The Responsiveness of Admitted Student Enrollment to Changes in the Net Tuition Price at Linfield College

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I. Abstract

This research project investigates the effect of changes in the net tuition price on the probability of enrollment for students admitted to Linfield College. Our sample data was provided by the Linfield College Office of Institutional Research for the 2015-2016 through the 2017-2018 academic years. A logit model is used to determine how the probability of enrollment is affected by the net tuition price controlling for academic achievement, student demographics, and the year of admittance. Given these controls, we find that a 1% increase in the net tuition price decreases the probability that an admitted student will enroll by about 29%.

II. Logit Model and Variables

L:PR(ENR) = f(NET TUITION PRICE, ACADEMIC ABILITY VARIABLES, DEMOGRAPHIC VARIABLES)

DEPENDENT VARIABLE

PR(ENR): The estimated probability that an admitted student enrolls, holding all else constant.

NET TUITION PRICE

NPRICE: The log of Linfield College's listed cost of attendance (tuition + room & board + fees) in the year of admittance less Linfield grant aid (in dollars).

ACADEMIC ABILITY VARIABLES

GPA: Cumulative high school GPA for admitted students on a 4-5 point scale.

SAT: The SAT scores for admitted students, adjusted for the scoring changes that occurred in 2016.

DEMOGRAPHIC VARIABLES

FGEN: Dummy variable equal to 1 if an admitted student is a first generation student.

YEAR2015 and YEAR2016: Dummy variables equal to 1 if an admitted student was admitted in the respective year.

CSD: Dummy variable equal to 1 if an admitted student attended Competitive Scholarship Day at Linfield College.

NURSING: Dummy variable equal to 1 if an admitted student's intended major is nursing.

GENDER: Dummy variable equal to 1 if an admitted student identifies as female.

BLACK, HISPLAT, ASIAN, and PINA: Dummy variables equal to 1 if an admitted student self-identifies as Black, Hispanic or Latino, Asian, or Pacific Islander and Native American respectively.

OR, WA, and CA: Dummy variables equal to 1 if an admitted student is from Oregon, Washington, or California respectively.

III. Theory and Hypotheses

- NPRICE (-): Following the law of demand, increases in net tuition price will reduce the probability that an admitted student enrolls.
- GPA and SAT (+/-): Increases in GPA or SAT may increase or reduce the probability that an admitted student enrolls.
- CSD (+): Admitted students that attend Competitive Scholarship Day will have an increased probability of enrollment.
- NURSING (+): Based on the strong reputation of Linfield's nursing program, admitted students who identified nursing as there intended major will have an increased probability of enrollment.
- FGEN (-): Admitted first generation students will have a decreased probability of enrollment.
- GENDER (+): Schools like Linfield have more success at attracting female students than male students. Admitted female students will have an increased probability of enrollment compared to an admitted male student.
- YEAR2015 and YEAR2016 (+): Given declining enrollment levels over the three years of our sample, students admitted in the 2015 and 2016 academic years will have an increased probability of enrollment.
- HISPLAT, ASIAN, BLACK, and PINA (-): Admitted ethnic minority students will have a decreased probability of enrollment.
- OR, WA, and CA (+): Admitted students who live in Oregon, Washington, or California will have an increased probability of enrollment compared to students from other states.

IV. Data

- Student unit data was collected from the Linfield College Office of Institutional Research. Incomplete student profiles were removed, leaving a sample of 5,600 admitted students from 2015-2017.
- There was a change in the SAT scoring system in the spring of 2016, moving from a total score of 2400 to a total score of 1600. Old SAT scores and ACT scores were converted into new SAT scores using Concordance Tables provided by College Board and 2018 ACT/SAT Concordance Tables provided by ACT.
- Each admitted student was provided the opportunity to identify with more than one ethnic category. Any student that identified with more than one ethnic category was sorted into the category they listed as their first ethnic identification. To condense the 34 total ethnic identifications used by students, each of the identities were sorted into one of five overarching categories: White, Black, Asian, Hispanic/Latino, and Pacific Islander and Native American.

V. Statistically Significant Logit Results

NET TUITION PRICE

- NPRICE: A 1% increase in net tuition price reduces the probability of enrollment by 29%.

ACADEMIC ABILITY VARIABLES

- GPA and SAT: A 1 point increase in GPA decreases the probability of enrollment by 15%. A 100- point increase in SAT score decreases the probability of enrollment by 6.3%.

DEMOGRAPHIC VARIABLES

- CSD: Attendance at Competitive Scholarship Day increases the probability of enrollment by 41%.
- NURSING: There is a 13.3% increase in the probability of enrollment for intended nursing majors.
- FGEN: There is a 3.9% decrease in the probability of enrollment for admitted first generation students.
- YEAR2015: Students admitted in 2015 were 5.2% more likely to enroll at Linfield.
- ASIAN and BLACK: There is a 10.5% and 5.5% reduced probability of enrollment for Black and Asian students respectively.
- OR: Admitted students from Oregon have a 12.5% increased probability of enrollment.

VI. Conclusion

We have hypothesized that the probability of enrollment for admitted students at Linfield would be affected by net tuition price, academic ability measures, and demographic variables.The logit results provide empirical evidence to support these hypotheses. However, our results should be interpreted cautiously. Our inability to control for substitute prices, the geographic distance between Linfield and accepted students' homes, and difficulties in measuring student academic ability using existing GPA data suggest that some of the model's coefficient estimates may be biased.