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Stability or Change?
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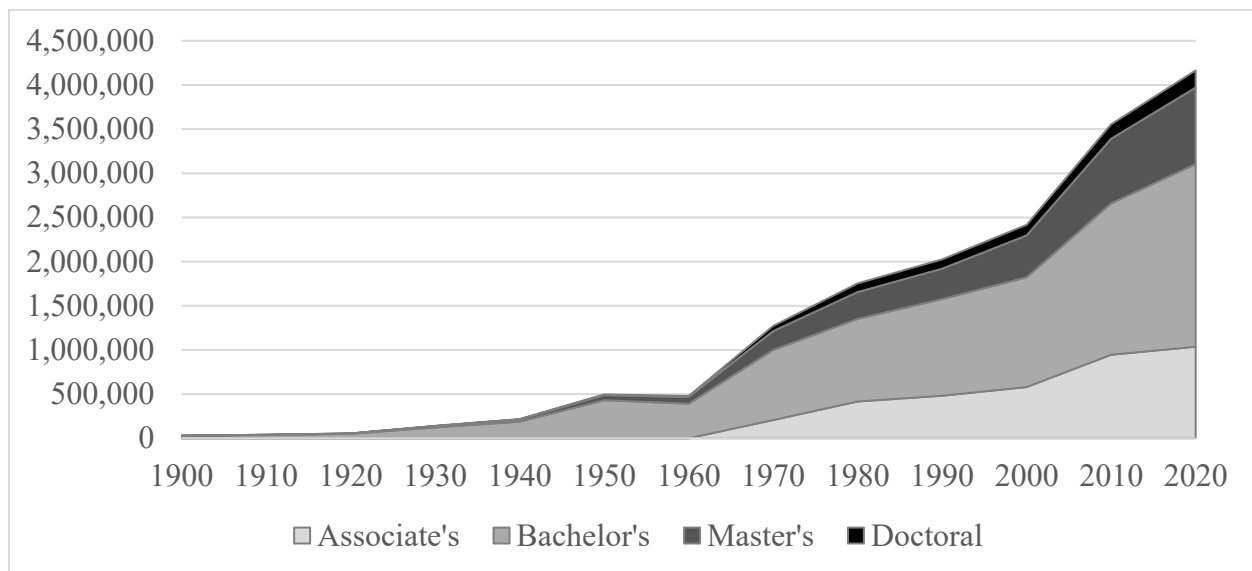
ABSTRACT

While a growing number of international studies are beginning to examine trends in educational stratification amid expansion, we still know relatively little about the case of the United States. In this analysis, I harmonize across five nationally representative datasets to quantify and compare vertical versus horizontal dimensions of educational stratification by social origin, and to test for change over time. Building upon a positional lens of educational credentials allows for a more holistic view of the multiple paths that privileged students may pursue to both gain and maintain advantage in education amid expansion. Spearman's rank correlation coefficients show that students from higher social origins primarily rely upon attainment level to gain positional advantage—patterns of inequality along vertical lines are much starker than along forms of horizontal stratification at the BA level. Even so, results of pooled ordinal logistic regression models reveal that privileged students are increasingly turning to horizontal bases of rank ordering to sustain their positional advantage as higher education has opened to a larger share of the population. The most significant change in behavior has been the dramatic shift toward more lucrative majors among students from higher social origins for the 1990s birth cohort.

Keywords: social origin, attainment, horizontal stratification, positional advantage, educational expansion

The United States, as much of the world, has experienced a rapid expansion of higher education over the last half century (Schofer and Meyer 2005). As shown in Figure 1, the number of degrees conferred at all levels increased markedly around 1970, with a subsequent jump from 2000 onwards. While an emerging body of studies have begun to examine how patterns of stratification in education by social origin may have shifted amid expansion across several countries (Boliver 2011; Ramirez Yee 2024; Reimer and Pollak 2010), we still know relatively little about overall trends in the context of the United States. In this analysis I draw upon a positional lens of educational credentials to investigate how students from varying socioeconomic backgrounds pursue forms of distinction and advantage within the American educational system once postsecondary schooling becomes broadly available.

Figure 1. Total Degrees Conferred in the United States by Level: 1900 - 2020



SOURCE: U.S. Department of Education, National Center for Education Statistics, *2023 Digest of Education Statistics*, Table 318.10: Degrees conferred by postsecondary institutions, by level of degree and sex of student: Selected years, 1869-70 through 2031-32.

The underlying positional nature of education is dependent on the link between education and the labor market in a particular society at a given time. Namely, scholars of stratification have argued that education—and the credentials conferred—operate to varying degrees as positional goods, in that their value lies in part from their relative scarcity in the population (Shavit and Park 2016). In turn, the scarcity of a given credential is directly related to its relative position within the hierarchy of formal degrees where individuals compete to acquire those forms of education that are tied to increased economic returns in the labor market (Bol 2015; Collins 1979). As such, a positional framework of education draws attention to the ways formal credentials exhibit a rank ordering to them (Fourcade 2016), and thus inequality emerges from differential access to forms of distinction situated relatively higher in comparison to others.

Consequently, to avoid the risk of downward mobility, privileged students would be expected to seek out positional advantage in education (Breen and Goldthorpe 1997) which could occur by attaining higher ranked credentials along vertical or horizontal dimensions. For example, along vertical lines, positional advantage would entail attainment of higher levels of schooling (Blau and Duncan 1967). In turn, as discussed by Gerber and Cheung (2008) with

respect to horizontal stratification at the undergraduate level, positional advantage could mean getting a degree from a selective university, in a lucrative major, or even perhaps in terms of graduating with academic honors (Gerber and Schaefer 2004; Hamilton et al. 2024; Ma and Savas 2014). While an extensive body of research has provided evidence of class-based inequality along many of these forms of positional advantage (Alon 2009; Bowen, Chingos, and McPherson 2009; Davies and Guppy 1997; Hamilton, Roksa, and Nielsen 2018; Mare 1980; Mare 1981; Mullen 2010; Zarifa 2012), it remains unclear how strong social background effects are across these various bases of rank ordering. Quantifying these comparisons is critical for understanding when and how individuals are unequally sorted across the educational system in the U.S.

Importantly, positional advantage in education by social origin may shift amid educational expansion as higher education is opened up to a larger share of the population. In terms of positional advantage by attainment level, as more individuals from all backgrounds enter postsecondary schooling and acquire degrees, changes to vertical stratification will depend on the relative growth across the distribution that occurs by social origin. If average attainment increases in a stepwise fashion equally across social strata, then patterns of inequality will remain largely the same (Raftery and Hout 1993). However, if growth in attainment for lower SES students outpaces that of their higher SES counterparts, then inequality could decrease over time (Breen et al. 2009). In terms of horizontal advantage at the BA level, inequality by social origin will depend in part on the salience of rank ordering across forms of differentiation, as well as the level of competition in access to graduate school. Namely, positional advantage along horizontal lines may correspond with the amount of information that is available to adequately rank credentials. Additionally, privileged students may increasingly draw upon forms of horizontal advantage as a means of sustaining positional advantage in response to widely available access to undergraduate education coupled with growing competition at the graduate level if demand for postbaccalaureate schooling outpaces supply (Jackson 2021; Lucas 2001).

In this study, I harmonize information across five nationally representative datasets to examine stability or change of positional advantage in education by social origin amid expansion in the U.S. I utilize the National Longitudinal Survey of Youth (NLSY) 1979 and 1997 cohorts to study vertical forms of advantage, and the Baccalaureate and Beyond Longitudinal Study (B&B) 1993, 2008, and 2016 cohorts to investigate horizontal forms of advantage at the bachelor's degree level. In so doing I pursue the following two aims: 1) quantify and compare the extent of social origin effects on attainment level versus effects on institutional selectivity level, major earnings (potential) level, or academic performance level among BA recipients, and 2) test for change to positional advantage by social origin amid educational expansion. Throughout I draw upon the highest parental education level as the measure of social origin since this is the only consistent background indicator across nationally representative datasets. It is also important to note that this study focuses on positional advantage in terms of the formal credentials obtained, since this most accurately reflects what most students rely upon when transitioning into the workforce.

In so doing, this research contributes to existing literature in several important ways. First, while a host of studies have documented SES-based inequalities in education at various junctures in the U.S. (Alon 2009; Bastedo and Jaquette 2011; Voss, Hout, and George 2024; Ziolk-Guest and Lee 2016), this analysis builds upon this work by providing a more holistic examination of educational stratification across the whole system than has been carried out previously. By harmonizing background and outcomes measures across national datasets and

cohorts, this study adds an important, but largely missing, investigation of American trends in educational inequality amid expansion (Boliver 2011; Ramirez Yee 2024; Reimer and Pollak 2010). The level of competition in U.S. education makes it a unique context with which to examine stability and change of inequality as access is opened up. Second, by quantifying the link between social origin and forms of rank ordering across vertical and horizontal lines, this project sheds light on when and how privileged students gain positional advantage in education. Results confirm that stratification in terms of attainment by social background is the primary means of unequal sorting in the U.S. and leads to much starker patterns of inequality than the significant, but much smaller, forms of horizontal stratification at the undergraduate level. Finally, testing for change across birth cohorts that span the 1960s to the 1990s, this paper provides strong evidence that privileged students not only undertake multiple strategies to obtain positional advantage in education but also shift behavior to maintain advantage amid changing dynamics. Namely, amid rapid educational expansion in U.S. higher education, but relatively slower growth at the graduate level, students from higher social origin have increasingly looked to forms of distinction at the undergraduate level to sustain their relative position in the labor queue.

BACKGROUND

Positional Structure of Educational Credentials

Growing literature highlights the positional nature of education and educational credentials (Bol 2015; Shavit and Park 2016). Educational credentials represent a principal basis of sorting into the labor market as they are utilized to rank individuals among their peers during the hiring process (Horowitz 2018). As such, a major insight from the literature on education as a positional good is that the value of an educational credential lies in part from its relative scarcity in the population. In other words, the value of education partially stems from its ability to demarcate some individuals from others (Domina, Penner, and Penner 2023). Consequently, as a larger share of the population reaches a given educational level, individuals must look for ways to distinguish themselves from among their peers in the labor queue (Boylan 1993). In the U.S., as more people obtain bachelor's degrees, individuals must look to either graduate school or more elite four-year degrees as a means of differentiating themselves amid heightening competition for jobs.

Table 1. Framework for Positional Structure of Educational Credentials

Dimension of Stratification	Basis of Rank Ordering	Scope of Contest
Vertical	Attainment Level	Across Levels of Schooling
Horizontal	Institutional Selectivity Level	Within Levels of Schooling Across Institutions
	Major Earnings (Potential) Level	Within Levels of Schooling Across Institutions Within Institutions
	Academic Performance Level	Within Levels of Schooling Across Institutions
		Within Institutions Within Majors

As outlined in Table 1, the positional structure of educational credentials can be organized along vertical and horizontal dimensions (Charles and Bradley 2002) and is linked to both the basis of rank ordering and the scope of competition that takes place. Along vertical lines, educational credentials are stratified in terms of attainment level and correspond to how far students go in school. Importantly, attainment for purposes of the current study encompasses schooling at the graduate level as well (Mare 1980; Mare 1981). In turn, in a highly influential paper, Gerber and Cheung (2008) layout the contours of horizontal stratification within higher education and the consequential distinctions that occur among students in terms of where individuals get their degree (e.g., institutional selectivity), in what subject area (e.g., major/field of study), and how they perform academically (e.g., grade-point average). Importantly, for each of these forms of rank ordering, research has provided evidence of differential returns (Ma and Savas 2014), which helps to explain the drive to pursue these kinds of formal distinctions in the U.S. For example, numerous studies have documented heightened economic returns to selective college degrees (Brewer, Eide, and Ehrenberg 1996; Chetty et al. 2020; Witteveen and Attewell 2017) or in specific majors (Carnevale, Cheah, and Hanson 2015; Eide, Hilmer, and Showalter 2016). While less research has examined the impact of college grade-point average (GPA), there is some evidence that higher academic markers matter (Gerber and Cheung 2008; Quadlin 2018; Rumberger and Thomas 1993).

Positional Advantage in Education by Social Origin Amid Expansion

Since educational credentials help determine where individuals are situated relative to their peers in the labor queue (Boylan 1993; Horowitz 2018), they provide a means of achieving positional advantage within education. Privileged students would therefore be expected to seek out the credentials that offer the best prospects for success in the labor market to avoid the risk of downward mobility (Breen and Goldthorpe 1997). With the rapid expansion of higher education, and more individuals getting bachelor's degrees, there are reasons to suspect that students from higher socioeconomic backgrounds may pursue various strategies in order to maintain their positional advantage in education over time (Shavit and Blossfeld 1993).

First, individuals from higher social origins may look to graduate school as a way to gain advanced skills and as a path to access high-status occupations (Posselt and Grodsky 2017; Wakeling and Laurison 2017). This strategy would align with the expectations of the theory of Maximally Maintained Inequality (MMI), where increasing access at a given level of education pushes privileged students to pursue the next higher level as a means of sustaining advantage (Raftery and Hout 1993). Importantly, this type of stepwise response among privileged students to growing access would be expected to lead to persistent background effects amid expansion (Shavit and Blossfeld 1993). Related work in this area has tended to focus on enrollment in higher education and completion of a four-year degree as access to postsecondary schooling has expanded (Voss, Hout, and George 2024; Ziolo-Guest and Lee 2016). While this line of research has largely found evidence of stable background effects amid expansion (Boliver 2011; Haim and Shavit 2013; Reimer and Pollak 2010), it is unclear if similar patterns will emerge once we include graduate education through doctoral degree attainment as well. Although the work of Jeffrey (2024) does provide evidence of intergenerational educational stability in the U.S., and incorporates graduate degree attainment, this analysis did not test for change over time or adjust for potential confounds.

Second, as four-year degrees become more common, privileged students may look for ways to distinguish themselves from others at the undergraduate level (Alon 2009; Armstrong

and Hamilton 2013; Espenshade and Radford 2009). This strategy would align with the theory of Effectively Maintained Inequality (EMI), which predicts that as lower-SES students make gains in terms of attainment, higher-SES students will increasingly draw upon horizontal forms of differentiation to maintain advantage (Lucas 2001). The employment of this approach could lead to the emergence of inequality by social origin in terms of degrees from selective colleges, in lucrative majors, or with academic markers of high grades (Bowen, Chingos, and McPherson 2009; Mullen 2010).

The most well-studied axis of class-based inequality at the undergraduate level in the U.S. has been that of institutional selectivity (Jeffrey and Gibbs 2024; Lor 2023; McDonough 1997; Zarifa, Sano, and Milian 2025). For example, several notable studies have drawn upon nationally representative samples to document the overrepresentation of high-SES students at selective colleges in the U.S. (Alon 2009; Bastedo and Jaquette 2011), with especially pronounced gaps at the most selective or elite institutions in the country (Abramitzky et al. 2024; Chetty et al. 2020). Studies outside the U.S. indicate little change in access to high-status institutions by social background during periods of educational expansion (Boliver 2011; Ramirez Yee 2024). While trends in the United States likewise have shown persistent disparities by socioeconomic background over time (Abramitzky et al. 2024; Alon 2009; Bastedo and Jaquette 2011), previous work has tended to focus on inequalities in terms of access or enrollment. It is less clear whether similar results will be present when measuring gaps even among BA recipients. Namely, the presence of transfer pathways to selective college degrees could lead to smaller gaps when compared to initial access. However, they could also be larger since numerous sociological studies highlight class-based barriers to successful degree completion even among those who make it to a selective college (Lee 2016; Stuber 2011).

Relatively less research in the U.S. has focused on the link between socioeconomic background and college major choice or field of study. Prior work in this area has found evidence that lower SES students tend to select vocationally oriented (or “applied”) fields, while their higher SES counterparts tend to choose the arts and sciences (or “academic”) fields (Goyette and Mullen 2006; Wright, Roscigno, and Quadlin 2023). However, drawing upon a classification of majors based on average monthly earnings revealed largely null results (Davies and Guppy 1997). One reason that the applied versus academic distinction might correspond more closely with student background is that these groupings may reflect longer standing differences in perceptions of status or prestige among majors (Pitt and Zhu 2019). In contrast, information on average returns to specific college majors or fields of study (Carnevale, Cheah, and Hanson 2015), and with it the ability to place them in rank order, has only become made widely available within the past few decades. Thus, although there is some evidence of stable background effects on stratification by field of study amid expansion (Reimer and Pollak 2010; Zarifa 2012), the widespread push for transparency regarding earnings to different college majors could make this form of positional advantage increasingly important.

Finally, very little sociological work has explored the possibility of performance differentials by family background at the undergraduate level. In their seminal paper on horizontal stratification in higher education, Gerber and Cheung (2008) discuss the potential of academic performance to serve as a form of differentiation among students. Prior research has provided some evidence of socioeconomic differences in college performance even among those who finish their degree. For example, data on college graduates across selective (Espenshade and Radford 2009) and public universities (Bowen, Chingos, and McPherson 2009) show that low-SES students have lower class ranks compared to their high-SES counterparts.

However, while we have reasons to expect significant social origin effects across and within levels of schooling amid expansion, there are also reasons to find only weak or null background effects as well. First, in terms of attainment, as more individuals from lower socioeconomic backgrounds access and obtain postsecondary credentials, the upward shift at the bottom could lead to a kind of compression effect at higher levels. The extent of compression would depend on growth at the undergraduate level relative to that at the graduate level. If undergraduate growth outpaces graduate growth, then we could observe decreasing background effects over time. This outcome would align with expectations of modernization theory (Boliver 2011; Ramirez Yee 2024; van de Werfhorst), although for different reasons. Namely, the “modernist” perspective is related to a technical-functional view of education (Collins 1971) which posits that industrialization increases demand for specialization and formally trained personnel. Because talent is randomly distributed across the population, increasing access would be expected to lead to educational outcomes that are less tied to social background over time (Treiman 1970). Second, in terms of horizontal stratification at the BA level, the lack of salience across axes of differentiation may limit their ability to form the basis of advantage. For example, although increased returns to higher levels of attainment is widely known and recognized, awareness of and agreement upon the differential returns to specific universities or fields of study is less clear. Lack of widespread information surrounding returns to college majors may have contributed to the largely null effect of social origin on choice of lucrative majors found in past work (Davies and Guppy 1997).

In summary, while a host of studies have highlighted the link between social background and educational inequality, little research has attempted to quantify and compare the strength of positional advantage by social origin along both vertical and horizontal lines. As discussed, the presence and magnitude of effects are likely related to the salience of rank ordering on each dimension but could also shift amid educational expansion. Namely, as higher education expands, privileged students may attempt to maintain positional advantage either by attaining graduate level credentials or by seeking out various forms of distinction at the BA level.

DATA AND METHODS

To quantify positional advantage in education by social origin and examine whether patterns of inequality have changed amid educational expansion in the U.S., this study draws upon several nationally-representative data sources: 1) the National Longitudinal Survey of Youth 1979 (NLSY79), 2) the National Longitudinal Survey of Youth 1997 (NLSY97), 3) the Baccalaureate and Beyond Longitudinal Study 1993 (B&B93), 4) the Baccalaureate and Beyond Longitudinal Study 2008 (B&B08), and 5) the Baccalaureate and Beyond Longitudinal Study 2016 (B&B16). I utilize the NLSY cohorts to examine vertical forms of positional advantage, and the B&B cohorts to study horizontal forms separately. I do this for several reasons. First, from a theoretical standpoint, studying them separately aligns with the idea that pursuing either graduate school or distinctions at the undergraduate level are two different strategies for maintaining positional advantage. Second, while NLSY is good for studying attainment level across cohorts, the information on horizontal stratification among BA recipients is limited and uses a much smaller sample size due to attrition across levels of schooling. Finally, although the NLSY allows us to examine attainment up to age forty, this constrains which birth cohorts we can currently observe. Namely, the B&B allows us to investigate data for the most recent 1990s birth cohort.

First, the U.S. Bureau of Labor Statistics carries out a set of surveys to gather information relevant to labor market activities in the United States. The National Longitudinal Survey of Youth (NLSY) is a nationally representative sample of U.S. youth at different time points. NLSY 1979 is nationally representative of those who were born between 1957 and 1964, while the NLSY 1997 is nationally representative of those born between 1980 and 1984. Across surveys, information was collected on the family background of respondents, their educational enrollments and degree attainments, as well as other basic demographic information. Currently, NLSY79 has available data through 2021, whereas NLSY97 has data through 2022. The NLSY datasets are used to examine vertical stratification in education.

Second, the U.S. Department of Education conducts several studies that follow samples of students at different educational stages in the United States. The Baccalaureate and Beyond Longitudinal Study (B&B) is a nationally representative sample of students who completed the requirements for a bachelor's degree in a given academic year. B&B collects data on student background, bachelor's degree major and institution attended, as well as graduate school enrollment and attainment. B&B93 follows students from 1993-2003, B&B08 follows students from 2008-2018, and B&B16 follows students from 2016-2020. Thus, B&B93 and B&B08 follow BA-recipients for 10 years after graduation, while the B&B16 only has data up to 4 years. The B&B datasets are used in this study to analyze horizontal educational stratification.

The analytic sample for this study includes a few limiting criteria. First, I exclude those respondents in the NLSY79 who were part of the supplementary military sample. Second, I limit the B&B sample to students who were between the ages of 18-35 at the time of BA graduation. Although most respondents of the B&B surveys seem to be traditional-aged students, utilizing age limits helps make the samples consistent across cohorts. Including age restrictions, B&B93, B&B08, and B&B16 roughly correspond with 1970s, 1980s, and 1990s birth cohorts, respectively. Finally, I exclude respondents with missing outcome data (von Hippel 2007) but handle missingness on the predictor variables using multiple imputation (MI) in STATA, with 10 imputed datasets. As such, the NLSY79 and NLSY97 samples include 11,210 and 8,976 respondents, while the B&B93, B&B08, and B&B16 samples include 8,490, 14,400, and 14,960 individuals across cohorts, respectively (see Supplementary Material S1 for details).

Dependent Variables

Attainment level

In this analysis, vertical stratification is educational attainment level as measured by highest degree obtained up to age forty since this allows for standardization across cohorts. I utilize information on secondary and postsecondary enrollment and degrees acquired to code educational attainment into ordinal levels as such: 0) less than high school degree, 1) high school degree or equivalent, 2) some college but no degree, 3) associate's (2-year) degree, 4) bachelor's (4-year) degree, 5) master's degree (e.g., MA, MBA), and 6) first-professional or doctoral degree (e.g., JD, MD, PhD). Importantly the longitudinal nature of this measure allows for any breaks in study that might occur during the educational process up to age forty. For example, some individuals might wait a year or two before starting postsecondary schooling or may take longer than four years to complete their bachelor's degree.

Institutional selectivity level

Institutional selectivity is measured utilizing data from Barron's Competitiveness Indices at different time points, consistent with many prior studies (Alon 2009; Bastedo and Jaquette 2011).¹ Institutional selectivity level thus includes the following ordinal distinctions: 1) noncompetitive, 2) less competitive, 3) competitive, 4) very competitive, 5) highly competitive,

and 6) most competitive. B&B93 draws upon Barron's 1984 (14th edition) classifications, B&B08 uses Barron's 2000 (24th edition), and B&B16 utilizes Barron's 2012 (30th edition). The goal of using these editions of Barron's classifications is to try to align the rankings to be within five years of when students would likely have started college. However, because B&B is a representative sample of bachelor's degree recipients, students might have taken varying paths and lengths of time to complete their four-year degree (i.e., different years of entry). For instance, some may have begun at a community college and subsequently transferred. Nevertheless, potential bias should be minimal as supplementary analyses revealed that the relative rankings of individual colleges remained remarkably stable over time.

Major earnings (potential) level

As discussed, past sociological work has measured horizontal stratification by college major or field of study in various ways. Here I follow the work of Davies and Guppy (1997) in using differential earnings to college degrees as a clear way to rank major/fields of study ordinally (Carnevale, Cheah, and Hanson 2015; Zarifa 2012). Major earnings is also an increasingly salient factor that students consider as they pursue postsecondary schooling (Bleemer et al. 2023). Data for this measure come from the National Center for Education Statistics through their Digest of Education Statistics, *Table 505.10*. Starting from 2009, this table provides information on the median annual earnings of full-time, year-round workers among 25-to-29-year-old bachelor's degree holders.

I generate the major earnings level variable through a two-step process. First, I recode student major from its Classification of Instructional Programs (CIP) code to the closest major/field of study match for which we have earnings data. I then use the median earnings information provided by NCES to construct ordinal ranks across majors and cohorts. Because this data was not generated prior to 2009, I utilize the same rankings for both the B&B93 and B&B08 cohorts. Importantly, however, the relative earnings levels of majors and fields of study have remained very stable over time (see Supplementary Material S2). I create the final major earnings variable using eleven ordinal levels from the within-cohort rankings as such: 1) 1-5 (i.e., lowest), 2) 6-10, 3) 11-15, 4) 16-20, 5) 21-25, 6) 26-30, 7) 31-35, 8) 36-40, 9) 41-45, 10) 46-50, 11) 51-56 (i.e., highest). For both major earnings and academic performance, I draw upon ordinal rather than continuous measures to make them comparable to the other outcomes in this analysis.

Academic performance level

The third form of horizontal stratification is differential academic performance. Here I utilize information on cumulative undergraduate grade-point average (GPA) during the final year of college. Data for this variable was gathered from institutional records and standardized to a 4.0 grading scale. Where institutional records were not available, student self-reported GPA was utilized. I recode the GPA measure into ordinal levels as follows: 1) 0-1.99, 2) 2.00-2.24, 3) 2.25-2.49, 4) 2.50-2.74, 5) 2.75-2.99, 6) 3.00-3.24, 7) 3.25-3.49, 8) 3.50-3.74, 9) 3.75-3.99, 10) 4.00.

Independent Variable

Social Origin

To capture social origin, I draw upon the highest parental education level since this is the only consistent aspect of social background across the five datasets. Because NLSY measured parental education in terms of years of schooling completed while the B&B utilized degree levels, I recode the measure into ordinal levels to make them comparable across analyses. I thus utilize the following parental education levels: 0) less than high school degree (< 12 years), 1)

high school degree or equivalent (12 years), 2) some college / associate's degree (13–15 years), 3) bachelor's degree (16–17 years), and 4) graduate degree (18–20 years).

Control Variables

I include the following set of sociodemographic covariates that are available across datasets: race/ethnicity (1=White; 2=Black/African American; 3=Hispanic/Latinx; 4=Other), gender (female=1; male=0), and nativity status (U.S. born=1; foreign born=0).² I control for birth year using relative sequence within cohort for NLSY analyses (range:1-8), and age at BA completion for B&B analyses. For models of vertical stratification, I also add an indicator of urbanicity (urban=1; non-urban=0) as well as region of residence of the youth (1=Northeast; 2=North Central; 3=South; 4=West). For models of horizontal stratification, I include an indicator of whether the student ultimately completed any graduate degree within the timeframe of the study (yes=1; no=0).

Analytic Strategy

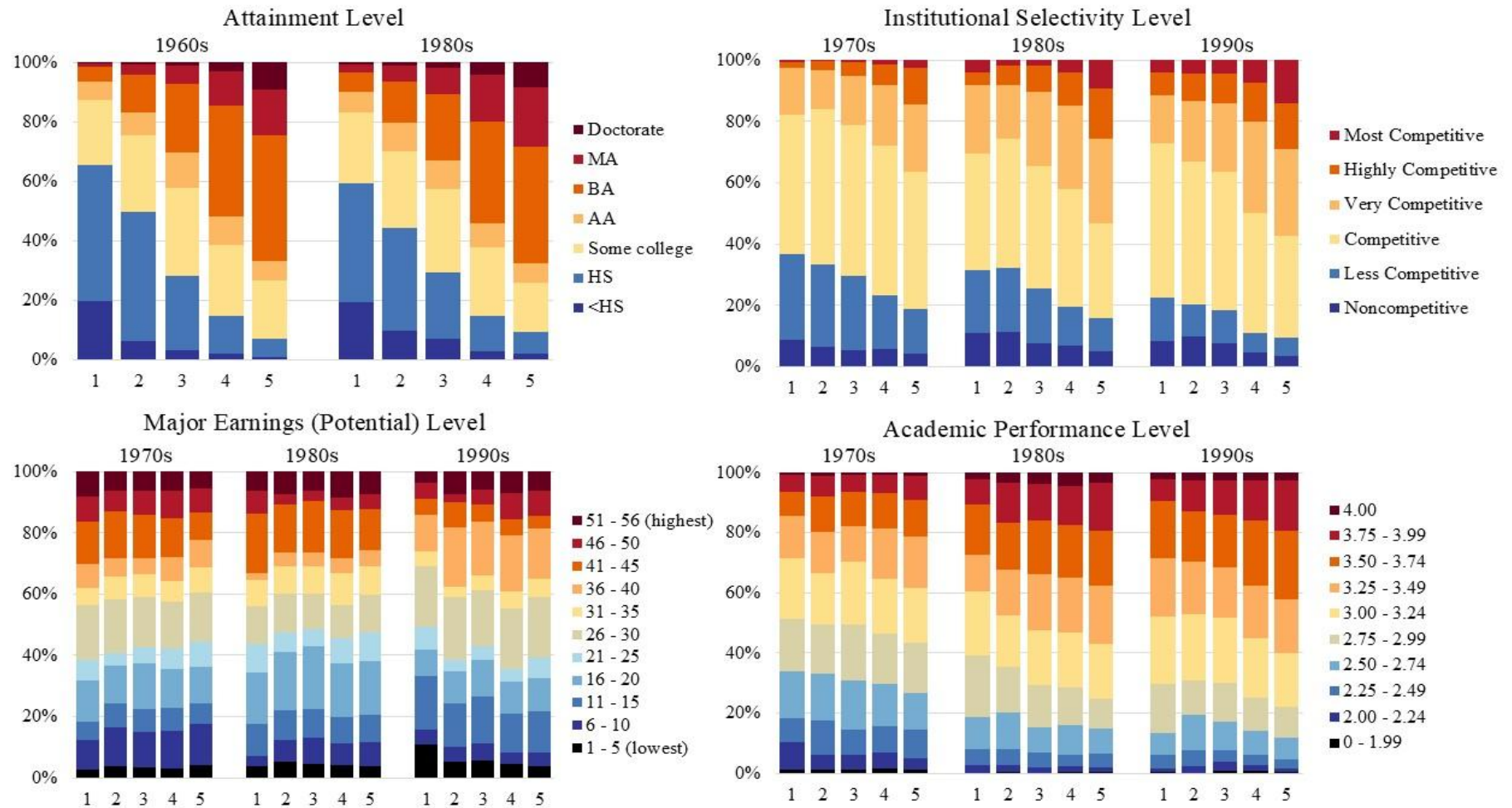
Sociologists have a long tradition of studying social background effects on educational attainment across cohorts (Mare 1980; Mare 1981). Even so, little research has attempted to quantify and compare the strength of social origin on attainment versus forms of horizontal stratification, and then to test for change over time. In this paper, I draw upon both descriptive as well as multivariate analyses to add to this literature.

First, to quantify and compare the relationship between social origin and vertical stratification versus horizontal stratification, I rely upon a set of Spearman's rank correlation coefficients. Spearman's rho is a statistical measure of the monotonic relationship between two ordinal variables. Importantly, the correlation coefficient does not depend on any particular scale and thus estimates of association across bases of rank ordering can be meaningfully compared. Each correlation is estimated by birth cohort and as such is cross-sectional.

Second, to test for change amid expansion, I utilize a series of pooled ordinal logistic regression models. While past work on attainment has largely drawn upon sequential logistic regression models (Mare 1980; Mare 1981), here we are interested in four different outcomes that are not all sequentially based. However, each of the four outcomes has hierarchical elements to them which fits the ranked assumptions of ordinal regressions. Across outcomes, I estimate a series of nested models. Model 1 represents the baseline model and includes only the main social origin measure as well as the cohort variable. Model 2 adds the sociodemographic covariates that correspond to each cohort. Finally, Model 3 represents the full model and includes the interaction term between social background and the cohort indicator. This interaction effect represents the test of change across cohorts. Assuming a positive base effect of social origin (i.e., parental education), a positive coefficient for the interaction term indicates an increasing effect of social origin, while a negative coefficient indicates a decreasing effect of social background. A null result corresponds to a stable effect of social origin or one that has not changed significantly over time.

RESULTS

Figure 2. Patterns of Positional Advantage in Education by Social Origin in the U.S., 1960s – 1990s Birth Cohorts



NOTES: Social origin is measured using the highest parental education level.

Parental education levels include: 1) Less than high school, 2) High school degree, 3) Some college / Associate's degree, 4) Bachelor's degree, and 5) Graduate degree.

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1979 cohort, 1979-2020.

U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 cohort, 1997-2021.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 1993 cohort, 1993-2003.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2008 cohort, 2008-2018.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2016 cohort, 2016-2020.

To visualize the extent of positional advantage by social origin and cohort, Figure 2 presents a series of stacked bar plots across axes of rank ordering in education. Utilizing a cold-to-hot color palette—from blue (or black) indicating lower levels to red indicating higher levels—we observe noticeable gradients by social origin as measured by parental education. Across most dimensions of stratification, less advantaged individuals are tilted more toward the blue end, whereas their more advantaged counterparts are shifted more toward the red. Importantly, the degree of inequality corresponds to how slanted the patterns are. For example, stark stratification in terms of attainment is evident by how steep the level of unevenness is across social strata, compared to major earnings which is much flatter.

Table 2. Spearman's Rank Correlation Coefficient between Social Origin and Form of Positional Advantage by Birth Cohort

Basis of Rank Ordering	1960s	1970s ^a	1980s ^a	1990s ^a
Attainment Level	.428***		.401***	
Institutional Selectivity Level		.199***	.167***	.217***
Major Earnings (Potential) Level		-.002	-.013***	.018***
Academic Performance Level		.069***	.044***	.097***

†p < .10; *p < .05; **p < .01; ***p < .001

^a These represent approximate birth cohorts for B&B samples as discussed.

NOTE: Social origin is measured using the highest parental education level.

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1979 cohort, 1979-2020.

U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 cohort, 1997-2021.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 1993 cohort, 1993-2003.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2008 cohort, 2008-2018.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2016 cohort, 2016-2020.

To quantify and compare the link between social origin and attainment versus horizontal forms of stratification at the BA level, Table 2 reports Spearman's rank correlation coefficients (ρ) for each basis of rank ordering by cohort. Spearman's rho ranges from -1 to 1 and measures the strength and direction of the monotonic association between two ranked variables. The results show that social origin is most strongly associated with attainment level, followed by institutional selectivity, academic performance, and finally major earnings. Because Spearman's rho is standardized and unit-free, the magnitudes can be directly compared across outcomes. The strength of the association between social origin and attainment level is roughly twice as large as that for institutional selectivity level, five to ten times larger than for academic performance level, and over twenty times larger than for major earnings (potential) level. To test for change over time, and to control for changing demographics in the population, I turn to a set of ordinal logistic regressions.

Table 3. Pooled Ordinal Logistic Regressions of Social Origin Effects across Forms of Positional Advantage and Birth Cohorts

Outcome	M1	M2	M3
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<i>Attainment Level</i>						
Social origin	.751***	(.014)	.742***	(.015)	.761***	(.020)
Cohort (ref. 1960s)						
Cohort - 1980s	.122***	(.031)	.220***	(.034)	.310***	(.053)
Social origin X cohort (1980s)					-.052*	(.026)
<i>Institutional Selectivity Level</i>						
Social origin	.342***	(.013)	.261***	(.013)	.177***	(.020)
Cohort (ref. 1970s)						
Cohort - 1980s	.416***	(.034)	.381***	(.035)	.111	(.084)
Cohort - 1990s	.744***	(.031)	.794***	(.032)	.515***	(.080)
Social origin X cohort (1980s)					.107***	(.030)
Social origin X cohort (1990s)					.110***	(.028)
<i>Major Earnings (Potential) Level</i>						
Social origin	.029*	(.011)	.024*	(.012)	-.031	(.021)
Cohort (ref. 1970s)						
Cohort - 1980s	-.040	(.034)	-.011	(.036)	-.107	(.086)
Cohort - 1990s	.017	(.031)	.0002	(.033)	-.254**	(.08)
Social origin X cohort (1980s)					.039	(.029)
Social origin X cohort (1990s)					.097***	(.027)
<i>Academic Performance Level</i>						
Social origin	.128***	(.012)	.075***	(.013)	.046*	(.023)
Cohort (ref. 1970s)						
Cohort - 1980s	.808***	(.035)	.801***	(.035)	.775***	(.089)
Cohort - 1990s	.840***	(.032)	1.03***	(.033)	.871***	(.084)
Social origin X cohort (1980s)					.012	(.031)
Social origin X cohort (1990s)					.059*	(.029)
Covariates			X		X	

†p <.10; *p <.05; **p <.01; ***p <.001

NOTES: Log-odds ratio coefficients reported.

Social origin is measured using the highest parental education level.

Covariates include: race/ethnicity, gender, nativity status, birth year (sequence) within cohort for NLSY analyses, and age at BA completion for B&B analyses. Models of attainment also include an indicator of urbanicity as well as region of residence. Models of horizontal stratification include an indicator of whether the student obtained a graduate degree.

Vertical analyses (N=20,190); Horizontal analyses (N=37,850).

All models are estimated using base year survey weights that correspond to the given sample.

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1979 cohort, 1979-2020.

U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 cohort, 1997-2021.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 1993 cohort, 1993-2003.

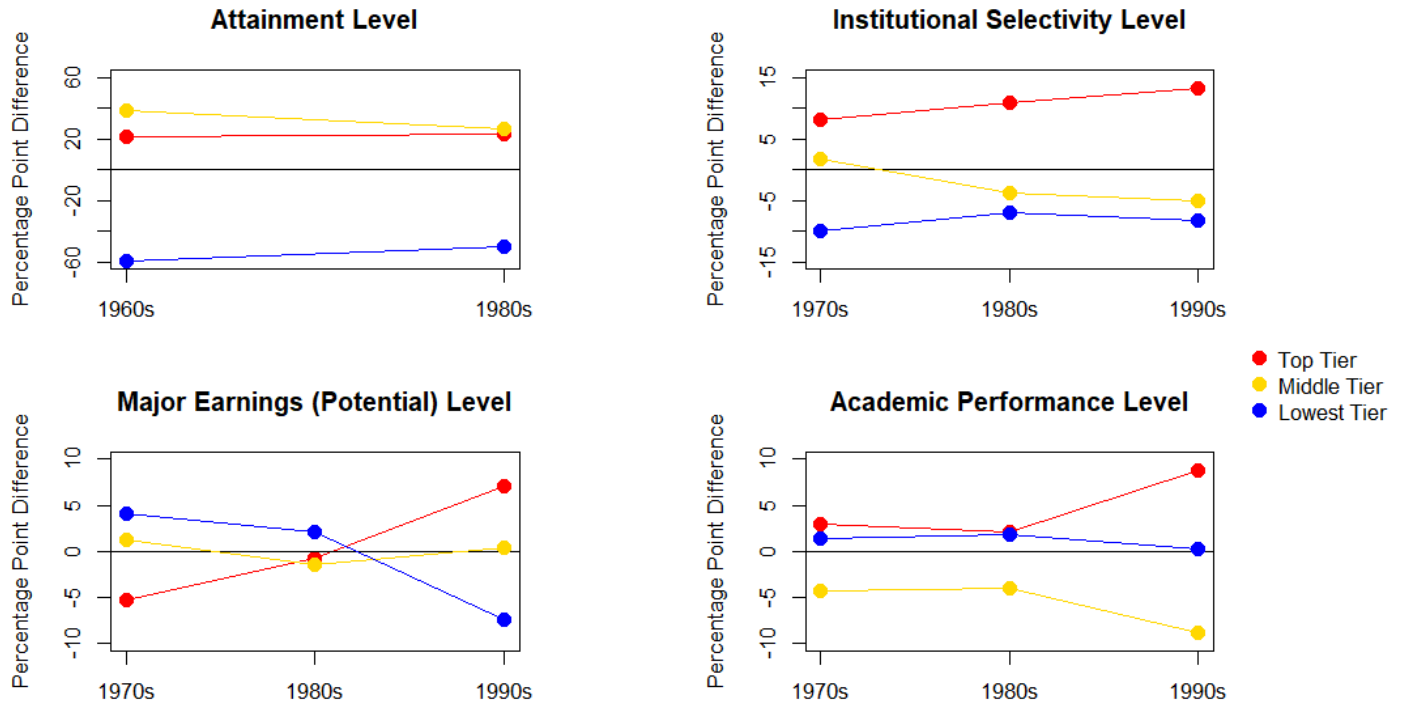
U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2008 cohort, 2008-2018.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2016 cohort, 2016-2020.

Table 3 shows the results from a series of pooled ordinal logistic regressions modeling forms of positional advantage in education by social origin amid expansion (see Supplementary Material S3 for full results). Models 1 and 2 test for social origin effects across outcomes before and after adjusting for covariates, respectively. In general, we find that privileged students have significantly greater odds of obtaining positional advantage across educational outcomes, both in terms of vertical and horizontal dimensions. The coefficients for the cohort variables indicate how the odds of attaining higher levels of each educational outcome have shifted across cohorts, net of other factors. For example, the positive and significant coefficients for the cohort variables in terms of institutional selectivity and academic performance indicate that, over time, students have higher odds of graduating from more selective institutions ($p < .001$) and with stronger academic performance ($p < .001$), net of other factors.

To assess whether positional advantage by social origin significantly shifted amid expansion, Model 3 tests for change over time by adding an interaction term for each cohort. Doing so reveals patterns of stability and change across forms of positional advantage. In terms of attainment level, we find evidence of decreasing background effects when comparing 1960s to 1980s birth cohorts ($b = -.052$, $p < .05$). In contrast, Model 3 shows that by the 1990s birth cohort, social background effects had increased across all forms of horizontal advantage at the BA level. Namely, the strength of social origin had significantly increased in terms of institutional selectivity level ($b = .107/.110$, $p < .001$), major earnings level ($b = .097$, $p < .001$), as well as academic performance level ($b = .059$, $p < .05$).³

Figure 3. Gaps in the Predicted Probability of Tier Placement between Highest and Lowest Social Origin Students across Birth Cohorts



NOTES: Estimates represent percentage point differences in the predicted probability of obtaining different outcomes between those whose parents have a graduate degree with those whose parents have less than a high school diploma, holding all other factors at their mean values.

Tiers are defined as followed: 1) **Attainment** – Top=MA+; Middle=Some college, AA, BA; Lowest=HS or less, 2) **Institutional selectivity** – Top=Most / Highly competitive; Middle=Very / Competitive; Lowest=Less / Noncompetitive, 3) **Major earnings** – Top=37-56; Middle=21-36; Lowest=1-20, and 4) **Academic performance** – Top=3.50-4.00; Middle=2.50-3.49; Lowest=2.49 or below.⁴

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1979 cohort, 1979-2020.

U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 cohort, 1997-2021.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 1993 cohort, 1993-2003.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2008 cohort, 2008-2018.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2016 cohort, 2016-2020.

To aid interpretation of the shifts that occurred amid expansion, and explore differential patterns across the distribution, I first collapse each outcome into top, middle, and lowest tiers. I then estimate a series of pooled multinomial logistic regression models to predict gaps in the likelihood of placement at each tier level by social origin and birth cohort, net of other factors.⁵ Positive values indicate a higher predicted probability for privileged students, whereas a negative value corresponds to a lower predicted probability. For example, turning to the panel on institutional selectivity level, the red line demonstrates how increasingly overrepresented advantaged students are in terms of obtaining the most/highly selective degrees across cohorts. Whereas students from advantaged backgrounds were around 8 percentage points more likely than their less advantaged counterparts to acquire a selective college degree for the 1970s cohort, by the 1990s cohort this percentage-point gap in predicted probability had grown to over 13.

Importantly, Figure 3 sheds light on similarities and differences in the kinds of changes that have taken place over time regarding positional advantage across top, middle, and lowest tiers by social background. In terms of positional advantage in top tier placement (i.e., red), we find evidence of growing disparities across all outcomes.⁶ For example, while students from higher social origins were around 21 percentage points more likely to attain top levels of education (i.e., top left panel) for the 1960s cohort, by the 1980s cohort this predicted gap had increased slightly to over 23 percentage points. Likewise, whereas individuals from privileged backgrounds were only around 3 percentage points more likely to achieve the equivalent of academic honors (i.e., bottom right panel) for the 1970s cohort, by the 1990s cohort this predicted gap in top tier performance had grown close to 9 percentage points.

At the middle (i.e., gold) and lowest (i.e., blue) tiers, gaps by social origin have been more variable across outcomes and cohorts. For instance, whereas individuals from more advantaged backgrounds have a higher predicted probability of middle tier placement in terms of attainment level, this is less common for forms of horizontal stratification. When looking at change amid expansion, privileged students have been increasingly less likely to end up with middle tier placement for institutional selectivity and academic performance level compared to their less privileged counterparts. In turn, those from higher social origins tend to have a lower likelihood of placement in the lowest tier. The only exceptions to this pattern were in terms of major earnings (potential) level among earlier cohorts and academic performance level throughout. Namely, while individuals born in the 1970s from higher social origins were more likely to attain degrees in lower-earning majors (i.e., positive blue dot) and less likely to acquire degrees in lucrative majors (i.e., negative red dot), by the 1990s birth cohort this had completely reversed. In general, gaps in vertical stratification tended to get smaller amid expansion while

gaps in horizontal forms of stratification tended to get larger across cohorts. For institutional selectivity and academic performance these changes were driven by shifts among advantaged students from the middle tier to the top tier, whereas for major earnings level it was due to shifts from the bottom tier to the top.

Table 4. Summary of Social Origin Effects Amid Educational Expansion

Basis of Rank Ordering	Relative Strength	Change (Overall)	Gap (Top)	Gap (Middle)	Gap (Bottom)
Attainment Level	Strong	Decreasing	+	–	–
Institutional Selectivity Level	Moderate	Increasing	+	+	same
Major Earnings (Potential) Level	Weak	Increasing	+	same	+
Academic Performance Level	Weak	Increasing	+	+	same

NOTES: Social origin is measured using the highest parental education level.

Institutional selectivity, major earnings, and academic performance are measured among BA recipients.

Table 4 provides a summary of the social origin effects documented here in terms of strength, change, and gaps across the distribution. Social origin effects on educational attainment level are by far the strongest, although this has decreased across cohorts due to smaller gaps in the middle and bottom of the distribution over time. Institutional selectivity level is moderately stratified by social background in comparison, whereas the social origin effects are relatively weaker for major earnings level and academic performance. However, across all forms of horizontal advantage at the BA level, social background effects have been increasing. For institutional selectivity and academic performance, gaps at the top and middle have widened, while gaps at the bottom have remained fairly the same. As noted, the patterns for major earnings level are quite different, where gaps at the top and bottom favoring lower origin students reversed and grew over time.

DISCUSSION

Scholars are increasingly studying how social origin effects may have changed amid educational expansion. While several studies have been carried out in countries outside the U.S., we still know relatively little about how these trends may have shifted over time in the highly competitive American context. Building upon research that highlights the positional nature of education and educational credentials, this study harmonizes across five nationally representative datasets to quantify and compare the extent of positional advantage by social background across bases of rank ordering in the U.S. educational system. I then utilize a set of pooled ordinal logistic regression models to examine stability or change of positional advantage in education by social origin amid expansion.

To quantify and compare stratification across dimensions, Spearman's rank correlation coefficients between social origin and bases of rank ordering shed light on how privileged students gain positional advantage in education. Namely, the much stronger association between background and attainment up to and through graduate education highlights that sorting across levels of schooling is the primary means of obtaining positional advantage. In comparison, the rank-rank relationships across forms of horizontal advantage at the BA level are much less pronounced. As noted, the strength of the association between social origin and attainment is roughly twice as large as that for institutional selectivity, five to ten times larger than for academic performance, and over twenty times larger than for major earnings (potential) level.

This indicates that while still showing patterns of stratification by social origin, the use of horizontal means to achieve positional advantage at the undergraduate level is secondary to that of overall attainment.

In turn, to test for change in positional advantage by social origin amid expansion, the set of pooled ordinal logistic regression models provide insight into how educational inequality shifted over time. Results of these analyses demonstrate that although privileged students had lost some positional advantage in terms of attainment (i.e., smaller social origin effect), they had increased gains along all forms of horizontal advantage at the BA level (i.e., larger social origin effects). The follow-up analyses of tier placement across birth cohorts reveal that these differences between vertical and horizontal dimensions of educational stratification emerge from varying dynamics. For attainment level, diminished gaps across the lowest and middle tiers outweigh the heightened gaps at the top leading to a smaller social origin effect overall. In contrast, across forms of rank ordering at the undergraduate level, gaps have grown not only at the top tiers, but also the middle or lowest tiers as well. The net effect has been to strengthen social origin effects across all forms of horizontal advantage at the BA level amid expansion.

The starkest shift over time has been in the choice of college major or field of study by social origin. Namely, whereas privileged students were more likely to be concentrated in the lowest earning majors for the 1970s birth cohort, by the 1990s birth cohort high-SES students were increasingly selecting to major in lucrative fields. While it is beyond the scope of this paper to fully dive into the mechanisms behind this dramatic shift, supplementary analyses explore one potential explanation. One possibility is that while in the past students drew upon applied versus academic major groupings to choose their field of study, unequal sorting could be increasingly tied to STEM versus non-STEM classifications. To test this possibility, I rerun the full major earnings model while accounting for academic (versus applied) and STEM (versus non-STEM) indicators, along with their interactions with social origin and cohort (see Supplementary Material S6). These supplementary analyses reveal that academic majors tend to be lower earning, while STEM majors tend to be higher earning. In turn, while there is evidence of differential sorting across major types and cohorts (i.e., significant interaction terms), these factors do not change the main major earnings patterns we observe over time. Thus, while not definitive, these results seem to indicate that privileged students may increasingly be selecting specific high-earning majors rather than simply drawing upon broad heuristics. Since this is only significantly the case for the 1990s birth cohort, I suspect that the heightened discussion and information regarding differential earnings to college majors likely had the unintended consequence of facilitating this shift among advantaged families.

Consequently, findings presented here add to our understanding of the nature of positional advantage in education, how forms of rank ordering matter across schooling, and the strategies that privileged students employ to sustain their relative advantage. Importantly, by looking more holistically across the educational system in the U.S. compared to previous work, results here highlight the potential interdependency between paths toward positional advantage. Namely, for a long time higher social origin students have held positional advantage in terms of attainment. As higher education has expanded, demand for graduate school has likely outpaced supply, and thus led to heightened competition for access to the postbaccalaureate level (Jackson 2021). Therefore, higher-SES students have had to increasingly rely upon forms of distinction at the undergraduate level to maintain positional advantage. The U.S. thus appears unique in both the extent of horizontal stratification at the BA level (Zarifa, Sano, and Milian 2025), as well as the strengthening reliance on these bases of rank ordering to maintain positional advantage over

time. Whereas most prior work outside the U.S. has found largely stable social origin effects on institutional type and major field of study amid expansion (Boliver 2011; Ramirez Yee 2024; Reimer and Pollak 2010), the American case provides evidence of increasing inequality among recent cohorts. Findings here thus lend impetus to more explicitly combine the expectations of MMI and EMI in the future. Specifically, evidence from this study highlights the ability of privileged students to pursue multiple routes to positional advantage in education, both vertically and horizontally (Lucas 2001; Raftery and Hout 1993), in order to continue to occupy a relatively better spot in the labor queue. Future work could explore how students from varying backgrounds unequally pivot, or strategize over time, in reaction to constraints they may face in pursuit of one path to positional advantage versus another.

In the current era of rapid technological and economic change, the insight presented here has potential implications for efforts to stave off worsening inequality in the future. First, the trends uncovered here highlight the various ways in which potential advantage by social origin can be maintained even amid change. It is important to note that the current study is likely a conservative portrait of the trends, since a more encompassing measure of socioeconomic background (e.g., with income, wealth, etc.) would most likely show even larger effects. Second, the stark reversal of social origin effects on choice of major for the most recent birth cohort calls for additional research. As mentioned, I suspect this shift was aided in part by increasing access to information regarding average earnings for different majors that has been published within the last few decades. Namely, influential reports could in essence provide a more standardized and agreed upon basis for rank ordering college majors. Thus, a challenge for researchers and policy makers alike is how to balance the aim of promoting transparency and broader access to information with the potential unintended consequence of entrenching or even augmenting existing inequalities.

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SUPPLEMENTARY MATERIAL

S1. Descriptive Statistics across Samples

	NLSY79	NLSY97	B&B93	B&B08	B&B16
	Mean/ prop.	Mean/ prop.	Mean/ prop.	Mean/ prop.	Mean/ prop.
Parental Education Level					
Less than high school degree	.23	.14	.03	.03	.03
High school degree	.43	.30	.25	.15	.11
Some college/AA	.13	.27	.19	.24	.24
Bachelor's degree	.14	.18	.25	.27	.30
Graduate degree	.06	.11	.27	.31	.31
Race/ethnicity					
White	.62	.62	.84	.74	.66
Black/African American	.13	.18	.06	.08	.09
Hispanic/Latinx	.06	.14	.04	.09	.12
Other	.18	.06	.06	.09	.13
Female (yes=1)	.50	.49	.53	.57	.57
U.S born (yes=1)	.95	.95	.96	.90	.88
Birth year (sequence)	4.5	3.0			
Age at BA graduation			23.2	23.1	23.3
Urban (yes=1)	.79	.72			
Region of residence					
Northeast	.21	.18			
North Central	.31	.26			
South	.32	.34			
West	.16	.21			
Obtained graduate degree (yes=1)			.23	.33	.13

S2. Major Earnings (Potential) Ranks Across Years – Bachelor's Degree Level

2009		2016	
Anthropology and archeology	1	Theology and religious vocations	1
Social work and human services	2	Early childhood education	2
Early childhood education	3	Social work and human services	3
Theology and religious vocations	4	Fine arts	4
Fine arts	5	Family and consumer sciences	5
Family and consumer sciences	6	Elementary education	6
Elementary education	7	Secondary teacher education	7
English language and literature	8	Anthropology and archeology	8
Education, other	9	Philosophy and religious studies	9
Secondary teacher education	10	Liberal arts and humanities	10
Sociology	11	Sociology	11
Liberal arts and humanities	12	Education, other	12
Agriculture	13	Physical fitness, parks, recreation and leisure	13
General education	14	Psychology	14
Environmental science	15	General education	15
Physical fitness, parks, recreation and leisure	16	English language and literature	16
History	17	Commercial art and graphic design	17
Psychology	18	Other fields	18
Communications and communications technologies	19	Criminal justice and fire protection	19
Criminal justice and fire protection	20	Environmental science	20
Miscellaneous social sciences	21	Linguistics and comparative language and literature	21
Linguistics and comparative language and literature	22	Miscellaneous social sciences	22
Area, ethnic, and civilization studies	23	Multi/interdisciplinary studies	23
Commercial art and graphic design	24	History	24
Geography	25	Area, ethnic, and civilization studies	25
Philosophy and religious studies	26	Agriculture	26
Biology	27	Geography	27
Other fields	28	Communications and communications technologies	28
Multi/interdisciplinary studies	29	Biology	29
Business management and administration	30	Business management and administration	30
Physical sciences	31	Physical sciences	31
Marketing and marketing research	32	Business, other and medical administration	32
Business, other and medical administration	33	Architecture	33
International relations	34	General medical and health services	34
Business, general	35	Marketing and marketing research	35
Architecture	36	Business, general	36
Political science and government	37	Political science and government	37
Mathematics	38	Mathematics	38
General medical and health services	39	Health professions	39
Construction/electrical/transportation technologies	40	International relations	40
Finance	41	Construction/electrical/transportation technologies	41
Health professions	42	Accounting	42

Public administration and public policy	43	Nursing	43
Accounting	44	Public administration and public policy	44
Nursing	45	Engineering technologies	45
Engineering technologies	46	Management information systems and statistics	46
Management information systems and statistics	47	Finance	47
Civil engineering	48	Economics	48
Engineering, other	49	Civil engineering	49
Economics	50	General engineering	50
Computer and information systems	51	Computer and information systems	51
General engineering	52	Engineering, other	52
Computer engineering	53	Mechanical engineering	53
Mechanical engineering	54	Electrical engineering	54
Electrical engineering	55	Chemical engineering	55
Chemical engineering	56	Computer engineering	56

SOURCES: U.S. Department of Education, National Center for Education Statistics, *2014 Digest of Education Statistics*, Table 505.10: Number, percentage distribution, unemployment rates, and median earnings of 25- to 29-year-old bachelor's degree holders and percentage of degree holders among all 25- to 29-year-olds, by field of study and science, technology, engineering, or mathematics (STEM) status of field: 2009 and 2013.

U.S. Department of Education, National Center for Education Statistics, *2017 Digest of Education Statistics*, Table 505.10: Number, percentage distribution, unemployment rates, and median earnings of 25- to 29-year-old bachelor's degree holders and percentage of degree holders among all 25- to 29-year-olds, by field of study and science, technology, engineering, or mathematics (STEM) status of field: 2010 and 2016.

S3. Pooled Ordinal Logistic Regressions of Social Origin Effects across Forms of Positional Advantage and Birth Cohorts, Full Results

Outcome	M1	M2	M3
<i>Attainment Level</i>			
Social origin	.751***	.742***	.761***
Cohort (reference=1960s)			
Cohort - 1980s	.122***	.220***	.310***
Social origin X cohort (1980s)			-.052*
Race/ethnicity (reference=White)			
Black/African American		-.157***	-.159***
Hispanic/Latinx		-.165**	-.174**
Other		.166**	.166**
Female (yes=1)		.391***	.391***
Birth year (sequence)		.013	.013†
Nativity status (U.S. born=1)		-.093	-.096
Urban (yes=1)		.126**	.125**
Region of residence (reference=Northeast)			
North Central		-.137**	-.136**
South		-.175***	-.175***
West		-.268***	-.267***
<i>Institutional Selectivity Level</i>			
Social origin	.342***	.261***	.177***
Cohort (reference=1970s)			
Cohort - 1980s	.416***	.381***	.111
Cohort - 1990s	.744***	.794***	.515***
Social origin X cohort (1980s)			.107***
Social origin X cohort (1990s)			.110***
Race/ethnicity (reference=White)			
Black/African American		-.540***	-.535***
Hispanic/Latinx		-.032	-.021
Other		.538***	.542***
Female (yes=1)		-.160***	-.159***
Age at BA graduation		-.153***	-.153***
Nativity status (U.S. born=1)		-.321***	-.322***
Graduate degree (yes=1)		.319***	.318***
<i>Major Earnings (Potential) Level</i>			
Social origin	.029*	.024*	-.031
Cohort (reference=1970s)			
Cohort - 1980s	-.040	-.011	-.107
Cohort - 1990s	.017	.0002	-.254**
Social origin X cohort (1980s)			.039

Social origin X cohort (1990s)			.097***
Race/ethnicity (reference=White)			
Black/African American	.030		.033
Hispanic/Latinx	-.134**		-.125**
Other	.342***		.347***
Female (yes=1)	-.872***		-.872***
Age at BA graduation	.015**		.015**
Nativity status (U.S. born=1)	-.425***		-.425***
Graduate degree (yes=1)	-.176***		-.174***
<i>Academic Performance Level</i>			
Social origin	.128***	.075***	.046*
Cohort (reference=1970s)			
Cohort - 1980s	.808***	.801***	.775***
Cohort - 1990s	.840***	1.026***	.871***
Social origin X cohort (1980s)			.012
Social origin X cohort (1990s)			.059*
Race/ethnicity (reference=White)			
Black/African American	-1.094***		-1.092***
Hispanic/Latinx	-.519***		-.513***
Other	-.220***		-.217***
Female (yes=1)	.485***		.485***
Age at BA graduation	-.016**		-.016**
Nativity status (U.S. born=1)	-.142**		-.140**
Graduate degree (yes=1)	.715***		.716***

†p < .10; *p < .05; **p < .01; ***p < .001

NOTES: Log-odds ratio coefficients reported.

Social origin is measured using the highest parental education level.

Vertical analyses (N=20,190); Horizontal analyses (N=37,850).

All models are estimated using base year survey weights that correspond to the given sample.

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1979 cohort, 1979-2020.

U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 cohort, 1997-2021.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 1993 cohort, 1993-2003.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2008 cohort, 2008-2018.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2016 cohort, 2016-2020.

S4. Net Social Origin Effects from Pooled Ordinal Logistic Regressions, All Together

Outcome	M4
<i>Institutional Selectivity Level</i>	
Social origin	.178***
Cohort (ref. 1970s)	
Cohort - 1980s	.084
Cohort - 1990s	.502***
Social origin X cohort (1980s)	.106***
Social origin X cohort (1990s)	.101***
<i>Major Earnings (Potential) Level</i>	
Social origin	-.041*
Cohort (ref. 1970s)	
Cohort - 1980s	-.130
Cohort - 1990s	-.301***
Social origin X cohort (1980s)	.033
Social origin X cohort (1990s)	.089**
<i>Academic Performance Level</i>	
Social origin	.039†
Cohort (ref. 1970s)	
Cohort - 1980s	.773***
Cohort - 1990s	.854***
Social origin X cohort (1980s)	.007
Social origin X cohort (1990s)	.053†
Covariates	X

†p < .10; *p < .05; **p < .01; ***p < .001

NOTES: Log-odds ratio coefficients reported.

Social origin is measured using the highest parental education level.

Covariates include: race/ethnicity, gender, nativity status, birth year (sequence) within cohort for NLSY analyses, and age at BA completion for B&B analyses. Models of attainment also include an indicator of urbanicity as well as region of residence. Models of horizontal stratification include an indicator of whether the student obtained a graduate degree.

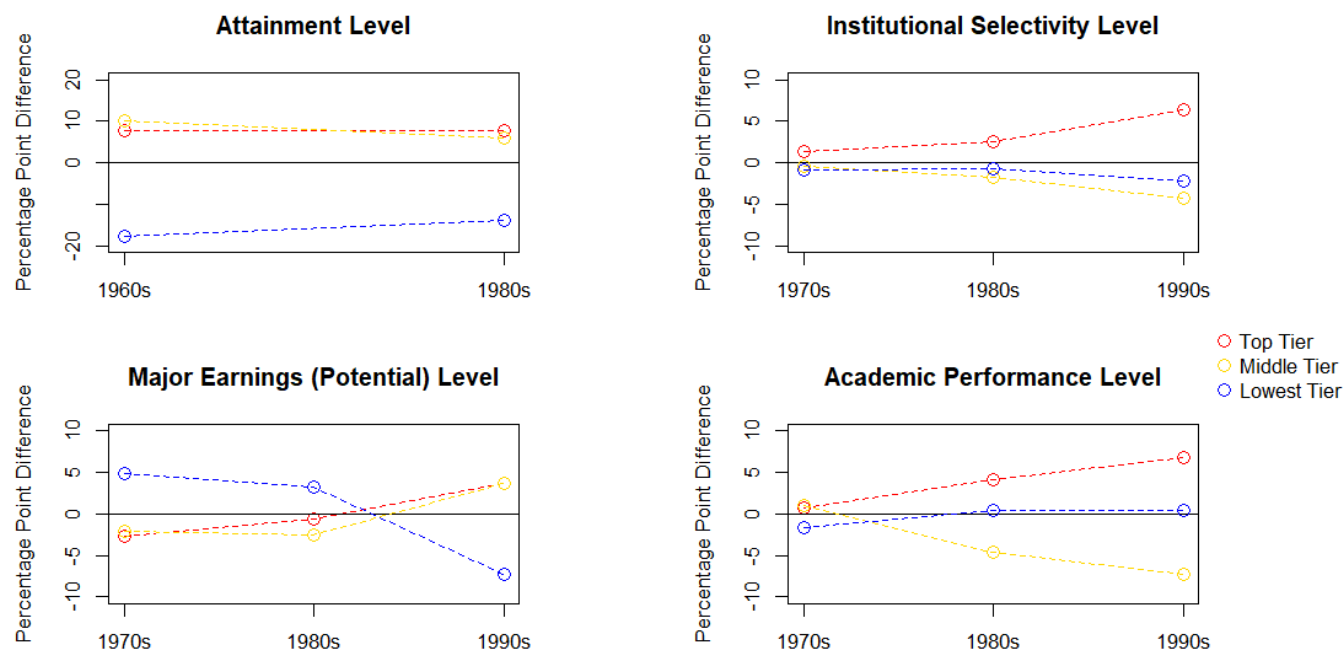
All models are estimated using base year survey weights that correspond to the given sample.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 1993 cohort, 1993-2003.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2008 cohort, 2008-2018.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2016 cohort, 2016-2020.

S5. Gaps in the Predicted Probability of Tier Placement between Highest and Lowest Social Origin Students across Birth Cohorts, Alternative Specification



NOTES: Estimates represent percentage point differences in the predicted probability of obtaining different outcomes between those whose parents have a graduate degree with those whose parents have less than a high school diploma, holding all other factors at their mean values.

Tiers are defined as followed: 1) **Attainment** – Top=Doctoral; Middle=HS, Some college, AA, BA, MA; Lowest=<HS, 2) **Institutional selectivity** – Top=Most competitive; Middle=Highly/ Very/ Competitive/ Less competitive; Lowest=Noncompetitive, 3) **Major earnings** – Top=47-56; Middle=11-46; Lowest=1-10, and 4) **Academic performance** – Top=3.75-4.00; Middle=2.25-3.74; Lowest=2.24 or below.

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1979 cohort, 1979-2020.

U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth 1997 cohort, 1997-2021.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 1993 cohort, 1993-2003.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2008 cohort, 2008-2018.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2016 cohort, 2016-2020.

S6. Social Origin Effects from Ordinal Logistic Regression on Major Earnings Level, Continued

Major Earnings Level	M1	M2	M3	M4	M5
Social origin	-.031	.011	-.002	-.055*	-.057**
Cohort (ref. 1970s)					
Cohort - 1980s	-.107	-.116	-.147†	-.094	-.090
Cohort - 1990s	-.254**	-.231**	-.279***	-.325***	-.344***
Social origin X cohort (1980s)	.039	.039	.091**	.061*	.050
Social origin X cohort (1990s)	.097***	.089**	.175***	.090**	.122***
Academic (reference = applied)		-1.136***	-.858***		
STEM (reference = non-STEM)				1.853***	1.964***
Social origin X academic X cohort (1980s)			-.089***		
Social origin X academic X cohort (1990s)			-.151***		
Social origin X STEM X cohort (1980s)					.082*
Social origin X STEM X cohort (1990s)					-.119***
Covariates	X	X	X	X	X

†p < .10; *p < .05; **p < .01; ***p < .001

NOTES: Log-odds ratio coefficients reported.

Social origin is measured using the highest parental education level.

Covariates include: race/ethnicity, gender, nativity status, age at BA completion, and an indicator of whether the student obtained a graduate degree.

All models are estimated using base year survey weights that correspond to the given sample.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 1993 cohort, 1993-2003.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2008 cohort, 2008-2018.

U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study of 2016 cohort, 2016-2020.

ENDNOTES

¹ Although other research reveals a high correspondence between Barron's and Integrated Postsecondary Education Data System (IPEDS) admissions data (Jeffrey and Gibbs 2024), IPEDS does not have available information prior to 2002.

² The B&B93 did not collect data on nativity status. Thus, for this cohort I draw upon citizenship status instead (U.S. citizen=1; U.S. permanent resident or has temporary visa / other visa status=0).

³ Results are similar if we instead model all forms of horizontal stratification net of each other (see Supplementary Material S4).

⁴ A GPA of 3.50 roughly corresponds to the equivalent of academic honors designation at many colleges.

⁵ Results are largely the same when drawing upon an alternative specification of tier placement (see Supplementary Material S5).