The Impact of Financial Aid on Graduation

A Preliminary Study

June 2015

The Maryland Higher Education Commission asked Morgan State University to assess the impact different types of financial aid had on graduation rates. An initial assessment has been completed. The staff of the Office of Institutional Research would like to acknowledge the technical support received from Dr. David Nichols, Lead Statistician-SPSS Support at IBM.

**Methodology**

**Participants**

The fall 2008 first-time, full-time cohort was used for this assessment. There were 1,430 students included in the analyses; of these, 468 had graduated by spring 2014, 833 had left Morgan during the period fall 2008 through spring 2014, and 129 were still enrolled. Data were compiled for this cohort for academic years 2008-2009 through 2013-2014. Profiles of the students who dropped out or graduated are displayed in Tables 1 and 3 respectively.

**Variables included**

The following variables were included for this assessment:

1. Dependency status in fall 2008 (dependent student, independent student, or missing dependency status)
2. Tuition status in fall 2008 (in-state, or out-of-state)
3. Pell eligible status in fall 2008 (students with an Expected Family Contribution at or below $4,041 were coded as Pell eligible)
4. Cumulative Morgan GPA at time of last attendance
5. Years enrolled
6. Parent loan amount awarded (average amounts were calculated)
7. Student loan amount awarded (average amounts were calculated)
8. Grants awarded (average amounts were calculated)
9. Scholarships awarded (average amounts were calculated)
10. Work study awarded (average amounts were calculated)
11. Unmet need (calculated as Cost of Attendance – (Expected Family Contribution + Total Aid Awarded) (Negative unmet need was set to $0).
12. Status as of spring 2014 (dropped, still enrolled, graduated)

**Results**

**Factors Impacting Not Graduating**

A Cox regression was conducted to determine the impact of total aid awarded on the risk of dropping out. A Cox regression is typically used in the analyses of survival rates and is useful for conducting longitudinal studies because it factors in time to the event occurrence.

Results indicate that as average aid increases in each aid category, the change in the risk of dropping out decreases. With each $1,000 increase in aid, the change in the relative risk of dropping out decreases by .5% for parent loans, 3% for student loans, 2% for grants, .6% for scholarships, and 26% for work study. Results indicate that the change in the relative risk of dropping out for Pell eligible students is 7% higher than for non-Pell eligible students. Results also indicate that paying in-state tuition reduces the risk of dropping out. As expected, the risk of dropping out decreases as a student’s cumulative GPA increases. Results are displayed in Table 2.

**Factors Impacting Time to Graduation**

An Ordinal regression was conducted to determine the impact of average aid awarded on whether students graduated within four, five or six years. Average amount of aid was used to address the issue of a student receiving more aid simply because they attended longer.

Results indicate that as average loan, grants and scholarship aid increases, the likelihood of graduating earlier increases slightly over the odds of graduating later. With each $1,000 increase in average aid the percentage increase in the odds of graduating in four years is 4% for parent loans, .7% for student loans, 4% for grants, and 3% for scholarships. Results also indicate that as average work study and unmet need increase, the likelihood of graduating later increases. Students paying out-of-state tuition are more likely to graduate earlier, as are students not eligible for Pell grants, and, as expected, those with higher GPAs. Results are displayed in Table 4.

**Discussion**

Results suggest that while financial aid plays a role in whether students drop out, Pell eligibility status, paying out-of-state tuition, and low grades have a larger impact on dropping out than specific aid types.

Results suggest that students who graduate and who are economically at risk (Pell eligible and/or receiving work study) have a lower likelihood of graduating within four years. Results also suggest that students who graduate and who receive higher amounts of aid in any given year are slightly more likely to graduate within four years. Cumulative GPA has a larger impact on graduating earlier than any other factor.

A limitation of this study is the use of only one cohort. The Office of Institutional Research is planning a study that will include the cohorts of 2002 through 2009. Also, additional variables such as gender and whether a student majored in a STEM field (science, technology, engineering or mathematics) or a non-STEM field will be included.

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| Table 1 |  |  |  |
| *Profile of Dropouts* |  |  |  |
|  | N | *Mean* | *SD* |
| Cumulative GPA | 833 | 1.669 | .926 |
| In-state tuition | 312 |  |  |
| Out-of-state tuition | 521 |  |  |
| Pell eligible | 429 |  |  |
| Not-Pell eligible | 351 |  |  |
| Missing Pell eligibility | 53 |  |  |
| Dependent | 706 |  |  |
| Independent | 66 |  |  |
| Missing dependency | 61 |  |  |

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| Table 2 |  |  |  |  |  |  |  |
|  | *Cox Regression with Not Graduating as the Event* | | | | | | |
| Variable | Coefficient | Standard Error | Wald | *P* | Risk Ratio | Change in Risk Ratio\* | 95% Confidence Interval |
| Dependency |  |  | 1.750 | .417 |  |  |  |
| Independent | .420 | .389 | 1.169 | .280 | 1.523 | 52.3% | .711 – 3.263 |
| Dependent | .273 | .367 | .552 | .458 | 1.313 | 31.3% | .640 – 2.697 |
| Pell Eligible | .071 | .101 | .492 | .483 | 1.074 | 7.4% | .880 – 1.309 |
| Tuition Status | -.471 | .097 | 23.462 | .000 | .624 | -37.6% | .516 - .755 |
| Cumulative GPA | -.860 | .042 | 412.846 | .000 | .423 | -57.7% | .390 - .460 |
| Average Parent Loans | -.005 | .009 | .242 | .623 | .995 | -0.5% | .977 – 1.014 |
| Average Student Loans | -.030 | .010 | 9.526 | .002 | .970 | -3.0% | .952 - .989 |
| Average Grants | -.022 | .013 | 2.775 | .096 | .978 | -2.2% | .953 – 1.004 |
| Average Scholarships | -.006 | .011 | .310 | .578 | .994 | -0.6% | .973 – 1.015 |
| Average Work Study | -.299 | .127 | 5.573 | .018 | .742 | -25.8% | .579 - .951 |
| Average Unmet Need | -.004 | .010 | .183 | .669 | .996 | -0.4% | .975 – 1.016 |

\**Change in Risk Ratio per unit increase in predictor. Change in Risk Ratio for types of aid is per $1,000 increase*

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| Table 3 |  |  |  |
| *Profile of Graduates* |  |  |  |
| Variable | 4 Year Graduates | 5 Year Graduates | 6 Year Graduates |
| Cumulative GPA |  |  |  |
| N | 176 | 202 | 90 |
| *Mean* | 3.277 | 2.932 | 2.744 |
| *SD* | .336 | .377 | .331 |
| In-state tuition | 95 | 145 | 68 |
| Out-of-state tuition | 81 | 57 | 22 |
| Pell eligible | 79 | 98 | 34 |
| Not-Pell eligible | 87 | 94 | 46 |
| Missing Pell eligibility | 10 | 10 | 10 |
| Dependent | 150 | 186 | 77 |
| Independent | 6 | 5 | 3 |
| Missing dependency | 20 | 11 | 10 |

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| Table 4 |  |  |  |  |  |  |  |
| Variable | Estimate | Standard Error | Wald | *P* | Estimate 95% Confidence Interval | Exp (-B) | Estimate 95% Confidence Interval  Exp(-B) |
| 4 Year | -9.571 | 1.042 | 84.307 | .000 | -11.614 –  -7.528 | 14339.01 | .000 - .001 |
| 5 Year | -6.939 | .983 | 49.880 | .000 | -8.8865 –  -5.013 | 1031.80 | .000 - .007 |
| Cumulative GPA | -2.797 | .304 | 84.526 | .000 | -3.393 –  -2.201 | 16.395 | 9.030 – 29.755 |
| Average Parent Loan | -.039 | .033 | 1.364 | .243 | -.104 - .026 | 1.039 | .974 – 1.110 |
| Average Student Loan | -.007 | .029 | .056 | .813 | -.064 –  .050 | 1.007 | .951 – 1.066 |
| Average Grants | -.041 | .033 | 1.589 | .207 | -.106 –  .023 | 1.041 | .977 – 1.112 |
| Average Scholarships | -.034 | .032 | 1.148 | .284 | -.097-  .028 | 1.034 | .972 – 1.102 |
| Average Work Study | .045 | .161 | .077 | .781 | -.271 –  .360 | .955 | .697 – 1.311 |
| Average Unmet Need | .062 | .035 | 3.096 | .078 | -.007 –  .132 | .939 | .877 – 1.007 |
| Out-of-State | -.613 | .310 | 3.897 | .048 | -1.221-  -.004 | 1.845 | 1.004 – 3.391 |
| In-State | .000 |  |  |  |  | 1.000 |  |
| Missing Dependency | -1.681 | 1.161 | 2.097 | .148 | -3.957 –  .594 | 5.370 | .552 – 52.303 |
| Independent | -.364 | .562 | .418 | .518 | -1.466 –  .739 | 1.439 | .478 – 4.332 |
| Dependent | .000 |  |  |  |  | 1.000 |  |
| Not Pell Eligible | -.139 | .264 | .277 | .599 |  | 1.149 | .685 – 1.929 |
| Pell Eligible | .000 |  |  |  | -.657 - .379 | 1.000 |  |