

# Which High Schoolers Know How Much College Costs and Why It Matters

Erin Dunlop Velez<sup>1,2</sup>

Katie Johnson<sup>1</sup>

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## **Abstract**

High school students are uninformed about college costs. According to a 2009-10 survey of high school students, 62 percent of 9<sup>th</sup> graders and 77 percent of 11<sup>th</sup> graders overestimated college costs. The median over estimator in 9<sup>th</sup> grade thought tuition at a public 4-year college in their state was about \$13,600 more than the actual cost of tuition. Overestimating college costs is related to students' perceptions of college unaffordability and their eventual college going decisions. But overestimating college costs is only half the problem. Many students underestimate college costs as well. The median under estimator in 9<sup>th</sup> grade thought public in-state 4-year tuition was about \$4,100 cheaper than it actual was. Underestimating tuition may lead students to not think they need as much financial aid as they actually do and reduce the likelihood of students submitting a Free Application for Federal Student Aid (FAFSA). This paper investigates what types of students over- and underestimate college tuition costs in both 9<sup>th</sup> and 11<sup>th</sup> grade and measures how these cost misconceptions are related to later college going decisions.

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<sup>1</sup> RTI International

<sup>2</sup> Corresponding author: [evelez@rti.org](mailto:evelez@rti.org)

# 1. Introduction

Every year high school students make decisions about whether or not to attend college. A chief consideration is whether the student and their family can afford to pay for college. In order to judge whether college is affordable, one needs to know how much college costs, among other factors, such as expected financial aid. With the plethora of college search engines and cost calculators available online, one would assume high school students have a pretty clear understanding of what college costs. Recent research indicates this is not the case.

A nationally representative 2009-10 survey found that 9<sup>th</sup> grade students could not accurately estimate the cost of in-state tuition at a public 4-year school *in their home state* (Velez and Horn 2018). The average high school freshman overestimated tuition by \$10,500. Average public in-state tuition in the United States at the time was only \$6,800, indicating the average student thought college was more than twice as expensive as it actually was. The study went on to find that students' estimates of college costs do not get more accurate throughout high school, and in fact, student overestimates were even larger in 11<sup>th</sup> grade than 9<sup>th</sup> grade.

While more than half (57 percent) of the 9<sup>th</sup> graders overestimated tuition costs by more than 25 percent of the actual cost, a sizeable fraction of students, 32 percent, underestimated costs by as much. What is more, students of different racial and socioeconomic status (SES) backgrounds seemed to demonstrate different types of misinformation. Across all race and SES groups, the fraction of students who accurately estimated costs (i.e., those who were within 25 percent above or below the actual cost), was similar – around 9-12 percent of each group. What varied across racial and SES groups was the proportion of students who over- or underestimated costs among those who were inaccurate. These findings indicate that students across all race and

SES groups know equally little about college costs, but the direction of their misconceptions varies.

Over- and underestimating college costs while in high school can harm students in different ways. Students who overestimate the cost of college may be more likely to perceive college as unaffordable, leading some to forego college or limit themselves to less-selective or two-year institutions. Students who underestimate college costs may not be prepared to cover the full cost of tuition: they may fail to apply for financial aid, spend more time working when they should be studying, or drop out before completing their degrees. Both types of mistakes may affect students' likelihood of persisting in college and completing a credential for no other reason than being misinformed.

This paper looks to extend the previous work by investigating more comprehensively the types of students who over- or underestimate tuition. More importantly, we measure whether being misinformed about college costs is related to later college going outcomes. Specifically, the research questions investigated in this paper are:

1. What characteristics are related to students' ability to accurately estimate the cost of college?
2. What is the relationship between the accuracy of a student's estimate of the cost of college and intermediate college going outcomes, such as perceptions of affordability and completion of a Free Application for Federal Student Aid (FAFSA)?
3. What is the relationship between intermediate college going outcomes, such as perceptions of affordability, and the decision to attend college?

Similar to the earlier study, this research uses data from the High School Longitudinal Study of 2009 (HSL:09), a nationally representative sample of high school freshman who are

interviewed throughout high school and into college. We find that a number of student characteristics, such as race, sex, family income, parental education, math achievement, GPA, and students' and their friend's college plans are related to the accuracy of students' tuition estimates. Additionally, several school characteristics, such as the fraction of students who receive free or reduced price lunch, the control of the high school (public or private), and how much time counselors spent on college preparation were also related to the accuracy of college cost estimates. We also find students who overestimate tuition are more likely to perceive college as unaffordable to them and students who underestimate tuition may be less likely to complete a FAFSA. Furthermore, perceptions of affordability are related to eventual college going.

## 2. Literature Review

In 2016-17, almost 27 million students were enrolled in higher education in the United States.<sup>3</sup> In recent years, traditionally under-served students have been enrolling in and completing college at higher rates, but despite these gains, gaps in college going and graduation persist between minority and low-income students relative to their wealthier, white peers (U.S. Department of Commerce, 2016; Shapiro et al, 2018). Continuing to address these gaps is critical to increasing social mobility in the United States and for improving the overall financial health of the U.S. economy. We focus specifically on the pathway to college entry as a factor that affects gaps in college enrollment and subsequent persistence and completion.

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<sup>3</sup> IPEDS Trend Generator "Student Enrollment: How many students enroll in postsecondary institutions annually?": <https://nces.ed.gov/ipeds/TrendGenerator/app/answer/2/2>.

Colloquially, we talk about college attendance as “a decision,” but the singularity of this characterization oversimplifies the reality of what it takes to pursue postsecondary education. A more accurate portrayal is as a series of steps and decisions that a student makes over an extended period prior to potential college enrollment (Klasik, 2012; Long and Riley, 2007; Paulsen and St. John, 2002). Each step along this trajectory is reinforced by its preceding steps, emphasizing the disproportionate impact of early decisions in the process and the value of momentum towards the ultimate goal of college attendance (Klasik, 2012). Klasik (2012) finds that students from minority and low-income backgrounds are less likely to persist through the series of steps necessary to enter postsecondary education than higher-income, White students. This finding suggests that the pathway to college attendance is one of the barriers contributing to sustained gaps in college going and completion between students from different demographic backgrounds.

Barriers to college attendance generally fall into one of three areas: (1) cost of attendance; (2) academic preparation; and (3) information about college and the application process (Long and Riley, 2007). In this study, we analyze the role that information plays in college decisions. That said, it is important to recognize that all three barriers are intrinsically linked (Page and Scott-Clayton, 2016). For instance, the rising cost of college (barrier one) has created a phenomenon whereby most college students pay less than the sticker or advertised price, introducing confusion and ambiguity into understanding what it costs to go to college (barrier three – information) (Hoxby and Turner, 2015). Understanding the relationship between all three barriers is critical to fully grasp the complexity of the pathway to college enrollment.

Information barriers mean that students often lack necessary facts to make informed college decisions (Page and Scott-Clayton, 2016). Understanding what it costs to go to college, a

hugely important factor for most students, is no exception, particularly for populations historically underrepresented in higher education. Minority and low-income students are less knowledgeable about college costs (Avery and Kane 2004, Bleemer and Zafar 2014) and uncertainty about college costs and financial aid is associated with under enrollment of minority and low-income students (O'Connor, Hammack, and Scott 2010). Moreover, incorrect perceptions of college costs and available financial aid may limit the colleges minority and low-income students consider attending (College Board and Art & Science Group 2010, Perna and Titus 2004, Sallie Mae and Ipsos 2016, Warwick and Mansfield 2003). Disadvantaged students are also more likely to consider cost when deciding where to apply (Avery and Turner 2012; College Board Advocacy and Policy Center 2011) meaning misconceptions might have a particularly harmful effect on these disadvantaged subgroups.

The limited research on the accuracy of college cost estimates suggests that students and parents misestimate what it costs to attend college (Avery and Kane 2004, Grodsky and Jones 2007; Velez and Horn 2018). But in order to combat this misinformation, more is needed to be known about what types of students over- and underestimate college costs, and whether this misinformation is harmful for students' eventual college going. This paper to fill these gaps in the literature.

### 3. Data and Estimation Strategy

We use data from the High School Longitudinal Study of 2009 (HSLs:09) to examine the relationships between students' estimates of college costs and the decision to attend a postsecondary institution. HSLs:09 is a nationally representative sample of beginning high school students in the year 2009. Follow-up surveys with the same student cohort were

conducted in 2012, when students were in their junior year of high school, and again in 2013, just after students completed high school. High school administrator and counselor interviews were also conducted in the base year in 2009.

Our main explanatory variable of interest is students' estimates of the cost of one year of public in-state tuition and mandatory fees in their home state. In the base year survey, when students were in 9<sup>th</sup> grade, they were asked "What is your best estimate of the cost of one year's tuition and mandatory fees at a public 4-year college in your state? Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board." Students were asked the same question again in 11<sup>th</sup> grade.

In order to assess the accuracy of student and parent estimates of tuition in a given year, we calculated enrollment-weighted average public 4-year in-state tuition by state. When calculating the average tuition across all public institutions in a state in a given year, we weighted each institution's tuition cost by its enrollment, so that larger schools have a bigger impact on a state's average tuition than smaller schools. We do this because students are more likely to be thinking of larger public institutions when generating their cost estimate. Information on the cost of tuition and mandatory fees and on enrollments in 2009, the year students were 9<sup>th</sup> graders, and in 2011, the year students were 11<sup>th</sup> graders, came from the Integrated Postsecondary Data System (IPEDS). IPEDS is a census of all Title IV aid eligible institutions in the country collected by the U.S. Department of Education annually.

In addition to college cost estimate information, HSLS:09 contains an extensive set of student characteristics, which allow us to control for a rich set of independent variables. Student characteristics include race, sex, family income, and parent's highest level of education. A math assessment was also administered to students in both 9<sup>th</sup> and 11<sup>th</sup> grades, and scores on this

assessment, in addition to high school GPA, provide measures of academic ability. HSLS:09 also includes several contextual measures that may inform students' college cost information, like whether the student planned to attend college in 9<sup>th</sup> grade and the percent of a student's friends planning to attend a 4-year school, as of 11<sup>th</sup> grade.

Because school culture itself could affect students' college cost information, we also utilize several high school level variables in HSLS:09, such as urbanicity, the percent of the student body that receives free and reduced price lunch, the percentage of time that college counselors spend preparing students for college, and the control (public or private) of the high school.

Our main outcomes of interest are students' perceptions of college affordability, whether students completed a Free Application for Federal Student Aid (FAFSA), and their college going in the year following high school graduation. In HSLS:09, perceptions of affordability were measured with the following interview question: "How much do you agree or disagree with the following statement? Even if you study, your family cannot afford to pay for you to attend college." The response options for this question were: strongly agree, agree, disagree, and strongly disagree. To analyze the relationship between cost estimates and perceptions of affordability, we combined those who disagree and strongly disagree (i.e. those who do not think college is unaffordable) and compare them to those who strongly agree and agree college is unaffordable. To measure FAFSA completion rates, there is an interview item that asks whether the student completed a FAFSA by the end of their senior year. To capture college going the year after high school graduation, we use two measures: whether the student attended college at all and whether the student enrolled in a bachelor's degree program.

### 3.1 Data Missingness



There are two sources of missing data in HSLs:09: unit level missingness and item level missingness. Even though a nationally representative sample of high school freshman in 2009 were sampled as part of HSLs:09, not all students responded to the survey, and the students who responded were likely different from students who did not. HSLs:09 deals with this unit level missingness by including sample weights, which adjust for the unequal likelihood that a given type of student responded to the survey. Using the sample weight, which all analyses in this paper do, adjusts for unit level missingness and ensures the results are nationally representative.

A larger concern is item level missingness, which occurs when some survey respondents don't respond to all questions. In HSLs:09, there is little imputation of missing data which means many students have some missing information. To adjust for this, all regression models include students with a missing variable as a separate category for that variable. While we don't report the results for these coefficients, since it's not clear what the effect on, for example, "Missing 9<sup>th</sup> grade GPA" really means, we include the variables so these students do not drop out of the model.

Overall, the level of missingness for our independent variables is relatively low. Demographics and math assessment scores are not missing at all or missing in less than 2 percent of respondents. Information on students' college plans in 9<sup>th</sup> grade and their friends' plans in 11<sup>th</sup> grade are missing for less than 5 percent of respondents. GPA information is missing for about 10 – 15 percent of respondents, and family income and parental education information is missing for about 20 – 25 percent of respondents.

The larger issue is that information on the variable of interest, the student's college cost estimate, is missing for just over half the sample. Part of this missing information is due to students not answering the college cost item in the interview, and part of it is because students

did answer the item, but later reported that they included room and board in their estimate, even though the college cost survey question specifically instructed respondents not to include this cost in their estimate. Students who said they included room and board in their estimate had their college cost estimate thrown out. Students with missing college cost estimates cause our sample to drop from about 22,000 to 9,100 students. Even with this large decrease in sample size, the analytical sample is still very similar to the full sample on observable characteristics and outcomes, as shown in Table 1. Even though the analytical sample in the analysis is very similar on observables to the full nationally representative sample, some caution should be used in interpreting the findings, given the large amount of missingness for our variable of interest.

### 3.3 Descriptive Statistics

Overall, our analytical sample is just over half White (53 percent), half female (49 percent), a third from families earning less than \$35,000 a year (31 percent), and almost half from families where neither parent has any college degree (46 percent). Some 63 percent of students planned to enroll in college directly after high school and 69 percent reported at least half of their friends planned to attend a 4-year college in 11<sup>th</sup> grade. About a third of students attended a high school in a city (32 percent) and another third attended a high school in the suburbs (33 percent). Some 45 percent of students attended a high school where counseling staff spent more than 20 percent of their time on college preparation, but 20 percent of students attended a high school where counselors spent 10 percent or less of their time on college preparation.

Some 62 percent of the sample overestimated tuition in 9<sup>th</sup> grade, and an even higher portion, 78 percent, overestimated in 11<sup>th</sup> grade. Over the same time, the percentage of students who perceived college as unaffordable increased as well, from 25 percent in 9<sup>th</sup> grade to 32

percent in 11<sup>th</sup> grade. The median overestimating 9<sup>th</sup> grader overestimated tuition costs by \$13,600 while the median underestimating 9<sup>th</sup> grader underestimated by \$4,100. Not only was the median misestimate larger for the over estimators, but the range in estimates was wider as well. Among 9<sup>th</sup> grade over estimators, the 25<sup>th</sup> and 75<sup>th</sup> percentile of overestimates ranged from \$5,100 to \$28,900, while among 9<sup>th</sup> grade under estimators, the 25<sup>th</sup> and 75<sup>th</sup> percentile of underestimates ranged from \$2,100 to \$5,900. Misestimates in 11<sup>th</sup> grade were mostly similar in magnitude, although in some cases somewhat smaller.

### 3.2 Estimation Strategy

We utilize several dependent variables to address our research questions with each regression model controlling for a rich set of student and school characteristics. First, to understand the factors associated with accurate estimates of college cost, we use three dependent variables: the likelihood of overestimating versus underestimating the cost of one year of college, the amount of misestimation among over estimators, and the amount of misestimation among under estimators. All three variables are based on the estimated cost of one year of college tuition at an in-state, four-year, public university. We run this analysis on both 9<sup>th</sup> and 11<sup>th</sup> graders.

To estimate the relationship between students' cost accuracy and intermediate college going outcomes, we look separately at students who over- and underestimated college costs, since these different types of misinformation may lead to different college going issues. The issue with students who overestimate costs is they may think college is too expensive and choose not to apply. The issue with students who underestimate costs is they may not access all financial aid available because they perceive it to not be necessary. As such, for students who overestimated college tuition costs, we analyze a binary dependent variable representing whether

the student perceived college as unaffordable (0 = did not perceive college as unaffordable; 1 = perceived college as unaffordable) in 9<sup>th</sup> grade, when students are beginning to make decisions about whether they want to prepare for college. Among students who underestimated college tuition costs, we examine the likelihood of not filling out the FAFSA by the end of high school (0 = submitted FAFSA; 1 = did not submit FAFSA).

Finally, we assess whether the intermediate outcome of perceiving college as unaffordable is related to college going in the year after high school. We use two binary dependent variables to capture students' postsecondary plans: is not attending any type of college and is not enrolled in a bachelor's degree program.

## 4. Results

Overall, we find that there are several student characteristics associated with whether a student over- or underestimates tuition, and by how much. Additionally, we find that overestimating tuition, which most students do, is associated with increased odds of perceiving college as unaffordable, and perceiving college as unaffordable is associated with increased odds of not attending a bachelor's degree program or any college at all. We also find suggestive evidence that underestimating tuition is associated with an increased rate of not submitting a FAFSA. All effects described below are significant at the 0.05 percent confidence level, unless otherwise noted.

### 4.1 Factors Related to Students' College Cost Estimates

Black students generally seem less informed than White students about college costs, and have odds 27 percent and 30 percent less than White students of underestimating tuition costs in 9<sup>th</sup> and 11<sup>th</sup> grade, respectively. Additionally, among over estimators in 9<sup>th</sup> grade, Black students

overestimated tuition by about \$5,100 more than White students. Asian students are no more likely to overestimate tuition costs than White students, but when Asian students do overestimate, they overestimate by about \$4,500 more than their White counterparts.

Females tend to overestimate college cost less than males. In 9<sup>th</sup> grade, females had odds 15 percent lower than their male peers of overestimating college costs, although there was no significant difference in the amount of misestimation among female and male over estimators. In contrast, females were not more likely than males to overestimate college costs in 11<sup>th</sup> grade, but when they did overestimate, they overestimated by significantly less than males—about \$4,200 less (i.e. closer to zero misestimation).

In the 9<sup>th</sup> grade, students from high income families and students with a parent who had an associate's or bachelors degree were more likely to over estimate college costs than students from low income families and those with parents who do not have a college degree. By the 11<sup>th</sup> grade, we found no significant differences in college cost estimation related to family income. Students whose parents had an associate's or bachelor's degree were also no longer significantly likely to overestimate the cost of college, but 11<sup>th</sup> graders whose parents had a graduate degree were (at the 0.10 percent confidence level).

Math ability is also highly related to students' cost estimates in both 9<sup>th</sup> and 11<sup>th</sup> grade, with higher test score students being more likely to overestimate, and lower test score students being more likely to underestimate, relative to middle test score peers. Among over and under estimators in the 9<sup>th</sup> and 11<sup>th</sup> grade, low math score students misestimated college costs by more than high math score students. In other words, low math score students consistently misestimate the cost of college by more than high math score students (relative to middle test score students), regardless of the direction in which they misestimate.

Additionally, GPA in 11<sup>th</sup> grade is related to college cost estimates in 11<sup>th</sup> grade, with higher GPA students having 26 percent larger odds of overestimating costs. Similarly, 9<sup>th</sup> graders who plan to attend college have 36 percent higher odds of overestimating cost and among those who underestimate, they misestimate by less than 9<sup>th</sup> graders who do not plan to attend college after high school.

Even after controlling for student characteristics, there are still some school characteristics that are significantly related to the accuracy of students' college cost estimates. For example, we found that relative to students living in a city, rural students are marginally more likely to overestimate college costs (at the 0.10 percent level) and among those who underestimate, they underestimate by smaller amounts. This indicates that underestimating college costs may not be as much of an issue at rural schools than at city schools.

Students attending schools with the highest proportions of students receiving free and reduced price lunch significantly underestimate college costs in 9<sup>th</sup> and 11<sup>th</sup> grade. Contrary to what we would expect, students at schools where counselors spend more than 20% of their time helping students navigate the college going process (relative to schools where it was less than 10% of the counselor's time) appear to have less accurate perceptions of college costs in 9<sup>th</sup> grade—they are more likely to overestimate college cost and, among under estimators, underestimate by more. There are no differences in 11<sup>th</sup> grade, suggesting that the increased college preparation counseling these students received may have occurred after 9<sup>th</sup> grade and helped correct their earlier misconceptions.

Overall, we found Black and low math achievement students, as well as students from high free and reduced priced lunch schools, tend to underestimate tuition, whereas male and

higher income, higher parental education, higher math achieving, higher GPA students, along with students with an interest in attending college, tend to overestimate costs.

#### 4.3 Factors Related to Students' College Outcomes

Since perceptions of college affordability are likely related to college costs, we would expect students who overestimated college costs to be more likely to perceive college as unaffordable. Our findings support this hypothesis. Among students who overestimate tuition costs in 9<sup>th</sup> grade, each \$1,000 more the student overestimated costs is associated with 0.7 percent higher odds of perceiving college as unaffordable in 9<sup>th</sup> grade. The median 9<sup>th</sup> grade over estimator thought college was \$13,600 more expensive than it actually was. This result indicates the median over estimator had 10 percent higher odds of perceiving college as unaffordable, relative to an otherwise similar student with a more accurate college cost estimate.

Since underestimating tuition may cause students to think they do not need all or any of the financial aid available to them, underestimation of tuition may be associated with a decreased rate of FAFSA completions. Among students who underestimated tuition in 11<sup>th</sup> grade (about the time they were considering completing a FAFSA) we found a positive relationship between how much students underestimate, and the likelihood that they do not complete a FAFSA, although it was only significant at the 0.10 percent level. We found that for each \$1,000 a student underestimated tuition, their odds of not submitting a FAFSA were about 7 percent higher. The median 11<sup>th</sup> grade under estimator thought college was \$3,000 cheaper than it actually was. This result indicates that the median under estimator's odds of submitting a FAFSA were about 21 percent less than an otherwise similar student with a more accurate college cost estimate. The relatively small sample size for this model, given underestimating college costs in 11<sup>th</sup> grade is

relatively rare, could be contributing to the lack of precision in the estimate and caution should be used when interpreting this result, given that it is only significant at the 0.10 percent level.

Finally, even though overestimating tuition costs is associated with an increased likelihood of perceiving college as unaffordable, this relationship is only important from a policy point of view if perceiving college as unaffordable is related to actual college going behavior. As a final step, we show that perceptions of affordability in 9<sup>th</sup> grade are related to later college going decisions. All else equal, the odds of not going to college for a bachelor's degree were 37 percent higher for 9<sup>th</sup> graders who perceived college as unaffordable. Similarly, their odds of not enrolling in any college were 38 percent higher, suggesting that instead of substituting a 4-year college for a 2-year college when they perceived the latter as unaffordable, students may be deciding not to attend college all together.

Overall, we found that several characteristics, such as race, sex, family income, parental education, math achievement, GPA, and students' and their friends college plans are related to whether students over- or underestimate tuition costs, and by how much. Additionally, several school characteristics, such as the fraction of students who receive free or reduced price lunch and how much time counselors spent on college preparation was also related to the accuracy of college cost estimates. Students who overestimate costs are more likely to perceive college as unaffordable while students who underestimate costs are marginally less likely to submit a FAFSA. Students who perceive college as unaffordable are more likely to choose not to attend a bachelor's degree program, and also not to attend college at all.

## 5. Discussion and Conclusion



There are many resources on the internet to help students be more informed about college costs, from various tools that let you compare college characteristics, to college cost calculators on institution websites. But just because the information is available, it does not mean students are accessing it. A study of high school freshman in 2009-10 confirms this, demonstrating that high schoolers are completely uninformed about college costs (Velez and Horn, 2018).

A possible explanation for this finding is that students were less informed about college costs at the time of that study than they are today. However, given how misinformed the students in the earlier study were, even at a time when there was plenty of college cost information available on the internet, we are hesitant to conclude that students know about college costs simply because information is available to them. In other words, even if students have more information about college costs today than they did ten years ago, it does not necessarily follow that they have more accurate perceptions of college costs and are able to make better college going decisions.

The purpose of the current study is to understand more about which types of students over- and underestimate college costs. This is important because a blanket message of “College is less expensive than you think!” supplied by a college counselor will not alleviate all college cost misinformation. Some students drastically overestimate college costs and need to be told that college is much less expensive than they think. Conversely though, other students are under the impression that college is much less expensive than it is and need to be made aware of the full cost, so they can be prepared to afford college.

Correcting student misconceptions of college costs is important. We find evidence that overestimating tuition costs in 9<sup>th</sup> grade may lead fewer students to attend college. We also find

more suggestive evidence that underestimating tuition may lead students to fail to apply for federal financial aid.

Not all students may feel that college is right for them. What is important is that when students are deciding whether to attend, they have all the correct information necessary to make the best decision for themselves. Many students are misinformed about college costs, and this misinformation is likely causing them to make suboptimal college going decisions. Like many informational barriers, providing students with accurate cost information is likely a less costly problem to fix, relative to other interventions with the same goal of increasing college attendance and retention, which often involved increased financial aid. We – as researchers, policy makers, administrators, and parents – need to find ways to get students more accurate college cost information. And we also need to recognize that just making this information available on the internet might not be enough.

## References

- Avery, C. and Kane, T.J. (2004). Student Perceptions of College Opportunities: The Boston COACH Program. In C.M. Hoxby (Ed.), *College Choices: The Economics of Where to Go, When to Go, and How to Pay for It* (pp 355-391). Chicago: The University of Chicago Press and the National Bureau of Economics Research.
- Avery, C. and Turner, S. (2012). Student Loans: Do College Students Borrow Too Much – Or Not Enough? *The Journal of Economic Perspectives*, 26(1): 165-192.
- Bleemer, Z. and Zafar, B. (2014). Information Heterogeneity and Intended College Enrollment. Federal Reserve Board of New York Staff Report No. 685. Retrieved February 12, 2019, from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2477860](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2477860).
- College Board Advocacy and Policy Center. (2011). Complexity in College Admission: The Barriers Between Aspiration and Enrollment for Lower-Income Students. Retrieved February 12, 2019, from <http://media.collegeboard.com/digitalServices/pdf/advocacy/admissions21century/complexity-in-college-admission.pdf>.

- College Board and Art & Science Group. (2010). Students and Parents Making Judgments about College Costs without Complete Information. Student Poll, 8(1). Retrieved February 14, 2019, from [https://static1.squarespace.com/static/5810fea5e58c62bd729121cc/t/58bf26562994ca368856b3b6/1488922199521/studentPOLL\\_V8.1\\_May2010.pdf](https://static1.squarespace.com/static/5810fea5e58c62bd729121cc/t/58bf26562994ca368856b3b6/1488922199521/studentPOLL_V8.1_May2010.pdf).
- Grodsky, E., & Jones, M. T. (2007). Real and imagined barriers to college entry: Perceptions of cost. *Social Science Research*, 36(2), 745-766.
- Hoxby, C. M., & Turner, S. (2015). What High-Achieving Low-Income Students Know About College†. *American Economic Review*, 105(5), 514–517. <https://doi.org/10.1257/aer.p20151027>
- Klasik, D. (2012). The college application gauntlet: A systematic analysis of the steps to four-year college enrollment. *Research in Higher Education*, 53(5), 506-549.
- Long, B. T. , & Riley, E. (2007). Financial aid: A broken bridge to college access? *Harvard Educational Review*, 77 (1), 39–63 .
- O’Connor, N., Hammack, F.M., and Scott, M.A. (2010) Social Capital, Financial Knowledge, and Hispanic Student College Choices. *Research in Higher Education*, 51(3): 195-219.
- Page, L. C., & Scott-Clayton, J. (2016). Improving college access in the United States: Barriers and policy responses. *Economics of Education Review*, 51, 4-22.
- Paulsen, M. B., & John, E. P. S. (2002). Social class and college costs: Examining the financial nexus between college choice and persistence. *The Journal of Higher Education*, 73(2), 189-236.
- Perna, L.W., and Titus, M.A. (2004). Understanding Differences in the Choice of College Attended: The Role of State Public Policies. *The Review of Higher Education*, 27(4): 501–525.
- Sallie Mae and Ipsos. (2016). How America Pays for College 2016. Retrieved February 12, 2019, from [http://news.salliemae.com/files/doc\\_library/file/HowAmericaPaysforCollege2016FNL.pdf](http://news.salliemae.com/files/doc_library/file/HowAmericaPaysforCollege2016FNL.pdf).
- Shapiro, D., Dundar, A., Huie, F., Wakhungu, P.K., Bhimdiwala, A. & Wilson, S. E. (2018, December). Completing College: A National View of Student Completion Rates – Fall 2012 Cohort (Signature Report No. 16). Herndon, VA: National Student Clearinghouse Research Center.
- U.S. Department of Commerce, Census Bureau, Current Population Survey (CPS), October, 1975 through 2016. (This table was prepared July 2017.)

Velez, E. D. and Horn, L. (2018). *What High Schoolers and Their Parents Know About Public 4-Year Tuition and Fees in Their State* (NCES 2019-404). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved November 2, 2018: <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2019404>.

Warwick, J., and Mansfield, P.M. (2003). Perceived Risk in College Selection: Differences in Evaluative Criteria Used by Students and Parents. *Journal of Marketing for Higher Education*, 13(1/2): 101–125.

## Tables

**Table 1: Descriptive Statistics**

	Full Sample (n=22,000)	Analytic Sample (n=9,100)
<b>Student Characteristics</b>		
Race		
White	51.6	53.2
Black	13.6	12.8
Hispanic	22.4	21.7
Asian	3.5	3.5
Other race	8.8	8.7
Sex		
Male	50.5	50.8
Female	49.5	49.2
Family Income		
<\$35k	32.5	30.7
\$35k-\$75k	32.3	32.7
\$75k-\$115k	18.0	18.1
\$115k+	17.2	18.5
Parent's Highest Education		
HS or less	46.7	46.2
Associate's degree	16.1	15.0
Bachelor's degree	22.0	23.4
Graduate degree	15.2	15.5
9th Grade Math Score Quintile		
Lowest quintile	20.0	17.0
Quintiles 2-4	60.0	60.7
Highest quintile	20.0	22.3
9th Grade GPA		
< 2.0	25.8	22.5
2.0+	74.2	77.5
9th Grade Plans to Enroll in AA/BA 1st Year After HS		
No	39.7	36.7
Yes	60.3	63.3
Number of Friends in 11th Grade Planning to Attend a 4yr school		
None	3.9	3.2
Less than half	13.3	13.7
About half	18.8	18.5

More than half	31.6	33.1
All	15.7	17.4
Don't know	16.6	14.2
<b>School Characteristics</b>		
School Locale		
City	31.9	32.0
Suburb	33.3	33.4
Town	11.7	11.4
Rural	23.0	23.1
Percent of Students at School who Receive Free/Reduced Lunch		
0%-20%	24.1	26.2
20%-40%	28.7	29.5
40%-60%	22.0	21.1
60%-80%	18.2	17.0
80%-100%	6.9	6.2
% of Hours Counseling Staff Spend on College Preparation		
10 % or less	20.3	19.7
11-20%	34.8	35.6
More than 20%	44.9	44.7
High School Control		
Public	92.8	92.2
Private	7.2	7.8
<b>Outcomes</b>		
9th Grade Student Overestimated College Costs		
No	38.50	38.50
Yes	61.50	61.50
Tuition Misestimation Among 9th Grade Student Over Estimators		
25th percentile	\$5,137	\$5,137
50th percentile	\$13,639	\$13,639
75th percentile	\$28,890	\$28,890
Tuition Misestimation Among 9th Grade Student Under Estimators		
25th percentile	\$2,143	\$2,143
50th percentile	\$4,149	\$4,149
75th percentile	\$5,853	\$5,853
11th Grade Student Overestimated College Costs		
No	22.60	22.00
Yes	77.40	78.00
Tuition Misestimation Among 11th Grade Student Over Estimators		
25th percentile	\$5,261	\$5,308
50th percentile	\$11,460	\$11,068
75th percentile	\$20,256	\$20,460
Tuition Misestimation Among 11th Grade Student Under Estimators		

25th percentile	\$1,283	\$1,212
50th percentile	\$3,018	\$2,824
75th percentile	\$5,252	\$5,073
9th Grade Student Perceives College as Unaffordable		
No	74.70	75.00
Yes	25.30	25.00
11th Grade Student Perceives College as Unaffordable		
No	67.20	68.50
Yes	32.80	31.50
Student Did Not Apply for FAFSA		
No, applied for FAFSA	62.80	64.90
Yes, did not apply	37.20	35.10
Student Is Not Attending Any College After HS Graduation		
No, student is attending college	67.60	69.70
Yes, student is not attending	32.40	30.30
Student Is Not Attend a BA Program After HS Graduation		
No, student is attending a BA program	76.70	77.90
Yes, student is not attending	23.30	22.10

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Source: High School Longitudinal Study of 2009 (HSLs:09)

**Table 2: Regression Results of the Effects of Student and School Characteristics on Students' Estimates of College Tuition**

	<u>9th Grade</u>			<u>11th Grade</u>		
	Probability of Over-estimating College Tuition	Over-estimation Amount	Under-estimation Amount	Probability of Over-estimating College Tuition	Over-estimation Amount	Under-estimation Amount
<b>Demographics</b>						
Race						
Black	0.726** (0.107)	5,091** (2,170)	-77.32 (231.6)	0.697*** (0.0905)	4,556 (6,442)	-162.7 (301.2)
Hispanic	0.950 (0.105)	300.2 (1,246)	-62.74 (187.8)	0.777 (0.121)	4,173 (3,317)	200.0 (289.0)
Asian	1.054 (0.183)	4,469** (1,742)	417.1 (283.0)	1.001 (0.211)	6,958* (3,894)	-48.55 (319.3)
Other race	0.883 (0.111)	1,736 (1,276)	-67.45 (218.7)	1.060 (0.141)	3,429 (2,740)	308.5 (342.3)
Sex						
Female	0.848** (0.0663)	-78.51 (845.5)	145.2 (126.1)	1.087 (0.111)	-4,244** (1,847)	-371.5 (225.4)
Family Income						
\$35k-\$75k	1.122 (0.151)	-610.4 (1,333)	-50.31 (207.6)	1.204 (0.188)	-4,019 (3,018)	31.62 (298.1)
\$75k-\$115k	1.424** (0.197)	-2,543 (1,552)	-260.2 (224.7)	1.254 (0.181)	-3,507 (2,754)	18.50 (299.1)
\$115k or more	1.418** (0.235)	-2,395 (1,660)	-384.5 (255.6)	1.344 (0.243)	-2,793 (3,035)	333.2 (390.5)
Parent's Highest Level of Education						
Associate's Degree	1.357** (0.163)	3,386** (1,501)	40.49 (218.4)	1.247 (0.244)	11,676 (15,532)	-164.6 (445.0)



Bachelor's Degree	1.296**	447.5	21.54	1.158	-73.18	-290.1
	(0.135)	(1,399)	(225.2)	(0.153)	(2,072)	(330.3)
Graduate Degree	1.180	1,588	65.78	1.238*	-1,059	-632.8**
	(0.150)	(1,304)	(241.3)	(0.142)	(2,068)	(244.3)
<b>Academic Ability</b>						
Math Assessment Score						
Lowest quintile	0.696***	2,270	733.6***	0.707***	14,271**	1,234***
	(0.0776)	(1,431)	(210.1)	(0.0838)	(6,514)	(288.7)
Highest Quintile	1.267**	-1,784**	-547.6***	1.255*	-3,121**	-491.3*
	(0.146)	(840.2)	(184.1)	(0.146)	(1,273)	(284.8)
Grade Point Average						
2.0 or higher	1.161	-896.0	-151.6	1.256**	-9,798	-435.8*
	(0.169)	(1,450)	(204.0)	(0.140)	(7,314)	(263.2)
<b>College Interest</b>						
Postsecondary Plans in 9th grade						
9th Grade Plans to Enroll in AA/BA	1.360***	-667.1	-371.9***	--	--	--
	(0.128)	(985.3)	(136.1)			
Number of Friends in 11th Grade Planning to Attend a 4yr school						
Less than half	--	--	--	1.268	-10,905	462.0
				(0.323)	(13,435)	(523.8)
About Half	--	--	--	1.353	-10,016	370.4
				(0.337)	(13,758)	(514.3)
More than half	--	--	--	1.576**	-8,196	102.3
				(0.344)	(14,367)	(549.9)
All	--	--	--	1.723**	-7,038	-185.3
				(0.410)	(14,274)	(551.5)
Don't Know	--	--	--	1.046	-6,541	231.4
				(0.264)	(13,496)	(564.8)
<b>School Characteristics</b>						
Urbanicity						

Suburb	1.090 (0.126)	1,040 (1,023)	-93.56 (233.5)	1.048 (0.126)	-1,836 (3,019)	-296.0 (323.7)
Town	0.998 (0.137)	476.0 (1,606)	-193.5 (317.7)	0.829 (0.138)	-3,301 (4,133)	-51.64 (364.5)
Rural	1.214* (0.129)	596.1 (1,240)	-486.0** (231.7)	0.876 (0.113)	-1,357 (3,801)	-243.1 (349.1)
Percent of Students at School who Receive Free/Reduced Lunch						
20%-40%	0.928 (0.107)	-962.3 (1,235)	-142.4 (273.0)	0.778* (0.112)	715.0 (2,510)	-851.0** (388.6)
40%-60%	0.858 (0.110)	-1,091 (1,463)	32.39 (307.3)	0.809 (0.128)	6,816 (5,183)	-588.0 (425.7)
60%-80%	0.766* (0.113)	-1,072 (1,695)	-429.5 (332.9)	0.800 (0.143)	-917.1 (2,956)	-570.8 (507.4)
80%-100%	0.639** (0.127)	-2,836 (2,938)	456.6 (470.4)	0.408*** (0.132)	-1,440 (6,983)	226.3 (609.4)
High School Control						
Private	1.623*** (0.227)	-1,037 (1,043)	-590.8* (325.1)	1.204 (0.207)	413.0 (1,702)	-468.6 (436.5)
% of Hours Counseling Staff Spend on College Preparation						
11%-20%	1.141 (0.153)	952.9 (1,511)	303.4 (242.5)	1.007 (0.143)	1,895 (2,399)	257.8 (250.0)
More than 21%	1.258** (0.144)	114.9 (1,540)	672.1*** (243.3)	1.137 (0.158)	409.1 (2,459)	554.7 (349.7)
Constant	0.916 (0.172)	20,746*** (2,387)	4,307*** (380.5)	2.104** (0.632)	37,440*** (13,722)	4,196*** (706.5)
N	9,100	5,900	3,200	10,300	8,200	2,000

Source: High School Longitudinal Study of 2009 (HSLs:09)

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3: Regression Results of Students' College Cost Estimates on Perceptions of Unaffordability and College Going**

	Probability that 9th Grade Students Who Overestimate Tuition Perceive College as Unaffordable	Probability that 11th Grade Students Who Underestimate Tuition Do Not Submit a FAFSA	Probability that student does not enroll any college	Probability that student does not enroll in college for a BA
<b>Demographics</b>				
Race				
Black	0.838 (0.161)	0.511* (0.185)	0.671*** (0.0986)	0.738** (0.101)
Hispanic	1.251 (0.194)	1.114 (0.333)	0.713** (0.0950)	1.111 (0.118)
Asian	0.630 (0.177)	0.340** (0.175)	0.352*** (0.0903)	0.563*** (0.0848)
Other race	1.235 (0.216)	1.208 (0.405)	0.845 (0.119)	1.115 (0.126)
Sex				
Female	1.157 (0.123)	0.637** (0.127)	0.674*** (0.0548)	0.813*** (0.0514)
Family Income				
\$35k-\$75k	0.725* (0.119)	1.343 (0.430)	0.892 (0.102)	0.809** (0.0863)
\$75k-\$115k	0.378*** (0.0910)	0.663 (0.228)	0.647*** (0.0857)	0.670*** (0.0787)
\$115k+	0.203*** (0.0486)	1.568 (0.627)	0.548*** (0.102)	0.482*** (0.0566)
Parent's Highest Level of Education				
Associate's degree	0.819	0.304**	0.646***	0.736**

Bachelor's degree	(0.142)	(0.169)	(0.0766)	(0.0895)
	0.722*	0.754	0.461***	0.476***
Graduate degree	(0.134)	(0.220)	(0.0484)	(0.0482)
	0.556***	0.616	0.401***	0.418***
	(0.115)	(0.193)	(0.0650)	(0.0458)
<b>Academic Ability</b>				
Math Assessment Score				
Lowest quintile	1.168	2.187***	1.141	1.869***
	(0.217)	(0.600)	(0.129)	(0.263)
Highest Quintile	0.814*	0.833	0.501***	0.409***
	(0.0985)	(0.244)	(0.0511)	(0.0382)
Grade Point Average				
2.0 or higher	0.707**	0.370**	0.363***	0.253***
	(0.104)	(0.146)	(0.0317)	(0.0332)
<b>College Interest</b>				
Postsecondary Plans in 9th grade				
9th Grade Plans to Enroll in AA/BA	0.568***		0.546***	0.570***
	(0.0801)		(0.0408)	(0.0517)
Number of Friends in 11th Grade Planning to Attend a 4yr school				
Less than half	--	0.318	--	--
		(0.222)		
About half	--	0.238**	--	--
		(0.170)		
More than half	--	0.217**	--	--
		(0.155)		
All	--	0.149**	--	--
		(0.109)		
Don't Know	--	0.417	--	--
		(0.304)		
<b>School Characteristics</b>				

Urbanicity				
Suburb	1.129 (0.177)	0.835 (0.247)	1.051 (0.131)	1.048 (0.130)
Town	1.285 (0.225)	0.841 (0.352)	1.250* (0.168)	1.264* (0.174)
Rural	1.131 (0.193)	1.090 (0.308)	1.316** (0.160)	1.283** (0.142)
Percent of Students at School who Receive Free/Reduced Lunch				
20%-40%	1.026 (0.197)	0.762 (0.244)	1.330** (0.174)	1.113 (0.141)
40%-60%	1.092 (0.240)	0.767 (0.234)	1.583*** (0.209)	1.369** (0.195)
60%-80%	0.985 (0.253)	0.915 (0.420)	1.200 (0.193)	0.965 (0.193)
80%-100%	0.838 (0.294)	0.870 (0.594)	1.727** (0.419)	1.494* (0.322)
High School Control				
Private	0.891 (0.186)	1.131 (0.383)	0.392*** (0.0811)	0.442*** (0.0728)
% of Hours Counseling Staff Spend on College Preparation				
11%-20%	1.089 (0.194)	1.220 (0.405)	0.973 (0.118)	0.992 (0.112)
More than 21%	0.744* (0.123)	0.937 (0.289)	0.879 (0.106)	0.618*** (0.0748)
<b>College Cost Estimates</b>				
College cost overestimation, 9th grade (\$1,000s)	1.007** (0.00291)	--	--	--
College cost underestimation, 11th grade (\$1,000s)	--	1.071* (0.0445)	--	--

**Perceptions of College Affordability**

Family cannot afford college, 9th grade Agree/ Strongly Agree	--	--	1.381*** (0.132)	1.371*** (0.142)
Constant	0.879 (0.248)	7.141** (6.043)	1.248 (0.253)	12.33*** (3.028)
N	5,800	2,000	16,900	15,600

Source: High School Longitudinal Study of 2009 (HSL:09)

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.