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Fear and Missing Out

New Data Quantify Impact of Coronavirus Pandemic on Coloradans' Health Care Visits in 2020

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One of the COVID-19 pandemic's most profound impacts on the health of Coloradans was not directly connected to the virus itself: As the state shut down and leaders encouraged people to stay home, the use of health care services in Colorado dropped precipitously.

To understand how Coloradans used and accessed health care during the pandemic, the Colorado Health Institute (CHI) analyzed data from a set of Colorado providers and spoke with individual providers about their experiences with patients who missed appointments in 2020.

Data showed that the use of health care was down by about 25% between the start of the pandemic and the end of 2020 compared with the same period the year before. The largest decreases in care volume occurred when Colorado's COVID-19 case numbers were highest. Later in the year, a gradual rebound did not make up for the amount of care missed at the peak of the pandemic-related shutdown.

This decrease in the use of health care services encompassed a wide range of diagnoses and health services. Insights from the data include:

- People with chronic diseases, those diagnosed with depression, and those over age 65 missed the most care.
- Care volumes for serious conditions such as cancer and for emergency department use decreased by more than 20%.
- Some Coloradans put off care for acute events like heart attacks and strokes — conditions that require rapid treatment for the best chance at a full recovery.
- Tests and screenings necessary to diagnose illnesses also decreased, in some cases by much more than 25%, which will likely lead to health concerns in the future.
- The volume of behavioral health visits decreased at a time when Coloradans were disconnected from their families, jobs, and usual sources of care.
- These declines took place despite an increase in the use of telemedicine for remote patient visits.

Key Takeaways

- The volume of visits to health care providers along Colorado's Front Range dropped 25% during the COVID-19 pandemic in 2020.
- Missed health care visits led to missed diagnoses, untreated physical and behavioral health conditions, and the exacerbation of inequities in the health care system.
- A concerted effort is needed from providers, policymakers, and community leaders to reconnect patients with services and address undiagnosed or worsened illnesses.

Why Did Coloradans Get Less Care in 2020?

As the COVID-19 pandemic unfolded, leaders at all levels had to make difficult decisions with limited information. Gov. Jared Polis signed executive orders that temporarily barred many health care providers from performing voluntary or elective procedures from March 23 through April 26, 2020.[1,2] Providers who were exempt from those orders could voluntarily put their services on hold, in part to ration limited personal protective equipment needed for the care of COVID-19 patients.[3,4]

At the same time, in the early months of the pandemic many Coloradans opted not to get care because they wanted to avoid the risk of contracting the virus and because state and local officials and their health care providers were encouraging them to stay home. A statewide stay-at-home order went into effect March 27, followed by calls from many state and local officials urging Coloradans to limit in-person interactions to preserve health system capacity. These messages discouraged many people from seeking care unless it was urgent or related to COVID-19.[5] Data show, however, that even urgent care was missed.

A national survey of Medicare enrollees provides insight into how patients in Colorado may have reacted to these changes and restrictions: One in five (21%) Medicare enrollees nationally reported not getting needed health care because of the pandemic, according to preliminary data from the Medicare Current Beneficiary Survey (MCBS), administered from June 10 through July 15, 2020. Almost half (45%) of those said they put off care because they didn't want to risk a visit to a medical facility, and more than a third (35%) said they did not want to leave their house at all.[6]

Of Medicare enrollees who missed care because their provider rescheduled their appointment, two in three (65%) said their provider's office was closed or was offering fewer appointments, according to the MCBS. Another one in five (19%) said their doctor

What CHORDS Data Show

Key Findings

1. Care volumes dropped by more than half (53%) the week of March 15 when Polis ordered the temporary closure of many nonessential businesses, such as restaurants and bars.
2. From March 15 through the end of 2020, care volumes were down 25% compared with the same period in 2019.
3. Visits for Coloradans with chronic conditions such as asthma, diabetes, and hypertension decreased by 38% over that same period.
4. The visit volume for patients with a cancer diagnosis was 22% lower compared with the prior year; the volume was 28% lower for those with a diagnosis of breast cancer.
5. Services related to depression decreased by a third (33%) at the same time that one in two Coloradans reported experiencing mental health stressors because of the coronavirus.[7]
6. Tests and screenings key to early identification of health issues also decreased: For example, various blood tests to assess heart health and the risk of developing heart disease were down anywhere from 11% to 23%.

About the Data

CHI used medical record data from the Colorado Health Observation Regional Data Service (CHORDS), a collaborative effort to share deidentified medical record data for public health monitoring, evaluation, and research. Twelve of the 14 Front Range health care providers in the CHORDS network participated in this effort, contributing aggregate data from approximately 1.5 million Coloradans, or approximately a quarter of the state's population. CHI used the data to compare the volume of health care visits — both virtual and in-person — between March and December 2020 with the same period in 2019 to understand changes in care utilization caused by the pandemic. See Appendix A for a detailed explanation of the data and our methodology.

Figure 1a. Total Visit Volume by Week Compared with Equivalent 2019 Time Frame

February 16, 2020, through May 9, 2020

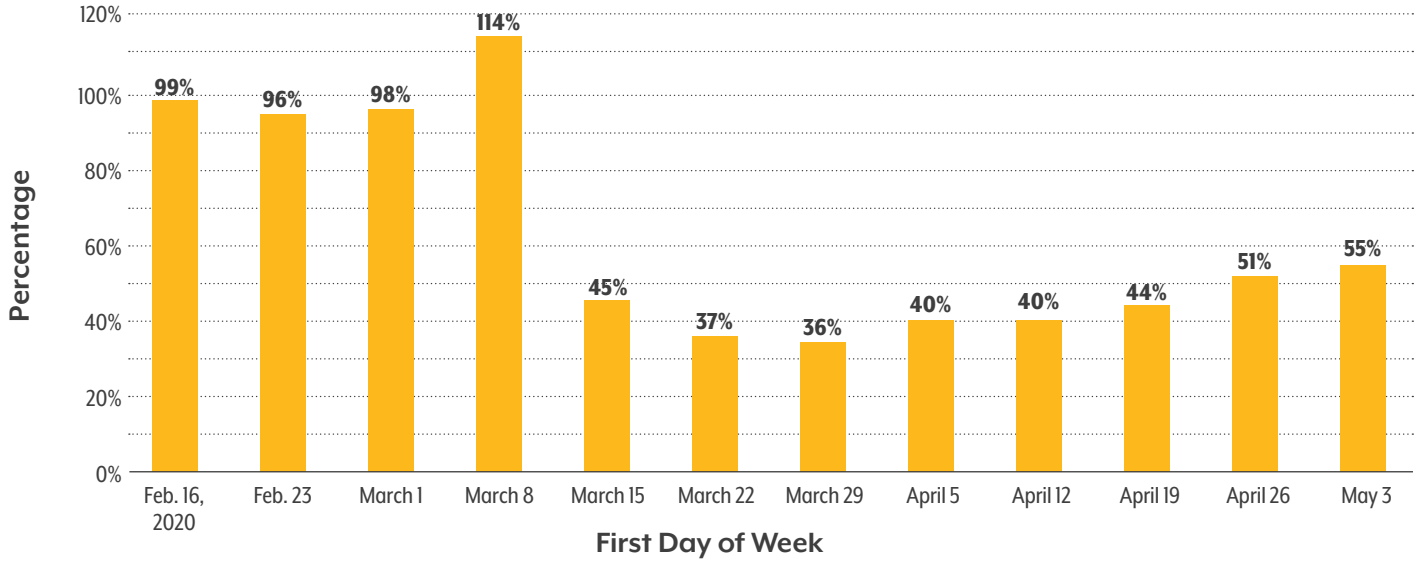
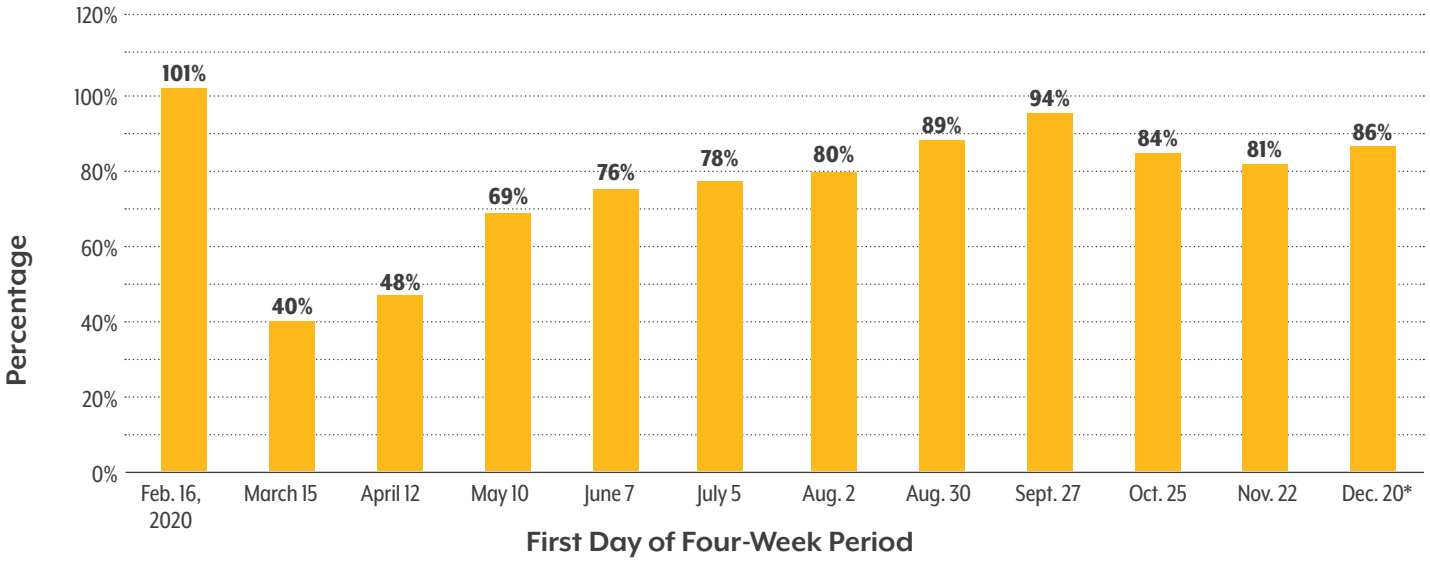


Figure 1b. Total Visit Volume by Four-Week Period Compared with Equivalent 2019 Time Frame

February 16, 2020, through January 2, 2021



Sources: Colorado Health Institute, Colorado Health Observation Regional Data Service
* The time period starting 12/20/2020 represents only a two-week period due to data availability.

postponed their appointment because priority was given to other, more urgent services.[8]

According to the CHORDS data, the steepest decline in the use of health care occurred in mid-March, at the height of uncertainty around the spread of the virus and during the initial wave of pandemic-related restrictions.

On March 16, 2020, Polis ordered the closure of restaurants, breweries and bars, movie theaters, gyms, and coffeehouses.[9] Care volumes that week dropped by more than half (55%) compared with the equivalent week in 2019. This was the steepest decline in care use seen in 2020 (see Figure 1a).

The following week, when the governor announced the ban on some providers performing voluntary or

elective procedures, care use dropped another 18%. At the end of March, weekly visit volume was down to only 36% of the equivalent time frame from 2019.

Care volumes began to recover slowly after March 2020 but remained well below pre-pandemic levels through the rest of the spring (see Figure 1b). By the beginning of June, marked as the four-week period starting June 7, 2020, total care volume had rebounded to 76% of pre-pandemic levels.

Though coronavirus case rates were relatively low in Colorado during the summer, there was no surge in visits to make up for previously missed appointments. Instead, care volume continued to slowly recover over that time. By late September, care use had reached 94% of pre-pandemic volume. Starting in October 2020, volumes began decreasing again during the third wave of coronavirus cases and amid anticipation for the holiday season.

Overall, the volume of visits from March through December 2020 was just 75% of the normal level. In short, patients missed one in four expected health care visits during that period compared with the same period in 2019.

Much of the health care delivered in 2020 shifted to virtual settings. The rapid rise in telemedicine partially offset decreases in in-person care. It offered a crucial lifeline to services for many patients, but it did not come close to fully replacing all the lost in-person visits. Data show that telemedicine has staying power; virtual visit volumes did not drop to pre-pandemic levels as in-person care inched toward normalcy. The lesson: Providers, insurers, and policymakers face many decisions about how best to employ telemedicine as we emerge from the pandemic.

Missed Care and Coloradans' Health

Missed visits have consequences. One national survey found more than half (57%) of those who postponed care reported negative health consequences due to the delay.[10] The health impacts were most immediate and apparent for Coloradans with chronic conditions that require frequent touchpoints with providers, such as diabetes or hypertension, and for Coloradans with new or existing behavioral health needs. Older Coloradans with multiple chronic conditions were particularly affected.[11] Without regular care, their health can decline quickly.

Coloradans With Chronic Disease Struggled to Get Care

The CHORDS data show that visits for chronic conditions decreased by an average of 38% across all age groups between 2019 and 2020. The decline for conditions included in this analysis — asthma, diabetes, high cholesterol (hyperlipidemia), and high blood pressure (hypertension) — ranged from 36% to 41% (see Figure 2).

According to a family medicine doctor with Kaiser Permanente, for many patients, "Life was not normal [during the pandemic]. Their lifestyle changed, and their healthy habits were disrupted."[12]

Some patients with conditions that are often managed by lifestyle modifications, such as diabetes, high cholesterol, or high blood pressure, were forced to adapt their dietary and exercise regimens while spending more time at home and lacking access to a gym. Some faced new stressors such as a lost job or child care challenges that competed with healthy routines.

Patients with chronic conditions are at risk of adverse outcomes when their regular care schedule and lifestyle modifications are upended in this way. For example, patients with diabetes may experience complications like eye disease, kidney disease, and nerve damage.[13]

One national survey fielded in September 2020 found more than three-quarters (76%) of adults who skipped care had at least one chronic health condition.[14] Another survey of primary care providers in October 2020 found that more than a third of clinicians (37%) said their patients with chronic conditions are in worse health due to the pandemic, in part due to delayed visits to manage their care.[15] A family nurse practitioner at STRIDE Community Health Center echoed these findings, stating that in their practice, "We are seeing worsening or uncontrolled diabetes, hypertension, obesity, and anxiety, depression, and mental health comorbidities." As a result of missed follow-up care, according to the practitioner, some patients ran out of medications.

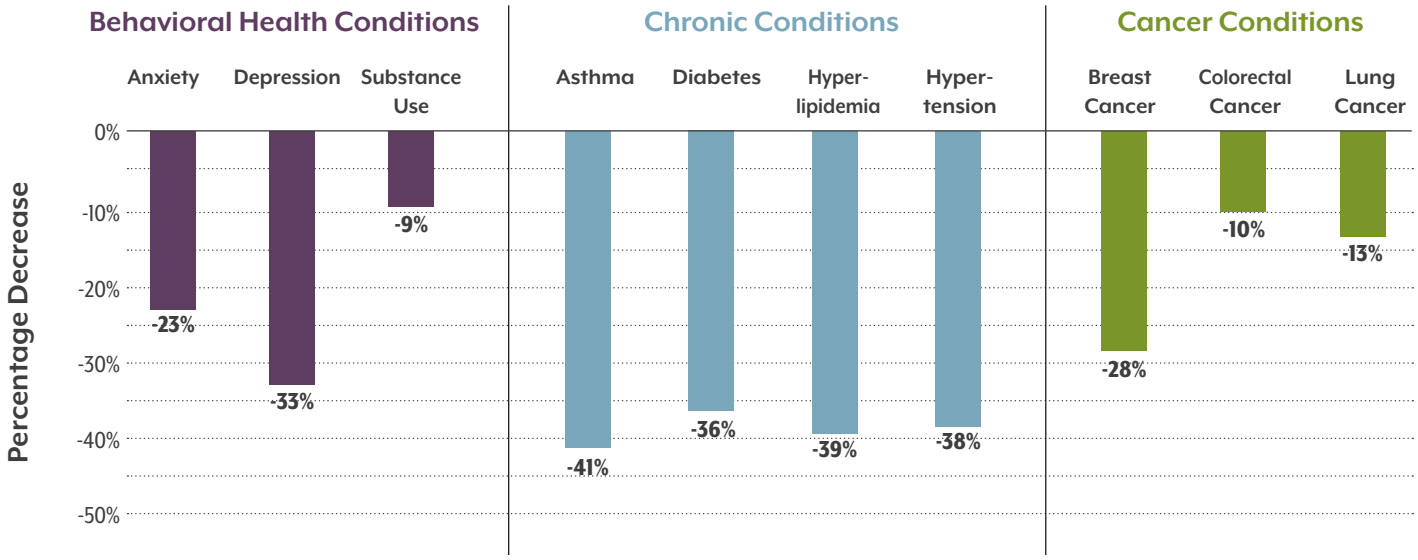
Pandemic Disrupted Treatment Regimens for Coloradans with Cancer

The COVID-19 pandemic upended vital treatment for some patients with cancer. Visits for patients with a cancer diagnosis or a personal history of cancer were 22% lower between March and December 2020 than in the same period in 2019. Visits for patients with a breast cancer diagnosis decreased by 28% compared with the prior year, while visits for those with a colorectal or lung cancer diagnosis decreased by 10% and 13% respectively.

The pandemic disrupted some chemotherapy and radiation treatment schedules and forced some surgeries to be postponed.[16] In certain cases, cancer treatment periods were accelerated or changed to minimize in-office exposure, and screenings (especially for breast cancer) were significantly curtailed due to fewer wellness

Figure 2 . Visit Volume by Condition Compared with Baseline

March 15, 2020, through January 2, 2021



Sources: Colorado Health Institute, Colorado Health Observation Regional Data Service

visits by primary care providers and diagnostic visits to oncologists, resulting in a decrease in new diagnoses. Missed or altered care for cancer patients and cancer screenings is inherently concerning, as these types of cancer are best treated when they are caught early.

Behavioral Health Care Decreased While Demand Increased

The pandemic strained patients' mental health while limiting their access to care. Services related to depression decreased by a third (33%) at the same time half of Coloradans reported experiencing mental health stressors because of the coronavirus.[17] A national survey found almost nine in 10 (85%) physicians said the mental health of their patients worsened during the pandemic, and some reported seeing more patients than usual who were abusing drugs or alcohol.[18]

Visit volume for services related to anxiety decreased by 23%, a decline that would have been even steeper if not for a substantial shift to telemedicine. Visit volume for substance use services decreased less, by 9% compared with the year prior. This may be due in part to a particularly high need for these services: Nationally, drug overdose deaths climbed to the most on record in 2020.[19]

The providers interviewed for this report were unanimous in their call for more resources to meet the need for behavioral health services. "We're seeing a lot more anxiety and depression, and our capacity to deal with it, unfortunately, is overwhelmed," said a family medicine doctor. Speaking about their pediatric patients, a provider from Children's Hospital Colorado said, "Mental health needs are skyrocketing ... [and] we should be screening every kid who comes in." A representative from STRIDE Community Health Center said many patients continue to feel "lonely and isolated" in 2021, yet some of them "have fear around coming to the clinic and are avoiding care or delaying care significantly."

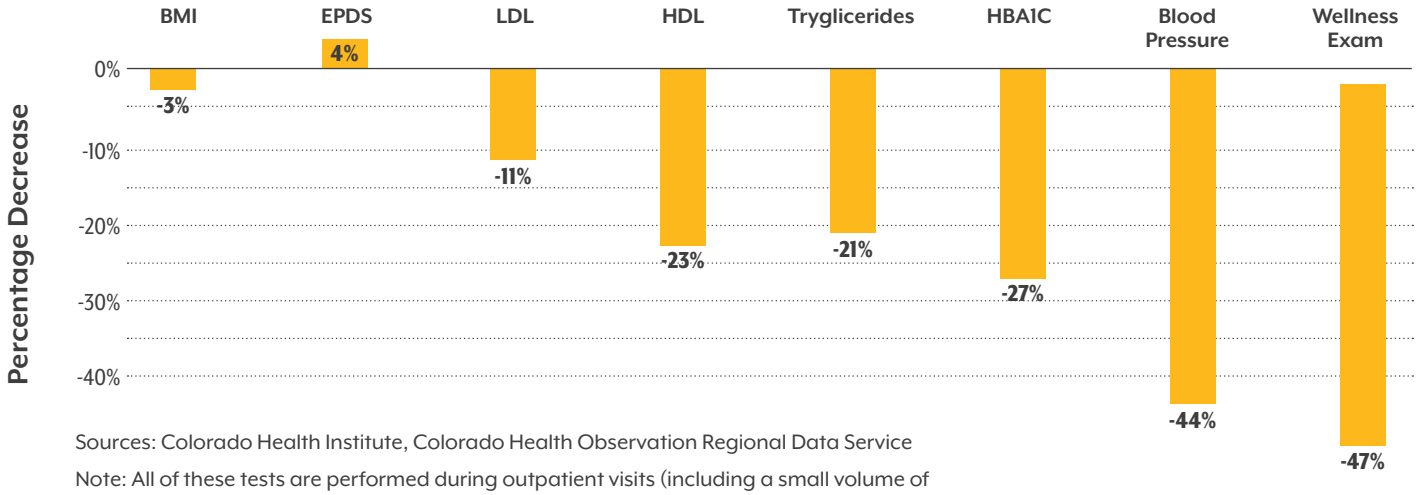
The consequences of what has been referred to as the "grief pandemic" — a combination of stressors such as isolation, job loss and financial strain, deaths of loved ones, and an inability to grieve properly — will likely be felt by Coloradans for years.[20] The increased need for behavioral health services resulting from these challenges has the potential to further strain Colorado's already-stretched behavioral health care system.

Fewer Screening and Diagnostic Tests Mean Fewer Illnesses Caught Early

While some patients experienced the fallout of missed care almost immediately, others won't feel the impact until further down the road. Routine screenings and diagnostic tests skipped during the pandemic likely resulted in missed diagnoses for a variety of conditions. Wellness exams decreased

Figure 3. Diagnostic and Screening Test Volume Compared with Baseline

March 15, 2020, through January 2, 2021



Sources: Colorado Health Institute, Colorado Health Observation Regional Data Service

Note: All of these tests are performed during outpatient visits (including a small volume of telemedicine visits when possible). Independent screens/tests are not included.

by almost half (47%) – the most of all diagnostic and screening services included in the analysis. Measurement of blood pressure, which typically occurs during a wellness exam or any primary care visit, was down by almost as much (44%). HbA1c tests, which are key for assessing a patient's management of diabetes, were down by more than a quarter (27%). (See Figure 3.)

In addition, blood tests used to assess heart health (HDL, LDL) and risk of developing heart disease (triglycerides) were down anywhere from 11% to 23%.

In contrast to other diagnostic and screening tests, the number of Edinburgh Postnatal Depression Scale (EPDS) screenings showed a slight increase (4%), indicating that obstetric care was one of the few medical services that was not significantly curtailed during the pandemic. Obstetricians confirmed that most prenatal and postpartum visits continued because patients realized services such as ultrasounds and blood draws are critical during pregnancy. However, a representative from STRIDE Community Health Center said some pregnant patients did not come in as scheduled: These patients "arrived late to care, often the week of their due date, and it was challenging to get them the [usual] screening tests and ultrasounds to check for fetal concerns."

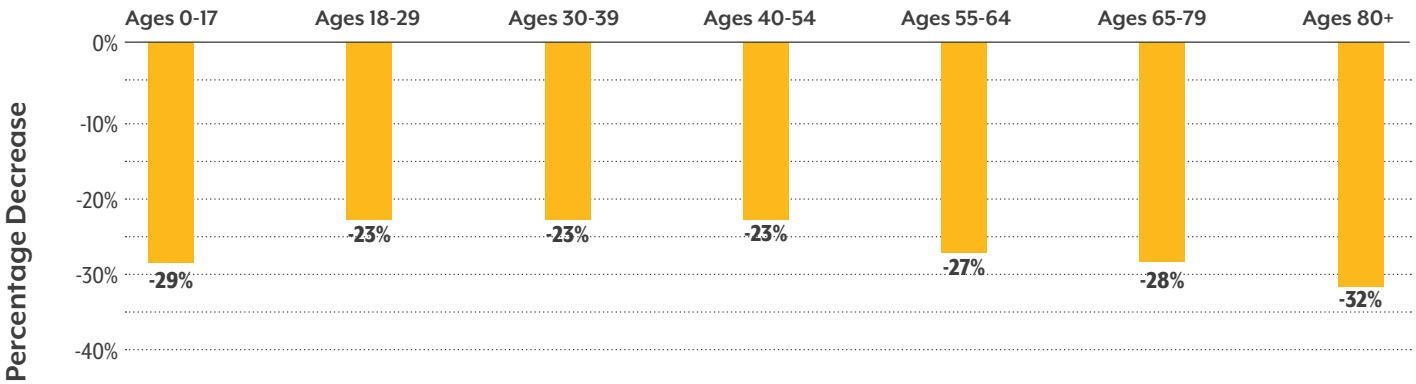
According to literature, other screenings not included in CHI's analysis decreased as well. Nationally, screenings for HIV were almost cut in half (45%), resulting in 5,000 fewer instances of HIV being identified and potentially treated in 2020.[21] Testing for cancer was not included in the analysis, but missed cancer diagnoses will certainly have repercussions. Over the past 30 years, increased early detection and advances in treatment and prevention have reduced cancer death rates by almost a third (down 31% from 1991 to 2018).[22] One national analysis estimated there will be almost 10,000 more deaths from breast and colorectal cancers over the next 10 years because of the pandemic's impact on screening and treatment. Combined, these two cancers account for only about one in six cancer deaths.[23]

Missed Care Generally Increased with Age

The rate of missed appointments generally increased with patients' age (see Figure 4), CHORDS data show. Care volume for Coloradans older than age 80 decreased by about a third (32%), while visits for those ages 18 to 54 declined by less than a quarter (23%). Older Coloradans may have been more likely to avoid in-person visits because of concern over the coronavirus; in addition, difficulties with technology may have discouraged some from using telemedicine as a replacement for in-person appointments. Because older Coloradans receive more health care on average than other age groups, they were also more likely to have an appointment cancelled or postponed during the early weeks of the pandemic.

Figure 4. Visit Volume by Age Compared with Baseline

March 15, 2020, through January 2, 2021



Sources: Colorado Health Institute, Colorado Health Observation Regional Data Service

Older adults are at risk for a decline in mobility and cognitive function due to reduced activity and isolation. In 2021, as the pandemic continues, physicians have reported their patients losing strength and having new difficulties with movement, balance, and weight control. Physicians also have seen an acceleration of conditions like dementia and worsening of illnesses such as diabetes, heart failure, and chronic obstructive pulmonary disease in elderly patients.[24]

Children under age 18 missed more care than young adults ages 18 to 29. National data support this trend: Across the country, pediatric care saw steeper volume declines than other specialties.[25] This is due in part to parents being forced to miss their children's regularly scheduled well-child visits. Children under age 5 require many regular check-ups, particularly in their first year of life. From birth until age one, for example, Children's Hospital Colorado recommends seven visits.

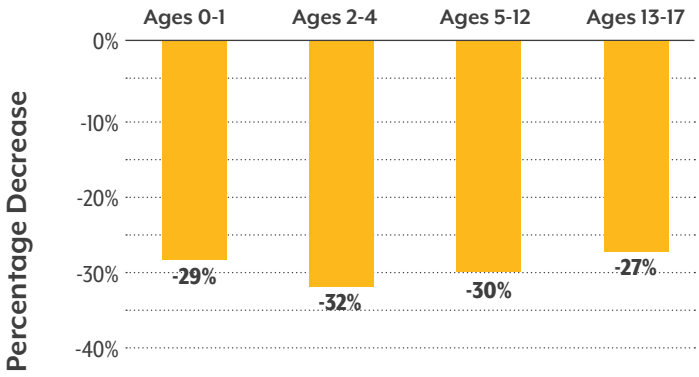
"We spent a lot of energy making sure we didn't fall behind with the babies (those under age 2)," said a provider from Children's Hospital. But healthy school-aged kids and teenagers, especially those not due for an immunization, had to be deprioritized and were more likely to miss preventive visits.

The provider points to two other key reasons why care volumes were down for children: less respiratory illness (including asthma) and fewer injuries, as kids were spending more time at home and less time socializing, in day care, or playing sports.[26] Other health care providers, such as STRIDE Community Health Center, resumed well-child visits for those under age 2 as early as April 2020 and gradually expanded to serve older kids.[27]

Visit volumes decreased slightly less for children under age 2 than for toddlers and preschoolers (ages 2 through 4) or elementary school-aged children (ages 5 through 12). This was likely due to an emphasis by pediatricians on well-child visits for their youngest patients in the early stages of the pandemic (see Figure 5). Still, visits for this group were down by more than a quarter (29%) compared with the same period in 2019. Visits for teenagers (ages 13 through 17) decreased the least, by 27%, potentially because this population tends to have fewer regularly scheduled visits than younger children and because they can be more easily treated via telemedicine .

Figure 5. Visit Volume by Pediatric Age Compared With Baseline

March 15, 2020, through January 2, 2021



Sources: Colorado Health Institute, Colorado Health Observation Regional Data Service

Early in the pandemic, some payers did not allow providers in Colorado to bill for virtual well-child visits. Some components of those visits, such as vaccinations, cannot be offered remotely, which may have also reduced care volume before in-person visits resumed. Once providers began offering in-person well-child visits again, not all families felt safe coming to a clinic and some may have believed that children who appeared healthy didn't need an exam.[28]

Pandemic Exacerbated Existing Inequities

Among racial and ethnic groups, CHI's analysis found populations with greater access to care prior to the pandemic were more likely to have missed visits during the pandemic. The sharpest declines in care were experienced by Asian Coloradans (32%), followed by white Coloradans (28%), Black Coloradans (25%), Hawaiian or Pacific Islanders (23%), and American Indian Coloradans (22%). Data from the Colorado Health Access Survey indicate that Asian and white Coloradans, like older adults, tend to use more care than Coloradans as a whole. Therefore, those with

greater access to the types of care that can more easily be skipped and rescheduled later, such as preventive visits and health screenings, were more likely to miss care during the pandemic.

That is not the only factor at play, however. An analysis by the National Asian Pacific Center on Aging found that 42% of Asian Americans and Pacific Islanders are family caregivers, much higher than the rate in the overall population (22%). These multigenerational households and families may have taken additional precautions, such as avoiding unnecessary contacts and health care visits, to protect older family members.[29] The rise in anti-Asian violence and hate crimes also may have deterred some Asian Coloradans from venturing out to seek care.[30]

One national survey found that Black adults were more likely than white or Hispanic/Latinx adults to report delaying or forgoing care.[31] A different national survey did not find significant differences in missed care by race or ethnicity.[32]

This analysis is a step toward understanding the holistic impact of the pandemic on Coloradans' health. However, it may underestimate the disparate impact on populations of color. The analysis compares changes in care volume with a baseline that suggests those populations have less access to — and less use of — health care due to historic, structural racism.[33,34] Not surprisingly, someone who typically sees a medical provider several times a year was more likely to have had an appointment postponed, cancelled, or missed in the spring of 2020, when care volumes were at their lowest, compared with someone who sees a health care provider once a year, if at all.

Other data about the impact of the pandemic on communities of color are less equivocal: The various effects of the pandemic have fallen hardest on Black and Latinx Coloradans, who are more likely to get sick and die from COVID-19 and are being vaccinated at lower rates.[35,36] A recent CHI analysis, also based on CHORDS data and focused on Front Range counties, found that infection rates were higher in Colorado neighborhoods where residents had lower education levels and in neighborhoods with more non-English speakers and people of color. Residents in these places may be more likely to hold jobs that require them to interact with the public and co-workers, increasing their chances for exposure to COVID-19 and making it difficult or impossible for them to practice social distancing. In the hardest-hit neighborhoods, CHI found that the rate of COVID-19 diagnoses was 10 times higher than in those neighborhoods that fared the best.[37] It is possible that an increase in visits related to COVID-19 for populations of color may have played a small role in offsetting decreases in their use of other health care services during the analysis period, further complicating this analysis.

The pandemic also exacerbated inequities already present in Colorado, such as income inequality and disparities in access to food and stable housing.[38,39] These changes will affect the long-term health outcomes of Coloradans and will not be felt equally among different racial and ethnic groups.

Emergency Department Use Decreased

A subset of emergency department use — visits by those who went to the emergency room and were sent home, rather than admitted for inpatient

care — also decreased by around a quarter (25%), similar to the change in outpatient visits. Previous research by CHI found those patients who sought emergency care during the pandemic were sicker on average than emergency room patients prior to the pandemic, likely because they waited longer to seek care in an effort to avoid in-person interaction, particularly in the early months.[40]

In many cases, patients delayed care for acute health issues such as heart attacks, strokes, and appendicitis — conditions for which prompt treatment is vital.[41] A practitioner at STRIDE Community Health Center stated that their clinic frequently saw patients who put off care and were then forced to seek assistance in the emergency department. In an interview with The Longmont Leader, the director of UCHealth Longs Peak Hospital's emergency department said patients who delayed seeking emergency care needed more aggressive treatment and faced a longer recovery. These outcomes could have been avoided if the individuals had gotten help when they needed it.[42]

An Increase in Deaths

Other analyses have documented an increase in deaths in Colorado in 2020, many for reasons not due strictly to the pandemic. Excess deaths, a measurement of whether more people are dying than expected in a given year, were up across the board last year. Many of these deaths were directly caused by COVID-19, but others were due to secondary impacts of the pandemic, such as consequences stemming from missed health care.

While this analysis is not able to directly tie those excess deaths to the decline in care volume evident in the CHORDS data, the numbers are striking. According to a Denver Post analysis, there were almost 9,000 excess deaths in Colorado in 2020, of which almost 5,000 had coronavirus listed as either the underlying cause or a contributing factor. Deaths from Alzheimer's disease, diabetes, chronic liver disease and cirrhosis, and Parkinson's disease each increased more than 16% in 2020. Some of these deaths may have been prevented without so much missed care. Conversely, deaths from influenza and pneumonia were 23% lower than expected due to the success of social distancing and masking in lowering infection rates.

In a striking example of inequities exacerbated by the pandemic, age-adjusted death rates increased more than 30% for Latinx, Asian American, and Black communities in Colorado, while increasing only 8% for white Coloradans.[43]

Making Up for Lost Time

The first step to ending the pandemic and improving Coloradans' health is to continue the work of vaccinating people against COVID-19. Vaccination is the best tool available to tamp down the virus and allow our focus and resources to shift to supporting other aspects of the state's recovery. But additional efforts to reconnect Coloradans with the health care system are urgently needed if we hope to prevent future epidemics of everything from cancer and chronic disease to behavioral health issues.

The focus of providers, policymakers, and local leaders should be on reaching out to patients and communities with tailored messages to mitigate health concerns that developed or worsened during the pandemic, and to head off negative health consequences that may develop further down the road.

Some recommended efforts and initiatives:

- Providers should proactively reach out to patients with **chronic illnesses**, particularly those with **comorbidities**, to check on their health status and encourage them to seek care if they have not already done so. Insurers can assist by identifying and providing outreach and resources to their higher-risk members.
- After many months spent isolated and stationary, a concerted effort is needed to identify and help some **older Coloradans** restore mobility and cognitive function.
- Patients with **new or worsening physical symptoms** like occasional mild trouble breathing or **behavioral health symptoms** like anxiety should seek medical advice as soon as possible, even if these symptoms do not yet seem serious.

- Many healthy Coloradans missed recommended **wellness visits** and **screenings for cancer.** The U.S. Preventive Services Task Force recommends annual screening for colorectal cancer in all adults starting at age 45, biennial breast cancer screenings for women starting at age 50, and annual lung cancer screenings for any adult older than 49 with a history of smoking at least 20 packs per year.[44] Recommendations vary depending on medical history and should be discussed with a clinician.
- To head off the spread of other (non-COVID-19) **vaccine-preventable diseases**, parents and providers should work to immunize children and youth who missed scheduled vaccines during the pandemic.[45]
- **Behavioral health services**, including substance use services, are more important than ever. Telemedicine has increased access to these services for many patients, but some will prefer and need in-person therapies.
- Coloradans should speak with a provider if they have questions or concerns about their **sexual health**, as many routine visits and tests were skipped in 2020.[46]
- **Dental care** was not part of this analysis but is a key component of ensuring good health. Coloradans should schedule a dental appointment if they have not done so recently, and dental providers should connect with patients to encourage them to seek care — especially given that some undoubtedly experienced a year of increased stress-related teeth grinding.[47]

Additional hurdles may complicate outreach efforts. For example, some Coloradans may need to find a new health care provider because their insurance plan's network has changed since they last sought care or because their previous provider closed or retired during the pandemic. Continued access to telemedicine will help some patients, particularly those with behavioral health needs, maintain continuity of care. But many will face extra challenges with getting back into the doctor's office. Health care providers and other leaders should think creatively about strategies and resources as they work to effectively assist those who need additional help.

In the months and years to come, providers, payers, and public health officials should continue to analyze claims data and clinical data sources such as CHORDS to measure progress in making up for missed health care services. These data will also help monitor the future impacts of reduced care volume due to the ongoing impacts of the pandemic. In some cases, researchers may learn that missed health care did not lead to worse outcomes, and this may offer natural experiments for identifying low-value care if and where it existed.[48] But no- or low-value care is the exception for Coloradans who went without so many important services in 2020.

As we continue to move through the pandemic, providers and policymakers should prioritize efforts to make up for missed health care visits. However, it is important to remember that many Coloradans face barriers that prevent them from accessing the health care system even during less trying circumstances. The push to remove those barriers via expanded insurance coverage, initiatives to rein in health costs, more patient outreach and education campaigns, and other efforts must continue to ensure that all Coloradans have the opportunity to be as healthy as possible.

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CHI extends our thanks to the external partners who spoke with us for this report. Their perspectives as health care providers added important context to our understanding of the data.

Appendix A: Data and Methodology

CHORDS Data

CHI's research for this analysis draws on a unique source of clinical data, the Colorado Health Observation Regional Data Service (CHORDS). CHORDS is a collaborative effort by health care, behavioral health, and public health partners on the Front Range to share deidentified medical record data for public health monitoring, evaluation, and research.

CHORDS aggregates electronic medical record (EMR) data for physical and behavioral health services from 14 contributing providers along the Front Range. Of those 14 providers, 12 participated in this research. These providers include four health systems (Children's Hospital Colorado, Barbara Davis Center, Denver Health and Hospital Authority, and Kaiser Permanente Colorado), two community mental health centers (Mental Health Center of Denver and Mental Health Partners), and six Federally Qualified Health Centers (Clinica Family Health, Clinica Tepeyac, Colorado Coalition for the Homeless, High Plains Community Health Center, North Colorado Health Alliance, and STRIDE Community Health Center).

This analysis includes aggregate data from approximately 1.5 million Coloradans, or approximately a quarter of the state's population. The majority of these 1.5 million people live in 10 Colorado counties: Adams, Arapahoe, Boulder, Broomfield, El Paso, Denver, Douglas, Jefferson, Larimer, and Weld. The CHORDS data used in these analyses represent approximately a third of the total population living in these 10 counties. Some analyses use data from a subset of partners due to limitations in data availability.

CHORDS data are not intended to be representative of the entire state but provide insights into the use of health care services among a sizeable portion of Coloradans living along the Front Range. (For more information about the CHORDS network and how the data used to inform this report compares with the U.S. Census Bureau's 2017 American Community Survey, visit www.CHORDSnetwork.org.)

Methodology

CHI analyzed de-identified weekly clinical encounter volume for telemedicine and in-person ambulatory, or outpatient, encounters before and during the pandemic to understand how providers adapted to a new set of restrictions and dynamics. Specifically, CHI compared the volume of health care visits from March through December 2019 — both virtual and in-person — with the same time period in 2020.

The pre-pandemic period, referred to as the "baseline" throughout this report, includes data from 42 weeks before the pandemic that roughly correspond to the analysis period: the 42 weeks from March 17, 2019, through January 4, 2020. Time series divided into one-week or four-week periods use seasonally adjusted statistics for roughly the same time period the year prior. These statistics are referred to as the "equivalent 2019 timeframe" throughout this report.

The primary unit of analysis (referred to as "visit volume") combines in-person ambulatory encounters and telemedicine encounters that were billed to insurance carriers and/or patients. Telemedicine encounters include both synchronous video visits and synchronous audio (telephone) visits. This unit of analysis reveals trends in care volume, but not individual care utilization patterns.

Emergency room visits are not included in visit volume statistics, but are mentioned separately in this report. Those emergency room visits consisted of only patients who were treated and subsequently sent home, so they do not reflect patients who were subsequently admitted for acute hospital care.

Acute inpatient, radiology, and laboratory services, along with all non-billable telecommunications (such as routine phone calls, patient portal communications, chatting, and texting) were not among the encounters included in this analysis.

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