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CENTER FOR RESEARCH ON  
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**RESEARCH BRIEF #18**

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**The Role of  
Socioeconomic Status  
and Internships on  
Early Career Earnings:  
Evidence for Widening  
and Rerouting Pathways  
to Social Mobility**



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## Introduction

Witteveen and Attewell (2017) reported in their study on bachelor's degree recipient earnings that universities do not erase class inequalities among graduates—they reflect them. The authors hypothesize that differences in family income affect students' abilities to access undergraduate experiences such as internships and the benefits they produce upon entering the labor market (Witteveen & Attewell, 2017). This is important because research on post-graduation outcomes suggests that internships improve post-graduation earnings and employment (Miller et al, 2018; Wolniak & Engberg, 2019). Sociological researchers elaborate on these findings and point to the social and cultural capital derived from socioeconomic status (SES) (Bourdieu, 1977) as gateways to internships and other undergraduate experiences, which generate additional capital (Armstrong & Hamilton, 2013; Stuber, 2011,2015; Hurst, 2015). Newly obtained social and cultural capital from internship experiences compounds the capital already derived from a students' high SES, all of which benefits students as they seek employment following graduation.

This research brief extends these ideas, focusing on how internships act as institutional mechanisms that reproduce inequalities among bachelor's degree recipients, yet may also serve as opportunities for potential pathways to advance social mobility. Jury et al. (2017) called for more research to understand better how university structures either reduce or contribute to existing social inequalities. Answering this call, the research brief first summarizes findings on internships, a university structure, pulled from a study that more broadly examined how student engagement and high-impact practices relate to post-graduation outcomes among students from different SES backgrounds (Schalewski, 2020). First, results suggest internships have a mediating role between a student's (SES) and early career earnings. Next, results show students from middle-SES backgrounds or those within quartiles two and three experience a significant effect from internship participation on early career earnings with non-significant findings for the lowest and highest quartiles. The brief concludes with implications for practice that aim to widen and reroute pathways to internships for lower-SES students to increase opportunities that lead to higher early career salaries and set trajectories for social mobility.

## Literature

Students continue to report that getting a good job is a leading reason for enrollment to college and their families reflect this belief (Eagan et al., 2017; Gallup, 2014). Obtaining an advanced degree further increases earning potential by facilitating access to higher-paid professions which is a key component to upward social mobility. An analysis of research on earnings gains due to post-secondary education found that each additional year of college provided a 5-9% increase in earnings, increasing over time (Pascarella et al., 2016). Inequalities in earnings after graduation exist between bachelor's degree graduates from different family incomes. Bachelor's degree holders from lower incomes made 91% more over their careers than high school graduates (Hershbein, 2016). However, higher-income students made 162% more compared to high school graduates (Hershbein, 2016). The gap between earnings from lower-income and higher-income graduates increases over a worker's career (Hershbein, 2016). After controlling for grade point average, academic major, and institution, Witteveen and Attewell (2017) found an approximate 15% income gap between graduates from lower-income families 10 years after graduation compared to middle and upper-class families within the same job sector. A SES perspective helps uncover why these earnings differences may exist as related to internship participation.

## **Socioeconomic Status Impact on Career Earnings**

Student socioeconomic backgrounds influence student career exploration, choice, and transition into the labor market. Career decisions and expectations are often shaped by how students self-identify within a social class position (Metheny & McWhirter, 2013). A student's own class-rooted understanding informs what type of occupational employment is perceived to be available to them and how best to achieve those occupations (Hurst, 2015; Stuber, 2011). Those from higher SES backgrounds are already thinking about graduate degree study for professional positions (such as dentists and lawyers) when they arrive at college (Armstrong & Hamilton, 2013; Stuber, 2011). The differences in career expectations are formed from external indirect and direct messages, and perceptions and knowledge about career options and career choice (Olson, 2014, Parks-Yancy, 2012; Silver & Roksa, 2017; Tate et al., 2015).

Parents and families can “bridge” their students' career outcomes through their established resources and networks as students enter the job market or seek out continued education opportunities. Parental bridging describes the process whereby higher-SES parents provide their children with financial support that allows for geographical mobility within their job search, share strategies on career advancement, and utilize connections, all of which result in higher labor market outcomes for students (Stuber, 2011). Students' class-based understandings, supported by family and parent influence, help explain why students from lower-SES backgrounds are more likely to receive higher wages.

## **Socioeconomic Status Impact on Internship Participation**

Research continues to show students from lower-SES backgrounds are less likely to participate in internship experiences. Hora et al.'s (2019) study articulates how multiple barriers such as time conflicts, financial, sociocultural, and institutional factors interconnect and create challenges throughout the search and process to secure an internship. Unpaid internships are in particular a barrier to lower income students who often require the time for paid work to meet living and school expenses and lack transportation availability to internships (Hora et al., 2019; Perna, 2010).

Additional evidence detailing barriers to internship participation are lacking but drawing from literature that speaks to access to student engagement and high-impact practices (HIPs) more broadly illustrates the relationship between SES and internship participation. Lower-SES students are more likely to attend public and community colleges while higher SES quartile students attend more selective four-year and private institutions, including elite and highly selective institutions that have additional resources dedicated towards undergraduate experiential experiences (Carnevale & Rose, 2004; Golden, 2007; Paulsen & St. John, 2002). An additional explanation for the engagement gap is that higher-SES students have positive dispositions toward engagement experiences based on prior knowledge about their benefits, leading to increased participation (Engle & O'Brien, 2007). Lange and Stewart (2019) clarify that these more positive attitudes towards engagement experiences are due to the ways HIPs, including internship experiences, are often designed for students from privileged backgrounds. Lower-SES students have less time available to spend on student engagement activities overall (Kezar et al., 2014) due to increased needs to work more during college (Hora et al., 2019; Soria et al., 2013; Rubin & Wright, 2017).

Parents not only provide connections when graduates transition out of college but also help their children identify institutions with the right resources to support engagement experiences that will benefit them in the job market (Hamilton et al., 2018). Shared parent insider knowledge of college experience advantages students when they seek employment (Hamilton et al., 2018). Higher-SES parents encourage their child's involvement in critical extracurricular activities and social engagement experiences (Hamilton et al., 2018). If colleges do not have adequate opportunities available, such as internships, higher SES parents work within their career and social networks to develop these experiences for their children (Hamilton et al., 2018; Stuber, 2011). For students who access internship experiences, the resulting outcome is increased opportunities within the job market.

## **Internship Participation's Impact on Early Career Earnings**

Internship experiences have a positive association with having an eased transition and successful placement into the workforce. Research has shown participation in an internship supports having a job at graduation time, lower risk of unemployment, increased interview offers, progress through the interview process, shorter time in the initial job search, job offers available, securing a career-oriented job, and job satisfaction (Baert et al., 2021, Callanan & Bensing, 2014; Gault et al., 2010; Martin & Frenette, 2017; Miller et al., 2018, Nunley et al., 2016; Rigsby et al., 2013; Silva et al. 2016; Taylor, 1988). These favorable transitions into the workforce provide opportunity where students may earn more compared to those who discover difficulty in searching for and securing a job following the successful completion of a bachelor's degree. Additional research has reported positive effects on career earnings due to participation in an internship among United States (Wolniak & Engberg, 2019), Swiss (Bulli et al., 2021), and German (Margaryan et al. 2020) college students. Two studies with Germany universities (Klein & Weiss, 2011; Weiss et al., 2014) and one study among Spanish students (Meglio et al., 2021) found no significant effect of internships on early career earnings.

## **Socioeconomic Status Conditional Effects of Internships**

Conditional effects of internships on career related outcomes have been examined by college major or labor market orientation, specialized fields, gender, high school performance, and field-related labor market experiences (Bittmann & Zorn, 2020; Margaryan et al., 2020; Sagen et al., 2020, Wolniak & Engberg, 2019), but there was no identified study which addressed the potential way SES may moderate this effect. One study by Klein and Weiss (2011) utilized propensity score matching to evaluate how differing effects of mandatory internships within Germany higher education on the transition from higher education and career outcomes of search time, employment history, and hourly wages with non-significant findings. The authors did examine how this impact differs between parents with and without an academic degree, one component of SES, and further indicated non-significant results (Klein & Weiss, 2011). Margaryan et al. (2020) also conducted a study on German universities among students who experienced an internship experience in firms and did not find significant conditional effects between parent education background.

One highly cited study describes the ways internships and HIPs overall are beneficial for all students and may specifically benefit students from lower-income backgrounds and other underserved populations (Finley & McNair, 2013). First-generation students self-report higher levels of deep learning, general education, practical competence, and personal and social development when participating in one or more HIPs (Finley & McNair, 2013). Kuh (2008) uses the term "compensatory effect" to describe findings that indicate HIPs participation particularly benefits underserved student populations.

## Summary

The research brief examines the mediating role of internship participation between SES and early career earnings. SES has been shown to support access to internship participation (Hamilton et al, 2018; Hora et al., 2019; Perna, 2010; Stuber, 2011) which in return grants additional advantages to those who access them with favorable career outcomes (Miller et al., 2018; Wolniak & Engberg, 2019). Exposing the ways institutional mechanisms either remove or reinforce social inequalities is important to understand given the continued perceived gateway to social mobility is through higher education. Scholars researching and theorizing on HIPs which includes internships have also pointed to the need for research to evaluate potential conditional effects which answers the stated question for whom these practices are high impact (Kilgo, et al., 2015; Miller et al., 2018; Lange & Stewart, 2019). The research brief responds to the need for conditional effects through a SES lens to determine how SES moderates the effect between internship participation and early career earnings. These two lines of inquiry are described as research questions:

- 1) How does internship participation mediate the relationship between socioeconomic status and early career earnings?
- 2) How does the effect of internship participation on early career earnings differ across socioeconomic status backgrounds?

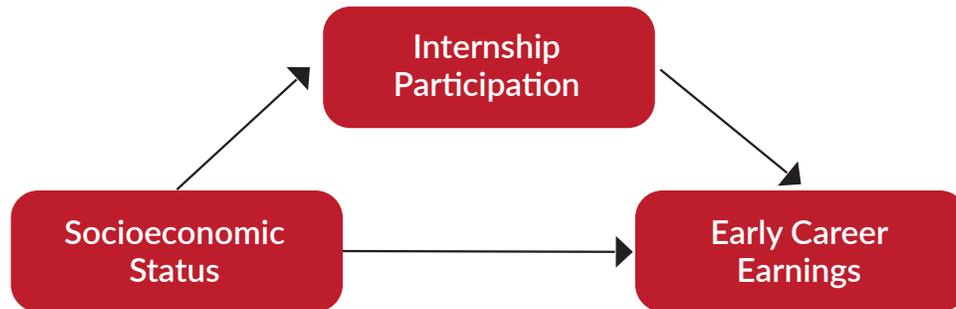
## Data Source

This study analyzed the Education Longitudinal Study 2002/2012 (ELS) dataset available through the National Center for Educational Statistics (NCES) within the U.S. Department of Education. Approximately 4,800 bachelor degree recipients were included in the analysis representing 701 high schools and 1,051 four-year universities. Students are asked survey questions at multiple rounds between 2002 and 2012 to understand the trajectories from high school, through postsecondary education experiences, and into the workforce and life outcomes. This included asking bachelor degree recipients to reflect on their undergraduate experience and indicate if they participated in an internship, co-op, field experience, student teaching, or clinical assignment. Respondent data are linked to educational transcripts and other data sources such as attended university IPEDS data and financial aid records.

## Conceptual Framework and Methods

Generalized structural equation modeling (GSEM) (Khine, 2013) was used to examine mediating relationships of internship experiences between SES and early career earnings (See Figure 1). A multiple-group GSEM analysis was then conducted to evaluate the conditional effects of SES between internships and early career earnings (See Figure 2). The full model analyzed included other covariates that contribute to earnings and are not included in the conceptual framework (Number of hours worked per week, months since graduation, academic field, sex, race, college cumulative grade point average, transfer status, institutional selectivity, institutional control, and advanced degree beyond bachelor's, and other student engagement and high-impact practices as mediating and moderating variables) but were controlled for in the GSEM analysis.

**Figure 1**  
*Conceptual Framework Describing a Partial Mediation Model of Internship Participation Mediating between Socioeconomic Status and Early Career Earnings*



**Figure 2**  
*Conceptual Framework Describing a Multiple-Group Model of SES Conditional Effects on Internship's Effect on Early Career Earnings*

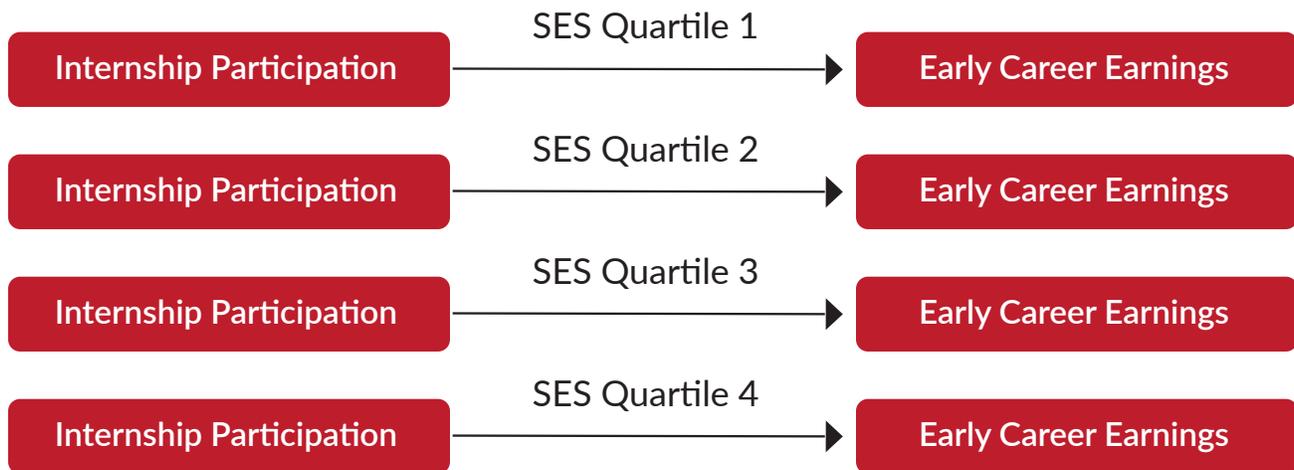


Table 1 describes descriptive information of the sample included in the analysis. SES was constructed as a latent variable which included student family income, mother’s education level, father’s education level, mother’s occupational level, and father’s occupational level as measured during their sophomore year (2002) of high school. Internship experiences was measured in 2012 as “an internship, co-op, field experience, student teaching, or clinical assignment,” of which 63.2% (n=2,784) reported participation within their undergraduate education. The average early career earnings of respondents was \$33,150.17 (SD = 28,660.94), which was also measured in the 2012 follow-up data collection as “About how much did you earn from employment in 2011 before taxes and all other deductions?” All respondents who reported working at least 1 hour during a typical working week in 2011 were included in the analyses. Additional sample demographics are available in Appendix A.

**Table 1**  
*Descriptive Statistics of Sample*

Variable	Values	Freq.	Per.
Income	\$0	13	0.3
	\$1 - 1,000	17	0.4
	\$1,001 - \$5,000	41	0.9
	\$5,001-10,000	49	1.0
	\$10,001 - \$15,000	93	1.9
	\$15,001 - \$20,000	110	2.3
	\$20,001 - \$25,000	167	3.4
	\$25,001-\$35,000	349	7.2
	\$35,001-\$50,000	722	14.9
	\$50,001-\$75,000	1,024	21.1
	\$75,001-\$100,000	905	18.7
	\$100,001-\$200,000	993	20.5
	\$200,001+	372	7.7
Mother's education	Did not finish high school	235	4.8
	Graduated high school or GED	866	17.9
	Attended 2-year school, no degree	454	9.4
	Graduated from 2-year school	500	10.3
	Attended college, no 4-year degree	515	10.6
	Graduated from college	1,432	29.5
	Completed Master's degree	679	14.0
	Completed PhD, MD, or other advanced degree	171	3.5

Variable	Values	Freq.	Per.
Father's education	Did not finish high school	240	5.0
	Graduated high school or GED	808	16.7
	Attended 2-year school, no degree	383	7.9
	Graduated from 2-year school	338	7.0
	Attended college, no 4-year degree	439	9.1
	Graduated from college	1,347	27.8
	Completed Master's degree or equivalent	735	15.2
	Completed PhD, MD, or other advanced degree	562	11.6
Mother's occupation	Occupation level 1 (technical support, military, teaching, sales)	3,591	74.0
	Occupation level 2 (accountants, registered nurses, librarians, social workers, engineers)	966	19.9
	Occupation level 3 (scientists, professors, lawyers, doctors)	295	6.1
Father's occupation	Occupation level 1 (technical support, military, teaching, sales)	3,482	71.8
	Occupation level 2 (accountants, registered nurses, librarians, social workers, engineers)	805	16.6
	Occupation level 3 (scientists, professors, lawyers, doctors)	565	11.6
Internship Experiences	No	1,618	36.8
	Yes	2,784	63.2
	Range	Mean	SD
Early Career Earnings	\$0 - \$600,000	\$33,150.17	\$28,637.29

## Research Question 1 Results: Internship Participation’s Mediation Role between SES and Early Career Earnings

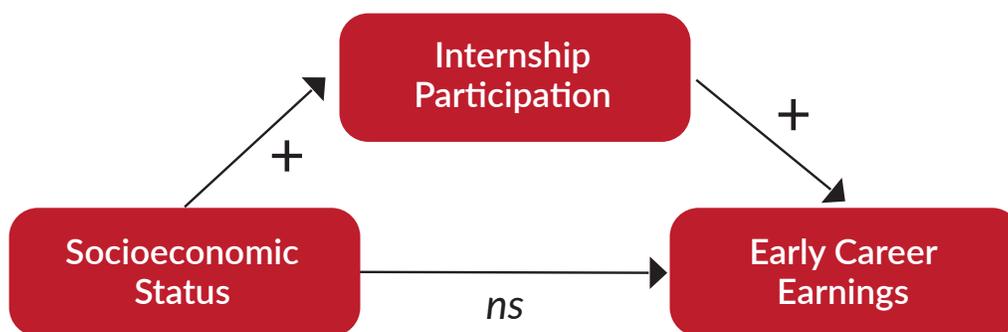
The higher SES background a student has when entering college, the greater the odds of accessing internship experiences and pertaining impact on earnings. For every one-unit increase in a student’s SES background they are 6% more likely to access internship experiences (OR = 1.06,  $p < .001$ ) and benefit from the subsequent advantage of an averaged increase of \$1,732.63 in early career earnings ( $\beta = 1,732.63$ ,  $p < .05$ ) compared to those who did not participate in an internship after holding other covariates constant. The effect of SES on early career earnings was not significant. Complete tables describing results within the mediation model are available in Appendix B.

### Internships as a Pathway to Social Reproduction

The present study drew upon cultural, social, and economic capital informed by prior sociological research (Armstrong & Hamilton, 2013; Bourdieu, 1984; Stuber, 2011) to explain how internships act as a sorting mechanism to support social reproduction. Internship experiences have a positive mediation relationship between SES and early career earnings (See Figure 3). Students from higher SES backgrounds are more likely to access internship experiences which led to an average increase in their early career earnings.

**Figure 3**

**Significant Positive Effects (+) and Non-Significant Effects (ns) in Conceptual Framework of Internship Participation Mediating between Socioeconomic Status and Early Career Earnings**



Findings provide support for Witteveen and Attewell’s (2017) assertion that engagement experiences such as internships are what explains why class inequalities are reflected upon graduation across bachelor’s degree graduates. Findings reflect prior research that details the way higher-SES students who bring with them more cultural, social, and economic capital can access experiential undergraduate experiences and use the produced social connections and express cultural characteristics that elicit better employment (Armstrong & Hamilton, 2013; Rivera, 2015; Hurst, 2015; Stuber, 2011). The findings affirm other research that describes the ways lower-SES students encounter barriers to internships which may further restrict pathways to social mobility (Hora et al, 2019).

## Research Question 2 Results and Discussion: SES Conditional Impact of Internship Participation on Early Career Earnings

Impact of internship experiences on early career earnings is conditional based on one’s SES quartile. Internships compared to not having such an experience had an average increase in earnings of \$2,975.65 for quartile two ( $\beta = 2,975.65, p < .05$ ) and \$2,807.74 for quartile three ( $\beta = 2,807.74, p < .05$ ) with non-significant findings among the quartile one or quartile four after controlling for other covariates. These results indicate that internships provide significant positive effects among the middle-SES, yet not for those in the lowest or highest SES quartiles. A full detailed table of model results are available in Appendix C.

### Internships as a Pathway to Social Mobility for the Middle Class

Conditional effects indicate internships may serve as a potential pathway to social mobility among middle-SES students who are able to access the experiences. Students from middle-SES backgrounds, or those within quartiles two and three, experience a significant positive effect on their early career earnings (See Figure 4). This indicates that internship experiences are predictive of early career earnings among middle SES quartiles. Little research directly explains why these results may be the case, however, findings illuminate how the conditional effects may be present (Rivera, 2015, Armstrong & Hamilton, 2013; Stuber, 2011; Hamilton et al., 2018).

**Figure 4**  
*Significant Positive Effects (+) and Non-Significant Effects (ns) in Conceptual Framework of Multiple-Group Model of SES Conditional Effects on Internship’s Effect on Early Career Earnings*

	SES Quartile 1	SES Quartile 2	SES Quartile 3	SES Quartile 4
Internship Participation	ns	+	+	ns

From a social, cultural, and economic capital perspective that reflects existing societal inequities, students from the lowest quartile who do access internships may not be procuring additional capital that can be effectively used in the workforce for higher earnings. This may be the case due to the types of internships students participate in does not provide access to the capital necessary that will provide returns on post-graduation outcomes. Lower-SES backgrounds may not have the social connections or finance available to support more prestigious internships that are located further away. Hora et al.’s (2019) research found lower-SES students are needing to prioritize work to meet essential needs for themselves and their families. These students may not have the time and funds to travel to locations were there are more prevalent internships. Parental bridging may be possible for middle-SES students whose parents can leverage any existing social networks by connecting their children to internship opportunities within larger cities at corporations which can lead to better paid jobs (Hamilton et al., 2018; Stuber, 2011). Internships may signal desired cultural values and attitudes or social capital that more prestigious and well-paid jobs are seeking in applications and new hires (Rivera, 2015). The results also suggest students from the highest SES quartile with the most privilege and associated social, culture, and economic capital do not experience benefits when it comes to earnings compared to the middle-

SES quartiles through internships. This may be due to the ways one's already possessed capital can be used to result in strong employment positions that pay well upon graduation. In these cases, internships are not a critical factor compared to those who acquire new cultural and social capital in the middle quartiles.

## **Implications for Practice**

The results have implications for policy and practices within higher education. Hora et al.'s (2019) conclusion of a need to problematize the discourse and widespread promotion of internships should be internalized among higher education administrators and scholars. The findings point to the fundamental issue of undergraduate internships as a mechanism that may support social reproduction instead of outcomes for upward mobility students expect when entering college and following graduation. Higher education state system leaders and university administrators need to be bold in their implementation of internship programs to transform them into pathways that lead to upward mobility for lower-SES students with alignment towards institutional missions. The following highlights four implications informed by the present findings and related literature.

### **1) Widen and reroute internships as pathways for social mobility**

To counteract the results of perpetuating social inequalities, internship experiences should be widened and rerouted within institutions to build out pathways towards social mobility. Armstrong and Hamilton (2013) described different sets of pathways that exist through one's undergraduate career and how experiential experiences such as internships serve as vehicles to upward mobility. However, these pathways are narrow and designed for students from higher-SES backgrounds. Increasing access and redesigning the experiences to center lower-SES will produce the reform necessary to cultivate social and cultural capital which in turn results in higher paid and more desired careers. Internship experiences were identified within the present study as opportunities that particularly benefit those in the middle class. These experiences should be more accessible and better resourced for those from lower SES backgrounds to strengthen equitable outcomes.

Stewart and Nicolazzo (2018) and Kouzoukas (2020) offer recommendations on how to design engagement experiences to better serve students from lower-SES and other minoritized backgrounds. They point to the importance of developing out internship programs and high-impact practices alongside lower-SES students. Universities and colleges who are seeking to scale and increase equity within internship participation and impact should include students from lower-SES backgrounds in the planning and implementation. The authors also argue the importance of intersectionality within designing experiences for lower-SES students.

### **2) Conduct institutional systematic equity-minded assessment of internship access and impact**

Institutional leadership and educators charged with developing and implementing internships should be continuously asking how internship experiences are accessed, the types of experiences students have in their participation, and who benefits from them. Although there has been increased focus on scaling equitable participation (NASH, 2020), more attention needs to be on the ways differing students experience internships and how they may produce differing outcomes across student groups. Assessing access is possible through developing an institutional-wide approach to tracking internship participation and developing accessible and useful dashboards or reports which help career service leaders and academic college deans and faculty

have real-time and actionable information. Setting measurable outcomes to increase equity in internship participation yearly will provide a collective effort to meeting that shared goal. Next, internship program administrators must simultaneously assess whether their internship program has equitable experiences and outcomes such as student learning, career placement, and earnings. A comprehensive and flexible framework for institutions to apply through a self-assessment on their internship programs is available through the Council for the Advancement of Standards in Higher Education (CAS, 2016).

### **3) Establish an equity-minded internship program planning and implementation team**

Universities and colleges consist of students, staff, faculty, and administrators who have a shared equity-minded commitment to support lower-SES student success and through critical career development opportunities, such as internship experiences. Tapping into these university social connections with a collective approach to enact social changes towards social justice is understood as a Critical Agency Network Model (Kiyama et al., 2012) and a promising strategy to create equity-minded changes within higher education internship programs. Based on institutional context and data produced from assessments, an institutional-wide team that involves students, student affairs, academic affairs, and alongside internship providers should be charged with advancing internship equity. This team does not require official notice or directives from prescribed leadership and may discover success through more informal personal networks than conventional organizational alignment (Kiyama et al., 2012). It is recommended that members bring with them a sense of passion and dedication along with current or previous identities as working class and/or first-generation. Ardoin (2020) recommends these team members reflect to uncover how students' social, cultural, and economic capital shapes the access and participation of internship experiences. The team will enable the use of existing data and conduct supplemental assessment that leads to identifying institutional assets, barriers, and solutions to equitable access, experiences, and impact for internship programs.

### **4) Support Student Basic Needs**

A growing awareness across college campuses includes the noted food and housing insecurity and increased attention to meeting student basic needs more broadly (Goldrick-Rab, 2016). Ardoin (2020) recommends meeting these essential needs is further important to supporting lower-SES student engagement overall. Lower-SES students are often working, at times multiple jobs, and may not be able to consider participating in internships given demands of basic living costs. Institutions looking to advance lower-SES student engagement in internships and other experiences will be committed to advancing food and housing security on their campus. Institutions should also provide a similar service by providing free high-quality professional or business attire. This type of clothing may be a barrier for lower-SES students who require professional attire to interview for internships or participate in them. Many models exist and are often referenced as a "Campus Closet" or "Career Closet" at institutions (Calhoun Community College, 2021; University of Arizona, 2021; University of Wisconsin-Eau Claire, 2021).

## Limitations

The present research has limitations. The measure of internship participation is broad and does not provide substantial information about the experiences within them. Students who responded they participated in an internship within their undergraduate experience may have resulted in microaggressions or other negative experiences. More so, the present study does not know in what ways the internship experience may have been beneficial or not to extrapolate the demonstrated effects. Additionally, the questions asked students to recall if they participated in internships which may have been up to five years after their experience. Therefore, there may be recall bias when reflecting back to undergraduate experiences. Measures of career earnings are only within eight years since one's graduation from high school. Students likely change jobs and pursue graduate degree opportunities after this timeframe. These important longer-term outcomes and therefore understanding of social mobility are not available within the study.

The study followed students who graduated from high school and transitioned through post-secondary experiences into the workforce. The ELS 2002 therefore does not account for students who are older or those who predominantly are taking courses online. Although the sample used consists of over 1,000 four year universities, the findings are limited in generalizability to higher education in the United States.

## Conclusion

Social mobility through the attainment of a college degree continues to be the narrative that families and students embrace. Internships are often seen as a public good and the idealized undergraduate experience for students contributing to desired outcomes after graduation. The present research problematizes this narrative with results showing the ways internships serve as pathways not to mobility but instead social reproduction. Students' socioeconomic classes upon entering college are perpetuated at graduation as they enter the workforce. However, promising opportunities may exist through internship experiences which serve as pathways to social mobility for the middle class. To transform these undergraduate experiences into pathways towards social mobility outcomes that better center lower-SES students, institutional leaders and educators must widen and reroute the experience to primarily serve lower-SES students who also hold other marginalized identities. Doing so will help to uphold the promise of upward mobility a bachelor's degree grants within higher education.

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## Appendix A

### Descriptive Statistics of Demographics

Variable (n)	Values	Frequency	Percent
Sex	Male	2,086	43.0
	Female	2,766	57.0
Race	White	3,253	67.0
	Asian/Pacific Islander	684	14.1
	Black	350	7.2
	Hispanic	363	7.5
	Native American	14	0.3
	More than 1 race	188	3.9
Academic Field	Business	929	19.4
	Art	269	5.6
	Biological Sciences	321	6.7
	Communications/Journalism	293	6.1
	Education	274	5.7
	Engineering and Computer Science	334	7.0
	Health Sciences	321	6.7
	Humanities and Liberal Arts	462	9.6
	Physical Sciences	140	2.9
	Social Services	169	3.5
	Social Sciences	854	17.8
	Other Majors / Interdisciplinary	432	9.0

Variable (n)	Values	Frequency	Percent
Barron's Institutional Selectivity	Most Competitive	433	8.9
	Highly Competitive	801	16.5
	Very competitive	1,319	27.2
	Competitive	1,706	35.2
	Less competitive	259	5.3
	Non-competitive	98	2.0
	Special/Unclassified	236	4.9
Institutional level	Did not attend two-year institution	3,424	75.0
	Attended a two-year institution	1,144	25.0
Institutional Control	Public	3,322	68.5
	Private and private for-profit	1,530	31.5
Advanced Degree	Bach/Post-bacc cert	3,693	76.1
	Masters/Post-masters cert	848	17.5
	Doctoral / Professional degree	311	6.4
	Range	Mean	SD
College GPA	1.55 - 4:00	3.19	0.47
Hours worked	1 - 99	37.4	16.3
Months since Graduation	0 - 55	24.5	9.4

## Appendix B

### Latent Variable Socioeconomic Status

Socioeconomic Status	OR	SE	95% CI		p-value
Father's Education Level	2.72	-	-	-	-
Mother's Education Level	1.79	0.09	1.61	1.98	<.001
Income	1.56	0.06	1.45	1.68	<.001
Father's Occupation Level	2.33	0.11	2.13	2.56	<.001
Mother's Occupation Level	1.36	0.05	1.27	1.47	<.001

### Effects of SES on Student Engagement and HIPs

SES → SE/HIPs	OR	SE	Normal-based 95% CI		p-value
Extracurricular Activities	1.15	0.02	1.11	1.19	<.001
Faculty Interactions	1.06	0.02	1.03	1.10	<.001
Internship	1.06	0.02	1.03	1.10	<.001
Research w/ Faculty	1.12	0.02	1.07	1.17	<.001
Study Abroad	1.24	0.03	1.17	1.30	<.001
Community Project	1.05	0.02	1.02	1.09	<.001
Senior Culm Exp	1.07	0.02	1.04	1.11	<.001
Mentorship	1.07	0.02	1.03	1.11	<.001

**Effects of SES, Student Engagement and HIPs on Early-Career Earnings**

Early Career Earnings	$\beta$	SE	Normal-based 95% Conf. Interval		p-value
SES	275.71	186.46	-89.75	641.17	.139
Student Eng. (ref = Never)					
Extracurric Sometimes	-301.09	988.45	-2,238.42	1,636.24	.761
Extracurric Often	606.48	1,019.79	-1,392.27	2,605.23	.552
Faculty Inter Sometimes	331.28	1,217.28	-2,054.54	2,717.10	.786
Faculty Often Inter	838.92	1,342.22	-1,791.79	3,469.63	.532
HIPs (ref = No)					
Internship	1,732.63	811.36	142.40	3,332.86	.033
Research with Faculty	-2,205.18	1,041.99	-4,247.43	-162.92	.034
Study Abroad	-237.69	990.26	-2,178.57	1,703.20	.810
Community Project	-252.84	727.49	-1,678.70	1,173.02	.728
Senior Culminating Exp	-651.79	671.60	-1,968.10	664.53	.332
Mentorship	430.05	835.79	-1,208.06	2,068.16	.607
GPA	1,657.92	995.42	-293.07	3,608.89	.096
Race (ref=white)					
API	362.19	1,547.92	588.32	6,656.06	.019
Black	-1,956.35	1,295.48	-4,495.45	582.74	.131
Hispanic	-949.06	1,147.26	-3,197.65	1,299.52	.408
Native American	-1,431.04	3,106.38	-7,519.44	4,657.36	.645
More than 1 race	797.05	1,958.28	-3,041.10	4,635.20	.684
Sex (ref=male)					
Female	-2,310.13	778.12	-38.35	-785.04	.003
Field (ref=Business)					
Arts	-13,449.67	1,499.76	-1,638.15	-10,510.20	<.001
Biological Sciences	-1,129.79	1,428.60	-14,099.78	-8,499.79	<.001
Comm, Journalism	-9,615.62	1,315.04	-12,193.06	-7,038.18	<.001
Education	-9,398.77	1,345.96	-12,086.81	-6,760.73	<.001

Early Career Earnings	$\beta$	SE	Normal-based 95% Conf. Interval		p-value
Eng, Computer Sci	8,820.83	1,642.09	5,602.39	12,039.27	<.001
Health Sciences	5,815.44	1,554.84	2,768.12	8,862.86	<.001
Humanities, Liberal arts	-11660.65	1,225.55	-1,4062.67	-9,258.62	<.001
Physical Sciences	-4814.33	3,018.97	-10,731.41	1,102.34	.111
Social Services	-2435.49	4,764.21	-11,773.16	1,902.18	.609
Social Sciences	-8702.60	1,143.52	-10,943.86	-6,461.34	<.001
Other Majors/Inter	-10069.80	1,265.43	-12,549.99	-7,589.61	<.001
Selective (ref=Most Competitive)					
Highly Competitive	2479.61	2,444.62	-2,311.76	7,270.98	.310
Very competitive	2525.87	2,267.82	-1,918.98	6,970.72	.265
Competitive	2623.67	2,189.69	-1,668.03	6,915.38	.321
Less competitive	4980.29	2,371.50	332.25	9,628.34	.036
Non-competitive	7670.70	2,663.03	2,451.25	12,890.15	.004
Special/Unclassified	2370.59	2,475.01	-2,480.34	7,221.53	.338
Control (ref=public)					
Private/for-profit	-641.86	802.31	-2,214.37	930.64	.424
Two-Year (ref=None)					
Attended two year	-1282.17	717.94	-2,689.31	124.97	.074
Hours worked per month	748.96	40.42	669.73	828.19	<.001
Months since last bachelors	325.89	38.99	249.47	402.31	<.001
Advanced degree (ref=Bac)					
Masters	-2068.46	935.60	-3,894.19	-226.72	.028
Doctorate/Prof	-7431.08	1,676.39	-10,716.74	-4,145.42	<.001
Constant	-5365.51	3,824.24	-12,860.89	2,129.87	.161

## Appendix C

### SES Quartile Multi-Group Effects on Early Career Earnings

Early Career Earnings	$\beta$ (SE)			
	Q1 (n=927)	Q2 (n=970)	Q3 (n=978)	Q4 (n=968)
Student Eng. (ref = Never)				
Extracurric Sometimes	3,730.25	-657.03	-2,929.88	-2,999.58
	(2,251.75)	(1,615.723)	(1,650.23)	(2,348.05)
Extracurric Often	2,572.06	-1,290.13	1,252.71	-1,467.45
	(2,502.79)	(1,733.38)	(1,706.19)	(2,393.68)
Faculty Inter Sometimes	498.94	-430.18	-260.11	1,519.80
	(2,754.13)	(1,959.89)	(2,050.24)	(2,802.83)
Faculty Intern Often	452.86	-406.19	690.57	3,477.76
	(3,173.69)	(2,184.16)	(2,319.07)	(3,056.39)
HIPs (ref = No)				
Internship	511.13	2,975.65*	2,807.74*	341.93
	(2,006.23)	(1,335.57)	(1,327.39)	(1,688.47)
Research with Faculty	-2,028.72	-2,445.07	-2,406.58	-321.53
	(2,689.34)	(1,582.49)	(1,664.38)	(1,919.30)
Study Abroad	3,254.59	-428.65	-2,538.79	599.14
	(3,029.22)	(1,754.52)	(1,548.45)	(1,793.62)
Community Project	-2,372.89	-574.42	-776.60	1,503.770
	(2,265.29)	(1,448.89)	(1,415.92)	(1,821.00)
Senior Culminating Exp	-991.20	1,179.53	68.31	-1,581.35
	(1,967.14)	(1,258.85)	(1,277.35)	(1,652.66)
Mentorship	328.47	-582.40	722.50	193.37
	(2,429.69)	(1,513.81)	(1,499.13)	(1,912.55)
GPA				
GPA	-237.93	3,820.75**	1,411.90	208.81
	(2,175.98)	(1,411.33)	(1,488.64)	(2,018.88)

Early Career Earnings	$\beta$ (SE)			
	Q1 (n=927)	Q2 (n=970)	Q3 (n=978)	Q4 (n=968)
Race (ref=white)				
API	2,573.55	1,453.67	2,319.44	7,123.13**
	(2,728.49)	(1,957.02)	(1,892.21)	(2,312.86)
Black	-3,967.78	-470.58	-3,218.68	788.93
	(3,268.21)	(2,262.81)	(2,474.72)	(4,131.48)
Hispanic	-1,787.58	114.31	-1,161.73	930.31
	(2,818.68)	(2,148.27)	(2,550.03)	(3,602.69)
More than 1 race	2,266.45	1,371.04	3,152.11	-1,466.61
	(5,363.43)	(2,801.74)	(3,147.53)	(3,721.74)
Sex (ref=male)				
Female	-3,554.80	-2,774.48*	106.55	-3,239.42
	(2,036.73)	(1,313.36)	(1,295.04)	(1,658.90)
Field (ref=Business)				
Arts	-1,1867.97*	-14,548.41***	-14,615.99***	-13,525.33***
	(4,771.28)	(2,907.47)	(2,711.15)	(3,733.08)
Biological Sciences	-11,073.81*	-8,445.42**	-8,375.94**	-16,001.93***
	(4,382.29)	(3,139.32)	(2,705.04)	(3,443.71)
Comm/Journalism	-7,604.70	-10,151.47***	-12,482.62***	-8,477.53*
	(4,269.08)	(2,606.91)	(2,601.74)	(3,843.85)
Education	-5,787.75	-7,205.61**	-11,345.82***	-13,459.99**
	(4,396.40)	(2,734.93)	(2,694.72)	(4,427.92)
Eng, ComSci	5,530.66	9,287.23***	11,161.46***	4,809.21
	(4,173.93)	(2,622.76)	(2,570.31)	(3,383.47)
Health Sciences	4,988.90	9,899.43***	5,425.99	1,749.74
	(3,790.92)	(2,564.99)	(2,767.40)	(4,334.65)
Humanities; liberal arts	-11,611.96**	-9,882.51***	-12,572.92***	-14,089.49***
	(3,907.86)	(2,431.43)	(2,418.78)	(2,884.09)

Early Career Earnings	$\beta$ (SE)			
	Q1 (n=927)	Q2 (n=970)	Q3 (n=978)	Q4 (n=968)
Physical Sciences	5,131.91	-6,327.01	-8,993.43*	-8,787.10
	(5,911.92)	(3,462.98)	(4,349.08)	(4,499.95)
Social Services	2,398.52	-4,966.48	-8,272.84*	3,636.55
	(4,253.68)	(3,245.23)	(3,592.83)	(6,401.97)
Social Sciences	-5,831.79*	-8,061.61***	-8,733.86***	-11,535.90***
	(2,929.64)	(2,064.49)	(1,940.22)	(2,616.92)
Other Majors/Inter.	-6,994.09	-9,415.96***	-8,514.85**	-15,724.90***
	(3,915.95)	(2,587.67)	(2,571.83)	(3,326.94)
Selective (ref=Most Competitive)				
Highly Competitive	9,180.28	-4,181.25	-223.65	-2,838.35
	(5,584.18)	(4,350.68)	(5,788.40)	(9,037.33)
Very competitive	6,610.07	-860.33	-4,439.02	963.58
	(4,796.54)	(3,703.25)	(5,119.29)	(8,041.44)
Competitive	8,032.95	-2,827.36	-4,339.11	1,640.80
	(4,981.98)	(3,773.89)	(5,127.17)	(7,984.26)
Less competitive	10,841.23*	3,584.21	-1,544.00	925.43
	(5,413.65)	(4,003.55)	(5,260.53)	(8,053.88)
Non-competitive	3,573.27	1,137.44	253.43	7,982.30
	(6,972.58)	(4,459.06)	(5,482.96)	(8,169.67)
Special/Unclassified	8,848.69	-3,381.03	-4,311.59	-519.16
	(6,085.57)	(4,517.82)	(5,755.40)	(9,190.17)
Control (ref=public)				
private/for-profit	-1,370.35	-904.45	-2,728.51*	1,939.08
	(2,276.34)	(1,430.43)	(1,371.66)	(1,722.96)
Two-Year (ref=None)				
attended two year	-1,928.57	-1,956.44	24.57	-2,555.77
	(2,031.01)	(1,395.21)	(1,439.37)	(2,087.70)

Early Career Earnings	$\beta$ (SE)			
	Q1 (n=927)	Q2 (n=970)	Q3 (n=978)	Q4 (n=968)
Hours worked				
Hours worked	714.30*** (63.22)	697.32*** (44.56)	772.07*** (41.74)	748.96*** (47.11)
Months since graduation				
Months since graduation	302.03** (96.10)	313.71*** (70.00)	344.40*** (72.22)	375.94*** (106.82)
Advanced degree (ref=Bac)				
Masters/Post-cert	795.00 (2,555.96)	-2,411.45 (1,644.19)	-3,049.65 (1,599.32)	-3,607.67 (2,028.82)
Doctorate/Prof	-7,647.04 (5,403.16)	-2,590.20 (3,000.61)	-10,665.73*** (2,798.75)	-8,088.20* (2,779.90)
Constant				
Constant	-4,397.01 (8,810.16)	-6,746.42 (6,311.13)	1,980.94 (7,411.81)	3,303.15 (11,065.79)

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



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