Retention rates are crucial for colleges and universities to consider, both in an effort to maintain their student body, as well as to compete in higher education ranking systems. This research aims to use data provided by The Integrated Postsecondary Education Data System to estimate the factors that affect the retention rates of private, four-year colleges classified by the Carnegie Classification of Institutions of Higher Education as Baccalaureate, both Arts and Sciences and Diverse Fields, using a time series cross-sectional model. Results indicated that five factors, out of the fifteen considered, were robust in determining retention rates. These were the 50th percentile ACT score of the student cohort, the student-to-faculty ratio of the college, instruction expenditures per student, the full time enrollment - or size - of the school, and if the school was an arts and sciences institution.

Institutional Characteristics: Resource Variables
- Student Faculty Ratio (STUDENT/FACULTY) - number of students per faculty member; it was hypothesized that the more students per faculty member, the lower the retention rate
- Instructional Expenditures per Student (INSTREXP) - dollar amount spent on instruction per student; it was hypothesized that higher levels of spending per student would lead to higher retention rates
- Student Service Expenditures per Student (SSST) - dollar amount spent on student services per student; it was hypothesized that this would lead to higher retention rates

Institutional Characteristics: Reputation Variables
- Acceptance Rate (ADMIT) - percentage of applicants who applied to the institution who were then accepted; it was hypothesized that lower acceptance rates indicate greater prestige and thus, lead to higher retention rates
- Full Time Enrollment (FTE) - number of full-time students enrolled in the institution in the fall of year t; it was hypothesized that as the student body size increase, retention would rise at decreasing rates

Institutional Characteristics: Programmatic Orientation Variables
- Urban Location (RURAL, TOWN, SUBURB) - dummy variable equal to 1 if institution is located in a rural location, town, or suburb, respectively; if all three variables equal 0, institution is located in an urban location. It was hypothesized that urban institutions would have higher retention rates
- Arts and Sciences (AS) - dummy variable equal to 1 if institution was classified as Arts and Sciences by the Carnegie Classification of Institutions of Higher Education, 0 if Diverse Fields; it was hypothesized that Arts and Sciences institutions would have higher retention rates

Student Cohort Characteristics: Demographic Information
- Percentage Male (MALE) - percentage of the freshman cohort that is male; no clear hypothesis
- Percentage White (WHITE) - percentage of the freshman cohort that is white; it was hypothesized that cohorts with greater white representation would have higher retention rates

Student Cohort Characteristics: Socioeconomic Status
- Federal Pell Grant Recipients (PELL) - percentage of freshman cohort receiving a Federal Pell Grant; it was hypothesized that cohorts with more students of low income backgrounds would have lower retention rates

Student Cohort Characteristic: Achievement
- Average Net Price per Student (NETPRICE) - average net price paid by the freshman cohort for their first year of school; it was hypothesized that the more students paid to attend, the lower their retention rate

Student Cohort Characteristic: Academic Readiness
- Average ACT Score of Cohort (ACTSCORE) - 50th percentile ACT score of the freshman cohort; it was hypothesized that higher ACT scores indicated greater college-readiness, and therefore we would observe higher retention rates

Empirical Model & Variables

Empirical Results

Conclusions & Implications
- Model Performance - The adjusted R² increased after the removal of insignificant variables, strengthening confidence that the removed variables were irrelevant; the model performed well, the errors are as follows:
  - The derivation of the final model incorporated two regression estimations. The initial model explained approximately 78.5% of the variation in the retention rate, while the second model explained approximately 79.9%.
- Significant Results - Five variables were found to be significant in the initial regression; they reduced their significance in the second regression, after removing insignificant variables, thus are concluded to be robust. The results were as follows:
  - A decrease in the student/faculty ratio by one student per faculty is estimated to raise the retention rate by 0.34%.
  - An increase in instructional expenditures by $1,000 per student raises retention by 2.06%.
- Implications - Our results suggest colleges and universities have the incentive to gear their own efforts towards increasing their student body size, decreasing their student to faculty ratio, and spending more per student on instruction. By increasing their students, they should take steps to enroll those who scored highest on the ACT.