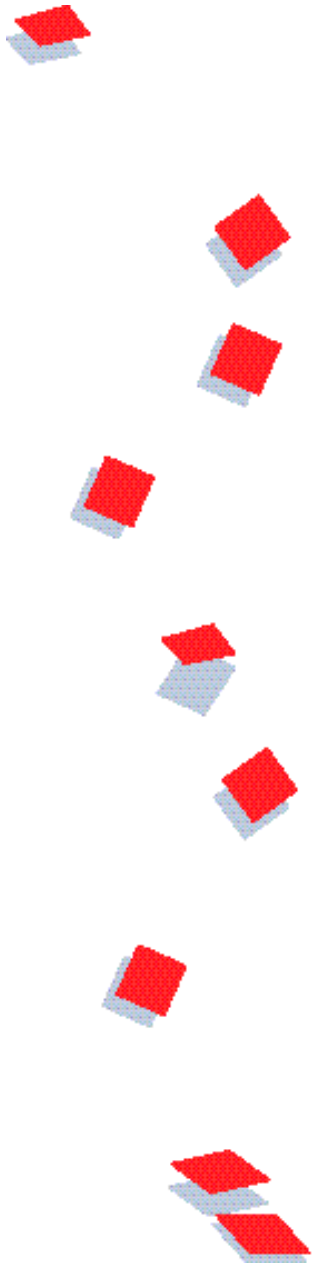

# Education on the Installment Plan: The Rise of Student Loan Indebtedness in Texas

Texas Guaranteed
Student Loan Corporation

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## Executive Summary

*The following findings pertain only to TG loan guarantees of Stafford and SLS loans. All indebtedness statistics represent the median indebtedness of borrowers who left a Texas postsecondary institution.*

The student loan debt levels of Texas borrowers are rising quickly. Median indebtedness grew 152 percent in the six years between academic year (AY) 1990-91 and AY 1996-97. In comparison, inflation rose by only 21 percent over the same period (page 6).

Even so, the debt loads of typical Texas borrowers do not appear to be very high. Borrowers leaving school in AY 1996-97 had a median indebtedness of $6,625, up from $2,625 in AY 1990-91 (page 6).

At present, the typical Texas borrower should be able to afford his or her payments. A borrower would have to pay about $81 a month on the median loan amount of $6,625, amortized over ten years. The $81 payment represents only 8 percent of the monthly income of someone earning $12,189. The 8 percent threshold is a conservative debt-to-income ratio that suggests a person who makes less than $12,189 a year would be burdened by making an $81 payment. The median income for Texans in 1997 was $22,136 (page 14 and table 4).

Some Texas borrowers have very large debt loads. Borrowers who last took loans as graduate students have a median indebtedness of $21,400 (page 10). Borrowers at certain colleges and schools also have very high debt levels (Appendix B).

Debt is rising the fastest at Texas four-year institutions. During the 1990s, indebtedness grew by 98 percent at public four-year colleges and 79 percent at private four-year institutions. By comparison, indebtedness expanded by 33 percent at two-year colleges and 61 percent at proprietary schools (page 7).

Borrowers at public four-year schools are now almost as indebted as their counterparts at private four-year institutions. By AY 1996-97, the median debt at Texas public colleges and universities represented 86 percent of the debt level at private four-year schools (page 8).

Borrowers differ significantly in the level of their indebtedness (pages 10-13). Students who borrow the most are borrowers who:

- Borrowed last as graduate students;
- Utilized both subsidized and unsubsidized loan programs;
- Graduated from their programs of study;
- Faced higher costs of attendance;
- Were older when they left school; and
- Had at least one of their loans sold to a secondary market.

Borrowers take advantage of the higher loan limits available at higher grade levels. On average, each advancement in grade level adds $1,437 to a borrower's debt load (page 15).

Indebtedness increases with rises in the cost of attendance. Each $1,000 rise in the cost of attendance is associated with a $400 increase in the amount of loans a borrower takes over the course of his or her education (page 15).

Borrowers with larger expected family contributions (EFC) do not appear to become less indebted than other borrowers. All other factors being equal, when expected family contribution increases by $1,000, cumulative indebtedness falls by only $84 (page 15).

Financial assistance from non-loan sources might not do much to reduce the borrowing of students who are inclined to borrow in the first place. For each $1,000 increase in the amount of financial aid from sources other than the loan, indebtedness decreases by only $52 (page 15). Further research using a better data source should be conducted to verify this result.

High indebtedness is related to an increased likelihood of repayment problems. For each increase of $2,500 in loan debt, the probability of delinquency rises by two percentage points and the probability of default rises by one percentage point (page 17).

Borrowers who consolidate their TG loans have much less difficulty during repayment. The probability of a delinquency drops by 12 percentage points for a borrower who consolidates within 400 days after separation from school. More importantly, the likelihood of default decreases by 17 percentage points for a borrower who consolidates his or her loans after leaving school (page 17).

Borrowers with multiple loan holders have a much greater likelihood of repayment problems. The probability of delinquency rises by eight percentage points and the likelihood of default increases by six percentage points for borrowers who have more than one loan holder. A single holder initiative could therefore help reduce defaults (page 17).

# I. Introduction

During the last academic year, 83,000 students left Texas postsecondary institutions with $882 million in federally guaranteed student loans. Most of those students will remain in Texas, where they will work and take on the responsibility of repaying their education loans. Whether they are able to meet their loan obligations, however, will depend upon many factors, but will rest in part upon the size of their debts and the size of the monthly payments required to satisfy them. Since failure to repay student loans can have dire consequences for a borrower, it is important to know how much students in Texas are borrowing and to understand the connection between the amount borrowed and the prospects for repayment.

Recent national studies have indicated a rapid rise in both the utilization of loans and the amount of borrowing for college. Based upon national survey data, researchers for the General Accounting Office (GAO) estimated that the percentage of undergraduate students who borrowed by the time they completed their schooling had increased to 52 percent in 1995-96 from 41 percent in 1992-93. Moreover, in that time period the average amount borrowed by program completers increased 24 percent to $9,700. The researchers noted even more extreme increases in indebtedness for some subgroups, such as bachelor's degree recipients (U.S. GAO, 1997). Given the soaring rate of indebtedness at the national level, the first objective of this report will be to identify the size of student loan indebtedness for students attending Texas institutions. Since not all borrowers utilize loans to the same extent, the report will also determine how indebtedness varies between subcategories of borrowers.

The problems posed to borrowers by high levels of indebtedness fall into two broad categories. The first area of concern, which this report will not address, is the impact that loan debt has on borrowers' life style decisions during repayment. Due to the burden of debt, some borrowers might delay or forgo the major economic, social, and financial milestones of early adulthood. Borrowers might feel more pressure than non-borrowers to put off purchases of cars and homes and to postpone marrying, having children, saving for the future, or continuing their educations. In order to pay back large loan amounts, borrowers might also have to forgo low-paying, public service jobs.

The second set of issues, upon which this report will focus, relates to the impact of student loan debt on the prospects of loan repayment and the likelihood of delinquency and default. These issues are important because the direct effect of debt level on the ability of borrowers to repay loans has profound implications for the student loan business. The financing of postsecondary education through student indebtedness is predicated in part upon the idea that the return on investment will at minimum allow the borrower to repay the loans. However, if the amount of borrowing itself contributes to delinquency and default, the very fundamentals of the loan programs are brought into question. Is the nation asking its youth to make investments that they cannot afford? Are students being overeducated or underemployed after education? Are debt amounts inflated by borrowing that is not applied to education expenses but is used for discretionary spending? Do borrowers have the repayment options they need? The logic of the loan programs accepts a certain number of defaults, but how much debt is too much? Is the answer to contain costs at colleges, to maintain or reduce loan limits, or to provide more information to students so they can make better educational investments? While this report stops short of providing definitive answers to all of these questions, these issues nonetheless provide the context for understanding the relationship between debt level and repayment.

# II. Background

The 1992 reauthorization of the Higher Education Act (HEA) greatly expanded the availability of federal loan funds to students. The introduction of the unsubsidized Stafford loan program in particular extended borrowing opportunities for virtually all students. The new unsubsidized program allowed both dependent and independent students to borrow additional unsubsidized loan amounts. For independent students, the new program also offered better loan terms than the old SLS program, probably boosting demand for federal student loans. These changes, together with increased annual and aggregate borrowing limits and modifications to need analysis, virtually ensured an explosion in student loan borrowing after 1992.

Federal loan commitments did in fact escalate nationally after 1992. Loan volume grew 21 percent between Fiscal Year (FY) 1992 and FY 1993, from $14.7 billion to $17.9 billion. Between FY 1993 and FY 1994, federal student loan commitments grew another 34 percent to $24 billion. After several more years of robust growth, student loan volume peaked at $32.4 billion during FY 1997, representing a cumulative increase of 120 percent over FY 1992 (U.S. Ed, 1997). Inflation, as measured by the Consumer Price Index, grew by 14 percent over the same time period.

Guarantee volume at TG followed a similar trend over the mid-1990s. The dollar amount of TG gross guarantees doubled between FY 1992 and FY 1997, from $700 million to $1.4 billion. Moreover, the growth in dollars outpaced the growth in the number of loans and the rise in the number of borrowers, which increased by 58 percent and 30 percent, respectively. The annual guarantee amounts per borrower also increased, from $3,959 in FY 1992 to $6,051 in FY 1997. These statistics strongly suggest that the cumulative amounts borrowed by students leaving school during this period have increased as well.

## III. Previous Research

Many recent studies have chronicled the rising level of student indebtedness. The U.S. General Accounting Office (U.S. GAO, 1998) found that larger numbers of students were borrowing greater amounts today than in the past. Comparing results from two national surveys (NPSAS 1992-93 and NPSAS 1995-96), GAO researchers found that the proportion of undergraduate students who had borrowed by the time they completed their programs of study had increased from 41 percent in 1992-93 to 52 percent in 1995-96. Between the two surveys, the average amount of undergraduate debt increased 24 percent, from $7,800 in 1992-93 to $9,700 in 1995-96 (in constant 1995-96 dollars). They reported steeper rises in loan indebtedness for bachelor's and master's degree recipients: increases of 32 percent to $13,269 and 50 percent to $19,245, respectively. The GAO report also utilized regression analysis to determine whether certain factors — such as type of school, class level, ethnicity, gender, cost of attendance, and dependency status — influenced the amounts borrowed annually by students. Analysts concluded that most factors explained little about the amounts students borrowed, but that "cost of attendance" had the strongest association with loan borrowing.

Using the same NPSAS data sets, the American Council on Education (King, 1997) also reported that student borrowing has expanded rapidly, adding that debt levels have increased more quickly than tuition. For nearly all categories of students analyzed, more students borrowed federal student loans in 1995-96 than in 1992-93 and students borrowed on average much larger amounts. In the case of students who received bachelor's degrees and borrowed federal student loans at public four-year institutions, the average amount of loans borrowed increased from $7,400 in 1992-93 to $11,950 in 1995-96 (in current dollars) — a 61 percent increase. The average monthly payments expanded 67 percent from $90 to $150. In comparison, tuition at public four-year institutions rose by only 27 percent during that time period. Although ACE concluded that debt levels remain reasonable, they recommended that policy makers consider making loans more affordable by reducing interest rates and reducing or eliminating origination fees. They further urged that policy makers provide more grant assistance in order to lessen the demand for loans.

A USA Group study (Scherschel, 1997) analyzed Stafford borrowers in the USA Group servicing portfolio who left school during 1995, 1996, and 1997 and found that student loan debt was continuing to increase annually at a great pace. Among graduate students, cumulative debt levels increased from $11,256 for borrowers leaving school in 1995 to $15,934 for those exiting in 1996. This 42 percent increase was followed by a 23 percent increase between 1996 and 1997. The researchers reported lower, but large, increases for undergraduate, community college, and proprietary school students. Notably, the USA Group suggested three indicators of repayment stress: how often borrowers selected flexible repayment terms, the rate at which borrowers became delinquent, and how often borrowers used forbearances. The researchers concluded that though delinquency rates are trending downward, higher use of forbearance and graduated repayment plans among some populations might hint that borrowers are seeking debt burden relief.

Other studies have attempted to quantify the burden and impact of high levels of student loan indebtedness. Keith Greiner measured debt burden both in terms of borrowers' perceptions of burden and in terms of arbitrary debt-to-income ratios (Greiner, 1996). A survey of borrowers indicated that 34 percent of them perceived their debts as a hardship. In addition, 26 percent of all respondents reported debt that exceeded 8 percent of their income. After considering several alternative thresholds for excessive debt burden, Greiner decided that an 8 percent monthly debt-to-income ratio seemed the most reasonable.

A report by Susan Choy and Sonya Geis for the National Center for Education Statistics (Choy, 1997) used a variety of measures to gauge the impact of debt. They found that 31 percent of borrowers had debt ratios of 10 percent or greater, exceeding the level of burdened borrowers found by Greiner. They also determined that borrowers with higher debt burdens were more likely to live with their parents and more likely to spend less on houses, cars, etc. but were no less likely to be married or have savings.

Survey results compiled by Nellie Mae (Baum, 1997) also indicated that borrowers believe student loan payments have caused them to postpone lifestyle choices. A fairly large percentage of borrowers reported delays in purchasing a home (40 percent), purchasing an automobile (31 percent), having children (22 percent), and moving out of their parents' home (20 percent). The Nellie Mae report found that borrowers had a median monthly debt-to-income ratio of 8 percent. Interestingly though, borrowers who reported that they delayed major life decisions were not more likely to have higher debt ratios than other borrowers.

Quite naturally, studies have succeeded well in tracking the explosion in student loan indebtedness but have been much less successful in measuring changes in debt burden over time. This is understandable, because simply calculating a debt-to-income ratio usually involves conducting a survey in order to acquire monthly income data or borrower perceptions about debt load — a step that can be expensive. Due to major differences in methodology, comparisons between studies are also difficult. Hopefully, analysis of longitudinal surveys will someday allow researchers to assess how quickly debt burdens are growing.

## IV. Scope and Methodology

The objective of this study is to analyze the cumulative TG loan indebtedness of student borrowers who left their institutions of postsecondary education during academic years 1991 through 1997. This analysis considers a student to have left school if the student falls below half-time enrollment status. The measure of loan indebtedness includes only Stafford and SLS guarantees provided through TG. PLUS and consolidation loans are excluded from the analysis. Table A.1 in Appendix A shows the number of borrowers with TG guarantees leaving school during each academic year. An academic year spans from July 1 through June 30 of the following year.

Each phase of the study uses a similar group of variables, or test factors. The source for each variable is the set of TG databases for loan guarantees, default prevention, and claims. The exclusive use of TG variables necessarily excludes important factors of analysis, like dependency status, income at the time of repayment, and amount of grant-based aid received. Despite the obvious limitations of this approach, procurement of external data was too costly to undertake at this time. Even so, this report will introduce a number of variables that few other research studies have considered with respect to student loan indebtedness. For example, this study looks at expected family contribution, whether the borrower has multiple lenders and whether the borrowers' loans are sold to a secondary market. Please refer to Appendix A for the definitions of the variables used in this study.

This report will depart from previous research in several respects. Unlike most studies, which use mean loan indebtedness to describe student debt, this report will use the median loan indebtedness of student borrowers. The advantage of using a median is that it more accurately reflects the typical experience of borrowers by stating a level of indebtedness that many borrowers actually have. The mean, in contrast, overstates the typical experience because it is strongly weighted by the extremely high levels of indebtedness of a few borrowers. To be fair, most researchers have practical reasons for not using a median measurement; their need to produce standard errors for sample-based estimates requires the utilization of a mean. In any case, this study will provide the mean and median for some groups in order to demonstrate the difference between how the two statistics depict student loan indebtedness.

Most national studies on the debt loads of students examine only the loan indebtedness of borrowers who graduate. While such research is valuable, the findings often overstate the indebtedness of borrowers who leave school with loan debt, since many student borrowers withdraw before completing their programs. This study will analyze students who leave school for any reason.

The present study makes another departure from previous research in the way it tests whether debt levels represent a burden to the borrower. Other studies that have looked at debt burden utilize either survey respondents' perceptions of hardship or an arbitrary threshold, expressed as a ratio of debt to income, beyond which borrowers are assumed to feel the pinch of their indebtedness. In contrast, this study will use logistic regression models to test whether there is a relationship between increasing student loan debt and the incidence of delinquency and default. If borrowers with higher levels of debt have higher probabilities of delinquency and default, controlling for other important characteristics of the borrower and loans, this study will infer that there is evidence that borrowers are burdened by debt.

# V. Findings

## Cumulative Student Loan Indebtedness

Like the rest of the nation, student loan indebtedness in Texas has expanded rapidly during the 1990s. Among borrowers who left a Texas postsecondary institution during AY 1990-91, the median indebtedness was $2,625. Coincidentally, this is the maximum annual amount that a student could borrow under the Stafford loan program during his or her first year of college. However, as of AY 1996-97, the median indebtedness of student borrowers stood at $6,625 — a $4,000 and 152 percent increase since the beginning of the decade. In comparison, inflation rose by only 21 percent over the period, suggesting that student debt loads have grown in real terms. Students are clearly taking on much more education debt today than they were just a few years ago.

Table 1 lists the median and mean debt levels for students leaving Texas postsecondary schools during each academic year in the 1990s. Notice that whereas the 1992 HEA reauthorization expanded loan fund availability beginning in AY 1993-94, the largest percentage growth in borrower indebtedness actually occurred before reauthorization, between AY 1990-91 and AY 1991-92. This unusual finding probably reflects the impact of cohort default rate sanctions, which began to exclude proprietary institutions from the guaranteed student loan programs in the early 1990s. Thus, while the low debt loads of proprietary school students are heavily represented in the low median of AY 1990-91, the median debt load for AY 1991-92 includes far fewer proprietary school students and a relatively greater number of four-year college students with higher debts. Even after the 1992 reauthorization, it is likely that the overall growth in per-borrower indebtedness levels was being influenced not only by the liberalization of loan program rules but also by the continued contraction of the proprietary school sector.

Table 1. Median and Mean Debt Levels of Borrowers Leaving College

| Academic Year | Median Indebtedness | Change from Previous Year | Mean Indebtedness | Change from Previous Year |
|---|---|---|---|---|
| 1990-91 | $2,625 | | $4,877 | |
| 1991-92 | $3,375 | 29% | $5,761 | 18% |
| 1992-93 | $3,937 | 17% | $6,418 | 11% |
| 1993-94 | $4,463 | 13% | $7,189 | 12% |
| 1994-95 | $5,291 | 19% | $8,383 | 17% |
| 1995-96 | $6,307 | 19% | $9,655 | 15% |
| 1996-97 | $6,625 | 5% | $10,646 | 10% |

As expected, Table 1 shows that median indebtedness is consistently lower than mean indebtedness. Because mean indebtedness is strongly influenced by the extremely high debt levels of a few borrowers, studies that rely upon the mean debt level might be overstating the typical experience of borrowers, thereby inflating the debt burdens and monthly payment statistics that policy makers have been using in their public discourse on student loan indebtedness. Admittedly, use of the mean is appropriate if the strategy is to give greater weight to "worst case" scenarios. However, if the objective is to fashion public policy based upon the typical experience of borrowers, as opposed to the experience of a minority of borrowers, then policy makers, analysts, and industry participants need to give greater consideration to median debt level measurements.

The mean and median indebtedness measures also provide a somewhat different impression of the growth rate of indebtedness. For all but one academic year depicted in Table 1, the annual growth rate for median indebtedness exceeds the growth rate for the mean indebtedness. The cumulative effect is that median student loan debt grew by 152 percent between AY 1990-91 and AY 1996-97, and average, or mean, debt level increased by 118 percent over the period. Therefore, for the typical student borrower, debt loads have been expanding at a greater rate than is indicated by average indebtedness figures.

## Differences Between School Sectors

Student loan indebtedness has grown at varying rates and has assumed different levels among the different school sectors. At proprietary schools and community colleges, median debt levels did not increase between AY 1990-91 and AY 1994-95, remaining at $2,625 in both school sectors. Over the last two years, indebtedness grew by 61 percent at proprietary schools and 33 percent at two-year institutions, ending up at $4,232 and $3,500, respectively. Steadier and more dramatic growth occurred in the four-year college sector, where median indebtedness grew every year during the 1990s, expanding by a total of 98 percent at Texas public four-year institutions and 79 percent at private four-year institutions. Whereas the median loan indebtedness for borrowers leaving a public four-year school was $5,083 in AY 1990-91, it had grown to a considerable $10,071 by AY 1996-97. Similarly, debt levels increased from $6,500 to $11,625 over the same period at private colleges and universities. Table 2 lists the median loan indebtedness for each Texas school sector and Appendix B lists the median debt level for each postsecondary institution.

Table 2. Median Student Loan Indebtedness by School Sector

| School Sector | Academic Year | Median Indebtedness | Change from Previous Year |
|---|---|---|---|
| Four-Year Public | 1990-91 | $5,083 | |
| | 1991-92 | $5,250 | 3% |
| | 1992-93 | $5,602 | 7% |
| | 1993-94 | $6,436 | 15% |
| | 1994-95 | $7,500 | 17% |
| | 1995-96 | $9,120 | 22% |
| | 1996-97 | $10,071 | 10% |
| Four-Year Private | 1990-91 | $6,500 | |
| | 1991-92 | $7,500 | 15% |
| | 1992-93 | $8,000 | 7% |
| | 1993-94 | $8,900 | 11% |
| | 1994-95 | $10,277 | 15% |
| | 1995-96 | $11,000 | 7% |
| | 1996-97 | $11,625 | 6% |
| Proprietary | 1990-91 | $2,625 | |
| | 1991-92 | $2,625 | 0% |
| | 1992-93 | $2,625 | 0% |
| | 1993-94 | $2,625 | 0% |
| | 1994-95 | $2,625 | 0% |
| | 1995-96 | $3,663 | 40% |
| | 1996-97 | $4,232 | 16% |
| Two-Year | 1990-91 | $2,625 | |
| | 1991-92 | $2,625 | 0% |
| | 1992-93 | $2,625 | 0% |
| | 1993-94 | $2,625 | 0% |
| | 1994-95 | $2,625 | 0% |
| | 1995-96 | $3,313 | 26% |
| | 1996-97 | $3,500 | 6% |

Upon closer examination, there are also important differences in the expansion of loan indebtedness at public and private four-year colleges and universities. In the private four-year sector, growth rates in indebtedness before the 1992 reauthorization were comparable to growth rates after the changes in law took place. This pattern suggests that higher loan limits and a new loan program cannot solely explain the growth of debt at private colleges. In contrast, the pattern of increasing debt within the public four-year school sector conforms to the expected trend: growth rates were moderate before the HEA reauthorization and high after reauthorization, indicating that students might have borrowed more in response to the increased availability of loan funds. Another difference between the sectors is that debt levels have continued to rise quickly at public four-year institutions over the last two academic years, while the growth in debt at private colleges and universities has slowed to single-digit, annual increases.

The fast growth in indebtedness at public four-year schools means that student borrowers at public and private four-year colleges are leaving school with very similar levels of debt. In AY 1990-91, the $5,083 in median debt for a borrower leaving a public four-year institution represented 78 percent of the debt of a borrower leaving a private four-year school ($6,500). Since then, the difference has narrowed. During AY 1996-97, the loan indebtedness of a public four-year school borrower ($10,071) amounted to 86 percent of the indebtedness of a borrower leaving a private university or college ($11,625). At least in terms of federal student loans, borrowers at public and private four-year schools are now making very similar investments in their futures.

The number of students leaving Texas four-year institutions with increasing levels of debt has risen quickly. In AY 1990-91, 24,770 TG student loan borrowers graduated or withdrew from public four-year schools. By AY 1996-97, the number of such borrowers had increased 77 percent to 43,900. As a rough benchmark, headcount enrollments at public four-year schools decreased by 2 percent between Fall 1991 and Fall 1997. Therefore, it appears that a higher proportion of students is becoming much more indebted than in the recent past. A look at the private four-year sector reveals a similar trend: Debt levels are growing and the number of students who are in debt is increasing rapidly. In short, taking on federal loan debt is becoming more and more common as an education financing option within the sectors of postsecondary education where debt levels are rising the most rapidly.

## The Characteristics of Students with Debt

The characteristics of indebted students have changed over time. Table 3 depicts the characteristics of borrowers who left school during academic years 1990-91, 1994-95, and 1996-97. As noted in the last section, indebtedness levels have increased over the course of the 1990s, with only 2.7 percent of borrowers owing $20,000 or more upon leaving school in AY 1990-91 and 14 percent having that level of indebtedness in AY 1996-97.

This trend toward increasing indebtedness parallels other trends in borrower characteristics that occurred between AY 1990-91 and AY 1996-97. Public four-year sector borrowers increased from 28 percent to 53 percent of indebted students. Students who last borrowed as graduate students grew from 8 percent to 14 percent of borrowers leaving postsecondary institutions. The proportion of borrowers who utilized both subsidized and unsubsidized loan programs swelled from 15 percent to 45 percent. Over the same period, the percentage of borrowers leaving from institutions that had costs of attendance of at least $10,000 expanded from 23 percent to 45 percent. Moreover, borrowers leaving school with four or more loans increased from 14 percent to 38 percent of total borrowers.

For the most part, these trends run parallel to the upward trend of rising student loan indebtedness. One would expect borrowers at four-year colleges and borrowers who took loans for graduate school to have a greater likelihood of borrowing during multiple enrollment periods and, therefore, to have higher levels of student loan indebtedness. Likewise, borrowers who face higher costs of attendance and those who borrow unsubsidized student loans in addition to subsidized Staffords would also tend to accumulate greater debt during their programs of study. Subsequent findings in this report will make these connections more explicit.

Table 3. Borrowers Who Left School During Academic Years 1990-91, 1994-95, and 1996-97

| Characteristic | AY 1990-91 % of Total (N=89,661) | AY 1994-95 % of Total (N=72,494) | AY 1996-97 % of Total (N=82,809) |
|---|---|---|---|
| Debt upon Leaving School | | | |
| Less than $2,000 | 24 | 16 | 13 |
| $2,500 - $4,999 | 46 | 31 | 24 |
| $5,000 - $9,999 | 20 | 25 | 25 |
| $10,000 - $19,999 | 8 | 20 | 24 |
| $20,000 and Over | 3 | 9 | 14 |
| Type of Last Institution | | | |
| Four-Year Public | 28 | 48 | 53 |
| Four-Year Private | 8 | 15 | 14 |
| Two-Year | 12 | 18 | 18 |
| Proprietary | 52 | 19 | 15 |
| Highest Grade Borrowed | | | |
| First Year | 57 | 36 | 34 |
| Second Year | 15 | 15 | 14 |
| Third Year | 6 | 8 | 9 |
| Fourth Year | 11 | 23 | 24 |
| Fifth Year | 3 | 5 | 5 |
| Graduate Level | 8 | 13 | 14 |
| Loan Programs Borrowed | | | |
| Subsidized Only | 84 | 63 | 47 |
| Both Sub & Unsub | 15 | 32 | 47 |
| Unsubsidized Only | 1 | 5 | 6 |
| Status Upon Leaving School | | | |
| Graduated | 43 | 49 | 31 |
| Withdrawn | 47 | 51 | 64 |
| Less than Half-Time | 10 | 0 | 5 |
| Residence — Region of Texas | | | |
| Central | 11 | 14 | 14 |
| Gulf Coast | 20 | 18 | 18 |
| Metroplex | 23 | 24 | 23 |
| South | 22 | 18 | 21 |
| Other/Non-Texas | 24 | 26 | 25 |
| Sold after Origination? | | | |
| Sold | 90 | 89 | 85 |
| Not Sold | 10 | 12 | 15 |
| Number of Lenders | | | |
| One | 77 | 73 | 71 |
| Two | 18 | 20 | 21 |
| Three | 4 | 6 | 6 |
| Four or More | 1 | 2 | 2 |

| | | | |
|---|---|---|---|
| Age When Leaving School | (missing # = 3) | (missing # = 1) | |
| 24 or Younger | 44 | 47 | 48 |
| 25 to 29 | 25 | 26 | 28 |
| 30 or Older | 31 | 28 | 25 |
| Expected Family Contribution | (missing # = 198) | (missing # = 25) | (missing # = 19) |
| $0 | 19 | 39 | 35 |
| $1 - $499 | 30 | 10 | 9 |
| $1,000 - $2,999 | 40 | 29 | 28 |
| $3,000 and Over | 12 | 22 | 29 |
| Cost of Attendance | (missing # = 198) | (missing # = 25) | (missing # = 19) |
| $4,999 and Less | 18 | 18 | 15 |
| $5,000 - $9,999 | 59 | 47 | 41 |
| $10,000 and Over | 23 | 36 | 45 |
| Number of Loans | | | |
| One | 53 | 34 | 25 |
| Two | 23 | 25 | 24 |
| Three | 9 | 12 | 13 |
| Four or More | 14 | 30 | 38 |

Table 3 suggests that the HEA reauthorization might have affected the distribution of borrowers' expected family contributions (EFCs). In AY 1994-95 and AY 1996-97, borrowers appear to have been forced to the extremes of EFC; more borrowers had zero EFCs and more borrowers had very high EFCs than was the case in AY 1990-91, before reauthorization. Correspondingly, far fewer of the borrowers who left school recently (in AY 1996-97) had EFCs between $1 and $2,999, as compared to borrowers who left college in AY 1990-91. If reauthorization caused such shifts in the EFC calculations of borrowers, all other factors being equal, some borrowers would tend to be eligible for higher borrowing amounts (i.e., EFC equal to zero) and other borrowers would tend to have their borrowing eligibility restrained.

## Borrowers with the Most and the Least Debt

Borrowers differ greatly in terms of loan indebtedness, depending upon the characteristics associated with their borrowing. As already stated, borrowers at four-year schools had much higher levels of borrowing than did students at two-year and proprietary institutions. In fact, as Table 4 shows, indebtedness at four-year colleges was more than twice as high as indebtedness in the other sectors during AY 1996-97. Within the four-year sector, borrowers at private colleges and universities had the highest median indebtedness; at $11,625, it was 3.3 times the typical debt load for borrowers from the two-year sector.

(The present discussion of Table 4 will concentrate on the column that describes median indebtedness. The two rightmost columns of Table 4 will be addressed within the next section of the report.)

Not surprisingly, students who last borrowed as upper classmen or graduate students had the highest levels of indebtedness. Borrowers at advanced grade levels face higher loan limits and are more likely than first or second year students to have borrowed multiple times. The result is that each higher grade level is associated with a much higher level of debt. Thus, borrowers who last took loans as fourth year, or senior, students had a median indebtedness of $13,400, over five times the indebtedness of first year borrowers. The indebtedness of fifth year and graduate student borrowers was even higher, at $15,275 and $21,400, respectively.

Table 4. Median Indebtedness for AY 1996-97 by Borrower Characteristic

| Characteristic | Median Indebtedness | Monthly Payment | Annual Income Required |
|---|---|---|---|
| All Borrowers | $6,625 | $81 | $12,189 |
| Type of Last Institution | | | |
| Four-Year Public | $10,071 | $124 | $18,529 |
| Four-Year Private | $11,625 | $143 | $21,388 |
| Two-Year | $3,500 | $50 | $7,500 |
| Proprietary | $4,232 | $52 | $7,786 |
| Highest Grade Borrowed | | | |
| First Year | $2,625 | $50 | $7,500 |
| Second Year | $6,125 | $75 | $11,269 |
| Third Year | $8,776 | $108 | $16,146 |
| Fourth Year | $13,400 | $164 | $24,653 |
| Fifth Year | $15,275 | $187 | $28,103 |
| Graduate Level | $21,400 | $262 | $39,371 |
| Loan Programs Borrowed | | | |
| Subsidized Only | $4,183 | $51 | $7,696 |
| Both Sub & Unsub | $11,586 | $142 | $21,316 |
| Unsubsidized Only | $4,666 | $57 | $8,584 |
| Status Upon Leaving School | | | |
| Graduated | $8,282 | $102 | $15,237 |
| Withdrawn | $6,125 | $75 | $11,269 |
| Less than Half-Time | $8,125 | $100 | $14,948 |
| Residence — Region of Texas | | | |
| Central | $10,586 | $130 | $19,476 |
| Gulf Coast | $6,625 | $81 | $12,189 |
| High Plains | $8,109 | $99 | $14,919 |
| Metroplex | $7,500 | $92 | $13,798 |
| Northwest | $6,557 | $80 | $12,063 |
| South | $5,500 | $67 | $10,119 |
| Southeast | $6,500 | $80 | $11,959 |
| Upper East | $6,125 | $75 | $11,269 |
| Upper Rio Grande | $5,248 | $64 | $9,655 |
| West | $5,688 | $70 | $10,465 |
| Non-Texas | $8,475 | $104 | $15,592 |
| Missing | $5,250 | $64 | $9,659 |
| Sold after Origination? | | | |
| Sold | $7,500 | $92 | $13,798 |
| Not Sold | $5,034 | $62 | $9,261 |

| | | | |
|---|---|---|---|
| Number of Holders | | | |
| One Holder | $5,250 | $64 | $9,659 |
| Multiple Holders | $14,268 | $175 | $26,250 |
| Age When Leaving School | | | |
| 24 or Younger | $5,156 | $63 | $9,486 |
| 25 to 29 | $10,443 | $128 | $19,213 |
| 30 or Older | $9,100 | $112 | $16,742 |
| Expected Family Contribution | | | |
| $0 | $6,125 | $75 | $11,269 |
| $1 - $499 | $7,399 | $91 | $13,613 |
| $1,000 - $2,999 | $7,438 | $91 | $13,684 |
| $3,000 and Over | $7,338 | $90 | $13,500 |
| Cost of Attendance | | | |
| $4,999 and Less | $6,534 | $80 | $12,021 |
| $5,000 - $9,999 | $5,862 | $72 | $10,785 |
| $10,000 and Over | $8,126 | $100 | $14,950 |
| Number of Loans | | | |
| One | $2,625 | $50 | $7,500 |
| Two | $5,002 | $61 | $9,203 |
| Three | $7,938 | $97 | $14,604 |
| Four or More | $16,910 | $207 | $31,111 |

Borrowers who utilized both subsidized and unsubsidized loan programs had higher levels of debt than other borrowers. While students who borrowed only from the subsidized Stafford program ended up with a median indebtedness of $4,183, students who also used the unsubsidized programs (SLS and Stafford) borrowed a median of $11,586 — almost three times as much. This pattern conforms to our understanding of the unsubsidized programs as extra reservoirs of financing, particularly for independent students who lack the support of parents.

Borrowers who graduated from school are more indebted than borrowers who did not graduate. Whereas borrowers who withdrew during academic year 1996-97 had a median indebtedness of $6,126, borrowers who graduated had $8,282 in total borrowing. Though borrowers who dropped to a less-than-half-time enrollment status also had a high level of indebtedness, they represent less than 5 percent of the population. Graduates might have a greater amount of debt simply because they attend school, and borrow, long enough to graduate. Another possibility is that more graduates than non-graduates attend four-year institutions, where they have a greater opportunity and need to borrow.

Borrowers differ greatly in their indebtedness according to their last known place of residence. Central Texans had the highest level of debt with a median of $10,586. Also having high levels of indebtedness were borrowers from the High Plains region of Texas ($8,109) and non-Texas borrowers ($8,475). In contrast, borrowers from South Texas, which includes San Antonio, borrowed a median of only $5,550. Please refer to Appendix C for a map of the Texas regions.

Not surprisingly, borrowers who faced the highest costs of attendance (COA) also borrowed the most. Borrowers who attended institutions with COAs of $10,000 or more left school with a median debt load of $8,126. In comparison, borrowers who encountered COAs of $4,999 or less typically left school with about $6,500. This finding generally supports the idea that greater costs would tend to apply upward pressures upon borrowing. Nevertheless, the picture is confused by the fact that the middle group of COAs (between $5,000 and $9,999) borrowed the least ($5,862).

The youngest borrowers had the least debt. Borrowers who left school when they were 24 years old or younger had a median indebtedness of $5,156. This amount was far below the debt of borrowers who were 25 to 29 years old ($10,443) or those

who were 30 years or older ($9,100). As it turns out, fewer than 3 percent of the youngest group took loans as graduate students, while almost 25 percent of the two older groups borrowed as graduate-level students. Therefore, since graduate students often have much higher debt loads than lower-level students, one would expect older students to borrow more than their younger counterparts.

Borrowers with more than one loan holder had much greater student loan indebtedness than borrowers with only one loan holder. At a median of $14,268, borrowers with multiple holders had 2.7 times the indebtedness of borrowers with one holder, who had a median debt level of $5,250. Since the group of borrowers with a single holder includes the subset of all borrowers who took only one loan, the difference between the groups is not completely surprising. Nevertheless, the extremely high indebtedness of the multiple holder group might suggest opportunities for lenders to seek consolidation of these loans into large balance accounts.

Borrowers whose loans were sold into the secondary markets had higher debt loads than borrowers whose loans stayed with their originating lenders. Thus, while borrowers whose loans stayed with their originating lenders had a median indebtedness of $5,034, borrowers whose loans were sold had a higher debt level of $7,500. Though it might appear that secondary markets are directly targeting higher balance accounts for purchase, this is probably not the case. More likely, secondary markets have preferences for loan and student characteristics — like school sector or particular institution attended — that are in turn associated with high average loan balances.

One of the most unexpected patterns of indebtedness comes to surface when comparing borrowers by their EFCs. Three of the four EFC groups in Table 4 had about the same median level of student loan indebtedness — between $7,338 and $7,438. The one exception was the group with EFCs of zero, which had a median debt of $6,125. Thus, it appears that the group with the highest level of demonstrated need had the lowest level of borrowing. In a close-to-ideal world, the reason for lower borrowing by the group of zero EFCs would be that their financial aid requirements are being satisfied by need-based student aid resources.

Table 5 indicates that the picture is a little more complicated. Borrowers in most school sectors did indeed have the expected pattern of borrowing. At four-year and two-year institutions, the borrowers with EFCs of zero had the highest levels of median student loan debt. Only at proprietary schools did borrowers with EFCs of zero have the lowest debt loads. In Table 4, the low median debt of borrowers with zero EFCs probably reflects the very low debt loads of zero EFC borrowers within the proprietary and two-year sectors.

Table 5. Median Indebtedness by EFC and School Sector

| School Sector | Expected Family Contribution | Median Indebtedness |
|---|---|---|
| Four-Year Public | Zero | $11,850 |
| | $1 - $499 | $11,000 |
| | $1,000 - $2,999 | $9,749 |
| | $3,000 and Over | $8,637 |
| Four-Year Private | Zero | $14,250 |
| | $1 - $499 | $12,580 |
| | $1,000 - $2,999 | $11,750 |
| | $3,000 and Over | $11,000 |
| Two-Year | Zero | $3,937 |
| | $1 - $499 | $3,500 |
| | $1,000 - $2,999 | $3,313 |
| | $3,000 and Over | $3,313 |
| Proprietary | Zero | $3,428 |
| | $1 - $499 | $4,250 |
| | $1,000 - $2,999 | $5,585 |
| | $3,000 and Over | $6,433 |

## Monthly Payments and Annual Income

Another way to assess the magnitude of indebtedness is to calculate the amount of the monthly payment required to repay the debt. The third column of Table 4 contains this calculation for each median level of indebtedness. The payment calculation assumes an interest rate of 8.25 percent, a repayment period of 10 years, and a minimum payment of $50. Payments range from $50 for borrowers who leave two-year schools to $262 for borrowers who last took loans as graduate students. The $6,625 in median indebtedness for all borrowers who left school in AY 1996-97 requires a payment of $81 a month.

From the payments, one can also compute the minimum annual income required to keep the payments from being too burdensome. Table 4 shows these income amounts. The calculation assumes that the ratio of the borrower's monthly payment to monthly income should not exceed 8 percent. Multiplying by 12 converts the monthly income to an annual amount.

Most Texas borrowers probably have incomes adequate to repay their loans. The typical Texas borrower needs an annual income of only $12,189 to keep a payment of $81 a month from being excessively burdensome. In comparison, Texans had a median annual income of $22,136 for a single-person family during federal fiscal year 1997. In fact, the required annual incomes for most categories of borrowers in Table 4 are below, if not far below, the median income for Texans in 1997.

Graduate-level borrowers require the largest incomes to support their monthly student loan payments. They need at least $39,371 annually in order to make payments of $262 a month on a median debt load of $21,400. While these numbers seem high, graduate-level students should be better positioned than other students to obtain jobs with high salaries.

## Multivariate Analysis of Student Loan Indebtedness

While the previous sections give valuable insights into the connections between borrower characteristics and level of indebtedness, the results are not necessarily as precise as one would want. One of the previous sections stated, for example, that borrowers who attend private four-year institutions leave with higher debt loads than other borrowers. But common sense suggests that borrowers at private four-year institutions tend to face higher costs of attendance and progress to higher grade levels, both of which are also factors related to higher indebtedness. The challenge, therefore, is to determine how much of an increase in indebtedness can be attributed to each of these variables individually. In this way, it will be possible to isolate the effect of private four-year college attendance on indebtedness, separating it from the influence of COA and highest grade level.

Regression analysis is an excellent method for determining the independent effect of each variable upon indebtedness level. As will be seen below, this approach will enhance the understanding of indebtedness developed in the previous sections. Table 6 provides the results of a multiple regression equation for loan indebtedness using borrowers who left school in AY 1994-95.

Table 6. Regression of Indebtedness Using Borrowers Who Left School in AY 1994-95 (R2=.83)

| Variable | Estimated Coefficient | Statistically Significant? (p<.05) | Standardized Coefficient |
|---|---|---|---|
| Intercept | -6817.36 | Yes | 0.00 |
| Number of Loans | 2262.47 | Yes | 0.65 |
| Highest Grade Level | 1456.33 | Yes | 0.35 |
| Cost of Attendance (in $1,000 units) | 397.83 | Yes | 0.21 |
| Expected Family Contribution (in $1,000 units) | -83.60 | Yes | -0.04 |
| Financial Aid from Other Sources (in $1K units) | -52.48 | Yes | -0.02 |
| Private Four-Year School | 266.35 | Yes | 0.01 |
| Proprietary School | 637.61 | Yes | 0.03 |
| Two-Year School | 1435.59 | Yes | 0.06 |
| Unsubsidized Only Borrowing | 1440.88 | Yes | 0.04 |

| | | | |
|---|---|---|---|
| Subsidized & Unsubsidized Borrowing | 304.04 | Yes | 0.02 |
| Graduated? | 243.88 | Yes | 0.01 |
| Age at Separation from School | -9.11 | Yes | -0.01 |
| Last Known Residence in Texas | | | |
| Central | -83.37 | No | -0.00 |
| Gulf Coast | 819.36 | Yes | 0.04 |
| High Plains | 223.09 | Yes | 0.01 |
| Metroplex | 163.05 | No | 0.01 |
| Northwest | -138.80 | No | -0.00 |
| South | 127.03 | No | 0.01 |
| Southeast | -89.71 | No | -0.00 |
| Upper East | -76.00 | No | -0.00 |
| Rio Grande | 490.22 | Yes | 0.01 |
| Missing Region | 787.23 | No | 0.00 |
| Non-Texas Resident | -107.50 | No | -0.00 |

The standardized coefficient makes it possible to compare the effects of variables that are expressed in different units of measurement. Thus, the fourth column of Table 6 shows that COA, measured in units of $1,000, has a much stronger relationship with indebtedness than the proprietary school variable, which has a value of one if the borrower last attended a proprietary school and a zero if the borrower last attended any other school sector. In fact, COA, with a standardized coefficient of 0.21, has seven times the effect on indebtedness that the proprietary school variable has. Glancing down the column of standardized coefficients, it is clear that the factors having the strongest relationships to indebtedness are the number of loans taken by the borrower (SC=0.64), the grade level at which the borrow last took loans (SC=0.35), and the COA on the most recent loan application (SC=0.21). The rest of the variables have much weaker relationships to indebtedness.

Obviously, the indebtedness of a borrower is going to have a strong relationship to the number of loans borrowed by that person. Nevertheless, it is sometimes necessary to confirm the obvious. The regression model shows that each additional loan borrowed increases indebtedness by $2,262 — the value of the estimated coefficient in Table 6.

Indebtedness also rises rapidly with increases in grade level. Each advancement in grade level contributes $1,457 to a borrower's indebtedness. Since number of loans is also included in the model, the effect of grade level does not simply reflect the fact that borrowers at higher grade levels tend to take more loans. The model gives the independent influence of grade level on indebtedness, holding loan count constant. Thus, a fourth year borrower with three loans will borrow $1,457 more than a third year borrower with three loans. The principal reason borrowers at higher grade levels borrow more is because they have the opportunity to do so; they are taking advantage of the expanded loan borrowing limits available to them.

The costs of attendance that borrowers face are strongly connected to increases in loan indebtedness. A rise of $1,000 in the COA is associated with about a $400 increase in borrower indebtedness. Though this statistic reflects $1,000 differentials between institutions instead of within a given school, it is very suggestive of how individual borrowers will react to cost increases at their schools. School officials and legislators who raise tuition and fees, which are admittedly only part of the total COA, may be putting indirect pressure upon students to increase their borrowing to finance their educations.

Other financial aid variables appear to have little impact upon indebtedness. When EFC rises by $1,000, debt level falls by only $84. To the extent that the EFC reflects family income, it appears that borrowers take on about the same amount of debt no matter how well off they are. Furthermore, the model indicates that debt loads drop by a mere $52 when the level of financial aid from other sources increases by $1,000. (Financial aid from other sources was taken from the borrower's last loan application and can include grants, scholarships, and loan amounts that cover the borrower's demonstrated need.) This result hints that financial support from grants, scholarships, and other sources might not do much to defray the borrowing of students who are inclined to borrow in the first place. However, even if this result holds up to further analysis, it may still be the case that grant and scholarship assistance prevent some students from having to borrow in the first place. Nevertheless, it appears that possible problems with both variables will necessitate further study in this area before firm conclusions can be made.

The regression model presents an unexpected picture of how loan indebtedness varies between school sectors. Table 4 gives the impression that indebtedness is greater at four-year sector institutions than at other schools. Indeed, this is the case. Because borrowers at four-year colleges typically face higher COAs and attend for longer periods of time in which they also borrow, they end up with much higher debt loads. However, when borrowers who share the same grade level, face similar costs and borrow the same number of loans are compared, four-year sector borrowers have the lowest indebtedness. Table 6 shows that when borrowers vary only by school sector, but otherwise have similar characteristics, the borrowers at two-year colleges borrow $1,436 more than borrowers at public four-year institutions and borrowers at proprietary schools end up with $639 more in debt than their public four-year counterparts. Private four-year borrowers also leave school with slightly more indebtedness ($267) than borrowers at public universities.

Without more information, one can only speculate at the dynamic behind this result. Borrowers at two-year schools might borrow more because they are attending and borrowing during a greater number of scheduled academic years in order to complete two years of advancement in grade level, relative to borrowers in the four-year sectors. Alternatively, two-year college borrowers might have a greater tendency to finance their contributions to the costs of their educations. Unfortunately, the model does not include variables — such as dependency status, marital status, and number of dependents — that could help end this speculation. One point is clear, though: Borrowers at two-year colleges are fundamentally different in some respect that affects their propensity to borrow.

Despite the regression model's indication of their higher indebtedness, two-year college borrowers are in little danger of leaving school with large debt loads. While they borrow more than first and second year borrowers who attend other types of institutions, first and second year students do not become very indebted in the first place. The reason for this, of course, is that annual loan limits for first and second year students greatly constrain the amounts they can borrow. The effect of the loan limits is evident in the very low levels of indebtedness of borrowers at two-year colleges (see Table 4).

As Table 6 shows, borrowers who use only unsubsidized loans are more indebted than borrowers who use subsidized Staffords only or a combination of subsidized and unsubsidized loans. Put another way, borrowers who have no demonstrated eligibility for need-based loans borrow between $1,100 and $1,400 more than other borrowers. It appears that there is a subset of the borrowing population that takes much advantage of the opportunity to finance their expected contributions. Alternatively, perhaps the only true difference between the groups is that the subsidized-only borrowers and the borrowers who use both subsidized and unsubsidized loans are simply unable to borrow as much as the unsubsidized-only group, even though they might want to do so. This could be the case if the subsidized Stafford borrowers are dependent students who exhaust their overall loan eligibility through borrowing in the subsidized Stafford program. Again, inclusion of dependency status as a variable in the model would provide additional insight into the differences in borrowing patterns.

Among borrowers who leave school, those who graduate become $244 more indebted on average than borrowers who do not graduate. The difference is small but perhaps troubling. Borrowers who attend similar institutions, have about the same EFCs and COAs and obtain the same number of loans, leave school with approximately the same debt load, whether or not they graduate. To the extent that educational credentials confer better jobs upon their recipients, borrowers who withdraw will therefore be at a disadvantage in repaying their loans relative to borrowers who graduate, assuming they have similar debt levels.

According to Table 6, indebtedness does not vary much by the borrower's age at the time of separation from school. Other factors held constant, older borrowers are slightly less indebted than younger borrowers. Age has the weakest relationship to debt of the significant variables in the model.

The last known residence of a borrower is generally a poor predictor of indebtedness level. Only three of the eleven residence variables — the Gulf Coast, High Plains, and Upper Rio Grande — have a significant relationship to debt level. As a whole, inclusion of the residence variables fails to capture cultural and regional differences in attitudes toward financing education with student loans. This failure is not completely surprising. Depending upon the borrower, these variables can reflect the residence of the borrower's parents, the region in which the borrower attended school, or the area to which the borrower moved after school. Therefore, even in the case of the significant residence variables, it is very difficult to determine the precise nature of their relationship to indebtedness.

## Indebtedness, Delinquency, and Default

Rising student loan indebtedness is particularly problematic if it causes borrowers to have difficulty repaying their loans. This section of the report attempts to determine whether higher debt loads are in fact related to a higher probability of delinquency and default. The method used to make this determination is a variation of regression modeling called logistic regression. With this type of regression, a researcher tries to identify the effects of variables on the probability that an event — such as delinquency or default — will take place.

The tables in Appendix D exhibit the results of the logistic regression analysis for borrowers who left school in academic year 1994-95. Table D.1 describes the relationship between indebtedness and the probability of delinquency. Table D.2 details a similar model for the effects of variables upon the likelihood of default. Both tables give estimates for the set of variables used in the preceding section. The present analysis also introduces four new variables to the logistic regression equations: whether the borrower has multiple loan holders, whether the borrower's loans were sold to a secondary market, whether a borrower used loan consolidation, and the FY 1992 cohort default rate of the borrower's school.

With a few notable exceptions, this section will concentrate primarily on the statistics associated with the debt level variable. This paper is not a report on the factors related to default. The inclusion of the many variables in Tables D.1 and D.2 is necessary so that the regression equations can isolate the independent effect of debt level upon the likelihood of delinquency and default. For a complete analysis of the factors related to default, refer to chapter 4 of the companion report entitled *Student Loan Defaults in Texas: Yesterday, Today, and Tomorrow*.

The regression equations demonstrate that higher levels of student loan indebtedness increase the probability of delinquency and the likelihood of default. For each increase of $2,500 in loan debt, the probability of delinquency rises by two percentage points and the probability of default rises by one percentage point. The fact that TG cohort default rates have actually declined over the most of the 1990s probably indicates that a shift toward otherwise low-risk loans has more than offset the modest upward pressure caused by increasing debt loads.

To the extent that the general results of the regression can be applied to specific subsets of borrowers, the connection of loan indebtedness to problems with repayment should be of greater concern to individual institutions. Assuming a causal relationship between debt and default, this analysis suggests a rule of thumb: All other factors remaining the same, a school's cohort default rate should rise by one percentage point for each $2,500 rise in the average amount of indebtedness of the institution's borrowers. (BSA's default paper suggests, however, that the effect of debt level on the probability of default is strongest at four-year schools and relatively weaker at two-year schools.)

Fortunately, schools can more than offset the impact of high debt on default rates. The tables in Appendix D show that the probability of default is greatly reduced if a borrower progresses to high grade levels or if a borrower graduates. Therefore, to the extent that a school can increase persistence and graduation rates through policy changes, it can produce a profound decrease in the default rate of its student borrowers. Conversely, however, a policy that causes decreases in academic progress and graduation will likely increase an institution's default rate.

Students who graduate with large debt loads also appear to have tools at their disposal for reducing the probability of default. The delinquency and default regression equations indicate that borrowers who consolidate their TG loans have much less difficulty during repayment. The probability of a delinquency drops by 12 percentage points for a borrower who consolidates within 400 days after separation from school. More importantly, the likelihood of default decreases by 17 percentage points for a borrower who consolidates his or her loans. It appears that loan consolidation fulfills its intended role; it is an effective tool for debt management. (Note, however, that these findings do not extend to the consolidation of defaulted loans.)

Reducing the number of a borrower's loan holders might serve as an effective default management tool as well. The regression equations show that borrowers with multiple loan holders have a much greater likelihood of repayment problems. The probability of delinquency rises by eight percentage points and the likelihood of default increases by six percentage points for borrowers who have more than one loan holder. It follows then that strategies that increase the number of borrowers with only one holder will greatly reduce default rates. These findings should therefore lend support to single-holder initiatives.

## VI. Policy Considerations

Texas students are leaving postsecondary education with more debt than ever, but the typical borrower is probably not taking on too much debt. Estimated payments for borrowers who have recently left school seem manageable and the annual incomes to support the payments are mostly low to medium by Texas standards. Furthermore, while higher debt levels do appear to increase the likelihood of repayment problems for Texas borrowers, the effect of indebtedness on delinquency and default is modest compared to other variables. This report simply does not find evidence that current levels of indebtedness are excessive for most borrowers.

Concern about debt levels is nonetheless warranted. Median indebtedness grew by another 10 percent between the last two academic years and shows no sign of abating in its growth. Debt loads could therefore be much less manageable in the future if increases in indebtedness continue. Moreover, a future economic downturn could make it considerably more difficult for borrowers to repay their loans, at any level of debt. Even in relatively good economic times, such as the present, there are some borrowers who are at risk of borrowing too much — who assume very large amounts of student loan debt, which could cause them problems during repayment.

Answering some of these concerns, this report suggests that financing education through debt can work well in many cases. After all, some of the borrowers who take on the most debt are borrowers who advance in grade level and borrowers who graduate. At the same time, grade advancement and graduation status greatly reduce the probabilities of delinquency and default. In short, the borrowers who succeed in their educations and borrow large amounts are also succeeding in the repayment of their loans. This finding suggests that any policy that promotes a borrower's success in school will also promote the borrower's ability to repay loans after school.

Borrowing may be an unfortunate necessity, but if all borrowers were able to make wise investments in quality education programs, there would be much less debate about debt levels. Policy debate therefore needs to center on ways to improve the efficiency of investments. One improvement is to increase the information available to students concerning all aspects of their investments, including information on personal finance, educational quality, and the labor market and income prospects associated with different programs of study. Such an approach assists all students in their investments, whether or not they borrow. Another way to improve the investment in education is for schools to ensure that educational programs are relevant to the world outside of school. Widening the use of internships is one possible method for making direct connections between curriculum and future career opportunities. This strategy has the added benefit of increasing the chances of loan repayment by helping to ease the transition from school to work, a period in which many loans become delinquent.

Despite the potential for some students to make poor investments in education, policy changes must support the opportunity to borrow. Though there will always be individuals who abuse the privilege of borrowing to finance their educations, policy must serve the many individuals who are able to make sensible investments as well as the significant number of students who could not attend postsecondary school without access to loans. At the very least, loan limits must keep pace with the steady increase in the cost of education. Although some students would use expanded limits to finance their own contributions to the cost of education, many other students will lose the opportunities of access and choice if loan limits lag behind rises in the cost of attendance.

Given the results of this report, there should be a more pronounced effort to educate students about the use of consolidation as a tool for debt management. Because the consolidation of loans in repayment greatly reduces the probabilities of delinquency and default, borrowers' knowledge about the consolidation program needs to be reinforced with follow-up information after exit counseling and especially during any period of delinquency. Information packets could stress that the extended repayment periods of some consolidations might result in increased interest costs to the borrower, but that the borrower has the right to prepay balances at any time. In addition to being a good debt management tool for borrowers, consolidations also create cost savings for lenders by lowering average default and servicing costs. If lenders compete for these cost savings, part of the savings could be passed on to borrowers.

A single holder initiative would also help counteract the negative effects of indebtedness. As the report shows, the likelihood of default is much higher for borrowers with multiple holders, at every level of debt. Therefore, if for no other reason than to reduce defaults, Texas lenders, servicers, and secondary markets could undertake a program to provide, to the extent practicable, a single holder solution for their borrowers. While a concerted and coordinated implementation of a single holder pro-

gram might be desirable, loan consolidation provides an individual lender with the means to establish a single holder program for its own borrowers.

Texas is well positioned to deal with the challenge of rising student loan debt. Because most borrowers' debt loads are still at reasonable levels, loan program participants have time to formulate a rational and thoughtful approach to easing the burden of debt. Such an approach, by including efforts to promote academic progression and graduation and by improving the investments that students make, will resonate with the perennial goals of providing an affordable, high-quality education. Such an approach will also ensure that students have the effective debt management tools that they need, such as loan consolidation and access to a single holder program. Be forewarned though: If rising debt levels cause widespread problems in the future, it will be because people neglected to take action today.

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## Appendix A — Methodology Notes

The objective of this study is to analyze the cumulative TG loan indebtedness of student borrowers who left their institutions of postsecondary education during academic years 1991 through 1997. This analysis considers a student to have left school if the student falls below half-time enrollment status. The measure of loan indebtedness includes only Stafford and SLS guarantees provided through TG. PLUS and consolidation loans are excluded from the analysis. Table A.1 shows the number of borrowers with TG guarantees leaving school during each academic year. An academic year spans from July 1 to June 30 of the following year.

Table A.1. Number of Borrowers with TG Guarantees Leaving School in Each Academic Year

| Academic Year | Number of Borrowers |
|---|---|
| 1990-91 | 89,661 |
| 1991-92 | 71,692 |
| 1992-93 | 72,003 |
| 1993-94 | 69,035 |
| 1994-95 | 72,494 |
| 1995-96 | 74,250 |
| 1996-97 | 82,809 |

Each phase of the study uses a similar group of variables, or test factors. The source for each variable is the set of TG databases for loan guarantees, default prevention, and claims. The exclusive use of TG variables necessarily excludes important factors of analysis, like dependency status, income at the time of repayment and amount of grant-based aid received. Despite the obvious limitations of this approach, procurement of external data was too costly to undertake at this time. Even so, this report will introduce a number of variables that few other research studies have considered with respect to student loan indebtedness. For example, this study looks at expected family contribution, whether the borrower has multiple lenders and whether the borrowers' loans are sold to a secondary market. Table A.2 lists the definitions of the variables used in this study.

Table A.2. TG Loan Indebtedness Study Variables

| Variable | Description |
|---|---|
| Borrower's Age | Borrower's age at the time borrower left school. |
| Cohort Default Rate for FY 1992 | The FY 1992 cohort default rate for the school last attended by the borrower. |
| Cost of Attendance | Cost of attendance on the most recent guarantee application. |
| Cumulative Indebtedness | Borrower's cumulative amount of TG-guaranteed loans at the time of leaving school. Stafford and SLS loans only. |
| Consolidation or Not | Whether the borrower consolidated TG loans. |
| Enrollment Status | Borrower's enrollment status at the time borrower left school: graduated, withdrawn, or less than half-time. |
| Expected Family Contribution | Borrower's expected family contribution on the most recent loan guarantee. |
| Financial Aid | Amount of financial aid from sources other than the loan, as recorded on the most recent guarantee application. |
| Highest Grade Level | Highest grade level at which borrower received a TG-guaranteed loan. |
| Loan Programs | Whether borrower received subsidized loans only, unsubsidized loans only, or both. |
| Multiple Holders | Whether borrower had one loan holder or more than one holder. |

| | |
|---|---|
| Number of Loans | Number of Stafford and SLS loans the borrower has. |
| Region | Borrower's last known residence, expressed as a region of the state of Texas. Out-of-state residents have a value of "Non-Texas". |
| School Sector | Type of institution last attended by borrower on at least a half-time basis. |
| Secondary Market? | Whether or not borrower had at least one loan sold to a secondary market. |

## Appendix B — Median Indebtedness at Individual Texas Schools

| Four-Year Public | Median Indebtedness | | |
|---|---|---|---|
| Institution | AY 1990-91 | AY 1993-94 | AY 1996-97 |
| Angelo State University - 003541 | $4,000 | $6,042 | $7,420 |
| Baylor College of Dentistry-TAMU - 004948 | $25,000 | $30,000 | $42,750 |
| Lamar University-Beaumont - 003581 | $3,572 | $3,137 | $5,500 |
| Midwestern State University - 003592 | $2,772 | $3,633 | $5,500 |
| Prairie View A&M University - 003630 | $4,000 | $3,925 | $10,716 |
| Sam Houston State University - 003606 | $3,881 | $5,227 | $6,625 |
| Southwest Texas State University - 003615 | $4,000 | $5,840 | $13,188 |
| Stephen F. Austin State University - 003624 | $3,807 | $5,787 | $6,938 |
| Sul Ross State University - 003625 | $4,857 | $5,002 | $8,593 |
| Tarleton State University - 003631 | $4,000 | $5,715 | $8,750 |
| Texas A&M International University - 009651 | $5,179 | $5,000 | $8,250 |
| Texas A&M University - 003632 | $5,983 | $7,414 | $12,130 |
| Texas A&M University - Commerce - 003565 | $4,293 | $6,000 | $12,500 |
| Texas A&M University - Corpus Christi - 011161 | $4,177 | $6,443 | $8,638 |
| Texas A&M University - Kingsville - 003639 | $3,938 | $4,325 | $6,999 |
| Texas A&M University - Texarkana - 031703 | $1,000 | $5,500 | $6,561 |
| Texas A&M University at Galveston - 010298 | $2,797 | $5,025 | $5,500 |
| Texas Southern University - 003642 | $6,231 | $5,313 | $11,954 |
| Texas Tech University - 003644 | $5,128 | $6,800 | $10,950 |
| Texas Tech University Health Sciences Center - 010674 | $14,100 | $20,125 | $29,172 |
| Texas Woman's University - 003646 | $5,145 | $8,000 | $13,205 |
| University of Houston - 003652 | $6,018 | $7,211 | $10,598 |
| University of Houston - Clear Lake - 011711 | $5,775 | $7,500 | $11,000 |
| University of Houston - Downtown - 003612 | $3,008 | $4,000 | $7,379 |
| University of Houston - Victoria - 013231 | $5,094 | $4,818 | $12,120 |
| University of North Texas - 003594 | $4,713 | $6,637 | $10,008 |
| University of North Texas Health Science Center - 009768 | $31,200 | $41,026 | $62,218 |
| University of Texas - Pan American - 003599 | $3,707 | $4,000 | $6,125 |
| University of Texas at Arlington - 003656 | $4,000 | $5,500 | $8,312 |
| University of Texas at Austin - 003658 | $6,480 | $8,600 | $13,993 |
| University of Texas at Brownsville - 030646 | $2,758 | $2,600 | $3,938 |
| University of Texas at Dallas - 009741 | $6,464 | $7,349 | $11,000 |
| University of Texas at El Paso - 003661 | $3,500 | $3,719 | $6,483 |
| University of Texas at San Antonio - 010115 | $5,000 | $6,000 | $8,000 |
| University of Texas at Tyler - 011163 | $5,300 | $7,750 | $6,500 |
| University of Texas Health Science Center at Houston - 004951 | $22,393 | $26,250 | $28,202 |
| University of Texas Health Science Center at San Antonio - 003659 | $18,625 | $22,500 | $25,224 |
| University of Texas Medical Branch at Galveston - 004952 | $14,110 | $22,000 | $12,988 |
| University of Texas of the Permian Basin - 009930 | $6,125 | $7,252 | $11,391 |
| University of Texas Southwestern Medical Center at Dallas - 003660 | $19,950 | $24,466 | $25,541 |
| West Texas A&M University - 003665 | $3,750 | $5,081 | $7,070 |

| Four-Year Private | Median Indebtedness | | |
|---|---|---|---|
| Institution | AY 1990-91 | AY 1993-94 | AY 1996-97 |
| Abilene Christian University - 003537 | $6,500 | $9,184 | $13,424 |
| Ambassador University - 030889 | $8,599 | $2,500 | $3,417 |
| Amber University - 022594 | $9,000 | $7,940 | $20,301 |
| Arlington Baptist College - 020814 | $2,625 | $2,888 | $6,063 |
| Austin College - 003543 | $6,000 | $7,713 | $6,125 |
| Austin Presbyterian Theological Seminary - 003544 | $6,250 | $9,600 | $13,500 |
| Baptist Missionary Assoc. Theological Seminary - 023312 | $10,763 | $2,625 | $25,264 |
| Baylor College of Medicine - 004949 | $27,429 | $29,014 | $35,856 |
| Baylor University - 003545 | $7,247 | $10,048 | $14,970 |
| Concordia University at Austin - 003557 | $4,506 | $5,500 | $11,063 |
| Dallas Baptist University - 003560 | $6,000 | $6,125 | $11,031 |
| Dallas Christian College - 006941 | $2,625 | $2,625 | $5,287 |
| Dallas Theological Seminary - 003562 | $3,969 | $7,500 | $11,625 |
| East Texas Baptist University - 003564 | $2,625 | $5,500 | $6,125 |
| Hardin-Simmons University - 003571 | $5,578 | $8,000 | $11,000 |
| Houston Baptist University - 003576 | $6,625 | $8,068 | $8,816 |
| Howard Payne University - 003575 | $2,967 | $4,125 | $9,807 |
| Huston-Tillotson College - 003577 | $2,925 | $7,359 | $13,250 |
| Institute For Christian Studies - 023628 | $3,313 | $1,313 | $22,304 |
| Jarvis Christian College - 003637 | $3,097 | $4,433 | $7,689 |
| LeTourneau College - 003584 | $4,219 | $8,000 | $11,750 |
| Lubbock Christian University - 003586 | $5,250 | $8,031 | $12,569 |
| McMurry University - 003591 | $4,000 | $7,880 | $12,812 |
| Northwood University - 004072 | $2,625 | $3,313 | $4,495 |
| Oblate School of Theology - 003595 | $4,713 | $9,056 | $21,232 |
| Our Lady of the Lake University - 003598 | $4,128 | $10,979 | $13,692 |
| Parker College of Chiropractic - 023053 | $35,720 | $27,026 | $10,551 |
| Paul Quinn College - 003602 | $2,625 | $4,000 | $5,268 |
| Rice University - 003604 | $4,000 | $7,413 | $5,500 |
| Schreiner College - 003610 | $3,346 | $4,000 | $6,609 |
| South Texas College of Law - 004977 | $23,000 | $35,528 | $55,500 |
| Southern Methodist University - 003613 | $10,673 | $12,750 | $17,125 |
| Southwestern Adventist College - 003619 | $5,125 | $7,888 | $8,900 |
| Southwestern Assemblies of God University - 003616 | $2,625 | $3,207 | $6,250 |
| Southwestern Christian College - 003618 | $2,535 | $2,625 | $3,119 |
| Southwestern University - 003620 | $7,276 | $8,730 | $13,545 |
| St. Edward's University - 003621 | $6,928 | $11,477 | $15,982 |
| St. Mary's University - 003623 | $12,039 | $10,434 | $7,883 |
| Texas Chiropractic College - 003635 | $30,500 | $35,536 | $24,928 |
| Texas Christian University - 003636 | $5,000 | $7,801 | $11,625 |
| Texas College - 003638 | $2,788 | $4,062 | $3,378 |
| Texas Lutheran College - 003641 | $4,154 | $7,424 | $14,375 |
| Texas Wesleyan University - 003645 | $6,198 | $8,932 | $8,084 |
| Trinity University - 003647 | $7,112 | $8,831 | $14,000 |
| University of Central Texas - 011854 | $6,625 | $9,710 | $11,512 |
| University of Dallas - 003651 | $7,745 | $12,125 | $9,625 |
| University of Mary Hardin-Baylor - 003588 | $5,000 | $6,124 | $11,000 |
| University of St. Thomas - 003654 | $4,000 | $9,200 | $15,847 |
| University of the Incarnate Word - 003578 | $6,500 | $10,400 | $9,725 |

| | | | |
|---|---|---|---|
| Wayland Baptist University - 003663 | $3,441 | $5,537 | $6,800 |
| Wiley College - 003669 | $2,625 | $3,874 | $3,500 |

| Two-Year Public | Median Indebtedness | | |
|---|---|---|---|
| Institution | AY 1990-91 | AY 1993-94 | AY 1996-97 |
| Alvin Community College - 003539 | $2,625 | $3,937 | $3,500 |
| Amarillo College - 003540 | $2,625 | $3,500 | $5,625 |
| Angelina College - 006661 | $2,616 | $2,188 | $2,625 |
| Austin Community College - 012015 | $2,755 | $4,083 | $5,250 |
| Bee County College - 003546 | $2,292 | $2,588 | $2,326 |
| Blinn College - 003549 | $2,560 | $2,625 | $2,625 |
| Brazosport College - 007287 | $2,625 | $2,625 | $2,623 |
| Brookhaven College - 021002 | $2,625 | $4,625 | $4,499 |
| Cedar Valley College - 003561 | $3,969 | $3,931 | $2,625 |
| Central Texas College - 004003 | $2,625 | $2,625 | $2,625 |
| Cisco Junior College - 003553 | $2,625 | $2,625 | $2,896 |
| Clarendon College - 003554 | $2,625 | $2,625 | $2,625 |
| College of the Mainland - 007096 | $2,625 | $3,229 | $3,629 |
| Collin County Community College - 023614 | $2,625 | $2,625 | $2,625 |
| Del Mar College - 003563 | $2,625 | $2,625 | $2,625 |
| Eastfield College - 008510 | $2,625 | $3,342 | $4,751 |
| El Centro College - 004453 | $2,625 | $2,625 | $4,627 |
| El Paso Community College District - 010387 | $2,620 | $2,625 | $2,625 |
| Frank Phillips College - 003568 | $2,625 | $2,625 | $2,625 |
| Galveston College - 004972 | $4,213 | $3,681 | $2,625 |
| Grayson County College - 003570 | $2,449 | $2,625 | $6,096 |
| Hill College - 003573 | $2,625 | $2,625 | $2,625 |
| Houston Community College - 010633 | $2,625 | $2,625 | $3,281 |
| Howard County Junior College District - 003574 | $2,625 | $2,625 | $4,557 |
| Kilgore College - 003580 | $2,625 | $2,625 | $3,625 |
| Lamar University at Orange - 023582 | $2,625 | $2,625 | $2,625 |
| Lamar University at Port Arthur - 023485 | $2,625 | $2,625 | $2,625 |
| Laredo Community College - 003582 | $2,625 | $2,625 | $2,625 |
| Lee College - 003583 | $2,625 | $2,625 | $2,613 |
| McLennan Community College - 003590 | $2,625 | $3,736 | $5,272 |
| Midland College - 009797 | $2,625 | $2,625 | $2,625 |
| Mountain View College - 008503 | $2,625 | $3,313 | $5,251 |
| Navarro College - 003593 | $2,508 | $2,610 | $2,625 |
| North Central Texas Community College District - 003558 | $2,625 | $2,625 | $2,625 |
| North Harris Montgomery Community College District - 011145 | $2,625 | $2,625 | $3,938 |
| North Lake College - 020774 | $2,625 | $3,662 | $4,625 |
| Northeast Texas Community College - 023154 | $2,473 | $2,000 | $1,545 |
| Odessa College - 003596 | $2,625 | $2,625 | $3,334 |
| Palo Alto College - 023413 | $2,625 | $3,282 | $2,625 |
| Panola College - 003600 | $2,625 | $2,730 | $4,506 |
| Paris Junior College - 003601 | $2,625 | $1,350 | $1,407 |
| Ranger Junior College - 003603 | $2,625 | $6,563 | $2,813 |

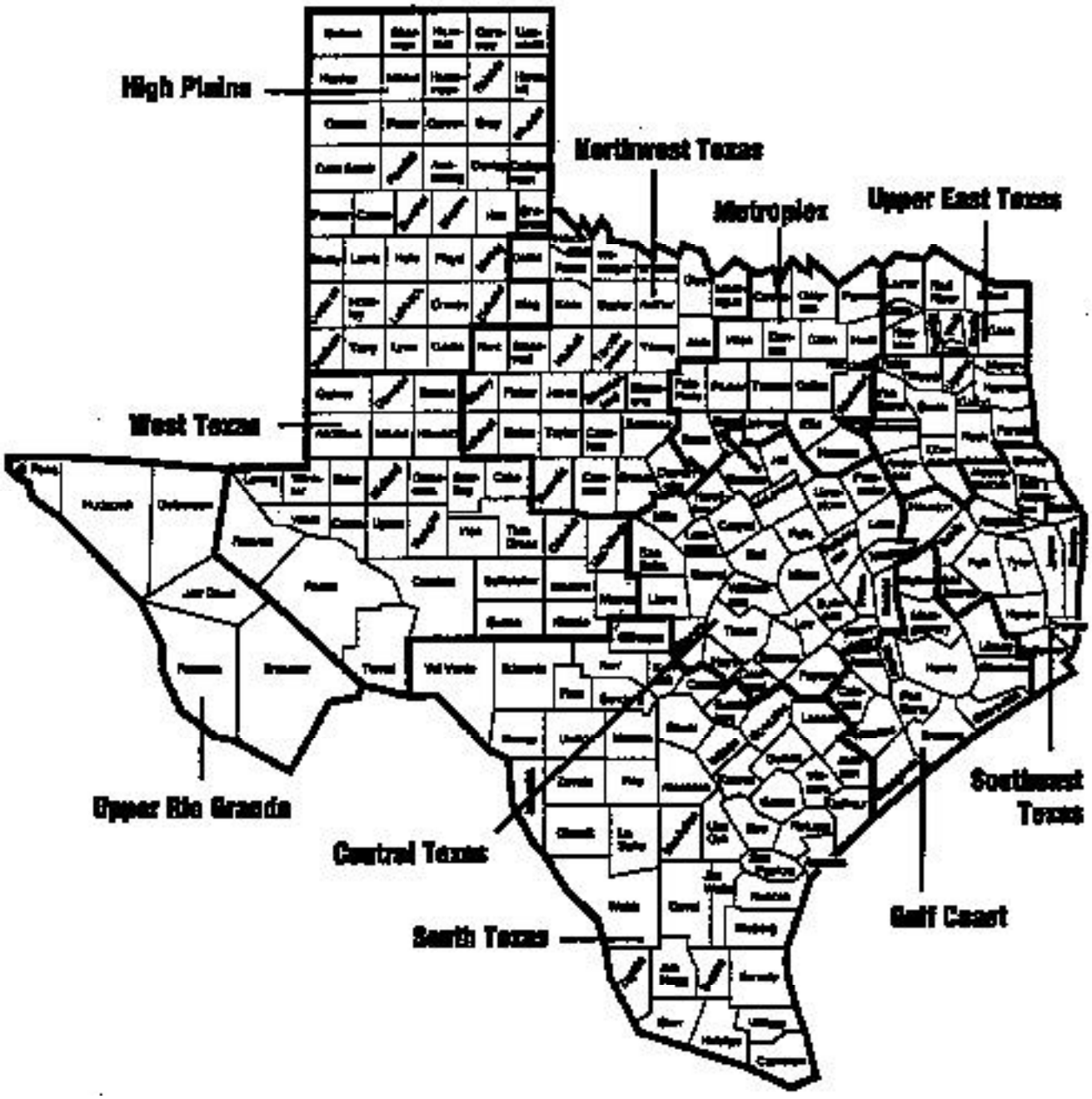
| | | | |
|---|---|---|---|
| Richland College - 008504 | $3,809 | $2,625 | $3,938 |
| San Antonio College - 003607 | $2,625 | $2,745 | $3,500 |
| San Jacinto College - 003609 | $2,625 | $2,625 | $5,500 |
| South Plains College - 003611 | $2,625 | $2,625 | $3,063 |
| South Texas Community College - 031034 | $1,000 | $2,625 | $5,938 |
| Southwest Texas Junior College - 003614 | $2,468 | $2,000 | $3,239 |
| St. Philip's College - 003608 | $2,625 | $2,625 | $3,500 |
| Tarrant County Junior College District - 003626 | $2,625 | $2,625 | $3,500 |
| Temple College - 003627 | $2,625 | $2,625 | $2,625 |
| Texarkana College - 003628 | $2,500 | $2,500 | $2,625 |
| Texas Southmost College - 003643 | $2,323 | $2,337 | $11,954 |
| Texas State Technical College - Harlingen - 009225 | $2,264 | $1,969 | $1,969 |
| Texas State Technical College - Sweetwater - 009932 | $2,625 | $2,625 | $4,969 |
| Texas State Technical College - Waco - 003634 | $2,625 | $3,282 | $4,969 |
| Trinity Valley Community College - 003572 | $2,625 | $2,625 | $3,312 |
| Tyler Junior College - 003648 | $2,625 | $2,625 | $4,174 |
| Vernon Regional Junior College - 010060 | $2,625 | $2,625 | $2,625 |
| Victoria College, The - 003662 | $2,625 | $3,500 | $6,000 |
| Weatherford College - 003664 | $2,625 | $2,625 | $2,625 |
| Western Texas College - 009549 | $1,666 | $2,625 | $4,838 |
| Wharton County Junior College - 003668 | $2,625 | $2,625 | $2,625 |

| Two-Year Private | Median Indebtedness | | |
|---|---|---|---|
| Institution | AY 1990-91 | AY 1993-94 | AY 1996-97 |
| Commonwealth Institute of Funeral Service - 003556 | $2,625 | $2,625 | $2,500 |
| Jacksonville College - 003579 | $2,500 | $2,362 | $2,625 |
| Lon Morris College - 003585 | $2,625 | $2,625 | $2,625 |
| Methodist Hospital School of Nursing - 006612 | $5,250 | $6,125 | $7,500 |

| Proprietary | Median Indebtedness | | |
|---|---|---|---|
| Institution | AY 1990-91 | AY 1993-94 | AY 1996-97 |
| Aims Academy - 030238 | $5,970 | $2,500 | $6,625 |
| Aladdin Beauty College #13 Cleburne - 010969 | $2,625 | $3,580 | $2,625 |
| Aladdin Beauty College #15 Fort Worth - 022816 | $2,813 | $2,625 | $2,625 |
| Aladdin Beauty College #17 Sherman - 022817 | $2,625 | $2,625 | $2,625 |
| Aladdin Beauty College #18 El Paso - 008137 | $2,625 | $2,625 | $2,625 |
| Aladdin Beauty College #19 Midland - 012299 | $2,969 | $2,625 | $2,625 |
| Aladdin Beauty College #25 Dallas - 012485 | $2,564 | $2,625 | $2,625 |
| Aladdin Beauty College #26 Mesquite - 012492 | $2,562 | $3,184 | $2,625 |
| Aladdin Beauty College #28 San Angelo - 030688 | $2,758 | $2,625 | $2,625 |
| Aladdin Beauty College #3 McKinney - 022814 | $2,625 | $3,500 | $2,625 |
| Aladdin Beauty College #32 Duncanville - 030322 | $6,625 | $4,375 | $2,625 |
| Aladdin Beauty College #4 Odessa - 009884 | $2,525 | $3,788 | $2,625 |
| Aladdin Beauty College #5 Arlington - 013066 | $3,383 | $2,625 | $2,625 |
| Aladdin Beauty College #7 Hurst - 022815 | $2,813 | $3,063 | $2,625 |
| Aladdin Beauty College #8 Abilene - 021007 | $2,625 | $3,376 | $2,625 |
| American Beauty College - 012093 | $2,625 | $2,000 | $2,625 |
| American Commercial College - 010057 | $2,625 | $2,625 | $3,843 |
| American Commercial College - 021368 | $2,625 | $2,625 | $5,016 |
| American Commercial College - 022008 | $2,625 | $2,625 | $4,559 |
| American Commerical College - 010059 | $2,625 | $2,625 | $4,102 |
| American Weld Testing School - 031064 | $1,000 | $2,625 | $6,625 |
| Arlington Court Reporting College - 025212 | $5,114 | $5,050 | $6,113 |
| Art Institute of Dallas - 025396 | $3,313 | $8,024 | $3,281 |
| Art Institute of Houston - 021171 | $2,625 | $2,625 | $4,000 |
| ATI Career Training Center - 025965 | $3,603 | $3,800 | $5,106 |
| ATI Career Training Center - 025966 | $2,625 | $3,800 | $6,175 |
| Austin Business College - 021886 | $2,625 | $2,625 | $2,625 |
| Business Skills Training Center - 030534 | $2,625 | $2,625 | $5,265 |
| Capitol City Careers - 022948 | $2,625 | $5,172 | $2,375 |
| Capitol City Trade & Technical School - 020741 | $2,625 | $2,625 | $4,686 |
| Career Advancement & Applied Technology Training - 022451 | $2,625 | $2,663 | $2,550 |
| Career Centers of Texas El Paso, Inc. - 025919 | $1,726 | $2,500 | $2,000 |
| Career Point Business School - 025911 | $2,625 | $4,400 | $6,625 |
| Center for Advanced Legal Studies - 026047 | $2,625 | $4,525 | $5,362 |
| Central Texas Commercial College - 010624 | $2,625 | $2,625 | $5,195 |
| Charles and Sue's School of Hair Design - 012930 | $2,625 | $2,625 | $5,282 |
| Computer Career Center - 025720 | $2,585 | $2,625 | $2,625 |
| Court Reporting Institute of Dallas - 021192 | $5,250 | $6,625 | $13,375 |
| Dallas Institute of Funeral Service - 010761 | $2,625 | $2,625 | $5,250 |
| Delta Career Institute - 026085 | $2,625 | $2,625 | $3,292 |
| Education America - Fort Worth Campus - 007586 | $2,625 | $3,990 | $4,603 |
| Executive Secretarial School of Texas - 009432 | $4,778 | $5,250 | $6,625 |
| Hallmark Institute of Technology - 010509 | $5,250 | $4,824 | $6,186 |
| Health Institute of San Antonio - 030837 | $8,599 | $5,204 | $7,086 |
| Houston Allied Health Careers - 031068 | $1,000 | $2,625 | $3,603 |
| Interactive Learning System - 023313 | $2,563 | $2,265 | $3,313 |
| International Aviation & Travel Academy - 022702 | $2,625 | $4,250 | $4,973 |
| International Business College - 009082 | $1,375 | $1,850 | $2,249 |
| International Business College of Lubbock - 025389 | $1,700 | $2,625 | $2,713 |
| Iverson Institute of Court Reporting - 025801 | $5,144 | $9,375 | $10,667 |

| | | | |
|---|---|---|---|
| K D Studio - 023182 | $5,250 | $6,625 | $10,450 |
| King Beauty Careers - 031087 | $1,000 | $2,625 | $4,313 |
| Le Chef College of Hospitality Careers - 025693 | $6,625 | $3,313 | $11,065 |
| Lincoln Technical Institute - 008353 | $2,563 | $2,625 | $6,625 |
| M & M Word Processing Institute - 030265 | $5,970 | $1,750 | $4,510 |
| Microcomputer Technology Institute - 022452 | $3,030 | $5,250 | $4,625 |
| Mims Classic Beauty College - 008498 | $2,063 | $2,625 | $1,550 |
| National Institute of Technology - 022613 | $2,625 | $3,198 | $3,679 |
| Ocean Corp Commercial Diver Training - 026002 | $5,125 | $3,160 | $4,250 |
| Ogle School of Hair Design - 013016 | $2,625 | $2,625 | $4,810 |
| Ogle School of Hair Design - 022305 | $2,625 | $2,625 | $3,250 |
| PCI Health Training Center - 030198 | $2,625 | $2,625 | $2,625 |
| Professional Court Reporting Inc. - 023601 | $5,543 | $8,772 | $13,250 |
| San Antonio Beauty College - 023260 | $2,625 | $2,625 | $2,300 |
| San Antonio School of Medical & Dental Assistants - 009466 | $2,569 | $2,590 | $2,615 |
| School of Automotive Machinists - 030323 | $6,625 | $5,125 | $5,353 |
| Seguin Beauty School - 025218 | $2,625 | $2,393 | $2,625 |
| Shirley Baker Career Institute - 026107 | $2,625 | $6,252 | $9,625 |
| South Texas Vocational Technology Institute - 025494 | $1,313 | $2,625 | $2,625 |
| South Texas Vo-Tech Brownsville - 022185 | $2,249 | $1,930 | $2,625 |
| Southern Careers Institute - Corpus Christi - 030353 | $2,625 | $2,625 | $3,610 |
| Southwest Institute Merchandising - 012982 | $2,625 | $2,625 | $5,250 |
| Southwest School of Electronics - 020936 | $6,408 | $6,764 | $5,425 |
| Stenograph Institute of Texas - 008958 | $2,230 | $11,125 | $17,050 |
| Success Institute of Business - 031513 | $1,000 | $2,625 | $3,050 |
| Texas Careers, Inc. - 031158 | $1,000 | $2,625 | $3,200 |
| Texas College of Cosmetology - 030250 | $5,970 | $2,500 | $13,510 |
| Texas School of Business - 023122 | $2,625 | $3,710 | $4,250 |
| Texas Vocational Schools - 022548 | $2,625 | $2,625 | $3,125 |
| Ultrasound Diagnostic School - 021160 | $2,625 | $6,625 | $6,625 |
| Universal Technical Institute - 023620 | $4,525 | $2,625 | $10,540 |
| University of Cosmetology Arts & Sciences - 022859 | $2,625 | $2,625 | $2,200 |
| Victoria Beauty College - 012020 | $2,625 | $2,625 | $2,563 |
| Visible Changes University - 026165 | $2,625 | $5,440 | $6,625 |
| Western Technical Institute - 020983 | $2,625 | $3,587 | $5,669 |

## Appendix C — Texas Regions



## Appendix D — Logistic Regression Models

The following tables represent the results of two logistic regression equations that test a set of variables for their relationship to the probability of delinquency and the likelihood of default. The regression equations are applied to borrowers who left school during academic year 1994-95, which extended from July 1, 1994, through June 30, 1995. For the purposes of the analysis, a borrower is delinquent if a lender filed a 90-day Request for Assistance on any of the borrower's loans for a delinquency that occurred before July 1, 1996. A borrower is considered "in default" in the regression of Table D.2 if TG paid a default claim before July 1, 1996. Table D.1 gives the results for the regression on delinquency and Table D.2 provides the statistics for the analysis of default.

Generally, the tables list variables in the descending order of their standardized coefficients (regardless of plus or minus sign). A standardized coefficient indicates the strength of relationship of a variable to the probability of delinquency and default. Because they are "standardized," these coefficients provide a basis for making comparisons between variables. Thus, in Table B.1, the variable with the strongest relationship to the probability of delinquency is highest grade level. In contrast, the borrower's age when leaving school, with a standardized coefficient of -0.01, has a very weak relationship to delinquency.

The sign of a coefficient indicates whether a variable increases or decreases the probability of the event. In Table D.1, the highest grade level variable has an estimated coefficient of -0.2477 and reduces the likelihood of delinquency. The indebtedness variable, however, has a positive coefficient (0.0824) and increases the probability of delinquency.

The Delta-p statistic is useful for expressing regression results in more practical terms than a coefficient does. The Delta-p of -0.06 for highest grade level in Table D.1 means that each advancement in grade level translates into a six percentage point decrease in the probability that the borrower will become delinquent. Likewise, the Delta-p for the proprietary school variable in the same table indicates that the probability of delinquency increases by 14 percentage points for borrowers who attend proprietary schools.

Table D.1. Logistic Regression of Delinquency Using Borrowers Who Left School in AY 1994-95 (R2=.16, N=70,594, Population Mean=47.5%)

| Variable | Estimated Coefficient | Statistically Significant? (p<.05) | Standardized Coefficient | Delta-p |
|---|---|---|---|---|
| Intercept | -0.1913 | Yes | N/A | N/A |
| Highest Grade Level | -0.2477 | Yes | -0.29 | -0.06 |
| Graduated? | -0.9695 | Yes | -0.27 | -0.22 |
| Expected Family Contribution (in $1,000 units) | -0.0731 | Yes | -0.17 | -0.02 |
| Indebtedness (in units of $2,500) | 0.0824 | Yes | 0.16 | 0.02 |
| FY 1992 Cohort Default Rate | 0.0278 | Yes | 0.14 | 0.01 |
| School Sector | | | | |
| Proprietary School | 0.5784 | Yes | 0.12 | 0.14 |
| Private Four-Year School | 0.1116 | Yes | 0.02 | 0.03 |
| Two-Year School | 0.0791 | Yes | 0.02 | 0.02 |
| Number of Loans | 0.0649 | Yes | 0.09 | 0.02 |
| Multiple Holders | 0.3021 | Yes | 0.07 | 0.08 |
| Consolidated Within 400 Days after Separation | -0.4957 | Yes | -0.05 | -0.12 |
| Loan Program | | | | |
| Subsidized & Unsubsidized Borrowing | 0.1955 | Yes | 0.05 | 0.05 |
| Unsubsidized Only Borrowing | 0.0464 | No | 0.01 | 0.01 |
| Cost of Attendance (in $1,000 units) | -0.0110 | Yes | -0.03 | 0.00 |
| Financial Aid from Other Sources (in $1K units) | 0.0185 | Yes | 0.03 | 0.00 |

| | | | | |
|---|---|---|---|---|
| Loans Sold to Secondary Market | 0.1404 | Yes | 0.02 | 0.04 |
| Age at Separation from School | -0.0037 | Yes | -0.01 | 0.00 |
| Last Known Residence in Texas | | | | |
| Central | 0.3201 | Yes | 0.06 | 0.08 |
| Gulf Coast | 0.4277 | Yes | 0.09 | 0.11 |
| High Plains | -0.1654 | Yes | -0.02 | -0.04 |
| Metroplex | 0.3578 | Yes | 0.08 | 0.09 |
| Northwest | 0.3554 | Yes | 0.04 | 0.09 |
| South | 0.2992 | Yes | 0.06 | 0.07 |
| Southeast | 0.6043 | Yes | 0.05 | 0.15 |
| Upper East | 0.5725 | Yes | 0.06 | 0.14 |
| Rio Grande | 0.2960 | Yes | 0.03 | 0.07 |
| Missing Region | 0.2855 | No | 0.00 | 0.07 |
| Non-Texas Resident | 0.2109 | Yes | 0.02 | 0.05 |

Table D.2. Logistic Regression of Default Using Borrowers Who Left School in AY 1994-95 (R2=.13, N=70,594, Population Mean=20%)

| Variable | Estimated Coefficient | Statistically Significant? (p<.05) | Standardized Coefficient | Delta-p |
|---|---|---|---|---|
| Intercept | | Yes | N/A | N/A |
| Highest Grade Level | -0.3280 | Yes | -0.38 | -0.05 |
| Graduated? | -1.1897 | Yes | -0.33 | -0.13 |
| Consolidated (TG non-default loans only) | -2.1926 | Yes | -0.29 | -0.17 |
| Expected Family Contribution (in $1,000 units) | -0.0917 | Yes | -0.21 | -0.01 |
| FY 1992 Cohort Default Rate | 0.0333 | Yes | 0.17 | 0.01 |
| Indebtedness (in units of $2,500) | 0.0745 | Yes | 0.14 | 0.01 |
| Loans Sold to Secondary Market | -0.5154 | Yes | -0.09 | -0.07 |
| Number of Loans | 0.0636 | Yes | 0.09 | 0.01 |
| Multiple Holders | 0.3525 | Yes | 0.09 | 0.06 |
| School Sector | | | | |
| Proprietary School | 0.2097 | Yes | 0.04 | 0.04 |
| Two-Year School | -0.1986 | Yes | -0.04 | -0.03 |
| Private Four-Year School | -0.0474 | No | -0.01 | -0.01 |
| Financial Aid from Other Sources (in $1K units) | 0.0229 | Yes | 0.03 | 0.00 |
| Cost of Attendance (in $1,000 units) | -0.0105 | Yes | -0.03 | 0.00 |
| Age at Separation from School | -0.0042 | Yes | -0.02 | 0.00 |
| Loan Program | | | | |
| Subsidized & Unsubsidized Borrowing | 0.0471 | No | 0.01 | 0.01 |
| Unsubsidized Only Borrowing | -0.1017 | No | -0.01 | -0.02 |
| Last Known Residence in Texas | | | | |
| Central | 0.1632 | Yes | 0.03 | 0.03 |
| Gulf Coast | 0.2255 | Yes | 0.05 | 0.04 |
| High Plains | -0.2144 | Yes | -0.03 | -0.03 |
| Metroplex | 0.1968 | Yes | 0.05 | 0.03 |
| Northwest | 0.0722 | No | 0.01 | 0.01 |
| South | 0.0331 | No | 0.01 | 0.01 |
| Southeast | 0.4035 | Yes | 0.03 | 0.07 |

| | | | | |
|---|---|---|---|---|
| Upper East | 0.2955 | Yes | 0.03 | 0.05 |
| Rio Grande | -0.1017 | No | -0.01 | -0.02 |
| Missing Region | 0.5860 | No | 0.01 | 0.11 |
| Non-Texas Resident | 0.0665 | No | 0.01 | 0.01 |