First Term GPA Analysis: Identifying Factors Associated with Low First Term GPA

This document outlines the results of a linear regression analysis aimed at understanding the statistically significant factors in determining the first term GPA of freshmen undergraduate students. The analysis uses data for freshmen students enrolled in Fall semesters for the academic years 2013-14 through 2018-19. The results of the analysis should be read along with the retention dashboard that aggregates results on key indicators for the incoming cohort of academic year 2019-20 and provides the user to target at-risk students based on specific characteristics.

Figure 1 presents the results of regression analysis. To account for variation in cohorts of students as well as some lower than average cohort sizes in recent years, the analysis is comprised of four regression models. Model 1 uses data from six academic cohorts from 2013-14 though 2018-19, Model 2 uses data from five academic cohorts from 2014-15 though 2018-19, Model 3 uses data from four academic cohorts from 2015-16 though 2018-19, and Model 4 uses data from three academic cohorts from 2016-17 though 2018-19.

The key findings section below the table discusses the results and identifies the type of students likely to attain lower than average first term GPA.

**Figure 1: Linear Regression Results for First Term GPA**

|  | **Model 1: 2013 to 2018** | **Model 2: 2014 to 2018** | **Model3: 2015 to 2018** | **Model 4: 2016 to 2018** |
| --- | --- | --- | --- | --- |
| First Generation | -0.1277\*\*\* | -0.1377\*\*\* | -0.1608\*\*\* | -0.1651\*\*\* |
| International | 0.2489\*\*\* | 0.2429\*\*\* | 0.2556\*\*\* | 0.2471\*\* |
| Pell Eligible | -0.1438\*\*\* | -0.1273\*\*\* | -0.1134\*\*\* | -0.1079\*\* |
| All Aid | 0.0040\*\* | 0.0037\*\* | 0.0025 | 0.0023 |
| Athlete Status | 0.0706\* | 0.0611 | 0.0433 | 0.0385 |
| **Gender (Reference Category: Female)** | | | | |
| Male | -0.1774\*\*\* | -0.1886\*\*\* | -0.1966\*\*\* | -0.2012\*\*\* |
| **College (Reference Category: BU)** | | | | |
| CAS | -0.1259\*\*\* | -0.1133\*\*\* | -0.0956\*\* | -0.1037\*\* |
| MA | 0.0657 | 0.0811\* | 0.1066\*\* | 0.1145\*\* |
| **High School GPA (Reference Category: 3.00 and Below)** | | | | |
| 3.01 to 3.40 | 0.5139\*\*\* | 0.5157\*\*\* | 0.4756\*\*\* | 0.5136\*\*\* |
| 3.41 to 3.70 | 0.7097\*\*\* | 0.7144\*\*\* | 0.6983\*\*\* | 0.7206\*\*\* |
| 3.71 and Above | 0.7959\*\*\* | 0.8002\*\*\* | 0.8001\*\*\* | 0.8300\*\*\* |
| **SAT Composite (Reference Category: 1050 and Below)** | | | | |
| 1060 to 1150 | 0.2088\*\*\* | 0.1976\*\*\* | 0.2159\*\*\* | 0.2085\*\*\* |
| 1160 to 1250 | 0.2818\*\*\* | 0.2475\*\*\* | 0.2731\*\*\* | 0.2533\*\*\* |
| 1260 and above | 0.4454\*\*\* | 0.4352\*\*\* | 0.4454\*\*\* | 0.4754\*\*\* |
| Intercept | 2.2857\*\*\* | 2.2078\*\*\* | 2.3785\*\*\* | 2.2988\*\*\* |
| \* p<.1, \*\* p<.05, \*\*\*p<.01 | | | | |
| **Note:** Accounting for Term Fixed Effects (Not Presented in Regression Tables) | | | | |

**Key Findings:**

1. **Demographics:**
   1. First Generation: On average, holding all other variables constant, a first-generation student is likely to score less than other students by 0.125 to 0.165 points on a GPA scale of 0 to 4.
   2. International Students: International students are likely to perform better than domestic students as across all the four models, International students’ performance was found to be significantly better than the domestic students. On average, holding all other variables constant, International students were likely to score 0.25 points greater than domestic students on first term GPA.
   3. Pell Eligibility: Pell eligible students were, on average, likely to perform worse than non-Pell students by 0.105 to 0.145 GPA points, all else being equal.
   4. Gender: Female students, on average, perform better than male students on first term GPA by 0.175 to 0.205 GPA points.
   5. Financial Aid and Athlete Status were statistically significant in only some of the models and insignificant in models from the last four years of data. Where significant, students who were athletes were found to have performed better than non-athletes while students with additional aid performed better than students with lower aid amounts, all else being equal. Lack of statistical significance denotes that between two groups of students (say athletes and non-athletes), the difference in performance was not significantly different than 0.
2. **College:**
   1. CAS: Compared to students at BU, students at CAS are likely to perform worse by 0.10 to 0.13 GPA points in the first term, on average, holding all the other variables constant.
   2. MA: Compared to students at BU, students at MA are likely to perform better by 0.08 to 0.115 GPA points in the first term, on average, holding all the other variables constant.
3. **Pre-Enrollment Academic Performance**

**High School GPA**

* 1. 3.01 to 3.40: Compared to students with a high school GPA of 3.00 and below (on a scale of 0 to 4), students with high school GPA between 3.01 to 3.40 are likely to perform better on first term GPA by 0.47 to 0.52 GPA points, on average, all else being equal.
  2. 3.41 to 3.70: Compared to students with a high school GPA of 3.00 and below (on a scale of 0 to 4), students with high school GPA between 3.41 to 3.70 are likely to perform better on first term GPA by 0.7 to 0.72 GPA points, on average, all else being equal.
  3. 3.71 and above: Compared to students with a high school GPA of 3.00 and below (on a scale of 0 to 4), students with high school GPA 3.71 and above are likely to perform better on first term GPA by 0.79 to 0.83 GPA points, on average, all else being equal.

**SAT Composite Scores**

1. 1060 to 1150: Compared to students with SAT composite score of 1050 and below students with SAT composite score between 1060 to 1150 are likely to perform better on first term GPA by 0.195 to 0.215 GPA points, on average, all else being equal.
2. 1160 to 1250: Compared to students with SAT composite score of 1050 and below students with SAT composite score between 1160 to 1150 are likely to perform better on first term GPA by 0.245 to 0.285 GPA points, on average, all else being equal.
3. 1260 and above: Compared to students with SAT composite score of 1050 and below students with SAT composite score 1260 and above are likely to perform better on first term GPA by 0.435 to 0.475 GPA points, on average, all else being equal.