WHAT'S AN ACADEMIC DISCIPLINE WORTH? ANALYZING ECONOMIC, SUBJECTIVE, AND CLASS IDENTITY RETURNS TO HIGHER EDUCATION

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Abstract:

This study provides a comprehensive assessment of the multidimensional returns to different academic disciplines by examining income differentials, job satisfaction, and subjective social class identification across five major categories: Business, STEM, Social Sciences, Humanities, and Other fields. Using nationally representative data from the General Social Survey (2012-2022), I analyze outcomes among 5,324 college graduates through multiple regression models that account for demographic and contextual factors. Results reveal significant differences in economic returns, with STEM graduates earning approximately 12.3% more than Business graduates, while Social Sciences majors earn 9.4% less. However, job satisfaction shows minimal variation across disciplines, suggesting that subjective well-being may depend more on person-environment fit than field-specific advantages. Subjective social class identification demonstrates significant field-based variation even after controlling for income, with STEM graduates most likely ($\beta = 0.277$, $p < 0.001$) and Humanities ($\beta = -0.350$, $p < 0.01$) and Other fields ($\beta = -0.579$, $p < 0.01$) least likely to identify with higher social classes. Gender moderates these relationships, with smaller gender gaps in Social Sciences ($\beta = 0.146$, $p < 0.05$) and Humanities ($\beta = 0.225$, $p < 0.01$) compared to Business and STEM fields. A composite ROI index integrating all three dimensions confirms STEM's overall advantage ($\beta = 0.092$, $p < 0.001$), followed by Business, with Social Sciences ($\beta = -0.066$, $p < 0.01$), Humanities ($\beta = -0.097$, $p < 0.01$), and Other fields ($\beta = -0.156$, $p < 0.05$) showing progressively lower comprehensive returns. The study provides evidence-based insights for educational policy, career guidance, and individual decision-making, suggesting that optimal educational choices may differ depending on which dimensions of success individuals prioritize. By revealing how different academic disciplines shape multiple aspects of career outcomes, this research contributes to a more nuanced understanding of the complex relationship between educational investment and life trajectories in modern society.

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1. Introduction

The decision about which major to pursue in college represents one of the most consequential educational choices individuals make in their lives. This choice shapes not only the knowledge and skills students acquire but also their career trajectories, earning potential, social status, and subjective well-being (Arcidiacono, 2004; Porter & Umbach, 2006). With rising tuition costs and growing concerns about student debt, the economic returns to different educational pathways have come under increasing scrutiny from students, parents, policymakers, and researchers alike (Webber, 2014; Oreopoulos & Petronijevic, 2013). The common narrative surrounding college majors often emphasizes the differential economic value of various fields, with science, technology, engineering, and mathematics (STEM) and business fields typically portrayed as offering superior returns compared to humanities and social sciences (Carnevale, Cheah, & Hanson, 2015; Kim, Tamborini, & Sakamoto, 2015). However, this narrow focus on immediate economic outcomes fails to capture the multidimensional nature of career success and may lead to educational decisions that optimize financial returns at the expense of other important dimensions of post-graduate well-being (Pallas, 2000; Delaney & Devereux, 2019).

This study aims to provide a more comprehensive understanding of the returns to different college majors by examining not only income differentials but also job satisfaction and subjective social class identification. By incorporating both objective economic measures and subjective well-being indicators, this research offers a more holistic assessment of the Return on Investment (ROI) associated with various fields of study. This multidimensional approach acknowledges that individuals may value different aspects of career success and that the worth of educational choices cannot be reduced to simple monetary calculations (Wolniak & Pascarella, 2005; Kalleberg, 2018). Some students may prioritize financial security and maximizing earnings, while others may place greater emphasis on finding fulfilling work that aligns with their interests and values, even if it offers more modest financial compensation (Steger, Dik, & Duffy, 2012). The concept of return on investment in education has traditionally been framed in human capital terms, focusing on the economic payoff from investments in additional years of schooling or advanced degrees. Early work by economists such as Becker (1964) and Mincer (1974) established frameworks for understanding education as an investment in productivity-enhancing skills and knowledge that yield returns in the labor market. However, as higher education has become increasingly differentiated, researchers have recognized that not all educational investments yield equal returns. The field of study, institutional prestige, and various demographic factors may moderate the relationship between educational attainment and subsequent career outcomes (Thomas & Zhang, 2005; Torche, 2011). Recent research has documented substantial heterogeneity in the economic returns to different college majors, with some fields offering significantly

higher earnings premiums than others (Carnevale, Cheah, & Hanson, 2015; Kim, Tamborini, & Sakamoto, 2015). These findings have fueled concerns about the value proposition of certain disciplines, particularly in the humanities and fine arts, which typically show lower average earnings compared to STEM and business fields (Altonji, Blom, & Meghir, 2012).

However, the narrow focus on earnings as the primary measure of educational returns has been criticized for ignoring other important dimensions of career success and life satisfaction (Heslin, 2005; Kalleberg, 2011). Job satisfaction, work-life balance, meaningful contribution to society, and fulfillment of individual potential may all represent valuable returns on educational investments that are not captured by income measures alone (Clark & Oswald, 1996; Ng, Eby, Sorensen, & Feldman, 2005). Moreover, subjective perceptions of social status and class position may be influenced by educational choices in ways that extend beyond objective economic outcomes (Rivera, 2015; Reeves *et al.*, 2017). Understanding these multifaceted returns is essential for developing a more accurate assessment of the value of different educational pathways and providing more comprehensive guidance to students making major choice decisions (Robst, 2007; Xu, 2013).

The present study addresses these limitations by examining three distinct dimensions of returns to college majors: income, job satisfaction, and subjective social class identification. Additionally, it explores how these returns vary across demographic categories, with particular attention to gender differences in the payoff to different fields of study (DiPrete & Buchmann, 2013; Michelmore & Sassler, 2016). By analyzing data from the General Social Survey (GSS), this research provides a contemporary perspective on the relationship between college majors and various indicators of career success among a diverse, nationally representative sample of college graduates in the United States. The GSS offers a unique advantage for this research as it includes measures of both objective economic outcomes and subjective well-being, allowing for a more comprehensive assessment of educational returns than is possible with purely economic datasets (Smith, Marsden, Hout, & Kim, 2016).

This research addresses several specific research questions that guide the empirical analysis:

1) How do different academic disciplines (college major) categories compare in terms of income returns, after controlling for relevant demographic and contextual factors?

2) To what extent do academic disciplines (college majors) differ in their association with job satisfaction? Do fields with higher economic returns also yield higher levels of subjective well-being in one's career?

3) How does the field of study relate to subjective social class identification?

4) Do the returns to different college majors vary by gender? Are gender gaps in income and other outcomes larger in some fields than others?

5) How do these various dimensions of returns (economic, psychological, and social) combine to create an overall pattern of advantages and disadvantages associated with different academic fields of study?

By addressing these questions, this study contributes to multiple bodies of literature at the intersection of education, labor markets, and social stratification. First, it extends the literature on economic returns to education by examining how the field of study influences not just earnings but also broader indicators of career success and well-being (Altonji *et al.*, 2012; Webber, 2014). Second, it contributes to research on gender stratification in higher education and labor markets by investigating how gender moderates the relationship between educational choices and career outcomes (DiPrete & Buchmann, 2013; Quadlin, 2018). Third, it advances our understanding of the connection between education and subjective social status by examining how the field of study shapes class identification beyond its impact on objective economic position (Bourdieu, 1984; Rivera, 2015).

The findings from this research have important implications for educational policy, career guidance, and individual decision-making. For policymakers, understanding the multidimensional returns to different fields can inform strategies for supporting disciplines that may offer significant social and personal benefits despite more modest economic returns (Pallas, 2000; Robst, 2007). For career counselors and academic advisors, this research provides a more nuanced framework for guiding students through the major selection process, acknowledging that optimal choices may differ depending on individual values and priorities (Holland, 1997; Steger *et al.*, 2012). For students and parents navigating the complex landscape of higher education, this study offers evidence-based insights about the various dimensions of success associated with different educational pathways, enabling more informed choices that align with personal goals and values (Porter & Umbach, 2006; Arcidiacono, 2004).

2. Literature Review

Research on the economic returns to higher education has consistently shown significant heterogeneity across fields of study. The literature on this topic has expanded substantially over the past two decades, with growing access to large-scale datasets that link educational histories to labor market outcomes. Numerous studies have documented substantial earnings differentials by college major, with STEM and business-related fields typically showing higher returns compared to humanities, education, and social sciences (Altonji, Blom, & Meghir, 2012; Kim *et al.*, 2015; Webber, 2014). Carnevale, Cheah, and Hanson (2015) analyzed data from the American Community Survey and found that median annual earnings for graduates with STEM majors were approximately 36% higher than those with arts and humanities majors. Similarly, business majors earned about 23% more than their counterparts from humanities disciplines. These patterns have remained relatively stable over time, though some research suggests that the earnings

premium for certain technical fields may have increased in recent decades (Delaney & Devereux, 2019).

The economic advantage of STEM and business fields appears to derive from several sources. First, these majors typically develop technical and quantitative skills that are highly valued in contemporary labor markets (Deming, 2017; Kirkeboen, Leuven, & Mogstad, 2016). Second, these fields often provide clearer pathways to specific occupations with established career ladders and salary structures (Roksa & Levey, 2010). Third, graduates from these fields may be more likely to work in industries and sectors that offer higher compensation, such as finance, consulting, and technology (Borgen & Mastekaasa, 2018). Research by Eide, Hilmer, and Showalter (2016) suggests that the economic returns to college majors vary not only by field but also by institutional selectivity, with graduates from more prestigious institutions receiving higher returns on their educational investments, particularly in certain fields like business.

However, some research points to limitations in how economic returns to college majors are typically measured. Most studies focus on average earnings differentials, which may obscure important variations in earnings distributions within fields (Hershbein & Kearney, 2020). Humanities and social science majors, for example, show greater earnings dispersion than many STEM fields, with some graduates achieving very high incomes while others earn considerably less. Additionally, cross-sectional analyses may not fully capture lifetime earnings trajectories, which can differ substantially across fields (Kim *et al.*, 2015). Some majors may offer higher starting salaries but flatter growth curves, while others may start lower but show steeper growth over time. Longitudinal research by Delaney and Devereux (2019) suggests that the economic advantage of STEM fields may be strongest early in careers but may diminish somewhat over time as humanities and social science graduates gain experience and develop specialized skills. While economic outcomes have dominated research on returns to education, a growing body of literature examines subjective dimensions of career success, including job satisfaction, work engagement, and overall well-being. This research typically draws from psychological frameworks like person-environment fit theory (Holland, 1997) and self-determination theory (Ryan & Deci, 2000), which emphasize the importance of alignment between individual characteristics (e.g., interests, values, abilities) and work environments for optimal functioning and satisfaction.

Studies examining the relationship between college major and job satisfaction have produced more nuanced findings than those focused on economic returns. Some research suggests that fields with lower economic returns may offer compensating advantages in terms of job satisfaction and fulfillment. Bender and Heywood (2006) found that despite lower average earnings, PhDs in humanities reported similar levels of job satisfaction compared to their counterparts in physical sciences and engineering. Similarly, Wolniak and Pascarella (2005) found relatively small differences in job satisfaction across major fields after controlling for job characteristics and individual attributes.

Other studies, however, suggest that the relationship between major field and job satisfaction may be mediated by various occupational characteristics. Xu (2013) found

that differences in job satisfaction across fields were largely explained by variations in job autonomy, work-life balance, and opportunities for advancement. Fields that provide greater autonomy and control over work conditions, regardless of economic compensation, tend to show higher levels of job satisfaction. Research by Robst and VanGilder (2016) indicates that match quality between the field of study and occupational requirements plays a significant role in job satisfaction, with graduates working in fields closely related to their majors reporting higher satisfaction than those working in unrelated fields, even when the latter earn higher salaries.

Additionally, some research suggests that the subjective returns to different fields may vary considerably over the life course. Studies by Clark, Diener, Georgellis, and Lucas (2008) indicate that adaptation processes may reduce the impact of income differentials on subjective well-being over time, potentially diminishing the subjective advantage of higher-paying fields. Conversely, intrinsic rewards such as meaningful work, creative expression, and contribution to society, often associated with fields in the arts, humanities, and social services, may become increasingly important sources of satisfaction as careers progress (Steger, Dik, & Duffy, 2012).

The relationship between education and social status has been a central concern in sociological research since the foundational studies of status attainment (Blau & Duncan, 1967; Sewell *et al.*, 1969). This literature has consistently shown that educational attainment serves as a crucial mechanism for social mobility and status acquisition. However, relatively few studies have examined how field of study influences subjective perceptions of social standing, beyond its impact on objective economic position.

Some research suggests that certain fields may confer status advantages that extend beyond their economic returns. Bourdieu's (1984) work on cultural capital and symbolic distinctions provides a theoretical foundation for understanding how different educational credentials may carry varying levels of prestige and social recognition. Fields historically associated with elite institutions and traditional professions, such as medicine, law, and certain scientific disciplines, may confer greater status advantages than newer or less prestigious fields (Rivera, 2015). Research by Reeves and colleagues (2017) indicates that occupational prestige remains only partially explained by income, with professions requiring specialized expertise and providing social benefits often receiving higher prestige ratings than equally or more highly compensated positions in business and industry.

The relationship between the field of study and subjective class identification may also be influenced by socialization processes during higher education. Mullen (2010) documented how different academic environments cultivate distinct class identities and status expectations. Students in elite liberal arts programs, for example, may develop class habitus and cultural capital that shape their subjective social standing in ways that transcend economic outcomes. Similarly, students in professional programs like business, law, and medicine may be socialized into particular expectations about their future class position and lifestyle (Stevens, Armstrong, & Arum, 2008).

Research on status and social comparisons suggests that reference group processes may further complicate the relationship between education and subjective social standing. Graduates may assess their status not relative to the general population but primarily in comparison to peers with similar educational backgrounds (Festinger, 1954). This may lead to paradoxical situations where objectively high-earning professionals in fields like finance or consulting nevertheless experience status anxiety or relative deprivation when comparing themselves to the most successful members of their peer group (Sennett & Cobb, 1972; Veblen, 1924).

A substantial body of research examines gender differences in the economic returns to education, consistently finding that women receive lower economic returns than men with equivalent credentials (DiPrete & Buchmann, 2013; England, Allison, Li, Mark, Thompson, Budig, & Sun, 2007). These gender gaps persist even after controlling for factors such as field of study, occupational choices, and work experience, though these factors explain a significant portion of the observed differentials (Blau & Kahn, 2017).

Research specifically examining gender differences in returns to college majors has identified several important patterns. First, fields with higher proportions of female graduates typically show lower average earnings, a pattern consistent with devaluation theory, which posits that work performed predominantly by women tends to be systematically undervalued in labor markets (England *et al.*, 2007; Levanon, England, & Allison, 2009). Second, gender earnings gaps tend to vary considerably across fields, with some studies finding larger gaps in business and STEM fields compared to female-dominated fields like education and nursing (Laurison & Friedman, 2016; Michelmore & Sassler, 2016). Third, gender differences extend beyond earnings to other career outcomes, including promotion rates, leadership opportunities, and work-family conflict (Goldin, 2014; Cha & Weeden, 2014).

Several explanations have been proposed for these gender differences in returns. Occupational segregation accounts for a significant portion of gender earnings gaps, with women more likely to enter lower-paying occupations even within the same broad field (Bertrand, Goldin, & Katz, 2010). Work schedule flexibility and penalties for intermittent labor force participation may also contribute to gender differences, particularly in fields like business and law, where long hours and continuous employment are highly rewarded (Goldin, 2014). Additionally, discrimination and gender bias in evaluation and reward practices may disadvantage women even when performing similar work as their male counterparts (Correll, Benard, & Paik, 2007).

Intersectional approaches have further complicated our understanding of gender differences by examining how gender interacts with other social categories like race, class, and parental status to shape career outcomes (Collins, 2015; Crenshaw, 1989). Research by Quadlin (2018) and Ridgeway (2011) suggests that gender inequalities in returns to education are structured not only by vertical hierarchies (higher/lower status) but also by horizontal segregation (different types of work), with these patterns further differentiated by racial and ethnic categories. This intersectional complexity highlights

the need for nuanced analyses that account for multiple dimensions of social stratification when examining educational returns.

Recent scholarship has increasingly called for more integrated approaches to studying educational returns that incorporate multiple dimensions of career outcomes and well-being (Kalleberg, 2018; Pallas, 2000). These approaches recognize that individuals may prioritize different aspects of career success depending on their values, circumstances, and life goals. Some may prioritize economic security and status attainment, while others may place greater emphasis on work-life balance, job satisfaction, or contributing to society.

Several studies have attempted to operationalize these multidimensional conceptions of career success. Ng, Eby, Sorensen, and Feldman (2005) conducted a meta-analysis of predictors of objective and subjective career success, finding that these dimensions are only moderately correlated and influenced by different sets of factors. Heslin (2005) proposed a framework for conceptualizing career success that includes both objective criteria (compensation, advancement) and subjective criteria (satisfaction, work-life balance, contribution), arguing that comprehensive assessments must incorporate both dimensions.

In the specific context of higher education, research by Robst (2007) and Xu (2013) has examined the relationship between college major, occupational match, and various career outcomes, finding that the returns to different fields depend significantly on whether graduates work in jobs related to their field of study. These findings suggest that examining returns to majors without considering occupational pathways may provide an incomplete picture of educational value. Similarly, research on job quality and precarious employment highlights the importance of considering not just earnings but also job security, benefits, work conditions, and advancement opportunities when assessing the value of different educational pathways (Kalleberg, 2011).

The literature reviewed here underscores the complexity of educational returns and the limitations of one-dimensional approaches focused solely on economic outcomes. A comprehensive understanding of how college majors shape subsequent life trajectories requires attention to multiple dimensions of career success and well-being, as well as consideration of how these returns may vary across demographic categories and life stages. The present study contributes to this literature by examining three distinct dimensions of returns—income, job satisfaction, and subjective social class—and exploring how these dimensions combine to create patterns of advantage and disadvantage associated with different fields of study.

3. Theoretical Framework

This study examines the multidimensional returns to different college majors by integrating several theoretical perspectives that collectively provide a comprehensive framework for understanding how educational choices shape career outcomes. The research draws primarily from human capital theory, status attainment theory, person-

environment fit theory, and intersectionality theory, while also engaging with broader conceptualizations of career success that incorporate both objective and subjective dimensions of well-being.

Human capital theory, pioneered by Becker (1964) and refined by Mincer (1974), serves as the foundational theoretical perspective for this study. This theory conceptualizes education as an investment in skills, knowledge, and capabilities that enhance an individual's productivity and, consequently, their economic returns in the labor market. While traditional human capital models often focus on quantitative aspects of education (years of schooling, credential attainment), this study extends the framework to examine the qualitative dimension of educational investment, specifically, how different fields of study yield varying economic returns.

According to human capital theory, college majors represent differentiated forms of human capital that equip graduates with distinct skill sets that are valued differently in the labor market. This differentiation occurs through several mechanisms. First, different majors develop varying types and levels of cognitive skills, technical competencies, and specialized knowledge. Second, major fields vary in their occupational specificity, with some providing direct pathways to particular careers while others offer more generalized preparation. Third, major fields differ in their signaling value to employers, with some fields carrying stronger connotations of ability, work ethic, or other desirable traits (Spence, 1973).

Human capital theory predicts that majors providing skills that are both scarce and in high demand in the labor market, such as STEM and Business fields, should yield higher economic returns than fields with more abundant skill supply or lower demand. The income analysis in this study directly tests this prediction. Additionally, human capital theory suggests that educational investments should yield not just immediate returns but lifetime income trajectories, which is reflected in this study's examination of income patterns across age groups. The theory also provides a framework for understanding how various demographic factors might influence returns to educational investments, as individuals may differ in their access to high-return fields or face varying constraints in their educational choices.

This study incorporates status attainment theory (Blau & Duncan, 1967; Sewell *et al.*, 1969) to understand how educational choices influence subjective social standing beyond purely economic outcomes. Status attainment theory examines the processes through which individuals acquire social status, identifying education as a crucial mechanism for social mobility. The theory emphasizes both the structural pathways to status (e.g., educational institutions, occupational hierarchies) and the social psychological processes that shape aspirations and attainment (e.g., significant others' influence, self-concept).

By including social class identification as an outcome measure, this research extends status attainment theory to examine how field of study, not just level of education, contributes to subjective perceptions of social standing. Different majors may confer varying levels of occupational prestige, cultural capital, and social connections

that influence graduates' sense of class position. Status attainment theory suggests that fields historically associated with elite institutions or traditional professions (such as STEM fields) might confer greater status advantages than newer or less prestigious fields. The significant differences in class identification across major categories found in this study support this theoretical perspective.

Furthermore, status attainment theory provides a framework for understanding how ascribed characteristics like gender and race might moderate the status returns to educational investments. The theory's emphasis on the role of social background in shaping opportunities and outcomes aligns with this study's examination of how demographic factors interact with major choice to influence various measures of career success.

The inclusion of job satisfaction as an outcome measure reflects the study's engagement with person-environment fit theory (Holland, 1997) and broader conceptualizations of career success that incorporate subjective well-being (Ng *et al.*, 2005; Heslin, 2005). Person-environment fit theory posits that career satisfaction and success depend on the alignment between individual characteristics (including interests, values, and abilities) and work environments. Educational choices like college major often serve as pathways to occupational environments, with different fields attracting individuals with distinct psychological profiles and leading to careers with varying characteristics.

This theoretical perspective suggests that the subjective returns to different majors might not perfectly align with objective economic returns. Fields that attract individuals with strong service orientations or intrinsic motivations (such as Humanities or Social Sciences) might yield higher subjective satisfaction despite lower economic rewards. Conversely, fields selected primarily for extrinsic rewards might show lower satisfaction despite higher incomes if they do not align with individuals' core interests or values. The relatively small differences in job satisfaction across major categories found in this study, contrasted with the larger differences in income and class identification, suggest complex relationships between objective and subjective dimensions of career success that align with person-environment fit theory.

The study's composite ROI index, which combines objective and subjective measures, represents an attempt to operationalize a more holistic concept of career success that bridges these theoretical perspectives. By examining how different majors perform across multiple dimensions, this approach acknowledges that educational investments yield returns that extend beyond material rewards to include psychological fulfillment and social status.

The examination of how gender and race moderate the relationship between college major and career outcomes reflects the study's engagement with intersectionality theory (Crenshaw, 1989; Collins, 2015). This theoretical perspective emphasizes that social categories like gender, race, and class interact to create unique social positions and experiences that cannot be understood by examining these categories in isolation. Applied to educational returns, intersectionality theory suggests that the value of human

capital investments may vary systematically across social categories due to structural inequalities, discrimination, or differences in social and cultural capital.

The significant gender-by-major interactions found in this study's income analysis align with this theoretical perspective, revealing that women experience different returns to the same educational investments compared to men. These findings suggest that labor markets are not neutral spaces but are structured by gender, racial, and other social hierarchies that shape how different forms of human capital are valued and rewarded. Intersectionality theory provides a framework for understanding these differential returns not as reflecting differences in human capital quality but as manifestations of broader social structures and inequalities.

By integrating these theoretical perspectives, this research offers a multidimensional framework for understanding the complex relationship between educational choices and career outcomes. This integrated approach acknowledges that educational investments yield returns across multiple domains—economic, social, and psychological—and that these returns may vary systematically across social categories. This framework allows for a more nuanced evaluation of the "value" of different college majors beyond simple economic calculations, recognizing that individuals may prioritize different types of returns based on their values, circumstances, and life goals.

The empirical findings of this study largely support the predictions derived from this integrated theoretical framework. STEM and Business majors show the highest returns in economic dimensions and social status, consistent with human capital and status attainment theories. However, the smaller differences in job satisfaction across major categories suggest that subjective well-being may depend more on person-environment fit than on field prestige or economic rewards. The significant interactions between major and gender in predicting income highlight the importance of intersectionality in understanding how educational returns are distributed across social categories.

This theoretical framework not only helps explain the empirical patterns observed in this study but also provides a foundation for future research examining how educational choices shape life trajectories in an increasingly complex and stratified society. By recognizing the multidimensional nature of educational returns and the social contexts that shape these returns, this approach contributes to a more comprehensive understanding of education as both a personal investment and a social institution.

4. Methodology

4.1 Research Question

This study examines the relationship between college majors and various measures of career success to determine the comparative return on investment (ROI) across different fields of study. The central research question investigates how various fields of study correlate with income levels, job satisfaction, and perceived social status as indicators of career success. As higher education represents a significant investment of time and

financial resources, understanding the differential returns across disciplinary fields provides valuable information for prospective students, educational institutions, and policymakers. By examining multiple outcome measures beyond simple income metrics, this research offers a more comprehensive understanding of the complex relationship between educational choices and subsequent life outcomes. This multidimensional approach acknowledges that career success encompasses not only financial compensation but also subjective elements such as job satisfaction and perceived social standing. The study specifically seeks to determine whether certain major categories consistently outperform others across these various dimensions of success, or if different majors offer distinct advantages in specific domains. Additionally, the analysis considers how individual characteristics such as gender, race, age, marital status, and geographic region may moderate the relationship between college major and career outcomes.

4.2 Data and Sample

This study utilizes data from the General Social Survey (GSS), a comprehensive, nationally representative survey of adults in the United States that has been conducted regularly since 1972 (Davern et al., 2024). The GSS collects information on a wide range of demographic, behavioral, and attitudinal variables, making it an ideal dataset for examining the relationship between educational choices and subsequent life outcomes. For this analysis, I focused on GSS data collected between 2012 and 2022, providing a contemporary perspective on the relationship between college majors and career outcomes. The dataset includes information from 5,324 respondents who have completed at least a bachelor's degree and provided valid information about their field of study. The sample is restricted to college graduates since the primary focus is on comparing outcomes across different fields of study in higher education.

The demographic composition of the sample reflects the diversity of college graduates in the United States during this period. The sample is 54% female and 46% male, with 80% identifying as white, 10.5% as Black, and 9.4% as other racial categories. The age distribution spans from under 30 years (10.3%) to 60 years and older (33.7%), with intermediate categories of 30-39 years (20.4%), 40-49 years (17.9%), and 50-59 years (17.7%). Regarding marital status, 55.1% of respondents are married, 23.3% have never been married, 14.2% are divorced, 5.6% are widowed, and 1.8% are separated. Respondents are distributed across different regions of the United States, with the largest representations from the South Atlantic (20.1%), East North Central (16.8%), and Pacific (15.0%) regions. This diverse sample allows for comprehensive analyses that account for various demographic factors that might influence the relationship between college majors and career outcomes.

4.3 Variables

The study analyzes several dependent variables to capture different dimensions of career success and return on investment across three distinct analytical samples. The primary outcome measures include income, job satisfaction, and subjective social class

identification, which are then combined into a composite ROI index. Real income is measured using the natural logarithm of respondents' reported real income, a transformation that normalizes the typically skewed distribution of income data and allows for interpretations in terms of percentage changes rather than absolute dollar amounts. In the full analytical sample (n = 5,324), the mean income is $53,605.68 with a standard deviation of $41,437.07. Job satisfaction is measured using responses to the GSS question about satisfaction with one's current job. The original variable (SATJOB) uses a 4-point scale where 1 represents "very satisfied" and 4 represents "not at all satisfied". For easier interpretation, this variable was reverse-coded to create "jobsat_rev", where higher values indicate greater satisfaction (4 = "very satisfied", 3 = "somewhat satisfied", 2 = "not too satisfied" 1 = "not at all satisfied"). Additionally, a binary job satisfaction measure ("jobsat_binary") was created by categorizing respondents as satisfied (somewhat or very satisfied) or not satisfied (not too satisfied or not at all satisfied). In the job satisfaction subsample (n = 3,964), which is smaller than the full sample due to missing data on job satisfaction, 49.5% of respondents reported being very satisfied with their jobs, 38.7% were somewhat satisfied, 8.8% were not too satisfied, and 3.0% were not at all satisfied. Overall, 88.2% of respondents in this subsample fell into the "satisfied" category of the binary measure.

Social class is measured using respondents' subjective class identification (CLASS), which is coded on a 4-point scale where 1 represents "lower class", 2 represents "working class", 3 represents "middle class", and 4 represents "upper class". A binary measure of middle/upper class identification ("middle_upper") was also created by categorizing respondents as either middle/upper class (values 3-4) or lower/working class (values 1-2). In the class identification subsample (n = 5,309), which excludes a small number of respondents with missing data on class identification, 65.3% of respondents identified as middle class, 24.6% as working class, 7.7% as upper class, and 2.5% as lower class. Overall, 73.0% of respondents in this subsample fell into the "middle or upper class" category of the binary measure.

The ROI Index serves as a composite measure created by standardizing and combining the income, job satisfaction, and social class variables. First, z-scores were computed for each of these three measures within the sample:

$$zincome = (logincome - \mu\_income)/\sigma\_income$$
$$zjobsat = (jobsat\_rev - \mu\_jobsat)/\sigma\_jobsat$$
$$zclass = (class - \mu\_class)/\sigma\_class$$

where μ represents the mean and σ represents the standard deviation of each measure. Then, the ROI index was calculated as the average of the available standardized measures for each respondent:

$$ROI\_index = (zincome + zjobsat + zclass) / n$$

where n is the number of non-missing values for each respondent. This approach, implemented using the rowmean function in STATA, provides a comprehensive measure of career success that incorporates both objective (income) and subjective (satisfaction, status) dimensions while appropriately handling missing values. The mean ROI index in the full analytical sample is -0.010 with a standard deviation of 0.744.

The primary independent variable is major field category (major_cat), which classifies respondents' fields of study into five broad categories: Business (50.6% of the sample), STEM (18.6%), Social Sciences (20.9%), Humanities (8.1%), and Other (1.8%). The Business category serves as the reference group in all regression analyses, allowing for direct comparisons of other major categories relative to Business majors. The analysis also incorporates several demographic and contextual factors as control variables to isolate the effect of college major on career outcomes. Age group (agegrp) is categorized as under 30, 30-39, 40-49, 50-59, and 60 or older. Gender (sex) is coded as male or female. Race (race) is categorized as White, Black, or other. Marital status (marital) includes married, widowed, divorced, separated, or never married. Geographic location is captured through the region variable, which identifies nine census regions of the United States: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Atlantic, West South Central, Mountain, and Pacific. Temporal trends are accounted for using the survey year (year) variable, which indicates the year in which the survey was conducted (2012-2022). These control variables allow for examining the relationship between college major and career outcomes while accounting for other important factors that might influence these relationships across the three analytical samples: the full sample (n = 5,324), the job satisfaction subsample (n = 3,964), and the class identification subsample (n = 5,309).

4.4 Analytical Approach

The analytical strategy employs multiple regression models appropriate for each outcome variable, controlling for demographic and contextual factors. For all analyses, Business majors serve as the reference category, allowing direct comparisons of other major categories relative to this common baseline. The analytical approach progresses from examining individual outcome measures to creating a comprehensive ROI index that combines these dimensions.

For the income analysis, I employ ordinary least squares (OLS) regression with the natural logarithm of real income as the dependent variable. The base model includes major field category as the primary independent variable, with controls for age group, gender, race, marital status, region, and survey year. Robust standard errors are used to account for potential heteroskedasticity. I also explore interaction effects between major and gender (major_cat##sex) to examine whether the income returns to different majors vary by gender. Additionally, I investigate whether the relative income advantage of different majors has changed over time by including an interaction between major and survey year (major_cat##c.year). For job satisfaction, I use ordered logistic regression to predict the 4-category job satisfaction measure, and binary logistic regression to predict

the dichotomized satisfied/not satisfied outcome. These models are appropriate given the ordinal and binary nature of these dependent variables, respectively. Both models include the same set of independent and control variables as the income models.

For social class identification, I similarly employ ordered logistic regression for the 4-category class measure and binary logistic regression for the dichotomized middle-upper/lower-working classification. These models include the same set of predictors as the previous analyses. Finally, I examine a comprehensive measure of return on investment by conducting an OLS regression with the ROI index as the dependent variable. This model includes the same set of predictors as the previous analyses and uses robust standard errors. By combining standardized measures of income, job satisfaction, and class identification, this analysis provides a more holistic assessment of how different major categories relate to overall career success. Throughout these analyses, I pay particular attention to the coefficients for the major field categories, which indicate the estimated difference in each outcome between graduates of that field and Business graduates (the reference category), net of other factors in the model. Statistical significance is assessed at the conventional levels of $p < 0.05$, $p < 0.01$, and $p < 0.001$.

5. Results

5.1 Descriptive Results
The sample consists of 5,324 college graduates, with Business majors representing the largest proportion (50.6%), followed by Social Sciences (20.9%), STEM (18.6%), Humanities (8.1%), and Other majors (1.8%). Demographic characteristics reveal a diverse sample, with 54.0% female respondents and 46.0% male respondents. The racial composition includes 80.1% white, 10.5% Black, and 9.4% other racial categories. The age distribution spans from under 30 years (10.3%) to 60 years and older (33.7%), with intermediate categories well represented. Regarding marital status, 55.1% of respondents are married, 23.3% have never been married, 14.2% are divorced, 5.6% are widowed, and 1.8% are separated. Table 1 presents these descriptive statistics broken down by major field category.

Income levels vary substantially across major categories. STEM graduates report the highest mean income at $60,813, followed by Business majors at $54,284, Social Sciences at $48,764, Humanities at $46,710, and Other majors at $47,203. This pattern suggests an initial income advantage for STEM and Business majors compared to other fields of study. The median income values follow a similar pattern, with STEM graduates at $46,800, Business at $40,900, and the remaining categories all at $35,970.

Table 1: Descriptive Statistics by Major Field Category

Variable	Business	STEM	Social Sciences	Humanities	Other	Total
Sample Size	2,696 (50.6%)	990 (18.6%)	1,112 (20.9%)	429 (8.1%)	97 (1.8%)	5,324 (100%)
Real Income in USD						
Mean	54,283.63	60,813.36	48,763.89	46,710.04	47,203.29	53,605.68
Standard deviation	41,449.48	44,059.64	40,089.51	36,907.26	35,060.78	41,437.07
Median	40,900	46,800	35,970	35,970	35,970	40,900
Gender						
Male	49.5%	44.3%	39.5%	45.7%	41.2%	46.0%
Female	50.5%	55.7%	60.5%	54.3%	58.8%	54.0%
Race						
White	80.0%	83.0%	79.7%	77.2%	70.1%	80.1%
Black	10.0%	7.5%	12.0%	15.4%	17.5%	10.5%
Other	10.0%	9.5%	8.4%	7.5%	12.4%	9.4%
Age Group						
Under 30	10.2%	10.4%	10.4%	10.4%	9.1%	10.3%
30-39	20.5%	20.3%	20.0%	20.2%	21.2%	20.4%
40-49	17.9%	18.2%	17.8%	17.6%	18.6%	17.9%
50-59	17.7%	17.7%	17.7%	17.9%	16.7%	17.7%
60 or older	33.7%	33.4%	34.1%	33.9%	34.4%	33.7%
ROI Index						
Mean	0.014	0.101	-0.063	-0.106	-0.154	-0.010
Standard deviation	0.741	0.728	0.746	0.759	0.744	0.744

Note: Data from General Social Survey, 2012-2022. Income reported in USD. ROI Index is a standardized composite measure combining income, job satisfaction, and social class identification.

Regarding job satisfaction, a majority of graduates across all major categories report being either somewhat satisfied or very satisfied with their jobs. STEM graduates report the highest proportion of being "very satisfied" (51.6%), followed by Social Sciences (49.5%), Business (49.1%), Humanities (49.0%), and Other majors (38.0%). When examined as a binary outcome, 88.2% of respondents overall are satisfied with their jobs, with minimal variation across major categories. The chi-square test for job satisfaction by major category does not reach statistical significance (p = 0.135), suggesting that job satisfaction levels are relatively similar across different fields of study, as detailed in Table 2.

Table 2: Job Satisfaction by Major Field Category (Job Satisfaction Subsample, n = 3,964)

Job Satisfaction	Business	STEM	Social Sciences	Humanities	Other	Total
Sample Size	1,990 (50.2%)	744 (18.8%)	822 (20.7%)	337 (8.5%)	71 (1.8%)	3,964 (100%)
Job Satisfaction Level						
Not at all satisfied	3.0%	2.6%	2.7%	4.5%	7.0%	3.0%
Not too satisfied	8.0%	9.9%	8.9%	10.7%	9.9%	8.8%
Somewhat satisfied	40.0%	35.9%	38.9%	35.9%	45.1%	38.7%
Very satisfied	49.1%	51.6%	49.5%	49.0%	38.0%	49.5%
Binary Satisfaction						
Satisfied (Somewhat or Very)	89.0%	87.5%	88.4%	84.9%	83.1%	88.2%
Not Satisfied	11.0%	12.5%	11.6%	15.1%	16.9%	11.8%

Note: Chi-square test for job satisfaction by major category: p = 0.135

Social class identification shows more variation by major category. STEM graduates are most likely to identify as upper class (10.8%), compared to 7.7% of Business majors, 6.6% of Social Sciences, 4.0% of Humanities, and 5.2% of Other majors. Similarly, middle class identification is highest among STEM graduates (67.3%), followed by Business (66.4%), Social Sciences (62.7%), Humanities (62.5%), and Other majors (53.1%). The chi-square test for class identification by major is statistically significant ($p < 0.001$), indicating meaningful differences in subjective social status across major categories, as shown in Table 3.

Table 3: Social Class Identification by Major Field
Category (Class Identification Subsample, n = 5,309)

Social Class	Business	STEM	Social Sciences	Humanities	Other	Total
Sample Size	2,693 (50.7%)	986 (18.6%)	1,105 (20.8%)	429 (8.1%)	96 (1.8%)	5,309 (100%)
Social Class Level						
Lower class	2.2%	1.7%	2.8%	5.1%	3.1%	2.5%
Working class	23.7%	20.2%	27.9%	28.4%	38.5%	24.6%
Middle class	66.4%	67.3%	62.7%	62.5%	53.1%	65.3%
Upper class	7.7%	10.8%	6.6%	4.0%	5.2%	7.7%
Binary Class						
Middle/Upper	74.1%	78.1%	69.3%	66.5%	58.3%	73.0%
Lower/Working	25.9%	21.9%	30.7%	33.5%	41.7%	27.0%

Note: Chi-square test for social class by major category: $p < 0.001$

Cross-tabulations of major category by gender reveal significant differences in the gender composition of different fields. Business majors have the most gender-balanced distribution, with 49.5% male and 50.5% female graduates. STEM fields show a higher proportion of women than might be expected (55.7% female), which may reflect changes in the gender composition of these fields in recent cohorts. Social Sciences show the highest proportion of female graduates (60.5%), followed by Other majors (58.8%) and Humanities (54.3%). These gender differences across major categories are statistically significant ($p < 0.001$).

Similarly, the racial composition varies significantly across major categories ($p < 0.001$). STEM fields have the highest proportion of white graduates (83.0%), while Other majors have the lowest (70.1%). Black students are most represented in Other majors (17.5%) and Humanities (15.4%), and least represented in STEM fields (7.5%). These patterns suggest important variations in the demographic composition of different fields of study that may influence subsequent career outcomes.

5.2 Income Analysis

The OLS regression model for income reveals significant differences in earnings across major categories, controlling for demographic and contextual factors. As illustrated in Figure 2, STEM graduates earn significantly more than Business graduates (b = 0.116, $p < 0.001$), representing approximately 12.3% higher income when transformed from the log coefficient. In contrast, Social Sciences graduates earn significantly less than Business

graduates (b = -0.099, p < 0.01), representing approximately 9.4% lower income. Humanities graduates also earn less than Business graduates (b = -0.068), though this difference is not statistically significant (p = 0.113). Graduates with Other majors earn slightly less than Business graduates (b = -0.040), but this difference is also not statistically significant (p = 0.570). Figure 1 visually displays these income differentials by college major, with Business majors as the reference category.

Figure 1: Estimated Income Differentials by
Academic Discipline Category Relative to Business Fields
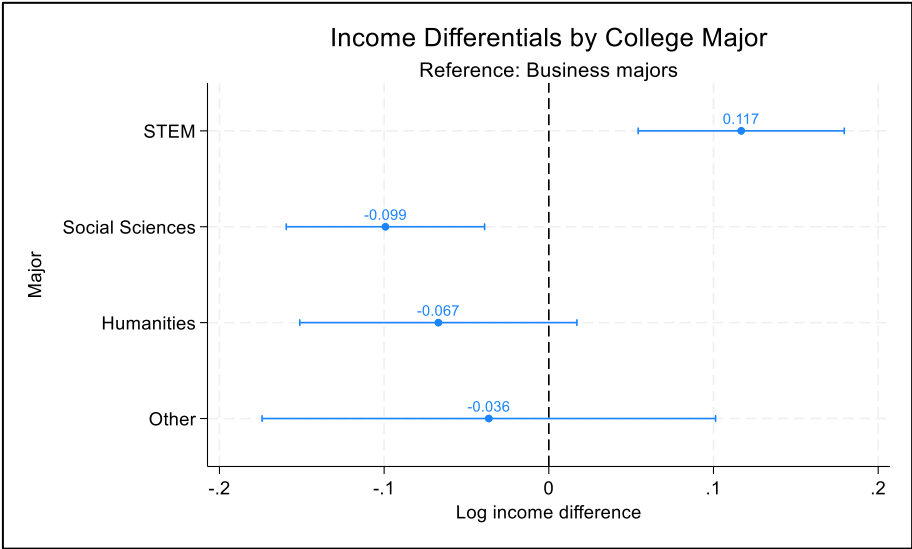
The detailed results of the income regression analysis are presented in Table 4, which shows the full model including all control variables. As the table indicates, these income differentials by major persist even after controlling for demographic and contextual factors.

Table 4: OLS Regression Results for Income and ROI Index

Variable	Income (Logged)		ROI Index	
	Coefficient	Std. Error	Coefficient	Std. Error
Major (ref: Business)				
STEM	0.116***	0.032	0.092***	0.025
Social Sciences	-0.099**	0.031	-0.066**	0.024
Humanities	-0.068	0.043	-0.097**	0.035
Other	-0.040	0.071	-0.156*	0.071
Age Group (ref: Under 30)				
30-39	0.253***	0.055	0.131***	0.038
40-49	0.420***	0.056	0.254***	0.041
50-59	0.470***	0.057	0.282***	0.042
60 or older	0.103	0.056	0.189***	0.040
Gender (ref: Male)				
Female	-0.096***	0.024	-0.081***	0.019
Race (ref: White)				
Black	-0.215***	0.044	-0.281***	0.034
Other	-0.135**	0.046	-0.210***	0.035
Marital Status (ref: Married)				

Widowed	-0.545***	0.054	-0.321***	0.044
Divorced	-0.643***	0.037	-0.432***	0.030
Separated	-0.560***	0.082	-0.384***	0.068
Never married	-0.735***	0.036	-0.494***	0.027
Region (ref: New England)				
Middle Atlantic	-0.011	0.054	-0.042	0.047
East North Central	-0.102*	0.049	-0.038	0.043
West North Central	-0.212***	0.059	-0.172***	0.051
South Atlantic	-0.087	0.049	0.004	0.042
East South Atlantic	-0.157*	0.065	-0.020	0.058
West South Central	-0.078	0.056	-0.010	0.048
Mountain	-0.235***	0.060	-0.137**	0.050
Pacific	0.012	0.052	0.049	0.044
Year	0.003	0.004	-0.002	0.003
Constant	5.596	7.075	4.040	5.532
Observations	5,324		5,324	
R-squared	0.204		0.167	

Note: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Age shows a strong relationship with income, with those in mid-career (40-59 years) earning substantially more than those under 30. Gender also plays a significant role, with female graduates earning approximately 9.1% less than male graduates (b = -0.096, p < 0.001), controlling for major and other factors. Race is similarly important, with Black graduates earning 19.3% less (b = -0.215, p < 0.001) and graduates of other racial categories earning 12.6% less (b = -0.135, p < 0.01) than white graduates. Marital status also shows strong associations with income, with married individuals having higher incomes than those in other marital categories. Regional differences are evident as well, with graduates in some regions (East North Central, West North Central, East South Atlantic, and Mountain) earning significantly less than those in New England.

When examining interactions between major and gender, interesting patterns emerge. The gender gap in income varies substantially across major categories. Among Business majors, women earn about 14.0% less than men (b = -0.151, p < 0.001). This gender gap is similar for STEM majors but substantially smaller for Social Sciences and Humanities majors. The interaction terms for Social Sciences and gender (b = 0.146, p < 0.05) and Humanities and gender (b = 0.225, p < 0.01) indicate that the female income disadvantage is significantly reduced in these fields compared to Business. While women still earn less than men in these fields, the gap is considerably narrower. Figure 2 illustrates these gender differences in predicted income across major categories, showing how the gender gap varies by field of study.

Figure 2: Predicted Log Income by Academic Discipline and Gender
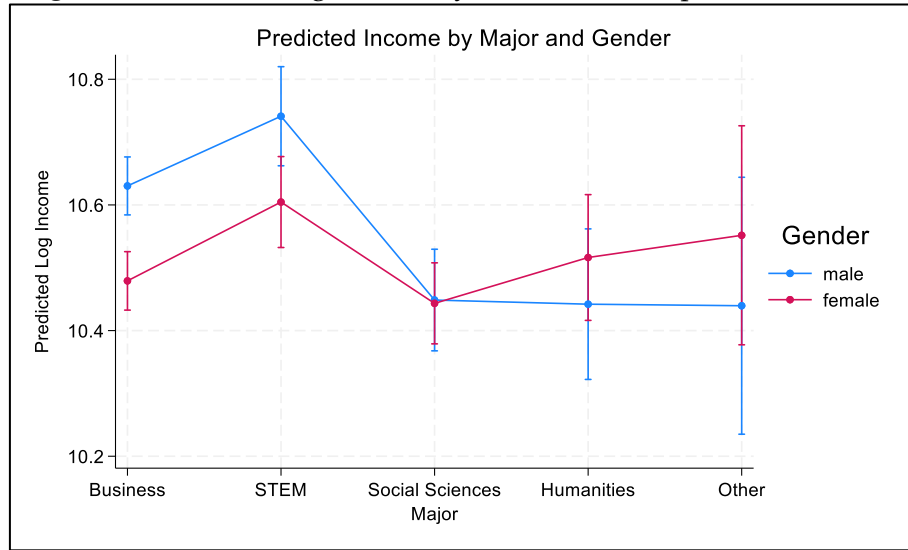

Table 5 presents the detailed regression results for the major-gender interaction model, confirming the statistical significance of these interaction effects.

Table 5: Major-Gender Interaction Effects on Income (OLS Regression)

Variable	Coefficient	Std. Error
Major (ref: Business)		
STEM	0.111*	0.046
Social Sciences	-0.182***	0.047
Humanities	-0.188**	0.065
Other	-0.191	0.107
Gender (ref: Male)		
Female	-0.151***	0.033
Major × Gender Interactions		
STEM × Female	0.015	0.064
Social Sciences × Female	0.146*	0.062
Humanities × Female	0.225**	0.086
Other × Female	0.263	0.141
Age Group (ref: Under 30)		
30-39	0.250***	0.055
40-49	0.418***	0.056
50-59	0.467***	0.057
60 or older	0.101	0.056
Race (ref: White)		
Black	-0.212***	0.044
Other	-0.134**	0.046
Year	0.003	0.004
Constant	5.436	7.077
Observations	5,324	
R-squared	0.206	

Note: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05. Marital status and region controls included but not shown.

The analysis of major-by-year interactions, which examines whether the income returns to different majors have changed over time, does not show statistically significant patterns. The coefficients for these interaction terms are relatively small and do not reach conventional levels of statistical significance, suggesting stability in the relative income advantages of different major categories during the 2012-2022 period.

5.3 Job Satisfaction Analysis

The ordered logistic regression model for job satisfaction shows a different pattern of results compared to the income analysis. As depicted in Figure 3, the predicted probability of being very satisfied with one's job varies somewhat across major categories, though these differences are generally not statistically significant. The figure illustrates that while STEM majors appear to have slightly higher job satisfaction, followed by Social Sciences, Business, and Humanities, with Other majors showing the lowest satisfaction, the confidence intervals overlap considerably.

Figure 3: Predicted Probability of Being Very Satisfied with Job by Academic Discipline
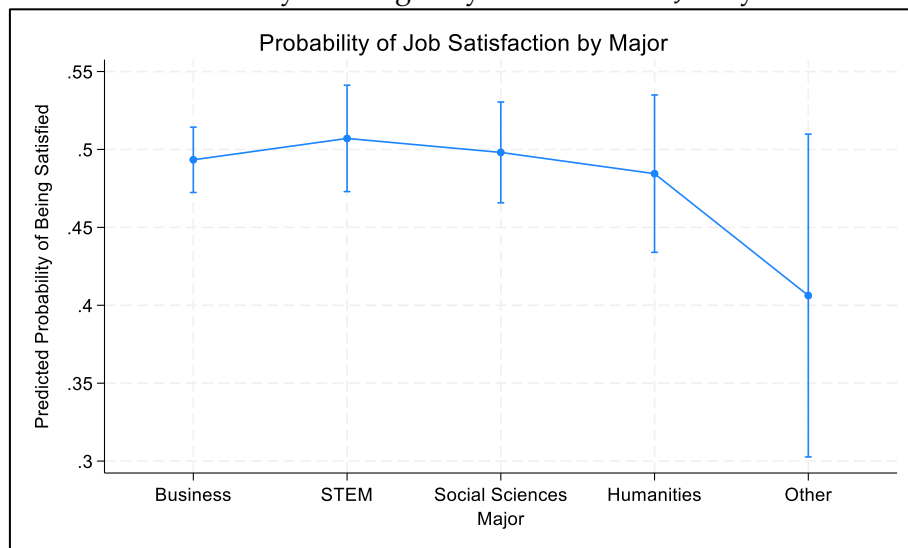
The coefficients for major categories in Table 6 are generally smaller and do not reach statistical significance, suggesting that the major field of study has less influence on job satisfaction than on income. STEM graduates show slightly higher job satisfaction than Business graduates (b = 0.057), but this difference is not statistically significant (p = 0.496). Similarly, Social Sciences graduates report marginally higher satisfaction (b = 0.020, p = 0.807), while Humanities graduates report slightly lower satisfaction (b = -0.037, p = 0.748). Graduates with Other majors report notably lower satisfaction (b = -0.367), though this difference is not statistically significant (p = 0.112).

Table 6: Ordered Logistic Regression Results for Job Satisfaction and Social Class

Variable	Job Satisfaction		Social Class	
	Coefficient	Std. Error	Coefficient	Std. Error
Major (ref: Business)				
STEM	0.057	0.084	0.277***	0.080
Social Sciences	0.020	0.081	-0.151*	0.075
Humanities	-0.037	0.115	-0.350**	0.108
Other	-0.367	0.231	-0.579**	0.209
Age Group (ref: Under 30)				
30-39	0.156	0.110	0.094	0.111
40-49	0.285*	0.117	0.403***	0.118
50-59	0.336**	0.122	0.477***	0.122
60 or older	0.715***	0.127	0.683***	0.114
Gender (ref: Male)				
Female	0.020	0.063	-0.289***	0.059
Race (ref: White)				
Black	-0.127	0.103	-1.048***	0.094
Other	-0.191	0.103	-0.702***	0.099
Marital Status (ref: Married)				
Widowed	0.091	0.218	-0.454***	0.136
Divorced	-0.242*	0.095	-0.770***	0.088
Separated	-0.042	0.243	-0.873***	0.214
Never married	-0.464***	0.081	-0.693***	0.079
Region (ref: New England)				
Middle Atlantic	-0.100	0.140	-0.128	0.139
East North Central	0.195	0.135	-0.168	0.132
West North Central	0.012	0.163	-0.558***	0.159
South Atlantic	0.137	0.133	0.065	0.130
East South Atlantic	0.290	0.177	-0.013	0.170
West South Central	0.382*	0.157	-0.174	0.150
Mountain	0.013	0.155	-0.223	0.149
Pacific	0.099	0.137	0.115	0.135
Year	-0.044***	0.009	0.021*	0.008
Observations	3,964		5,309	
Pseudo R-squared	0.022		0.059	

Note: Standard errors in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$. Cut points for ordered logistic regressions are omitted from the table.

Age shows a stronger relationship with job satisfaction than major category, with older respondents reporting significantly higher satisfaction. In particular, those aged 60 or older report substantially higher job satisfaction than those under 30 (b = 0.715, p < 0.001). Gender does not show a significant relationship with job satisfaction (b = 0.020, p = 0.750), in contrast to its strong relationship with income. Race shows modest associations, with Black and other racial categories reporting somewhat lower satisfaction than whites, though these differences are not statistically significant. Marital status is significantly associated with job satisfaction, with divorced (b = -0.242, p < 0.05) and never married (b = -0.464, p < 0.001) respondents reporting lower satisfaction than married respondents.

The binary logistic regression model for the dichotomized job satisfaction measure (satisfied vs. not satisfied) shows a similar pattern of results. Major category is not significantly associated with the odds of being satisfied with one's job, though the

coefficients suggest that STEM, Social Sciences, Humanities, and Other majors all have somewhat lower odds of job satisfaction compared to Business majors. Age, particularly being 60 or older, is associated with higher odds of satisfaction, while never having been married is associated with lower odds of satisfaction.

5.4 Social Class Analysis

The ordered logistic regression model for subjective social class identification reveals significant differences across major categories. Figure 4 illustrates these differences by displaying the predicted probabilities of identifying with each social class level by major category. As the figure shows, STEM graduates have the highest probability of identifying as middle or upper class and the lowest probability of identifying as lower or working class, while the pattern is reversed for graduates with Other majors.

Figure 4: Predicted Probabilities of Social Class Identification by Academic Discipline
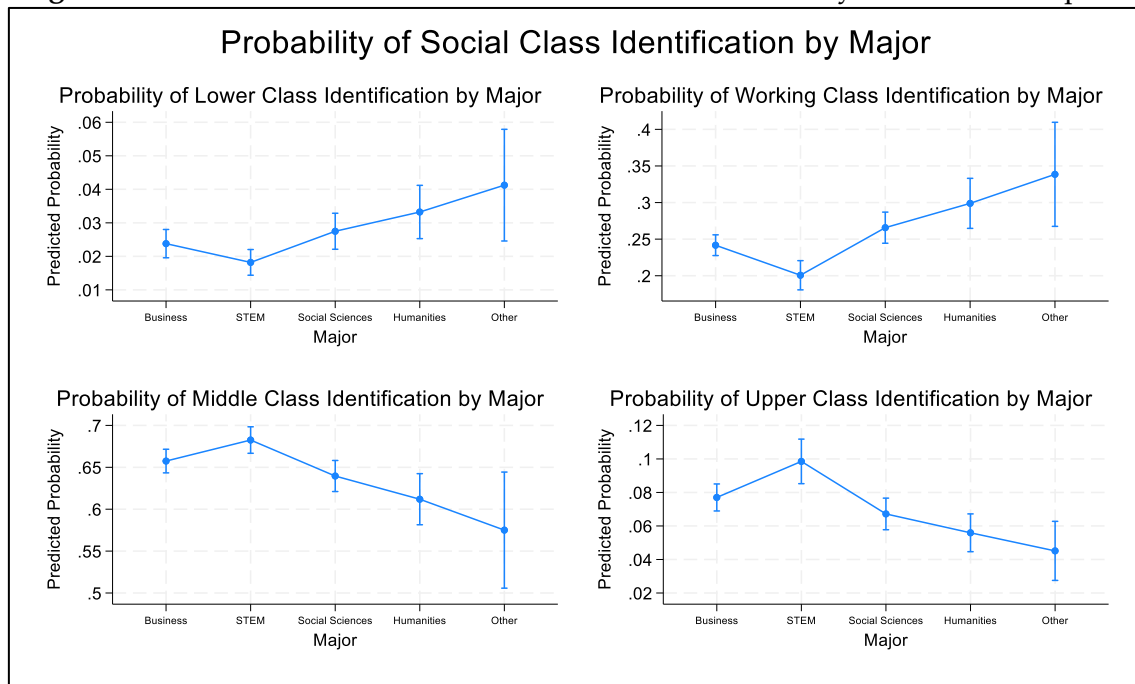
Consistent with the patterns shown in Figure 4, the regression results in Table 6 indicate that STEM graduates identify with higher social classes than Business graduates (b = 0.277, p < 0.001), consistent with their higher income levels. In contrast, Social Sciences (b = -0.151, p < 0.05), Humanities (b = -0.350, p < 0.01), and Other majors (b = -0.579, p < 0.01) all identify with lower social classes than Business graduates. These differences are substantial and statistically significant, suggesting that field of study has a meaningful influence on subjective social status.

Age shows a strong positive relationship with social class identification, with older respondents identifying with higher social classes than younger respondents. Gender also plays a significant role, with female graduates identifying with lower social classes than male graduates (b = -0.289, p < 0.001), even after controlling for income differences.

Race shows particularly strong associations, with Black respondents (b = -1.048, p < 0.001) and those of other racial categories (b = -0.702, p < 0.001) identifying with substantially lower social classes than white respondents. Marital status is also significantly associated with class identification, with unmarried respondents generally identifying with lower social classes than married respondents.

The binary logistic regression model for middle/upper class identification (vs. lower/working class) shows a similar pattern of results. STEM graduates have significantly higher odds of identifying as middle or upper class compared to Business graduates (b = 0.222, p < 0.05), while Social Sciences (b = -0.169, p < 0.05), Humanities (b = -0.258, p < 0.05), and Other majors (b = -0.627, p < 0.01) have significantly lower odds. These findings reinforce the conclusion that the field of study has a substantive impact on subjective social status, even after controlling for demographic and contextual factors.

5.5 ROI Index Analysis

The OLS regression model for the ROI index, which combines standardized measures of income, job satisfaction, and social class, provides a comprehensive assessment of the returns to different fields of study. This analysis reveals significant differences in overall career success across major categories. Figure 5 visually represents these differences in the mean ROI index by college major, clearly showing that STEM fields have the highest overall return on investment, followed by Business, while Social Sciences, Humanities, and Other majors have progressively lower returns.

Figure 5: Composite Return on Investment (ROI) Index by Academic Discipline
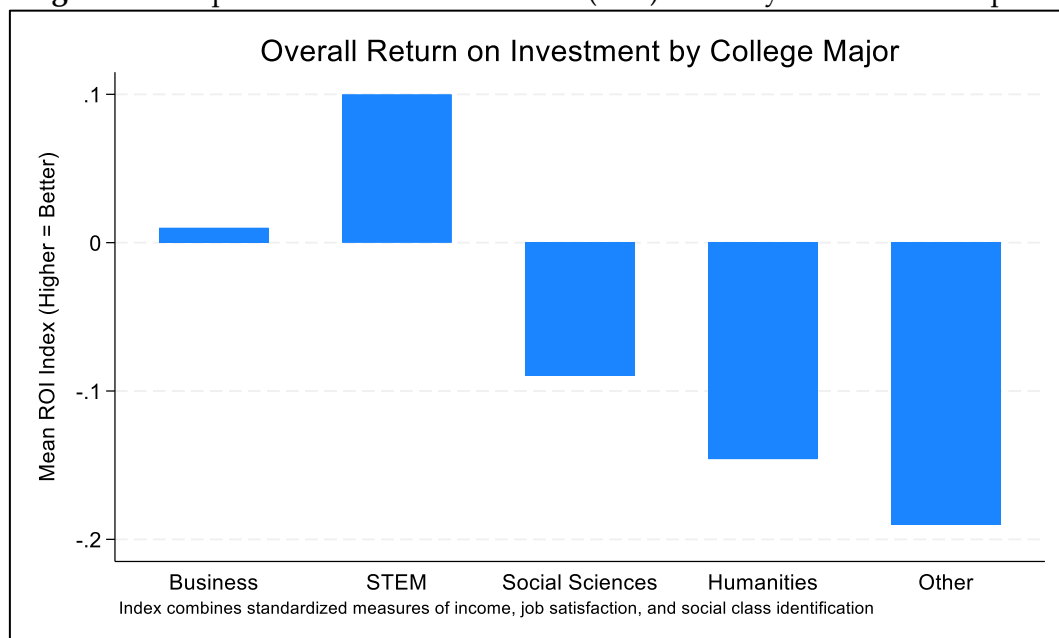
As shown in Table 4, STEM graduates show significantly higher ROI than Business graduates (b = 0.092, p < 0.001), consistent with their advantages in income and class identification. In contrast, Social Sciences (b = -0.066, p < 0.01), Humanities (b = -0.097, p

< 0.01), and Other majors (b = -0.156, p < 0.05) all show significantly lower ROI than Business graduates. These findings suggest that the combined returns to different fields of study vary substantially, with STEM and Business offering the highest overall returns. Age shows a strong positive relationship with the ROI index, with middle-aged respondents (40-59 years) showing the highest overall career success. Gender is significantly associated with ROI, with female graduates showing lower overall returns than male graduates (b = -0.081, p < 0.001), even after controlling for other factors. Race shows particularly strong associations, with Black respondents (b = -0.281, p < 0.001) and those of other racial categories (b = -0.210, p < 0.001) having substantially lower ROI than white respondents. Marital status is also significantly associated with ROI, with unmarried respondents generally showing lower returns than married respondents. Regional differences are evident as well, with graduates in some regions (West North Central and Mountain) showing significantly lower ROI than those in New England.

6. Summary of Findings

The results of this comprehensive analysis reveal important differences in the returns to various fields of study across multiple dimensions of career success. Table 7 provides a summary of these differential returns by college major across all outcome measures examined in this study. As the table shows, STEM majors consistently show the highest returns, with significant advantages in income, social class identification, and the composite ROI index compared to Business majors. Business majors generally rank second in these outcomes, particularly in income and social class, though they do not show significant advantages in job satisfaction. Social Sciences, Humanities, and Other majors typically show lower returns across these measures, particularly in income and social class identification.

Table 7: Summary of Returns on Investment by College Major Across Outcome Measures

Major	Income	Job Satisfaction	Social Class	ROI Index
Business	Reference	Reference	Reference	Reference
STEM	+11.6%***	+5.7%	+27.7%***	+0.092***
Social Sciences	-9.9%**	+2.0%	-15.1%*	-0.066**
Humanities	-6.8%	-3.7%	-35.0%**	-0.097**
Other	-4.0%	-36.7%	-57.9%**	-0.156*

Note: Values represent coefficients from regression models with full controls. For income, percentage approximations are shown (derived from log coefficients). *** p<0.001, ** p<0.01, * p<0.05.

Interestingly, job satisfaction shows the least variation across major categories, suggesting that subjective well-being in one's career is less determined by field of study than objective outcomes like income and social status. This finding highlights the importance of considering multiple dimensions of career success when evaluating the returns to different educational pathways. The analysis also reveals important demographic and contextual influences on career outcomes. Gender, race, age, marital

status, and region all show significant associations with various measures of success, sometimes interacting with field of study to produce differential returns for different groups. For example, the gender gap in income varies substantially across major categories, with smaller gaps in Social Sciences and Humanities compared to Business and STEM. Overall, this analysis provides a nuanced understanding of the complex relationship between college major and subsequent career success, incorporating both objective and subjective dimensions of returns on educational investment. The findings suggest that while STEM and Business fields generally offer the highest overall returns, the specific pattern of advantages varies across different outcome measures, underscoring the multidimensional nature of career success.

7. Discussion

This study examined the multidimensional returns to different college majors by analyzing income differentials, job satisfaction, and subjective social class identification across five major categories. The findings reveal significant variations in how different fields of study influence these dimensions of career success, with important implications for educational decision-making, policy, and theoretical perspectives on the relationship between education and life outcomes. This discussion integrates the empirical findings with the theoretical framework outlined earlier, considers their broader implications, and identifies directions for future research.

The empirical findings of this study largely align with the predictions derived from the integrated theoretical framework that combines human capital theory, status attainment theory, person-environment fit theory, and intersectionality theory. Human capital theory predicts that fields providing skills in high demand in the labor market would yield higher economic returns, which is supported by the substantial income advantage observed for STEM majors compared to other fields. The higher returns to STEM fields likely reflect both the market value of technical and quantitative skills in contemporary labor markets and the occupational specificity of these majors, which provide relatively direct pathways to high-paying professions (Kirkeboen *et al.*, 2016). The economic disadvantage observed for Social Sciences, Humanities, and Other majors aligns with human capital perspectives on skill specificity and occupational matching, with these more generalist fields potentially providing less specific labor market preparation (Robst, 2007).

However, the findings regarding job satisfaction complicate purely economic perspectives on educational returns. The relatively small and statistically non-significant differences in job satisfaction across major categories suggest that subjective career well-being may depend more on factors beyond the field of study, such as work environment characteristics, person-job fit, and individual preferences. This pattern aligns with person-environment fit theory (Holland, 1997), which emphasizes the importance of alignment between individual characteristics and work environments for optimal functioning and satisfaction. The results suggest that graduates from different fields may

find equally satisfying work when they locate positions that match their interests, abilities, and values, regardless of field-specific economic advantages. This interpretation is consistent with research by Wolniak and Pascarella (2005) and Xu (2013), who found that job characteristics like autonomy, work-life balance, and opportunities for advancement explain more variation in job satisfaction than field of study itself.

The findings on social class identification support status attainment theory's emphasis on education as a mechanism for status acquisition while extending this perspective to consider how field of study (not just level of education) contributes to subjective perceptions of social standing. The significant advantages in class identification observed for STEM graduates, even after controlling for income, suggest that these fields may confer additional status benefits beyond their economic returns. Conversely, the lower-class identification among Social Sciences, Humanities, and Other majors, despite controlling for income differences, indicates that these fields may carry less prestige or status value in contemporary society. These patterns align with Bourdieu's (1984) insights about how different forms of cultural capital receive varying social recognition and prestige, with technical and scientific knowledge potentially carrying greater symbolic weight in an increasingly technological society.

The significant gender interactions observed in the income analysis provide support for intersectionality theory's prediction that returns to human capital investments vary systematically across social categories. The finding that the gender income gap is substantially smaller in Social Sciences and Humanities compared to Business and STEM suggests that gender operates differently across fields, potentially reflecting differences in occupational structures, workplace cultures, or discrimination patterns. These results align with research by Michelmore and Sassler (2016), who found larger gender earnings gaps in male-dominated STEM fields compared to more gender-balanced or female-dominated fields. The smaller gender gaps in Social Sciences and Humanities may reflect either more equitable workplace practices in these fields or lower overall returns that constrain gender disparities through floor effects.

The combined findings across all three dimensions of returns captured in the ROI index analysis, demonstrate the value of an integrated theoretical approach that recognizes the multidimensional nature of educational returns. No single theoretical perspective can fully explain the complex patterns observed across different outcome measures and demographic categories. Human capital theory effectively accounts for income differentials but provides limited insight into subjective dimensions of career success. Status attainment theory helps explain patterns of class identification but may overlook the psychological dimensions of person-environment fit that shape job satisfaction. Intersectionality theory illuminates how gender moderates educational returns but requires integration with other perspectives to explain field-specific advantages and disadvantages. By bringing these theoretical perspectives into dialogue, this study contributes to a more comprehensive understanding of how educational choices shape life trajectories.

The findings of this study have several important implications for educational policy, career guidance, and individual decision-making. First, the consistent economic advantage observed for STEM majors, together with their higher subjective social class identification and overall ROI, provides empirical support for policy initiatives aimed at increasing participation in these fields. However, the relatively small differences in job satisfaction across fields caution against one-size-fits-all recommendations that prioritize STEM education without considering individual interests, values, and abilities. Career advisors and counselors should encourage students to consider multiple dimensions of potential returns when making educational choices, recognizing that optimal pathways may differ depending on individual priorities and preferences.

Second, the significant gender differences in income returns across major categories highlight the importance of addressing structural inequalities within fields rather than simply redirecting women into traditionally male-dominated areas. While increased female participation in STEM and Business fields may expand economic opportunities for women, the persistence of gender gaps within these fields suggests that such efforts must be accompanied by workplace policies and practices that reduce gender-based discrimination and promote equity in compensation and advancement. Additionally, the smaller gender gaps observed in Social Sciences and Humanities suggest that these fields may offer important advantages for women, particularly those who prioritize gender equity alongside other career considerations.

Third, the finding that job satisfaction shows less variation across fields than income or class identification has important implications for understanding the subjective value of different educational pathways. Students who prioritize job satisfaction and subjective well-being in their career decisions may benefit from focusing more on aligning their educational choices with their personal interests, values, and strengths rather than following general prescriptions about high-return fields. Career counselors can help students assess their individual fit with different fields and identify specific occupational niches within broader disciplines that may offer satisfying work despite lower average economic returns.

Fourth, the multidimensional approach to ROI developed in this study provides a useful framework for more comprehensive educational advising and decision-making. By considering economic outcomes alongside subjective well-being and social status, this approach offers a more holistic assessment of the value of different educational pathways than traditional frameworks focused solely on economic returns. Educational institutions and policymakers could adapt this multidimensional framework to provide more nuanced guidance to students navigating major choices, potentially developing individualized ROI assessments that weight different dimensions according to student priorities and values.

7.1 Limitations and Future Research

While this study provides valuable insights into the multidimensional returns to college majors, several limitations should be acknowledged.

First, the cross-sectional nature of the GSS data limits causal inferences about the relationship between major choice and subsequent career outcomes. Selection effects may partly explain observed differences across fields, as students with different characteristics, abilities, and preferences sort into different majors. Longitudinal research that follows students from before major selection through their career trajectories would provide stronger evidence about causal relationships between educational choices and career outcomes.

Second, the relatively broad major categories used in this analysis may obscure important variations within fields. For example, the economic returns to specific STEM disciplines like engineering may differ substantially from those in biological sciences, and humanities fields like philosophy may yield different outcomes than history or literature. Future research using more disaggregated major classifications would provide more precise estimates of field-specific returns and potentially identify important patterns obscured by broader categorizations.

Third, the measures of job satisfaction and social class identification available in the GSS, while valuable for their national representativeness, are relatively simple compared to more sophisticated scales used in psychological and sociological research. More detailed measures of subjective career success, including multiple dimensions of satisfaction, engagement, meaning, and work-life balance, would provide a richer understanding of the subjective returns to different fields. Similarly, more nuanced measures of status and prestige that distinguish between different dimensions of social standing would enrich our understanding of how educational choices shape subjective social position.

Fourth, this study examined only three dimensions of returns to college majors, leaving other potentially important outcomes unexplored. Future research could extend this multidimensional approach to include additional outcomes such as job security, work autonomy, work-life balance, occupational health, and civic engagement. Extending the analysis to these additional dimensions would provide an even more comprehensive understanding of how educational choices shape multiple aspects of life experience and well-being.

Fifth, while this study examined gender differences in returns, the analysis of other demographic moderators was limited. Future research could more thoroughly investigate how factors such as race, social class background, and age intersect with field of study to shape career outcomes. Intersectional approaches that consider multiple dimensions of social position simultaneously would provide a more complete picture of how educational returns are distributed across diverse populations.

Finally, this study examined returns to college majors within a specific historical and national context. The patterns observed here may differ across countries with different educational systems, labor market structures, and cultural values. Similarly, these patterns may evolve over time as labor markets, technological conditions, and social values change. Comparative research across national contexts and longitudinal

studies spanning longer time periods would help situate these findings within broader historical and cultural contexts.

8. Conclusion

This study contributes to our understanding of educational returns by examining how college majors influence multiple dimensions of career success and well-being. The findings reveal significant variations in how different fields of study shape income, job satisfaction, and subjective social class identification, with STEM and Business fields generally offering higher overall returns compared to Social Sciences, Humanities, and Other majors. However, the patterns differ across outcome measures, with job satisfaction showing less variation by field than income or class identification. Additionally, gender moderates these relationships, with smaller gender gaps in some fields than others.

These findings underscore the multidimensional nature of educational returns and the limitations of approaches focused solely on economic outcomes. They suggest that optimal educational choices may differ depending on individual priorities, with some students reasonably prioritizing fields with higher economic returns while others may benefit more from following their interests and strengths into fields that offer greater satisfaction despite more modest financial rewards. By integrating insights from human capital theory, status attainment theory, person-environment fit theory, and intersectionality theory, this research provides a more comprehensive framework for understanding how educational choices shape life trajectories across multiple domains.

Future research should build on this multidimensional approach by examining additional outcome measures, investigating more specific major categories, and exploring how various demographic and contextual factors moderate educational returns. Such research would further enhance our understanding of the complex relationship between education and life outcomes, ultimately providing better guidance to individuals navigating educational decisions and policymakers seeking to create more equitable and effective educational systems.

Conflict of Interest Statement
The authors declare no conflicts of interest.

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