

Competition amongst Same-state Post-Secondary Institutions: Student Pool Dynamics and Specialization through Fields

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Abstract

Post-secondary institutions have historically been recognized to have a heavy connection with the strength of a country's industries and economic well-being. Within the United States, the competitive environment of the higher education industry, which has had more than 3,900 institutions since 2019, has led many to recognize it through the lens of a market model. While various researchers have conducted studies surrounding the importance and value of the post-secondary education system, how institutions of different sectors and institutional types within the same state compete against one another remains underexamined.

Thus, this paper, through empirical analysis of 2006–2024 enrollment and completion data from the Integrated Postsecondary Education Data System (IPEDS), investigates whether public and private institutions as well as non-liberal arts and liberal arts institutions in the same state compete for students in the same student pool and whether such institutions attempt to gain a comparative advantage by specializing in specific fields.

The findings demonstrate that differences in sector and institutional type are linked to limited competition for the same student pool and that institutions do not specialize in a field of study through increasing the number of graduates of that field. Instead, the results reveal a decreasing trend in graduates of the humanities field in all institutions, suggesting government intervention in maintaining the provision of such programs. This descriptive evidence paves the way for future research.

Introduction

- more than **3,982** post-secondary institutions in the US since 2019
- market structure of the higher education industry is often seen as a monopolistic competition

This paper tests two hypotheses:

- Even if institutions are not in the same sector or do not follow the same institutional type, they still compete for the same pool of students
- American post-secondary institutions within the same state but of different sectors or different institutional types differentiate by specializing in one specific field (STEM or humanities) over time through increasing the number of graduates in a unique field.

Gaps filled:

- lack of research on specialization trends for institutions of higher rankings located within the same state
- shortage of quantitative analysis on student demographic data

Methods

Sampling Strategy

- total of 192 post-secondary institutions were part of the sample
- 4 institutions/US state
 - top 2 highest ranked universities in the state
 - top 2 highest ranked liberal arts colleges/private insitutions in the state

Data Collection

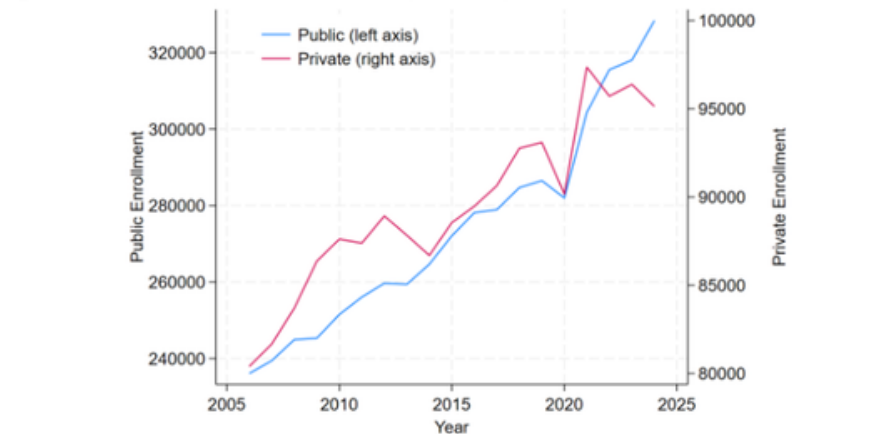
- data collected for all sample institutions spanned from 2006 to 2024 (3648 total observations)
- data from on fall enrollment of all first-time, undergraduate, degree-seeking students
- data on bachelor's degree graduates by the first two digits of their major's Classification of Instructional Programs (CIP) code

Economic Analysis

- all schools within the sample were identified by sector (public or private) and type (non-liberal arts or liberal arts)
- analyzed enrollment & completion using StataNow 19 BE
- TWFE regression on Public vs Private enrollment and Liberal arts vs Non-liberal arts enrollment
- TWFE regression on Public STEM share vs Private humanities share & Non-liberal arts STEM share vs Liberal arts humanities share

Results

Figure 1: Public vs. Private Fall Enrollment (2006-2024)



Note: Sample consists of 192 institutions ($N_{Public} = 74$, $N_{Private} = 118$). The blue line and left y-axis represent public enrollment while the red line and right y-axis represent private enrollment.

Table 1: Bivariate OLS Regression of Change in Private Enrollment on Change in Public Enrollment

	DV: Change in private enrollment	DV: Change in private enrollment	DV: Change in private enrollment (outlier AZ excluded)
Change in public enrollment	0.071*** (0.015)	0.059*** (0.015)	0.015 (0.013)
Year FE	No	Yes	No
R ²	0.025	0.071	0.0016
Observations	900	900	882

Note: Standard errors are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 3: Average STEM and Humanities Share over time by Sector

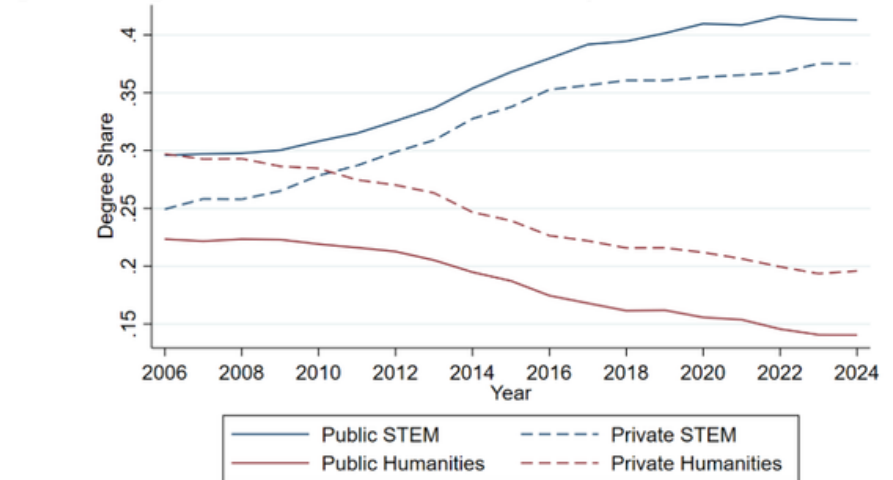


Table 5: Two-way Fixed Effects Regression of Private Humanities Share on Public STEM Share

	DV: Private humanities share
Public STEM share	-0.140 (0.122)
Year FE	Yes
State FE	Yes
R ²	0.595
Observations	817

Note: Standard errors are in parentheses and clustered at the state level, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Discussion

- results ultimately disprove our two initial hypotheses
- all institutions follow a similar upward trend in enrollment with the exception of the recent five years
- STEM share increased no matter sector or institutional type and humanities share decreased no matter sector or institutional type

Interpretations

- could be explained by factors such as institution capacity, stratified income, or could also be caused by a large student population that is not zero sum
- enrollment and graduation of students in a specific field is heavily determined by external factors, such as student interest or industry trends

Conclusion

Limitations

- sample only covers a small proportion of the total number of institutions that exist within the US, possibly causing certain patterns and relationships to be uncapturedquantity cannot fully represent whether an institution is specializing in a field
- public STEM share and private humanities values regressed in completion analysis are recorded within the same year

Future Directions

- investigate how institutions hire their faculty members, specifically instructional staff, and how they compete against other employers in the labour market
- investigate the graduation outcomes of alumni from different institutions & compare salary of such graduates

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