

TRACKING THE DISCOUNT

Tuition Discount Rates, Net Tuition Revenue, and Efforts to Inform Institutional Practices

Natalie Pullaro Davis,
Kenneth E. Redd

About the Authors

Natalie Pullaro Davis is manager, Research and Policy Analysis, of the National Association of College and University Business Officers. Kenneth E. Redd is director, Research and Policy Analysis, of the National Association of College and University Business Officers.

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Abstract

This article uses findings from the 2012 Tuition Discounting Study (TDS) conducted by the National Association of College and University Business Officers (NACUBO) to provide a framework for institutional researchers to develop and adapt their own custom tuition discounting definitions and formulas.

Under tuition discounting, colleges and universities use a portion of their gross tuition and fee revenue dollars to provide academic merit scholarships and other grants to reduce undergraduate students' tuition and fee charges. Higher education institutions typically use discounting to attract undergraduates who would otherwise be unable or unwilling to pay to enroll. Although discounting practices are often used successfully, they have the potential to erode net tuition revenue (gross tuition and fees – grant aid) in some circumstances. Institutional researchers and others on campus should continually monitor their enrollment and tuition and fee

prices to gauge their institutions' competitiveness in the market. The article begins with a detailed description of tuition discounting and then uses data from the TDS to answer five research questions: (1) What is the annual tuition discount rate at 4-year private colleges and universities? (2) What revenue sources are used to fund institutional grants? (3) Has the rising discount rate led to increasing net tuition and fee revenue at private colleges and universities? (4) What effect has discounting had on overall enrollments of undergraduate students and on enrollments at different types of institutions (small, comprehensive/doctoral, and research institutions)? (5) What share of institutional grant dollars is used to meet students' demonstrated financial need?

The article concludes with advice for institutional research offices that want to use the data and trends presented as a basis for analyzing trends in institutional grant aid and net tuition revenue at their own campuses.

INTRODUCTION: WHAT IS TUITION DISCOUNTING?

Over the past two decades, institutional aid has been one of the fastest-growing expenditures for higher education. Between academic year (AY) 1991–

1992 and AY 2010–2011, institutions increased their grant aid dollars to undergraduates by 253% in inflation-adjusted (2011) dollars.¹

Expenditures for instruction, in contrast, grew 205% in roughly the same period (The College Board, 2012a; National Center for Education Statistics [NCES], 2012).

For AY 2011–2012, according to the College Board (2012a), higher education institutions provided \$32.8 billion in scholarships, fellowships, and other grants to help undergraduates pay their college expenses. These grants accounted for 18% of the total amount of financial aid students received that year (The College Board, 2012a). While many public colleges award institutional grants, the majority of this aid—roughly 70.3% in AY 2009–2010—is awarded by private nonprofit 4-year colleges and universities (NCES, 2010).

A number of private educational institutions have used a portion of their funding for financial aid for many decades (Davis, 2003; Redd, 2000; Russo, 2000). Prior to the 1970s, most of these institutions awarded the majority of their grant aid to financially needy students (Davis, 2003; McPherson & Schapiro, 1998; Russo, 2000). These 4-year private colleges and universities generally used complex formulas that measured family income, financial assets, and other factors to determine which students were eligible for awards and how much they would receive (McPherson & Schapiro, 1998; Russo, 2000). As a result, most aid dollars were distributed to students based on their demonstrated financial need.

Consequently, the majority of financial aid dollars went to students from low- and moderate-income families (Russo, 2000).


Beginning in the 1970s, institutions began relying on enrollment managers who developed complex strategies designed to distribute institutional grant aid dollars to students based on academic merit or other criteria other than financial need (Davis, 2003). Many private institutions adopted these new criteria, in part because they felt compelled to increase grant aid for middle- and upper-income students who increasingly expressed concerns about college affordability (National Commission on the Cost of Higher Education, 1998). Indeed, over the period from 1982 to 2012 listed tuition prices at 4-year private institutions increased 166.5%, on average, in inflation-adjusted value, whereas family incomes for households most likely to have college-age children increased only 11.5% (The College Board, 2012b; U.S. Census Bureau, 2012).

Pressures on private colleges and universities to use their aid dollars more strategically also increased as U.S. News and World Report's annual ranking of higher education institutions began to use methodologies that emphasized the proportion of entering first-year students with high college admissions test scores and other demonstrated abilities (Morse & Flanigan, 2000). Accordingly, many 4-year private institutions now devote more of their institutional aid dollars to enticing the best and brightest students to enroll on their campuses (Lapovsky & Hubbell, 2000; McPherson & Schapiro, 1998; Winston & Zimmerman, 2000).

The strategies employed by many private colleges and universities to award institutional aid dollars are referred to as “tuition discounting” plans. Under tuition discounting, colleges and universities use part of their revenue to provide academic merit scholarships and other non-need-based grants, which reduce the tuition and fee charges students would otherwise be unable or unwilling to pay to attend those institutions. Need-based and non-need-based grants may be funded by gross tuition and fee revenue (the collective amounts of tuition and fees that students [and their families] pay to attend postsecondary education institutions), donations from alumni or other private sources, and income from institutional endowments (NACUBO, 2012; Redd, 2000). Tuition and fee revenue, however, is most often used as the basis of analysis because this revenue is most often the largest source of funds used to support these institutional programs. A 2002 study (National Association of Student Financial Aid Administrators [NASFAA] & The College Board, 2002) found that 67% of total institutional grant awards were supported by tuition and fee revenue, 21% were funded by endowment earnings, and just 9% came from donations and other financial gifts to the institutions; 3% were unknown or not identified. Tuition discounts also may be unfunded tuition waivers, whereby colleges and universities simply forego all or part of the total tuition and fee charges that students otherwise would have had to pay to attend their institutions (Allan, 1999, 2005).

Under tuition discounting strategies, colleges and universities hope to use their institutional grant dollars

¹ For many institutions, the AY is the period between August or September of one year through May or June of the following year. Institutional grant expenditures and tuition and fee revenue for the TDS are reported based on the full AY as of the fall for each year. That is, institutional aid data and tuition and fee revenue for AY 2011–12 are based on amounts reported as of fall 2011.



to encourage a greater number of students to enroll on their campuses. Under these plans, institutional grant recipients and amounts are based on students' admissions test scores, grades or other forms of academic merit, musical or other artistic talents and abilities, and/or other factors other than—or in addition to—demonstrated financial need. Some colleges and universities may use up to six different criteria (in addition to financial need) to award their institutional grants (NASFAA & The College Board, 2002).

At the same time, most private institutions still seek to enroll students from various income levels and racial/ethnic backgrounds (Pérez-Peña, 2012; Redd, 2000). As such, 4-year private colleges and universities generally use tuition discounting for several distinct purposes:

- to strengthen their campus diversity efforts by encouraging students from low-income families, racial/ethnic minorities, and other underrepresented groups to enroll;
- to enhance their enrollment management goals by using non-need-based aid to entice students with high academic achievement or other talents to attend their institutions;
- and (perhaps most important to campus administrators) to bring in more revenue in the long run.

Many administrators believe that providing the discounts to students who pay part of the tuition and fees is better than having empty classroom and dormitory space, which generates no additional revenue (McPherson & Schapiro, 1998). Institutional grant dollars, if spent strategically and wisely, can help increase revenue from tuition and fees and might raise total enrollments to levels above what they would have been had no aid been

provided (Baum, 2000; McPherson & Schapiro, 1998).

To meet enrollment and revenue objectives, private colleges and universities seek to set an appropriate tuition discount rate. Institutions and their institutional research (IR) departments can calculate the discount rate in a number of ways. (These various rate calculations are discussed in the Research Methodology section of this article.) Generally, the rate is based on the dollar amount of total institutional grant aid awarded (need- and non-need-based aid combined) divided by total gross tuition and fee revenue (Redd, 2000).

While tuition discounting may have benefits for colleges and universities, many higher education analysts have expressed concerns about its unintended effects. Various studies from the late 1990s, for example, indicate that discounting has led to a shift of institutional aid toward undergraduates from middle- and upper-income families (Baum, 2000). Heller and Nelson Laird (1999) discovered that during the 1990s the number of need-based institutional grants provided to undergraduates from higher-income families grew by 79%, while the number of grants provided to undergraduates from low-income families rose by just 1%. A more recent study by Davis (2003) suggests that “*on a national basis* tuition discounting appears to limit affordability and choice for many low-income students” (p. 5; emphasis in original) because much of the aid is distributed to academically meritorious students from middle- and upper-income families at the expense of need-based grant dollars that could have gone to students from low-income families. Earlier research has also suggested that rapid increases in

discount rates have resulted in steep losses in net tuition and fee revenue for some 4-year private colleges and universities. For example, Redd (2000) found that colleges and universities with above-average increases in discount rates lost \$306 per full-time equivalent undergraduate as a result of their increased spending on institutional grant aid. These losses came because the institutions lost enrollment despite increasing grant aid or because their growth in grant awards exceeded any increases in enrollment or tuition and fee revenue.

RESEARCH BACKGROUND AND RESEARCH QUESTIONS

The rise of tuition discounting and its potentially adverse effects has led to several questions about its use:

- What is the annual tuition discount rate at 4-year private colleges and universities?
- What revenue sources are used to fund institutional grants?
- Has the rising discount rate led to increasing net tuition and fee revenue at private colleges and universities?
- What effect has discounting had on overall enrollments of undergraduate students and on enrollments at different types of institutions (small, comprehensive/doctoral, and research institutions)?
- What share of institutional grant dollars is used to meet students' demonstrated financial need?

To answer these five research questions, the National Association of College and University Business Officers (NACUBO) has conducted a Tuition Discounting Study (TDS) each year since 1994. The TDS grew out of a regional study conducted by the Eastern Association of College and

University Business Officers (Davis, 2013; Lapovsky & Hubbell, 2000). The annual TDS has become a widely used source of information on institutional grants to undergraduates who attend 4-year private nonprofit colleges and universities in the United States.

Research Methodology

The annual TDS measures tuition discount rates and other indicators of institutional grant awards provided to undergraduate students by 4-year, private, nonprofit colleges and universities. The TDS calculates two discount rates: the freshman rate, based on awards to first-time, full-time, degree-seeking first-year undergraduates; and the discounting among all undergraduates.

Both rates are calculated in a similar way: total institutional grant aid awarded as a percentage of gross tuition and fee revenue. This rate can be determined in one of two ways:

Direct formula: Total institutional grants for freshmen divided by total gross tuition and mandatory fee revenue for freshmen. Gross tuition and mandatory fee revenue is equal to the tuition and fee price multiplied by the total number of freshmen.

Component formula: The product of the percentage of freshmen aided and the average freshman grant as a percentage of tuition and mandatory fees.

By definition, both methods of calculation will yield the same tuition discount rate for each individual institution.

The freshman rate is based on total

grants and tuition and fee revenue for first-time freshmen exclusively. Total institutional grant aid in the NACUBO study includes all institutionally funded or administered need- and non-need-based scholarships, fellowships, and other grant awards (including tuition waivers and athletic scholarships) provided to undergraduate students. That is, the survey data are designed to include all grants that are either funded by institutional resources or awarded to students based on institutionally developed criteria.

This definition includes grants, scholarships, and fellowships funded by tuition and fee revenue, endowment spending, general investment earnings, donations, and other forms of support revenue. It also includes so-called unfunded tuition waivers. It does not include tuition remission (generally provided as a benefit of employment at an institution and thus not considered financial aid available to all undergraduates) or tuition exchange programs (usually awarded as part of an exchange agreement between two or more institutions, but not considered as part of the general financial aid expenditures). Additionally, NACUBO's definition does not include institutional matches to federal or state financial aid programs, because colleges and universities do not develop the criteria used to award aid under such programs.

NACUBO collects data for the TDS via a Web-based survey instrument. The 2012 survey instrument (Davis, 2013) contained 14 questions. It asked institutions to report the following:

- Final total undergraduate institutional grant expenditures and gross tuition and fee revenue

for AY 2011–2012, and preliminary estimates of these data for 2012–2013

- Percentage of their fall 2011 and fall 2012 total undergraduate enrollment and enrollment of first-time, full-time, degree- or certificate-seeking freshmen
- Institutional grants that were funded by endowment income in 2011–2012
- Percentage of their total awarded institutional grant dollars that met students' demonstrated financial need in 2011–2012 (based on the institution's definition of need)
- Incoming freshman admissions acceptance and yield rates in fall 2011

The 2012 survey instrument also included open-ended questions that allow chief business officers (CBOs) to share their thoughts on their institution's discounting strategies and other comments they think will help share an understanding of what is happening on their campuses. (Selected responses appear in the Research Results section of this article.)

Data collected for the 2012 TDS are based on information available as of each institution's fall census date. Although the survey is sent to the CBO on campus, much of these data are provided by the IR, financial aid, and admissions offices.²

The Research Results section of this article provides more details on the 2012 TDS results, including the data from AY 2000–2001 to 2012–2013 (to account for the period prior to, during, and after the economic recession of 2008–2009), and tables with year-to-year comparisons, where appropriate. The study results look

² The fall census date is the date by which institutions have their final enrollment data, and is generally the same date as the census date used for the Integrated Postsecondary Education Data System (IPEDS) fall enrollment and other surveys.

at discount rates over this 12-year period for all participating institutions and for institutions by three NACUBO constituent groups:

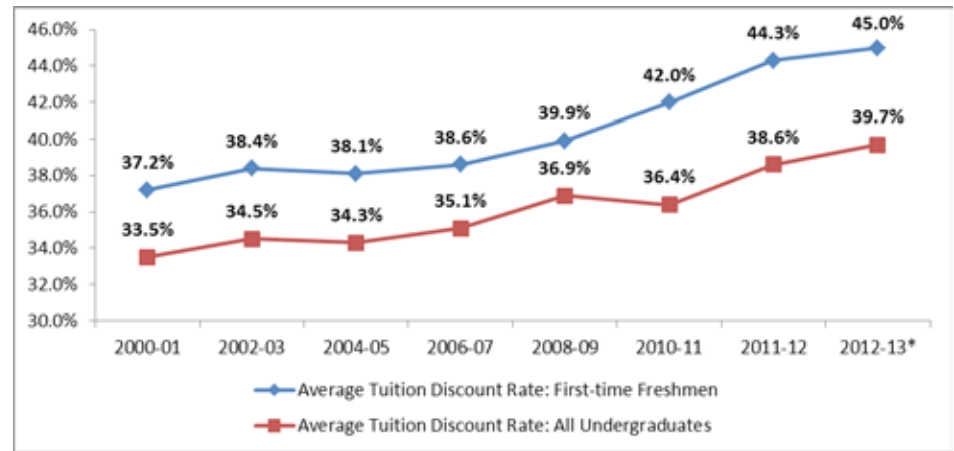
1. Small institutions (Small): Colleges and universities with total enrollment under 4,000. The baccalaureate is the highest degree awarded at most of these institutions.
2. Comprehensive/doctoral institutions (Comprehensive/Doctoral): Master's- and doctoral degree-granting colleges and universities with enrollment above 4,000.
3. Research institutions (Research): Doctoral degree-granting research universities.

Survey Participation

Each year, NACUBO e-mails a link to the TDS survey instrument to its primary representatives (typically, the CBO) at all 4-year private, nonprofit colleges and universities that are members of NACUBO as of September. For the 2012 study, the survey was sent to 1,070 private nonprofit institutions. The survey was launched in mid-September 2012 and responses were collected through mid-November.

Roughly 36% (383) institutions submitted usable responses by the end of the survey data collection period. While there are some differences in the distribution of the survey participants when compared with the total population, these differences do not appear to be statistically significant ($\alpha = 0.05$). Roughly 9% of the respondents came from research institutions, versus 7% of the survey population. Approximately 78% of the responses came from small institutions, compared with 84% of the total survey population. Finally, about 13% of the survey responses came from comprehensive institutions, compared

Figure 1. Average Tuition Discount Rate for First-Time, Full-Time Freshmen and All Undergraduates, AY 2000–2001 to AY 2012–2013*



Source: Davis (2013).

Note: Figures represent the AY as of the fall census date. Due to revisions in NACUBO's database of historical survey database, minor adjustments from prior years' reports are to be expected. *Preliminary estimate.

with 9% of the population.

Survey participants received a complimentary copy of the report (nonparticipant NACUBO members pay \$50, and nonmembers pay \$200), as well as access to an online benchmarking tool where institutions can see their submitted data alongside a group of self-selected peers. (The tool is described more fully in the Considerations for Applying This Research to Your Campus section of this article.)

Institutional participation in the TDS has grown from 148 institutions in 2000 to 383 in 2012. To increase participation, NACUBO staff involved in the survey's administration interact more with prospective participants. NACUBO sends several e-mails to announce the survey and remind institutions to respond. Improved participation can also be attributed to better maintenance of the database of survey contacts and organization-

wide communication about the TDS to NACUBO members.

RESEARCH RESULTS

Research Question 1: What is the annual tuition discount rate at 4-year private colleges and universities?

The average tuition discount rate has long been a measure of an institution's ability to remain competitive in the marketplace (Davis, 2013). It is a core measure that CBOs often use to measure their institutional grant expenditures and changes in tuition revenue against their peer institutions. Measured as the share of gross tuition and fee revenue used for institutional grant aid, it essentially quantifies how much of the gross tuition and fee revenue is foregone by an institution. It is also a potential proxy for the fiscal health of private colleges and universities (Moody's Investors Services, 2012).

As Figure 1 illustrates, the early and

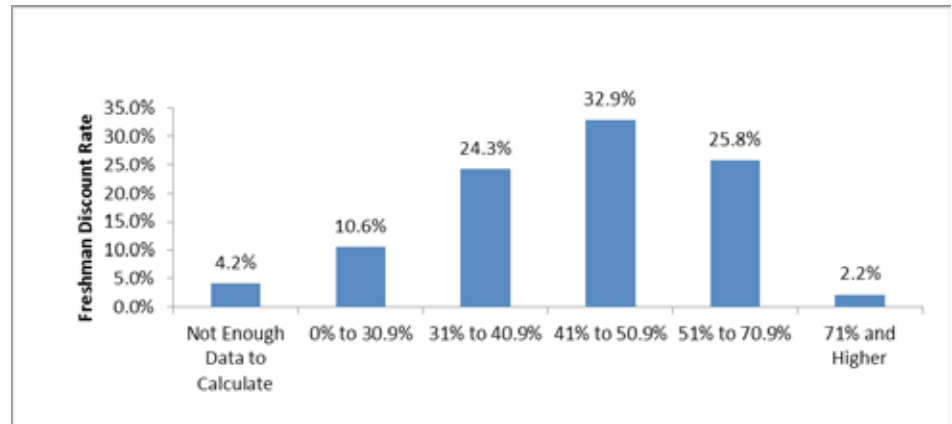
mid-2000s marked a period of stability in the discount rate: the freshman rate hovered between 37% and 38% and the rate for all undergraduates ranged from 34% to 35%. However, the severe economic recession that began in late 2007 and the sluggish recovery from 2009 to 2010 appear to have ushered in an era of large spurts in the average discount rate for both freshmen and all undergraduates. This growth in discount rate has continued despite the fact that the recession has officially ended. From 2010–2011 to 2011–2012 the average discount rate for first-time freshmen jumped from 42% to 44.3%; this 2.3 percentage point rise is the largest 1-year increase in the history of the TDS.

Why did the discount rate increase so dramatically between 2010–2011 and 2011–2012? The weak recovery from the recession appears to be the primary culprit. According to the U.S. Federal Reserve (2012), the median value of inflation-adjusted pretax income fell 7.7% from calendar year 2007 to calendar year 2010, and median net worth of families fell 38.8%. Declines in family income and net worth tend to increase college students' need for financial aid. At the same time, several states reduced their state financial aid programs for students (National Association of State Student Grant and Aid Programs [NASSGAP], 2012). In many cases, institutions have bridged the gap in funding from the state, meaning they have to use more of their own revenue to increase grant-based funding to students.

Distribution of Freshman Tuition Discount Rates

While the average 2011–2012 discount rate for first-time freshmen was 44.3%, the rate by individual school varied greatly, as Figure 2 reveals. In 2011–2012, 10.6% of TDS respondents had

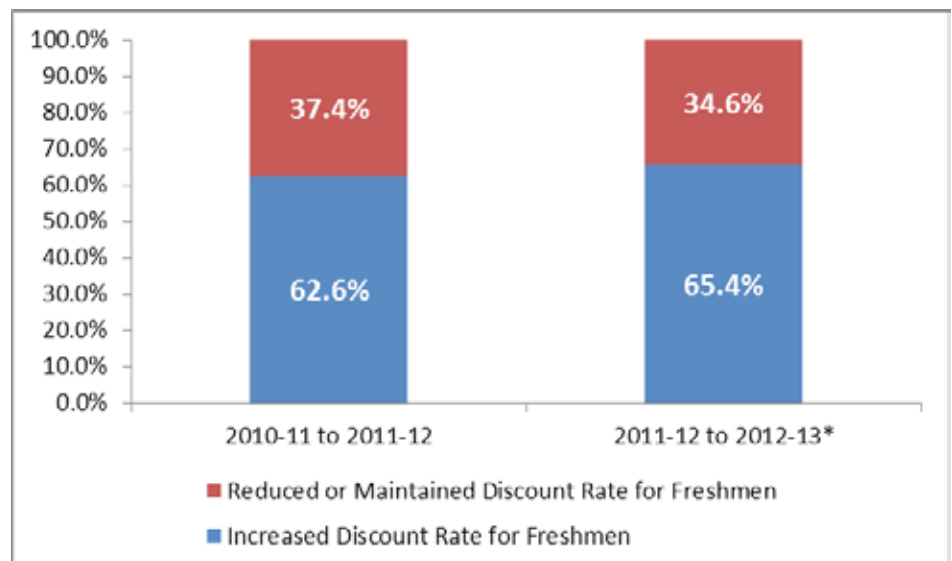
Figure 2. 2012 TDS Participating Institutions by AY 2011–2012 Freshman Discount Rate



Source: Davis (2013).

Note: Figures represent the AY as of the fall census date.

Figure 3. Percentage of Institutions that Increased or Decreased or Maintained Their Tuition Discount Rate for First-Time, Full-Time Freshmen from AY 2010–2011 to AY 2011–2012, and from AY 2011–2012 to AY 2012–2013*



Sources: Davis (2013); NACUBO (2012).

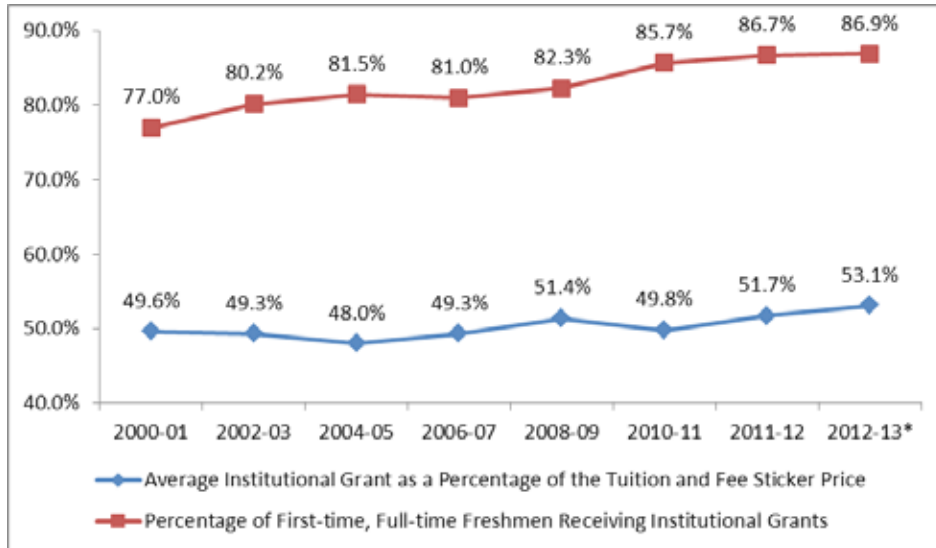
Note: Data for AYs are as of the fall census date for each respective year. *Data for 2012–2013 are preliminary estimates.

a freshman discount rate that ranged from 0% to 30.9%, 24.3% had a rate from 31% to 40.9%, 32.9% had a rate from 41% to 50.9%, and 25.8% had a rate from 51% and 70.9%. A small portion of schools did not provide enough data elements to calculate a freshman discount rate for 2011–2012.

Movement in the Discount Rate from AY 2011–2012 to AY 2012–2013

While the average discount rate has increased over the past year, a great deal of variation occurred in the movement of discount rates from

Figure 4. Percentage of First-Time, Full-Time Freshmen Receiving Institutional Grants and the Average Institutional Grant for First-Time, Full-Time Recipients as a Percentage of Tuition and Fees



Source: Davis (2013).

Note: Due to the nature of NACUBO’s living database of historical survey data, minor adjustments from prior years’ reports are to be expected. Figures represent AY as of the fall census date. *Preliminary estimate.

AY 2011–2012 to AY 2012–2013. As Figure 3 shows, 34.6% of institutions reduced their discount rate from AY 2011 to AY 2012. In contrast, the 2011 TDS results (NACUBO, 2012) found that 37.4% of institutions decreased their discount rate from 2010 to 2011. Many institutions that decreased their discount rate did so because they were uncomfortable with a high discount rate or because they believed their discount rate was unsustainable.

As a CBO at a small institution in the Plains region remarked, “FY2013 marks a turning point for [the institution]. With a discount rate climbing near an unsustainable 65%, a comprehensive strategy is being discussed to rein in aid costs and increase net tuition revenue. Changes will be implemented for the entering class in 2014” (Davis, 2013, p. 33). For other institutions, such attempts had a steep cost. As a CBO from a small institution in the Great

Lakes region noted, “We attempted to reduce our discount rate. Enrollment plunged” (Davis, 2013, p. 33).

Larger Grant Awards, More Recipients

As tuition discount rates have jumped, the portion of tuition and fees covered by the average institutional grant award has been steadily growing. This indicates that institutional grant awards have been rising faster than listed tuition and fee charges (see Figure 4). Institutional grant aid as a percentage of tuition and fee charges is calculated by dividing the aggregate institutional grant dollars awarded to full-time freshmen by the product of the number of full-time freshmen receiving institutional aid and the tuition and mandatory fee rate.

In AY 2000–2001 the average institutional grant covered 49.6% of the average tuition and fee sticker price. By

AY 2012–2013 the average institutional grant will cover an estimated 53.1% of the average sticker price, the highest percentage recorded in the history of the TDS.

In addition, the percentage of first-time, full-time students who received institutional grants has been on the rise. Between 2008–2009 and 2012–2013 the percentage of freshmen receiving an institutional grant grew from 82.3% to 86.9% (Figure 4). This unprecedented growth in the percentage of freshmen receiving an institutional award illustrates how higher education institutions have responded to rising student financial need during and after the economic recession. Although most economists have declared the recession over, the percentage of freshmen receiving aid has not returned to prerecession levels, signaling a new normal for private colleges and universities.

Research Question 2: What revenue sources are used to fund institutional grants?

Beginning in 2009, the TDS began collecting information on the amount of endowment income used to fund institutional grant programs. According to the 2012 NACUBO–Commonfund Study of Endowments (NCSE), many endowments remain relatively small: the median total endowment reported in fiscal year (FY) 2012 (based on the value of college and university endowment assets values as June 30, 2012, the FY end date of many institutions) was about \$90 million. In addition, most schools do not withdraw a large amount of income from their endowments to support institutional aid programs or other expenditures

3 The data include institutional grants funded by restricted and unrestricted endowments.

(NACUBO and Commonfund Institute, 2013).

As Table 1 shows, in 2011–2012 just 10.4% of total institutional grant aid, on average, was funded directly from endowment income.³ This is down slightly from 2010–2011, when endowments supported 10.6% of grants (NACUBO, 2012).

There is a positive relationship between an institution’s endowment level and the percentage of institutional grants funded by endowment income. On average, survey respondents with endowments greater than \$1 billion reported their endowment income provided 32.5% of the funding for institutional grants, compared with 6.2% at institutions with endowments less than \$25 million.

While the TDS does not ask respondents to report funding of aid from other sources (such as alumni donations), these data suggest that, even at institutions with the largest endowments, the vast majority of institutional grant aid is unfunded. That is, no dedicated revenue source supports the bulk of institutional grant aid expenditures (Allan, 2005).

Research Question 3: Has the rising discount rate led to increasing net tuition and fee revenue at private colleges and universities?

Net tuition revenue per student is an important measure to understand the revenue generated per student on campus. In the TDS, net tuition revenue is equal to the aggregate gross tuition revenue for full-time, freshmen students minus institutionally funded grants for full-time freshmen, divided by the number of full-time freshmen. Net tuition revenue does not include

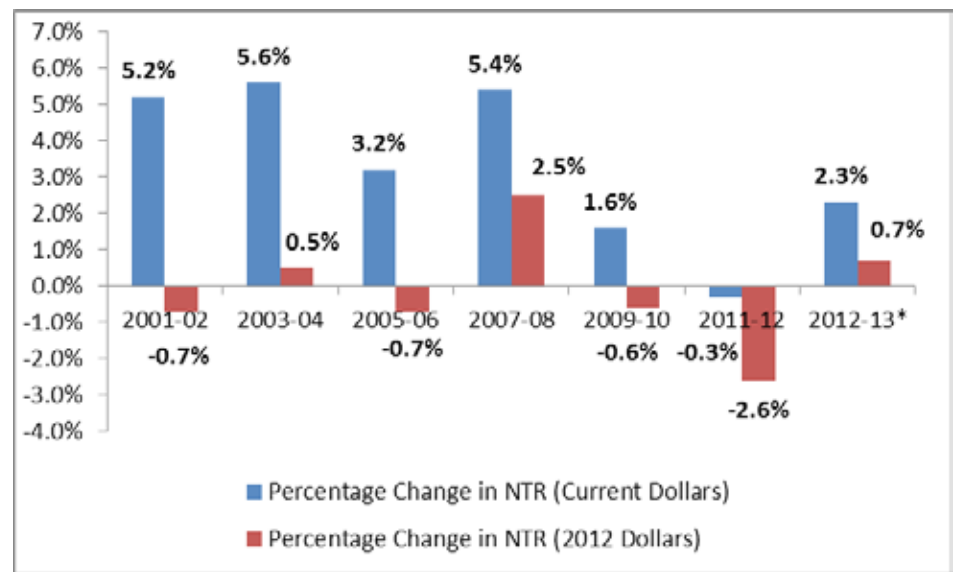
Table 1. Percentage of Total Undergraduate Institutional Grant Aid Funded by Endowment Income, by Institutional Endowment Level

FY 2012 Endowment Level	AY 2009–2010	AY 2010–2011	AY 2011–2012
Over \$1 billion	22.6%	33.9%	32.5%
\$500 million to \$1 billion	24.2%	23.2%	21.6%
\$100 million to \$500 million	13.2%	13.0%	9.8%
\$50 million to \$100 million	7.2%	7.8%	9.0%
\$25 million to \$50 million	7.9%	9.4%	7.0%
Under \$25 million	3.7%	3.8%	6.2%
Unknown endowment level	7.2%	5.5%	n/a
All Institutions	9.7%	10.6%	10.4%

Sources: Davis (2013); NACUBO (2012).

Note: Endowment levels are based on the amounts of endowment assets reported by institution as of June 30, 2012.

Figure 5. Average Change in Net Tuition Revenue per Full-Time Freshman and Inflation-Adjusted* (HEPI) Average Change in Net Tuition Revenue per Full-Time Freshman



Source: Davis (2013).

Note: Dollars adjusted using the HEPI. *Data for 2012–2013 are preliminary estimates. NTR = net tuition revenue.

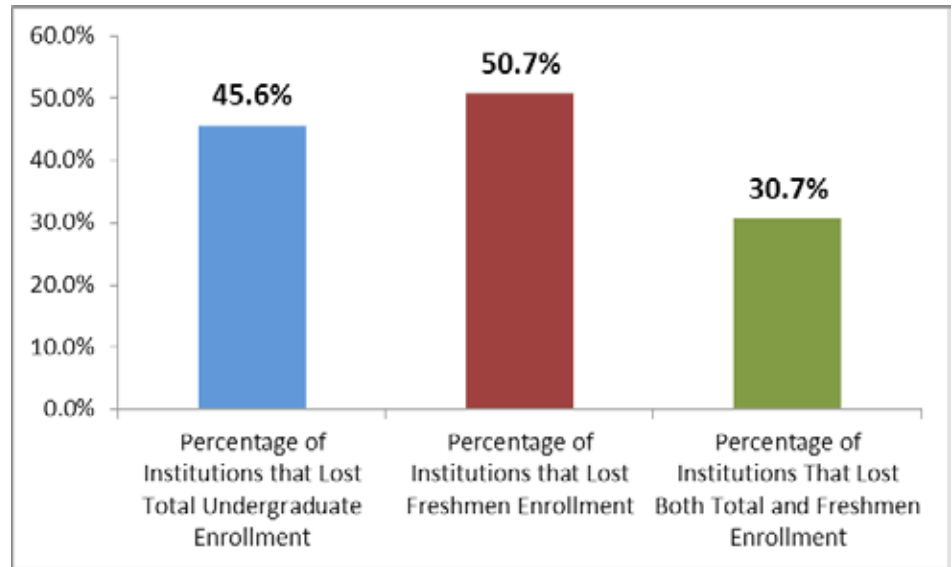
any amounts an institution receives for room, board, or other charges.

As Figure 5 reveals, when net tuition revenue dollars are converted to constant (2012) dollars using the Higher Education Price Index (HEPI), institutions have essentially had flat net tuition revenue over the past 12 years.⁴ In other words, the inflation-adjusted value of gross tuition and fee price increases has largely been offset by increased grant aid to students. And in some years, especially 2008, institutions, on average, reported declines in net tuition revenue, as increases in grant aid exceeded any increases in tuition revenue.

Although private colleges and universities had falling net tuition revenue on average as a sector, not all institutions lost net tuition and fee revenue. Some institutions increased their net tuition revenue by increasing their enrollment and/or the price of tuition. One institution in the Far West region with strong enrollment growth reported, “We increased the dollar value of merit scholarships. The resulting increase in enrollment also resulted in increased net tuition” (Davis, 2013, p. 39).

Note that at some institutions declines in net tuition revenue do not translate into a decrease in overall revenue; schools can generate additional support from charitable contributions and other gifts, auxiliary services (such as foodservice programs, bookstores, parking, and student housing), and other sources. Nonetheless, because on average private colleges and universities derive approximately 29% of their total funding from net tuition revenue as of AY 2010–2011 (NCES, 2012), losses in this revenue

Figure 6. Percentage of Participating Institutions That Experienced a Decline in Undergraduate Enrollment* from Fall 2011 to Fall 2012



Source: Davis (2013).

source are a particular concern. It is likely that a number of private colleges and universities have had to draw on other sources of support to fund their educational and general operations.

While preliminary estimates for 2012–2013 show an increase in net tuition revenue of 2.3% in nominal dollars (0.7% in inflation-adjusted value), this gain is far below the 5% annual gains in revenue that generally occurred in the years before the economic downturn. It does not appear that institutions will be returning to prerecession growth in net tuition revenue anytime soon. As a January 2013 report from Moody’s Investors Service says, “The [higher education] sector will need to adjust to the prospect of prolonged muted revenue growth. . . . Families remain willing to pay for college but their capacity to pay higher prices has been largely tapped and has dramatically dampened the sector’s capacity

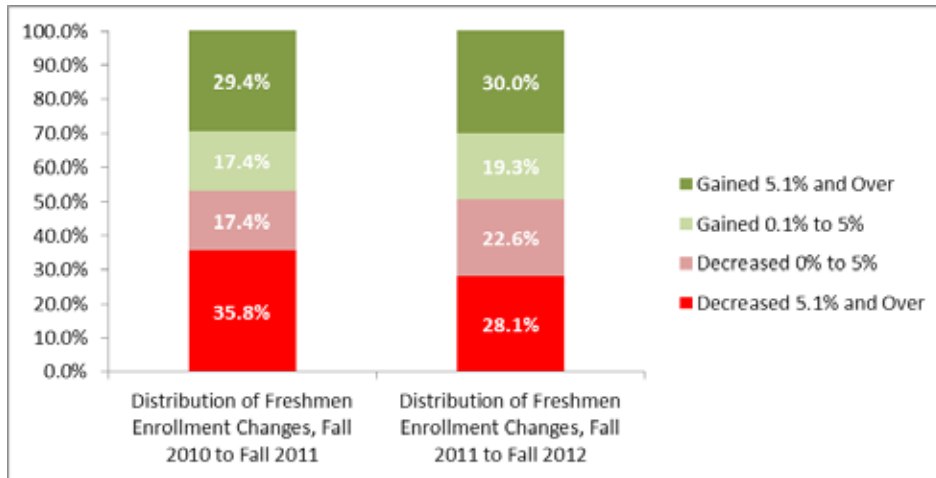
to grow tuition revenue” (Moody’s Investors Services, 2013, pp. 1–2).

Research Question 4: What effect has discounting had on overall enrollments of undergraduate students and on enrollments at different types of institutions (small, comprehensive/doctoral, and research institutions)?

Rising discount rates and falling net tuition revenue are especially concerning to institutions with softening enrollment demand. Private colleges and universities experiencing diminished demand may have to continually discount their tuition and fee sticker prices to fill classroom seats. When an institution discounts too deeply to meet enrollment goals, however, it may not raise enough tuition revenue to offset the cost of educating all students. In other words, institutions can lose enrollment in spite of efforts to increase both their tuition

⁴ HEPI measures changes in prices for goods and services typically purchased by colleges and universities (Commonfund Institute, 2013).

Figure 7. Distribution of Freshmen Enrollment Changes, Fall 2010 to Fall 2011 and Fall 2011 to Fall 2012



Source: Davis (2013).

discount rates and institutional grant awards.

A number of private, nonprofit colleges and universities appear to be in this situation. Among the institutions that participated in the 2012 TDS, 50.7% reported a decline in first-time freshmen enrollment between fall 2011 and fall 2012, while 45.6% had declines in total undergraduate enrollment and 30.7% had declines in both first-time students and total enrollment (see Figure 6).

Note that the categories of “lost freshmen enrollment” and “lost total undergraduate enrollment” in Figure 6 are not mutually exclusive and should not be considered a subset of one another. An institution can lose freshmen enrollment but gain a large number of upperclassmen through transfer or other enrollment strategies, thereby gaining total enrollment.

Figure 7 looks more closely at the enrollment of first-time freshmen and examines the distribution of change in enrollment of these students among

fall 2010 to fall 2011 and fall 2011 to fall 2012 TDS participants. First-time freshmen are examined more closely here because this enrollment trend is often a key ingredient in colleges’ and universities’ plans for future enrollment growth, as these new students have the potential to stay enrolled 4 years or longer, providing a source of tuition revenue for several years to come.

From fall 2010 to fall 2011, 53.2% of schools lost freshmen enrollment (Figure 7). More importantly, 35.8% of schools had enrollment losses of 5.1% or greater, while 29.4% had enrollment gains of 5.1% or greater.

In 2012, 50.7% of institutions reported a decline in their numbers of new first-year students, but a smaller share of schools experienced large enrollment declines. Instead, institutions were more likely to have experienced smaller declines, between 0% and 5%, from the year before. There was also a small gain in the proportion of institutions with a large gain in enrollment between 0.1% and 5% when compared with the year prior.

Still, it appears a number of 4-year private colleges and universities have declining numbers of first-time freshmen in spite of the rising discount rates. Many factors contribute to this loss of student enrollment. First, these declines may be the beginning signs of a major demographic shift. From 2012 to 2023 the number of high school graduates will generally decline, according to the Western Interstate Commission for Higher Education (WICHE, 2012), and an even greater share of schools may see falling first-time enrollments due to this population dip. Private colleges and universities also face greater competition for new students from public institutions, as well as shifting public opinion about the value of a college degree, concerns about rising levels of student indebtedness, and fears about the inability of new college graduates to find employment (Moody’s Investors Services, 2012). As a result, “nearly half of all universities are reporting lower enrollment for fall 2012. . . . [E]nrollment declines are concentrated in colleges with smaller enrollment size, high tuition dependence, weak selectivity/yield rates, and soft regional demographics” (Moody’s Investors Services, 2013, p. 4).

Not all losses in student enrollment that institutions experienced, however, were due to economic issues. Some colleges purposefully pared down enrollment to become more selective, to correct for years where enrollment was very large, or for other reasons. We cannot determine the exact percentage of schools intentionally becoming smaller (Davis, 2013). Nonetheless, a dip in enrollment often results in declines in net tuition revenue. While some institutions indicated they had planned for reduced or flat enrollment, reductions in net revenue were not the intended outcome. Thus, strategies

Table 2. Percentage of Total Awarded Undergraduate Institutional Grant Dollars that Met Students' Financial Need, by NACUBO Constituent Group and Endowment

	AY 2010–2011		AY 2011–2012	
NACUBO Constituent Groups	Number of Participating Institutions	Percentage of Total Institutional Grant Aid Awarded that Met Students' Financial Need	Number of Participating Institutions	Percentage of Total Institutional Grant Aid Awarded that Met Students' Financial Need
Small	217	72.8%	210	71.7%
Comprehensive/Doctoral	39	68.7%	39	67.2%
Research	24	82.3%	24	84.0%
All Institutions	280	73.0%	273	72.1%
	AY 2010–2011		AY 2011–2012	
FY 2012 Endowment Level	Number of Participating Institutions	Percentage of Total Institutional Grant Aid Awarded that Met Students' Financial Need	Number of Participating Institutions	Percentage of Total Institutional Grant Aid Awarded that Met Students' Financial Need
Over \$1 billion	22	88.4%	20	90.6%
\$500 million to \$1 billion	16	83.3%	16	75.9%
\$100 million to \$500 million	74	78.0%	76	74.5%
\$50 million to \$100 million	47	73.2%	53	73.2%
\$25 million to \$50 million	33	68.5%	44	67.0%
Under \$25 million	16	65.1%	53	62.2%
Unknown Endowment Level	72	64.7%	11	78.8%
All Institutions	280	73.0%	273	72.1%

Source: Davis (2013).

Note: Endowment levels are based on the amounts of endowment assets reported by institution as of June 30, 2012. Grant aid that met students' need includes merit and other non-need-based scholarships awarded to students with any demonstrated financial need, in addition to need-based grants.

to increase net tuition revenue in the face of declining enrollment had mixed results.

For example, one survey respondent in the Great Lakes region offered this

observation: "As an institution, we planned for a modest decrease in enrollment for our full-time freshman population and budgeted for a flat discount rate. A targeted population was identified late in the cycle,

and institutional aid dollars were redeployed in order to increase net tuition revenue. This program was moderately successful" (Davis, 2013, p. 16). In contrast, another respondent reported this experience: "We tried

to increase net tuition revenue by enrolling more students on campus with increasing the amount of financial aid offered. Our strategy was not successful as we saw a drop in overall yield even with an increase on our first-year discount” (Davis, 2013, p. 16).

Research Question 5: What share of the institutional grant dollars is used to meet students’ demonstrated financial need?

While higher education institutions use a variety of criteria to award scholarships and grants, they generally disburse these awards based on two general classifications: (1) students’ demonstrated financial need and (2) students’ academic merit or other non-need-based criteria, such as athletic or artistic ability (NASFAA & The College Board, 2002). Eligibility for need-based grants is usually based on a financial aid application that collects information on a student’s family income, assets, and other measures of financial circumstances.

Institutions can use one of several methodologies to determine student eligibility for need-based grants (NACUBO, 2011): the federal methodology (FM), an institutionally developed methodology (IM), a combination of FM and IM, or some other methodology. In the 2010 TDS—the last time the question was asked—63.5% of respondents reported using the FM exclusively to determine eligibility for need-based institutional grants. Another 8.5% relied on IM exclusively, while 2.5% used a combination of both methods. Approximately 25.5% of schools opted not to report which methodology they used (NACUBO, 2011).

The 2012 TDS asked participants to report the percentages of their total institutional grant dollars awarded in 2011 that they distributed to undergraduates who had any financial need. Institutions were directed to include grants that may have been non-need-based in their selection criteria, but that were awarded to undergraduates with any financial need.⁵ Grants were classified in this way for the 2012 TDS to better understand the share of total institutional grant dollars that met students’ financial need, regardless of the criteria for which the grants were awarded.


Based on this classification, the vast majority (72.1%) of total institutional grant aid awarded was used to meet students’ financial need in 2011–2012, a slight decrease from the year before when 73% of institutional grants met student need (see Table 2).

The portion of dollars awarded that met need varied by NACUBO constituent group. On average, comprehensive/doctoral institutions reported that 67.2% of their institutional grant dollars met student need, compared with 84% at research institutions and 71.7% at small institutions. Research institutions are the only constituent group that increased the share of institutional grants that met need, and that increase was by 1.7 percentage points. There also appears to be a positive relationship between the size of the responding institutions’ endowment and the portion of dollars meeting financial need. Institutions with endowments \$1 billion or greater used 90.6% of their institutional grant dollars to meet student need, while schools with endowments of under \$25 million used 62.2%. Institutions

with endowments that exceeded \$1 billion made up the only group that increased its share of grants meeting need from 2010–2011 to 2011–2012. Many of these institutions were research institutions. Schools with higher endowments tend to have higher tuition and fee charges, so more of their students have some financial need.

Because only two years’ worth of data are available, it is impossible to determine if the decrease in dollars that met need represents a trend. Comments from CBOs suggest that some institutions are using merit- and other non-need-based scholarships to attract prospective students earlier in the admissions process. As one institution’s CBO reported, “[We were] more aggressive with merit awards, which increased freshmen discount rate, freshmen class, and net tuition revenue. . . . We feel certain that some students who likely have need don’t bother to apply if they have received a significant merit award. As a result, for those students we do not have verifiable data on whether or not they have need” (Davis, 2013, p. 47). On the other hand, some institutions are shifting dollars toward grants that meet need in order to increase their enrollments. One CBO at a small institution mentioned his university’s strategy to leverage need-based aid and the impact on the enrollment and discount rate: “We attempted this year to put more resources into need-based programs and less into our academic top-level scholarships, in an effort to attract more students in the 25%–75% SAT range, and to reduce our discount rate. Ultimately we had [fewer] Presidential (top-level) scholarships and more middle level. We also had [fewer] at the lower level of our entering class.

⁵ The wording of this question changed in the 2011 survey (2010 data) so only two years of data are available for analysis.



Lastly, our freshmen class declined about 4 percent from fall 2011. We were able to decrease our discount rate slightly” (Davis, 2013, p. 48).

An East Coast institution took a different approach: “We worked with [our enrollment consultant group] every year to identify opportunities to increase net tuition revenue. The main strategy used with [our enrollment consulting group] is to cut back on percentage of need met in cells where we offered too high a percent of need met. This worked in some cells and [in] others it didn’t. We increased our net tuition revenue in our commuter population by pulling back some aid in areas [where] we were offering too much” (Davis, 2013, p. 48).

As more institutions continue to tinker with their need- versus non-need-based aid strategies, and as college costs rise, it is increasingly clear that the need- versus non-need-based categorization of aid is becoming a false dichotomy. Colleges may call their grants “merit based” but shift the aid to “need based” depending on the students’ level of need and which category colleges think will be more attractive to prospective students. This suggests that need- and non-need-based categories are becoming irrelevant to many business officers.

CONSIDERATIONS FOR APPLYING THIS RESEARCH TO YOUR CAMPUS

The results of the 2012 TDS are designed to help inform institutional practices. The study shows that private institutions continue to see an increase in the discount rate for freshmen and

the larger undergraduate population. At many institutions, discount rates are rising at the same time that total enrollments and enrollments of first-time freshmen are contracting. As a result, net tuition revenue is constrained.

These issues are challenging institutional researchers at a number of campuses—both public and private nonprofit. Often, IR professionals work with financial aid and admissions officers, CBOs, enrollment managers, and other leaders on campus to develop institutional grants and other financial benchmarks that will compare their expenditures with those of peer institutions.

To assist IR offices with these efforts, NACUBO has developed an online benchmarking tool, a complimentary member benefit that enables NACUBO member institutions to create customized reports and compare their tuition discount rates against national averages by Carnegie classification and by region. The tool also allows users to create up to 18 self-selected peer groups for analysis that is more individual and customized. The tool, developed by NACUBO and the Exeter Group using IBM/Cognos Business Intelligence software, was unveiled in 2007 and has been expanded and updated annually.⁶

This article has presented the definitions, variables, and formulas used by NACUBO to construct our discount rates and net revenue information. While this methodology has been widely used, we recommend that IR professionals consider the following issues when calculating their own institution’s discount rates and net revenue data and comparing the

resulting data with the national and constituent group averages from the 2012 TDS.

Determining Dollars of Institutional Aid Awarded

IR offices at public colleges and universities should consider including state pass-through grants in their institutional aid dollars. Because the NACUBO’s annual TDS survey collects data only from private nonprofit colleges and universities, it does not account for state appropriations and other grants that states may award to public colleges for use as institution-based financial aid awards. Inclusion of state-funded grants in the calculations may make comparisons of discount rates and institutional grant awards between public and private nonprofit institutions difficult.

IR offices at public and private institution should also consider whether to include tuition waivers in their institutional grant calculations. The TDS includes these waivers as unfunded institutional grants. If your campus excludes these awards, your results could differ substantially from NACUBO’s data.

Many institutions use both restricted and unrestricted endowment funds as a source for institutional grant aid and include these endowment funds in their discount rate calculations. Other schools do not include endowment funds, as they prefer to calculate a discount rate that is based on purely unfunded grants (i.e., grants funded by tuition and fee revenue exclusively). When compiling a comparison group, IR staff should determine which of their peer institutions include funded and which include unfunded grant aid.

⁶ For more information, including an instructional video that demonstrates the benchmarking tool’s capabilities, see NACUBO (n.d.).

Colleges and universities use several different methodologies to categorize need- and non-need-based grants, and these methodologies may change over time. Take the changing definitions of need- and non-need-based into account when constructing these variables, and make note of periods when definitions of aid change.

NACUBO's data include institutionally administered athletic grants and scholarships. IR offices may want or need to exclude athletic aid based on their own institutions' definitions, funding sources, and circumstances.

Determining Revenue

NACUBO's calculation of discount rates includes only dollars from tuition and mandatory fees. IR offices may also consider including revenue from room and board charges along with tuition and fees, as on some campuses revenue from these sources may also be used to support institutional grant expenditures.

Similarly, schools and IR offices may include revenue from students in nondegree or certificate programs, which may be another source of institutional grants. This is particularly true for colleges and universities with large numbers of students enrolled in off-campus or nontraditional programs. If your college or university has differential tuition pricing, you may want to replace the calculation of number of students multiplied by sticker price with a total revenue figure. This will provide you a more accurate picture of revenue.

Determining the Type of Discount Rate to Use

NACUBO's tuition discounting methodology is best understood as an institutional discount rate: the college or university is the unit of

analysis, and thus the rate includes only the institutional grant expenditures and the gross and net institutional tuition and fee revenue collected by the college or university. But the resulting discount rate does not take into account grants that students receive from federal, state, or other noninstitutional sources. Some IR offices may instead want to include all other grants that lower the cost of college for undergraduates. Inclusion of all grants is sometimes referred to as a "student discount rate" because it is based on the students' total cost of attendance (tuition, fees, room, board, books, educational supplies, and all other costs of postsecondary education) and all grants that lower this total cost (Allan, 1999). IR offices that want to report the effects of all grants on lowering the cost of attendance at their institutions may need to consider a student-centered discount rate rather than NACUBO's institutionally focused rate.

Public institutions may need to consider calculating a separate discount rate for their in-state resident students who may be more likely to receive institutional grant dollars that are tied to a state-residency requirement. If so, differences in tuition and fee revenue from, and grant dollars to, out-of-state students would need to be considered.

IR offices may also need to determine which group of students is the focus of your institution—first-time freshmen or all undergraduates. Many schools may want to calculate a discount rate for all undergraduates, while others may want to calculate separate rates for each student group. Schools with large populations of new incoming or continuing transfer students who are eligible for institutionally funded grants may need to consider a third separate rate for these students.

If your university has differential tuition pricing by college you may want to create a discount rate for each college. NACUBO's current TDS methodology does not include data based on differential tuition and fee price structures.

College and university presidents and other cabinet-level officers may want to compare their institutions' discount rates against self-identified peer institutions. IR officers who are tasked with these responsibilities may need to know how their peer groups' institutional aid policies and practices differ from their own. Knowing more about the aid policies—as opposed to simply the discount rates—could help you better understand trends in aid funding and distribution.

SUMMARY AND CONCLUSIONS

As tuition discounting has grown, the discount rate has become an important measure of an institution's ability to attract students, meet revenue goals, and remain competitive. While tuition discounting has been controversial due to the introduction of non-need-based and other grants, the strategies used to increase enrollment and revenue have helped many CBOs at similarly situated colleges and universities gauge their enrollment management effectiveness and thus enable many students to achieve higher education goals. Measured as the share of gross tuition and fee revenue used for institutional grant aid, the discount rate essentially quantifies how much of the gross tuition and fee revenue an institution forgoes.

In recent years, as the nation has struggled to fully emerge from the 2008–2009 financial crisis, many institutions have had difficulty finding

the right balance between remaining affordable to students and families while generating adequate net tuition revenue to meet educational and general expenses. This struggle, along with the access and equity arguments surrounding need- and non-need-based grant aid, will remain a challenge for 4-year private colleges and universities. IR offices will be called upon to provide CBOs and other leaders with the information to determine the appropriate balance among pricing, enrollment, and discounting to fulfill institutional missions.

REFERENCES

- Allan, R. G. (1999). Tuition discounts, institutional student aid and scholarship allowance. Sallie Mae Education Institute, Washington, DC.
- Allan, R. (2005). Tuition discounting: Does it matter whether it's funded? Yes. *Business Officer*. Retrieved from http://www.nacubo.org/business_officer_magazine/magazine_archives/july_2005/financial_aid_does_it_matter_whether_its_funded.html
- Baum, S. (2000). Equity and enrollment management: Conflicting goals? In *Proceedings from the NACUBO forum on tuition discounting* (pp. 45–48). Retrieved from www.nacubo.org/documents/business_topics/Forum%20Proceedings.pdf
- College Board, The. (2012a). *Trends in student aid: 2012*. College Board Advocacy & Policy Center. Retrieved from <http://advocacy.collegeboard.org/sites/default/files/student-aid-2012-full-report.pdf>
- College Board, The. (2012b). *Trends in college pricing: 2012*. College Board Advocacy & Policy Center. Retrieved from http://advocacy.collegeboard.org/sites/default/files/college-pricing-2012-full-report_0.pdf
- Commonfund Institute. (2013). *Higher education price index: 2012 update*. Retrieved from https://www.commonfund.org/CommonfundInstitute/HEPI/HEPI%20Documents/2012/CF_HEPI_2012.pdf
- Davis, J. S. (2003). *Unintended consequences of tuition discounting*. Indianapolis, IN: Lumina Foundation for Education.
- Davis, N. P. (2013). *2012 NACUBO tuition discounting study*. Washington, DC: NACUBO.
- Heller, D. E., & Nelson Laird, T. F. (1999). Trends in the use of need-based and non-need financial aid in American colleges and universities. Paper presented at the 39th Annual Association for Institutional Research Forum, Seattle, WA.
- Lapovsky, L., & Hubbell, L. L. (2000). Positioning for competition: Results of the 1999 NACUBO tuition discounting study. *Business Officer* 34(6): 22–30.
- McPherson, M. S., & Schapiro, M. O. (1998). *The student aid game: Meeting need and rewarding talent in American higher education*. Princeton, NJ: Princeton University Press.
- Moody's Investors Services. (2012, January 4). More U.S. universities expect tuition revenue declines; Larger, diversified universities favored in tough higher education market: Results of Moody's third annual tuition pricing survey of U.S. higher education. Retrieved from <https://www.moody.com/researchandratings/market-segment/u.s.-public-finance/005003/4294966117/429496623/0/0/-/0/-/-/en/global/rr>
- Moody's Investors Services. (2013, January 16). U.S. higher education outlook negative in 2013: Revenue pressure on all fronts intensifies need to grapple with traditional cost structure. Retrieved from <http://www.marquette.edu/budget/documents/USHigherEducationOutlookNegativein2013.pdf>
- Morse, R. J., & Flanigan, S. M. (2000). How we rank colleges: Our method uses 16 measures of academic excellence. *U.S. News and World Report*. Retrieved from http://www.usnews.com/usnews/edu/articles/000911/archive_012867.htm
- National Association of College and University Business Officers (NACUBO). (2011). 2010 NACUBO tuition discounting study report. Washington, DC: NACUBO.
- National Association of College and University Business Officers (NACUBO). (2012). 2011 NACUBO tuition discounting study report. Washington, DC: NACUBO.
- National Association of College and University Business Officers (NACUBO). (n.d.). NACUBO benchmarking tool. Retrieved from http://www.nacubo.org/Research/NA-CUBO_Benchmarking_Tool.html
- National Association of College and University Business Officers (NACUBO) and Commonfund Institute. (2013). *The 2012 NACUBO-Commonfund study of endowments*. Retrieved from http://www.nacubo.org/Research/NACUBO_Endowment_Study/Public_NCSE_Tables_.html
- National Association of State Student Grant & Aid Programs (NASSGAP). (2012). *The 42nd annual survey report on state-sponsored student financial aid, 2010–2011 academic year*. Retrieved from <http://www.nassgap.org/viewrepository.aspx?categoryID=3>
- National Association of Student Financial Aid Administrators (NASFAA) & The College Board. (2002). *Financial aid professionals at work in 1999–2000: Results from the 2001 Survey of Undergraduate Financial Aid Policies, Practices, and Procedures*. Washington, DC: Authors.
- National Center for Education Statistics (NCES). (2010). Integrated postsecondary education data system, Spring 2010 Finance Component. Table 36: Scholarship and fellowship expenses of title IV institutions, by level and control of institution, accounting standards utilized, and source of funds, United States, fiscal year 2009. Analysis by N. P. Davis. Retrieved from nces.ed.gov/das/library/tables_listings/tableXLS.asp?tableID=7510
- National Center for Education Statistics (NCES). (2012). Digest of education statistics. Table 405: Total revenue of private nonprofit degree-granting institutions, by source of funds and level of institution: 1999–2000 through 2010–11. Analysis by K. E. Redd. Retrieved from http://nces.ed.gov/programs/digest/d12/tables/dt12_405.asp
- National Commission on the Cost of Higher Education. (1998). *Straight talk about college costs and prices*. Phoenix, AZ: The American Council on Education/Oryx Press.
- Pérez-Peña, R. (2012). Aid changes raise issue of diversity at colleges. *New York Times*, November 30. Retrieved from <http://www.nytimes.com/2012/12/01/education/elite-smaller-colleges-struggle-to-cover-financial-aid.html?pagewanted=all>
- Redd, K. E. (2000). *Discounting toward disaster: Tuition discounting, college finances, and enrollments of low-income undergraduates*. Indianapolis, IN: USA Group Foundation.
- Russo, J. A. (2000). Tuition discounting and merit scholarships. In *Proceedings from the NACUBO forum on tuition discounting* (pp.

49–54). Retrieved from www.nacubo.org/documents/business_topics/Forum%20Proceedings.pdf

U.S. Census Bureau. (2012). Table F-11. Age of householder: Families by median and mean income, all races, 1947 to 2012. Analysis by K. E. Redd. Retrieved from <http://www.census.gov/hhes/www/income/data/historical/families/>

U.S. Federal Reserve. (2012, June). Changes in U.S. family finances from 2007 to 2010: Evidence from the survey of consumer finances. *Federal Reserve Bulletin* 98(2). Retrieved from <http://www.federalreserve.gov/pubs/bulletin/2012/pdf/scf12.pdf>

Western Interstate Commission for Higher Education (WICHE). (2012, December). Knocking at the college door: *Projection of high school graduates, 8th ed.* Retrieved from <http://www.wiche.edu/pub/16556>

Winston, G. C., & Zimmerman, D. J. (2000). *Where is aggressive price competition taking higher Education?* *Change* 32(4): 10–18.