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# Temporal Trends in Dental No-Show Rates During the COVID-19 Pandemic

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## Background

The COVID-19 pandemic resulted in significant changes to the delivery of health care services<sup>1,2</sup>. During the initial stages of the pandemic, there were documented declines in outpatient and emergency medical services in dental offices and hospitals<sup>2</sup>. In the United States, many dental offices closed or offered only emergency care during the spring of 2020 owing to the risk of experiencing virus transmission<sup>2</sup>.

Some studies have described how the COVID-19 pandemic affects dental patients<sup>3</sup>. It has been reported that the COVID-19 pandemic has a significant impact on dental appointments, anxiety levels of patients, and their willingness to attend a dental appointment<sup>3,4</sup>.

Many dental offices and hospitals, as recommended by various governing organizations, followed strict aerosol generating procedure (AGP) guidelines where dental operatories were kept closed for up to 60 minutes after providing an AGP for a patient<sup>2,5,6</sup>. Therefore, the space utilization was negatively impacted, especially when a patient no-showed for an appointment. A missed appointment is defined as an appointment for which the patient did not show up and did not call in to cancel or reschedule<sup>7</sup>. Access to oral health care is jeopardized when patients miss scheduled appointments<sup>7</sup>. Missed appointments affect patients, as it leads to loss of continuity of care; this could cause a health risk that might eventually lead to an increase in the emergency room visits or chronic conditions<sup>7</sup>.

In Boston Children’s Hospital (BCH) is an urban, safety-net hospital in Boston, MA. The Pediatric Dental Clinic was limited to emergency care only from mid-March 2020 until mid-June 2020 when the clinic began to re-open for routine appointments and procedures.

## Objectives

To evaluate the association of confirmed COVID-19 cases in Massachusetts and show/no-show rates of dental appointments in an urban safety-net hospital.

## Methods

This study was conducted as an 18-month retrospective cohort study at BCH Department of Dentistry. Hospital scheduling software such as *Epic* and *Dentrix* were used to determine no-show frequencies of various appointment types. Historic COVID-19 case counts of Massachusetts were obtained from the Centers for Disease Control and Prevention (CDC) COVID Data Tracker<sup>9</sup>. Vaccination rates for the Commonwealth of Massachusetts were obtained from the Commonwealth of Massachusetts COVID-19 Vaccination Reports<sup>8</sup>. Dates for when public schools were closed was obtained from the Boston Public Schools’ Calendar<sup>10</sup>.

All types of in-clinic appointments were included in this study including restorative, recall, hygiene, teledentistry, specialty (Prosthodontics, Periodontics, Endodontics, Orthodontics) and emergency appointments. The data was collected and archived in encrypted Excel files on BCH servers. Data was collected from June 13, 2020, when the Dental Clinic re-opened for routine care, until December 31, 2021.

## Results

During the data collection period of June 13, 2020 to December 31, 2021, there were 38,011 scheduled patient visits at BCH Department of Dentistry (Figure 1). Beginning in June 2020, the BCH Dental Clinic began seeing patients for routine, non-emergent care. Consistent with hospital priority to maintain patient safety, clinic volume limited was limited to 142 visits during the initial week of re-opening (Figure 1). With operationalization of teledentistry visits in combination with in clinic visits, the average clinic volume reached a 561 visits per week by November 2020 (Figure 1). The mean number of visits between November 2020 to December 2021 was 488 visits per week. The mean no-show rate for this study was 11.9%. There were was a positive correlation observed with weekly positive COVID-19 count and the percentage of weekly appointment no-shows (Pearson’s  $r=0.3187$ ,  $P=.0035$ ), (Figures 3, 4).

In pre-COVID times, generalized spikes were traditionally observed in appointment no-show rates during the start of the academic calendar year and around holidays<sup>11</sup>. This study revealed that the pre-COVID trend remained true also during the COVID-19 pandemic (Figure 3).

The number of people who were fully vaccinated against COVID-19 in Massachusetts steadily climbed from December 2020 to December 2021. Similarly the no-show rates climbed steadily from December 2020 to December 2021. There were was a positive correlation observed with the percentage of weekly appointment no-shows and the number of fully vaccinated individuals in Massachusetts (Spearman’s  $r=0.7632$ ,  $P<.0001$ ), (Figures 2, 3).The largest spike in no-show rates appeared to be in association with the surge in COVID-19 cases related to the omicron variant.

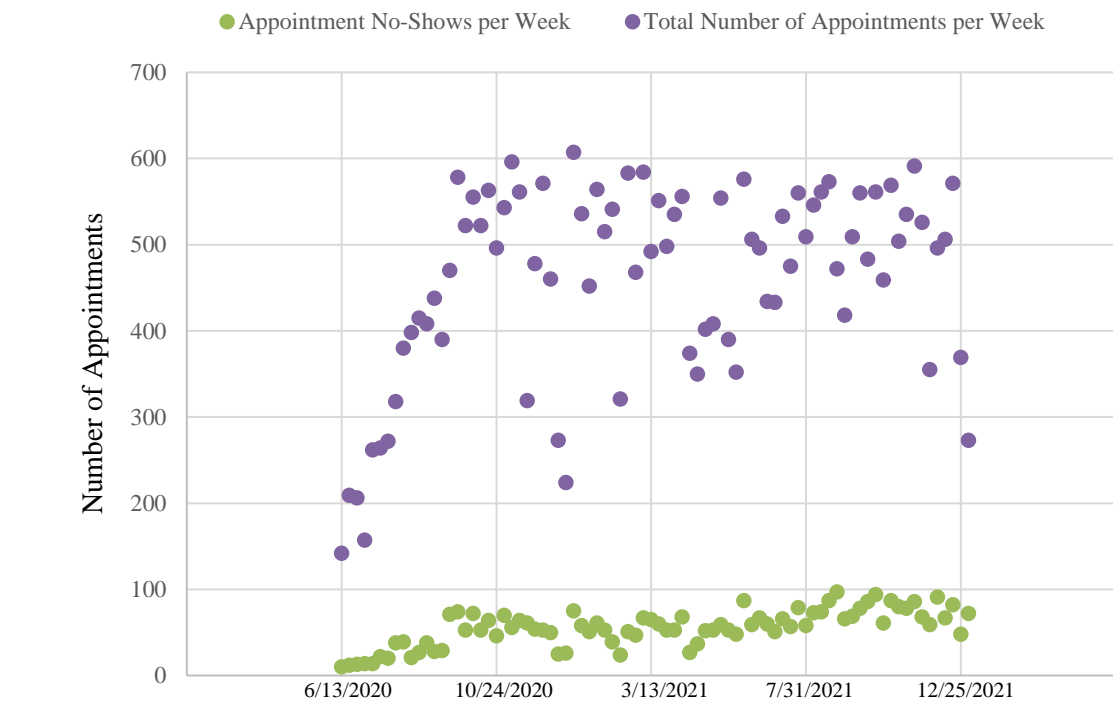


Figure 1. Total Number of Appointments, Total Number of No-Shows in the Department of Dentistry at BCH.

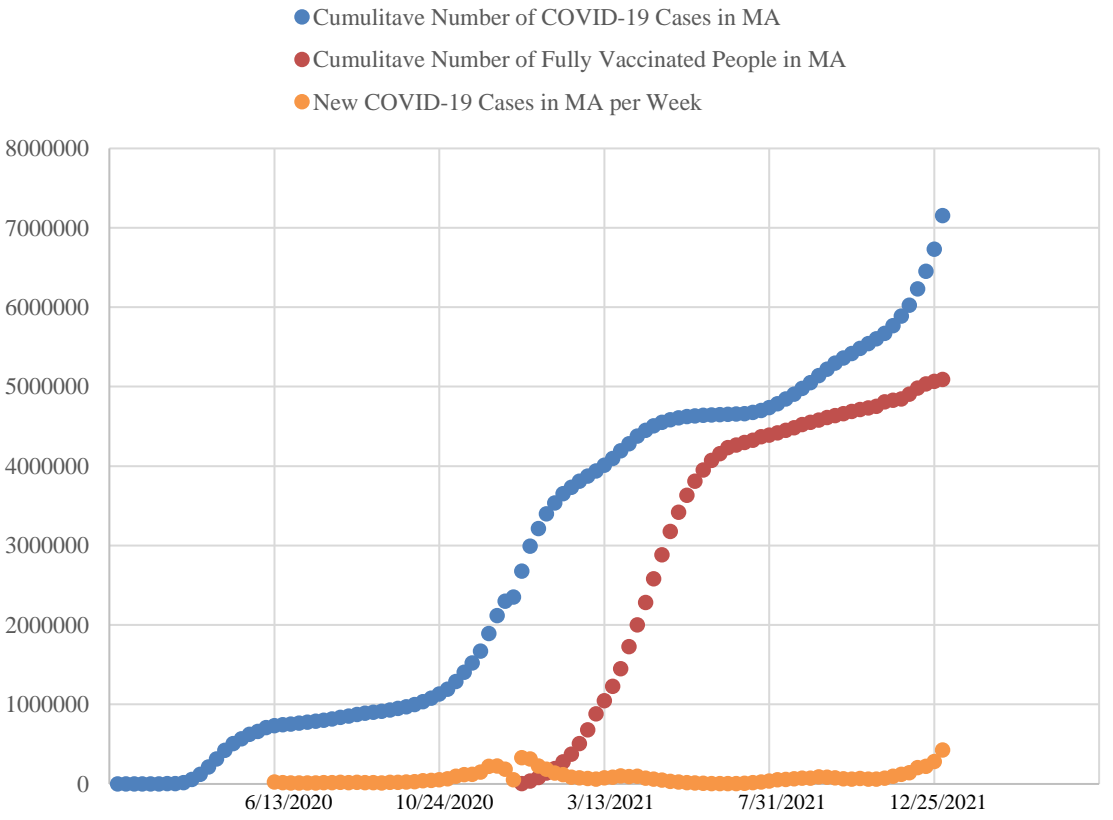


Figure 2. Number of COVID-19 Cases in Massachusetts from February 2020 to December 2021.

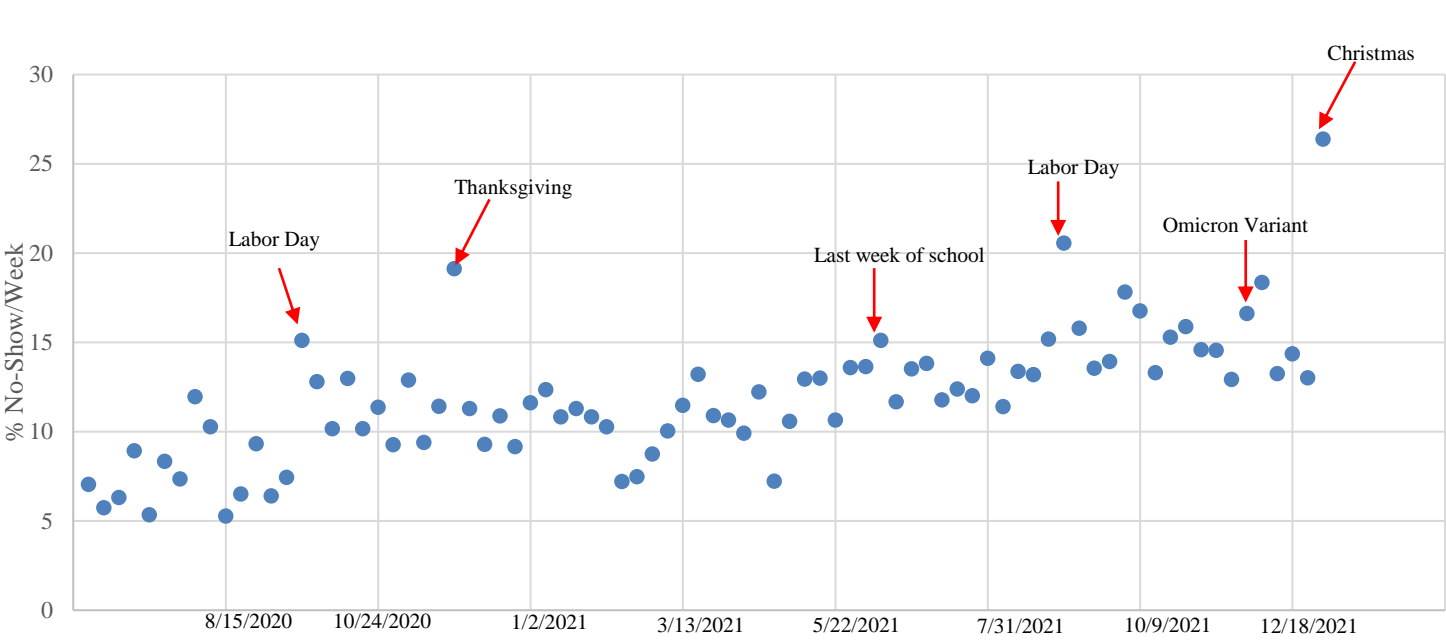


Figure 3. Weekly No-Show Rate (%). No-show percentage over time is shown. Spikes in no-show rate correlated with national holidays.

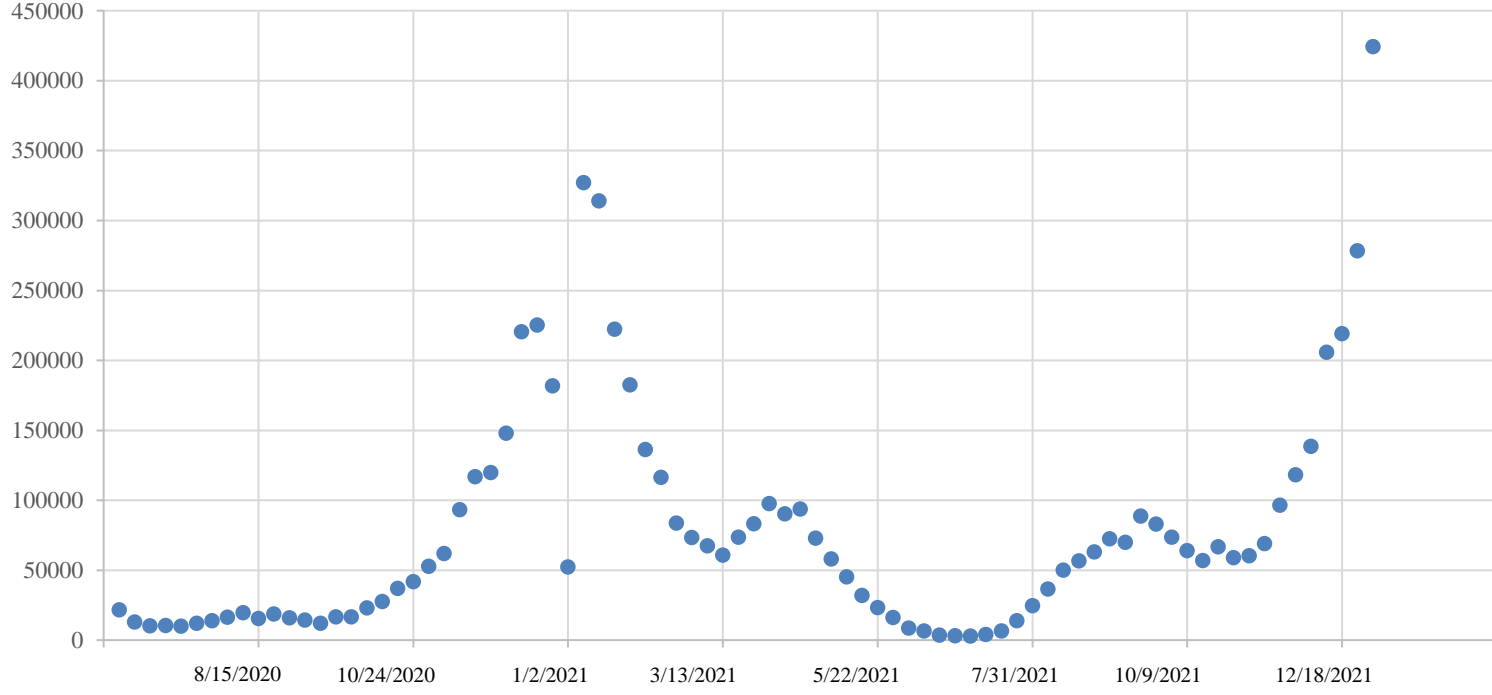


Figure 4. Number of Weekly Positive COVID-19 Cases in Massachusetts.

## Conclusion

Patients and families were more likely to no-show for their dental appointment when the prevalence of confirmed COVID-19 was high, particularly during the recent surge due to the Omicron variant. Appointment no-show rates were influenced by the number of people who had been fully immunized against the COVID-19 virus. The Centers for Disease Control and Prevention did not recommend that children ages 5-11 begin to receive the COVID-19 vaccine until November 2, 2021<sup>9</sup>. Further studies will be needed to determine if children who are fully vaccinated, will be more likely to present for their scheduled dental appointments.

Missing medical appointments due to public school closures or holidays has been a consistent factor in determining why people no-show for appointments<sup>7</sup>. As children returned to school, families may have been more reluctant to remove their child from the classroom for a dental appointment. Also, the patient’s family might have suffered a financial hardship during the COVID-19 pandemic, making them more reluctant to miss work to bring their child to a dental appointment.

The limited access to care in safety net clinics has been exacerbated during the COVID-19 pandemic, presenting an unprecedented set of challenges in obtaining dental care. Missed appointments have serious clinical and economic impacts in a pediatric dental clinic. It deprives another patient from getting an appointment, causing a delay in the treatment of both the scheduled patient and the one who could have had the appointment. During COVID-19 this problem has magnified the long waitlist for treatment at Boston Children’s Hospital and has been a challenge in caring for patients in a timely manner. Further studies are needed to closely examine this and other barriers to providing dental care for patients during the COVID-19 pandemic.

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