

Measuring (and Managing) the Invisible Costs of Postsecondary Attrition

POLICY BRIEF

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Measuring (and Managing) the Invisible Costs of Postsecondary Attrition

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INTRODUCTION

The collision between funding realities and the paramount goal of increasing educational attainment has brought new attention to ways to reduce postsecondary attrition and get more students who enroll in college to complete a degree or credential. Reductions in attrition are both educationally effective *and* cost effective. Students reach high-value learning outcomes at less cost in time and money, while degree production costs are lowered.

But despite a good deal of attention to retention and graduation, there is neither a commonly understood measure of student attrition, nor a way to determine its cost. Attrition is not just the difference between graduation rates and 100 percent because graduation rates do not distinguish between students who leave higher education altogether versus those that stop or transfer between institutions en route to a degree. Moreover, historically, the institutional costs of attrition have been virtually invisible, particularly in large public institutions with high levels of student enrollment demand and funding models that generate revenues for credits whether or not they attach to degrees. Students who leave early are replaced by others knocking at the door. While many institutions and states have undertaken efforts to improve graduation rates, they typically do not zero in on the relationship between spending and student success, and on ways that reducing attrition costs can also reduce degree production costs by translating a higher proportion of credits into degrees.

An understanding of the different types and costs of attrition can equip institutional leaders and policymakers with the tools to make strategic choices about where, when, and how to invest time and attention towards increased graduation rates and lower production costs. This project has been designed to generate such metrics and produce recommendations on ways to use these measures to increase student success. The elements of this analysis include the following:

- A recommended definition of attrition, as well as a methodology for estimating attrition and ascribing costs to it
- An example of the application of the methodology using national data samples, including findings about the patterns and costs of attrition
- Recommendations to institutions and states about ways to use the measures to support efforts to reduce attrition, including setting benchmarks and goals, and rewarding progress as part of performance- or outcomes-based budgeting

DEFINITIONS AND METHODOLOGIES FOR ASCRIBING COSTS TO ATTRITION

Defining Attrition

We define attrition as student departure from all forms of postsecondary education prior to completion of a credential or degree. Under this definition, students who transfer across many institutions but ultimately complete a degree are counted as successes, in contrast to conventional cohort graduation rates. This is a conservative measure, and probably understates attrition and its related costs. Table 1 outlines some of the outcomes of students in higher education and whether they represent attrition.

Table 1. Which Outcomes Represent Attrition?

| Outcome | Attrition? |
|---|---|
| Student completes the credential originally sought | No |
| Student completes a lower level credential than the one originally sought | No |
| Student is still enrolled | No |
| Student transfers and is still enrolled | No |
| Student transfers and completes elsewhere | No |
| Student drops out without completing or transferring and does not reenroll | Yes |
| Student reenrolls after completing a credential and does not complete another | Yes (but only costs after reenrollment) |
| Student transfers, then leaves without a credential | Yes |

Measuring Attrition

Attrition is estimated by measuring the credits taken by students who do not complete a degree or other credential. Institutions and states with student unit record systems can identify these credits with reasonable ease. For those that do not have these systems, estimates can be generated using transcript analysis and projections based on year-to-year rates of student persistence.¹ We have compared estimates of attrition using this technique with more precise measures generated from historic data and found them to be quite accurate in estimating actual rates of attrition. This means that institutions and states need not wait for perfect measures and completely rebuilt information systems to measure attrition. The methodology is most accurate at the statewide or system level because it captures student flow across many institutions. But the measures can also be used at the institutional level for setting benchmarks and measuring progress over time.

¹ A detailed description of this methodology, and examples of its application, are provided in the research paper accompanying this brief.

Estimating the Institutional Cost of Attrition Using Available Data

We recommend keeping the measure of attrition costs relatively simple and based on an estimate of the average education and related (E&R) cost of credits taken that do not attach to a degree. The E&R measure is an average full-cost figure, and includes costs for instruction and student services and related overhead.² Some institutions and a few states have more granular data about unit costs by level of instruction and discipline; those with better data can develop more precise measures.

More elaborate measures are possible and would be analytically “correct,” such as also including the recruitment and enrollment costs for students who drop out or “lost” financial aid, and by developing more fine-tuned cost estimates by level of instruction and discipline. One could also add student opportunity costs (from lost income while being enrolled in college) as well as the lifetime earnings losses for students who fail to complete a degree. The data requirements for these more precise measures would not, in our opinion, improve the essential accuracy of the average cost/credit-based measure. In addition, the focus on cost per credit tracks to metrics that are used by institutions and states to allocate resources, so they generate information that is actionable in a way that more comprehensive measures do not.

NATIONAL FINDINGS OF ATTRITION PATTERNS AND COSTS³

Nationwide, a little more than one-third of all undergraduate students in public and nonprofit, private institutions fall victim to attrition, and leave college without ultimately obtaining a degree or certificate. However, *spending* on these students accounts for just 19 percent of education and related spending—again more than half as much as would be predicted based on the attrition rate alone. This is because the majority of students who leave higher education do so within the first two years, when they have accumulated fewer “lost” credits. Also, more students who drop out have been attending lower cost community colleges than is the case for students who complete degrees. The highest losses to attrition occur in community colleges, where 49 percent of students do not finish (but where just one-third of institutional spending is on these students), compared with student attrition of 20 percent in public four-year institutions (13 percent of spending) and attrition of 17 percent in private, four-year institutions (9 percent of spending) (Table 2).

² The definition and methodology for this may be found in the Delta Cost Project, “Metrics for Improving Cost Accountability,” at http://www.deltacostproject.org/resources/pdf/issuebrief_02.pdf

³ This analysis is based on a national sample of public and nonprofit, private undergraduate education, using the national Beginning Postsecondary Students (BPS) Longitudinal Study. Details about the analysis and estimating techniques are included in the *The Institutional Costs of Student Attrition*.

Table 2. Attrition Rate and Cost by Sector

| Sector | Student Attrition (Percentage of student credit hours not attached to any degree or certificate) | Costs of Attrition (Percentage of total E&R spending associated with student attrition) |
|-------------------|--|---|
| Public Two-Year | 48.8% | 32.7% |
| Public Four-Year | 20.1% | 12.9% |
| Private Four-Year | 17.1% | 9.4% |

Source: Based on BPS study of six-year survival of students entering in 2003–2004 by 2008–2009. See attached analysis of methodology by Johnson, *The Institutional Costs of Student Attrition*.

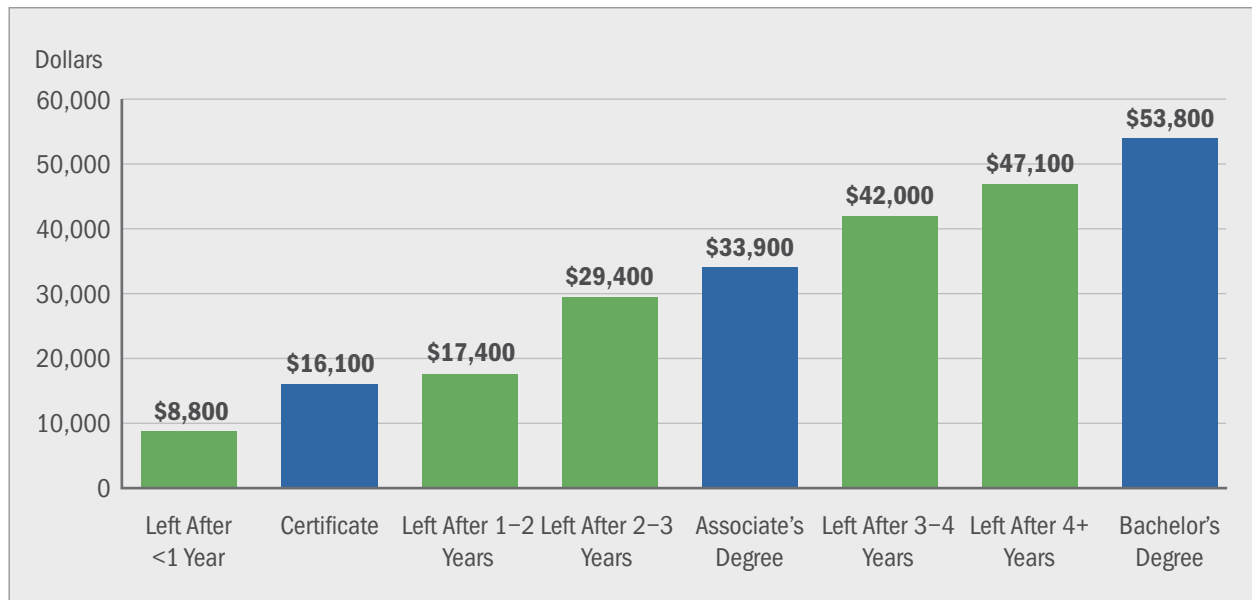
The practical meaning of these figures is that they establish a reference point for increases in degree production that are possible within current funding and enrollment levels. We cannot expect attrition rates to go to zero in any institution, particularly in public open-access institutions. Some level of “loss” in production is inevitable in any enterprise that serves the general population, from K–12 schools (where high school graduation rates hover about 70 percent nationally), to prisons (where recidivism runs about 41 percent), to the military (where about one-third of new recruits do not get through basic training).⁴ However, data on attrition costs can be used to determine where students are leaving, and target interventions to the areas where attrition costs are highest and relatively modest investments of time and attention are most likely to convert units into degrees.

Currently, it costs an average of \$55,800 for each degree or certificate completed—a cost that includes average spending of \$43,000 on students who complete a degree or certificate and \$12,800 in “lost” credits to attrition. A 20 percent reduction in attrition would reduce spending per credential by \$2,500 and result in a 6 percent increase in the number of degrees and certificates awarded overall—equivalent to 260,000 additional credentials per year. Reducing attrition rates will not generate “savings” in the budgetary sense because the institutions still need to serve students who do not drop out. Also, institutions and states need to be careful not to create even more incentives to reduce attrition by raising admissions standards. Cutting budgets after efficiency gains would produce exactly that effect. But efficiency gains are possible, and even marginal reductions in attrition can reduce the cost per degree considerably.

Potential savings are even more significant when the timing of attrition is taken into consideration. The difference between the expenditures on an associate’s degree graduate (\$33,900) and a student who leaves after two to three years of education (\$29,400) is just \$4,500 (Figure 1). If the existing investment in the latter student’s education could be applied toward a degree, several students could finish an associate’s degree for what a single degree costs from start to finish. Similarly, five late-stage dropouts (after three or four years) could complete bachelor’s degrees at the same cost of a single start-to-finish baccalaureate. Additionally, the savings to states from salvaging these lost investments would be considerable, and an even larger savings would accrue to students and families from the now more valuable return for their dollars invested in higher education.

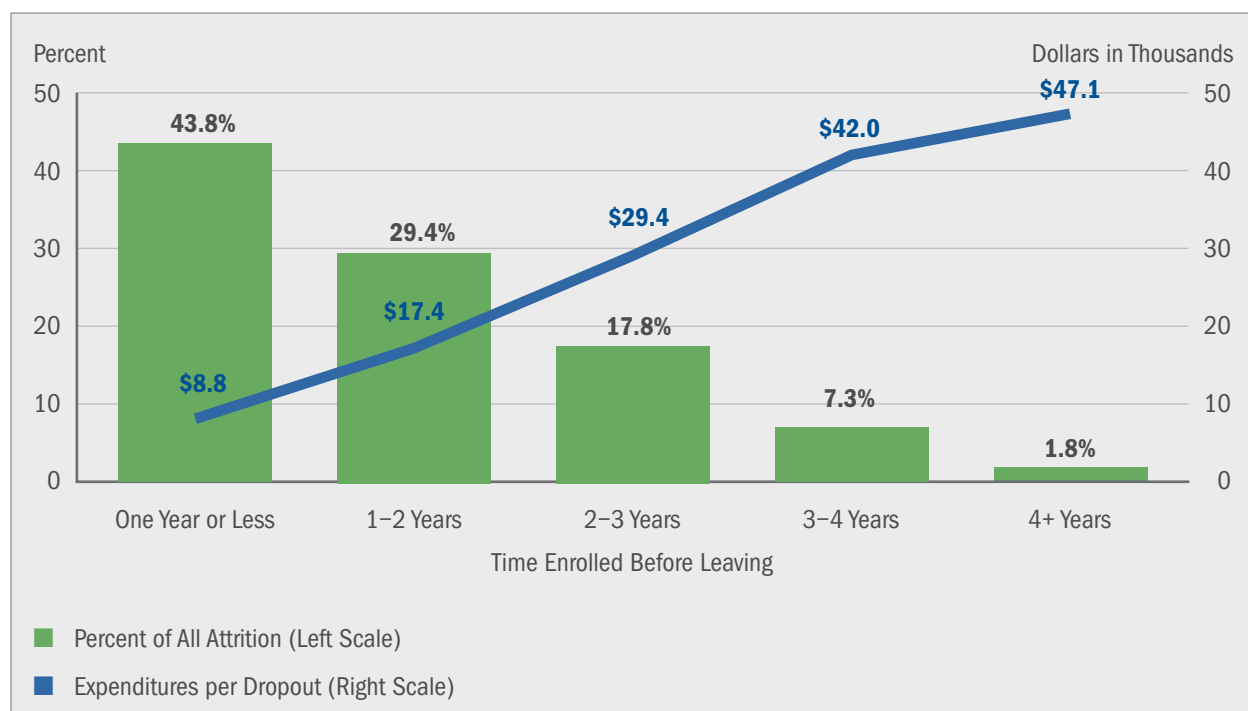
⁴ See the companion background paper *Benchmarking Attrition: What Can We Learn From Other Industries?* for more details about these and other measures of production efficiencies that may be analogous to postsecondary attrition.

Figure 1: Mean E&R per Student by Outcome



Most student attrition occurs in the first two years of college, yet the unit costs of attrition are highest for students who leave after several years. As Figure 2 below illustrates, 73 percent of students who leave college without any degree leave during the first two years of college—44 percent in the first year, and another 29 percent in the second year. However, these early losses account for just 50 percent of total institutional spending because of the lower number of credits taken and the lower unit costs of students enrolled in the first two years. Spending on students who left after one year was just \$8,800, on average, per student, compared with more than \$40,000 on students who left after three years or more. The low institutional cost associated with high rates of early attrition reflects historic approaches to funding higher education, where spending per student is kept low at entry levels and allowed to increase at upper division and graduate levels, where smaller class sizes and more individualized instruction are common. These funding practices evolved at a time when the economy did not demand attainment rates much above 30 to 40 percent and colleges served roughly the top one-third of recent high school graduates. Students were given the opportunity to enroll in higher education through open admissions policies and low tuition rates, and high rates of student attrition were seen as a price of business. In today's environment, the expectations have changed, but funding patterns from another era persist.

Figure 2. Volume and Costs of Early and Late Attrition



Attrition attributable to poor academic performance (students leaving with C averages or below) accounts, on average, for only about 15 percent of the spending associated with student attrition (Table 3). In fact, fully 40 percent of dropouts had estimated GPAs above 3.25 (and these accounted for 43 percent of spending). And 17 percent of the students who left (accounting for almost 17 percent of spending) had “mostly As” (GPA above 3.75)—a higher proportion than the C–F range combined.

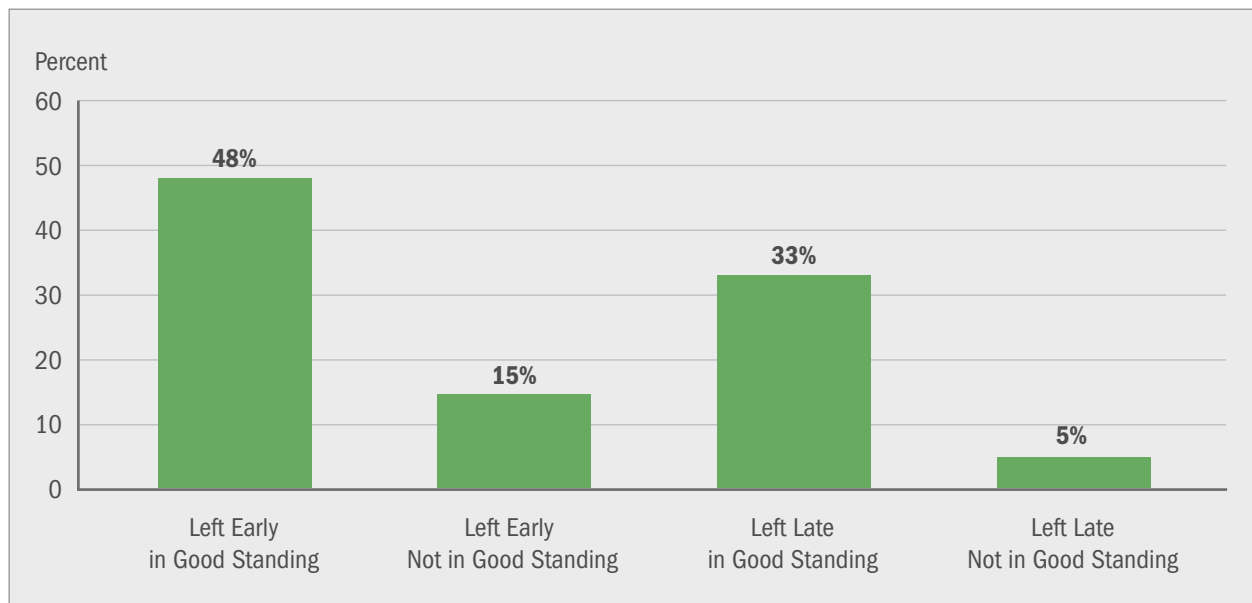
Table 3. Percentage of Unfinished Degrees and Costs by Detailed Estimated Cumulative GPA

| Grade Point Average Estimate When Last Enrolled Through 2009 | Average (Mean) Cost per Student | Percentage of Costs | Percentage of Students |
|--|---------------------------------|---------------------|------------------------|
| Mostly As (3.75 and above) | \$ 17,067 | 16.3% | 17.3% |
| As and Bs (3.25–3.74) | \$ 20,365 | 26.6% | 23.7% |
| Mostly Bs (2.75–3.24) | \$ 19,105 | 22.8% | 21.6% |
| Bs and Cs (2.25–2.74) | \$ 19,054 | 19.1% | 18.1% |
| Mostly Cs (1.75–2.24) | \$ 16,793 | 8.5% | 9.2% |
| Cs and Ds (1.25–1.74) | \$ 13,115 | 3.6% | 4.9% |
| Mostly Ds or below (below 1.24) | \$ 11,196 | 3.2% | 5.2% |

Combining enrollment duration with academic performance helps to group dropouts into four categories (Figure 3):

1. **Left early in good standing:** The largest group—48 percent—is made up of those who leave with less than two years of postsecondary education but in good academic standing. This group is important because it is so big and students in this category have shown that they can succeed in postsecondary-level work. At this point, the investment in and by each student is relatively small.

Figure 3: Attrition Timing and Academic Standing of Students



2. **Left late in good standing:** The second largest group, at 33 percent of dropouts, consists of students who leave with more than two years of postsecondary education and in good academic standing. Not only have they shown themselves capable of college-level work, but they have completed a substantial amount of coursework, representing a significant investment of time and money.

Investments in strategies to help these students find ways to stay in higher education, or to return once they have left, may yield the highest “return on investment” in terms of increasing the number of college graduates. Much of their education has already been paid for. The \$47,000 spent on students who leave after four years is not much different from the expenditures on public bachelor’s degree graduates. If a few thousand dollars in additional aid, loan subsidies, or academic support could tip the balance to completion for these students, the marginal cost of the additional degrees would be much lower than what it takes to educate a new freshman.

3. **Left early not in good standing:** The 15 percent of students who leave early and with weak academic records represents the group that many people might think of as the typical college dropouts, even though they comprise a relatively small minority. These students may have found postsecondary work too challenging or difficult to balance with other commitments, or they may have ended up in the wrong type of institution or program for their needs. While their failure certainly has economic and psychological consequences, the lost investment is relatively small. In creating programs or interventions to help this

group, care should be taken to move them into the “completers” category, rather than into the last group in the grid—those who stay in higher education for a prolonged period before finally dropping out.

4. **Left late not in good standing:** The 5 percent of dropouts who attend for a long time but leave with a poor academic record are a small proportion of the whole. But this group illustrates why “retention” without completion should not be seen as an end in itself. Not only do these students leave without a degree and good prospects for returning later to complete one, but they have spent much longer in the attempt than students in the previous group. For this group, the best approach could be to improve advising and tracking systems to ensure that students do not remain too long in programs in which they have not been successful.

RECOMMENDATIONS TO STATES AND INSTITUTIONS

Estimates of the costs of attrition should be used by institutions and/or states to establish benchmarks and set goals for improvements in retention and graduation. The goal is not to cut budgets or create incentives for institutions to reduce attrition by increasing admission standards. Rather, the goal is to both reduce attrition and increase graduation, creating real gains in productivity, cost-effectiveness, and attainment. We recommend that states and institutions implement the following:

- **Institutional measures, attached to goals and incentives.** States should ask their public institutions to generate measures of the costs of attrition, and report on how they are using these measures to establish benchmarks and goals for improvement. The analyses in this document focused only on undergraduate attrition. But we know that graduate attrition is also an issue and that the costs per student of graduate attrition are even higher than for undergraduate education.⁵ This is an agenda that needs to include research universities as well as community colleges and comprehensive institutions.

To assist states and institutions in generating their own measures of attrition costs for use in setting benchmarks and goals for improvement, a programmer’s guide to the proposed methodology of measuring attrition costs is provided in a companion paper to this policy brief, *Attrition Cost Model Instruction Manual*.

- **Create incentive pools to reduce early stage attrition.** States and institutions or systems should attach measures of attrition and related costs to their systems for performance-based budgeting. Investment pools should be created and targeted at the low-cost forms of early attrition where underfunding may be part of the problem of attrition and additional resources could make a difference in yielding greater returns.

⁵ The Council on Graduate Schools has a national project on graduate attrition; for information about that work, see <http://www.cgsnet.org/attrition-and-completion>

METHODOLOGY AND FRAMEWORK

Defining Attrition

We define attrition as any departure from all forms of postsecondary education without obtaining a degree or other credential. Unlike cohort graduation rates, this measure does not consider as a dropout or loss those students who leave one institution without obtaining a degree, but who subsequently get a degree or credential from another institution. This measure is conservative, and probably understates rather than overstates total attrition.

Methodology for Measuring Attrition

We recommend a methodology that measures attrition using transcript analysis to identify student credit units that do not attach to a degree.

Data Requirements to Measure Attrition

Precise measures of attrition, calibrated for individual students based on their course files, would require longitudinal student record systems that can be attached to institutional course files, including information about class size and faculty pay. Institutions that have such systems can generate very precise measures of attrition, but we do not believe that this level of precision is needed to generate highly reliable estimates of attrition. We recommend using a projection technique based on year-to-year cohort survival figures. Estimates can be generated with existing data in almost all states and institutions.

Assigning Costs to Attrition

We measure operating expenditures or spending associated with attrition, rather than total economic losses to students and society from unfinished degrees. We used the Delta Cost Project's measure of education and related expenses per credit hour as the measure of cost per student. This is an average full-cost figure across all types of student levels and disciplines, including both direct spending on instruction along with spending on student services and shared overhead. Because it is an average figure, and not an audited analysis of actual expenses, it probably overstates instructional costs, which are averaged across all levels of students, but likely understates student academic and support costs, which are likely highest for entering students. States or institutions with more granular data by level of instruction or discipline can, of course, use their own expenditure files to produce more precise measures.

The companion paper *The Institutional Costs of Student Attrition* provides more details on the methodology for producing these estimates, and the technical *Attrition Cost Model Instruction Manual* provides states and institutions with guidance on how to apply this methodology using their own student and expenditure data.

About the Delta Cost Project

The Delta Cost Project at American Institutes for Research provides data and tools to help higher education administrators and policymakers improve college affordability by controlling institutional costs and increasing productivity. The work is animated by the belief that college costs can be contained without sacrificing access or educational quality through better use of data to inform strategic decision making. For more information about the Delta Cost Project, visit www.deltacostproject.org.

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