TEXAS Grant Priority Model



Predictive Analysis

Background

The primary rationale for realigning the TEXAS Grant academic requirements with changes made in the P-12 sector is to attain better results for the significant investment made by the state. Previous THECB analysis shows that students meeting the proposed priority criteria graduate from college at twice the rate of those who do not meet the criteria. This analysis was based on a single cohort of TEXAS Grant recipients who entered higher education in the fall of 2003. Subsequently, the THECB and the Legislative Budget Board (LBB) were directed by the 81st Texas Legislature via Rider 60 of the General Appropriations Act to conduct a more comprehensive study on those factors that influence student success, as measured most directly by college graduation rates.

The Rider 60 study is a far reaching analysis that examines a variety of success indicators for all students who enrolled in universities in the five year period ending with the fall 2006 cohort. Because the TEXAS Grant is limited to a particular subset of that total population (those with an Expected Family Contribution less than \$4,000), the THECB focused a separate analysis with the same data set to examine how the proposed priority criteria relate statistically with student success.

Methodology

A series of logistic regression analyses were conducted to describe the relationship between a variety of combinations of high school academic achievements in high school and receipt of a TEXAS Grants, with graduation. The study examined students who met all of the following characteristics:

- ✓ Enrolled in a Texas public university
- ✓ Enrolled full-time (no less than 12 semester credit hours)
- ✓ Enrolled directly from a Texas public high school
- ✓ Reported an expected family contribution (EFC) of less than \$4,000

Because the analysis was specifically designed to study the effect of the priority criteria on student success, the THECB excluded students for which there was no class rank information, SAT (or converted ACT) scores, or TSI readiness information.

The THECB examined three distinct cohorts for the analysis (FY 04, FY 05, and FY 06). These cohorts allowed the THECB to measure 4-, 5-, and 6-year graduation rates depending on the specific cohort. The total students in these cohorts ranged from 11,702 to 12,334.

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The THECB analysis also controlled for factors other than the priority criteria. These factors include:

- ✓ Asian ethnicity
- ✓ SAT/ACT score
- ✓ Gender
- ✓ Father's education level
- ✓ Other financial aid

- ✓ Economic disadvantage
- ✓ Unmet need
- ✓ Differences in institutional factors
- √ Family contribution
- ✓ Cost of attendance

These factors were used in each statistical model to partially control for differences in the populations compared (i.e., priority vs. non-priority level students, TEXAS Grant recipient vs. non-recipient), that, in addition to TEXAS Grant and priority status, may lead to differences in graduation rates.

Students were included as priority students if they achieved two of four benchmarks outlined in Figure 1.

Figure 1.

Advanced Academic Programs

- Distinguished Achievement Program (DAP); or
- 12 or more hours of college-credit courses (AP/IB/dual-credit)

Class Standing

 Achieve standing in top one-third of class

College Readiness

 Achieve college readiness in math, reading and writing.

Advanced Math

• Complete a course above Algebra II

On the basis of priority status and receipt of a TEXAS Grant, students were divided into four groups: 1) students who earned priority status <u>and</u> received a TEXAS Grant; 2) students who earned priority status <u>and</u> did not receive a TEXAS Grant; 3) students who did not earn priority status <u>and</u> received a TEXAS Grant; and 4) students who did not earn priority status and who did not receive a TEXAS Grant.

Group 4 was used as the reference group for this analysis. Eighteen individual logistic regression analyses were conducted to measure the probability of students graduating relative to the reference group. This analysis yielded estimated odds ratios, which are a measure of the difference between graduating in the analyzed group vs. the reference group.

Odds Ratio **greater than 1** = **increase** in the probability of graduating vs. reference group

Odds Ratio **less than 1** = **decrease** in the probability of graduating vs. reference group

Sixteen of the eighteen regression analyses were statistically significant. Pearson Goodness-of-Fit statistics were in the acceptable range.

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Findings

The findings of this analysis show that achieving priority status by meeting at least two of the four academic criteria has a significant positive impact on increasing the probability of graduating.

4-Year Graduation

| Cohort | Odds Ratio | % Increase in Probability of Graduating |
|----------------------------------|---------------|--|
| FY 04: Priority w/TEXAS Grant | 4.80 | 379.9 |
| FY 04: Priority w/no TEXAS Grant | 3.58 | 258.1 |
| FY 04: No Priority w/TEXAS Grant | 1.43 | 43.0* |

6-Year Graduation

| Cohort | Odds | % Increase in | |
|----------------------------------|-------|---------------------------|--|
| | Ratio | Probability of Graduating | |
| FY 04: Priority w/TEXAS Grant | 3.41 | 241.0 | |
| FY 04: Priority w/no TEXAS Grant | 2.20 | 119.5 | |
| FY 04: No Priority w/TEXAS Grant | 1.34 | 34.4 | |

The findings also show that while receiving a TEXAS Grant alone has a positive relationship to student success, it is far below the effect of having a TEXAS Grant <u>and</u> meeting priority status.

Additional Data

| Priority Status <u>and</u> TEXAS Grant Recipient vs. Reference Group | | | | | |
|--|---------------|---------------------|-------|-----------------------|---|
| Cohort Year/Graduation | Odds Ratio | Confidence Level | | Significance Level | Estimated % Increase in Probability of Graduating vs. |
| | | Lower | Upper | | Reference Group |
| Cohort FY04 4-Year Graduation | 4.80 | 3.60 | 6.39 | <.0001 | 379.9 |
| Cohort FY04 5-Year Graduation | 3.72 | 3.13 | 4.42 | <.0001 | 271.6 |
| Cohort FY04 6-Year Graduation | 3.41 | 2.92 | 3.98 | <.0001 | 241.0 |
| Cohort FY05 4-Year Graduation | 3.47 | 2.64 | 4.58 | <.0001 | 247.3 |
| Cohort FY05 5-Year Graduation | 3.17 | 2.65 | 3.78 | <.0001 | 216.7 |
| Cohort FY06 4-Year Graduation | 3.45 | 2.62 | 4.55 | <.0001 | 245.4 |

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| Priority Status <u>and</u> NO TEXAS Grant Recipient vs. Reference Group | | | | | |
|---|---------------|---------------------|-------|-----------------------|---|
| Cohort Year/ | Odds Ratio | Confidence Level | | Significance Level | Estimated % Increase in Probability of Graduating vs. Reference Group |
| Graduation | | Lower | Upper | | |
| Cohort FY04 4-Year Graduation | 3.58 | 2.70 | 4.75 | <.0001 | 258.1 |
| Cohort FY04 5-Year Graduation | 2.53 | 2.15 | 2.99 | <.0001 | 153.4 |
| Cohort FY04 6-Year Graduation | 2.20 | 1.90 | 2.53 | <.0001 | 119.5 |
| Cohort FY05 4-Year Graduation | 2.99 | 2.28 | 3.92 | <.0001 | 198.9 |
| Cohort FY05 5-Year Graduation | 2.53 | 2.13 | 3.00 | <.0001 | 152.9 |
| Cohort FY06 4-Year Graduation | 2.90 | 2.20 | 3.81 | <.0001 | 189.9 |

| NO Priority Status <u>and</u> TEXAS Grant Recipient vs. Reference Group | | | | | |
|---|---------------|---------------------|-------|-----------------------|---|
| Cohort Year/Graduation | Odds Ratio | Confidence Level | | Significance Level | Estimated % Increase in Probability of Graduating vs. |
| | | Lower | Upper | | Reference Group |
| Cohort FY04 Four Year Graduation | 1.43 | 0.99 | 2.06 | 0.0537* | 43.0 |
| Cohort FY04 Five Year Graduation | 1.28 | 1.04 | 1.58 | 0.0203 | 28.3 |
| Cohort FY04 Six Year Graduation | 1.34 | 1.12 | 1.61 | 0.0012 | 34.4 |
| Cohort FY05 Four Year Graduation | 1.00 | 0.71 | 1.40 | 0.9916* | -0.2 |
| Cohort FY05 Five Year Graduation | 1.26 | 1.03 | 1.54 | 0.024 | 26.0 |
| Cohort FY06 Four Year Graduation | 1.45 | 1.06 | 1.99 | 0.0202 | 45.0 |

* Not Statistically Significant

For more information:

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