

Does close count in higher education? The effect of distance on degree completion in Kentucky

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Background

- There is a renewed interest concerning the role of distance in college-going behavior
- This is attributable to recent initiatives to increase college “shopping”
- Several policy reports criticize this strategy as it ignores distance as a significant constraint

Two ways policy may be pushing greater distances

College Shopping

- College Scorecard,
- College Navigator,
- Financial Aid Shopping Sheet
- Encourages students to expand college choice sets
- Facilitates matching with colleges that may be farther away from home

Trends in Higher Ed Financing

- State appropriations decline
- High tuition-high aid model
- Aid is not keeping pace with tuition
- Tuition differential between states degrades
- Student choice sets expand

Research Question

Does the distance a student migrates to attend the institution of his or her choice subsequently impact the likelihood he or she completes a degree from that institution?

Two Theoretical Motivations

1. Human Capital Investment

- Attendance, choice, and persistence a matter of weighing costs and benefits (Becker, 1964; Paulsen, 2001)
- College participation, completion gap (Turner, 2004)
- Uncertainty leads to miscalculations, failure to complete degree
- Distance may increase uncertainty
- Or, students do not include distance in decision-making

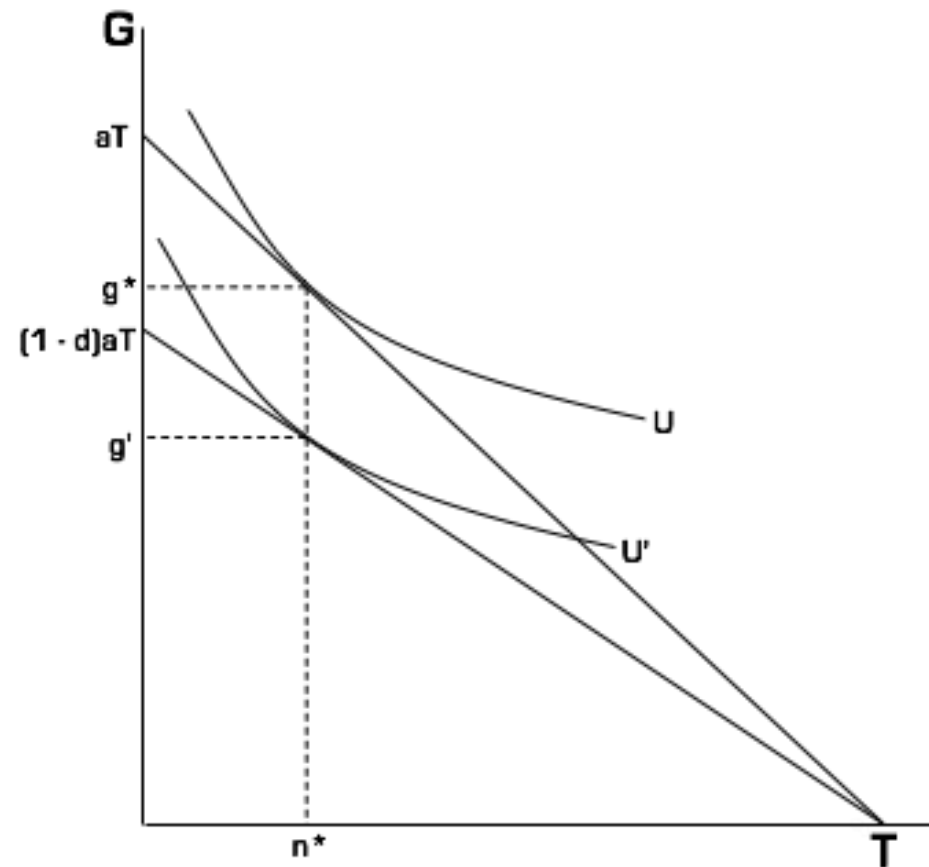
Two Theoretical Motivations

2. Student supply of academic effort

- S_i chooses to attend a college
- Now faces a decision to allocate his time between
- E = academic effort; n = non-academic effort
- $U = u(G, n)$; G = grades
- Faces constraint: $G = a(T - n)$; a = ability, T = total time
- Distance (d) can enter into constraint as a lump-sum cost or a cost to the student's ability to convert effort into achievement

Student choice of academic effort

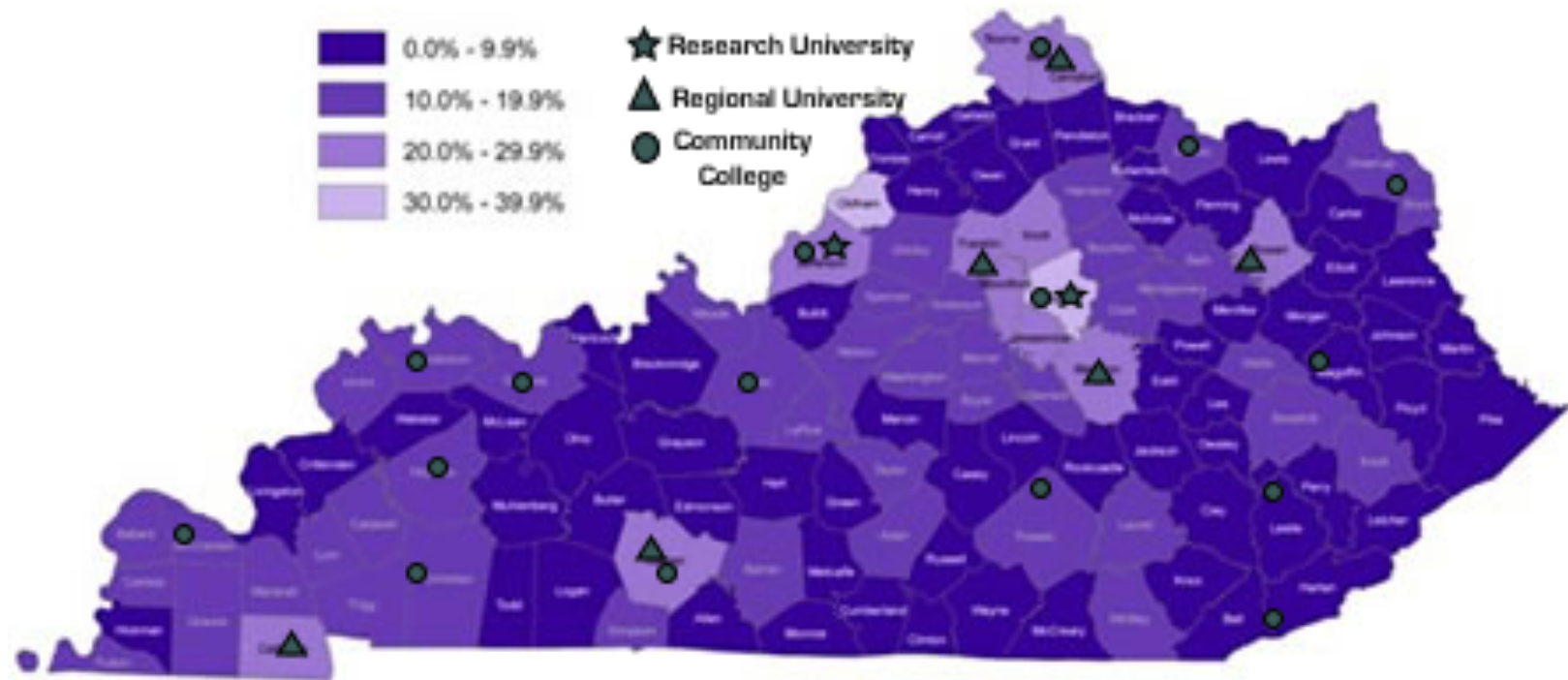
- Holding all else constant, distance decreases grades
- Why might a student choose equivalent colleges at the cost of distance?
- Student sorting from geographic integration (Epple, Romano, Sieg, 2003; Hoxby, 2000)



Past Studies on Distance

- Distance has been found as a significant deterrent to access
 - Intra-state studies: Kariel, 1968; Ullis and Knowles, 1975; Ali, 2003; Alm and Winters, 2009
- No study has looked at the direct effect of distance on completion
- Some have looked at “spillover effects”
 - Living near a university increases amount of school 0.32-0.38 years (Card, 1995)
 - Living within 100 miles of a community college increases BA attainment 3.2 percent (Dee, 2004)
 - Increase of 10 miles to a university decreases years of education 0.018 (Rouse, 1995)
 - Proximity to a community college increases years of education 0.4-1.0 among BA seekers (Gill, 2003).

Intra-state migration and degree completion in Kentucky



Data

Table 1: Student-level descriptive statistics

Continuous variables	Mean	SD
High school GPA	3.30	0.54
ACT	22.17	4.29
Financial aid (1,000)	3.82	2.60
Total family income (10,000)	5.37	6.69
Distance (miles)	53.31	57.09
Count variables	Count	Percentage
Male	19,631	44.29
Seeking Associate's	12,451	23.29
Seeking BA	31,873	59.61
Completed degree	21,347	48.16
Completed Associate's	2,433	19.54
Completed BA	16,977	53.26
Transfers	3,101	7.00
2006	14,370	32.42
2007	14,401	32.49
2008	15,553	35.09
Total N		44,324

Note: Completion statistics for a specific degree are conditional on seeking that degree. Whether a student transferred is only known if a student graduated from an institution different from the institution in which he or she initially matriculated.

Methodology (2SLS)

$$\ln(\hat{D}_i) = \pi_0 + \pi_1 S_i + \pi_2 C_i + \pi_3' Z_i' + v_i \quad (2a)$$

$$Y_i = \beta_0 + \beta_1 \ln(\hat{D}_i) + \beta_2' Z_i' + \varepsilon_i \quad (2b)$$

where

\hat{D} = the predicted distance migrated by student i ;

S = the degree sought by student i ;

C = the county of origin of student i ;

Z = a vector of covariates for student i expected to affect the likelihood to complete a degree. These include the student's gender, high school gpa, composite ACT score, total family income, total financial aid awarded, and the academic year of matriculation (2006-2008); and

Y = an indicator variable if student i completed a degree

Results

Table 3: 2SLS estimates of the effect of distance on the likelihood to complete a degree

	1	2	3
	Degree	Bachelors	Associates
In Distance	-0.0058** (0.0027)	-0.0190*** (0.0046)	0.0020 (0.0116)
Male	-0.0375*** (0.0043)	-0.0480*** (0.0071)	-0.0087 (0.0174)
GPA	0.2542*** (0.0048)	0.2947*** (0.0081)	0.1690*** (0.0215)
ACT	0.0227*** (0.0006)	0.0190*** (0.0009)	0.0185*** (0.0034)
Income (10,000)	0.0020*** (0.0004)	0.0018*** (0.0004)	0.0031 (0.0028)
Financial Aid (1,000)	0.0003 (0.0015)	-0.0004 (0.0023)	0.0150* (0.0081)
Academic year			
2007	0.0289*** (0.0052)	0.0230*** (0.0094)	-0.0101 (0.0231)
2008	0.0191*** (0.0065)	0.0408*** (0.0139)	0.0098 (0.0269)
R^2	0.17	0.14	0.10
N	44,322	31,873	12,449

Note: Estimates with robust standard errors in parentheses. Estimates of dummy variables for missing GPA, ACT, Income, and Financial aid values were excluded. *p<0.10; **p<0.05; ***p<0.01

Conclusions

- On average, distance imposes a cost to students after attendance decisions have been made
 - Effects appear to be different for those pursuing a bachelor's vs. associate's
- Magnitude?
 - The effect of distance coincides with approximately a one standard deviation increase
 - Over 2,000 students in the sample migrated approximately 200 miles. Based on the results, these students had a 4.22 percent lower likelihood of completing a degree compared to the average student.
- Regardless of the exact policy mechanism, if the result is that students begin migrating greater distances, then we may expect to see a decline in graduation rates.

Future Research

- Transfer behavior
- Alternative specifications
- Are declines in state appropriations associated with greater student migration?

Thank you.
Questions?

