

Inequality in Internships

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Preliminary and Incomplete

How unequal is access to internships, and what explains the inequality? Using Dutch administrative data, we show that the richest university students are 50% (7.5 percentage points) more likely to complete an internship than their poorest peers. This inequality matters, as the literature has found long-term wage returns to doing an internship between five and ten percent, and we show that internships contribute to 5% of the intergenerational income inequality. In our paper, we investigate the factors that explain differences in which students choose to pursue internships. High school exam scores don't explain any of the inequality between rich and poor; however, selection into university programs accounts for 23% of this inequality. We then study the importance of family connections using a causal design that compares siblings and find that these connections explain at least 9% of the inequality. Lastly, we provide evidence that the opportunity costs of doing an internship may also be important.

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1 – Introduction

Education has long been regarded as the “great equalizer”: a pathway through which children from less privileged backgrounds can achieve upward mobility (Mann 1848). Yet despite substantial growth in educational attainment over recent decades (Goldin and Katz 2008), intergenerational inequality remains high (Chetty et al. 2014; Chetty, Grusky, et al. 2017). Even among educated individuals, children from wealthier families earn significantly more in the labor market later in life (Zimmerman 2019; Chetty et al. 2020; Chetty, Deming, and Friedman 2025).

In this paper, we propose that internships are a key mechanism perpetuating this inequality. Once limited to professions like medicine and law, internships have spread across disciplines and countries over the past few decades (Stewart et al. 2021). In the United States, for example, participation rates have doubled since the 1990s, and similar expansion has occurred across Europe (NACE 2018). In the Netherlands, more than 15% of university students now intern during their studies. Students pursue internships to gain hands-on experience, explore potential careers, and build professional networks. Employers, in turn, use them as extended screening periods and as a means of recruiting recent graduates (Baert et al. 2021; Oswald-Egg and Renold 2021). What was once an optional credential has become a near-essential stepping stone to a good career (Nunley et al. 2016; Wright and Mulvey 2021).

Yet unlike formal education, which governments subsidize and regulate to promote access, internships remain largely unregulated (Owens and Stewart 2016; Hunt and Tzanakou 2021; Stewart et al. 2021). Students must navigate informal networks to find opportunities. Once offered a position, they are paid well below the minimum wage, if at all. This lack of oversight creates fertile ground for family advantages to compound. Who gets an internship increasingly depends on family background rather than individual merit (Wright and Mulvey 2021).

In this paper, we document socioeconomic inequality in internship access and decompose its sources. We use administrative data from the Netherlands, where a unique institutional feature requires internships to be reported to the government for approval. This allows us to identify internship participation among all university students. We find that students from the highest-

income families are 50% more likely to intern than those from the lowest-income families (7.5 percentage points). Our analysis quantifies the primary drivers of this gap, offering a detailed account of how family background shapes access to opportunity within higher education.

We decompose the socioeconomic gradient into four potential mechanisms. The first is selection. Students from wealthier backgrounds sort into programs and universities where internships are more common, such as business and law in cities like Amsterdam and Rotterdam, rather than humanities at smaller institutions. Comparing students within the same university program flattens the gradient, but only modestly. Selection accounts for 23% of the gap, and most of the inequality persists even among students enrolled in the same degree programs.

Next, we examine family connections. The administrative data allow us to identify all students' relatives and their workplaces. Students from wealthier backgrounds have more connections to industries that offer internships. To assess whether these connections matter causally, we compare siblings studying different fields who differ in whether they have a relevant connection, defined as a family member working in an industry where internships are common for that field of study. The effects are highly heterogeneous. On average, having a connection raises internship participation by 1.1 percentage points, though the effect is significant on aggregate only for master's students. This mechanism accounts for an additional 9% of the gradient.

A natural concern is that both selection and connections are correlated with ability. Perhaps wealthier students are better prepared or more capable, leading to higher rates of internship participation. We test this directly using high school exit exam scores. These scores are highly correlated with parental income and predict future wages well, suggesting they capture meaningful information about ability. Yet when we add them into our analysis, we find a precisely zero effect. Controlling for exam scores does not attenuate the gradient at all.

With selection, connections, and ability accounting for roughly a third of the gradient, a substantial portion of the gradient remains unexplained. We present evidence that opportunity costs play an important role. In the Netherlands, internships pay around €400 per month on average, three times less than student jobs in retail and hospitality, which typically pay the minimum wage. Lower-income students are far more likely to take these “survival jobs” to cover living expenses, forgoing

the career-relevant experience an internship provides. This trade-off constitutes a substantial barrier to equal opportunity within higher education and, subsequently, in the labor market.

This inequality is important given the labor-market returns to internships. Prior research documented wage premiums of 5–10% on average (Oswald-Egg and Renold 2021; Margaryan et al. 2022), and résumé audit studies find higher callback rates for applicants with internship experience (e.g., Nunley et al. (2016), Baert et al. (2021), Jaeger et al. (2023), and Arellano-Bover et al. (2026)). In our setting, roughly one in four interns transition to full-time employment at their internship firm after graduation, at firms that are, on average, higher paying and larger. These substantial returns, combined with unequal access, account for approximately 5% of the persistence of inter-generational inequality among university graduates seven years after graduation. Internships, as it appears, represent a mechanism through which socioeconomic advantages perpetuate across generations.

This paper contributes to four strands of related research. First, we contribute to work on inequality in access to education. A large body of research has documented that family background shapes educational trajectories. Children from the top one percent are 77 times more likely to attend Ivy League colleges than those from the bottom quintile (Chetty, Friedman, et al. 2017), gaps driven partly by legacy admissions and non-academic recruitment (Chetty, Deming, and Friedman 2025). Even among high achievers, students from low-income backgrounds are less likely to apply to selective institutions, often simply because they lack information about their options (Hoxby and Avery 2012; Hoxby and Turner 2015). We show that similar inequalities exist within higher education, operating through internships. Descriptive surveys have documented that lower-income students participate at lower rates (O’Connor and Bodicoat 2017; Hunt and Scott 2020; Shandra 2022), but we are the first to measure this gap using administrative data and decompose it into its determinants.

Second, we contribute to the literature on firm training. A central question here is why firms invest in workers at all. Market frictions have been argued to let firms capture some returns from training, making investment worthwhile despite worker mobility (Acemoglu and Pischke 1998, 1999). Empirical work has largely focused on formal apprenticeship systems, documenting both

the costs and benefits to firms (Dionisius et al. 2009; Muehlemann and Wolter 2014) and the wage returns to workers (Fersterer, Pischke, and Winter-Ebmer 2008; Riphahn and Zibrowius 2015). But apprenticeships differ from internships in important ways: wages are collectively bargained, training is standardized, and credentials are portable (Wolter and Ryan 2011). These features leave aside questions that matter for internships: which workers can afford to get training in the first place? Internships represent an unregulated training market where compensation, content, and access are left to bilateral negotiation. We contribute by decomposing barriers to accessing these opportunities, showing that inequality is driven not only by who can benefit from training but also by who can afford to participate.

Third, we contribute to the literature on intergenerational mobility. Identifying specific mechanisms through which economic advantages persist across generations is essential for policy aimed at increasing equal opportunity (Solon 1999; Black and Devereux 2011). Foundational research shows that, among others, education (Goldin and Katz 2008), neighborhoods (Chetty and Hendren 2018), and family structure (Chang et al. 2025) play important roles. Yet substantial outcome gaps persist even among individuals with similar credentials. Recent studies have begun to examine within-education mechanisms that generate earnings differences among graduates, such as field of study (Kirkeboen, Leuven, and Mogstad 2016) and institution quality (Dale and Krueger 2014; Zimmerman 2019). We quantify internships as a distinct channel of intergenerational transmission. Differential access accounts for approximately 5% of income persistence seven years after graduation. For a single, time-limited mechanism, this is a meaningful share. It also suggests that policies that improve access to internships could have significant effects on mobility.

Lastly, we contribute to the literature on networks and referrals in labor markets. Social connections shape how labor markets operate: a large share of workers find jobs through referrals, which in turn affects who gets hired, at what wage, and for how long (Ioannides and Loury 2004). Studies using administrative data have traced the mechanisms behind these effects. Neighborhood networks connect workers to higher-paying firms (Bayer, Ross, and Topa 2008; Schmutte 2015). Social connections influence how workers sort across employers (Eliason et al. 2023). Employee referrals improve match quality and reduce turnover (Brown, Setren, and Topa 2016; Friebel et al. 2023). Access to online social networks during college is associated with higher later earnings

(Armona 2025).

When networks are segregated, they can also reinforce inequality (Bolte, Jackson, and Immorlica 2020). Family networks, in particular, transmit labor market advantages across generations. A large share of young workers find their first full-time job at a parent’s firm, and this intergenerational transmission of employers correlates strongly with parental earnings (Corak and Piraino 2011; Kramarz and Skans 2014; Staiger 2021). Parents also use their connections to buffer children against labor market shocks (Kaila, Nix, and Riukula 2025). But this literature focuses primarily on networks that operate at or after labor market entry. We show that family connections matter earlier, shaping access to career-building opportunities while students are still enrolled. Network advantages, it seems, compound educational investments even before young people enter the labor force.

The remainder of the paper proceeds as follows. Section 2 describes the institutional setting for internships in the Netherlands. Section 3 introduces our data and documents the socioeconomic gradient in internship participation. Section 4 decomposes this gradient into its underlying mechanisms. Section 5 examines the implications for intergenerational inequality. Section 6 discusses policy implications and concludes.

2 – Internships in the Netherlands

2.1. *Higher Education*

In the Netherlands, the higher education system distinguishes research-oriented universities (*wetenschappelijk onderwijs*, or WO) from universities of applied sciences (*hoger beroepsonderwijs*, or HBO) (Government of the Netherlands 2026a). In this study, we focus on research universities. This distinction is critical for understanding how internships in the Netherlands are treated under the two systems.

Research universities (WO) offer academically oriented programs in which bachelor’s programs last three years, and master’s programs last at most two years. Admissions require pre-university

secondary education and emphasize scientific thinking and problem-solving (Nuffic 2026). Internships at research universities are generally optional. When WO students intern, they decide whether and where to apply for positions (e.g., Vrije Universiteit Amsterdam (2026)).

Universities of applied sciences (HBO), in contrast, are by nature vocationally oriented. They last four years, and internships are mandatory. HBO students usually complete a work placement of nine months in their third year, and the placements are *required* for graduation (Nuffic 2026).

In this study, we focus on research university students, as internships are optional. The socioeconomic gradient, therefore, cannot be attributed to differences in curriculum and reflects students' choices. At HBO institutions, where internships are compulsory, all students must participate regardless of background, limiting variation in access but potentially raising questions about the extensive margin of *which* firms different students intern in.

2.2. Legal Framework

Internships in the Netherlands are distinguished from regular employment based on the purpose assigned to them. It must focus on learning rather than production, because when a worker performs productive work, they are legally entitled to the minimum wage and other standard employment protections. The Netherlands Labor Authority is the body responsible for monitoring this distinction and can fine firms misclassifying workers (Government of the Netherlands 2026b).¹

Although employers are exempt from paying the minimum wage to their interns, they typically provide an allowance, which is entirely discretionary. This contrasts with a standard job, which must pay at least the statutory minimum wage, currently approximately €13 per hour for workers aged 21 and above (Government of the Netherlands 2026b).

1. Transavia airline is one recent example, where the firm classified as interns 60 students performing production tasks. The labor inspection has fined Transavia €46,000 and required it to pay outstanding wages and allowances to the students, totaling €623,000 (L&E Global 2026).

2.3. *Costs of Interning*

Pursuing an internship imposes both direct and indirect costs on students. To qualify as interns, students must remain enrolled at the university throughout. Annual tuition fees run approximately €2,600 for EU students, so a six-month internship undertaken outside the standard curriculum, which is standard practice in the Netherlands, adds roughly €1,300 in tuition if it extends the study period ([Dienst Uitvoering Onderwijs \(DUO\) 2026](#)).² Students also forgo earnings from regular employment. Working part-time at minimum wage, a student can earn around €1,200 per month, roughly three times the typical internship allowance. Over a five-month internship, this implies forgone earnings of €3,000–4,000.

Combined with potential tuition costs from study delay, the total cost of an internship can exceed €5,000. Students from affluent backgrounds can absorb this as a career investment. Those who rely on employment income to cover living expenses cannot. These opportunity costs are particularly salient in the Netherlands because of the structure of student finance.

The Dutch student finance system has provided grants and loans to eligible students, but has changed over the years. Until January 2015, a universal grant was in place, which every Dutch student received, amounting to approximately €100 per month for students living at home and €300 for those living alone. After 2015, the government abolished this universal grant and only retained the means-tested supplement, which was already in place before, capped at approximately €450 and declining continuously with parental income ([Ministerie van Financiën 2015](#)). In its place came a loan system that allowed all students to borrow up to €1,000 per month at zero interest. Even so, grant amounts remain insufficient to cover students' likely living expenses. In our sample, 20% of students are eligible for part of the supplementary grant, while only 9% are eligible for the full amount ([SER 2021](#)).³

We present descriptive evidence consistent with the importance of opportunity costs in [Section 4.4](#),

2. Non-EU students face substantially higher institutional tuition fees, but are not represented in our analysis as we cannot classify their parental income.

3. The Dutch government has recently reinstated the grant system, abolishing the loan procedure ([DOU 2023](#)). Students who studied under the loan regime are receiving approximately €1,000 in compensation, though many report accumulated debts ten times that amount ([The Herring 2022](#)).

showing that lower-income students are more likely to work in what we call “survival jobs”: positions in retail, hospitality, and food service that offer higher immediate pay but limited career value.

2.4. Finding an Internship

The route to pursuing an internship differs between vocational and research university students. In vocational education, the Dutch government mandates practical training components, and an infrastructure supports placement. Accredited training companies all register on a centralized platform ([Stagemarkt.nl](https://stagemarkt.nl)), and the universities support the students in matching their students to the internships. Research university students lack such a system and must navigate the internship market largely on their own (OECD 2024; [Government of the Netherlands 2021](#)).

Universities provide some support, though it varies across institutions and fields of study. Career services offices typically provide resume workshops, interview preparation, and, in some cases, databases of firms that have previously hosted interns from the program ([Nuffic 2025](#)). The student is responsible for identifying opportunities and submitting their applications.

Another way in which universities offer a route to employer exposure is through career fairs. [Delft Career Days](#) draws close to 180 companies and 3,000 students annually, focusing on technical careers, while the [University of Twente’s Business Days](#) attracts similar crowds from engineering and science programs. Economics and business students can attend events organized through student associations, such as the [LED career day](#) coordinated by the Landelijke Orgaan der Econometrische Studieverenigingen (LOES), which rotates host universities each year. Broader events like the [Erasmus Recruitment Days](#) in Rotterdam and [Amsterdam Career Days](#) serve mixed audiences across fields.

The decentralized nature of this market carries implications for access to internships. When positions circulate through personal networks before reaching public job boards, students with professional connections gain early access. When firms recruit informally rather than through standardized processes, the ability to identify relevant opportunities becomes itself a valuable skill—one that may correlate with family background. When career services vary in quality across

universities and faculties, students at well-resourced institutions hold an advantage. We return to these dynamics in Section 4.2, where we estimate the extent to which family connections contribute to the socioeconomic gradient in internship participation.

3 — Data Description

We use administrative data from Statistics Netherlands (CBS). The CBS data are crucial for answering our research question because, unlike many other data sources, they specifically distinguish internships from other types of employment. Moreover, they provide high-quality information on people’s employment, education, personal and household income, relatives, and more.

Our sample consists of all 852,690 students at Dutch research universities who started a total of 1,173,177 Bachelor’s or Master’s degrees between 2006 and 2020. We can observe when students enroll and dis-enroll, and in which program at which university they enroll. Each program is uniquely identified and can be categorized according to its degree level and field of study. We also see the students’ secondary school final exam grades that are the basis for university admissions.

The education data is linked to data on all employment relationships in the Netherlands that are covered by payroll tax. The employment data contains monthly information on any work a student does during or after their studies, including detailed information on salaries, working hours, overtime, contract types, and more. We also observe the employing company, its size, location, and industry. Most importantly, there is a specific variable that identifies internships.

We also have data on all parent-child and sibling relationships, as well as registered partnerships. With these data we can identify all family members of the students in our sample, including relatives in-law. The data on education and employment mentioned above is also available for the family members.

We use household income data to measure a student’s socioeconomic background. Specifically, we identify which of the student’s parents has a higher average household income in the five years

leading up to the student's enrollment. Then we use that income to create the parent's percentile rank among all parents of other students who enrolled in the same year. We use personal labor income on the other hand to measure a student's post-graduation earnings.

Table 1 shows that internships in the Netherlands are common. Around 10 percent of bachelor's students and 26 percent of master's students complete one during their degree. These typically involve a full semester of work, meaning students interrupt their studies and other employment to participate.⁴ The timing varies by degree level. More than half of bachelor's internships occur after the standard three-year program, while the vast majority of master's students intern within their two years of study. Pay, meanwhile, is low: the average hourly wage of €3.10 falls well short of the 2016 minimum wage of €8.80.

How common internships are varies by the field of study. Among Bachelor's degrees, it's the Business, Economics, and Law students who are more likely to do an internship compared to Science, Mathematics, and Health students. Among Master's degrees, internships are more common across all fields, but particularly common in STEM subjects. On the other hand, internship pay and hours are similar across all fields.

Which firms do students do internships at? Roughly 40% of internships are done in either the public sector or the broad consulting sector (accounting, IT, strategy consulting, etc.). Table 2 shows that the typical internship firm is medium-sized and high-paying.

Moreover, 26% of interns convert an internship into a permanent position at the same company. The high conversion rate coupled with the fact that internships are done at high-paying companies suggest that internships serve as a stepping stone into the labor market. Through internships students can find work at better-paying firms, and then try to convert the internship into a better-paying permanent position.

The focus of our paper will be on the question of who does internships. The internship gradient in Figure 1 shows that rich students do more internships than poor students. Specifically, a student whose parents earn a household income in the highest percentile is 50% more likely to do an

4. For a 35-hour week, the average month has 152 working hours.

Table 1 — Internship Descriptives

Year	Internship Rate	Pay in €	Hours	Months	Hourly Pay in €	Observations
<i>Bachelor's Degree</i>						
1st Year	0.55%	363	110	5.49	5.04	578,365
2nd Year	1.65%	347	119	2.23	3.67	578,365
3rd Year	3.50%	354	125	5.04	3.16	521,724
4th+ Year	4.90%	442	140	4.84	3.39	308,014
Full Degree	9.9%	417	137	4.93	3.33	579,484
<i>Bachelor's Degree — by Field</i>						
Business and Economics	13.3%	482	143	5.65	3.58	100,077
Health and Social Services	3.5%	278	106	4.64	3.36	83,651
Humanities and Social Sciences	10.5%	346	133	5.22	2.96	202,447
Law and Public Order	14.6%	522	144	3.92	3.84	81,108
Maths, Science and IT	4.1%	419	131	5.44	3.61	42,607
Technology	9.6%	403	141	4.66	3.09	59,231
<i>Master's Degree</i>						
1st Year	12.7%	387	127	6.41	3.39	591,534
2nd Year	11.2%	461	149	6.29	3.29	457,782
3rd+ Year	4.5%	467	151	5.95	3.32	244,164
Full Degree	25.9%	463	149	6.15	3.30	593,689
<i>Master's Degree — by Field</i>						
Business and Economics	24.8%	565	155	7.43	3.83	117,078
Health and Social Services	16.8%	366	137	4.81	2.98	89,416
Humanities and Social Sciences	26.9%	332	127	6.13	2.91	156,951
Law and Public Order	26.1%	605	160	4.18	4.11	80,937
Maths, Science and IT	29.7%	530	173	7.17	3.21	41,528
Technology	38.9%	552	178	7.41	3.31	67,487

internship than a student whose parents are in the lowest percentile.

4 — Decomposing the Gradient

Why do rich students do more internships? To answer this question we decompose the internship gradient into several potential candidate explanations. First, the gradient could reflect selection into fields of study, universities, and specific programs. Second, rich students may have better connections that facilitate access to internships. Third, richer students may be more intelligent and companies simply recognize that in their hiring. Fourth, opportunity costs may matter more for poor students, who face greater liquidity constraints and cannot afford to forgo paid work in

Table 2 — Internship Firm Descriptives

	Mean Firm Size	Median Firm Size	Wage Percentile
Internships	3800	600	65
Student Jobs	4600	120	35
All Jobs	4200	110	53

Notes. We construct firms' wage percentiles by regressing wages on firm and year fixed effects using the universe of all Dutch employment contracts, and then ranking firms according to their fixed effect coefficient.

favor of a badly-paid internship. We address each of these explanations in turn.

4.1. Selection into Programs

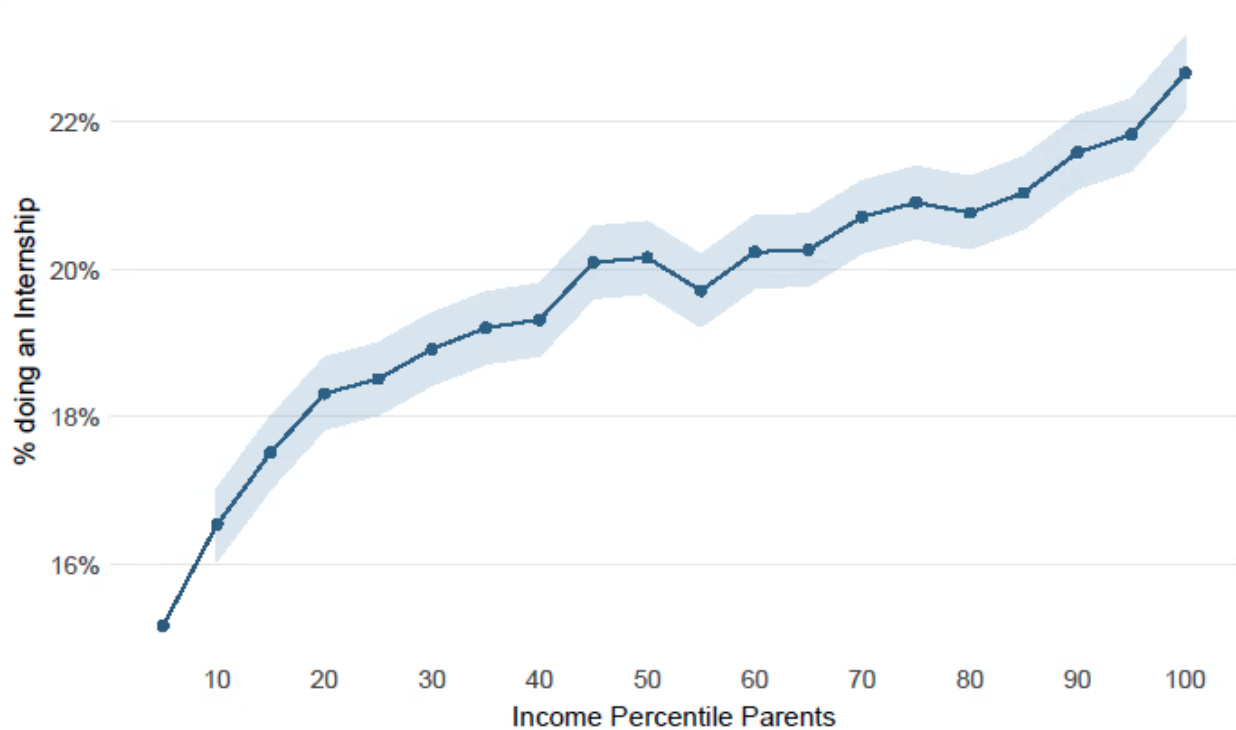
Part of the internship gradient could be explained by differential selection into fields of study, universities, and degree programs. If richer students systematically enroll in programs where internships are more common, this compositional difference would generate a gradient even absent any within-program inequality.

Internship rates vary dramatically across fields, as seen in Section 3. Among master's students, 39 percent in technology complete an internship, compared with 17 percent in health and social services. Business, economics, and law fall somewhere in between. These differences are large enough that sorting across fields could, in principle, account for much of the gradient we observe.

We quantify the role of selection by examining how the gradient changes when we control for different measures of choice. Figure 2 presents the results of this residualization exercise. Compared to the unconditional gradient, controlling for the university reduces the gradient by 9%, and controlling for the specific university program reduces the gradient by 23%. The gap between these two numbers is telling: field of study matters more than the institution itself.

Geography may compound this sorting. Universities near Amsterdam, Rotterdam, and Utrecht sit closer to firms that offer internships, and programs in these cities likely provide more opportunities. Students from wealthier families may find it easier to afford housing in these expensive urban centers, or may have grown up nearby. To the extent that the program fixed effects capture

Figure 1 – Internship gradient



Notes. Point estimates and 95%-confidence intervals from a regression of an internship dummy on parental household income ventile (1-20) fixed effects, controlling for degree level (Bachelor's/Master's).

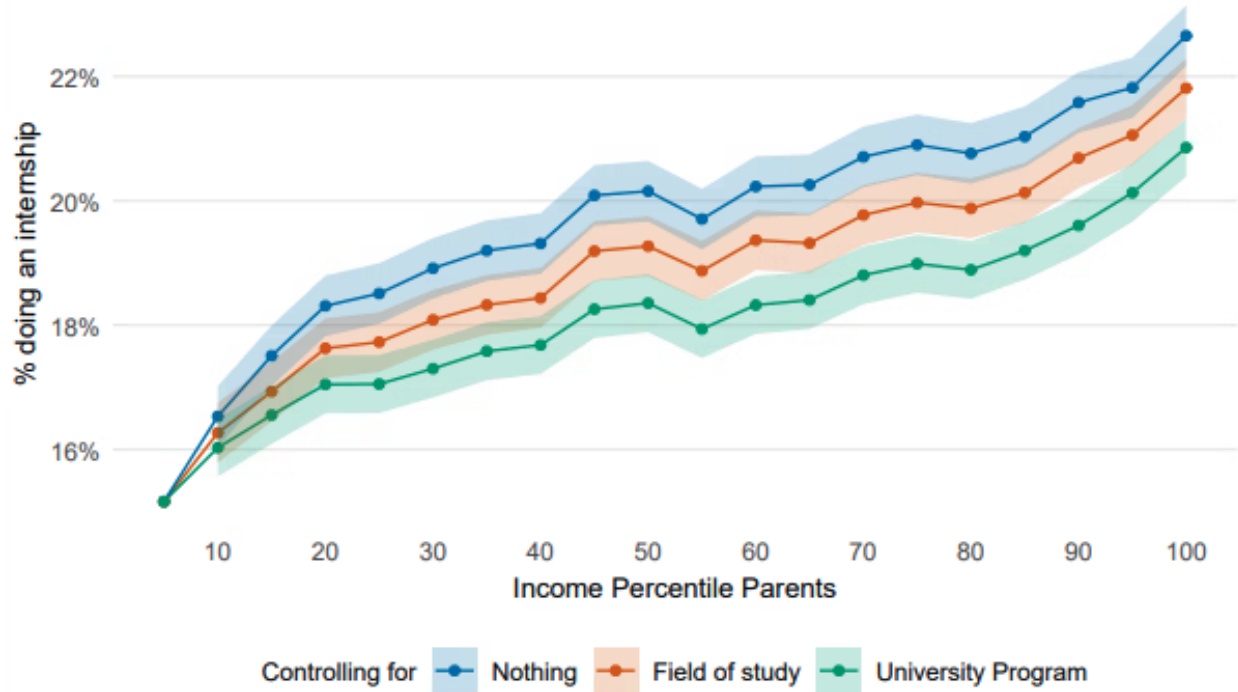
location as well as field, some of the 23 percent may operate through this channel.

However, this gap could also capture differences in information and guidance: richer students may attend better secondary schools that provide career-oriented advice on which university programs offer strong internship opportunities. Regardless of the underlying mechanism, selection accounts for less than a quarter of the gradient. The remaining 77 percent reflects inequality that persists among students enrolled in identical programs at the same universities. Something beyond compositional sorting is driving the gap.

4.2. Family Connections

A common narrative suggests that obtaining an internship is often about “who you know.” If students from wealthier families have better professional networks through their parents and

Figure 2 — Gradient Residualization Selection



Notes. This figure shows how the internship gradient changes as we control for selection into fields of study or degree programs. The blue line represents the original gradient (Figure 1). Subsequent lines show the gradient after residualizing on different measures of selection.

relatives, this could contribute to the internship gradient.

We construct a measure of family connections based on the industries in which a student's family members work. For each field of study, we first identify the industries where students in that field typically complete internships. A student is then classified as having a connection if any of their family members work in one of these field-relevant industries. For example, a law student whose parent works at a law firm would be classified as having a connection, while a medicine student whose parent works at a law firm would not. Accordingly, we define an internship as a relevant internship if it takes place in a field-relevant industry. This helps us to isolate how a connection helps to find an internship in the same industry as the connection works in.

Figure A1 shows how the gradient changes when we control for whether a student has a connection and for the number of connections they have. Accounting for connections reduces the gradient by

8 percent. Of course, this is only a correlation: students with connections may differ from those without in unobserved ways that independently affect internship participation.

To estimate the causal effect of having a connection, we exploit within-family variation by comparing siblings. Specifically, we focus on sibling pairs who study in different fields or at different times. Because the relevance of a family connection depends on a student’s field of study, one sibling may have a connection while the other does not, even though they share the same family network. This within-family variation allows us to identify the causal effect of connections net of all family-level confounders.

We estimate the following regression:

$$\text{Internship}_i = \alpha + \beta \text{Connection}_i + \gamma_f \text{Family}_f + \lambda_{su} \text{Study Field}_s \times \text{University}_u + \theta_y \text{Year}_y + \epsilon_i \quad (1)$$

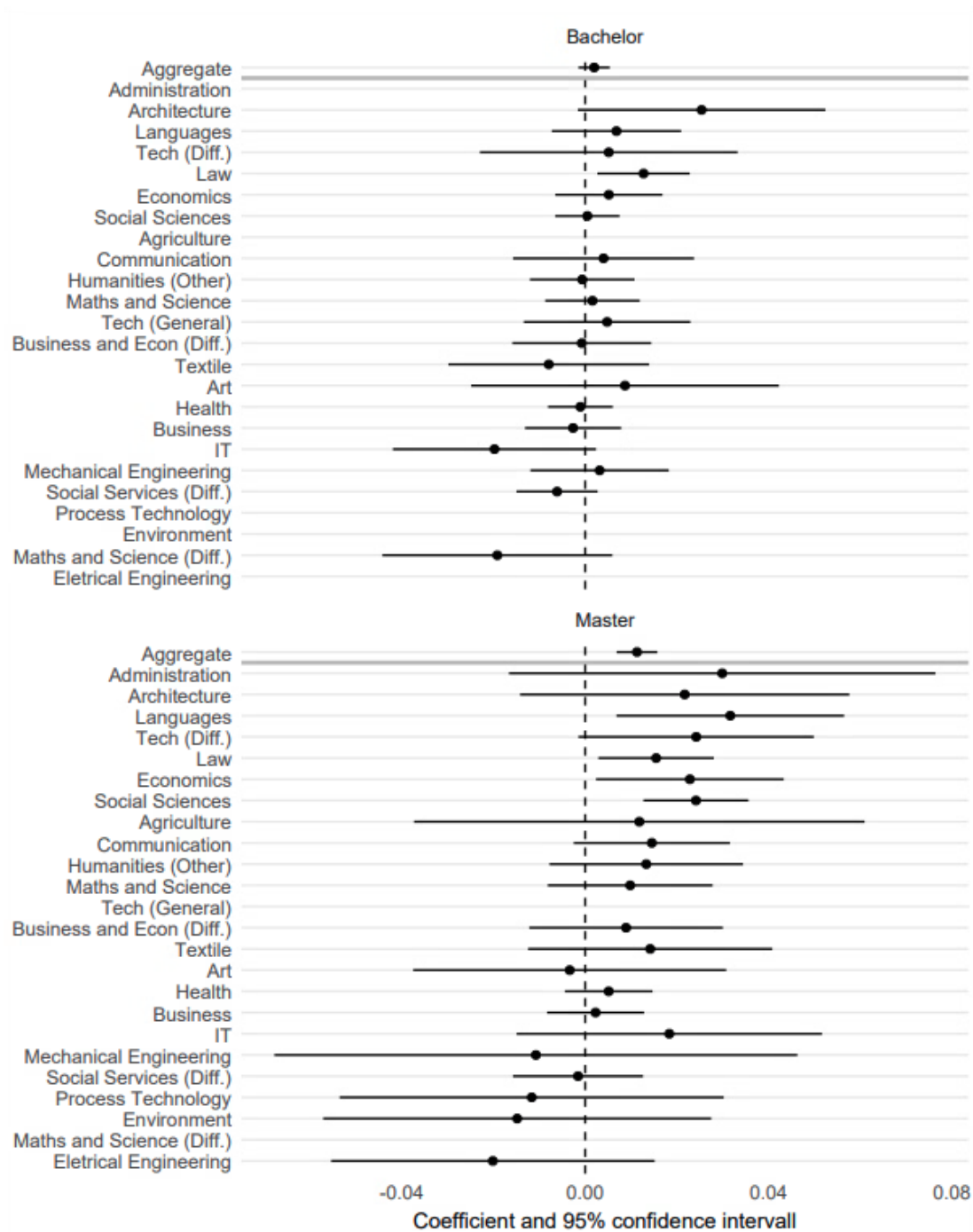
The coefficient β captures how much more likely a student with a connection is to obtain an internship, relative to their sibling and relative to other students who study the same field at the same university.

We find no significant effect for Bachelor’s students, but a statistically significant effect of 1.1 percentage points for Master’s students. Given baseline internship rates, this corresponds to approximately a five percent increase in the likelihood of completing an internship. While the average effect is modest, the importance of connections varies substantially across fields of study. Figure 3 presents heterogeneous treatment effects by field. In many fields, connections have no detectable effect. However, in others, having a family connection raises the probability of completing an internship by 10–15 percentage points.

To quantify the aggregate contribution of connections to the internship gradient, we construct a counterfactual in which every student has a connection. For students who currently lack a connection, we add the relevant field-specific treatment effect to their internship probability. We then recalculate the gradient under this counterfactual. Figure 4 compares the original and counterfactual gradients.

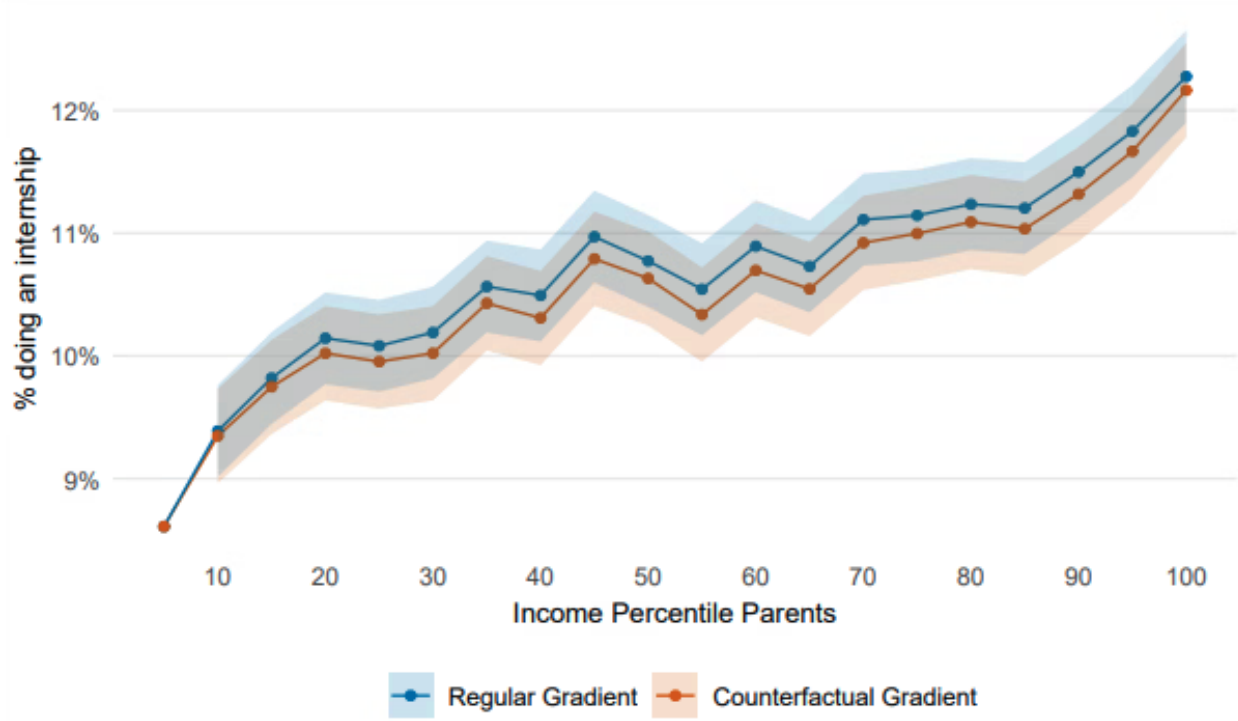
To formally test whether the counterfactual gradient is significantly flatter than the original, we

Figure 3 – Connections Treatment Effect by Field



Notes. This figure shows heterogeneous treatment effects of having a family connection on internship completion, interacted by degree level and field of study. Estimates are obtained from a sibling fixed effects specification. Confidence intervals are at the 95 percent level. Standard errors are clustered by family.

Figure 4 – Counterfactual Gradient Residualization



Notes. This figure compares the original internship gradient with a counterfactual gradient in which all students are assigned a family connection. The counterfactual is constructed by adding field-specific treatment effects to the internship probability for students without connections. Displaying point estimates and 95% confidence intervals.

stack the dataset twice: once with the actual internship outcome and once with the counterfactual outcome. We then estimate:

$$\text{Internship}_{is} = \beta_1 \cdot \text{Percentile}_i + \beta_2 \cdot \text{CF}_s + \beta_3 \cdot (\text{Percentile}_i \times \text{CF}_s) + \varepsilon_{is} \quad (2)$$

where s indexes the stacked version (original or counterfactual) and CF_s is an indicator for observations from the counterfactual dataset. The coefficient β_3 on the interaction term tests whether the slope of the gradient differs between the original and counterfactual scenarios. Table A1 presents the results. The interaction term is statistically significant, confirming that the counterfactual gradient is indeed flatter. Based on this specification, we estimate that family connections explain 9.1 percent of the internship gradient.

4.3. Ability

A straightforward explanation for the internship gradient is that richer students are more intelligent on average and companies simply recognize that in their hiring. This would imply that ability plays a role in shaping the internship gradient.

Unfortunately, we cannot observe ability. Instead, we proxy for ability using scores from the nationwide standardised secondary school graduation exams in the Netherlands. All students sit exams in mathematics, Dutch, English, and history plus other subjects that depend on their chosen focus. The exams are administered uniformly nationwide and, unlike teacher-assigned grades, they offer a consistent benchmark of academic performance right before students enter university.

Do these scores capture anything real? Table 3 suggests they do. Regressing post-graduation earnings on exam performance yields positive and significant coefficients that increase over time: a one-standard-deviation increase predicts a 2.3 percent higher wage at three years, rising to 5.1 percent at seven years. The scores also correlate with parental income. One standard deviation maps to roughly 2.4 percentiles in the family income distribution. Whether this reflects nature or nurture matters less here than the implication: if ability explains the internship gradient, and exam scores capture ability, then adding them to our regressions should attenuate the gradient.

Table 3 – Exam scores predict own future income and parental income

	Post-graduation labor income (log)			Parental income
	(1) after 3 years	(2) after 5 years	(3) after 7 years	(4) HH income percentile
Std. central exam score	0.023*** (0.004)	0.032*** (0.005)	0.051*** (0.006)	2.371*** (0.040)
Year FE	Yes	Yes	Yes	No
Observations	283,759	180,422	113,925	422,044

Notes. OLS estimates. In columns 1-3 outcomes are log labor income measured 3, 5, and 7 years after graduation. In column 4 outcome is the parental household income percentile. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4 presents the results. The baseline gradient in column (1) shows that moving from the bottom to the top of the parental income distribution raises internship probability by 7.1 percentage

points. Add exam scores in column (2). The coefficient holds steady at 7.1 percentage points; the standard error barely changes. These findings suggest that ability differences, at least as captured by high school exam performance, do not explain why students from higher-income families are more likely to complete internships.

Table 4 — Ability regression

Outcome: Doing an internship		
	(1)	(2)
Income Gradient (0–1)	0.071*** (0.012)	0.071*** (0.010)
Std. HS Exam Score		0.002 (0.002)
Uni Program FE	×	×
Num. Obs.	654 273	654 273

Notes. OLS estimates. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

One concern in this analysis is that exam scores may fail to capture important dimensions of ability. They measure performance on standardized academic tests rather than soft skills such as social abilities. If these, unobserved qualities correlate with family background, ability, broadly defined, might still drive the gradient, even though our narrow proxy does not.

4.4. Opportunity Costs

Many Dutch students work in regular jobs during their studies. We argue that such regular jobs are a relevant opportunity cost for doing an internship. Regular jobs are defined as any work done by a student that is not classified as an internship and hence, must pay at least the minimum wage. If liquidity constraints prevent poor students from forgoing their regular jobs in favor of internships, opportunity costs could contribute to the internship gradient.

Figure 5, Panel A provides suggestive evidence consistent with this hypothesis. While there is a steep positive gradient in internship participation, the gradient for regular jobs is much

flatter. This pattern suggests that students from lower-income backgrounds substitute toward paid employment rather than internships.

To dig deeper, we distinguish between two types of regular jobs: relevant jobs that are related to one's field of study, and survival jobs in sectors such as retail and hospitality. To classify jobs as relevant, we use data on post-graduation employment to identify the most common industries that graduates from each field of study work in. We then apply this field-specific list to current students: a regular job is classified as relevant if the student works in an industry that is common among graduates from their field of study. A job is classified as a survival job if it is in an industry that is more associated with side jobs than a postgraduate career⁵. Panel B shows that richer students are somewhat more likely to work in relevant jobs, while poorer students are substantially more likely to work in survival jobs. This pattern is consistent with the view that liquidity constraints push poor students toward career-irrelevant employment, at the expense of internships or relevant work experience.

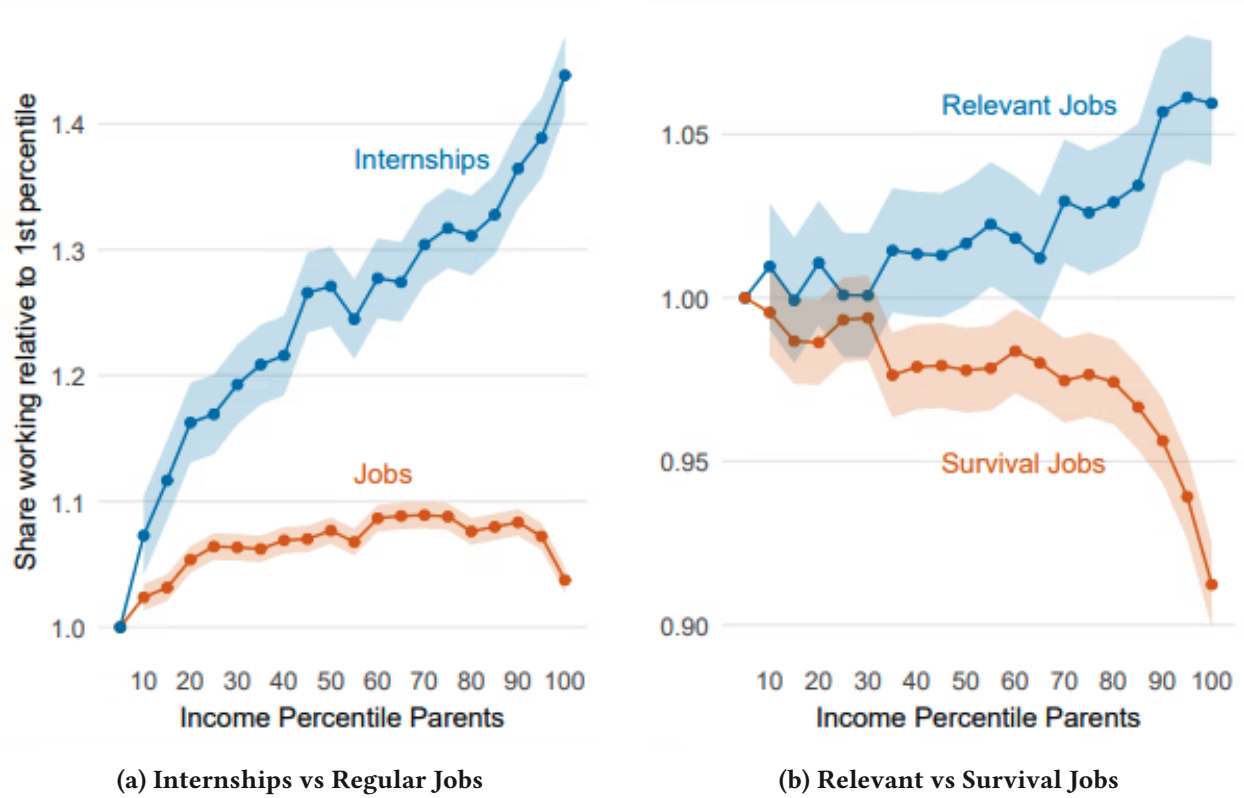
The evidence presented here is suggestive rather than causal. It indicates that opportunity costs likely play a role in generating the internship gradient, but does not quantify their precise contribution. We leave the development of a causal design to quantify opportunity cost effects for future work.

5 — Implications for Intergenerational Inequality

The gap in internship access would matter little if internships had no labor market returns. In this section, we estimate the earnings returns to completing an internship, examine how these returns evolve over time, and quantify the extent to which intergenerational income transmission operates through differential internship participation.

5. Survival industries: agriculture and hunting, forestry, fishing and aquaculture, trade and repair of motor vehicles, retail trade, warehousing, postal and courier services, accommodation services, food and beverage services, employment placement, temporary employment and HR services, security services, facility management, cleaning and landscaping.

Figure 5 – Opportunity Costs



Notes. Panel A compares the parental income gradient in internship participation with the gradient in regular employment. Panel B shows gradients for two types of regular jobs: relevant jobs and survival jobs (see text for details). Poorer students are substantially more likely to work in survival jobs.

5.1. Returns to Internships

We start by estimating the relationship between internship experience and subsequent earnings. Table 5 reports coefficients from regressions of log labor income on an indicator for having completed an internship during university, controlling for university, field, and degree fixed effects, cohort fixed effects, age at enrollment, and high-school exam scores. Three years after graduation, students who completed internships earn 22 log points more than their peers who did not. This premium increases slightly at five years to 23 log points, then declines to 20 log points after seven years.

These raw associations almost certainly overstate the causal effect. Students who pursue intern-

Table 5 — Internship Returns and Intergenerational Income Persistence

	Years After Graduation		
	3 Years	5 Years	7 Years
<i>Panel A: Wage Returns to Internships</i>			
Internship	0.219 (0.009)	0.233 (0.011)	0.200 (0.014)
Observations	283,757	180,420	113,923
<i>Panel B: Intergenerational Income Gradient</i>			
Without internship control	0.0798 (0.0014)	0.0977 (0.0017)	0.1011 (0.0019)
With internship control	0.0734 (0.0013)	0.0918 (0.0017)	0.0961 (0.0019)
% Explained by internships	8.0%	6.1%	4.9%
Observations	461,377	355,868	279,201

Notes. Panel A: Dependent variable is log labor income. Reports coefficients on an indicator for completing an internship during university, controlling for age at enrollment, age squared, high-school exam score, study field, year FE, and a Master's degree FE. Panel B: Reports coefficients from a rank-rank regression of a student's labor income rank on their parents' household income rank plus year fixed effects. Both ranks are within birth-year. Standard errors in parentheses.

ships differ from those who do not in ways that we cannot fully observe (e.g., motivation, career orientation, and soft skills). Yet even accounting for this selection, the literature consistently finds meaningful returns. Margaryan et al. 2022 exploits mandatory internship requirements at German universities and estimates returns of approximately six percent. Arellano-Bover et al. 2026, Jaeger et al. 2023, and Nunley et al. 2016 all use resume audit studies to isolate signaling value, finding that internship experience significantly increases callback rates.

Why do internships pay off? We think of at least three channels that seem plausible. First, internships build human capital. Students learn on-the-job skills, workplace norms, and industry knowledge that make them more productive. Second, they provide signals to future employers about their motivation and ability. Third, and perhaps most importantly in our setting, they open doors. Roughly one quarter of internships in our data convert directly into employment at the same firm. This conversion benefits the students, as it provides them with access to better employers. As shown in Section 3, the median internship occurs at a larger company, which also pays higher wages.⁶

5.2. *How Much Does This Matter for Intergenerational Inequality?*

We now turn to the central question of how much of the relationship between parental income and children's earnings operates through internships. Our approach is straightforward. We regress children's income rank on their parents' income rank, first without and then with controls for internship participation.⁷ The difference in the coefficients tells us what share of intergenerational persistence runs through this channel.

Panel B of Table 5 presents the results. Three years after graduation, the rank-rank coefficient stands at 0.080 without controlling for internships. Adding an indicator control for internship participation reduces the coefficient to 0.073, an 8% decline. The interpretation is that roughly 8 percent of the early-career relationship between parental and child income can be accounted for by differential internship participation.

6. Arellano-Bover (2024) shows that the size of the young workers' first employer has implications for better skill development.

7. All rank measures are calculated within the children's respective year of birth.

This share shrinks as careers progress. Five years after, internships explain 6.1% of the gradient; at seven years, 4.9%. The pattern makes sense. Early in their careers, recent graduates compete largely on credentials and signals. An internship on the resume matters more when you have little else to show. Over time, actual job performance and accumulated experience take over, diluting the relative importance of a single credential. That internships still account for nearly 5 percent of intergenerational persistence a decade later is suggesting that these early advantages leave lasting marks.

5.3. *Heterogeneity and Robustness*

Do these patterns hold across different contexts, or are they driven by particular fields or degree types? We explore this in several ways.

First, we examine whether returns differ between bachelor's and master's students. Returns appear larger for bachelor's students, with a 23% premium at three years compared to 19% for master's students. By seven years, bachelor's students still see an 18.5% return versus 17.2% for master's students. This may reflect the fact that bachelor's internships, while shorter and more poorly compensated, provide a stronger signal in a context where students have fewer other credentials to differentiate themselves.

Second, we ask whether certain fields drive the results. Internships are far more common in some disciplines than others: 39 percent of technology master's students complete one, compared with 17 percent in health and social services. The returns show substantial heterogeneity across fields that does not simply mirror participation rates.

Panel B of Table 6 reports field-specific coefficients at seven years post-graduation. The largest returns appear in Maths, Science & IT (43%), Humanities & Social Sciences (27%), and Law & Public Order (24%). At the other end, Health & Social Services shows returns of just 10%, and Teaching shows a statistically insignificant coefficient. Business & Economics, despite high internship prevalence, shows relatively modest returns of 13%.

These patterns suggest that fields where internships are less common may see higher returns

Table 6 – Heterogeneity in the Returns to Internships

	Years After Graduation		
	3 Years	5 Years	7 Years
Panel A: Returns by Degree Level			
Bachelor's	0.234 (0.015)	0.223 (0.018)	0.185 (0.023)
Master's	0.189 (0.008)	0.196 (0.010)	0.172 (0.013)
Panel B: Returns by Field of Study (7 Years)			
Maths, Science & IT	0.429 (0.054)		
Humanities & Social Sciences	0.268 (0.023)		
Law & Public Order	0.244 (0.034)		
Technology	0.214 (0.042)		
Teaching	0.181 (0.154)		
Business & Economics	0.128 (0.006)		
Health & Social Services	0.098 (0.040)		
Panel C: Returns by Parental Income (7 Years)			
Poorest Third	0.133 (0.022)		
Middle Third	0.229 (0.020)		
Richest Third	0.273 (0.020)		

Notes. Panel A reports internship coefficients from regressions of log labor income estimated separately by degree level. Panel B reports coefficients at 7 years post-graduation by field. Panel C reports coefficients at 7 years post-graduation by household income rank of the student's parents. All regressions control for age at enrollment, age squared, high school exam scores, education field FE, Master's degree FE, and year FE. Standard errors in parentheses.

precisely because the experience serves as a stronger differentiating signal. The weak returns in Health and Teaching likely reflect the credentialized nature of these labor markets, where formal qualifications matter more than work experience signals. More broadly, fields with clearer occupational pathways and more standardized hiring processes appear to show lower returns to internships. This is consistent with Hanushek et al. 2017, who find that occupation-specific training provides initial labor market advantages but that these advantages depreciate relative to general education. In fields where career trajectories are well defined, the marginal value of an

internship may be lower.

Panel C of Table 6 shows that returns to internships vary sharply by parental income. Students from the upper third of the parental income distribution see returns of 27% at seven years, compared to 23% for the middle third and just 13% for those from the lower third. Students from wealthy backgrounds thus earn roughly twice as much from completing an internship as their lower-income peers.

This heterogeneity suggests that internships amplify rather than reduce inequality. Not only do wealthy students have greater access to internships, but they also benefit more when they participate. We hypothesize that the quality of internships differs systematically by family background. Students from high-income families may secure positions at more prestigious firms, in higher-paying industries, or with better mentorship and skill development opportunities. Family connections likely facilitate access not just to any internship, but specifically to the most valuable ones. If true, this might imply that expanding internship access alone may be insufficient, and interventions may also need to address the quality of placements lower-income students receive.

6 — Discussion and Conclusions

The richest students are 50 percent more likely to do an internship than the poorest students. We are the first paper to document this gradient and quantify the reasons for it. Selection into fields of study and university programs explains 23 percent of the gradient. Family connections, identified through a sibling comparison design, account for at least 9 percent. Ability, as measured by high school exam scores, explains none of the gap. Opportunity costs likely also play a role: poorer students are more likely to work in survival jobs that pay better than internships but offer little career value.

This inequality matters because internships have high returns. Though we only show correlations in this paper, the existing literature finds meaningful causal effects. Students who complete internships earn more after graduation, and roughly one in four converts their internship into permanent employment at the same firm. The combination of high returns and unequal access

means that internships hinder intergenerational mobility.

Our findings matter for policy. First, the role of selection points toward expanding internship opportunities across fields and institutions. Programs in humanities and social sciences, where internships are less common, could benefit from structured partnerships with employers. Universities could also do more to integrate internships into curricula.

Second, the importance of family connections suggests more formal hiring processes could help. Transparent procedures and standardized hiring criteria would reduce the role of informal referrals and level the playing field.

Third, the opportunity cost channel implies that finances are important. Policy could address this by extending the minimum wage to internships or by subsidizing internships for poor students. If internship markets are monopsonistic—students are very substitutable and not all companies offer internships—the minimum wage could raise pay without reducing the number of internships available.

Our study has several limitations that point toward future research. The evidence on opportunity costs is correlational rather than causal. Developing a research design that can credibly identify the causal effect of financial constraints on internship participation is an important next step. Our estimates for the role of connections are likely a lower bound. We measure only family connections and capture only one channel through which connections help: knowing someone working in a field-relevant industry. We plan to extend the analysis to other types of connections—coworkers, classmates, neighbors—to estimate the effect of connections more comprehensively. Our estimates of returns to internships are correlations and likely overstated due to selection, estimating causal returns would be important to underscore the importance of internships in our specific context. Finally, our analysis focuses on whether students do an internship rather than where they intern. Equalizing access may not be enough if poor students intern at lower-quality firms. Hence, understanding heterogeneity in internship quality and its consequences will be important as well.

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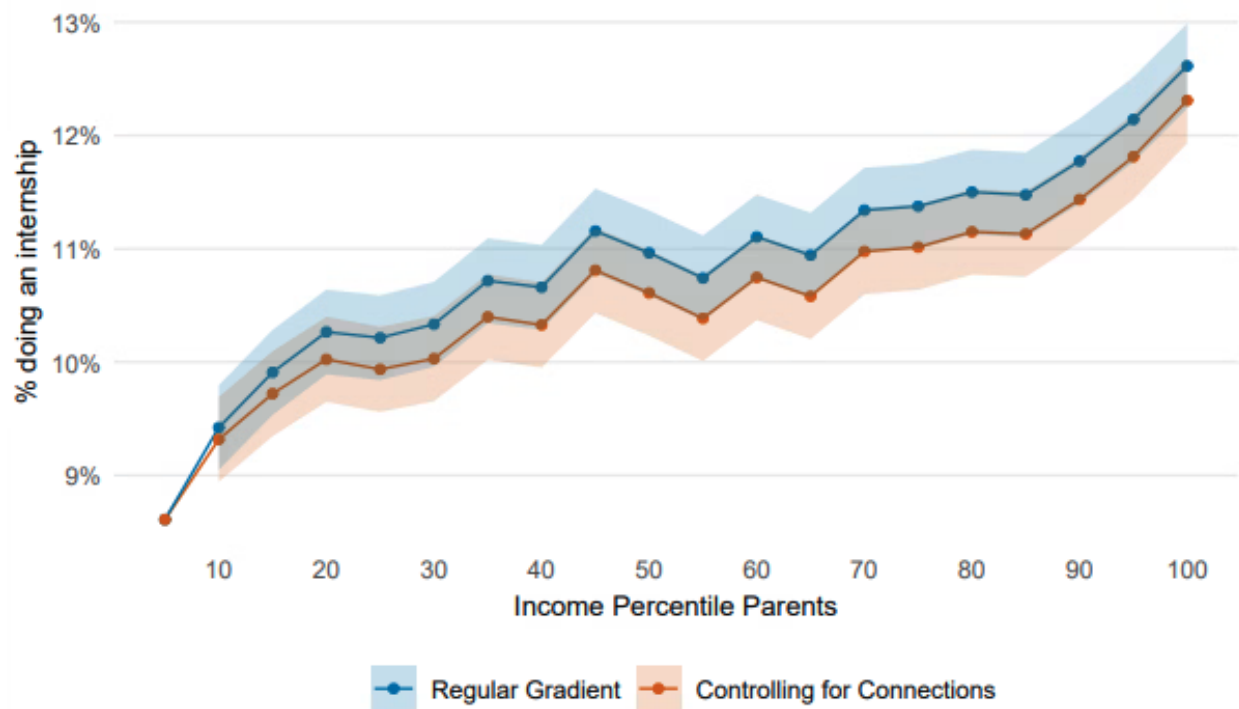
A — Appendix

Table A1 — Internship Gradient: Real vs. Counterfactual

Outcome: Doing an internship	
Income Gradient (0–1)	0.022*** (0.006)
Income Gradient (0–1) $\times$ Counterfactual	-0.002*** (0.000)
<i>% change in the gradient: 9.1%</i>	

Notes. Regression on a stacked dataset containing both realized and counterfactual outcomes. Counterfactual is an indicator for counterfactual outcomes. The interaction Income Gradient $\times$ Counterfactual captures the difference in slopes between counterfactual and realized gradient. Standard errors are in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Figure A1 – Gradient Residualization Connections



Notes. This figure shows how the internship gradient changes when controlling for whether a student has a family connection and the number of connections. The outcome variable is a dummy for doing a relevant internship. See text for details on the construction of the connections variable.