Where do they go?

An examination of dropouts

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ABSTRACT

This study examines what happens to students after they dropout; do they persist in higher education and are they successful (graduate) at another institution. The sample for this study is 4 freshman IPEDS defined cohorts. Descriptive analyses show the majority (61.2%) of the dropouts continue to persist in higher education by enrolling in another institution. When a student does persist, they will most likely do so in the same state as their residency (82.6%). Just under half (46.7%) of the dropouts who continue to persist in higher education will graduate with a bachelor’s degree within 6 years of their initial enrollment at the original institution. Binary Logistic Regression analysis shows that gender, residency, academic probation, cumulative GPA, parent’s education, and admission selectivity of transfer institution impacts the odds of a student graduating with a bachelor’s degree from another institution (within 6 years of initial enrollment at original institution) after dropping out.
Introduction

Student retention and persistence studies are one of the regular analyses conducted by institutional researchers. Persistence is the conscious act by students to maintain their enrollment in a higher education institution (Mortenson, 2005). Retention refers to the ability of an institution to retain a student from admission through graduation, most often related to a single institution (as opposed to a student’s transfer between two or more colleges; Berger & Lyon, 2005). Using persistence as the student’s continuation in higher education until receiving a bachelor degree; this paper investigates the persistence within higher education of students who left a university before graduating through tracking enrollment and degree progress within other higher education institutions.

Historically, concerns about student retention and persistence have largely been focused at the institutional level. In the last few years, policy makers have become more interested in student retention and persistence not only within an institution, but also at the state and federal level (Titus, 2006). Much of the increased governmental attention on retention and persistence is due, in large part, over accountability and efficiency concerns of higher education. Greater governmental oversight is pushing institutions to justify the large government subsidies they are receiving. Examining the persistence of the dropouts of an institution can provide useful data which can help retention efforts. If a student successfully graduates from another institution after they dropout, why were they not successful at the original institution? Institutions look for ways to understand their students progression towards degree completion; the more they know about their students and what makes them successful (even at other institutions), the more it allows an institution to design effective retention programs and policies.
Literature Review

Retention & Persistence Theory

Research on student persistence and retention is voluminous and despite all the research, no definitive model has been developed to provide guidelines for institutional officials to enhance student persistence through graduation (Seidman, 2005). Past research has provided differing theories as to why some students leave and why some persist; with the most influential reasons include students’ level of academic preparation, commitment to their studies, and the intensity of their involvement within the institution (Seidman, 2005).

Many factors, academic and nonacademic, affect retention and persistence (Tinto, 1993; Tinto 1997; Adelman, 1999; and Ishitani & DesJardins 2002). Research has shown a relationship between a student’s first-year GPA and retention; the higher a student’s GPA the better the chances of them persisting (Ishitani & DesJardins, 2002). Other studies have examined academic preparedness before entering college and show that students who are better prepared are retained at higher levels (Tinto, 1993; Cabrera, Nora, & Castaneda, 1993; Tinto 1997; Adelman, 1999). Another set of research investigating nonacademic factors found that the commitment to the degree, involvement/engagement within the university community, confidence level of the student, and life skills (time management, self-esteem, and personal habits) are influencing factors on whether a student persists or drops-out (Pascarella & Terenzini, 1980; Tinto, 1997; Braxton, 2000; Braxton & McClendon, 2002).

Adleman (1999) found students with the strongest academic profiles persist and graduate regardless of their socioeconomic class (SEC). Low SES students with the proper high school curriculum, test scores, and class rank graduate at a higher rate than the majority of students in the upper SES quartiles (Adelman, 1999). Students are also more likely to persist in an
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evironment with high expectations, clear advising, and are highly involved on campus (both socially and academically; Tinto, 1997). Adleman (1999) also found students that took advance placement graduated quicker with a bachelor degree and students not completing an average fulltime load by the end of their first year reduced their chances for earning a bachelor degree.

The ability to pay for higher education has been shown to impact a student’s ability to persist and graduate. A report by the Advisory Committee on Student Financial Aid, Access Denied (2001), indicates that the proportion of low income SEC families spend on college tuition has risen and will continue to rise significantly, greater than other income groups. This report contends that this has happened while middle-income and merit aid financial aid policies became the primary focus for state and federal higher education policymakers. This shift in policy focus coupled with the rising costs of higher education has created substantial increases in the amount of unmet need-based aid for low-income students.

A follow-up study by the Advisory Committee on Student Financial Aid, Empty Promises (2002), found that the shortages in grant aid resulted in low-income families paying on average $7,500 for tuition (net), which represents almost a third of a low SES family’s income. This penalizes low income students and decreases their enrollment rates within 4-year institutions. Paulsen and St. John (2002) in comparing the cost and benefits of future attendance on experiences of past attendance, found when low SES students attend college for just one year and then drop out will come back when (if) they obtain financial independence.

Adleman (1999) in examining students attending four-year institutions and received financial aid found students persisted at lower rates if they were in work study programs or employed for the purpose of paying their educational expenses. To meet the costs of attending (due in large part to decrease level of unmet financial aid), many low SES students are
developing strategies of attending part-time, working long hours, and acquiring heavy loan debt. In general, these choices lower likelihood of them persisting and completing a degree (Advisory Committee on Student Financial Aid, 2001; Gladieux and Perna, 2005).

*Human Capital Theory*

Human capital theory is an accepted economic theory for studying college choice (Manski & Wise, 1983; Morgan, 1988; Kane, 1994; Heller, 1999; Paulsen & St.John, 2002). Human capital theory provides a guide for understanding private investments in higher education based on rational choices of competing opportunities (Becker, 1964). In addition to examining choice by financial factors, many elasticity studies have modeled student enrollment behavior in response to cost of attendance (Ehrenberg & Sherman, 1984; Leslie & Brinkman, 1987; Viehland, 1989; Wetzel, J., O’Toole, D. & Peterson, P. 1998; Heller, 1999; Noorbakhsh & Culp, 2002; Curs and Singell, 2002; and Toutkoushian, 2004). In general, the affects of affordability (ability of a student to pay for college) on student retention is linked to the student’s willingness to invest current financial resources for possible future gain.

Economists (Schultz, 1961; Becker, 1964) found people will invest large amounts of resources in themselves. These investments differentiate one person from another and in turn increase their net worth through earnings (Becker, 1964). This differentiation can assist in explaining student migration (Schutzl, 1961). High quality colleges often employ distinguished faculty, enroll highly capable students, have great academic facilities (libraries, laboratories) and offer many extracurricular resources (athletic centers, student unions, etc.) which attracts students to enroll at the institution (Ehrneberg, 2000). Human capital theory suggests individuals decide which competing activities to pursue by weighing opportunity and direct costs. This decision affects the individual’s productivity, which correlates to quantity and quality of their
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educational investment (Schultz, 1961; Becker, 1964). Students may decide that an investment in enrolling at a high quality university will return at a greater rate than an investment in a lower quality university (based on however the student defines quality).

Based on this belief, students will select the option with the largest net value (Bettle, 2002). For many this net value includes opportunity costs in the labor market, student loans, and family obligations. In order to get the highest return possible on their investment in higher education, students will attend the best institution their abilities and financial resources will allow. Following Becker’s human capital theory (1964), students should be more willing to pay a higher cost (tuition) if they anticipate a greater return on their investment. A number of students attend higher cost out-of-state universities instead of in-state institutions based on a perception of larger returns on the investment. Research though found that when controlling for institutional quality and the surrounding economy, the cost of out-of-state tuition has no effect on student migration (going out-of-state vs. staying in-state; Baryla & Dotterweich, 2001). Additional research (Leslie & Brinkman, 1987; Heller 1999) found that tuition is inversely related to non-resident enrollment. Increases in nonresident tuition typically lead to reductions in nonresident enrollment. Nonresident students may enroll at an institution for a period of time and then leave due to costs.

Methods

Previous studies have examined and provide evidence for explaining student retention and persistence, but one area that has not been examined in depth is what happens to students after they dropout and leave before graduation. Do these students persist in higher education and enroll at another institution? Are they successful (graduate)? This study examines what happens to students after they dropout and provides evidence to if and where students persist. Research
questions for this study include:

1) Who are the students who dropout and how do they compare to students who are retained?

2) Are there identifiable patterns or characteristics attributable to dropout students?

3) Does a student who is not retained enroll at another institution?
   a. Which institution(s) do these students enroll in?
      i. By type, location, etc.
      ii. Is there a pattern to this?
   b. How successful (defined as graduation) are students at their new institution(s)?

Sample

Mortenson (2005) suggests that the foundation of measurement for student persistence studies is through the use of cohorts (a clearly defined group), identification of demographic and enrollment characteristics, and tracking of these characteristics over time. The data for this study includes students who enrolled as first-time, full-time freshman in the fall semesters between 1998 and 2001 (4 IPEDS defined freshman cohorts; N = 17,416). Student demographic and financial data are paired with academic and social activity for each semester through six years (a total of 18 semesters) from official university files. For institutional selectivity, the 1997 Barron’s Educational Series institutional selectivity rankings (1998) were used\(^1\). The choice to use the 1997 rankings was made due to the first cohort used in the study enrolled in 1998 and it closely approximated the selectivity of institutions at the time students in the sample were applying for admission.

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\(^1\) The selectivity rankings include most 4 year schools, but did not rank many 2-year institutions. All medical schools (mainly due to transfers for nursing bachelor degrees) and pharmacy schools transferred to were considered same selectivity as original institution as they were not ranked in selectivity.
Students were classified into two groups, retained or not retained after six years. A student is considered retained if the student had graduated or was still enrolled in a bachelor degree program within the original institution by the end of six years. A student is considered not retained if they had not graduated and were not enrolled in a bachelor degree program at the original institution at the end of six years.

Students identified as not retained had their institutional data paired with enrollment and graduation data from the Student Tracker database compiled by the National Student Clearinghouse. Over 3,100 institutions (accounting for 91% of all enrolled post-secondary students) contribute enrollment and graduation reports to the National Student Clearinghouse (National Student Clearinghouse, 2008). The Student Tracker data from the National Student Clearinghouse allows individual analysis on enrollment, completion and retention patterns across institutions. For non-retained students who enrolled in another institution(s) – a primary transfer institution was identified based on the following hierarchy of decision rules: institution where student graduated with bachelors, institution where student enrolled the most after leaving initial institution, and first institution of enrollment after leaving initial institution.

The institution in this study is a large, research-extensive public university located in the Southeast. As the state’s flagship and land-grant university, it offers over 150 degree programs in 16 colleges and schools. The undergraduate student body is comprised mostly of traditional age students (18-22 yrs) enrolling primarily from the local region (~88% of students are in-state). Approximately 25,000 undergraduates are currently enrolled at the institution.

**Methods**

Some notable examples of student retention and persistence studies have shown that student background characteristics (Tinto, 1975; Pascarella & Terenzini, 1980; Tinto, 1997; St.
John, Hu, Simmons, & Musoba, 2001; Paulsen & St. John, 2002; Perkhounkova, Noble, & McLaughlin, 2006; Titus, 2006) student ability (St. John, Hu, Simmons, & Musoba, 2001; Perkhounkova, Noble, & McLaughlin, 2006; Titus, 2006) student social integration/involvement (Pascarella & Terenzini, 1980; Tinto, 1997; Titus, 2006) student academic integration (Pascarella & Terenzini, 1980; Tinto, 1997) and student wealth/socioeconomic status (St. John, Hu, Simmons, & Musoba, 2001; Paulsen & St. John, 2002; Perkhounkova, Noble, & McLaughlin, 2006; Titus, 2006) as factors influencing persistence and retention. The five groupings of independent variables included in this study are:

- Admission Profile:
  - SAT score
  - High School GPA
  - Predicted GPA (derived from SAT and HS GPA)
- Student Demographics
  - Gender
  - Race/Ethnicity
  - Residency Status (In-State/Out-of-State)
  - Parents Educational Attainment
- Academic Performance:
  - Term & Cumulative GPA (individual terms through 6 years)
  - Earned academic probation
- Collegiate & Social Involvement:
  - Lived in Residence Halls (first year only)
  - Joined a Greek organization
Financial Aid:

- Receipt of merit-based scholarship
- Receipt of non-need based aid (minus merit-based aid)
- Receipt of need-based aid (all types, including Pell)
- Receipt of Pell Grants (only)

A variety of analyses were conducted to examine the research questions. A series of descriptive statistics and one-way ANOVAs were followed by a binary logistic regression analysis to examine potentially contributing factors of students persisting and being successful (graduate) in higher education after leaving the original institution in which they began their pursuit of a higher education degree. Basic descriptive statistics and correlation analyses provide an understanding of students who persisted and who were successful (graduated) and the general relationship among the factors (variables) that relate to persistence. A binary logistic regression was developed to determine the effects of the independent variables on students who successfully persisted (graduated) from another institution after they had left the institution which was their initial bachelor degree seeking institution.\(^2\)

Findings

A total of 3,664 students (21% of sample) were not retained after 6 years. Table 1 shows the admissions profile of the sample and the two identified student groups, retained and not-retained. As shown, students who are not retained have lower high school GPA, SAT scores, and predicted GPA than student who are retained (p<.01).

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\(^2\) Two binary logistic regressions were planned and developed (one for whether student enrolled in another institution and one if a student graduated with a bachelors degree within six years from initial start date from another institution – the binary logistic regression for whether a student enrolled in another institution after leaving initial institution was shown not meet goodness of fit tests and was subsequently left out of the analysis.
Table 1: Admissions Profile of Students

<table>
<thead>
<tr>
<th></th>
<th>All Students</th>
<th>Retained Students (6 Years)</th>
<th>Non-Retained Students (6 Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS GPA (Mean)</td>
<td>3.54</td>
<td>3.57</td>
<td>3.41</td>
</tr>
<tr>
<td>SAT (Mean)</td>
<td>1193</td>
<td>1198</td>
<td>1172</td>
</tr>
<tr>
<td>Predicted GPA (Mean)</td>
<td>3.05</td>
<td>3.09</td>
<td>2.93</td>
</tr>
</tbody>
</table>

The majority of the sample was female (59.1%) and were predominantly in-state residents (88.8%). Female (55.6%) and in-state (87.9%) students were slightly less represented in the non-retained group than in the retained group (60.1% and 89.0% respectively; p<.01). The students in the sample were primarily white (83.8%), but white students were less represented in the non-retained group (81.4%) than the retained group (84.4%; p<.01). Asian (4.8%), Black/African-American (6.8%), and Hispanic (1.7%) students were more represented in the non-retained group than the retained group (4.2%, 5.3%, 1.5% respectively; p<.01).

Table 2: Academics

<table>
<thead>
<tr>
<th></th>
<th>All Students</th>
<th>Retained Students (6 Years)</th>
<th>Non-Retained Students (6 Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Probation 1st Fall</td>
<td>0.08</td>
<td>0.04</td>
<td>0.23</td>
</tr>
<tr>
<td>Academic Probation Ever</td>
<td>0.14</td>
<td>0.07</td>
<td>0.39</td>
</tr>
<tr>
<td>Term GPA 1st Fall</td>
<td>2.97</td>
<td>3.10</td>
<td>2.48</td>
</tr>
<tr>
<td>Term GPA 1st Spring</td>
<td>3.01</td>
<td>3.14</td>
<td>2.45</td>
</tr>
<tr>
<td>Cum GPA (last)</td>
<td>3.08</td>
<td>3.26</td>
<td>2.35</td>
</tr>
<tr>
<td>Dean's List Ever</td>
<td>0.59</td>
<td>0.69</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Table 2 shows the collegiate academic performance for the entire sample and for the retained and non-retained groups. Students who were not retained had higher rates of academic probation in the first fall term and throughout their academic career compared to retained students (p<.01). Students who were not retained earned lower grades in the first year as well as a cumulative GPA than retained students (p<.01). In looking at non-resident students only, the difference in grades earned between retained and non-retained was smaller for both the first year and cumulative GPAs (2.73 for non-retained and 3.13 for retained for first year GPA, p<.01; 2.66
for non-retained and 3.32 for retained for cumulative GPA, p<.01). Students who retained had a higher percentage of students make the Dean’s list at least one semester than non-retained students (p<.01).

Table 3 shows the rates of students receiving different types of financial aid. In the first year of enrollment, retained and non-retained students had comparable rates of receiving merit-based scholarships (p<.01). In the second year though, non-retained students had a considerably lower rate of receiving merit-based aid than retained students (p<.01). Non-retained students had higher rates of students receiving Need-Based financial aid and Pell Grants than retained students (P<.01).

Table 3: Rates of Receiving Financial Aid

<table>
<thead>
<tr>
<th></th>
<th>All Students</th>
<th>Retained Students (6 Years)</th>
<th>Non-Retained Students (6 Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received Merit-Aid 1st Fall</td>
<td>81.2</td>
<td>82.1</td>
<td>77.6</td>
</tr>
<tr>
<td>Received Merit-Aid 1st Spring</td>
<td>79.2</td>
<td>81.6</td>
<td>70.1</td>
</tr>
<tr>
<td>Received Merit-Aid 2nd Fall</td>
<td>62.4</td>
<td>69.1</td>
<td>37.1</td>
</tr>
<tr>
<td>Received Merit-Aid 2nd Spring</td>
<td>46.8</td>
<td>54.9</td>
<td>16.6</td>
</tr>
<tr>
<td>Received Need Based Aid 1st Fall</td>
<td>14.7</td>
<td>13.1</td>
<td>20.9</td>
</tr>
<tr>
<td>Received Need Based Aid 1st Spring</td>
<td>14.0</td>
<td>12.8</td>
<td>18.6</td>
</tr>
<tr>
<td>Received Non-Need Based Aid 1st Fall</td>
<td>86.9</td>
<td>87.5</td>
<td>84.6</td>
</tr>
<tr>
<td>Received Non-Need Based Aid 1st Spring</td>
<td>84.4</td>
<td>86.6</td>
<td>75.9</td>
</tr>
<tr>
<td>Received Pell Grant 1st Fall</td>
<td>7.5</td>
<td>6.5</td>
<td>10.9</td>
</tr>
<tr>
<td>Received Pell Grant 1st Spring</td>
<td>7.2</td>
<td>6.5</td>
<td>9.7</td>
</tr>
</tbody>
</table>

A total of 2,243 (61.2% of non-retained students) students enrolled in another institution (transfer enrollees). Of the transfer enrollees, 1,598 (71.2%) enrolled in an institution within the same state as the original institution while 1,303 (58.1%) enrolled in an institution within the same state system as the original institution. A total of 1,823 students (81.3% of transfer enrollees) enrolled in an institution as the same state of their residency. In looking at residency status and enrollment in same state of residency, 73.9% (249 students) of non-resident and 82.6% (1574 students) of transfer enrollees enrolled in an institution that is the same as their
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State of residency. In terms of selectivity, 1,640 (73.1% of transfer enrollees) enrolled in an institution whose selectivity was ranked by Barron’s\(^3\). 592 students (36.1% of transfer enrollees that enrolled in a ranked institution) transferred to an institution with the same or better selectivity as the original institution.

Table 4 shows the difference in demographics, financial-aid received, and academic performance of transfer enrollees and those who do not enroll in another institution (transfer non-enrollees). Transfer enrollees had higher rates of being female and having at least one parent with a bachelor degree than transfer non-enrollees (p<.01). Transfer enrollees and transfer non-enrollees had similar ethnicity/race composition and rates of receiving merit and non-need aid. Transfer non-enrollees had comparable (albeit slightly lower) high school academic performance, but performed significantly lower academically in college than transfer enrollees (p<.01). This is evidenced through SAT scores; predicted, high-school, first-year and cumulative GPAs; and rates of earning academic probation. Transfer non-enrollees had higher rates of receiving need-based and Pell grant financial aid than transfer enrollees (p<.01).

Table 4: Differences between transfer enrollees and transfer non-enrollees

<table>
<thead>
<tr>
<th></th>
<th>Transfer Enrollees</th>
<th>Transfer Non-Enrollees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>63.4</td>
<td>43.2</td>
</tr>
<tr>
<td>Received Need Aid 1st Fall</td>
<td>19.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Received Pell 1st Fall</td>
<td>9.5</td>
<td>13.0</td>
</tr>
<tr>
<td>1 Parent w/Bachelor Degree</td>
<td>68.6</td>
<td>55.2</td>
</tr>
<tr>
<td>Academic Probation 1st Fall</td>
<td>19.8</td>
<td>36.2</td>
</tr>
<tr>
<td>Academic Probation Ever</td>
<td>29.9</td>
<td>52.3</td>
</tr>
<tr>
<td>Predicted GPA</td>
<td>2.97</td>
<td>2.88</td>
</tr>
<tr>
<td>Term GPA 1st Fall</td>
<td>2.58</td>
<td>2.32</td>
</tr>
<tr>
<td>Term GPA 1st Spring</td>
<td>2.58</td>
<td>2.26</td>
</tr>
<tr>
<td>Cumulative GPA (last)</td>
<td>2.53</td>
<td>2.06</td>
</tr>
</tbody>
</table>

\(^3\) The vast majority who enrolled in a non-ranked (selectivity) institution enrolled at a 2-year community college or specialized institution (ex: art & design school, school for arts, etc.).
A total of 1,048 (28.6% of non-retained students, 46.7% of transfer enrollees) earned a bachelor degree from another institution within 6 years of first enrollment at original institution (transfer graduates). Of transfer graduates, 733 (69.9%) earned a degree from another institution within the same state of original institution while 670 students (63.9%) earned a degree from another institution within the state system as the original institution. A total of 865 students (82.5% of transfer graduates) graduated from an institution within their same state of residency. In looking at residency status and graduation from an institution within the same state of residency, 76.0% (146 students) of non-resident and 84.0% (719 students) of resident transfer graduates graduated from an institution in the state of their residency. In terms of selectivity, 1,000 (95.4% of transfer graduates) graduated from an institution whose selectivity was ranked by Barron’s. 457 students (45.7% of students who graduated from a ranked school) graduated from an institution with the same or better selectivity as the original institution.

| Table 5: Difference between transfer graduates and transfer non-graduates |
|--------------------------------------------------|------------------|------------------|
| Female                                           | Transfer         | Transfer         |
|                                                  | Graduates        | Non-graduates    |
| 74.2 %                                          | 48.1 %           |
| Received Need Aid 1st Fall                       | 16.2 %           | 22.8 %           |
| Received Pell 1st Fall                           | 7.2 %            | 12.4 %           |
| 1 Parent w/Bachelor Degree                       | 72.8 %           | 59.6 %           |
| Academic Probation 1st Fall                      | 7.0 %            | 29.6 %           |
| Academic Probation Ever                          | 10.5 %           | 49.8 %           |
| Predicted GPA                                    | 3.04             | 2.89             |
| Term GPA 1st Fall                                | 2.96             | 2.29             |
| Term GPA 1st Spring                              | 3.01             | 2.23             |
| Cumulative GPA (last)                            | 3.00             | 2.08             |

Table 5 shows the difference in demographics, financial-aid received, and academic performance of transfer graduates and those who do not graduate from another institution (transfer non-graduates). Transfer graduates had higher rates of being female and having at least one parent with a bachelor degree than transfer non-enrollees (p<.01). Transfer graduates and
transfer non-graduates had similar ethnicity/race composition and rates of receiving merit and non-need aid. Transfer non-graduates performed academically lower in both high school as well as college than transfer enrollees (p<.01). This is evidenced through SAT scores; predicted, high-school, first-year and cumulative GPAs; and rates of earning academic probation. Transfer non-enrollees had higher rates of receiving need-based and Pell grant financial aid than transfer enrollees (p<.01).

In order to more fully examine the relationship between non-retained students and contributing factors leading to them enrolling in and graduating from another institution, a binary logistic regression were developed. For the binary logistic regression analysis, transfer graduate was used as the dependent variable. Binary logistic regression was chosen due to the dependent variable being binary (Yes, student graduated with a bachelor degree from another institution/No, student did not graduate with a bachelor degree from another institution) and is a model that can appropriately handle binary dependent variables. The following independent variables were used in the binary logistic regression

- Residency status (in-state/out-of-state)
- Gender
- Final cumulative GPA
- First fall term GPA
- Earned academic probation (ever)
- If at least 1 parent earned a bachelors or graduate degree
- Graduated from institution with same or better selectivity than original institution

4 The full list of independent variables from methods section of the paper were originally included in the full model but were removed from the final model after showing statistically insignificant or collinearity with other independent variables. Some specific variables removed include race/ethnicity, receipt of merit-based financial aid, receipt of non-need financial aid, and receipt of Pell Grants.
In the correlation table between the independent variables, no strong relationships between variables were revealed. In the classification table marking correct and incorrect estimates for the null model (with only the constant present in the model), it predicts students not graduating from another institution (the most frequent category of dependent variable) at 81.1%. While this overall percent correctly predicted from the null model is acceptable, it must be noted however that just blindly estimating for the most frequently category (non-probation status) for all cases yields at a 71.4% rate. This implies that graduation status can be differentiated on the basis of a student’s gender, in-state/out-state residency status, cumulative GPA, first fall GPA, if they ever earned probation, parents’ educational attainment, and receiving need-based financial aid for these data.

The Cox-Snell $R^2$ and Nagelkerke $R^2$ are attempts to provide a logistic analogy to $R^2$ in OLS regression. The Nagelkerke measure adapts the Cox-Snell measure so that it varies from 0 to 1, as does $R^2$ in OLS. The pseudo $R^2$ produced by both measures provide good explanations in the variance of who graduates after transferring. The Nagelkerke $R^2$ is .428, indicating the model explains 42.8% of the variance in transfer graduates by the coefficients in the model.

<table>
<thead>
<tr>
<th>Model Summary</th>
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<tbody>
<tr>
<td>Step</td>
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<td>1</td>
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</tbody>
</table>

The Hosmer and Lemeshow Goodness-of-Fit Test divides subjects into deciles based on predicted probabilities, and then computes a chi-square from observed and expected frequencies (Hosmer & Lemeshow, 2000). The p-value = .383 here indicates that the logistic model is a good fit (If the Hosmer and Lemeshow Goodness-of-Fit Test is .05 or less, we would reject the null hypothesis that there is no difference between the observed and predicted values of the dependent variable – student graduated from another institution after transferring). As the p-
value is greater than .05, we fail to reject the null hypothesis that there is no difference, implying that model’s estimates fit the data at acceptable levels.

Table 6 shows the variables in the equation and the results of the model. It shows the coefficients (B), their standard errors, the Wald-Chi-Square statistic, associated p-values, and odds ratio (Exp (B)). The Wald statistic and the corresponding significance level test the significance of each of the covariates in the model (Savin & Würtz, 2001). The ratio of the logistic coefficient B to its standard error, squared, equals the Wald statistic (Savin & Würtz, 2001). If the Wald statistic is significant (i.e. less than .05) then the parameter is significant in the model. Results show that all of the independent variables are significant in this model.

Table 6: Variables in the Binary Logistic Equation

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-State Resident</td>
<td>-0.744</td>
<td>0.124</td>
<td>36.187</td>
<td>1</td>
<td>0.000</td>
<td>0.475</td>
</tr>
<tr>
<td>Female</td>
<td>0.788</td>
<td>0.097</td>
<td>66.682</td>
<td>1</td>
<td>0.000</td>
<td>2.199</td>
</tr>
<tr>
<td>Cumulative GPA</td>
<td>0.919</td>
<td>0.096</td>
<td>91.113</td>
<td>1</td>
<td>0.000</td>
<td>2.508</td>
</tr>
<tr>
<td>Term GPA - 1st Fall</td>
<td>-0.451</td>
<td>0.084</td>
<td>28.976</td>
<td>1</td>
<td>0.000</td>
<td>0.637</td>
</tr>
<tr>
<td>Earned Probation (Ever)</td>
<td>-1.062</td>
<td>0.142</td>
<td>55.936</td>
<td>1</td>
<td>0.000</td>
<td>0.346</td>
</tr>
<tr>
<td>Parents Education &gt;= Bachelor</td>
<td>0.365</td>
<td>0.098</td>
<td>13.886</td>
<td>1</td>
<td>0.000</td>
<td>1.440</td>
</tr>
<tr>
<td>Selectivity of Transfer School &gt;=</td>
<td>2.068</td>
<td>0.119</td>
<td>303.969</td>
<td>1</td>
<td>0.000</td>
<td>7.905</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.279</td>
<td>0.245</td>
<td>86.495</td>
<td>1</td>
<td>0.000</td>
<td>0.102</td>
</tr>
</tbody>
</table>

The Exp (B) is the label for the odds ratio of the row independent with the dependent (transfer graduate). It is the predicted change in odds for a one unit increase in the corresponding independent variable. Odds ratios less than 1.0 correspond to decreases and odds ratios more than 1.0 to increases in odds. Odds ratios close to 1.0 indicate that unit changes in that independent variable do not affect the dependent variable. In this model, for every one unit increase in first fall GPA, the odds of graduating from another institution after transferring increase by a factor of .637 (actually decreasing in probability). For every one unit increase in
cumulative GPA, the odds of graduating from another institution after transferring increase by a factor of 2.508 (actually increasing in probability).

**Discussion**

Findings from this study point to six main conclusions. First, based on all 17,416 students in the study, there are significant differences in academic performance and rates of receiving financial aid between retained and non-retained students. In looking at the cumulative GPA, 1st Fall GPA, 1st Spring GPA, and rates of earning probation, the non-retained students performed significantly lower academically than the retained students. This is in-line with previous research findings that the higher a student’s GPA, the higher rate of them persisting (Ishtani & DesJardins, 2002).

When looking at the high school academic performance of these 2 groups (academic preparation; HS GPA, SAT scores, predicted GPA) the non-retained students were less academic prepared than the retained students. This fits with other studies examining academic preparedness and retention which show that students who are better prepared are retained at higher levels (Tinto, 1993; Cabrera, Nora, & Castaneda, 1993; Tinto 1997; Adelman, 1999). But it should be noted that the difference in academic preparation between the retained and non-retained was much smaller than the difference between the two group’s collegiate academic performances. This perhaps is suggesting that academic performance in college, rather than academic preparation is a stronger indicator of whether a student is retained or not.

With financial aid received, the non-retained students had significantly lower rates of receiving merit and non-need based financial aid but higher rates of receiving Pell Grants and need-based aid than retained students. This differs from Adelman’s (1999) findings that this no
difference in retention and persistence rates between students from lower and upper socioeconomic classes. Adleman’s (1999) findings are from a national data set while this study sample is drawn from a single institution. This study’s sample in general (regardless if student was retained or not-retained) had a small percentage of students receiving Pell grants (7.5%) and need-based aid (14.7%) to begin with. This is possibly suggesting that the sample is not representative on a larger scale (state and national) due to the small size of the Pell grant and need-based recipients in the sample and their higher rates of not being retained.

Second, the majority of non-retained students continued to persist in higher education. Over 61% of the non-retained students enrolled in another institution (transfer enrollees). Third, when a student continues to persist in higher education after leaving the institution, they will do so close to home. Of the transfer enrollees, over 82% of the students enrolled in an institution in the same state of their residency. In looking specifically at non-resident transfer enrollees, roughly 74% enrolled in an institution in the same state of their residency. This possibly suggests that cost associated with the original institution is a reason why students a non-resident student dropouts. With non-resident students, roughly three out of four students who persisted enrolled in an institution back in their home state. This would fit with previous research (Leslie & Brinkman, 1987; Heller 1999) that non-resident students cost sensitive.

Fourth, roughly half (46.7%) of the non-retained students who enroll in another institution (transfer enrollees) will graduate with a bachelors degree within 6 years of initial bachelor degree enrollment (transfer graduates). Of these transfer graduates, roughly 83% of the students earned a degree from an institution within the same state as their residency – comparable rates to students enrolling in an institution within the same state as their residency.
Fifth, students who transfer to better or same admissions selectivity of institution as their original institution are more successful (graduate) than those who transfer to less selective schools. In looking at the admissions selectivity of the institution the transfer student graduated from, just under half (45.7%) graduated from an institution that had better or same admissions selectivity rating. This is up from the rate of non-retained students enrolling (transfer enrollees) in an institution that had the same or better admissions selectivity rating (36.1%) the original institution. The results of the binary logistic regression also confirm this finding by showing that enrolling in an institution that had the same or better admissions selectivity, the odds of graduating increased by a factor of 7.905.

Sixth, findings from the binary logistic regression analysis provide evidence of factors that increase the likelihood of a student graduating after leaving the original institution. Being female, an out-of-state resident, not earning academic probation, having at least 1 parent with a bachelor degree, and transferring to an institution with the same or better admission selectivity are significant factors that increase the likelihood a student graduates with bachelors from another institution after leaving the original institution. Also, the higher the cumulative GPA of a student at the original institution, the odds of that student graduating from another institution increases.

In general, academic performance at the original institution is indicative of the success the student experiences at their transfer school. Students with higher cumulative GPAs and did not earn academic probation had increased odds of being successful (graduating) from the transfer institution. Females had increased odds of graduating from another institution after dropping out than males. These two results are in-line with national research findings that
females earn higher grades and earn more degrees than males (National Science Foundation, 1996; National Science Foundation, 2007).

Parental education also played a significant factor in a student’s success after transferring. The transmission of importance of graduating from college from the parent may have influenced the desire of student to complete a bachelor degree. This would be in-line with Bourdieu’s (1977) concept of “habitus”. “Habitus” is embedded set of values, beliefs, and attitudes an individual uses to make choices in their life and is derived from an individual’s family, friends, and environment. All interactions and choices are filtered through one’s “habitus”, thus all actions are based on an individual values and interpretation of what one “sees” (Bourdieu, 1977). A student that has a parent with a bachelor degree, they would likely be in an environment where the student can “see” and experience the opportunities available with a bachelor degree and will have the aspiration to earn the bachelor degree for themselves.

**Implications**

There are many contributions that come from examining what happens to students after they leave an institution. Understanding if and where a non-retained student persists can aid the original institution in designing their financial aid policy, curriculum, and student activities. The results from this study showed that a majority (62.1%) of the non-retained students did enroll in another institution after leaving the original institution. This indicates that a majority of these dropouts were still looking to earn a college degree, even after they left the original institution.

In looking at the academic performance of the transfer graduates, the mean cumulative GPA was 3.00, indicating that these students, for the most part, were academically successful at the original institution but left for other reasons. One reason this possible suggests is the student’s choice of major. The original institution has a number of majors that are restrictive
(limited space due to high demand with additional academic entrance criteria) and require a student to apply before being fully accepted into a major. A student who wanted to earn a particular degree which happens to be restricted access could have left the institution to pursue this degree if they were not able to be accepted into the program at the original institution. This suggests that the original institution could revisit institutional policies restricting access to particular majors and investigate whether some changes could retain more students who would likely leave and be successful (graduate) at another institution.

Another possible reason why transfer graduates left that they felt the cost at the original institution was not worth the investment. Roughly 84 percent of non-resident transfer graduates returned to their home state and roughly half of all transfer graduates graduated from institutions with the same or better admissions selectivity. This suggests possibly that non-resident students felt the investment in attending the original institution (human capital) may not have been worth what they thought initially and so returned to home state, where in-state rates could be cheaper. Most students who enrolled in a lower selective admissions institution enrolled in a two-year, community college. Students who received financial aid may have done so because community college typically has reduced tuitions and this investment may better suit them.

The descriptives statistics showed statically differing rates of receiving financial aid between both transfer non-enrollees and transfer enrollees and transfer non-graduates and transfer graduates. However, in the binary logistic regression type of financial aid received fell out of the model as being a significant influencer of where a student graduates from another institution after dropping out. Maybe it is not necessarily the type of aid received, but the dollar amount received. Previous research (Morgan, 1983; Leslie and Brinkman, 1987; Heller, 1999) showed how increases in tuition do impact the enrollment of students, in particularly non-
resident students. An increase of tuition may provide reason to enroll at another institution to lower costs. The loss of revenues will from losing students, particularly non-resident students and higher tuition dollars, will make many senior administers to examine and potential modify tuition and institutional financial aid policies.

Lastly, understanding if and where non-retained students persist in higher education also provides an opportunity for the original institution to expand the definition of how “successful” it has been in helping students persist and graduate; an institution can combine its own graduates with the enrollees and graduates of other institutions who originally started at the institution. This is particular helpful in thinking of retention and persistence within a state system of higher education. In looking at the transfer enrollees and transfer graduates, the majority of students enrolled (58.1%) and graduated (63.9%) respectively from another institution who is a member of the same state system as the original institution. This provides the original institution another discussion point in working with the state legislature on accountability measures – that if a student is not successful here (at the original institution), they can transfer (and most do) to another system school and will be successful there.

Future Research

An investigation of major choice in reference to transfers needs to occur. We do not know if someone opted to transfer to pursue a major they could not pursue at the original institution. A student’s major was tracked through the institutional data, but was only available at the time of graduation (not for each term of enrollment) from the National Student Clearinghouse data. Expanding this study to examine the last major at time of dropout is warranted.

Another step to take is to expand the number of students and institutions used in the sample. We have began to expand the research to encompass an entire state system containing
research & regional universities, state universities, state colleges, and state two year institutions. Institutional differentiation in the sample will allow greater analysis on institutional and individual (student) influences on persistence in higher education after a student drops out.

Additional examination of costs of attendance is needed. For financial aid received, there were statistical differences found in the descriptive statistics, but were not statically significant in the binary logistic regression. This suggests that it might be the dollar amount of aid and not the type of aid that influences students persisting and graduating. The high rates of non-resident students enrolling and graduating from institutions from their original state of residency also suggest that price sensitivity to non-resident tuition might be a factor in students leaving. In general, these students performed well academically while at original institution but left to persist in an institution within their home state. Tuition costs and increases over time were not examined in the initial study.

Expansion of the variables used in the analysis to include additional student engagement variables is called for. The only student engagement variables used in the analysis were if student lived on campus or joined a Greek organization. The literature suggests that highly involved students for a tighter connection campus and are more likely to be retained and persist (Astin, 1977; Astin 1993). Additional variables on student engagement could be included to explore this further.

Limitations

The sample of this study was drawn from a single institution. Using one institution with a relatively selective admissions process could produce a sample appearing moderately homogenous. A larger diverse institution sample may produce better explanatory results. In addition, this institution resides in a state offering a merit based scholarship to attend college
based of high school grade point averages. This could have enticed resident students to remain in-state. Articulation agreements with neighboring states were not investigated.

The data from the National Student Clearinghouse does not include all students who enroll in a post secondary institution within the United States. While it covers most institutions and students, there are a few instances where the National Student Clearinghouse did not pick up enrollment of students in another institution after they left the original institution. As there is no national unit record data system at the student level available, this is the best option to track students enrolled in other institutions but it must be noted that the data is not complete.

Lastly, this analysis worked under the assumption that students from each cohort had similar experiences (environment) while at the original institution. The years in this study (1999-2007) where a time of great expansion of the use of electronic and internet technologies in the classroom which were not accounted for in this study. This includes and is not limited to the growth in the use of email, chat rooms, internet posting of syllabuses and assignments, internet classroom management tools such as WebCT and Blackboard. Also not accounted for were the changes in pedagogies within disciplines.
References


