Research Brief
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The Impact of Campus Housing on Student Academic Performance, Retention & Graduation

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Executive Summary

This report uses a quasi-experimental method to estimate and document the casual impact of living on campus on academic performance, graduation and retention of first and second-year students at the University of Connecticut – Storrs Campus. The analysis reveals that first-year students who live on campus during their first and second years of enrollment at UConn have a higher GPA than those who lived off campus. Furthermore, students who remain on campus after their first academic year have a higher retention rate and graduate faster than those who stay off campus.

Background

The significance of university student housing in undergraduate students' lives has evolved. Over the years, UConn has carefully used student housing to improve and advance students' college experience. However, there is a dearth of knowledge on how these initiatives have impacted student success. Using a quasi-experimental design, we examine the impact of on-campus housing on student academic performance, retention and graduation.

Major Objectives of the Study

Does living on campus during the first and second academic years contribute to student success outcomes compared to living off campus?

- GPA
- Retention
- Graduation

Introduction

Recovering causal estimates of the effect of on-campus housing is challenging, since students who choose to live on campus (treated group) may be different on a number of characteristics from those who stay off-campus (control group). Therefore, any analysis of the impact of campus housing on student academic performance, retention and graduation is prone to self-selection bias.

The implication of self-selection is that student living on campus may be systematically different in observable attributes such as family income, college preparedness, innate abilities and so on, when compared to students living off-campus.

Consequently, a simple difference in student academic performance between on-campus and off-campus students will not be entirely due to student housing status, and hence render the estimates biased and inconsistent.

To extract unbiased and consistent estimates, this study utilizes matching methods[1] to evaluate the effect of campus housing on student GPA, retention and graduation.

The goal of matching is to reduce bias by finding, for every on-campus student, one (or more) off-campus student(s) with similar observable characteristics against who the covariates are balanced out. Statistical matching does this by invoking the conditional independence assumption that states that "after conditioning on a set of observed co-variates, treatment assignment is independent of potential outcomes". This implies that, after matching, if we pick two students who have the same attributes that make them likely to stay on campus, the only reason why one decides to stay on campus and the other stays off-campus is purely due to a "coin flip".

1 Propensity Score Matching (PSM) is used to create a control group by matching each treated unit with a non-treated unit with similar characteristics. These matches are then used to estimate the impact of on-campus housing on student academic performance, retention, and graduation.

Data

Data on first-time, full-time freshmen cohorts who enrolled at UConn between 2010 and 2018 were used in this analysis.

The outcomes of interest were:

- First-year-first-semester GPA
- First-year-second-semester GPA
- Second-year-second-semester cumulative GPA (CGPA)
- Retention to the fall of academic years two and three
- Graduation within four years

Control variables used in the study include:

- Gender
- Age
- Race
- State Residency (in-state vs. out-of-state)
- First – Generation status
- High School GPA
- SAT Score
- CAP Status
- Pell Grant Status
- STEM vs non-STEM Degree

Results

Table 1 displays the average treatment effect (ATE) and the average treatment effect on the treated (ATT) of the impact of living on campus on first-year-first-semester GPA, first-year-second-semester GPA, and second-year-second-semester CGPA after controlling for observed covariates.

The ATE represents the average effect of campus residence on student's GPA across the study sample. The ATT represents the average effect among students in the sample group that lived on campus.

Table 1: Estimates of ATE and ATT – GPA

	Average Treatment Effect of Living On-Campus on GPA		
	First Year, First Semester GPA	First Year, Second Semester GPA	Second Year, Second Semester Cumulative GPA
Overall Average Treatment Effect (ATE)	0.3188*** (0.0501)	0.1720*** (0.0299)	0.0345*** (0.010)
Average Treatment Effect on the Treated (ATT)	0.3104*** (0.0519)	0.1720*** (0.0312)	0.0295** (0.0111)

*Standard errors in parentheses. ** significant at 5%; *** significant at 1%*

The findings suggest that living on campus for the first and second academic years has a positive impact on student GPA. Freshmen who lived on campus during their freshman year between 2010 and 2018 earned 0.31 points higher in their first semester GPA, 0.17 points higher in their second semester GPA, and 0.03 points higher in their end-of-second year CGPA than those who lived off-campus.

Table 2: Estimates of ATE and ATT – Retention

	Average Treatment Effect of Living On-Campus on Retention	
	First Year to Second Year Retention	Second Year to Third Year Retention
Overall Average Treatment Effect (ATE)	0.2044*** (0.0122)	0.1390*** (0.006)
Average Treatment Effect on the Treated (ATT)	0.2058*** (0.0131)	0.1400** (0.008)

*Standard errors in parentheses. ** significant at 5%; *** significant at 1%*

Table 2 displays the ATE and the ATT of the effects of on-campus living on student retention. The results indicate that between 2010 and 2018, freshmen who lived on campus had a higher retention rate than those who lived off campus.

Students who lived on campus were 21 percentage points more likely, on average, to return for their second year than those who lived off campus. Although retention rate decreases by 6 percentage points by the third year, on average, students who lived on campus were 14 percentage points more likely to return for their third year than those who lived off campus.

The average treatment effect of living on campus on graduating in four years is shown in Table 3. According to the estimate, students who stay on campus graduate at a rate that is 15 percentage points higher than those who stay off campus.

Table 3: Estimates of ATE and ATT – Graduation

	Average Treatment Effect of Living On-Campus on Graduation
	Graduate in 4 Years
Overall Average Treatment Effect (ATE)	0.1491***
	(0.018)
Average Treatment Effect on the Treated (ATT)	0.1499**
	(0.019)

*Standard errors in parentheses. ** significant at 5%; *** significant at 1%*

Conclusion

In conclusion, the results indicate that, all else being equal, students who choose to stay on campus in their first year and continue to live on campus perform better academically. They have a higher GPA and are more likely to stay at UConn and graduate than their off-campus peers.

References

Rosenbaum, P. R., & Rubin, D. B. (1983). The Central Role of the Propensity Score in Observational Studies for Causal Effects. Biometrica 70(1): 41–55.