitment efforts.

Figure C-1. Focus Group Recruitment



Data Collection

Racial/Ethnic Concordance and Co-Facilitators

Experienced and approachable focus group facilitators are an essential factor in ensuring high-quality data collection.⁶ In focus groups with members of underrepresented and underserved minority groups, racial and ethnic concordance with facilitators is also crucial to ensuring a free and frank exchange among participants.⁷ Therefore, experienced co-facilitators who were members of the convened groups and had expertise in health disparities were recruited. These co-facilitators assisted in identifying and recruiting potential participants, offered suggestions on focus group script and slide revisions aimed at making them more user-friendly and culturally appropriate, and partnered with the team in leading the focus groups.

Focus Group Scripts

Scripts for each focus group were divided into two sets of questions. In Part 1, time was spent listening deeply to participants respond to two broad, open-ended questions: (1) “What does quality in health care look like from the perspective of the communities you serve?” and (2) “What comes to mind when you think about health disparities as they affect individuals and families in the communities you serve?” In Part 2, the emphasis was on measures that had shown statistically significant disparities for represented communities. Participants were asked whether a disparity reflected trends they had witnessed in their community, what might be some drivers of the disparity, and whether they had any suggestions or examples of novel approaches their organizations had taken to address the disparity. Figure C-2 shows the focus groups that discussed selected measure topics associated with disparities, categorized by health care quality priority.

Figure C-2. Measure Topics Discussed in Focus Groups

Person-Centered Care	
Dignity and respect in hospice care	A/PI
Access to timely care from primary or specialist	A/PI
Dialysis center staff rating	AA
Care Coordination	
Medication management – comprehensive review	A/PI
Chronic Conditions	
Fill diabetes medication	AA, AI/AN, H/L
Blood sugar not controlled	LI, RU
Wellness and Prevention	
Colorectal cancer screening	RU
Affordability and Efficiency	
Unplanned rehospitalization	AA, AI/AN, H/L
Behavioral Health	
Improving or maintaining mental health	H/L, LI
Safety	
Brain scan after stroke	AI/AN, LI, RU

AA Black or African American

A/PI Asian/Native Hawaiian/Other Pacific Islander

AI/AN American Indian/Alaska Native

H/L Hispanic or Latino

LI Low income

RU Rural

Focus Group Structure

Focus groups were convened online over Zoom and lasted 2 to 2½ hours. To ensure that participants had every opportunity to express their views, given the relatively large size of each group, they were encouraged to use the Zoom “chat” function to add to the conversation. Each focus group was recorded through Zoom, then professionally transcribed and deidentified. A deidentified transcript of the focus group was sent to participants with an invitation to email any corrections, amendments, or additions to the views they expressed during the meeting. This member checking process empowers participants to continue providing input and to modify statements when they feel they might have been misunderstood.⁸ Discussions in the chat and the responses to the member checking efforts were added to the data files to be analyzed, along with the transcripts of the focus groups. Participants also were asked to evaluate the experience of attending the focus group.

Data Analysis

Codebook Development

Data analysis followed the directed content analysis method.⁹ This approach to qualitative data analysis combines conventional open coding for emergent themes appearing across all focus groups with focused coding based on a pre-existing theoretical framework. In this case, Meaningful Measures health care quality priorities¹⁰ and key concepts from the literature on health disparities constituted the theoretical framework. In addition to using this theoretical framework as thematic codes, the coding team generated emergent themes by open-coding three of the nine focus group transcripts, during which all differences were adjudicated by consensus. Coders also sought emergent themes throughout coding of the transcripts, adding them to the codebook by consensus.

Coding Data in NVivo

Transcripts of the nine focus groups, data from the transcripts of chat activity, and comments received from respondents during member checking were coded using the qualitative data analysis software NVivo.¹¹ All members of the coding team coded the first two transcripts to establish an intercoder reliability *kappa* score of 0.8, indicating substantial agreement between coders.¹²

Thematic Analysis

Queries, or compilations of all text coded under each theme, were produced in NVivo for all thematic categories. These queries were analyzed manually to create a quote table identifying counts of participants in each group mentioning a theme and quotes representing the range of perspectives on each theme. Quote tables were then expanded as analytic memos, which became the working draft of this report.¹³

Participant Characteristics

Nine focus groups were convened from December 2021 through January 2023. Thirty-eight of the 133 individuals who consented to participate withdrew because of competing demands in their communities. Expecting a high withdrawal rate because of the coronavirus disease 2019 (COVID-19) public health emergency, the team overenrolled participants. The resulting nine groups had 8–14 participants each for a total of 95 participants (Table C-1).

Table C-1. Participant Characteristics

Group Attended/ Characteristics	American Indian/ Alaska Native	Asian / Native Hawaiian / Other Pacific Islander (2 groups)	Black or African American (2 groups)	Hispanic or Latino (2 groups)	Low- Income	Rural	All Groups
Income level served*							
Not low-income	1	8	12	2	0	6	29
Low-income	7	13	12	16	14	4	66
Population served*							
Rural	4	2	4	6	1	10	27
Urban	3	16	20	10	11	0	60
≤ 50% rural or urban	1	3	0	2	2	0	8
Geographic distribution†							
Pacific	2	4	3	3	3	1	16
Mountain	2	2	2	2	1	0	9
West North Central	2	2	1	2	0	3	10
East North Central	0	3	2	5	3	3	16
West South Central	1	3	4	1	1	1	11
East South Central	0	1	3	0	1	1	6
South Atlantic	0	2	3	2	1	1	9
Middle Atlantic	0	2	4	2	3	0	11
New England	1	2	2	1	1	0	7
Total	8	21	24	18	14	10	95

* Low-income and rural/urban designations are based on participant self-report.

† Geographic region is based on U.S. Census regions.¹⁴

Participants and the organizations they represent provide multiple types of services, including wellness and prevention education; providing resources around chronic conditions, vaccines, and nutrition; health promotion and education; and insurance navigation. Participants engage in social work, housing support assistance, transportation, career services, crisis intervention, literacy services, and immigration support. Their workplaces include not only local clinics, but also churches, cultural centers, community centers, community nonprofits, and lesbian, gay, bisexual, transgender, or queer (LGBTQ+) organizations.

Results: Participant Input on Health Equity and Health Disparities

Based on a review of health disparities literature, the team grouped focus group participant responses into the following thematic categories: social drivers of health, including access to care; cultural and linguistic competency; health literacy; and bias in care delivery. The sections that follow summarize the most frequently mentioned crosscutting concerns. Although the results should in no way be interpreted as nationally representative, they offer some insight into causes and effects of disparities from the perspective of individuals serving affected communities.

Some drivers of disparities concerned only one or two groups but evoked impassioned conversations. To give due weight to issues of great concern to individuals serving a single community, these themes are summarized under the heading “Group-Specific Concerns.”

Throughout the narrative, parenthetical notations indicate the number of participants expressing a sentiment and the number of focus groups in which the same theme emerged, e.g., (n = 46 | 9). Quotes are identified by the focus group in which they were expressed and a self-reported description of the income level and/or rural/urban status of the community the speaker serves.

Social Drivers of Health

The CMS Health Equity Framework cites *Healthy People 2030*¹⁵ in describing “the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.”

Social drivers of health were the most frequently discussed sources of health disparities. Sixty-eight participants across nine focus groups (n = 68 | 9) mentioned factors such as inadequate access to health insurance and health care, as well as unmet basic needs such as shelter, healthy food, and transportation. They described how the lack of consistent health insurance coverage prevented members of their communities from seeking care and how facility closures, insufficient staffing, and a dearth of health care providers adversely affected entire communities. They also explained that basic needs—safe and affordable housing, access to healthy foods, and the means to prepare them—must be addressed pre-emptively and concurrently with the delivery of health services for members of their communities to become engaged health care consumers.

Inadequate Access to Health Care

Participants in every focus group—especially those who served low-income consumers—discussed challenges regarding access to care (n = 46 | 9). They cited inadequate and inconsistent access to care most frequently as a barrier to quality care when responding to the question “What comes to mind when you think of ‘quality’ in health care from the perspective of the individuals you serve?”

Access to Coverage

Inadequate access to care begins with a lack of insurance coverage (n = 22 | 7). Participants mentioned legal and bureaucratic barriers, including variations in state-based Medicaid policies and eligibility based on citizenship status, as sources of fear and confusion. Income thresholds create gaps in coverage for community members who earn too much to qualify for Medicaid but lack the income to pay premiums for Medicare or plans available through the Marketplace.

“Trying to get people enrolled for health insurance that are in poverty, but they have to pay HIGH premium. ... So how can they pay a \$600 premium if you are in poverty? ... We run into that problem often.”

–Black or African American | low-income, rural community

They asserted that household-based income thresholds discriminate against individuals and families whose living situations do not match the nuclear family model.

“[Our community members] live in multigenerational homes and sometimes are required to include the income of other members working in the household, and so their Medicaid application becomes denied.”

–Asian/Native Hawaiian or Other Pacific Islander | low-income, urban community

Understanding insurance systems and what is covered is a challenge in itself, they revealed. Strict eligibility requirements and confusing and inequitable criteria from state to state can raise significant barriers to becoming insured.

Access to Care

Focus group members raised concerns about poor access to transportation and lengthy wait times for appointments for low-income consumers in both rural and urban communities. Transportation-related challenges were mentioned by 31 participants in all nine focus groups (n = 31 | 9), most frequently by those who serve low-income consumers. Among rural participants, driving times of many hours and lack of choice in primary and specialty care were common complaints.

“We are in a small community ... three hours away from the largest city. [Because] there’s not very many providers or specialists in this area, everyone is being transferred over there. And the lack of transportation also affects our patients getting the care that they need.”

–Rural | low income, Hispanic or Latino community

Urban participants mentioned that sites of care were not conveniently accessible by public transit lines. They expressed concerns about hospital and pharmacy closures.

“We’ve had about five pharmacies close. So not only is it hard for patients to even get their medication because now they have to ... travel miles, [but] they may not have a car. They may not have access to public transportation. They may not have a ride there and back.”

–Black or African American | low-income, rural community

Scheduling care usually entails months-long waits for appointments, especially for low-income community members. Wait times become barriers to care, especially for emergent needs such as behavioral health concerns. Participants in both rural and urban areas cited long wait times for primary and preventive care as a chief reason that low-income consumers seek care at urgent care or emergency departments (n = 33 | 9).

“We have one provider serving about a four-county area. So, for example, [for] my own husband who was scheduling [a cancer screening], it was six months out before he could get in for that screening.”

–Rural | low income, Hispanic or Latino community

Participants in low-income, rural, Asian/Native Hawaiian or Other Pacific Islander, Black or African American, and Hispanic or Latino focus groups noted that their clients often work multiple jobs and have caregiving responsibilities that make it difficult for them to schedule appointments with providers whose hours are primarily during weekdays (n = 14 | 7).

A participant mentioned the frustration a patient may feel if a provider cancels an appointment because it takes so much effort to rebalance work or family schedules.

“Most of the Vietnamese women in our program are in the nail industry. ... Their schedule is ... seven days a week. ... They’re in there by 9:00 a.m. ... they don’t leave until 8:00 or 9:00 [p.m.]. They’re frustrated [when they’re asked to reschedule and plan a new time] because that’s the only time that they can schedule it.”

–Asian/Native Hawaiian or Other Pacific Islander | low income, urban community

Participants noted that in rural and low-income communities, fear of incurring medical debt makes individuals reluctant to seek care even when they have insurance coverage (n = 18 | 5). They regarded this fear as an equity issue that must be addressed in tandem with other social drivers of health.

Participant Suggestions to Address Access-Related Challenges

According to participants, too many people need services but are unable to qualify for insurance because of income and status restrictions (n = 10 | 5). To address barriers to coverage, some participants suggested removing income as an eligibility criterion for Medicaid.

“I’d like to see the federal poverty guideline ... removed as a qualifying measurement. There are many people who fall into the gap of not qualifying for Medicaid and not being able to afford the Marketplace.”

–Black or African American | low-income, urban community

Focus group participants suggested that primary care clinics offer appointments during off-hours. Some participants mentioned telehealth as a tool to mitigate access issues; others cited low technology literacy as a barrier to its use (n = 21 | 2). Others added that the patients they serve, in general, do not feel comfortable using telehealth or lack adequate broadband to effectively access remote visits in rural areas.

“With COVID-19, not a lot of providers see their patient in person anymore. ... A lot of patients having to learn to [use] telehealth and not everyone [has] accessible internet, smartphone, or computers to see their providers online.”

–Asian/Native Hawaiian or Other Pacific Islander | low-income community

Participants offered other access solutions, including rideshare programs, transportation vouchers, and medication delivery services, as well as meeting consumers where they routinely go, such as partnering with churches for transportation and medication delivery.

“Our solution has been to have onsite pharmacies at our [church]. ... You can also do mail order or home delivery. ... We try to bring those services to where the clients are.”

–Black or African American | urban community

Unmet Basic Needs

Members of all focus groups, except for one Asian/Native Hawaiian or Other Pacific Islander group, described working with individuals who regularly face hard choices between going to the doctor or filling a prescription and paying for food, rent, and utilities (n = 32 | 8). They described individuals who share prescriptions or take medications not as prescribed to make them last longer (n = 12 | 5). These difficult tradeoffs exacerbate health disparities, and the clinical care team may view patients as noncompliant when financial or social barriers prevent patients from accessing needed medications, screenings, or follow-up care.

“With the older population ... they’re on a fixed income. ... They don’t take their prescriptions or their meds that they need for their health. ... They may take one this week ... cut them in half ... maybe they’ll take another one if they start having like a little heart flutter.”

–Rural | low-income, Black or African American community

Participants also described patients who lack access to affordable fresh food (n = 12 | 6), live in food deserts (n = 9 | 4), and lack food preparation facilities (n = 5 | 4). Not only do certain unmet needs create poor health, but these factors adversely affect the capacity to manage chronic conditions or engage in preventive care.

“House and health come together. ... If you don’t have a house, you don’t have your health. How [are] you going to get the nutritional value that you need? ... You see all these homeless people come in. They got diabetes; they have poor dental health.”

–American Indian/Alaska Native | low-income, urban community

Focus group members also suggested that family burdens might interfere with a patient’s ability to adhere to treatment or attend office visits.

“You just can’t look at the patient. You have to look at who are they living with at home? Maybe they’re living with two adults that are alcoholics and are monitoring Grandma’s medications. ... Maybe they have [custody of] grandkids.”

–American Indian/Alaska Native | rural community

Participants asserted that providers err in assuming that patients have safe housing or access to transportation or nutrition (n = 7 | 4). Patients without the basic needs of food, water, and shelter may be unable to follow prescribed treatment plans. Individuals face more barriers to accessing care if experiencing homelessness or limited transportation options.

“[Providers need to] really understand how people are truly living and what they’re up against outside of ... receiving treatment. It’s just amazing what people are trying to do to just survive. ... It’s hard if you’re prescribing certain meds or a certain meal plan if the person is ... renting a room with other people and may or may not even have a hot plate to use.”

–Low-income | Hispanic or Latino, urban community

Participants observed that physicians performing home visits gain critical insight into how patients live and what might prevent them from getting well.

“I think it’s important that doctors have a full picture of the patient’s home life. ... Our residents who have visiting doctors tend to do better because that doctor gets to see their living environment and understand some of the challenges that they have.”

–Low-income | White community

Participant Suggestions to Address Unmet Basic Needs

Participants argued that limiting the definition of health care to what happens inside the clinical encounter excludes important factors. They recommended that providers take time to understand the context in which a patient lives, as well as the needs that must be met before the patient can follow medical advice.

“Quality care is really dealing with the whole person ... having that provider take the time to really get to understand. ... Health really happens outside the four walls of any health care facility or clinic or hospital, and by the time people show up, it’s just symptomatic of what life is really doing to them.”

–Black or African American | urban community

Participants made the case that if individuals cannot meet their most basic needs, following medical advice becomes an unaffordable luxury. Contending with poverty, unsafe housing, and limited access to nutrition not only drives health disparities, they said, but also impacts a patient's ability to adhere to provider recommendations. To facilitate attainable treatment plans, providers must take the time to understand a patient's environment. Addressing drivers of health disparities pre-emptively or concurrently with health issues can address root causes and prevent unplanned returns to hospitals.

"Sometimes they're not even doing the holistic check ... just giving them a quick one-two treatment and then send[ing] them out. ... They're going back to that same environment. ... Within 30 days, they're back in the hospital for the exact same thing."

—Black or African American | urban community

Focus group members argued for integrating social work into clinical care as a way of addressing social and health needs. By screening patients for potential social drivers of health, providers can connect patients with social workers and other necessary resources.

"As part of the intake process, look at ... the scope of people's social determinants of health when they come in."

—American Indian/Alaska Native | low-income, urban community

Deficits in Cultural and Linguistic Competency

The second most frequently mentioned concern raised by focus group participants centered on the lack of culturally and linguistically competent care. According to the Department of Health and Human Services (HHS) National Culturally and Linguistically Appropriate Services (CLAS) Standards, cultural and linguistic competency is exemplified by "effective, equitable, understandable, and respectful quality care and services that are responsive to diverse cultural health beliefs and practices, preferred languages, health literacy, and other communication needs."¹⁶ Participants across all nine focus groups described difficulty in accessing services in preferred languages and the lack of culturally competent care providers; these drivers of disparities in health care were mentioned more frequently than any other equity-related concept (n = 58 | 9). Participants most frequently noted CLAS-related concerns in response to two open-ended prompts: "What comes to mind when you think of 'quality' in health care?" and "What do you think of when you think about 'disparities' in health care as they affect the communities you serve?"

Deficiencies in Linguistically Competent Care

Forty-four attendees across all focus groups other than those serving American Indian/Alaska Native communities (n = 44 | 8) specifically mentioned insufficient access to care in their preferred language as the primary driver of health disparities affecting their communities. English-language-only services and materials make it difficult for patients to access care, comprehend instructions, and adhere to treatment guidelines. Focus group members mentioned the need for clearer hospital discharge instructions in languages other than English, especially Spanish, Chinese, Japanese, Korean, Hindi, German, Russian, Nepalese, Burmese, and Hmong dialects. Participants also noted that patients with low literacy in their native language need materials translated at an appropriate grade level.

Linguistic competency at sites of care was defined by participants as the presence of bilingual health care providers or the availability of certified medical interpreters (n = 19 | 5). They argued that the dearth of professional interpreters and translators at certain health care facilities means

that for many elders, children or grandchildren must attend appointments with them to interpret. This can cause delays in care and often embarrassment for patients and family members:

"I have a large Chinese population here. ... Residents have to wait for their children [to] go to the doctors with them ... translate for them or ask certain questions to make sure they get the follow-up care that they need."

—Low-income | White community

Locating fully bilingual clinicians in certain specialties, participants said, is like "finding the Holy Grail." Interpreters who share the same dialect and culture as patients create trust, improving patient comfort and allowing them to be forthcoming with providers regarding their health, they explained. They also noted the value of consistency in interpreters across visits.

"Our older people ... have told me, 'It feels like I am getting naked every time a different interpreter comes in because I have to explain again how I feel to different people.'"

—Hispanic or Latino | low-income, urban community

Participants emphasized the value of in-person assistance of a certified medical interpreter who will understand and accurately explain medical terms. Call-in services may default to word-for-word interpretation, making errors that frequently lead to patient confusion and failure to follow medical advice, they said.

Participants argued that a lack of cultural competency among providers drives health disparities (n = 38 | 9). They suggested that a provider's ability to understand a patient's culture is as crucial as the capacity to diagnose illness in promoting health and well-being. They emphasized the need for providers to understand the history and values that their patients bring with them, not merely from a deficit model, but from an understanding of their cultural strengths.

"In the Polynesian community that I serve, I think we do very well at this stage in making our loved ones feel comfortable and making this experience for them a good one. ... COVID has brought so much death to our community ... just seeing celebration of life ... is something I think that is a cultural thing."

—Asian/Native Hawaiian or Other Pacific Islander | urban community

Participants noted the importance of cultural competency during end-of-life care to properly navigate sensitive health topics and incorporate traditional rituals.

"The end-of-life stage ... it's a lot of emotion. The Asian culture [is] not really used to talking about end of life and health care. ... People will very easily get offended when the Western world may bring this up as a matter-of-fact [topic]. ... That's the cultural gap here."

—Asian/Native Hawaiian or Other Pacific Islander | urban community

Providers' lack of linguistic and cultural competency is a particularly acute challenge for patients seeking mental health care. Participants noted the issues inherent in having sensitive, emotional conversations with people who do not speak the same language. Some mentioned sensitivity to cultural biases against receiving mental health services—especially relevant among Hispanic or Latino and Asian/Hawaiian or Other Pacific Islander communities—as a trait lacking in many providers (n = 25 | 6).

"Mental health care in Latino culture is ... taboo. ... You don't necessarily need those services; you need to pray ... go to church. [Are] there culturally competent services available? Are there ... providers that know that there's this bias against ... seeking services?"

—Hispanic or Latino | low-income, urban community

Participants also discussed the need for providers who understand the culture, history, and values of Black or African American patients. Members of those focus groups noted that failing to understand how one's cultural background shapes health care needs can leave patients feeling stereotyped and their health goals unheard and unattained.

"And another side to that too is ... the doctors; they're very intelligent, but ... they lack the social skills to speak to us. ... I've had experienced myself times where they ... went with the stereotype. ... You need to listen to me."

—Black or African American | urban community

Finally, participants from the American Indian/Alaska Native and Asian/Native Hawaiian or Other Pacific Islander focus groups voiced concern about the need for providers to be literate, or at least conversant, in non-Western medical approaches; to integrate spiritual needs with medical needs; and to align with patients' understandings of their health and disease processes (n = 11 | 4). For example, they spoke of the need for culturally appropriate foods in medical settings to help patients heal properly:

"[We need] to get Hmong meals into our hospitals here ... any culture-specific meals for our community members. ... In the Hmong community, we believe that after a woman gives birth, she should be on a chicken diet for the next 30 days. And our hospital is working on that."

—Asian/Native Hawaiian or Other Pacific Islander | low-income, rural community

Focus group attendees also spoke eloquently of the need to treat older patients as elders, understanding and respecting cultural heritage and traditional health practices as part of treating the whole person. From the perspective of the individuals they serve, these approaches not only are appropriately respectful, but also build patients' trust in the health care system and link patients to core health services.

Participants in all focus groups spoke of how much individuals in their communities need to see themselves represented by health care providers who "look like us," speak their language, and understand their culture.

"We know that tribal communities do better when they have tribal people from their own communities who are working with them and health care assistance to help engage them, keep them engaged in care. ... And in both small and larger health systems, we know that to be true."

—American Indian/Alaska Native | low-income, urban community

They stressed that providers from similar backgrounds foster trust, particularly in culturally sensitive areas like end-of-life and mental health care, and that in general, quality in health care means seeing themselves represented.

"Quality health care is having clinicians ... that can relate and connect with us and meet us where we are."

—Black or African American | low-income, urban community

At the same time, participants acknowledged that training and staffing providers from various racial/ethnic backgrounds will not be easy, particularly in areas where there may be culturally specific taboos, such as hospice care and mental health care. The same stigma that prevents patients from seeking certain services may impede professionals from entering those fields.

Participant Suggestions to Address Cultural and Linguistic Competency

In the absence of providers from their communities, focus group attendees suggested that health care providers need to develop cultural humility and be educated about the drivers of health disparities to effectively treat patients who are experiencing multiple social, economic, and health challenges.

“What I think of in terms of quality services [is] when the health service providers understand the climate in which the patients reside. ... During the pandemic ... we ran smack-dab into violence against Asians. ... That has a material effect on whether people come out of their houses, get vaccinated, whether they seek out medical [care]. ... [It] would be really nice if [the] medical industry would adopt what I call situational awareness.”

—Asian/Native Hawaiian or Other Pacific Islander | low-income, urban community

Focus group members suggested incorporating cultural competency training into medical school curricula in tandem with continuing education units (CEU) for providers (n = 12 | 7).

“Cultural humility needs to be incorporated into coursework, not just a CEU requirement.”

—Black or African American | low-income, urban community

Other participants asserted that providers need to develop enhanced social skills and tailor materials to the language, literacy level, and culture of patients. These positive communication abilities should be viewed as forms of cultural competency.

“Both for a provider perspective on ... respecting boundaries and understanding their [culture], and ... being able to tailor information and programming and services so that they can provide the right support so that families feel more comfortable accepting the help.”

—Hispanic or Latino | low-income, rural community

Having a basic understanding of a patient’s language and literacy level will allow a provider to more effectively listen and communicate with patients, participants stressed. Providers who take time to understand patients’ cultures, backgrounds, and languages can thus better understand their health concerns, aligning treatment with unique patient traditions and goals.

Low Health Literacy

Low health literacy among consumers was the third most frequently mentioned driver of health disparities in response to all prompts (n = 54 | 9). Participants who serve rural and low-income communities raised this concern most often.

Difficulties Understanding Insurance and Eligibility

According to focus group participants, difficulties stemming from health literacy begin prior to an episode of care with failure to understand insurance eligibility, what is covered, and where to seek types of services (n = 24 | 8).

“Not a lot of people know what their insurance can cover, what the benefit is. ... That’s why it’s so important ... as navigators and as community health workers ... to provide that service for ... our community.”

—Hispanic or Latino | low-income, urban community

Insurance eligibility literacy is complicated, though, by the inherent complexity of the U.S. health care system, gaps in coverage, and eligibility materials that contain jargon or are provided only in English.

“If [clients] don't understand what their coverage and their benefits are, they won't go out and use it. And we don't want to see any more clients that we could help that don't go ... even if there's health insurance, until it's too late.”

–Asian/Native Hawaiian or Other Pacific Islander | urban community

Focus group participants observed that materials sent by Medicare or by a physician's office or hospital—even if in their chosen language—are frequently written in terminology that patients perceive as dense and incomprehensible. They suggested the need to provide information in a culturally and linguistically competent way as a bridge to comprehension for patients with low health literacy.

“One of the major disparities is lack of education. ... This information is put out in ways that we can't interpret or comprehend because [of] the discrepancy in the education levels. ... They use the English language ... [but] it's like they [are] talking in a foreign language because the people not understanding what they're talking about.”

–Black or African American | urban community

These factors combine with social isolation, a lack of community support, and limited access to other sources of information to make an impenetrable fog of miscommunication for many older patients in underserved communities. Participants described these as particularly pressing problems for elders living alone with no family to interpret or assist them with access.

Low Literacy as a Barrier to Care

Individuals with low literacy are less likely to notice, recognize, and act on the need for medical care even if they are aware that they are eligible for services. Once in clinic, their problems with health literacy impede shared decision-making, as well as compliance and adherence, because beneficiaries cannot communicate their wishes effectively, do not understand their medications or their side effects, or are confused by chronic disease processes in general.

“They don't understand what's going on with their own illnesses. ... They know they are diabetic, but they don't understand what exactly is diabetic, their medication.”

–Asian/Native Hawaiian or Other Pacific Islander | low-income, urban community

Participants also noted that low health literacy interferes with patients' capacity to advocate for themselves, especially in high-pressure or rapid-paced environments.

“Sometimes clients will agree to do something ... they don't understand what they're agreeing to. They're just nodding ... because the doctor doesn't ... take the time to really understand what kind of service the client is looking for, what treatment is good for them or appropriate for them.”

–Low-income | Black or African American, urban community

Often deficits in providers' cultural competency and patients' health literacy overlap and exacerbate one another. Participants described patients labeled as noncompliant with treatments they did not understand or agreeing to treatments they would not have accepted had they understood.

Health Literacy and 'Information Deserts'

Participants from Black or African American, Hispanic or Latino, and rural communities (n = 6 | 3) cited beneficiaries with low health literacy as particularly susceptible to misinformation on social media and in other forms. Misinformation spreads especially rapidly in rural communities, participants said, because individuals live in “information deserts” where they lack access to diverse perspectives from educated peers or family members.

“When you and your neighbors ... have a political belief attached with COVID ... when your lived experience is [holds two fingers close together] this big and you can’t see outside of, ‘Hey, this is what my politician says about this’ ... we’re not going to vaccinate; we’re not going to be able to help.”

–Rural | low-income, White community

The delivery of valid health information cannot rival the spread of misinformation across social networks, participants serving Black or African American communities further argued.

“It’s so easy to spread disinformation on multiple platforms. ... And that is a health disparity in itself [which] contributes to larger health disparities that we haven’t addressed because we’re seeing it real time when dealing with the pandemic.”

–Black or African American | low-income, urban community

In these contexts, poor health literacy can lead to credulity toward vaccine and other health misinformation or overreliance on traditional or false home remedies.

Participant Suggestions to Address Low Health Literacy

Focus group members emphasized that providers should use plain language aimed at the literacy level of their patients. Participants (n = 19 | 6) suggested that providers slow down and take more time with low-literacy patients, asking questions and offering suggestions in a language that low-literacy patients can understand. Providers need to use methods of communication that allow patients to ask questions and demonstrate that they understand the treatment plan.

“Nowadays, doctors or [other] medical providers practice in a very short period of time. They complete the visit in 15 minutes. ... We don’t really have a mechanism to check how much the patient take[s] in, how much do they know?”

–Asian/Native Hawaiian or Other Pacific Islander | urban community

While providers may need to prioritize acute issues within allotted appointments, participants noted that they should set up follow-up visits with low-literacy patients to ensure that all of their needs are met.

“What takes precedence in this 15-minute [appointment]? ... One thing I can say about Medicare and Medicaid, you can call the patient back. ... There is no cap on the amount of visits. ... Maybe there is going to be a time where you have a visit, and that patient really needed to speak to you ... and maybe it wasn’t health-related.”

–Black or African American | urban community

Other suggestions included using nonclinical team members—patient navigators, social workers, community health workers, even receptionists—to proactively address gaps in knowledge and help patients navigate complex health systems and understand their eligibility (n = 15 | 6). Health workers from the community they serve may connect patients to resources in their preferred language and on par with their literacy level.

“As their provider ... we understand that you’re only given a certain amount of time, so what other resources are you providing this patient? Am I just going to leave you with a brochure that tells you this is what you’re susceptible to? Or am I going to give you a number or a resource to someone else that can actually spend the time?”

–Black or African American | low-income, rural community

Increasing appointment time slots can help patients with low health literacy to ask questions and understand their diagnosis, medication, and treatment. Spending more time together may also improve the provider's relationship with a patient and understanding of the patient's needs. Nonclinical members can help meet the literacy and navigation needs of patients.

Bias in Care Delivery

None of the question prompts posed in focus groups asked about caregiver bias, but 35 participants across all groups mentioned bias as a key driver of disparities in the quality of health care delivery. Participants (n = 35 | 9) shared examples of bias in care in the communities they serve, as well as from their own experiences and those of family members, at both provider and health system levels. Experiences took the form of differential treatment based on race, ethnicity, socioeconomic status, sexual orientation, gender identity, and insurance coverage.

Bias in care delivery was mentioned most frequently in the context of conversations about “What do you think of when you think about ‘disparities’ in health care as they affect the communities you serve?” and “What comes to mind when you think of ‘quality’ in health care?” However, such concerns were raised in discussions across seven of the 10 measure prompts posed in all nine focus groups and with respect to care in primary settings, emergency departments, hospitals, dialysis centers, and home health. Bias in care was discussed most frequently in the American Indian/Alaska Native, Hispanic/Latino, and Black or African American groups, but it was mentioned in all groups. Participants suggested several sources of inequitable care delivery, ranging from the implicit and explicit bias of individual providers to institutional or structural racism.^{17,18}

Institutional Racism

Participants described institutional racism (n = 13 | 6) as bias stemming from how health care systems are organized, as well as having to adapt to a “system that wasn't created for us.” Participants contended that high-quality services exist but are delivered inequitably.

“You can have wonderful facilities, all the services, but it's how those services are delivered. Traditional health care systems ... have been embedded with institutional racism. And because of that, it really ... has an impact on how care is delivered.”

—Black or African American | urban community

Perceptions of Insurance-Based Bias

Participants in eight focus groups, excluding the rural group, described their communities' perceptions that patients with different types of insurance coverage (private versus public or Medicare versus Medicaid) experience differential treatment (n = 15 | 8). Community members believe that patients covered under Medicaid experience longer wait times and less time with providers regardless of acuity. These concerns were voiced most frequently in response to prompts concerning hospital readmission and timely access to brain scans when there is a suspicion of stroke.

“When I'm sitting in emergency room with my clients, or [by] myself, or with family members, what I've seen are disparities. ... It goes by color ... and what health insurance you have. ... I see the ones that with private, good health insurance go first. And the people with Medicaid will sit there and wait longer.”

—American Indian/Alaska Native | low-income, urban community

Focus group participants recounted anecdotes of patients on Medicaid who were diagnosed with COVID-19 and sent home from the hospital; conversely, patients they believed to be less acutely ill who had Medicare or employer-provided insurance were admitted and placed on ventilators.

Similarly, in response to a measure prompt concerning readmission, participants in the focus group serving Black or African American communities stated that higher rates of 30-day rehospitalization among patients in their community were caused by premature discharge. They contended that hospitals did not want to keep low-reimbursement Medicaid recipients on an inpatient basis.

The American Indian/Alaska Native focus group also discussed a perception of differential treatment based on insurance coverage. One participant shared the view that doctors spend less time with patients on Medicaid than those with Medicare or employer-provided plans, inhibiting opportunities to discuss comprehensive screenings:

“So, there’s inequity baked into the system from, on the provider side ... things like getting reimbursed. Like if [providers] have to spend more time with a patient in the room to talk to them about their cancer screenings ... they might not prioritize ... preventative care, especially if they’re not getting paid the same rate that they would with a private payer.”
—American Indian/Alaska Native | low-income, urban community

Participants also noted that state-level differences in Medicaid expansion and eligibility criteria drive disparities in care, such as when a patient has to relocate to maintain coverage. Participants decried such policies as unfair.

Perceptions of Provider Bias

Participants (n = 21 | 6) in six focus groups also recounted experiences with provider biases, whether implicit or explicit. In particular, members of the focus groups serving American Indian and Alaska Native, Black or African American, and Hispanic/Latino communities described patient perceptions of biased treatment when seeking care.

“They tend to just stereotype us all. We’re all Hispanic, and that’s it. ... And we try to bring a lot of knowledge into that, that we’re not all the same. We all have different values, and we should not be stereotyped.”
—Hispanic or Latino | low-income, rural community

Participants also suggested that when rushed or faced with limited information about a complex problem, providers may default to negative stereotypes. They mentioned provider biases that certain groups experience pain differently, are hypochondriacal, or are more likely to be noncompliant or nonadherent.

“The systematic issue of African American[s] being hypersensitive, especially African American women, when it comes to dialysis or any different services like that, that if we’re stating something that’s actually going on with us, it’s always like we’re [exaggerating] it or making it bigger than what it is than my counterpart, a white female, going in with the same service.”
—Black or African American | urban community

Participants mentioned research that focused on different treatment of pain for certain racial groups and gave examples of worse health outcomes for their population that perpetuate concerns of bias within the health care system.

“Black patients in general, we have been believed to have different pain levels, so we were tested on different levels of pain.”

–Black or African American | urban community

Participants in rural, American Indian/Alaska Native, and low-income groups (n = 5 | 3) characterized patients’ experiences of anti-LGBTQ bias; specifically, participants mentioned difficulties patients faced, particularly in rural areas, in seeking care that is gender-affirming or at least not homophobic or transphobic.

“About 43% of LGBTQ folks in rural areas are turned away from hospitals, and that’s inclusive of emergency care or basic care. Iowa being a rural majority state, that happens in our state often. And a lot of times, people think, how does that work? It’s because there’s a lack of knowledge around rights when it comes to health care.”

–Rural | White community

Participants noted that anti-LGBTQ bias is especially concerning for older individuals who may struggle to find trustworthy care providers after a physician they have known and trusted retires.

Patient Distrust and Mistrust

Bias in care delivery not only drives health disparities because of the potential for unequal care, but also because of the effects on patient and community trust of the health care system. The experience or perception of bias creates patient distrust that has ripple effects among patients’ families and communities.

Distrust is a “belief informed by experiences or reliable knowledge that the health care system, or provider, will not act in the patient’s best interest,” while mistrust is developed from a “general sense of suspicion of the system or provider not based in a personal experience.”^{19,20}

Participants discussed both of these concepts. When distrust arises from an individual encounter, the story can spread mistrust and reluctance to seek care across communities, sometimes for generations.

“I don’t think Black and brown people have been given equity in regard to treatment. You see that in maternal health rates. ... As we went through COVID, in regard to vaccine hesitancy, we seen it there.”

–Black or African American | low-income, urban community

Thirty-three participants across all focus groups (n = 33 | 9) gave examples of how an experience of unequal care for an individual created a pervasive sense of unease across a population. Community members hearing about unequal treatment due to differences in insurance coverage or a lack of coverage question whether the health care system exists to help people get and stay well or is no more altruistic than any other business:

“They’ve been treated differently when they don’t have insurance coverage. They’re seeing hospitals as deathbeds. So, trust ... has a lot to do with that as well.”

–Asian/Native Hawaiian or Other Pacific Islander | low-income, urban community

Participants in the focus groups serving American Indian/Alaska Native, Asian/Native Hawaiian and Other Pacific Islander, Black or African American, and Hispanic or Latino communities also explained that an experience of bias in one health care setting extended to create pervasive mistrust of all health care settings:

“When our people are disrespected, they don’t want to go back to the health care system. I have elders who still won’t take shots because they had a bad experience with some system. They still won’t even get surgery because they were disrespected at some time in their life.”

–American Indian/Alaska Native | low-income community

Similarly, participants who serve LGBTQ patients, particularly in rural communities with few gender-affirming options, described how experiences of anti-LGBTQ bias or insensitive practices like misgendering or “dead naming” could discourage an entire community of LGBTQ patients from seeking care (n = 5 | 3). Their examples demonstrated that bias extends to all patient-facing professionals.

“Once you have a negative experience, it’s like a one-and-done kind of deal for LGBTQ folks. ... I go into a health care facility, and I’ve changed my name. ... And I walk in there, and they say, ‘Hello, [former name], how are you?’ I’m done. I won’t be going back to that health care facility.”

–Rural | White community

Participant Suggestions to Address Bias in Care

Participants called for combatting bias across the care continuum. To counter distrust and mistrust, all caregivers should seek to understand the impacts that bias has on individuals and communities.

“One of the things I think about when it comes to quality is patient experience, from the very beginning, through your visit, through your follow-up. ... And I think what can help contribute to that is the provider’s ... office and their training and their knowledge and awareness of what patient experience means, especially to the population that they served.”

–Asian/Native Hawaiian or Other Pacific Islander | urban community

Participants underscored the need for providers to create psychologically safe spaces for patients to disclose information (n = 7 | 3).

“Having a safe space where they can open up and ... not be judged by that and get the health care that they need is extremely important.”

–Hispanic or Latino | low-income, rural community

Some participants mentioned patient experience surveys to measure perceptions of bias as one way to hold providers accountable.

Group-Specific Themes

In addition to the crosscutting themes that emerged across all discussions, issues raised by fewer participants were highly salient in these specific focus groups:

Black or African American: Participants reported poor-quality dialysis center staff (n = 13 | 2), discussing instances of fatal treatment errors (n = 3 | 1). These participants also emphasized inadequate portability of personal health information, which contributed to misdiagnosis (n = 6 | 1). Finally, concerns pertaining to effects of overpolicing and historical mistreatment of African Americans were raised (n = 8 | 2). As a result, participants discussed that African Americans may be more likely to lack trust in the health care system and fall prey to misinformation on social media.

American Indian/Alaska Native: Participants mentioned bias in the form of racism, homophobia, weight stigma, sexism, and transphobia as drivers of health disparities (n = 10 | 1). Bias in care was believed to result in longer wait times, inaccurate diagnoses, and avoidance of care based on distrust. Participants also discussed the importance of honoring indigenous practices such as traditional healing and prioritizing community wellness.

Asian/Native Hawaiian or Other Pacific Islander: Participants emphasized the importance of health data disaggregation as it pertains to the many subgroups that make up this classification and decried an inaccurate and harmful “healthy immigrant” stereotype. (n = 6 | 1). These participants also raised concerns about the rise of anti-Asian hate crimes during the COVID-19 pandemic and subsequent effects on the willingness of Asian Americans to seek vaccination and health care.

Hispanic or Latino: Participants discussed strains that COVID-19 placed on patients already living at or near poverty, creating behavioral health challenges and unmet needs (n = 4 | 1). In addition, participants noted a lack of adequate services and culturally competent providers. They stressed the need for linguistically appropriate care and in-person translation services (n = 11 | 2). Finally, participants described changes to immigration laws creating waves of fear and leading individuals to avoid seeking care (n = 3 | 1).

Low income: Those serving low-income individuals highlighted poverty as a driver for health disparities and stressed the need to address social services concurrently with health care needs (n = 9 | 1); they noted that working patients often “fall between the cracks”—not poor enough to qualify for Medicaid but unable to afford plans that would cover more than hospital and emergency care (n = 3 | 1). Low health literacy and lack of knowledge about insurance were also cited as barriers to adequate care.

Rural: Participants discussed patient concerns surrounding medical debt (n = 6 | 1). Patients face limited care options in their communities and are subject to higher costs than are residents of urban areas (n = 2 | 1). Available sites may not accept a patient’s insurance plan or may have contributed to a negative patient experience, leaving the patient with limited alternatives. Finally, difficulties combatting misinformation in rural areas were noted, as low literacy levels generally prevail, and limited sources of accurate information exist (n = 3 | 1).

Implications for Health Equity and Quality Measurement

The qualitative findings from this project add to an understanding of disparities in health care quality from the community perspective and where measurement could foster health equity. Focus groups identified social drivers of health, barriers in the health system, and barriers in clinical encounters as key drivers of disparities. Based on key findings and participant suggestions, equity measures are needed to address bias in care delivery, basic unmet needs and social determinants of health, cultural competency, access, and health literacy.

In support of the 2016 and 2020 ASPE recommendations for the development and use of health equity measures,^{21,22} CMS introduced three measures in 2023 aimed at screening and assessing patient-level social risk factors and improving facilities' commitment to health equity outcomes. Beginning with voluntary reporting in the CY 2023 reporting period and mandatory reporting in the CY 2024 reporting period, hospitals in the Inpatient Quality Reporting (IQR) Program will submit two patient-level measures aimed at screening and assessing social risk factors: *Screening for Social Drivers of Health* and *Screen Positive Rate for Social Drivers of Health*.^{23(p. 48785)}

Also in CY 2023, hospitals began reporting a new structural measure, *Hospital Commitment to Health Equity*,^{23(p. 48785)} which assesses “a suite of equity-focused organizational competencies aimed at achieving health equity for racial and ethnic minority groups, people with disabilities, members of the LGBTQ+ community, individuals with limited English proficiency, rural populations, religious minorities, and people facing socioeconomic challenges.”^{23(p. 49193)} These new health equity measures align with concerns about social drivers of health mentioned across all focus groups.

CMS is addressing issues of provider bias through the Consumer Assessment of Healthcare Providers and Systems (CAHPS). As of 2024, the Medicare Advantage and Prescription Drug Plan (MA & PDP) CAHPS survey added a new question to ask Medicare beneficiaries whether they believe they were treated in an unfair or insensitive way during an episode of care because of their health condition, disability, age, culture or religion, language or accent, race or ethnicity, sex, sexual orientation, gender or gender identity, or income.²⁴ The new survey item will help identify and address the sources of bias in care and demonstrate to members of underserved communities that CMS takes their concerns seriously.

CMS recognizes that low digital health literacy is a barrier to telehealth access. CMS is finalizing requirements for Medicare Advantage organizations to develop and maintain procedures to identify and offer digital health education to enrollees with low digital health literacy to address this barrier.^{25(p. 22121)} Those organizations will have flexibility to design their own screening and education programs for addressing low digital health literacy.

Future measure development may draw upon the National CLAS Standards¹⁶ for health literacy and the supplemental CAHPS Health Literacy Item Sets²⁶ to address broader aspects of health literacy. The CLAS standards establish a blueprint for organizations to address health literacy and call for “regular assessments of community health assets and needs [used] to plan and implement services that respond to the cultural and linguistic diversity of populations in the service area.”¹⁶

The CAHPS Health Literacy Item Sets include single-item and composite measures that allow beneficiaries to evaluate how well providers and health plans communicate about medicines, tests, and results.²⁶ Opportunities exist to expand such health literacy measures across additional

CMS settings and tie measure performance to payment or reward for decreasing disparities in health literacy.

Discussion

This report summarizes the perspectives of a diverse group of people who help individuals and families in underserved communities to solve problems accessing health care. As community health workers, patient navigators, health educators, social workers, and health outreach staff at local churches and community centers, they possess a system-level understanding of health care and thus offered insights on the drivers of disparities in quality health care delivery evident in the national data. As members of the communities they serve, they also drew from their own experiences as patients and family members of Medicare and Medicaid beneficiaries.

Key Findings

- Baseline needs such as housing, nutrition, and transportation are prerequisites to accessing high-quality health care and achieving favorable outcomes.
- Provider shortages present challenges for patients in low-income and rural communities.
- Providers' lack of cultural and linguistic competency contributes to deficiencies in access to and quality of care. Patients from underserved communities need more time to interact with clinicians.
- Poor health literacy is a key barrier to access and adherence to treatment.
- Insurance plans and health care services can be too complex for patients to navigate.
- Members of communities that have experienced institutional bias and individual prejudice in the health care system mistrust providers and are reluctant to seek care.
- Cultural stigma is a key barrier to accessing behavioral health services.

An important takeaway from these conversations is the perception, articulated by a focus group participant, that quality is multidimensional.

"Quality of health ... is a very wide field, starting from accessibility of resources, health care being equitable to all communities, affordability of health care."

—Black or African American community

Participants in all nine focus groups mentioned disparities in outcomes during the COVID-19 pandemic.

Across all groups, the most frequently mentioned drivers of disparities in health care quality appeared at three levels:

- At the societal (macro) level, they described challenges involving unequal access to care, effects of social drivers of health, and low health literacy.
- At the system (meso) level, they described the lack of regular sources of primary care for low-income and rural consumers, as well as long wait times and difficulty accessing specialty and hospital care in some rural and inner-city areas.
- In the clinical setting (micro) level, participants explained how shortages of culturally and linguistically competent care adversely affect individuals from underserved communities. Language issues are central for communities whose primary language is not English. However, cultural competency and understanding the patient's social context are equally pressing concerns among all groups. Participants across all focus groups also

stressed that bias in care delivery—whether driven by systemic or individual biases and whether implicit or explicit—was a key driver of unequal outcomes. Further, the experience of bias damages trust in the health care system, not just in individuals, but within entire communities, creating a further source of inequity in health outcomes.

Many of these drivers of disparities in health care quality are mutually reinforcing. For example, in focus group discussions, participants concurrently discussed providers with low cultural competency and patients with low health literacy. Similarly, concerns about adequate time with providers were expressed alongside communication difficulties in the clinical encounter. These intersecting concerns from the perspective of focus group participants suggest that precisely the patients who could benefit most from an ongoing relationship and unhurried clinical encounters with a primary care provider are the least likely to have that crucial source of care. Quality measures designed to address social drivers of health may foster positive change in disparities such as bias in care delivery, access, cultural competency, and health literacy and thus advance health equity.

Limitation

Although the focus group participants represent perspectives of multiple demographic groups and social strata within the United States, their views are not intended to be statistically representative. Qualitative research with focus groups using purposive sampling is designed to elicit information-rich perspectives from a targeted array of respondents, selected to shed light on the phenomenon of interest. These focus groups are meant to offer useful insights that may point to fruitful directions for future measure development.

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Appendix D – 2024 Impact Assessment Methods

Introduction

The 2024 Impact Assessment Report evaluates the quality and efficiency impact of endorsed measures and a limited number of unendorsed measures in use in 26 CMS quality programs between 2016 and 2021 for which data are available. The report focuses on health equity and the impacts of the coronavirus disease 2019 (COVID-19) public health emergency (PHE) on quality measurement.

This appendix describes the methods HSAG used to assess the impact of such quality measures, defined as:

- Effects of the COVID-19 PHE on quality measurement.
- Improvement or decline in measure performance.
- Disparities in measure performance.
- Numbers of patients impacted by changes in measure performance.
- Costs avoided associated with improvements in measure performance.
- Qualitative data about groups that experience health disparities, derived from focus groups with community leaders who work with them.

Scope of the Assessment

The Impact Assessment Report presents an overarching view of CMS quality and efficiency measures by describing national measure scores, trends, and disparities and estimating associated impact to patients and costs avoided. This function distinguishes the assessment from individual program evaluations that assess the effects of specific program features and compare providers and facilities, as well as evaluations of the scientific properties of individual measures implemented in CMS programs. The analyses described here were subject to data availability, which could vary based on how long a CMS program has used a measure. The COVID-19 PHE also affected data availability, as CMS exempted providers from reporting quality measures for some of the data period for the 2024 report.

Included Measures and Programs

The team identified the measures applicable to the Impact Assessment by using the inclusion criteria identified in the statuteⁱⁱⁱ:

- (1) The consensus-based entity–endorsed measure is used pursuant to a program described in section 1890(b)(7)(B)(i)(I) of the Act.
- (2) The endorsed measure is used to report performance information to the public.
- (3) The endorsed measure is used in a health care program other than a Medicare program.

Measures that met any of the above inclusion criteria and were implemented in programs between 2016 and 2023 were designated for inclusion and data analysis in the 2024 Impact Assessment Report.^{iv} This information was identified in final rules published in the *Federal Register*,¹ CMS news releases,² CMS.gov,³ and Medicaid.gov⁴ through March 2023. Data sets used in classification systems to establish payment rates were excluded.^v

ⁱⁱⁱ Section 1890A(a)(6) and 1890(b)(7)(B) of the Social Security Act (the Act).

^{iv} For completeness, the report includes analyses of both endorsed and non-endorsed measures in CMS programs.

^v Section 1890(b)(7)(B)(ii) of the Act.



The team identified 1,082 measures, counted at the program level, that met the initial inclusion criteria and were implemented in the 26 CMS quality programs between 2016 and 2023.⁵⁻¹¹⁷ These measures were included in the portfolio analysis, which provides statistics about the measures included in CMS quality programs. Criteria were further applied to the measure list based on the data received to identify the subset of measures for each analysis. The COVID-19 analysis—performed prior to other analyses on all measures in use during the COVID-19 PHE—required at least three consecutive data points between 2016 and 2019 and an additional data point in 2020 or 2021. The trend analysis required at least three consecutive data points between 2016 and 2021.

Inclusion/Exclusion Criteria for 2024 Impact Assessment Analyses

Measure Portfolio Analyses

Inclusion: Measures used in CMS programs in performance period 2023 (listed in Appendix B); also, for comparative counts, measures in CMS quality programs from 2016 to 2023

COVID-19 Analysis

Inclusion: Measures with at least three annual data points from 2016 to 2019 and at least one data point in 2020 or 2021, after removal of annual data points due to low data reliability or substantive specification changes.

Exclusions:

1. Any data point with a data collection period ending in 2020 or 2021 that contains no data from that year because of exemptions during the COVID-19 PHE. (Note: Such data points can be included in the trending analysis)
2. Any measure missing data for more than half of the measurement period (e.g., more than two quarters of a 12-month measure)

Inferential Analyses (i.e., trends, disparities, patient impact, costs avoided)

Inclusion: Measures with at least one annual data point obtained between 2016 and 2021

Exclusions:

1. Measures that are designated for optional reporting
2. Measures that providers can select for reporting to meet program requirements (e.g., select six from a list of available measures), including MIPS eligible clinician measures and Promoting Interoperability electronic clinical quality measures
3. Measures in Part C and D Star and Display that address plan characteristics

Trends

Inclusion: Measures that have a minimum of three annual data points for the final trending data series between 2016 and 2021 (annual data points need not be consecutive) after removal of annual data points because of low data reliability, substantive specification changes, or significant effects detected in the COVID-19 analysis.

Exclusion: Measures constructed such that year-over-year changes in measure scores cannot be interpreted as changes in care quality.

The 2021 Impact Assessment Report identified a set of measures called Key Indicators to highlight in the main report, based on certain measure attributes and expert input. That approach has been revised to consider all measures with sufficient data for highlighting in the final 2024 Impact Assessment Report. This all-measures approach ensures data-driven selections and maximizes flexibility to include measures of interest to all parties.¹¹⁸



CMS Measures Portfolio^{vi}

The report aligns with CMS strategic goals and the Meaningful Measures Initiative, which has informed CMS quality measurement policy since 2017. Structured according to Meaningful Measures 2.0,^{vii} the report devotes a chapter to each of the framework's eight priorities: Person-Centered Care, Equity, Safety, Affordability and Efficiency, Chronic Conditions, Wellness and Prevention, Seamless Care Coordination, and Behavioral Health. Measures are analyzed and findings organized under the applicable priority.

To further categorize measures, the report relies on the Cascade of Meaningful Measures 2.0 framework,¹¹⁹ a tool that shows in increasing detail how CMS measures aspects of health care. The team exported measure data from the CMS Measures Inventory Tool (CMIT) in March 2023 to determine each measure's primary or secondary priority and goal combination.^{viii} Differences in measure classification found in approximately 1% of measures were resolved with the CMS measures management contractor.

During this exercise, certain measures included in the Impact Assessment were not listed in CMIT (e.g., Medicare Part C and Part D display measures) or categorized there by the Meaningful Measures 2.0 framework (e.g., historical measures no longer implemented in a CMS program). In such instances, the team assigned a suitable priority and goal from the Cascade. Objectives were not published in CMIT during report production, so the team assigned to each measure an objective aligned with the designated priority and goal. When a measure did not align with any objective in the Cascade, the team assigned an "other" temporary objective (e.g., Other: CAHPS-related).

Measures by type – Measures for the 2023 performance year were classified using the Donabedian model^{120,121} of structure-process-outcome (modified to include patient experience and payment categories and patient-reported outcome performance measures), defined as follows:

- Structure – features of a health care organization or clinician relevant to the capacity to provide health care
- Process – steps in providing good clinical care, supported by scientific evidence that the process increases the probability of achieving a desired outcome
- Outcome – results of health care that patients experience, such as clinical events, recovery and health status, patient-reported outcomes, and experiences in the health system
- Cost and resource use^{ix} – total health care spending by payer or consumer, including total resource use and unit price(s) for a health care service or services associated with a specified patient population, period, and unit(s) of clinical accountability¹²²

Measure types were assigned via guidance from CMIT, program documentation, consensus-based entity (CBE) documentation, and subject matter expertise.

^{vi} The portfolio analyses count unique measures based on published rules or program documentation by removing duplicate measures used in multiple programs. Appendix B contains a unique identifier, titled Measure-Level CMIT ID, and a full list of program-specific measures.

^{vii} Any changes to the Meaningful Measures or Cascade of Measures frameworks after March 2023 are not reflected in the measure classifications used in this report.

^{viii} Subsequent classifications in CMIT may vary from those in this report.

^{ix} Measures are classified as cost and resource use only when the measure attributes a dollar figure to the care provided.



Focus on outcomes and burden reduction This metric compares the percentage of outcome measures and the number of unique measures in 2023 versus 2016.

Digital data sources^x – CMS has set a goal of advancing quality measurement by transitioning to digital quality measures, or dQMs, in its quality programs. As a metric of initial progress, the percentage of measures with at least one digital option for submitting data for the 2023 performance year was calculated for each program measure portfolio. A review of measure specifications documented whether a measure used a digital data source (i.e., administrative system, laboratory system, electronically submitted clinical or social needs assessment, electronic health record (EHR), prescription drug monitoring program, medical instrument or wearable device, patient portal, health data application, health information exchange, or clinical registry)¹²³ and did not require manual abstraction of data from medical records for submission.

Coverage of CMS priority goals by quality measures – Stratified by accountable entity (e.g., accountable care organization, facility, health plan), this indicator signifies the presence or absence of measures for the 2023 performance year that represent Meaningful Measures 2.0 goals for each priority. Appendix B categorizes each measure by priority.

Data Acquisition and Validation

The team requested the data needed to analyze measure performance directly from the CMS quality programs and their respective contractors responsible for data collection and/or computing measure scores. Data owners were asked to provide data for all years that a CMS quality program used a measure through 2021. If data received for prior Impact Assessment Reports could be used for the 2024 report, then data owners were asked only to provide additional years of data. When beneficiary-level data with Medicare Beneficiary Identifiers (MBIs) or Health Insurance Claim Numbers (HICNs) were available, demographic and geographic data were linked with the measure data at the beneficiary level using data from the CMS Center for Clinical Standards and Quality's Centralized Data Repository (CDR) or, in the case of race and ethnicity, the Medicare Bayesian Improved Surname Geocoding 2.1 (MBISG)¹²⁴ data set if the data owner did not provide beneficiary-level data elements-. Linked nine-digit ZIP codes were used to assign the U.S. Census block group and Area Deprivation Index (ADI) using information from the University of Wisconsin Neighborhood Atlas,^{125,126} stored in the CDR. A beneficiary's five-digit ZIP code was used to identify a U.S. county of residence to classify the beneficiary along an urban-rural gradient based on the NCHS Urban-Rural Classification Scheme for Counties.¹²⁷

A data validation checklist was used to guide a review of datasets and documentation received from data owners, focusing on completeness and correctness. Data received at the beneficiary or provider level required aggregation to calculate national and stratified scores. Then, national-level scores produced from the acquired data were compared with scores publicly reported by CMS to verify the results. Unexplained differences were researched and, if needed, referred to the data owners for consultation.

After the comparison of national results, measure scores, numerators, denominators, and the number of reporting providers were plotted for all years in the available data series, these data

^x Analysis for this metric is conducted at the program level because multiple programs can use the same measure with different data sources.

were manually inspected for indications of measure specification changes, changes in utilization, and/or changes in provider participation. When such changes were observed, further research of use of the measure was conducted to determine any known causes.

Analytic Methods

The following describes the quantitative (inferential) analyses conducted for the 2024 Impact Assessment Report:

- Changes in measure scores during the COVID-19 PHE: Compared observed measure scores with expected measure scores, based on prior trends, both nationally and for subgroups of interest; in cases of large effects, determined potential for bias resulting from changes in participation of accountable entities.
- Trends: Compared measure performance over 2016–2021 with national achievable results calculated using the Achievable Benchmarks of Care (ABC) methodology.¹²⁸
- Disparities: Identified differences in outcomes or care demonstrated by comparing measure scores for subgroups of interest with those of a reference group.
- Trends in disparities: Compared measure performance for subgroups of interest to examine differences over time.
- Patient impact: Estimated the number of patients affected by improvements in measure performance.
- Costs avoided: Estimated impact on costs associated with improvements in measure performance.
- Qualitative analysis: Collected perspectives on the drivers of disparities in health outcomes and health care quality from community health workers and representatives of community-based organizations that worked in medically underserved areas.

Table D-1 highlights how the methodology for quantitative analyses differs significantly from that used for the 2021 Impact Assessment Report.¹²⁹

Table D-1: Significant Changes Between 2021 and 2024 Impact Assessment Report Methodologies

Analysis Item	2021	2024	Rationale
COVID-19 Impact	N/A	Effect of COVID-19 public health emergency (PHE) on national and stratified measure scores	Analysis was required to identify possible effects of COVID-19, interpret trends and disparities during the period of analysis, and glean lessons learned for future national emergencies.
Trending time frame	2013–2018	2016–2021	Trending time frame was updated for the 2024 report to the most recent six years of available reporting data.
New disparity variable	Disparities analyses included age, sex, race/ethnicity, dual eligibility, income, urban/rural, and Census division.	All variables used in 2021 Report plus the Area Deprivation Index (ADI); MBISG is used as the data source for race/ethnicity if not provided by data owner.	Use of the ADI, which includes 17 socioeconomic variables shown to be associated with health care outcomes, contributes to the report focus on health equity. Use of the MBISG improves the accuracy of race/ethnicity assignments at the patient level.

Analysis Item	2021	2024	Rationale
Measure selection	Determined by expert opinion guided by classification scheme for Key Indicators	No separate category of Key Indicators	All measures were classified and considered for highlighting in report based on findings.
Description of disparities change	Improving, declining, or stable	Closing, worsening, or stable/undetermined	Updated terminology based on CMS reviewers' guidance
Disparity trends	Based on comparison of trend estimates calculated separately for each population group using a log-linear model	Based on comparison of trend estimates calculated separately for each population group using a linear regression model	Approach aligns with AHRQ methodology ¹³⁰ and is conceptually similar to methodology used in CMS Office of Minority Health stratified reports. ¹³¹
External sources of data	Not directly linked to results in main report	Included when feasible for comparison with Impact Assessment data	The TEP/FASC Methods Workgroup recommended published sources of external data to improve the validity of report findings.
Inclusion of Medicaid data	Available Medicaid data included only in appendices	Medicaid-produced trending results incorporated in main report for context	The TEP/FASC Methods Workgroup encouraged team to include Medicaid results in main report as an important indicator of national health care quality.

COVID-19 PHE Effects

The purpose of these analyses was to characterize the differences in measure rates during the COVID-19 PHE and glean lessons learned to prepare the CMS measurement enterprise for future emergencies. Recent measure performance trends were compared with projections of trends prior to the PHE (i.e., observed versus expected rates) to identify changes in measure scores. Further analysis examined differential effects on the quality of care provided to beneficiaries, especially communities that historically have been medically underserved. Identification of COVID-19 effects should not be construed as implying a known causal mechanism linking direct or indirect effects of the COVID-19 PHE on measure scores. The analyses were designed to examine the following:

- **Effects on measure performance:** changes in measure performance since the COVID-19 PHE, examined to determine whether data obtained could be relied upon for trends and disparities analyses
- **Effects on disparities:** differential effects of the COVID-19 PHE on historically disadvantaged beneficiary population groups

To ensure sufficient reliable data to establish baseline trends, measures were included in the

Reliability of Measure Scores

To ensure that the measure rates analyzed were reliable estimates of performance, data were excluded from point-in-time analyses if the national or stratified score was based on a sample size of less than 30 or if the relative standard error (standard error of the annual score divided by the annual score multiplied by 100) was greater than 30%. Trend analyses were not performed for a measure unless at least 50% of the annual data points in the time series met these criteria. The selection of these thresholds was guided by reliability standards used by the National Center for Health Statistics.

COVID-19 analysis if at least three annual data points prior to 2020 and at least one data point in 2020 or 2021 were available and met reliability standards.^{132,133} Annual data points found to be affected by the COVID-19 PHE were excluded from further analyses such as trends and disparities.

Effects on Measure Performance

These analyses examined whether measure trends were disrupted during the COVID-19 PHE. Annual measure scores Y_t , for available data for years 2016–2019, were regressed on data year t , using a linear model^{xi}:

$$Y_t = \beta_0 + \beta_1 t + \varepsilon_t \quad (1)$$

Predictions of the mean annual scores in 2020 and 2021, $\hat{Y}_{\{t=2020\}}$ and $\hat{Y}_{\{t=2021\}}$, calculated from the model intercept, β_0 , and slope, β_1 were compared with observed annual scores in the same years. If the absolute value of the difference between the predicted and observed scores was at least four times greater than the absolute value of the largest residual ε_t , and the observed score was significantly different from the predicted score, treated as a fixed value, the measure was considered potentially affected by the COVID-19 PHE. Statistically significant differences between the observed and predicted values were evaluated using a one-sample t -test ($\alpha = 0.05$). If significant effects were observed in either 2020 or 2021, those data points were used only for summarizing COVID-19 effects and were not considered for further trend and disparities analyses in the 2024 report. Data were trended only through the year not affected by COVID-19.

Effects on Disparities

This analysis leveraged the same methodology used to evaluate effects on measure scores but stratified the results by population groups for which data were available and of sufficient quality. The analysis detected significant differences between observed and predicted measure scores; variations in the magnitude of these differences were interpreted as potential differential effects of COVID-19 on population groups of interest. See the *Disparities* section for information on the population group stratifications.

Examples of larger differential effects of COVID-19 PHE were identified by calculating pairwise differences in the estimated COVID-19 PHE effect for all pairs of groups within stratifying variables. For example, differences in observed minus expected deviations during 2020 or 2021 for White enrollees and Black or African American enrollees and between Asian or Pacific Islander and Black or African American enrollees. This list of all pairwise differences was sorted, and examples from among the largest values where performance was worse than expected for both groups were checked visually for face validity. Examples for the report were then chosen from among results that were worse than expected during the COVID-19 PHE and where a significant COVID-19 PHE effect was detected in the unstratified analysis.

Reporting Bias

To assess the potential for bias in reporting, the team analyzed performance for accountable entities in the last available year before the COVID-19 PHE. The team compared the distribution of scores for all entities versus a subset constructed by excluding those entities that did not subsequently report measure data in 2020 or 2021. A significant Wilcoxon rank-sum test

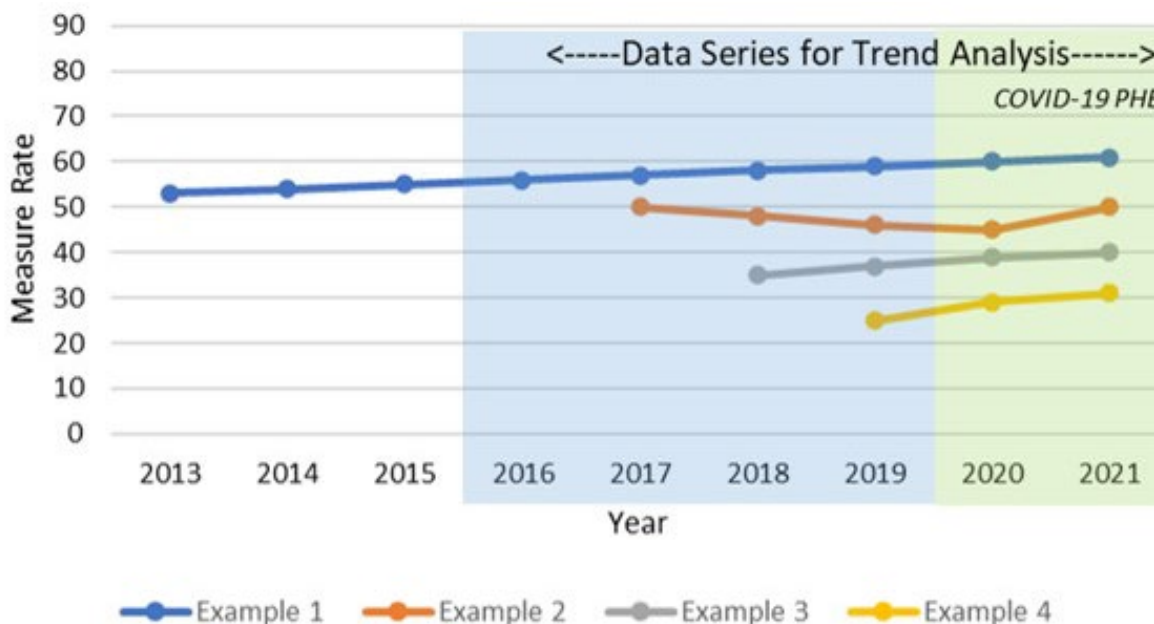
^{xi} In cases where visual inspection of the data indicated the linear model was a poor fit to the data and at least four annual data points were available, a nonlinear locally weighted scatterplot smoother (LOESS) was used to generate predictions.

($\alpha = 0.05$) was taken as evidence that the loss of those entities in either 2020 or 2021 could bias the results.

Trends

The trend analysis identified whether measure scores improved, declined, or were stable over the period of analysis (i.e., 2016–2021). Trends were calculated from three to six consecutive data points including 2021, the most recent performance period for which national annual measure scores were available for report production (Figure D-1).

Figure D-1: Illustration of the Data Used to Interpret Trends in Measure Performance



Measures vary in the number of annual data points available, but a maximum of six of the most recent data points were used. COVID-19 analyses described in this report refer to the years highlighted in green (2020–2021). Period-of-record data prior to the data series for trend analysis are included in Appendix E but did not contribute to the estimation of trends. Both the main report and Appendix E present trend results for the pre-COVID-19 PHE time period (2016-2019) and through 2021 after removal of data points affected by the COVID-19 PHE.

Trending results produced by the Center for Medicaid and CHIP Services (CMCS) are included for the first time in the 2024 Impact Assessment Report. Different methodological approaches used by CMCS did not allow for independent analysis of beneficiary-level Medicaid data using the Impact Assessment trend methodology. However, Medicaid results are presented along with trending results for comparable measures or areas of focus generated from the methods outlined here.

Trend Estimation

Trends in performance were estimated on a relative scale using the average annual percentage change (AAPC) statistic, calculated using regression. This approach, also used for the 2021 Impact Assessment Report,¹²⁹ aligns with methods for the 2021 Agency for Healthcare Research and Quality (AHRQ) *National Healthcare Quality and Disparities Report* (NHQDR).¹³⁰

Log-linear regression was used to estimate the annual change in the logarithm of the measure score. The annual change on the logarithmic scale is the slope of the model

$$\log(Y_t) = \beta_0 + \beta_1 \text{Year}_t + \epsilon_t, \quad (2)$$

where $\log(Y_t)$ is the logarithm of the measure score; β_0 is the intercept; β_1 is the slope; and ϵ_t represents a normally distributed error term. Since the analysis was limited to the last six years of data, the number of annual data points, indexed by t , ranges from three to a maximum of six.

Given the estimate of β_1 , the AAPC is given by:

$$\text{AAPC} = 100 * [\exp(\beta_1) - 1], \quad (3)$$

where $\exp(x)$ represents the exponential function.

Since each annual data point represents a potentially large number of observations, the error presented in the model above does not accurately represent uncertainty in the average rate of change in measure scores. Therefore, calculating confidence intervals for AAPC involves two steps:

1. Calculating the standard error for each annual measure score based on the beneficiary-level sample size
2. Calculating the standard error and confidence interval for each AAPC, using a parametric bootstrap procedure¹³⁴

Calculation of the standard error varies depending on whether the measure score is a proportion, mean, or median.

- **For measure scores expressed as proportions**, the standard error is given by

$$se = \sqrt{\frac{y(1-y)}{n}}, \quad (4)$$

where y is the national annual measure score expressed as a proportion and n is the denominator.

- **For measure scores expressed as means**, the annual standard errors are obtained from the data owner or calculated from the beneficiary-level data, using

$$se = \sqrt{\frac{s^2}{n}}, \quad (5)$$

where s^2 is the variance of the measure scores given by

$$s^2 = \sum_i^n \frac{(y_i - \bar{y})^2}{n-1} \quad (6)$$

and n is the sample size.

- **For measure scores expressed as medians** (e.g., a time-based measure such as the interval from emergency department arrival to departure), the standard error is estimated with a nonparametric bootstrap technique¹³⁴ in which a sample of n beneficiary-level measure results is sampled with replacement from the population of all beneficiary results. This produces what is known as a bootstrap sample; 2,000 such samples were produced, and the median was computed for each. The standard deviation of the resulting bootstrap distribution of medians was used as an estimate of the standard error for an annual measure score.

- **For measure scores expressed as rate ratios**, where the person-time or device-time values in the numerator and denominator rates are equal, the standard error is estimated using:

$$se = \frac{\sqrt{n}}{d} \quad (7)$$

where n is the event count for the numerator rate and d is the event count for the denominator rate.

This calculation assumes that the denominator rate, the expected rate in standardized rate ratios, is measured without error.

When annual, national scores were available only at the provider level, each annual data point was calculated as the average of provider scores, and the standard errors of the annual scores were based on the standard deviation between provider scores and the number of providers.

Once the standard error associated with each annual data point was calculated by one of the methods described above, the standard error of the AAPC (SE_{AAPC}) was estimated using a parametric bootstrap technique.¹³⁴ First, a set of 2,000 replicate data series was generated by drawing random values from the distribution of measure scores defined by the observed annual measure scores and standard errors previously calculated. The AAPC was calculated using each replicate time series, as previously described. The set of AAPC estimates for all replicates was used to construct a bootstrap distribution. The standard deviation of this distribution is the estimate of the standard error of the AAPC.

Based on the standard error for the AAPC, 90% confidence intervals (CIs)—chosen to align with significance thresholds used in the NHQDR¹³⁰—were constructed around the AAPC.

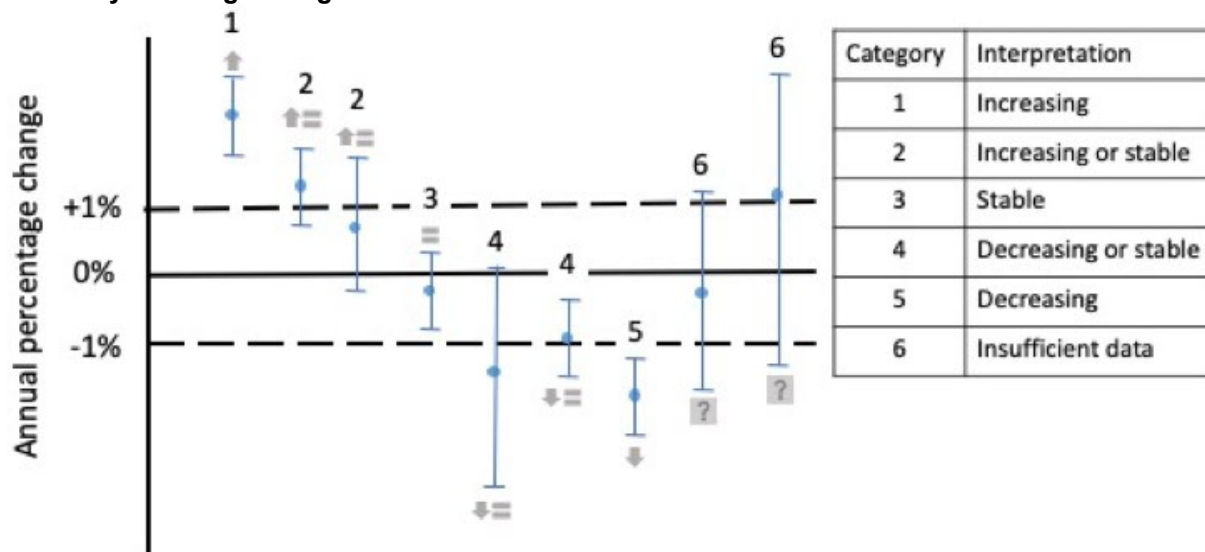
$$AAPC \text{ (90\% CI)} = AAPC \pm 1.65(SE_{AAPC}) \quad (8)$$

Following the methodology from the 2021 Impact Assessment Report¹²⁹ and the NHQDR, an AAPC estimate is considered clinically significant if its absolute value is greater than 1%. Decisions concerning clinical significance were based on all values contained in the CI rather than only the point estimate.

The following trend interpretations were based on the lower and upper limits of the 90% CI (Figure D-2):

1. Increasing – lower limit of the 90% CI > 1%
2. Increasing or stable – lower limit of the 90% CI \geq -1% and upper limit of the 90% CI > 1%
3. Stable – lower limit of the 90% CI \geq -1% and upper limit of the 90% CI \leq 1%
4. Stable or decreasing – lower limit of the 90% CI < -1% and upper limit of the 90% CI \leq 1%
5. Decreasing – upper limit of the 90% CI < -1%
6. Insufficient data – lower limit of the 90% CI < -1% and upper limit of the 90% CI > 1%

Figure D-2: Interpretations of Confidence Intervals Relative to Values of AAPC Representing Clinically Meaningful Magnitudes



Four measure trend categories were created by condensing interpretation categories. When higher measure scores reflect better quality, an *increasing* measure score over time represents improvement, and the categories are defined as follows:

- Improving – data consistent with change in a favorable direction (interpretation 1 or 2)
- Stable – data consistent with neither improvement nor decline (interpretation 3)
- Declining – data consistent with change in an unfavorable direction (interpretation 4 or 5)
- Insufficient data (interpretation 6)

When lower measure scores reflect better quality, a *decreasing* measure score over time represents improvement, and the categories are defined in a similar manner but with interpretations 1 and 2 exchanged with interpretations 4 and 5.

Adjustment for Differences in Age and Sex Over Time

Outcome measures used in CMS programs that compare performance between providers are usually adjusted for numerous (often 30 to 50) clinical and demographic factors as needed to make fair comparisons. Controlling for patients' clinical conditions and demographic traits aids in distinguishing between providers on the basis of outcomes that result from variation in the quality of care rather than the baseline risk of the population. These risk-adjustment models are specific to the targeted population for each measure and performance period.

The analytic focus for the 2024 Impact Assessment Report was to assess the impact of measures at the national level rather than to compare providers' performance. However, variables that strongly influence health outcomes and may be expected to change over time, such as distributions of age and sex, could confound the interpretation of measure performance. Therefore, when beneficiary-level data or stratified measure outcome scores were available, the approach for the trend analyses was to adjust outcome measures by a direct standardization technique¹³⁵ such that each annual data point represents the performance expected if the distribution of age and sex were constant over the data series used in the trend analysis.

Measure scores calculated for each age-sex stratum in each year were multiplied by the proportions of the denominator population in each age-sex stratum earliest available from the trending series. The results are referred to as age-sex adjusted scores. No other adjustments were made for most measures except when measure scores were adjusted by the data owner and were not available in raw form. In such cases, details of the adjustment are noted in the results.

National Achievable Rate

A national achievable rate represents a measurable goal for performance based on the Achievable Benchmarks of Care (ABC)[®] approach¹²⁸: the weighted mean score among the highest-ranking providers that cumulatively account for at least 10% of the total patient population. This calculation provides context for interpreting measure data.

The distribution of provider measure scores at the first available data point in the trending time series was used to rank providers. If any specification changes occurred after the first year of the trending series, the next year after the change was used to calculate the achievable score. An adjustment to the scores of all providers prevents providers with a low volume of cases/patients from being included by chance in the top tier: The adjusted performance fraction adds a constant α to the numerator and a constant $\alpha + \beta$ to the denominator, which moves scores toward $\alpha/(\alpha + \beta)$ by an amount inversely proportional to the sample size for each provider.

To further improve the handling of scores from small providers, information available in the observed distribution of provider scores was used to estimate the parameters, α and β , via maximum likelihood, assuming a beta-binomial distribution. This varies from the published ABC[®] method (which sets both α and β equal to 1, assuming there is no prior information about the distribution of provider scores) but is consistent with the intent of the published method.

When provider-level denominator data equal to or proportional to the eligible population were not available (for example, for measures with complex sampling designs), achievable scores were based on the distribution of provider scores from the first annual measure score in the trending time series. The achievable score was set at the 10th percentile when lower measure scores indicated better quality and the 90th percentile when higher measure scores indicated better quality. Achievable scores were not calculated if only national-level rates were provided, if significant changes to the measure interrupted a trend, or if providers were too few to produce informative results, e.g., Prospective Payment System (PPS)-exempt cancer hospitals. Note that CMS may establish benchmarks that differ from the results in the Impact Assessment Report to assist with provider comparisons and performance goals specific to a quality program. The definition for national achievable rate used in this report was chosen to apply a consistent methodology across measures and set a benchmark for national performance.

Provider Variation

The aim of reducing variation in measure performance between providers is to encourage low performers to improve while ensuring that patients receive the same high-quality care regardless of where they are treated. To represent the impact of CMS measures at the provider level, the interquartile range (IQR) was calculated as the absolute difference between the 25th and 75th quartiles of the distribution of provider-level measure scores for the first and last years of the data series used for trending. A large IQR represents high variation in provider performance, indicative of a measure that has room for improvement. Conversely, a small IQR represents low variation, indicating potentially less room for improvement at the provider level. Comparing

IQRs from the first and last performance periods shows whether variation in provider measure scores has decreased or increased. Ideally, variation decreases as performance improves for each measure.

The provider variation analysis was not conducted when provider-level data were not available or when providers were too few to produce informative results.

Disparities

Disparities analyses identify whether differences between population groups exist at the national level, the first step in determining how to advance health equity for Medicare beneficiaries.

Definitions of Population Groups

A reference category was defined for each disparity variable based on the most frequently highest-performing population group for that variable in the 2021 Impact Assessment Report. All other categories were compared with the reference category to determine whether performance gaps exist across population groups. Table D-2 lists the variables used in disparity analyses with their data sources, category definitions, and reference groups. The category definitions were adjusted as necessary to match measure specifications. For example, a measure may exclude the 18–64 age group.

The 2024 report for the first time uses the ADI, which incorporates 17 U.S. Census poverty, education, housing, and employment indicators into an index of socioeconomic disadvantage.^{125,126} The ADI is a validated indicator of neighborhood disadvantage, and residing in a community with a high ADI score is an independent predictor of risk for poor health outcomes.^{136,137}

Table D-2: Variables for Disparity Analyses

Variable	Data Source	Category Definitions	Reference Group
Sex	Varies, depending on measure	Male, female	Male
Age	Varies, depending on measure	18–64, 65–74, 75–84, 85+	65–74
Race/ethnicity	Varies, depending on measure	Varies by source – 1997 OMB definitions preferred; Unknown and Other categories excluded	For race: White For ethnicity: non-Hispanic
Census division	U.S. Census Bureau based on the state and ZIP code of the beneficiary at the time of measurement	New England, Middle Atlantic, Southern Atlantic, East North Central, East South Central, West North Central, West South Central, Mountain, Pacific	New England
Urban/rural	National Center for Health Statistics urban-rural scheme (2014) ¹³⁸ based on the state and ZIP code of the beneficiary, which varies, depending on the source of the beneficiary’s location used for the measure	Large central metro, large fringe metro, medium metro, small metro, micropolitan, noncore	Large fringe metro

Variable	Data Source	Category Definitions	Reference Group
Income	U.S. Census Bureau 2010 estimates of median household income for beneficiaries aged 65 years or older in the ZIP Code Tabulation Area (ZCTA) linked to the ZIP code of the beneficiary; for measures that are not restricted to Medicare populations, the overall median income in the ZCTA, not limited to older beneficiaries, was used.	Categories of household income based on the 2018 federal poverty limit (FPL) for two-person family definitions: - Low income: < 199% of FPL - Middle income: 200%–399% of FPL - High income: ≥ 400% of FPL	High income (400% of FPL and above)
Dual eligibility	Medicare denominator file	Dual-eligible, not dual-eligible	Not dual-eligible
*Area Deprivation Index (ADI)	Center for Health Disparities Research, University of Wisconsin School of Medicine and Public Health	Categories of national ADI percentile scores ¹³⁹ : - Least disadvantaged: ADI ≤ 85 - Most disadvantaged: ADI > 85	Least disadvantaged ADI ≤ 85

*New variable added for 2024 report

Disparity Magnitude

Disparities were identified using the same methodology used for the NHQDR.¹³⁰ When comparing annual measure scores for reference and comparison groups, two criteria were used to determine whether the observed differences were sufficient to define as a disparity. First, using a two-tailed test, the difference between measure scores for the two groups must be statistically significant with $p < 0.05$. Second, the relative difference between the comparison group and the reference group must have an absolute value of at least 0.1 (10%), where p_1 is the comparison group score and p_2 is the reference group score:

$$\left| \frac{(p_1 - p_2)}{p_2} \right| \geq 0.1 \text{ where } p_1 < 0.5, \text{ or } \left| \frac{((1 - p_1) - (1 - p_2))}{(1 - p_2)} \right| \geq 0.1 \text{ where } p_1 \geq 0.5 \quad (9)$$

For a given absolute difference between proportions, the relative difference is largest when the proportions are close to 0.0 and smallest when the proportions approach 1.0. The second part of Equation 9 addresses this by treating the difference between 95% and 96% as it would treat a difference between 5% and 4%, yielding a relative difference of 25% in both instances rather than 1% in the former and 25% in the latter.

Where the measure result is something other than a proportion (e.g., a median), the computation of the relative difference between results r_1 and r_2 is virtually identical to the above method but with an additional requirement that the difference must have an absolute value of at least 10%:

$$\left| \frac{(r_1 - r_2)}{r_2} \right| \geq 0.1 \quad (10)$$

The statistical difference between measure scores was examined using a z -test for proportions if the underlying measure was based on a proportion, or a t -test if the underlying measure was based on an average, median, or other non-proportion-based measure score.

The formula for a z-test for the difference between proportions is:

$$z = \frac{p_1 - p_2}{\sqrt{\frac{p(1-p)}{n_1} + \frac{p(1-p)}{n_2}}}, \quad (11)$$

where

$$p = \frac{(p_1 * n_1) + (p_2 * n_2)}{n_1 + n_2}. \quad (12)$$

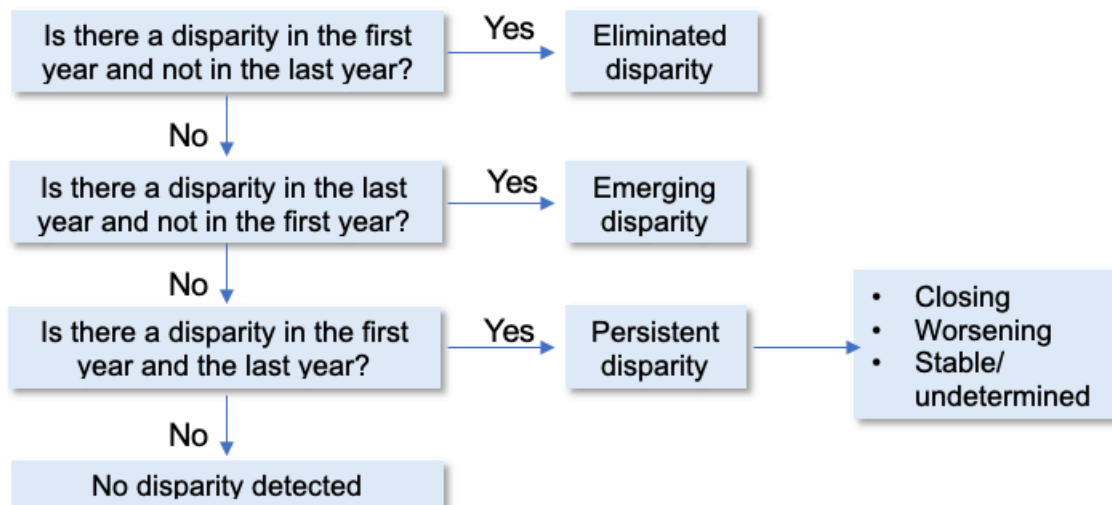
In Equations 11 and 12, the proportion for the measure score is p_1 for the reference group and p_2 for the comparison group; n_1 and n_2 are the sample sizes for the reference and comparison groups, respectively.

For measures represented as means or rate ratios, standard errors for the t -test were calculated using the same methods described in the section *Trend Estimation* except that these calculations were conducted separately for each stratum.

Trends in Disparities

This analysis assesses how disparities between reference and comparison groups are changing over time. To guide the identification of key successes and areas in need of improvement, the methodology from the 2021 report was modified to add categorizations based on the point-in-time disparities analyses described in the previous section (Figure D-3).

Figure D-3: Logic Model for Categorizing Changes in Disparities



“First year” and “last year” refer to the first and last years of the data series used for trending in this report.

In contrast to the 2021 report, linear models of the national measure scores over time were used instead of a log-linear model to align with the methodology used in the NHQDR.¹³⁰

For disparities found to be persistent, an analysis of trends stratified by population groups of interest was used to determine whether disparities are closing or worsening. The analysis was based on comparison of trend estimates calculated separately for each population group, e.g.,

$$y_{ti} = \beta_{0i} + \beta_{1i}(Year_t) + \varepsilon_{ti}, \quad (13)$$

where subscript $i = 1$ for the comparison group and 2 for the reference group.

A two-sample z-test was performed on the difference between comparison group and reference group slopes to determine whether measure score trends differ between reference and comparison groups:

$$z = \frac{(\beta_{11} - \beta_{12})}{\sqrt{[se^2(\beta_{11}) + se^2(\beta_{12})]}} \quad (14)$$

where the standard errors for the slopes are calculated with the same parametric bootstrap method described in the section *Trend Estimation*.

The difference in slopes is considered statistically significant if the *p*-value corresponding to the *z* statistic computed in Equation 14 is less than the alpha level of 0.10 and practically significant if the absolute value of the difference in slopes is more than 1 unit per year.

To interpret the difference in slopes, it is necessary to calculate the predicted results for the most recent year, *k*, for each group, *i*, based on the population group-specific regressions. The predicted result is:

$$\hat{y}_{ki} = \beta_{0i} + \beta_{1i}(\text{Year}_k) \quad (15)$$

If the difference in slopes is not significant ($p \geq 0.10$) or if the absolute value of the difference between slopes is ≤ 1 unit per year, then no convergence or divergence in the trends is occurring. Otherwise, the interpretation for persistent disparities depends on the difference in slopes and the predicted score in the last year, as shown in Table D-3.

Table D-3: Interpretation of Disparity Change Analysis (Absolute) Results

Predicted Current Scores	Difference in Slopes	Interpretation*
$\hat{y}_{k1} > \hat{y}_{k2}$	$\beta_{11} - \beta_{12} < -1$	Closing
$\hat{y}_{k1} > \hat{y}_{k2}$	$\beta_{11} - \beta_{12} > 1$	Worsening
$\hat{y}_{k1} \leq \hat{y}_{k2}$	$\beta_{11} - \beta_{12} < -1$	Worsening
$\hat{y}_{k1} \leq \hat{y}_{k2}$	$\beta_{11} - \beta_{12} > 1$	Closing

*Cases not satisfying these conditions are considered stable/undetermined.

Patient Impact

Trends in measure scores were used to estimate the patient impact associated with changes in measures scores over time. Patient impact is described in terms of the impact of measures in patient-level events, such as a positive outcome achieved or an adverse event avoided.

The analysis calculates the expected number of numerator events, $N(E)_t$, for each year after the first year (baseline) in the trend series, time *t*, under the assumption that the baseline measure score is constant over time.

$$N(E)_t = Y_{\text{baseline}} * D_t \quad (16)$$

where Y_{baseline} is the measure score at baseline, and D_t is the number of eligible denominator cases in year *t*.

The number of observed numerator events in each year, $N(O)_t$, is calculated from the observed score in each year, Y_t :

$$N(O)_t = Y_t * D_t \quad (17)$$

The number of eligible denominator cases is often the same as the total denominator size—for example, when a measure includes an entire population of patients. However, for sampled measures, this number refers to the number of eligible denominator cases in the sampling frame rather than the sample size. In this way, the methods here estimate impacts on all measured patients rather than only the patients included in samples.

The difference between the observed and expected number of numerator events is the estimate of annual impact for the measure, I_t . When a higher score indicates better quality, an observed number greater than the expected number represents a positive impact.

$$I_t = N(O)_t - N(E)_t \quad (18)$$

Finally, a cumulative measure of impact, I , is estimated as the sum of the annual impact across all years included in the data series used for trending:

$$I = \sum_{t=1}^k I_t \quad (19)$$

An exception to the approach above applied to measures with multi-year denominators (e.g., 30-day mortality) and measures for which patient events may satisfy numerator criteria across multiple measurement years, such as some screening measures (e.g., colorectal cancer or mammogram) and vaccination measures (e.g., pneumococcal). In these instances, total impact was calculated using only the first and last years of the data series. This exception reduced the effect of double-counting numerator cases across years.

Costs Avoided

The cost-avoided analysis relies on patient impact calculations for selected measures. A cost-avoided estimate is determined by multiplying the patient impact result for measures that are found to be improving over time by an estimate of health care cost related to the measured harm or disease condition. A targeted literature scan identified published economic analyses that report costs associated with patient outcomes relevant to the appropriate measures.¹⁴⁰ The published research studies from which cost estimates were derived prioritize payer-perspective estimates from Medicare. Studies relying on cost estimation using Medicare diagnosis-related groups (DRGs) were excluded. When multiple cost estimates were available, smallest and largest estimates were provided to represent a range of reasonable estimates for cost avoided. To align with the latest year of the data period, costs were converted to 2021 dollars, based on the Medical Care Services Index (MCS) report by the U.S. Bureau of Labor Statistics.¹⁴¹

When valid published literature was not available to quantify credible cost estimates for measures with patient impact estimates, those measures were excluded from the cost-avoided analysis. Table D-4 details the cost estimates derived from the targeted literature review and converted to 2021 dollars. All estimates are found in Appendix E.

Table D-4: Relevant Cost Estimates for Cost-Avoided Analysis of Selected Measures

Cost Group	Cost Estimate per Event (setting or focus, 2021 dollars)
Chronic Conditions – End-Stage Renal Disease Blood Transfusion	\$1,335 ¹⁴²
Hospitalizations – All-Cause Readmission	\$17,051 ¹⁴³ –\$17,498 ¹⁴⁴ (inpatient)
Hospitalizations – Admission	\$4,937 ¹⁴⁵ (cancer care centers)
Healthcare Harm – Complications Following THA/TKA	\$14,489 ¹⁴⁶ –\$28,140 ¹⁴⁷ (THA) \$29,879 ¹⁴⁷ –\$34,670 ¹⁴⁸ (TKA)
Infection – Catheter-Associated Urinary Tract Infection (CAUTI)	\$1,107 ¹⁴⁹ –\$16,127 ¹⁵⁰ (inpatient)
Infection – Central Line–Associated Bloodstream Infection (CLABSI)	\$1,962 ¹⁵¹ –\$57,999 ¹⁴⁹ (inpatient)
Infection – <i>Clostridioides difficile</i> Infection (CDI)	\$4,339 ¹⁵² –\$20,294 ¹⁵⁰ (cancer centers, inpatient)
Infection – Methicillin-Resistant <i>Staphylococcus aureus</i> (MRSA)	\$9,777–\$31,610 ¹⁵³ (age 18+, VA payer perspective)
Infection – Procedure-Specific Surgical Site Infection	\$28,760–\$95,236 ¹⁵⁴ (colorectal surgery)
Medication Management – Medication Adherence (statins, diabetes, renin-angiotensin system [RAS] antagonists)	Cost savings attributed to adherence: Statins \$3,124 ¹⁵⁵ Diabetes \$590 ¹⁵⁶ –\$2,061 ¹⁵⁵ RAS antagonists \$3,866 ¹⁵⁷ –\$4,915 ¹⁵⁵

Limitations

The limitations of the Impact Assessment are acknowledged and addressed as follows:

- **Data:**
 - The COVID-19 PHE overlapped the time period that measures were evaluated for the Impact Assessment, resulting in gaps in trend data for some measures. Changes in health care delivery and utilization, practice disruptions for providers, and policy changes easing reporting requirements all have had downstream effects on data availability, as well as potential to affect measure performance rates. Although historical analyses of trends, disparities, patient impact, and costs avoided were limited to data not adversely affected by the COVID-19 PHE, the report also includes an analysis of the COVID-19 PHE effect on measure scores.
 - The COVID-19 PHE analysis is based on observed deviations from expectations of measure scores and does not imply a causal mechanism. Many factors can influence measure scores, including direct and indirect effects of COVID-19 and changes to the health care system that coincide with the COVID-19 PHE but may not be related. The scope of this report does not allow detailed causal analyses but may identify areas for future research.
 - Data required to perform trend and disparities analyses may be incomplete because of varying data collection requirements across programs (e.g., collection of race/ethnicity as a single variable versus separate race and ethnicity variables) or limited capability of CMS data owners to provide patient-level data. As a result, summary statistics such as the percentage of measures with significant

disparities may be underestimated because such a statistic does not account for missing data. To mitigate this issue, the team summarized results for all measures and included a category of “data unavailable” for the analysis, which provides a more accurate depiction of the results.

- **Attribution:** This assessment acknowledges the influence of factors other than CMS performance measures, including both federal and private-sector quality initiatives, on achievement of goals for improving the quality of health care and patient outcomes. The analysis does not attempt to establish causal relationships or attribution to specific CMS measures or quality programs, which is more appropriate for analyses of individual measures or evaluation of quality programs. However, quality measurement is a key component of most quality improvement efforts, and it is plausible to attribute at least some of the observed improvements characterized in this report to measurement.
- **Costs avoided:** Studies that include estimates of health care costs relevant to the measures included in this report are limited. Valid published literature may not be available to quantify health care costs for all measures identified as potentially appropriate for cost-avoided analysis. Measures were excluded from the cost-avoided analysis when credible cost estimates were not available.

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Appendix E – 2024 Impact Assessment Analytic Results

Please see the Excel workbook.