



COVID-19's Impact on the Dental Care Sector

Modeling the Impact of COVID-19 on U.S. Dental Spending — June 2020 Update

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Key Messages

- *The U.S. economy has begun its recovery from the COVID-19 pandemic. Dental practice activity in terms of patient volume and practice employment has rebounded, though these markers are still below pre-COVID-19 levels.*
- *Our latest modeling predicts that U.S. dental care spending could decline by up to 38 percent in 2020 and 20 percent in 2021. We model alternative scenarios as well and they have a more muted impact.*
- *Our updated spending projections are more optimistic than those we published in April 2020. This is due to dental practices opening and patient volume recovering faster than anticipated.*
- *Our analysis is still subject to major uncertainty at this stage, and we will update it as more data become available. Our scenarios do not account for a potential major second wave of COVID-19, which could cause a significant relapse in the dental economy.*

Introduction

COVID-19 is having an unprecedented impact on society, the economy, and the dental care sector. In March and April 2020, the dental economy came to a virtual standstill¹ along with several other health care sectors.^{2,3,4} During this period, the early proactive response by the dental community to help flatten the curve and preserve personal protective equipment (PPE) impacted the dental economy in profound ways. With 90 percent of dental practices re-opened,⁵ employment growth in dentistry is the fastest of any health care sector. Of the 312,000 health care jobs that have been recovered in May 2020, 244,000 of those jobs came from dental offices.⁶

In this research brief, we update our dental spending projections through the end of 2021 based on new HPI data. Our updated projections are the second iteration of our modeling, which was first published in April 2020. We plan to regularly update our analysis as better information becomes available.

COVID-19, the U.S. Economy, and the Dental Economy

Since late 2019, COVID-19 has reached pandemic status with cases in 188 countries. Worldwide, nearly 9 million individuals have been infected and over 468,000 have died.⁷ COVID-19 is a novel coronavirus that originated in Wuhan, China, where a cluster of pneumonia cases first appeared in December 2019.⁸ Doctors eventually connected these cases with COVID-19. Initially, it was thought the first case of COVID-19 in the United States occurred in a 35-year-old male in Snohomish County, Washington on January 20, 2020. This individual had previously travelled to Wuhan, China.⁹ Subsequently, the state of Ohio documented a case of COVID-19 on January 7, 2020.¹⁰ It is still not clear when exactly the first case of COVID-19 occurred in the United States. The first COVID-19 death occurred in California on February 6, 2020.¹¹ COVID-19 thereafter spread to each state and the District of Columbia and as of June 22, 2020, over 2 million have been infected and over 120,000 have died from the virus.⁴

In March, individual states and municipalities began imposing shelter-in-place orders. On March 16, 2020, six San Francisco Bay area counties imposed a shelter-in-place order and on March 19, 2019, California was the first state to mandate a state-wide shelter-in-place order.¹² By April 15, 2020, 42 states and the District of Columbia had state-wide shelter-in-place orders.¹³ On March 16, 2020, the Centers for Disease Control and Prevention (CDC) published social distancing guidelines to limit the spread of COVID-19.¹⁴ As a result of these state-wide orders and social distancing guidelines, many restaurants, shops, and other non-essential businesses stopped operating. Many workers began to work from home.

In late April 2020, some states began to re-open their economies and relax their shelter-in-place orders. Alaska was the first state to do so on April 24, 2020. As of June 10, 2020, only two states, California and Oregon, still maintain shelter-in-place orders. Nevertheless, businesses have already re-opened in many counties in these states.¹⁵

There are several projections that assess the impact of COVID-19 on the U.S. economy. Statewide shelter-in-place mandates, the high mortality rate of COVID-19 relative to other viruses (COVID-19 has a mortality rate of approximately 3.4 percent as opposed to 0.1 percent for influenza),¹⁶ the highly contagious nature of the virus, and the significant recovery period of those infected (2-6 weeks)¹⁷ are key factors behind why COVID-19 has had a significant impact on the U.S. economy. Unlike other economic downturns, the current contraction gripping the U.S. is driven by a pandemic, heavily rooted in consumer safety and well-being concerns and, consequently, in reduced demand within the services industry. Using the 1918-1920 Spanish flu pandemic as a guide, Barro et al. (2020) predict that COVID-19 will decrease GDP globally by 6 percent and private consumption by 8 percent.¹⁸ The Congressional Budget Office (CBO) also projects the unemployment rate to be at over 10 percent in Q2 2020 and 9 percent by the end of 2021.¹⁹ As of June 11, 2020, U.S. jobless claims have reached 44 million.²⁰ In April, the unemployment rate peaked at 14.7 percent before declining to 13.3 percent in May.²¹ Unexpectedly, an additional 2.5 million jobs were created in May.⁶ On June 10, 2020, the Federal Reserve (FED) projected that U.S. unemployment will be at 9.3 percent by the end of 2020 and at 5.5 percent in 2022. The FED projects it will not raise interest rates until at least 2022.²² The FED also projects that real GDP will decline by 6.5 percent in 2020 before increasing by 5 percent in 2021 and 3.5 percent in 2022. Core inflation will hold steady between 1-2

percent from 2020 through 2022.²³ The Organisation for Economic Co-operation and Development (OECD) projects that in 2020, U.S. GDP will decline by 7.3 percent if there is one wave of COVID-19 and by 8.3 percent if there is a second wave.²⁴ Relative to the previous quarter, the CBO projects that real GDP will decline by 11.2 percent in Q2 2020 before increasing by 5 percent in Q3 2020 and 2.5 percent in Q4 2020. On an annualized basis, real GDP will decline by 5.6 in 2020 and increase by 4.2 percent in 2021.²⁵

The COVID-19 pandemic has had a significant adverse impact on high-contact industries, including dentistry. As a result of strict social distancing guidelines imposed by many states, dental clinics, general practice physician offices, optometry offices, as well as non-health care industries like hotels and restaurants have closed. Preliminary estimates from the St. Louis Federal Reserve suggest that demand in high-contact industries will decline by 51 percent and that gross output will fall by 47 percent.²⁶

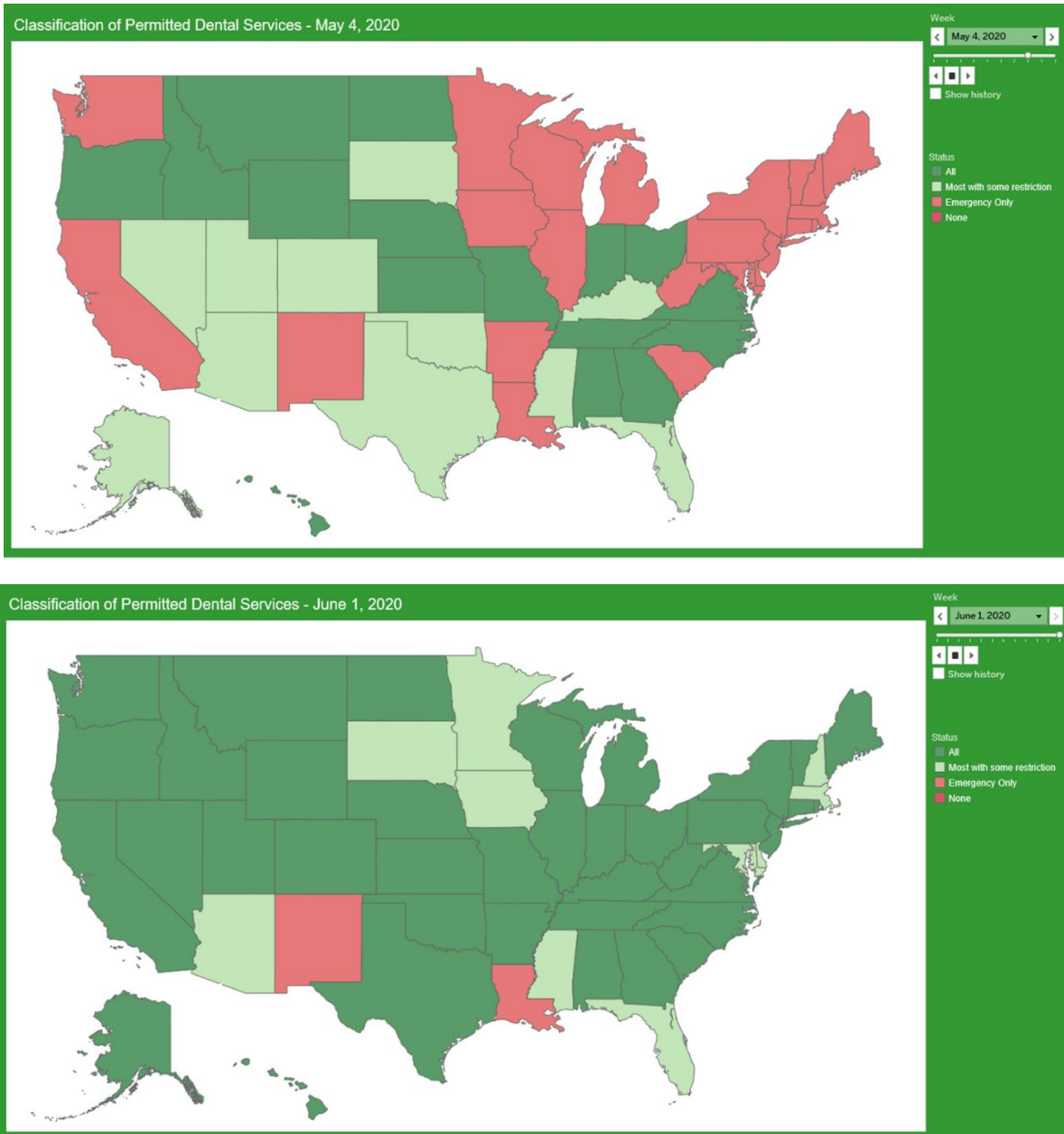
To keep dentists and patients safe from the adverse health effects of COVID-19 and to conserve PPE, the American Dental Association (ADA) issued on March 16, 2020 guidance that dental practices postpone elective procedures and only provide emergency or urgent care.²⁷ On April 1, 2020, the ADA extended these guidelines to April 30.²⁸ The procedures that the ADA recommended dentists postpone include radiographs, oral examinations, aesthetic dental

procedures, routine cleaning and preventive therapies, and orthodontic procedures that don't involve pain management. Urgent dental care includes extensive dental caries involving pain, uncontrolled oral bleeding, facial trauma, dental trauma, tooth fractures and biopsies of abnormal tissues.²⁹

Since HPI's previous dental spending projection in April 2020,¹ the dental economy has experienced a significant rebound. By May 4, 2020, 27 states allowed dental offices to open for elective care. As of June 1, 2020, 48 states, including the District of Columbia, have opened for elective dental care (Figure 1). As a result, employment at dental offices has rebounded. In fact, the rate of re-employment in the dental sector outpaces other health care sectors (Figure 2). The U.S. Bureau of Labor Statistics reports that employment at dental offices as of May 2020 is at 70 percent of pre-pandemic levels.⁶

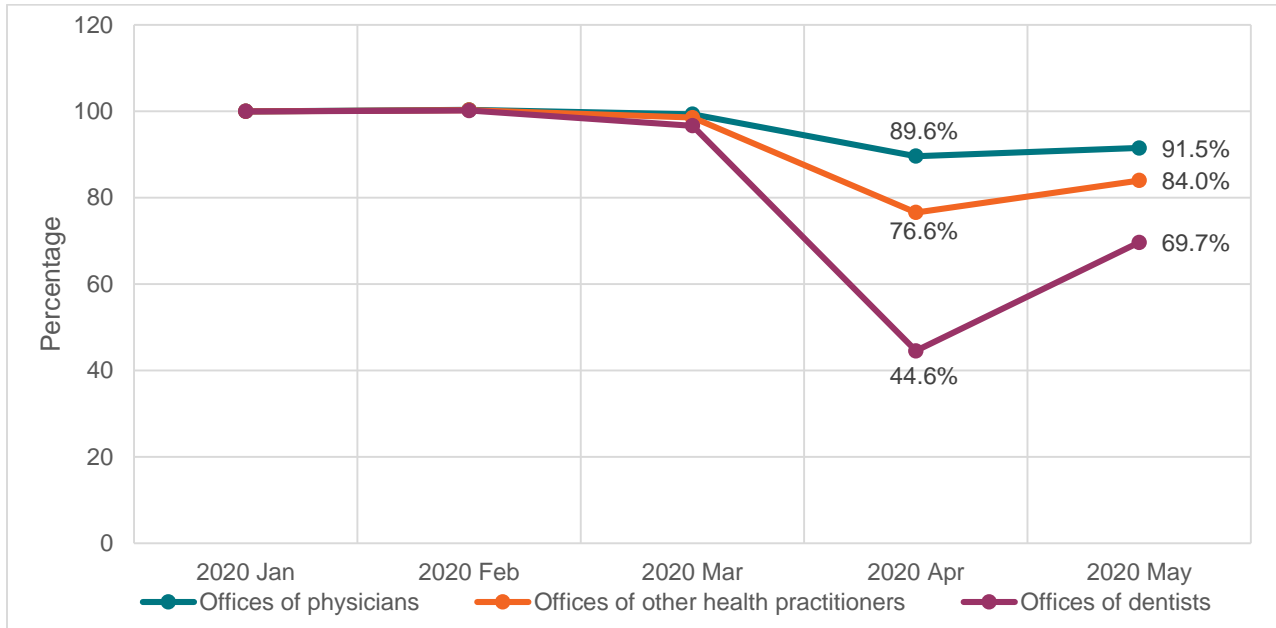
Since March 2020, the ADA has fielded a tracking poll to monitor the economic impact of COVID-19. The week of March 23, only 5 percent of dental offices remained open. Since then, dental practices have re-opened at a significant rate (Figure 3). By the week of June 1, 90 percent of practices had re-opened. Patient volume and total collections have also rebounded significantly compared to late March (Figure 4). Nationally, patient volume reached 53 percent of pre-COVID-19 levels the week of June 1 compared to 7 percent in April.

Figure 1: State Dental Restriction Mandates



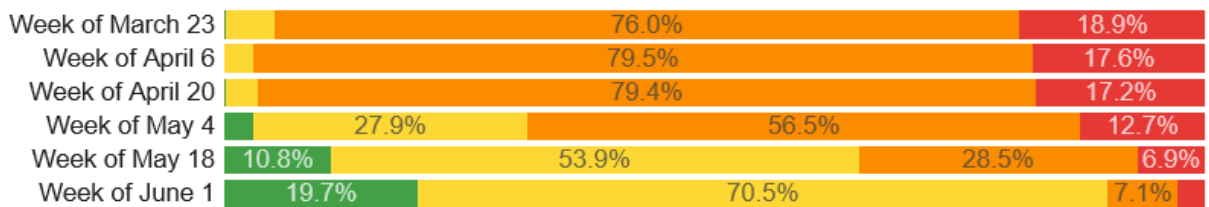
Source: ADA Health Policy Institute analysis of COVID-19 State Dental Mandates and Recommendations data provided by ADA Member & Client Services, Dental Society Outreach. **Note:** Dark green states: no restrictions on dental services. Light green states: elective procedures allowed but with some restrictions such as no cosmetic procedures and dentists must obtain personal protective equipment (PPE) from private channels without relying on state supply. Pink states: emergency services only. Red states: no dental procedures allowed.

Figure 2: Employment as a Percentage of January 2020 Employment in the Health Care Sector



Source: U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics. **Note:** "Employment data refer to persons on establishment payrolls who worked or received pay for any part of the pay period that includes the 12th day of the month." <https://www.bls.gov/web/empsit/cestn.htm>.

Figure 3: Status of Dental Practices

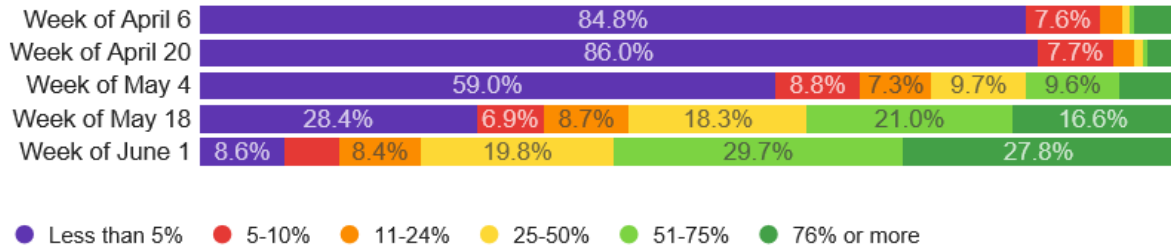


- Open and business as usual
- Open but lower patient volume than usual
- Closed but seeing emergency patients only
- Closed and not seeing any patients

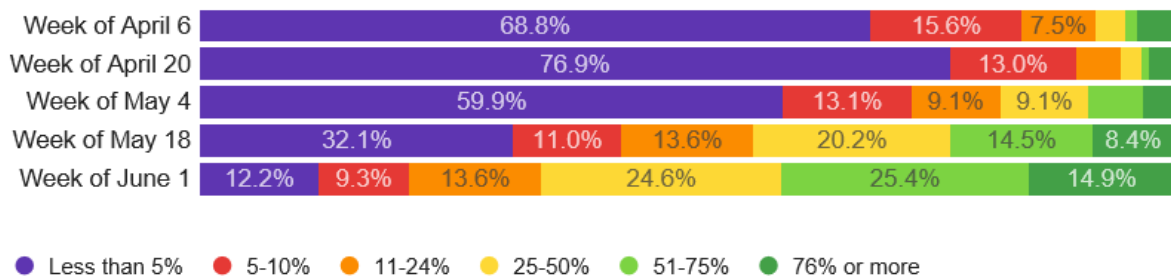
Source: ADA Health Policy Institute COVID-19 Tracking Survey.

Figure 4: Patient Volume and Total Collections

Total Patient Volume



Volume of Total Collections



Source: ADA Health Policy Institute COVID-19 Tracking Survey.

Data, Methods and Assumptions

In our economic projection model, we modeled four overall scenarios based on two different assumptions regarding the recovery of the U.S. economy and two different assumptions related to how the dental economy tracks the U.S. economy. Since HPI's last dental spending projection, where it was assumed that the economy would recover by January or May 2021,¹ additional data as shown in Figure 3 and Figure 4 from the HPI COVID-19 tracking survey⁵ suggest that dental practices are re-opening at a faster rate than anticipated. Hence, our modified assumption projects that the dental economy will recover by October 2020 or January 2021. Supporting this assumption, the CBO projects positive GDP growth in Q3 and Q4 2020.³¹ Of course, this assumes that there will not be a second

shutdown in response to a potential second wave of COVID-19.

We have two assumptions for how the dental economy (i.e., U.S. dental spending) tracks the U.S. economy. One assumption is that the dental economy will recover fully to pre-pandemic projected levels in tandem with the U.S. economy. Under this assumption, the dental economy fully recovers to its long-term trend line either by October 2020 or January 2021. The second assumption is that the dental economy recovers to 80 percent of pre-pandemic projected levels, meaning the dental economy does not return to its long-term trend line. This second assumption is more akin to the experience around the Great Recession. In addition, while consumer polling data

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strongly suggest that the public does not view dental visits as inherently unsafe or high risk for exposure to COVID-19,^{30,31} there could be longer-term effects on dental demand due to increased unemployment.

It is important to note that these projections are, at this stage, subject to a high degree of uncertainty. We drew on the best available data and historical experience, but there is simply very little to draw on. We plan to regularly update these projections as more economic data are published in the coming weeks and months.

We built our dental expenditure projection off of the estimated baseline for annual dental spending generated by CMS for 2020 and 2021.³² Baseline total dental spending, not taking into account COVID-19, is estimated to be \$148.3 billion in 2020 and \$154.9 billion in 2021. In our model, we estimated dental expenditures on a monthly basis. We allocated dental spending to each calendar month based on the percentage of total annual spending that occurred each month in the private dental insurance market, as measured by the IBM Watson MarketScan Commercial Dental Claims Database (Table 1). These are seasonality factors that we incorporated into our model when projecting dental spending through December 2021.

We used data from the ADA's bi-monthly COVID-19 tracking survey of dental practices to calculate the average collection rate from March 2020 through June 2020. The latest data from the June 1 wave show that 20 percent of practices are back to business as usual, 71 percent of dental practices are open but with lower

patient volume than usual, 7 percent of dental practices are closed except for emergency patients, and 2 percent are closed entirely. For March, April, May and June, among these four categories of practices, we calculated the average collection rate compared to what is typical (Table 2). We then estimated a weighted average collection rate of dental practices in the U.S. The average collection rate of dental practices in the U.S. increased from 7.9 percent in March/April to 47.5 percent in June. These are estimated dental spending levels compared to what is typical historically. For each month, we applied the collection rate factor to estimate monthly dental expenditures in the U.S. during COVID-19.

Our dental expenditure projection model covers four phases. In Phase 1, which covers the period from January 1, 2020 to March 16, 2020, monthly dental expenditures are set at CMS projected levels. During Phase 2, we applied the COVID-19 collection rate factor to estimate monthly dental expenditures in the U.S. Phase 2 covers the period from March 16, 2020 to June 30, 2020, during which much of the country had a shelter-in-place order in effect. In Phase 3, we assumed that dental expenditures grow at a compounded monthly growth rate until they recover either fully to pre-pandemic projected levels or 80 percent of pre-pandemic levels and that this will happen either by October 2020 or January 2021, depending on the scenario. During Phase 3, a seasonality factor is applied to this growth rate. In Phase 4, dental spending grows at the rates projected by CMS for the relevant months.

Table 1: Percentage of Total Typical Dental Spending that Occurs Each Month

Month	Percentage
January	9.4%
February	8.2%
March	9.1%
April	8.2%
May	8.6%
June	8.7%
July	8.1%
August	9.0%
September	6.8%
October	7.9%
November	7.7%
December	8.2%
Total	100%

Source: ADA Health Policy Institute analysis of 2016-17 IBM Watson MarketScan Commercial Dental Claims Database.

Table 2: Collection Rate of U.S. Dental Practices during COVID-19

	March and April		May		June	
	Percentage of Practices	Collection Rate	Percentage of Practices	Collection Rate	Percentage of Practices	Collection Rate
Closed, but seeing emergency only patients	79.0%	7.4%	28.5%	1.8%	7.1%	0.4%
Closed and not seeing any patients	18.0%	0.0%	6.9%	0.0%	2.8%	0.0%
Open but lower patient volume	3.0%	0.5%	53.9%	18.1%	70.4%	27.3%
Open and business as usual	0.0%	0.0%	10.8%	10.8%	19.7%	19.7%
Overall Collection Rate		7.9%		30.7%		47.5%

Source: ADA Health Policy Institute Economic Impact of COVID-19 on Dental Practices survey.

Results

We present four scenarios: in Scenario 1, the U.S. economy fully recovers by October 2020 and dental spending recovers to 80 percent of its projected pre-pandemic level by October 2020. In Scenario 2, the U.S. economy fully recovers by October 2020 and dental spending recovers fully to pre-pandemic

projected levels as well by October 2020. In Scenario 3, the U.S. economy fully recovers by January 2021 and dental spending recovers to 80 percent of its pre-pandemic projected level by January 2021. In Scenario 4, both the U.S. economy and dental spending recover fully by January 2021.

Table 3 summarizes our modeling results and compares them to CMS's pre-pandemic projections. Under Scenario 1 (October 2020 economic recovery, dental spending 80 percent recovered), we project total dental spending to be \$92.8 billion in 2020 and \$123.9 billion in 2021. Under this scenario, dental spending is 62.6 percent of its projected pre-pandemic level in 2020 and 80.0 percent in 2021. Put another way, we estimate COVID-19 leads to a 37.4 percent reduction in U.S. dental spending in 2020 and a 20.0 percent reduction in 2021 under this scenario.

Under Scenario 2 (October 2020 economic recovery, dental spending fully recovered), we project total dental spending to be \$102.2 billion in 2020 and \$154.9 billion in 2021. Under this scenario, dental spending is 69.0 percent of its projected pre-pandemic level in 2020 and 100.0 percent in 2021.

Scenarios 3 and 4 entail a full economic recovery by January 2021. For example, under Scenario 4 where dental spending fully recovers, dental expenditures in 2020 reach 65.8 percent of the pre-pandemic level, and in 2021, there is no negative impact on the dental economy at all.

Figure 4 shows our monthly dental spending estimates under each of the four scenarios and how these compare to CMS's projected dental spending levels pre-pandemic. Dental spending in Scenario 1 drops from \$14 billion in January 2020 to \$0.97 billion in April 2020, which is the nadir in the contraction in the dental economy. Dental spending then recovers to \$8.6 billion in October 2020 and then to \$11.7 billion in January 2021. The other scenarios show a similar pattern but vary in duration of recovery and whether dental spending recovers.

Under Scenario 2, dental spending increases from \$0.97 billion in April 2020 back to its pre-pandemic projected level of \$11.5 billion in November 2020. Table 4 summarizes our findings at the most aggregate level. For 2020, we estimate between a 31 and 38 percent reduction in dental spending compared to projected pre-pandemic levels. In 2021, we estimate anywhere from a 0.80 percent increase to a 20 percent reduction in dental spending compared to projected pre-pandemic levels.

Figure 5: Projected Monthly Dental Spending under Four Modeling Scenarios (\$ Billions)

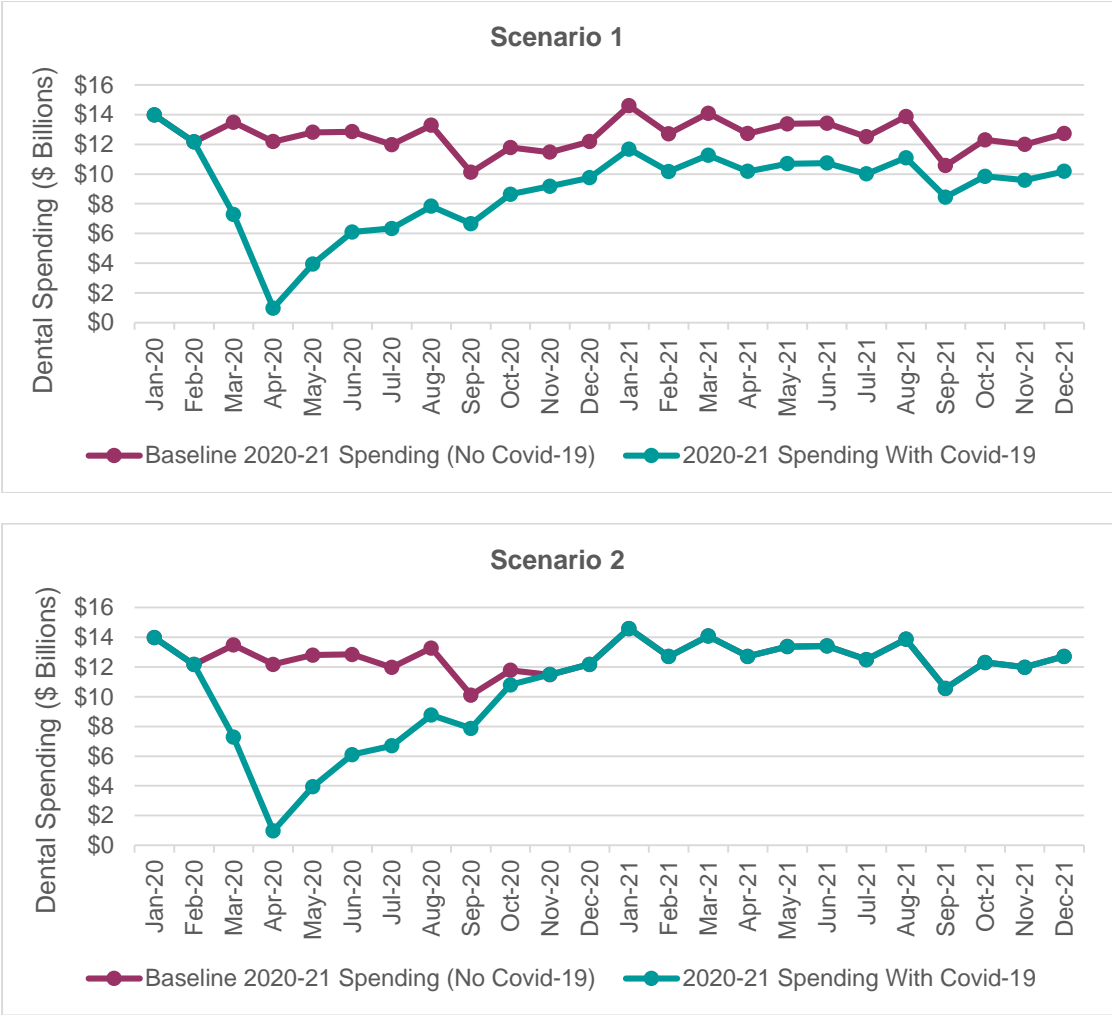
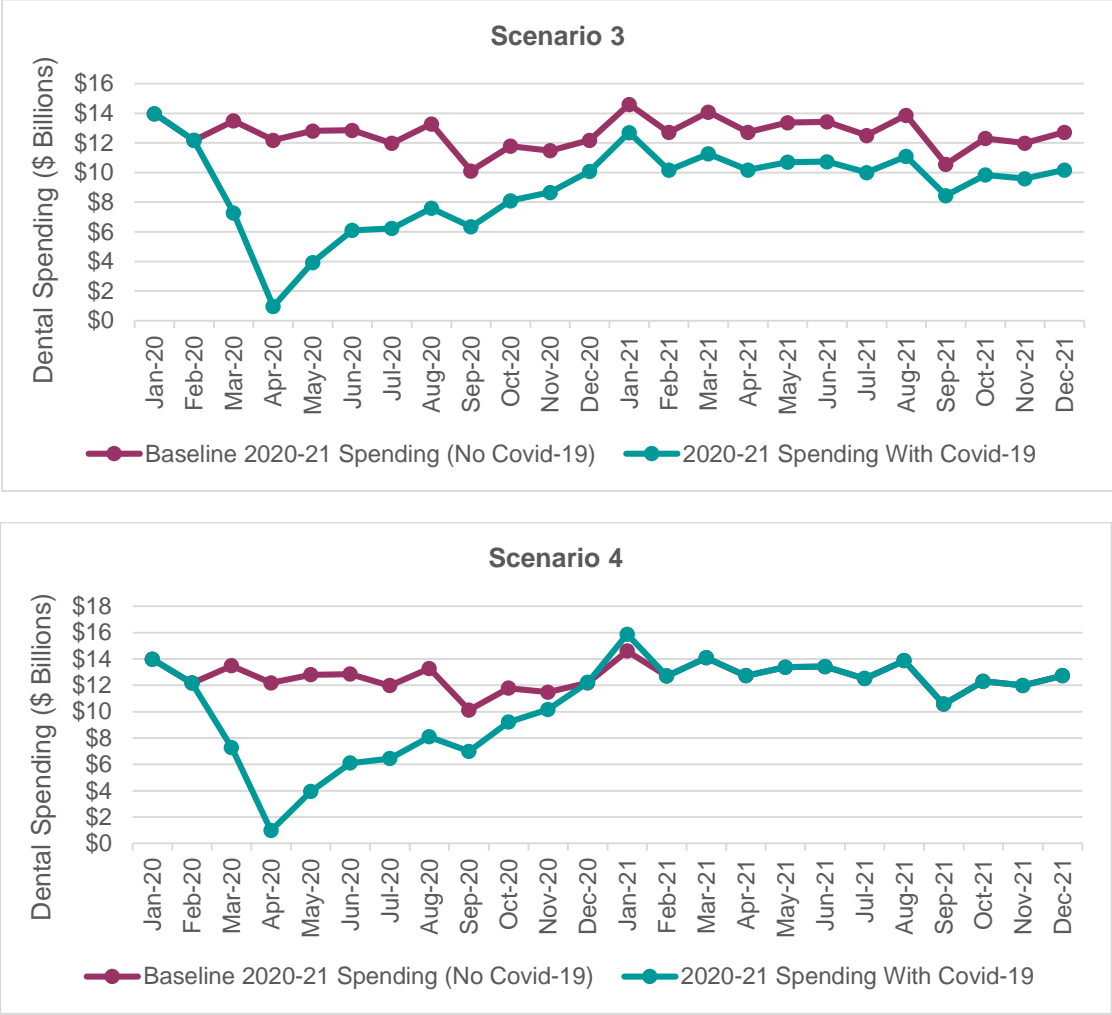


Figure 5 (Continued): Projected Monthly Dental Spending under Four Modeling Scenarios (\$ Billions)



Source: ADA Health Policy Institute modeling results.

Table 3: Total Projected Expenditures in Billions (% of CMS pre-pandemic projection)

Scenarios	2020	2021
Economy recovers by October 2020, dental economy recovers to 80%	92.8 (62.6%)	123.9 (80.0%)
Economy recovers by October 2020, dental economy fully recovers	102.2 (69.0 %)	154.9 (100.0%)
Economy recovers by January 2021, dental economy recovers to 80%	91.5 (61.7%)	124.9 (80.7%)
Economy recovers by January 2021, dental economy fully recovers	97.5 (65.8%)	156.2 (100.8%)
CMS Projection (pre-COVID-19)	148.3	154.9

Source: ADA Health Policy Institute modeling results.

Table 4: Estimated Impact of COVID-19 on U.S. Dental Spending in 2020 and 2021

	Dental spending recovers to 100% of projected levels	Dental spending recovers to 80% of projected levels
U.S. economy recovers to pre-COVID-19 level by October 2020	31.0% reduction in 2020 0% reduction in 2021	37.4% reduction in 2020 20.0% reduction in 2021
U.S. economy recovers to pre-COVID-19 level by January 2021	34.2% reduction in 2020 0.80% increase in 2021	38.3% reduction in 2020 19.3% reduction in 2021

Source: ADA Health Policy Institute modeling results.

Discussion

Our analysis predicts up to a 37.4 percent reduction in U.S. dental spending in 2020 compared to pre-pandemic projections and up to a 20 percent reduction in 2021. Alternative scenarios predict as little as a 31.0 percent reduction for 2020 and no effect for 2021. From our perspective, our analysis is based on the best available data, takes into account the dental economy’s recovery pattern post-Great Recession, and incorporates macroeconomic projections of the U.S.

economy. Still, the U.S. is in a highly uncertain stage of the pandemic, and we caution against over-interpretation of our analysis. For example, other researchers using a different methodology and different assumptions predict a 27 to 52 percent decline in private dental insurance spending in the first year of the COVID-19 pandemic.³³

Beyond any potential issues surrounding perceptions of safety, demand for dental care is closely linked with

dental insurance coverage which, in turn, is closely linked to employment. An estimated 70 percent of all dental patients in the U.S. have private dental insurance. With high unemployment levels projected in the coming months, there is a major risk that demand for dental care could stagnate due to economic factors. Moreover, some epidemiologists speculate that there could be intermittent periods of social distancing through 2022 or at least until a vaccine is found. It is even possible that a resurgence of COVID-19 could occur in the coming years.³⁴ Medical insurance premiums are predicted to increase, meaning that employers may “crowd out” dental care, further limiting dental coverage for employees, which would also constrain demand.

We want to be clear that this round of projections is still subject to significant uncertainty. For example, our modeling scenarios do not take into account a second major wave of COVID-19 and any negative effect of potential shelter-in-place directives. Adding further uncertainty, if this were to occur, it is unclear whether dental offices would close or remain open. We have tried to use the best available data and our best judgment but recognize there is so much we do not know about how COVID-19 will impact the U.S. economy. We plan to update our projections regularly as more information becomes available.

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