Intern-net Gains:

Deciphering the Economic Outcomes of Remote Internships

by

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Abstract

In the wake of the pandemic, there has been a discernible shift towards remote work platforms, affecting all types of employment opportunities. This paper focuses on the sustained shift of internships towards online platforms. While internship gains have always exhibited variance, the newly clear contrast between remote and in-person work environments creates potential disparities in internship returns. The pivotal question addressed in this paper is whether virtual internships adequately replicate the skills, networking connections, and overall workplace immersion offered by in-person internships. By designing and distributing a survey regarding internship return outcomes to University of Virginia economics students and alumni, this paper quantifies the effect of an internship's work environment on its outcomes. I find evidence that fully remote internship environments reduce returns for undergraduate students and lessen the internship program's overall quality.

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Section 1: Introduction

Remote work attacked the labor market in full force following the COVID-19 pandemic. Full-time employees had their work worlds turned upside-down, trading office cubicles for at-home work setups. This transition sparked interest in economic research regarding remote work, as questions about its effect on productivity arose. Even after the pandemic had run its course, some companies opted to keep remote and hybrid work environments alive for their employees.

An area of the labor market that has not been analyzed since this transition is the internship sector. Internships typically occur over brief periods, such as summer breaks, and are considered vital opportunities for students to gain exposure to the job market.

Today students are encountering the decision between fully in-person, hybrid, and remote internships, presenting a unique situation for undergraduates. Some may have preconceptions about which type of internship yields the greatest benefits and provides the highest career returns, but no study has yet explored this matter. Remote internships also may be a catalyst to make internship opportunities accessible to new demographics of students, such as those who do not live in urban areas, are unable to commute or relocate, etc. However, remote work may fail to replicate the vital opportunities and experiences that traditional work environments offer.

This paper aims to explore these crucial questions to assess the overall benefits of various internship formats. By doing so, this study seeks to supply students, educators, and employers with evidence-based insights to inform their decision-making and optimize internship program designs.

Section 2: Background and Literature Review

Section 2.1: Defining Internships and Their Importance

Section 2.1.1: What is an Internship?

Internships lack a universally agreed-upon definition and can hold many different attributes, but certain characteristics remain common throughout. The University of Maryland, Baltimore County (UMBC) defines an internship as "a professional learning experience that offers meaningful, practical work related to a student's field of study or career interest." This study specifically focuses on paid, full-time internships undertaken by undergraduate students between their academic years. Internships can take place at any time of the year, but this study will focus solely on summer internships.

Studies have sought to identify the key qualities of internships and the skills that interns hope to gain from them. O'Higgins et al. (2021) observed that paid internships are associated with more favorable post-internship labor market outcomes. Additionally, they found that structured and formalized intern programs, strong mentorship, working conditions similar to full-time employees, and substantial internship duration all enhance an intern's returns. UMBC holds a similar viewpoint, stating that a quality internship involves limited clerical or administrative duties, provides a clear job description, orients the student to the organization, helps the student develop and achieve learning goals, and offers regular feedback. As a whole, clear structure, organization, and positive mentorship are accepted as essential for a quality internship experience.

Interns offer tangible value to firms through several avenues; they contribute to increased work capacity, bring fresh perspectives, and serve as valuable recruitment assets (Maertz Jr et al., 2014). By utilizing interns, companies can expand their workforce capabilities, tackle additional

projects, and potentially explore new ideas and approaches brought forth by interns. Interns' enthusiasm and eagerness can invigorate workplace dynamics and foster a motivated work culture.

Research by Steele (2017) at Brigham Young University highlights the substantial returns that firms can reap from investing in their interns. Steele found that approximately 65% of paid internships turned into official job offers, a statistic that underscores the pivotal role internships play as a pipeline for talent acquisition and retention. By providing interns with valuable learning experiences and exposure to company culture and operations, firms can foster a pool of skilled and knowledgeable future employees.

In conclusion, while there are costs associated with hiring interns, the returns of talent development, recruitment efficiency, and workplace capacity make internships a strategic investment for firms.

Section 2.1.2: What Constitutes a Virtual Internship?

The landscape of internships is evolving rapidly. By 2022, only 25.8% of employers were set to hold exclusively in-person internships (NACE 2022 Internship & Co-op Survey), marking a notable shift toward hybrid and remote internship models. A virtual internship is defined as one conducted digitally and remotely, where interns engage in tasks and responsibilities autonomously, often utilizing frequent video meetings and email communications. While virtual internships aim to replicate some characteristics of in-person experiences, differences emerge in communication methods, relationship formation, accessibility to mentorship, and many other features that shape an internship experience.

Research by Jenkins et al. (2023) identifies the primary challenges of virtual internships as increased distractions and a lack of structure. Their survey data suggests that interns report

higher satisfaction with their experience when they have communicative supervisors. Similarly, Boehm et al. (2021) argue that virtual internship environments cannot fully replicate real corporate settings or foster cultural development. Nevertheless, they provide evidence that remote internships enhance professional skills and yield positive student experiences. While virtual internships can be successful, they are not without limitations. Firms may need to extend beyond their usual practices to support virtual interns and provide a more structured experience.

Furthermore, findings from Irwin et al. (2022) suggest that some employers are wary of hiring interns they have never met in person, concerned with trusting them to work responsibly. Quantitative results of their survey study display that company stakeholders do not perceive online internships to be equivalent to on-site programs with regards to skill development or networking capacity. The same paper also finds that remote internships offer firms reduced costs and increased flexibility, diversity, and inclusivity in intern recruiting. Proponents of virtual internships argue that they expand a firm's reach and allow internships to be accessible globally without relocation (Feldman, 2021). While many internship benefits can be replicated in the virtual space, studies highlight the need for specific procedures by both firms and interns to reap these benefits. For instance, research by Choudhury et al. (2023) identifies various design opportunities for virtual social interactions, demonstrating that synchronous discussion forums between new hires and senior managers can enhance interpersonal relationships and organizational commitment, leading to improved task performance and reduced employee turnover.

If executed effectively, remote internships can yield positive outcomes, but optimizing the intern experience requires careful consideration of various factors and costs. The question

remains whether most firms are undertaking the necessary efforts to ensure the success of virtual internship programs.

Section 2.2: Literature Background

Remote work has gained significant attention in economic literature, with researchers exploring the dynamics of remote work environments and drawing conclusions regarding their effectiveness. Clancy's (2020) research examines the long-term benefits of remote working environments, highlighting comparable or higher productivity compared to traditional work settings. Clancy also emphasizes the cost-effectiveness of remote work for both firms and employees, suggesting that remote work is a lasting trend poised for continuous expansion.

Contributing to this narrative, insights from Barrero et al. (2021) project a sustained shift towards remote work post-pandemic, predicting that 20 percent full workdays will be conducted from home as society continues to evolve following the pandemic. This shift is motivated by employee benefits, reduced spending, and increased productivity all brought on by remote work environments.

In contrast, Emanuel and Harrington (2023) find that remote work environments may reduce employee productivity, and those who opt for remote work also tend to be less productive initially. This discovery raises questions about self-selection effects among interns pursuing remote internships and their potential impact on internship returns.

Internship productivity is crucial for determining internship returns. Margaryan et al. (2022) find that work experience gained through student internships increases employee earnings by around six percent in the short and medium term. The researchers also contend that graduates who complete an internship face a lower risk of unemployment.

Supporting these findings, Bolli et al. (2021) assert that internships enhance students' human capital and future wages by teaching workplace performance skills. Exploring differences in perceived human capital gains between remote and in-person internships could be an intriguing avenue for further research.

Saniter and Siedler (2014) suggest that internship returns may manifest in the form of positive reference letters, enhancing students' employability by showcasing integrity and personal character. One of the biggest concerns regarding remote internships is that the remote nature may hinder connections between employers and interns, which in turn may affect the quality of reference letters.

Usamah (2023) finds that interns who are well-matched to their internships are likely to experience the greatest returns, indicating the importance of internships aligned with individual skills and interests. Remote internships have the potential to facilitate this alignment and enable firms to reach a broader pool of interns, increasing the likelihood of finding suitable matches.

While economic literature has separately explored the effectiveness of remote work in the full-time labor market and internship returns in general, the connection between these two topics remains underexplored. This research aims to bridge this gap by providing insights into how remote work influences intern experiences and career advancement.

Section 3: Conceptual Framework

From an economic perspective, companies' transition to remote work can be attributed to three primary factors: cost efficiency, the broadening of the talent pool, and advancements in collaborative technology. However, as indicated by previous studies, remote work may entail consequences that affect various aspects of the internship experience.

Section 3.1: Hypothesized Effects of Remote Work on Intern Returns

One hypothesized effect of remote work on internship returns revolves around the quality and depth of mentorship and professional development opportunities. Traditional office environments often facilitate organic interactions and mentor relationships, leading to skill acquisition and career advancement. In contrast, remote settings may present barriers to effective mentorship, hindering interns' ability to learn and grow professionally. The absence of face-to-face interactions and spontaneous learning moments could limit the depth of mentorship experiences, likely diminishing the internship's overall returns.

Moreover, the virtual nature of remote work may contribute to a diluted sense of organizational culture and cohesion among interns and employees. In traditional office settings, interns benefit from immersion in the company's culture, participating in team-building activities and forging connections with colleagues. However, remote work may erode these opportunities for cultural involvement, leading to a fragmented sense of belonging and camaraderie. As a result, interns may miss out on valuable networking opportunities and the chance to establish lasting professional relationships, which are integral to career advancement.

Another hypothesized effect of remote work on internship returns pertains to the acquisition of practical skills and hands-on experience. In traditional office environments, interns have direct access to resources, equipment, and on-the-job training, all of which enable them to develop their capabilities. However, remote work may pose challenges in replicating these hands-on learning experiences. Limited access to specialized equipment, reduced opportunities for direct supervision, and reliance on digital communication platforms may hinder interns' ability to efficiently acquire practical skills. Consequently, interns may graduate from remote

internships with a substandard skill set, potentially diminishing their competitiveness in the job market.

The demographic composition of interns may influence the hypothesized effects of remote work on internship returns. Tech-savvy interns with strong digital literacy may adapt more readily to remote work environments, leveraging technology to overcome communication barriers and maximize productivity. Conversely, interns from disadvantaged backgrounds with limited access to technology – such as low-income students and those from rural areas – may encounter greater challenges in navigating remote work settings, potentially exacerbating existing disparities in internship experiences and outcomes.

For low-income students, remote internships may initially appear as an attractive option due to potential cost savings, but limited access to reliable internet connectivity and necessary technology infrastructure may impede their full engagement. Similarly, those from rural areas may face challenges related to internet connectivity, infrastructure limitations, and isolation from professional networks. Overall, the adoption of remote internships may inadvertently intensify existing disparities among underrepresented demographic groups, widening the gap in internship experiences and outcomes.

In summary, while remote work offers compelling benefits in terms of flexibility and potential efficiency, its implementation in internship programs may pose significant challenges that could compromise internship returns. The hypothesized effects outlined above underscore the need for proactive measures to optimize the remote internship experience for interns.

Section 4: Data Description

Section 4.1: Lack of Preexisting Data

In order to draw conclusions regarding the returns of both in-person and remote internships, it's crucial to acknowledge the limited availability of preexisting data. While there are some studies regarding virtual internships, they tend to look solely at the COVID-19 pandemic timeline. As of 2024, companies have had three years to fortify their internship programs and adapt them to alternate work environments. With the majority of firms now able to resume in-person work environments, the decision to persist with remote work offerings is a conscious choice.

There is a notable gap in the availability of publicly accessible data pertaining to individual students who partake in remote internships. This gap is particularly significant given the recency of the pandemic, which stresses the need to understand internship experiences' evolution in response to remote work dynamics. Consequently, my empirical research embarks on an approach to design and implement a survey targeted at University of Virginia (UVA) economics students who have completed a summer internship during their undergraduate studies. This survey will gather insights into their internship experiences and outcomes. Given the University of Virginia's prestigious undergraduate academics, this population provides a logical sample group for this survey; it is reasonable to assume that most students at UVA have an interest in pursuing a summer internship at some point in their undergraduate career. Through this survey, I aim to quantitatively assess students' perspectives on remote internships and their associated returns. The survey, detailed below, is poised to provide valuable insights into the nuanced nature of internship experiences within the backdrop of remote, hybrid, and in-person work environments.

Section 4.2: Survey Description and Variables

This survey employs a natural experiment strategy to investigate the effects of remote work on summer internships. The exogenous variation between remote, hybrid, and in-person internships enables the observation of causal relationships between remote work and internship outcomes.

Given the recent emergence of remote work, student internship data that varies between remote and in-person opportunities is limited to the past few years. Direct data collection from students becomes necessary for this paper, as such information has not yet been publicly gathered.

To gather data, a survey was distributed to current economics undergraduates and recent economics alumni at the University of Virginia. This survey aims to address the impact of remote work on internships.

The survey consists of three main sections, outlined below.

Section 4.2.1: Demographic Data Collection

The survey begins by gathering preliminary demographic data, including the student's gender, graduation year, race, home zip code, whether they are a double major, whether they are a first-generation student, etc. This preliminary data collection allows for the recording of trend discrepancies, as students' characteristics may influence their selection of work environment or their internship returns. Additionally, the survey includes questions regarding students' internship and full-time work environment preferences.

Section 4.2.2: Internship Type and Characteristic Data Collection

Questions regarding the type of internship are then posed. Examples include whether the summer internship aligns with the student's desired career path, the field description which their internship best fit, their hourly pay, and their work environment. Additionally, details about the work environment of coworkers were procured. For in-person and hybrid internships, essential questions about the geographic location, number of days spent in-office, and relocation and commute requirements were also included. These data points provide insights into the associated opportunity costs of the individual's internship.

Section 4.2.3: Outcome Measure Data Collection

The survey includes questions that prompt opinion-based responses regarding the student's internship experience, asking students to rank how strongly they agree with various statements about their internships. Response options range from zero to ten, with zero being "Do Not Agree At All" and ten being "Agree Completely". A full list of slider questions can be found in the appendix <u>Official Survey Design</u> section. These slider questions provide valuable insight into internship returns and are grouped into three outcome variables.

The first outcome variable approximates the long-term outcome of a student's internship. This outcome variable is produced from responses regarding the intern's confidence in receiving a strong letter of recommendation, how largely the intern believes their professional network expanded due to their internship, and whether the internship considerably bolstered their resume. These are all values that were deemed to constitute positive returns that students received from internship experiences as discussed in Section 2. Because their benefit extends past the internship itself, I believe these three factors best capture an internship's long-term returns. Letters of

recommendation, expanded networks, and resume strengthening all set students up for success in their career progression.

The second return focuses on the overall quality of the internship program and the intern's summer experience. This category uses four slider variables to measure the quality: whether the intern felt their firm valued positive company culture, whether they spent the majority of their workday communicating with coworkers, whether they made meaningful connections with coworkers and interns, and whether they would want to work at a similar firm in the future. These variables allow us to observe the intern's opinion of the firm and their internship program, providing an inside perspective on each work environment and the organizational effectiveness of each internship program.

The third category of outcome variables is characterized by the intern's perceived acquired skills during their internship, measured using three slider variables: whether the intern's day-to-day tasks were similar to those of a full-time employee, whether the internship met or exceeded their expectations, and whether they learned useful workplace skills. This category considers a student's own opinion of the benefits their internship provided for their workplace knowledge and skill set.

The last set of outcome variables utilizes the presence and acceptance of full-time return offers. To observe this outcome, this study uses both a dummy variable for the presence of a full-time offer and a dummy variable for the acceptance of a full-time offer. Because full-time offers are some students' primary incentive to complete internships, observing this outcome is crucial to understanding internship returns.

Comparing survey responses between remote and in-person interns is vital. Companies may believe they are supporting virtual interns and providing quality internships, but the experiences of interns will illustrate the true effectiveness of their efforts.

Section 5: Empirical Framework

The empirical model for analysis estimates the causal effect of remote work on internship outcomes using an ordinary least squares (OLS) regression analysis. My analysis splits the internship returns into separate outcome variables and groups. All of these outcome measures are run in each regression model to observe their return effects by the internship work environment.

Model one, the baseline analysis, is as follows:

$$Outcome_i = \alpha + \beta_{Remote} \bullet Remote_i + \beta_{inPerson} \bullet inPerson_i + \epsilon_i$$

The baseline model regresses each outcome group or variable (long-term outcome, quality of program, skills gained, full-time offer presence, and full-time offer acceptance) by remote and in-person internship dummy variables. It is not necessary to include the hybrid dummy variable as this is accounted for by the inclusion of the two dummy variables.

Model one assesses whether one work environment is associated with better outcomes than the other. The coefficients of the remote dummy and in-person dummy in the regression results indicate the estimated effect of each work environment on internship outcomes, holding other variables constant.

This model does not account for basic demographic variables of the student and their internship, so I do not expect Model one to account for much of the outcome variation.

Model two adds demographic variables regarding the student and their internship to account for more of the outcome variation:

 $Outcome_{i} = \alpha + \beta_{Remote} \bullet Remote_{i} + \beta_{inPerson} \bullet inPerson_{i} + \beta_{Demographics} \bullet \epsilon_{i}$ $Demographics_{i} + \epsilon_{i}$

This model again regresses each outcome group or variable by remote and in-person internship dummy variables but includes variables to account for other demographics of the student and their internships. The demographic variables include gender, race, first-generation status, double major status, whether they live in a city core, whether their internship was in a field of study in which they were interested, and the average number of hours worked per day.

These demographic variables will allow the regression to more precisely account for control variables and focus on the effect that just remote work status may have on the outcome variables.

Model three uses coworkers' work environments as opposed to the intern's work environment. This provides a different approach to analyzing the effects of remote work on internship returns.

 $Outcome_{i} = \alpha + \beta_{RemoteCoworkers} \bullet RemoteCoworkers_{i} + \beta_{inPersonCoworkers} \bullet$ $inPersonCoworkers_{i} + \beta_{Demographics} \bullet Demographics_{i} + \epsilon_{i}$

This model uses the same demographic variables to account for control variables for interns and their internships.

Dummy variables for all remote coworkers and all in-person coworkers are used in this model.

Section 6: Results

Section 6.1: General Summary Statistics

Following IRB ethics protocols and with written permissions to access email listservs and LinkedIn alumni groups, the Qualtrics link was distributed to UVA economics majors and alumni. In order to recruit participants for the survey, an incentive was provided. Participants who successfully completed the survey were entered into a raffle to receive a 100-dollar gift card. The survey totaled 82 respondents. Of those 82 responses, 66 had completed a summer internship. Table I displays the trends of the internship work environment among the 66 respondents.

Work Environment	Percent
Remote	15.15%
Hybrid	54.55%
In-person	30.3%

Table I: Distribution of Internship Work Environment

Source: UVA Qualtrics Survey 2024

This table illustrates that hybrid internship work environments are the most common among respondents, which provides further evidence supporting the idea that remote work environments are generally gaining traction and changing the way the labor and internship market operate. If we were to look at internship opportunities ten years ago, I suspect that the vast majority would be in-person. Hybrid work has adapted since the pandemic and become a popular work environment option for many firms.

Section 2 highlights the significance of well-matched internships, which have been linked to greater internship returns for students, as they provide the most valuable work experience aligning with future career opportunities. Moreover, this section discusses the potential implications of remote work on internship opportunities, noting the capacity remote work has to broaden the applicant pool and potentially enhance matching between employees and firms. Table II presents the percentage of interns in each work environment and their response to whether or not their summer internship was in a field they were interested in pursuing.

Was Summer Internship in a Field of Interest?	In-person	Hybrid	Remote
Yes	75%	72.2%	50%
Maybe	20%	22.2%	40%
No	5%	5.6%	10%

Table II: Distribution of Field of Interest by Internship Work Environment

Source: UVA Qualtrics Survey 2024

The results from the Qualtrics survey do not suggest any evidence that remote work facilitates better-matched internships. Instead, in-person and hybrid work environments show notably higher percentages of interns reporting matching their preferred fields.

These findings suggest that remote work may not necessarily enhance internship matching. Later regression analysis shows that an internship matching the intern's preferred field has a significant positive effect on all return outcome measures. The weaker relationship between remote work and internship matching further underscores the potential limitations of remote internships in providing optimal benefits to interns.

Another statistic captured in the survey is the average number of daily work hours. This statistic allows us to discern fundamental differences between internship environments and observe trends. The survey also measures the average number of days worked in person per week for hybrid and in-person interns to further analyze differences between these types of programs.

Table III: Work Statistics by Internship Work Environment

	In-person	Hybrid	Remote
Average Number of Hours Spent Working per Day	8.868	8.081	6
Average Number of Days Spent in Person During the Week	4.55	2.861	0

Source: UVA Qualtrics Survey 2024

The table above depicts the averages of these two statistics for each work environment type, showing quite a large separation in the average number of daily hours worked between in-person/hybrid and remote. Later regressions find a statistically significant positive correlation between the number of hours spent working per day and the outcome variables.

Both hybrid and in-person work environments have a similar number of daily working hours, but the difference lies in the average number of days spent in person during the week. Hybrid interns average about half of the number of days compared to in-person interns, which is generally expected. Another aspect of the analysis explores whether in-person or hybrid internships are feasible for all students. If they are not, there may be groups of students who have no access to increasing their internship returns.

In order to quantify this question, the survey asks all students who completed a remote internship whether they would have been able to take part in their internship had it been in-person.

Table IV: Internship Completion Rate for Remote Interns if In-person

Would you have been able to complete a summer internship if you worked in person?	Percent
Yes	60%
No	30%
Other	10%

Source: UVA Qualtrics Survey 2024

As Table IV displays, 30% of the remote respondents say that they would not have been able to complete their internship if it had been in-person. As a significant portion of the group, this result raises concerns that remote internships may be limiting returns for those unable to participate in-person. As discussed previously, people from low socioeconomic backgrounds and people from rural areas may be the ones unable to relocate for in-person internships, forcing them to pursue remote ones. Later regression results show that being from a Core Area – defined as a metropolitan core – has a significant positive correlation with many of the return outcome variables. This provides some evidence that those outside Core Areas may not have access to

more valuable internship environments. If so, firms would benefit from updating their internship programs to reach students with decreased access to in-person and hybrid positions. However, this hypothesis requires more research to truly account for the many factors that affect this matter.

Model three of my regression analysis uses coworker and supervisor work environment status: remote, hybrid, in-person, or varied. The survey results displayed in Table V show the breakdown of coworker and supervisor work environments for each internship type.

What was the work environment of coworkers and supervisors?	In-person	Hybrid	Remote
All in-person	70%	0%	0%
All hybrid	0%	72.2%	20%
All online	0%	0%	80%
Varied	30%	27.8%	0%

Table V: Coworker Work Environment by Intern Work Environment

Source: UVA Qualtrics Survey 2024

The survey results show a strong alignment of the internship work environment to that of their coworkers. It is interesting to note that remote internships only came from firms that either had coworkers working fully remotely or hybrid, suggesting that firms hiring remote interns do not seem to practice fully in-person work with full-time employees.

This breakdown will help interpret the Model three regressions, as these models utilize coworker work environments to analyze effects on internship outcome variables. Due to the similarity between the varied and hybrid variables, they are combined into one variable for the regressions.

As discussed previously, I broke the slider variables into three separate outcome categories: long-term outcome, quality of program, and skills gained.

All three outcome return groups factor in relevant slider questions. These slider question variables range from a scale of zero to ten, with ten being a student's full agreement with the slider prompt. The group variable consists of adding their relevant slider question variables together and dividing by the number of variables in order to obtain an average outcome rating. This rating also ranges from zero to ten based on the student's agreement with the grouped outcome slider prompts.

I define the term "Outcome Rating" as the measure of internship returns for each of the outcome groups. This measure ranges from zero to ten, with ten being the maximum return and zero being the lowest. The table below displays summary statistics of the Outcome Rating for the three outcome groups.

Variable	Mean	Std. dev.	Min	Max
Long-Term Outcome	7.802083	2.079308	1.666667	10
Quality of Program	7.0625	2.151382	2.5	10
Skills Gained	7.416667	2.097281	1	10

Table VI: Summary Statistics of Outcome Variables

Source: Qualtrics Survey Data 2024

This data aggregates all work environments, showing that the general average for each outcome group tends to be fairly similar and fairly high. This displays that interns generally think positively about their internship returns. Long-term outcomes have the highest average and smallest deviation. Skills gained outcomes have the second highest average, and quality of the program outcomes have the lowest average, with the most variation among internship experiences. Overall, these summary statistics do not give insight into what makes a successful internship, but rather display the overall results among these variables. A graph of each specific slider variable's summary statistics can be found in <u>Appendix Table VI: Summary Statistics of Slider Variables</u>.

The goal of this study is to investigate the differences in outcomes and returns among separate work environment types. The box plot below displays the summary statistics of the three outcome groups separated by work environment status.





Figure I shows that all three outcome variables are significantly lower in remote work environments compared to hybrid and in-person. Despite many of the return groups having large variations and outliers, the averages for remote work are the lowest of the groups, and in-person internships have larger averages than hybrid. This figure supports the hypothesis that remote work fails to replicate valuable aspects of in-person internship tasks.

Looking at the ungrouped slider variables, I observe similar trends in their averages.



Figure II: Distribution of Slider Variables by Internship Work Environment

Figure II illustrates that some slider questions display more variance than others across internship types, but the same trend as Figure I generally continues. In-person work environments are consistently ranked the highest, closely followed by hybrid work. Remote internships tend to have much lower average rankings for all slider questions.

Looking specifically at full-time return offers – possibly the greatest motivator for students to pursue internships – there is a vast difference in their presence and acceptance between the work environments. Figure III displays these results.

Source: Qualtrics Survey Data 2024



Figure III: Percentage of Full-Time Offers Received and Accepted by Internship Work Environment

Hybrid and in-person work environments have similar percentages of full-time offers received, but remote work's percentage is significantly lower.

Looking at the acceptance of offers further elucidates the quality of the intern's experience, the connections they made within the firm, and how they valued the internship. Interns who have good experiences and feel strongly about the firm are far more likely to accept return offers once they have been issued.

The sample size of remote interns who received offers is likely too small to form accurate results. However, hybrid and in-person interns received similar percentages of return offers, but

Source: Qualtrics Survey Data 2024

there is a significant difference between the percentage of accepted and declined offers; it was much more likely for in-person interns to accept their return offer than hybrid interns.

Section 6.2: Regression Results

I performed the three regression models for each of the outcome variables.

The first outcome variable I tested was the long-term outcome variable. This variable estimates a student's long-term gain from their internship. The results from the regression equations are below:

VARIABLES	(1)	(2)	(3)
Remote	-2.037***	-1.459**	
	(0.674)	(0.621)	
In-person	0.889	0.820*	
L	(0.544)	(0.473)	
Male	()	-0.425	-0.341
		(0.399)	(0.421)
NonPOC		1.138**	1.264**
		(0.465)	(0.483)
First Generation Student		1.859**	1.503*
		(0.834)	(0.875)
Double Major		0.527	0.487
5		(0.413)	(0.438)
Core Area		2.167**	1.705*
		(0.976)	(1.002)
Field of Study Interested In		1.532***	1.622***
2		(0.353)	(0.383)
Num of Working Hours per Day		0.302***	0.314**
		(0.106)	(0.118)
Coworkers all Remote			-1.468*
			(0.776)
Coworkers all In-person			0.388
-			(0.546)
Constant	7.870***	-0.277	-0.0635
	(0.314)	(1.386)	(1.447)
R-squared	0.203	0.568	0.523

Long-term Outcome Regressions:

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Model one uses my most basic equation to estimate the impact of the work environment on the long-term outcome. This model displays a statistically significant negative correlation of remote work on the long-term outcome with a coefficient of -2.037. Model one has a low R-squared value and also displays significance in the constant variable, implying that this model most likely was unable to account for all variables. This is expected since this model does not include any demographic variables about the student or internship.

Model two includes demographic variables while still including the remote and in-person dummy variables. Again, remote work shows a significant negative relationship with the long-term outcome variable, with a coefficient of -1.459. The in-person dummy also is significant with a positive coefficient of 0.82. Among the demographic variables included in this model, I see significance on the NonPOC, First Generation, Core Area, Field of Study Interested In, and Number of Working Hours per Day variables. Core Area displays the largest coefficient.

Model three utilizes the same demographic variables but instead tests the work environment of coworkers and supervisors rather than those of the interns themselves. The same demographic variables display positive statistical significance in this model. The variable for interns having all remote coworkers displays a statistically significant negative coefficient of -1.523. Having remote coworkers is strongly associated with remote internships as shown in <u>Table V</u>.

Model two displays the largest R-squared value at 0.568. This is fairly high, but there can still be other factors influencing these outcomes that were not accounted for. Overall, the demographic variables that display significance agree with past studies on internship returns.

Furthermore, the coefficients on the remote and in-person dummy variables agree with my previous hypotheses.

The same three regression equations were run on the variable for quality of program.

VARIABLES	(1)	(2)	(3)
			, <i>i</i>
Remote	-2.870***	-1.970***	
	(0.653)	(0.671)	
In-person	0.735	0.962*	
	(0.531)	(0.505)	
Male		0.136	0.273
		(0.434)	(0.458)
NonPOC		0.0744	0.233
		(0.532)	(0.553)
First Generation Student		0.637	0.118
		(0.886)	(0.937)
Double Major		0.799*	0.763
-		(0.457)	(0.485)
Core Area		2.287**	1.724
		(1.030)	(1.058)
Field of Study Interested in		1.020**	1.203***
-		(0.399)	(0.430)
Num of Working Hours per Day		0.343***	0.337**
		(0.120)	(0.135)
Coworkers all Remote		× ,	-2.336***
			(0.839)
Coworkers all In-person			0.372
ľ			(0.581)
Constant	7.320***	-0.178	0.141
	(0.318)	(1.587)	(1.659)
R-squared	0.323	0.542	0.493

Quality of Program Outcome Regressions:

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Here, Model one forms results similar to the first model of the previous long-term outcome variable regression. The remote dummy variable had a significant negative coefficient of -2.870, showing that remote internships seemed to lead to lower-quality programs. The R-squared value of Model one is low and the constant once again displays significance given the absence of any other control variables.

Model two finds that remote work has a statistically significantly negative coefficient of -1.970. This is also a slightly higher effect than the coefficient from Model two of the long-term outcome regression. Perhaps this illustrates that the quality of the program is the return outcome most affected by the work environment. Many of the same demographic variables displayed positive significance.

Model three found a significant negative coefficient of all online coworkers of -2.336 on the quality of the program. Because internships with only online coworkers were only reported by remote interns, these results are similar to those from Model one. Also, many of the same demographic variables as Model two display positive, statistically significant correlations. Once again, there is no significant relationship between the quality of the program and strictly in-person coworkers.

Overall, the effect of remote work and remote coworkers has a larger significant impact on the quality of the program compared to the long-term outcome. Additionally, some key demographic variables held significance among both outcome regressions. Core Area, Field of Study Interested In, and Number of Working Hours per Day all emerge as significant demographic variables.

The R-squared value of Model two is the highest at 0.542 which is slightly lower than the long-term outcome Model two, but still fairly large.

Finally, the same three regression equations were run on the variable created to account for skills gained from the internship experience

VARIABLES	(1)	(2)	(3)
Remote	-1.767**	-1.715**	
	(0.720)	(0.791)	
In-person	0.312	0.800	
	(0.572)	(0.601)	
Male		-0.119	-0.0500
		(0.514)	(0.538)
NonPOC		0.279	0.401
		(0.612)	(0.633)
First Generation Student		1.100	0.706
		(1.059)	(1.106)
Double Major		0.968*	0.902
		(0.529)	(0.556)
Core Area		2.472*	2.044
		(1.240)	(1.265)
Field of Study Interested In		1.385***	1.464***
		(0.452)	(0.488)
Num of Working Hours per Day		-0.0338	-0.00814
		(0.135)	(0.150)
Coworkers all Remote			-1.432
			(0.985)
Coworkers all In-person			0.487
			(0.689)
Constant	7.600***	2.349	2.408
	(0.340)	(1.766)	(1.833)
R-squared	0.112	0.304	0.241
R-squared	0.112	0.304	0.241

Skills Gained Outcome Regressions:

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Model one follows the same precedent of the past two outcome models, as the remote work dummy displays a significant negative correlation with the outcome variable. This model has the lowest effect, with a coefficient on remote work of -1.767 compared to the other outcome groups. The coefficient on in-person work is positive but not statistically significant. The first model of this regression once again has a very low R-squared value and finds statistical significance in the constant.

Adding demographic variables to Model two slightly increased the R-squared, but it is still quite low. There is still a significant negative correlation between remote work and the skills gained outcome variable, with a coefficient on remote work of -1.715. The coefficient on in-person work is once again positive but not statistically significant. Double Major, Core Area, and Field of Study Interested In all have positive significant correlations with the skills gained outcome variable. Overall, this model has similar results to the Model two of the other outcome variables but seems less stable.

Model three of the skills gained outcome variable regression looks slightly different than the third model for the other outcome variables. There was no statistical significance found on either of the coworker's work environment variables. Statistical significance was only found in the variable for Field of Study Interested In. The R-squared value of this model was once again quite low.

As a whole, there seems to be less statistical significance among this return variable compared to the others. It seems as though the skills gained outcome variable is the most difficult to predict given the model. Still, there may not be as much variation among internship types and skills gained.

My regression models are then tested on the full-time offer outcome variables. The results of the regression testing the effect of the work environments on the reception of a full-time offer are below:

VARIABLES	(1)	(2)	(3)
Remote	-0.483***	-0.454**	
	(0.172)	(0.188)	
In-person	-0.0333	-0.0805	
1	(0.134)	(0.141)	
Male		-0.233*	-0.208*
		(0.120)	(0.119)
NonPOC		0.236*	0.234*
		(0.139)	(0.136)
First Generation Student		-0.0205	-0.123
		(0.253)	(0.251)
Double Major		-0.0326	-0.0597
5		(0.124)	(0.124)
Core Area		0.351	0.271
		(0.296)	(0.287)
Field of Study Interested In		0.172	0.189*
-		(0.108)	(0.110)
Num of Working Hours per Day		0.0616*	0.0657*
		(0.0318)	(0.0336)
Coworkers all Remote			-0.467**
			(0.222)
Coworkers all In-person			-0.239
-			(0.152)
Constant	0.583***	-0.580	-0.543
	(0.0802)	(0.421)	(0.414)
R-squared	0.115	0.330	0.342

Full-Time Offer Reception Outcome Regressions:

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Model one displays a statistically significant negative coefficient on remote work of -0.483. This coefficient is very powerful as the reception of a full-time offer dummy variable ranges from zero to one, so – for my sample group – remote work is set to decrease an intern's chances of an offer by almost half. Including the demographic variables, Model two finds a similar negative coefficient on the remote work variable and again finds significance on various demographic variables. The presence of a full-time return offer finds a statistically significant negative coefficient on the variables for all coworkers being remote in Model three, due to the aforementioned connection between remote coworker environments and remote internships.

None of the coefficients on the in-person variables display any statistical significance.

Turning to the outcome variable of an intern's acceptance of a full-time return offer, I ran the regression on the acceptance dummy variable.

Full-Time Offer Acceptance Outcome	Regressions:		
VARIABLES	(1)	(2)	(3)
Remote	0.0722	0.156*	
	(0.0757)	(0.0920)	
In-person	0.0222	0.0231	
	(0.0590)	(0.0687)	
Male		-0.0368	-0.0401
		(0.0586)	(0.0602)
NonPOC		0.00483	0.00162
		(0.0678)	(0.0689)
First Generation Student		-0.116	-0.0958
		(0.124)	(0.127)
Double Major		-0.0918	-0.0714
-		(0.0608)	(0.0629)
Core Area		0.0681	0.0895
		(0.144)	(0.145)
Field of Study Interested in		-0.0809	-0.0705
-		(0.0526)	(0.0556)
Num of Working Hours per Day		0.0188	0.00854
		(0.0155)	(0.0170)
Coworkers all Remote		· · · ·	-0.000988
			(0.112)
Coworkers all In-person			0.0327
1			(0.0771)
Constant	0.0278	0.0180	0.0733
	(0.0353)	(0.206)	(0.210)
R-squared	0.014	0.118	0.073

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 All of the regression models that utilize full-offer acceptance as an outcome variable exhibit low R-squared values and do not display much statistical significance. It does not appear that this outcome variable is able to fully address the relationship between work environment and internship returns.

Section 7: Discussion

The results of this study offer valuable insights into internship experiences and their outcomes across various work environments, extending beyond the pandemic era. Despite the prevalence of remote and hybrid internship programs, my survey results find evidence that these types of internships decrease an intern's returns in many of the outcome variables I identified.

I do not find any evidence supporting the hypothesis that remote work allows for better-matched internships among interns and firms. However, I do find evidence that supports the hypothesis that better-matched internships result in greater intern returns. Furthermore, remote internships were the least well-matched internship environment, further supporting the idea that remote work results in lower intern returns.

My analysis delves into fundamental differences between internship programs in each work environment. I observe that in-person internships tend to have the largest average number of working hours per day, and remote internship programs have the lowest. Regression analysis finds that this variable has a positive correlation with internship returns, showing that programs with fewer daily working hours yield lesser returns. This provides further evidence of remote programs leading to lower returns.

My results find evidence that interns pursuing remote internships may be self-selecting due to the inability to pursue an in-person work environment. Though reasons for this are not

explicitly stated, I hypothesize that some students from low socioeconomic backgrounds or rural areas may be the groups affected. My regression analysis finds the dummy variable Core Area – indicating whether the intern is from a metropolitan core – to be significant and positively correlated with internship outcomes.

My regression analysis finds statistically significant negative correlations between remote work and the three groups of return outcomes: long-term outcome, quality of program, and skills gained. Regression Model two finds remote internship work environments have a 1.459 point decrease on an intern's long-term Outcome Rating, a 1.970 point decrease on an intern's quality of program Outcome Rating, and a 1.715 decrease on an intern's skills gained Outcome Rating. The Outcome Rating of the quality of program variable is impacted the most by internship work environments, but in general, remote work has quite a significant effect on the Outcome Rating score for all three slider question groups. <u>Table VI</u> displays the mean and standard deviations of these outcome groups, and majority of the variables observe around a 2 point standard deviation. It is quite significant that remote work is close to one standard deviation away from the Outcome Rating mean for all of these outcome group variables.

I also see statistically significant positive correlations between in-person internship work environments and two of the three outcome variables. Regression Model two displays that in-person work increases long-term return Outcome Rating by 0.820 points and the quality of program Outcome Rating by 0.962 points¹. The skills gained Outcome Rating has a positive correlation with the in-person work environment but is not statistically significant.

Regression Model three, focusing on an intern's coworkers' work environment, finds a statistically significant negative effect between having all remote coworkers and an intern's

¹ Regression Coefficients are interpreted as "points" meaning how much the participant is likely to change their agreement ranking to the slider questions about the internship outcome variable. The scale for these ratings range from zero to ten and their mean and standard deviations can be viewed in Table VI.

long-term outcome and quality of program. Having only remote coworkers decreases long-term Outcome Rating by 1.468 points and the quality of program Outcome Rating by 2.336 points. Having all in-person coworkers is positively correlated with all return groups but does not show statistical significance.

Some demographic variables emerge as significant in internship return outcomes. Key variables include race, whether the intern is from a Core Area, whether the internship fell within a student's field of interest, and the average number of daily working hours. Past studies have also found positive correlation between well-matched internships and positive internship outcomes. I find the same results and notice that Field of Study Interested In has a positive statistically significant relationship with all groups of outcome variables. I also find a positive statistically significant relationship between the average number of daily working hours and most of the outcome variables.

Full-time offer outcomes offer some supportive evidence, as the regression analysis of the reception of a full-time return offer displays statistically significant negative correlations with remote work, with a coefficient of -0.454. It also shows statistically significant negative correlations with coworkers being fully remote, with a coefficient of -0.467. This shows a large decrease in the chances of remote interns receiving full-time employment opportunities from their internships, which is a vital return on investment for internship pursuit.

In conclusion, the study contributes unexplored insights into the dynamics of internship experiences within different work environments. By identifying factors that influence internship outcomes, I hope to provide students, employers, educators, and policymakers with guidance in optimizing internship returns and enhancing internship experiences. This study has shown

significant evidence towards the belief that remote work decreases students' internship returns across multiple outcome groups.

Section 8: Limitations

This study is subject to several limitations that I would like to acknowledge.

Firstly, the findings are primarily applicable to the economics industry and common internships in which economics majors participate. <u>Appendix Table I</u> shows a breakdown of specific fields for which my sample group pursued internships. I expect that the effects of remote work on internship outcomes will vary among industries and that there may be significant differences. However, for the purpose of this paper, a focus on students majoring in economics and the corresponding industries allowed for control and limited variation. Extending this survey to all students would require the implementation of additional control variables to account for many fundamental differences that would arise within the new sample group.

Secondly, my sample group is strictly taken from the University of Virginia. I expect UVA to represent a strong sample group for my research but believe extending the study geographically would lead to increased variance. Student demographics differ drastically by university and college, so there may be slightly different results if looking at a more diverse sample group.

Thirdly, there may be potential selection bias, since my sample group consists solely of students who completed the survey voluntarily. There is a larger population of economics majors at UVA, but not all of these individuals completed the survey. As such, I could not factor their experiences into my findings. Participants' motivations and characteristics may differ between those who had enough initiative to complete the survey and those who did not.

The three limitations above stem from the study's relatively small sample size, including only 66 respondents. A larger, more diverse sample group would better represent the American intern population and likely produce more robust results.

Next, it is difficult to account for all relevant control variables. If provided access to a student's GPA, test scores, work ethic, work and leadership experience, etc., I may have been able to account for more of the variation in internship outcomes.

Additionally, it would be advantageous to conduct a longitudinal analysis to directly compare pre-COVID, during-COVID, and post-COVID internship experiences. Such an approach could provide a better understanding of remote work's effects over time and how the internship market has reacted to the increased viability of virtual work.

One final limitation may arise from the fact that this study surveyed the value that interns gained from their experiences. It would be interesting to also gather information from firms regarding which internship environment provided their company with the most value.

In consideration of these limitations, it is important to approach the interpretation of the findings with prudence.

Appendix Table I: Field of Internships by Internship Work Environment

Which best described the field of your internship?	In-person	Hybrid	Remote
Business and Marketing Analysis	0%	13.9%	12.5%
Consulting	35%	36.1%	12.5%
Data Analysis and Analytics	0%	2.8%	25%
Economics Research	0%	0%	25%
Finance	40%	22.2%	0%
Government and Public Policy	15%	13.9%	12.5%
International Development	5%	0%	0%
Non-Profit and Social Impact	0%	2.8%	12.5%
Other	5%	8.3%	0%

Source: Qualtrics Survey Data 2024

Appendix Table II: Commute Length by Internship Work Environment

How long was your commute?	In-person	Hybrid
Less than 15 minutes	35.3%	16.7%
15 to 30 minutes	29.4%	36.7%

30 minutes to an hour	29.4%	36.7%
Over an hour	5.9%	10%

Appendix Table III: Relocation by Internship Work Environment

Did you relocate for your summer internship?	In-person	Hybrid
Yes	50%	52.8%
No	50%	44.4%
Other	0%	2.8%

Source: Qualtrics Survey Data 2024

Appendix Table IV: Pay for Accommodation by Internship Work Environment

Did you need to pay for accommodation over the summer?	In-person	Hybrid
Yes	30%	42.1%
Yes, but was given a stipend	60%	47.4%
No	10%	10.5%

Source: Qualtrics Survey Data 2024

Appendix Table V: Internship Work Environment Preference by Internship Work Environment

What was your	In-person	Hybrid	Remote
work environment preference for your			
internsnip?			

Wanted to be in person	70%	36.1%	20%
Wanted to be hybrid	10%	58.3%	30%
Wanted to be remote	0%	0%	40%
No preference	20%	5.56%	10%

Appendix Table VI: Full-Time Work Environment Preference by Internship Work Environment

What was your work environment preference for your internship?	In-person	Hybrid	Remote
Wanted to be in person	65%	33.3%	30%
Wanted to be hybrid	25%	63.9%	50%
Wanted to be remote	5%	0%	20%
No preference	5%	2.8%	0%

Source: Qualtrics Survey Data 2024

Appendix Table VII: Summary Statistics of Slider Variables

Agreement Ranking Variable	Mean	Std. dev.	Min	Max
Could receive a strong letter of recommendation	8.169231	2.328957	1	10
Greatly expanded professional network	7.046875	2.722217	0	10

Considerably Strengthened resume	8.092308	2.20598	0	10
The Firm Valued Positive Company Culture and Social Events	7.40625	2.781565	0	10
The Majority of the Day was Spent Communicating with Coworkers	6.063492	2.758407	0	10
Made Meaningful Connections	7.03125	2.856175	0	10
Would Want to Work at a Firm Like the One in the Internship	6.95082	2.877651	0	10
Day-to-day tasks were similar to full-time employee's	7.25	2.397088	1	10
Internship Met or exceeded Expectations	7.28125	2.699022	0	10
Learned many common, useful workplace skills	7.71875	2.214446	2	10





Source: Qualtrics Survey Data 2024



Appendix Figure II: Distribution of Slider Variables by Coworker Work Environment

Source: Qualtrics Survey Data 2024

Official Survey Design:

Distributed on UVA Qualtrics

Link: https://virginia.az1.qualtrics.com/jfe/form/SV_6JSBOImWB0IQTmS

IRB Protocol #6551

- 1. (Internship Electronic Study Information Page)
- 2. Please check this box to indicate that you are 18 or older, that you have read the above information, and that you are willing to take part in the study.

If the box is not checked, cannot proceed with the survey.

- 3. Graduation or expected UVA graduation date (ex. May 2024)
- 4. Did you double major at UVA?

Display this question: if Did you major at UVA? "Yes" is selected

- 5. What was your other major?
- 6. Gender
- 7. Race
- 8. Home Address Zip Code (at time of internship)
- 9. Are you a first-generation college student?
- 10. Did you have a summer internship

Skip to: End of the survey: if "No" is Selected

- 11. Was your summer internship in a field you are interested in pursuing a career in?
- 12. Which best describes the field of your internship?
- 13. What was the hourly pay of your internship?
- 14. Average number of hours spent working per day?
- 15. What was the work environment of your summer internship?

Skip to: Would you have been able to complete a summer internship if you worked in person?: if "Remote (Completely virtual)" is Selected

16. Location of summer internship (City, Abbreviated State) (Ex. Chicago, IL)

- 17. Average number of days spent in-person in-office per week?
- 18. Did you relocate for your internship?

Display this question: if Did you relocate for your internship? "No" Is Selected

19. Were you willing to relocate for your summer internship?

Display this question: if Did you relocate for your internship? "No" Is Not Selected

20. Did you need to pay for accommodation over the summer?

21. Did you have to commute to your summer internship?

Display this question: if Did you have to commute to your summer internship? "No" Is Not Selected

22. How long was your commute?

Display this question: if What was the work environment of your summer internship? "Remote" Is Selected

23. Would you have been able to complete a summer internship if you worked in person?

- 24. What was the work environment of coworkers and supervisors?
- 25. What was your work environment preference for your internship?
- 26. What is your work environment preference for a full-time job?

- 27. Rate how much you agree with the following statements. (0 being don't agree at all and 10 being completely agree)
 - a. I feel as though I could receive a strong letter of recommendation from my internship
 - b. My internship greatly expanded my professional network
 - c. My internship considerably strengthened my resume
- 28. Rate how much you agree with the following statements. (0 being don't agree at all and 10 being completely agree)
 - a. My firm valued positive company culture and social events
 - b. I spent the majority of the workday communicating with other coworkers
 - c. I made meaningful connections at my firm
 - d. I would want to work at a firm like the one I interned for
- 29. Rate how much you agree with the following statements. (0 being don't agree at all and 10 being completely agree)
 - a. My day-to-day tasks were similar to full-time employee's
 - b. My internship met or exceeded my expectations for a summer internship
 - c. I learned many common, useful workplace skills

30. Did you receive a full-time offer at the firm where you interned? Display this question: if Did you receive a full-time offer at the firm you interned? "No" Is Selected

31. Did your firm give any return offers?

Display this question: if Did you receive a full-time offer at the firm you interned? "Yes" Is Selected

- 32. Did you accept the offer?
- 33. Any other comments on your intern experience?

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