A Multi-Institution Analysis of the Effects of Campus-Based Financial Aid
On Student Persistence at Public Four-Year Institutions

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Abstract

This paper examines the effects of campus-based aid on student persistence. Much of the research to date on student persistence does not consider the effects of financial aid on student departure. Most of the studies that have considered the effects of financial aid on persistence have only had access to the amounts of state and federal financial aid awarded to students. These studies typically lack data elements for campus-based financial aid awards. As a result, institutional and public policy makers know little about the effects of campus-based aid on student persistence and graduation. Using an integrated state database for public four-year institutions, this study examines the unique effects of campus-based financial aid on student departure.
In the last four decades, a large body of research has emerged on factors associated with student persistence. Much of this research has focused on the development and testing of theoretical and conceptual models of student departure. Student persistence models developed by Tinto (1975, 1993) and Bean (1980) and tested by Pascarella and Terenzini (1977, 1979, 1980a, 1980b, 1980c, 1983), Cabrera, Nora, and Castañeda (1993), and Bean et al. (1985a, 1985b) dominate this body of literature. More recently, Braxton and colleagues (1997, 2000, 2004) have devoted considerable effort to testing the propositions of the Tinto model and to looking at alternative models of student persistence. In most instances, these studies focused primarily on student goals and student interactions with the collegiate environment.

In the last two decades, scholars such as St. John and colleagues (1989, 1990a, 1990b, 1994, 1995), Cabrera et al. (1993), and Somers et al. (1997) have examined the effects of financial aid on student persistence. These studies look at the effects of state and federal grants, loans, and college work-study awards on student departure behavior.

There is good reason to examine the effects of institutional financial aid. Martin (2004) provides a thoughtful analysis and critique of the uses and misuses of campus-based financial aid on external measures of institutional quality, of total undergraduate enrollment, and of the fiscal health of colleges and universities. A number of other studies have considered the effects of financial aid on enrollment decisions (see, e.g., DesJardins, Ahlburg, & McCall, 1999; Hossler, Hu, & Schmit, 1999; Hu & Hossler, 2000; McPherson, Schapiro, & Winston, 1993). Singell and colleagues (2002a, 2002b, 2002c) have also published a number of studies that focus exclusively on the effects of
institutional aid on student enrollment behaviors, though most of this work does not look at persistence as an outcome variable.

Little is known, therefore, about the effects of institutional aid on student persistence. However, there are strong incentives for institutional and public policy makers to better understand the effects of campus-based aid on student persistence. Institutions invested more than $24 billion in campus-based aid in 2004-05 (College Board, 2005). Moreover, state and federal policy makers are demonstrating a growing interest in student persistence. Increasingly, public policy makers are advocating the use of student persistence and graduation rates as indicators of institutional quality. In addition, 20 percent of the formula for calculating the rankings published in *U.S. News and World Report: America’s Best Colleges* is based on measures of student persistence.

It is evident that there are many reasons to be interested in the impact of campus-based financial aid on student departure behaviors. It behooves institutions not only to understand the effects of their aid expenditures on the matriculation decisions of students but also to examine the effects of campus aid on student persistence.

*Institutional Aid and Student Persistence*

A recent study on the correlates of graduation rates among low-income students concluded that elite private institutions were better choices for low-income students because students were more likely to persist in them (Mortenson, 2000). Interestingly, however, that study did not consider campus-based aid variables in its analysis. Becker (personal communication, February, 2006) has noted that because elite private colleges provide more generous financial aid packages than other institutions, it is impossible to
assess accurately the determinants of persistence at the institutional level without controlling for institutional aid.

To date, there are few high quality studies of the effects of institutional financial aid on student persistence. DesJardins, Ahlburg, and McCall (2002) included campus-based financial aid as one measure in their examination of the effects. Using data from the University of Minnesota, they found that campus-based scholarships and grants increased the likelihood of student persistence. One of the reasons there are few empirical studies of this topic is because there are few data sets that include a comprehensive set of campus-based aid data. Singell, for example, has been able to secure data from three public flagship institutions in different states for analytic purposes. In these cases, however, it is more difficult to isolate the effects of institutional aid because state aid programs vary. DesJardins, in some of his work on college choice and student persistence, has used single institution data from the Universities of Iowa and Minnesota. Many state student databases only include state and federal aid information. Thus, despite previous research, and in part because of the structure and availability of databases, an important gap remains in our understanding of how institutional aid affects student persistence.

In this study we employ constructs from the “nexus model of college choice” (St. John, Paulsen, & Carter, 2005) to identify predictors of college persistence from students’ first year to their sophomore year. More specifically, we seek to determine the unique effects of campus-based financial aid on student persistence.

The nexus model posits that the decision to go to college, the selection of a specific college, the choice of major, and the decision to persist can be best understood as
a series of interrelated decisions. The model proposes that analyses of persistence should include measures of student background characteristics, the educational aspirations of high school students, high school academic preparation and involvement, college grade point average (GPA), major choice, college engagement, and financial aid. These variables are commonly used in most studies of student persistence (Bettinger, 2004; DesJardins, Ahlburg, & McCall, 2002; Cabrera, Nora, & Castañeda, 1993; Pascarella & Terenzini, 1983; Paulsen & St. John, 2002; St. John, Paulsen, & Carter, 2005). All key control variables were included in the models where possible. In the case of variables with little variation or for the sake or parsimony, not all of the variables were included in the model. Student major, for example, was omitted. Additionally, because we lacked measures of student engagement once students were enrolled in college, we have excluded that component from this discussion as well.

Methodology

Sample Characteristics

This study focused on the 2001 cohort of first-time, full-time students (n=16,256) enrolled in three doctorate-granting, public, Midwestern institutions. Student characteristics were similar across all three institutions. As might be expected at three moderately selective universities, students were academically above average, with a disproportionate number coming from the top quartile of their high school class (just over 44%) and most earning As and Bs in their first year (72.6%). The sample was predominantly White (87.3%). Furthermore, 36.2 percent of students came from families with reported incomes above $70,000. The preponderance of students (87.6%) lived on
campus, most were state residents (about 69%), and 70 percent received some form of financial aid (see Table A.2 in Appendix). Of the students who received financial aid, 3,611 (or just over 31%) received some form of need-based aid (see Table A.3 for a full description of student characteristics for aid recipients and nonrecipients).

**Methods**

Logistic regression was used by the researchers because the outcome of interest was dichotomous, i.e., whether a student persisted from the 2001-2002 to the 2002-2003 academic year. Regression analysis enabled us to control for factors known from previous research and theory to affect student persistence—such as student background, academic preparation, college enrollment characteristics, and financial aid—to isolate and explore causal relationships among the variables of interest.

Our research has followed the “workable models approach” (St. John, 1992), which advocates using existing admission and institutional records for policy research. It builds on theory and research from sociology, economics, and higher education. Two key strengths of this model are in dealing with missing data and in controlling for student characteristics.

Like most research approaches, the workable models approach requires weighing tradeoffs in deciding whether to incorporate data via design set coding. Use of design set coding to preserve missing data enables the institutional researcher to preserve cases, preventing loss of information (Hosmer & Lemeshow, 2000). However, missing data are not necessarily interpretable outside known contexts. For example, income or high school rank data may be missing for different reasons in different institutional contexts.
Therefore, caution must be used when incorporating missing data as categorical variables because interpretation may be more difficult. Nonetheless, using institutional data generated from transactional systems allows for proxy measurement and control of key student characteristics, such as background and academic preparation. The process of model building and variable inclusion is addressed next.

*Logical Models*

Four conceptual categories comprised the model: (a) financial aid and college costs, (b) student background, (c) academic preparation, and (d) college enrollment characteristics. From this foundation a combination of parsimony and pragmatism guided the inclusion of specific variables. We weighed a variable’s adequacy as a proxy measurement for the construct of interest along with the availability of data. For example, in deciding whether to use SAT data or high school rank data as our proxy for academic preparation, we determined that more data were available for high school rank. Though one might argue SAT score provides a better criterion of academic preparation than high school rank, we weighed the benefits of having information for more students against the costs of not using the more standardized measure. Table 1, below, lists under each category the specific variable employed in our final model.
Table 1. Variables Included in the Logical Model

<table>
<thead>
<tr>
<th>Financial Aid (Block One)</th>
<th>Student Background (Block Two)</th>
<th>Academic Preparation (Block Three)</th>
<th>College Enrollment (Block Four)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Institutional aid</td>
<td>• Gender</td>
<td>• High school rank</td>
<td>• College GPA</td>
</tr>
<tr>
<td>• Grant aid</td>
<td>• Race &amp; ethnicity</td>
<td></td>
<td>• Living on or off campus</td>
</tr>
<tr>
<td>• Loans</td>
<td>• Family income(^1)</td>
<td></td>
<td>• Twenty-first Century Scholar(^2)</td>
</tr>
<tr>
<td>• Other packages</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Unmet need</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In initial testing of the logical models, each category of variables was entered into the regression as a block to determine whether the category itself significantly contributed to the overall explanatory power of the model. Based on chi-square tests of statistical significance, we determined that each block improved our model at the 0.05 level of significance. These findings, considered together with findings from previous research, suggest that our logical model was appropriate for testing the effects of institutional aid on student persistence.

Before describing data sources for this study, some further explanation of how variables were constructed is warranted, specifically for institutional aid. From the available data, we were unable to determine whether aid awarded to students was based on merit, need, or some combination of the two. To control for need-based aid to the extent possible, we created a categorical variable as a proxy measure based on students’

\(^1\) Family income was included as a categorical variable because data were only available for students who applied for aid. Some research (e.g., King, 2006) suggests that low-income students who are eligible do not apply for aid. In this case, we took a conservative approach in estimating the effects of aid by including cases for whom income data were not available.

\(^2\) Established in 1990 by the Indiana State Legislature, the Twenty-first Century Scholars program is intended to enhance aspirations and preparation in high school and then to provide last-dollar grant support to students who enroll in a postsecondary institution in Indiana, public or private.
receipt of state or federal need-based aid (such as Pell Grants). Future work will benefit from being able to differentiate institutional aid awarded for need and merit.

Because the amount of unmet financial need may play an important role in student persistence we included it in our model. Unmet need was determined from institutional data submitted to the Indiana Department of Education and made available via the state’s Integrated Postsecondary Education Data System (IPEDS). Unmet need is the difference between total costs of attendance and total aid received. Costs were calculated for full-time, first-time, degree-seeking students, including those who were residents and nonresidents and who lived on or off campus (not with their family). Total costs included tuition, room, board, fees, books, supplies, and any other campus expenses.

Data Sources

Our data came from the Indiana Commission for Higher Education (ICHE), whose data derive from the student information systems (SIS) of all public universities, colleges, and community colleges in Indiana. SIS data are collected at the student level, usually for enrollment related transactions, for example, registering for courses, assigning student grades, or awarding financial aid. Institutional cost data for 2001-2002 came from IPEDS.
Findings and Implications

Descriptive Findings

Over 85 percent of students persisted from the 2001-2002 to the 2002-2003 academic year. A similarly high proportion of persisters received some form of financial aid (86.1%) including institutional aid, while 35.1 percent of students received institutional aid (see Tables A.2 and A.3, in the Appendix). A higher percentage of those who received institutional aid persisted than students who did not (88.2% and 83.8% respectively). A slightly lower percentage of students who received need-based aid persisted than students who did not (84.7% versus 85.6%). Students from families with incomes over $70,000 persisted at the highest rate (86.4%), though students from families earning between $30,000 and $70,000 persisted at a similarly high rate of 86.1 percent. Students from families whose income was not reported persisted at a rate of 84.6 percent, whereas students from the lowest-income families persisted at the lowest rate of all income groups (82.3%). The average institutional aid award was just over $1,600, though the awards ranged as high as nearly $30,000. The average amount of loans among all aid recipients was just over $3,700.

Table 2. Average Aid Amounts by Type Among All Aid Recipients

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional Gift Aid</td>
<td>$ 0</td>
<td>$29,756.00</td>
<td>$1,643.98</td>
</tr>
<tr>
<td>Grants</td>
<td>$ 0</td>
<td>$17,548.00</td>
<td>$1,272.44</td>
</tr>
<tr>
<td>Loans</td>
<td>$ 0</td>
<td>$30,667.00</td>
<td>$3,775.23</td>
</tr>
<tr>
<td>Other Gift Aid</td>
<td>$ 0</td>
<td>$26,866.00</td>
<td>$781.87</td>
</tr>
<tr>
<td>Unmet Need</td>
<td>(19,113.00)</td>
<td>-</td>
<td>(796.39)</td>
</tr>
</tbody>
</table>

N=11,489
When disaggregated by race and ethnicity (Figure 1, below) we find that the greatest proportion\(^3\) of need-based aid recipients were African Americans (53%), followed by Hispanics (35%), Native Americans and Other Race (25%), Asian American and Pacific Islander (23%), Whites (21%), and finally Race Missing (14%). Similarly, 57 percent of African Americans received some form of institutional aid, followed by Race missing (47%), Hispanics (45%), Native American and Other Race (45%), Asian American and Pacific Islanders (37%), and Whites (33%). It is important to note again that institutional aid could not be disaggregated by merit versus need. Need-based aid discussed here includes only that received from state or federal sources.

![Figure 1. Receipt of Need-Based and Institutional Aid by Race and Ethnicity](image)

Disaggregated by gender and controlling for numbers of men and women in the population, we find that a greater proportion of women than men received

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\(^3\) By proportion, we mean the ratio of a given category of students relative to their overall number in the student population. For example, of the 684 African Americans in the sample, 363 (53%) received need-based aid of some form. This was the method used to calculate all proportions discussed in this section of the paper.
noninstitutional need-based aid (25% versus 20%) (see Figure 2, below). In addition, a higher proportion of women than men received institutional aid.

![Figure 2. Receipt of Need-Based and Institutional Aid by Gender](image)

Exploration of aid patterns by income groups revealed that the highest proportion of both need-based and institutional aid recipients were students from the lowest-income (below $30,000) families. Over 50 percent of lowest-income students received institutional aid while nearly 80 percent received need-based aid. Nearly equal proportions of middle-income students received need-based (52.5%) and institution-based (47.2%) aid.
It is instructive to explore in more detail the degrees to which income groups were over- or under-represented in terms of receipt of need-based and institutional aid. For example, though the highest proportion of institutional aid recipients was from high-income families (32%), this income group also represented a greater percentage of the population than any other income group (36%). Figure 4 represents the proportion of each income group by total population and total number of institutional aid recipients. The differential proportions show that the highest-income students and students whose families had no reported income were under-represented among institutional aid recipients. Students from lowest- and middle-income families were over-represented by 4 percent and 8 percent respectively.
Inferential Findings

Findings suggest that institutional aid has a significant and positive effect on the likelihood of student persistence (Tables A.6 and A.7). A $1,000 increase in institutional aid increased the likelihood of persistence by 4 percent, holding all else constant. Institutional aid was positively related to persistence both when controlling for and not controlling for student background, academic preparation, and college enrollment characteristics, though the effect size decreased slightly. Grant aid and loans were also positively associated with persistence. A $1,000 increase in grant aid increased likelihood of persistence by just over 5 percent, while a similar increase in loans increased likelihood of persistence by 2.4 percent, controlling for all else. Curiously, perhaps, a $1,000 increase in unmet need was positively associated with persistence, increasing the likelihood by 2.5 percent. On closer look we noted a high positive correlation between unmet need and student loans. This could indicate that at moderately selective institutions
with a disproportionate number of high-income students, student willingness to incur debt was related to overall commitment to the educational goal.

Several student background characteristics were also found to be significantly related to persistence. Men were more likely than women to persist. Students who identified as Native American or Other Race were less likely to persist than White students. All income groups—missing, low, and middle—were less likely to persist than the highest-income group.

Findings for the effects of academic preparation at first glance may appear counterintuitive. When institutional aid was excluded from the model, students in the third quartile of their high school class were more likely to persist than students in the top quartile. The inclusion of institutional aid increased the statistical significance of the coefficient for the effect of being ranked in the third quartile of high school. In addition, having a missing high school rank became marginally significant at the 0.1 level. These results may be an artifact of differences in reporting data at the institutions included in the study. For example, one institution had a greater proportion of missing data for high school rank than other institutions, even though institutional selectivity and student academic characteristics were similar across institutions.

Finally, both college GPA and living on campus were positively associated with persistence. A one-point increase in overall grade average resulted in an over 200 percent increase in the likelihood of persistence, controlling for all else. Living on campus rather than off campus increased the likelihood of persistence by just over 18 percent, *ceteris paribus.*
Effects of Institutional Aid on Grade Point Average

Further analysis into the effects of institutional aid on student persistence focused on the relationship between receipt of the aid and a student’s cumulative GPA at the end of the 2001 academic year. Most institutions have formal policies establishing minimum GPA requirements for continued enrollment and good academic standing.

In our study, institutional aid had a robust, but overall modest effect on cumulative GPA. Controlling for all else, a $1,000 increase in institutional aid resulted in a 0.04 increase in GPA (Table 3, below). Although statistically significant and positively related, the effect of income on GPA was almost nonexistent. Curiously, unmet financial need was also positively associated with an increase in GPA. As expected, ranking relatively higher in high school was associated with overall higher GPA. Being male, African American, Hispanic, or Native American and Other were each associated negatively with GPA, holding all else constant.
Table 3. Effects of Institutional Aid on Cumulative Grade Point Average, 2001

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Institutional Gift Aid</td>
<td>0.037</td>
<td>0.002</td>
<td>****</td>
</tr>
<tr>
<td>Total Grants</td>
<td>-0.003</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Total Loans</td>
<td>0.000</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Other Aid Packages</td>
<td>0.062</td>
<td>0.004</td>
<td>****</td>
</tr>
<tr>
<td>Work-Study*</td>
<td>-0.034</td>
<td>0.027</td>
<td></td>
</tr>
<tr>
<td>Unmet Need</td>
<td>0.015</td>
<td>0.001</td>
<td>****</td>
</tr>
<tr>
<td>Males Compared to Females &amp; Missing</td>
<td>-0.174</td>
<td>0.011</td>
<td>****</td>
</tr>
<tr>
<td>Compared to White Students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American*</td>
<td>-0.331</td>
<td>0.028</td>
<td>****</td>
</tr>
<tr>
<td>Hispanic*</td>
<td>-0.203</td>
<td>0.041</td>
<td>****</td>
</tr>
<tr>
<td>Asian American, Pacific Islander*</td>
<td>-0.042</td>
<td>0.028</td>
<td>****</td>
</tr>
<tr>
<td>Native American, Other*</td>
<td>-0.187</td>
<td>0.090</td>
<td>**</td>
</tr>
<tr>
<td>Race Missing*</td>
<td>0.038</td>
<td>0.034</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>0.001</td>
<td>0.000</td>
<td>****</td>
</tr>
<tr>
<td>Compared to Top Quartile High School Rank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Quartile*</td>
<td>-0.399</td>
<td>0.013</td>
<td>****</td>
</tr>
<tr>
<td>Third Quartile*</td>
<td>-0.611</td>
<td>0.021</td>
<td>****</td>
</tr>
<tr>
<td>Lowest Quartile*</td>
<td>-0.569</td>
<td>0.066</td>
<td>****</td>
</tr>
<tr>
<td>Missing</td>
<td>-0.214</td>
<td>0.016</td>
<td>****</td>
</tr>
<tr>
<td>On- Compared to Off-Campus Housing*</td>
<td>0.041</td>
<td>0.017</td>
<td>**</td>
</tr>
<tr>
<td>Twenty-first Century Scholar*</td>
<td>-0.039</td>
<td>0.034</td>
<td></td>
</tr>
</tbody>
</table>

N=16,256  
Durbin-Watson 1.96  
Adjusted R-square 0.171  
F-statistic 177.0  

*Denotes categorical variable  
Aid amounts in units of $1,000  
Outcome: Cumulative GPA, 2001  
****p<0.001, ***p<0.01, **p<0.05, *p<0.10

Relationship Between Institutional Aid and Gender

The statistically significant relationship between gender and likelihood of persistence warranted further investigation. A third model was developed to explore the possible interaction of institutional aid and gender. A cross-product term representing the relationship between being male and receipt of institutional aid was included. When entered as a separate block in the model, the cross-product term improved overall model
fit and was statistically significant. This suggests that the effect of institutional aid was greater for men than for women. Figure 5, below, models the effects of institutional aid on the probability of men and women persisting from one academic year to the next.

Figure 5. Impact of Institutional Aid on Probability of Persistence by Gender

Discussion and Implications

Most of the results of this study are consistent with extant literature on persistence. The effects of campus-based aid are particularly interesting in that they suggest that colleges and universities may be able to improve student persistence rates by awarding financial aid to a greater number of enrolled students. The results also raise the possibility that the average amount of campus aid awarded to students at a campus may help explain campus retention and graduation rates.

The effects of financial aid on student departure decisions may be due to several factors. St. John (2004) has found that financial aid has an indirect effect on the level of
student engagement. He posits that financial aid reduces the need for students to work, thus allowing them more time to be engaged in the collegiate experience. Bean (1980) has hypothesized that financial concerns can be a reason to drop out. Hossler (1984) has suggested that campus-based financial aid can be viewed as a form of “courtship” during the recruitment process, thus strengthening students’ feelings of belongingness and commitment to the institution.

Although adding the amount of campus-based scholarships to our models revealed that campus aid did have a statistically significant effect on persistence, it did not have a large impact on the overall fit of the model. This suggests that while campus-based aid is important, it does not have a dramatic impact on the likelihood that recipients will persist, when controlling for other factors. This may not be surprising.

As we have already noted, we were not able determine whether campus-based aid went to students to meet need or to reward merit. However, in the context of Heller’s (2006) recent observation that more and more campus-based aid is going for merit purposes in public universities, it is possible that campus aid dollars on the campuses included in this study are disproportionately for merit rather than need. Thus, campus-based financial aid may be going disproportionately to students who are more likely to persist overall.

These findings bring us back to the original purpose of this study. As Becker suggested, the higher persistence rates at more elite colleges may, at least in part, be due to the more generous financial aid packages they are able to offer. Our results, however, do not indicate a dramatic effect based solely on differences in institutional aid packages. We hypothesize that higher rates of persistence are not only a function of student
background characteristics, academic success, and institutional aid packages but are also a function of latent student characteristics that are more difficult to measure. Hossler, Schmit, and Vesper (1999) found that some students started planning for postsecondary education and looking at colleges earlier than other students. Professional wisdom among admissions practitioners holds that students who apply earlier are more motivated and more likely to enroll (and these attributes are not perfectly correlated with family education and income). We posit that more selective residential institutions are also more likely to enroll students who have spent more time and effort investigating the colleges and universities they subsequently attend and, thus, are more committed to those institutions. Greater levels of institutional commitment, as Tinto (1975, 1993) suggests, lead to higher rates of persistence.

The differences between the effects of campus-based financial aid on the persistence of men and women are intriguing. At the moment, we cannot offer definitive insights into these results. Hossler et al. (1999) found that women had consulted with a wider range of people and had more sources of support for their educational plan than their male counterparts. Could it be that—in lieu of many other sources of support—financial aid has a more direct effect on the persistence plans for male students? This question is speculative, however, as this area needs more research. The effects of campus-based financial aid and gender on students’ persistence, grades, engagement, and college choice decisions clearly merit further study.
References


### Appendix

Table A.1. Descriptive Characteristics for Student Population

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Count</th>
<th>Col %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Persistence, 2001-2002 to 2002-2003</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonpersistence</td>
<td>2379</td>
<td>14.63</td>
</tr>
<tr>
<td>Persistence</td>
<td>13877</td>
<td>85.37</td>
</tr>
<tr>
<td><strong>Received financial aid</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>4767</td>
<td>29.32</td>
</tr>
<tr>
<td>Yes</td>
<td>11489</td>
<td>70.68</td>
</tr>
<tr>
<td><strong>Tuition category</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonresident, off-campus</td>
<td>302</td>
<td>1.86</td>
</tr>
<tr>
<td>Nonresident, on-campus</td>
<td>4600</td>
<td>28.30</td>
</tr>
<tr>
<td>Resident, off-campus</td>
<td>1721</td>
<td>10.59</td>
</tr>
<tr>
<td>Resident, on-campus</td>
<td>9633</td>
<td>59.26</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>8384</td>
<td>51.57</td>
</tr>
<tr>
<td>Female and missing</td>
<td>7872</td>
<td>48.43</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native American, Other</td>
<td>56</td>
<td>0.34</td>
</tr>
<tr>
<td>Asian American, Pacific Islander</td>
<td>607</td>
<td>3.73</td>
</tr>
<tr>
<td>African American</td>
<td>684</td>
<td>4.21</td>
</tr>
<tr>
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Outcome: Persistence, 2001-2001 to 2002-2003

*Aid amounts in units of $1000*

****p<0.001, ***p<0.01, **p<0.05, *p<0.10
Table A.7. Results from Logistic Regression, Including Institutional Aid, Student Persistence from 2001-2002 to 2002-2003

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Outcome: Persistence, 2001-2001 to 2002-2003

Aid amounts in units of $1000

****p<0.001, ***p<0.01, **p<0.05, *p<0.10