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Obstacles to Opportunity: Accompanying Methodology Note

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Introduction

This methodology note details the data, methods, assumptions, and limitations underpinning the analysis presented in the report, "Obstacles to Opportunity: Increasing College Success by Understanding & Addressing Older Students' Costs Beyond Tuition." This note is organized following the original quantitative contributions made in this report along with a discussion of limitations:

1. Defining Older Students & Their Families;
2. Defining & Estimating Older Students' Costs Beyond Tuition;
3. Calculating Institution-Reported Allowable Living Expenses for Older Students; and
4. Limitations of this Costs-Beyond-Tuition Analysis

1. DEFINING OLDER STUDENTS & THEIR FAMILIES

In this report, we define older students as first-time undergraduate students who are between the ages of 25 and 45. The report primarily relies on two data sources to better understand the older student population: the 2015-16 National Postsecondary Student Aid Study (NPSAS) for undergraduates[1] and the 2014 to 2018 Consumer Expenditure Survey (CE) Interview files.[2] Each data source was chosen because it provides the best data available on its particular subject area: NPSAS on characteristics of students with a special emphasis on financial aid and CE on detailed information on total household expenditures. Taken together they provide a more comprehensive view of the costs faced by older students that neither can provide alone. The following subsections briefly describe how we defined older students in each data source.

Defining the Older Student Universe in the National Postsecondary Student Aid Study

The NPSAS is the most detailed national public dataset on financial aid and demographic information at the student level.[3] NPSAS data is comprised of both institutional administrative data and a sample-based student-level survey. The nationally representative 2015-16 NPSAS sample includes approximately 1,800 postsecondary education institutions eligible to receive U.S. federal student aid ("Title IV institutions") and 89,000 undergraduate students in the 50 states, the District of Columbia, and Puerto Rico. The sample includes students enrolled in a Title IV institution at any point during the 2015-2016 academic year.[4]

We defined older students as students ages 25 to 45 as of December 31st, 2015. Students 24 years of age and younger were defined as younger students.[5] We filtered our sample to include only "first-time undergraduates" by excluding students who already held a bachelor's, master's, or doctoral degree at the time of their enrollment. We also excluded students enrolled in colleges in Puerto Rico to align with the CE's geographic universe, which covers only the 50 states plus the District of Columbia. Figure 1 displays more information on the sample size used throughout this analysis.

NPSAS data include limited but useful information on students' family characteristics that allow us to categorize older students as parents or as married. For example, students who report having a dependent child either on their response to the Free Application for Federal Student Aid (FAFSA) or the student interview portion of NPSAS are categorized as parents, regardless of the actual relationship to the child. Additionally, only students who reported being married are counted as such, with students who were separated being counted as single.

Figure 1. Sample sizes of NPSAS Universe & CBT Sample

Universe	Weighted sample size
Total Undergraduates	**19,532,300**
Ages 25 to 45	6,128,800
With some college or less	5,418,100
Not in Puerto Rico	5,359,500

Note: Based on analysis of National Center for Education Statistics (NCES) National Postsecondary Student Aid (NPSAS) data. Older students are ages 25-45. Students with some college or less are those who have not previously obtained a four-year, graduate, or professional degree.

Source: Georgetown Center on Poverty and Inequality, 2021.

Defining the Older Student Universe in the Consumer Expenditure Survey

Sponsored by the Bureau of Labor Statistics (BLS), the CE is a nationally representative dataset that contains information on a comprehensive set of expenditures among a sample of consumer units (CUs), which we also refer to as "households," as well as demographic and other information about the CU and its members. Expenditure data represent the combined expenses of all members of the consumer unit, which most often comprise the entire household, but may also reflect smaller subgroups within a household who pool their income to make joint spending decisions, or individuals who are financially independent from other household members.[6] Expenditure data are for out-of-pocket costs and do not include the value of in-kind subsidies, non-cash public benefits, and expenses paid for by financial aid distributed directly to institutions on behalf of students, though receipt of those supports likely affects reported spending. This creates a limitation of using the CE to approximate costs beyond tuition (CBT), which we partially address by removing those living in student housing from our sample. Our analysis combines data from the quarterly interview component of the consumer expenditure survey for calendar years 2014 through 2018.

Our CE sample identifies consumer units with older students. To identify older student CUs, we first restrict the CE sample based on the presence of at least one older undergraduate student aged 25 to 45 enrolled at the time of the survey. As each quarterly sample includes only households with an older

student at the time of the survey, our overall sample represents students throughout the calendar year. Since the CE information on college enrollment does not differentiate between the degree type, students currently enrolled in higher education who have attained neither a bachelor's nor a graduate degree are assumed to be undergraduates. Because we cannot attribute expenditures to an individual within a consumer unit, we further restrict the sample to older students who are either the reference person—the person who owns or rents the home and for survey purposes all other household members' relationships are defined—or the reference person's spouse or unmarried partner, if present. We apply this restriction in order to assume household expenditures largely reflect the needs of the older student, as omitted households have on average more than twice the number non-student adults, whose spending patterns may differ.

We also exclude a very small portion of students who report living in student housing as they report much lower expenditure levels on housing and food, likely because financial aid distributions, including loans, are paid directly to the institution and cover a substantial portion of their housing and food costs.

The universe for this analysis includes about 43 percent of all CUs in the overall sample and 73 percent of CUs with older students in the 2014-2018 CE data (see Figure 2.)

Figure 2. Weighted & Unweighted Sample Sizes for Costs Beyond Tuition Data Source & Analysis

Universe	Weighted Sample Size of Consumer Units	Unweighted Sample Size of Consumer Units
Total Consumer Units	129,099,632	122,561
With an Older Student	4,398,290	3,920
Where Older Student Is Reference Person, Spouse, or Unmarried Partner	3,273,997	2,935
Excluding Those in Student Housing	3,231,555	2,899

Note: Costs beyond tuition are based on analysis of pooled 2014-2018 Consumer Expenditure Surveys (CE) interview files. Figures represent annual consumer unit (CU) expenditures, are adjusted to 2020 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), and are rounded to the nearest hundred. CE estimates include CUs with at least one student ages 25-45 who is the householder, spouse, or unmarried partner, excluding those who live in student housing.

Source: Georgetown Center on Poverty and Inequality, 2021.

To define older students in CE data as parents, we used a two-fold approach based on the relationship of the household member to the reference person. First, as described above, we include only households where the older student is the reference person or the reference person's spouse or unmarried partner. Second, we define these households as being student parent households when there

is a child under age 18 present who is the biological, adopted, or legal child of the reference person. Students are defined as married only if their spouse is present in the household.

2. DEFINING & ESTIMATING OLDER STUDENTS' COSTS BEYOND TUITION

This costs-beyond-tuition framework quantifies the average out-of-pocket expenditures older students incur over a 12-month period as they work to complete a degree. The CBT framework described here applies three important adjustments to CE data so that estimates can be compared to institutional estimates of allowable living expenses (discussed further below). First, we combine annualized quarterly data and inflate costs to 2020 dollars. Then we select a subsection of expenditures measured by the survey that correspond to categories included in allowable living expenses. Finally, we use an equivalence scale to convert the estimates from the household level to the individual (or student) level. Like BLS does for their published CE statistics, the estimates presented in this report are means, calculated using sampling weights.

Annualizing & Inflating Quarterly Data

Our analysis combines data from the quarterly interview component of the CE survey for years 2014 through 2018. Each quarterly sample of the CE is designed to represent the national population and is considered independent of other quarterly data from the same year. For each of the five years of CE data in our analysis, we combine four quarters of data.[7] We inflate cost estimates in the pooled CE data to 2020 dollars using the Consumer Price Index for All Urban Consumers (CPI-U).

Constructing Spending Categories for Costs Beyond Tuition

We construct cost categories using summarized CE cost variables as a baseline and then we use our judgement to remove cost subcategories beyond needs associated with a "modest but adequate living standard,"[8] the phrase financial aid offices commonly use to establish reasonable cost of living allowances that set eligibility limits for financial aid as defined under the Higher Education Act.[9] For example, our costs beyond tuition food and transportation categories exclude spending on out-of-town trips. These decisions make our costs-beyond-tuition estimates more conservative (see Figure 2).

Overall, our estimates for older students' spending on costs beyond tuition follow an "outlay" approach as opposed to an expenditure approach. For large purchases (e.g., housing, transportation), outlays measure monthly payments as opposed to the total net price of the purchase. As BLS states, the "total outlays approach is believed to be a better measure of the regular out-of-pocket outlays of consumers than is the total expenditures measure" because it smooths the impact of large, one-time purchases.[10, 11, 12]

Figure 3. Components of Costs Beyond Tuition

Costs Beyond Tuition Category	Summary Description of Expenses Included in Category
Housing*	**Mortgage, Rent, & Property Tax:** Mortgage interest and principal, property tax, and rent. **Utilities, Furnishing, & Services:** *Utilities:* Natural gas, electricity, water and other public services, and other fuels, excluding telephone and internet. *Furnishing:* Household furnishings and equipment (excluding personal office equipment, computers, and entertainment-related products). *Services:* Maintenance and repair services (excluding landscaping services).
Transportation*	**Vehicle Purchases:** *Financed Vehicles:* Down payment, finance changes, and principal and interest paid on loans. *Cash Purchases:* Purchase amount. **Vehicle Operations & Transit:** Gasoline and motor oil, maintenance and repairs, insurance, public and other transportation, and vehicle rental licenses and other charges (excluding expenses for out-of-town trips).
Food	**Food at Home:** Food and nonalcoholic beverages prepared at home. **Food Away from Home:** Food or board at school, school lunches, and dining out at restaurants, cafeterias, drive-ins, etc.
Internet, Technology, & Educational Materials	**Internet & Phone:** Home broadband services, cell phone service, phone cards, residential telephone including Voice over Internet Protocol (VoIP), and internet services away from home. **Technology:** Computers, accessories, office equipment, and installation or repair services for personal use. **Educational Materials:** School books, supplies, equipment for Pre-K through college, including vocational and other schools, and other school expenses including test preparation and tutoring services.
Health Care	**Health Care:** Medical supplies, prescription drugs, and health, dental, vision, and prescription drug insurances.
Clothing & Personal Care	**Clothing:** Casual and dress clothes, uniforms, outerwear, footwear, costumes, accessories, sewing supplies, and clothing repair and alteration. **Personal Care:** Wigs and hairpieces, oral hygiene products, and personal care services.
Dependent care	**Child Care:** Babysitting and child day care services, and books, supplies, and equipment for day care. **Adult Care:** Long-term supports and services for adults, including people with disabilities or adults older than 64, such as home and center-based care.

Notes: Categories are based on GCPI analysis of summary and detailed (UCC-level) expenses included in pooled 2014-2018 Consumer Expenditure Surveys (CE) interview files. *Denotes that expenses reported use the total outlay approach, which better corresponds to monthly cash flow requirements. All other expenses use the total expenditure approach.

Source: Georgetown Center on Poverty and Inequality, 2021.

Adjusting Consumer Unit Data to the Individual Level

The federal "cost of attendance" concept for establishing financial aid eligibility and limits is measured at the individual (student) level. Yet for households with an older student and more than one adult present, we cannot readily distinguish how the incidence of spending is allocated between adults in the households, as CE data report combined expenditures for all persons in the same household. To address this, we use an equivalence scale to adjust a household's expenditures by the number and composition of household members.[13] Applying an equivalence scale allows us to measure an older students' individual spending on costs beyond tuition and meaningfully compare across family arrangements and demographic characteristics.

We choose to scale our costs-beyond-tuition estimates based on the square root of the number of adults (persons 18 years of age or older) per household. This equivalence scale reflects the lived experiences of older students and lessons learned from prior research as it accounts for differences in spending on dependent children. This approach also accounts for economies of scale, as an older student's estimated costs beyond tuition is reduced at a decreasing rate for each additional adult present, holding household expenditures constant.

Notably, the choice of an equivalence scale—or lack thereof—can be rather consequential, significantly influencing aggregate estimates, especially when many households in the universe of analysis have more than one person, as is the case for our analysis. Unfortunately, there is little empirical research available to fully validate the choice of a particular equivalence scale for our purposes. Figure 4 shows the impact of the equivalence scale we chose on our costs-beyond-tuition estimates for our overall CE older student sample as well as for select demographics. It also presents margins of error and sample size information for evaluating the reliability of our estimates.

Figure 4. Overall CBT Estimates, Margins of Error, & Sample Sizes for Older Students by Select Demographics With & Without Equivalence Scale Adjustment

Description	CBT, No Equivalence Scale Adjustment	CBT, Equivalence Scale Adjustment	Margin of Error CBT, Equivalence Scale Adjustment	Unweighted Count of Households in Sample
Overall CBT Estimate	$42,700	$30,900	$800	2,899
Parental Status				
Not Student Parent	$36,600	$27,400	$1,430	1,170
Student Parent	$46,800	$33,300	$830	1,729
Sex				
Male	$43,200	$31,200	$1,390	1,089
Female	$42,400	$30,800	$970	1,810
Race				
White, Non-Hispanic	$43,100	$31,300	$920	1,671
Black, Non-Hispanic	$41,100	$30,500	$2,660	536
Hispanic	$42,500	$30,600	$1,330	507
Asian, Non-Hispanic	$48,800	$31,700	$4,400	114
Other, Non-Hispanic	$38,700	$28,200	$4,320	71

Note: Costs beyond tuition are based on analysis of pooled 2014-2018 Consumer Expenditure Surveys (CE) interview files. Figures represent annual consumer unit (CU) expenditures, are adjusted to 2020 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), and are rounded to the nearest hundred. CE estimates include CUs with at least one student ages 25-45 who is the householder, spouse, or unmarried partner, excluding those who live in student housing. Margins of error are rounded to the nearest ten.

Source: Georgetown Center on Poverty and Inequality, 2021.

3. CALCULATING INSTITUTION-REPORTED ALLOWABLE LIVING EXPENSES FOR OLDER STUDENTS

NPSAS reports data on a student's overall cost of attendance for students attending a single institution in the academic year and is separated into two parts: non-tuition student budget, and tuition and fees.[14] The non-tuition student budget represents institutional estimates of their students' Allowable Living Expenses as permitted under federal financial aid rules.[15] While NPSAS combines information from

several sources, data on the allowable living expenses are gathered from institutions' administrative records, the National Student Loan Data System (for Pell Grant recipients), and imputations based on the student's attendance, residence, and dependency status from students attending the same institution.

When comparing estimates of allowable living expenses to costs beyond tuition, we include only students who attended for a full academic year (either full-time or part-time). Published NPSAS data on allowable living expenses are based on reported data for students at the same institution who attend full-time for the full academic year, but are prorated downwards for students who attend either part-time (by 25 percent), part-year (by 50 percent), or both (by 75 percent) to reflect federal financial aid rules.[16] Reversing the adjustment for part-year students is prohibitively difficult using the required online webtool PowerStats.[17] The resulting sample represents about 46 percent of older students with allowable living expenses reported.

For students attending full-year, part-time, we reverse the 25 percent reduction discussed above by multiplying the reported allowable living expenses by 1.33 (or 100 percent/75 percent) so that the result corresponds to living costs on a full-academic-year, full-time basis. Further, since the academic year is assumed to be 9 months, we multiply all estimates by 1.33 (or 12 months/9 months), including those for full-year, part-time students that were already multiplied once by 1.33, so that the final results represent institutional estimates of allowable living expenses for a full 12 months. As we do with estimates based on CE data, we inflate the results to 2020 dollars using the CPI-U.

4. LIMITATIONS OF THIS COSTS-BEYOND-TUITION ANALYSIS

There are several limitations to our costs-beyond-tuition analysis. First, our samples had limited student characteristics that prevented us from analyzing costs beyond tuition along important demographic lines. Second, because our analysis measures spending rather than need, positive data may bias our results.

Limited Student Characteristics & Samples Prevent Important Disaggregation

Due to CE and NPSAS sample size challenges and lack of detailed information about college attendance, demographics, and lived experience, we were not able to disaggregate estimates by student characteristics to the full extent that the topic of costs beyond tuition merits. Overly aggregated data may obscure important differences in student need. In particular, we were not able disaggregate costs beyond tuition for American Indian, Alaska Native, Native Hawaiian, or other Pacific Islander students because of insufficient sample size. Insufficient sample size leads to margins of error that are too wide to permit meaningful group expenditure estimates.

The CE also does not provide nuanced information on key demographic characteristics and lived experiences of students. Specifically, the CE does not provide data necessary to identify students as people with disabilities, LGBTQ+, immigrants, former foster youth, or first-generation students. Moreover, the CE asks for information regarding sex and not gender. These limitations prevent meaningful identification and analysis of the heightened inequities students with any of these identities may experience.

Additionally, the CE does not provide nuanced information about college attendance intensity. We could identify whether a student attends college part-time or full-time but could not measure the duration a student attended college nor the credit hours they took within a given semester. The CE is also unable to differentiate college attendance by sector (two-year or four-year public, private nonprofit, or for-profit institutions) and only includes residents of the 50 U.S. states and the District of Columbia, leaving out Puerto Rico and other territories of the United States.

Positive Data Likely Bias Data

CE data reflect actual spending patterns and do not necessarily reflect a level of spending that individuals need to live at prevailing standards and meet basic needs. This reality warrants several additional considerations when using CE data to estimate the cost of a decent living standard for older students.

First, budget constraints, rather than necessity, frequently dictate spending habits for households with low incomes. Budget constraints can result in higher spending on certain services and goods, such as paying more for diapers if one does not have the resources at a given time to buy in bulk,[18] and lower spending on other needed services and goods, such as out-of-pocket medical expenses, as these costs may be unaffordable to incur.[19] These constraints may particularly depress our costs-beyond-tuition estimates of dependent care, as many student parents may be unable to afford to spend sufficient money on reliable dependent care, even though they require dependent care to attend college.

Additionally, because CE expenditures measure out of pocket spending, our estimates for costs-beyond-tuition spending fail to explicitly include subsidies that households may receive which lower their effective costs beyond tuition. Some subsidies go directly to service providers, which then limits the expense an older student would report (e.g. child care subsidies paid directly to a child care provider would make total child care spending in CE data appear more affordable than it actually is).

Without considering how severely constrained budgets can depress estimates of older students' spending, calibrating financial aid, public benefits, and other resources to such estimates may misrepresent and understate the types and amounts of aid that should be made available to students.

Endnotes

[1] The U.S. Department of Education National Center for Education Statistics (NCES) administers the National Postsecondary Student Aid Study (NPSAS) dataset. For more information, please see "National Postsecondary Student Aid Study (NPSAS)." U.S. Department of Education National Center for Education Statistics, n.d. Available at https://nces.ed.gov/surveys/npsas/.

[2] The U.S. Bureau of Labor Statistics administers the Consumer Expenditure Surveys (CE) public use microdata. For more information, please see "Consumer Expenditure Surveys: Public-Use Microdata." U.S. Bureau of Labor Statistics, last updated 7 May 2021. Available at https://www.bls.gov/cex/pumd.htm.

[3] While NPSAS combines information from several sources, data on the student budget are gathered from institutions' administrative records, the National Student Loan Data System (for Pell Grant recipients), or imputations based on the student's dependency status and residency. Hunt-White, Tracy et al. "2015-16 National Postsecondary Student Aid Study (NPSAS:16): Data File Documentation." U.S. Department of Education National Center for Education Statistics, May 2018. Available at https://nces.ed.gov/pubs2018/2018482.pdf.

[4] Ibid.

[5] We limit our analysis of older students to those ages 25 to 45, about 86% of all first-time undergraduates above age 24. If supported through completion, these students would likely benefit from an earned degree for many years. Further, about half have dependents, leading to substantial intergenerational benefits. GCPI ESOI analysis of 2016 National Postsecondary Student Aid Study (NPSAS).

[6] "Consumer Expenditure Surveys: Glossary." Bureau of Labor Statistics, 13 February 2015. Available at https://www.bls.gov/cex/csxgloss.htm.

[7] The interview survey consists of five quarters of data for each year to allow analysts to create calendar year estimates. This is necessary because the survey interviews households on a monthly basis and asks about the previous 3 months of expenses. We use the first four quarters of data for each year which closely but do not exactly align to expense for the calendar year. For more information, see: "Consumer Expenditure Surveys Public Use Microdata Getting Started Guide." U.S. Bureau of Labor Statistics, updated 29 April 2021. Available at https://www.bls.gov/cex/pumd-getting-started-guide.htm#section3.

[8] We include about 95% of the expenditures included in the following summarized CE cost variables: food, housing, transportation, food, health, cash contributions, apparel, personal care, and education (excluding tuition). The three largest detailed costs excluded from these summary cost categories were "contributions to church, religious organizations," "airline fares," and "food on out-of-town trips," comprising about half of the removed expenditures.

[9] "Monograph 24: Developing the Cost of Attendance." National Association of Student Financial Aid Administrators, January 2018. Available at https://www.nasfaa.org/uploads/documents/monograph24_7th.pdf.

[10] Rogers, John M. and Maureen B. Gray. "CE Data: Quintiles of Income Versus Quintiles of Outlays." *Monthly Labor Review*, December 1994, pp. 32-37. Available at https://www.bls.gov/opub/mlr/1994/12/art4full.pdf.

[11] "Characteristics and Spending Patterns of Consumer Units in the Lowest 10 Percent of the Expenditure Distribution." Bureau of Labor Statistics, 02 April 2001. Available at https://www.bls.gov/opub/btn/archive/characteristics-and-spending-patterns-of-consumer-units-in-the-lowest-10-percent-of-the-expenditure-distribution.pdf.

[12] Sullivan, Julie. "Comparing Characteristics and Selected Expenditures of Dual- and Single-Income Households with Children." U.S. Bureau of Labor Statistics, *Monthly Labor Review*, September 2020. Available at https://www.bls.gov/opub/mlr/2020/article/comparing-characteristics-and-selected-expenditures-of-dual-and-single-income-households-with-children.htm.

[13] In measuring average income using household- or family-level data, it is common to use equivalence scales to account for economies of scale and variation in household composition. For more information, see: Reeves, Richard V., and Christopher Pulliam. "Tipping the Balance: Why Equivalence Scales Matter More Than You Think." Brookings Institute, 17 April 2019. Available at https://www.brookings.edu/blog/up-front/2019/04/17/whats-in-an-equivalence-scale-maybe-more-than-you-think/.

[14] The variable names in the NPSAS dataset are BUDNONAJ and TUITION2, respectively.
[15] As used in this methodology note and referring report, "allowable living expenses" refers to a financial aid concept and is unrelated to a similarly named tax concept used by the IRS regarding the ability to pay a delinquent tax liability.
[16] Technically, NPSASP adjusts BUDNONAJ (i.e. allowable living expenses) for attendance using three variables: the number of months enrolled full-time (MFT), number of months enrolled part-time (MPT), and attendance status (ATTNSTAT). For further information on financial aid variables, see: https://nces.ed.gov/pubs2020/2020439.pdf.
[17] PowerStats has very limited ability to categorize students based on more than one variable at the same time and does not allow users to create new variables based off existing variables, both of which are needed to account for the adjustments to part-year students.
[18] Badger, Emily. "Why the Poor Pay More for Toilet Paper – and Just About Everything Else." Washington Post, 8 March 2016. Available at https://www.washingtonpost.com/news/wonk/wp/2016/03/08/why-the-poor-pay-more-for-toilet-paper-and-just-about-everything-else/.
[19] Fox, Liana. "The Supplemental Poverty Measure: 2019." U.S. Census Bureau, September 2020. Available at https://www.census.gov/content/dam/Census/library/publications/2020/demo/p60-272.pdf.