SOCIUS
Original Article

American Sociological Association

Socius: Sociological Research for a Dynamic World
Volume 8: 1–13

Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/23780231221117659
srd.sagepub.com
SAGE

Income Inequality in College Enrollment and Degree Attainment During and After the Great Recession Years

Joshua Klugman[1], Genesis D. Arteta[1], and Jennifer C. Lee[2]

Abstract

Prior research using the Current Population Surveys (CPS) documents a dramatic equalization in U.S. college enrollments based on family income starting in 2014. However, the measurement of income for independent young adults is problematic; we correct for this by imputing their incomes. We complement our reanalysis of CPS data with data from the Panel Study for Income Dynamics-Transition into Adulthood (PSID-TA). Both data sets show moderate, nonsignificant reductions in the income gap in college enrollments for cohorts coming of age during and after the Recession. Extending the CPS analysis to examine inequalities during the COVID pandemic, we show more or less unchanged inequalities for the cohort coming of age in 2020. Using the PSID-TA to examine degree attainment, we again find stable income inequalities in obtaining any degree and a bachelor's degree for pre-Recession and Recession-era cohorts.

Keywords

higher education, status attainment, social mobility, educational attainment

The United States has a mass higher education system, where going to college is an expected part of the life course for most young adults. For cohorts born in the latter half of the twentieth century, enrollment and completion rates have increased for students from families of all income levels. However, those increases were especially large for students from high-income families, resulting in worsening inequalities.

Unfortunately, we do not know much about recent trends in income inequality in college enrollment and completion. The Great Recession (starting in late 2007 and ending in mid-2009, making it the longest recession since the 1930s) saw wrenching disruptions in the economy but also sharp increases in college enrollment rates. The Great Recession was followed by an unusually weak economic recovery, and college enrollment rates declined but still remained well above their pre-Recession levels. These higher levels of enrollment could be due to a mixture of push and pull factors. Greater difficulty in finding jobs makes college a more attractive option, "pushing" students into higher education, while robust and durable policy changes in higher education related to Pell Grants and loans could also reduce the costs of college, "pulling" students into college as well. It is plausible that these push and pull factors are especially influential for students from low-income families. Indeed, the National Center for Education Statistics (NCES; Snyder, de Brey, and Dillow 2019) studied college enrollment immediately after receipt of a high school degree (HSD) or GED. They found that enrollment gaps between young adults from low- and middle-income families dramatically narrowed starting in 2014.

The main research question of this study is: How have income gaps in enrolling in college and attaining a college degree changed for cohorts coming of age before, during, and after the Great Recession? Our descriptive analysis makes three contributions. First, we replicate the NCES analysis of immediate college enrollments using both the same and different data sources. Our replications improve on the NCES analyses in terms of measurement and are what Freese and Peterson (2017) refer to as "robustness" and "generalizability" tests—robustness replications use the same data but a different specification; generalizability replications use different data and a different specification.

[1]Temple University, Philadelphia, PA, USA
[2]Indiana University, Bloomington, IN, USA

Corresponding Author:
Joshua Klugman, Department of Sociology, Temple University, 713 Gladfelter Hall 1115 W Polett Walk, Philadelphia, PA 19122, USA.
Email: klugman@temple.edu

Second, we update this research to examine income inequalities in immediate college enrollment for the first cohort getting their HSD/GED during the COVID pandemic. Third, we extend our analyses beyond immediate college enrollments and examine recent trends in degree attainment within seven years of HSD/GED receipt.

We find the NCES analysis drastically overstates the equalization that occurred in the 2010s, although there is weak evidence that some amelioration of income gaps in college enrollment occurred during this time period. Inequalities in enrollments remained strong for the cohort graduating from high school in the first year of the pandemic. In addition, inequalities in degree attainment are about the same for cohorts coming of age during the Great Recession as they are for cohorts coming of age before.

Changes in Push and Pull Factors in College-Going

College enrollments tend to be "countercyclical"—rising during periods of economic contraction (Barr and Turner 2013; Betts and McFarland 1995; Long 2014). Pöyliö (2020) argued this should especially be the case for young adults from low-income families. When jobs are scarce, the opportunity costs of attending college, in the form of foregone wages, declines. Ordinarily, low-income students could reproduce their family socioeconomic status by pursuing work after high school, but this is made difficult when recessions cause job scarcity. They should especially be sensitive to the declining opportunity costs of attending college. In contrast, middle-class students rely on college credentials to obtain jobs that secure a middle-class standing, and they should be less sensitive to college opportunity costs. Thus, economic declines should produce growth in college enrollment and a narrowing of socioeconomic gaps.

The goal of this study is to describe the associations between family income and college enrollment and degree attainment before, during, and after the Great Recession. Testing the causal effects of the Great Recession's economic changes on college-going is difficult and outside the scope of this study. For one thing, the Great Recession did not occur in a vacuum; changes in college-going behavior may also be a reaction to policy responses to the Great Recession. Changes to higher education policy may have also contributed to making college enrollment appealing, pulling young adults into colleges. This includes the shuttering of the Federal Family Educational Loan program and expansion of the Federal Direct Loan program, thus making income-driven repayment plans more readily available. In addition, increases in spending limits and lower interest rates make loans more attractive. Furthermore, the maximum Pell Grant was increased, although Pell Grants have weak associations with increased enrollment and persistence in college (Carruthers and Welch 2019; Evans and Nguyen 2019; Park and Scott-Clayton 2018; Rubin 2011). Other changes may undercut any beneficial effect, such as increased tuition costs or declines in other sources of aid, such as that provided by states (Barr and Turner 2013; Bettinger and Williams 2014).

Ultimately, whether due to economic or policy changes, the Great Recession indeed saw dramatic increases in college enrollments. At the undergraduate level, enrollment rates for 18- to 24-year-olds were 11 percent larger during the Great Recession period than the preceding four-year period, and while enrollment rates dropped after the recession, they continued at higher levels than before. Growth in enrollment rates were similar for two-year and four-year nonprofit colleges (around 8 percent); the growth was especially large for for-profit colleges (60 percent). After the recession, in 2012–2015, enrollment rates declined at nonprofit two-year colleges (9 percent from the 2008–2011 recessionary period) and for-profit colleges (16 percent drop from the recessionary period) but continued growing at four-year colleges, albeit at a slower pace than during the recessionary period (4 percent increase from recessionary period (de Brey et al. 2021: Tables 303.70 and 101.10).

Obviously research on the COVID-19 pandemic's effects on college-going is still in infancy. Theoretically, it is not clear how a catastrophic event like the pandemic would influence income gaps in enrollment and degree attainment. The pandemic sparked a brief recession in early 2020, but college enrollments behaved quite differently than they did during the Great Recession. In 2020, enrollment levels stayed steady at four-year colleges but sharply dropped at two-year colleges (National Student Clearinghouse Research Center 2020). Young adults deciding whether to attend college weighed the perceived benefits of a college education against not only the direct costs of attendance and the opportunity costs of foregone earnings but also the health risks of in-person courses and the costs and downsides—real or perceived—of remote, online instruction (Lowenthal, Bauer, and Chen 2015). It is not clear how the sum of these pandemic-specific factors would differentially push low-, middle-, and high-income students out of attending college. On the one hand, the technical and environmental requirements of online learning will be more likely to deter lower-income young adults (Gillis and Krull 2020). On the other hand, the pandemic minimized the socializing aspect of the college experience (Jackson et al. 2021), more likely to be valued by high-income students (Armstrong and Hamilton 2013).

Trends in Income Gradients in College-Going

Income gaps in college enrollment and completion have widened for birth cohorts born from the 1950s through the 1980s (Bailey and Dynarski 2011; Belley and Lochner 2007; Chetty et al. 2014; Duncan, Kalil, and Ziol-Guest 2017; Jackson and Holzman 2020; Snyder et al. 2019; Ziol-Guest and Lee 2016). A handful of studies examining trends for recent cohorts coming of age during or after the Great Recession hint at income gradients modestly weakening since the Great Recession (Chetty et al. 2014; Haider and McGarry 2018; Jackson and Holzman 2020; Pöyliö 2020).[1] The NCES (Snyder et al. 2019) finding showing dramatic equalization for the post-Recession years is a clear outlier.

The NCES analyzed Current Population Surveys (CPSs) and showed equalization starts with cohorts graduating from high school in 2014, and this equalization continued through 2016 when NCES stopped updating the analysis due to data concerns (personal communication, C. de Brey, January 1, 2019). No other study has examined cohorts as recent as those graduating from high school in 2014–2016, so all that is known about income gradients in college enrollment since 2014 comes from the NCES analysis. Given the unusually persistent economic aftershocks of the Great Recession and the durable policy responses in higher education, it is important to update what we know about income inequality in college enrollment.

The aforementioned data concern with the CPS survey is it can only link young adults to their parents' income if those young adults still live in the same household as their parents (Chingos and Dynarski 2015). College students who are "temporarily" living away are still considered household members; nonetheless, in the CPS data, around 15 percent of recent high school graduates are independent adults and were never observed sharing a household with their parents. This produces a problem of measurement error because independent young adults' reported family incomes will not reflect parental income. To address this, we leverage the longitudinal nature of the CPS data to impute the parental incomes of independent young adults.

All of the studies describing postsecondary educational behavior during the Great Recession by necessity look at what we call "immediate college enrollment"—college enrollment soon after HSD/GED receipt (Pöyliö 2020; Snyder et al. 2019) or on trends in college enrollment at age 19 (Chetty et al. 2014; Jackson and Holzman 2020). This is worthwhile because immediate college enrollment is associated with eventual bachelor's degree (BA) attainment (Roksa and Velez 2012), but now sufficient time has elapsed for research to also describe trends in inequalities in degree attainment for cohorts coming of age during the recession, which is another contribution of this study.

Methods

We use data from two different sources: the CPS (Flood et al. 2020) and the Panel Study for Income Dynamics-Transition into Adulthood (PSID-TA; Survey Research Center 2020). The CPS is a survey fielded monthly that uses regularly rotated panels (households are surveyed monthly for four months; after eight months of no follow-ups, they are again surveyed monthly for four months). Because the CPS is a household survey, a reference person answers questions about all individuals in the household.[2] In the month of October, CPS adds an education supplement gathering detailed information on the educational attainment and enrollment status of household members. In addition, many October households are surveyed in earlier months (October, November, and December of the prior year; January of the current year; and July, August, and September from the prior and current years); we use data from all observations to create the parental income variable. CPS analyses are limited to individuals age 16 to 24 who earned their HSD/GED in the calendar year in which the survey was taken between 2003 and 2020. To maintain consistency with the PSID-TA, we drop the cohort obtaining their HSD/GED in 2019 so the post-Recession, pre-COVID cohorts will be consistent in both data sets (2014–2018).

The PSID has tracked a sample of U.S. families from 1968 (nearly all of which were headed by Black and White individuals; less than 2.5 percent of households were headed by persons self-categorizing into another group) and their children up to the present. The PSID originally started as a combination of two samples: a representative sample of U.S. families (the so-called SRC sample because the sample was designed by the Survey Research Center at the University of Michigan) and an oversample of low-income families (the so-called SEO sample because these families were originally from the Survey of Economic Opportunity). Some researchers have expressed concern that the SEO sample was not randomly drawn (Fiel 2020; Lee and Solon 2009:Note 4); analytical decisions based on the distribution of income will

[1]Cozzolino, Smith, and Crosnoe (2018) is an exception, finding an increase in income gaps for cohorts coming of age during the Great Recession. This is the only study cited here using the National Longitudinal Survey of Youth-Young Adult (NLSY79-YA) study; we are skeptical of this data source's ability to speak to generalizable trends for young adults because it is following children of women born between 1957 and 1964. Mothers of NLSY79-YA young adults coming of age during the Great Recession would have have been around 26 to 33 years old when these children were born, with the consequence that these analyses exclude the considerable number of young adults with mothers younger than 26 and older than 33. Based on our data sources, this would exclude over half of young adults receiving their HSD/GED during the Great Recession.

[2]We estimate that for the 2007–2018 period in our data (the years when this information is available), 84 percent of subjects in our analysis had a parent as a household respondent, and 8 percent were the household respondent themselves. The remaining 8 percent had an unknown relationship to the household respondent.

Table 1. Summary Statistics.

Variable	CPS (2003–2020) Mean/Proportion	PSID-TA (2003–2018) Mean/Proportion
Immediate enrollment in college after high school	.67	.64
Degree attainment 7 years after high school		
No degree		.57
AA		.08
BA		.35
Parental income (2017 dollars, $10,000s)	7.82	11.48
	(5.34)	(14.54)
Parental income (percentile ranking)	51	47
	(30)	(30)
Cohort (year of HSD/GED receipt)		
Pre-Recession (2003-2007)	.27	.28
Recession (2008-2013)	.37	.42
Post-Recession (2014-2018)	.30	.31
Pandemic (2020)	.06	.00

Note: Standard deviations presented in parentheses. CPS = Current Population Survey; PSID-TA = Panel Study for Income Dynamics Transition Into Adulthood; AA = associate's degree; BA = bachelor's degree; HSD = high school degree.

come from the SRC subjects only. PSID researchers added immigrant refresher samples in 1997 and 2017. The PSID is fielded biennially, and starting in 2005, the PSID-TA was launched to collect information specific to adulthood transitions for respondents age 18 to 28.[3] We used information from the 2005–2019 PSID-TA waves. We dropped PSID-TA subjects reporting HSD/GED receipt in 2019 because the PSID-TA 2019 wave was fielded throughout the year, resulting in poor estimates of college attendance for this cohort. We limit the analyses to PSID-TA individuals who earned their HSD/GED between the ages of 16 and 24 in the years 2003–2018 for analyses of immediate college enrollment and in the years 2003–2012 for analyses of college enrollment and BA attainment. Family income is measured when the individuals are between the ages of 13 and 16, and thus they must have at least one observation in that age range to be included in the sample.

These data sources each have their strengths and weaknesses. As noted earlier, the CPS cannot link young adults to their parents' income if their parents consider them to have permanently moved out by the October of their year of HSD/GED receipt. This is not an issue for the PSID-TA, which follows children into young adulthood. On the other hand, the intensive longitudinal data provided by PSID-TA comes at the expense of sample size and statistical power, with around 250 individuals per yearly cohort of HSD/GED recipients, as opposed to over 1,100 per yearly cohort in the CPS.

[3]Up until the 2017 wave, the PSID-TA specifically surveyed adult PSID respondents who were part of the Child Development Supplement; starting in 2017, all young adult PSID sample members were included in the PSID-TA sample.

Variables

Summary statistics of our outcomes and predictors are presented in Table 1.

Outcomes

College enrollment immediately after high school graduation (CPS & PSID-TA). The CPS records separate variables indicating if the subject received their HSD/GED that year, if subjects are enrolled in college, and if so, the level (two-year vs. four-year). We constructed a dichotomous variable for enrolling in any college, either two-year or four-year. In our imputation strategy and supplemental analyses presented in Appendix B in the supplement, we use a trichotomous measure with outcomes for no immediate college enrollment, two-year college enrollment, and four-year college enrollment. The PSID-TA obtains a history of colleges attended by the respondent and asks them when their enrollment started. Similar to CPS, we use a dichotomous indicator for attending any college in the same year as HSD/GED receipt in our main analyses and a trichotomous measure for imputations and supplemental analyses.

Degree attainment (PSID-TA). In addition to obtaining college histories, the PSID-TA asked respondents, what, if any, degree they earned at the college(s) they attended. Using this information we constructed a binary indicator for earning either an associate's degree (AA) or BA degree with seven years of HSD/GED receipt and a trichotomous indicator distinguishing between no degree, an AA degree, or a BA degree. Both variables are censored; degrees had to be earned and reported within seven years of HSD/GED receipt.

Key predictors

Family income. The CPS asks the household respondent to place their family income for the previous 12 months in a series of categories that varies over time—we recoded these reports to the midpoints of the income ranges for the categories, which were then inflated to 2017 dollars.[4] If multiple families live in a household, the respondent is supposed to report only the income of their family. PSID-TA asks household respondents to report the taxable and transfer income of themselves and other members of the household in dollar amounts for the prior calendar year; these are summed up in a composite variable provided by PSID-TA.

We make a distinction between *family* and *parental* income; family income is the income for the subject's family regardless if their parents are present; parental income is family income specifically when parents are present in the household. We attempted to verify the NCES analysis using the CPS data and used a measure of family income that comes as close as possible to their specification; we took family income reports from the October survey in the year that subjects graduated from high school regardless if they were living with their parents. Using this measure of family income, we constructed cohort-specific quintile categories (in line with the NCES analysis) and percentile rankings (both cohort-specific rankings and sample-wide rankings) ranging from 0 to 100.[5]

For our main analysis of CPS and PSID-TA data, we measure parental income continuously by averaging income reports over time. In the CPS data, we used incomes reported in every wave in which the household was observed. These reports cover, at most, a two-year period. In the PSID-TA data, we used incomes reported for years subjects were between the ages of 13 and 16. In both data sets, income reports were only taken if the subject was living with a parent.[6] We standardardized incomes for each yearly cohort of HSD/GED recipients using percentile rankings.[7]

Time. Time is measured as the calendar year participants obtained their HSD or GED. For the CPS data, we grouped years into "cohort groupings": pre-Recession (2003–2007), Recession (2008–2013), post-Recession (2014–2018), and pandemic (2020). For our verification test, we break up the post-Recession cohort into cohorts getting their degree between 2014 and 2016 (the last years covered by NCES) and 2017 and 2018 (which NCES did not cover). We used the same scheme for the PSID-TA (minus the 2020 cohort). For the 8 percent of PSID-TA respondents not reporting the year they obtained their HSD/GED, we imputed their year as the year they turned 18.

Missing Data

In the CPS data, we kept 19,643 participants receiving their HSD/GED in a year their household was surveyed in October and whose age was reported to be between 16 and 24 at the time. We dropped 406 subjects with inconsistencies in their reported age, which could be attributed to errors in the IPUMS-constructed person ID variable, leaving our analytic sample of 19,237 subjects.[8] Of these subjects, 3,210 have missing information on their parental income, most of whom (83 percent) were never observed sharing a household with a parent.

We used the chained equations variant of multiple imputation to impute missing values on parental income, generating 20 imputations. We were able to get information on other variables not dependent on parents: race, age, sex, region, nativity, and the subject's employment history during the CPS data collection. We supplemented these with other variables based on parental information: parental education, parental household size, and mother's age when the subject

[4]Unfortunately, due to the design of the CPS, no households surveyed in October are surveyed in March, when the CPS fields their Annual Social and Economic Supplement survey, which includes more reliable measures of income.

[5]We fall short of perfectly "verifying" the NCES analysis, in the Freese and Peterson (2017) sense of using the same specification on the same data. We use the crude categorical measure of family income available in the monthly surveys. NCES attempted to get a more precise measure of family income through cold-deck imputation with the March CPS Annual Social and Economic Supplement—which has more a refined measure of income—serving as a donor data set (personal communication, C. de Brey, January 1, 2019). Despite this difference, we verify the NCES finding of an equalization starting in 2014.

[6]In the CPS data, subjects had between zero and eight income reports, with the average being 5.4 and the median being 6; the intraclass correlation (ICC) for these income reports is .86. In the PSID-TA, 88 percent of subjects had two income reports, and the remainder had one or zero; the ICC is .68 with a median absolute difference of $14,000.

[7]In the PSID-TA data, percentile rankings were calculated from a sample excluding the SEO data; SEO subjects were assigned percentile rankings, but they came from the distribution of the SRC and immigrant refresher samples.

[8]IPUMS acknowledges errors in the ID variable and advises analysts to confirm observations are from the same person using age, sex, and race, which we did. The 406 dropped subjects are those whose reported age changed by at least four years over the 16-month span of CPS follow-ups. We kept subjects whose age changes are impossible (either increasing by at least three years or decreasing up to three years) due to the possibility that such changes in age were due to reporting error and not because of errors in the ID variable.

was born. In line with Von Hippel (2007), who recommends imputing predictors using the outcome (but not including cases where the outcome itself has to be imputed), we used these variables and a trichotomous measure of college enrollment (none/two-year/four-year) to impute parental incomes.

Subjects who were never observed sharing a household with a parent ("independent adults") lack useful variables, such as parental education, that could considerably strengthen our confidence in our imputations of parental income. For this pool of subjects, imputations rely on basic demographics, our trichotomous college enrollment variable, and employment history—variables that are not based on parental information. We attempted to strengthen the quality of our imputations by leveraging the longitudinal nature of the CPS to find a pool of subjects observed in their parental household similar to subjects who were never observed sharing a household with parents: These are subjects who left their households during the CPS data collection after their education information was recorded in October ("home leavers"). Home leavers have information on their parental income (taken when they were living in their parents' household), but they also left their parental household like subjects who were never observed living with their parents.

We performed our multiple imputations separately on groups defined by their cohort (the year they graduated from high school) and whether they left their parental household. In sum, we restricted the imputations to only use information from home leavers to impute parental incomes for independent adults. Among "home stayers"—CPS subjects who did not leave their parental household during the CPS data collection after education data were collected—there were a few hundred subjects who still lacked valid income data; we imputed them with other home stayers with parental income data. Appendix A in the supplement presents more details on our imputation strategy for CPS.

In the PSID-TA data, there are a total of 4,776 participants from the 2005 to 2019 waves. Of these, 4,424 got a HSD/GED. For analyses of immediate college enrollment in the PSID-TA data, we limited the data to respondents who graduated from high school between 2003 and 2018 when they were between the ages of 16 and 24 and who lived in the United States during the ages of 14 to 17, eliminating 351 participants. Of the remaining 4,073 participants, 76 said they went to college but reported enrolling in college before their reported HSD/GED receipt year. In addition, 7 participants disclosed enrolling in college but did not indicate if they sought a two-year or four-year degree. This leaves 3,990 participants.

For analyses of degree attainment, we limited the data to young adults who obtained their HSD/GED between 2003 and 2012 when they were between the ages of 14 and 17 and who spent their adolescent years (ages 14–17) and their young adult years (within 7 years of HSD/GED receipt) in the United States, leaving 2,526 respondents. We dropped an additional 186 respondents who had no follow-ups within 5 to 7 years after their HSD/GED receipt year (unless they obtained their BA within 4 years of their HSD/GED). To do comparable analyses with our analysis on enrollment in the same year as HSD/GED receipt, we lose an additional 33 cases with missing data on that outcome, resulting in an analytic sample of 2,307.

Of our college enrollment and degree attainment samples, around 5 percent to 6 percent of subjects had missing information on their parental incomes. As with CPS, we used chained equations to multiply impute missing parental income using equivalent predictors that we used for CPS (race, sex, age, nativity, parental education, maternal age at childbirth) and some additional predictors (parental income observed when the respondent was less than 13 years old and the average income of PSID-TA respondents identified as parents of the PSID-TA subject). The missing data problem in PSID-TA is more tractable than it is in CPS (nearly all subjects have information on parental education), so we did not have to leverage different timings of household exits like we did with CPS. We performed imputations separately only by year of HSD/GED receipt.

Analyses

We first present a verification of the NCES analysis where we approximate the NCES analysis in terms of CPS sample and measures. We analyze everyone with valid family income data (even independent adults not living with their parents) using the quintile categories and percentile rankings. We use both cohort-specific percentile rankings (e.g., where 10 means a subject's family income is at the 10th percentile for the yearly cohort they belong to) and pooled percentile rankings (where 10 means a subject's family income is at the 10th percentile for the entire CPS sample of recent high school graduates; note that incomes were inflated to 2017 dollars before being converted to percentile rankings). To capture potential nonlinear associations between income and the outcomes, we use a cubic polynomial specification for all models using percentile rankings as a predictor.

We then proceed to our primary contributions. We analyze college enrollments using the CPS data. Unlike our verification tests, we use parental income (cohort-specific percentile rankings using a cubic polynomial specification); for independent adults, this is imputed. We also perform our generalizability test to see if the results for college enrollment hold up in the PSID-TA data. Finally, we use the PSID-TA data to analyze degree attainment.

To quantify the strength of the associations between family income and college outcomes, we use logistic regressions. For college enrollments, we run binary logistic regressions where the outcome is an indicator for enrolling in any college in the same year as HSD/GED receipt. For degree attainment, we performed binary and multinomial logistic regressions (where the outcomes are any degree attainment and degree type, respectively). We present

Table 2. Verification of National Center for Education Statistics Analysis of Immediate College Enrollments (Current Population Survey, 2003–2018, $n = 16{,}878$).

	Panel A			Panel B			Panel C	
Period	Income	APP	APD	Income	APP	APD	APP	APD
2003–2007 (pre-Recession cohorts)	QU1	.48 [.43, .54]	–.18[a] [–.24, –.13]	P10	.49 [.44, .55]	–.14[a] [–.21, –.08]	.49 [.43, .54]	–.16[a] [–.22, –.09]
	QU234	.67 [.65, .69]		P50	.63 [.61, .66]		.64 [.62, .67]	
	QU5	.84 [.82, .86]	.17[a] [.14, .20]	P90	.82 [.80, .84]	.19[a] [.16, .22]	.83 [.81, .85]	.19[a] [.16, .22]
2008–2013 (Recession cohorts)	QU1	.54[b] [.49, .59]	–.14[a] [–.19, –.10]	P10	.53 [.48, .58]	–.12[a] [–.16, –.07]	.53 [.48, .58]	–.13[a] [–.17, –.08]
	QU234	.68 [.66, .70]		P50	.64 [.62, .67]		.66 [.63, .68]	
	QU5	.83 [.81, .86]	.16[a] [.13, .19]	P90	.82 [.79, .84]	.17[a] [.14, .20]	.82 [.80, .85]	.17[a] [.13, .20]
2014–2016 (post-Recession cohorts)	QU1	.62[b] [.55, .68]	–.03[b] [–.08, .03]	P10	.64[b] [.57, .72]	.03[b] [–.03, .10]	.64[b] [.56, .72]	.04[b] [–.03, .11]
	QU234	.64 [.61, .68]		P50	.61 [.57, .64]		.60[b] [.57, .64]	
	QU5	.83 [.80, .86]	.19[a] [.15, .22]	P90	.83 [.80, .86]	.22[a,b] [.19, .25]	.82 [.79, .85]	.22[a,b] [.18, .25]
2017–2018 (post-Recession cohorts)	QU1	.64 [.58, .69]	.02 [–.04, .08]	P10	.64 [.58, .70]	.04 [–.02, .10]	.65 [.59, .70]	.06 [–.01, .13]
	QU234	.61 [.58, .65]		P50	.60 [.56, .64]		.59 [.54, .63]	
	QU5	.80 [.75, .85]	.19[a] [.14, .24]	P90	.79[b] [.75, .82]	.18[a] [.14, .23]	.77[b] [.73, .80]	.18[a] [.13, .23]

Note: APDs represent QU1–QU234, QU5–QU234, P10–P50, and P90–P50 gaps. Ninety-five percent confidence intervals presented in brackets. APP = average predicted probability; APD = average predicted difference; QU1 = lowest 20 percent; QU234 = middle 60 percent; QU5 = top 20 percent; P10 = 10th percentile; P50 = 50th percentile; P90 = 90th percentile.
[a]APD significantly different from 0, $p < .05$.
[b]APP/APD significantly different from corresponding one in prior cohort grouping, $p < .05$.

models conditional only on HSD/GED receipt and also models conditional on immediate college entry.

All of our regressions use sampling weights. We use the weight specifically for the education supplement in the CPS (as named "EDSUPPWT" in the IPUMS CPS release). For the PSID-TA, we use the main cross-sectional weights for the PSID (using the TA-specific longitudinal weights would require dropping additional cases). For analyses of immediate college enrollment in the PSID-TA, we used the first nonzero weight after the subject obtained their HSD/GED; if none was available, we used the last nonzero weight before the subject obtained their HSD/GED. For analyses of degree attainment, we used the last nonzero weight available within seven years of HSD/GED receipt. The weights were normalized by the wave the weight comes from.

Results

Verification of NCES Analysis

Table 2 presents our verification of the NCES analyses for the 2003–2016 cohorts and our extension to the 2017–2018 cohorts. Using the CPS data, we regress college enrollment on family income that comes from only the October survey. Recall that independent adults are using their reported family incomes, which are not their parental incomes. Panel A uses cohort-specific income quartiles (with comparisons between the bottom 20 percent and middle 60 percent and between the top 20 percent and middle 60 percent), consistent with the NCES analysis. Panel B uses our preferred specification, a cubic trend of cohort-specific percentile rankings, with the results presented as comparisons between the 10th percentile and 50th percentile and between the 90th percentile and 50th percentile. To address whether changes in the distribution of income are responsible for changes in income gaps, in Panel C, we use sample-wide percentile rankings. The results across all three specifications are very much alike and verify the NCES finding of a dramatic equalization in college enrollment between lower-income and middle-income young adults starting in 2014 and continuing for cohorts graduating from high school in 2017 and 2018. The fact that the results are the same even when using sample-wide percentile rankings suggest the changing rates in enrollment are not due to changes in the distribution of income.

To walk the reader through the analyses, consider the results in Table 2, Panel B. We present average predicted probabilities (APPs) for young adults with family incomes at the 10th (P10 or low-income), 50th (P50 or middle-income), and 90th (P90 or high-income) percentiles. We also present average predicted differences (APDs; Gelman and Hill 2007), which are simply the difference between the P10 and P50 APPs and the difference between the P90 and P50 APPs, and serve as our estimates of the "low-middle" and "high-middle" gaps in college outcomes.[9]

In both the pre-Recession and Recession cohorts, there are sizable low-middle and high-middle gaps. In the pre-Recession cohorts, low-, middle, and high-income young adults have 49, percent 63, percent, and 82 percent chances, respectively, of immediately enrolling in college after HSD/GED attainment, presented as APPs. Low-income young adults' chances are 14 percent points lower than their middle-income counterparts; high-income young adults' chances are 19 percent points higher than middle-income students. Both of these gaps are presented as APDs and are statistically significant, as denoted by the superscript "a" next to the APDs in Table 2. We see similar results for Recession cohorts, with low-middle and high-middle APDs of –12 and 17 percentage points, respectively. Both are significantly different from zero but are not significantly different from their comparable estimates for the pre-Recession cohorts.

With the post-Recession cohorts of 2014–2016, there are significant deviations from the income patterns in the Recession cohorts. First, low-income students have a 64 percent chance of enrolling in college. This is significantly larger than the corresponding APP of 53 percent for low-income young adults in the Recession cohorts, which is indicated by the superscript "b" next to the APP in Table 2.

Second, the low-middle and high-middle gaps for the 2014-2016 cohorts have also changed for the 2014-2018 cohorts. While the low-middle APD was previously -12 percentage points for the Recession cohorts, it weakened and actually reversed to +3 percentage points for the 2014-2016 cohorts, meaning that for the 2014-2016 period low-income students were more likely to enroll in college than the middle-income students, although this gap is not significantly different from zero. It is however significantly different from the Recession cohort group's low-middle APD of -12 percentage points. The high-middle APD also significantly grew, from 17 to 22 percentage points.

The 2017–2018 cohorts, which were not included in the NCES analysis, show very similar results as the 2014–2016 cohorts. In subsequent analyses, these two cohort groupings are combined to constitute the post-Recession cohorts.

[9]APDs are similar to average marginal effects (AMEs; Mood 2009); AMEs are the instantaneous rate of change in the probability given a unit increase in a predictor, averaged across all cases. APDs are the noninstantaneous change in probabilities, averaged across all cases.

Robustness and Generalizability Analyses of Immediate College Enrollment

We now turn to our robustness and generalizability tests, presented in Table 3, where we rectify the issues with the CPS data and analyze parental incomes, which we impute for independent adults who never shared a household with their parents during the CPS survey. Additionally, we present our analysis of the PSID-TA, which suffers from smaller samples but has minimal missing values for parental income. For the sake of parsimony we analyze a dichotomous college enrollment indicator; in Appendix B in the supplement, we show results for a multinomial logistic regression analysis of college enrollment, where two-year college college enrollment is separated out from four-year college enrollment.

The results from the CPS and the PSID data are consistent. Both show sizable low-middle gaps for the pre-Recession cohorts, which diminish for the Recession cohorts and again for the post-Recession cohorts. However, none of these changes across cohort groupings are significant.[10] Notably, while the verified NCES analysis showed reversed low-middle gaps for the post-Recession period, in both the CPS and PSID-TA, the post-Recession low-middle gaps indicate a significant low-income disadvantage in terms of enrolling in college for the post-Recession cohorts. Thus, our robustness and generalizability tests agree that the original NCES analysis overstates the equalization seen for the post-Recession cohorts, given that they show there is still significant inequalities between low- and middle-income young adults. Our tests are inconclusive if equalization happened at all for the post-Recession cohorts (see Note 10); both samples show equalization occurring, but the estimates are too imprecise (i.e., they have large standard errors) to make conclusions for the population of U.S. young adults.

Using the CPS data, we also examine how income gaps changed for the first cohort obtaining their HSD/GED credential during the COVID-19 pandemic. Compared to the post-Recession cohorts, young adults in the COVID cohort were less likely to enroll in college regardless of their income level, although the reductions in enrollment for low-income (from 56 percent to 52 percent) and middle-income (from 68 percent to 64 percent) young adults are not significant. On the other hand, high-income students show a pronounced, significant drop in enrollment (from 85 percent to 75 percent). Consequently, the

[10]In the CPS data, the low-middle APD weakens from –.20 for the pre-Recession cohorts to –.16 for the Recession cohorts, a change of .04 (95 percent CI [–.01, .10]). It weakens again for the post-Recession cohorts, becoming –.12, a another change of .04 (95 percent CI [–.01, .10]). In the PSID-TA data, the low-middle APD weakens from –.28 for the pre-Recession cohorts to –.21, a change of .07 (95 percent CI [–.05, .19]). For the post-Recession cohorts, it weakens again to –.14, another change of .07 (95 percent CI [–.05, .19]).

Table 3. Analyses of Immediate College Enrollments.

		Current Population Survey (n = 19,237)		Panel Study for Income Dynamics-Transition into Adulthood (n = 3,990)	
Period	Income	APP	APD	APP	APD
2003–2007 (pre-Recession cohorts)	P10	.50 [.46, .54]	–.20[a] [–.26, –.15]	.46 [.39, .53]	–.28[a] [–.37, –.19]
	P50	.70 [.67, .73]		.74 [.69, .79]	
	P90	.86 [.84, .88]	.16[a] [.13, .20]	.90 [.85, .94]	.16[a] [.08, .23]
2008–2013 (Recession cohorts)	P10	.53 [.48, .58]	–.16[a] [–.21, –.11]	.44 [.38, .50]	–.21[a] [–.29, –.13]
	P50	.69 [.67, .71]		.65[b] [.60, .70]	
	P90	.87 [.84, .89]	.18[a] [.14, .21]	.89 [.84, .93]	.24[a] [.16, .31]
2014–2018 (post-Recession cohorts)	P10	.56 [.52, .61]	–.12[a] [–.16, –.07]	.46 [.40, .53]	–.14[a] [–.23, –.05]
	P50	.68 [.65, .71]		.60 [.54, .66]	
	P90	.85 [.82, .88]	.17[a] [.13, .21]	.81 [.74, .89]	.21[a] [.10, .32]
2020 cohort	P10	.52 [.44, .60]	–.12[a] [–.22, –.03]		
	P50	.64 [.58, .70]			
	P90	.75[b] [.69, .81]	.11[a] [.02, .19]		

Note: Ninety-five percent confidence intervals presented in brackets. APDs represent P10–P50 gaps and P90–P50 gaps. APP = average predicted probability; APD = average predicted difference; P10 = 10th percentile; P50 = 50th percentile; P90 = 90th percentile.
[a]APD significantly different from 0, $p < .05$.
[b]APP/APD significantly different from corresponding one in prior cohort grouping, $p < .05$.

high-middle gap weakens from the post-Recession cohorts to the COVID cohort, although this reduction is not significant.[11] The significant drop in high-income enrollment is in line with the expectation that high-income students would be less likely to enroll in college because of the suppression of social activities. However, our supplemental analysis (shown in Appendix B in the supplement) casts doubt on this explanation. High-income young adults were significantly less likely to enroll in two-year colleges, not four-year colleges with more vibrant social scenes (Witkow, Gillen-O'Neel, and Fuligni 2012) that would be vulnerable to COVID-related restrictions. Our suspicion is that higher-income students know that attending a two-year college has a more tenuous connection to reproducing their parents' advantaged social status, and the risks associated with COVID make it not worth the cost in their minds.

[11]The change in the high-middle APD, from .17 to .11, is –.06 (95 percent CI [–.16, .03]. The point estimates for the low-middle APD (around –.12) changed trivially, decreasing by less than .01 (95 percent CI [–.12, .10]).

Degree Attainment

The case for a post-Recession equalization in immediate enrollments is weakened, but what about eventual degree attainment? We use the longitudinal nature of the PSID-TA data on the 2003–2012 cohorts to compare the pre-Recession and Recession cohorts' attainment of college degrees within seven years of HSD/GED receipt. In Table 4, we present APPs and APDs for the outcomes of attaining any degree. We present analyses conditioned just on having a high school degree and analyses conditioned on immediate enrollment in any college. In Table 5, we present APPs and APDs for the outcomes of attaining a BA degree. We present analyses conditioned on high school graduation and analyses conditioned on immediate enrollment in a four-year college. Neither outcome shows evidence for equalization in degree attainments.

Any degree attainment. When we condition our analyses on just having a high school degree, low-middle gaps in any degree attainment are nearly the same (around –18 percentage points) for both pre-Recession and Recession cohorts. High-middle gaps in attaining any degree and BA degree attainment are also stable. Among the

Table 4. Analyses of Attaining Any Degree (Panel Study for Income Dynamics-Transition into Adulthood, 2003–2012).

		Conditioned on High School Degree (n = 2,307)		Conditioned on Immediate College Entry (n = 1,365)	
Period	Income	APP	APD	APP	APD
2003–2007 (pre-Recession cohorts)	P10	.24 [.17, .32]	–.18[a] [–.29, –.07]	.45 [.32, .57]	–.09 [–.25, .07]
	P50	.42 [.35, .49]		.53 [.45, .62]	
	P90	.74 [.65, .83]	.32[a] [.20, .44]	.80 [.71, .89]	.27[a] [.13, .40]
2008–2012 (Recession cohorts)	P10	.23 [.17, .29]	–.18[a] [–.27, –.09]	.42 [.32, .52]	–.18[a] [–.31, –.05]
	P50	.41 [.35, .48]		.60 [.52, .68]	
	P90	.77 [.69, .85]	.36[a] [.25, .47]	.83 [.75, .91]	.24[a] [.12, .35]

Note: Ninety-five percent confidence intervals presented in brackets. APDs represent P10–P50 gaps and P90–P50 gaps. APP = average predicted probability; APD = average predicted difference; P10 = 10th percentile; P50 = 50th percentile; P90 = 90th percentile. No 2008–2012 APP/APD is significantly different from APP/APD for 2003–2007.
[a]APD significantly different from 0, $p < .05$.

Table 5. Analyses of Bachelor's Degree Attainment (Panel Study for Income Dynamics-Transition into Adulthood, 2003–2012).

		Conditioned on High School Graduation (n = 2,307)		Conditioned on Immediate Four-Year College Enrollment (n = 882)	
Period	Income	APP	APD	APP	APD
2003–2007 (pre-Recession cohorts)	P10	.15 [.09, .22]	–.19[a] [–.29, –.09]	.48 [.31, .65]	–.05 [–.26, .17]
	P50	.34 [.27, .41]		.53 [.42, .63]	
	P90	.67 [.58, .76]	.33[a] [.21, .45]	.87 [.80, .93]	.34[a] [.21, .47]
2008–2012 (Recession cohorts)	P10	.12 [.08, .17]	–.22[a] [–.30, –.14]	.41 [.25, .57]	–.29[a] [–.47, –.10]
	P50	.34 [.28, .41]		.70[b] [.60, .79]	
	P90	.68 [.59, .78]	.34[a] [.22, .46]	.86 [.78, .95]	.16[a] [.03, .30]

Note: Ninety-five percent confidence intervals presented in brackets. APDs represent P10–P50 gaps and P90–P50 gaps. APP = average predicted probability; APD = average predicted difference; P10 = 10th percentile; P50 = 50th percentile; P90 = 90th percentile. No 2008–2012 APP/APD is significantly different from APP/APD for 2003–2007.
[a]APD significantly different from 0, $p < .05$.
[b]APP/APD significantly different from corresponding one in prior cohort grouping, $p < .05$.

pre-Recession cohorts, high-income students were 32 percentage points more likely to obtain any college degree than middle-income students; for the Recession cohorts, this gap increased (nonsignificantly) to 36 percentage points.

When we condition our analyses on college entry, there are indications that low-middle gaps grew worse for the Recession cohorts. Among students who immediately enrolled in any college, low-middle inequalities in attaining any degree are not significant for the pre-Recession cohorts (–9 percentage points). These inequalities strengthen and become significant for the Recession cohorts (–18 percentage points), although the change in the low-middle gaps are not significant.[12] High-middle gaps remained around 25 percentage points (and were significant) for both the pre-Recession and Recession cohorts.

[12]The change in APDs, from –.09 to –.18, is –.09 (95 percent CI [–.30, .11].

BA attainment. Our results for BA attainment are very similar to any degree attainment. When looking at recent high school graduates, low-middle and high-middle gaps are stable across the pre-Recession and Recession cohorts, hovering around –20 and 33 percentage points, respectively. When we look at young adults who immediately enrolled in a four-year college, middle-income young adults' chances of attaining a BA degree grow significantly from 53 percent to 70 percent from the pre-Recession to Recession cohorts. This has the consequence that the low-middle gap grows, from a nonsignificant –5 percentage points to a significant –29 percentage points, and the high-middle gap decreases, from 34 percentage points to 16 percentage points, although neither change in these APDs are significant.[13]

Conclusion

In this article, we examined trends for recent cohorts coming of age before, during, and (in the case of immediate enrollments) after the Great Recession. We build on recent work (Chetty et al. 2014; Jackson and Holzman 2020; Pöyliö 2020; Snyder et al. 2019) by using the most up-to-date data and, in addition to examining immediate college enrollments, analyzing the long-term outcome of degree attainment within seven years of HSD/GED receipt. We also developed an imputation strategy to address the issue of independent adults bedeviling attempts to gauge inequalities in college enrollment using the CPS data.

In terms of immediate college enrollment, we draw three firm conclusions and two speculative findings. Our first conclusion is that prior NCES analyses drastically overstates the extent to which immediate college enrollments equalized between low- and middle-income young adults. This overstatement is due to the use of faulty income data for independent adults, which we dealt with by imputing their parental incomes using a similar group of subjects who left their parental household during the CPS observation period. Our second conclusion confirms the NCES result that high-middle gaps in immediate college enrollments stayed steady throughout the Recession and post-Recession years, including the years of 2017–2018, which were not included in the NCES analysis. Our third firm finding is that low-middle inequalities in immediate college enrollments remained very consistent for the first cohort coming of age during the COVID pandemic, with the point estimate being the same as for the post-Recession cohort group.

Our first speculative finding regarding enrollments is that while we can definitively say the NCES analysis drastically overstated the equalization in enrollments occurring for the post-Recession cohorts, our findings are more ambiguous on the matter if there was *any* equalization occurring. We see equalization occur in both the CPS and PSID-TA samples for the post-Recession cohorts, but the changes in the low-middle gaps across cohort groups are not significant in either data source. Our second tentative finding is there may have been equalization between high- and middle-income young adults during the COVID pandemic. The probability of immediately enrolling in college significantly dropped for high-income young adults, reducing the high-middle gap, although this change in the gap is not significant.

Regarding degree attainments, we conclude that among high school graduates (regardless if they immediately enter college or not), inequalities in college degree attainments have remained robust for cohorts coming of age during the Great Recession, being very similar to those occurring in the pre-Recession cohorts. This is the first study to speak to degree attainment for cohorts coming of age during the Great Recession. If we look at just immediate college entrants, our estimates indicate both reduced gaps (between high- and middle-income students) and growing gaps (between low- and middle-income students), but our estimates are too imprecise to say anything definitive here.

In short, our findings suggest more or less persistent income inequalities in college entrance and degree attainment since 2003. The Great Recession and COVID pandemic may have reduced some of these income gaps, but if they did, these changes happened on the margins, and in some other respects, they may have increased income gaps.

Short of a massive undertaking of updating Chetty et al.'s (2014) analysis of administrative data linking parental income to adult children's college outcomes, it will be difficult if not impossible to get firmer, more definitive answers regarding income inequalities in higher education due to the Great Recession or COVID pandemic. It is usual in social science articles to call for more research on their specific research questions, but rather than discuss future studies addressing past disruptions, we want sociologists to think about future studies addressing *future* disruptions. Even with our attempts to extract the most data from our sources, one common refrain in our analyses was imprecisely estimated changes in income gaps in college enrollment outcomes. Unfortunately, it is likely that future cohorts of children and young adults will be making educational choices in the midst of major disruptions caused by economic downturns, global pandemics, and climate change. Our results show that with current data sources, research studying these future disruptions will be unable to precisely gauge the consequences of these disruptions and the extent to which they unequally affect young people.

Acknowledgments

We thank Gretchen Condran, Jeff Dixon, Karen Robinson, Tom Wooten, and Ashley Wright for comments on earlier versions of the article, the Department of Sociology at Temple University for funding support for Arteta, and the Temple University Libraries for their partial funding of the publication of this article.

[13]The change in the low-middle APD from –.05 to –.29 is –.24 (95 percent CI [–.52, .04]), and the change in the high-middle APD from .34 to .16 is –.17 (95 percent CI [–.36, .01]).

Availability of Data and Material

We will upload our data and syntax to a repository. A replication package is available at https://osf.io/zg8b7/ . This article uses publicly-available data from the Current Popular Survey (CPS) and the Panel Study for Income Dynamics - Transition Into Adulthood supplement (PSID-TA). Because the original CPS data file is so large we do not include it in this replication package but we include a codebook file so users can specify the same data extract that we did from the CPS website. The PSID-TA data files are included in this package.

Code Availability

A replication package is available at https://osf.io/zg8b7/.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no external funding for this research. The collection of the Panel Study for Income Dynamics data used in this study was partly supported by the National Institutes of Health under Grant Nos. R01 HD069609 and RO1 AG040213 and the National Science Foundation under Award Nos. SES 1157698 and 1623684. Arteta was supported by the Department of Sociology at Temple University. Publication of this article was funded in part by the Temple University Libraries Open Access Publishing Fund.

ORCID iD

Joshua Klugman https://orcid.org/0000-0002-7072-0041

Supplemental Material

Supplemental material for this article is available online.

References

Armstrong, Elizabeth A., and Laura T. Hamilton. 2013. *Paying for the Party: How College Maintains Inequality*. Cambridge, MA: Harvard University Press.

Bailey, Martha J., and Susan M. Dynarski. 2011. "Inequality in Postsecondary Education." Pp. 117–32 in *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*, edited by G. J. Duncan and R. J. Murnane. New York, NY: Russell Sage Foundation.

Barr, Andrew, and Sarah E. Turner. 2013. "Expanding Enrollments and Contracting State Budgets: The Effect of the Great Recession on Higher Education." *The ANNALS of the American Academy of Political and Social Science* 650(1):168–93. doi:10.1177/0002716213500035.

Belley, Philippe, and Lance Lochner. 2007. "The Changing Role of Family Income and Ability in Determining Educational Attainment." *Journal of Human Capital* 1(1):37–89.

Bettinger, Eric, and Betsy Williams. 2014. "Federal and State Financial Aid During the Great Recession." Pp. 235–62 in *How the Financial Crisis and Great Recession Affected Higher Education*, edited by J. K. Brown and C. M. Hoxby. Chicago, IL: University of Chicago Press.

Betts, Julian R., and Laurel L. McFarland. 1995. "Safe Port in a Storm: The Impact of Labor Market Conditions on Community College Enrollments." *The Journal of Human Resources* 30(4):741–65. doi:10.2307/146230.

Carruthers, Celeste K., and Jilleah G. Welch. 2019. "Not Whether, but Where? Pell Grants and College Choices." *Journal of Public Economics* 172:1–19. doi:10.1016/j.jpubeco.2018.11.006.

Chetty, Raj, Nathaniel Hendren, Patrick Kline, Emmanuel Saez, and Nicholas Turner. 2014. "Is the United States Still a Land of Opportunity? Recent Trends in Intergenerational Mobility." *American Economic Review* 104:141–47.

Chingos, Matthew M., and Susan M. Dynarski. 2015. *How Can We Track Trends in Educational Attainment by Parental Income? Hint: Not with the Current Population Survey*. Washington, DC: Brookings Institution.

Cozzolino, Elizabeth, Chelsea Smith, and Robert L. Crosnoe. 2018. "Family-Related Disparities in College Enrollment across the Great Recession." *Sociological Perspectives* 61(5):689–710. doi:10.1177/0731121418760542.

de Brey, Cristobal, Thomas D. Snyder, Anlan Zhang, and Sally A. Dillow. 2021. *Digest of Education Statistics 2019. NCES 2021-009*. Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Duncan, Greg J., Ariel Kalil, and Kathleen M. Ziol-Guest. 2017. "Increasing Inequality in Parent Incomes and Children's Schooling." *Demography* 54(5):1603–26. doi:10.1007/s13524-017-0600-4.

Evans, Brent J., and Tuan D. Nguyen. 2019. "Monetary Substitution of Loans, Earnings, and Need-Based Aid in Postsecondary Education: The Impact of Pell Grant Eligibility." *Economics of Education Review* 70:1–19. doi:10.1016/j.econedurev.2019.02.004.

Fiel, Jeremy E. 2020. "Great Equalizer or Great Selector? Reconsidering Education as a Moderator of Intergenerational Transmissions - Jeremy E. Fiel, 2020." *Sociology of Education* 93(4):353–71. doi:10.1177/0038040720927886.

Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2020. *Integrated Public Use Microdata Series, Current Population Survey: Version 8.0* [Data set]. Minneapolis, MN: IPUMS.

Freese, Jeremy, and David Peterson. 2017. "Replication in Social Science." *Annual Review of Sociology* 43:147–65.

Gelman, Andrew, and Jennifer Hill. 2007. *Data Analysis Using Regression and Multilevel/Hierarchical Models*. Cambridge, UK: Cambridge University Press.

Gillis, Alanna, and Laura M Krull. 2020. "COVID-19 Remote Learning Transition in Spring 2020: Class Structures, Student Perceptions, and Inequality in College Courses." *Teaching Sociology* 48(4):283–99. doi:10.1177/0092055X20954263.

Haider, Steven J., and Kathleen McGarry. 2018. "Postsecondary Schooling and Parental Resources: Evidence from the PSID and HRS." *Education Finance and Policy* 13(1):72–96. doi:10.1162/edfp_a_00219.

Jackson, Kristina M., Jennifer E. Merrill, Angela K. Stevens, Kerri L. Hayes, and Helene R. White. 2021. "Changes in Alcohol Use and Drinking Context due to the COVID-19 Pandemic:

A Multimethod Study of College Student Drinkers." *Alcoholism: Clinical and Experimental Research* 45(4):752–64. doi:10.1111/acer.14574.

Jackson, Michelle, and Brian Holzman. 2020. "A Century of Educational Inequality in the United States." *Proceedings of the National Academy of Sciences* 117(32):19108–15. doi:10.1073/pnas.1907258117.

Lee, Chul-In, and Gary Solon. 2009. "Trends in Intergenerational Income Mobility." *The Review of Economics and Statistics* 91(4):766–72. doi:10.1162/rest.91.4.766.

Long, Bridget Terry. 2014. "The Financial Crisis and College Enrollment: How Have Students and Their Families Responded?" Pp. 209–34 in *How the Financial Crisis and Great Recession Affected Higher Education*, edited by Hoxby, C. M., and J. K. Brown. Chicago, IL: University of Chicago Press.

Lowenthal, Patrick, Christine Bauer, and Ken-Zen Chen. 2015. "Student Perceptions of Online Learning: An Analysis of Online Course Evaluations." *American Journal of Distance Education* 29(2):85–97. doi:10.1080/08923647.2015.1023621.

Mood, Carina. 2009. "Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It." *European Sociological Review* 26(1):67–82.

National Student Clearinghouse Research Center. 2020. *Current Term Enrollment Estimates: Fall 2020*. Herndon, VA: National Student Clearinghouse.

Park, Rina Seung Eun, and Judith Scott-Clayton. 2018. "The Impact of Pell Grant Eligibility on Community College Students' Financial Aid Packages, Labor Supply, and Academic Outcomes." *Educational Evaluation and Policy Analysis* 40(4):557–85. doi:10.3102/0162373718783868.

Pöyliö, Heta. 2020. "Something Good out of the Bad Times? The Impacts of Reduced Opportunity Costs on the Intergenerational Inequalities in College Enrollment." *Sociological Research Online* 25(1):23–45.

Roksa, Josipa, and Melissa Velez. 2012. "A Late Start: Delayed Entry, Life Course Transitions and Bachelor's Degree Completion." *Social Forces* 90(3):769–94. doi:10.1093/sf/sor018.

Rubin, Rachel B. 2011. "The Pell and the Poor: A Regression-Discontinuity Analysis of On-Time College Enrollment." *Research in Higher Education* 52(7):675–92. doi:10.1007/s11162-011-9215-6.

Snyder, Thomas D., Cristobal de Brey, and Sally A. Dillow. 2019. *Digest of Education Statistics: 2017. NCES 2018-070*. Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Survey Research Center. 2020. *Panel Study of Income Dynamics, Public Use Dataset*. Ann Arbor, MI: Institute for Social Research, University of Michigan.

Von Hippel, Paul T. 2007. "Regression with Missing Ys: An Improved Strategy for Analyzing Multiply Imputed Data." *Sociological Methodology* 37(1):83–117.

Witkow, Melissa R., Cari Gillen-O'Neel, and Andrew J. Fuligni. 2012. "College Social Engagement and School Identification: Differences by College Type and Ethnicity." *Journal of Applied Developmental Psychology* 33(5):243–51. doi:10.1016/j.appdev.2012.06.003.

Ziol-Guest, Kathleen M., and Kenneth T. H. Lee. 2016. "Parent Income-Based Gaps in Schooling: Cross-Cohort Trends in the NLSYs and the PSID." *AERA Open* 2(2). doi:10.1177/2332858416645834.

Author Biographies

Joshua Klugman is an associate professor in the Department of Sociology and Department of Psychology at Temple University. His research focuses on class inequalities in the transition to college.

Genesis D. Arteta is a graduate student in the Department of Sociology at Temple University. Her research focuses on the percentage of Latinos enrolled in a postsecondary institution and the educational outcomes of Latino college students. Other research interests include Hispanic-Serving Institutions, immigration, and low-income, first-generation, and/or working-class (LIFGWC) students.

Jennifer C. Lee is an Associate Professor of Sociology at Indiana University. Her research interests include sociology of education, race/ethnicity, and Asian American Studies.