

Institutional Characteristics and College Student Dropout Risks: A Multilevel Event History Analysis



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Introduction

- Persistently high dropout rates
- Research to date:
 - Student-centered research tradition
 - Cross-sectional and single level data and analytic approach
 - Mostly focuses on institutions' structural or financial attributes

This Study

- Purpose: Examines how institutional characteristics are related to college student dropout risk over time
- What is unique:
 - Addresses the dropout issue from an institutional perspective.
 - Includes comprehensive institutional attributes.
 - Combines multilevel model and event history methods to examine student dropout behavior

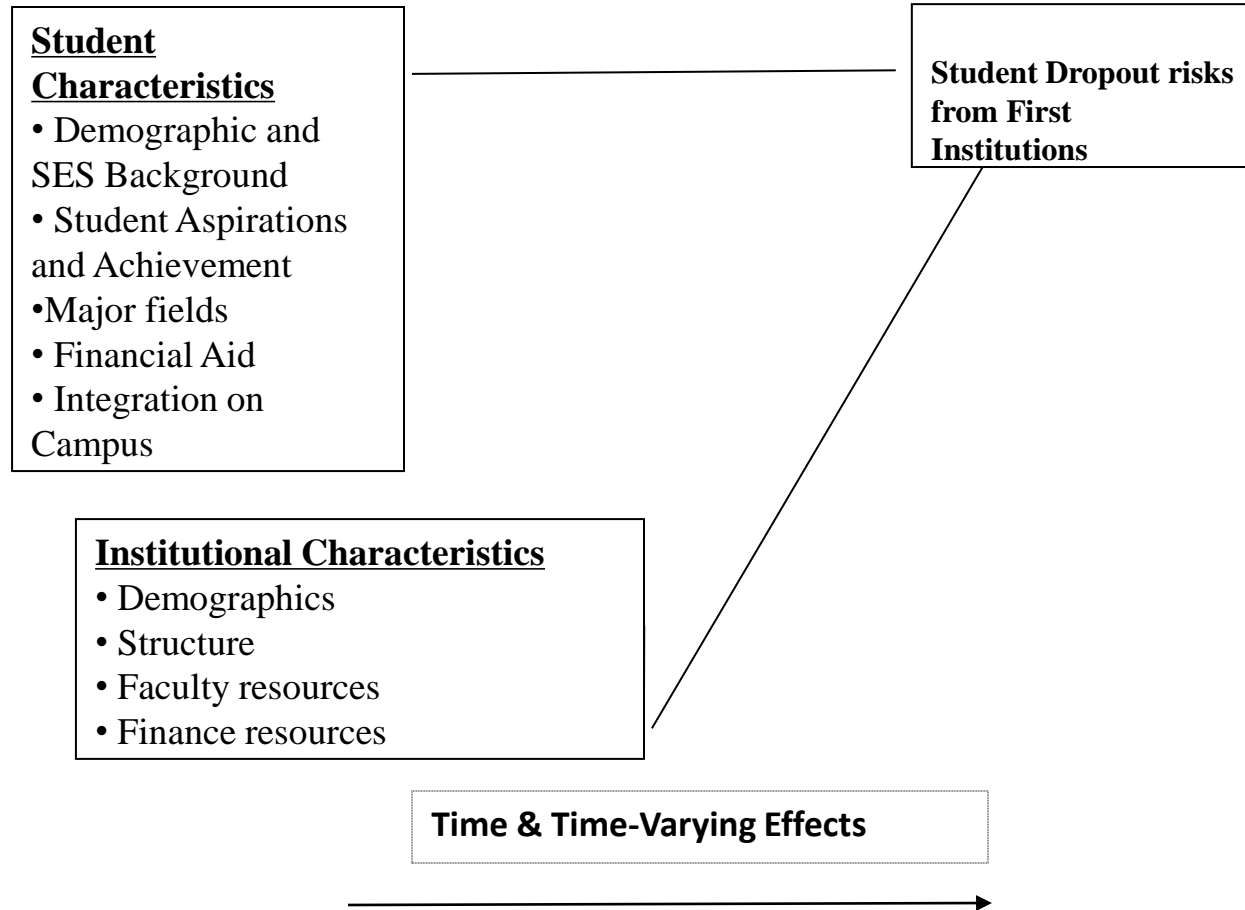
Research Questions

- How do student level variables predict student dropout risks over time from their first institutions?
- How are the various institutional level factors related to student dropout risks from first institutions over time after controlling for student level predictors?

Major Theoretical models

- Berger and Milem's (2000) framework
 - Based on the structural-contingency theory (Pfeffer, 1982)
 - Focuses on the structural-demographic features of an institution
- Titus' (2006) framework
 - Based on the resource dependency theory (Pfeffer & Salancik, 1978)
 - Proposes that institutional resources might also influence students' decisions in continuous enrollment

Conceptual Model in This Study



Data and Sample

□ Data

- Beginning Postsecondary Students (BPS) 1996/2001
- Integrated Postsecondary Education Data System (IPEDS) 1995-2000

□ Sample

- Sample selection (undergraduate students in 4-year institutions)
- Sample size: 5,762 students in 400 four-year institutions

Model Specification I

- Outcome variable *
- Dropout without return from first institutions by the end of 6th year (yes/no)
- Independent variables
 - Student level:
 - *race/ethnicity, gender, SES,*
 - *highest degree aspired to attain, high school GPA, first-year college GPA,*
 - *first-year academic integration on campus, first-year social integration on campus,*
 - *first-year college major fields, time in college*,*
 - *Pell grants*, Subsidized Stafford and Perkins Loans*, Unsubsidized Stafford Loans*, work-study*, first-year merit aid*

Model Specification II

□ Independent variables

■ Institutional characteristics:

- *Demographics ** (pct of minority students)
- *Structure* (control, selectivity)
- *Faculty resources ** (pct of part-time faculty, full-time faculty-student ratio)
- *Financial resources ** (instructional expenditures, academic support expenditures, and student service expenditures)

■ Interaction effects included

- *Time-varying effects*
- *Aid*SES, aid*race/ethnicity*
- *Institutional Resources*SES*
- *Institutional Resources*race/ethnicity*

*Note: * indicates time-varying predictors*

Statistical Methods

- Combined use of event history methods and multilevel analysis
 - Applications of event history methods in higher education
 - Rationale for multilevel event history analysis in this study

Statistical Analyses

- Steps for analysis
 - Data reconstruction
 - Censoring
 - Descriptive analysis (life-table and Nelson-Aalen estimation)
 - Multilevel Event History Modeling
 - Fully-unconditional model
 - Baseline model without interaction terms
 - Model with interaction terms

Descriptive of the sample (Life-Table)

Year	Beginning Total	Dropout	Censored Cases	Dropout Risk
1	5762	1018	0	0.177
2	4744	635	8	0.134
3	4101	305	102	0.074
4	3694	155	1901	0.042
5	1638	109	1043	0.066
6	486	33	453	0.068

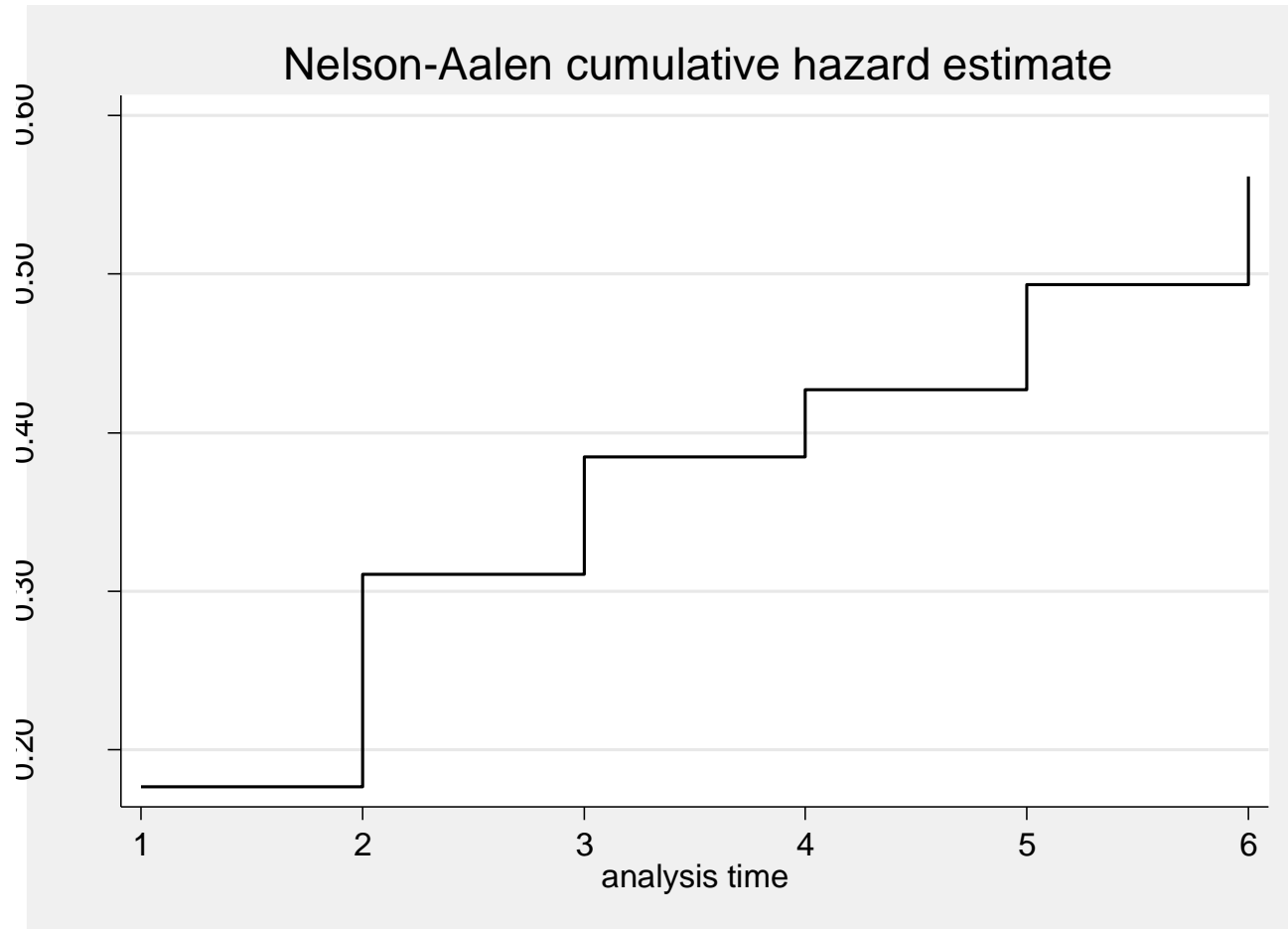
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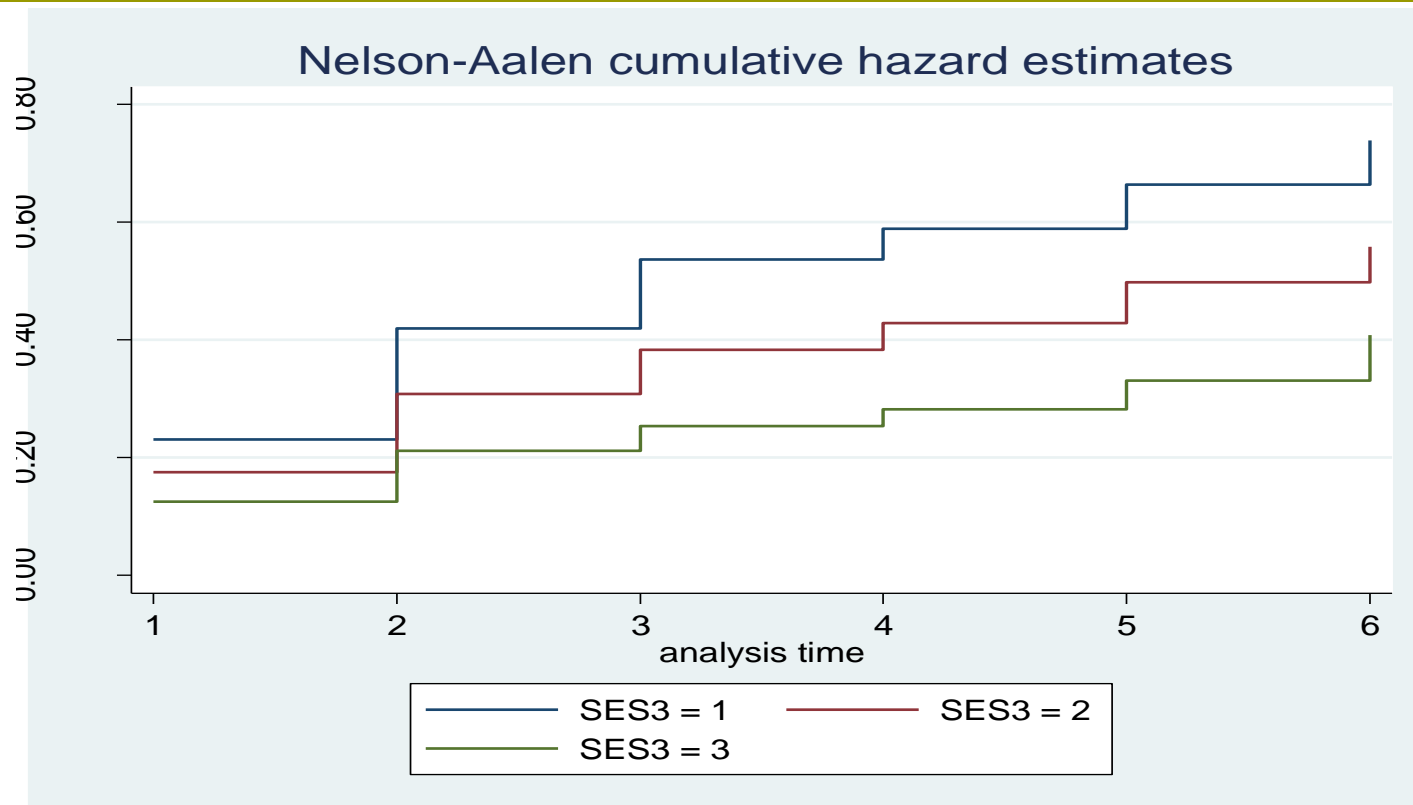
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Cumulative dropout risk over time

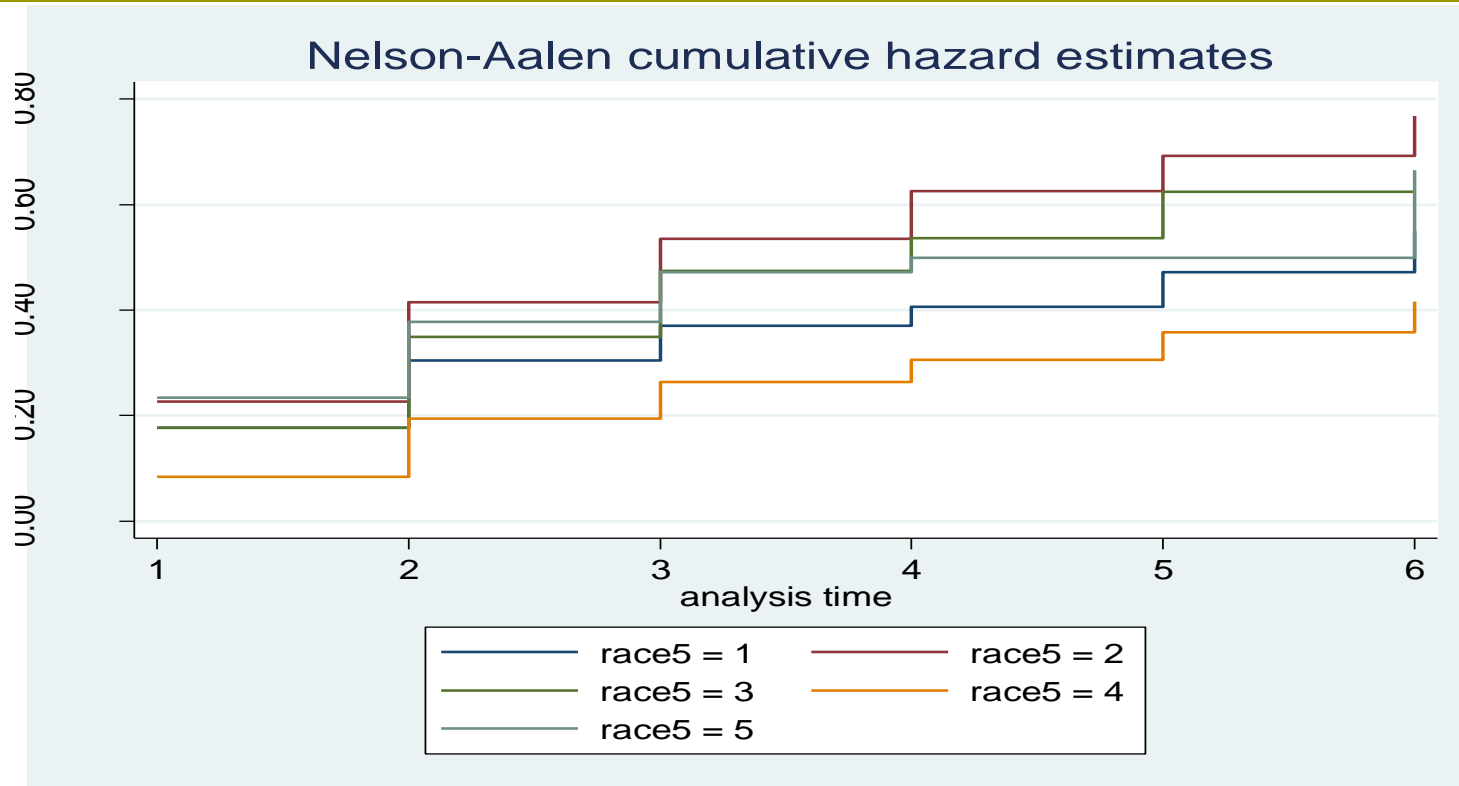


Cumulative dropout risk by SES



Note: SES3=1 represents low-SES group, SES3=2 mid-SES group, and SES3=3 high-SES group.

Cumulative dropout risk by race/ethnicity



Note: Race5=1 represents White, race5=2 African American, race5=3 Hispanic, Race5=4 Asian, and race5=5 other race/ethnicity.

Fully Unconditional Model

Random Institutional level coefficient	Reliability Estimate
Intercept for dropout	0.66
Estimation of Level Two variance components	Variance component
Intercept for dropout	0.53***
* $p < .05$, ** $p < .01$, *** $p < .001$ Note. Intercepts reported here are the log-odds of first-institution dropout (relative to persistence) according to the results of the HGLM fully unconditional model.	

Highlighted results of the Multilevel Event History baseline Model

	<i>Hazard Rate Ratio</i>	<i>Std. Error</i>	<i>Sig.</i>
Mid SES	0.81	0.07	***
High SES	0.62	0.10	***
Educational Plan	0.68	0.07	***
Z score of academic integration	0.91	0.04	***
Z score of social integration	0.87	0.04	***
Z score of college GPA	0.59	0.04	***
Subsidized Loan (in\$1000)	0.92	0.02	***
Unsubsidized Loan (in\$1000)	0.95	0.02	*
Receiving work-study	0.81	0.08	**
First-year merit aid (in\$1000)	0.94	0.02	**
Year3	0.58	0.09	***
Year4	0.38	0.11	***
Year5	0.43	0.14	***
Year6	0.30	0.22	***
Log of student service expenditure	0.85	0.08	*

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Highlighted results of the multilevel event history model with interaction effects

- Significant interaction effects
 - Aid (Pell, subloan, merit)*SES
 - Pell*Whites
 - Pell*year & Unsubloan*year
- Non-significant interaction effects
 - Relationships between institutions' faculty/finance resources and dropout risks do not vary significantly across SES or race/ethnicity.

Policy implications

- ❑ Need for a continued emphasis on equality in student success.
- ❑ Institutions need to identify and help high-risk students
- ❑ Retention programs reflect the time-varying characteristics of dropout
- ❑ Institutional financial resource emphasizing student services may promote college student persistence.

Research Implications

- ❑ Further institutional research on “what institutions do” is warranted.
- ❑ Future research needs to differentiate among expenditures on student services.
- ❑ Multilevel event history modeling suggests a new and viable approach for this line of research.

Questions?

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Paper is available online

<http://www.springerlink.com/content/m76rh67251116113>