

Impact of COVID-19 on College Admissions and High Schoolers' Well-Being

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Abstract

COVID-19 tremendously affected and continues to impact high school students' learning environment, particularly high school seniors' college application, aspects, outcomes, and well-being. College admission statistics from representative samples of colleges classified by historical selectivity are collected as a baseline. The time trend of admission, prior and after COVID, is analyzed. We discuss the impact of COVID-19 on college admission, including the increasing unpredictability due to gap year applicants, a change of admission policies, a reduction in available opportunities for learning and extracurriculars, and a tremendous mental impact on high school seniors. Significant decreases in admission rates and increases in unpredictable outcomes may potentially affect high school students' well-being. Recommendations to next year's high school seniors and risk mitigation measures to improve students' well-being are discussed. Mitigation measures are proposed to reduce the stress of stakeholders involved.

Key Words: college admissions, COVID-19, high schoolers, pandemic impact, college application, admission rates

1. Introduction

College admission in the US has always been competitive, as students from the US and worldwide would like to get into selective schools despite a large number of colleges. Acceptance rates (in percentages) at the highly selective schools are often in the teens or single digits. Business Student (2019) compared the top 50 colleges in 2006 and 2018 and found their overall acceptance rates dropped from 35.9% to 22.6%. The trend has become more competitive over time.

Nobel Prize Laureate Al Roth explained the downward trend of acceptance rates, "... overall acceptance rates ... have gone down, and each individual application is less likely to be accepted, because even though the absolute number of acceptances is going up, the total number of applicants is going up even faster - thus the ratio falls. That in turn prompts students to submit even more applications, which makes acceptance rates still lower..." from Roth (2015, Ch.10).

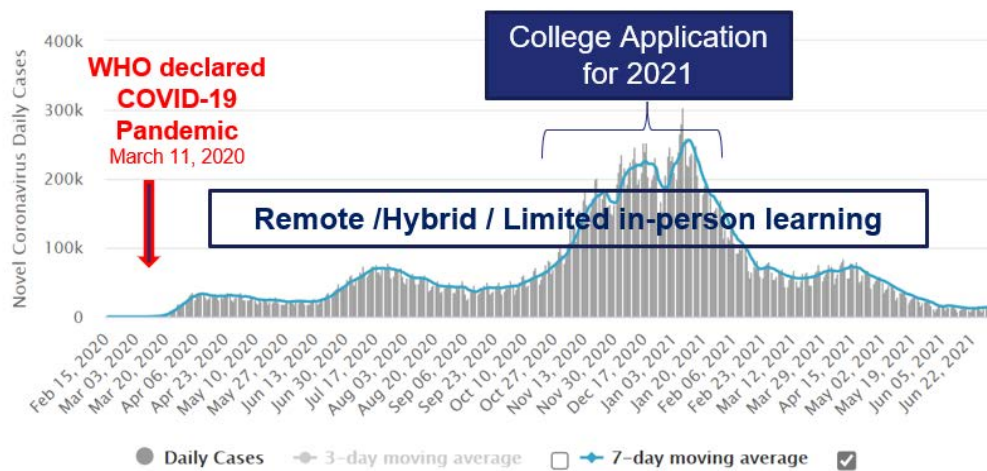
The World Health Organization (WHO) declared the novel coronavirus (COVID-19) outbreak a global pandemic on March 11, 2020 (Cucinotta 2020). Many schools

were temporarily closed for in-person learning. Some adapted a remote learning, hybrid learning, or a limited in-person learning system for most students between the latter half of 2020 and 2021 due to the pandemic. The first author recently went through the college application process, encountering a roller coaster of emotions himself and from the people surrounding him. Figure 1 displays the time frame of a typical college application from high school seniors (class of 2021) and the COVID-19 pandemic impact on the United States. With this first-hand college application experience directly impacted by the cancelation of school activities, extra-curricular activities, sports tournaments, college campus visits, summer job opportunities, and standardized tests, we know that 2020-2021 was an extraordinarily challenging period for high schoolers and their navigation of the college application process. We set out to quantitatively investigate whether COVID-19 indeed made the already competitive trend even more challenging. If that is the case, did the acceptance rates of more selective colleges change differently from those of less-selective colleges? We want to learn if there is a differential impact of the COVID-19 pandemic on different colleges.

We spent significant efforts to extract published college admission data available to the public. The media and many websites tend to report the acceptance rates for top universities, e.g., IvyWise (2021). As a result, we gathered more data than typical media coverage via visiting college-owned websites for more reliable sources when available and compared data from multiple websites for validation.

Based on college admission data from various sources (Acceptance Rate Data), we first examined the overall trend of acceptance over time, particularly comparing 2021 to each of the previous years. We also investigated the trend by the level of selectivity as defined by acceptance rate and the US News Domestic college ranking. To understand the common challenges for college applicants due to the pandemic, we augmented our quantitative analysis with a small survey study. Last but not least, we provided some recommendations on college applications for high school seniors next year. Our goal is to shed some light on the potential COVID-19 impact on college admission and offer some guidance for future college applicants.

Figure 1: College Application for 2021 during the Pandemic
Source: Worldometer on COVID-19



2. Data Collection

From June to August 2021, we collected college admission data between 2017 to 2021 from published information on the internet. We aimed at building a diverse list of schools within the United States, including Ivy League schools, regional schools, liberal art schools, and several trade schools in the United States.

The rankings of each school in the original list of 605 schools developed were based on the 2021 ranking published in the US News (U.S. News Best Colleges Ranking). Note that national universities, liberal arts schools, and regional schools all had different ranking systems.

In total, we found 531 schools with at least three years of admission data. However, for 2021, we only managed to obtain the admission rate of 90 schools, probably because many schools have yet to publish their admission data for the Fall 2021 admission cycle.

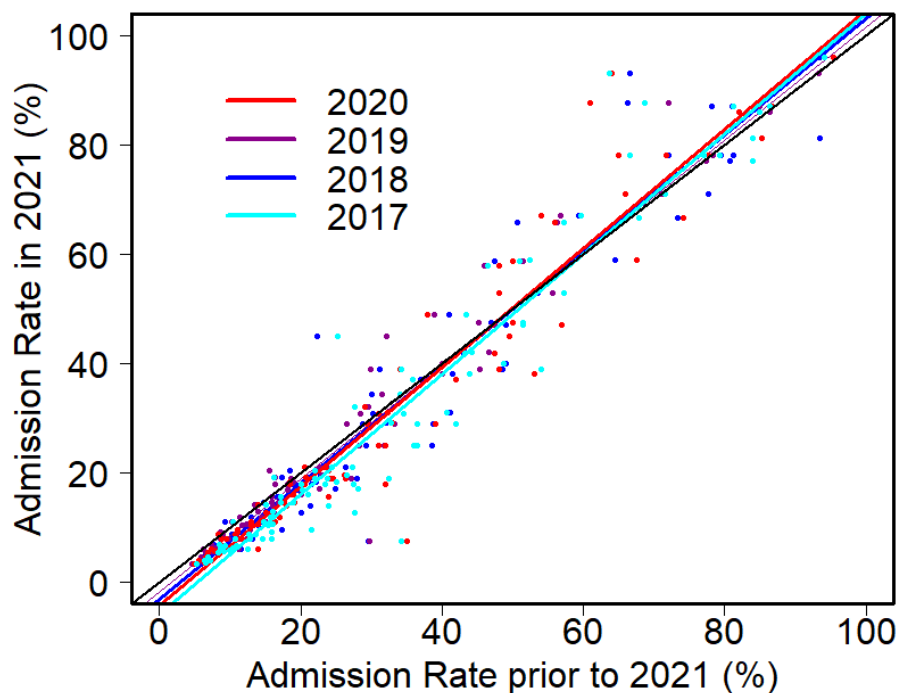
It was challenging to collect unbiased data from the public on the well-being assessments due to our restrictions, including cost, time, and most importantly, the pandemic. So, the first author conducted a poll for rising first-year college students in his community, asking questions about their struggles with the pandemic and if the pandemic took a role in affecting their college admissions.

3. Results

3.1 Change of College Acceptance Rates Pre-Pandemic versus Pandemic Years

We compared the college acceptance rates in 2021 with those in the prior years from 2017 to 2021. There were 531 schools with at least three years of admission data. Figure 2 shows the acceptance rates in 2021 on the x-axis versus each of the four prior years on the y-axis. The black line is the 45° line, where the acceptance rate for a prior year (2017, 2018, 2019, or 2020) is the same as the acceptance rate for 2021. To learn the pattern, we fit a linear regression line for each of the previous years on the acceptance rates in 2021. The regression slope estimates $\hat{\beta}$ decreased from 1.1 ($p < 0.05$ for $H_1: \beta > 1$) in 2017 to 1.06 in 2018 and then 1.03 in 2019. In 2020, $\hat{\beta}$ was 1.09 ($p < 0.05$). The R^2 ranged from 0.92 to 0.97, indicating the linear models fit the collected data well. Statistical tests indicate that the slopes are statistically greater than 1.0 for 2017, 2018, and 2020. The overall acceptance rate in 2020 was closer to that in 2017 (less competitive than the year 2019 just preceding the COVID-19 pandemic).

Figure 2: Linear Regression Comparing Prior Years to 2021 for Acceptance Rates

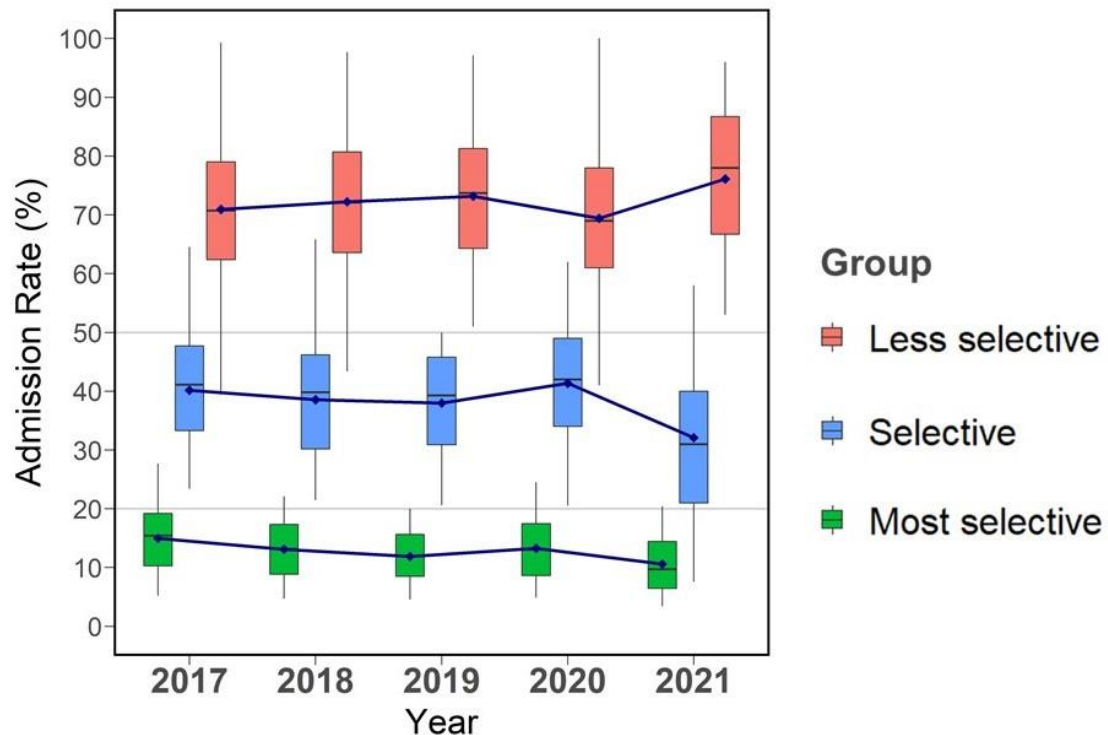


To understand the pattern more clearly at a granular level, we stratified the universities ($n=531$) into three groups according to selectivity based on acceptance rate (AR) in 2019:

- Group 1: Less Selective with $AR > 50\%$,
- Group 2: Selective with AR between $(20\%, 50\%]$,
- Group 3: Most Selective with $AR < 20\%$.

As seen in Figure 3, the colleges in Group 3 (Most Selective) became even more selective in 2021, and the pattern is similar for Group 2, the Selective colleges. However, Group 1 (Less Selective) became even less selective with higher acceptance rates in 2021. Note that 2020 (the first pandemic year) appears to be somewhat of an outlier, with the Most Selective and Selective colleges having slightly higher acceptance rates compared to previous years. One possibility is that a larger percentage of accepted students took a gap year (according to the media, e.g., Rodriguez 2020), resulting in colleges opening up their pool to accept more students to fill out as many seats as possible.

Figure 3: Linear Regression of Acceptance Rates Comparing Prior Years to 2021



As a sensitivity analysis or confirmation, we also looked at the US News domestic ranking ($n=443$), known as one of the most popular ranking systems for domestic applicants. Liberal art schools were included in a different ranking system from

the national school ranking. To improve comparability, these schools were excluded from this analysis. The universities or colleges are grouped as follows:

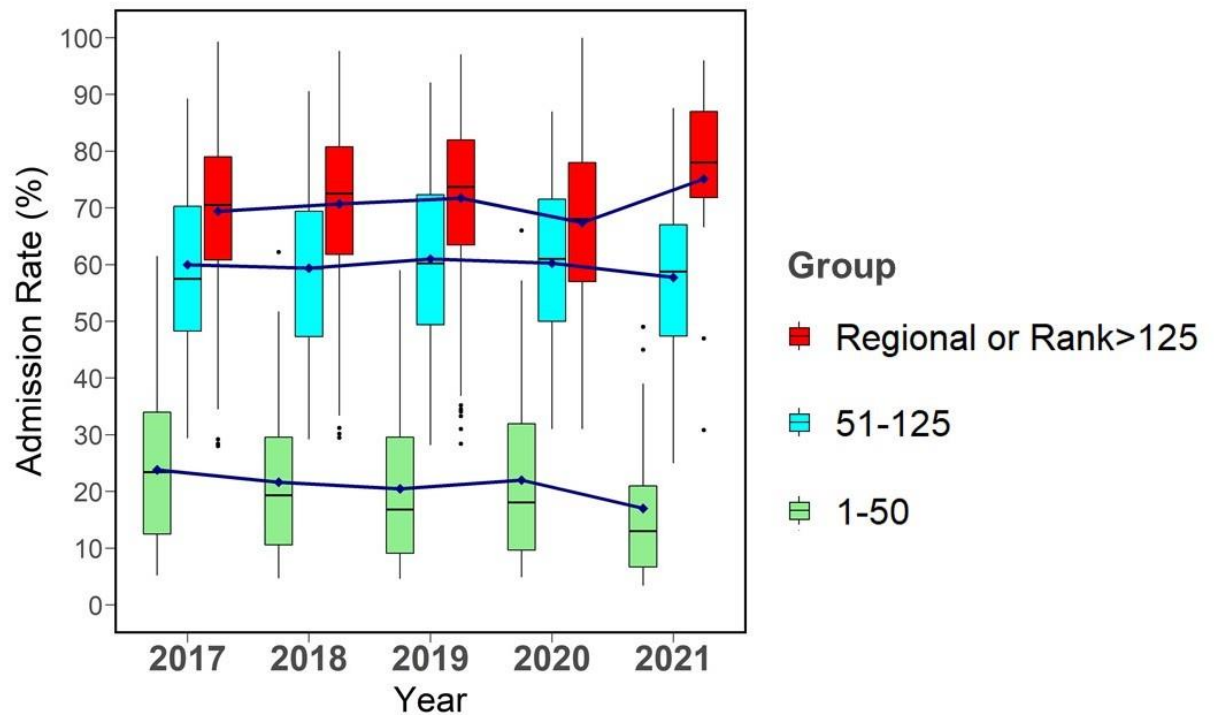
Group 1: Less Selective with US News Rank > 125 or are regional colleges,

Group 2: Selective with US News Rank in $[51,125]$,

Group 3: Most Selective with US News Rank in $[1, 50]$.

Figure 4 shows a similar pattern to Figure 3, with the highest-ranking colleges becoming harder to get into for 2021, while the opposite is true for the “Regional or Rank > 125 ” colleges according to the US News ranking level.

Figure 4: Acceptance Rate by Level of US News Ranking



3.2 Incoming College Freshmen Survey

While the above provides a quantitative analysis across the nation, we also wanted to understand the deeper impact using survey analysis. The first author gathered a convenience sample (due to a lack of resources to gather large groups of unbiased data) from his peers and asked for their thoughts on the impact of the pandemic on college admissions, as well as their application process and college decision. Figure 5a shows that the majority of the students (87.5%) believed that the pandemic had impacted college admissions. Also, Figure 5b shows most students (68.9%) reported that the pandemic influenced their own application process and college decision.

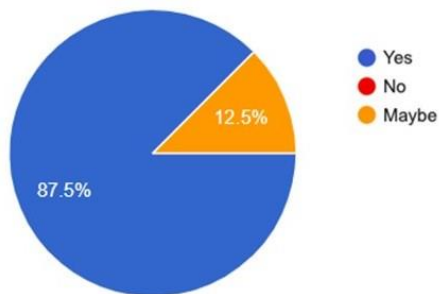
We also gathered answers to the question: “What difficulties have you had as a result of the pandemic?” This is summarized in the word cloud in Figure 6. Not unexpectedly, other than the prominent words such as college and exams, the following sentiments are identified from the respondents:

- Cancellation
- Mental Health
- Depression

Figure 5: Survey Findings of Pandemic Effects

a) “Do you personally think the pandemic has had an effect on college admissions?”

▪ n = 48 responses; 87.5% answered “Yes”



b) “Did the pandemic have an effect on your application process and college decision?”

▪ n = 45 responses; 68.9% answered “Yes”

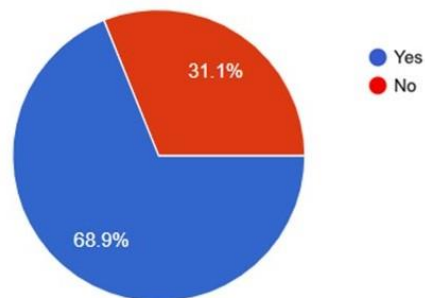


Figure 6: Word Cloud Displaying Shared Words in Incoming College Freshmen’s Responses



3.3 Recommendations for Next Year's High School Seniors

- 1) Would acceptance rates be even lower next year for selective/highly selective colleges, or would they return to previous levels? Due to a high degree of uncertainty (because of COVID-19 and the general trend of acceptance rates), we recommend applying to multiple SAFETY and MATCH colleges for risk mitigation in addition to REACH schools.
 - a) Colleges considered a SAFE/MATCH school could end up being harder to get into than expected or predicted using historical data.
 - b) Canadian universities have larger numbers of seats and higher acceptance rates than equivalent US universities (Selingo 2020).
- 2) While US News' Domestic Ranking is one of the most popular ranking tools, we recommend considering multiple ranking systems, e.g., QS, US News Global, and Times Higher Education, in addition to US News Domestic only (O'Neil 2016, 2017).
- 3) US News' ranking and other ranking systems are not equivalent to acceptance rate (Chatterjee 2015). We found a wide range of acceptance rates for each group derived from the US News' ranking (Figure 4). We suggest considering acceptance rate and other factors in the application process:
 - a) What factors are important to **YOU**: selectivity, majors, geography, financial aid, setting (e.g., urban, suburban, rural), size, internships/co-ops, research, extra-curricular activities, alumni network, campus, and even food.
 - b) Use multiple criteria for decision making, such as the Multi-Attribute Utility Theory (Shanmuganathan et al., 2018).
- 4) Given the rise of mental health issues, we recommend spending time with your friends and the people you care about, as mental health is very important. Happiness and well-being should always come first (Prime et al. 2020, American Psychological Association (2020), and Rao & Rao (2021)).

4. Discussion

We identified a clear impact of COVID-19 on college admissions, but the effect was not the same for every college. Using the acceptance rate pre-pandemic as the primary stratification factor and the US News domestic ranking for sensitivity analysis, we observed an increase in admission outcome disparity. In the 2021 admission cycle, most or mid-level selective colleges became more selective. However, the less selective schools became less selective. One reason is that many students who received an offer in the previous year took a gap year, resulting in fewer seats available in 2021 for selective universities (Rodriguez, 2020). An increase in applications among selective schools and a decline in applications among less selective schools are also contributing factors (Wingens 2021). An enrollment drop of over 727,000 undergraduate students was observed in Spring

2021 compared with Spring 2020, with over 65% of the total undergraduate enrollment losses occurring in the community college sector (National Student Clearinghouse Research Center, 2021).

COVID-19 impacted the admission rates, increased unpredictable outcomes and disparity. This potentially affected students' well-being. Students reported the pandemic resulting in a "loss in motivation," "depression," and a toll on their "mental health," according to our survey. This is consistent with more extensive studies such as the American Psychological Association (2020), which found the majority of Gen Z teens who were in school (81%) reported they were negatively impacted due to school closures as a result of the pandemic, such as having less motivation to do schoolwork. Rao and Rao (2021) found a similar decrease in mental health, with online schooling being the most influential factor.

In our paper, we have provided a list of recommendations for next year's high school seniors, including applying to more SAFETY and MATCH universities and consideration of multiple ranking systems and multiple decision criteria for college applications and decisions.

This research has limitations, as limited admission data was published for the less selective schools. More selective schools had more publicized articles and admission data. Future work can include analyses of the broader spectrum of colleges impacted by the pandemics when more data are available. Continuous efforts by the community to improve the mental health and well-being of students involved in the college admission and decision process are needed.

Disclaimer

The authors conducted this research in their personal capacity. The opinions expressed in this article are those of the authors and do not reflect the view of the authors' employers or affiliation.

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