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College Costs: Students Can't Afford Not to Know

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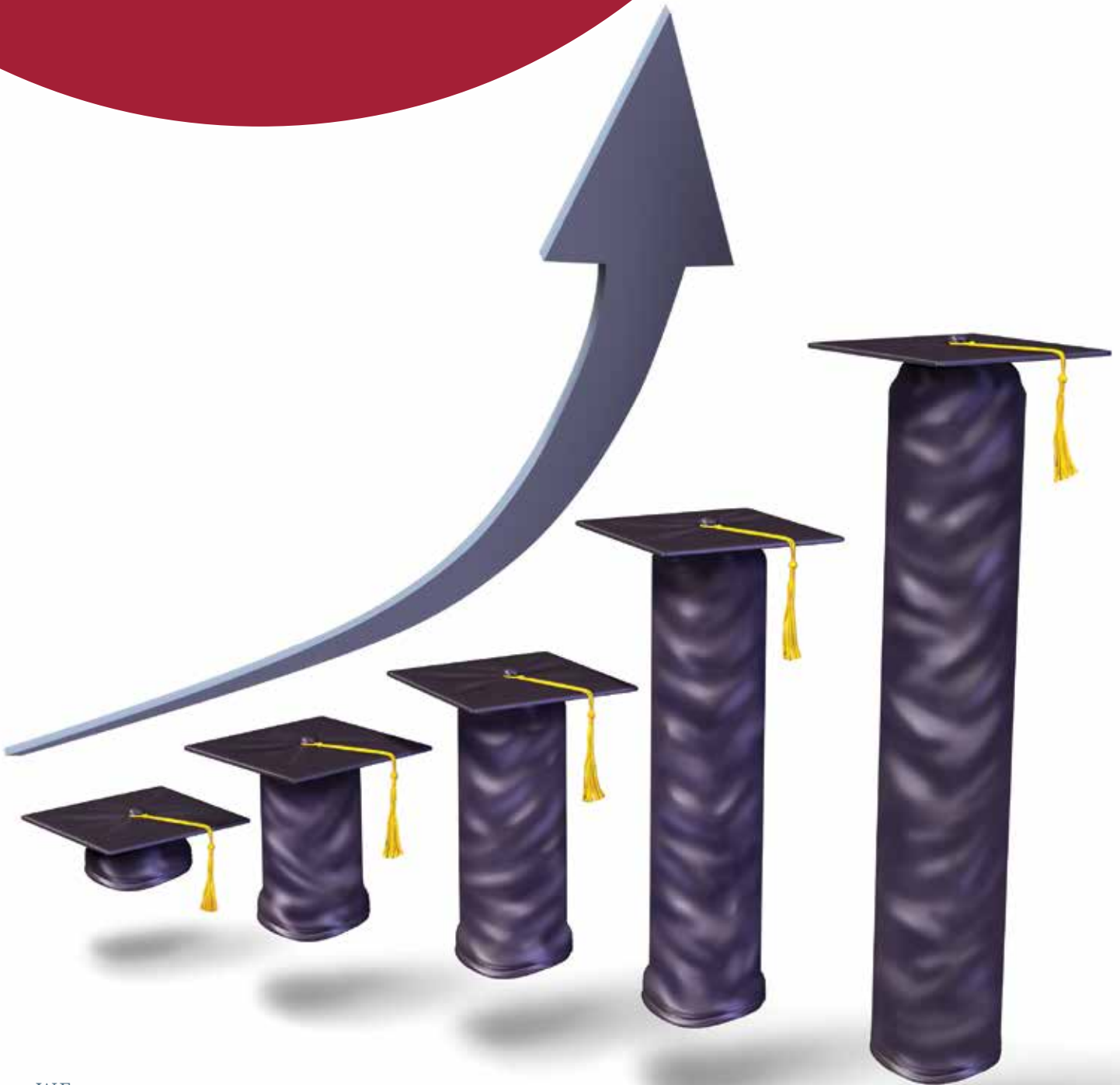
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Abstract:

This paper offers a more useful, individualized, and feasible approach to understanding college affordability. First, it conceptually differentiates affordability from economic value. In so doing, it helps reconcile why Americans, when polled, agree with economists that higher education is worthwhile and has positive economic value, while at the same time fearing that lack of affordability will jeopardize college access and success. Second, it argues that information on average costs and outcomes, such as that available in the Education Department's College Scorecard, while a step in the right direction, is not sufficient for students to make informed choices. The large variances in costs and outcomes may not be understood by many students, particularly those from families with little college experience, and this may lead them astray. Third, and most important, it advocates a three-pronged strategy for providing students — well before the college application decision occurs — customized information on net costs, debt repayment, and earnings outcomes. This strategy draws upon lessons learned from behavioral economics and recent research and can be implemented (on an interim basis) with existing data.

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Disclaimer:

This paper is one in a series of reports funded by Lumina Foundation. The series is designed to generate innovative ideas for improving the ways in which postsecondary education is paid for in this country — by students, states, institutions and the federal government — in order to make higher education more affordable and more equitable. The views expressed in this paper — and all papers in this series — are those of its author(s) and do not necessarily reflect the views of Lumina Foundation.

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Executive Summary

There is no more salient policy issue in higher education today than how to pay for it. Many students and their families lack the information necessary to make the best schooling choices, and attempts to get this information to them are not succeeding. In this paper, we:

- Conceptually differentiate affordability from economic value in the context of college.
- Argue that average cost and outcome data aren't helpful enough to make decisions.
- Propose an inexpensive method to get customized information on college costs and benefits directly to students early in high school.

There is ample confusion between the *value* of college — the return to attending college, net of costs, over a lifetime — and its *affordability*, the extent to which college payments require one to give up something considered more important. Information needed to determine either of these is hard to come by, but it is affordability that is the bigger concern. Without good information, many students adopt shortcuts in thinking that lead to poor college success outcomes.

Although recent years have seen greater attempts to collect and report information on college costs and benefits, these efforts have two major weaknesses: (1) the information is seldom tailored to the individual student, and (2) the information does not reach the students who need it most. We offer an intervention that is designed to rectify both of these problems and that is simple and inexpensive, does not require the collection of additional data, and could be implemented within a few months. In short, we propose to:

1. **Automatically provide, in high school**, net price information tailored to individual students,
2. **Automatically provide, in high school**, debt repayment estimates tailored to individual students,
3. **Automatically provide, in high school**, detailed earnings and employment outcomes by major.

By cooperating with high schools and incorporating lessons from behavioral science on how to effectively reach students, we show how more targeted information on college costs and returns can help redefine the determination of college affordability. Our approach does not take a stance on whether the purpose of college is holistically academic (learning broadly for personal growth and understanding) or specifically occupational (preparation for a better job and career). Different people want different things out of higher education, and preferences vary across potential students. What this approach is meant to do is give potential students more and better financial information with which to make their decisions, whatever their preferences are.

Chapter 1: Introduction

There is no more salient policy issue in higher education today than how to pay for it. To the extent that Americans increasingly view college as unaffordable¹, the Lumina Foundation's goal of expanding the share of Americans with postsecondary credentials to 60 percent by 2025 is threatened, especially for low-income students. It is undeniable that the costs of attending college, regardless of how they are measured, have risen faster than both overall price levels and median incomes over the last few decades, and sentiments about affordability may reflect these trends. The problem is that college affordability is unavoidably subjective. It depends on an individual's (or family's) tastes and preferences, risk aversion, income, and wealth. In determining whether higher education is affordable, one-size-fits-all approaches are unlikely to be helpful.

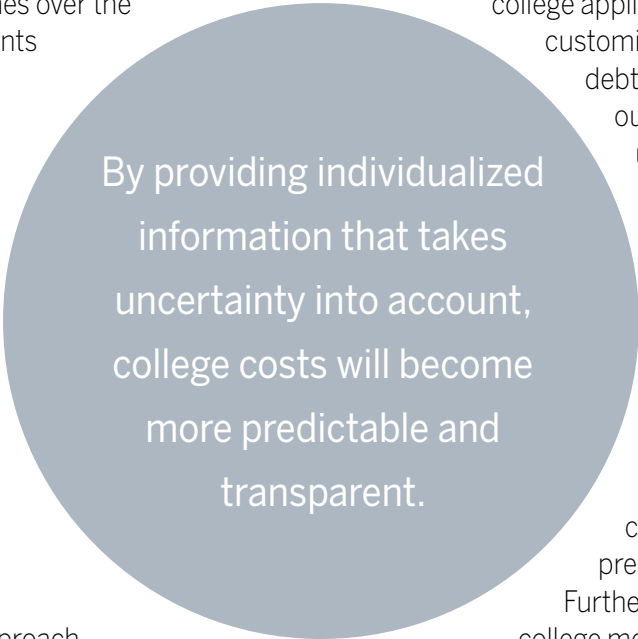
This paper offers a useful, individualized, and feasible approach to understanding college affordability. First, it conceptually differentiates affordability from economic value. In so doing, it helps reconcile why Americans, when polled, agree with economists that higher education is worthwhile and has positive economic value, while at the same time fearing that lack of affordability will jeopardize college access and success. Second, it argues that information on average costs

and outcomes, such as that available in the Education Department's College Scorecard², while a step in the right direction, is not sufficient for students to make informed choices. The large variances in costs and outcomes may not be understood by many students, particularly those from families with little college experience, and this may lead them astray. Third, and most important, it advocates a three-pronged strategy for providing students — well before the college application decision occurs —

customized information on net costs, debt repayment, and earnings outcomes. This strategy draws upon lessons learned from behavioral economics and recent research and can be implemented (on an interim basis) with existing data.

By providing individualized information that takes uncertainty into account, college costs will become more predictable and transparent.

Furthermore, in order to make college more affordable for low-income students, it is imperative that they receive information on how much college will actually cost and how easily they will be able to repay loans, should they borrow, for different planned fields of study. Lack of this information is a major impediment to college success (Grodsky and Jones 2004; Horn, Chen, and Chapman 2003; Hoxby and Turner 2013).



By providing individualized information that takes uncertainty into account, college costs will become more predictable and transparent.

Chapter 2: Value versus Affordability

It is important to distinguish between value and affordability. Economic value is a well-established and well-defined concept for making an investment, whether it involves buying a stock or building human capital through education. Cost-benefit calculations generally compare the total discounted stream of benefits with the total stream of costs over the lifetime of the investment. If the former exceed the latter, economists consider the investment worthwhile and say that it has positive private value. In the case of college education, the stream of benefits translates to higher earnings over one's lifetime, and the costs capture tuition and fees paid, other schooling costs, and the opportunity costs of foregone earnings.³

Organizations such as the Pew Research Center (Fry 2011) and the Georgetown University Center on Education and the Workforce (Carnevale, Rose, and Cheah 2011) have performed these calculations and have found that, on average, bachelor's degree earners net at least half a million dollars more than high school graduates over their lifetimes. For those obtaining an associate's degree, a certificate, or some college without a credential, the difference is smaller but still positive.⁴ Some of these studies are careful to note, however, that just because the net gain is positive on average does not mean that it is necessarily positive for everyone who actually earns the credential, let alone for everyone who is considering going to college. Nonetheless, these calculations reinforce that the value of college is based on lifetime costs and benefits; it is determined over the long term.

The aftermath of the Great Recession has brought many reports and media attention about how recent college graduates have become more likely to be unemployed (Shierholz, Sabadish, and Finio 2013), be underemployed (Abel, Deitz, and Su 2014), and suffer

earnings losses (Stone, Horn, and Zukin 2012), all relative to graduates from before 2008. These short-run effects, while quite real, have caused some policy makers to question whether college education is worth it — whether it has positive economic value — for most students (Vedder 2011).⁵ This argument is unfortunate, not only because it ignores lifetime benefits, but because it distracts from a more important barrier to college success: affordability.

College affordability is subjective, but it perhaps can best be considered by determining whether servicing the costs at a *specific time* — particularly in one's early career when earnings tend to be low — would require giving up the consumption of other goods and services that the individual student is unwilling to forgo. This definition is commonly used with many consumer goods. For example, an individual may want to buy a new HDTV, but if doing so would mean being unable to pay the grocery bill, he may consider the TV unaffordable. This type of thinking can also apply to longer-term purchases such as housing: a home that requires a mortgage payment larger than one's monthly income would almost certainly be considered unaffordable (Baum and Schwartz 2012). Affordability, unlike value, thus depends on the timing of paying for something.

However, unlike the cost of a TV or of a mortgage, the cost of attending college is not at all transparent. Although advertised or sticker prices are easy to find, few students pay these prices because of financial aid (Baum and Ma 2013). As financial aid policies vary from school to school, actual or net prices (sticker prices net of grant aid) can vary considerably, both for a given student across colleges and across students for a given college, and these numbers are not advertised. Unlike a mortgage, if students borrow to pay some of

the cost of college, the size of monthly payments is not prominently featured or well known.⁶

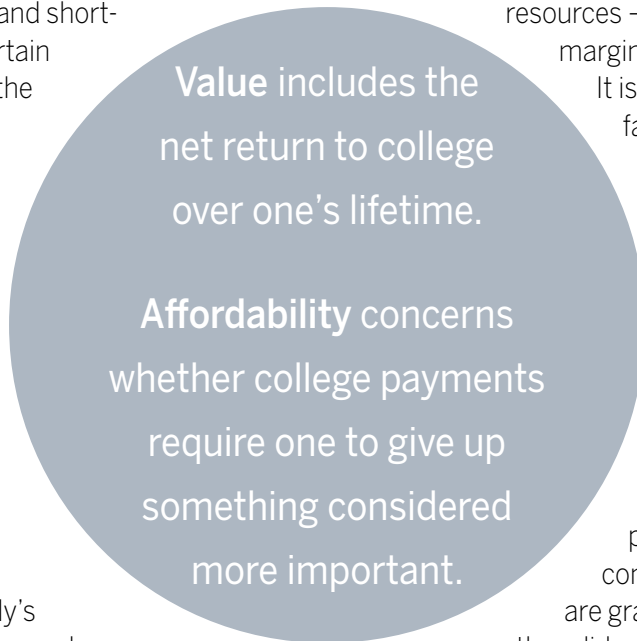
Furthermore, it is straightforward to observe the benefits of a TV or house before making a purchase (e.g., testing the TV in a store, attending an open house), but the benefits of attending college are realized over a lifetime and can be quite variable and uncertain in the short term. While monthly payments for a mortgage or car can generally be compared to a known income stream, monthly payments for student debt often become due when earnings are at the lowest and most variable level in a worker's career. With both the individualized costs and short-term benefits of college uncertain — if not outright unknown — the core elements in determining the affordability of college are not readily available.⁷

Because many families lack the information with which to make these calculations, a different rule-of-thumb method is often used instead. This approach compares the sticker price of college — instead of the harder-to-find net price — with the family's (or individual's) current income and savings. If the potential student believes that the former is too high relative to the latter, she concludes that college is not affordable.⁸ This decision rule is problematic for at least two reasons. First, because the sticker price is almost always substantially higher than what the student will actually have to pay, college will appear less "affordable" than it actually is. Second, it does not capture the reality that college, like other investments, is often paid for over time: loan repayments as well as upfront costs need to be considered. These misconceptions may result in

students choosing to attend a college that is not the best fit for them or not to attend at all.⁹

The use of the ad hoc approach, despite its shortcomings, should not be unexpected. The rationale behind this way of thinking was described 40 years ago by Tversky and Kahneman (1974). When faced with a complex decision, people often take short-cuts, based on heuristics or stereotypes, and this can lead to the wrong inference. In the current landscape of dispersed and disparate data, finding out accurate information on college costs and returns is complicated for a high-achieving individual who has access to extensive resources — it is nearly impossible for a marginal student with few resources. It is thus not surprising that many families rely on benchmarks based on historical experience rather than an uncertain future. For example, because sticker price has grown much faster than family incomes, college may be deemed "unaffordable" because it is less "affordable" in this metric than in the past. Similarly, a family may conclude that since students are graduating with more debt than they did previously, college is becoming "unaffordable" even though debt payments relative to future incomes may be quite manageable.

As complicated as the college decision process is, recent research by psychologists and neuroscientists suggests that it is even worse for late adolescents. The neurobiology of the teenage mind is primed for short-term thinking, with the self-control required for longer-term planning still developing (Castleman 2013). While parents from families with more advantaged backgrounds can mitigate this behavior, these



supports are often not present in the families of less advantaged and first-generation college students. These latter students thus not only face greater barriers to accessing information on college costs and benefits, they may not receive the assistance with which to interpret them. Both factors help to explain the widening socioeconomic divide in college-going and completion (Bailey and Dynarski 2012).

Realigning the decision-making process must recognize that students and their families need guided, or tailored, information on both the long-term benefits of postsecondary education (value) *and* realistic estimates of what it will cost upfront and after leaving school (affordability). The information should be in

readily accessible, quantifiable terms. This is not to say that better provision of information is *sufficient*, by itself, to enable prospective students to determine the postsecondary path that is most valuable and affordable for them. There are other barriers that arise from cultural or neighborhood contexts (Goldrick-Rab et al., forthcoming) and real economic difficulties.¹⁰

However, breaking the informational constraint is almost certainly *necessary* for redefining the metric often used for affordability and improving college outcomes.

Chapter 3: Individualized Information

Within the past few years, there has been a push by the U.S. Department of Education to make more information about college costs available to students. Since the fall of 2011, colleges have been required to include net price cost calculators on their web sites, and in 2013, the Department released the College Scorecard, a web site that provides information on the average net price and median amount borrowed at every college and university that receives federal student aid.¹¹ Furthermore, within the past two years several nonprofit organizations, funded by private foundations, have created web sites containing a wealth of searchable information (including cost) about colleges. (A list of these web sites with their funders is provided in Appendix B.) These innovations are well-intentioned and are a step in the right direction, but several shortcomings preclude their usefulness in providing accurate and relevant information to many students.

First, net price calculators, while able to provide highly customized cost information, are not easy to use. They often require detailed knowledge of parental and student assets and income from tax returns, which less financially savvy students and families may not readily have, especially early in the college search process.¹² Additionally, each institution's calculator is different in format and in the set of required inputs, so even if financial data have been entered successfully on one college's calculator, the same inputs may not

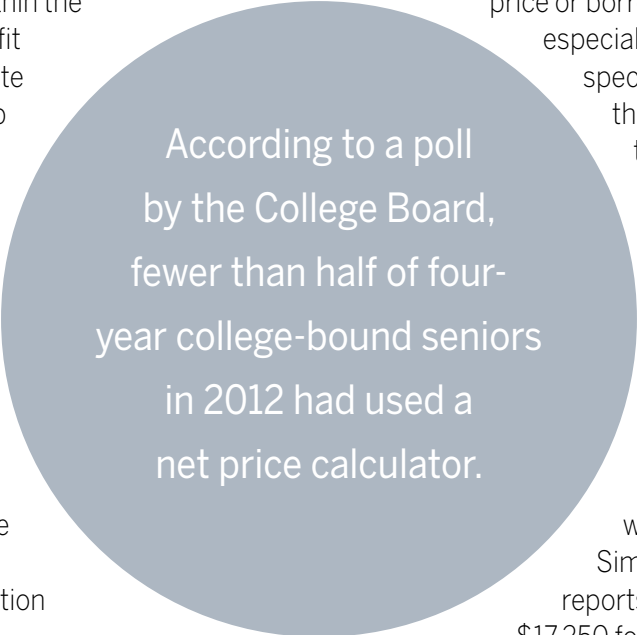
be sufficient for a different college's calculator. There is also no simple way to compare costs across colleges without separately entering information for each college's calculator.¹³

Second, the information provided, particularly in the College Scorecard, does not reflect the wide variation in costs attributable to student characteristics.

Few students will experience the "average" net price or borrow the median amount, especially if they are atypical for the specific institution. For example, the College Scorecard lists the average net price for attending the University of California-Berkeley as \$15,600 per year, but the school's net price calculator shows a net price of \$8,500 for a family with income of \$30,000 and a net price of \$21,600 for a family with income of \$100,000. Similarly, the Scorecard reports median borrowing of \$17,250 for undergraduate study, but

it does not mention that fewer than half of undergraduate completers there borrow at all. While it is understandable that medians or means are presented for simplicity, these summary statistics may be misleading for many students, possibly to a degree that significantly affects their college choice.¹⁴

Third, and perhaps most important, all of the innovations require students to be aware of and actively search for the relevant web sites. However, according to a poll by the College Board, fewer than half of four-

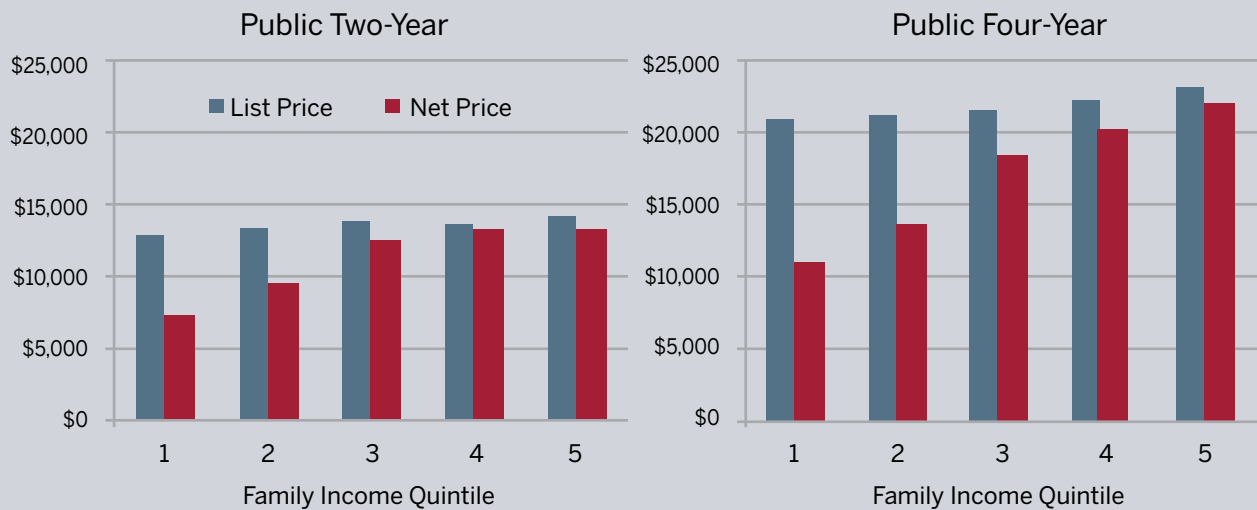


According to a poll by the College Board, fewer than half of four-year college-bound seniors in 2012 had used a net price calculator.

year college-bound seniors in 2012 had used a net price calculator.¹⁵ This fraction is almost certainly smaller among students aiming to attend community or for-profit colleges, as the poll also found that students with lower SAT scores were less likely to look at net costs in considering the expense of college. Another factor could be that even if students are aware of these web sites, they cannot distinguish the reliable ones from the

many other sites actually trying to sell them “college advice” (Hoxby and Turner 2013). A lack of familiarity or trust with these web sites also explains why many students — especially low-income students — routinely overestimate net costs (Ikenberry and Hartle 1998; Shireman, Baum, and Steele 2012).

Median List Price of Attendance and Net Price of Attendance, by Family Income Quintile, for Public Two-year and Four-year Sectors in 2011–2012



Note: Prices are for full-time, dependent students. List price includes tuition and fees, room and board, and other expenses. Net price is list price less grants from all sources. Family income quintiles are: (1) less than \$25,000; (2) \$25,000 to \$50,000; (3) \$50,000 to \$80,000; (4) \$80,000 to \$118,000; and (5) above \$118,000.

Source: Authors' calculations from National Postsecondary Student Aid Study, 2012.

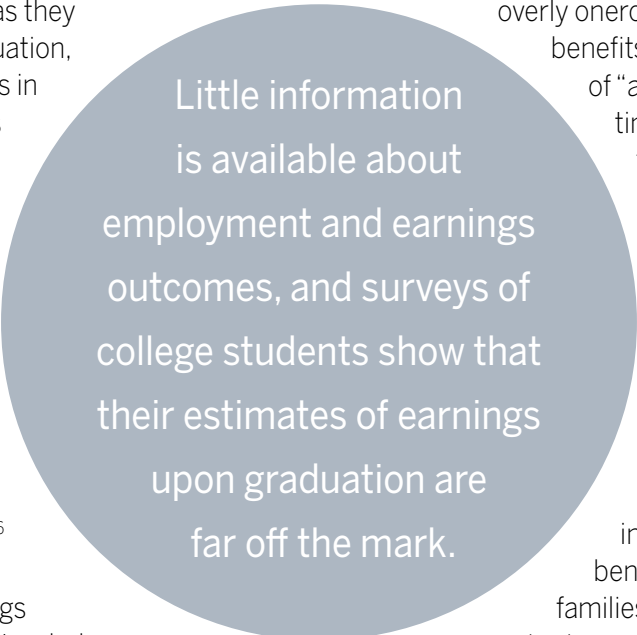
Collectively, these caveats imply that customized cost information is not adequately reaching students. Moreover, little information about employment and earnings outcomes is available at all, and surveys of college students have found that their estimates of earnings upon graduation are significantly off the mark. In particular, Betts (1996) found that while students at a selective university learned more about earnings of recent graduates as they themselves approached graduation, and knew more about earnings in their own field, their estimates still had a mean absolute error of 20 percent. These misconceptions are also not an artifact of the pre-Internet era: Wiswall and Zafar (2013) show that, even recently, students at a selective university poorly predicted earnings by major, with even larger mean absolute errors than in Betts.¹⁶

Although the release of earnings information for graduates is intended in the College Scorecard, average earnings data are not likely to be particularly useful in helping students make more informed choices.¹⁷ There is significant variation in earnings and employment outcomes among graduates — even within the same college and major — in both the short and long terms. Unfortunately, many policymakers and academics have not paid suitable attention to this issue and its implications for debt repayment and financial stress

in early career. For students who recognize that their future earnings are variable, the variance can lead to uncertainty, and the uncertainty can lead to risk aversion that distorts college choice in a way that can actually lower expected earnings. (Cunningham and Santiago 2008; Bowen, Chingos, and McPherson 2011).

On the other hand, students who do not recognize the uncertainty (or its extent) may end up with overly onerous debt burdens if *realized* benefits fall short of the predictions of “average” returns made at the time of college choice. In the first case, a lack of earnings information translates to undue pessimism and quite possibly too little borrowing; in the second, it translates to undue optimism and too much borrowing.

The lack of individualized information on costs and benefits precludes students and families from accurately determining whether a certain college path is a good value or affordable for them. Attempts to provide accurate information are laudable, but it is critical that the information actually reaches students in a format they can understand *and* early enough in the process to guide college choice. Furthermore, the information must take into account variation in student background, particularly in regard to costs, and dispersion in earnings, especially in early career.



Little information is available about employment and earnings outcomes, and surveys of college students show that their estimates of earnings upon graduation are far off the mark.

Chapter 4: How Better Information Dissemination Could Work

The solution we propose to remedy the dearth of customized information about the costs and benefits of college is straightforward and has three components:

- 1) **Automatically provide, in high school**, net price information tailored to individual students.
- 2) **Automatically provide, in high school**, debt repayment estimates tailored to individual students.
- 3) **Automatically provide, in high school**, detailed earnings and employment outcomes by major.

The automatic and early provision of information is integral. Work in behavioral economics has emphatically demonstrated that seemingly small effort costs — such as signing up for a retirement plan at work or searching for a college's net price calculator — can lead to inertia and deter people from making optimal decisions (Thaler and Sunstein 2008). Furthermore, disseminating information before the application stage is necessary for students to make the most informed decisions, including those that affect college preparation.¹⁸

Our proposal is not the first to advocate better dissemination of college cost and benefit information to students (see, in particular, Long 2010). However, we believe it is the first to provide specific recommendations that can be implemented with existing data and without additional legislation. In this chapter, we explain each of the three prongs, where the data for each would come from, and how the intervention could work in practice.

The Three Prongs

1 Net price information tailored to individual students

The first prong reinforces the intent of and improves upon the operation of net price calculators by increasing the likelihood that students will actually see the difference between sticker and net price. Recent research illustrates how important provision of this information straight to the student can be.

For example, Hoxby and Turner (2013) show that directly mailing semi-customized information on aptitude-appropriate colleges and their net financial costs to high-ability, low-income students significantly increases the likelihood of these students applying to and attending colleges with more resources and higher graduation rates. Indeed, “undermatching” — the phenomenon of students attending colleges for which they are overqualified, often due to concerns over costs — is a key factor in reduced rates of college persistence and completion (Bowen, Chingos, and McPherson 2011). Remarkably, the Hoxby and Turner intervention cost only \$6 per student.

The idea captured in the Hoxby and Turner experiment — that clear, reliable, and accessible cost information changes decision-making — could be extended for a broader range of students, not just those of very high aptitude, early in high school, around the end of 10th grade.¹⁹ Rather than emphasizing highly selective institutions that may be far away, net price information for these students would cover approximately half a dozen in-state schools (two-year and four-year)

that college-going students in the area typically attend. Additionally, incorporating research findings summarized by Castleman (2013) on the importance of sending information through multiple channels for less academically strong students, postal mail to the student's address could be supplemented with email, a short classroom-based seminar, and reminders via text messaging to increase the salience of the information amidst the other stimuli competing for students' attention.

By providing net price data directly to students and without the need for a user-initiated web form, this component can help counter media reports that focus on the sticker price of the highest-cost schools and that create cognitive dissonance about what most people pay for college. By informing students of what college is likely to actually cost them, it could also foster a dialogue and culture of college-going (at any level) that may increase students' academic behaviors and better prepare them for college work.²⁰

2 Debt repayment estimates tailored to individual students

The second prong relates to what total borrowing and monthly debt payments are likely to be for the 57 percent of students — and 64 percent of bachelor's degree recipients — who borrow for their undergraduate education (Baum and Payea 2013, Figures 2012_11A and 2012_11B). Few of these students understand how much they are borrowing and how much they will have to pay. For example, although the law requires students receiving federal loans to undergo a loan counseling exit interview upon school leaving, a survey by NERA Economic Consulting and the advocacy group Young Invincibles found that 40 percent of students with large loan balances did not recall receiving any form of loan counseling at all (Whitsett and O'Sullivan 2012).²¹ Even so, school leaving is too late a time to apprise students of repayment: it is

important for students to understand what their debt payments are likely to be *before* deciding which college to attend.

With net price information across a set of colleges in hand from the first prong of our approach, the student (or her family) could visit the Education Department's Repayment Estimator web site (a link to which would be provided in the net price information), plug in a possible amount to borrow, and see the estimated payment schedule under prevailing interest rates.²² This alone would be an improvement over the College Scorecard, since loan amounts could be selected by the student. However, because many students may find it difficult to estimate how much they will borrow even given net price information, especially over the entire period of undergraduate study, we recommend providing targeted (example) debt profiles drawn from existing records of similar students. In other words, given the net price faced by the student and her family background (income, state of residence, family structure, type of school, etc.), it is possible with current data to forecast what typical debt will be at graduation.²³ If these background data were available, these debt estimates could be distributed to the student through the same methods as for the net price data. Alternatively, a link could be provided to a web site that would allow the student to enter such information and then receive tailored debt and repayment estimates. By making students aware of borrowing and repayment magnitudes, this prong can begin to help reframe college as a durable good or asset that is paid for over time. However, it will be more effective in conjunction with the next component.

3 Detailed earnings and employment outcomes by major

The third and most novel prong focuses on detailed earnings and employment outcomes.²⁴ While the Education Department has begun efforts to collect

earnings data by college attended, we argue that mean earnings, even those that are college-specific, mask variation of which students need to be aware, especially when it comes to loan repayment. Instead of reporting average or median college earnings at some future date, we advocate reporting different *percentiles* of earnings for different *majors* using data that are available *now*.

By reporting percentiles of earnings, such as the 25th, 50th (median), and 75th — along with a clear definition of the percentiles²⁵ — students could observe how much earnings can vary and the possibility that they could be lower than “average.” It is also more important to report earnings by major than by college. Among college graduates, earnings vary much more by choice of major than by institution, and institutional differences that do exist stem mostly from factors that are specific to the individual or are related to geography rather than endemic to the school itself (Hershbein 2013; Altonji, Kahn, and Speer 2013; Schneider 2013).²⁶ Providing earning percentiles by major not only would allow students to see how outcomes vary across majors, it would enable them to see the variation within a major as well.

Moreover, it is crucial for earnings data reported to students to incorporate the chance of both unemployment and underemployment in the form of involuntary part-time employment.²⁷ As the probability for these occurrences varies substantially across majors and education levels (see Appendix C), and almost certainly across institutions, it would be misleading to report earnings assuming full-time employment. Earnings among people who are in the labor force—those who either have a job or are actively looking for one—would present a more accurate picture for students. Furthermore, while early-career earnings can shed light on the ability to repay debt or budget expectations shortly after school leaving (affordability), they may not represent the longer-term picture (value). Thus, students should be presented both early and mid-career earnings.

Earnings data would be even more useful in conjunction with debt repayment estimates from the second prong. Students could directly compare monthly payments to monthly earnings, by major, accounting for the chance that earnings are lower (or higher) than typical. A bit of integration through a web site could automatically place the debt repayment and earnings in context by displaying the share of income necessary to service the debt, perhaps with color-coded guides to indicate dangerous thresholds (Baum and Schwartz 2006). The system could even incorporate the likelihood of qualifying for alternative repayment strategies, such as Pay As You Earn or other income-based repayments, at different earnings percentiles.²⁸ (This feature would also make students aware that such repayment plans exist before they begin borrowing.)

Providing this type of earnings information, as well as measures of the estimated risk of repayment difficulty, would be in line with what Baum and Schwartz (2013) call “psychology-guided” information and what Thaler and Sunstein (2003, 2008) call a “nudge” or “libertarian paternalism.” Rather than, as some politicians have called for, making the terms of financial aid contingent on a certain major choice — a hard or binding restriction — the provision of the information would give a strong (color-coded) hint to the student about the risks of her choice.²⁹

Where the information would come from

One of the major features of our three-pronged intervention is that the information necessary for each prong already exists. The proposal does not rely on data to be collected at some future date, or the passage of a new law by Congress, or additional outlays of money; it can be implemented now.³⁰ We briefly describe below the sources of data for each prong; more detailed descriptions are in Appendix A.

Net Prices

The Department of Education's Integrated Postsecondary Education Data System (IPEDS) provides institution-specific, annually updated average net prices for students from five different family income categories: less than \$30,000, \$30,001 to \$48,000, \$48,001 to \$75,000, \$75,001 to \$110,000, and more than \$110,000. These numbers are crude, not accounting for any individual student's circumstances beside family income, but they represent a significant improvement over the average net price at an institution, not accounting for income at all. They also do not require *any input or customization* from the student and therefore can be generated quickly and inexpensively. These estimates will not be as accurate as those from college net price calculators, of course, but they are often reasonably close to what most students can expect. A comparison of IPEDS average net prices to actual net prices paid by students can be found in Appendix D.

Debt Levels and Repayment

The Department of Education's National Postsecondary Student Aid Study (NPSAS), conducted every four years, is the most comprehensive source of student borrowing from all sources (not just federal loans) at the individual student level. Although not every school is represented, NPSAS has an advantage over other, aggregate sources of borrowing in being able to break down debt estimates by detailed student characteristics, including net price, family income, family structure, and more. As these characteristics better predict borrowing than just knowing the school attended, targeted debt estimates can be drawn from the survey to match similar students and provide a more realistic assessment of loan volume.³¹ For example, instead of a potential student at the University of South Florida being told the median federal debt of that school's students, as in the College Scorecard, she could be given the range of total debt for the middle 50 percent of students at public schools in Florida who share her family background and financial situation.

With these figures, it is straightforward to calculate estimated monthly payments at prevailing interest rates under the standard 10-year repayment plan or graduated or extended (if qualified) repayment plans. Payments under income-determined plans necessarily require information on income from prong three.

Earnings

The best source of publicly available data on earnings by educational attainment and major is the U.S. Census Bureau's American Community Survey, which samples approximately 1 percent of Americans each year. There is sufficient detail in the data to calculate earnings percentiles for most majors, both for young individuals soon after graduation and for people who are in mid-career.³² It is even possible, through statistical adjustment, to calculate earnings at the state level in order to account for geographic variation in wages.

How the intervention would work in practice

In the spring of her sophomore year, a student would receive from her high school information on the net prices, by family income category, for six postsecondary institutions of higher learning in her state. The mix of institutions would include the local public community college, the state flagship university, and four other schools (public and private, 2-year and 4-year) based on proximity. This accords with the fact that most college students attend school relatively close to home.³³ In addition to the net prices for the schools, the one-sheet document would list the sticker prices (in smaller font) and explanations of what the sticker and net prices mean. It would also clearly state that the net prices are ballpark estimates and are not exactly what the student's family would have to pay. The sheet would provide links to each college's net price calculator web page with the message that these calculators could provide a better estimate of net price but require detailed information on student and parental income

and assets, like those on a tax return.³⁴ The same message would indicate that this information would eventually be required to be entered into the Free Application for Federal Student Aid (the FAFSA) in order to obtain any federal aid. All of this information would be in English on one side and Spanish on the other.

The document would be: (a) mailed to a student's home address, (b) distributed in school (in home room, for example), (c) emailed to the student and her parents or guardians, and (d) discussed with a guidance counselor in school settings with resources to permit it. Students would also receive reminders about the distribution of the net price sheet via text message when possible, and teachers would be encouraged to mention it in class. To better prepare students and their families for the incoming information, schools would also mail an announcement about the document several weeks in advance and mention it in parent-teacher conferences and student assemblies.

This requires collaboration with high schools. We envision such cooperation in part because of the objective to get students to think about attending college and in (perhaps greater) part because it would require minimal effort or expense from high school staff. A centralized database and web site would allow a school staff member, once a year, to enter her school's ZIP code and automatically download the net price information sheet for that area. (Many of the independent college information web sites listed in Appendix B already have such a searchable database, as does the Education Department's College Navigator.) The physical mailings could be combined with other routine school mailings to save on postage costs. Some schools would need to begin collecting email addresses and mobile phone numbers from students and guardians, although this is not difficult and many districts already do collect such contact information. The time of guidance counselors is harder to come by, but this component, while helpful, is not absolutely necessary.

The distribution of the net price document, although simple, is still not ideal. Even leaving aside the accuracy of the net price estimates, automatically populating the mix of schools without regard to students' academic characteristics is a shortcoming. Schools certainly have data on student grades and standardized test scores, and it would be straightforward for an algorithm to use these data to select a more aptitude-appropriate set of schools for an individual student. Six schools also may not be sufficient to provide a good match for all students. Yet, although better targeting would be nice, the point of the net price sheet is not to tell students how much the school they may eventually attend will cost. Rather, the point is to get students and their families thinking about the difference between sticker and net price, the magnitudes of grant money available, and resources available to find more information. The direct provision of example information can help jumpstart this process.

While the net price document does not require student-level customization, information from the other prongs — borrowing and earnings by major — does, and the easiest way to deliver such information is through a web site. Thus, the net price document contains a link to a web site, hypothetically called *collegeborrowing.org*, where a student could enter her net price, family income, family size, and school type to obtain a range of what a similar-appearing student typically borrows.³⁵ This web site would also allow the student to enter in a few majors of interest and see the distribution of earnings as described above. With borrowing and earnings estimates in hand, the student could then visit via a link the Education Department's Repayment Estimator to see several different repayment strategies, including income-related ones. Ideally, the link would allow the generated borrowing and earnings estimates to populate directly into the respective fields of the Estimator.

An Example Net Price Document

COLLEGE NET PRICE INFORMATION SHEET

The prices for attending college that you hear or read about in the news may seem steep, but you should be aware that most families do not pay these advertised or “sticker” prices. Because of financial aid in the form of grants and scholarships — money that does not need to be repaid — the actual or “net” price is often much less than the sticker price. Because federal grant aid is designed to help lower-income families, these families especially benefit.

The table below shows both the sticker price and the net prices for several colleges and universities in your area using information from the U.S. Department of Education. (You can also search for additional schools at the Department’s College Navigator web site: <http://nces.ed.gov/collegenavigator>.) These prices are comprehensive and include tuition and fees, room and board, books and supplies, travel, and other personal expenses. To get an idea of what your family will likely pay for one full year of college, find the row that contains your family’s annual income and check the price for each college in that row.

IMPORTANT: THESE NET PRICES ARE ONLY APPROXIMATE ESTIMATES. YOUR ACTUAL NET PRICE MAY BE DIFFERENT BECAUSE SEVERAL FACTORS OTHER THAN INCOME AFFECT FINANCIAL AID. You can obtain a more customized and accurate net price by following the links to each college’s net price calculator web page. These calculators ask for a lot of financial information from a recent tax return and may be difficult to use, but they can provide a net price tailored to your circumstances. In order to qualify for federal financial aid, however, you will eventually need to enter the same financial information on the Free Application for Federal Student Aid (the FAFSA).

	Ivy Tech Community College*	Indiana State University	Purdue University	Indiana University- Bloomington	University of Indianapolis	Harrison College
Location	Indianapolis, IN	Terre Haute, IN	West Lafayette, IN	Bloomington, IN	Indianapolis, IN	Indianapolis, IN
Type	2-year public	4-year public	4-year public	4-year public	4-year private nonprofit	4-year private nonprofit
Enrollment	100,272	12,114	40,393	42,133	5,484	4,547
Total “sticker” price	\$15,970	\$19,840	\$22,750	\$22,050	\$35,890	\$25,140
Total “net” price by family income						
Less than \$30,000	\$8,460	\$7,640	\$6,410	\$4,730	\$16,630	\$18,720
\$30,001 to \$48,000	\$9,210	\$9,770	\$8,830	\$7,440	\$18,470	\$18,660
\$48,001 to \$75,000	\$11,740	\$14,450	\$14,860	\$14,630	\$21,610	\$20,260
\$75,001 to \$110,000	\$13,290	\$16,680	\$19,355	\$18,610	\$25,030	\$21,470
More than \$110,000	\$13,390	\$17,510	\$21,163	\$19,700	\$25,740	\$22,960

*Prices for 2-year schools include living expenses that would need to be paid even if you were not enrolled in college.

For more accurate estimates, visit each college’s net price calculator web page:

Ivy Tech: www.ivytech.edu/financial-aid/estimator.html

Indiana State: indstate.studentaidcalculator.com/welcome.aspx

Purdue: www.purdue.edu/DFA/estimator

Indiana-Bloomington: npc.collegeboard.org/student/app/indiana

University of Indianapolis: uindy.collegecosts.com/Estimator/Agreement

Harrison: harrison.edu/Admissions/TuitionCalculator.aspx

Net prices can be paid from cash or savings as well as federal loans — money that does need to be repaid. To see how much *someone like you* typically borrows for his/her entire college career, and how much college graduates with different majors typically earn right after graduation, visit www.collegeborrowing.org. Once you know how much you are likely to borrow in total and what you might be expected to earn, you can use the Education Department’s Repayment Estimator to see your best option for repaying these loans: studentloans.gov/myDirectLoan/mobile/repayment/repaymentEstimator.action

We allow that this web site approach does ask a lot from students who are just finishing their sophomore years. Few of these students (or their parents) are accustomed to thinking about the need to borrow for college or what major they may pursue if they go to college. It is for this reason of unfamiliarity that we advocate beginning the intervention in 10th grade: it prompts students to begin thinking about college possibilities over the summer and as they see some friends who have graduated high school prepare to attend a postsecondary institution. Reinforcing this shift in thinking is also why we believe that the transmission of the net price document, complete with announcements and text reminders, should be conducted for the same students again in the fall of their junior year and yet again in the spring of that year. By repeating the intervention, we aim to increase its salience, for the students and the high school.

We also rely on the Education Department's Repayment Estimator. This is in part to avoid reinventing the wheel, as the Estimator already produces different repayment options for federal loans, which many other calculators do not. It also takes advantage of the trustworthiness and reputation of an official government site. However, it may not be possible to have an external site work in tandem with the Department's page. Moreover, while the Estimator outputs multiple repayment options, it offers no guidance on which plan to choose.

An independent web site, on the other hand, could repeat the calculations underlying the Repayment Estimator and extend them. For example, the monthly payments under each qualified repayment plan could also be expressed as a share of income and shaded green if this share was less than 8 percent, yellow if the share was between 8 and 12 percent, and red if the share exceeded 12 percent. This would highlight the better options. A tighter integration between the earnings percentile estimates by major and debt repayment could allow the user to compare debt repayment plans as a share of income across selected majors; the advanced user could even toggle between the different percentiles of earnings.

While such an integrated site remains theoretical at the moment, we have created an operational proof-of-concept site for the earnings data. (Details on its construction are in Appendix A.) The web tool at <http://www.upjohn.org/models/collearn/home.php> allows users to select several majors and see the earnings percentiles of bachelors graduates with those majors in early and mid-career, along with earnings for other sub-baccalaureate education levels for reference. An advanced version of the tool allows for geography-specific earnings and to condition workers on full-time status. We hope to refine this tool with further testing.

Chapter 5: Improvements Possible with Better Data

Net Prices

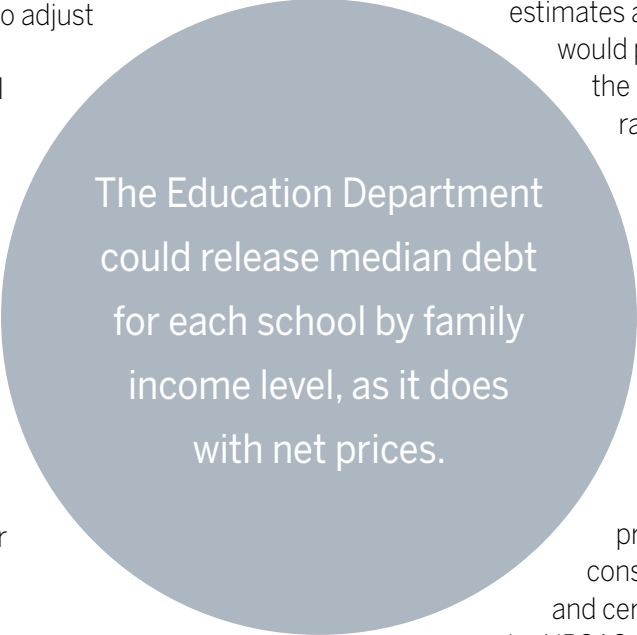
The approach described above of taking average net price data by family income from the IPEDS database is simple, requiring no additional data collection or background information about the student. We showed that if a student's family income were available, however, it would be possible to adjust these IPEDS net prices using data derived from the National Postsecondary Student Aid Study (NPSAS) to yield a more accurate estimate. While these methods are sufficient to create a net price figure that is in the ballpark of what a student would actually have to pay, and create a considerable revision from the full sticker price, they are still far from ideal and may not work well for all students.³⁶

Net price calculators, for all their difficulty and flaws, offer more reliable net prices at the cost of more detailed information. The Net Price Calculator Improvement Act (H.R. 3694, 113th Congress), a bill introduced in December of 2013, would standardize the format of the calculators across colleges and, most importantly, allow the Department of Education to host a universal net price calculator on its web site that could simultaneously compare net prices across multiple colleges.³⁷ Such a tool would increase the utility of net price calculators, although it would still require user initiative and knowledge of some family financial data.

A compelling option would be a hybrid approach combining the simplicity of the (adjusted) IPEDS net prices with the greater potential accuracy of a universal net price calculator. Students would receive in high school the IPEDS net prices, as above, but in addition to the warning that the net prices were rough estimates and not exactly what they would pay, there would be a link to the universal net price calculator rather than the school-specific calculators. This approach could simplify the informational refinement process.

Borrowing and loans data

The previous chapter explained how tailored profiles on borrowing could be constructed using an algorithm and certain data elements from the NPSAS. Rather than relying on model-based estimates, it would be more accurate and direct if anonymized data (but with institutional identifiers) from the National Student Loan Data System (NSLDS), the depository of all federal loan data and the source for median debt in the College Scorecard, were made available by license to researchers. With data on family income, expected family contribution, and a few other demographic indicators, it would be straightforward to calculate for each school not just the median cumulative debt as in the College Scorecard, but also debt statistics for



The Education Department could release median debt for each school by family income level, as it does with net prices.

different family income groups and family structures. Importantly, these statistics could cover both *annual* and *cumulative* borrowing at school leaving, including the fraction of students who borrow at all. As such, it would be possible to present debt profiles that closely match with an individual student's characteristics.

Even if such access to the NSLDS database were determined to be infeasible for external researchers, staff at the Education Department could easily tabulate more detailed statistics than just the school-level median. At a minimum, the Department could release median debt, both annual and cumulative, for students with Pell grants in addition to median debt for all students. Better, and still not that taxing, would be to release debt at the 25th and 75th percentiles, as well as the median, for the same family income groups that are defined for net price reporting in the IPEDS. This would provide sufficient information for students to learn how much *other students like them* borrowed to attend different schools in their area (or of interest).

Of course, a shortcoming of the NSLDS is that it tracks only federal loans and not other types such as private and institutional loans.³⁸ Although the share of total loans disbursed that were nonfederal reached 25 percent in the 2007–2008 school year, this number fell to just 8 percent by 2012–2013 in the wake of the Great Recession (Baum and Payea 2013). Even if this share begins to climb again, federal loans are likely to account for the vast majority of student-level borrowing, making the NSLDS the most reliable source of student debt at the institution-specific level.

Earnings data

The data on earnings from the American Community Survey have the strengths of being representative (on national and state levels), offering detail at the level of major, and being readily accessible. Sample sizes are also typically large enough to estimate statistics beyond the mean or median. Unfortunately, they do

not allow breaking out earnings at the level of college attended, nor do they capture field of study for programs below bachelor's degrees. While it is possible to statistically adjust earnings for differences in geography, this is a weak substitute for institution and degree-specific earnings. Fortunately, there are several possibilities for improvement in this direction of reported earnings data, some of which are already underway.

For example, the Student Right to Know Before You Go Act (H.R. 1937, 113th Congress) would charge the Secretary of Education to confer with the Social Security Administration (SSA) to develop guidelines on how earnings reported to SSA could be matched to the specific college or university attended.³⁹ While logistically challenging, this would provide among the most accurate earnings data possible because almost all newly hired workers are in the SSA database.⁴⁰ Earnings data by school and major would be possible not just for means at starting and mid-career points, but in theory also for a range of quantiles. Of course, it is not yet clear whether completers would be separated from transfers and school leavers or how data would be shared with the public, but the efforts are nonetheless encouraging.

Another administrative data source would be unemployment insurance (UI) wage records, which are almost as comprehensive as SSA data except that they exclude some federal government workers and the self-employed. The main difficulty with these data is that UI systems are administered at the state level, leading to greater logistical complexity since there are 50 separate systems, each with slightly different rules. While some states have already linked UI wage records to graduates from state colleges and universities (Arkansas, Colorado, Florida, Tennessee, Texas, and Virginia; see www.collegemeasures.org), they have done so only for graduates who stay within state, and previous research has shown that people become

more geographically mobile the more educated they are (Malamud and Wozniak 2010). Thus, these data become less representative the more likely graduates are to leave the state.⁴¹

A third possibility would be to link individual income tax return data with Form 1098-T data. All postsecondary institutions that are eligible to receive federal financial aid file 1098-T forms for tuition paid or scholarships received for every student.⁴² By linking historical 1098-T forms to current tax return data, it is possible to compute earnings distributions by school and time elapsed, but not by field of study or whether a degree was actually earned. On the other hand, this linkage does not require significant additional investment of resources and has already been done, notably by Chetty *et al.* (2011).

Earnings data by institution and major are also available from certain proprietary web sites, most notably payscale.com, an online salary and compensation databank service. Unlike the other administrative data,

however, payscale.com's data are based on users who choose to provide data upon visiting the site. This opt-in nature of data collection calls into question the representativeness and accuracy of the data. For example, if more successful alumni — that is, those with higher earnings — are more likely to report, school-level earnings will be biased upwards, giving a misleading picture of success. This problem would be exacerbated for earnings quantiles farther from the median. As such, we cannot recommend the use of these data for information provision to students.⁴³

Regardless of the data source, however, we stress again that it is critical that earnings data represent all individuals in the labor force — those with a job or actively looking for one — and not just full-time, year-round workers. The risk of unemployment — or involuntary part-time employment — is an important consideration in early career earnings, the planning of budgets, and especially the ability to service loans under conventional repayment methods.

Chapter 6: Some Shortcomings and Responses

The solution we propose is clearly not perfect. No feasible intervention is likely to be. Nonetheless, we attempt to address in this section specific shortcomings that were mentioned in our conversations with other higher education experts.

1. Net price data, particularly from IPEDS (the Department of Education's "census" of postsecondary institutions) are manipulable and may not be accurate.

Because the net price data that IPEDS collects from institutions apply only to full-time students who have not attended college before, it is possible for schools to front-load their aid by offering a larger grants-based financial aid package to first-year students and then reducing this aid in subsequent enrollment periods. In effect, this makes reported net price look lower than the net price that students actually pay over their undergraduate study. A related issue is that the net price data apply only to students receiving Federal Title IV aid (including grants, loans, and work-study). While almost all lower-income students receive some form of federal aid, higher-income students are less likely to qualify for need-based federal aid.⁴⁴ This means that reported net prices may be too low for higher income groups.

This is a valid point, and it also applies to net price data from net price calculators. In general, reliability of data is always a concern, and regulatory efforts should be taken to improve data quality. Statutory or legislative changes that required reporting of net prices for all enrolled undergraduates, broken out by full- or part-

time status, instead of full-time, first-time students, would be helpful, as would a broader definition of net price that included students not receiving Title IV aid. Both reforms have been previously suggested (Kantrowitz 2011).

However, these issues seem to be less prevalent for lower-income students who are more likely on the margin of attending college. As noted, low-income students are more likely to receive grants, and the share of their grants that are need-based—and thus over which colleges have less discretion—is greater. Further, when we analyzed National Postsecondary Student Aid Study from 2012, we found insignificant differences in net prices between first- and second-year students after controlling for specific institutions and family income. Front-loading may occur, but the magnitude for lower-income students is almost certainly dwarfed by the difference between list and net cost of attendance.

2. The information experiment of Hoxby and Turner (2013) won't necessarily work on lower-aptitude students.

Hoxby and Turner's intervention was targeted to low-income high school students achieving among the top 4 percent of SAT and ACT takers. These students may react to information about net prices — particularly at highly selective private schools where they are likely to receive considerable institutional grant aid — quite differently than low-to-middle-aptitude students do to net prices at more inclusive public schools.

This is quite possible. The difference between list price of attendance and net price is much larger for the students in Hoxby and Turner's sample than it would be for more typical students, so the "shock" of the revised information may be larger. Social scientists would call this an empirical question: we simply don't know if the effect will be different (or by how much) until we try it. Yet there is some encouraging evidence that even modest changes in anticipated costs can change behavior for more middling students. Bartik and Lachowska (2012) find that knowledge of eligibility for the Kalamazoo Promise, a universal place-based college scholarship, decreased suspensions and increased GPA for African-American students (almost all of whom receive free or subsidized lunches) in their last year of high school. Since these affected students were on the margin of attending a two-year college, a change in expected costs of a few thousand dollars was enough to produce a significant effect. Thus, optimism on the effects of broader information provision is not unfounded.

3. Presenting income ranges or quantiles to students may lead to overconfidence such that the students overpredict their earnings.

Some experts have voiced concern that presenting earnings ranges to students will lead at least some of them to systematically over predict their earnings. That is, rather than focus on the possibility that their

earnings could be at the 25th percentile, for example, they will gravitate to the 75th percentile, thinking they will do better than typical. As a result, they may be inclined to underestimate their ability to repay loans.

This point is well taken. It would be useful to conduct focus groups to determine the extent of this overconfidence and how it may vary with observable student characteristics. This could shed light on how substantive is the issue. Even without additional research, there are a few alternatives in the presentation of earnings data that could mitigate the tendency toward overconfidence. One method would simply omit the 75th percentile earnings figure to better highlight the downside risk, although this perhaps errs on the side of too much paternalism.

Another option that is fairly easy to implement is for the earnings calculator to require the user to input additional information to provide context. For example, the tool would ask for expected debt at graduation, or, if the user could not project this, it could impute debt at graduation from input on net price, or even family income and choice of institution, as described earlier. If the monthly payment from this debt exceeded some threshold percentage of income at the *25th percentile* — regardless of the 75th percentile income level — a color-coded warning could appear to signify its risk.⁴⁵ This could reduce the salience of focusing on the higher earnings figure.

Some experts have voiced concern that presenting earnings ranges to students will lead at least some of them to systematically over-predict their earnings.

Chapter 7: Conclusion

The costs of attending college, regardless of how they are measured, have risen and continue to rise quickly. Yet many students receive financial aid, in grants and loans and other forms, that substantially changes the cost that students end up paying. The problem is that students and their families often don't find out about the net price they will actually face or whether a certain debt load will be manageable until it is too late. The lack of information results in some students attending a college that is not the right fit for them or not attending at all; others take on overly burdensome debt that they will struggle to pay with their chosen studies.

We offer an inexpensive and feasible method of getting targeted information on college costs and benefits to students well before they make college decisions. Our proposal is not the first to try to get more information to students. Existing and pending government efforts to improve the collection and presentation of college cost information, such as the College Scorecard and the Student Right to Know Before You Go Act, are important steps toward providing families of prospective college students the information necessary to determine whether and what type of college is affordable and the right value for them. Our intervention also collates information either previously unavailable or available but not easy to find in one place. It differs, however, in two crucial ways.

First, it delves beyond averages, which often do not capture the experience of the typical student, let alone an atypical student. This feature is particularly salient for initial earnings, in which the (unknown) risk of a lower-than-expected outcome — and the corresponding difficulty with loan repayment — can jeopardize short-term financial security or dissuade someone from attending college altogether. Second, it deals with dissemination by taking the initial information directly to the student *and* her family *and* her school. This interrelationship improves the salience and trustworthiness of the information, as students are not required to have the initiative to find a web site on their own or gauge its reliability among many alternatives that are trying to sell something (such as sites associated with “free” annual credit reports). While this might seem a small hurdle, experiments in psychology and behavioral economics have shown that it is a substantial one in practice.

We are aware that our proposal, by focusing on high school students, will do little to reach nontraditional students who may be returning to (or first attending) college well after high school. This is one among several shortcomings; no proposal is perfect. Yet, by reaching students in high school, the intervention may encourage students who thought that college was unaffordable and would have to wait to reconsider whether attending sooner is, in fact, possible.⁴⁶

Appendices

Appendix A: Technical Details

Net price data

The Integrated Postsecondary Education Data System (IPEDS), run by the Department of Education, is an annual census of all postsecondary educational institutions in the U.S. receiving any form of federal financial aid. It contains extensive information on enrollment, admissions, completions, finances, staff, tuition, and financial aid. Beginning with the 2008–2009 school year, IPEDS has collected data on average net price for full-time, first-time, degree-or-certificate-seeking undergraduates who receive any governmental or institutional grant aid. The average net price is the total cost of attendance — including published tuition and fees, room and board (accounting for average living arrangements), books and supplies, and other personal expenses — less the average amount of all governmental and institutional grants. Average net price is collected for all students meeting the above criteria and separately for students in five family income ranges: less than \$30,000, \$30,001 to \$48,000, \$48,001 to \$75,000, \$75,001 to \$110,000, and more than \$110,000. The net price data by family income range cover only students receiving federal Title IV aid; that is, they do not include students who receive only state or institutional aid. These definitions of covered students mean that the average net prices in IPEDS are not representative of all undergraduate students, although this issue is less severe for lower-income students, most of whom receive Title IV aid. See Appendix D.

Debt profile data

The National Postsecondary Student Aid Study (NPSAS) is conducted every four years under the auspices of the Department of Education and is the predominant source for comprehensive information on all aspects of financial aid, including borrowing. Consisting of a survey of approximately 100,000 students attending Title IV-eligible postsecondary institutions, individual responses are supplemented with data from the schools themselves and with administrative data from the federal government on the distribution of all types of federal aid. Borrowing levels, in particular, are available for both the current year and cumulative totals to date.

Because there are not sufficient data to tabulate borrowing totals for individual schools, a regression-based procedure statistically associates cumulative borrowing with sector of institution (public, private nonprofit, private for-profit), state of institution, net price, family income, family size, and number of parents or guardians in the household. Separate procedures are performed for 2-year and 4-year schools. The coefficients from these regressions are used to build a model of estimated borrowing. We are exploring whether incorporating median debt by school from the National Student Loan Data System can produce additional refinement to the model.

Earnings data

Earnings data are currently taken from the 2009 through 2012 American Community Survey (ACS) from the U.S. Census Bureau. The ACS samples approximately 1 percent of all U.S. residents each year, more than three million people. The 2009 wave was the first to ask about undergraduate college major among respondents who had completed a bachelor's degree or higher. (Major is not available for individuals who earned an associate's degree or left college before earning a degree; it is also not available for graduate field of study for those with a graduate degree.⁴⁷) Since new waves are released each fall, the earnings data can be revised to incorporate the more recent release, with a five-year moving average as the target.

Earnings refer to the sum of wages and salaries and self-employment business income over the 12 months prior to the time of survey. Since the ACS is fielded continuously throughout the year, earnings from the 2009 through 2012 waves actually cover the years 2008 through 2012. For example, a respondent interviewed in January of 2009 would report earnings almost entirely in 2008, while a respondent interviewed in December of 2012 would report earnings almost entirely in 2012. Because this period overlaps with the Great Recession, earnings estimates may be lower than forthcoming graduates can expect as incomes recover. The earnings data are adjusted for inflation to year 2012 dollars using the personal consumption expenditures (PCE) index from the Bureau of Economic Analysis.

Earnings are tabulated for two groups of workers: (a) young and (b) midcareer. Young workers are aged 23 through 25 at the time of survey and have no more than a bachelor's degree. Midcareer workers are aged 38 through 42 at the time of survey, and respondents with bachelor's degrees may have graduate degrees as well. For both groups, individuals whose earnings have been allocated or imputed by the Census Bureau (as opposed to self-reported) are not included in the estimates. The estimates are, however, calculated using population weights from the survey.

Under the simple interface, earnings are shown for a single definition of worker: those who are in the labor force (either have or are actively looking for a job) and are not enrolled in school. This group is meant to capture individuals whose primary activity is meant to be work, but it also captures the risk of unemployment and underemployment. Under the advanced interface, the user can pick this definition of worker as well as three others: (a) those who are in the labor force but with no restriction on enrollment; (b) those who are currently employed, not enrolled, and worked at least one week within the last 12 months; and (c) those who are currently employed, not enrolled, worked at least 40 weeks in the last 12 months, and currently work at least 35 hours per week.

Major

The ACS has two classifications of college major: a broad one with 38 majors and a detailed one with 176 majors. Even with the large sample sizes in the ACS, many of the majors have too few individuals to obtain reliable earnings estimates. The majors presented here are a combination of the broad and detailed classes from the ACS that have sufficient sample sizes (at least 100 respondents).

Geographic adjustment

Because there are not sufficient data to tabulate earnings by major and state separately, a regression-based procedure is used to adjust earnings by geography. Specifically, a Poisson regression on earnings in levels is run on a set of dummies for broad major, sex, marital status, race and ethnicity, and state interacted with metro area status for each relevant sample. (For the comparison groups who are not college graduates, separate regressions by education group and sample are run that omit the dummies for major but have the other covariates.) The coefficients on the state-metro interactions are constrained to sum to zero so that each coefficient can be interpreted relative to the grand mean. When exponentiated, these coefficients become multiplicative adjustment factors for the geographic area. That is, the national earnings estimates are multiplied by these adjustment factors to yield the estimates by major for each state metro or non-metro area. While this process accounts for differences in demographics and fields studied across geographical areas, it does not account for differential returns to field of study across geographic areas or differences in the earnings distributions across geographical areas.

Statistical code to process the ACS earnings data was written in Stata and is available upon request from the authors.

Appendix B: College Information Web Sites (Nonprofit Only)

Sponsor	Site Name	URL	Funders
U.S. Department of Education	College Navigator College Affordability and	nces.ed.gov/collegenavigator collegecost.ed.gov/catc	Federal government
	Transparency Center College Scorecard	whitehouse.gov/issues/ education/higher-education/ college-score-card	
Chronicle of Higher Education	College Reality Check	collegerealitycheck.com	Gates Foundation
	College Completion	collegecompletion.chronicle.com	
The Institute for College Access and Success	Project on Student Debt	projectonstudentdebt.org	Ford, Gates, Gilbert, Kresge, and Lumina Foundations
	College Insight	college-insight.org	
American Association of State Colleges and Universities; Association of Public Land-grant Universities	College Portraits	collegeportraits.org	ACT, Educational Testing Service, Lumina Foundation, and respective school systems
Complete College America	Complete College America	completecollege.org	Carnegie Corporation; Ford, Gates, Lumina, and Kellogg Foundations; USA Funds
American Institutes for Research (AIR); Matrix Knowledge Group	College Measures	collegemeasures.org	AIR, Gates Foundation, Matrix Knowledge Group
The Education Trust	College Results Online	collegeresults.org	Broad, Carnegie, Casey, Gates, Ford, Haas, Hewlett, Kellogg, and Lumina Foundations; and others

Appendix C: Share of Recent College Graduates Working Full-Time, Full-Year, By Major

Majors by Group, Alphabetical	Percentage FTFY
Agriculture	
Agricultural Economics	80.8
Animal Sciences	80.8
General Agriculture	76.3
Arts	
Art History and Criticism	69.7
Commercial Art and Graphic Design	65.3
Drama and Theater Arts	53.4
Film, Video and Photographic Art	53.7
Fine and Studio Arts	56.0
Music	59.6
Business	
Accounting and Actuarial Science	77.8
Business Management and Administration	76.2
Finance	76.9
Hospitality Management	73.3
Human Resources and Personnel Management	81.3
International Business and Business Economics	75.0
Marketing and Marketing Research	77.8
Operations and Logistics	79.5
Communications and Journalism	
Advertising and Public Relations	71.9
Communications	70.2
Communication Technologies	59.5
Journalism	70.9
Mass Media	64.7
Computer Science and Mathematics	
Computer Science	75.9
Mathematics and Statistics	71.4
Education	
Art and Music Education	63.6
Early Childhood Education	73.1
Elementary Education	67.1
General Education	71.7
Language and Drama Education	62.7
Math and Science Teacher Education	74.1
Physical and Health Teacher Education	58.6
Secondary Teacher Education	66.6
Special Needs Education	77.9
Social Science or History Teacher Education	58.7
Engineering	
General Engineering	78.1
Aerospace Engineering	74.7
Biological, Biomedical, and Environmental Engineering	70.6
Chemical Engineering	81.7
Civil Engineering	73.5
Computer Engineering	78.6
Electrical Engineering	76.9
Industrial and Manufacturing Engineering	82.1
Mechanical Engineering	77.2
Energy and Extraction Engineering	66.8
Engineering Technologies	77.9

Health	
Health and Medical Administration	66.1
Medical Technologies and Assistance	64.0
Nursing	75.3
Physical Fitness, Nutrition, and Sports Studies	65.9
Treatment and Therapist Professions	63.0
Humanities	
Area, Ethnic, and Civilization Studies	62.5
Composition and Speech	61.7
English Language and Literature	65.1
Liberal Arts	62.0
Linguistics and Foreign Language	65.3
Intercultural and International Studies	61.6
Philosophy and Religious Studies	56.9
Theology and Religious Vocations	71.4
Life Sciences	
Biochemistry and Molecular Biology	63.8
Biology	64.6
Botany, Ecology, and Zoology	63.2
Microbiology, Physiology, Genetics, and Neuroscience	67.3
Miscellaneous	
Architecture	67.6
Construction Services	82.2
Environment and Natural Resources	58.1
Family and Consumer Sciences	69.6
Production and Transportation Technologies	69.2
Physical Sciences	
Chemistry	70.3
Earth and Other Physical Sciences	68.0
Multidisciplinary Science	73.9
Physics	68.9
Social Sciences	
Anthropology and Archeology	57.9
Criminology and Criminal Justice	70.3
Economics	76.3
Geography	76.8
History	65.6
International Relations	67.5
Political Science and Government	68.6
Psychology	65.5
Public Administration and Policy	68.2
Social Work	75.0
Sociology	67.0
All Fields	70.5
Associates degree	69.1
1+ years college, no degree	64.0
Less than 1 year college, no degree	60.6
HS diploma	60.3

NOTE: These numbers represent the percentage of people ages 23 through 25, not enrolled in school and with a job or looking for one, who worked 40 or more weeks within the last 12 months and usually worked at least 35 hours per week. Source: Authors' tabulations of the American Community Survey, 2009–2012.

Appendix D: Comparison of IPEDS and Actual Net Prices

This appendix compares the average net prices by family income category that are available for the 2011–2012 school year in the IPEDS database with actual net prices paid by students in the National Postsecondary Student Aid Study (NPSAS), also from the 2011–2012 school year. Both sets of net prices refer to full-time, first-year undergraduates. However, while the IPEDS prices cover only students receiving federal Title IV aid, this restriction was purposefully not imposed on the NPSAS data in order to illustrate the size of bias. Since our intervention is geared toward high school students, we focus on dependent students in the comparisons.⁴⁸

The tables below show percentage differences between the NPSAS net prices actually paid and the IPEDS average net prices for undergraduate students and by type of school attended. Because actual net prices paid vary by student, with some students paying more than the IPEDS figure and some paying less, we calculated the percentage difference for every relevant student in NPSAS as: $(\text{Actual price} - \text{IPEDS Price}) / \text{Actual Price}$. Thus, a *positive* difference indicates that the actual price paid was more than the IPEDS price; a *negative* difference indicates an actual price below the IPEDS price. We then ranked all of the students' percentage differences from smallest to largest. We display in the tables the percentage differences at the 25th, 50th, and 75th percentiles. For example, in the first table below, the typical, or median, student with family income between \$48,001 and \$75,000 actually paid a net price 17 percent above the average IPEDS net price for that income range. However, one-quarter of students in that income category paid at least 5 percent less than the IPEDS net price, and one-quarter paid at least 32 percent more.

For many students, IPEDS net prices will systematically undershoot actual net prices, but by margins that are considerably smaller than the difference between actual net price and sticker price. Although percentage differences are larger in the 2-year than 4-year sector, the lower base level in the 2-year sector means actual dollar differences are of similar magnitudes. It would be possible to inflate the IPEDS estimates by the median percentages below in order to correct the bias and provide a more accurate net price than the raw IPEDS, income-based numbers.

Percentage Difference Between Actual and IPEDS Net Price, by Family Income: All Sectors

Family Income	25th	50th	75th
Less than \$30,000	-18	15	41
\$30,001 to \$48,000	-16	15	37
\$48,001 to \$75,000	-5	17	32
\$75,001 to \$110,000	-3	12	27
More than \$110,000	-2	12	29
<i>All Incomes</i>	-8	14	33

Percentage Difference Between Actual and IPEDS Net Price, by Family Income: Public 2-year

Family Income	25th	50th	75th
Less than \$30,000	-15	23	48
\$30,001 to \$48,000	-7	24	43
\$48,001 to \$75,000	6	23	36
\$75,001 to \$110,000	1	21	32
More than \$110,000	3	21	32
<i>All Incomes</i>	-4	23	41

Percentage Difference Between Actual and IPEDS Net Price, by Family Income: **Public 4-year**

Family Income	25th	50th	75th
Less than \$30,000	-24	12	38
\$30,001 to \$48,000	-16	13	35
\$48,001 to \$75,000	-6	15	29
\$75,001 to \$110,000	-3	10	23
More than \$110,000	0	11	29
<i>All Incomes</i>	-8	12	31

Percentage Difference Between Actual and IPEDS Net Price, by Family Income: **Private, nonprofit 4-year**

Family Income	25th	50th	75th
Less than \$30,000	-34	1	29
\$30,001 to \$48,000	-34	-2	26
\$48,001 to \$75,000	-20	8	31
\$75,001 to \$110,000	-10	10	26
More than \$110,000	-7	11	26
<i>All Incomes</i>	-17	7	27

Percentage Difference Between Actual and IPEDS Net Price, by Family Income: **Private, for-profit 2-year**

Family Income	25th	50th	75th
Less than \$30,000	-3	13	30
\$30,001 to \$48,000	-1	19	34
\$48,001 to \$75,000	4	15	26
\$75,001 to \$110,000	2	13	24
More than \$110,000	-31	10	17
<i>All Incomes</i>	-2	14	30

Percentage Difference Between Actual and IPEDS Net Price, by Family Income: **Private, for-profit 4-year**

Family Income	25th	50th	75th
Less than \$30,000	2	26	44
\$30,001 to \$48,000	-2	19	31
\$48,001 to \$75,000	12	30	46
\$75,001 to \$110,000	13	37	47
More than \$110,000	13	36	49
<i>All Incomes</i>	5	26	47

Sources: Integrated Postsecondary Education Data System (File SFA112) and authors' tabulations of the National Postsecondary Student Aid Study 2012.

Endnotes

- 1 See http://www.luminafoundation.org/publications/Americas_Call_for_Higher_Education_Redesign.pdf and <http://www.pewresearch.org/daily-number/college-is-not-affordable/>.
- 2 <http://www.whitehouse.gov/issues/education/higher-education/college-score-card>.
- 3 In the classic case, only financial benefits are included, but the framework is easily broadened to include other benefits (health, civic participation, consumption value of college) and other costs (psychic costs of various forms).
- 4 More sophisticated analyses (Avery and Turner 2012, Card 1999) find similar results, even after accounting for the possibility that college graduates would have earned more than the typical high school graduate even if they hadn't gone to college.
- 5 Kahn (2010) and Oreopoulos, von Wachter, and Heisz (2012) show that earnings losses from graduating college in a recession can last for a decade, though the penalties are still small relative to the premium over high school.
- 6 The United States is unusual in having such high variation in college costs. Other OECD countries subsidize higher education much more heavily than does the United States (Schleicher 2012), so costs are considerably lower and debt financing is relatively rare. Even in countries where debt financing does occur, such as Australia, the loans typically carry no (real) interest and balances are considerably lower than in the United States.
- 7 This also holds true for the determination of economic value, but polls show that most students think that college is worthwhile in the long run, in agreement with the evidence (see endnote 1). The concern is affordability.
- 8 According to a College Board poll, just over half of students used this approach. See <http://www.artsci.com/studentpoll/v10n1/index.aspx>.
- 9 Low-income students, in particular, are often counseled of the risk of being unable to repay loans (Baum and Schwartz 2012), and this may cause them to attend less expensive institutions where their success is less likely and lifetime returns are lower (Bowen, Chingos, and McPherson 2011).
- 10 For example, the potential student's family may rely on him or her to provide necessary income, which college attendance could disrupt. This type of opportunity cost is understudied.
- 11 See <http://www.whitehouse.gov/issues/education/higher-education/college-score-card>. The net price is the total cost of attendance — including tuition and fees, room and board, books and supplies, and travel costs — less grants and scholarships. It represents the amount that a student (and family) must pay from money in hand, savings, or the taking out of loans. Much of the information on the Scorecard tracks what higher education economist Bridget Terry Long called for in her Hamilton Project 2010 paper.
- 12 Levine (2013) shows that calculators can, under certain circumstances, be simplified greatly while still providing useful (albeit less precise) estimates of aid. At the same time, Bettinger et al. (2012) show that the complexity of filling out the forms to obtain this aid (the FAFSA) is an impediment to college access.
- 13 The Institute for College Access and Success (TICAS) also criticizes the poor user-friendliness of net price calculators: http://www.ticas.org/pub_view.php?idx=859. The startup company College Abacus (www.collegeabacus.com) attempts to allow cross-college comparisons by having users input information only once, but its set of colleges is limited due to proprietary concerns of one of the vendors that develop calculators (Field 2013). A bill introduced in December of 2013 (H.R. 3694) would offer a universal calculator on the Department of Education's web page, but the bill is still in committee.
- 14 Indeed, this risk is cited in focus groups of students who didn't borrow, as reported in Cunningham and Santiago (2008). These lower-income students often chose 2-year colleges even if they were academically qualified to attend a 4-year college. As a consequence, they may be less likely to earn any credential at all, as completion rates are lower in the 2-year sector even after a variety of adjustments to account for selection (Reynolds 2012).
- 15 See <http://www.artsci.com/studentpoll/v10n1/index.aspx>.
- 16 Note that the earnings distribution among college graduates has grown more dispersed over the roughly twenty years in which the two surveys were fielded.
- 17 Some of the independent web sites report earnings data from payscale.com, which collects wages from alumni who choose to divulge this information. The reliability of these data are questionable, as discussed below.
- 18 Earlier dissemination of college information has been advocated by several participants in the Reimagining Aid Design and Delivery (RADD) project; see Akers (2013).
- 19 The Hoxby-Turner experiment relied on students who had taken the ACT or SAT. Due to the timing of typical test administration, information reached most affected students near the end of their junior year.
- 20 Bartik and Lachowska (2012) find that eligibility for the Kalamazoo Promise, a place-based scholarship, reduced the rate of high school suspensions and, for African-American students, raised GPA.
- 21 The sample, which included graduate students, was not meant to be representative of all student borrowers. Still, students with large loan balances typically have more interaction with financial aid offices.
- 22 Other calculators are available, as well. The one at [finaid.org](http://www.finaid.org), <http://www.finaid.org/calculators/loanpayments.phtml>, is particularly user-friendly. The Education Department's calculator requires more information but outputs more repayment options.
- 23 Forecasting debt after each year of study is also possible.
- 24 Provision of earnings data should not be taken to indicate that the sole or even primary purpose of higher education is pecuniary. Several researchers, including Oreopoulos and Salvanes (2011); Baum, Ma, and Payea (2013); and others find benefits to health, civic participation, community engagement, and family stability. Nonetheless, since responsible college financing requires an understanding of the pecuniary returns, it is important that students be informed of them.
- 25 The 25th percentile of earnings is the level at which one-quarter of people earn less and three-quarters earn more; for the median, half earn less and half earn more; and for the 75th percentile, three-quarters earn less and one-quarter earn more.

- 26 While there is a premium to attending more selective institutions, controlling for major and individual characteristics, the premium is small relative to the differences across majors (Hershbein 2013).
- 27 Note that many estimates of earnings profiles (Taylor et al., 2011; Avery and Turner 2012) are based on samples restricted to full-time, full-year workers. However, since the less educated are less likely to be a full-time, full-year worker, these earnings profiles underestimate the return to education. Informative earnings and income data should thus not condition on employment status.
- 28 There are several different repayment options for federal student loans: <http://studentaid.ed.gov/repay-loans/understand/plans>. The complexity in understanding the requirements for each plan, as well as the need to opt-in to a non-standard plan, result in most borrowers being in the standard 10-year payment plan. See <http://studentaid.ed.gov/about/data-center/student/portfolio>.
- 29 Again, evidence supports the contention that consumers respond when given these types of hints. Agarwal, Chomsisengphet, Mahoney, and Stroebel (2013) found that giving information on interest savings from paying off credit card balances within 36 months instead of making the minimum payment increased the share of consumers making the 36-month payment instead of the minimum, with the effect largest for people with low-to-mid-range credit scores.
- 30 Of course, these efforts, especially in data collection, have great potential to improve information dissemination, and we discuss them further in Chapter 5. Nevertheless, the core proposal can get off the ground under the status quo.
- 31 See Appendix A. Since NPSAS is quadrennial, the debt profiles could be inflated in intervening years to match the annual growth in average student debt.
- 32 Carnevale, Strohl, and Melton (2011) use the data to report median earnings by major for full-time, full-year workers across all ages. By pooling data across years, our approach allows more granularity.
- 33 According to the 2012 NPSAS, 60 percent of undergrads attend a college within 20 miles from their permanent home, and 81 percent attend a college within 100 miles. Most students attending distant colleges tend to be high achievers and are not the focal group of our proposal.
- 34 An alternative would be to provide a link to a simplified universal calculator that asks only about family income and family structure and uses an algorithm based on NPSAS data to further adjust the IPEDS prices; this would trade the accuracy of the specific calculators for greater expedience. We are currently exploring this algorithm.
- 35 We have been testing an algorithm for this calculation using the NPSAS data, and we hope to have a working (Internet-accessible) example soon.
- 36 The next section discusses some of the concerns with net price data from these and other sources.
- 37 The bill allows the creation of the universal net price calculator but does not require it. We advocate requiring the universal calculator and incorporating the simplifications of Levine (2013) and Dynarski and Scott-Clayton (2008).
- 38 According to the NPSAS, private loans account for over 90 percent of all nonfederal loans.
- 39 In order to establish postsecondary institutions' compliance with Gainful Employment rules, requirements to receive federal Title-IV aid, the Education Department already collects earnings data via the Social Security Administration for students in non-degree programs (e.g., certificates) at most schools and for students in nearly all programs at for-profit schools. (Currently, these data are available only for 2011 and for programs with at least 31 completers per year, limiting their usefulness: <http://studentaid.ed.gov/about/data-center/school/ge>.) The bill under consideration would essentially extend this collection to all postsecondary institutions.
- 40 As of 2008, approximately 94 percent of all workers were covered by Social Security, but only 73 percent of state and local government workers were, as some of these have their own pension plans (Nuschler, Shelton, and Topoleski 2011). Colleges in which a significant fraction of graduates go to work for governmental agencies that opt out of Social Security would not have representative earnings data, although this issue is likely to be minor.
- 41 Another complication is that these databases follow people from degree receipt regardless of previous labor market experience: some programs that disproportionately graduate more experienced workers, particularly at the associates degree level, may not accurately capture early career earnings.
- 42 Title IV schools include essentially the universe of degree-granting institutions. Most of the exceptions are certain for-profit schools that offer only sub-degree programs such as certificates and diplomas; still, about 75 percent of students at for-profit schools are Title IV eligible (Goldin and Cellini 2012).
- 43 Other independent, college information web sites, such as the Chronicle of Higher Education's collegerealitycheck.com, do provide earnings data from payscale.com, although no mention is made of data reliability. Earnings are also restricted to full-time, full-year workers.
- 44 According to the 2012 wave of the National Postsecondary Student Aid Study, of full-time, first-time students, 89 percent received Title IV aid if they were dependents with family income less than \$50,000. For dependents with family income greater than \$100,000, the proportion was 46 percent.
- 45 Typical thresholds for a burden cluster around 8 to 10 percent. Baum and Schwartz (2006) discuss the history and pros and cons of these thresholds.
- 46 Social scientists at heart, we have begun negotiations with a school district to pilot our intervention, and if initiated, we hope to evaluate its degree of success.
- 47 Jepsen, Troske, and Coomes (2014) present evidence that returns to sub-baccalaureate credentials—including diplomas and certificates as well as associate's degrees—vary by field and are notably higher in health and vocational fields than in humanities or business.
- 48 The percentage differences for independent students are larger than those shown in the tables. Income of independent students is less predictive of grant aid, and thus net price, because of a wider variety of family structures and backgrounds.
- 49 The percentage differences for independent students are larger than those shown in the tables. Income of independent students is less predictive of grant aid, and thus net price, because of a wider variety of family structures and backgrounds.

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Brad Hershbein is an economist at the Upjohn Institute. His research focuses on labor economics, economics of the family, and economics of education, and particularly how all three fields intersect at labor market entry. He has investigated how high school graduates fare in the labor market following graduating in a recession, how the availability of birth control allowed young women in the 1960s and 1970s to invest in their education and careers, and how employers jointly use GPA and the selectivity of school attended to infer the productivity of new college graduates. He is currently investigating the impact of the Kalamazoo Promise, a universal, place-based scholarship, on college persistence and success. With Kevin Hollenbeck, he co-organized a research conference on student loans in 2013, authoring a paper on the evolution and causes of increasing debt of bachelor's graduates. He holds an AB in economics from Harvard University and a PhD, also in economics, from the University of Michigan. Prior to graduate school, he worked at the Federal Reserve Bank of Boston.

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