Changing Minds: How Academic Fields Shape Political Attitudes

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Abstract

This study examines how academic fields shape students' political ideologies, using a comprehensive dataset of 310,000 students across 477 U.S. colleges from enrollment cohorts between 1990 and 2015. Controlling for detailed pre-college attitudes, intended majors, social preferences, and demographics, we find that studying humanities or social sciences increases liberal self-identification by 0.22 standard deviations relative to studying business or economics. Unobserved selection would need to be more than three times greater than selection on observables to overturn these results. Quasi-experimental evidence from college-level expansions in business and economics further supports a causal interpretation: such expansions are uncorrelated with students' baseline political ideology but affect their ideology at graduation. These ideological shifts extend beyond political self-placement, significantly influencing attitudes toward economic, cultural, and other policy issues, as well as students' behaviors and goals upon graduation. We also investigate mechanisms. Changes over time in peer political composition within programs have precisely estimated zero effects, indicating peer ideology composition accounts for no more than 10% of the observed effects by major. Instead, departmental ideology appears influential: students in departments with more liberal faculty exhibit greater liberalization, particularly within humanities and social sciences, suggesting teaching as a channel. We discuss implications of these findings for broader political outcomes and for understanding the mechanisms behind economic returns to different fields of study.

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"Socrates does nothing that is just; he is a curious person, who searches into things under the earth and in the sky, and he makes the worse appear the better cause; and he teaches the aforesaid doctrines to others."
The Apology of Socrates

1 Introduction

Education lies at the heart of human societies: It is widely recognized for its role in enhancing productivity and economic mobility (Becker, 1964; Mincer, 1974; Angrist and Krueger, 1991; Card, 1999) and in fostering civic engagement through critical thinking and moral autonomy (Plato, 1992; Kant, 2002; Dewey, 1916; Negt, 2000). Yet, education has historically been a disputed territory. Concerns about educators influencing students' beliefs trace back to Socrates, who was accused of corrupting Athenian youth. Today, similar debates persist, with universities often accused of liberal indoctrination.[1] Critics even call for restricting funding or support for certain academic fields, which are especially prone to inducing a liberal shift among young adults.[2] Despite significant attention in public discourse, rigorous empirical evidence remains scarce regarding key questions: To what extent do academic fields truly influence students' political ideologies? Does this ideological shift represent a substantial change in worldview, or merely reflect changes in political self-identification? And, crucially, which aspects of the academic experience drive these ideological transformations?

This study addresses these questions empirically, using a large-scale survey dataset of 310,000 students who entered 477 four-year U.S. colleges between 1990 and 2015. The dataset includes each student's responses at two critical points: during the first week of college and upon graduation. Political ideology is measured on a five-point scale, with students self-identifying as far right, conservative, middle-of-the-road, liberal, or far left. The data also capture detailed policy attitudes on diverse issues including abortion, race, taxation, and healthcare, enabling exploration beyond simple ideological self-placement. Furthermore, rich information on peers and faculty characteristics facilitates an examination of potential mechanisms. Descriptive analysis in Section 2 reveals significant variation in ideological shifts across majors. On average, students become approximately six percentage points more liberal during college. However, economics and business majors show minimal ideological movement, while social science and humanities

[1] Surveys indicate that public confidence in higher education has significantly declined over the past decade, driven largely by Republicans (*Gallup* 2023 and *Pew Research Center* 2019).
[2] Criticism frequently targets fields within the humanities, claiming they foster ideological bias. Legislative proposals to restrict or control funding for these fields have emerged in various U.S. states (*Brookings* 2023 and *AP* 2023).

majors become 7 percentage points more liberal and 5 percentage points less conservative.

These descriptive patterns suggest that academic fields causally influence ideological development. Section 3 tests this hypothesis through multiple steps. Initially, we estimate differences in graduation-year ideology across majors, controlling for pre-college factors—baseline ideology, detailed policy attitudes, and intended major. Compared to STEM majors, students in the humanities or social sciences graduate approximately 0.10–0.14 standard deviations (SD) further left, while economics and business majors graduate about 0.08–0.12 SD further right. Health and education majors show smaller leftward differences of about 0.02–0.05 SD relative to STEM. Additionally, when considering a binary indicator of liberal identification, humanities and social-science majors are 3–6 percentage points more likely than STEM students to identify as liberal, whereas economics and business majors are 4–7 percentage points less likely. Health and education majors are modestly more likely (by 1.5–3 percentage points) to identify as liberal. To contextualize these magnitudes, choosing social sciences or humanities over business or economics produces ideological effects equivalent to growing up in a county with a 20-percentage-point higher Democratic voter share throughout adolescence (Brown et al., 2023).

The causal interpretation of these estimates relies on a conditional independence assumption—that is, students' major choices are independent of unobserved determinants of their political ideologies at graduation. We validate this assumption through several robustness checks. First, we show that our estimates remain stable when incorporating additional controls, such as demographics, detailed pre-college behaviors, and college-specific fixed effects. Second, we implement a negative control exposure test, demonstrating that once actual major choices are accounted for, initial intended majors no longer predict graduation ideology, thus limiting the potential influence of unobserved preference-related confounders. Third, we apply the bounding methodology from Oster (2019), which quantifies the robustness of our results against selection on unobservables. We find that any unobserved confounding factors would need to be more than three times more influential than our extensive observed covariates to alter our conclusions.

To further strengthen our causal claims, we employ complementary quasi-experimental evidence derived from sudden, supply-driven expansions in business and economics programs at certain colleges. These shocks, which are independent of students' baseline ideologies, increase enrollment in business and economics majors by approximately four percentage points, primarily attracting students from other social sciences. This shift leads to a measurable conservative change in graduation ideology of about 0.05 SD. Although this quasi-experimental evidence

is not directly comparable to our primary results, since such shocks may indirectly influence experiences beyond the chosen major (e.g., through changes in non-major courses), it nonetheless reinforces our central finding: academic fields indeed shape students' political ideologies. Additionally, these findings provide policy-relevant evidence regarding the ideological impacts of changes in college major availability.

Next, Section 4 analyzes policy attitudes. We show that college majors affect attitudes on various policy issues ranging from abortion to taxation. These effects partially mirror changes in self-placement political ideology. Students' attitudes toward economic issues, such as taxation or healthcare, become especially polarized: Students majoring in business or economics tend to adopt more right-leaning positions (e.g., against national healthcare provision), while in contrast students in social sciences and humanities tend to adopt more left-leaning positions. With respect to many cultural and other issues all students become more liberal during their studies, with smaller yet significant effects of studying in different fields.[3] Furthermore, decomposing the effects of majors on political ideology (following the methodology of Gelbach, 2016) reveal that changes in economic views explain the most substantial portion of the effects of business and economics while cultural views changes explain the largest portion of the effects of social sciences and humanities (relative to STEM).

Section 5 further explores the mechanisms underlying these ideological shifts. To investigate the potential role of peer influence, we leverage variation in peers' baseline political ideology within the same academic programs over time. Although students' political ideologies strongly correlate with those of their peers at graduation, our findings suggest this association largely results from initial selection into programs rather than peer effects. Specifically, we show that within-program variations in peer ideological composition over time do not affect individual graduation ideologies. Importantly, our precise estimates rule out peer ideology as accounting for more than 10% of the total impact that college majors have on students' ideological outcomes. This result does not imply that peer effects are absent universally, as previous studies argue for such effects (Strother et al., 2021; Coriale et al., 2023; Firoozi, 2023). Instead, it indicates that peer composition differences across majors do not drive the ideological effects we identify.

Consequently, other mechanisms, particularly academic content and interactions with faculty, appear more influential. To explore this possibility directly, we utilize data on faculty members' political ideologies across different colleges and departments. Our analysis reveals that students studying the same major within departments characterized by more liberal faculty tend to graduate with more

[3]Note that the term "liberal" can carry multiple meanings across different contexts. To ensure empirical clarity, we restrict its use to two measurable outcomes: self-identification as liberal and the specific policy attitudes that predict such self-identification.

liberal ideologies. This effect is particularly pronounced among humanities and social science majors. While these findings highlight a correlation between faculty ideology and ideological effects, they should be interpreted with caution, as our analysis does not isolate faculty ideology specifically from other correlated factors such as curriculum content and instructional methods. Further research is required to disentangle these precise mechanisms.

Finally, Section 6 discusses the broad implications of our results. First, the "education divide" is, is highly linked to what students study at college. Humanities and social-science majors account for a disproportionate share of the aggregate liberal shift among college graduates. Thus, if students shifted en masse from other majors into economics or business majors, it would substantially narrow the average ideological gap between college graduates and the rest of the electorate. Second, self-selection into majors amplifies existing ideological polarization. Students who enter college more liberal choose more liberal-leaning majors. Consequently, graduation leaves students further apart than they were on entry. Third, women's greater propensity to major in liberal-leaning fields accounts for roughly one-sixth of the male–female difference in ideology at graduation. Taken together, these findings complicate the conventional view that education increases civic cohesion and trust—channels often invoked to explain education's link to economic growth (Gradstein and Justman, 2002; Glaeser et al., 2007). Instead, we document how academic specialization may contribute to ideological fragmentation.

This research contributes to the literature exploring how education shapes students' political attitudes. While extensive research across the social sciences investigates this relationship, rigorous causal evidence linking educational experiences directly to political attitudes remains limited. Previous studies primarily leverage explicitly political curriculum interventions—such as those under authoritarian regimes in Nazi Germany, China, and Taiwan—to examine educational impacts on student attitudes (Voigtländer and Voth, 2015; Cantoni et al., 2017; Chen et al., 2023). In contrast, our study addresses a context typically perceived as neutral, in which students freely select their academic majors. Thus, we demonstrate that even educational content without explicit political agendas can significantly influence political perspectives.

Closer to our focus, numerous studies have specifically examined the attitudes of economics students, highlighting that their political views differ systematically from peers in other fields and evolve distinctly over the course of their education (Frank et al., 1993; Rubinstein, 2006; Bauman and Rose, 2011; Hammock et al., 2016; Fischer et al., 2017; Paredes et al., 2023). Beyond economics, broader social science literature documents a general trend toward liberalization among university students in countries such as the US, UK, and Romania, especially concerning

cultural issues (Broćić and Miles, 2021; Fryer, 2022; Scott, 2022; Apfeld et al., 2023). Recent political science research further suggests correlations between students' chosen fields and their voting behaviors in Europe, attributing these patterns to both self-selection into fields and educational experiences (Hooghe et al., 2024).

Our study contributes to this literature in three distinct ways. First, we provide a battery of evidence supporting the interpretation that differences in ideological changes across college majors reflect genuine effects of these majors rather than merely differential pre-existing trends. Second, we investigate the underlying mechanisms driving these ideological shifts, notably finding minimal peer influence, and instead highlighting the potential role of academic content and faculty interactions. Third, we link major selection explicitly to broader political outcomes, including political polarization, the gender gap in ideological alignment, and the divergence between the political attitudes of college graduates and non-graduates.

Finally, this study complements the literature on the labor market effects of college majors (Hastings et al., 2013; Altonji et al., 2016; Kirkeboen et al., 2016; Heinesen et al., 2022; Bleemer and Mehta, 2022; Goldstein, 2024; Andrews et al., 2024) by showing that fields of study also shape students' political attitudes. This highlights that majors influence not only career paths but also broader societal and political outcomes. Our findings suggest a possible mechanism for returns to different fields: majors change preferences. For example, majoring in business or economics makes students much more likely to prioritize financial success as a life goal, which may partly explain the economic returns to these fields. Future research should further explore how preference changes drive the returns to education.

2 The Data: HERI Student Surveys

This study relies on survey data from the Cooperative Institutional Research Program (CIRP), conducted by the Higher Education Research Institute (HERI) of UCLA. The survey data has gathered information on incoming college students across the US since the 1960s. The incoming freshman survey covers various topics, including family backgrounds, high-school behaviors and achievements, political attitudes, college and life plans, and more. Since 1990, a subset of these students has also participated in an exit survey upon graduation. The sample of colleges in the survey is not random, as participation requires colleges to pay a fee. Despite this, a substantial number of colleges across the US–more than a thousand annually–choose to pay and participate. Some of these colleges have also participated at least once in the exit survey. Both the CIRP Freshman

Survey and the College Senior Survey, though officially voluntary, are purposefully integrated by HERI into mandatory student processes (orientation or registration for freshmen, and graduation packets or rehearsal sessions for seniors), yielding relatively high response rates.

Sample. The baseline survey sample covers cohorts who started their undergraduate studies from 1990 to 2015, comprising approximately 10 million students from 1,500 colleges who completed the freshman survey (also known as TFS).[4] The main analysis in this study focuses on the subset of 477 4-year colleges that also participated in the senior survey (also known as CSS), involving approximately 2,500,000 students in relevant years. Among them, 380,000 students completed both surveys. Specifically, the analysis focuses on the subset of about 310,000 students with non-missing information on political ideology and chosen majors.

Political ideology. The primary outcome of interest is students' responses to the question: "How would you characterize your political views?" with a response scale from 5 (far left) to 1 (far right).[5] For clarity, we rescaled the variable so that lower values correspond to more liberal orientations. This rescaling is used in all subsequent analyses. The trends in this outcome among incoming and graduating students appear in Appendix Figure A1. This figure highlights several interesting trends. First, it reveals that over the study period, incoming college students have gradually identified as slightly more liberal, with an increase from around three on average in 1990 to 3.15 in 2015. Second, there is a consistent shift toward more liberal political views from college entry to graduation. This ideological movement increased throughout our sample period, especially among students who enrolled in 2010 and 2015. Third, this gap varies substantially between students in different majors, with students in social sciences, humanities and arts becoming more significantly more liberal during their studies, which is a consistent pattern across all cohorts in our data.

Figure 1 further show the distributional changes in students' political ideologies over the course of college. Panel A, showing the distribution for the entire student population, reveals a general shift away from far right, conservative and middle-of-the-road views toward more liberal and far left positions. On average, students become 5.8 percentage points more liberal, 1.7 percentage points more far left, 2.8 percentage points less conservative, and 0.5 less far right during college. However, this pattern varies by major. For instance, business and economics majors become slightly less middle-of-the-road—shifting about two percentage points to the more

[4]Details on the data and access are available here: https://heri.ucla.edu/cirp-freshman-survey.
[5]Figure A3 shows that responses to this question in other surveys is highly correlated with voting behavior, a relationship we further discuss in Section 6.

liberal stances—while humanities and social sciences majors become 10.5 and 10.7 percentage points more left-wing and 6.5 and 4.6 percentage points less right-wing. Meanwhile, students in health, education, and STEM experience modest liberal shifts, similar to the overall average. These initial findings suggest a potential causal impact of college majors on political attitudes—a hypothesis examined in depth in Section 3.

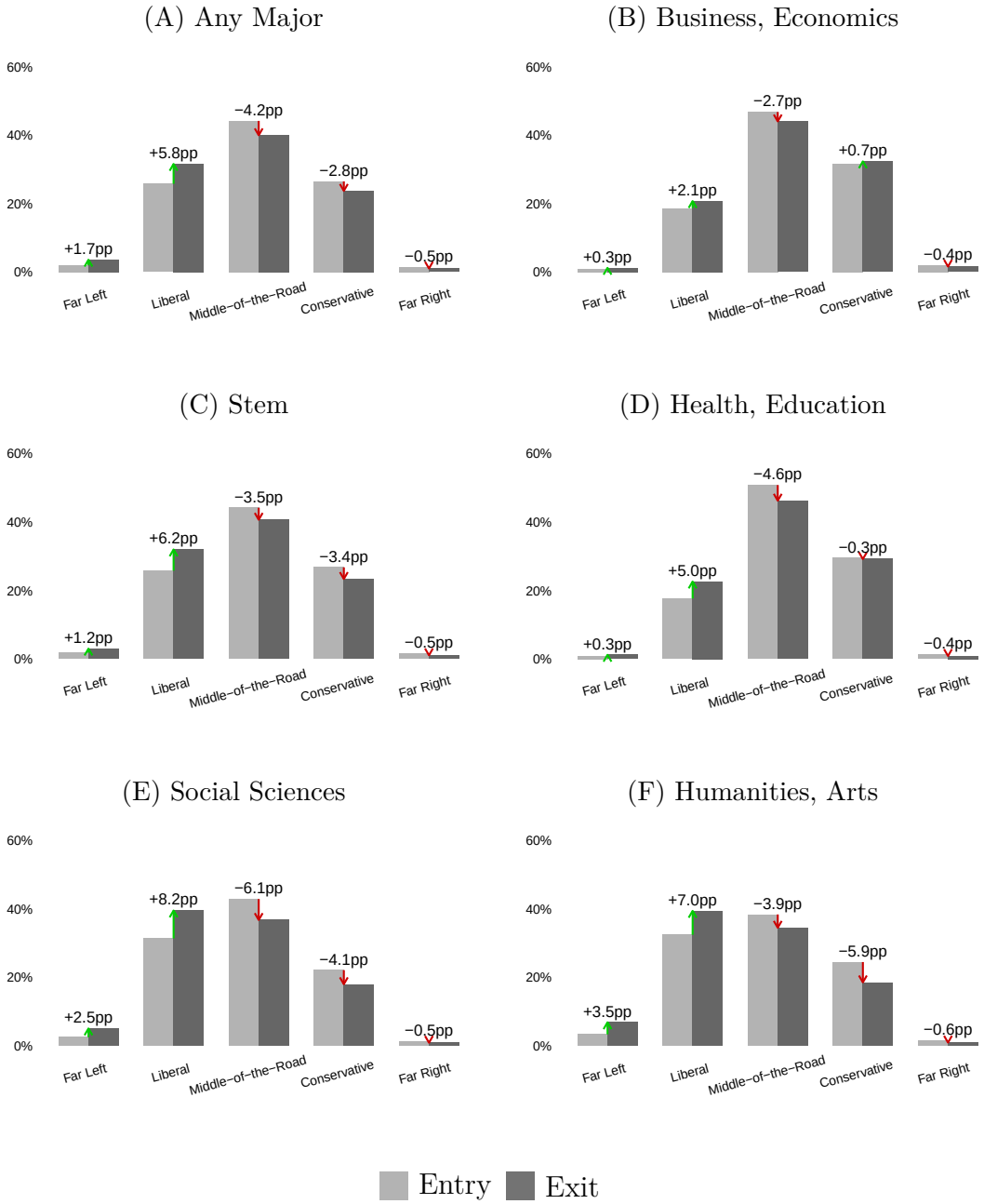
Figure A2 provides detailed information on the transitions between different ideology positions. Panel A shows transitions for all the students and illustrates that students who start as middle-of-the-road are more likely to become liberal (26%) than conservative (15%). However, Panels B–D repeat this analysis by major groups and show that this pattern varies substantially between fields, with 33% and 34% becoming liberal in the humanities and social sciences, compared to 18% in business and economics.

Additionally, Figure 2 compares students' baseline and graduation ideology across majors using a broader definitions. For majors in business, economics, graduation ideology remains similar to the baseline, as their corresponded circles are very close to the 45-degree line, representing where students' ideologies don't change during college. Students in health, education, and STEM, become slightly more liberal, as their corresponding circles are below the 45-degree line. Finally, humanities and social sciences majors exhibit a significant liberal shift during college, as their circles are much below the 45-degree line.

Interestingly, the fields where students become more liberal are typically the fields that also attract more liberal students at baseline. Therefore, assuming these patterns reflect the causal effect of academic fields, then field selection likely contributes to growing political polarization, as students choose fields that reinforce their preexisting ideology. Still, there are exceptions: some majors attract less liberal students yet induce a more liberal shift. A notable example is theology, which, despite attracting relatively conservative students, leads to a marked shift toward more liberal views on average.

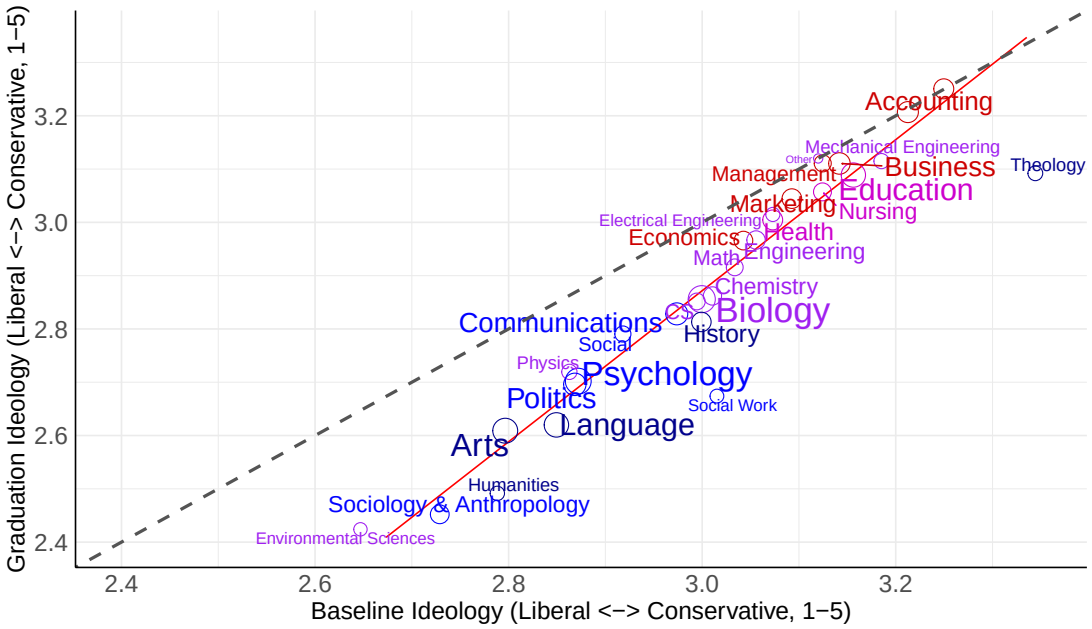
Policy attitudes. The survey data include questions on specific policy areas, with responses ranging from 1 (Disagree Strongly) to 4 (Agree Strongly). We focus on twelve of these questions, appearing in both entry and exit surveys for a substantial sample. 1 lists these questions and shows the share of students who agree (strongly or not) with each, for all students, and by students' chosen college majors. The table highlights significant shifts in responses to some questions which are consistent across majors (e.g., on abortion) while also showing that students in different majors shift to different directions with respect to other questions (e.g., on taxation). Table A1 further shows the full response distribution

Figure 1: Political Ideology Distributions Before and After College



Note: This figure plots the distribution of students' baseline (light grey) and graduation (dark grey) political ideology. The sample includes all students with non-missing values for this outcome in the baseline and graduation surveys, totaling 299,630 students. Panel A's sample includes all students, while panels B–F's samples are restricted to students in specific groups of majors.

Figure 2: Students Baseline and Graduation Ideology By Major



Note: This figure plots the average baseline (x-axis) and graduation (y-axis) political ideology of students by major, on a scale of 1–5 from far left to far right. The sample includes only students with non-missing values in the major and political ideology (299,630 students). Colors indicate the classification group for each major: blue for social sciences; dark blue for humanities and arts; purple for health and education; dark purple for STEM; red for business, economics, and finance. The black dashed line indicates where students' graduation ideology equals their baseline ideology (45-degree line), while the red solid line represents the regression line fitted to the observed data.

for each question, and correlations with political ideology. Interestingly, the table also shows that the correlation between responses to all statements and students' political ideology increases during college. This suggests that while students' views and political ideology both evolve throughout their time in college, they do so in a way that strengthens the connection between them, leading to a more cohesive alignment between their policy attitudes and political identity.

Majors. The data includes information on students' intended majors when they start college and their actual majors at graduation. The list of majors in the survey slightly changes over time, so we aggregate them into broader groups at two levels, as detailed in Appendix Table A2. Appendix Figure A4 illustrates the transitions between intended and actual majors, indicating that almost 70% of the students in our sample ultimately pursued the majors they initially preferred, while the other half switched to a different major. Interestingly, the figure also shows movement between nearly all pairs of majors, even if the numbers are small for certain specific pairs. This is true also for transitions between broader major groups, where we find that about half of the students eventually pursue the majors they intended. Not that until 2004, the survey indicate only one major for each

Table 1: Students' Opinions on Policy Issues

Statement	N	Survey	All	Business & Economics	Health & Education	Humanities & Arts	Social Sciences	STEM
Addressing global climate change should be a federal priority	28654	Base	67.5%	60.4%	62.3%	71.8%	71.4%	69.3%
		Grad	78%	71.7%	67.6%	81.3%	80.8%	82.9%
Abortion should be legal	246539	Base	51.9%	51.8%	39.9%	53.4%	55.9%	53.7%
		Grad	61.9%	61%	46.8%	64.7%	67.6%	63.3%
A national health care plan is needed to cover everybody's medical costs	152419	Base	68.2%	63.3%	71.2%	70.3%	72.4%	64.9%
		Grad	68.2%	57.1%	70.7%	72.9%	74.9%	65.9%
It is important to have laws prohibiting homosexual relationships	189542	Base	27.2%	31.5%	33.4%	23.1%	22.7%	27.2%
		Grad	19.2%	23.8%	25.2%	15.1%	14.9%	19%
Wealthy people should pay a larger share of taxes than they do now	192215	Base	59.9%	51.9%	62.8%	62%	61.6%	62%
		Grad	60.9%	47.8%	61.4%	67.1%	66.3%	61.8%
Marijuana should be legalized	223116	Base	28.4%	28.8%	17.8%	32.5%	31.3%	27.5%
		Grad	43.8%	42.9%	28.1%	49.5%	48.6%	44%
The death penalty should be abolished	205628	Base	32.3%	25.7%	29%	40%	35.1%	30.9%
		Grad	39.4%	30.3%	31.5%	50.4%	45.3%	37.4%
The federal government should do more to control the sale of handguns	149194	Base	83.6%	82.4%	86.5%	84%	86.1%	80.3%
		Grad	82.2%	80.1%	84.9%	83.7%	85.1%	78.5%
There is too much concern in the courts for the rights of criminals	140205	Base	67.4%	71.9%	70.8%	61.4%	64.8%	69.1%
		Grad	56.2%	64.4%	63.2%	47.3%	49.2%	58.8%
Racial discrimination is no longer a major problem in America	265675	Base	17%	20.5%	16.8%	14.6%	14.7%	18.5%
		Grad	13.5%	18.6%	11.9%	10.8%	10.1%	15.4%
Realistically, an individual can do little to bring about changes in our society	203464	Base	22.5%	26.8%	21.6%	19.4%	20.8%	23.3%
		Grad	24.2%	28.5%	20.9%	22.2%	21.1%	27.1%
Colleges should prohibit racist/sexist speech on campus	185476	Base	63.4%	62.4%	70%	61.4%	63.7%	61.8%
		Grad	54.2%	52.1%	59.5%	54.1%	55.6%	51.3%

Note: This table displays twelve questions related to policy issues, as featured in both the baseline and graduation surveys throughout our analysis period. The table shows the share of students who respond as either highly or somewhat agreeing with each question, separately in the baseline and graduation surveys. The sample for each question is restricted to students who provided responses in both their baseline and graduation surveys.

individual, thus missing information about double majors. However, since 2005, we observe information on double majors, too, and thus we use this information for a subsample analysis that studying the effects of double majors, too.

Attrition. The sample for this study is derived from two distinct sampling processes. The baseline survey was conducted with a representative sample of American first-year students, while the graduation survey sampled graduating students. The primary analysis sample consists of students who participated in both surveys. Among college cohorts included in both surveys, approximately 20% of baseline survey participants are also observed in the graduation survey. If participation in the graduation survey varies systematically by major choice (differential attrition), this study's findings could be biased.

Directly examining differential attrition between actual majors is impossible, as we lack information on the actual majors taken by students who did not participate

in the graduation survey. However, it is possible to test for heterogeneous attrition by intended major. Columns (1)–(3) of Table A3 reveal slight differences in the likelihood of participating in the graduation survey across students with different intended majors. These differences, however, become negligible and statistically insignificant once controlling for students' high school GPA. This suggests that differential attrition is unlikely in our context and that our results are unlikely to suffer from significant attrition bias. Moreover, columns (4)–(6) demonstrate that intended majors do not influence graduation survey participation for individuals with any baseline political ideology, further mitigating concerns about attrition bias.

3 Political Ideology

This section investigates the effects of academic fields on students' political ideology. It begins with a selection-on-observables approach to analyze the impact of college major choices. This approach leverages unique features of our dataset—pre-treatment measures of political ideology, opinions regarding numerous policy issues, and students' stated major preferences collected just before college entry. The dataset includes a comprehensive set of additional control variables, which helps address concerns about omitted variable bias and supports the plausibility of a causal interpretation, and the sensitivity for potential selection on unobservables. To further validate the causal interpretation, we implement a quasi-experimental design that exploits shocks to the availability of specific academic fields within colleges in specific years.

3.1 Baseline Estimates

As a first step, the following equation estimates the effect of each major on students' political ideology:

$$\underbrace{p_i}_{\substack{\text{Graduation political} \\ \text{ideology}}} = \underbrace{\sum_m \delta_m D_{im}}_{\substack{\text{Major} \\ \text{effects}}} + \underbrace{X_i'\alpha}_{\substack{\text{Baseline ideology,} \\ \text{intended major,} \\ \text{social preferences,} \\ \text{college type, year}}} + \varepsilon_i \tag{1}$$

where p_i represents the political ideology of student i at graduation. D_{im} is a dummy variable equal to 1 if student i majored in field m, and 0 otherwise. The coefficients of interest, δ_m, estimate the effect of major m on political ideology relative to the omitted reference category. In the main specification, the vector

X_i includes fixed effects for students' baseline political ideology, intended majors, and social preferences (policy attitudes, life goals, political behavior) at enrollment. Other specifications also include additional controls that, while not strictly necessary for identification, address concerns about omitted variable bias, such as demographics, time use, and college and year fixed-effects. Table A4 lists the controls used in our main analysis.

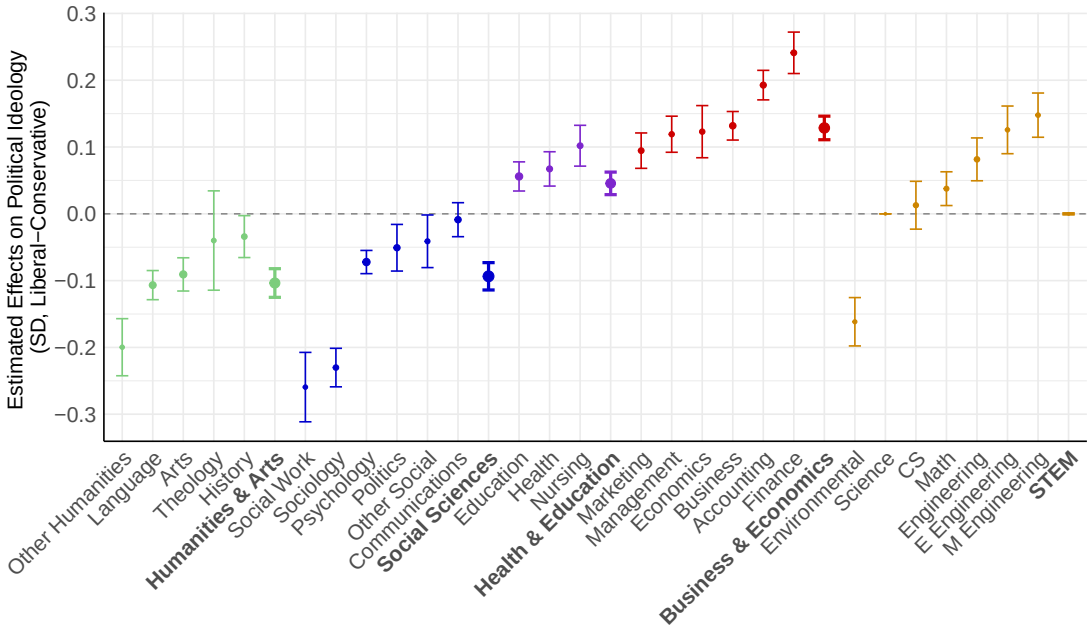
The identification assumption underlying this specification is that, conditional on the controls, actual major choices are not correlated with unobserved factors affecting graduation ideology ($\varepsilon_i \perp\!\!\!\perp D_{im} \mid X_i$). Figure A5 illustrates the identification framework using a directed acyclic graph (DAG). The figure highlights two distinct sets of variables that could theoretically bias the results: (1) unobserved preferences that existed before the baseline survey but were not captured in it, and (2) later experiences during college that influence both final major choices and political ideology. After showing the baseline results in this subsection, the subsequent subsections provide a battery of evidence showing these potential sources of bias are unlikely to affect our results significantly.

Figure 3 presents the main estimation results. The bold lines represent coefficients from a model that groups majors into five broad categories, while the thinner lines show coefficients from a more detailed model with 28 specific major categories. The omitted group of majors is STEM for the broad model and science (biology, physics, chemistry) for the detailed model. The findings reveal substantial effects: majors in humanities, arts, and social sciences significantly shift students' ideology towards more liberal self-placements, with a notable impact of approximately 0.08–0.12 standard deviations compared to the omitted majors. Conversely, economics and business majors shift students approximately 0.11–0.15 standard deviations towards more conservative ideology relative to STEM.

The figure also shows heterogeneity within major groups. Among humanities and social sciences, fields such as other humanities, sociology, anthropology, and social work exhibit the most substantial liberalizing effects. For example, choosing sociology over science increases a student's liberal ideology by an average of 0.2–0.26 standard deviations. In contrast, finance and accounting are associated with a slight conservative shift in business-related fields compared to other majors in their category. Notably, environmental sciences stand out within STEM as an outlier, significantly shifting students toward liberal positions.

Figure A6 shows the estimation results with an outcome of an indicator for identifying as liberal. Students in humanities, arts, and social sciences are 3–6 percentage points more likely to identify as liberal, while those in business and economics are 4–6 percentage points less likely, relative to STEM. Similarly, humanities and social sciences students are 2–3 percentage points less likely to

Figure 3: Effects of College Majors on Political Ideology



Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is students' self-reported answers to the question: "How would you characterize your political views?". Estimates are presented in standard deviation units. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample is restricted to students with non-missing values for both major and outcome, totaling 313,466 students.

identify as conservative, whereas business and economics majors are 4–5 percentage points more likely to do so (Appendix Figure A7). Further, business and economics students are 0–2 percentage points more likely to classify themselves as middle-of-the-road, while those in other social sciences and humanities are 1–3 percentage points less likely (Appendix Figure A8). Finally, students in humanities and social sciences are 1–2 percentage points more likely to become far left, whereas business and economics students show only a very small (less than 1 percentage point) increase in high conservative self-placement (Appendix Figures A9 and A10).

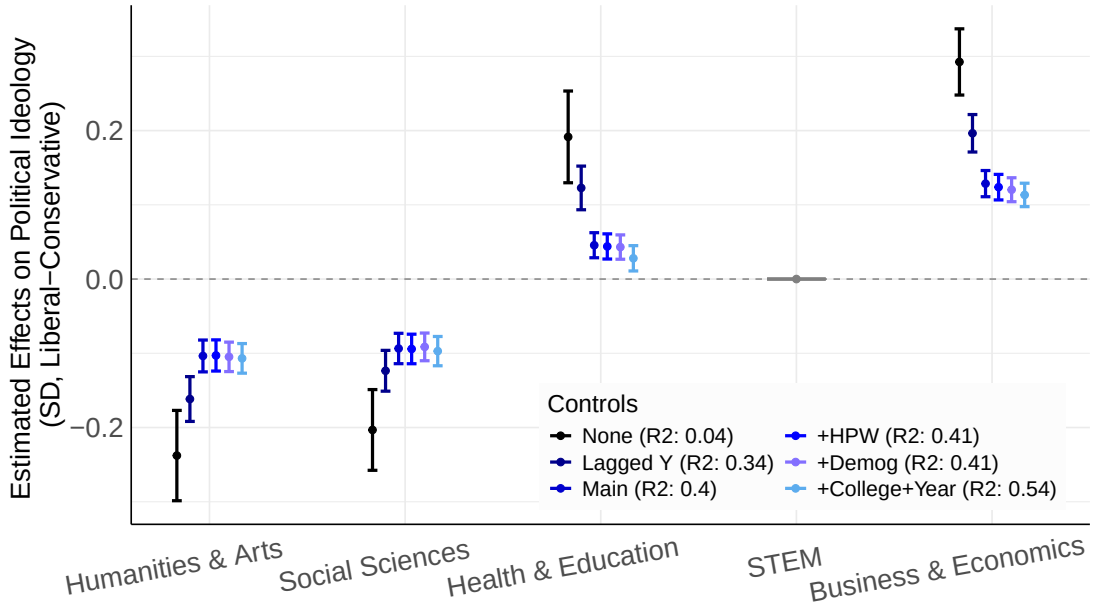
These magnitudes are large, comparable to other meaningful life experiences, expected to translate into meaningful differences in voting behaviors, and also help explaining broader political outcomes such as the gender gap in political ideology. We elaborate on this implications in Section 6.

3.2 Robustness and Sensitivity for Unobservable Selection

Additional control variables. Figure 4 displays the estimated coefficients from the broader model, considering different subsets of control variables listed in

Table A4. Initially, the coefficients reflect a model incorporating only the major dummies, which is prone to selection bias. The model is then sequentially expanded to include controls for students' initial political ideology, and all controls included in our main specification (intended majors and social preferences). These controls appear crucial for satisfying our identification assumption, as their inclusion significantly impacts the estimated coefficients. However, the estimates remain stable as additional control variables—such as time use, demographics, and college by year fixed effects— are incorporated into the analysis. This stability is particularly noteworthy since these additional control variables could be considered potential sources of unobserved confounding.

Figure 4: Effects of College Majors on Political Ideology, Robustness to Including Additional Sets of Control Variables



Note: This figure plots the estimates for δ_m from equation 1 and their 95% confidence intervals. The estimated coefficients represent the effects of studying in each major group relative to STEM, health, and education (the omitted group of majors). The outcome variable is students' responses to the following question: "How would you characterize your political views?". Estimates are shown in standard deviations. The sample includes only students with non-missing majors and political ideology in the graduation survey (313,466 students). Table A4 provides the full list of control variables. Baseline refers to baseline political ideology and preferred refers to intended majors. Our model incorporates all variables flexibly (with fixed effects for each value available in the survey).

Negative control exposure test (falsification). We further assess the scope for omitted-variable bias by implementing a *negative-control exposure* (NCE) test. Omitted-variable bias arises when an unobserved factor simultaneously affects the outcome p and the treatment D even after we condition on observables X. Two related falsification excercises exist. A *negative-control outcome* (NCO) test checks

whether D predicts an outcome that is assumed to be a proxy for a potential confounder which is correlated with the outcome. A *negative-control exposure* (NCE) test instead asks whether the outcome is predicted by a variable that is assumed to be a proxy for a potential confounder which is correlated with the treatment (see Danieli et al., 2023 for a further discussion with respect to instrumental variables). In our context, an NCE is readily available. Students' intended majors at entry are strongly related to the tastes and abilities that also shape their actual majors. Thus, we can test whether they predict students' graduation ideology, controlling for the actual majors and other controls. Figure A12 validates this choice and shows the results of an NCE test using intended majors. When the specification controls for the actual major (Panel A), coefficients on intended majors are indistinguishable from zero; omitting the realised major (Panel B) restores a substantial association. This further supports the validity of our conditional-on-observables approach for generating plausibly causal estimates in this setting.

Sensitivity for selection on unobservables. Furthermore, we assess the robustness of our estimates to selection on unobservables using the coefficient-stability approach of Oster (2019). The bias-adjusted effect is

$$\beta^* \;=\; \beta_{\text{full}} \;-\; \delta\,(\beta_{\text{short}} - \beta_{\text{full}})\frac{R^2_{\text{max}} - R^2_{\text{full}}}{R^2_{\text{full}} - R^2_{\text{short}}},$$

where β_{short} (R^2_{short}) and β_{full} (R^2_{full}) come from the baseline and fully-controlled specifications, R^2_{max} is the maximum attainable explanatory power, and δ is the relative strength of selection on unobservables versus observables.

We set $R^2_{\text{max}} = 0.85$, which is an appropriate for a discrete outcome (supported by a simulation) and solve for the value of δ that drives the adjusted coefficient to zero ($\beta^* = 0$). Using the estimated coefficients and R^2 reported in Figure 4, we get that selection on unobservables should be 3.3 times larger relative to selection on (not essential) observables to change the sign of our estimate for the effects of studying humanities or social sciences instead of business and economics. To see this, note that the full coefficient is 0.22 while the short one is 0.25, and R_2 is 0.54 relative to 0.4. Thus: ($\beta_{\text{short}} = 0.25,\ \beta_{\text{full}} = 0.22,\ R^2_{\text{short}} = 0.40,\ R^2_{\text{full}} = 0.54$):

$$\delta \;=\; \frac{\beta_{\text{full}}}{\beta_{\text{short}} - \beta_{\text{full}}}\frac{R^2_{\text{full}} - R^2_{\text{short}}}{R^2_{\text{max}} - R^2_{\text{full}}} \;=\; \frac{0.22}{0.03} \times \frac{0.14}{0.31} \;\approx\; \mathbf{3.3}.$$

Similarly, we can quantify selection on unobservables relative to the model with no controls. Given that the estimated short coefficient is 0.52 and R^2 is 0.04, we

get that: ($\beta_{\text{short}} = 0.52,\ \beta_{\text{full}} = 0.22,\ R^2_{\text{short}} = 0.04,\ R^2_{\text{full}} = 0.54$):

$$\delta \ = \ \frac{0.22}{0.52 - 0.22} \times \frac{0.54 - 0.04}{0.85 - 0.54} \ = \ \frac{0.22}{0.30} \times \frac{0.50}{0.31} \ \approx \ \mathbf{1.2}.$$

Thus, unobservables would have to be about 20% **stronger** than all observed controls combined (including, for example, baseline ideology and intended majors) to eliminate the effect.

Accounting for post-baseline survey confounders. As mentioned earlier, and presented in Figure A5, our results could also be biased due to post-baseline survey experiences that affect final major choices, if such experiences directly affect graduation political ideology, too. To address this caveat, we can use students' intended majors at college entry as instruments for their eventual major selections. This strategy exploits variation driven by initial preferences, thereby mitigating bias from later college experiences. The results in Panel B of Figure A12 can be viewed as the reduced form of this instrumental variable approach. The following system of equations implements the full IV strategy:

$$D_{im} = \sum_m \pi_m D^0_{im} + Q_i'\beta + u_i, \tag{2}$$

$$p_i = \sum_m \tau_m D_{im} + Q_i'\gamma + v_i, \tag{3}$$

Where D^0_{im} are the intended major dummies, serving as instrumental variables for actual major choices D_{im}, and Q_i is defined as X_i excluding the intended major dummies. Figure A4 shows that about 70% of students ultimately pursue a major within the same group of their intended major, indicating a strong first stage for the IV approach. The independence assumption for this analysis—requiring that intended majors are uncorrelated with factors affecting graduation ideology, conditional on our controls ($v_i \perp\!\!\!\perp D^0_{im} \mid Q_i$)—is stronger than that of our main analysis. This assumption can be tested using a negative control instrument test with proxies for other determinants of major preferences, such as career preferences, which we plan to assess in future versions.

The IV monotonicity assumption is likely to hold because a preference for a specific major increases the likelihood of pursuing it. This exercise also relies on an exclusion restriction: major preferences should affect graduation ideology only through their impact on major choice. A potential violation could occur if students who preferred a major but ultimately did not choose it still took related courses that influenced their political ideology. Although such violations might

make these results less comparable to our main approach, they would operate through the same channel and are unlikely to be large in our setting.

Figure A13 shows that the results from this IV approach are very similar to those obtained from our main OLS estimation. Furthermore, the IV estimates are slightly larger than the baseline OLS estimates. If the OLS estimates were biased due to omitted variables, we would expect them to be upward biased. Thus, the fact that the IV estimates are larger suggests that the baseline OLS estimates may not be biased due to unobserved factors. It is plausible that the larger estimates using the IV strategy result from attenuation bias in the OLS estimates, which may arise due to measurement error. However, the differences between the estimates from the two strategies are not statistically significant and may reflect noise.

Double majors. The analysis so far focused on students' primary major, as second majors are not observed for cohorts enrolled before 2005. Table A5 summarizes the prevalence of double majors in our sample, showing that about 30% of students in the relevant cohorts pursue a double major, with this share varying across fields. To assess whether missing information on second majors could bias our main results, we re-estimate Equation 1 both with and without flexible controls for students' second majors. Table A6 demonstrates that the estimated effects on both political ideology and policy attitudes' index are nearly identical, indicating that omitting second majors does not meaningfully affect the main conclusions.

We also explore how the effects of first majors interact with students' second majors by estimating a version of Equation 1 that includes dummies for each major combination, with single-major STEM students as the reference group. Figure A15 presents these estimates. The results reveal that the ideological effects of double majors generally depend on the combination of fields. For example, students who major in business or economics and also take a second major in social sciences or humanities do not become more liberal relative to STEM-only students, suggesting that the conservative effect of business/economics offsets the liberal influence of the social sciences and humanities. However, combining social sciences or humanities with social sciences or humanities leads to much more liberal shift, with estimated effects reaching 0.12–0.16 standard deviations above STEM. In contrast, Combining business and economics with business and economics, lead to 0.19 shift toward conservatism.

3.3 Heterogeneity of the Effects

We also examine whether the effects of college majors are heterogeneous across different groups by estimating Equation 1 separately for various subsamples. Table A7 presents results by students' personal characteristics. The effects of major on ideology and attitudes are remarkably similar across gender, socioeconomic background, and ability level. If anything, the effects are slightly larger among high-ability students (0.26 SD in ideology, 0.29 SD in attitudes) compared to their lower-ability peers (0.22 SD in both outcomes).

Table A8 reports estimates by students' baseline political ideology. Here, the effects tend to be larger for students whose initial views differ from the typical ideological shift in their chosen major. However, this pattern may be partly mechanical: students who start out further to the left or right have less room to move in that direction.

Table A9 further examines variation by college characteristics, finding broadly similar effects across college types, selectivity, and geographic regions. Finally, Table A10 investigates changes over time, showing that the effects have become slightly larger since 2010 (0.27 SD), compared to 0.21–0.22 SD in earlier periods.

3.4 Quasi-Experimental Analysis of College-Level Changes in Fields-of-Study Availability

While the main results rely on a conditional-on-observables approach, we further validate the causal interpretation using a quasi-experimental design that exploits college-level shocks to field supply. In theory, such shocks could have served as instrumental variables to estimate the impact of college majors—provided they affect students' political ideology only through changes in their chosen majors. However, this exclusion restriction is unlikely to hold here, as these shocks may also influence students' course selections beyond their majors. Nonetheless, because these expansions reflect supply-side shifts rather than demand, they are expected to be orthogonal to students' potential outcomes, allowing us to estimate a policy-relevant causal parameter: the effect of expanding access to specific fields within a college. For statistical power reasons, our analysis focuses on sharp expansions in business and economics programs. While some colleges also expand STEM fields, the implications for political ideology are ambiguous, and humanities and social sciences are less likely to expand during the study period.

Administrative data from the Integrated Post-secondary Education Data System (IPEDS) is employed to identify such shocks. This dataset provides information on the total number of graduates from each program (at the Classification of Instructional Programs, or CIP, level) by college and year. We classify the CIP

codes into groups of majors, corresponding to the groups used in our primary analysis. This allows us to calculate, for each college i by year y, the share of students in business and economics majors, denoted by B_{icy}. For the main analysis, shocks are defined as college-years with a relative increase of 30% or more in the share of students studying business or economics, with no significant change (an increase or decrease of 15% or more) in the previous year. While the choice of specific values is arbitrary, we decide on the specific values using a data-driven approach. Specifically, we run the same algorithm 27 times, with 3 different values for the share (20%, 25%, 30%), and also varying the restriction on changes in the previous period (half/two-fifths/third of the given share), and the minimal number of students in the cohort (0, 25, or 50). We choose the definition that yield the highest increase in business and economics majors in our survey. We also report the results using other definition, and plot the effects on business and economics majors against the effects on political ideology, which is shown in Figure A16.

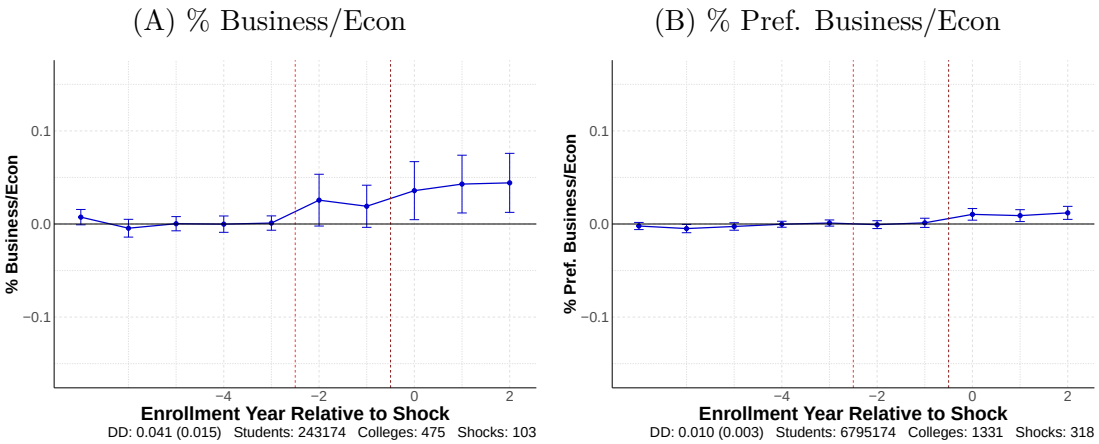
Using the main definition we identify large shocks in field availability in 318 of the colleges included in the baseline survey, but only 103 of them are included in the graduation survey, too. We use all colleges for falsification, and only the colleges in the graduation survey for the analysis itself. Anecdotal evidence suggests that these shocks are driven by external factors. For instance, web reports indicate that the two largest colleges experiencing such shocks since 2010 received significant financial donations aimed at expanding access to business and economics programs, with the timing closely aligning with the identified shocks. This further supports the assumption that these shocks reflect college supply decisions rather than students' demand.

The following event study equation estimates the dynamic impact of these college-level shocks:

$$y_{icy} = \sum_{k \neq -3} \rho_k \mathbb{1}[\text{years since shock} = k] + \eta_c + \zeta_y + \epsilon_{icy}, \tag{4}$$

The term $\mathbb{1}[\text{years since shock} = k]$ is an indicator variable equal to 1 if the students first enrolled in college k years before ($k < 0$) or after ($k > 0$) the identified shock year. The coefficients of interest, ρ_k, represent the effect of the shock relative to the omitted category ($k = -3$, three years preceding the shock). We compare to this cohort, and exclude the subsequent two cohorts from our estimation as their chose coursework may still be affected by the shock. The terms λ_c and η_y denote college and year fixed effects, respectively. The analysis focuses on a window of eight years around the shock. Additionally, estimating an alternative specification that includes a single indicator for post-shock years

Figure 5: Estimated Impacts of College-Level Shocks to Business Major Preference and Choice



Note: These figures plot the estimates for ρ_k from equation 4, representing the effects of college-level shocks to the availability of business and economics on students' actual major choices, along with their standard errors clustered at the college level. Each figure also reports the equivalent difference-in-difference estimate for the average impact. Estimation is based on the imputation estimator (Gardner, 2022).

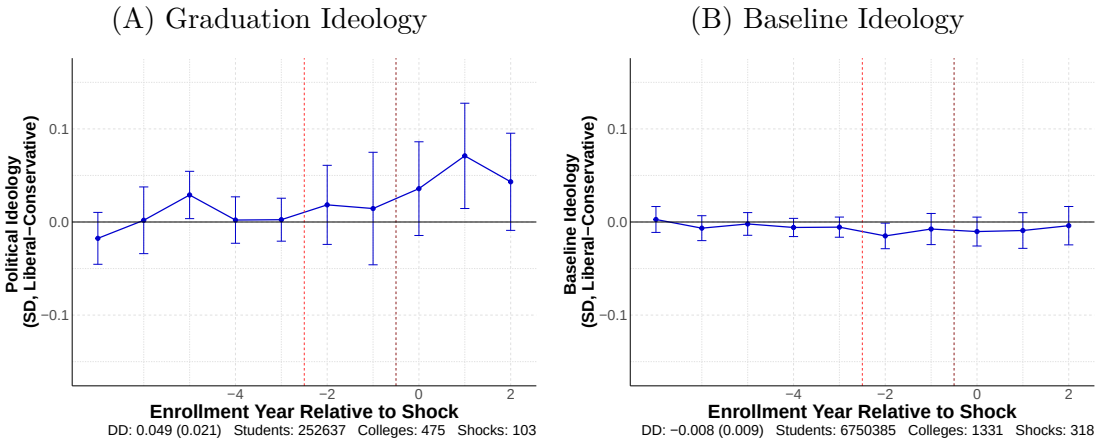
allows us to capture the average effect on students during the four years following the shock. The timing of events varies across colleges in our sample, resulting in a staggered difference-in-differences design. Recent literature (surveyed recently by Roth et al., 2023) has argued that Two-Way Fixed Effects (TWFE) regressions may be biased in such settings. To overcome these issues, our main estimation employs the imputation estimator (Gardner, 2022),[6] but we also validate the results using other estimators such as the canonical TWFE.

Figure 5 presents the estimated effects on binary indicators for majoring in Business/Economics (using the graduation survey) and for intended major in these fields (using the larger baseline survey). Prior to the shock, both outcomes follow parallel trends. However, following the shock, the probability of a student majoring in Business/Economics increases by 4 percentage points, while the likelihood of declaring it on entrance only slightly increase by 1pp. These results indicate that the shocks are statistically significant and produce a meaningful shift in academic field exposure. They also suggest that they are not driven by students' demand. Figure A17 further shows that the increase in economics and business major choices is driven by a decrease in other social science majors.

Figure 6 focuses students' ideologies in cohort enrolling before and after the shock. We examine both baseline and graduation ideology. Panel (A) shows that subsequent to the shock, students' graduation political ideology shifts 0.05 standard deviations toward conservatism. Panel (B) shows that students' baseline

[6]This estimate is numerically equivalent to Borusyak et al. (2024), but its inference seems to perform better in finite samples.

Figure 6: Estimated Impacts of College-Level Shocks to Field Availability on Students' Ideology



Note: These figures plot the estimates for ρ_k from equation 4, representing the effects of college-level shocks to the Graduation and Baseline political Ideology, along with their standard errors clustered at the college level. Each figure also reports the equivalent difference-in-difference estimate for the average impact. Estimation is based on the imputation estimator (Gardner, 2022).

political ideology is unchanged, further supports the view that the shocks are orthogonal to students' ideologies as they are driven by supply-side factors. It is important to note that these falsification tests are highly powered, as they include the full sample of students from the baseline survey. Figure A18 further shows that the results are qualitatively similar when using TWFE approach.

These results suggest that shock to field availability affect students' ideologies, reinforcing the main causal claim of this section. In terms of magnitudes, these estimates are not directly comparable to those from the conditional-on-observables approach, as they estimate the average effect of college-level expansions rather than isolating the direct impact of majoring. As explained earlier, students who are not shifted into business and economics majors, can still be affected by these shocks, e.g., by taking more non-major courses in these fields. Nonetheless, the estimates are both statistically and economically significant, suggesting that the effects of fields of study on students' ideologies are meaningful.

4 Policy Attitudes

This section attempts to explore whether the ideological effects of college majors represent a substantial change in worldview, or merely reflect changes in political self-identification. We start by estimating the impacts of college majors on these outcomes. Then, we also quantify the extent that changes in different policy

attitudes are driving the effects on political ideology, documented in the previous section.

4.1 Impacts of College Majors on Policy Attitudes

This analysis explores how college majors influence students' worldviews beyond simple liberal-conservative self-placement. It begins by estimating equation 1 using various policy attitudes—measured in standard deviations—as outcome variables. Table 2 reports the results, which indicate that college majors significantly affect policy attitudes. Compared to STEM majors, social Sciences and humanities/arts majors consistently shift in a liberal direction across almost all policy domains. They become significantly more supportive of abortion rights, gun control, death penalty abolition, LGBTQ rights, marijuana legalization, universal healthcare, higher taxes on the wealthy, and protections for free speech, while showing less support for tough-on-crime stances and greater recognition of ongoing racial discrimination. In contrast, business and economics students become more conservative than STEM students, especially on economic and punitive justice issues. Notably, the effects of college major are much larger for economic policy items than for most cultural issues: for example, the gap between business/economics and humanities/social Science majors reaches 0.22–0.25 standard deviations for healthcare and taxation, but only 0.07 standard deviations for abortion rights or gun control. Furthermore, while all students tend to become more liberal on abortion during college, economic attitudes diverge sharply by major, with some groups shifting left and others right.

Furthermore, the analysis quantifies how well the overall change in political ideology aligns with shifts in policy attitudes. To do so, we first predict each student's political ideology using their responses to all policy questions in Table A1; these predicted values capture how closely a student's policy attitudes conform to a liberal outlook beyond their self-placement on the liberal-conservative spectrum. We then estimate equation 1 with these predicted values as the outcome. Figure A14 shows that majors driving students toward more liberal self-identification also shift their attitudes on various policy areas in a manner consistent with a liberal worldview. The effect size of moving from economics or business to other social sciences or humanities is 0.18-0.28 standard deviations—similar to the effect on self-placement political ideology. This suggests that the overall change in political ideology may be partly explained by changes in policy attitudes. In the next subsection we explore this directly.

Table 2: Effects of College Majors on Policy Attitudes

	Abortion	Guns	Death	Criminal	Race	LGBTQ	Marijuana	Healthcare	Taxes	Speech	Change	Climate
Business/	-0.01	-0.00	-0.04***	0.03**	0.04**	0.06***	0.01	-0.15***	-0.15***	-0.00	0.01	-0.20***
Economics	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Health/	-0.08***	0.05***	-0.03**	-0.00	-0.06***	0.04**	-0.08***	0.03**	-0.00	0.05***	-0.07***	-0.19***
Education	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Social	0.06***	0.06***	0.09***	-0.13***	-0.15***	-0.07***	0.08***	0.10***	0.07***	0.05***	-0.10***	-0.10***
Sciences	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Humanities/	0.04***	0.07***	0.12***	-0.11***	-0.13***	-0.08***	0.08***	0.08***	0.07***	0.03*	-0.05***	-0.09***
Arts	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	262066	154490	212513	144344	276313	194798	230710	161675	201434	238210	210727	66744
Baseline Change	-0.26	0.04	-0.16	0.18	0.1	0.26	-0.4	-0.03	-0.01	0.21	-0.11	-0.4

This table shows the estimates for δ_m from equation 1 and their 95% confidence intervals. The estimated coefficients represent the effects of studying each major relative to STEM (the omitted group of majors). The sample includes only students with non-missing values in the major and outcome. The outcomes represent responses (measured in standard deviations) to the following questions: Abortion should be legal; The federal government should do more to control the sale of handguns; The death penalty should be abolished; There is too much concern in the courts for the rights of criminals; Racial discrimination is no longer a major problem in America; It is important to have laws prohibiting; Marijuana should be legalized; A national health care plan is needed to cover everybody's medical costs; Wealthy people should pay a larger share of taxes than they do now; Colleges have the right to ban extreme speakers from campus; Realistically, an individual can do little to bring about changes in our society; Addressing global climate change should be a federal priority; Baseline represent the average change in the outcome during college for students in the omitted group of majors. *** p<0.01, ** p<0.05, * p<0.1

4.2 Decomposing Effects on Political Ideology

Given that college majors influence not only students' self-identified ideology but also their specific policy attitudes, it is natural to ask to what extent changes in policy attitudes mediate the observed ideological effects. To address this, we implement a decomposition approach following Gelbach (2016), which quantifies how much each covariate in a regression accounts for changes in the baseline coefficients. Specifically, we estimate the following model:

$$\underbrace{p_i}_{\substack{\text{Graduation political} \\ \text{ideology}}} = \underbrace{\sum_m \delta'_m D_{im}}_{\substack{\text{Major} \\ \text{effects}}} + \underbrace{X'_i\alpha'}_{\substack{\text{Baseline ideology,} \\ \text{intended major,} \\ \text{social preferences,} \\ \text{college type, year}}} + \underbrace{A'_i\beta}_{\text{Graduation attitudes}} + \varepsilon_i. \tag{5}$$

This equation is identical to 1, but adds students' graduation policy attitudes as additional covariates. Importantly, these are mediators rather than controls, as they are determined post-treatment and, as discussed above, are themselves affected by the treatment. Comparing the estimated major effects (δ'_m) from this model to the baseline estimates (δ_m) reveals the extent to which policy attitude changes account for the overall ideological effects. This analysis requires an additional identification assumption: that potential political ideology is independent of potential policy attitudes, conditional on observed covariates. While this assumption is not trivial, we believe that the strong explanatory power of our controls and mediators makes substantial omitted variable bias less likely. We also assess the robustness of our conclusions as we add more variables capturing policy attitudes.

We begin by focusing on questions that appear consistently across many survey years. Specifically, we use two economic questions (taxation and healthcare), four cultural questions (abortion, race, LGBTQ rights, and free speech), and two additional questions (marijuana legalization and ability to effect change). For each group, we construct a principal component summarizing responses within the group. This allows us to quantify the importance of each component as a mediator using the approach of Gelbach (2016).

Table A11 presents the results separately for pairs of major groups. Policy attitudes explain a substantial share of the effect of college major: together, all attitudes account for roughly 47% and 40% of the difference between studying business/economics and social sciences/humanities. Economic attitudes alone explain a larger portion than cultural ones, while other attitudes contribute

relatively little. Table A13 provides further detail on the relative importance of specific attitudes.

In Table 3, we incorporate additional attitudes, which increases the share explained to 49% and 50%. The apparent increase in the role of cultural attitudes in this specification mainly reflects the inclusion of more cultural items. Figure 7 presents these results graphically, illustrating the relative contribution of each component to the impact of each major compared to STEM. The figure underscores that economic attitudes are the primary mediators for the effects of business and economics majors, whereas cultural attitudes account for a larger share of the effects observed among social sciences and humanities/arts majors.

Finally, Table A12 allows the weights on different attitudes to vary by field, capturing the possibility that majors differ not just in their views but in the priorities they assign to various policy domains. However, differences in priorities appear to play only a minor role in explaining the overall effects.

Table 3: Decomposition of the Effects of College Majors

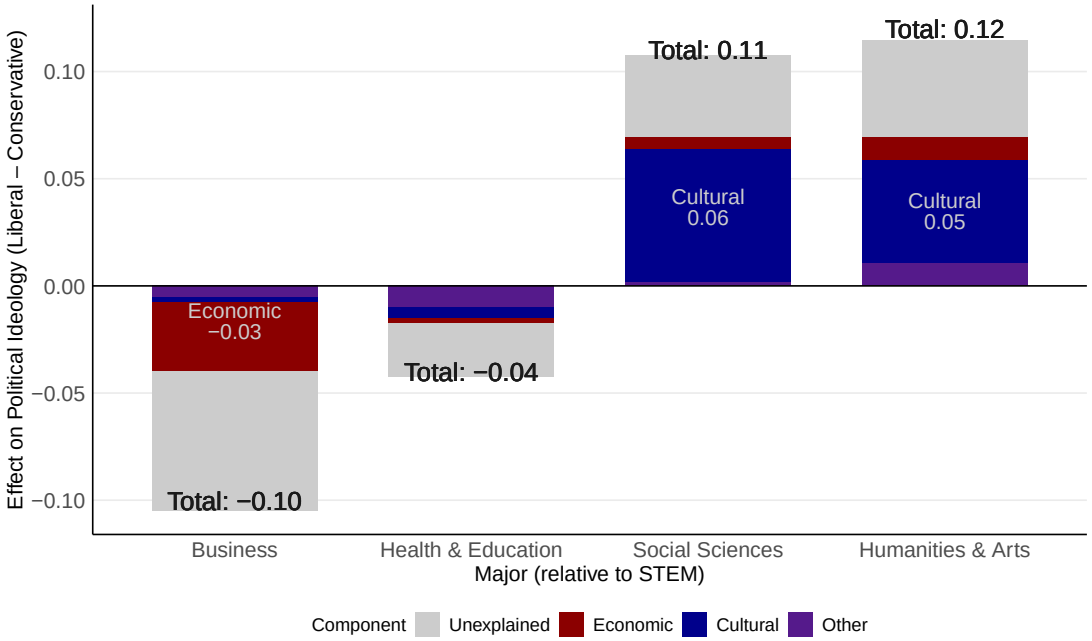
Major 1	Major 2	Base Coef	Full Coef	Economic Views	Culture Views	Other Views	Not Explained
Business	Health & Education	-0.078	-0.054	38.39%	-1.92%	-5.8%	69.33%
Business	STEM	-0.105	-0.065	30.88%	2%	4.97%	62.15%
Business	Social Sciences	-0.224	-0.114	19.88%	25.87%	3.26%	51%
Business	Humanities & Arts	-0.242	-0.121	21.49%	21.96%	6.44%	50.11%
Health & Education	STEM	-0.042	-0.025	6.29%	11.23%	23.55%	58.92%
Health & Education	Social Sciences	-0.147	-0.054	6.09%	47.94%	9.24%	36.73%
Health & Education	Humanities & Arts	-0.146	-0.052	9.03%	40.37%	15.19%	35.42%
STEM	Social Sciences	-0.108	-0.038	5.42%	57.71%	1.42%	35.45%
STEM	Humanities & Arts	-0.115	-0.045	9.48%	42.03%	9.03%	39.46%
Social Sciences	Humanities & Arts	-0.010	-0.004	51.17%	-72.83%	83.2%	38.47%

extitNotes: This table shows the Gelbach decomposition of the estimated effects of college major on students' political ideology at graduation. Economic refers to the principal component constructed from questions about any economic issue included in the survey. Culture refers to the principal component of questions on any cultural issue. Other refers to the principal component for other attitudes. Base Coef is the coefficient on the major group (relative to the paired group) from the baseline model, and Full Coef is the coefficient after controlling for all policy attitudes. The remaining columns show the share of the base effect explained by each policy attitude group (expressed as a percentage of the baseline effect), with Not Explained representing the share of the major effect not accounted for by the included mediators. All models control for baseline ideology, intended major, and social preferences.

5 Mechanisms

The results above demonstrate that academic fields substantially shape students' political ideology, reflecting significant changes in their worldview. This section investigates potential mechanisms behind these effects. First, we examine peer influences and find that changes in the baseline ideology of peers do not predict

Figure 7: Gelbach Decomposition of the Effects of College Majors



Note: This figure plots the decomposition of the effects of each college major (relative to STEM) on students' political ideology at graduation. Each bar represents the total effect for a given major, divided into components explained by economic attitudes, cultural attitudes, other attitudes, and the portion not explained by included mediators ("Unexplained"). Economic, cultural, and other components correspond to principal components constructed from relevant survey questions as described in the text. Values indicate the contribution of each component to the total effect, measured in standard deviations of political ideology (liberal–conservative).

graduation ideology, suggesting that peer composition is not the primary channel. Second, we assess the impact of departmental ideology by leveraging variation in faculty ideology across colleges. The evidence indicates that this variation matters, implying that academic content, instructional methods, or faculty interactions contribute to the observed effects. Finally, we discuss additional potential mechanisms—such as differences in earning expectations—that may warrant further investigation in future work.

5.1 Peer Ideology Composition

Students in different majors are exposed to peers with varying political ideology. Thus, we examine whether students' political ideology are influenced by the political ideology of peers in the same college major cohort. To avoid reflection issues (Manski, 1993), the analysis focuses on how one's *graduation* ideology is affected by their peers' *baseline* ideology. Throughout the analysis, peers are defined as students who enrolled in the same college in the same year and *intended to* pursue the same major. We define peers based on intended majors rather than actual majors for two reasons. First, since students typically finalize their majors in their second or third year, using intended majors avoids potential endogeneity

from early college friendships influencing final major choices. Second, the intended major data from the freshman survey covers a much larger sample than the actual major data from graduation, reducing measurement error and increasing precision. Moreover, many students with the same intended major eventually choose the same actual major, and even those who do not are likely to share similar early course experiences.

Causal identification relies on exploiting idiosyncratic variations in peers' baseline ideology within the same program (college by major) over time. To achieve this, we examine the relationship between a student's graduation ideology and the average baseline ideology of their peers, controlling for fixed effects at the college-by-major, college-by-year, and major-by-year levels. We also include a counterfactual measure of peer ideology constructed from students in the same college and major from adjacent cohorts (two years ahead and two years behind). This control allows us to interpret the estimates as comparing the effects of actual peers versus similar potential peers. Under the assumption that, conditional on our fixed effects, peers are as good as randomly drawn from the pool of potential peers, controlling for their average ideology is sufficient for identification.[7] Formally, the following equation estimates peer effects:

$$p_{icmt} = \sigma P_{cmt}^{-i} + \beta \Phi_{cmt}^{-i} + \nu_{cm} + \theta_{ct} + \lambda_{mt} + \varepsilon_{icmt} \tag{6}$$

Where p_{icmt} is political graduation ideology of student i studying at college c, preferring major m, and starting their studies at year t; P_{cmt}^{-i} represents the average baseline political ideology of the student's peers (in standard deviations); Φ_{cmt}^{-i} captures the average ideology of students in the same college and intended major across the five-year window ($t' \in \{t-2, t-1, t, t+1, t+2\}$; ν_{cm}, θ_{ct}, and λ_{mt} denote college-major, college-cohort, and major-cohort fixed effects, respectively. Identification of this specification relies on the assumption that potential graduation ideology are orthogonal to peers' average ideology, conditional on the controls. This assumption yields a testable implication: a student's baseline political ideology should be uncorrelated with their peers' average ideology after conditioning on our control set. We empirically validate this and discuss the results below.

[7]This approach follows Guryan et al. (2009) and can be viewed as implementing a recentering econometric strategy (Borusyak and Hull, 2023). However, since no explicit randomization occurs, students can choose their college and major in our setting. We include additional fixed effects and interpret our identification strategy as model-based, with the fixed effects absorbing slight differences between groups within the pool of potential peers.

Measuring peer baseline ideology based on a subsample. A key challenge in our setting is that only a subset of peers is observed. Although this subsample is representative, using the observed peers' average ideology may introduce attenuation bias by incorrectly assuming that the observed and unobserved peers share similar idiosyncratic ideology components. To address this, we construct an adjusted treatment measure that predicts the unobserved peers' ideology using fixed effects from Equation 6. Specifically:

$$P_{cmt}^{-i} = \alpha_{ct} P_{cmt}^{-i,O} + (1 - \alpha_{ct}) \widehat{P_{cmt}^{-i}} \tag{7}$$

Where $P_{cmt}^{-i,O}$ is the average ideology of observed peers, α_{ct} is the share of students in college c and enrollment year t who are covered in the baseline survey,[8] and $\widehat{P_{cmt}^{-i}}$ is the predicted political ideology of students in college c and enrollment year t, with intended major m, based on all elements included in equation 6, except for P itself. Φ_{cmt}^{-i} is also adjusted using the predicted value for the unobserved potential peers. Under the assumption that peers' ideology are uncorrelated conditional on controls, this constructed measure equals the average ideology of all peers (observed and unobserved) plus a small measurement error due to idiosyncratic components in unobserved peers' ideology. Appendix C formally derives the attenuation bias and presents our proposed solution. In the main analysis, the sample is restricted to college cohorts, where the baseline survey includes at least 5 peers which account for at least 10 percent of enrolled students. The results are not sensitive for choosing other values.

Avoiding exclusion bias. Estimating peer effects in specifications that include fixed effects presents a unique challenge of exclusion bias (Guryan et al., 2009; Angrist, 2014; Caeyers and Fafchamps, 2024). The exclusion bias arises because individuals are mechanically excluded from their own peer group, creating a negative correlation between individual outcomes and peer averages in specifications that include fixed effects. For individuals in the same college-year-major cell, when an individual is above (below) the pool average, their exclusion from their peer group necessarily lowers (raises) the peer average, inducing a negative correlation. A split-sample method addresses this bias by dividing the data into separate groups for measuring outcomes and defining peer ideology (Stevenson, 2017). Our analysis builds on this approach by implementing a four-way split. It randomly divides the graduation sample into quarters, using each quarter in turn as the outcome group while constructing peer measures from the remaining

[8]We calculate the coverage as the number of surveyed students in college c in year t divided by the number of total first-year BA enrollment based on the IPEDS administrative data.

three quarters combined with baseline survey observations not included in the graduation sample. The reported coefficients average the estimates from these four iterations.[9]

Table 4: Estimated "Effects" of Peer Ideology Composition on Baseline Ideology (Falsificataion)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Estimate	0.751***	0.726***	0.025**	0.014***	0.036***	0.027***	0.014	-0.002
	(0.022)	(0.015)	(0.013)	(0.004)	(0.014)	(0.004)	(0.015)	(0.004)
Estimate	1.216***	1.028***	0.050**	0.020***	0.066***	0.039***	0.029	-0.003
(Adjusted)	(0.038)	(0.019)	(0.022)	(0.006)	(0.024)	(0.006)	(0.025)	(0.006)
Full		V		V		V		V
Expectation					V	V	V	V
Baseline								
FEs			V	V			V	V

Notes: This table presents falsification for equation 6. The outcome variable measures political views using responses to the question "How would you characterize your political views?" from the baseline survey The treatment variable captures peers' responses to the same question in the baseline survey, where peers are defined as students from the same college-cohort-intended major group. The estimates account for exclusion bias using a four-way split-sample approach. Specifications include controls for the average political views of potential peers from four adjacent cohorts (Expectaions), pre-college political ideology and opinion index (Baseline), and college-major, college-cohort, and major-cohort fixed-effects (FEs). All estimates are in standard deviation units. The sample is restricted to students with non-missing values for both major and political views, and with information available for at least 5 of their peers which represent at least 10% of the cohort. Full sample include all students in the baseline survey, and the non-full sample include only those appearing in the graduation sample too. Full sample includes 3782828 students, and the non-full sample includes only those appearing in the graduation sample too, 228617 students *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Falsification tests. Table 4 presents balance test, which regresses students' baseline political ideology on their peers' average ideology using equation 6. Columns (1), (3), (5), (7) use the full baseline sample, while columns (2), (4), (6), (8) restrict the estimation sample only to students who complete the graduation survey (though the peer ideology treatment remains defined using the full freshman sample). We report both unadjusted and adjusted estimates, but prefer the adjusted ones as the unadjusted may suffer from attenuation bias. The results

[9]We do so by estimating equation 6 with quarter dummies interacting with all variables and fixed effects except the treatment.

support the identification assumption, showing that when all controls are included, the estimated coefficients become tiny and statistically insignificant in both samples. The large sample size allows the rejection of positive coefficients larger than 0.025 and 0.051 in the baseline and graduation samples, respectively.

Table 5: Estimated Effects of Peer Ideology Composition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Estimate	0.750***	0.009	-0.006	0.012	-0.013	0.004	-0.003
	(0.023)	(0.012)	(0.010)	(0.014)	(0.010)	(0.013)	(0.010)
Estimate	1.215***	0.018	-0.008	0.021	-0.021	0.007	-0.006
(Adjusted)	(0.040)	(0.020)	(0.016)	(0.023)	(0.018)	(0.022)	(0.016)
Expectation				V	V	V	V
Baseline			V		V		V
FEs		V	V			V	V

Notes: This table presents estimates of peer effects on students' political ideology based on equation 6. The outcome variable measures political views using responses to the question "How would you characterize your political views?" from the graduation survey The treatment variable captures peers' responses to the same question in the baseline survey, where peers are defined as students from the same college-cohort-intended major group. The estimates account for exclusion bias using a four-way split-sample approach. Specifications include controls for the average political views of potential peers from four adjacent cohorts (Expectaions), pre-college political ideology and opinion index (Baseline), and college-major, college-cohort, and major-cohort fixed-effects (FEs). All estimates are in standard deviation units. The sample is restricted to students with non-missing values for both major and political views, and with information available for at least 5 of their peers which represent at least 10% of the cohort. Full sample includes 227475 students, and the non-full sample includes only those appearing in the graduation sample too, 227475 students *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Estimated peer effects. Table 5 present the main estimates for the impacts of peer political ideology, based on equation 6. The table shows that while peers' ideology strongly predicts each other's graduation ideology, this relationship disappears when accounting for selection into similar programs. Remarkably, the estimated coefficients are small and insignificant across many different specifications. Moreover, the large sample size enables ruling out peer effects as small as 0.025 in the preferred specification (column 8, adjusted estimate). Appendix Table A14 demonstrates robustness across various specifications, consistently showing small negative coefficients with precise standard errors. Appendix Table A15

examines heterogeneity across major groups, finding no significant effects in any of them. It also includes one analysis focusing on small cohorts, where peer effects may be more important, but the estimated coefficients are still not positive.

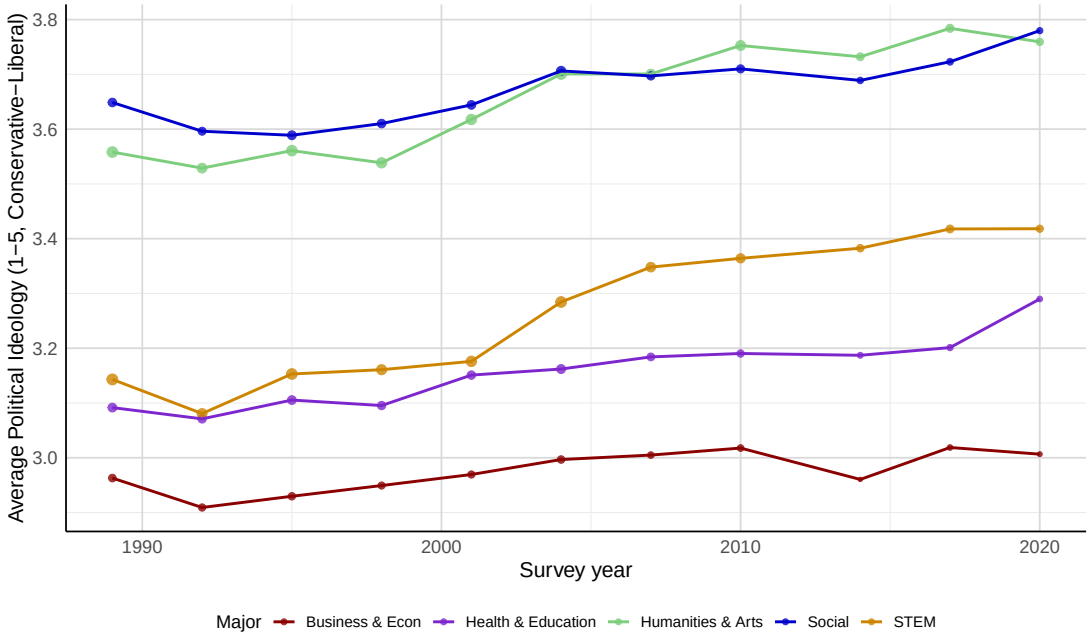
A back-of-the-envelope calculation assesses whether peer effects explain a large fraction of the estimated college major effects. The baseline difference in political views between business/economics and social/humanities majors is 0.351 standard deviations. With an upper-bound peer effect estimate of 0.025 standard deviations, the maximum peer effect from switching between these majors equals 0.009 standard deviations (0.025×0.351). Since only 37 percent of the pairs of students with the same intended major ultimately choose the same major, a more conservative estimate yields 0.024 standard deviations (0.009/0.37). This accounts for approximately 10 percent of the estimated effect of choosing business/economics over social/humanities (0.22 standard deviations), suggesting that peer effects could only explain a small fraction of major-specific changes in political ideology.

5.2 Departmental Ideology

Since peer ideology composition across majors does not explain the main effects documented in this paper, other channels are likely more important drivers. Natural candidates include academic content, teaching methods, and faculty interactions. While we cannot directly isolate each of these mechanisms, we provide suggestive evidence that faculty ideology, which may be correlated with each of these channels, plays a meaningful role. To do so, we leverage survey data on faculty political ideology, collected by HERI every three years since 1989, which allows us to compute the average ideology of faculty within each department at each college.

We begin by presenting descriptive statistics on faculty ideology across majors in our sample. Figure 8 shows the time trends in faculty ideology across majors. Faculty in all majors become more liberal during this period, and faculty in the humanities and social sciences are consistently much more liberal relative to faculty in other departments. Next, we aggregate the information at the department level, measuring the average political ideology of faculty in these departments across any survey year. Figure 9 plots the 10th, 50th, and 90th percentiles of this measure across majors. The results show clear variation: faculty in the social sciences and humanities are the most left-leaning, while those in business-related fields and engineering are the most right-leaning. Notably, economics faculty are much more centrist compared to others in their major group. Figure A24 provides a more detailed breakdown without aggregating majors at all, revealing even greater differences across narrowly defined fields. In some humanities fields,

Figure 8: Faculty Ideology Over Time



Notes: This figure plots the average faculty ideology across major-groups over time (y-axis, measured on a 1- 5 scale).

nearly all departments have average faculty ideology below the mean, highlighting a consistently liberal orientation across departments.

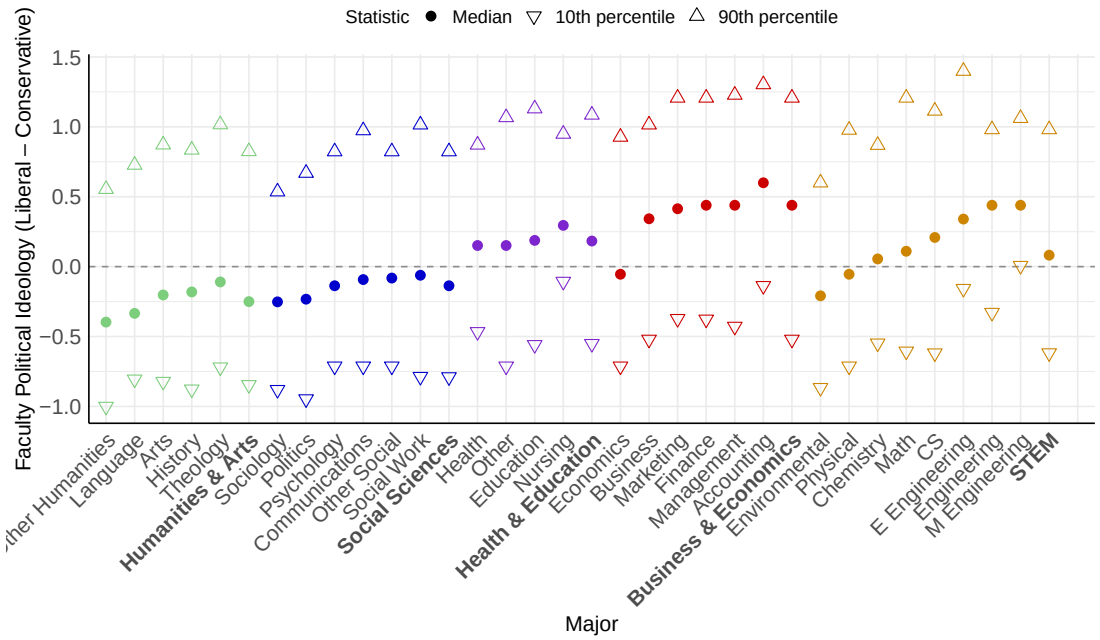
Next, we match this department-specific faculty ideology measure to students based on their intended major and college. We match using intended rather than actual major, to avoid endogeneity from students self-selecting into majors due to faculty ideology, consistent with our approach for peers. We then estimate the following model:

$$p_{icm} = \tau F_{cm} + \eta_{tm} + \theta_{cta(m)} + \zeta_{icmt} \tag{8}$$

where p_{icm} is the graduation political ideology of student i at college c with intended major m; F_{cm} is the average faculty ideology (in standard deviations) in major m at college c; η_{tm} and $\theta_{cta(m)}$ are major-cohort and college-cohort-major-group fixed effects, respectively. Although faculty ideology is only observed for a subsample within each department, we adjust our measure using methods analogous to those used for peer ideology, as described in the previous section.

Identification of this specification relies on the assumption that potential graduation ideologies are orthogonal to faculty's ideology, conditional on the controls. This assumption yields a testable implication: Students' baseline political ideology should be uncorrelated with their faculty's ideology after conditioning on our

Figure 9: Faculty Ideology By Major



Notes: This figure plots the 10th, 50th, and 90th percentiles of average faculty ideology across departments within each major (y-axis, measured in standard deviations). The sample includes only departments with at least three faculty members included in the survey, representing at least 10% of the department's faculty (159,400 faculty from 418 colleges). Figure A24 provides a more detailed breakdown without aggregating majors at all.

control set. Columns (1)-(3) of Table 6 test this. Again, the tables report both unadjusted and adjusted estimates, but we prefer the adjusted ones as they are less sensitive to attenuation bias. First, using all students in the baseline survey, we find a positive and significant relationship between students' baseline political ideologies and their faculty ideology, even conditional on the relevant set of fixed effects. When focusing only on the subsample of colleges and cohorts that are included in the graduation survey, this relationship becomes insignificant. This may suggest that the identification assumption is more justified in the colleges in focus or that the smaller subsample limits the statistical power of this exercise. Thus, we continue by analyzing the effects using this sample, and also discuss potential reasons for violations and validate that our results are robust below.

Table 6: Estimated Effects of Faculty Ideology

Outcome	Baseline			Graduation		
	(1)	(2)	(3)	(4)	(5)	(6)
Estimate	0.011***	0.004	-0.017	0.009	0.017**	0.015*
	(0.003)	(0.006)	(0.011)	(0.011)	(0.008)	(0.008)
Estimate	0.028***	0.014	-0.023	0.036*	0.043**	0.042**
(Adjusted)	(0.006)	(0.013)	(0.023)	(0.022)	(0.019)	(0.019)
Sample	Baseline	Baseline (subsample)		Graduation		
N	4,227,899	758,560	153,878	155,049	155,049	155,049
FEs	V	V	V	V	V	V
Baseline					V	V
More						V

Notes: This table presents estimates of the effects of faculty ideology on students' political ideology based on equation 8. The outcome variable measures political views using responses to the question "How would you characterize your political views?" from the graduation survey The treatment variable captures faculty's responses to the same question, based on all faculty from the department that correspond to the student's college and intended major. Columns (1)-(3) show flasification excercises using baseline ideology as the outcome, using different samples: all baseline survey, baseline survey restricted to colleges and cohorts included in the graduation survey, and the gradution survey. Columns (4)-(6) show the main analysis using graduation sample and graduation ideology. Specifications include controls for major-cohort, college-cohort, and major-group-college-cohort fixed-effects (FEs), pre-college political ideology and opinion index (Baseline), and social preferences (More). All estimates are in standard deviation units. The sample is restricted to students with non-missing values for both intended major and political views, and with information available for at least 3 of their faculty included in the survey which represent at least 10% of the faculty in the department *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Columns (4)-(6) present the main results. The effects of faculty ideology appear positive, and as we incorporate more controls, the magnitude remains similar and the estimates become more precise and statistically significant. Across all majors and colleges, studying the same major in a department with more liberal faculty makes students more liberal in graduation. This holds even though at baseline, students' ideology was not correlated with their faculty ideology, as is shown in Column (3). These results imply that either the academic content, instructional

methods, or the direct interactions with faculty are key channels in driving the effects of college majors. Further, Table 7 shows that these results are driven mostly by social sciences and humanities and arts. Table A16 further shows that these results are robust for limiting the sample only to departments where we observe a large share of the faculty.

Table 7: Estimated Effects of Faculty Ideology, by Major-Group

	(1)	(2)	(3)	(4)	(5)
Estimate	-0.012	0.018	0.003	0.040*	0.035**
	(0.012)	(0.017)	(0.021)	(0.021)	(0.016)
Estimate	-0.029	0.034	0.017	0.085*	0.099***
(Adjusted)	(0.030)	(0.041)	(0.049)	(0.046)	(0.034)
Sample	STEM	Economics Business	Health Education	Humanities Arts	Social Sciences
N	39,903	25,277	25,905	27,224	36,545
FEs	V	V	V	V	V
Baseline	V	V	V	V	V
More	V	V	V	V	V

Notes: This table presents estimates of the effects of faculty ideology on students' political ideology based on equation 8. The outcome variable measures political views using responses to the question "How would you characterize your political views?" from the graduation survey The treatment variable captures faculty's responses to the same question, based on all faculty from the department that correspond to the student's college and intended major. The estimation sample is defined by students' intended major-groups. Specifications include controls for major-cohort, college-cohort, and major-group-college-cohort fixed-effects (FEs), pre-college political ideology and opinion index (Baseline), and social preferences (More). All estimates are in standard deviation units. The sample is restricted to students with non-missing values for both intended major and political views, and with information available for at least 3 of their faculty included in the survey which represent at least 10% of the faculty in the department *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

5.3 Earnings Expectations and Self-Interest

The findings in this paper suggest that teaching is a central mechanism behind the observed effects of college major on political attitudes. However, alternative channels may also contribute, and our data do not allow us to rule them out fully.

One prominent possibility is students' earnings expectations. A large literature shows that economic returns to post-secondary education vary substantially by field of study (e.g., Altonji et al., 2016; Bleemer and Mehta, 2022; Andrews et al., 2024), and students are likely aware—at least to some extent—of their future economic prospects. Even before full-time employment, many students hold part-time jobs or job offers, shaping their income expectations. Thus, future earnings could influence students' political attitudes through self-interest: students in higher-earning fields such as STEM and business may be more inclined to support policies that benefit them financially, like lower income taxes. This mechanism is consistent with some of our results.

Although we cannot directly test this channel, we provide suggestive evidence by examining how estimated effects vary over time. During our sample period, two major financial shocks—the early 2000s dot-com crisis and the 2008 financial crisis—disproportionately affected certain fields. If earnings expectations drive attitudes, we might expect, for example, that computer science students would support higher taxes following the dot-com bust, and finance students would do so after the 2008 crisis. To assess this, we estimate Equation 1 for cohorts entering college in the same year, using attitudes toward taxation as the outcome. Figure 10 shows these estimation results, where there is no clear evidence for significant changes in tax support in the relevant years. Figure A25 shows these estimates for more narrow groups of majors, again with no clear pattern that support this channel. Further research could improve the examination of this channel by either incorporating direct measures of earning expectations or by exploiting more nuanced comparison such as exploring differences across different local labor markets.

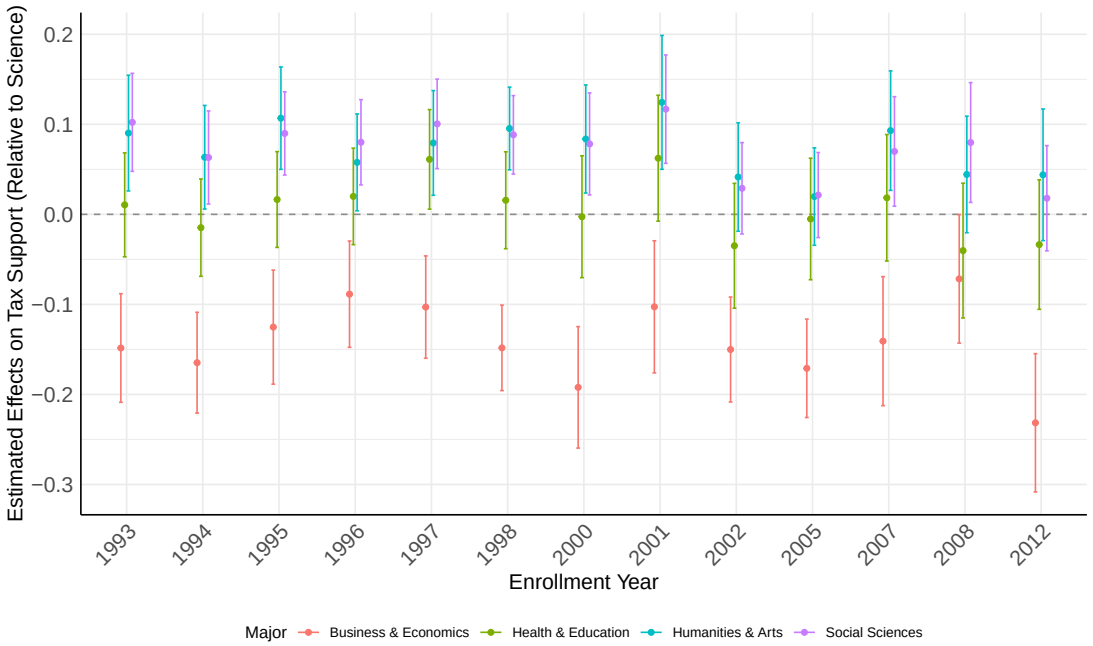
6 Implications

Academic specialization is a central feature of post-secondary education, allowing students to shape their college experience through their choice of field. The results in this paper suggest that such specialization carries important implications. In this section, we highlight several key consequences—focusing on voting and political activism, political polarization and the education divide, gender gaps, and the economic returns to different fields of study.

6.1 Voting and Political Activism

While our analysis focuses on ideological self-identification, these effects likely extend to voting behavior. Although our data do not include actual vote choices,

Figure 10: Year-by-Year Effects of College Majors on Tax Support



Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals, from a model that groups majors into five broad categories, with STEM as the omitted reference group. The outcome variable is students' support for higher taxes on the wealthy. Estimates are presented in standard deviation units. Models control flexibly for students' baseline political ideology, policy attitudes, and major preferences.

external surveys such as the CCES and ANES consistently show a strong correlation between liberal-conservative self-placement and voting: most liberals vote Democratic, most conservatives vote Republican, and those in the middle tend to lean Democratic. Our estimates indicate that majoring in the humanities or social sciences increases the likelihood of identifying as liberal by 10 percentage points relative to business or economics majors—shifting seven percentage points away from conservatism and three points from the middle. Based on the voting patterns in Appendix Figure A3, this translates into roughly a 6.5 pp higher probability of voting Democratic ($0.8\times7 + 0.25\times3 \approx 6.5$).

These magnitudes suggest that academic specialization is one of the most powerful experiences shaping political attitudes. For context, Brown et al. (2023) find that each additional year spent in a county with a one percentage point higher Democratic vote share during ages 13–19 increases the likelihood of voting Democratic by 0.05 pp. Thus, the estimated effect of majoring in social sciences or humanities (versus business or economics) is equivalent to the impact of living for six years in a county with about 20 percentage points higher Democratic support.

In addition to ideology, our survey data capture students' political behaviors, such as voting, participating in demonstrations, and discussing politics. We also examine how college majors affect these outcomes. Consistent with Bell et al. (2022), Figure A19 shows that differences in voter registration across majors are

generally small and statistically insignificant. However, we find notable differences in other forms of political engagement: Figure A20 shows that students majoring in the social sciences and humanities/arts are significantly more likely to participate in demonstrations, while Figure A22 indicates they are also much more likely to discuss politics.[10]

6.2 Polarization and Divides

Our findings have important implications for understanding polarization and political differences between groups. First, they suggest that the widely discussed "education divide" is partly driven by the specific fields students study in college. Our results allow us to simulate a counterfactual: if all students studied economics or business, the proportion identifying as liberal at graduation would decline substantially—from about 0.129SD to 0.bout 0.012SD—and the ideological gap between college graduates and non-graduates would narrow substantially.

Furthermore, since students self-select into majors, our findings shed light on political differences within the educated population. Differential major selection explains a significant portion of the gender gap in political ideology: it accounts for 0.037 standard deviations of the 0.23 standard deviation gap in liberalism at graduation (about 18%). Major selection also amplifies ideological polarization: students who enter college with more liberal views are more likely to choose liberal-leaning majors, so by graduation, ideological differences among students are even larger than at entry. Therefore, if all students would pursue STEM fields, the standard deviation of graduation ideology would decrease by approximately 2%.

Therefore, these results have implications for the relationship between education and social cohesion. Historically, education at earlier stages has been seen as fostering civic cohesion and trust, which are often cited as channels linking education to economic growth (Gradstein and Justman, 2002; Glaeser et al., 2007). However, our results suggest that the increasing academic specialization characteristic of modern postsecondary education may instead contribute to greater ideological fragmentation rather than cohesion.

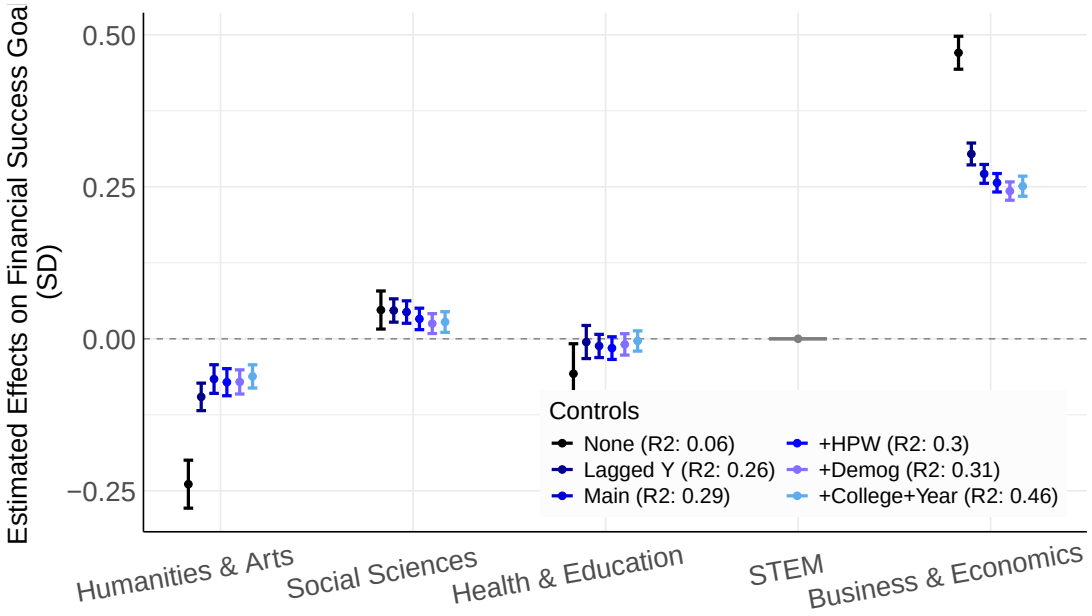
6.3 Preferences and Economic Returns to Majors

To what extent do students' career preferences change as a result of their fields of study? If career preferences change, this may have implications for understanding (at least partly) the nature of the economic returns to fields of study. Using

[10]Somewhat related, Figure A21 show the estimation results for the impacts of college majors on volunteering.

information on students' goals upon graduation, we attempt to provide suggestive evidence that this channel may be important and worth further exploration. Figure 11 shows that students in economics and business tend to adopt financial success as an important goal, much more than those in any other field. Event study estimates support the causal interpretation even though these estimates are noisier (Figure A26). Moreover, we show that students in economics and business tend to see helping as a goal less (Figure A27).

Figure 11: Effects of College Majors on Financial Success Goal



Note: This figure plots the estimates for δ_m from equation 1 and their 95% confidence intervals. The estimated coefficients represent the effects of studying in each major group relative to STEM, health, and education (the omitted group of majors). The outcome variable is students' agreement that the following is a goal for them: "Being very well off financially". Estimates are shown in standard deviations. The sample includes only students with non-missing majors and the outcome in the graduation survey (313,466 students). Table A4 provides the full list of control variables. Baseline refers to baseline outcome and preferred refers to intended majors. Our model incorporates all variables flexibly (with fixed effects for each value available in the survey).

7 Conclusion

To be completed.

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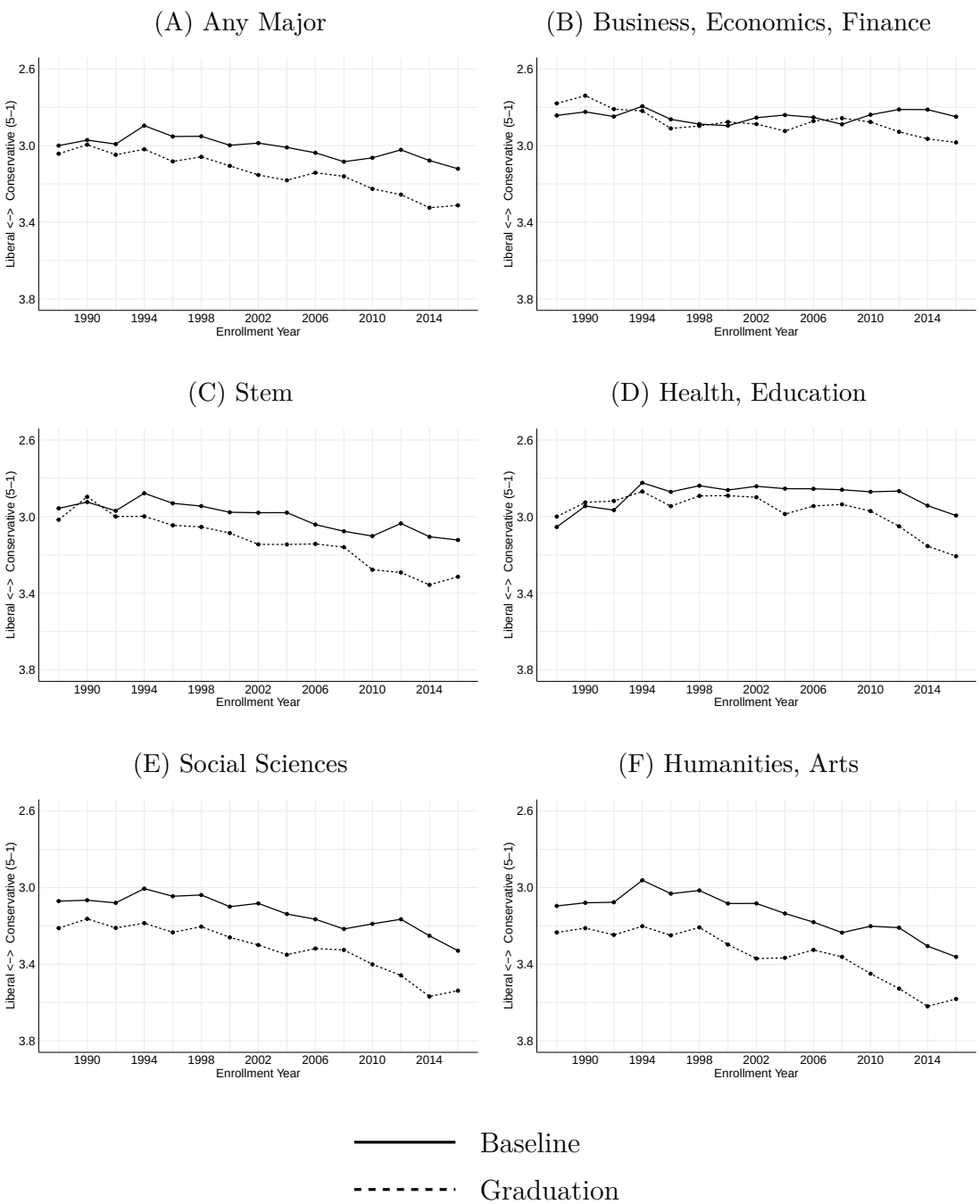
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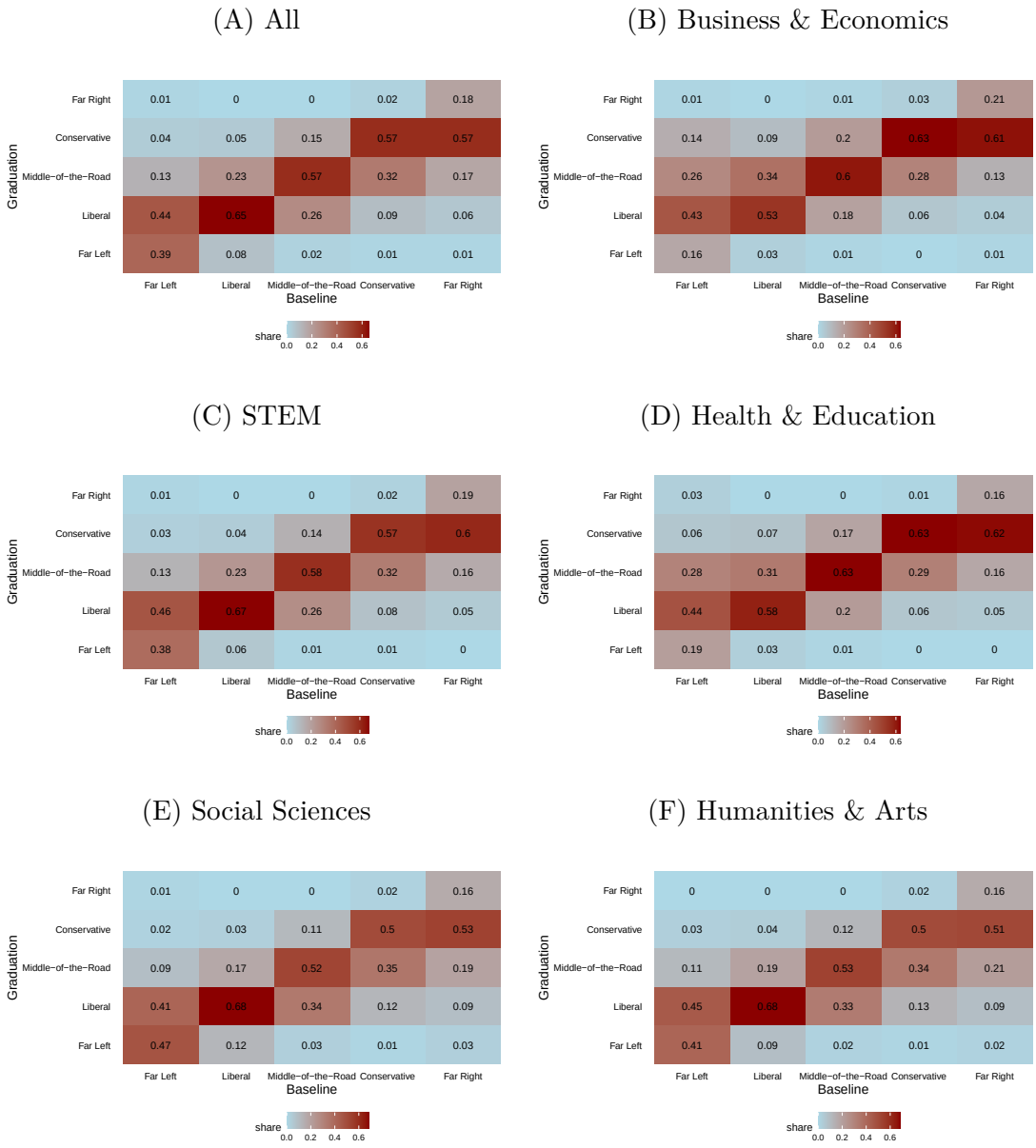
Appendix A Appendix Figures

Figure A1: Students' Political Ideology, 1990–2015



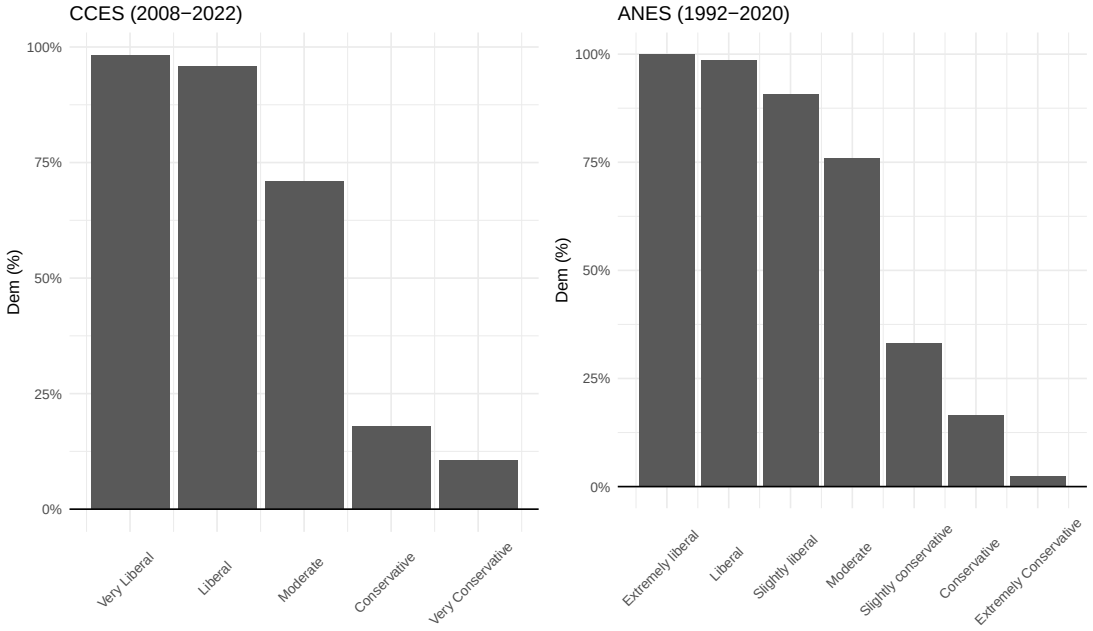
Note: This figure plots students' baseline (solid lines) and graduation (dashed lines) political ideology. The sample includes all students with non-missing values for this outcome in the entry and exit surveys, who started their studies in 1990 or later (299,630 students). Note that the colleges included in the survey have not been consistent over the years, and thus, changes over the years may be partly attributed to changes in the sample of colleges. Political ideology is measured on a five-point scale, with students self-identifying as far right, conservative, middle-of-the-road, liberal, or far left. Panel A's sample includes all students, while panels B–F's samples are restricted to students in specific groups of majors.

Figure A2: Transitions in Political Ideology During College



Note: This figure plots the changes in students' baseline and graduation political ideology. The sample includes all students with non-missing values for this outcome in the entry and exit surveys, totaling 299,630 students. Panel A's sample includes all students, while the samples in panels B–F are restricted to those in specific groups of majors.

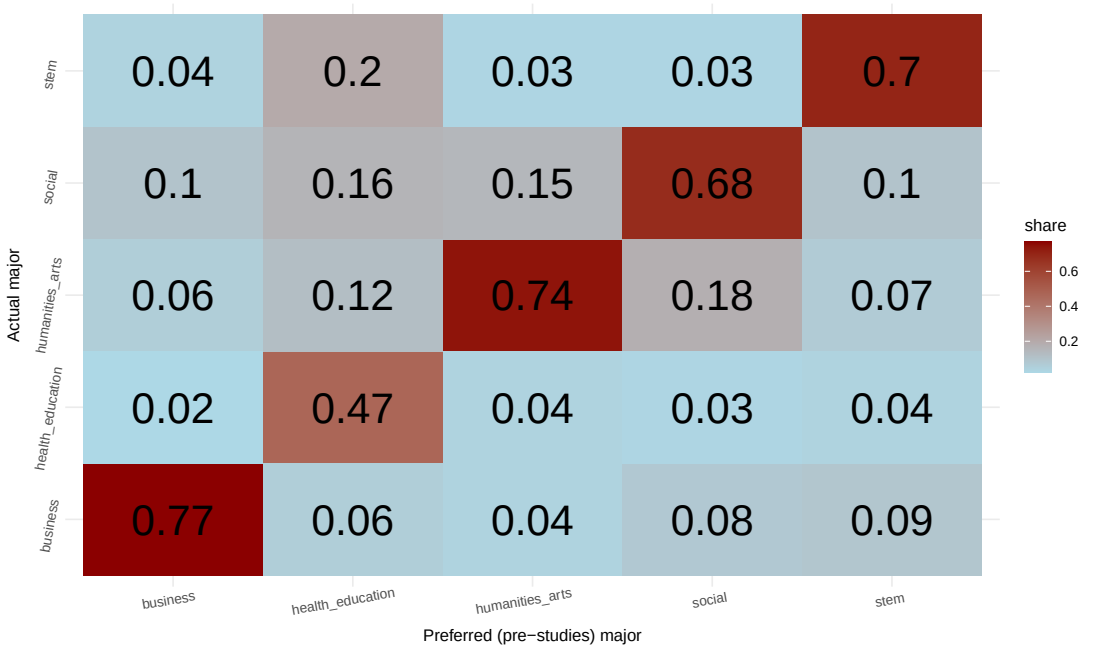
Figure A3: Students' Attitudes and Voting in National Surveys



Note: This figure plots students' attitudes on a liberal-conservative scale and their voting in presidential elections. The sample includes all students in the CCES and ANES surveys with non-missing values for the scale ('How would you characterize your political views?') and voting in presidential elections variables. We focus on student responses in the ANES (American National Election Studies) and CCES (Cooperative Election Study), which both feature an ideology scale and a presidential voting question. The larger CCES (n=11,570) aligns more closely with our surveys in query structure[a] but only dates back to 2006, limiting historical overlap. The ANES, older and with fewer students (n=345), employs a different ideology question ('We hear a lot of talk these days about liberals and conservatives. Here is a 7-point scale on which the political views that people might hold are arranged from extremely liberal to extremely conservative. Where would you place yourself on this scale, or haven't you thought much about this.') and scale. The correlation between ideology and voting behavior is very high in both surveys and higher in the CCES (0.65) than in the ANES (0.59). The figure presents the distribution of voting to the democrat candidate in national elections in both surveys based on the ideology scale.

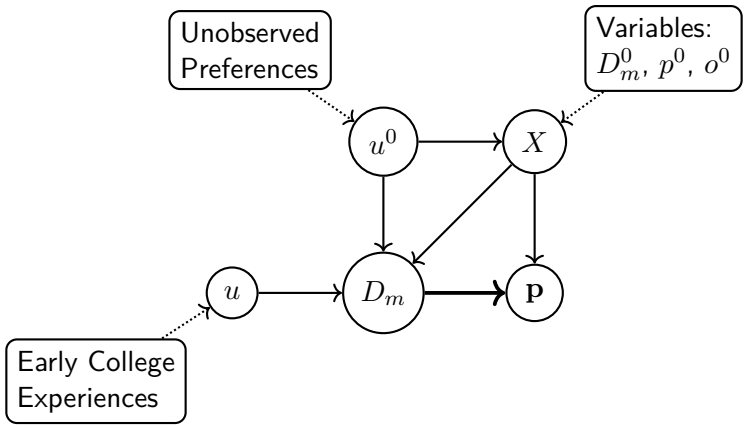
[a]'In general, how would you describe your own political viewpoint'

Figure A4: Major Choice Changes During College



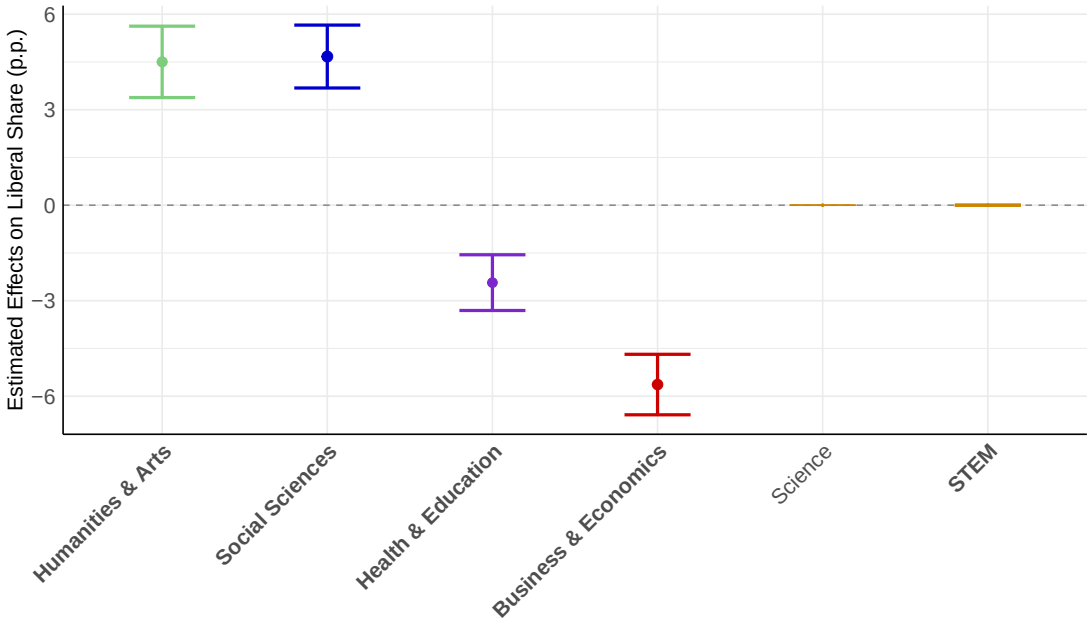
Note: This figure plots students' preferred and actual majors. The sample includes all students in our sample with non-missing values for this variable both in the entry and exit surveys (324,090 students).

Figure A5: DAG Illustrating Our Baseline Identification Approach and Caveats



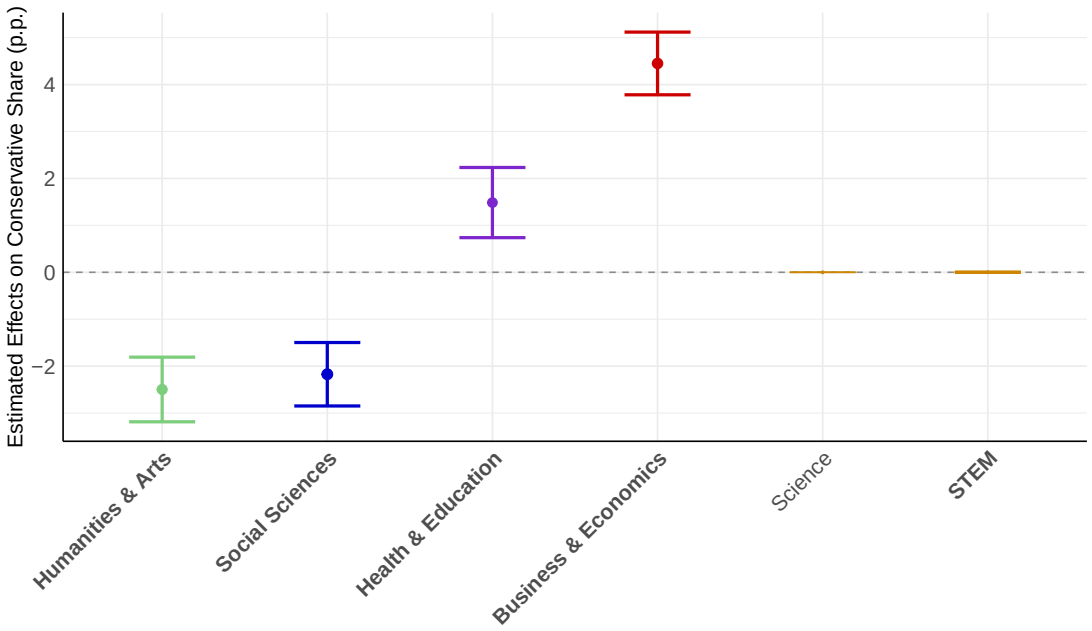
Note: This figure illustrates our baseline identification approach (equation 1) and its potential caveats using a directed acyclic graph. D_m denotes actual major choices, p represents graduation political ideology, and X includes the main control variables: intended majors (D_m^0), baseline political ideology (p^0), and policy attitudes (o^0). u^0 captures unobserved preferences influencing major choices that are not controlled for, while u represents early college experiences occurring after the baseline survey that may also affect major choices. The graph demonstrates our identification assumption: neither u nor u^0 directly affects graduation political ideology. Figure A11 demonstrates the negative control exposure test for the validity of this assumption.

Figure A6: Effects of College Majors on Liberal Share



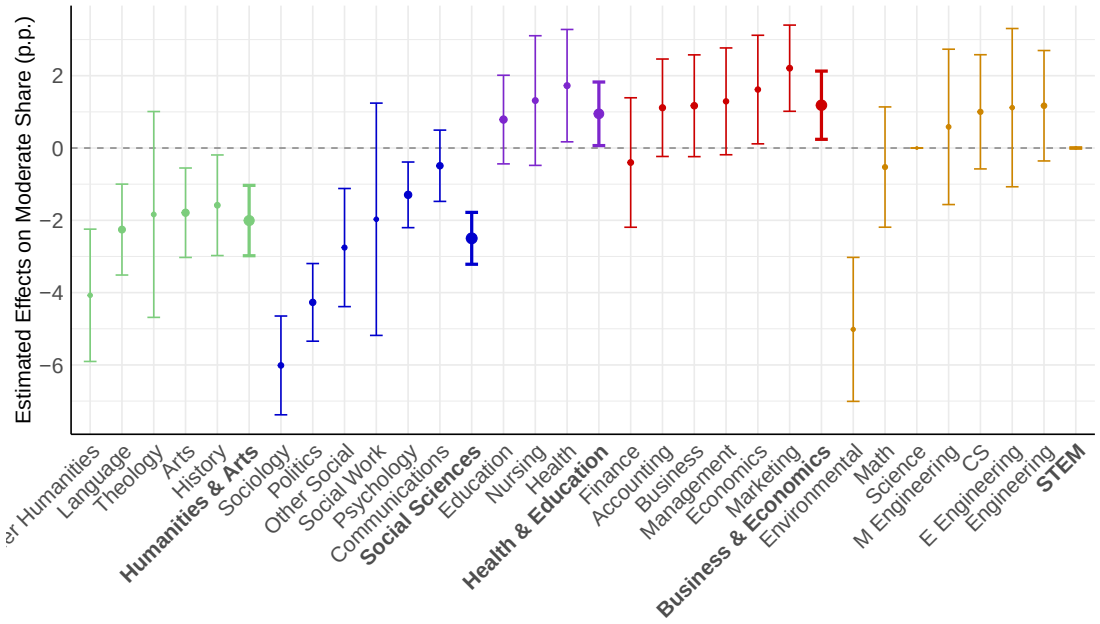
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is a dummy for students' identification as either liberal or far left. Estimates are shown in percentage points. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample includes only students with non-missing values in the major and outcome (313,466 students). Standard errors are clustered at the college level.

Figure A7: Effects of College Majors on Conservative Share



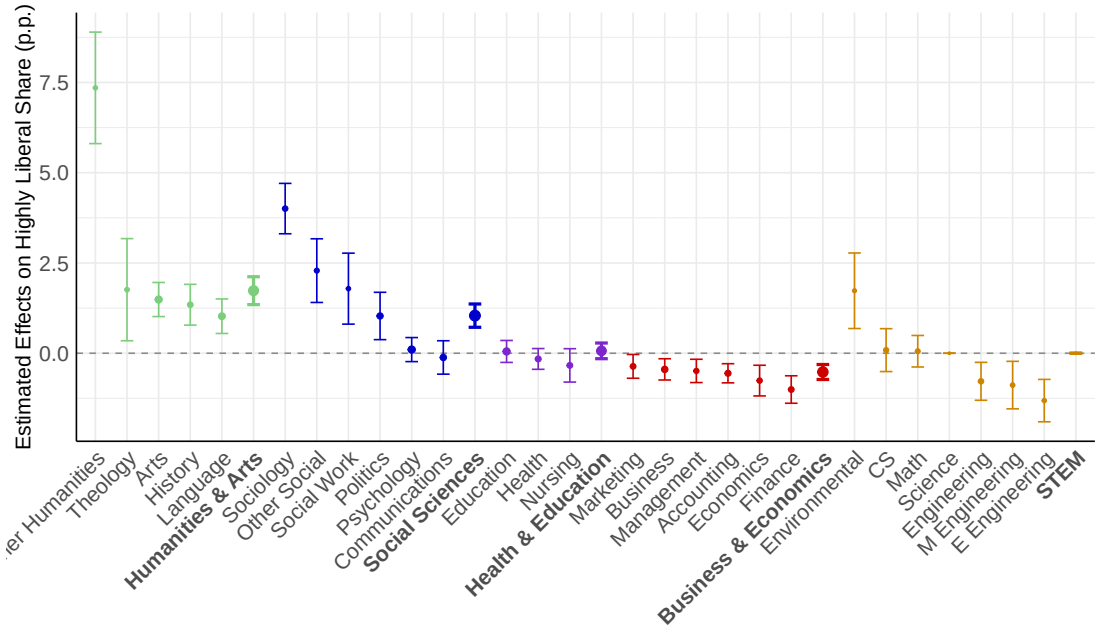
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is a dummy for students' identification as either conservative or far right. Estimates are shown in percentage points. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample includes only students with non-missing values in the major and outcome (313,466 students).

Figure A8: Effects of College Majors on middle-of-the-road Share



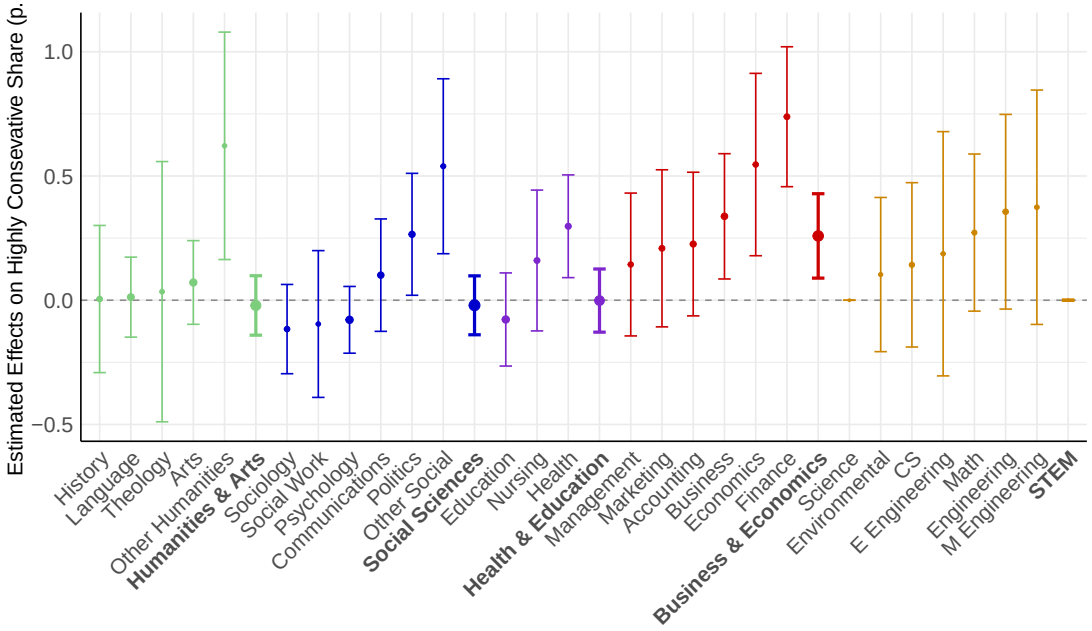
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is a dummy for students' identification as middle-of-the-road. Estimates are shown in percentage points. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample includes only students with non-missing values in the major and outcome (313,466 students). Standard errors are clustered at the college level.

Figure A9: Effects of College Majors on far left Share



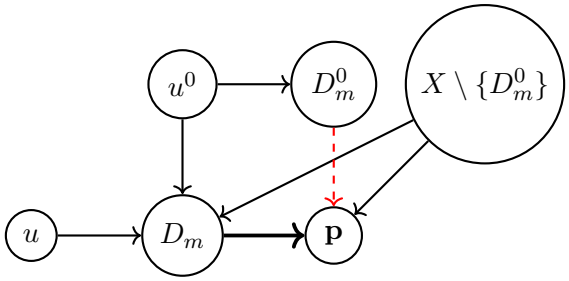
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is a dummy for students' identification as far left. Estimates are shown in percentage points. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample includes only students with non-missing values in the major and outcome (313,466 students). Standard errors are clustered at the college level.

Figure A10: Effects of College Majors on far right Share



Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is a dummy for students' identification as far right. Estimates are shown in percentage points. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample includes only students with non-missing values in the major and outcome (313,466 students). Standard errors are clustered at the college level.

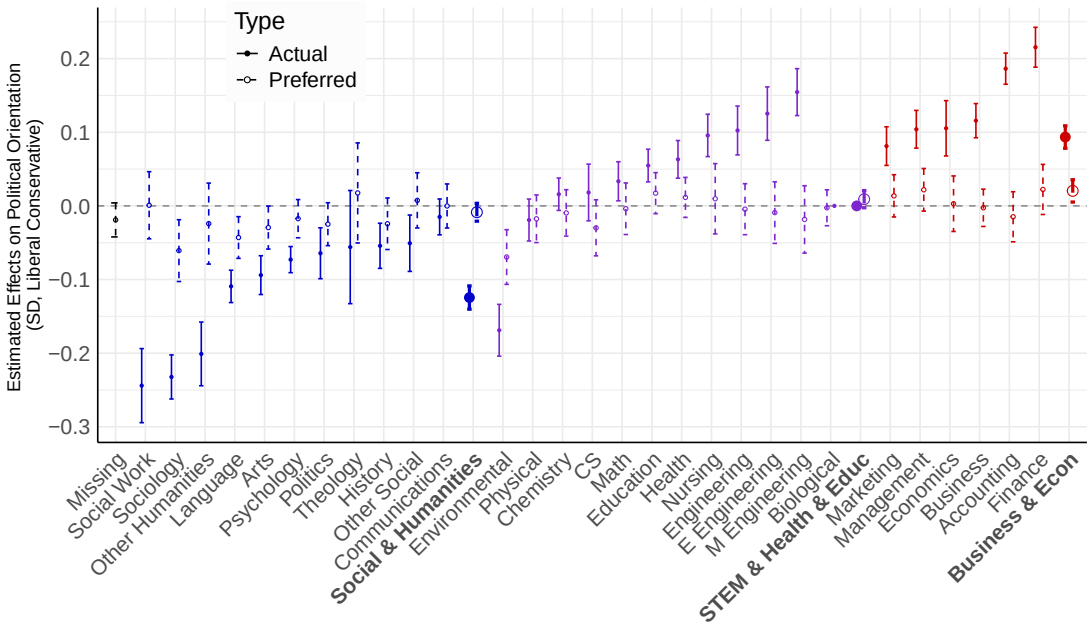
Figure A11: DAG Illustrating Negative Control Exposure Test Using intended majors



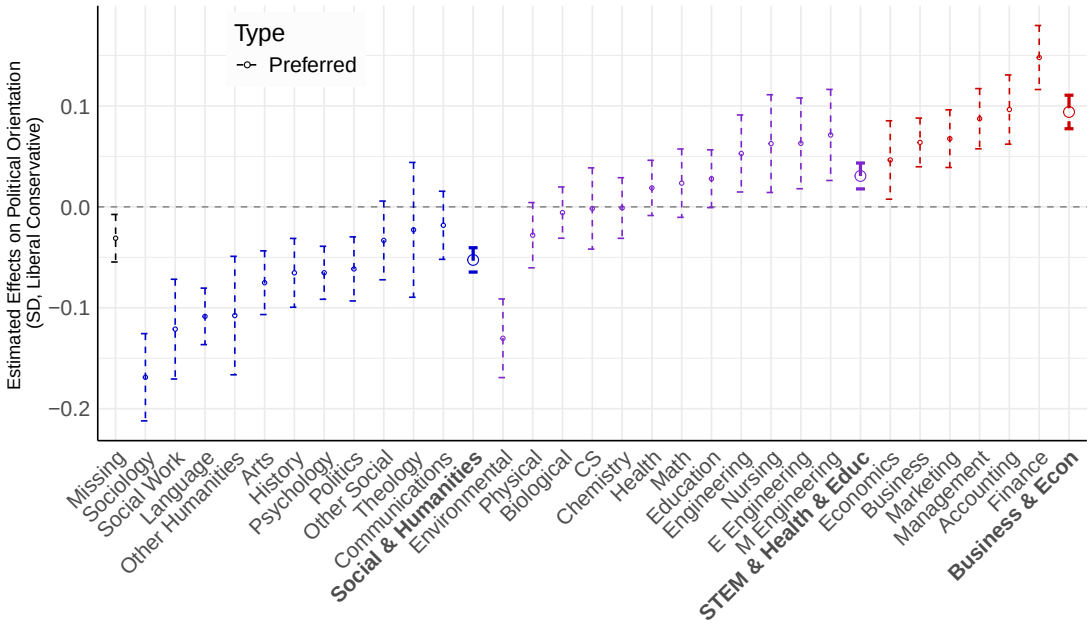
Note: This figure illustrates the negative control exposure test for the validity of our baseline identification approach (estimated using equation 1) using a directed acyclic graph. D_m denotes actual major choices, p represents graduation political ideology, and X includes the main control variables: intended majors (D_m^0), baseline political ideology (p^0), and policy attitudes (o^0). The graph demonstrates our test supporting the assumption that unobserved preferences (u^0) do not directly influence graduation ideology, using intended majors (D_m^0) as a proxy (negative control). u represents early college experiences after the baseline survey that may also affect major choices, which we assume have no direct impact on students' graduation ideology.

Figure A12: Negative Control Exposure Test, Using intended majors

(A) Including Actual Majors

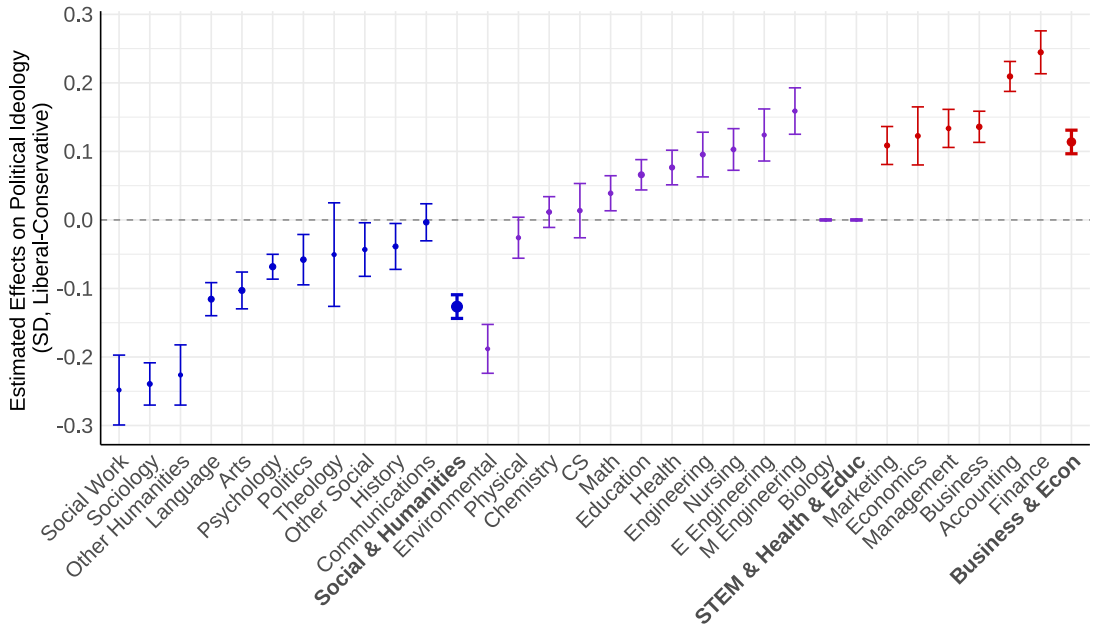


(B) Excluding Actual Majors



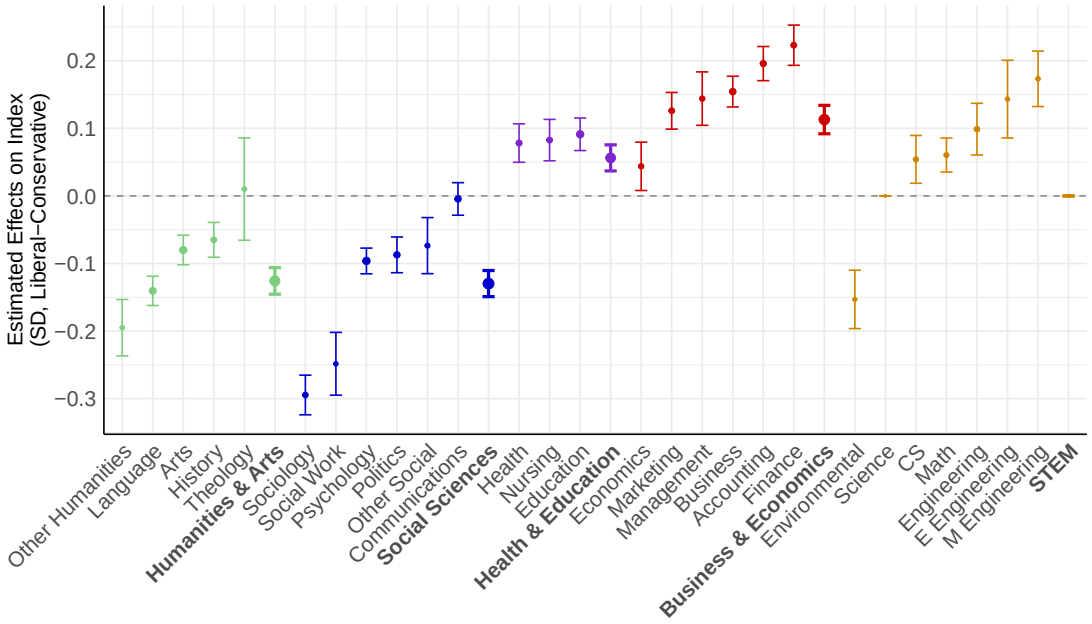
Note: These figures present the negative control exposure test, examining whether major preferences correlate with graduation political ideology, independent of the major chosen. Panel A plots the estimates for both δ_m and the corresponding coefficients of intended majors from equation 1, along with their 95% confidence intervals. Bold lines represent coefficients from a model grouping majors into five broad categories, with STEM as the omitted reference group. Thinner lines represent coefficients from a more detailed model with 28 specific major categories, using biology as the omitted reference group. Panel B displays the coefficients of intended majors from models excluding the actual major dummies. In all models, the outcome variable is students' self-reported political ideology, measured on a standardized scale. The sample includes 313,466 students with non-missing values for both major and outcome.

Figure A13: Effects of College Majors on Political Ideology, intended majors as IVs



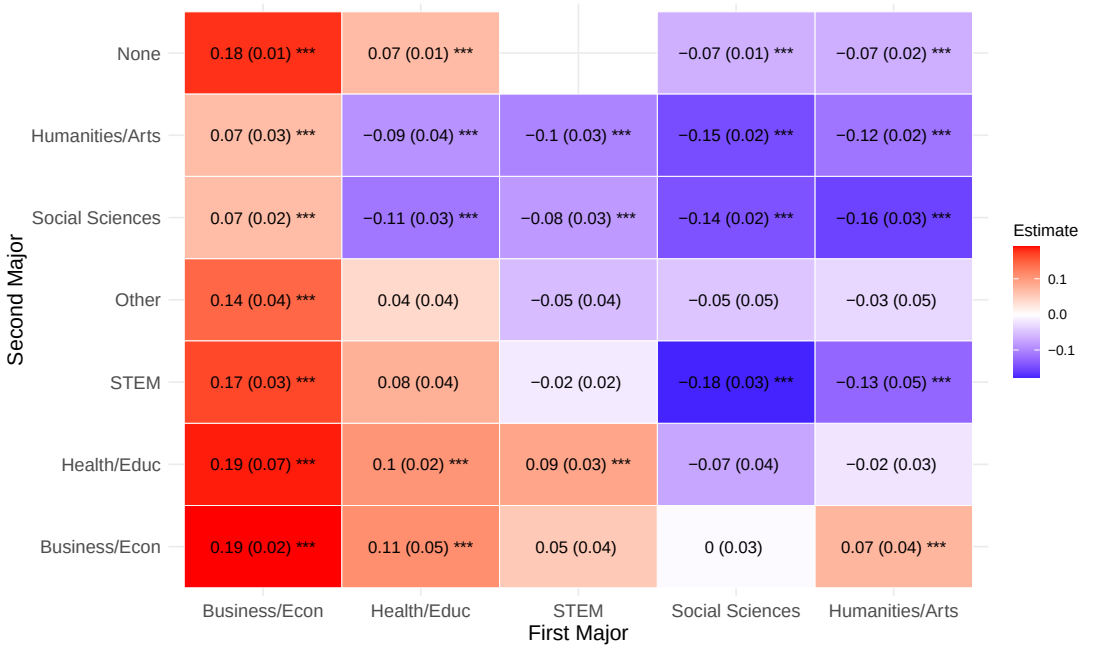
Note: This figure plots the estimates for τ_m from equation 2 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is students' answers to the following question: "How would you characterize your political views?". Estimates are shown in standard deviations. Both models are flexible in controlling students' baseline political ideology and policy attitudes. The sample includes only students with non-missing values in the major and outcome (313,466 students).

Figure A14: Effects of College Majors on Students' Opinions (Index)



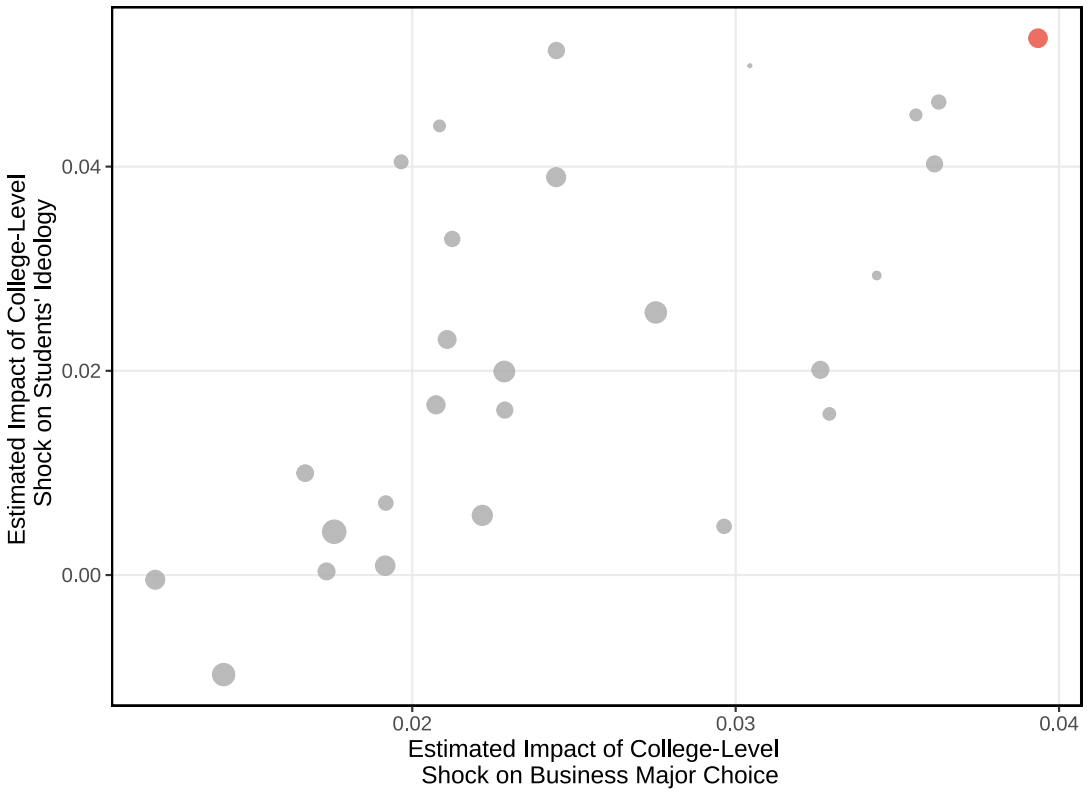
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is an index variable, measuring how closely students' policy attitudes align with liberal perspectives (the construction procedure is described in the main text). Estimates are presented in standard deviation units. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample is restricted to students with non-missing values for both major and outcome, totaling 313,466 students.

Figure A15: Effects of College Majors and Double Majors on Students' Ideology



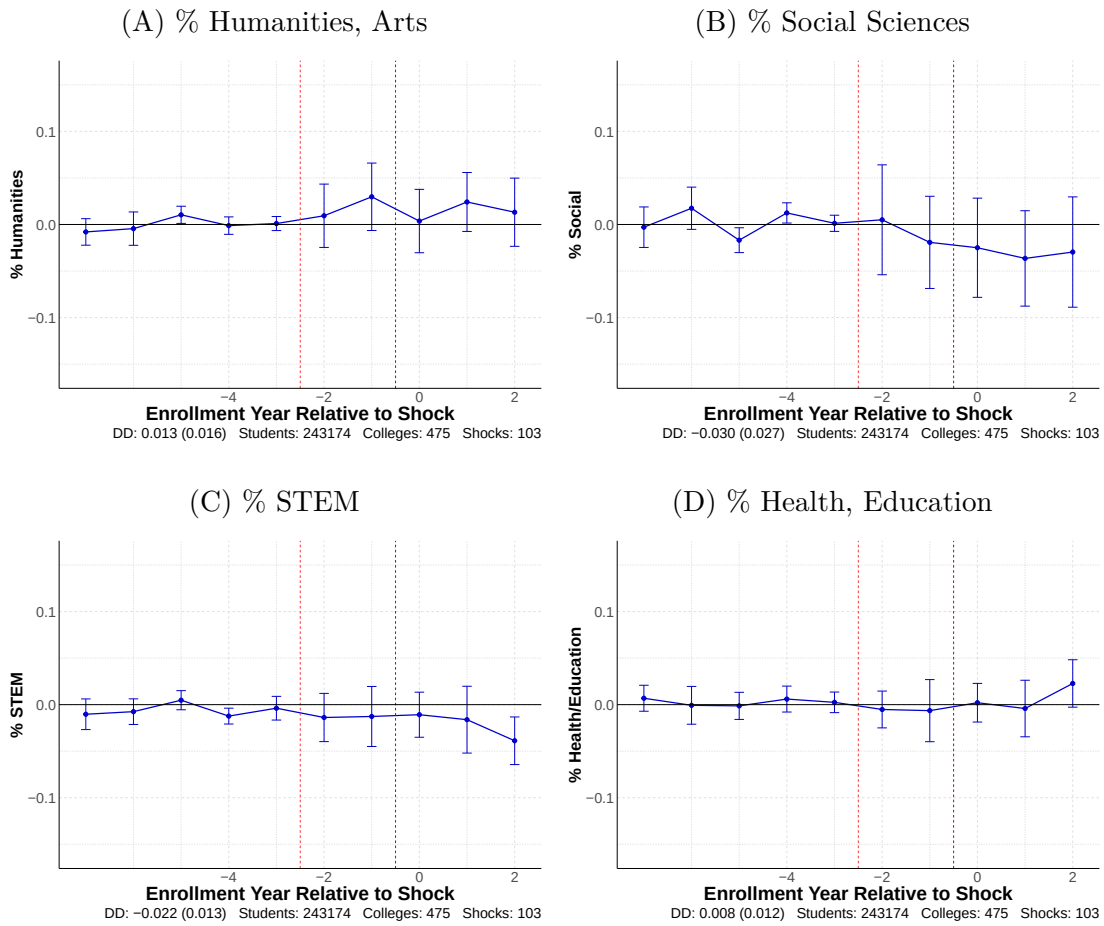
Note: This figure plots the estimates for δ_m from equation 1 and their 95% confidence intervals from a model with interaction between first and second majors. The estimated coefficients represent the effects of studying each combination of majors relative to STEM with no second major (the omitted group). The outcome variable is students' responses to the following question: "How would you characterize your political views?". Estimates are shown in standard deviations. The sample includes only students with non-missing majors and political ideology in the graduation survey from enrolling cohorts since 2005 (10x,xxx students). Standard errors are clustered at the college level.

Figure A16: Comparing Main DID Results for Different Shocks Definitions



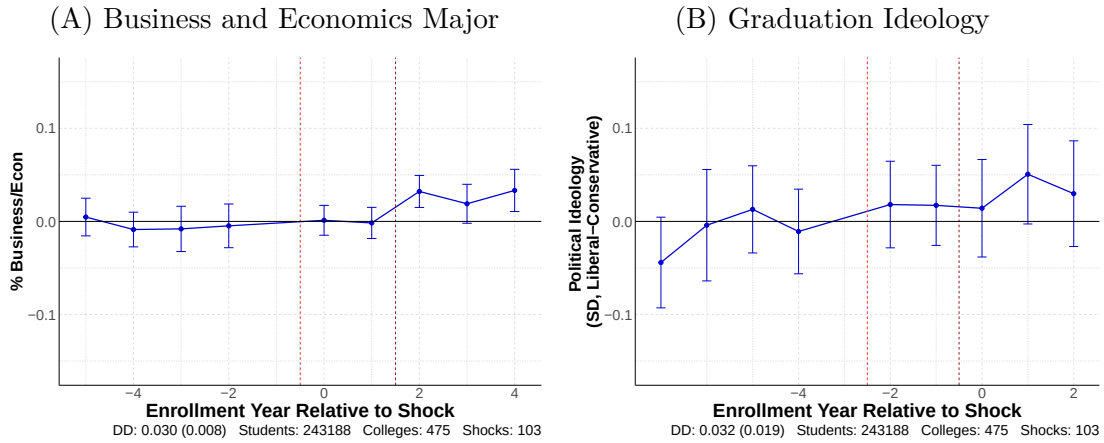
Note: Each point in the plot represents a distinct set of college-level shocks based on different definitions. The coordinates of each point correspond to estimates from the DID specification of equation 4. The x-axis displays the estimated effect on students selecting business and economics majors, while the y-axis shows the estimated effect on students' political ideology at graduation. All estimates are obtained using the two-stage imputation estimator developed by Gardner (2022). The larger red point highlights the primary shock specification used in the main analysis, while the smaller blue points represent alternative shock definitions.

Figure A17: Estimated Impacts of College-Level Shocks to Major Choices



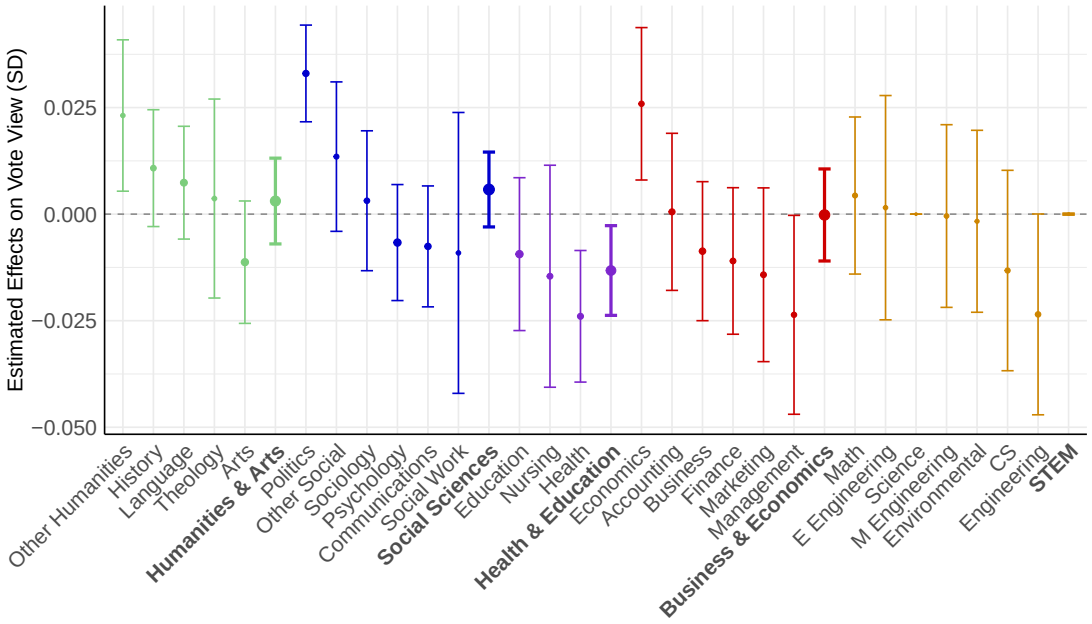
Note: This figure plots the estimates for ρ_k from equation 4, representing the effects of college-level shocks to the availability of business and economics majors on students' actual majors, along with their standard errors clustered at the college level. The sample includes all students in the baseline sample. Each figure also reports the equivalent difference-in-difference estimate for the average impact. Estimation is based on the imputation estimator (Gardner, 2022).

Figure A18: Estimated Impacts of College-Level Shocks to Field Availability, TWFE



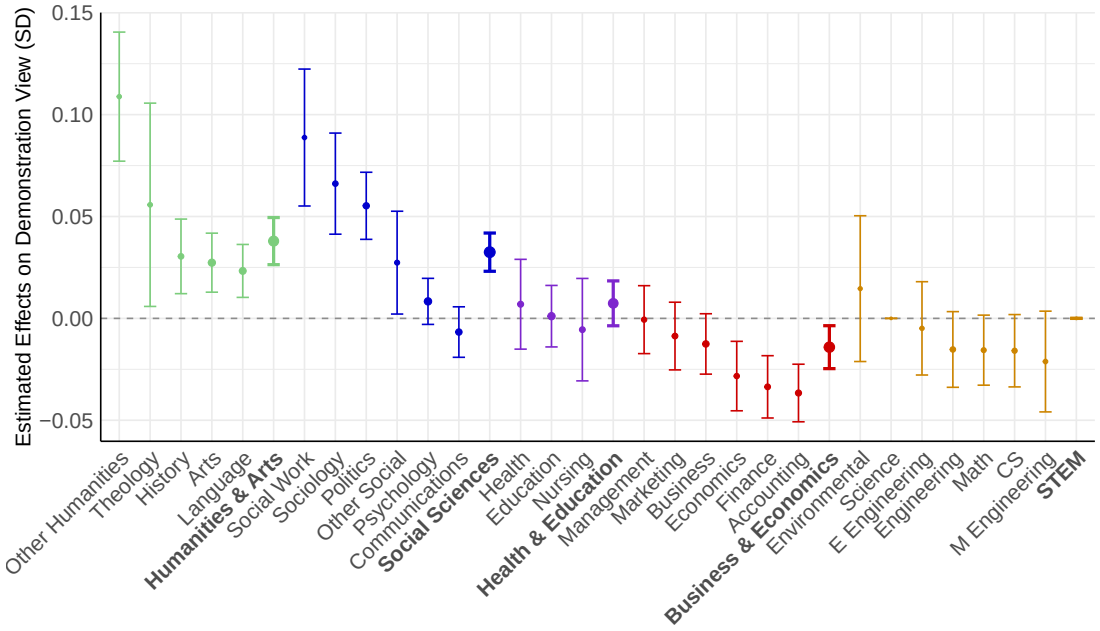
Note: These figures plot the estimates for ρ_k from equation 4, representing the effects of college-level shocks to economics and business availability on students graduation and baseline political Ideology, along with their standard errors clustered at the college level. Each figure also reports the equivalent difference-in-difference estimate for the average impact. Estimation is based on Two-Way Fixed-Effects Regression.

Figure A19: Effects of College Majors on Registration to Vote



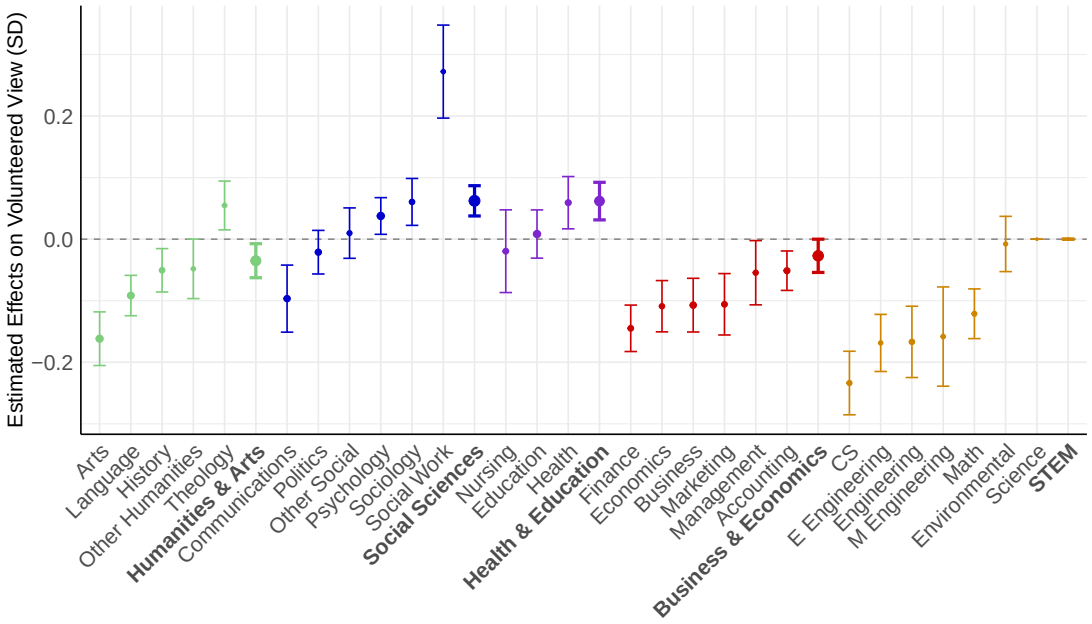
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is an indicator for registration to vote. Estimates are presented in standard deviation units. Both models control flexibly students' baseline political ideology, policy attitudes, and major preferences. The sample is restricted to students with non-missing values for both major and outcome, totaling 313,466 students.

Figure A20: Effects of College Majors on Participation in Demonstrations



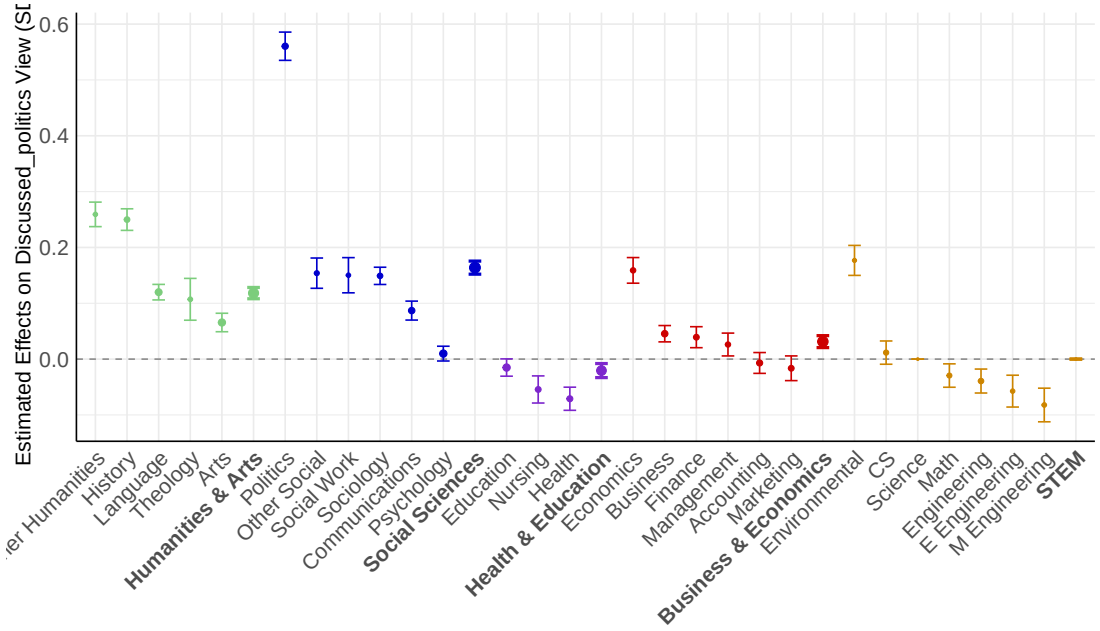
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is an indicator of demonstration participation. Estimates are presented in standard deviation units. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample is restricted to students with non-missing values for both major and outcome, totaling 313,466 students.

Figure A21: Effects of College Majors on Volunteering



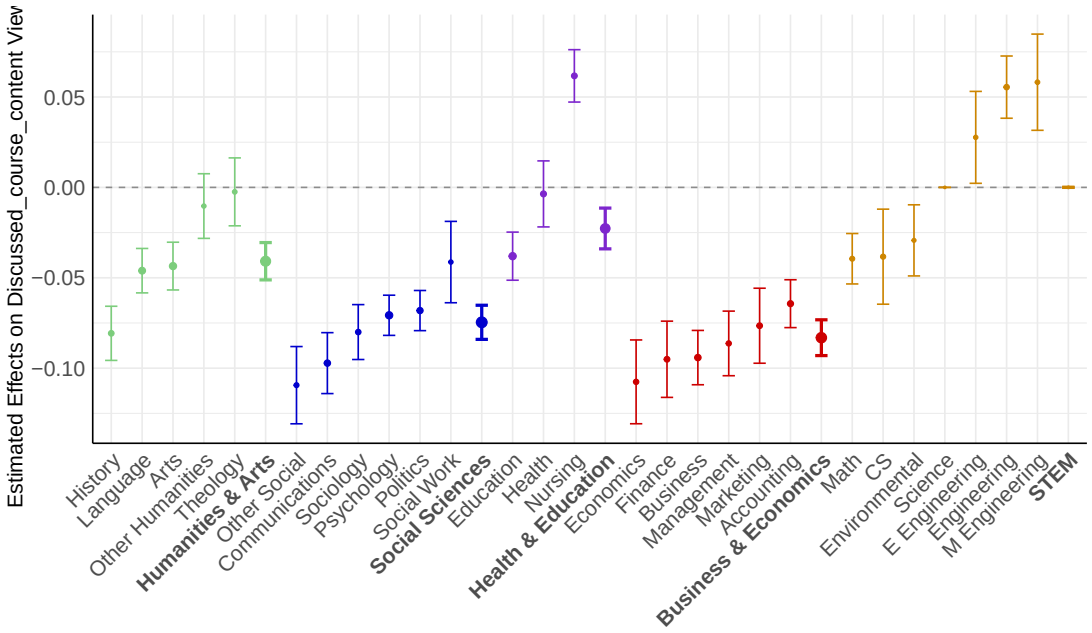
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is an indicator of volunteering. Estimates are presented in standard deviation units. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample is restricted to students with non-missing values for both major and outcome, totaling 313,466 students.

Figure A22: Effects of College Majors on Discussing Politics



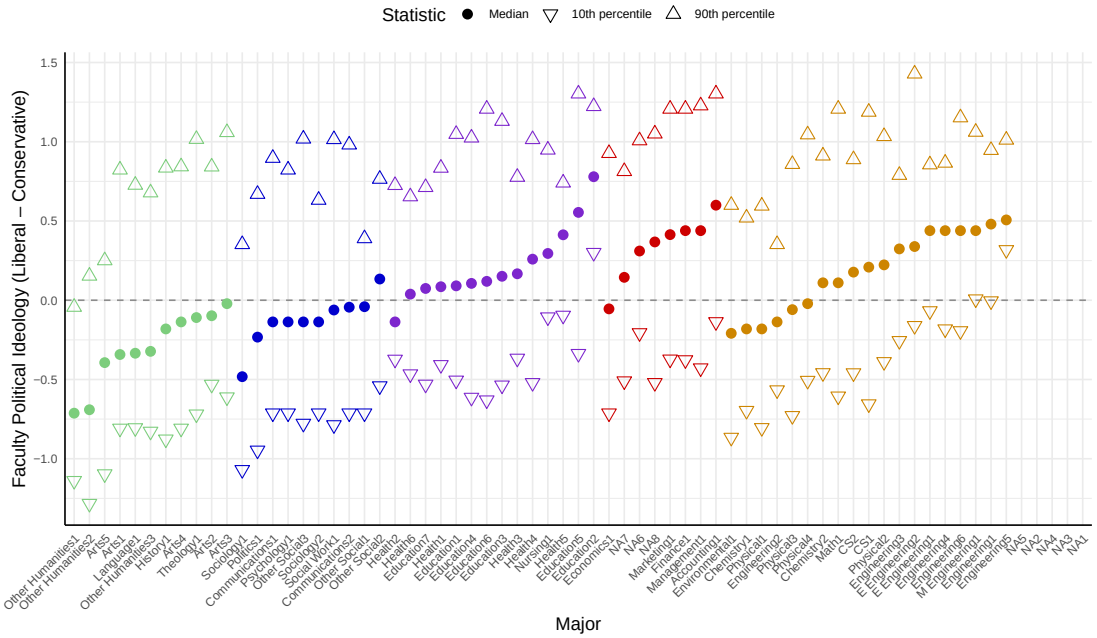
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is an indicator of discussing politics. Estimates are presented in standard deviation units. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample is restricted to students with non-missing values for both major and outcome, totaling 313,466 students.

Figure A23: Effects of College Majors on Discussing Course Content



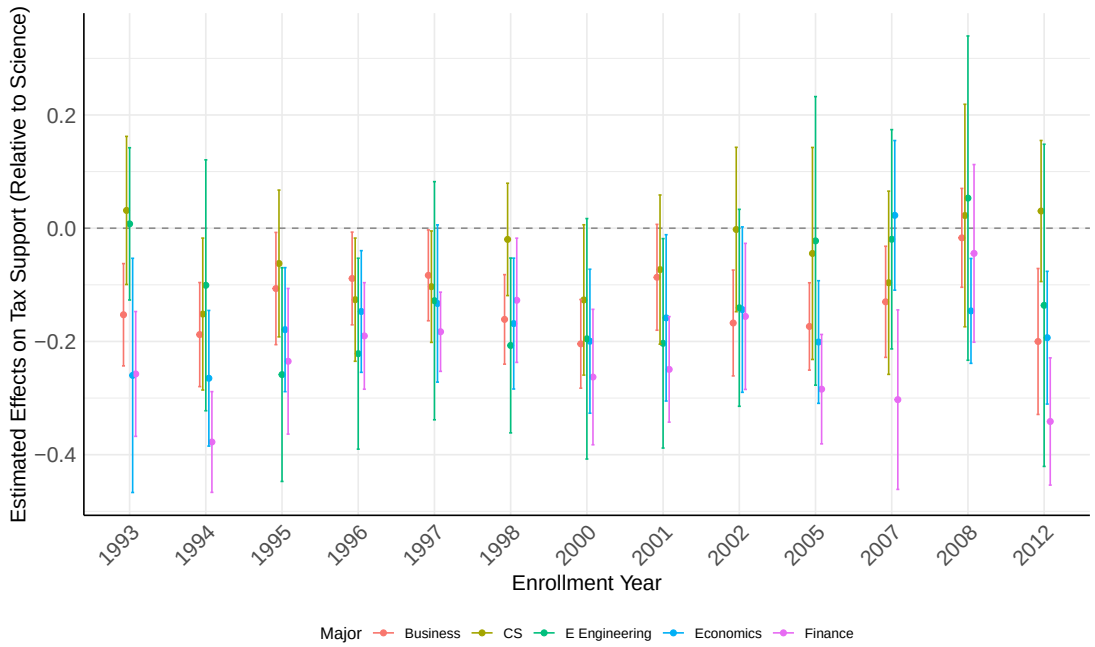
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals. The bold lines represent coefficients from a model that groups majors into five broad categories, with STEM as the omitted reference group. The thinner lines show coefficients from a more detailed model with 28 specific major categories, where natural sciences (physics, chemistry, biology) is the omitted reference group. The outcome variable is an indicator of discussing course content. Estimates are presented in standard deviation units. Both models control flexibly for students' baseline political ideology, policy attitudes, and major preferences. The sample is restricted to students with non-missing values for both major and outcome, totaling 313,466 students.

Figure A24: Faculty Ideology By Major, no Aggregation



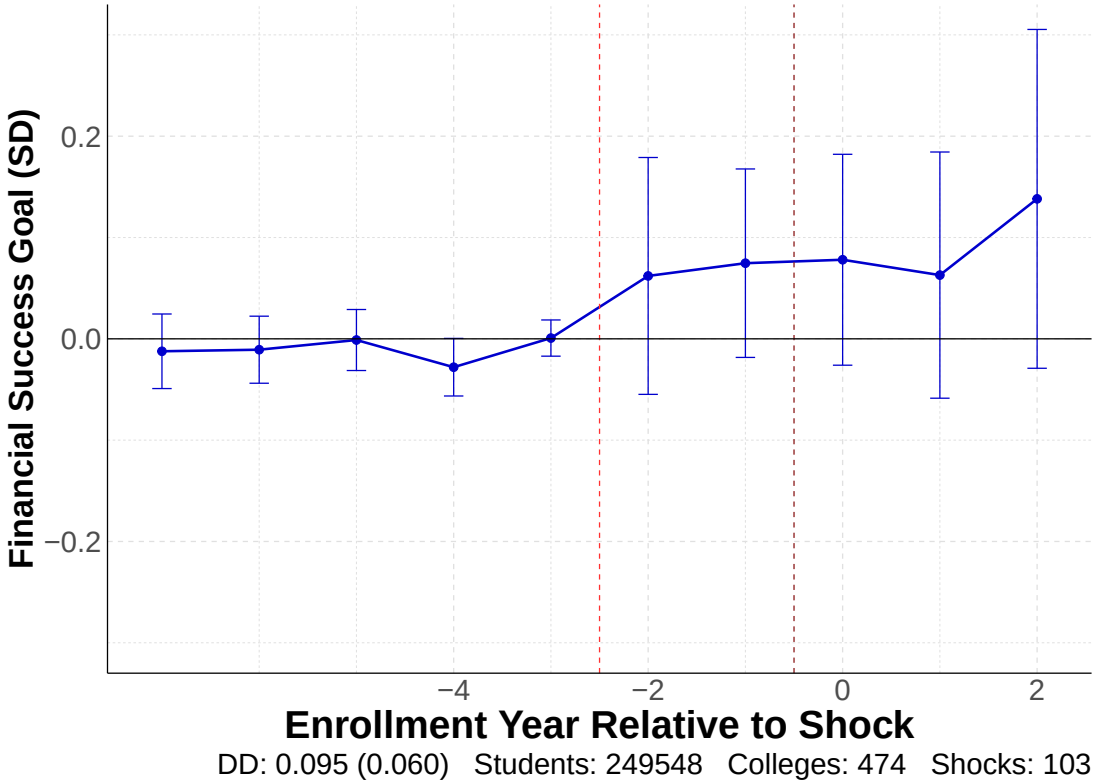
Notes: This figure plots the 10th, 50th, and 90th percentiles of average faculty ideology across departments within each major (y-axis, measured in standard deviations). The sample includes only departments with at least three faculty members included in the survey, representing at least 10% of the department's faculty (159,400 faculty from 418 colleges).

Figure A25: Year-by-Year Effects of College Majors on Tax Support, Selected Majors



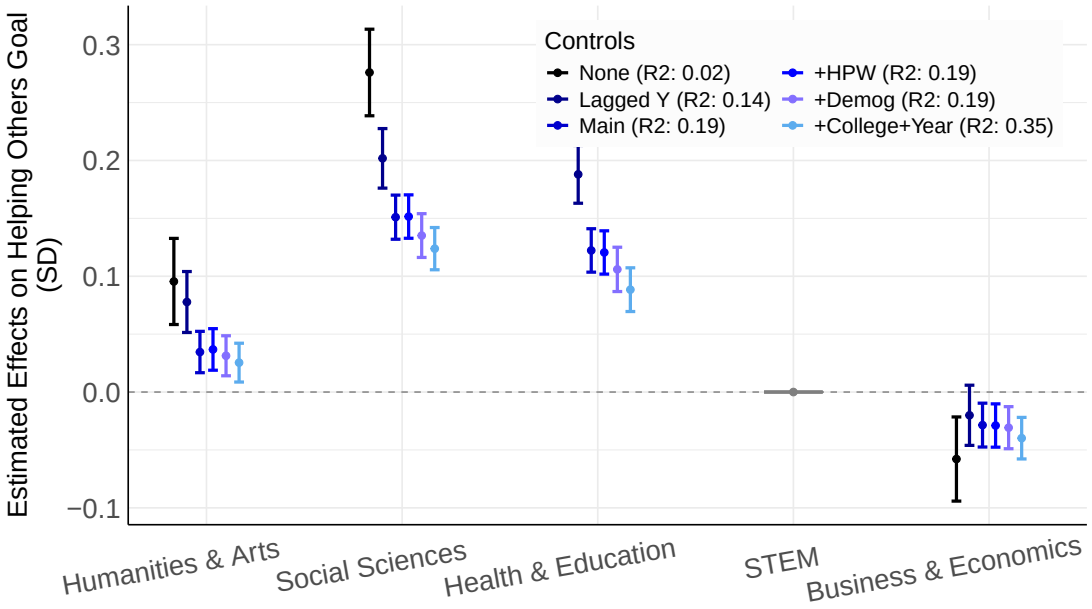
Note: This figure plots the estimates for δ_m from equation 1 along with their 95% confidence intervals, from a model that groups majors into twenty-nine categories, with science as the omitted reference group. The figure shows only the coefficients for selected majors.. The outcome variable is students' support for higher taxes on the wealthy. Estimates are presented in standard deviation units. Models control flexibly for students' baseline political ideology, policy attitudes, and major preferences.

Figure A26: Estimated Impacts of College-Level Shocks to Field Availability on Financial Success Goal



Note: These figures plot the estimates for ρ_k from equation 4, representing the effects of college-level shocks to economics and business majors availability on the outcome, along with their standard errors clustered at the college level. Each figure also reports the equivalent difference-in-difference estimate for the average impact. Estimation is based on the imputation estimator (Gardner, 2022). The outcome variable is students' agreement that the following is a goal for them: "Being very well off financially".

Figure A27: Effects of College Majors on Helping Others Goal



Note: This figure plots the estimates for δ_m from equation 1 and their 95% confidence intervals. The estimated coefficients represent the effects of studying in each major group relative to STEM, health, and education (the omitted group of majors). The outcome variable is students' agreement that the following is a goal for them: "Helping others who are in difficulty". Estimates are shown in standard deviations. The sample includes only students with non-missing majors and the outcome in the graduation survey (313,466 students). Table A4 provides the full list of control variables. Baseline refers to baseline outcome and preferred refers to intended majors. Our model incorporates all variables flexibly (with fixed effects for each value available in the survey).

Table A1: Students' Opinions on Policy Issues

Statement	Observations	Survey	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly	$Cor(., P)$
Addressing global climate change should be a federal priority	28980	Baseline	11.02%	21.58%	39.02%	28.37%	0.46
		Graduation	6%	16.07%	37.26%	40.68%	0.48
Abortion should be legal	286632	Baseline	32.43%	15.73%	25.25%	26.59%	0.43
		Graduation	23.2%	15.08%	27.45%	34.26%	0.47
A national health care plan is needed to cover everybody's medical costs	170130	Baseline	10.44%	21%	43.99%	24.57%	0.39
		Graduation	11.27%	20.09%	41.72%	26.93%	0.45
It is important to have laws prohibiting homosexual relationships	228820	Baseline	44.12%	28.95%	15.06%	11.87%	-0.39
		Graduation	57.71%	23.1%	11.49%	7.7%	-0.41
Wealthy people should pay a larger share of taxes than they do now	227981	Baseline	13.55%	26.87%	39.65%	19.93%	0.3
		Graduation	12.72%	26.65%	38.96%	21.66%	0.39
Marijuana should be legalized	263039	Baseline	44.79%	27.03%	20.77%	7.41%	0.28
		Graduation	30.11%	26.5%	28.83%	14.56%	0.35
The death penalty should be abolished	244950	Baseline	31.19%	36.71%	18.54%	13.56%	0.21
		Graduation	23.85%	36.63%	22%	17.53%	0.3
The federal government should do more to control the sale of handguns	185803	Baseline	5.28%	10.53%	35.91%	48.28%	0.24
		Graduation	5.63%	12%	36.75%	45.62%	0.28
There is too much concern in the courts for the rights of criminals	175059	Baseline	5.99%	26.58%	47.72%	19.72%	-0.22
		Graduation	8.33%	36.26%	42.01%	13.39%	-0.27
Racial discrimination is no longer a major problem in America	305868	Baseline	37.59%	45.48%	14.73%	2.2%	-0.18
		Graduation	46.71%	39.89%	11.24%	2.16%	-0.24
Colleges should prohibit racist/sexist speech on campus	221381	Baseline	11.51%	25.23%	35.27%	27.99%	-0.02
		Graduation	16.24%	29.97%	31.93%	21.85%	0.04
Realistically, an individual can do little to bring about changes in our society	241317	Baseline	35.46%	41.9%	18.99%	3.65%	-0.01
		Graduation	NA	NA	NA	NA	NA

Note: This table displays twelve questions related to policy issues, as featured in both the baseline and graduation surveys throughout our analysis period. The table shows the distribution of responses to these questions and the correlation between responses to each question and answers to political ideology (P): "How would you characterize your political views?" with a response scale from 1 (very conservative) to 5 (very liberal) in both surveys (entry and exit). The sample for each question is restricted to students who provided responses in both their baseline and graduation surveys.

Appendix B Appendix Tables

Table A2: College Majors Classification and Aggregation

Major Group	Majors	Details
Accounting	Accounting	Accounting
Arts	Arts	Art, Design, Music, Other Art Humanities, Theater
Biological	Biological	Agriculture, Zoology, Biology, Other Biological, Microbiology
Business	Business	Business, International Business, Other Business
Chemistry	Chemistry	Biochemistry, Chemistry
Communications	Communications	Communications, Speech
Cs	Cs	Computer Science, Data
Economics	Economics	Economics
Education	Education	Business Education, Elementary Education, Art Education, Other Education, Physical Education, Secondary Education, Special Education
Electronic Engineering	Electronic Engineering	Computer Engineering, Electronic Engineering
Engineering	Engineering	Aero Engineering, Architecture, Chemical Engineering, Civil Engineering, Industrial Engineering, Other Engineering
Environmental	Environmental	Environmental Science
Finance	Finance	Finance
Health	Health	Health Technology, Kinesiology, Med Dent Vet, Other Health, Pharmacy, Therapy
History	History	History
Language	Language	Language
Management	Management	Management
Marketing	Marketing	Marketing
Math	Math	Math
Mechanical Engineering	Mechanical Engineering	Mechanical Engineering
Missing Undecided	Missing Undecided	Undecided, Na
Missing Undecided	Other	Other
Nursing	Nursing	Nursing
Other	Other	Building Trades, Other Technical, Home Economics, Other
Other Humanities	Other Humanities	Ethnic Studies, Philosophy, Gender Studies
Physical	Physical	Other Physical, Earth Science, Marine Sciences, Physics
Politics	Politics	Politics
Psychology	Psychology	Psychology
Social	Social	Geography, Law Enforcement, Other Social
Social Work	Social Work	Social Work
Sociology Anthropology	Sociology Anthropology	Anthropology, Sociology
Theology	Theology	Theology

Note: The table shows the names of each major as they appear in the baseline and graduation surveys, and then their classification into majors for our analysis, and the aggregation of different majors into broad groups also used in our analysis.

Table A3: Assessing Differential Attrition

	1(graduation survey)					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.167***			0.168***		
	(0.013)			(0.013)		
Econ&Business	-0.001	-0.012***	-0.003*	-0.002	-0.013***	-0.003**
	(0.006)	(0.002)	(0.002)	(0.006)	(0.002)	(0.002)
Social&Humanities	0.014**	-0.006***	0.0010	0.016**	-0.006***	0.001
	(0.007)	(0.001)	(0.001)	(0.007)	(0.001)	(0.001)
Political				-0.008***	-0.005***	-0.003***
				(0.003)	(0.0006)	(0.0005)
Econ&Business × Political				-0.002	0.001	0.0003
				(0.002)	(0.0007)	(0.0007)
Social&Humanities × Political				0.003	0.001	0.0004
				(0.002)	(0.0007)	(0.0007)
College-Year FEs		✓	✓		✓	✓
HS GPA			✓			✓
Observations	1,652,381	1,652,381	1,641,120	1,573,926	1,573,926	1,564,001
R^2	0.0003	0.303	0.311	0.0007	0.305	0.312
Within R^2		0.0002	2.21×10^{-5}		0.0004	8.49×10^{-5}

Note: This table presents the estimation results from regressing an indicator for participation in the graduation survey on students' intended majors, political ideology, their interactions. The sample includes all students from the colleges and cohorts in our main sample described in the text, who participated in the baseline survey. Standard errors are clustered at the college level.

Table A4: Main Control Variables

Group	**Variables**
Views (main)	*political*, abortion, guns, death penalty, criminal rights, race, gay rights, marijuana Tax, Healthcare, Change, Speech Gender, Climate
Past Behaviors (main)	discussed politics, voted in student elections, volunteered, (student/other) demonstration, religious service
Goals (main)	environmentalism, community action, racial equality, staying informed, and understanding politics, helping financial success, social values, family, meaning
Hours-per-week	reading, working, household, homework, volunteering, TV, clubs, party socializing, sports, faculty meetings
Demographics	sex, race, citizenship, religion, parental income, education, and marital status
Other	College, year

Note: This table shows the control variable included in our analysis.

Table A5: Distribution of Double Majors for Cohorts Enrolled Since 2005

First Major	Second Major	Students
Business & Economics	None	17308
Business & Economics	Business & Economics	5681
Business & Economics	Humanities & Arts	1538
Business & Economics	Social Sciences	1242
Business & Economics	STEM	874
Business & Economics	Other	380
Business & Economics	Health & Education	113
Health & Education	None	13256
Health & Education	Health & Education	1333
Health & Education	Humanities & Arts	848
Health & Education	Social Sciences	518
Health & Education	Other	459
Health & Education	STEM	345
Health & Education	Business & Economics	209
Humanities & Arts	None	15073
Humanities & Arts	Humanities & Arts	4319
Humanities & Arts	Social Sciences	2092
Humanities & Arts	Health & Education	960
Humanities & Arts	Business & Economics	524
Humanities & Arts	STEM	483
Humanities & Arts	Other	293
Social Sciences	None	20229
Social Sciences	Humanities & Arts	3836
Social Sciences	Social Sciences	3390
Social Sciences	Business & Economics	945
Social Sciences	Other	646
Social Sciences	Health & Education	551
Social Sciences	STEM	535
STEM	None	23942
STEM	STEM	2802
STEM	Humanities & Arts	1708
STEM	Social Sciences	1022

Table A6: Robustness of the Results, Controlling for Double Majors

	Ideology		Index	
Control		+		+
Business/	0.17***	0.17***	0.15***	0.15***
Economics	(0.01)	(0.01)	(0.01)	(0.01)
Health/	0.06***	0.06***	0.07***	0.07***
Education	(0.01)	(0.01)	(0.01)	(0.01)
Humanities/	-0.07***	-0.06***	-0.08***	-0.07***
Arts	(0.01)	(0.01)	(0.01)	(0.01)
Social	-0.07***	-0.06***	-0.10***	-0.09***
Sciences	(0.01)	(0.01)	(0.01)	(0.01)
N	123255	123255	119691	119691

This table shows the estimates for δ_m from equation 1 and their 95% confidence intervals, with and without controlling for the double major category. The estimated coefficients represent the effects of studying each major relative to STEM (the omitted group of majors). The sample includes only students with non-missing values in the major and outcome from the enrolling cohorts of 2005 or later. The outcomes represent self-reported political ideology and an index for policy attitudes (both measured in standard deviations, on a Liberal-Conservative scale. *** p<0.01, ** p<0.05, * p<0.1

Table A7: Effects of College Majors on Ideology and Attitudes, By Student's Characteristics

	Females	Males	Low SES	High SES	Low HSGPA	High HSGPA
Outcome: Ideology						
Business/	0.13***	0.13***	0.10***	0.14***	0.12***	0.14***
Economics	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Health/	0.05***	0.03*	0.03**	0.05***	0.04***	0.05***
Education	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Social	-0.09***	-0.08***	-0.10***	-0.09***	-0.09***	-0.12***
Sciences	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)
Humanities/	-0.10***	-0.10***	-0.12***	-0.10***	-0.10***	-0.12***
Arts	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
N	192273	114004	134981	140653	196503	107219
Outcome: Index						
Business/	0.10***	0.12***	0.09***	0.12***	0.10***	0.13***
Economics	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Health/	0.07***	0.04**	0.04***	0.07***	0.05***	0.06***
Education	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Social	-0.13***	-0.11***	-0.15***	-0.12***	-0.12***	-0.16***
Sciences	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Humanities/	-0.12***	-0.12***	-0.14***	-0.11***	-0.12***	-0.15***
Arts	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
N	188849	111951	132974	137885	192719	105569

This table shows the estimates for δ_m from equation 1 and their 95% confidence intervals. The estimated coefficients represent the effects of studying each major relative to STEM (the omitted group of majors). The sample includes only students with non-missing values in the major and outcome. The outcomes represent self-reported political ideology and an index for policy attitudes (both measured in standard deviations, on a Liberal-Conservative scale. *** p<0.01, ** p<0.05, * p<0.1

Table A8: Effects of College Majors on Ideology and Attitudes, By Pre-College Ideology

	Far Left	Conservative	Moderate	Liberal	Far Right
Outcome: Ideology					
Business/	0.29***	0.08***	0.12***	0.16***	0.03
Economics	(0.06)	(0.01)	(0.01)	(0.01)	(0.05)
Health/	0.07	0.03*	0.03***	0.05***	-0.02
Education	(0.06)	(0.01)	(0.01)	(0.01)	(0.05)
Social	-0.04	-0.13***	-0.09***	-0.06***	-0.25***
Sciences	(0.04)	(0.01)	(0.01)	(0.01)	(0.06)
Humanities/	-0.01	-0.14***	-0.10***	-0.07***	-0.28***
Arts	(0.05)	(0.02)	(0.01)	(0.01)	(0.06)
N	5705	77642	129380	75555	4509
Outcome: Index					
Business/	0.16***	0.09***	0.10***	0.14***	0.02
Economics	(0.05)	(0.01)	(0.01)	(0.01)	(0.05)
Health/	-0.01	0.06***	0.05***	0.06***	-0.07
Education	(0.05)	(0.01)	(0.01)	(0.01)	(0.05)
Social	-0.10**	-0.13***	-0.14***	-0.10***	-0.23***
Sciences	(0.03)	(0.01)	(0.01)	(0.01)	(0.05)
Humanities/	-0.10**	-0.12***	-0.13***	-0.10***	-0.26***
Arts	(0.04)	(0.01)	(0.01)	(0.01)	(0.05)
N	5579	76405	127143	74089	4438

This table shows the estimates for δ_m from equation 1 and their 95% confidence intervals. The estimated coefficients represent the effects of studying each major relative to STEM (the omitted group of majors). The sample includes only students with non-missing values in the major and outcome. The outcomes represent self-reported political ideology and an index for policy attitudes (both measured in standard deviations, on a Liberal-Conservative scale. *** p<0.01, ** p<0.05, * p<0.1

Table A9: Effects of College Majors on Ideology and Attitudes, By College Characteristics

	Private College	Private University	Public	More Selective	Less Selective	North	South
Outcome: Ideology							
Business/	0.14***	0.11***	0.10***	0.14***	0.12***	0.13***	0.14***
Economics	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
Health/	0.07***	0.01	-0.00	0.04*	0.04***	0.04***	0.07***
Education	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
Social	-0.08***	-0.13***	-0.13***	-0.08*	-0.10***	-0.09***	-0.09***
Sciences	(0.01)	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)	(0.02)
Humanities/	-0.08***	-0.15***	-0.15***	-0.10***	-0.11***	-0.11***	-0.09***
Arts	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
N	209014	58599	39131	64365	241468	268186	38302
Outcome: Index							
Business/	0.13***	0.10***	0.07***	0.11***	0.11***	0.11***	0.13***
Economics	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
Health/	0.09***	0.04	-0.03	0.02	0.05***	0.05***	0.08***
Education	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
Social	-0.11***	-0.15***	-0.19***	-0.13***	-0.13***	-0.13***	-0.13***
Sciences	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
Humanities/	-0.11***	-0.15***	-0.18***	-0.13***	-0.12***	-0.13***	-0.14***
Arts	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
N	205565	57653	38035	63501	236887	263490	37522

This table shows the estimates for δ_m from equation 1 and their 95% confidence intervals. The estimated coefficients represent the effects of studying each major relative to STEM (the omitted group of majors). The sample includes only students with non-missing values in the major and outcome. The outcomes represent self-reported political ideology and an index for policy attitudes (both measured in standard deviations, on a Liberal-Conservative scale. *** p<0.01, ** p<0.05, * p<0.1

Table A10: Effects of College Majors on Ideology and Attitudes, By Enrollment Year

	2000 and Before	2000-2009	2010 and Later
Outcome: Ideology			
Business/	0.08***	0.12***	0.20***
Economics	(0.01)	(0.01)	(0.02)
Health/	0.01	0.06***	0.08***
Education	(0.01)	(0.01)	(0.02)
Social	-0.12***	-0.08***	-0.06**
Sciences	(0.01)	(0.01)	(0.02)
Humanities/	-0.14***	-0.09***	-0.07***
Arts	(0.01)	(0.01)	(0.02)
N	114833	136843	55068
Outcome: Index			
Business/	0.08***	0.09***	0.20***
Economics	(0.01)	(0.01)	(0.02)
Health/	0.02	0.06***	0.09***
Education	(0.01)	(0.01)	(0.02)
Social	-0.15***	-0.14***	-0.07***
Sciences	(0.01)	(0.01)	(0.02)
Humanities/	-0.15***	-0.12***	-0.08***
Arts	(0.01)	(0.01)	(0.02)
N	113630	134410	53213

This table shows the estimates for δ_m from equation 1 and their 95% confidence intervals. The estimated coefficients represent the effects of studying each major relative to STEM (the omitted group of majors). The sample includes only students with non-missing values in the major and outcome. The outcomes represent self-reported political ideology and an index for policy attitudes (both measured in standard deviations, on a Liberal-Conservative scale. *** p<0.01, ** p<0.05, * p<0.1

Table A11: Decomposition of the Effects of College Majors, Using Only Persistent Survey Questions

Major 1	Major 2	Base Coef	Full Coef	Economic Views	Culture Views	Other Views	Not Explained
Business	Health & Education	-0.067	-0.047	57.07%	-11.58%	-16.42%	70.93%
Business	STEM	-0.079	-0.051	33.71%	3.18%	-1.34%	64.46%
Business	Social Sciences	-0.202	-0.108	31.14%	16.34%	-0.99%	53.51%
Business	Humanities & Arts	-0.233	-0.141	24.78%	15.3%	-0.28%	60.2%
Health & Education	STEM	-0.014	-0.003	-41.4%	65.35%	58.32%	17.73%
Health & Education	Social Sciences	-0.137	-0.061	9.64%	39.47%	6.48%	44.41%
Health & Education	Humanities & Arts	-0.129	-0.065	1.13%	39.15%	9.51%	50.22%
STEM	Social Sciences	-0.107	-0.052	23.94%	28.88%	-1.08%	48.26%
STEM	Humanities & Arts	-0.123	-0.075	12.66%	25.82%	0.78%	60.74%
Social Sciences	Humanities & Arts	-0.015	-0.019	-34.19%	-11.2%	13.91%	131.48%

extitNotes: This table shows the Gelbach decomposition of the estimated effects of college major on students' political ideology at graduation. Economic refers to the principal component constructed from questions about support for higher taxes on the wealthy and for universal healthcare. Culture refers to the principal component of questions on abortion, race, LGBTQ rights, and free speech. Other refers to the principal component for questions about marijuana legalization and belief in the ability to bring about social change. Base Coef is the coefficient on the major group (relative to the paired group) from the baseline model, and Full Coef is the coefficient after controlling for all policy attitudes. The remaining columns show the share of the base effect explained by each policy attitude group (expressed as a percentage of the baseline effect), with Not Explained representing the share of the major effect not accounted for by the included mediators. All models control for baseline ideology, intended major, and social preferences.

Table A12: Decomposition of the Effects of College Majors, Allowing for Different Weights

Major 1	Major 2	Base Coef	Full Coef	Economic Views	Culture Views	Other Views	Weights	Not Explained
Business	Health & Education	-0.078	-0.057	42.16%	-1.83%	-5.77%	-6.96%	72.39%
Business	STEM	-0.105	-0.077	31.18%	2.17%	5.13%	-11.26%	72.78%
Business	Social Sciences	-0.224	-0.122	18.14%	22.49%	2.9%	1.96%	54.5%
Business	Humanities & Arts	-0.242	-0.128	20%	19.43%	5.63%	1.82%	53.11%
Health & Education	STEM	-0.042	-0.033	6.92%	11.5%	23.88%	-19.4%	77.1%
Health & Education	Social Sciences	-0.147	-0.064	6.83%	49.9%	9.59%	-10.08%	43.77%
Health & Education	Humanities & Arts	-0.146	-0.063	10.11%	42.24%	15.81%	-11.48%	43.32%
STEM	Social Sciences	-0.108	-0.036	5.08%	55.55%	1.35%	5.12%	32.9%
STEM	Humanities & Arts	-0.115	-0.043	9.08%	40.75%	8.56%	4.4%	37.21%
Social Sciences	Humanities & Arts	-0.010	-0.004	50.65%	-73.09%	83.48%	2.34%	36.62%

extitNotes: This table shows the Gelbach decomposition of the estimated effects of college major on students' political ideology at graduation. Economic refers to the principal component constructed from questions about support for higher taxes on the wealthy and for universal healthcare. Culture refers to the principal component of questions on abortion, race, LGBTQ rights, and free speech. Other refers to the principal component for questions about marijuana legalization and belief in the ability to bring about social change. Weights refer to the relative importance of each component. Base Coef is the coefficient on the major group (relative to the paired group) from the baseline model, and Full Coef is the coefficient after controlling for all policy attitudes. The remaining columns show the share of the base effect explained by each policy attitude group (expressed as a percentage of the baseline effect), with Not Explained representing the share of the major effect not accounted for by the included mediators. All models control for baseline ideology, intended major, and social preferences.

Table A13: Decomposition of the Effects of College Majors, Detailed Results

Major 1	Major 2	Base Coef	Full Coef	Tax	Healthcare	Abortion	Race	Gay Prohibit	Speech	Marijuana	Change	Not Explained
Business	Health & Education	-0.067	-0.052	27.47%	26.1%	-23.02%	6.44%	1.56%	-0.55%	-18.31%	2.21%	78.1%
Business	STEM	-0.079	-0.050	17.48%	14.86%	-2.52%	2.45%	4.76%	-0.31%	-1.5%	0.65%	64.14%
Business	Social Sciences	-0.202	-0.101	13.88%	15.54%	5.23%	4.61%	6.86%	0.05%	2.35%	1.41%	50.07%
Business	Humanities & Arts	-0.233	-0.131	10.95%	12.05%	2.71%	4.93%	8.29%	-0.01%	4.24%	0.69%	56.13%
Health & Education	STEM	-0.014	0.004	-11.69%	-28.16%	113.06%	-12.12%	-8.36%	0.7%	80.48%	-6.08%	-27.82%
Health & Education	Social Sciences	-0.137	-0.050	4%	4.82%	23.26%	4.1%	12.78%	0.51%	14.14%	0.02%	36.37%
Health & Education	Humanities & Arts	-0.129	-0.049	1.73%	-0.7%	20.44%	4.19%	17.35%	0.59%	18.05%	0.28%	38.08%
STEM	Social Sciences	-0.107	-0.046	10%	12.17%	11.29%	7.53%	10.19%	-0.16%	3.96%	2.07%	42.94%
STEM	Humanities & Arts	-0.123	-0.064	6.73%	5.19%	8.2%	7.14%	11.46%	-0.28%	7.98%	1.31%	52.27%
Social Sciences	Humanities & Arts	-0.015	-0.019	-13.48%	-17.29%	-30.72%	-5.22%	23.65%	-0.42%	17.49%	-2.92%	128.9%

extitNotes: This table shows the Gelbach decomposition of the estimated effects of college major on students' political ideology at graduation. Base Coef is the coefficient on the major group (relative to the paired group) from the baseline model, and Full Coef is the coefficient after controlling for all policy attitudes. The remaining columns show the share of the base effect explained by each policy attitude (expressed as a percentage of the baseline effect), with Not Explained representing the share of the major effect not accounted for by the included mediators. All models control for baseline ideology, intended major, and social preferences.

Table A14: Estimated Effects of Peer Ideology Composition, Robustness

	Ideology	Liberal	Index	Ideology	Ideology	Ideology
	(1)	(2)	(3)	(4)	(5)	(6)
Estimate	-0.003	0.014	0.010	-0.007	-0.013	-0.002
	(0.010)	(0.012)	(0.012)	(0.010)	(0.012)	(0.039)
Estimate	-0.006	0.018	0.011	-0.009	-0.018	-0.006
(Adjusted)	(0.016)	(0.019)	(0.021)	(0.016)	(0.017)	(0.049)
N	227,475	227,475	222,669	214,312	154,638	42,107
Share	0.1	0.1	0.1	0.3	0.5	0.7
Expectation	V	V	V	V	V	V
Baseline	V	V	V	V	V	V
FEs	V	V	V	V	V	V

Notes: This table presents estimates of peer effects on students' political ideology based on equation 6. The outcome variable is either self-reported ideology, or dummy for liberal, or the opinion index constructed from the graduation survey The treatment variable captures peers' outcome from the baseline survey, where peers are defined as students from the same college-cohort-intended major group. The estimates account for exclusion bias using a four-way split-sample approach. Specifications include controls for the average index of potential peers from four adjacent cohorts (Expectaions), pre-college political ideology and opinion index (Baseline), and college-major, college-cohort, and major-cohort fixed-effects (FEs). All estimates are in standard deviation units. The sample is restricted to students with non-missing values for both major and political views, and with information available for at least 5 of their peers which represent at least x% of the cohort, with x reported in the table (Share). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A15: Estimated Effects of Peer Ideology Composition, Subsamples

	Economics Business	Health Education	Humanities Arts	Social Sciences	STEM	Small Cohorts
	(1)	(2)	(3)	(4)	(5)	(6)
Estimate	0.024	0.031	-0.052	-0.021	-0.008	-0.026*
	(0.026)	(0.031)	(0.033)	(0.033)	(0.028)	(0.014)
Estimate	0.036	0.044	-0.063	-0.026	-0.020	-0.036*
(Adjusted)	(0.044)	(0.053)	(0.050)	(0.055)	(0.045)	(0.020)
N	43,566	52,198	26,321	40,903	48,656	87,712
Expectation	V	V	V	V	V	V
Baseline	V	V	V	V	V	V
FEs	V	V	V	V	V	V

Notes: This table presents estimates of peer effects on students' political ideology based on equation 6. The outcome variable is either self-reported ideology, or dummy for liberal, or the opinion index constructed from the graduation survey The treatment variable captures peers' outcome from the baseline survey, where peers are defined as students from the same college-cohort-intended major group. The estimates account for exclusion bias using a four-way split-sample approach. Specifications include controls for the average index of potential peers from four adjacent cohorts (Expectaions), pre-college political ideology and opinion index (Baseline), and college-major, college-cohort, and major-cohort fixed-effects (FEs). All estimates are in standard deviation units. The sample is restricted to students with non-missing values for both major and political views, and with information available for at least 5 of their peers which represent at least 10% of the cohort. Samples are defined based on intended majors or cohort size (below 50). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A16: Estimated Effects of Faculty Ideology, Robustness

	(1)	(2)	(3)	(4)
Estimate	0.015*	0.020**	0.031**	0.046**
	(0.008)	(0.010)	(0.013)	(0.019)
Estimate	0.042**	0.045**	0.055**	0.071**
(Adjusted)	(0.019)	(0.020)	(0.023)	(0.029)
N	155,049	116,171	73,841	34,902
Share	0.1	0.3	0.4	0.5
FEs	V	V	V	V
Baseline	V	V	V	V
More	V	V	V	V

Notes: This table presents estimates of the effects of faculty ideology on students' political ideology based on equation 8. The outcome variable measures political views using responses to the question "How would you characterize your political views?" from the graduation survey The treatment variable captures faculty's responses to the same question, based on all faculty from the department that correspond to the student's college and intended major. Specifications include controls for major-cohort, college-cohort, and major-group-college-cohort fixed-effects (FEs), pre-college political ideology and opinion index (Baseline), and social preferences (More). All estimates are in standard deviation units. The sample is restricted to students with non-missing values for both intended major and political views, and with information available for at least 3 of their faculty included in the survey which represent at least x% of the faculty in the department, where x is shown in the Table (Share). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Appendix C Adjusting Peers' ideology Measure

Estimating peer effects in our setting presents a unique challenge since we observe only a (large) fraction of each student's peers rather than the complete peer sample. In this appendix, we demonstrate that a naive approach ignoring the fraction of observed peers leads to attenuation bias in our estimator. We then show how our proposed solution substantially mitigates this bias.

Consider a hypothetical sample containing a complete set of peers. The following version of equation 6 would apply:

$$p_{icmt} = \sigma^F P_{cmt}^{F,-i} + \beta^F \Phi_{cmt}^{F,-i} + \nu_{cm} + \theta_{ct} + \lambda_{mt} + \varepsilon_{icmt} \tag{A1}$$

where superscript F denotes the full peers sample equivalent of each variable. The treatment variable can be decomposed into:

$$P_{cmt}^{F,-i} = \widehat{P_{cmt}^{-i}} + \overline{\eta_{cmt}^F} \tag{A2}$$

Here, $\widehat{P_{cmt}^{-i}}$ represents the component predictable by fixed effects and controls, while $\overline{\eta_{cmt}^F}$ captures the unpredictable component. Our identification assumption implies that conditional on controls, initial views within the same college major year are uncorrelated. Therefore, $\overline{\eta_{cmt}^F}$ can be interpreted as an average of mean-zero idiosyncratic errors across individuals. Applying the Frisch–Waugh–Lovell theorem (Frisch and Waugh, 1933), we can express equation A2 in its residualized form:

$$p_{icmt}^{\perp} = \sigma^F \overline{\eta^F cmt} + \varepsilon_{icmt} \tag{A3}$$

where superscript $\perp$ indicates residualization with respect to $\Phi_{cmt}^{F,-i}$ and the fixed effects from equation A1. The term $\overline{\eta_{cmt}^F}$ can be further decomposed into observed and unobserved components:

$$\overline{\eta_{cmt}^F} = \alpha_{ct} \overline{\eta_{cmt}^O} + (1 - \alpha_{ct}) \overline{\eta_{cmt}^U} \tag{A4}$$

where α_{ct} represents the survey coverage rate for students in college c and year t.[11] Substituting A4 into A3 and replacing the second term with mean-zero average error υ, we obtain:

$$p^{\perp}_{icmt} = \sigma^{F}(\alpha_{ct}\overline{\eta^{O}_{cmt}} + \overline{\upsilon_{cmt}}) + \varepsilon_{icmt} \tag{A5}$$

A naive approach attributing observed peers' views to unobserved peers yields the following residualized specification, where the residualized treatment is inflated by the inverse α_{ct} and omits unobserved peers' idiosyncratic errors:

$$p^{\perp}_{icmt} = \sigma^{O}\overline{\eta^{O}_{cmt}} + \varepsilon_{icmt} \tag{A6}$$

Our preferred approach adjusts the average peer view by assigning predicted views to unobserved peers. Leading to:

$$P^{-i}_{cmt} = \widehat{P^{-i}_{cmt}} + \alpha_{ct}\overline{\eta^{O}_{cmt}} \tag{A7}$$

Yielding the residualized specification:

$$p^{\perp}_{icmt} = \sigma\alpha_{ct}\overline{\eta^{O}_{cmt}} + \varepsilon_{icmt} \tag{A8}$$

This specification differs from A3 only by excluding unobserved peers' idiosyncratic errors, resulting in standard attenuation bias from measurement error in the treatment.

[11] Since intended major is one of the survey questions, we assume that coverage is constant across intended majors within each college-year pair.