

The Impact of the COVID-19 Pandemic on Undergraduate Enrollment in the United States: A Quantitative Analysis

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Abstract



Overview:



Study explores how the COVID-19 pandemic influenced undergraduate enrollment in the U.S. (2016 to 2022).



Focuses on trends before, during, and after the pandemic.



Uses regression analysis to analyze changes and identify state-level and institutional variations.

Research Objectives



Primary Goals:



Assess trends in undergraduate enrollment pre-pandemic, during the pandemic, and post-pandemic.



Analyze the pandemic's impact using regression models.



Identify states and institutions most affected by enrollment changes.

Literature Review Highlights



Pre-Pandemic Trends:



Declining enrollments (NCES, 2023): 15% decrease from 2010 to 2021.



Pandemic Impact:



Accelerated enrollment decline due to health concerns, financial instability, and online learning transition.



Comparison with Past Recessions:



Unlike the 2008 recession, COVID-19 saw a decrease in enrollments due to unprecedented challenges

Data and Methodology



Data Description:



Undergraduate enrollment data (2016 to 2022).



Variables: Year, Institution Type, State, Enrollment Numbers.



Methodology:



Cleaned data by removing non-U.S. records and handling missing values.

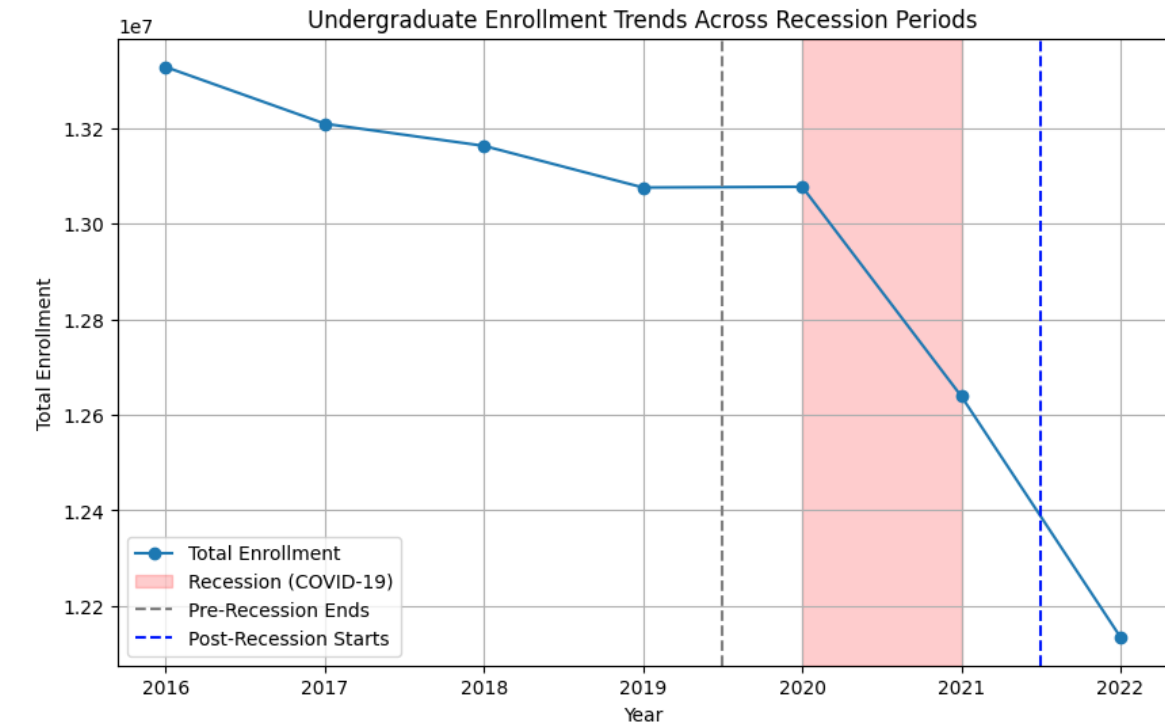
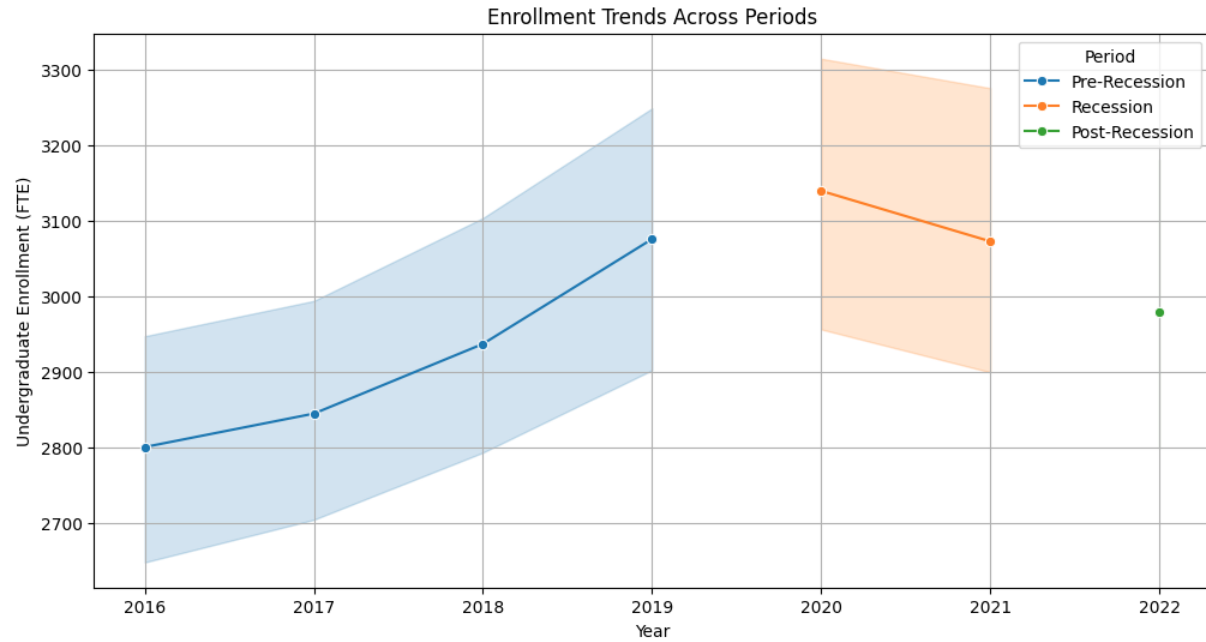


Categorized data into pre-pandemic, pandemic, and post-pandemic periods.



Regression analysis used to identify trends and significant factors.

Statistical Models



- + Regression Equation: $E_i = \beta_0 + \beta_1 Y_i + \beta_2 A_i + \epsilon_i$
- + E_i : Reported undergraduate enrollment.
- + Y_i : Year.
- + A_i : Institution type.
- + ϵ_i : Error term.
- + Metrics:
- + R-squared to assess model fit.
- + Percentage change for state-level comparisons.

Results – Descriptive Statistics

Enrollment Averages:

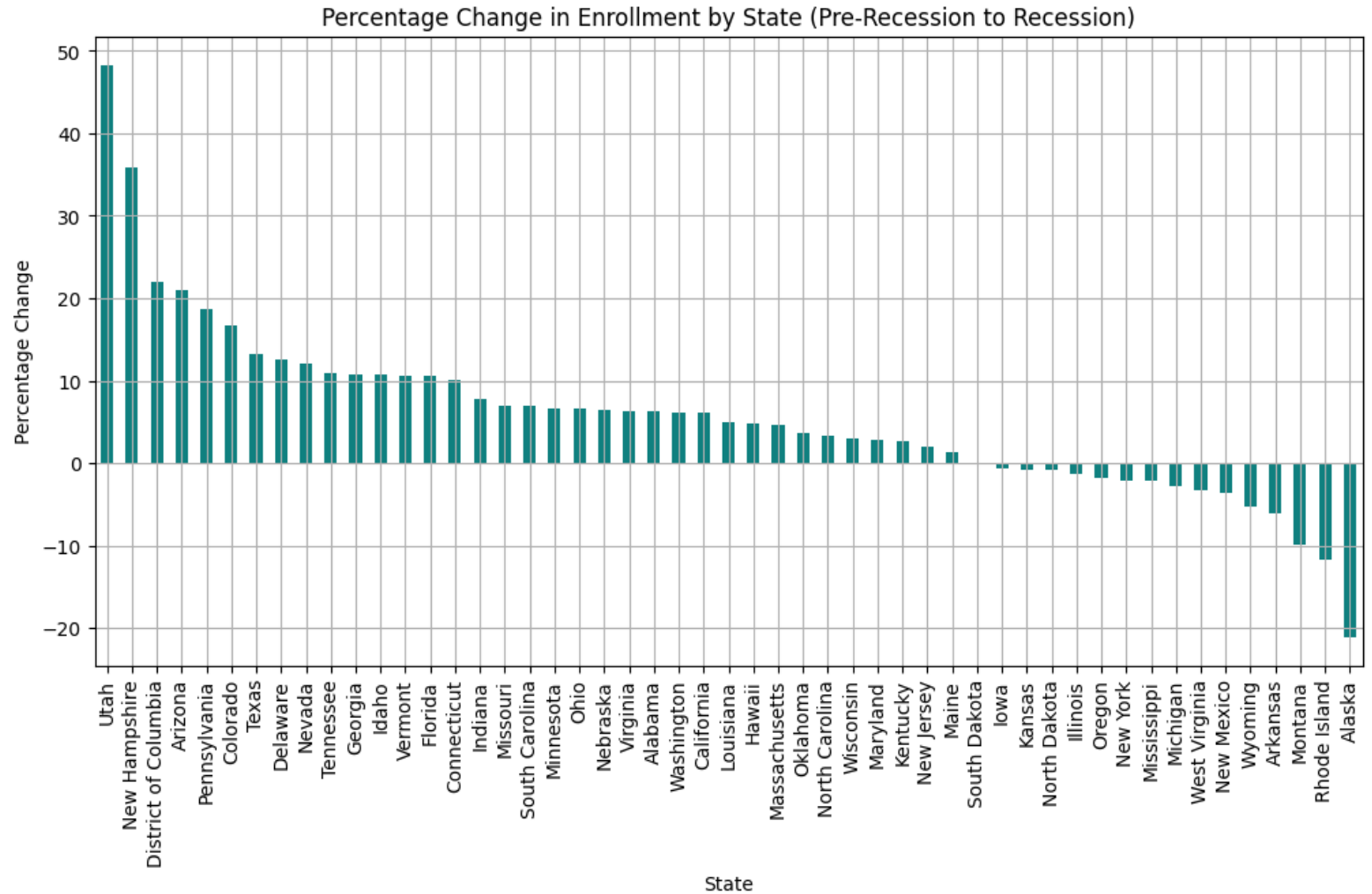
Pre-pandemic (2016 to 2019):
2909.95 students.

Pandemic: (2020 to 2021):
3106.66 students.

Post-pandemic (2022): 2979.33
students.

State-Level Analysis

- + States with Growth:
- + Utah (+52.56%), New Hampshire (+42.49%), District of Columbia (+24.62%), Arizona (+22.24%), Colorado (+17.20%).
- + States with Decline:
- + Alaska (-21.10%), Rhode Island (-11.73%), Arkansas (-9.83%), Wyoming (-6.12%), Montana (-5.83%).



Institutional Responses



Adaptations During the Pandemic:



Expanded admissions policies.



Increased financial aid for students.



Challenges:



Digital divide limited access to resources for some students. Resource disparities affected institutional responses.

Conclusion



Key Takeaways:



COVID-19 significantly impacted undergraduate enrollment, with variations across states and institutions.



Public institutions showed more resilience than private ones.



Enrollment declined more sharply post-pandemic than during the pandemic.



Future Research Recommendations:



Explore the long-term impact of online learning adoption.



Investigate demographic shifts influencing enrollment trends.

References

Hayoung Kim, C. K. (2020, May 21). *COVID-19 and US higher education enrollment: Preparing leaders for fall*. Retrieved from mckinsey.com: <https://www.mckinsey.com/industries/education/our-insights/covid-19-and-us-higher-education-enrollment-preparing-leaders-for-fall>

Howell, J., Hurwitz, M., Ma, J., Pender, M., Perfetto, G., & Young, L. (2021). *College Enrollment and Retention in the Era of Covid*. CollegeBoard.

Jingyun Li, J. M. (2019, February). *College and University Professional Association for Human Resources*. Retrieved from <https://www.cupahr.org/>: https://www.cupahr.org/surveys/research-briefs/2018-impact-of-the-economic-recession/?utm_source=chatgpt.com

NCES. (2023, May). Retrieved from nces.ed.gov: https://nces.ed.gov/programs/coe/indicator/cha?utm_source

NCES. (n.d.). *Annual Reports and Information Staff (Annual Reports)*. Retrieved from nces.ed.gov: https://nces.ed.gov/surveys/annualreports/topical-studies/covid/?utm_source

NSC Blog. (2020, April 15). *How Will the Next Recession Impact U.S. College Enrollment, Persistence and Completions?* Retrieved from <https://www.studentclearinghouse.org/>: <https://www.studentclearinghouse.org/nsblog/how-will-the-next-recession-impact-u-s-college-enrollment-persistence-and-completions/>