EQUITY GAPS IN TELEHEALTH USE TO MANAGE CHRONIC CONDITIONS DURING COVID-19

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About the UCLA Latino Policy and Politics Institute

The UCLA Latino Policy and Politics Institute addresses the most critical domestic policy challenges facing Latinos and other communities of color through research, advocacy, mobilization, and leadership development to expand genuine opportunity for all Americans.

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EXECUTIVE SUMMARY

After the onset of the COVID-19 pandemic, health care systems in the United States responded by rapidly moving routine care to telehealth.[1] For communities of color that experienced disproportionate rates of COVID-19 infection and death throughout the pandemic, a well-functioning telehealth system remains critical to ensuring their well-being and resilience against future public health emergencies.

This report examines the role of patient race and ethnicity in the use of in-person and telehealth visits to manage chronic conditions before and after California issued a stay-at-home order on March 19, 2020. The UCLA Latino Policy and Politics Institute (UCLA LPPI) partnered with a large, multi-specialty medical group to conduct a mixed-methods study in seven primary care clinics in Los Angeles County serving a diverse population of adults with chronic conditions and different types of health coverage.

The study used two sources of information:

1) Patient visit data aggregated at the clinic level for seven clinics between January 6, 2020 and December 21, 2020. We used this data to examine racial and ethnic differences in the share of in-person and telehealth (phone and video) visits from Latino and non-Latino Asian, Black, and white patients.

2) Survey responses and interview data collected from 39 health care providers (clinical and ancillary staff, and/or administrators) based out of the same seven clinic sites using convenience sampling. Participants first completed the Assessment of Chronic Illness Care (ACIC) survey to examine chronic care delivery at clinic sites. Following the survey, participants engaged in one-on-one interviews about the role of patient race and ethnicity in the use of in-person and telehealth visits during the COVID-19 pandemic.

The key findings from our analysis of **patient visit data** are as follows:

1. **Telehealth visits increased substantially after California issued a stay-at-home order in March 2020.**

2. **The share of video visits by Black patients (16.1%) was higher than the share of video visits by Latino (11.4%), Asian (11.0%), and white (10.4%) patients after the stay-at-home order went into effect.**

3. **Patients with Medicare coverage had the most telephone (48.7%) and video (71.8%) visits, followed by patients with private coverage.**

4. **After the stay-at-home order was implemented, emergency department visits increased while the share of urgent care visits declined.**

5. **After health enhancement sessions shifted to telehealth, they did not revert to in-person.**

The main findings from our **provider and administrator analysis** are as follows:

6. **Interviewees reported that clinic sites provided "reasonably good support" for chronic care management across sites.**

7. **Informants who are people of color (POC) were more likely than white informants to report that the race and ethnicity of patients impacted their telehealth use.**

8. **Latino and Asian patients were perceived by interviewees to have more challenges with telehealth use compared to white patients due to the limited availability of non-English resources during telehealth and in-person visits.**

9. **Interviewees perceived that Black and white patients experienced fewer technology and language hurdles with telehealth use.**

10. **Older patients and those with limited access to technology were perceived to face more challenges with telehealth, but family support partly addressed these access issues.**

Our study draws the following lessons from the increased use of telehealth during the COVID-19 pandemic:

1. **A robust technological infrastructure pre-pandemic was key to ensuring a quick telehealth transition to managing chronic conditions remotely.**

2. **Technology literacy and access to broadband and devices to access telehealth were important enablers of telehealth use, particularly among patients of color.**

3. **Hybrid models of care that include telehealth have the potential to improve chronic care management and the quality of care.**

4. **Administrators in health care organizations should be mindful of challenges that patients may face when using remote services.**

Based on our study findings, health systems interested in expanding their telehealth capabilities to manage chronic conditions should invest in telehealth navigation support, design hybrid approaches that provide both telehealth and in-person services, address technological accessibility and digital literacy, and educate providers about the role of race and ethnicity in telehealth delivery. Future telehealth state and federal legislation should address gaps in telehealth use by race/ethnicity and health coverage type, and extend or make permanent telehealth flexibilities and funding initiated in response to the COVID-19 pandemic.

INTRODUCTION

Telehealth and Chronic Condition Management in the United States

The first case of COVID-19 in the United States was identified on January 20, 2020.[2] Strategic public health measures, including social/physical distancing and home confinement, were implemented to mitigate the spread of the virus. As a result of these measures, patients were suddenly advised not to seek clinical care in their regular healthcare settings.

Efforts to prevent the spread of COVID-19 led to disruptions in access to and use of primary and specialty care, diagnostic services, and therapeutic procedures that are critical to chronic care management. Healthcare systems had to rapidly transition to telehealth visits[3] as the primary means for diagnosis, communication, and chronic care management.

Telehealth is "the use of electronic information and telecommunication technologies to support long-distance clinical health care, patient and professional health-related education, public health, and health administration."[4] Telehealth and other digital health tools, such as virtual doctor visits, telephone visits, health monitoring apps, mobile messaging platforms, and online patient portals provide access to care and effective communication between patients and health care providers regardless of patient or provider location.[5]

Research shows that virtual visits are comparable to in-person office visits for appropriate and timely diagnosis, treatment, and communication.[6] Studies demonstrate that telehealth reduces healthcare costs, allows patients to save money on transportation, and limits lost income due to time away from work.[7,8,9] Telehealth also allows patients to access care in a timely manner by integrating specialty and primary care and by decreasing wait times between a referral and subsequent visits.[10] For these reasons, telehealth is also critical for addressing the shortage of health care providers in rural and underserved communities by allowing specialists and subspecialists to evaluate patients virtually.

Since the onset of the COVID-19 pandemic, telehealth services have experienced considerable growth, particularly as insurance reimbursement rates for telehealth have increased.[11] The expansion of telehealth made it possible for millions of adults with chronic conditions to have continuity of health care during a pandemic.

While telehealth offers the opportunity for health systems to increase accessibility;[12] it may also widen disparities in health care access across racial and ethnic groups due to cost of, and barriers in access to technology.[13] Health disparities in chronic disease incidence and mortality are well-documented among members of racial and ethnic minority populations.[14] In the U.S., 60% of individuals live with at least one chronic condition such as diabetes or hypertension.[15] Approximately 12.1% of Black, 11.8% of Latino[16], 9.5% of Asian, and 7.4% of white adults have Type 2 diabetes in the U.S.[17] In the case of hypertension, 56.2% of Black, 48% of white, 46.3% of Asian, and 38.9% of Latino adults have been diagnosed with this disease.[18]

Telehealth use also poses potential disparities, especially for non-English speaking communities.[19,20,21] Limited English proficient (LEP) individuals are less likely to use telehealth services.[22] Socioeconomic status, race/ethnicity, and digital literacy also contribute to the widening of the digital divide that translates to inequitable health care access through telehealth.[23]

Purpose of this Study

This report examines the role of patient race and ethnicity in the use of in-person and telehealth visits to manage chronic conditions before and after California's stay-at-home order (issued on March 19, 2020). Existing research has largely been conducted in under-resourced health care settings such as safety net clinics.[24,25,26] Few studies have examined differences in telehealth services among patients of color in non-safety net clinics. Our study investigates the rapid transition to telehealth in a well-resourced health care setting: a commercial health care provider. Our study uses mixed methods to generate new evidence about telehealth use by race and ethnicity before and after the state of California issued the stay-at-home order.

This study was conducted in partnership with an integrated, multi-specialty medical group in Los Angeles County that serves a diverse patient population. In addition to presenting results of the study, this report outlines health system recommendations (see page 21) and policy considerations (see page 22) for addressing disparities in telehealth use to manage chronic conditions.

METHODOLOGY & ANALYTICAL APPROACH

Patient Visits Analysis: To understand how a large, integrated, multi-specialty medical group in Los Angeles County deployed telehealth to manage patients' chronic conditions during the COVID-19 pandemic, we collected de-identified data of patient visits and aggregated it by each of the seven clinic sites to examine trends in the adoption of telehealth by race and ethnicity. Data corresponded to patients who sought care at one of the seven clinics, were 18 years of age or older, had one or more chronic condition, and were seen in a primary care, urgent care, and emergency department (ED) setting, either in person or via telehealth (phone or video visit) between January 6, 2020 and December 21, 2020. A total of 155,514 patient visits were included in this analysis.

We used weekly visit data to obtain several measures.

i.) Number of weekly in-person, telephone, and video visits.

ii.) Percentage of each type of visit (in-person, telephone, or video) out of the total number of visits (share of visits for each type). We combined weekly visit data from all seven sites to obtain measures for in-person, telephone, and video visits before the onset of the COVID-19 pandemic (01/06/20 to 3/16/20) and after California's stay-at-home order was issued on 03/19/20, which included weekly data from 3/23/20 to 12/21/20. Data on video visits were unavailable for 2020 before the onset of the pandemic.

iii.) Estimated share of uninsured, Medicaid (or CHIP + Dual Eligible), Medicare, and private insurance holders for each type of visit before and after the stay-at-home order.

iv.) Share of emergency department and urgent care visits before and after the stay-at home order.

v.) Clinic sites offered patients health enhancement one-to-one sessions or group classes to manage chronic conditions through lifestyle changes (e.g. diet and exercise) and support groups. Thus, we analyzed the telehealth transition of health enhancement classes.

Provider and Administrator Analysis: To examine which health system, provider, and patient factors (including race/ethnicity) influenced the deployment and use of telehealth to manage patient's chronic conditions following COVID-19, we collected data from key informant surveys and interviews (n=39) with providers and administrators who were part of care teams delivering services to the patients at the seven clinic sites.

i.) **Provider and administrator survey.** Health care providers and administrators from the seven clinic sites first completed the Assessment of Chronic Illness Care (ACIC) survey version 3.5 to measure health site capabilities across six different dimensions for effective chronic care management (CCM): organization of delivery system, community linkages, self-management support, decision support, delivery system design, and clinical information systems and integration of CCM components. We used data from this survey for two purposes: 1) to compare clinic sites by their ability to deliver effective chronic care management across six health system dimensions, and 2) to identify site-specific questions that informed our in-depth interviews. ACIC survey responses were scored based on the standardized scoring method provided by the survey developers.[27] Study participants completed the survey between October 2021 and April 2022. Study participant characteristics are available in the Appendix (Table A3).

ii.) **Provider and administrator interviews.** We conducted one-on-one interviews with the survey respondents to gain a deeper understanding of provider and administrator views on facilitators of and barriers to telehealth transition for patients of different racial and ethnic groups during the COVID-19 pandemic. The research team developed semi-structured interview guides which included questions about health workers' experiences with managing patients with chronic conditions during the COVID-19 pandemic and considered the findings from the ACIC survey results. Interviews were conducted and recorded using Zoom. Interview data were transcribed and analyzed using a flexible coding approach.[28] Researchers identified themes and patterns regarding barriers to and facilitators of the use of telehealth such as patient race/ethnicity, sex/gender, age, English proficiency, digital literacy, appointment preference, and organizational attributes such as leadership support, community resources, and patient care.

The conceptual framework that guided our analysis was adapted from the main principles of the Chronic Care Model for the effective management of chronic conditions (Appendix Figure A1).

KEY FINDINGS

Patient Visits Analysis

Our findings show that across the seven sites, more than half of patient visits were by Latinos (Table 1). More than half the patient visits took place in person and the rest took place through telehealth; the majority of these telehealth visits took place over the telephone. Hypertension and Type 2 diabetes were the most common chronic conditions among patients. More than half of patients were female. Most patients had either Medicare or private insurance coverage. Most patient visits were conducted in English or Spanish (Table 1). Additional patient visit characteristics are available in the Appendix (by site in Table A1 and by race and ethnicity in Table A2).

Table 1. Patient visit characteristics

Patient Visit Characteristics	%
Race/Ethnicity	
Latino	54.9
Black	13.9
Asian	6.2
White	19
Other	6
Type of Visit	
In-person	54.4
Telephone	41.1
Video	4.6
Chronic Conditions	
Prediabetes	5.8
Type 2 diabetes	37.3
Hypertension	45.2
Respiratory chronic conditions	3.5
Female	57.5
Health Coverage	
Medicare	49.8
Private Insurance	33
Medicaid-Dual Eligible	3.9
Uninsured	13.3
Language	
English	57.4
Spanish	41.5
All other languages	1.1
Total Number of Visits	155,514

Source: LPPI analysis of data from clinic sites provided by our partner medical group.

Key Finding 1. Telehealth visits increased substantially after the state of California issued a stay-at-home order on March 19, 2020.

Our analysis shows that the share of telehealth visits increased across the seven clinic sites after California issued a stay-at-home order on March 19, 2020. The share of telephone visits increased from 8.1% to 47.7% and the share of video visits increased from zero to 6.1% (Figure 1). In addition, the share of in-person visits declined from 91.9% to 46.2%.

Figure 1. Share of in-person and telehealth visits before and after the State stay-at-home order
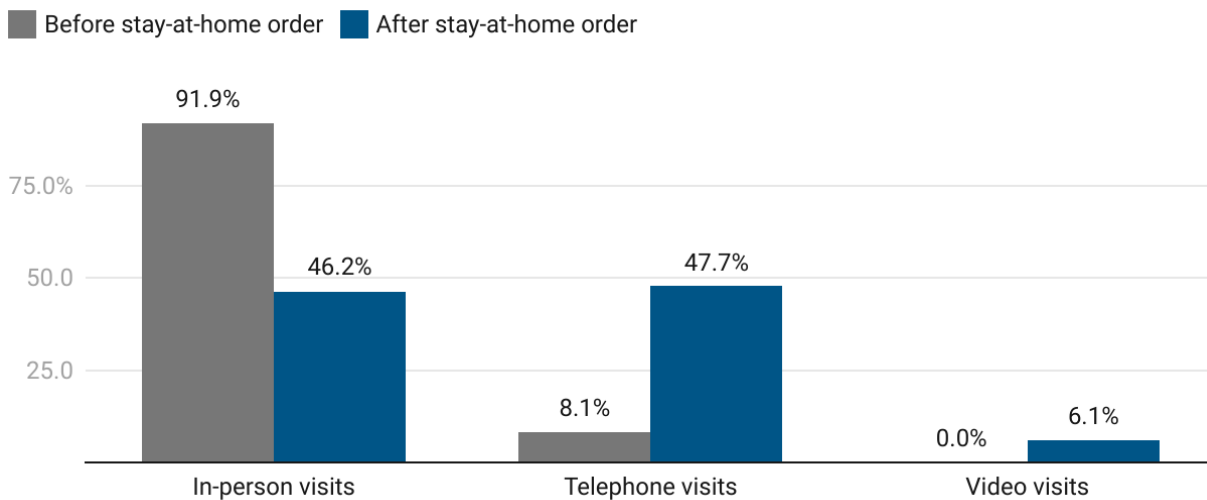
We observed an inverse relationship between in-person and telehealth visits for all clinic sites around the time when stay-at-home orders were enacted. Figure 2 uses a logarithmic transformation to compare the evolution of in-person visits, telehealth visits, and confirmed COVID-19 cases in Los Angeles County and shows that a rise in the number of telehealth visits was closely related with an increase in COVID-19 cases. While in-person visits dropped drastically after the stay-at-home order, they started to increase again in mid-June 2020.

Figure 2. Weekly trends for in-person and telehealth visits across clinic sites in 2020
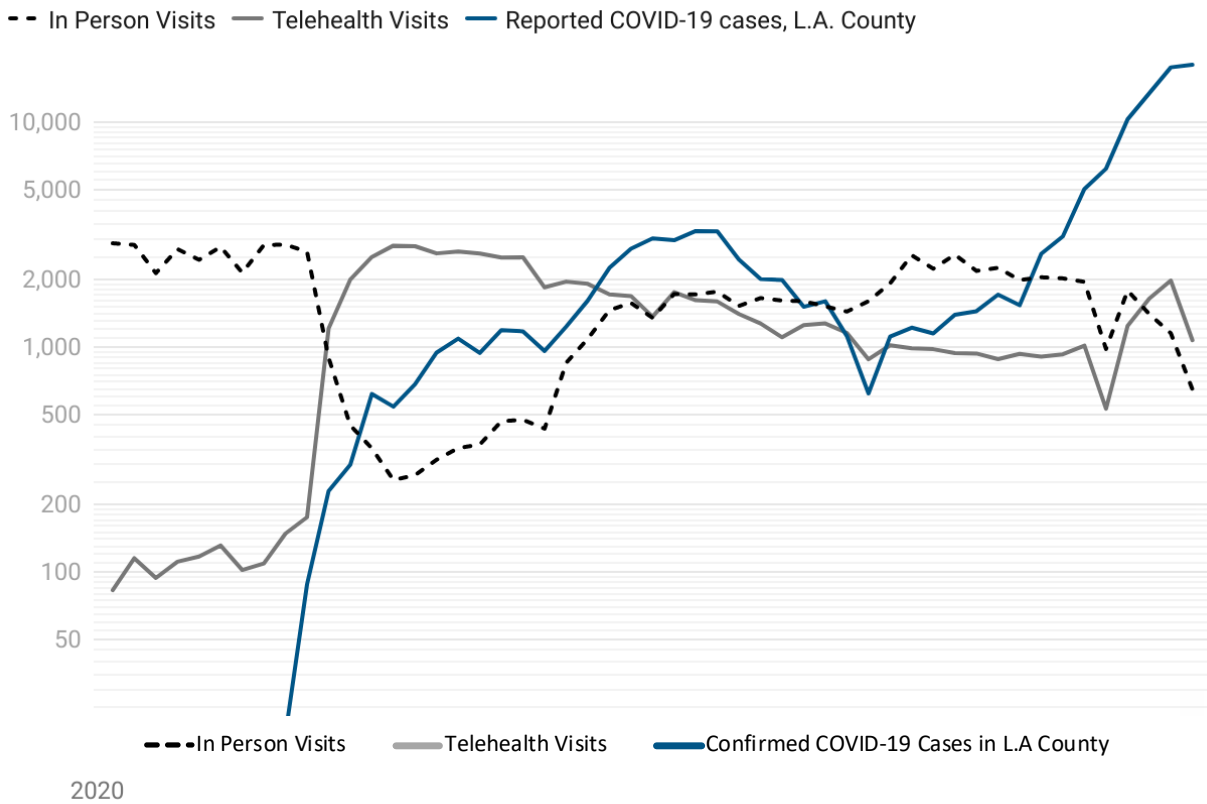
Note: Given that the scale and magnitude of COVID-19 cases is much higher than the total number of visits, logarithm scale was used to be able to present data for each visit type and for the number of COVID-19 cases in Los Angeles County on the same graph. For this reason, the number of in-person, telehealth visits, and COVID-19 cases are not directly comparable.

Key Finding 2. The share of video visits from Black patients was higher than the share of visits by Latino, Asian, and white patients after the stay-at-home order went into effect.

When we compared visits by telehealth modality and by race/ethnicity, we found that the share of video visits conducted for Black patients (16.1%) was higher than for Latino (11.4%), Asian (11.0%), white (10.4%), and "Other" race/ethnicity patients (7.4%) after California issued its stay-at home order in March 2020 (Figure 3).

Figure 3. Telehealth visits (telephone and video) by patient race/ethnicity, after the stay-at-home order was issued (03/23/20 to 12/21/20)

Legend: ■ Telephone visits ■ Video visits

	Telephone visits	Video visits
Latino	88.6%	11.4%
Black	83.9%	16.1%
Asian	89.0%	11.0%
White	89.6%	10.4%
Other	92.6%	7.4%
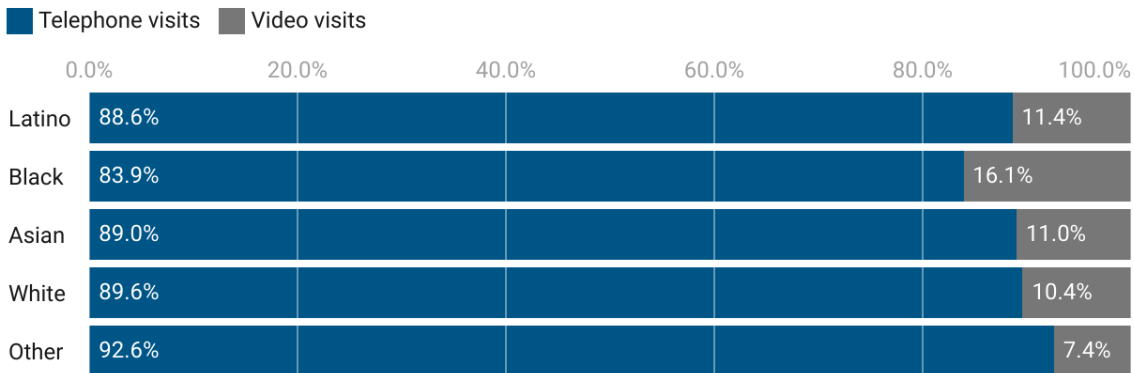
Key Finding 3. Patients with Medicare coverage had the most telephone and video visits, followed by patients with private coverage.

We examined in-person and telehealth visits conducted in 2020 by patient insurance type and found that most visits, irrespective of visit type, were from patients with Medicare coverage (52.4%), followed by patients with private insurance coverage (31.2%), no insurance (12.6%), and Medicaid (3.8%) (Table 2). We observed similar trends for telephone and video visits (Table 2).

Table 2. In-person and telehealth visits in 2020 by patient insurance type

Type of visit (%)	Medicare patient visits	Private insurance patient visits	Medicaid (or CHIP+ Dual Eligible) patient visits	Uninsured patient visits
All visits (combined, in-person and telehealth)	52.4	31.2	3.8	12.6
In-person visits	53.3	27.8	3.7	15.2
Telephone visits	48.7	37.5	3.7	10.1
Video visits	71.8	17.6	4.6	6

In the data we analyzed, no video visits were observed between January 6, 2020 and March 16, 2020. Thus, we combined weekly data for telephone and video visits to compare telehealth visits before and after California issued the stay-at-home order. For telehealth visits, we observed an increase in the share of uninsured (3.1% to 9.9%) and Medicaid (2.6% to 3.8%) patient visits after the stay-at-home order (Figure 4).

Figure 4. Share of telehealth visits by patient insurance type before and after the stay-at-home order
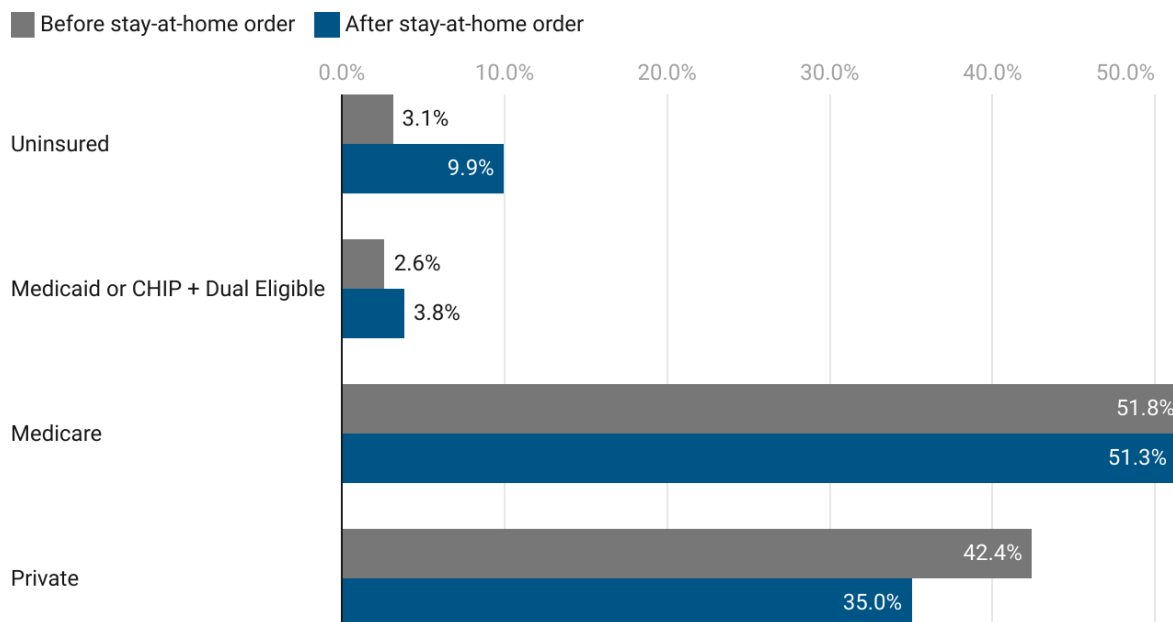
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Key Finding 4. Emergency department visits increased while the share of urgent care visits declined after California issued a stay-at-home order in March 20202.

Our data analysis found that the share of emergency department visits increased from 27.1% to 30.7% after the stay-at-home order (Figure 5). By contrast, the share of urgent care visits declined from 72.9% to 69.3% after the stay-at-home order (Figure 5).

Figure 5. Share of emergency department and urgent care visits.
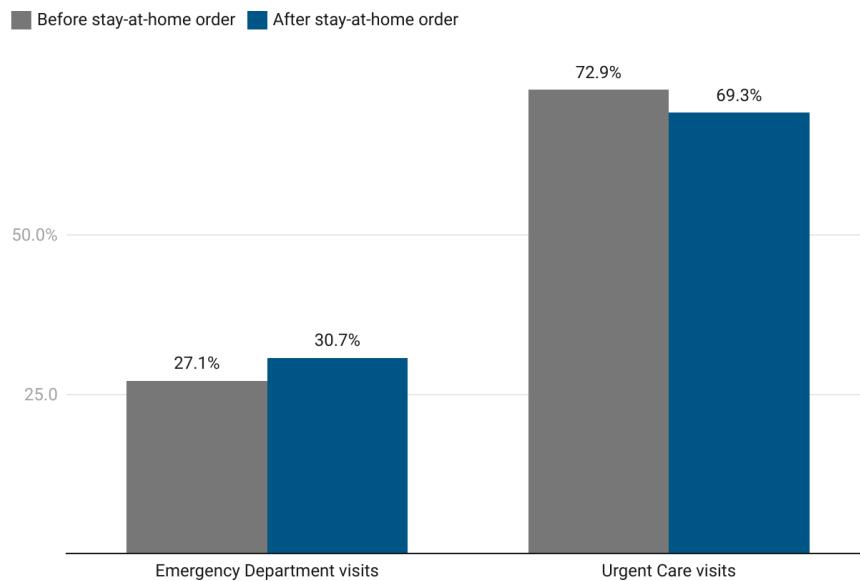
Key Finding 5. After health enhancement sessions shifted to telehealth in 2020, they did not revert to in-person.

Clinic sites in our sample offered patients individual or group health enhancement sessions to help manage chronic conditions. These health enhancement sessions were facilitated by registered dieticians, certified diabetes educators, nurses, and/or exercise physiologists. During these sessions, patients shared experiences with other patients and learned how to make lifestyle changes (e.g., diet, exercise) to manage their conditions. We analyzed in-person and telephone data from these individual and group sessions. We found that in-person health enhancement sessions switched to telephone sessions after the stay-at-home order (Figure 6). This transition was observed for all each race/ethnicity examined. Sessions continued to be offered primarily by telephone and did not revert to in-person during 2020.

Figure 6. Weekly in-person and telephone health enhancement sessions by race/ethnicity

In-person sessions
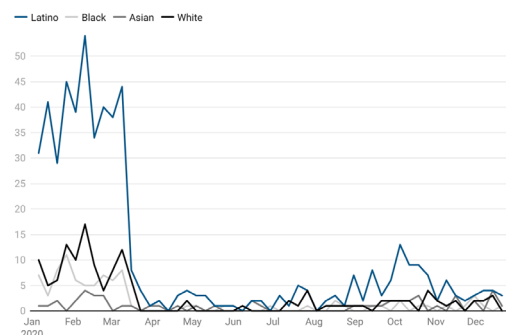
Telehealth sessions
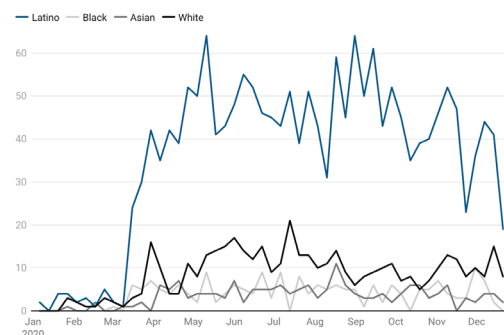
Provider and Administrator Analysis

Key Finding 6. Providers and administrators reported that clinic sites provided "reasonably good support" for chronic care management across sites.

A total of 39 health care providers and administrators from the seven clinic sites completed the Assessment of Chronic Illness Care (ACIC)[29] survey and later participated in an in-depth one-on-one interview with members of the study team. We used ACIC survey results to compare site capabilities across six dimensions of effective chronic care management.

The ACIC survey results showed that providers and administrators thought their respective clinics provided reasonably good support for chronic care management overall and for each of the seven constructs related to the management of chronic health conditions (Table 3). On a scale of 0 to 11, where 0 indicates limited support for chronic care management and a score of 11 points for optimal care, the mean score for all sites was 8.2. Clinic scores ranged from 7.2 to 9.2 across sites (see Tables A4 and A5 in the Appendix for additional methodological information). We did not find a statistically significant difference across sites, suggesting that differences in telehealth use across sites cannot be attributed to site-specific capabilities to manage chronic care (Table 3).

Table 3. ACIC sub-scale and overall scores by study sites

Characteristic	Across all sites	Site					p-value
		A	B	E	F	G	
	n=39	n=8	n=10	n=9	n=7	n=5	
Organization of delivery system	8.8 (1.8)	8.5 (2.1)	9.3 (1.3)	8.3 (2.0)	8.2 (1.8)	9.3 (1.3)	0.7
Community linkages	7.7 (2.5)	7.1 (3.4)	8.9 (1.6)	6.6 (2.5)	7.7 (1.8)	7.8 (2.7)	0.4
Self-management support	8.2 (2.3)	7.7 (2.7)	9.4 (1.8)	7 (2.0)	8 (2.4)	9.2 (1.0)	0.11
Decision support	8.3 (2.5)	8.9 (2.6)	9.1 (2.5)	7.1 (2.6)	7.6 (2.2)	8.8 (1.9)	0.2
Delivery system design	8.1 (2.6)	8.2 (2.6)	9.1 (2.6)	7.0 (2.6)	7.5 (2.3)	8.7 (2.0)	0.2
Clinical information systems	8.4 (2.4)	8.6 (2.4)	9.2 (2.3)	7.7 (2.2)	7.9 (2.8)	8.4 (2.8)	0.4
Integration of CCM components	8.2 (2.5)	8.6 (2.7)	9.2 (2.0)	6.7 (2.6)	7.5 (2.7)	8.9 (1.7)	0.13
Overall score	*8.2 (2.1)*	*8.2 (2.4)*	*9.2 (1.8)*	*7.2 (2.1)*	*7.8 (2.1)*	*8.7 (1.7)*	*0.2*

Note: Scores indicate means and standard deviations in parentheses. Only five columns are shown because sites B, C, and D were collapsed into one (column B) to avoid small sample sizes. P-values are from Kruskall Wallis rank-sum tests. CCM=Chronic Care Management

Key Finding 7. Providers and administrators who are people of color (POC) were more likely to report that the race and ethnicity of patients impacted telehealth use.

During one-on-one interviews with study participants, most key informants argued that patient race/ethnicity was not a barrier to their ability to deliver quality care either in-person or through telehealth services. They reported that all patients were treated equally and fairly. As one of our key informants put it:

> **"I don't see race as a factor that impacts quality of care. At least in my office, I don't see [patient] discrimination... we [act] according to individual patient needs equally."**

Key informants who identified as Black, Native Hawaiian and Pacific Islander, Native American, Asian, or non-white Latino (POC, subsequently) were much more likely than non-Latino or Latino white informants to state that race and ethnicity impact telehealth-related disparities among the patient population. One POC provider stated:

> **"I think that there's been a lot of disparity [related to patient care]. It depends on the case. Some people have more support than others, even if it's like in their own home. I think Latinos have a little bit more support because they do have these extended families that are in the same household, for example."**

Overall, non-Latino and Latino white providers did not believe that barriers to telehealth use may be affected by one's race or ethnicity. The only instance in which these providers discussed the relationship between patient care and race/ethnicity was to address patients with limited English proficiency.

Key Finding 8. Providers and administrators perceived Latino and Asian patients to have more challenges with telehealth use compared to white patients due to the limited availability of non-English resources during telehealth and in-person visits.

When providers did report race/ethnic disparities related to telehealth services during the COVID-19 pandemic, they noted that Spanish-speaking Latino patients struggled more than others. Key informants reported that Latino patients often requested to be seen by providers who understood them linguistically and culturally, which was not always an option due to existing provider staffing at the clinics. Key informants also reported that Latino patients were more reluctant than others to opt for telehealth since they more often sought a personal connection with their providers:

> **"Our Spanish-speaking population is very traditional. They're a little bit older, and not used to using technology to replace in-person visits. So, it's been a challenge to try to coordinate and educate them on telehealth matters."**
>
> **-Provider**

Participants agreed that language was also a barrier to telehealth use for Asian patients, especially since the clinics served predominantly Spanish-speaking populations. Even though interpretation services were offered to this population in languages such as Korean, Tagalog, and Mandarin, they were not as easily available as Spanish:

> **"We have a language line (interpreter service) that we are able to call into for languages like Mandarin that staff do not know. But since we primarily serve Latinos, all of our staff know Spanish, and it's easier to serve that population linguistically."**
>
> **-Provider**

Key Finding 9. Black and white patients experienced fewer hurdles with telehealth use, according to providers and administrators.

Key informants reported that Black and white patients experienced fewer hurdles with telehealth use during the pandemic. Informants mentioned that lower rates of COVID-19 vaccination at the time may have led them to opt out of in-person visits to avoid infection:

> **"Black patients prefer to do the video visits because they haven't been vaccinated. So, they prefer to do the phone appointments because they don't have to come into the office and expose themselves to the virus."**
>
> **-Provider**

With high rates of telehealth usage, providers found that Black and white patients had a better understanding of telehealth compared to other race/ethnic patient populations. Additionally, Black and white patients were unlikely to request appointments in non-English languages, which removed the language barrier from both of these groups' experiences with telehealth adoption.

Key Finding 10. Older patients and those with limited access to technology faced more challenges with telehealth, according to providers and administrators. Family support partly addressed this issue.

Older patients, regardless of race/ethnicity or sex/gender, were perceived to encounter more hurdles with telehealth use, according to all our informants. Interviewees reported that older Latino adults had more difficulties with telehealth than the older adult population of other race/ethnic groups due to factors like language barriers and access to technology.

Key informants discussed that all their clinic sites made it a priority to alleviate language barriers by providing language interpreters to support patient care coordination. In addition, interviewees agreed that Spanish-speaking patients, especially older adults, used family support to overcome the language barriers and other telehealth-related difficulties that they faced. Providers observed that patients preferred interpretation help from family members rather than interpreters employed by the health group. One participant mentioned:

> **"With someone else at home, it makes it [the telehealth appointment] easier. I feel like because there's someone else to help them understand, to ask questions differently, that sort of thing."**
>
> **-Provider**

Providers observed that Spanish-speaking individuals had more family support in general compared to individuals of other race or ethnic groups. However, some informants noted that family support declined when patients' relatives went back to work as stay-at-home orders were lifted. Informants noticed that the transition back to in-person work left older Spanish-speaking adults struggling with telehealth services more than others. One provider noted:

> **"Once family members started going back into the office after government shutdowns [ended], it was apparent that older Latino patients felt that. Their families were not as able to help them with the technology as they were at the beginning of the pandemic."**
>
> **-Provider**

Lessons Learned from the Telehealth Rollout in California During COVID-19

Lesson 1. For the medical group in this study, a robust technological infrastructure pre-pandemic was key to ensuring a quick telehealth transition to managing chronic conditions remotely.

The medical group in this study made investments in technological infrastructure before the onset of the pandemic. These prior investments were important to ensuring that chronic care management continued to be delivered remotely during the pandemic. Key informants described the medical group's many pre-pandemic protocols to care for patients with chronic conditions. Examples included calling patients using interactive voice response (IVR) technology twice a week to check in on patients' conditions, providing a 24/7 nurse hotline for patients who needed assistance, and employing health educators who assisted patients with managing their chronic conditions in and out of the clinic. The difference between before and during the pandemic was the frequency of use of such programs. For example, health educators who would often be in-clinic for appointments made themselves more available to patients via phone and video visits. Other uses of technology played a key role in delivering chronic health management after the onset of the COVID-19 pandemic. For patients with chronic conditions that strongly rely on self-management, such as diabetes, the medical group provided at-home medical devices, such as glucose monitors, to ensure that patients could continue their management routines regardless of whether they used telehealth or visited the clinic in-person during the pandemic.

Lesson 2. Technology literacy and access to broadband and mobile devices were important enablers of telehealth use, particularly among patients of color.

The medical group tested and used telehealth prior to COVID-19. However, telehealth use and popularity were limited, particularly among patients of color. Providers reported that older patients and patients of color with chronic conditions were less likely to have technological literacy and access to broadband and mobile devices, which limited the adoption and widespread use of telehealth before the pandemic. However, during the pandemic, two types of solutions partly addressed these barriers:

1. **Use of phone visits.** As shown by our analysis of patient visits, 41.1% of telehealth visits happened over the phone and only 4.6% took place over video (Table 1). Patients continued to attend health enhancement sessions over the phone after stay-at-home order was issued, reducing the reliance on a broadband connection and allowing patients to manage chronic conditions.

2. **GrandPad tablet use.** Key informants noted that for patients experiencing connectivity challenges, the medical group delivered "GrandPad" tablets to their houses. GrandPads were intended to facilitate the use of telehealth, particularly for older patients and those who found it difficult to use telehealth services.

Lesson 3. Hybrid models of care that include telehealth have the potential to improve chronic care management and the quality of care.

Providers reported that telehealth has been useful for patients in various ways, such as increasing access to health care for patients who would have been otherwise unable to attend in-person visits due to lack of transportation, safety, or time. By contrast, informants also discussed the difficulties of deploying remote health care. They stressed that some patients, particularly older patients, had a strong preference for face-to-face interactions and continued to choose in-person visits, even if those visits took place in the parking lot of some of the clinics to follow social distancing rules. Previous research has shown that older adults value in-person care due to the physical examination that occurs, in addition to the established in-person relationship with their provider.[30,31,32] Patients of color, particularly those with limited English proficiency, were also less comfortable using telehealth. As the pandemic evolved and patients returned to the clinic, our informants found that while patients preferred in-person visits, some services continued to take place remotely, such as participation in health enhancement visits. Informants noted that health enhancement session attendance has improved since these sessions began to take place remotely. This lesson from the provision of care during the pandemic calls for the development of hybrid models that combine in-person and remote services that are mindful of disparities in digital access and personal preferences.

Lesson 4. Administrators in health care organizations should be mindful of challenges that patients may face when using remote services.

Providers most commonly discussed scheduling appointments as a key difficulty in the rapid deployment of telehealth. The administration at the medical group allocated less time for telehealth appointments than in-person appointments by default. However, telehealth appointments often took the same amount of time as in-person appointments. As a result, providers reported that telehealth appointments often went over time, making it challenging for them to stay on schedule.

HEALTH SYSTEM RECOMMENDATIONS

Based on our study findings, we provide the following recommendations to health care administrators and providers.

Invest in telehealth navigation support. Older patients often require support to use telehealth services effectively, even when provided with necessary devices. Health systems should consider providing telehealth navigators to enhance telehealth use, accessibility, and efficacy. Telehealth navigators can provide in-person technology demonstrations, on-demand technical assistance, and virtual support for patients during portal and video visits to troubleshoot when problems arise. Guidelines supported by the medical literature and clinician expertise can help identify effective navigation support interventions to maintain high-quality care and patient safety.

Design hybrid approaches to patient care that are responsive to needs and preferences. Our analysis of key informant interviews found that in-person and telehealth visits served distinct purposes for different individuals. Factors such as age and race/ethnicity were critical in influencing the efficacy and uptake of telehealth use. Maintaining accessibility of in-person visits at the institutional level while supporting primary care providers to deploy telehealth allows for an optimized hybrid care approach. To ensure a clinically appropriate balance between in-person and telehealth care, health systems should have parameters to guide patients and providers in this hybrid approach to chronic care management.

Address digital literacy and barriers to technology access. Internet access and the availability of devices are critical barriers for older patients and some patients of color. Owning a cellphone, tablet, or computer equipment, however, is not a sufficient condition for the effective use of telehealth to complement chronic care management. Digital literacy is key in taking advantage of the different capabilities used by various telehealth platforms. Creators of digital solutions and health care administrators should be mindful that the main users of chronic care services would likely be aging adults who will not always be capable of using complex mobile capabilities for telehealth use. In our study, the GrandPad home delivery program addressed gaps in access to technology and internet access and serves as a model for how to incorporate technological solutions that improve access and patient experience for older adults and patients of color. Our findings call for the use of telehealth tools that are mindful of patient characteristics and social determinants of health.

Educate providers about the role of race and ethnicity in telehealth delivery. Our study shows that the views about the role of patients' race and ethnicity in telehealth use differed between white health care providers and providers of color (including non-white Latinos). Related research studies[33,34,35] have also identified gaps in telehealth use by race and ethnicity. Health systems should equip provides to improve telehealth care by informing health care providers about the complex relationships between race/ethnicity and access to and use of telehealth services. Increasing diversity within the health care workforce for in-person and telehealth services can serve as a long-term solution to potentially improve patient experiences.[36]

POLICY CONSIDERATIONS

More than 75% of health care spending in the U.S. is attributable to patients with chronic conditions.[37] These persistent conditions represent the nation's leading causes of death and disability.[38] Telehealth has great potential to improve access to and quality of care for a growing adult population with chronic conditions. Policymakers should consider the following when drafting federal and state legislation regarding telehealth.

Address gaps in telehealth use by race/ethnicity and insurance coverage. Previous research has found significant variation in telehealth use by race and ethnicity and type of health insurance coverage.[39] Our study findings show similar variation with telehealth visits from Medicare and privately insured patients outnumbering the share of telehealth visits from Medicaid or uninsured patients. While further research should investigate the main causes of telehealth use differences by race/ethnicity and health coverage type, policymakers could fund pilot efforts such as Massachusetts' Federally Qualified Health Center's Telehealth Navigator Program[40] to identify cost-effective interventions to address telehealth inequities in minoritized communities.

Prioritize making telehealth flexibilities and funding permanent. During the COVID-19 public health emergency, the Centers for Medicare and Medicaid Services (CMS) issued waivers that expanded the type of telehealth services that health care organizations could offer and reimbursed such services at parity with in-person care.[41] In order to guarantee that patients with chronic conditions retain much-needed alternatives to in-person care, telehealth flexibilities from the public health emergency should be funded in perpetuity. The U.S. House of Representatives approved a bill to extend Medicare telehealth reimbursements through the end of 2024,[42] and the *Advancing Telehealth Beyond COVID-19 Act of 2021*,[43] if passed through the senate, would further the accessibility of telehealth appointments. Other recent advancements in California, such as the 2022 passage of Assembly Bill No. 32, guarantees permanent full payment parity on all telehealth services[44] for all, including Medi-Cal beneficiaries.

CONCLUSIONS

Our study shows that the rapid rollout of telehealth services during the COVID-19 pandemic, particularly after the state of California issued a stay-at-home order on March 19, 2020, exposed some inadequacies in the capacity of existing telehealth and digital health infrastructure to engage a diverse set of patients, particularly Latino and Asian patients with limited English proficiency. In the case of older adults, our results were mixed. Our patient visit analysis showed that Medicare beneficiaries, who are mostly 65 years of age and older, reported the largest share of telehealth (phone and video) visits in our sample. Our key informants, however, overwhelmingly agreed that older adults experienced more hurdles using telehealth. Perhaps the convenience from video telehealth may have motivated some older adults to overcome the technology gap during the pandemic, particularly those with family support. While our research focused on a commercial and highly integrated health system where we found reasonably good support for chronic care management according to our ACIC analysis, we still observed race and ethnic differences that previous research has encountered in less-resourced health systems, such as in safety net clinics or providers with a larger share of Medicaid eligible patients.[45] This is an important finding that suggests health care providers and administrators should be mindful of patient characteristics (e.g., age, race/ethnicity, and type of insurance) when planning and delivering telehealth services.

APPENDIX

Conceptual Framework

Figure A1. Health system, provider, and patient factors that influence telehealth use
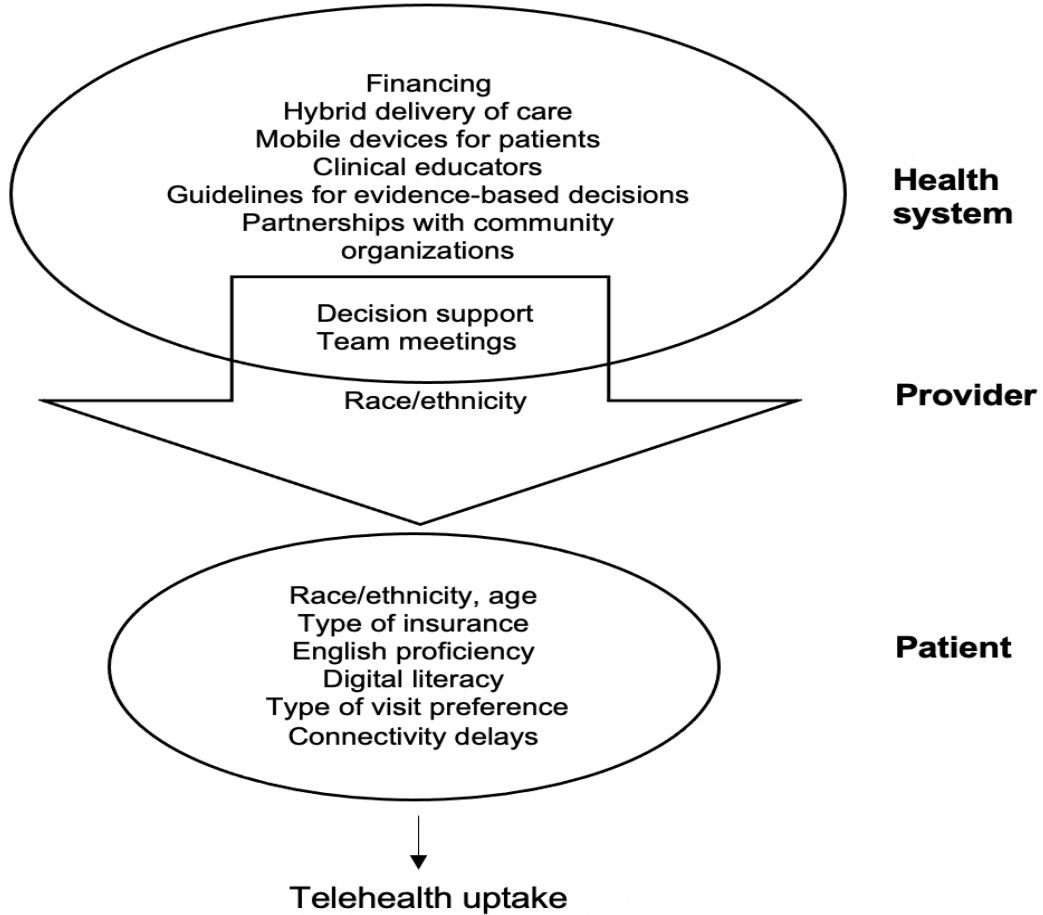
Notes: Conceptual framework that guided our analysis adapted from the main principles of the Chronic Care Model for the effective management of chronic conditions

APPENDIX

Table A1 Patient visits by Study Sites

Variable	% Mean value for all sites	Site A	Site B	Site C	Site D	Site E	Site F	Site G	p - value
Type of Visit (%) (in 2020)									
In-person	54.4	52.6	58.2	52	43.9	51.6	61.1	61.1	<0.0001
Telephone	41.1	41	39.8	43	49.4	40.8	37	36.6	<0.0001
Video	4.6	6.4	2	5	6.7	7.6	1.9	2.3	<0.0001
% In-person visits									
01/06/20 − 03/30/20	79.6	79.3	80.6	84.1	77.4	78.9	81.4	75.2	<0.0001
04/06/20 − 06/29/20	19.5	26.3	20	6.1	10.7	21.4	32.3	19.8	<0.0001
07/06/20 − 09/28/20	59.6	56.2	73.5	51.5	39.9	51.5	66.4	78.1	<0.0001
10/05/20 − 12/21/20	62.3	54.4	67.5	65.6	48.4	60.3	64.4	75.5	<0.0001
% Telephone visits									
01/06/20 − 03/30/20	20.4	20.7	19.4	15.9	22.6	21.1	18.6	24.8	<0.0001
04/06/20 − 06/29/20	74.3	69.9	77.9	85.1	75	70.1	65.8	76	<0.0001
07/06/20 − 09/28/20	33.5	32.9	22.6	41.8	52.5	34.3	30.9	19.7	<0.0001
10/05/20 − 12/21/20	32.8	35.4	29.8	29.8	46.9	33.4	32.7	21.8	<0.0001
% Video visits									
01/06/20 − 03/30/20	0	0	0	0	0	0	0	0	N/A
04/06/20 − 06/29/20	6.2	3.8	2.1	8.8	14.3	8.5	1.9	4.2	<0.0001
07/06/20 − 09/28/20	6.9	10.9	3.9	6.7	7.6	14.2	2.7	2.2	<0.0001
10/05/20 − 12/21/20	4.9	10.2	2.7	4.6	4.7	6.3	2.9	2.7	<0.0001
Race/Ethnicity (%)									
Latino	54.9	47.8	79.3	34.8	48.1	76.2	50	48.4	<0.0001
Asian (Non-Hispanic Asian & Non-Hispanic Pacific Islander)	6.2	10.8	1.9	9.1	1.1	2.2	7	11.5	<0.0001
Black (Non-Hispanic)	13.9	5	2	21.2	45	16	3.1	4.7	<0.0001
White (Non-Hispanic)	19	29.3	13.2	28.9	3.7	4.9	27.1	25.7	<0.0001
Other (Non-Hisp. Unspecified & AI/AN)	6	7.1	3.6	6	2.1	0.7	12.8	9.8	<0.0001
Chronic Conditions (%)									
Prediabetes	5.8	11.1	8.9	2.5	1.5	9	4.9	2.9	<0.0001
Type 2 diabetes	37.3	31.6	35.5	35.9	39	43.5	36.9	38.7	<0.0001
Hypertension	45.2	44.5	47.8	47.7	46.6	38.3	44.4	47.4	<0.0001
Respiratory chronic condition	3.5	4.4	2	6	4.5	2.4	4.2	1.1	<0.0001
Mental health condition	1.8	1.8	1.2	1.9	1.4	1.7	2.1	2.3	0.0004
Other (all other conditions)	6.4	6.7	4.6	6	7	5.1	7.5	7.6	<0.0001
Comorbidities (%)									
One	70.5	60.3	74.6	69.4	66	78	70.4	74.8	<0.0001
Two	27.2	35.4	24.2	29.4	30.4	20	27	23.9	<0.0001
Three	2.2	3.9	1.2	1.2	3.6	1.9	2.4	1.3	<0.0001
Four +	0.1	0.4	0	0	0	0.1	0.2	0	<0.0001
Age (%)									
18-39	13.8	19.1	7.8	17.6	10.7	10.4	13.5	17.2	<0.0001
40-64	32.8	34.4	36.5	37.6	30	26.2	34.2	30.9	<0.0001
65-75	35.5	33.3	35.6	31.1	38.2	44	31.9	34.5	<0.0001
76+ years of age and above	17.9	13.2	20.1	13.7	21.1	19.4	20.4	17.4	<0.0001
Female (%)	**57.5**	**59.9**	**57.8**	**58.4**	**59.9**	**57.6**	**59.4**	**49.7**	**<0.0001**
Insurance (%)									
Uninsured	13.3	13.2	12.1	15	10.5	9.9	15.9	16.3	<0.0001
Medicare	49.8	39.6	44.1	46.4	63.1	61.1	46.6	48	<0.0001
Medicaid + Dual Eligible	3.9	3.9	7	3.8	2.3	4.6	2.7	2.9	<0.0001
Private/commercial	33	43.3	36.8	34.8	24.1	24.4	34.8	32.8	<0.0001
Other (public ins: e.g. VA)	0	0	0	0	0	0	0	0	N/A
Delivery system (%)									
HMO	75.6	75.9	75.3	69.3	80.8	82.6	73.4	71.9	<0.0001
FFS	24.4	24.1	24.7	30.7	19.2	17.4	26.6	28.1	<0.0001
Language spoken during visits (%) (in-person and telehealth visits)									
English	57.4	63.4	26.6	77	62.2	37.4	66	69.2	<0.0001
Spanish	41.5	34.5	72.6	21.6	37.7	62.5	32.4	29.5	<0.0001
Other (all other languages)	1.1	2.1	0.8	1.4	0.1	0.1	1.6	1.3	<0.0001
Number of primary care visits: 01/06/20 to 12/21/20		13,662	5,093	8,158	7,849	41,388	38,180	4,184	.

Note: AI/AN=American Indian/Alaska Native, VA=Veteran Affairs, HMO=Health Maintenance Organization, FFS=Fee-for-Service. p-values correspond to Chi-square joint significance tests (across all sites)

APPENDIX

Table A2 Patient visits by Race and Ethnicity

Variable	Latino	Asian	Black	White	Other	*p - value* Latino vs. White	*p - value* Asian vs. White	*p - value* Black vs. White	*p - value* Asian vs. Latino	*p - value* Black vs. Latino
% Primary Care Visits										
% In-person	56.5	56.4	46.6	56.1	57.8	0.33	0.67	<0.0001	0.91	<0.0001
% Telephone	38.7	39	45.1	39.5	39.2	0.04	0.44	<0.0001	0.72	<0.0001
% Video	4.8	4.6	8.3	4.4	3	0.02	0.43	<0.0001	0.56	<0.0001
% In-person visits (across all sites)										
01/06/20 – 03/30/20	81.1	80.1	76.9	79.7	80.1	0.02	0.7	0.001	0.34	<0.0001
04/06/20 – 06/29/20	25.6	20.5	15.1	24.8	29.3	0.22	0.0001	<0.0001	<0.0001	<0.0001
07/06/20 – 09/28/20	59.3	61.8	45.5	59.1	62.7	0.81	0.04	<0.0001	0.03	<0.0001
10/05/20 – 12/21/20	62.3	65.6	55.7	62.1	61.8	0.71	0.01	<0.0001	0.01	<0.0001
% Telephone visits (across all sites)										
01/06/20 – 03/30/20	18.9	19.9	23.1	20.3	19.9	0.02	0.7	0.001	0.34	<0.0001
04/06/20 – 06/29/20	68.4	74.5	75.4	70.9	67.4	0.0003	0.003	<0.0001	<0.0001	<0.0001
07/06/20 – 09/28/20	32.6	31.1	39.3	33.6	32.9	0.12	0.04	<0.0001	0.18	<0.0001
10/05/20 – 12/21/20	33.2	28.1	37.3	32.1	34.1	0.16	0.002	<0.0001	<0.0001	<0.0001
% Video visits (across all sites)										
01/06/20 – 03/30/20	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
04/06/20 – 06/29/20	6	5	9.5	4.3	3.3	<0.0001	0.18	<0.0001	0.1	<0.0001
07/06/20 – 09/28/20	8.1	7.1	15.1	7.3	4.4	0.02	0.79	<0.0001	0.12	<0.0001
10/05/20 – 12/21/20	4.5	6.3	7	5.8	4.1	<0.0001	0.45	0.02	0	<0.0001
By site (%) (In-person and telehealth visits)										
Site A	47.8	10.8	5	29.3	7.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Site B	79.3	1.9	2	13.2	3.6	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Site C	34.8	9.1	21.2	28.9	6	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Site D	48.1	1.1	45	3.7	2.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Site E	76.2	2.2	16	4.9	0.7	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Site F	55.1	6.6	3.1	25	10.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Site G	49.8	10.8	4.8	25.2	9.5	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
% Chronic conditions (in-person and telehealth visits, all sites)										
Prediabetes	8.2	7.9	4.6	5.9	6.5	<0.0001	<0.0001	<0.0001	0.61	<0.0001
Type 2 diabetes	43	39.5	32.7	31.1	36.5	<0.0001	<0.0001	0.004	<0.0001	<0.0001
Hypertension	39.7	45.2	47.9	45.8	44.2	<0.0001	0.5	0.001	<0.0001	<0.0001
Respiratory chronic condition	1.6	3.1	6.5	7.1	4.2	<0.0001	<0.0001	0.04	<0.0001	<0.0001
Mental health condition	1.6	1.3	2	2.6	1.6	<0.0001	<0.0001	<0.0001	0.07	<0.0001
Other (all other conditions)	5.8	3	6.5	7.5	7	<0.0001	<0.0001	0.001	<0.0001	0.004
Comorbidities (%) (in-person and telehealth visits, all sites)										
One	73.8	73.2	68.6	70	70.8	<0.0001	0.004	0.09	0.48	<0.0001
Two	24	25.2	27.9	27.7	26.3	<0.0001	0.02	0.86	0.2	<0.0001
Three	2.2	1.6	3.4	1.8	2.9	0.08	0.52	<0.0001	0.1	<0.0001
Four +	0	0	0.1	0.5	0	<0.0001	0.001	<0.0001	>0.9999	<0.0001
Age (%) (in-person and telehealth visits, all sites)										
18-39	12.8	16.9	9.1	13.4	10.4	0.02	<0.0001	<0.0001	<0.0001	<0.0001
40-64	30.4	37.7	29.6	32.1	30.6	<0.0001	<0.0001	<0.0001	<0.0001	0.04
65-75	40.8	29.1	33.8	31.5	38.1	<0.0001	0.001	<0.0001	<0.0001	<0.0001
76+ years of age & older	16	16.3	27.5	23	20.9	<0.0001	<0.0001	<0.0001	0.55	<0.0001
Female (%) (in-person and telehealth visits)	58	61.9	63.3	56.3	59.5	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Insurance (%) (in-person and telehealth visits, all sites)										
Uninsured	11.4	16.1	11.3	14.5	13.2	<0.0001	0.003	<0.0001	<0.0001	0.65
Medicare	53.8	38.7	60.4	49	54.3	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Medicaid + Dual Eligible	4.2	1.4	4.9	2.2	3.4	<0.0001	0.0001	<0.0001	<0.0001	0.0003
Private/commercial	30.6	43.8	23.4	34.3	29.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Other (e.g. VA)	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
Delivery system (%) (in-person and telehealth visits, all sites)										
HMO	80.7	69.9	79	72.4	74.3	<0.0001	0.0002	<0.0001	<0.0001	<0.0001
FFS	19.3	30.1	21	27.6	25.7	<0.0001	0.0002	<0.0001	<0.0001	<0.0001
Language spoken during visit (%) (in-person and telehealth visits, all sites)										
English	30.4	88.7	100	98.7	98.6	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Spanish	69.5	0	0	0	0	<0.0001	>0.9999	>0.9999	<0.0001	<0.0001
Other (all other languages)	0.1	11.3	0	1.3	1.4	<0.0001	<0.0001	<0.0001	<0.0001	0.01
Number of all visits by Race and Ethnicity	78,915	7,082	16,114	24,474	8,966	.	.	.	.	.

Note: VA=Veteran Affairs, HMO=Health Maintenance Organization, FFS=Fee-for-Service

APPENDIX

Table A3 Site and sociodemographic characteristics of key informant participants

Variable	n	(%)
Site		
A	8	20.5%
B	10	25.6%
E	9	23.1%
F	7	17.9%
G	5	12.8%
Role		
Providers	9	23.1%
Clinical staff	17	43.6%
Ancillary staff	4	10.3%
Administrators	9	23.1%
Race		
White	20	51.2%
Black	11	28.2%
Asian	1	2.6%
NHPI	3	7.7%
>2 races	2	5.1%
American Indian	2	5.1%
Ethnicity		
Non-latino	13	33.3%
Latino	26	66.7%
Age Category		
25-34	11	28.2%
35-44	14	35.9%
45-44	10	25.6%
55-64	4	10.3%
Sex		
Male	8	20.5%
Female	31	79.5%

Note: NHPI=Native Hawaiian or Pacific Islander. Only five sites are shown because sites B,C, and D were collapsed into one (site B) to avoid small sample sizes

APPENDIX

Assessment of Chronic Illness Care Survey Analysis

Table A4 Categorization of health workers' roles

Category	Roles
Providers	Doctor of Medicine, Nurse Practitioner
Clinical staff	Licensed Vocational Nurse, Medical Assistant, Registered Nurse
Ancillary and Clerical Staff	Health Advocate, Patient Relations Liaison, Certified Diabetes Care and Education Specialist, Surgery Coordinator
Administrators	Care Team Supervisor, Staff Administrator, Patient Relations Liaison Supervisor, Regional Manager, Registered Nurse Supervisor, Director of Operations

The Assessment of Chronic Illness Care (ACIC) is a practical quality improvement tool designed to help organizations evaluate the strengths and weaknesses of their delivery of care for chronic illness in six areas:

1. Organization of health care delivery system
2. Community linkages
3. Self-management support
4. Decision support
5. Delivery system design
6. Clinical information systems

Each area corresponds to 3 to 6 items. Scores can range from 0 to 11, where 11 represents optimal care.

Table A5 ACIC scoring

Range	Assessment
0 to 2	Limited support for chronic illness care
3 to 5	Basic support for chronic illness care
6 to 8	Reasonably good support for chronic illness care
9 to 11	Fully developed chronic illness care

ENDNOTES

[1] Telehealth is the usage of electronic devices to connect providers and patients to health services virtually via phone call or video call.

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