



Retention and Graduation:  
An Examination of Students Who Earn Academic Probation

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Introduction

This study examines the retention and graduation of students who have been placed on academic probation at some point during their tenure at the University of Georgia. By definition, retention refers to the ability on an institution to retain a student from admission to the institution through graduation, most often related to a single institution (as opposed to a student’s transfer between two or more colleges; Berger & Lyon, 2005). Persistence is the conscious act by students to maintain their status in education and continue their enrollment in a higher education institution (Mortenson, 2005).

Students who do not achieve an institutionally-set minimum grade point average are placed on academic warning or probation. University-wide regulations provide that undergraduates are placed on academic probation at the end of any term in which their cumulative grade point average is below 2.00. Students may remove themselves from academic probation by achieving a 2.00 cumulative grade point average. Transfer credits are not included in the computation of the cumulative grade point average. Students are academically dismissed after two successive terms of probation if their cumulative grade point average remains below that required for a designated number of total hours attempted<sup>1</sup>. While some colleges maintain academic standards that exceed university regulations, only the university-wide regulations for probation are used for this study. Being placed on probation is usually the first step before a student is academically dismissed from a program or institution. This study hopes to help in the understanding of probation students and provide clues where institutional intervention can help probation students persist and be retained on through graduation.

Demographic & Exploratory Analysis

The data set for this study used the official Board of Regents Cohort (4,375 students) for full-time freshman entering the University of Georgia in the Fall 1999 semester. Student demographic and financial characteristics are paired with student academic and social activity for each semester through the fall 2006 semester (a total of 19 semesters, including summers). Students who earned probation were classified into three groups: students who earned probation after the 1<sup>st</sup> fall semester, students who earned probation after the 1<sup>st</sup> spring semester, and students who earned probation at any time during their time at UGA (probation ever). These groups are inclusive and students can be placed in more than one group<sup>2</sup>.

# of Students Earning Probation

- Total Students in Cohort 4375
- Total Students earning Probation after 1<sup>st</sup> Fall 400 (9.1 %)
- Total Students earning Probation after 1<sup>st</sup> Spring 360 (8.2 %)
- Total Students earning Probation at any time 672 (15.4 %)
- Total Students never earning Probation 3703 (84.6%)

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<sup>1</sup> The required minimum cumulative GPA rises sequentially based on the number of total hours attempted. In other words, the more hours a student has, the higher the minimum cumulative GPA is required.

<sup>2</sup> Example: a student who earns probation after the first fall semester and first spring semester is in all three probation groups; a student who earns probation only after the first fall semester is in the probation after the 1<sup>st</sup> fall and probation ever groups.

*Table 1: Admissions Profile of Students*

As shown, students who earn probation (for all three probation groups) have lower high school GPA, SAT scores, and predicted GPA than students who never earn probation ( $p < .01$  for all three variables; HS GPA, SAT, and Predicted GPA).

	Cohort	On probation after 1 <sup>st</sup> fall	On probation after 1 <sup>st</sup> spring	On probation ever	Never on probation
HS GPA (Mean)	3.50	3.20	3.18	3.22	3.55
SAT (Mean)	1189	1158	1152	1153	1195
Predicted GPA (Mean)	3.09	2.82	2.79	2.83	3.13

*Table 2: Gender of Students*

The majority of the cohort was female (58%), but over 60% of the students who earned probation were male (similar results for all three probation groups,  $p < .01$ ). 10% of all female students and 23% of all male students earned probation (ever) during their time at UGA ( $p < .01$ ).

	Cohort	On probation after 1 <sup>st</sup> fall	On probation after 1 <sup>st</sup> spring	On probation ever	Never on probation
Female	58%	39%	34%	39%	62%
Male	41%	61%	65%	61%	37%
Unknown	1%	0.5%	1%	0.7%	1%

*Table 3: Race/Ethnicity of Students*

The students in the cohort were predominately white (84%), but white students were less represented in the three probation groups than in the cohort. Asian, Black/African-American, and multi-racial students were over represented in each of the three probation groups than in the cohort ( $p < .01$ ). White and Hispanic students (12-14%) were less likely to have earned probation (ever) than the other race/ethnic groups (23-43%) ( $p < .01$ ).

	% of Cohort	% of 1st fall probation	% of 1st spring probation	% of Probation at any time	% of never on Probation
Asian	4.3%	6.8%	6.9%	6.1%	3.9%
Black/African American	5.7%	7.3%	7.8%	8.5%	5.1%
Hispanic	1.7%	1.3%	1.7%	1.3%	1.7%
American Indian	0.2%	0.3%	0.3%	0.5%	0.1%
Multi-Racial	1.8%	4.0%	3.9%	3.4%	1.5%
White	84.4%	78.0%	77.5%	78.3%	85.5%
Unknown	2.1%	2.5%	1.9%	1.9%	2.2%

*Table 4: UNIV course & Freshman Seminar Enrollment*

Table below shows the enrollment rates in UNIV<sup>3</sup> and freshman seminar<sup>4</sup> courses of the entire cohort and probation groups. Students who ever earned probation (ever) had higher rates of taking a UNIV course in their first year (for both the fall 1999 and spring 2000 semesters) compared to non-probation students ( $p < .01$ ). Students who earned probation (ever) had lower rates of enrollments in a freshman seminar course than non-probation students ( $p < .01$ ).

	Cohort	On probation ever	Never on probation
Took a UNIV course in 1 <sup>st</sup> Fall	7%	10%	6%
Took a UNIV course in 1 <sup>st</sup> Spring	8%	13%	7%
Took a Freshman Seminar in 1 <sup>st</sup> Fall	17%	14%	18%

*Table 5: Rates of Receiving Financial Aid*

Table below shows the rates of students receiving different types of financial aid. For the first year (Fall 1999-Spring 2000), probation (ever) students had comparable rates of receiving merit-based scholarship as compared to non-probation students ( $p < .01$ ). In the second year (Fall 2000-Spring 2001), probation students were drastically less likely to receive merit-aid scholarships compared to non-probation students ( $p < .01$ ). Students on probation (ever) had higher rates of receiving need-based aid (all types, including Pell Grants) than non-probation students ( $p < .01$ ). Probation (ever) students had roughly double the rates of receiving Pell Grants than non-probation students ( $p < .01$ ).

	Cohort	On probation ever	Never on probation
Student had Merit-Aid in 1 <sup>st</sup> Fall	98%	96%	98%
Student had Merit-Aid in 1 <sup>st</sup> Spring	95%	90%	96%
Student had Merit-Aid in 2 <sup>nd</sup> Fall	75%	41%	82%
Student had Merit-Aid in 2 <sup>nd</sup> Spring	55%	3%	65%
Student had Need-Based Aid in 1 <sup>st</sup> Fall	20%	31%	18%
Student had Need-Based Aid in 1 <sup>st</sup> Spring	18%	28%	17%
Student had Pell Grant in 1st Fall	12%	20%	11%
Student had Pell Grant in 1 <sup>st</sup> Spring	11%	18%	10%

*Table 6: Proportion of Probation Students Receiving Financial Aid*

Table below shows the proportion of need-based (all types, including Pell Grants) and Pell Grant recipients who earned probation. Nearly one-fourth of all need based and Pell Grant recipients earned probation sometime during their undergraduate career.

<sup>3</sup> UNIV courses are introductory courses in English, mathematics, reading, and study strategies. Some of these courses have a non-traditional format and carry only institutional credit, not counting towards graduation.

<sup>4</sup> Freshman seminars provide an opportunity for students new to the University to become acquainted with a senior faculty member and to learn something about the excitement of study and research in a specific discipline and the intellectual challenge of academic life at the University. Class size is limited to encourage one-on-one interaction, and some seminars are hosted in residence halls. Seminars are focused on topics of special interest to faculty members' research and teaching and explore a diverse array of topics. The majority of First-year seminars count as one hour of credit towards graduation.

	On probation ever	Never on probation
Student had Need Based Aid in 9908	24%	76%
Student had Need Based Aid in 0002	23%	77%
Student had Pell Grant in 9908	25%	75%
Student had Pell Grant in 0002	24%	76%

*Table 7: Stop-out and Drop-out Rates*

Table below shows the stop-out and drop-out rates of the cohort and the probation groups. Each of the three probation groups had significantly higher rates of students stopping-out and/or dropping out than the non-probation group ( $p < .01$ ).

	Cohort	On probation after 1 <sup>st</sup> fall	On probation after 1 <sup>st</sup> spring	On probation ever	Never on probation
Stop Out - Anytime before end of 3 <sup>rd</sup> year	10%	25%	33%	28%	6%
Drop Out - Anytime before graduation	22%	63%	68%	60%	15%

*Table 8: Proportion of Probation Students in Stop-out & Drop-out Groups*

Table below shows the composition of the stop-out and drop-out groups. For the first three semesters (non-summer), there were proportionately more probation (all three groups) students who stopped-out and dropped-out than in the following two semesters (non-summer). In most of the first three semesters (non-summer), over 30% of the stop-outs & drop-outs were students who had earned probation after their first fall semester ( $p < .01$ ). After the third semester (2<sup>nd</sup> fall semester), the proportion of students who earned probation after the first fall semester in the stop-out and drop-out groups significantly dropped to less than 20% ( $p < .01$ ).

	On probation after 1 <sup>st</sup> fall	On probation after 1 <sup>st</sup> spring	On probation ever	Never on probation
Stop Out - After 1st Fall	19%	9%	40%	60%
Stop Out - After 1st Spring	32%	42%	47%	53%
Stop Out - After 2nd Fall Semester	38%	43%	58%	42%
Stop Out - After 2nd Spring Semester	14%	20%	38%	62%
Stop Out - After 3rd Fall Semester	11%	10%	39%	61%
Stop Out - Anytime before end of 3rd year	24%	28%	45%	53%
Drop Out - After 1st Fall	32%	0%	32%	68%
Drop Out - After 1st Spring	35%	39%	42%	58%
Drop Out - After 2nd Fall Semester	45%	48%	56%	44%
Drop Out - After 2nd Spring Semester	8%	10%	21%	86%
Drop Out - After 3rd Fall Semester	20%	18%	51%	49%
Drop Out - Anytime before graduation	26%	25%	41%	59%

*Table 9: Retention & Graduation Rates*

Table below shows the graduation and retention rates of the cohort and probation groups. A retained student refers to students who have enrolled in the subsequent (non-summer) semester

and/or graduated. In general, students who have earned probation (similar results for all three probation groups) were much less likely to graduate and be retained than students who did not earn probation. Only 62% of the students who earned probation after their first fall semester were retained after the first year ( $p < .01$ ). 51% of students who earned probation (ever) were retained after the 3<sup>rd</sup> year compared to 86% of students who never earned probation ( $p < .01$ ). Only 31% of the students who had earned probation (ever) graduated within 6 years or less compared to 82% of students who never earned probation ( $p < .01$ ).

	Cohort	On probation after 1 <sup>st</sup> fall	On probation after 1st spring	On probation ever	Never on probation
Retained after 1st Year	89%	61%	62%	72%	92%
Retained after 2nd Year	83%	43%	40%	55%	88%
Retained after 3rd Year	80%	43%	41%	51%	86%
Graduated in 4 years or less	43%	7%	2%	5%	50%
Graduated in 5 years or less	69%	24%	18%	22%	78%
Graduated in 6 years or less	74%	31%	24%	31%	82%

*Table 10: Proportion of Probation Students in Non-Retained Groups*

Table below shows the composition of the students not retained during the first three years. In each of the first three years, roughly 40% of the non-retained students earned probation (ever) during their undergraduate career ( $p < .01$ ).

	On probation after 1 <sup>st</sup> fall	On probation after 1st spring	On probation ever	Never on probation
Not Retained after 1 Year	33%	29%	40%	60%
Not Retained after 2 Years	30%	29%	40%	60%
Not Retained after 3 Years	26%	25%	39%	61%

Binary Logistic Regression Analysis

In order to more fully examine the relationship between students and contributing factors leading to probation, a binary logistic regression was developed. For the binary logistic regression analysis, only probation ever is used. Binary logistic regression was chosen due to the dependent variable being binary (Yes, student earned probation ever; No, student did not earn probation ever) and is a model which can appropriately handle binary dependent variables. The following independent variables were used in the binary logistic regression<sup>5</sup>.

- Predicted GPA (derived from SAT and HS GPA)
- Gender
- In-State/Out-State residency status

<sup>5</sup> A number of variables were originally included in the full model but were removed from the final model after showing statistically insignificant. Some specific variables removed include race/ethnicity, enrollment in a freshman seminar, living on campus, receipt of merit-based financial aid, receipt of non-need financial aid, and receipt of Pell Grants.

- Enrolled in UNIV course in 1<sup>st</sup> fall semester
- Joined a Greek organization in 1<sup>st</sup> fall semester
- Receipt of need-based aid in 1<sup>st</sup> fall semester (all types, includes Pell Grants)

Model Summary

step	-2 Log Likelihood	Cox-Snell R <sup>2</sup>	Nagelkerke R <sup>2</sup>
1	3086.989	0.133	0.230

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 = .406 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 earned probation ever). 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 11 shows the variables in the equation and gets to the heart of 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 all of the independent variables are significant in this model.

The Exp (B) is the label for the odds ratio of the row independent with the dependent (probation ever). 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 predicated GPA, the odds of earning probation (ever) increase by a factor of .053 (actually decreasing in probability). For a student who is an in-state resident, the odds of earning probation (ever) increases by a factor of 2.865 (actually increasing in probability).

*Table 11: Variables in the Binary Logistic Equation*

Variables	B	S.E.	Wald	df	Sig.	Exp (B)
Predicted GPA	-2.933	0.165	317.882	1	0.000	0.053
Gender	-0.685	0.094	52.758	1	0.000	0.504
In-state	1.053	0.207	25.777	1	0.000	2.865
Enroll in UNIV course	-0.410	0.185	4.937	1	0.026	0.664
Join Greek	-0.344	0.141	5.951	1	0.015	0.709
Received Need Aid	0.489	0.106	21.179	1	0.000	1.631
Constant	6.417	0.496	167.403	1	0.000	612.038

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## Discussion

Findings from this study point to five main conclusions. First, based on the cohort of 4,375 students in this study, there are significant differences between students who earn probation and those who do not before they ever arrive on at college. In looking at the admissions profile of students, all three probation student groups had on average 0.3 lower high school GPA, 0.3 lower predicted GPA, and 40 points lower on the SAT than students who do not earn probation.

Second, one-way ANOVAs reveal that significant differences exist between probation (ever) students and non-probation students in regards to gender, race/ethnicity, and financial aid received. For gender, the majority of the cohort population was female (58%), but the majority of students who earned probation (in all three probation groups) was male (+60%). For race/ethnicity, White and Hispanic students were less represented in the three probation groups than in the total cohort. For Asian, Black/African-American, and multi-racial students, this was reversed. These students were more represented in each of the three probation groups than in the cohort.

For financial aid received, students who earn probation (ever) had higher rates of receiving need-based aid and Pell Grants than non-probation students. In regards merit-based aid, probation (ever) students had comparable rates of receiving aid with non-probation students in the first year, but in the second year, there was a large drop off in the rate of receiving the merit-based aid by probation (ever) students and were not comparable to the rates of non-probation students. This is somewhat inherent due to merit-based aid requires a 3.0 minimum cumulative GPA to keep receiving the aid and probation (ever) students by nature have below a 2.0 cumulative GPA at some point in their undergraduate career.

Third, students who earn probation are retained and graduate at significantly lower rates than non-probation students. Students who earn probation (ever) are 20% less likely to be retained after the 1<sup>st</sup> year than non-probation students. After the 2<sup>nd</sup> and 3<sup>rd</sup> years, the difference grows to over 30%. In most cases within the first three semesters, students who earn probation after the 1<sup>st</sup> fall make-up over 30 to 40% of the students who stopped-out or dropped-out in a particular semester. In terms of graduation, only 5% of students who earn probation (ever) graduate within 4 years as compared to 50% of students who do not earn probation. 31% of students who earn probation (ever) graduate within 6 years as compared to 83% of students who do not earn probation.

Fourth, findings from the binary logistic regression analysis provide evidence of factors that increase the likelihood of a student earning probation. Being male, an in-state resident, not enrolling in a UNIV course, not joining a Greek organization, and receiving need-based aid are significant factors that increase the likelihood a student earns probation. Also, the lower the predicated GPA of a student, the odds of that student earning probation increases.

Fifth, the low Nagelkerke  $R^2$  (.230; a pseudo OLS  $R^2$ ) coupled with the closeness of the null model's (84.6%) and the full model's (85.4%) ability to correctly predict a student not earning probation indicates the model used here can only explain a portion of why students earn



probation. It appears that when a student earns probation, it is due to a combination of factors many which are not in this model due to their complexity and difficulty to quantify.

#### References

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