Limited Means, Limited Options

College Remains Unaffordable for Many Americans

TECHNICAL APPENDIX

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To better understand the nature and scope of inequities in college affordability, tailored net price data can be used to identify trends across schools for different types of students. IHEP analyzed more than 2,000 colleges' net prices for this project, using Lumina Foundation's Affordability Benchmark as a guide for what typical 21st-century students should be expected to pay for college.[1] The research report that is based on this first-of-its-kind analysis highlights just how unaffordable college has become for many Americans, and it explores recommendations to address issues of institutional cost and financial aid policy that negatively affect college access and completion. This accompanying technical appendix serves to provide additional insight into the methodological details behind the research.

Research Concept

There are three key components to the research behind *Limited Means, Limited Options*:

- Profiles of 10 theoretical 21st-century students, representing a diversity of backgrounds, derived from nationally representative data.
- Lumina Foundation's Affordability Benchmark, used to calculate individual affordability thresholds for each student.
- Net price data from over 2,000 colleges, customized to fit each student using institutions' net price calculators (NPCs).

College costs go beyond tuition and are more complex than "sticker price." The U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) features aggregate net price figures,[2] but NPCs, which colleges are required to post on their websites,[3] currently provide the best available cost estimates for individual students with different backgrounds and financial circumstances. Using NPC data in this analysis allowed for variation beyond income categories among students, and offered a way to examine college affordability for a diversity of college-going Americans. Additionally, while college affordability discussions often lack a guidepost for what "affordable" truly means, Lumina's Affordability Benchmark provided a simple, reasonable, and equitable measure of what should be affordable for students representing different family sizes and income levels.

Student Profiles

IHEP's research team created 10 theoretical students, for the purpose of running each student's profile through thousands of net price calculators simultaneously. Each of these theoretical students possesses a series of economic, demographic, and academic characteristics based on nationally representative data. These individual attributes provided answers to the wide range of questions that appear in colleges' net price calculators. They also represent a broad array of college 21st-century college students. To complement the Affordability Benchmark, the student profiles assume the following:

- All students in the analysis are about to begin their first year of college, and are ultimately seeking a four-year bachelor's degree. Students who begin at two-year institutions are assumed to transfer to a four-year institution after two years of study. While the price and cost of two-year colleges and four-year colleges tend to differ on average, the Benchmark assumes that students will earn a four-year degree. This analysis employs a yearly average for each student's affordability threshold.
- All students will be attending college full-time. Full-time students are more likely to complete a degree program on-time than students who attend part-time,[4] prices and financial aid availability differ for part-time students compared to full-time students, and the Affordability Benchmark assumes that students will attend full-time.
- Dependent students live on campus, if their college offers on-campus housing. Otherwise, the student lives off-campus but not with family. All of the independent students live off-campus but not with family.
- All students are eligible for in-state tuition at public colleges and universities in every state, so the reader should assume that public tuition will be higher for out-of-state students. None of the students, however, are eligible for in-district tuition at public colleges or universities.
- None of the students use military or veteran's benefits.

Of the 10 students, half are financially dependent and half are independent. Each of the five dependent students represents a different income quintile, as derived from the 2012 follow-up to the National Postsecondary Student Aid Study (NPSAS:12). Among independent students in NPSAS, approximately 40 percent are single without dependents, while around 30 percent are unmarried with dependents and 20 percent are married with dependents.[5] At the same time, the income distribution for independent students is quite narrow compared to that of dependents (the incomes of approximately 80 percent of independent students fall into the bottom two quintiles of the dependent income distribution).[6] With household characteristics and income distribution in mind, we chose to model two of our independent students as representing the bottom quintile and two as representing the fourth quintile—one single without dependents and one single with dependents for each—in addition to one married student with dependents from the middle quintile.

We also used NPSAS data to answer questions about other student characteristics, including age, household size, number of siblings, and parent education level. Additionally, grade point average (GPA) estimates by income for dependent

students came from the 2009 High School Longitudinal Study (HSLS:09), and data on assets, investments, net worth, and homeownership came from the 2013 editions of the Survey of Consumer Finances (SCF) and the American Housing Survey (AHS). Retirement contributions were based on 2014 data from Vanguard and the Center for Retirement Research at Boston College. We completed forms from the Internal Revenue Service (IRS) the Department of Education using these figures to calculate the tax information and Expected Family Contribution (EFC) for each theoretical student. Finally, we set affordability thresholds for each student according to Lumina's Affordability Benchmark, as described in the research report. Selected key attributes of the students can be found in **Tables 2** and **3** on pages 3 and 4 of this appendix.

Net Price Calculators

For these analyses, College Abacus converted their public-use web tool into an analytic research tool that could calculate thousands of net prices simultaneously. After preparing answers to NPC questions for each student, we could use the College Abacus tool to generate net price data tailored specifically to these individuals. Because of the broad coverage of institutions, there were over 500 questions to answer about standardized test scores, athletic participation, parents' net worth, and other factors, as seen in **Table 1**. Approximately half the questions were about intended academic major and over 20 percent of the questions that we classified as "personal information" were about some type of alumni affiliation.

The way in which institutions go beyond the minimum net price calculator requirements to tweak their formulas yields incredible variability, which poses a problem for students trying to compare their options. College Abacus has a database of nearly 2,000 possible net price calculator questions, which is due in part to the slight differences in how each question is asked between NPCs. Additional research showed that some institutions even produce different net price results for the same student, depending on whether they use EFC or more detailed information. Colleges also vary in how current their net prices are. While College Abacus was not able to provide information on how recent colleges' data were, manual data checks for randomly selected colleges revealed that different schools can provide net prices for different years.

The output included components of cost—tuition and fees, room and board, books and supplies, transportation and other expenses—as well as total cost of attendance (CoA), in addition to total grand aid and net price for each student by institution. College Abacus set all public institutions to produce in-state tuition figures by matching each student's residency to the institution's state, and included the selected living arrangement designation in the data output. They were also able to include Office of Postsecondary Education identifiers (OPEIDs) for some institutions, which assisted in matching additional information (such as sector and degree-granting status) from IPEDS.

Sample Colleges

As outlined in the research report, not all U.S. colleges were included in the sample—over 500 block College Abacus from accessing their net price calculators, and over 1,600 colleges were eliminated from the sample because their data proved to be unreliable. Some of the institutions included in the initial output appeared to report zero-values for CoA or for one or more components of cost. Others reported negative net prices, or reported a net price that did not match the appropriate cost-minus-grants formula. Nine even reported conflicting total cost figures for different student profiles.

4,735	Initial output
-769	Calculator error or access blocked
-824	One or more cost figure was not positive, the total did not match sum of components, or the total cost was not consistent across students
-39	Net price did not match total cost less grant aid, or net price was negative
-1,102	Not two-year or above, undergraduate-serving, or Title IV-participating; or a duplicate
2,001	Final sample

Any of these could have been the result of data entry or computational errors, and many of them followed no discernible trend. One of the more troubling patterns to emerge, however, was for non-residential campuses to report a zero-value for room and board cost. While not required to provide estimates for students living at home or with family, colleges are required to provide reasonable estimates for food and housing if students are living on their own off-campus. Because expenses such as these represent a substantial component of

Table 1. Net price calculator questions among sample colleges

Type of question	Number	Proportion	Types of characteristics included
Academic background	61	10.6%	Grades, SAT/ACT scores, high-school attendance, scholarship eligibility
College intentions	299	51.9%	Intended major/program, campus/college, extracurricular activities
Finances	111	19.3%	Student/parent income, assets, taxes, benefits
Personal information	105	18.2%	Household composition, religion, veteran status, alumni affiliation
TOTAL	576	100%	

college costs—in some cases greater than tuition and fees—we removed institutions that reported zero-values for cost components from the sample.

Using matched data from IPEDS, we were able to further limit the sample to two-year or above, degree-granting, Title IV-participating institutions that serve undergraduate students. Our final sample included 2,001 colleges. **Table 4** provides a breakdown of institutions in our sample by sector. The sample is slightly more representative of public colleges than private colleges, with the greatest proportion being public two-year. We attribute the slight underrepresentation of private colleges, compared with the IPEDS universe, to the fact that private colleges comprised the vast majority of institutions blocking College Abacus (around 52 percent of blocking schools were nonprofit two-year or above and 35 percent were for-profit two-year or above).

Additional Affordability Models

In an effort to further examine methods that students are using in an attempt to overcome the lack of affordable college options (i.e., borrowing) and ways to address larger issues of cost and aid (e.g., increased grant aid and free tuition/fees), we modeled different adjustments to the net prices in the sample, to see how they would affect the affordability landscape for each of the 10 students. The results are outlined in

Table 2. Selected key characteristics of the five independent students.

	Anthony	Traval	Aneesa	Jin Sook	Mohammed	Source	Notes
Age	28	28	28	28	28	NPSAS:12	Median age by dependency status and attendance intensity.[7]
Marital status	Single	Single	Single	Single	Married	NPSAS:12	Based on distributions of dependency status and marital status by attendance intensity and age.[8]
Number of dependents	0	0	2	2	2	NPSAS:12	Median number of dependent children by attendance intensity, age, dependency, and marital status.[9]
Household size	1	1	3	3	4	NPSAS:12	Derived from number of dependents and marital status.
Household college students	1	1	1	1	1	NPSAS:12	Median family in college by attendance intensity, age, dependency status, and marital status.[10]
High-school GPA	3.0	3.1	3.1	3.2	3.2	NPSAS:12	Derived from mean high-school GPA by attendance intensity, age, income quintile, dependency, and marital status.[11]
ACT composite	21	19	19	19	24	NPSAS:12	Median ACT composite score by attendance intensity, age, income quintile, dependency, and marital status.[12]
SAT reading	480	460	470	490	510	NPSAS:12	Median SAT reading score by attendance intensity, age, income quintile, dependency, and marital status.[13]
SAT math	520	460	460	420	580	NPSAS:12	Median SAT math score by attendance intensity, age, income quintile, dependency, and marital status.[14]
Student/spouse annual earnings/AGI	$2,706	$30,388	$2,130	$33,639	$20,719	NPSAS:12	Mean AGI by attendance intensity, age, income quintile, dependency, and marital status.[15]
Household with SNAP/FRPL benefits	Yes	No	Yes	Yes	Yes	FNS 2016	According to USDA eligibility criteria.[16]
Student/spouse tax form	1040EZ	1040EZ	1040A	1040A	1040A	2015 1040/A/EZ	According to IRS filing requirements.[17]
Student/spouse taxes paid	$0	$2,550	$0	$0	$0	2015 1040/A/EZ	According to manual completion of 2015 federal tax forms.[18]
Student/spouse tax credits	$0	$0	$0	$0	$0	2015 1040/A/EZ	According to manual completion of 2015 federal tax forms.[19]
Student/spouse retirement contributions	$0	$912	$0	$1,009	$0	Vanguard 2014	Based on 6% of income (U.S. average contribution, not including average employer match) for household over median U.S. income; 3% of income for household less than median but above $30,000.[20]
Student/spouse savings	$0	$1,100	$0	$2,000	$900	SCF 2013 Table 6	Derived from median transaction account balance by income category.[21]
Student/spouse investments	$0	$0	$0	$0	$0	SCF 2013 Table 6	Derived from median stocks and pooled investment funds amounts, based on distribution by income category.[22]
Student/spouse homeowner	No	No	No	No	No	AHS 2013	Based on distribution of ownership by income category.[23]
EFC	$0	$7,017	$0	$0	$0	2016–17 EFC	According to manual completion of 2016–17 FAFSA and EFC worksheet.[24]
Affordability threshold	$3,625	$5,282	$3,625	$3,625	$3,625	Lumina Foundation	Calculated according to Lumina's Affordability Benchmark.[25]

Table 3. Selected key characteristics of the five dependent students.

	Sonja	Hakim	Ava	Sergio	Maria	Source	Notes
Age	18	18	18	18	18	NPSAS:12	Median age at start of postsecondary education by dependency and attendance intensity.[26]
Parent marital status	Single	Married	Married	Married	Married	NPSAS:12	Median of parent marital status by dependency status, attendance intensity, income quintile, and age at start of postsecondary.[27]
Parent 1 education	High school	Associate's	Some college	Some college	Bachelor's	NPSAS:12	Median of mother's highest education level by dependency status, attendance intensity, income quintile, and age at start of postsecondary.[28]
Parent 2 education	n/a	High school	Associate's	Some college	Bachelor's	NPSAS:12	Median of father's highest education by dependency status, attendance intensity, income quintile, and age at start of postsecondary.[29]
High-school GPA	2.9	3.0	3.2	3.4	3.5	HSLS:09	Mean weighted GPA by postsecondary attendance intensity and family income category.[30]
ACT composite	18	21	22	23	24	NPSAS:12	Median ACT composite score by dependency status, attendance intensity, income quintile, age at start of postsecondary, and parent marital status.[31]
SAT reading	440	500	510	520	550	NPSAS:12	Median SAT reading score by dependency status, attendance intensity, income quintile, age at start of postsecondary, and parent marital status.[32]
SAT math	430	500	520	530	560	NPSAS:12	Median SAT math score by dependency status, attendance intensity, income quintile, age at start of postsecondary, and parent marital status.[33]
Household college students	1	1	1	1	2	NPSAS:12	Median family in college by dependency status, attendance intensity, income quintile, age at start of postsecondary, and parent marital status.[34]
Household size	3	4	4	4	4	NPSAS:12	Median family size by dependency status, attendance intensity, income quintile, age at start of postsecondary, and parent marital status.[35]
Number of siblings	1	1	1	1	1	NPSAS:12	Derived from household size and parent marital status.
Siblings in college	0	0	0	0	1	NPSAS:12	Based on number of siblings and household college students.
Parent annual earnings/ AGI	$12,491	$35,910	$69,000	$105,405	$162,995	NPSAS:12	Mean AGI by attendance intensity, dependency status, income quintile, age at start of postsecondary, parent marital status, and family size.[36]
Household with SNAP/ FRPL benefits	Yes	Yes	No	No	No	FNS 2016	According to USDA eligibility criteria.[37]
Parent tax form	1040A	1040A	1040A	1040	1040	2015 1040/A/EZ	According to IRS filing requirements.[38]
Parent taxes paid	$0	$0	$4,141	$10,794	$25,186	2015 1040/A/EZ	According to manual completion of 2015 federal tax forms.[39]
Parent tax credits	$5,990	$3,441	$0	$0	$0	2015 1040/A/EZ	According to manual completion of 2015 federal tax forms.[40]
Parent retirement contributions	$0	$1,077	$4,140	$6,324	$9,780	Vanguard 2014	Based on 6% of income (U.S. average contribution, not including average employer match) for household over median U.S. income; 3% of income for household less than median but above $30,000.[41]
Parent savings	$600	$2,200	$4,900	$10,150	$32,250	SCF 2013 Table 6	Derived from median transaction account balance by income category.[42]
Parent investments	$0	$0	$0	$15,250	$227,600	SCF 2013 Table 6	Derived from median stocks and pooled investment funds amounts, based on distribution by income category.[43]
Parent homeowner	No	No	Yes	Yes	Yes	AHS 2013	Based on distribution of ownership by income category.[44]
Home purchase	n/a	n/a	2005	2006	2007	AHS 2013	Based on distribution of purchase category by income category.[45]
Home price	n/a	n/a	$150,000	$200,000	$300,000	AHS 2013	Based on distribution of price category by income category.[46]
Home value	n/a	n/a	$200,000	$200,000	$300,000	AHS 2013	Based on distribution of value category by income category.[47]
EFC	$0	$2,017	$9,361	$21,747	$53,839	2016–17 EFC	According to manual completion of 2016–17 FAFSA and EFC worksheet.[48]
Affordability threshold	$3,625	$3,625	$8,725	$17,826	$32,224	Lumina Foundation	Calculated according to Lumina's Affordability Benchmark.[49]

the research report, with detailed notes, and further description of the methodology follows below.

Stafford Loans

First, we subtracted Subsidized Stafford and Unsubsidized Stafford estimates from net price amounts according to each student's eligibility for Stafford Loans. Subsidized Stafford is calculated according the student's remaining financial need—which is the difference between: a) net price minus EFC, and b) total cost of attendance at a given institution—up to the maximum Subsidized Stafford amount for first-year undergraduates.[50] For 2016–17, the maximum limit for Subsidized Stafford was $3,500.[51] Next, Unsubsidized Stafford met any remaining financial need,[52] up to the college's CoA or the overall Stafford Loan limit, whichever came first. The maximum limit on Stafford Loans for 2016–17 was $5,500 for dependent students and $9,500 for independent students.[53] The calculations in our analysis account for each college's CoA, each student's eligibility, and the different Stafford Loan limits. All students received Subsidized Stafford for at least one school, and all students received Unsubsidized Stafford for at least one school, as well. The low- and moderate-income students were much more likely to be eligible for Subsidized Stafford but were only very slightly more likely to be eligible for Unsubsidized Stafford than the higher-income students (Sergio and Maria).

Table 4. Sample colleges by sector.

	Number	Proportion
Private for-profit	405	20.2%
Private nonprofit	497	24.8%
Public, 2-year	717	35.8%
Public, 4-year or above	382	19.1%
TOTAL	2001	100.0%

Doubling the maximum Pell Grant

The Office of Federal Student Aid calculates Pell Grant amounts for full-time undergraduate students, using approximations of the student's EFC up to the maximum award,[54] which was $5,815 for 2016–17.[55] Doubling this amount to $11,630 not only increases the award amount for eligible students but also increases eligibility for the award—as the limit increases, so does the maximum EFC that can be subtracted from the maximum award. In our analysis, students who were estimated to have received a 2016–17 award received double that award while those who had not received Pell still did not, with two exceptions—both students Traval and Ava were not estimated to have been eligible for Pell when the maximum award was $5,815, but they did receive Pell when the maximum was doubled to $11,630. To model a doubling of Pell, we calculated both an estimate of how much Pell the student should receive for 2016–17 as well as how much they would receive if the maximum limit for the award were doubled. We then subtracted the amount of the student's new Pell award from each college's net price, but we added back the estimated 2016–17 award in order to avoid double-counting the different awards.

Last-dollar free-college

The last-dollar free-college model in our analysis demonstrates the limited impact last-dollar free-college models have on college affordability for low- and moderate-income students. To calculate last-dollar, the tuition and fees figure for each college was subtracted from the CoA for the public colleges (approximately 55 percent of the sample), and any grant aid beyond the tuition and fees amount was deducted from the remaining costs—with the assumption in mind that colleges would not simply rescind the additional grant aid after tuition and fees had been fully covered by federal and state aid. It is worth noting that these calculations eliminate both tuition and fees because the net price data did not distinguish between the two, which means the small benefit provided to the low- and moderate-income students in our analysis is still likely overstated in the model.

Glossary of Key Terms

Cost of attendance (CoA):
CoA is the official total cost to attend a given college. For the purpose of federal reporting, CoA is applicable to first-time, full-time undergraduate students. Tuition and fees, room and board, books and supplies, transportation and other costs comprise CoA. At public colleges, CoA is based on in-state tuition costs. The official definition is part of the Higher Education Act of 1965 (HEA), as amended.

Degree-granting institution:
Postsecondary institutions can offer many different kinds of credentials. Some have career-oriented vocational programs that offer certificates. Most traditional U.S. colleges offer at least associate's degrees or bachelor's degrees, usually as part of two-year or four-year programs, respectively. A degree-granting institution awards these undergraduate or graduate credentials, while non-degree-granting institutions do not.

Dependency status:
All postsecondary students are classified as either financially dependent or independent. Dependent students are usually students younger than 24 who live with parents, guardians, or persons who support them financially and claim them on their taxes. Independent students are on their own financially, often older, and may have dependents of their own. Grant aid can be awarded according to different policies for dependent and independent students, as is the case with Stafford Loan limits. Dependent students are also more likely to live in a traditional on-campus college residence, whereas independent students often have their own housing arrangements, which can result in different college costs. Additionally, NPCs account for the finances of dependent students' parents in addition to the student's own finances.

Expected family contribution (EFC):
EFC is the product of a formula that is supposed to determine how much a student or family should pay for a postsecondary education, although it rarely functions that way in practice. EFC is calculated using income, assets, benefits, and tax information normally provided by students and families via the FAFSA. Many colleges use EFC to calculate aid, and FSA uses it to calculate eligibility for federal aid such as Pell Grants and Stafford Loans.

Financial need:
Financial need, as defined by FSA, is the difference between a student's estimated grant aid, their EFC, and the remaining CoA at a given college. Determination of financial need is critical in calculating aid amounts and eligibility for federal student aid programs, such as the Stafford Loan program.

Free Application for Federal Student Aid (FAFSA):
The FAFSA is the document—available on paper or online—that students and families must complete in order to obtain eligibility for federal financial aid. The form becomes available the fall prior to when the student plans to enroll in college, in October, and can be submitted up until June. Students indicate the college to which they want to send their information for aid eligibility. The form primarily relies on IRS tax information from two years prior.

Grant aid:
Grant aid is any financial aid offered to a prospective or current college student that, unlike a loan, does not need to be paid back. Subtracting a student's grant aid from a given college's CoA yields the net price for the student to attend that college. Grant aid can be need-based or non-need-based (sometimes called merit-based) or some combination of the two. Most "scholarships" have some non-need/merit-based component to their eligibility criteria.

Net price:
Net price is an estimate of the cost to attend a given college after grant aid has been subtracted from the CoA. As with CoA, the average net price figures reported to the federal Integrated Postsecondary Education Data System (IPEDS) are applicable to first-time, full-time undergraduate students. Net price calculators (NPCs) however, allow students to calculate individualized estimates.

Net price calculator (NPC):
NPCs are web-based tools that produce personalized estimates of net price for a given college, based on the questions the NPC asks and information the student provides—questions about academic background, personal or family finances, enrollment intentions, and more. All institutions that participate in Title IV financial aid programs are required to post an NPC on their website.

Office of Federal Student Aid (FSA):
FSA administers and monitors the distribution of student aid funds for the Department of Education. As such, FSA maintains all of the functions related to calculating students' EFCs, updating the FAFSA and processing the forms, as well as administering the Pell Grant program, the Stafford Loan program, and other Title IV programs.

Pell Grants:
Pell Grants are federal grants offered to the lowest-income students. Pell awards are capped at a maximum amount each year, and the amount of aid awarded a student is determined by subtracting an approximation of the student's EFC from the maximum award amount. The maximum Pell award was $5,815 for 2016–17 and $5,920 for 2017–18.

Sector:
Because colleges offer different programs and postsecondary credentials, they are often grouped by level as two-year, less than two-year, or four-year and above. There are also three different types of institutional control—public colleges are primarily funded and operated by a state, for-profit colleges are private business that operate to generate profit for their shareholders or owners, and nonprofit colleges are private organizations that are not-for-profit organizations. The sector of an institution usually denotes both level and control (e.g., public two-year or nonprofit four-year).

Stafford Loans:
Stafford Loans are a form of federal student aid that can only be used to cover costs associated with college and must be paid back. They generally offer lower interest rates for student borrowers than other types of loans, they often feature benefits such as forbearance or deferment for those experiencing financial hardship, and in some cases they may be forgiven for students who go on to a career in public service. All Stafford Loans are serviced by private companies but backed by the federal government. For Subsidized Stafford Loans, the government essentially pays any accrued interest while the student borrower is in college.

Title IV:
Title IV is the part of HEA that outlines federal student aid programs that allow dollars to flow to students through institutions of higher learning. Pell Grants, Stafford Loans, and Federal Work-Study are all governed by Title IV. In order to gain access to Title IV funding for their students, colleges must meet other standards outlined in HEA, such as seeking and maintain postsecondary accreditation.

Endnotes

1 Lumina Foundation. (2015). *A benchmark for making college affordable: The rule of 10*. Retrieved from http://www.luminafoundation.org/files/resources/affordability-benchmark-1.pdf

2 U.S. Department of Education; Notice of proposed information collection requests, 74 Fed. Reg. 8239. (February 24, 2009). http://www.gpo.gov/fdsys/pkg/FR-2009-02-24/pdf/E9-3924.pdf; U.S. Department of Education. (March 2015). *Average institutional net price FAQs*. Retrieved from http://nces.ed.gov/ipeds/Section/Institutional_net_price

3 20 USC 1015a(h). Retrieved from http://www.gpo.gov/fdsys/pkg/USCODE-2015-title20/pdf/USCODE-2015-title20-chap28-subchapI-partC-sec1015a.pdf; U.S. Department of Education. (2016, January 28). *Net Price Calculator Information Center*. Retrieved from http://nces.ed.gov/ipeds/section/net_price_calculator

4 Shapiro, D., Dundar, A., Wakhungu, P.K., Yuan, X., Nathan, A., & Hwang, Y. (2016). *Completing college: A national view of student attainment rates—fall 2010 cohort (signature report no. 12)*. National Student Clearinghouse Research Center. Retrieved from https://nscresearchcenter.org/wp-content/uploads/SignatureReport12.pdf

5 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 11, 2016. Variables used were DEPEND5B, DEPEND (independent), ENRSTAT (enrolled mostly full-time), & AGE (28), weight variable was WTA000.

6 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on March 14, 2017. Variables used were CINCOME (quintiles) & DEPEND (independent), weight variable was WTA000.

7 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 10, 2016. Variables used were AGE, DEPEND, & ENRSTAT (enrolled mostly full-time), weight variable was WTA000.

8 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 11, 2016. Variables used were DEPEND5B, DEPEND (independent), ENRSTAT (enrolled mostly full-time), & AGE (28), weight variable was WTA000.

9 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 11, 2016. Variables used were DEPNUMCH, DEPEND (independent), ENRSTAT (enrolled mostly full-time), AGE (28), & DEPEND5B, weight variable was WTA000.

10 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 11, 2016. Variables used were SINCOL, DEPEND (independent), ENRSTAT (enrolled mostly full-time), AGE (28), & DEPEND5B, weight variable was WTA000.

11 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on August 8, 2016. Variables used were HSGPA, ENRSTAT (enrolled mostly full-time), AGE (28), PCTINDEP (quintiles), & DEPEND5B, weight variable was WTA000.

12 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on August 5, 2016. Variables used were TEACDER, ENRSTAT (enrolled mostly full-time), AGE (28), PCTINDEP (quintiles), & DEPEND5B, weight variable was WTA000.

13 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on August 5, 2016. Variables used were TESATVDE, ENRSTAT (enrolled mostly full-time), AGE (28), PCTINDEP (quintiles), & DEPEND5B, weight variable was WTA000.

14 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on August 5, 2016. Variables used were TESATMDE, ENRSTAT (enrolled mostly full-time), AGE (28), PCTINDEP (quintiles), & DEPEND5B, weight variable was WTA000.

15 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 29, 2016. Variables used were CAGI, ENRSTAT (enrolled mostly full-time), AGE (28), PCTINDEP (quintiles), & DEPEND5B, weight variable was WTA000.

16 Food and Nutrition Service, U.S. Department of Agriculture. (2016, February 25). *Supplemental Nutrition Assistance Program (SNAP): Eligibility*. Retrieved from http://www.fns.usda.gov/snap/eligibility

17 Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *1040 instructions*. Retrieved from http://www.irs.gov/pub/irs-prior/i1040gi--2015.pdf; Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *1040A instructions*. Retrieved from http://www.irs.gov/pub/irs-prior/i1040a--2015.pdf; Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *1040EZ instructions*. Retrieved from http://www.irs.gov/pub/irs-prior/i1040ez--2015.pdf

18 Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *Form 1040: U.S. individual income tax return*. Retrieved from http://www.irs.gov/pub/irs-prior/f1040--2015.pdf; Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *Form 1040A: U.S. individual income tax return*. Retrieved from http://www.irs.gov/pub/irs-prior/f1040a--2015.pdf; Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *Form 1040EZ: Income tax return for single and joint filers with no dependents*. Retrieved from http://www.irs.gov/pub/irs-prior/f1040ez--2015.pdf

19 Ibid.

20 Utkus, S.P. & Young, J.A. (2014). *How America saves 2014: A report on Vanguard 2013 defined contribution plan data*. Vanguard. http://institutional.vanguard.com/iam/pdf/HAS14.pdf. Found in Munnell, A.H. (2014). *401(K)/IRA holdings in 2013: An update from the SCF*. Center for Retirement Research, Boston College. http://crr.bc.edu/wp-content/uploads/2014/09/IB_14-151.pdf

21 Board of Governors of the Federal Reserve System. (n.d.). *2013 Survey of Consumer Finances: Estimates in nominal dollars based on internal data* [Data file]. Retrieved from http://www.federalreserve.gov/econresdata/scf/files/scf2013_tables_internal_nominal.xls

22 Ibid.

23 Census Bureau, U.S. Department of Commerce. (n.d.). *American Housing Survey: 2013 national summary tables* [Data file]. Retrieved from http://www2.census.gov/programs-surveys/ahs/2013/AHS_2013_National_Tables_v1.2.xls

24 Office of Federal Student Aid, U.S. Department of Education. (n.d.) *Free Application for Federal Student Aid (FAFSA) July 1, 2016 – June 30, 2017*. Retrieved from http://fafsa.ed.gov/fotw1617/pdf/PdfFafsa16-17.pdf; Office of Federal Student Aid, U.S. Department of Education. (n.d.). *The EFC formula, 2016–17*. Retrieved from http://studentaid.ed.gov/sa/sites/default/files/2016-17-efc-formula.pdf

25 Lumina Foundation. (2015).

26 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 10, 2016. Variables used were AGEPSE, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), & PCTDEP (quintiles), weight variable was WTA000.

27 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 20, 2016. Variables used were PMARITAL, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), & AGEPSE (18), weight variable was WTA000.

28 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 27, 2016. Variables used were PMOMED, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), & AGEPSE (18), weight variable was WTA000.

29 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 27, 2016. Variables used were PDADED, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), & AGEPSE (18), weight variable was WTA000.

30 IHEP analysis of 2009 data from the High-School Longitudinal Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on June 7, 2016. Variables used were X3TGPAWGT, S3CLGFT (full-time), & X2FAMINCOME, weight variable was W3W2STUTR.

31 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on August 5, 2016. Variables used were TEACTDER, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), AGEPSE (18), & PMARITAL (married or single), weight variable was WTA000.

32 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on August 5, 2016. Variables used were TESATVDE, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), AGEPSE (18), & PMARITAL (married or single), weight variable was WTA000.

33 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on August 5, 2016. Variables used were TESATMDE, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), AGEPSE (18), & PMARITAL (married or single), weight variable was WTA000.

34 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 12, 2016. Variables used were PINCOL, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), AGEPSE (18), & PMARITAL (married or single), weight variable was WTA000.

35 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 27, 2016. Variables used were PFAMNUM, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), AGEPSE (18), & PMARITAL, weight variable was WTA000.

36 IHEP analysis of 2012 data from the National Postsecondary Student Aid Study conducted by the National Center for Education Statistics, U.S. Department of Education. Computation by NCES PowerStats Version 1.0 on May 29, 2016. Variables used were CAGI, DEPEND (dependent), ENRSTAT (enrolled mostly full-time), PCTDEP (quintiles), AGEPSE (18), PMARITAL & PFAMNUM, weight variable was WTA000.

37 U.S. Department of Agriculture. (2016, February 25).

38 Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *1040 instructions*; Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *1040A instructions*; Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *1040EZ instructions*.

39 Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *Form 1040: U.S. individual income tax return*; Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *Form 1040A: U.S. individual income tax return*; Internal Revenue Service, U.S. Department of the Treasury. (n.d.). *Form 1040EZ: Income tax return for single and joint filers with no dependents*.

40 Ibid.
41 Utkus, S.P. & Young, J.A. (2014); Munnell, A.H. (2014).
42 Board of Governors of the Federal Reserve System. (n.d.). *2013 Survey of Consumer Finances: Estimates in nominal dollars based on internal data* [Data file].
43 Ibid.
44 Census Bureau, U.S. Department of Commerce. (n.d.). *American Housing Survey: 2013 national summary tables* [Data file].
45 Ibid.
46 Ibid.
47 Ibid.
48 Office of Federal Student Aid, U.S. Department of Education. (n.d.). *Free Application for Federal Student Aid (FAFSA) July 1, 2016 – June 30, 2017*; Office of Federal Student Aid, U.S. Department of Education. (n.d.). *The EFC formula, 2016–17*.
49 Lumina Foundation. (2015).
50 Office of Federal Student Aid, U.S. Department of Education. (2003). Chapter 2—Borrower eligibility for Stafford and PLUS Loans. In *2003–04 FSA Handbook: Direct Loan and FFEL Programs* (Vol. 8). Retrieved from http://ifap.ed.gov/sfahandbooks/attachments/0304Vol8Ch2eligibleborrower.pdf
51 Office of Federal Student Aid, U.S. Department of Education. (n.d.). *Subsidized and Unsubsidized Loans*. Retrieved from http://studentaid.ed.gov/sa/types/loans/subsidized-unsubsidized
52 Office of Federal Student Aid, U.S. Department of Education. (2003).
53 Office of Federal Student Aid, U.S. Department of Education. (n.d.). *Subsidized and Unsubsidized Loans*. The independent student limit of $9,500 also applies to dependent student whose parents have been denied for a PLUS loan, but that circumstance was not included in our analysis.
54 Office of Federal Student Aid, U.S. Department of Education. (January 2016). *2016–17 federal Pell Grant payment and disbursement schedule (GEN-16-01)*. Retrieved from http://ifap.ed.gov/dpcletters/attachments/GEN1601Attach.pdf
55 Ibid.

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