

# The Impact of the COVID-19 Pandemic on College Enrollment Rates in the U.S from 2016 to 2022

Salama, Saikiran Reddy

## Introduction

The COVID-19 pandemic undoubtedly impacted many spheres of life, including higher education. When the Centers for Disease Control and Prevention (CDC) announced the first COVID-related shutdowns in March 2020, schools from K-12 to undergraduate and graduate programs were forced to rethink how they delivered instructions. The immediate transition to online learning was necessary however, many in academia worried both at the time and in retrospect about how the circumstances surrounding that transition may have affected enrollment. This study examines recent enrollment trends in U.S. higher education, focusing on data from 2016 to 2022 and delving into both the pre- and post-pandemic periods to inform institutional and governmental strategies for managing enrollment during future crises.

## Literature Review

Several studies have looked at how different kinds of crises have affected college enrollment. For instance, researchers Barr and Turner (2013) looked at how the latest recession impacted college enrollment. They found that the effect was very noticeable and that it mostly hit lower-income families. They also mentioned that the government's financial aid programs have a large impact on how many students enroll when the economy is in bad shape.

The pandemic posed particular difficulties, and practitioners across the field now have a better understanding of the impact that the crisis had on their students. At the peak of the pandemic, many schools were forced to pivot quickly from face-to-face instruction to remote instruction. COVID-19, however, was not the first health emergency that forced schools to suddenly discontinue their in-person classes. The Spanish Flu of 1918 had a similar effect on U.S. schools. In both instances, the health crisis caused many teachers to reimagine how they could deliver meaningful instruction to their students.

This research addresses this gap by examining enrollment data from pre- and mid-pandemic times at various U.S. higher education institutions. It concentrates on what's happening with both undergraduate and graduate enrollments. Essentially, it provides a "look back" at how we've changed as a result of what happened over the past couple of years—especially in regard to our institutional enrollments.

# Data and Methodology

## Dataset

The data used in this study spans from 2016 to 2022, covering annual enrollment figures across U.S. higher education institutions. Key variables include:

- **Year:** Indicates the time frame (2016–2022) to compare pre-pandemic and pandemic/post-pandemic periods.
- **Undergraduate\_Enrollment\_FTE and Graduate\_Enrollment\_FTE:** Represent the full-time equivalent (FTE) enrollment for undergraduate and graduate students.
- **Activity\_Type:** Provides information on instructional activity types (e.g., credit hours or contact hours).

## Methodology

- **Descriptive Analysis:** Summary statistics, including mean, median, and standard deviation, were calculated to observe general trends over time.
- **Comparative Analysis:** The dataset was divided into pre-pandemic (2016–2018) and pandemic/post-pandemic (2019–2022) periods to identify differences in enrollment trends.
- **Visualization:** Line charts were created to visualize average enrollment trends over time for both undergraduate and graduate enrollments.

## Data Analysis Plan

The following data analysis techniques were chosen based on the research question, the nature of the data, and the need for a comprehensive understanding of enrollment trends across different periods:

### 1. Descriptive Statistics:

- **Objective:** To provide a foundational understanding of the enrollment data.
- **Approach:** Calculate mean, median, and standard deviation for both undergraduate and graduate enrollment FTE (Full-Time Equivalent) from 2016 to 2022.
- **Justification:** Descriptive statistics will help identify the general enrollment patterns, allowing for an initial assessment of trends over time.

### 2. Comparative Analysis:

- **Objective:** To compare pre-pandemic (2016–2018) and pandemic/post-pandemic (2019–2022) enrollment rates.
- **Approach:** Split the dataset into two periods and calculate the average undergraduate and graduate enrollments for each period. This allows a direct comparison of how the pandemic years influenced enrollment compared to prior years.

- **Justification:** This analysis directly addresses the research question by examining if and how enrollment numbers changed due to the pandemic, capturing trends that are specific to the pandemic's timeframe.

### 3. Visualization Techniques:

- **Objective:** To visually represent enrollment trends over time and highlight any noticeable shifts.
- **Approach:** Create line charts to track average enrollment for undergraduate and graduate FTEs from 2016 to 2022.
- **Justification:** Visualizations allow for a clearer, more intuitive understanding of changes across years, helping to easily identify any spikes or declines in enrollment due to the pandemic. This visual aid is crucial for interpreting long-term trends.

### 4. Regression Analysis

- The objective of the regression analysis is to quantify the impact of the COVID-19 pandemic on college enrollment rates in the United States. By comparing enrollment levels in the pre-pandemic (2016–2018) and pandemic/post-pandemic periods (2019–2022), this analysis aims to determine whether the observed changes in undergraduate and graduate enrollments are statistically significant.
- A simple linear regression model will be used to analyze the effect of the pandemic period on enrollment rates. The dependent variables are `Undergraduate_Enrollment_FTE` and `Graduate_Enrollment_FTE`, representing full-time equivalent enrollments. A binary variable, `Pandemic`, will serve as the independent variable, where:
  - **1** indicates the pandemic/post-pandemic years (2019–2022),
  - **0** indicates the pre-pandemic years (2016–2018).
- The model specification is as follows:

$$\text{Enrollment} = \beta_0 + \beta_1 \times \text{Pandemic} + \epsilon$$

- Where:
  - **Enrollment** represents either undergraduate or graduate enrollment (FTE),
  - $\beta_0$  is the intercept, capturing average enrollment in the pre-pandemic period,
  - $\beta_1$  is the coefficient for the *Pandemic* variable, indicating the average change in enrollment during the pandemic years relative to pre-pandemic years,
  - $\epsilon$  is the error term.

# Results

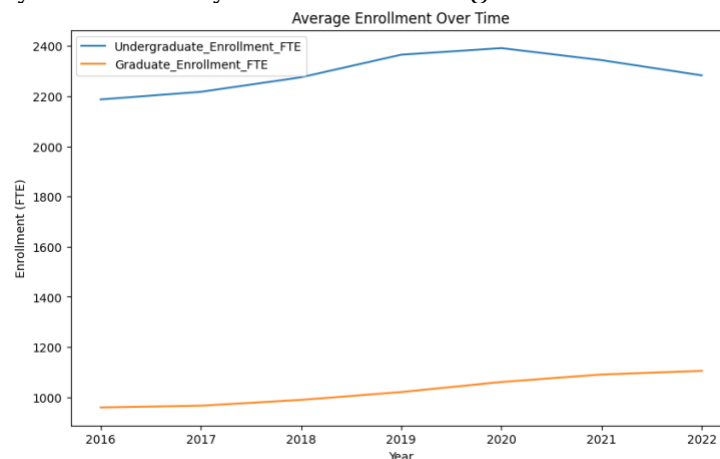
## Descriptive Statistics

The descriptive statistics indicate that average undergraduate enrollment fluctuated over the years, with a peak around 2019 and a decline during the pandemic. The pre-pandemic mean undergraduate enrollment was approximately 2,225.98, while during the pandemic, it increased to 2,346.64, showing resilience despite a slight decline. Graduate enrollment showed a steady increase, with the pre-pandemic mean at 971.20 and a pandemic mean of 1,068.71.

	Pre-Pandemic Mean	Pandemic Mean
Undergraduate Enrollment FTE	2,225.98	2,346.64
Graduate Enrollment FTE	971.20	1,068.71

## Visualization

The line chart illustrates that undergraduate enrollment peaked in 2019, followed by a decline likely related to pandemic disruptions. Graduate enrollment displayed a consistent upward trend, suggesting that graduate students may have been less affected or were attracted by the flexibility of online learning.



# Discussion

## Key Findings

The analysis shows that the pandemic's impact on enrollment was much greater for undergraduates than for graduates. The very slight decline in undergraduate enrollment seems to line up with the findings of Liguori and Winkler (2020), who suggest that it is health and financial concerns that most affect undergraduates and that those factors modestly deter undergraduates from entering college.

## Interpretation

The increase in graduate enrollment seems to be the result of more people returning to school during this uncertain job market, as past research on economic downturns has documented (Barr & Turner, 2013). The kinds of remote learning options that we are all becoming accustomed to may also have made higher education even more accessible for the kind of people who are already pursuing a graduate education.

## Policy Implications

To help sustain enrollment, colleges and universities might boost their support of undergraduates during times of crisis. To this end, they could promote financial safety net policies as well as policies that promote the health safety of all. Also helpful, I think, would be to maintain and even expand the kinds of flexible learning options that have been instituted as a response to the coronavirus pandemic. This might especially appeal to and help retain our graduate students.

## Conclusion

This investigation focused on how the coronavirus pandemic affected college enrollment from 2016 to 2022. The researchers found that while the enrollment of undergraduates dipped a bit during the crisis, the enrollment of graduate students continued to grow apace. These findings suggest that not only are grad programs resilient, but they also offer models for enhancing enrollments among undergrads during difficult times. The researchers also point out that many of the trends they uncovered could be usefully explored by looking at demographic and economic factors that help explain them.

## References:

- Barr, A., & Turner, S. (2013). Expanding enrollments and contracting state budgets: The effect of the Great Recession on higher education. *The ANNALS of the American Academy of Political and Social Science*, 650(1), 168–193.
- Liguori, E., & Winkler, C. (2020). From offline to online: Challenges and opportunities for entrepreneurship education following the COVID-19 pandemic. *Entrepreneurship Education and Pedagogy*, 3(4), 346–351
- Kalenkoski, C. M., & Pabilonia, S. W. (2010). Parental transfers, student achievement, and the labor supply of college students. *Journal of Population Economics*, 23(2), 469–496.