**The Impact of High School Grade Point Average on Student Outcomes**

**Douglas Ducharme Ed.D., Associate Director**

The purpose of this report is to present results of an analysis into the relationship between high school grade point average (GPA) and various student outcomes, such as first-year retention, first-year GPA, 6-year graduation, and final GPA.

The last six cohorts of first-time, full-time freshman undergraduate students that were eligible to graduate within six years in 2015 consisted of 4,942 students, including cohorts from Fall 2004 to 2009. Table 1 depicts the descriptive statistics for students broken down by levels of high school GPA that were available for 4,720 students (*M* = 3.03, *SD* = 0.48, Median = 3.00).

**Table 1: Retention, Graduation, and Academic Performance by High School GPA**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **High School GPA** | ***N*** | **1st Year Retention** | **1st Year GPA** | **6-Yr Grad Rate** | **Final GPA** |
| > 3.45 | 963 | 83.0% | 3.19 | 59.7% | 3.39 |
| 3.14 – 3.45 | 939 | 78.3% | 2.93 | 45.3% | 3.22 |
| 2.87 – 3.13 | 932 | 72.7% | 2.74 | 37.6% | 3.14 |
| 2.60 – 2.86 | 951 | 70.8% | 2.52 | 31.3% | 3.06 |
| < 2.60 | 955 | 65.9% | 2.46 | 26.7% | 3.05 |
| **Total** | **4740** | **74.3%** | **2.79** | **40.0%** | **3.21** |

The results in Table 1 show a clear difference in student outcomes depending on the level of high school GPA attainment. Comparisons of high school GPA between groups based on first-year retention and 6-year graduation were conducted using t-test calculations (Table 2). Students that were retained after the first year of college possessed a high school GPA significantly higher than those students who were not retained. Likewise, students that graduated within 6 years possessed a high school GPA significantly higher than those students who did not graduate.

**Table 2: Differences in High School GPA Based on Retention and Graduation Rates**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Dimension** | **Not Retained****(*n* = 1226)** | **1st-Year Retained****(*n* = 3514)** | ***t*** | ***p*** |
| ***M*** | ***SD*** | ***M*** | ***SD*** |
| High School GPA | 2.92 | .46 | 3.07 | .48 | -9.25 | .000 |
| **Did Not Graduate****(*n* = 2837)** | **Graduated by 6 years****(*n* = 1903)** | ***t*** | ***p*** |
| ***M*** | ***SD*** | ***M*** | ***SD*** |
| 2.93 | .45 | 3.17 | .49 | -17.09 | .000 |

While these data suggest that high school GPA represents a causal factor in student outcomes, the degree to which it factors is unknown. Therefore, a correlational calculation was conducted to examine the relationship further between high school GPA and first-year, as well as final, GPA. High school GPA was found to correlate significantly with first-year retention (*N* = 3633, *r* = .333, *r*2 = .111, *p* = .000) and with 6-year graduation (*N* = 1903, *r* = .373, *r*2 = .139, *p* = .000). The significant results indicated that high school GPA helped explain only about 11% and 14% of the variance in first-year retention and 6-year graduation, respectively. Therefore, other factors should be analyzed to help explain the outcomes of undergraduate students.

Additional factors were explored using a stepwise multiple regression analysis with results depicted in Table 3. These factors included combined SAT score (verbal plus math), math SAT score, gender, race, age, and non-resident status. However, non-resident status did not have a significant correlation with any of the outcomes and math SAT had a lower correlation that combined SAT. Therefore, these two variables were disregarded from the stepwise multiple regression.

**Table 3: Explained Variance (*R*2) from Stepwise Multiple Regression for Predictor Variables for Student Outcomes**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Predictor Variable** | **1st Year Retention****(*N* = 4053)** | **1st Year GPA****(*N* = 3117)** | **6-Yr Grad Rate****(*N* = 4053)** | **Final GPA****(*N* = 1634)** |
| High School GPA |  2.3% |  12.0% |  6.9% |  15.5% |
| Combined SAT | 1.0 | 1.8 | NS | 6.5 |
| Gender | NS | NS | 0.2 | 0.7 |
| Race | 0.5 | 0.6 | NS | 0.8 |
| Age | NS | 0.8 | NS | 1.4 |
| **Total** |  **3.8%** |  **15.3%** |  **7.1%** |  **24.9%** |

*Note:* NS = no significance

Of the predictor variables, high school GPA remained the best predictor of student outcomes. Only 3.8% of the variance in first-year retention could be explained by the model of predictor variables, with race accounting for 0.5% whereby students that self-reported as non-white had a greater retention rate (78.5%, *n* = 2143) than those self-reported as white (69.6%, *n* = 2223). However, prediction for first-year GPA had reversed results as students that self-reported as non-white had a lower first-year GPA (2.69) than those self-reported as white (2.89). Gender accounted for a very small amount of variance (0.2%) in the 6-year graduation rate, but the results were significant with females graduating at a higher rate (43.8%, *n* = 2883) than males (34.7%, *n* = 2059).

The predictor variables provided the highest explained variance, nearly 25%, for the final GPA of graduating students. High school GPA and combined SAT scores were positively correlated with final GPA. Female students had a higher mean GPA of 3.24 (*n* = 1264) than male students with 3.16 (*n* = 1481). Students self-reporting as white had a higher mean GPA of 3.27 (*n* = 868) than non-white with 3.14 (*n* = 870). Age was positively correlated with final GPA as students 19 years old and older had a mean GPA of 3.23 (*n* = 497) versus 3.20 (*n* = 1481) for students less than 19 years old.