Creating New Businesses in America: The Determinants of and Returns to Entrepreneurship*

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Introduction

Entrepreneurship has long been viewed as an engine of economic growth (e.g., Schumpeter, 1934; King and Levine, 1993). Policy makers have accordingly sought to spur entrepreneurship using a broad range of policies, ranging from tax credits and subsidized loans for small businesses to incubator programs to support new and aspiring entrepreneurs. However, the determinants of business formation and growth—and, correspondingly, the best approaches to increasing high-growth entrepreneurship—remain unclear despite extensive study. What factors determine whether an individual starts a business? What are the marginal returns to inducing more people to start businesses?

In this paper, we study the determinants of and returns to entrepreneurship using a new anonymized panel dataset covering the universe of ten million business founders in the United States from 2000 to 2022. We construct this dataset by linking two sets of tax data: business tax returns (forms K-1 and 1125-E, analyzed by Smith, Yagan, Zidar and Zwick (2019)) and federal income tax returns on individuals and their

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parents (forms 1040 and W-2, analyzed by Chetty, Deming and Friedman (2023) and others). The linked dataset provides rich longitudinal information on the childhood backgrounds of entrepreneurs (parental income, neighborhoods, demographics), labor market experience (employers, industry, occupation, earnings), and business outcomes (e.g., founding date, industry, number of employees, firm performance).[1] In our baseline analysis, we analyze rates of business founding up to 2022.

Our dataset has two key advantages over existing data used to study entrepreneurship (e.g., the Panel Study of Income Dynamics or the Kauffman Firm Survey). First, because we can follow businesses over time after startup, we can separate the small number of "star" founders who start businesses that are responsible for a large fraction of business revenue and growth (e.g., large technology firms or regional retailers) from more typical founders who start businesses that remain small (e.g., local restaurants or service providers in Hurst and Pugsley (2011)) throughout their lifecycle.[2] Second, the dataset is several orders of magnitude larger than existing survey datasets on entrepreneurs, which allows us to implement new quasi-experimental research designs in order to identify the determinants and consequences of entrepreneurship.[3]

We structure our analysis by following entrepreneurs over their lifecycle, as illustrated in Figure I. We begin by characterizing how rates of entrepreneurship vary with background characteristics such as parental income, childhood region, or demographic (ω). We then identify the causal effects of three sets of factors (X_i) that have been emphasized in prior work as potential drivers of the decision to found a business: pre-labor-market childhood environments, labor market experiences, and access to financial capital at the point of startup.[4] Finally, we measure the returns to business foundation (R_i), both on average and from marginal changes in the upstream determinants, to shed light on whether there may be "missing entrepreneurs" who could have started successful businesses.

In the first part of our analysis, we show that rates of entrepreneurship vary widely across individuals of different backgrounds. Individuals born to high-income families are significantly more likely to found firms, with a highly convex relationship with parental income. Individuals from families in the top 1% of the income distribution are 4.1 times more likely to have founded a firm by 2022 as those with parents at the median, and 2.4 times as likely to have founded a firm as those with parents at the 90$^{\text{th}}$ percentile. Children of business-owning parents are 3.4 times more likely to become founders than the children of non-business-owning ones. People who grew up in entrepreneurial regions like Salt Lake City, Utah, are nearly twice as likely to start a firm than those from less entrepreneurial regions like Memphis, Tennessee. Historically high-entrepreneurship demographic groups found firms at 2 to 4 times the rate relative to low-

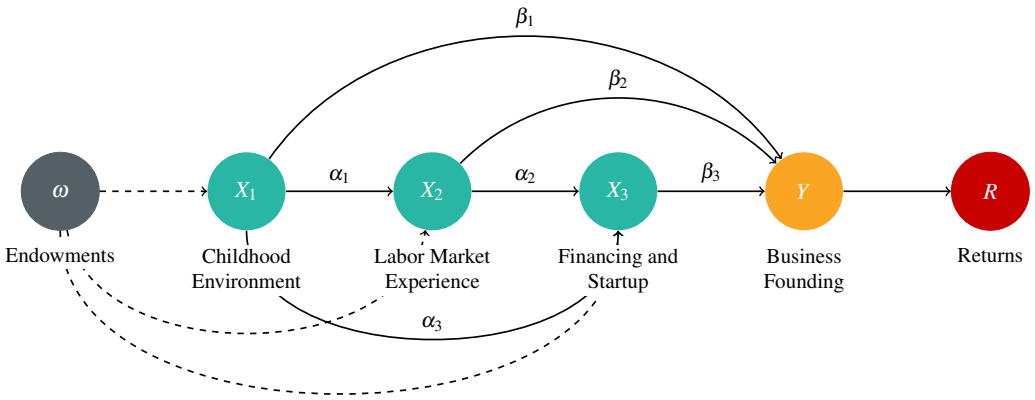
[1] For certain analyses, we also draw upon College Board and ACT data—which provide information on standardized test scores and demographics—linked to tax records and analyzed by Chetty, Deming and Friedman (2023).

[2] Both typical business starts and star founding are of normative interest, for different reasons. We show that starting a business is a common pathway to the "American Dream" of upward mobility, more so than other pathways such as attending an elite college. Starting a star business may be particularly relevant for GDP growth, as it creates employment opportunities for many other people. We analyze both outcomes throughout the paper for this reason.

[3] An exception is the U.S. Census Bureau's Longitudinal Business Database (LBD) (Azoulay, Jones, Kim and Miranda, 2020), which has 2.7 million founders. The key innovation of our dataset relative to that dataset is the link to individual income tax records, allowing us to analyze entrepreneurs' backgrounds. Additionally, we include founders of C-corporations, which are not covered by the Census LBD.

[4] There are many other factors that could affect rates of entrepreneurship across groups, such as differences in risk preferences, social norms, or motherhood penalties. We focus on the three factors highlighted in Figure 1 because they have been the focus of policy interventions and broadly capture three distinct phases of an entrepreneur's lifecycle.

FIGURE I
The Entrepreneurial Pipeline



entrepreneurship groups, confirming findings from prior work (e.g., Hurst and Lusardi, 2004; Lazear, 2005; Fairlie and Robb, 2007, 2009).

The differences in founding rates across groups are several times larger when we focus on the "star" or "superstar" firms that drive employment and growth. We classify firms that are in the top 10% and top 1% of their cohort in terms of either revenues or employees two years after founding as "stars" and "superstars," respectively. A typical new firm in our data might be a restaurant or small-scale general contractor, whereas a typical star might be a parts distributor, a regional law firm, or a mid-sized retail chain. The typical superstar might be a successful tech startup, a regional manufacturer, or an auto dealer. Only 3.5% of stars and 3.0% of superstars are in ICT sectors, illustrating the breadth of our data. Individuals from families in the top 1% are four times more likely to found a star firm and 7 times more likely to found a superstar firm than those from the 90th percentile.[5]

In the second part of the paper, we analyze why entrepreneurship rates vary so sharply across demographic groups and, more generally, what factors influence whether a given individual becomes an entrepreneur. Prior work has established that differences in earnings by demographic group and parental income can be explained in large part by pre-labor-market differences in general human capital, as proxied by standardized test scores or educational attainment (Johnson and Neal, 1996; Chetty, Friedman, Saez, Turner and Yagan, 2020). To evaluate whether the same is true for entrepreneurship, we examine how rates of entrepreneurship vary with end-of-high school standardized (SAT/ACT) test scores. We find that entrepreneurship is less correlated with test scores than other measures of success in the labor market. As a result, differences in test scores explain a much smaller share of the gaps in entrepreneurship documented above than for earnings and patent rates. This finding suggests that the determinants of entrepreneurship might differ from those of economic success more broadly, calling for investigation of entrepreneurship-

[5]Similarly, the children of entrepreneurs are more than five times and six times as likely to start star and superstar firms, respectively, as the children of non-entrepreneurs.

specific mechanisms.

We consider three types of mechanisms that have been the focus of prior research and policy interventions, working backwards chronologically from the point of business founding. The first is access to financial capital at the point of startup, which has historically been the focus of many policies that seek to increase entrepreneurship.

We identify the causal effect of financial capital on entrepreneurship using a research design that uses differential windfalls to workers at firms that list their shares in initial public offerings (IPOs). Windfalls from IPOs vary sharply with the date at which workers arrived at the firm: the tenth hire receives, on average, significantly more stock options than the 15^{th} hire. Under the assumption that latent propensities to start a business do not vary with the exact order in which a worker is hired, these differences create quasi-random variation in wealth shocks across comparable workers. The key differences between this source of variation and the types of variation that have been exploited in prior work, such as lottery winnings (e.g., Golosov, Graber, Mogstad and Novgorodsky, 2024), are that this wealth shock is several orders of magnitude larger, with an average wealth shock of $9M, and it applies to a population that has a much higher baseline rate of business founding, especially of star firms. As a result of these features, our design yields more precise estimates than prior studies and may identify a local average treatment effect that is more relevant for policy interventions targeted at would-be entrepreneurs.

We implement this research design by analyzing a subsample of approximately 475,000 workers at 2,100 firms that had an IPO. We estimate that among the first 32 workers in a firm (excluding the three highest wage workers), being hired 10 positions earlier increases wealth by $5.2M and the probability of founding a new business by 2022 by 1.41 percentage points (p.p.). Under our identification assumption of constant potential founding rates by hiring order, these estimates imply that a $1 million increase in liquid wealth increases overall founding rates by 0.3 p.p. and star founding rates by 0.1 p.p.—statistically significant but economically modest impacts. To evaluate the identification assumption, we repeat the analysis for workers with lower hire rank (hires 33-500) by the firm that has an IPO. These workers typically are "out of the money" for stock options and receive much smaller windfalls on average from the IPO. Accordingly, we find little relationship between hiring order and founding rates among these workers. We then split workers based on their pre-IPO level of liquid wealth, estimated using the capitalization approach developed in Smith, Zidar and Zwick (2023). Among the initial hires at the firm (workers 4-32), there is a much stronger relationship between hiring order and star founding rates among those with low liquid wealth, consistent with liquidity being the key causal mechanism underlying the reduced-form relationship.

Combining our estimate of the causal effect of liquid wealth with estimates of differences in wealth across subgroups, we estimate that less than 5% of the gap in both overall and star founding rates by parental background, geography, and demographics can be explained by differences in wealth.[6]

The next mechanism we consider is labor market experience. Experience working in certain industries

[6]One may be concerned that our causal effect estimates based on individuals working at firms that are about to IPO may understate the importance of liquidity in the broader population, which may have less access to capital markets. However, estimates for the broader population based on variation such as lottery winnings also imply that liquidity accounts for a small share of gaps in entrepreneurship (see Golosov, Graber, Mogstad and Novgorodsky (2024) for a recent U.S. study). To be clear, this result does not imply that access to capital does not matter for entrepreneurship; it simply shows that differences in access to capital do not explain much of the observed differences in rates of entrepreneurship across individuals.

or occupations may be valuable for subsequent business formation, by providing relevant job-specific human capital, such as experience with specific technologies and access to networks that can provide support and potential customers (e.g., Lafontaine and Shaw, 2016; Azoulay, Jones, Kim and Miranda, 2020).

To identify the causal effects of labor market experience on entrepreneurship rates, we exploit high-frequency variation in labor demand across sectors within labor markets. Consider two people living in Silicon Valley, one of whom graduates from college in 2000—the peak of the "dot-com boom" in which Internet companies were hiring widely—and another who graduates in 2001, after the hiring boom collapsed. Empirically, the 2000 graduate is much more likely to have a first job in the tech sector and ends up with more labor market experience in technology—which historically has many more entrepreneurs than other sectors—than the 2001 graduate. In this example, our research design asks whether the first individual, who has more labor market experience in entrepreneurial industries, is more likely to start a business in the subsequent 15 years than the second.

To generalize this example, we measure each industry's entrepreneurship potential as the share of its employees between ages 31-50 who start a firm. We then measure the average entrepreneurship potential of the industries into which 22 year olds were hired in each county and cohort. Finally, we regress an indicator for founding a firm by age 35 on the average entrepreneurship potential for 22 year olds in the individual's cohort, controlling for cohort and county fixed effects. This regression is identified from variation across cohorts within counties in rates of hiring across sectors that produce more entrepreneurs (e.g., tech and construction) versus few entrepreneurs (e.g., retail and nursing). The identification assumption underlying this design is that individuals' potential business founding outcomes a decade later are orthogonal to high-frequency fluctuations in hiring across industries in their county when they enter the labor market.

We implement this design in a sample of 21 million workers who were born between 1978 and 1987. We estimate that a one-standard deviation increase in predicted entrepreneurial experience leads to an increase in the probability of founding a business by 4.5 p.p. (an elasticity of 2.7) and founding a star firm by 0.83 p.p. (an elasticity of 3.4). To evaluate the identification assumption underlying this design, we show that unlike rates of hiring in the year in which the individual enters the labor market, rates of hiring across industries one year earlier or later are uncorrelated with their future founding rates. Insofar as latent founding rates are unlikely to fluctuate at such a high frequency with labor demand, this sharp temporal pattern supports the view that initial labor market experience has a causal effect on founding rates many years later, well after the initial labor demand shocks have dissipated. Furthermore, labor market experience increases founding rates in industries that are similar to those where hiring went up the most, consistent with the view that individuals acquire industry-specific skills and contacts that support future business formation.

Individuals from low-income families, low-entrepreneurship demographic groups, and less entrepreneurial regions have significantly less labor market experience in entrepreneurial sectors than their peers. Our estimates of the causal effect of experience imply that differences in labor market experience account for 20-50% of the gaps in founding rates by subgroup. These magnitudes are comparable to the role of pre-labor-market factors (as proxied by test scores) in explaining differences in earnings outcomes. Hence, early labor market experience is as important in explaining gaps in entrepreneurship as general differences in pre-labor-market environments are in explaining differences in earnings outcomes.

The third and final set of determinants of entrepreneurship we analyze is the role of the childhood environment, focusing not on general human capital accumulation as captured by test scores but rather on entrepreneurship-specific exposure. In particular, motivated by evidence on the importance of childhood exposure effects for innovation (Bell, Chetty, Jaravel, Petkova and Van Reenen, 2019), we analyze whether exposure to an entrepreneurial environment during childhood increases an individual's propensity to start a business in adulthood. We identify causal exposure effects using the movers exposure effect design developed by Chetty and Hendren (2018). We test whether children who move to areas with higher future entrepreneurship rates among their cohorts earlier in childhood are more likely to become entrepreneurs. This research design allows for the possibility that children who move to more entrepreneurial areas may have greater latent potential to start businesses themselves, but requires that any such selection does not vary with the *age* at which they move—a "constant selection effects by age" assumption that has been extensively validated in prior experimental and quasi-experimental studies in the context of other outcomes.

Implementing this research design in a sample of 4.4 million movers across counties, we estimate that a child who spends 20 years in a one-percentage-point more entrepreneurial county is 0.28 p.p. more likely to found a business herself in adulthood. Although economically meaningful, this estimate nevertheless implies that differences in childhood exposure account for less than 5% of the demographic gaps in founding rates because exposure to entrepreneurship does not vary dramatically across subgroups.[7]

The reduced-form impact of childhood exposure on founding combines the direct effect of exposure as well as indirect effects, which arise from potential increases in labor market experience driven by childhood exposure. For example, children exposed to more entrepreneurs may be more likely to start working in the tech sector. Using labor market experience as a dependent variable in the same movers exposure effect design, we find that 64% of the impact of childhood exposure on entrepreneurship comes via its effect on increased labor market experience in entrepreneurial sectors. Using the same methodology, we estimate that less than 3% of the exposure and labor market experience effects arise from downstream changes in liquid wealth. This causal mediation analysis reinforces the view that labor market experience is the pivotal factor in the causal chain of determinants of entrepreneurship outlined in Figure I.

Our analysis suggests that providing greater labor market experience in entrepreneurial sectors could increase rates of entrepreneurship significantly, especially among subgroups that are currently less likely to start new firms. But would the businesses started by these new marginal entrepreneurs be as successful as existing businesses? In the third and final part of the paper, we estimate the average and marginal returns to entrepreneurship to answer this question.

We estimate average returns by matching entrepreneurs to individuals who do not start businesses with similar demographics, income trajectories, industry, and geographic region prior to the date of founding. We then conduct an event study of incomes (as reported on 1040 individual income tax returns) around the point of business founding, comparing the evolution of incomes between entrepreneurs and their matched

[7] In our baseline analysis, we define exposure as the future entrepreneurship rate of kids who grow up in a given county, which may understate the extent to which actual exposure (based on direct interaction) varies across subgroups. However, drawing on more granular ZIP-code-level measures of exposure or estimates based on network data from Fluegge and Bailey (2024) do not change our conclusions significantly, leaving the portion of gaps explained by exposure at less than 5%. Furthermore, our finding below that most of the exposure effect is mediated by changes in labor market experience is less likely to be affected by noise in our proxy for exposure.

controls. Prior to the date of founding (excluding the years used for matching themselves), incomes trend very similarly among entrepreneurs and non-entrepreneurs. After an initial slowdown around founding, incomes rise much more rapidly among entrepreneurs; on average, incomes rise to about 10% higher than non-entrepreneurs eight years after businesses are started, including all businesses regardless of survival. The returns to business startup vary widely across individuals, with substantial differences by industry and geographic location as well as considerable residual dispersion conditional on observables.[8]

Building on this approach, we estimate the returns earned by the marginal founders who are induced to start businesses by obtaining greater labor market experience in entrepreneurial sectors. We infer the returns earned by the marginal founders by comparing average returns to firms started in groups with high versus low labor market entrepreneurial experience, exploiting the same cross-cohort research design we used above to identify the impact of experience on entrepreneurship levels. We find that marginal returns are very similar to average returns. Notably, the probability that the marginal founder starts a star firm that goes on to have very high revenues and employment is very similar to the probability that the average current founder does so. These findings reveal that the quality supply curve of entrepreneurs is relatively flat around current levels of entrepreneurship, suggesting that marginal increases in labor market entrepreneurial experience could in fact lead to the creation of new businesses that are as successful as current ventures.

The preceding conclusion is based on a partial equilibrium analysis. In general equilibrium, one may be concerned that inducing additional entrepreneurs to enter would crowd out other existing founders, potentially dissipating the impact on the total number of business starts. To evaluate the importance of this concern, we simulate the impacts of removing barriers that limit entry of certain groups into entrepreneurship in general equilibrium. We extend the framework developed by Hsieh, Hurst, Jones and Klenow (2019) to allow individuals to found new firms after working in a given sector. The key parameter in the model that determines the extent of crowdout in entrepreneurial entry is the elasticity of substitution across sectors in aggregate production. This parameter is effectively identified by the ratio of marginal to average returns: when that ratio is small, the elasticity of substitution is large, and crowdout is substantial. We calibrate the elasticity of substitution to match the ratio of marginal to average returns we estimate empirically and take other parameters directly from Hsieh, Hurst, Jones and Klenow (2019). Under these assumptions, we find modest crowdout: the predicted increase in the total number of entrepreneurs from reducing barriers to entry is only about 20% smaller in general equilibrium than in partial equilibrium. Although the model omits many features that would be required to fully capture the impacts of additional entrepreneurship on growth, this analysis suggests that efforts to draw more individuals into entrepreneurship would increase the total number of businesses that achieve high levels of growth.

We conclude that there may be a significant number of missing entrepreneurs at present in America. In particular, under the assumption that preferences to enter entrepreneurship do not vary sharply across demographic groups, our results imply that there are many people who could start businesses that would generate

[8] Our estimates of average returns, which are consistent with estimates reported by Levine and Rubinstein (2017) and Bhandari, Kass, May, McGrattan and Schulz (2022), are gross expected returns: they do not incorporate costs of starting a business and do not adjust for risk. The distributional statistics we report could be combined with measures of costs of business startup and estimates of risk aversion to construct risk-adjusted net returns. We do not do so here because our primary goal is to compare average and marginal returns, and insofar as these other factors do not vary sharply at the margin, differences in gross returns are the key statistic of interest.

substantial returns and employment. Our analysis does not shed light on specific interventions that can draw these individuals into entrepreneurship. However, our findings suggest that upstream efforts to strengthen the pipeline to entrepreneurship—focusing, for instance, on providing experience in entrepreneurial occupations early in people's careers—are likely to be more fruitful than providing support purely at the point of business startup such as loans or tax credits.

Related Literature. Each part of this paper builds on and contributes to a distinct literature. First, our descriptive findings are consistent with prior work documenting differences in rates of entrepreneurship across groups and regions (e.g., Evans and Jovanovic 1989; Evans and Leighton 1989; Blanchflower and Oswald 1998; Hamilton 2000; Robb 2002; Lazear 2005; Fairlie and Robb 2007; Farlie and Robb 2009; Glaeser and Gottlieb 2009; Delgado, Porter and Stern 2010; Hurst and Pugsley 2011; Guzman and Stern 2015, 2020; Levine and Rubinstein 2017; Howell and Nanda 2024; Azoulay, Jones, Kim and Miranda 2020; Kerr and Robert-Nicoud 2020; Cook, Marx and Yimfor Forthcoming; Ewens 2023). Our study provides more precise estimates of these gaps and shows how the gaps are accentuated when one focuses on high-growth star firms.

Second, our paper contributes to work on the determinants of entrepreneurship, in particular several studies that have analyzed the role of liquidity and background wealth (e.g., Evans and Jovanovic 1989; Holtz-Eakin, Joulfaian and Rosen 1994*a*; Holtz-Eakin, Joulfaian and Rosen 1994*b*; Blanchflower and Oswald 1998; Quadrini 1999; Hurst and Lusardi 2004; Gentry and Hubbard 2004; Cagetti and De Nardi 2006; Hvide and Møen 2010; Adelino, Schoar and Severino 2015; Golosov, Graber, Mogstad and Novgorodsky 2024). By comparing the size of wealth effects to other determinants of entrepreneurship (childhood exposure and labor market experience), we contextualize the relative importance of wealth compared to other factors.

Third, our analysis contributes to the literature estimating the returns to entrepreneurship, which has reached conflicting results on whether entrepreneurship pays relative to traditional employment (e.g., Evans and Leighton 1989; Hamilton 2000; Astebro, Herz, Nanda and Weber 2014; Manso 2016; Hurst, Li and Pugsley 2014). Using larger samples that permit more granular matching strategies with more precise measures of income, we find that entrepreneurship does in fact increase income significantly on average, consistent with the conclusions of Bhandari, Kass, May, McGrattan and Schulz (2022) and Levine and Rubinstein (2017), who find that restricting attention to entrepreneurs who start formal, incorporated businesses yields positive estimates of returns. We also find that founders experience increases in the variance of income relative to similar workers, supporting the view that entrepreneurship entails a higher burden of idiosyncratic risk (Heaton and Lucas 2000; Hall and Woodward 2010; see Astebro 2012 for a survey).

Finally, our paper connects to work studying the misallocation of talent across occupations (e.g., Murphy, Shleifer and Vishny 1991; Baumol 1990; Hsieh, Hurst, Jones and Klenow 2019). Our findings on missing entrepreneurs are consistent with a misallocation of talent toward business formation, which could have particularly broad implications for economic growth, given the disproportionate role of small, young firms in job creation (e.g., Davis, Haltiwanger and Schuh 1996; Haltiwanger, Jarmin and Miranda 2013).

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Creating New Businesses in America
The Determinants of and Returns to Entrepreneurship

Raj Chetty, Harvard and NBER
Gaia Dossi, UCL
Matthew Smith, US Treasury Department[1]
John Van Reenen, LSE, MIT, and NBER
Owen Zidar, Princeton and NBER
Eric Zwick, Chicago Booth and NBER

July 2025

[1]This research was conducted while the author was an employee at the U.S. Department of the Treasury. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author and do not necessarily reflect the views or the official positions of the U.S. Department of the Treasury. Any taxpayer data used in this research was kept in a secured Treasury or IRS data repository, and all results have been reviewed to ensure that no confidential information is disclosed.

OPPORTUNITY INSIGHTS

Introduction: What are the Drivers of Entrepreneurship?

- Entrepreneurship is widely viewed as a key engine of growth and a pathway to the American Dream [Schumpeter Aghion King Levine Davis Haltiwanger; Alger]

- Growing concern about declining business dynamism: startup rates have fallen significantly in past 30 years [Pugsley and Sahin 2014, Decker et al. 2014, Karahan et al. 2024]

- Despite extensive study, determinants of entrepreneurship and its returns remain unclear
  - Lack of large-scale panel data on business founders, especially on **star firms** that drive job growth

- We study determinants of and returns to entrepreneurship by building a new panel on universe of firm founders in the U.S. using tax records

Outline

1. Describe **characteristics** of entrepreneurs in America

2. Analyze **determinants** of business founding rates using three research designs

3. Estimate **returns** for marginal founders to test for "missing" entrepreneurs

4. Quantify impacts of interventions to increase entrepreneurship in **general equilibrium**
   [extending Hsieh Hurst Jones Klenow 2019]



Data

A New Panel Dataset on America's Entrepreneurs

Firms

- C-corp, S-corp, partnership tax filings (1998-2022)
- Define founding event as date when the firm first has a non-owner employee
- Focus on "star" firms: in top 10% of subsequent revenues or employment in their birth cohort

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Founders

- Owners in year firm started (K-1, 1125-E tax forms) [Smith Yagan Zidar Zwick 2019]
- Identify active founders by excluding owners without wage income from firm in first two years
- Data on 10 million founders (1000x prior surveys)



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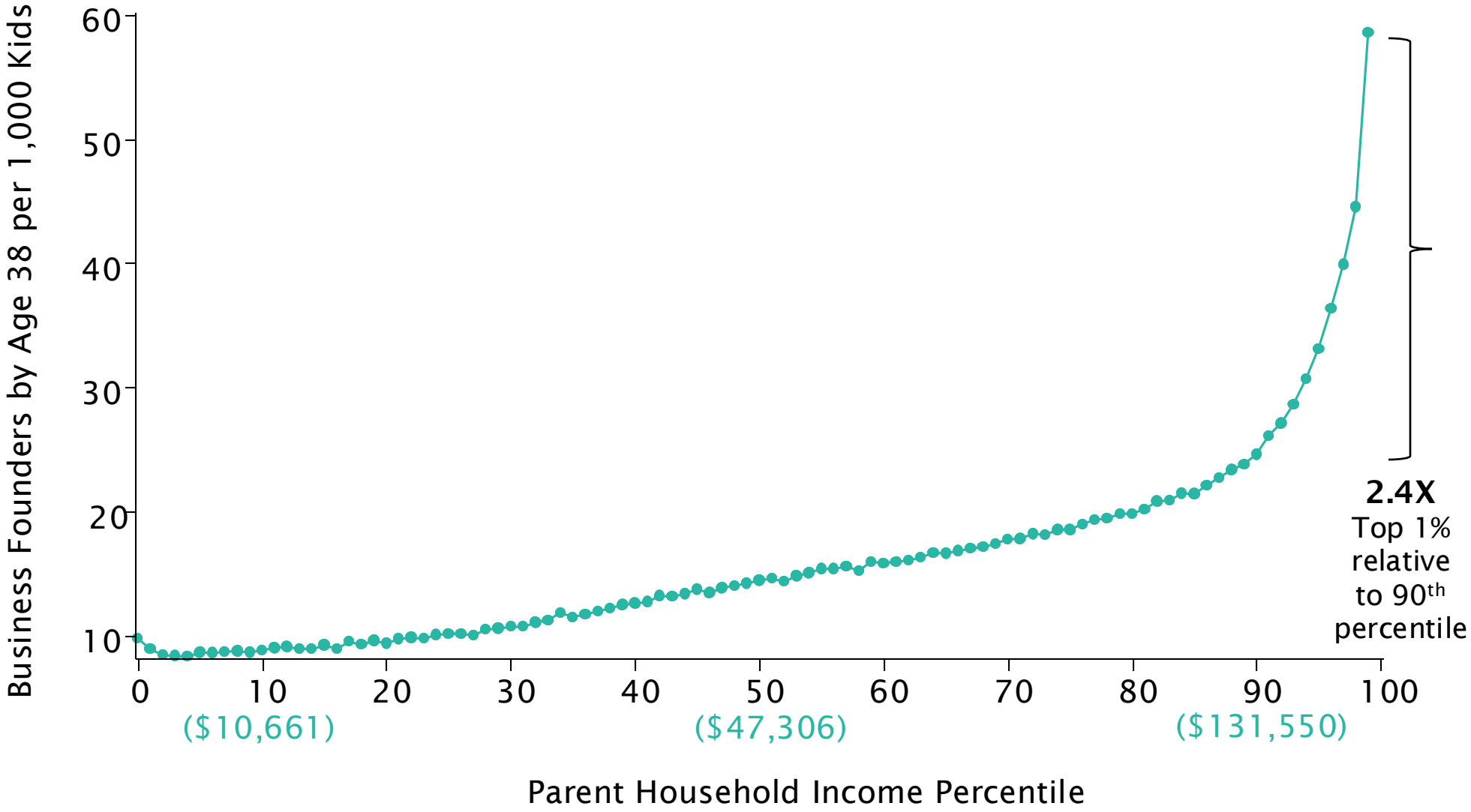
Founders' Characteristics

- Panel data on employment and income from 1040 tax forms
- Parent income and childhood location from 1980 birth cohort [Chetty Hendren Kline Saez 2014]
- ACT/SAT scores [Chetty Deming Friedman 2023]

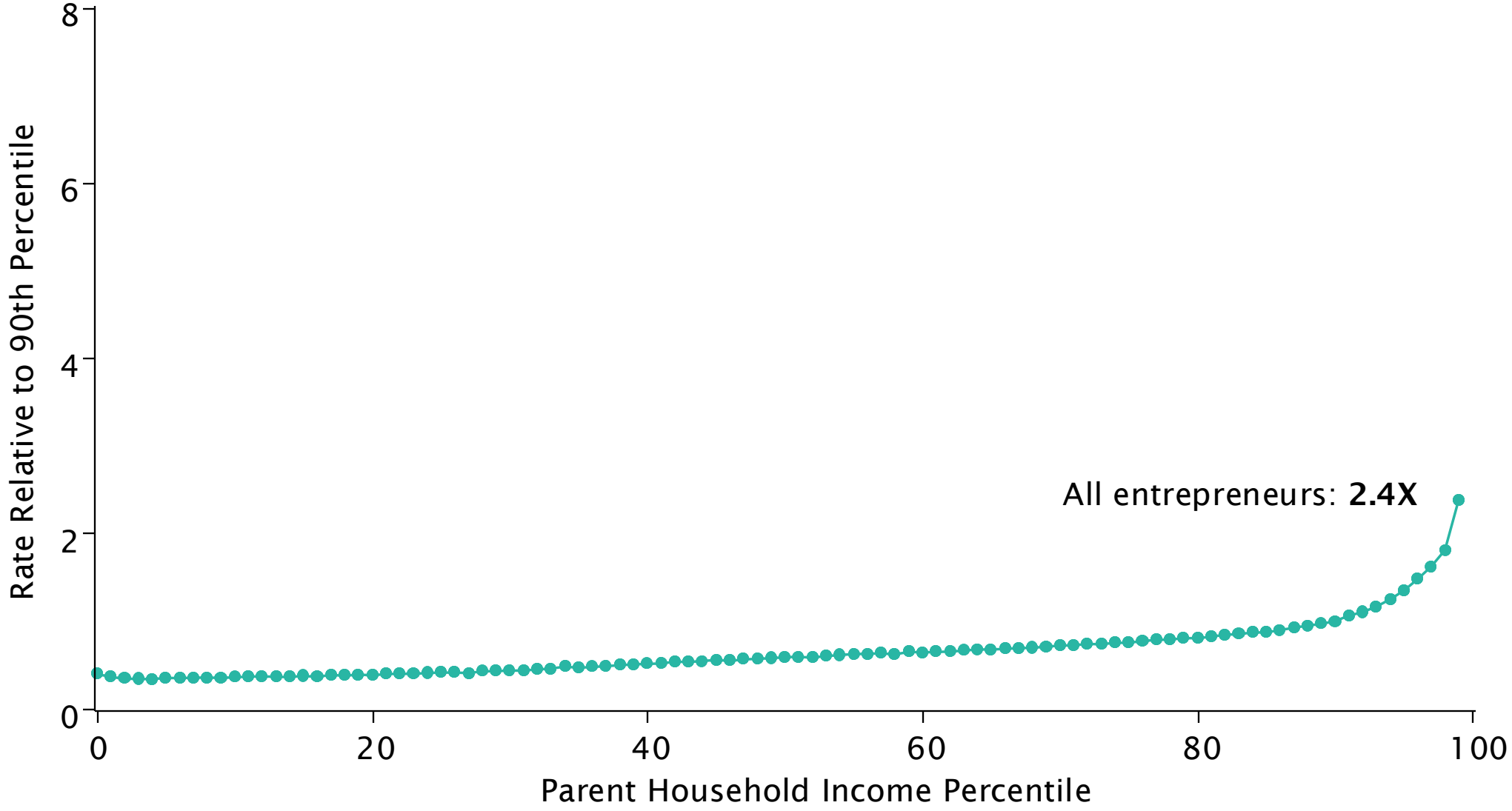


Who are America’s Entrepreneurs?

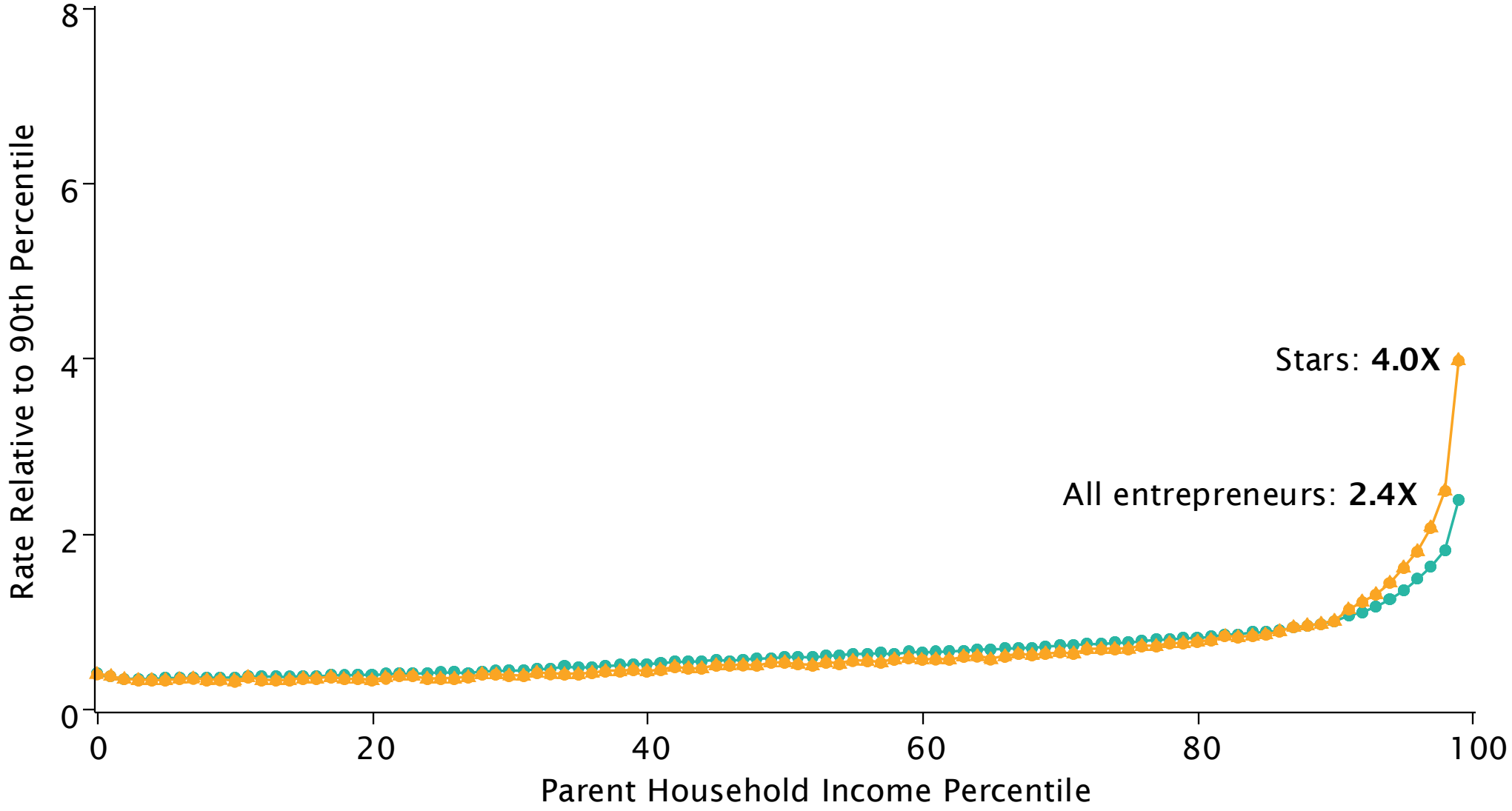
Entrepreneurship Rates by Parental Income



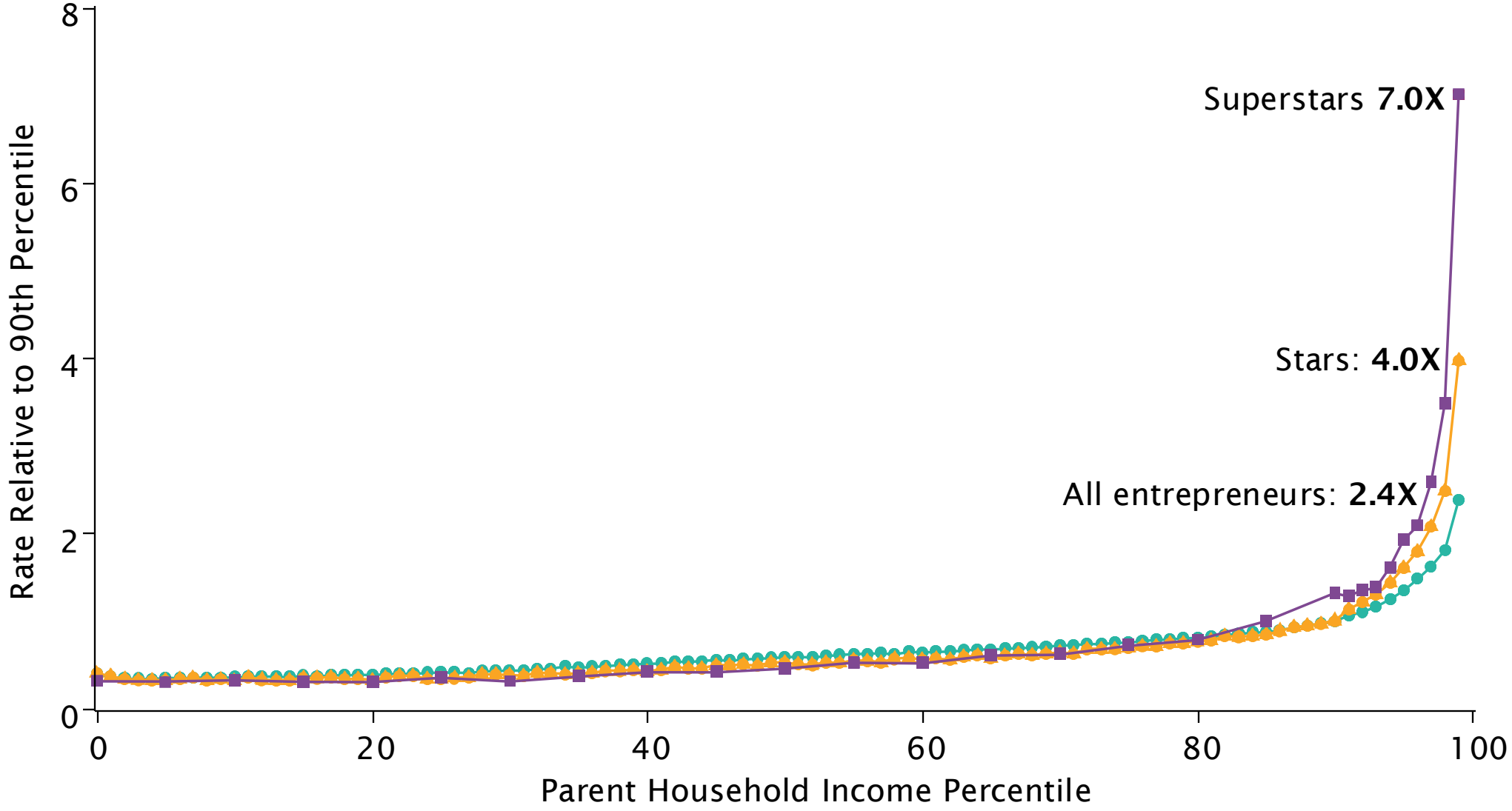
Entrepreneurship Gaps by Parental Income



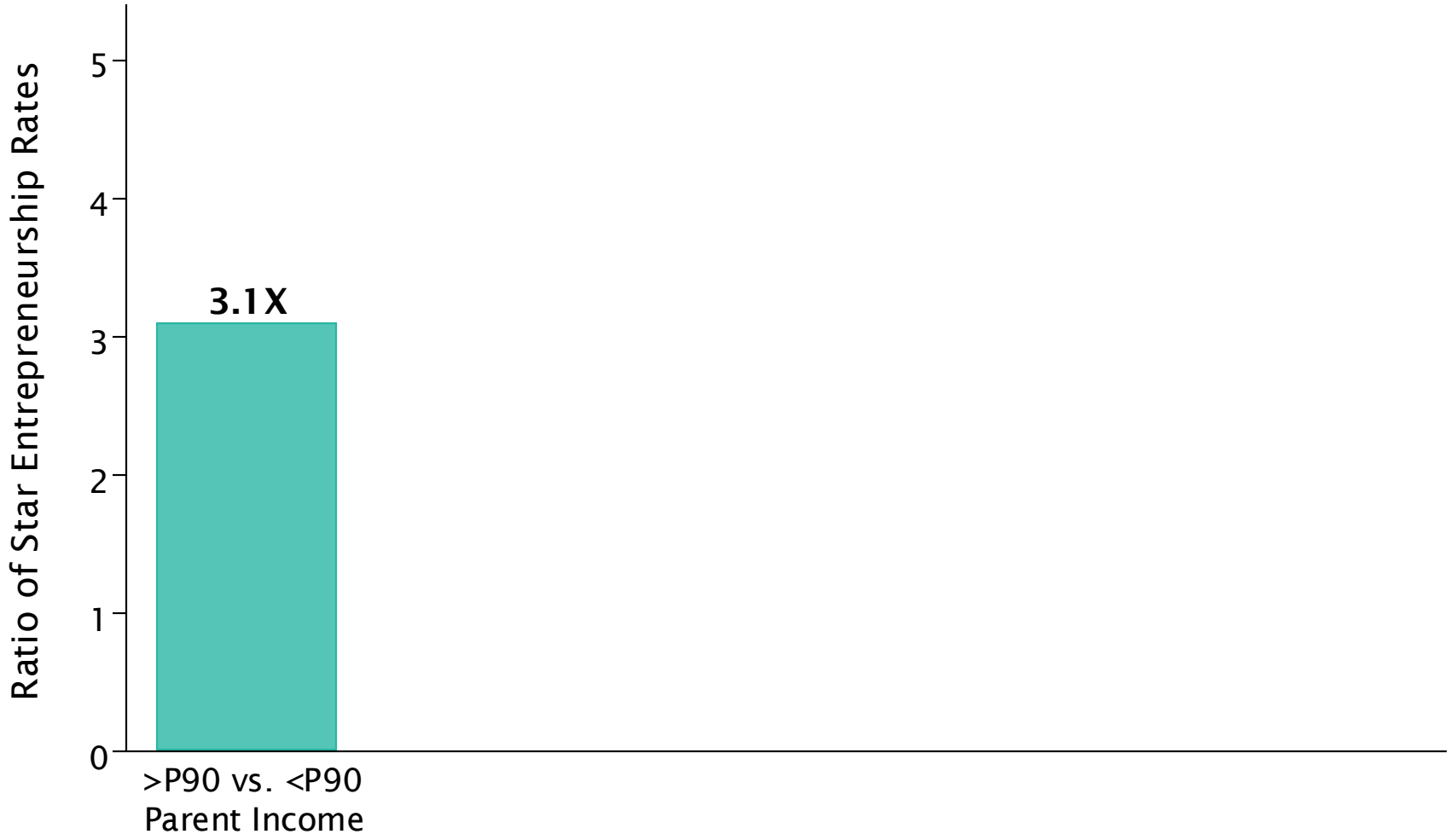
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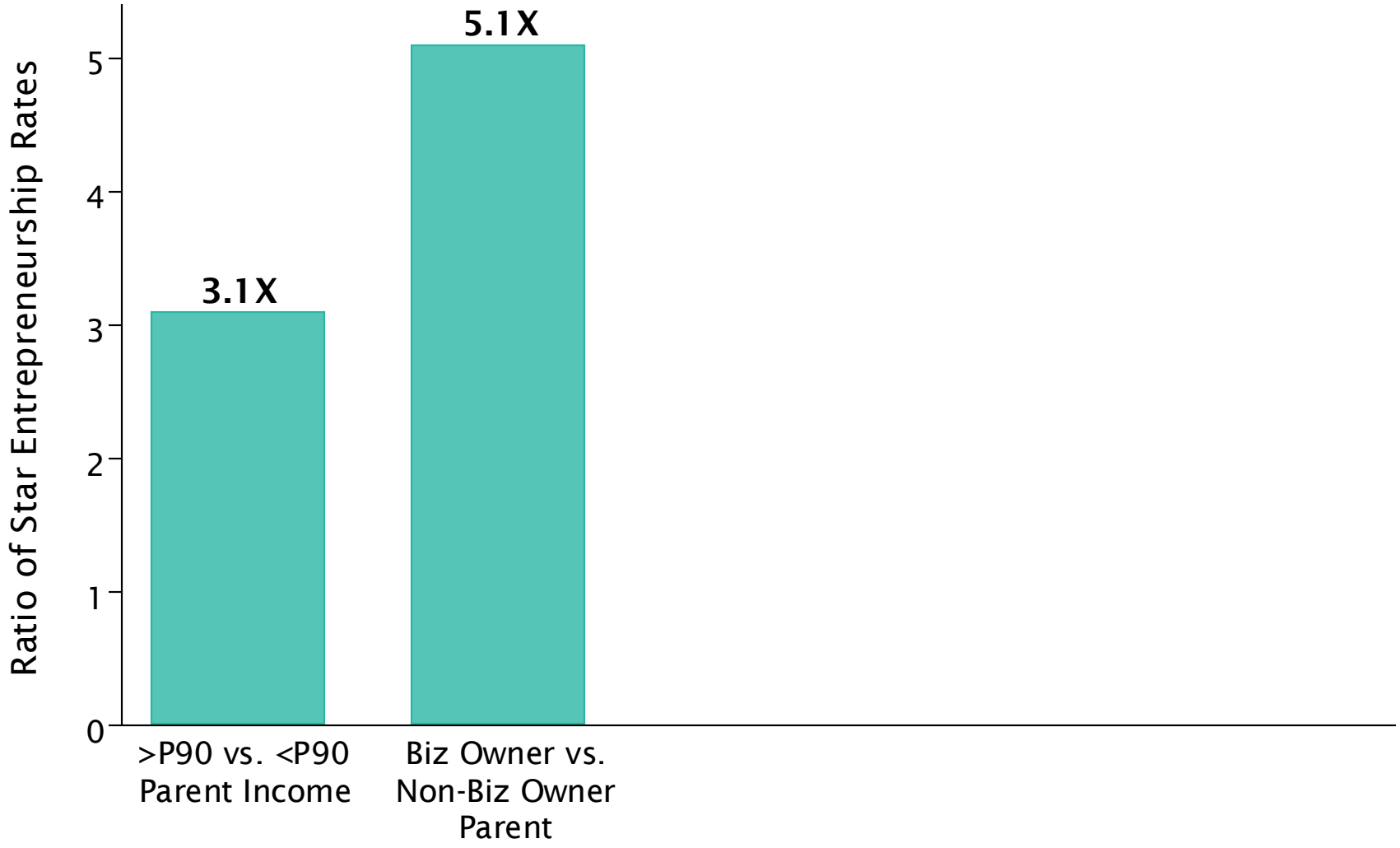
Entrepreneurship Gaps by Parental Income



Entrepreneurship Gaps by Group

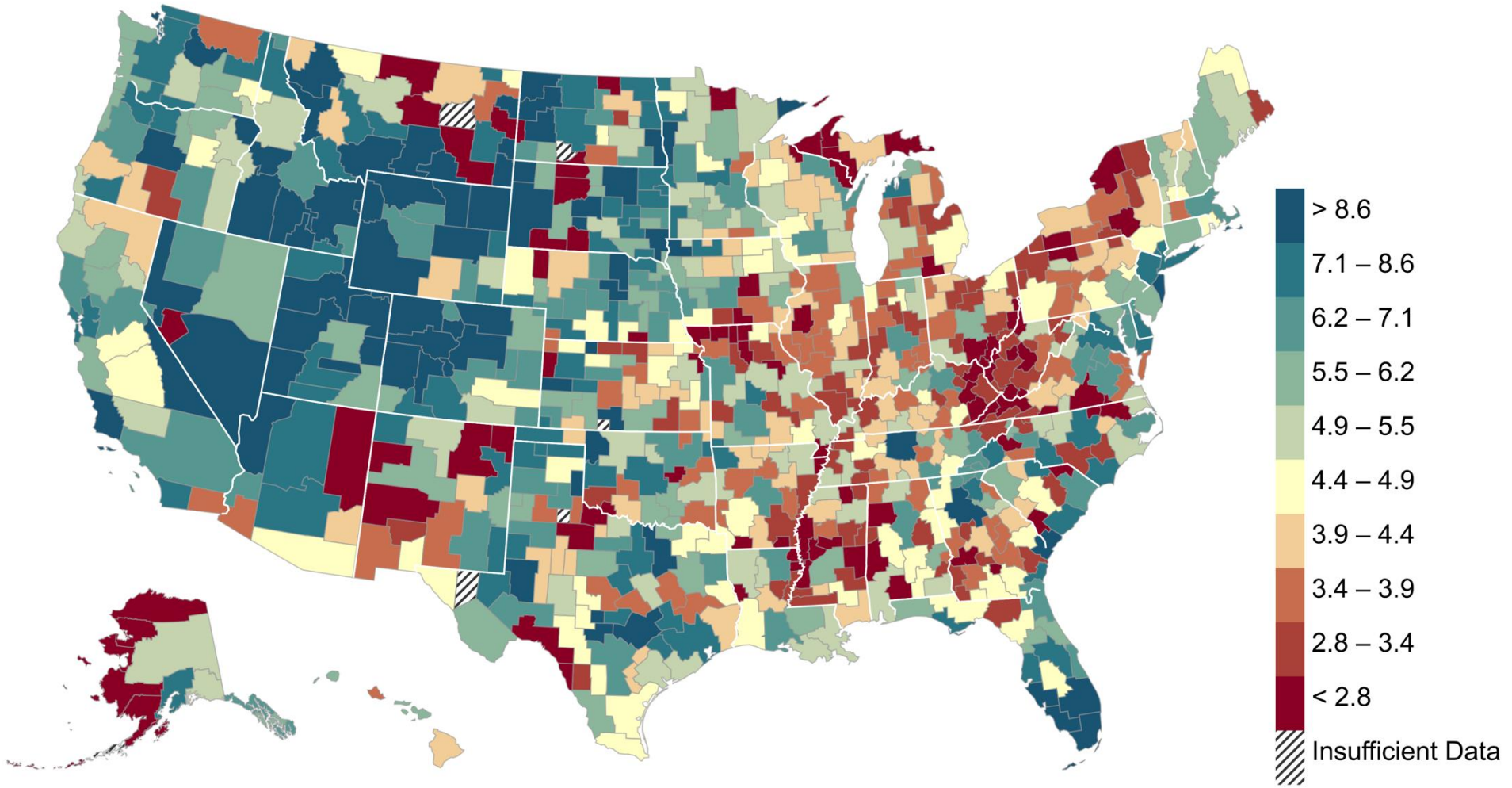


Entrepreneurship Gaps by Group

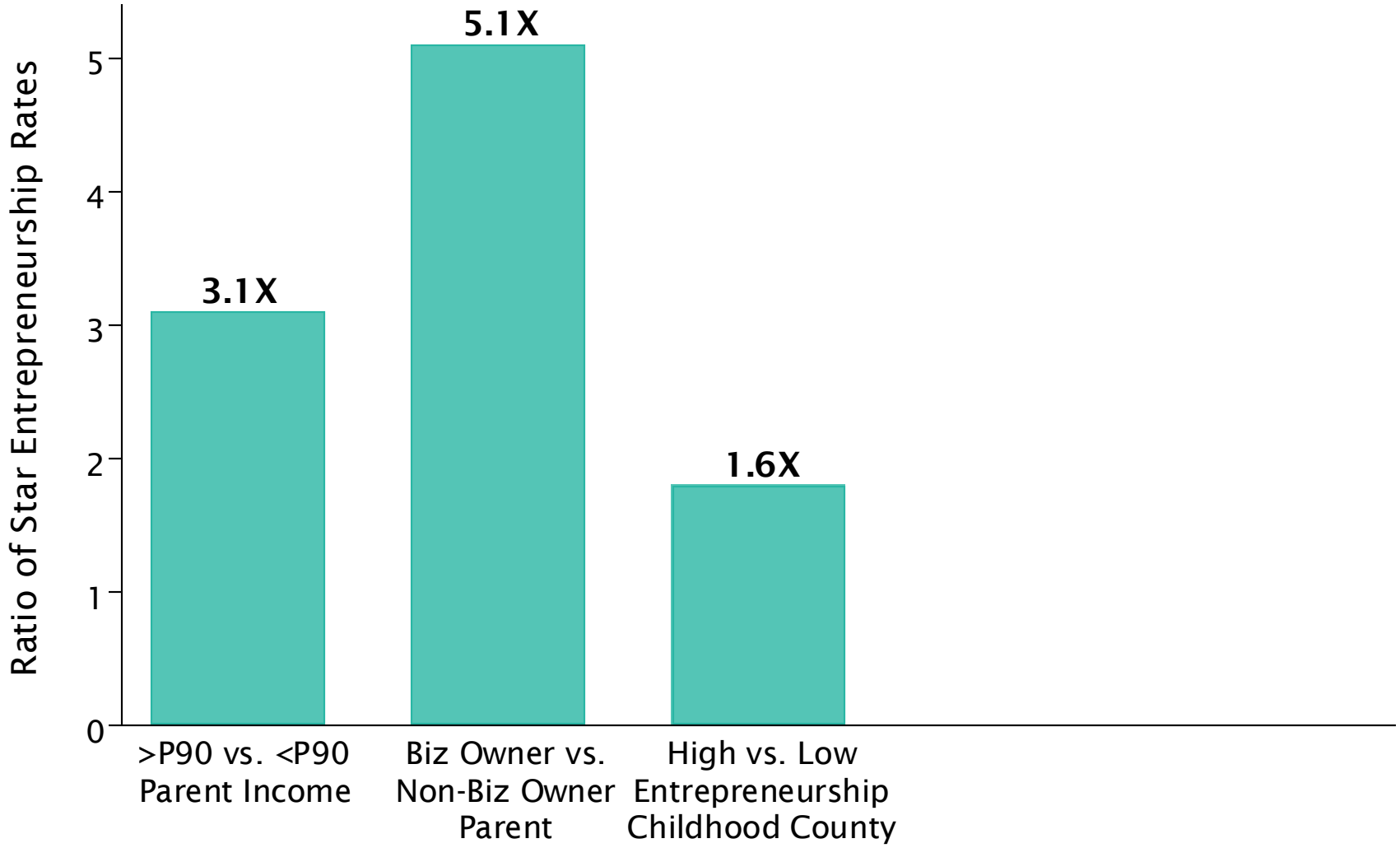


The Geography of Entrepreneurship in America

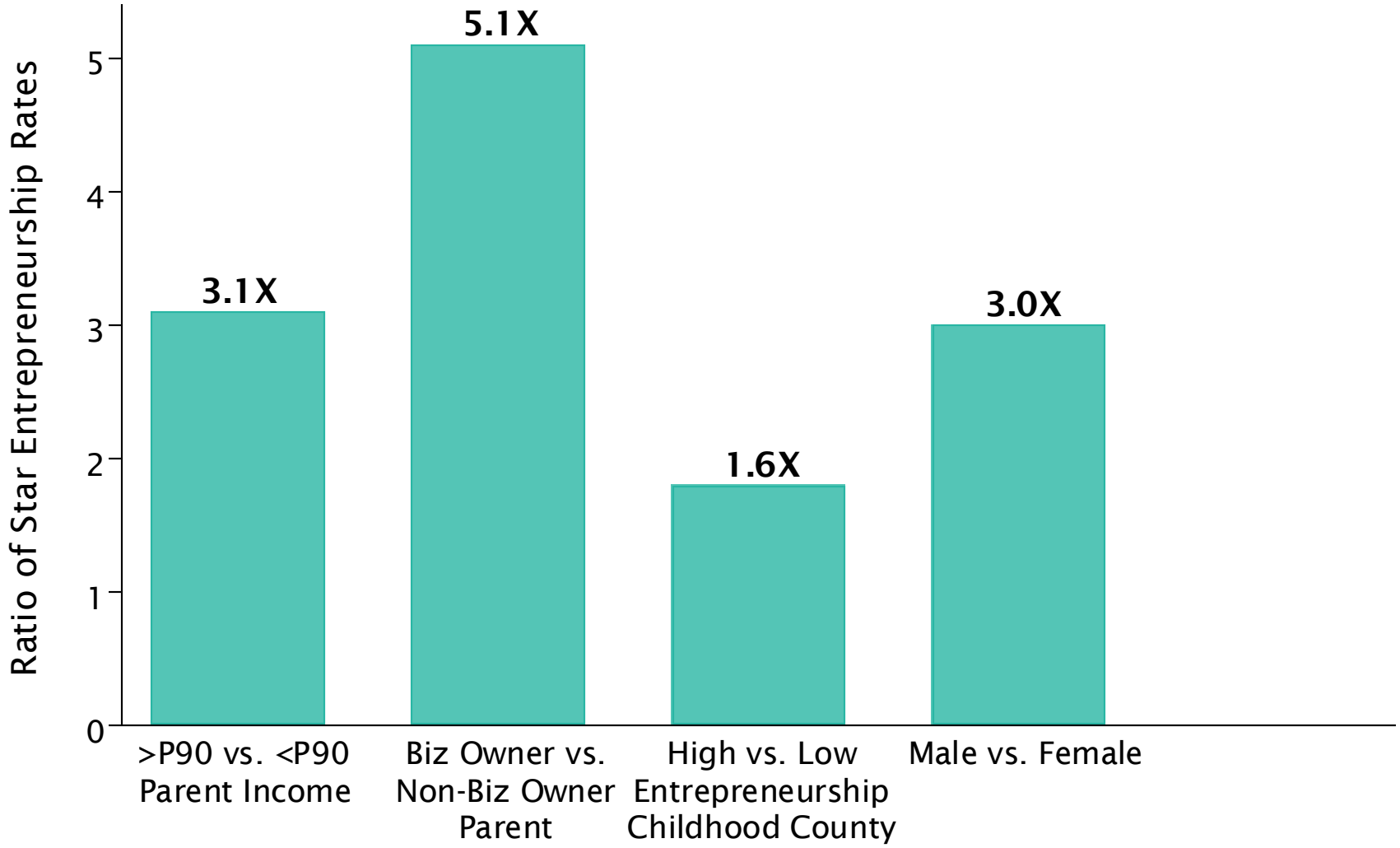
Number of Star Founders Between 2000-2022 per 1,000 Adults, by Commuting Zone



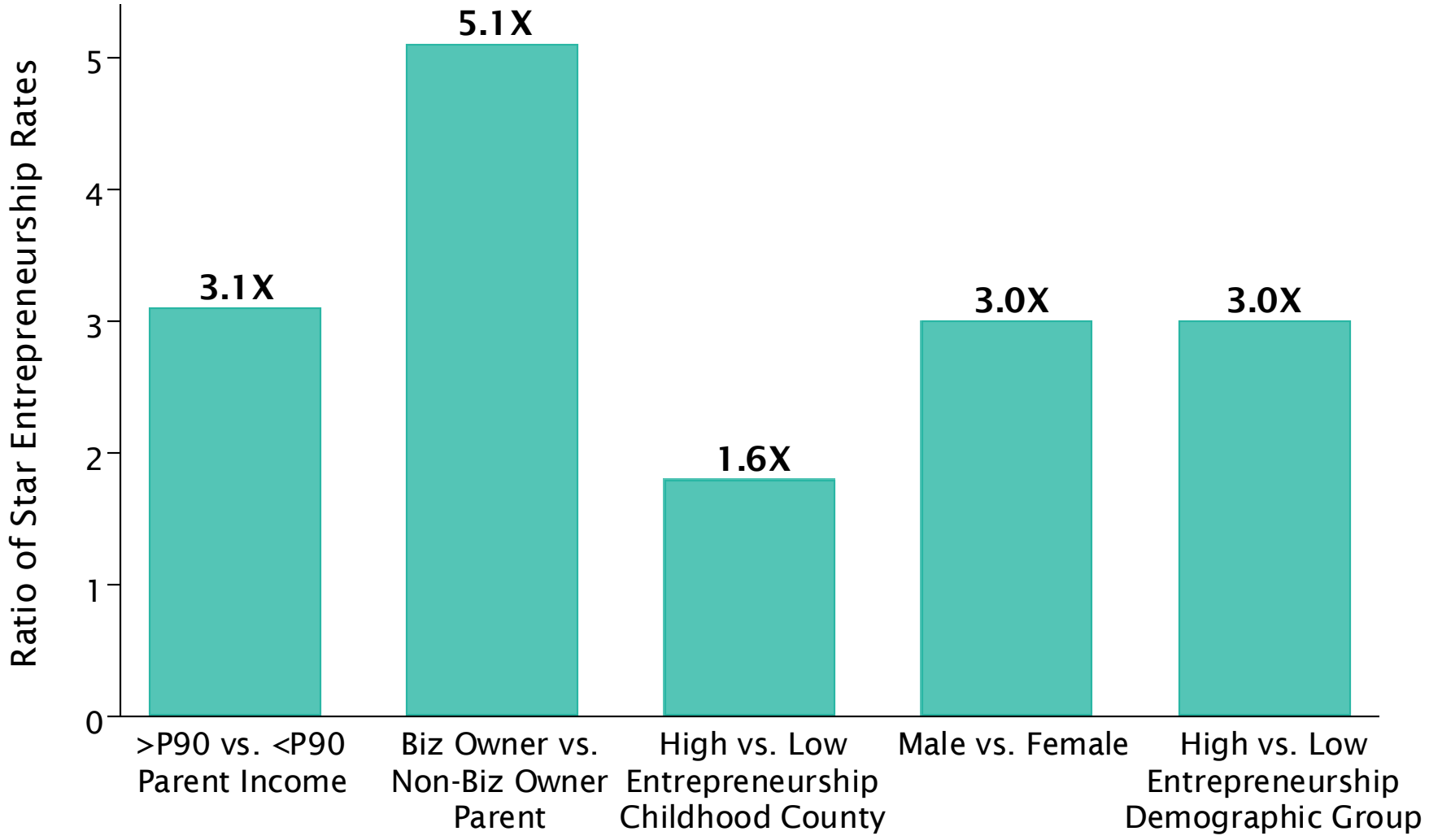
Entrepreneurship Gaps by Group



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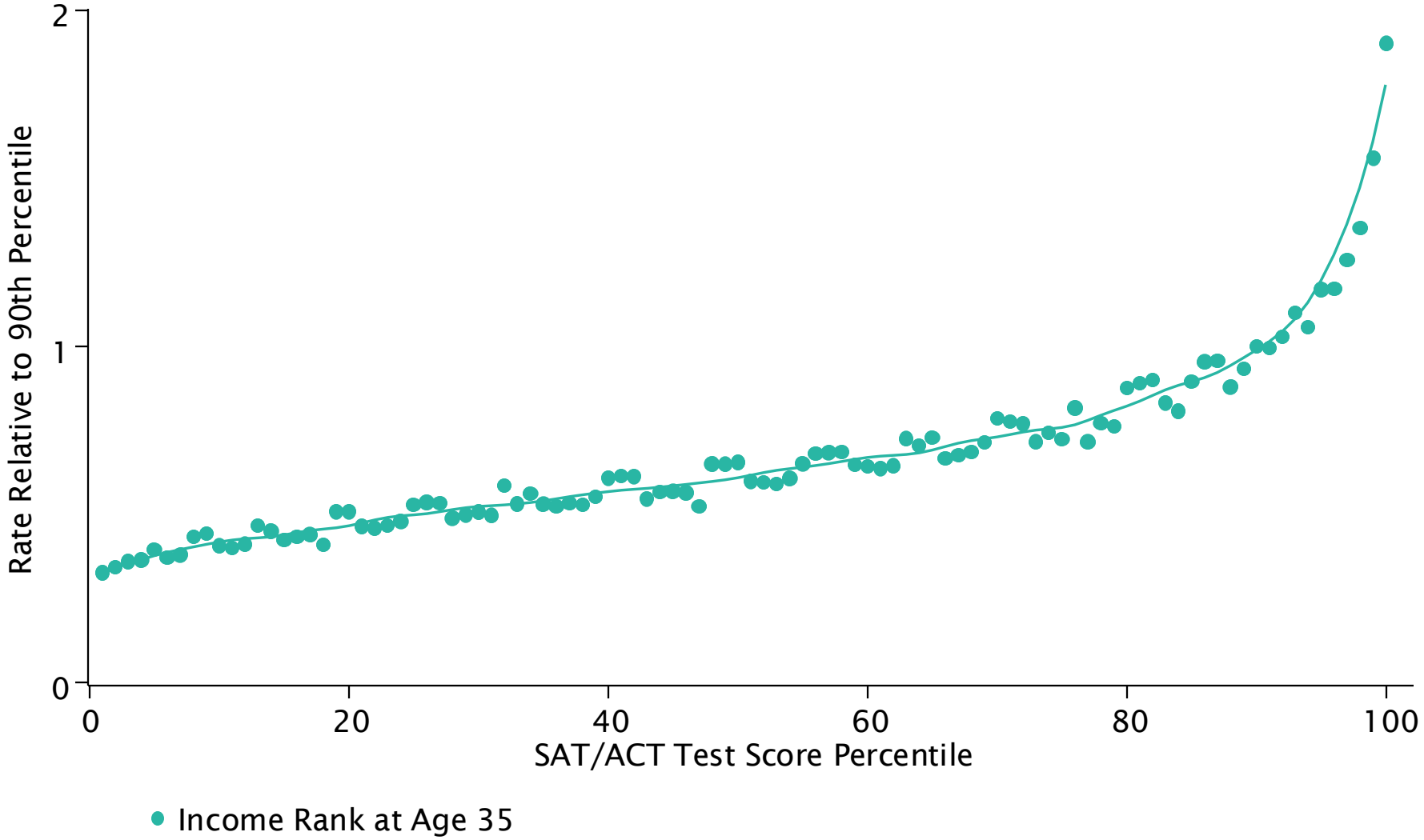
Entrepreneurship Gaps by Group



Determinants of Entrepreneurship

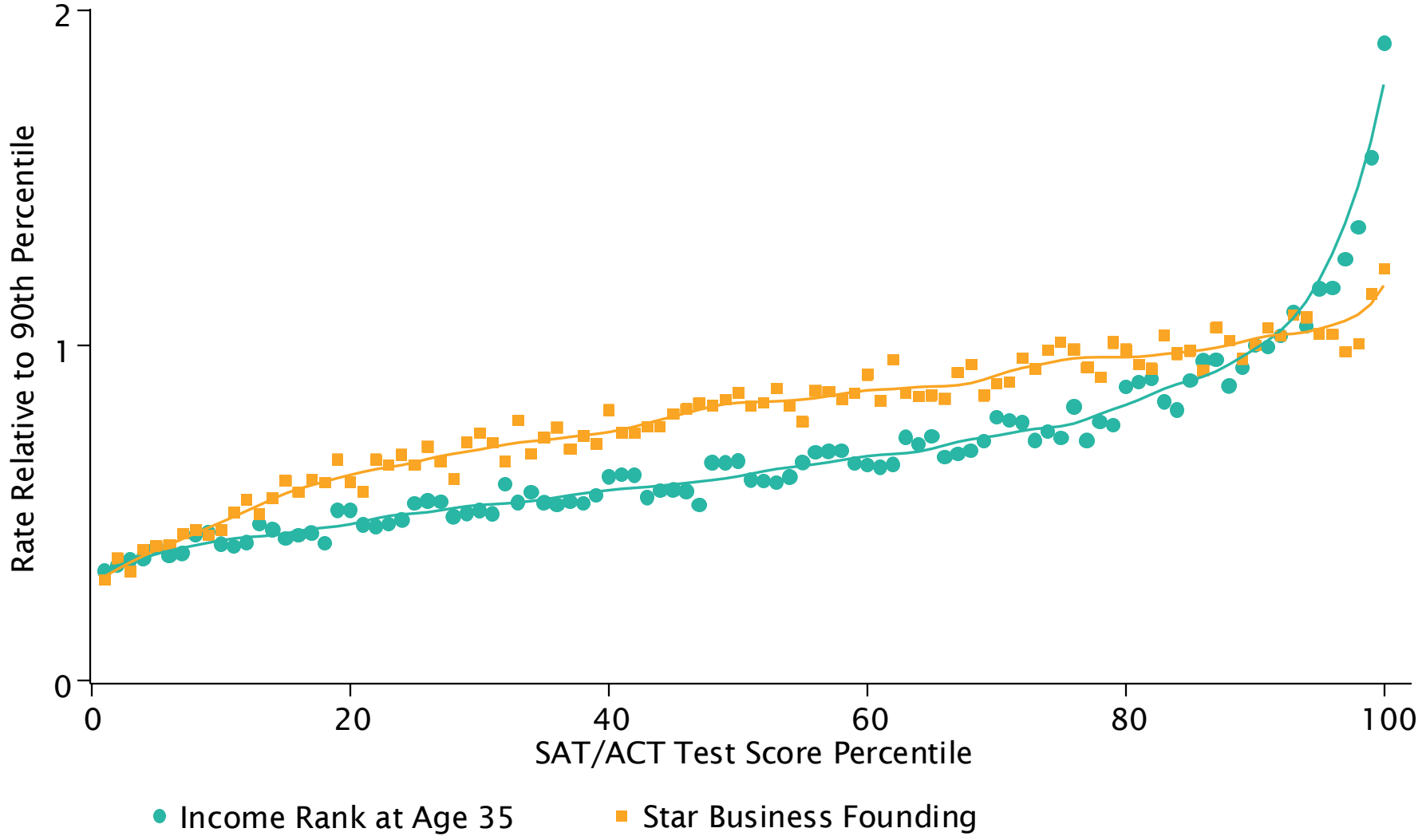
Entrepreneurship Rates and Income vs. Standardized Test Scores

Sample: 1978-1982 Birth Cohorts who take SAT/ACT



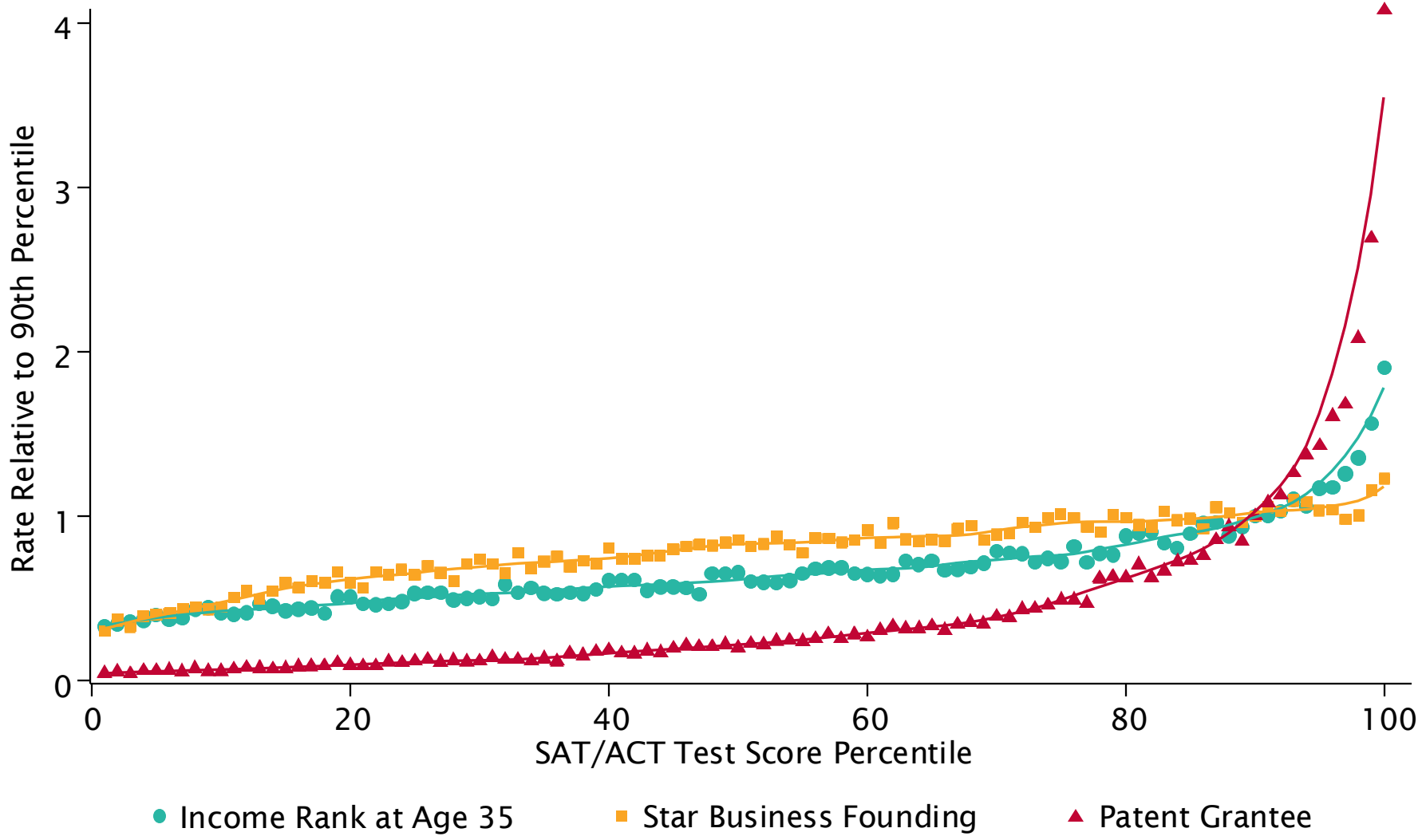
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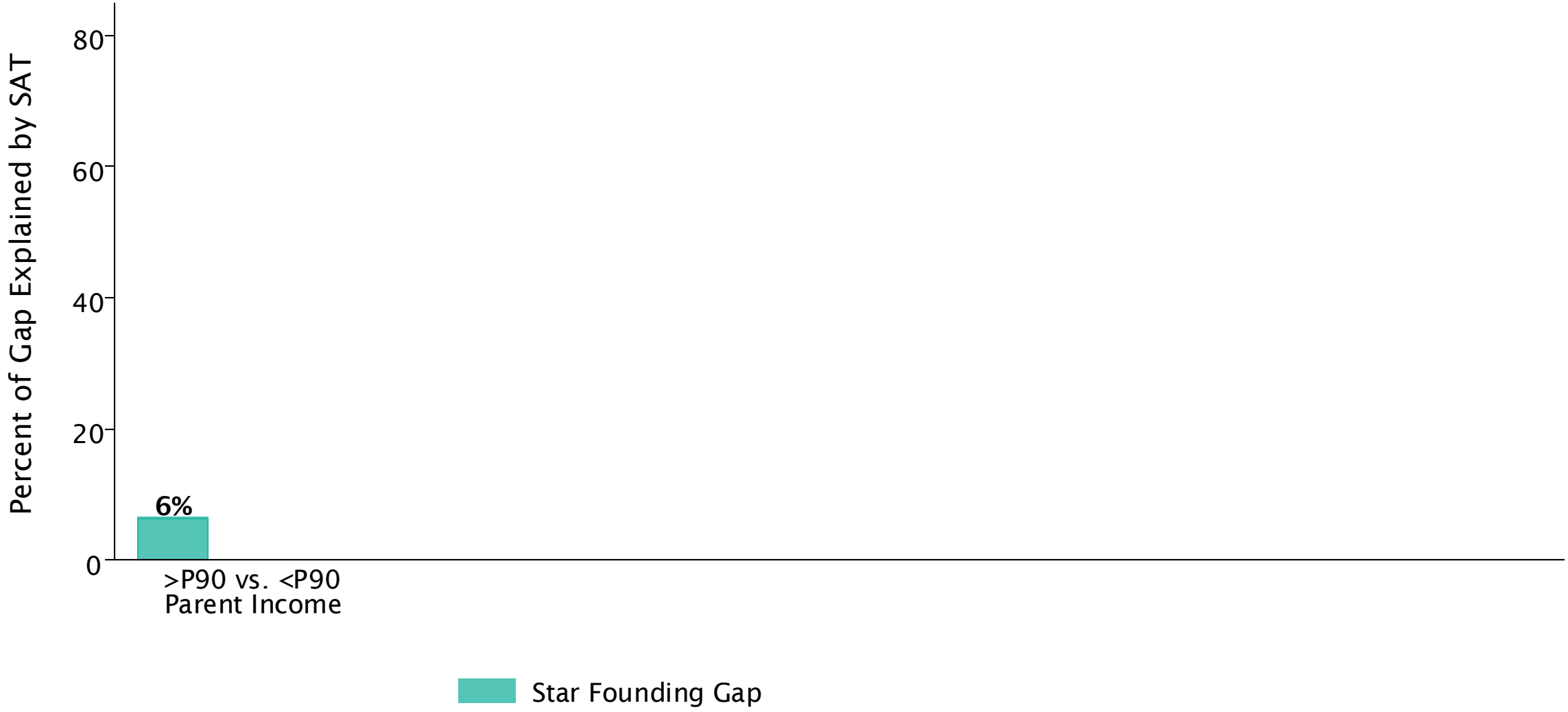
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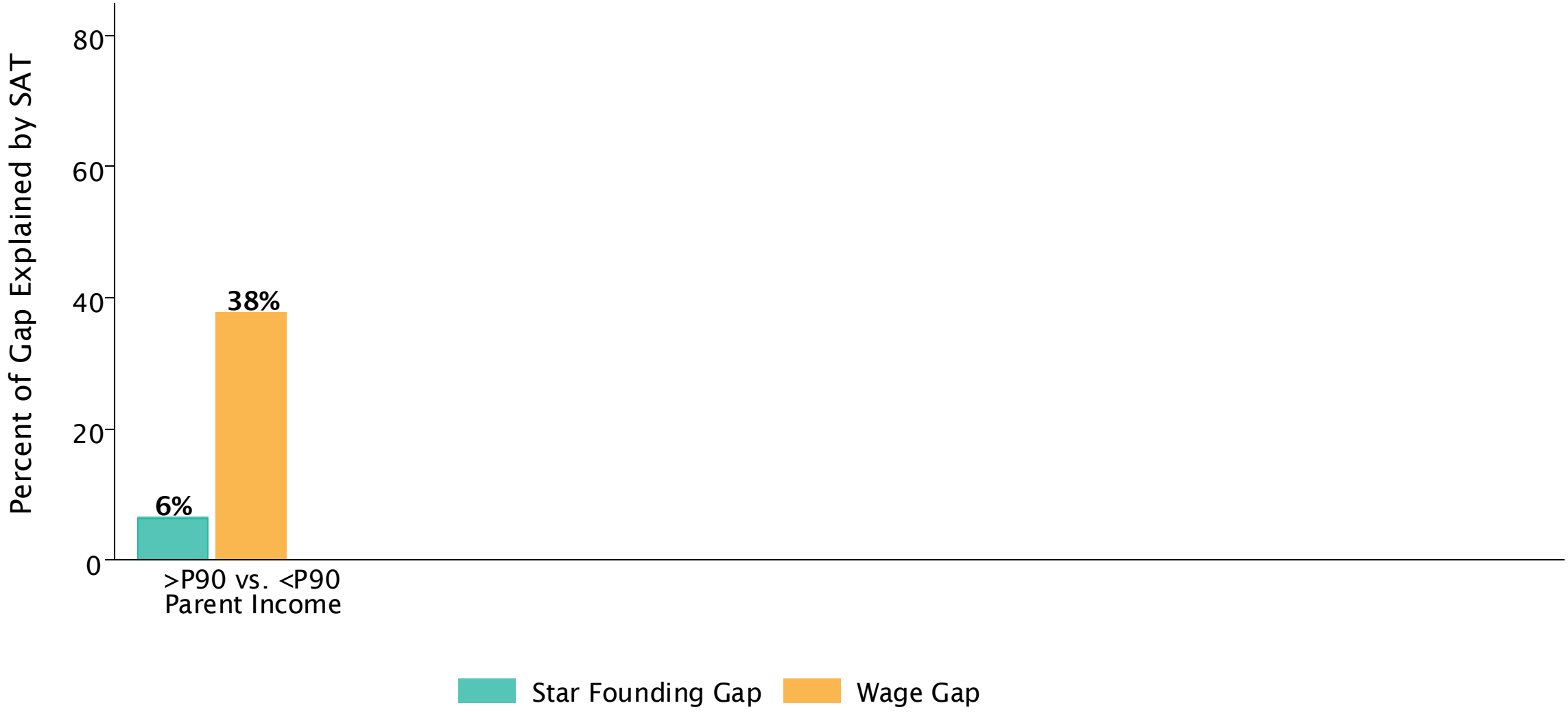
Entrepreneurship vs. Income Gaps Explained by Test Scores

Sample: Star Founders between 2000 and 2022



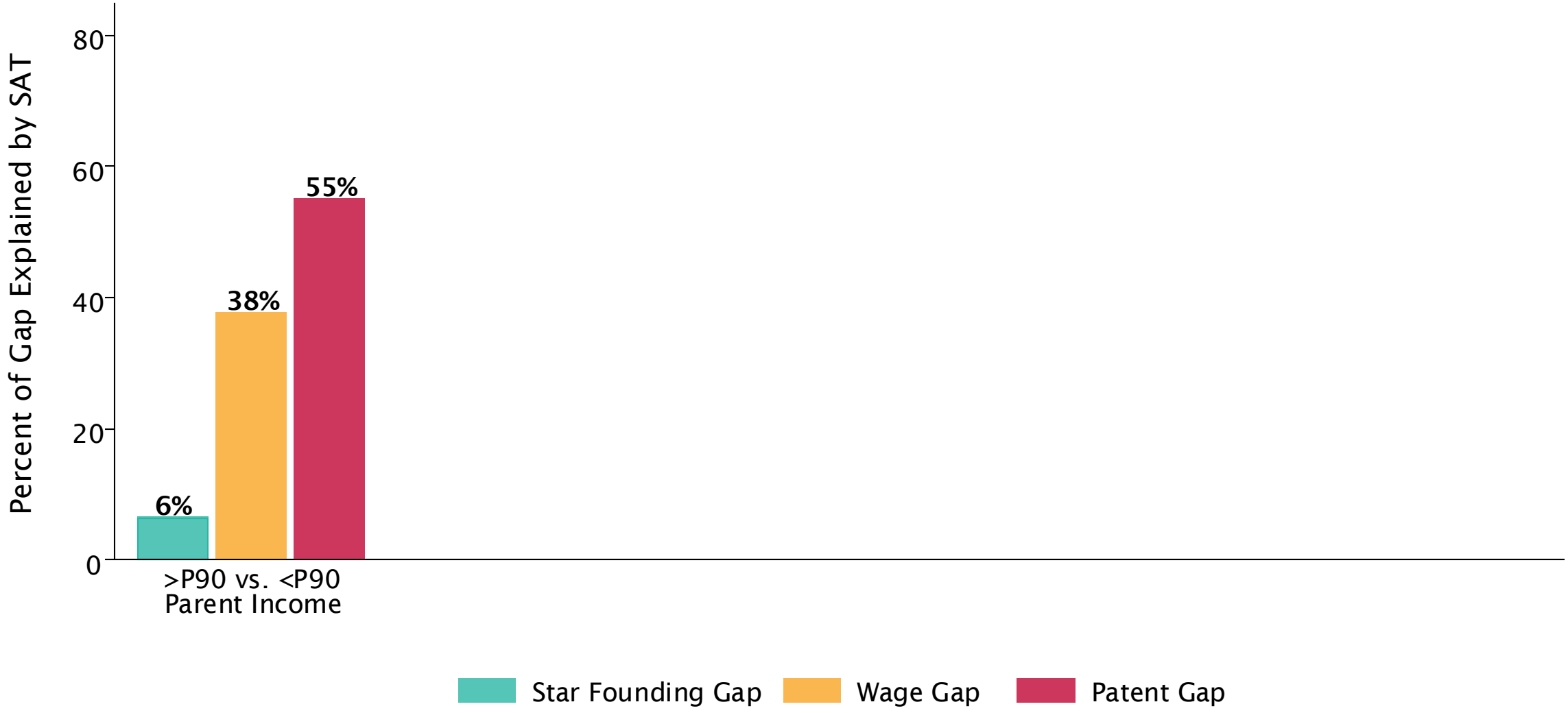
Entrepreneurship vs. Income Gaps Explained by Test Scores

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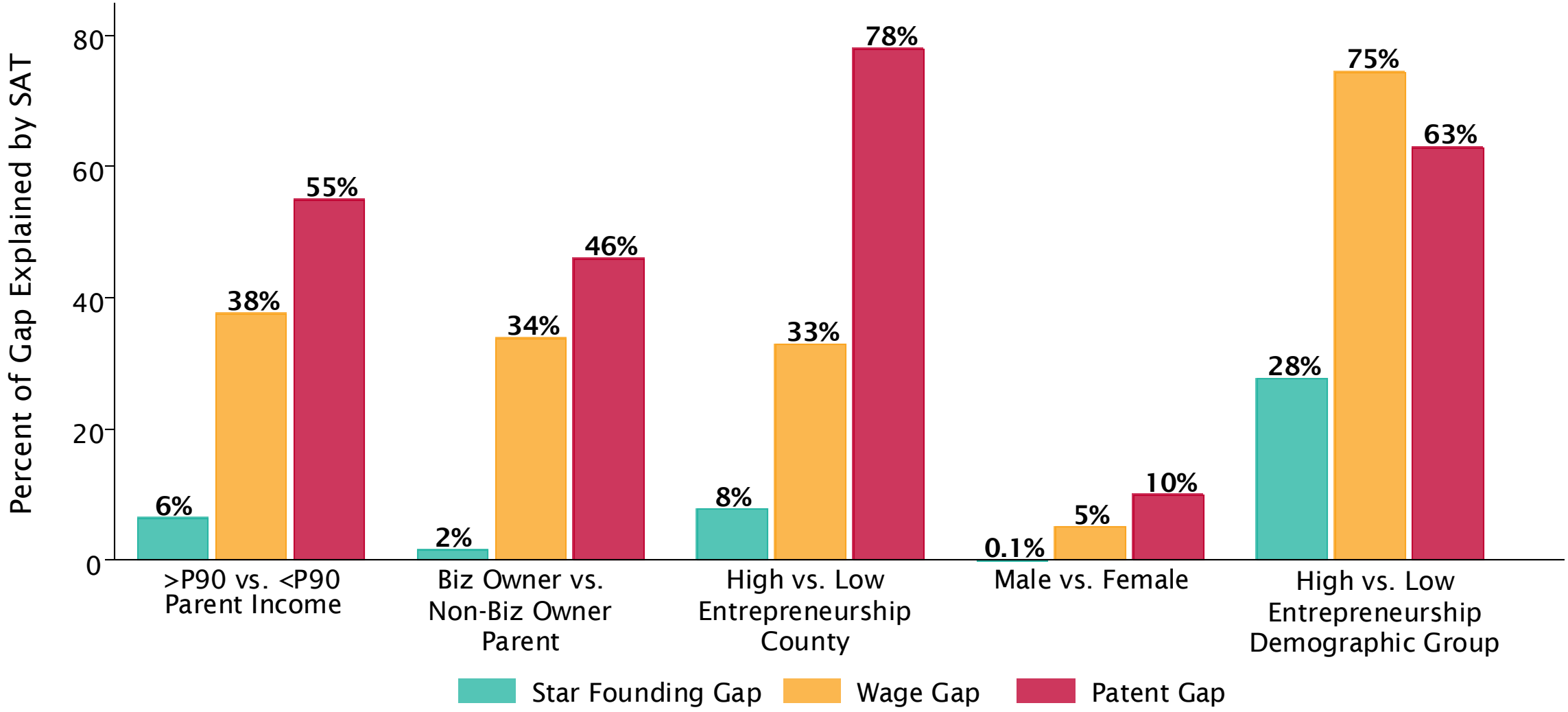
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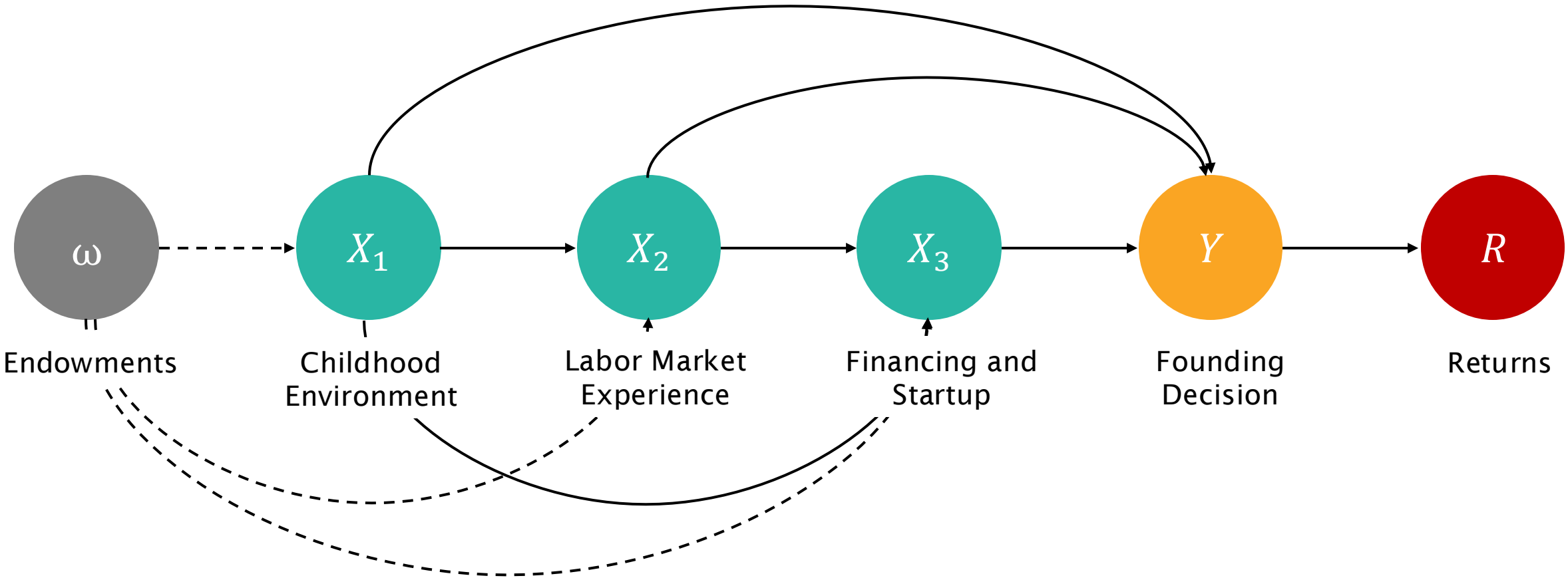


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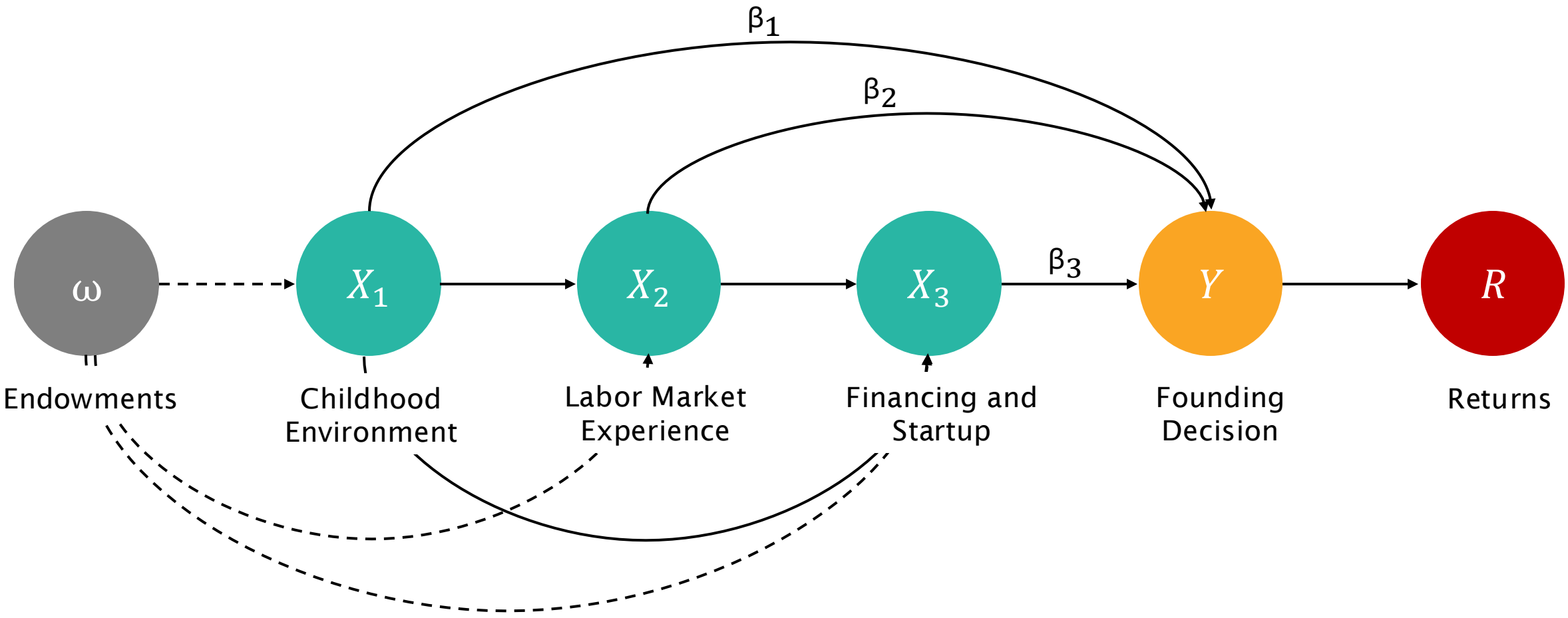
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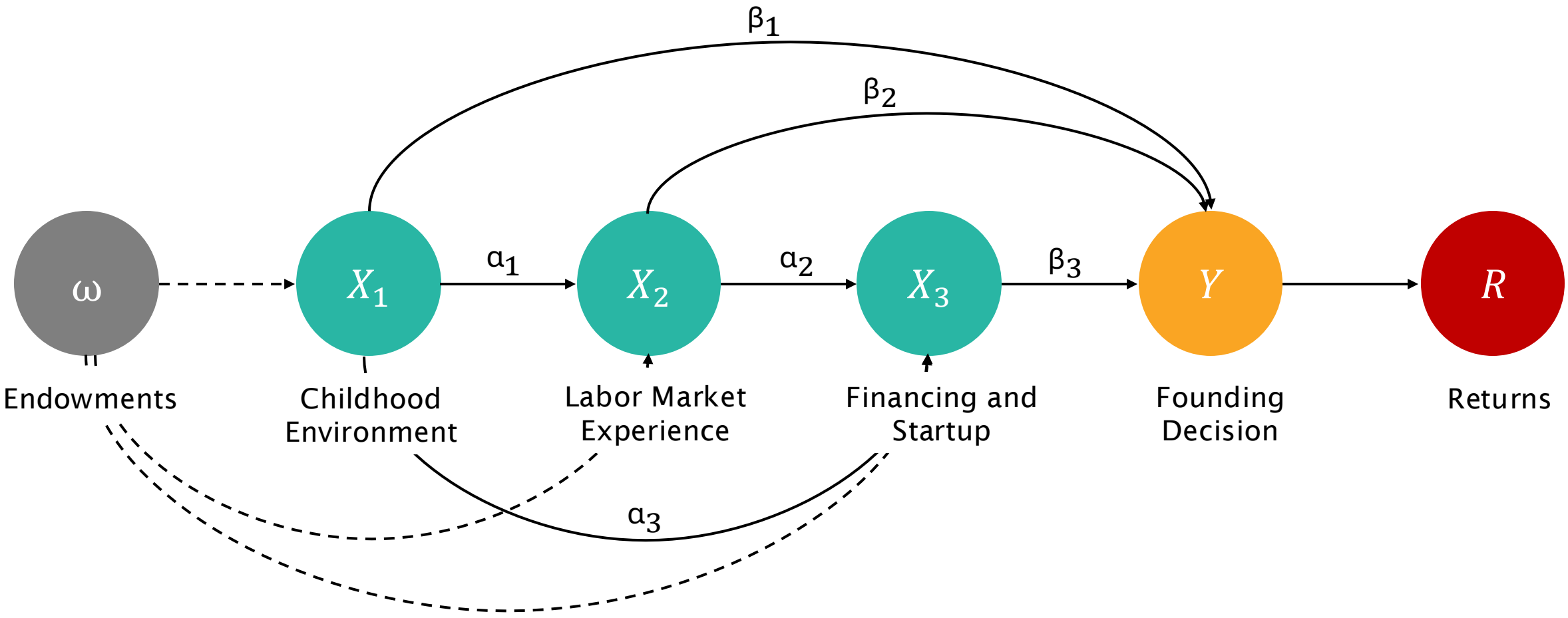
The Entrepreneurial Pipeline



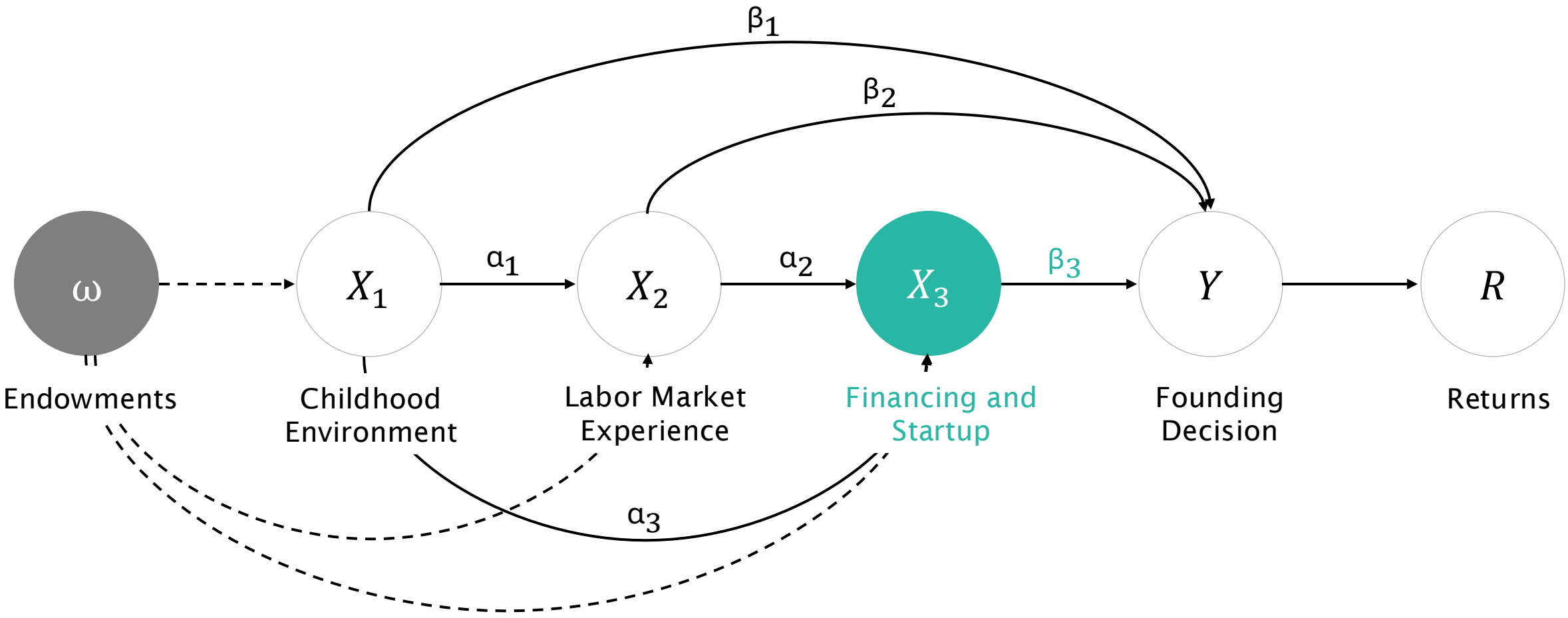
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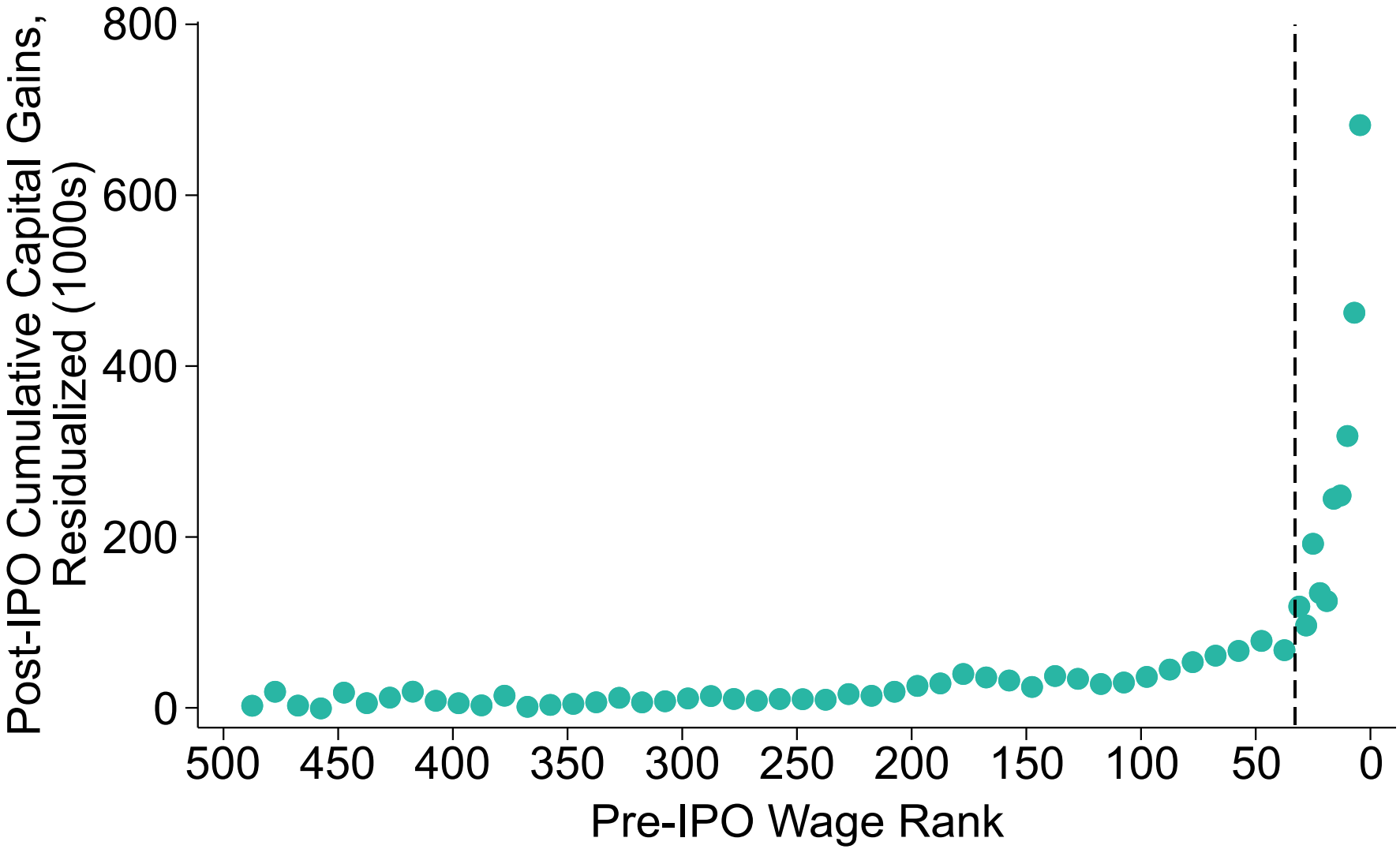
The Entrepreneurial Pipeline



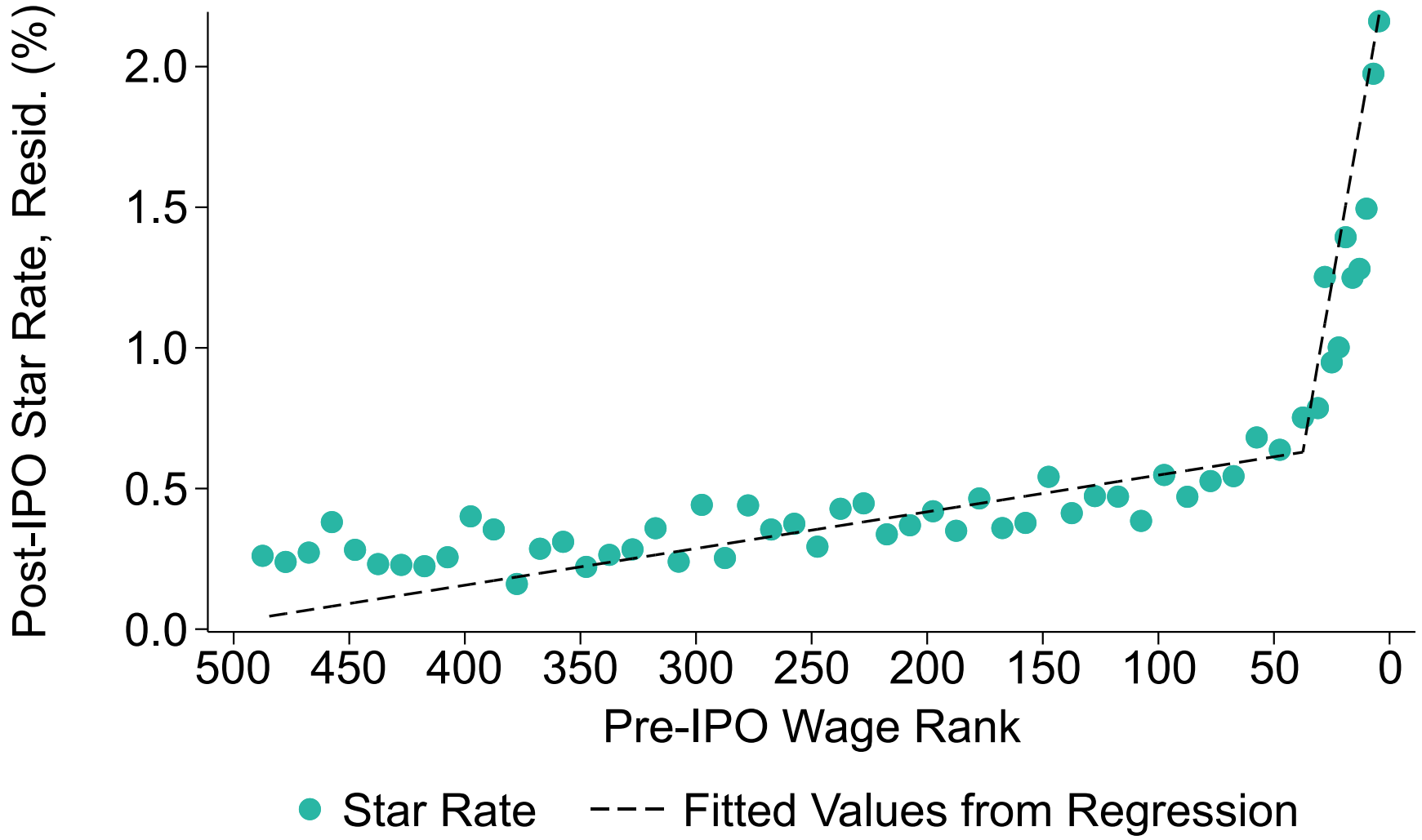
The Entrepreneurial Pipeline I: Liquid Wealth



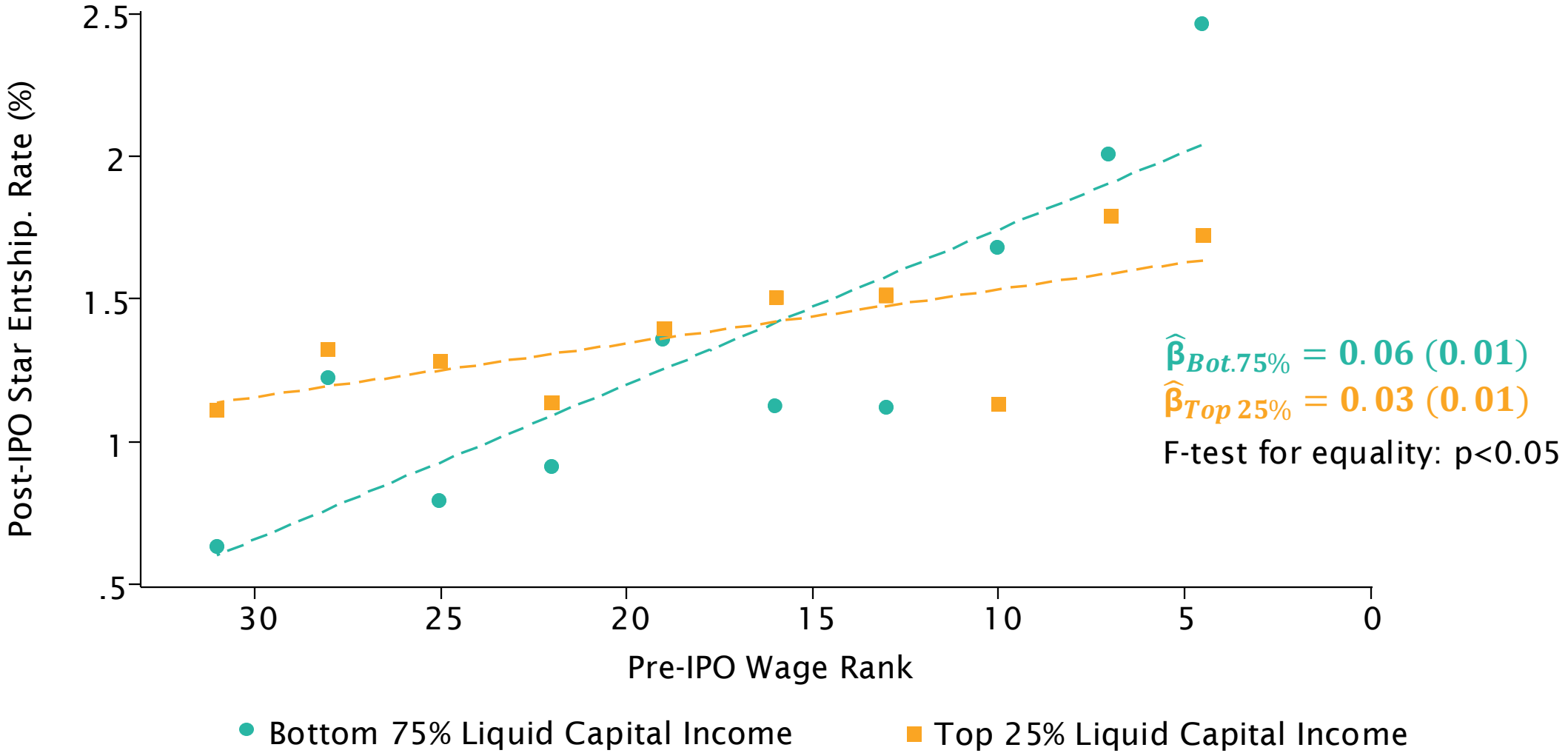
Wealth Windfall by Wage Rank in Initial Public Offerings



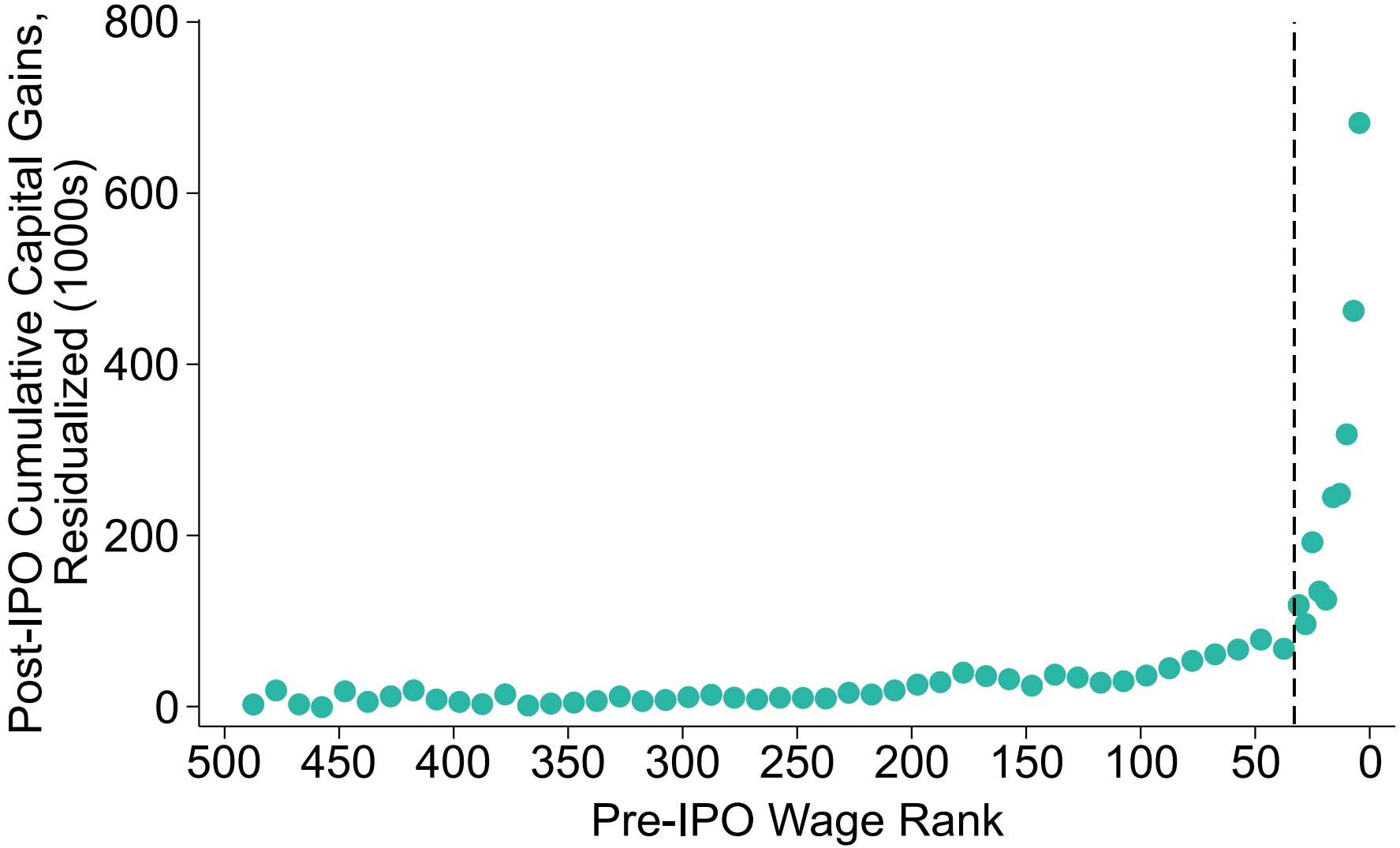
Impact of IPO Cash Windfalls on Subsequent Entrepreneurship Rates



Impact of IPO Cash Windfalls on Subsequent Entrepreneurship Rates



First Stage IPO Total Wealth Windfall



Change in wage rank of 10 positions increases IPO wealth by $3.66M

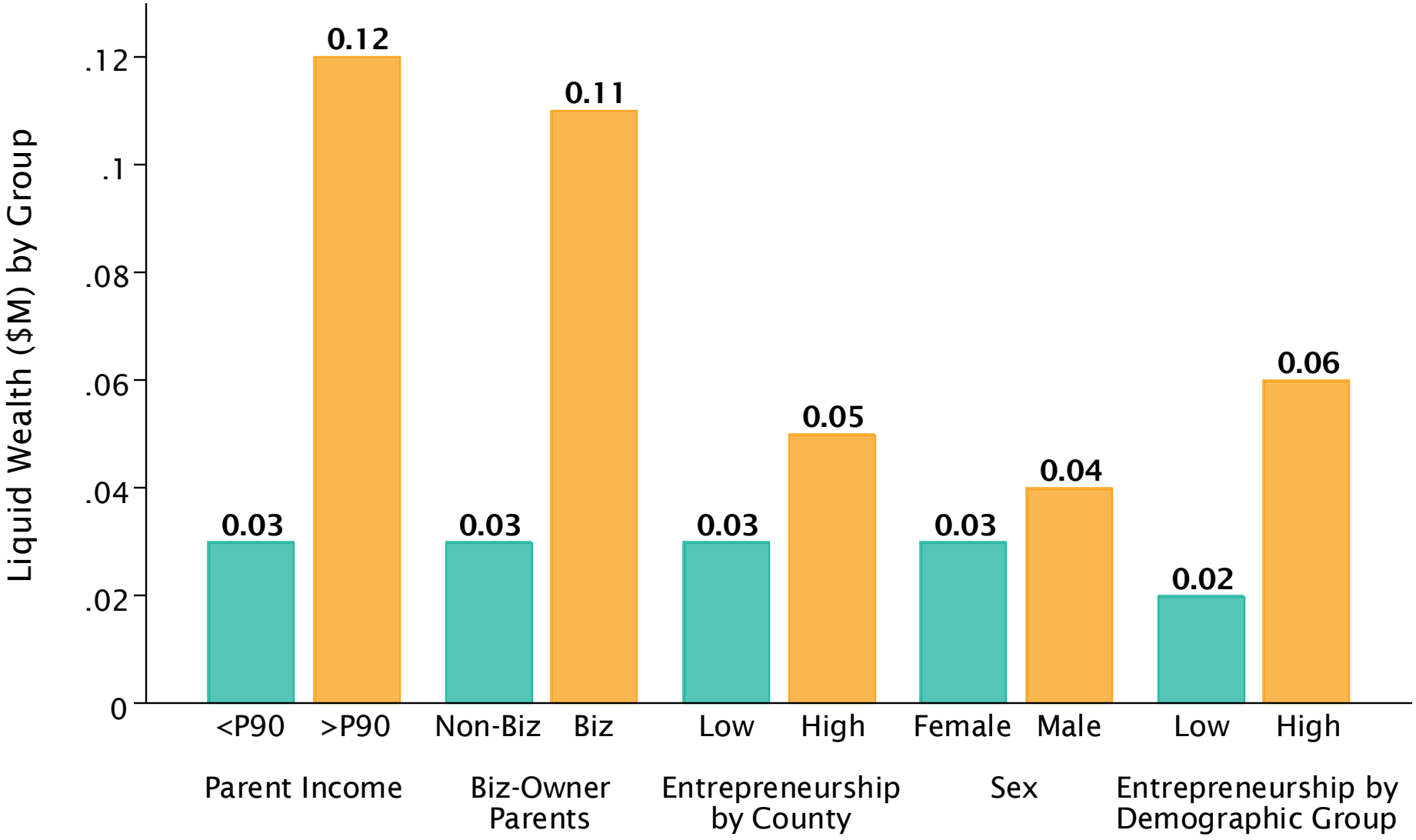
↓

Reduced form effect of 0.5% star ents per change of 10 positions

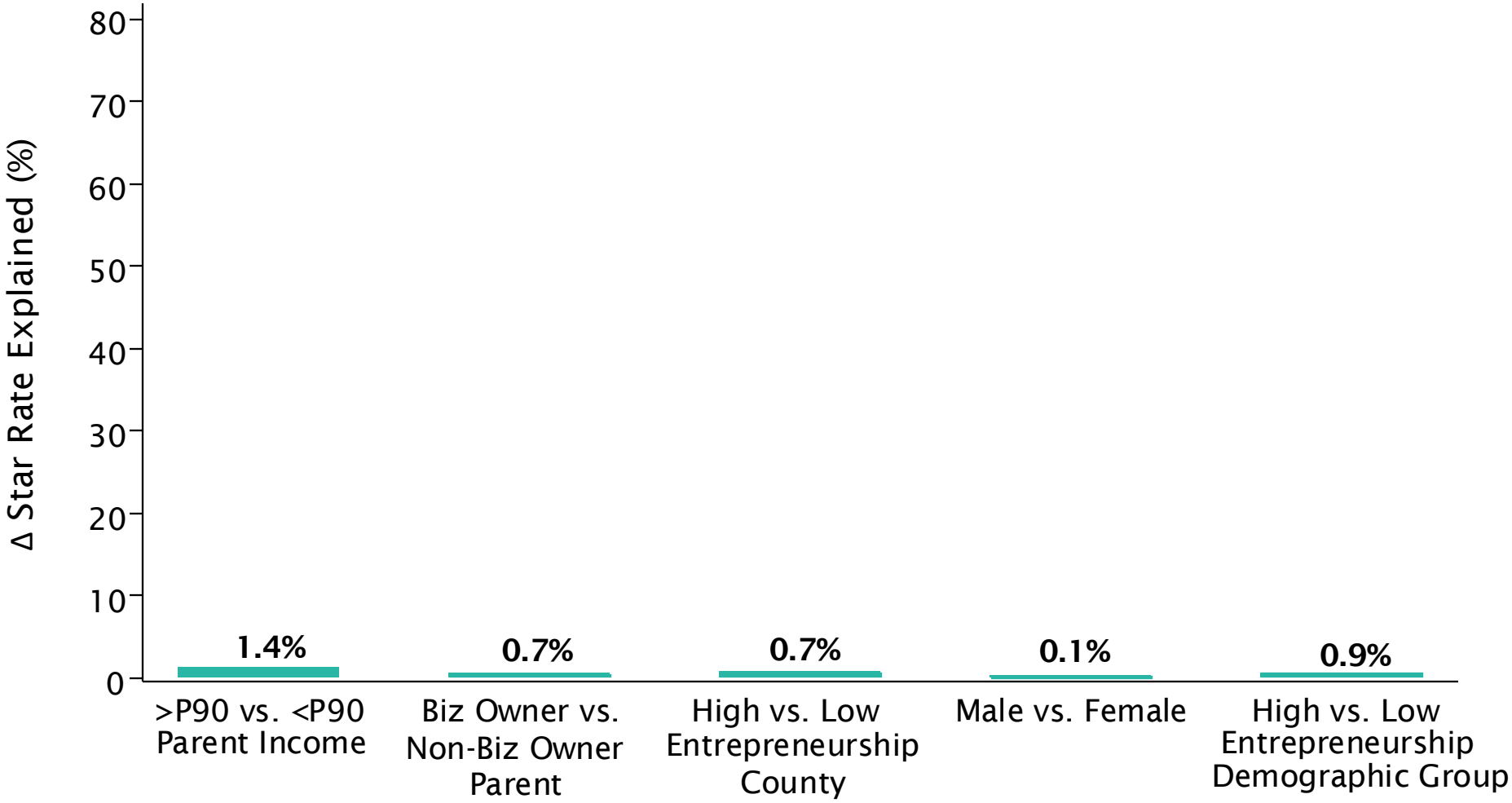
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$\hat{\beta}_3 =$ **0.1%** more star ents per $1M of liquid wealth

Gaps in Liquid Wealth by Group

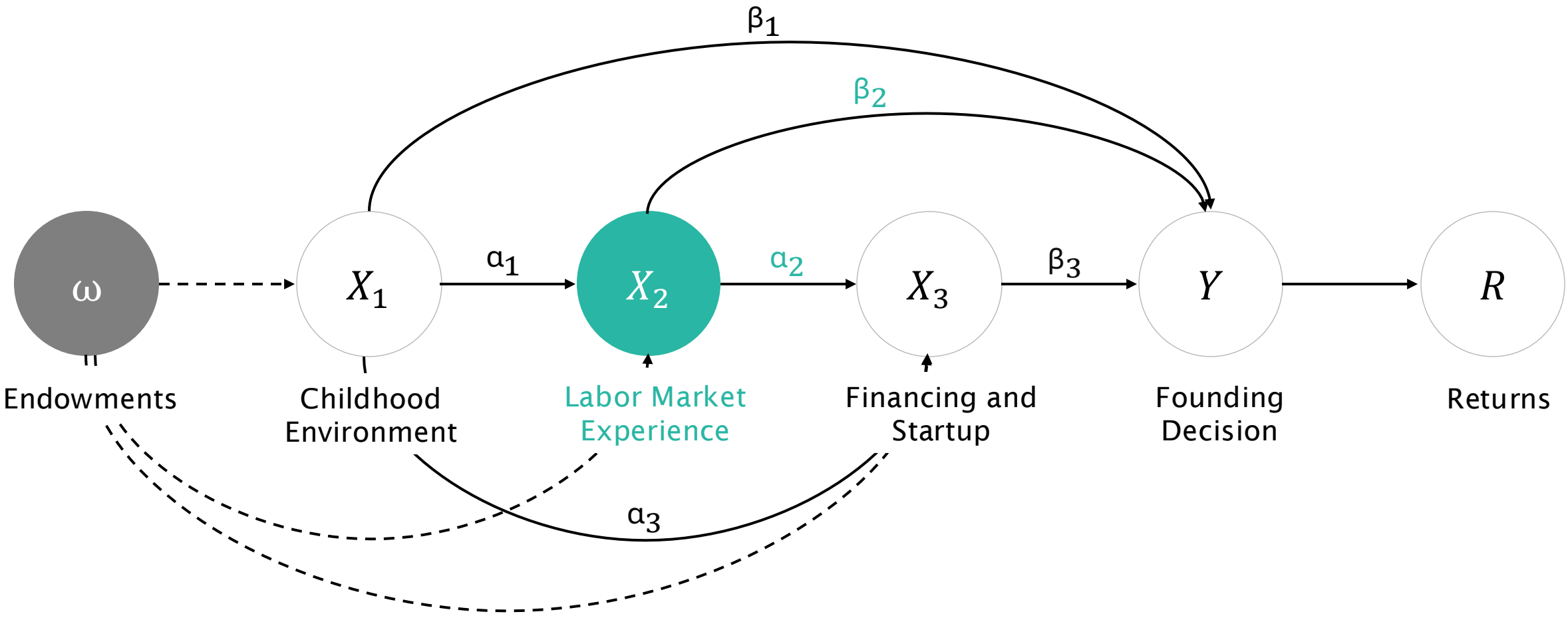


Differences in Wealth Account for a Small Share of Entrepreneurship Gap



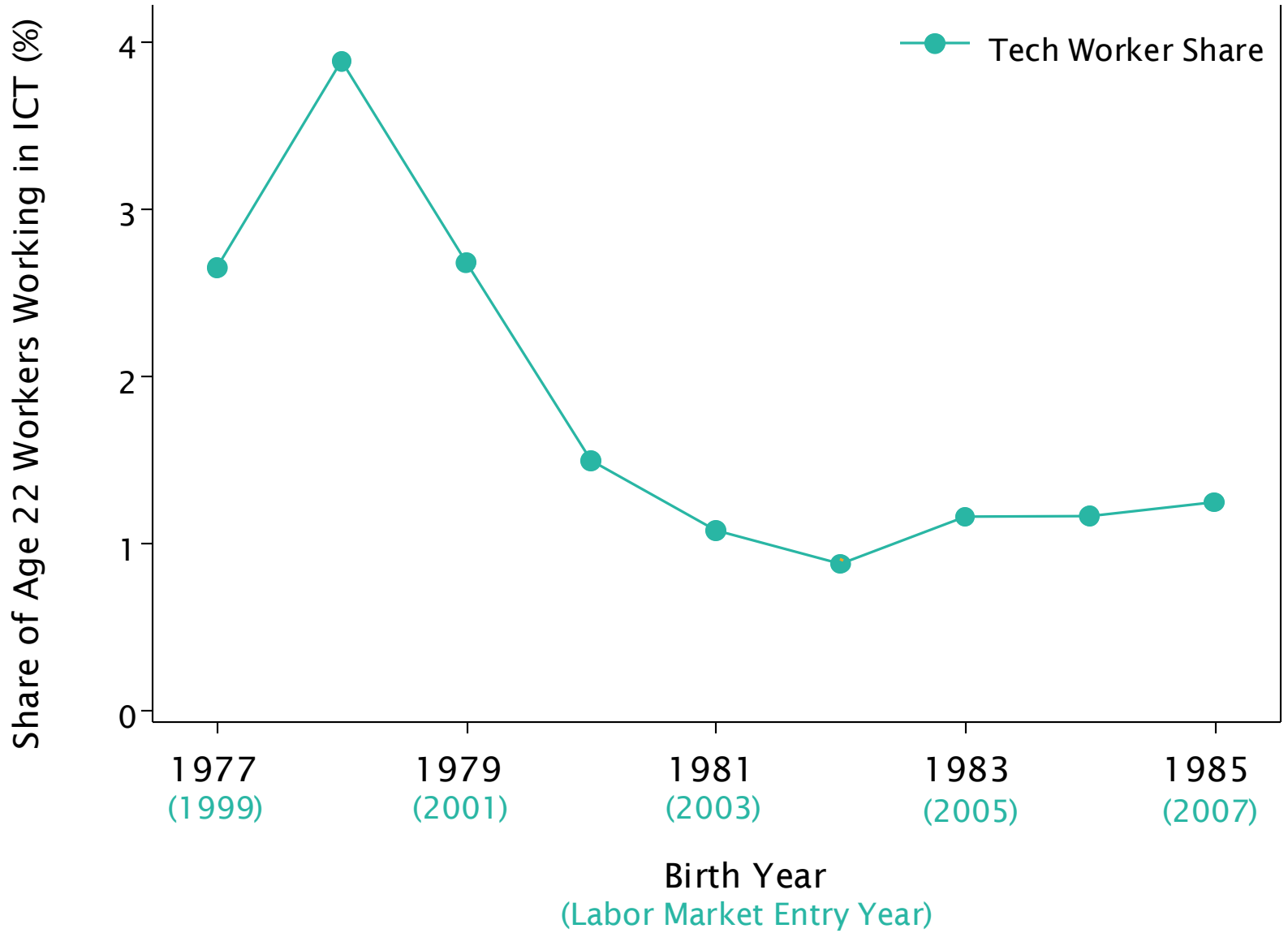
Share of Gap Explained by Liquid Wealth = $\hat{\beta}_3 \times \Delta$ Liquid Wealth / Δ Entrepreneurship

The Entrepreneurial Pipeline II: Labor Market Experience



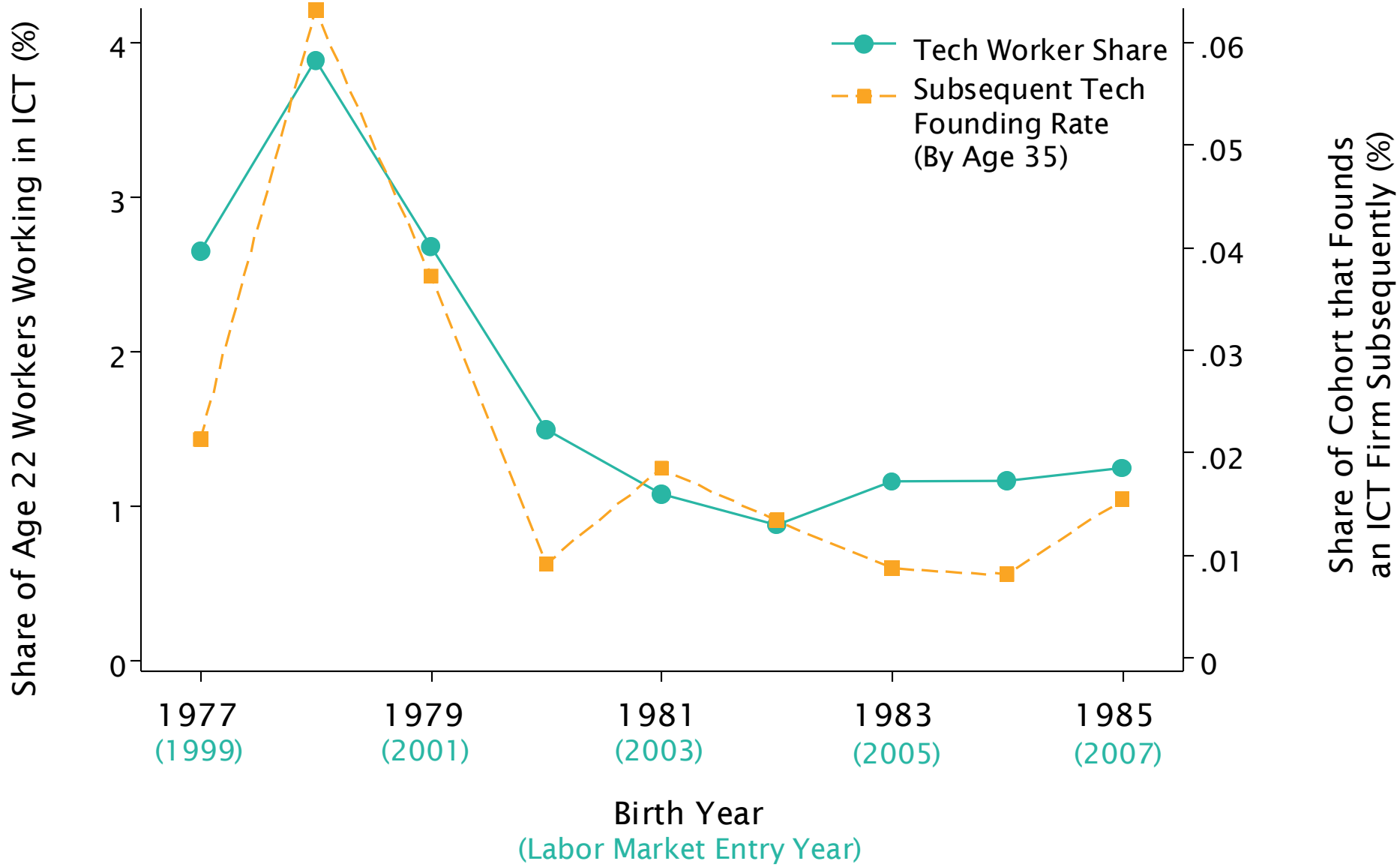
Impacts of First Job on Founding: Dot-Com Boom Illustration

Individuals Living in San Francisco at Age 22



Impacts of First Job on Founding: Dot-Com Boom Illustration

Individuals Living in San Francisco at Age 22



Estimating the Impact of Initial Labor Market Experience

Build on this example to investigate whether initial sector in which a person works affects overall founding rates, exploiting high-frequency labor demand fluctuations

Design: exploit fluctuations in labor demand across cohorts by sector within counties

- Some industries produce more entrepreneurs than others (e.g., computer design vs. semiconductor manufacturing; auto repair vs. auto manufacturing)
- If those industries are hiring more when you graduate from college in your county, are you more likely to become an entrepreneur?
- ID assumption: Cross-cohort fluctuations in demand by sector are uncorrelated with potential founding rates in subsequent years across cohorts



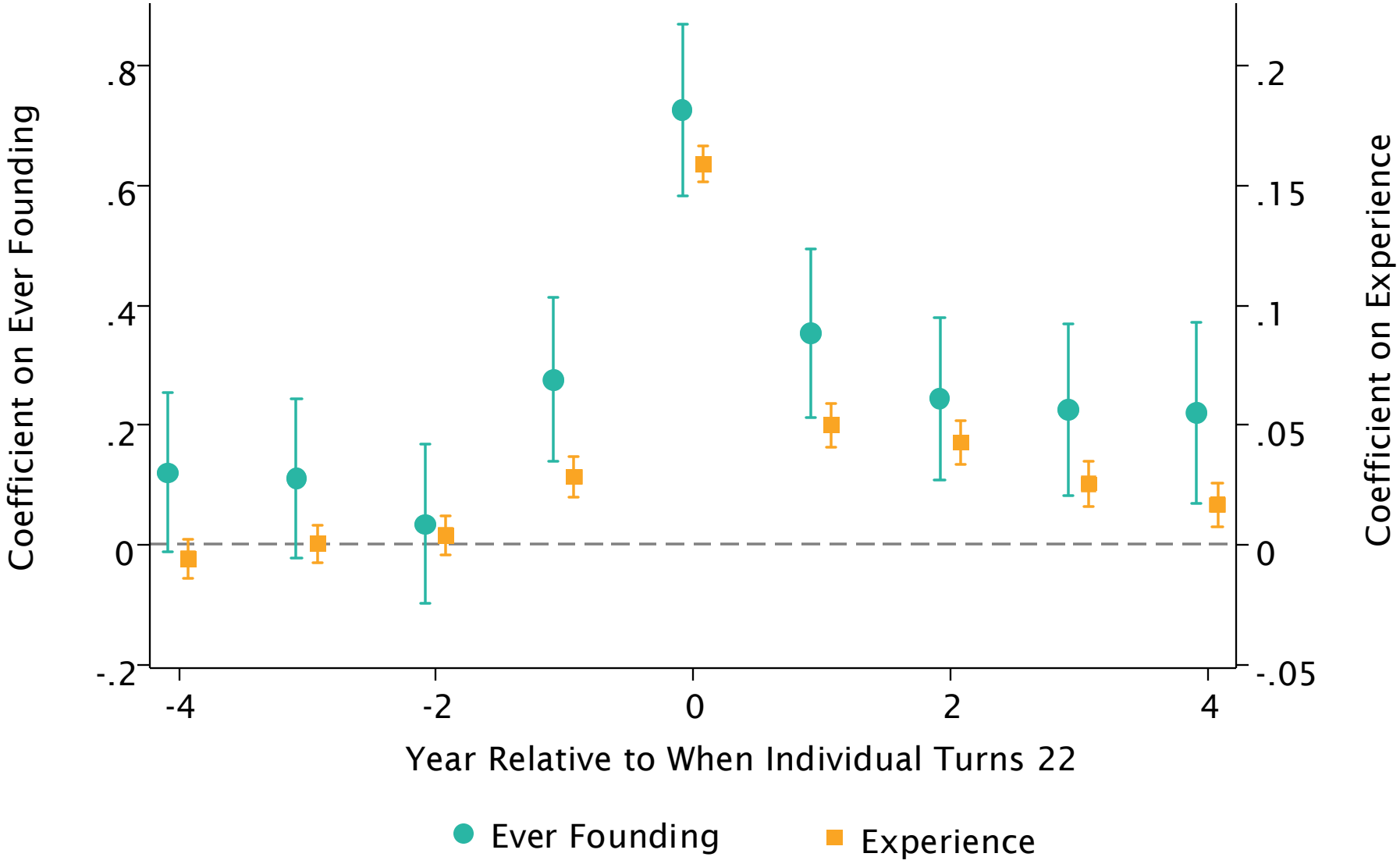
Impacts of Early Labor Market Experience on Business Founding Rates



Note: x and y variables are residuals from regressions on age 22 county and cohort fixed effects

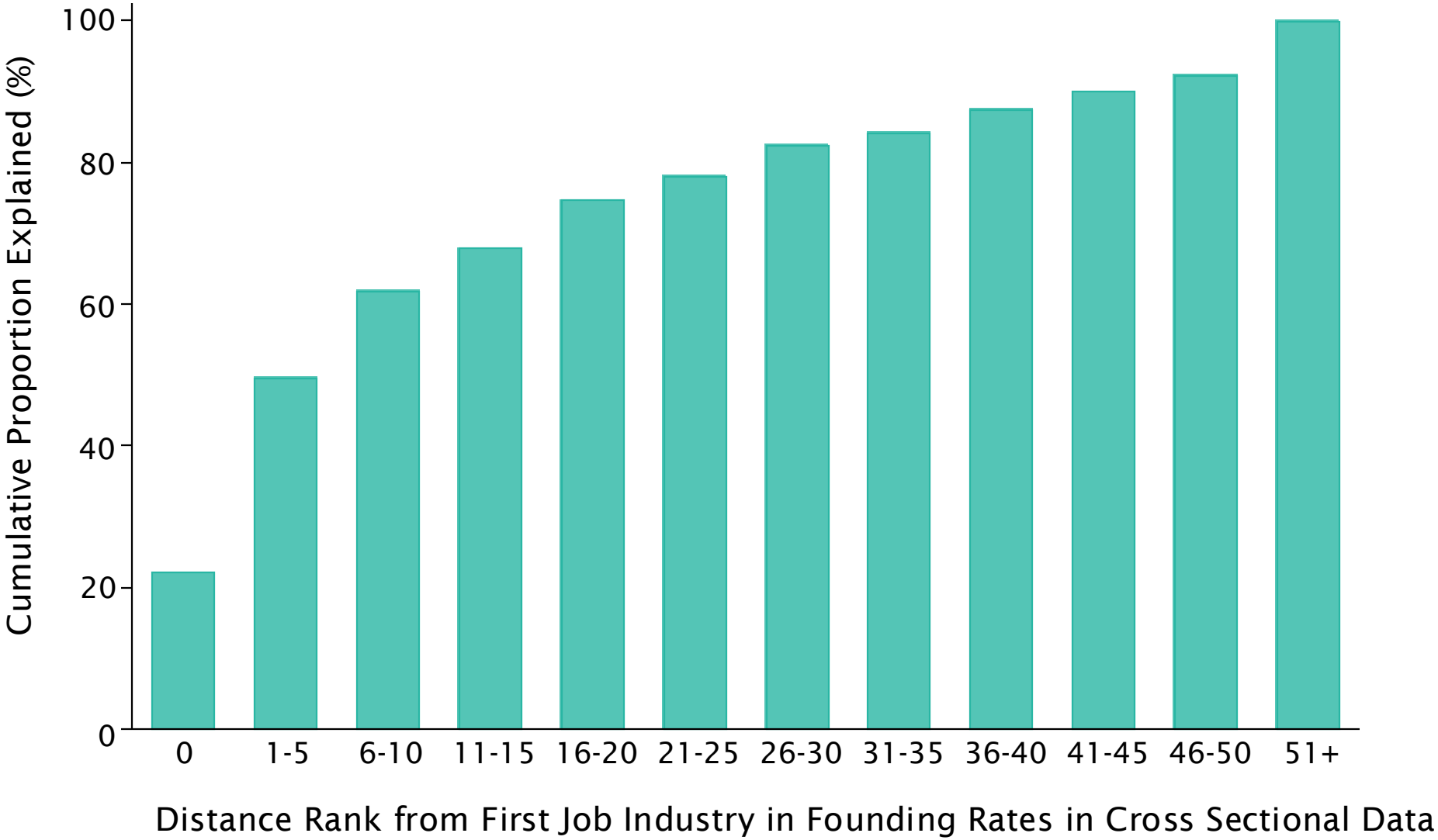
Impact of Labor Market Hiring Shocks on Subsequent Business Founding

Coefficients on Leads and Lags of Shocks from Separate OLS Regressions

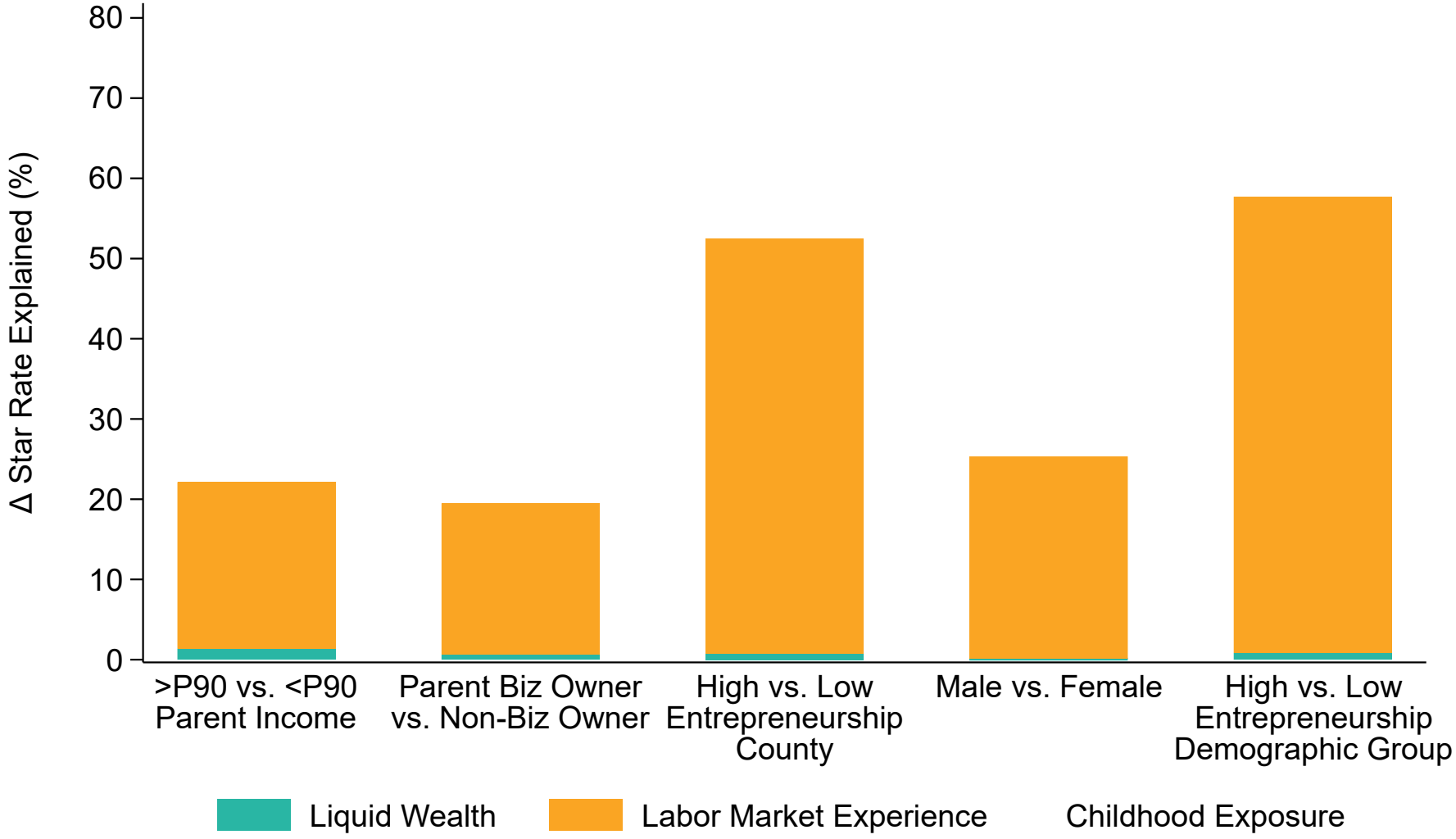


Impacts of Labor Market Experience on Founding Rates Across Industries

Distance Between Industry (4 Digit NAICS) of Business Founding and Industry of Initial Job

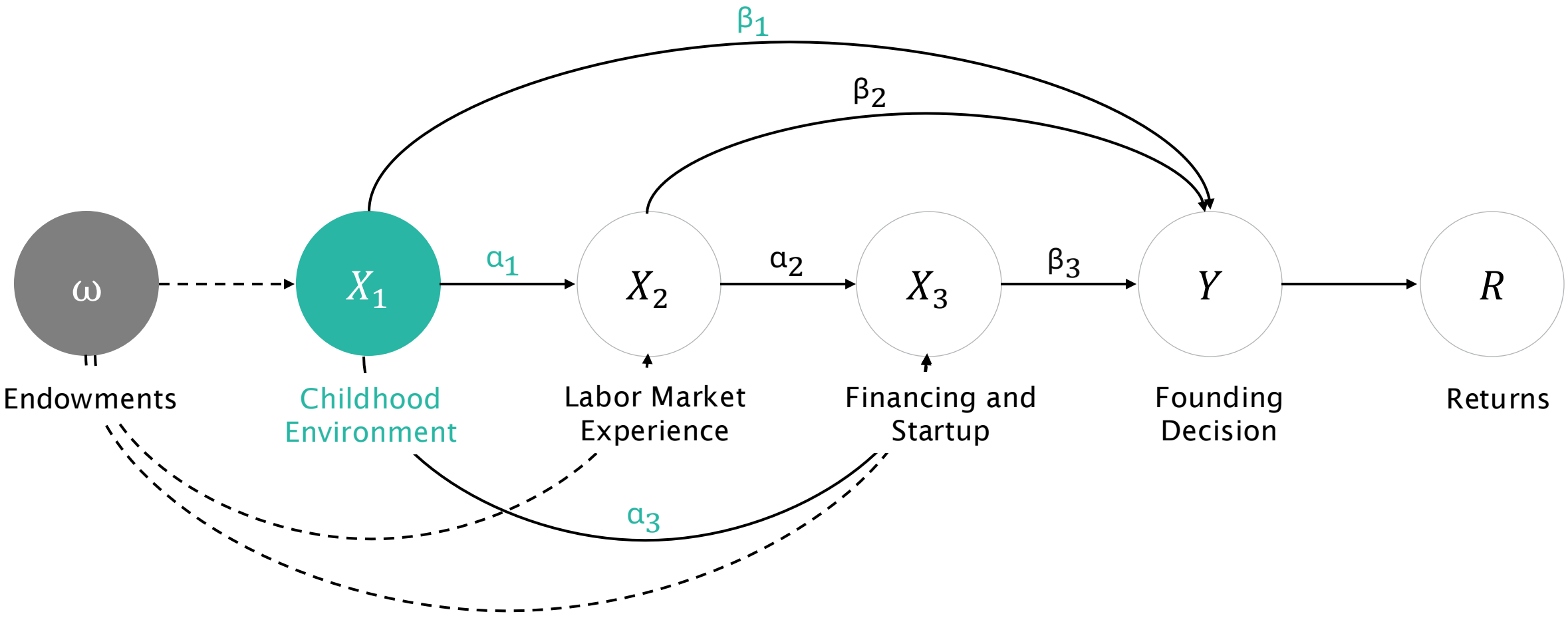


Initial Labor Market Experience Accounts for Large Share of Gaps



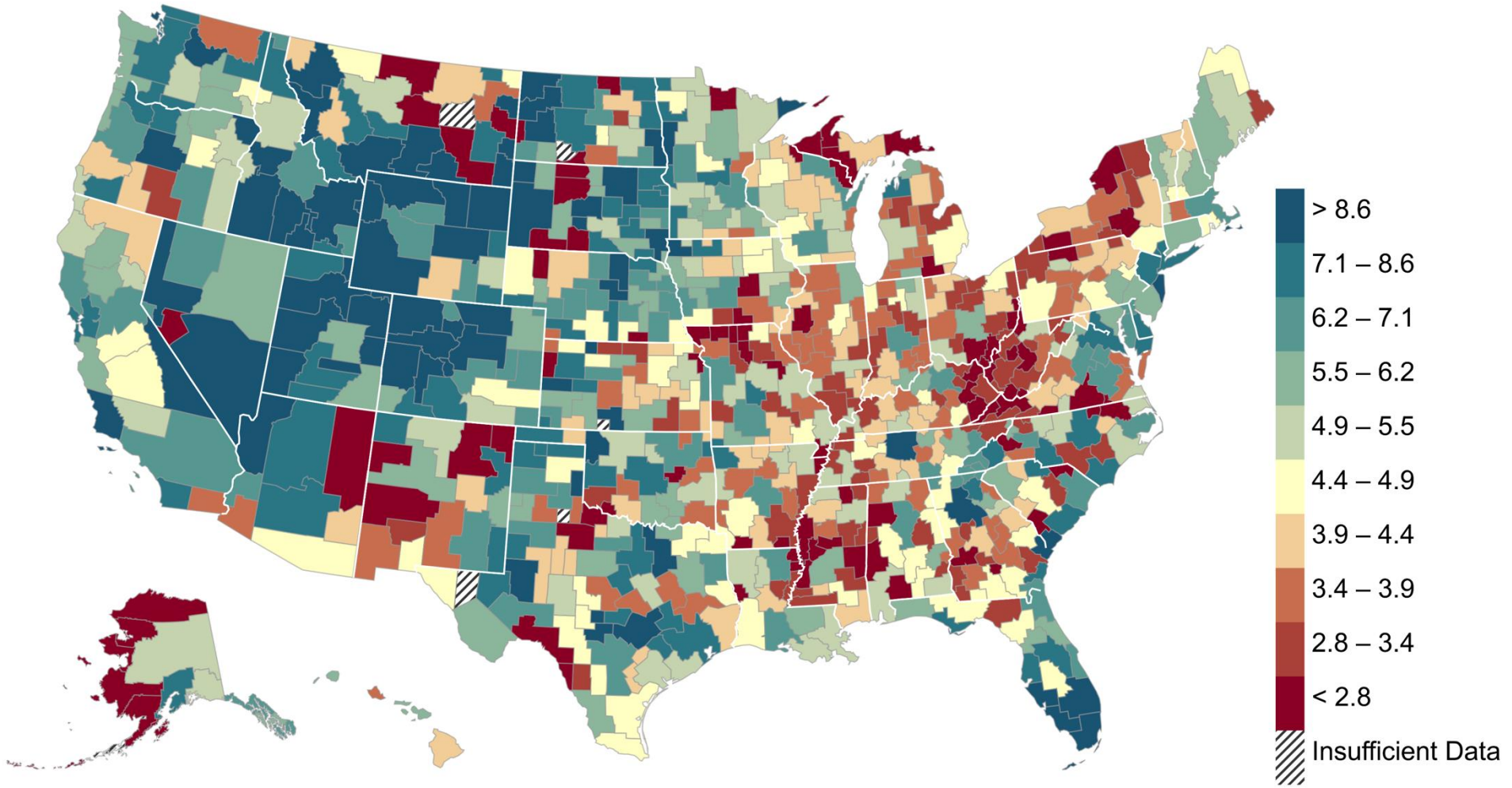
Share of gap explained by experience = $\hat{\beta}_2 \times \Delta$ Experience / Δ Entrepreneurship

The Entrepreneurial Pipeline III: Childhood Exposure



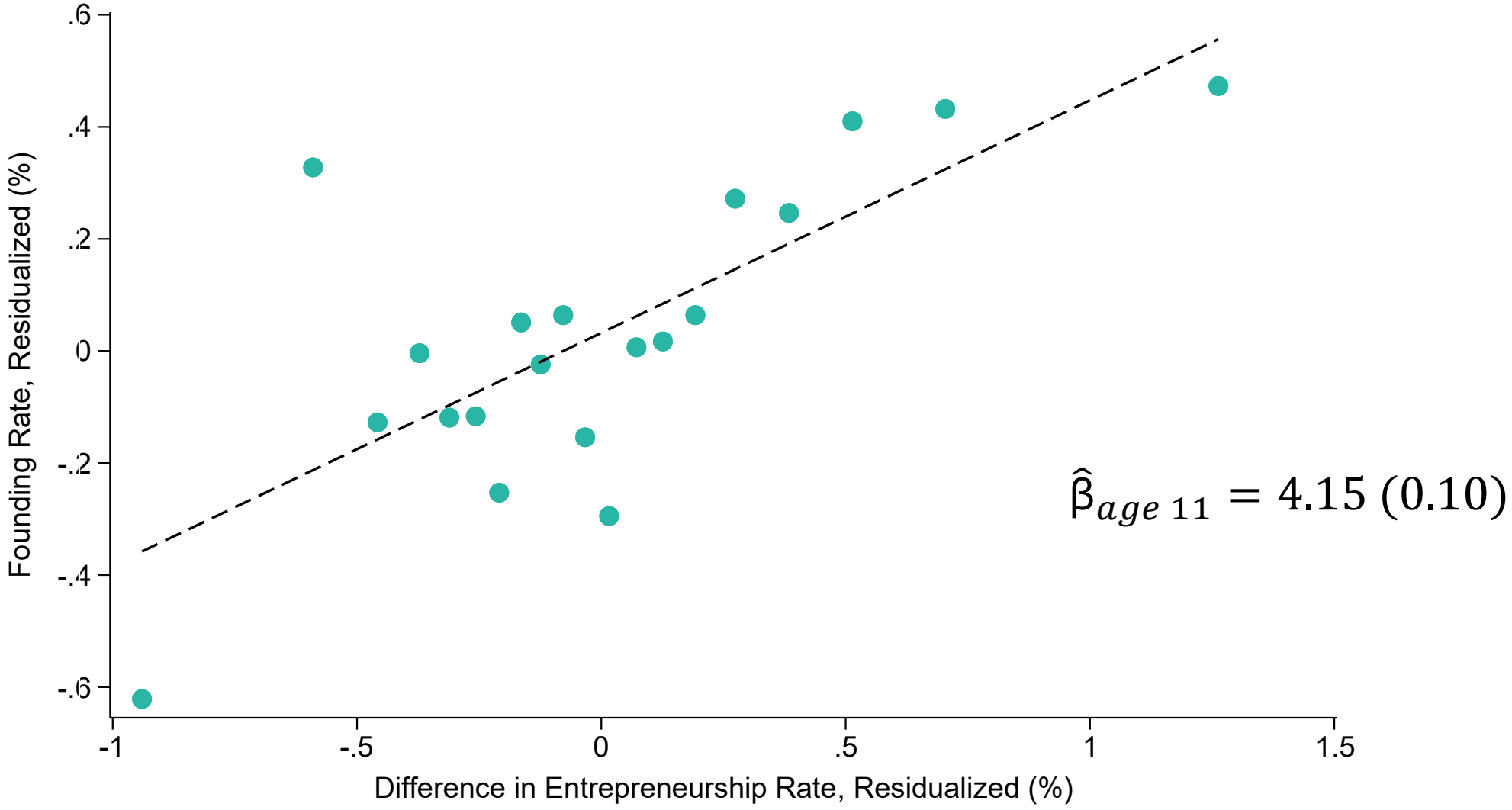
The Geography of Entrepreneurship in America

Number of Star Founders Between 2000-2022 per 1,000 Adults, by Commuting Zone

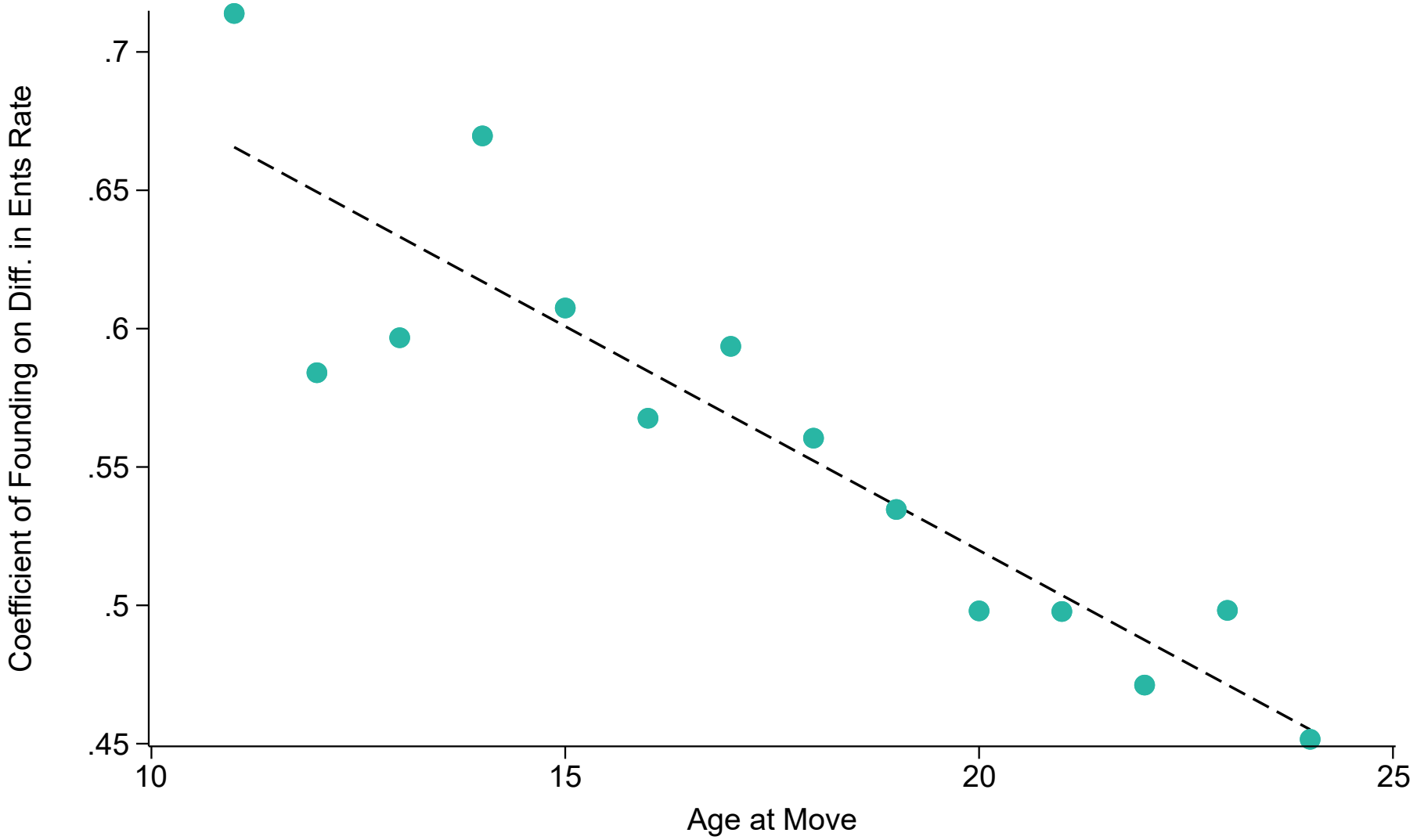


Effects of Exposure to a More Entrepreneurial Environment in Childhood

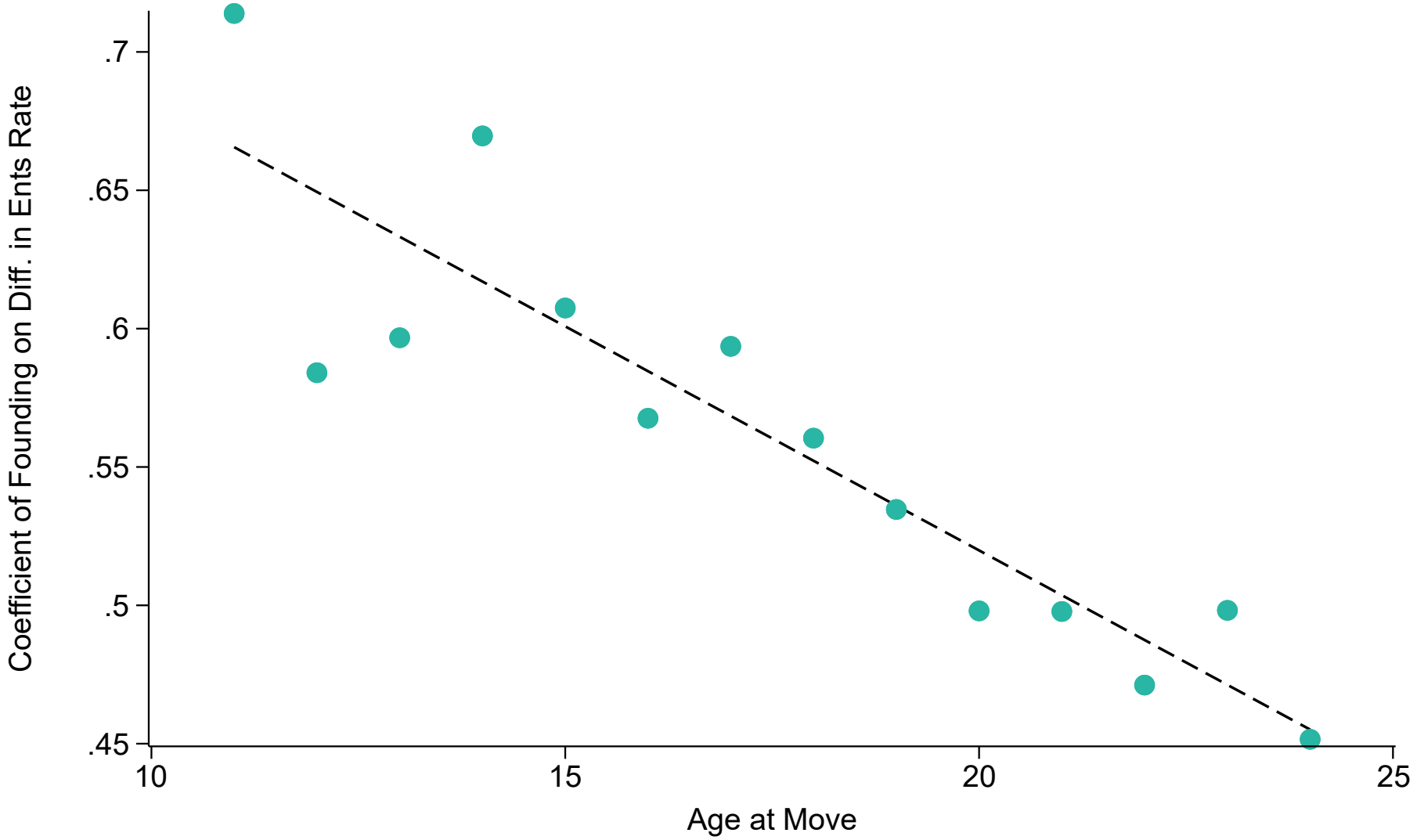
Movers at Age 11



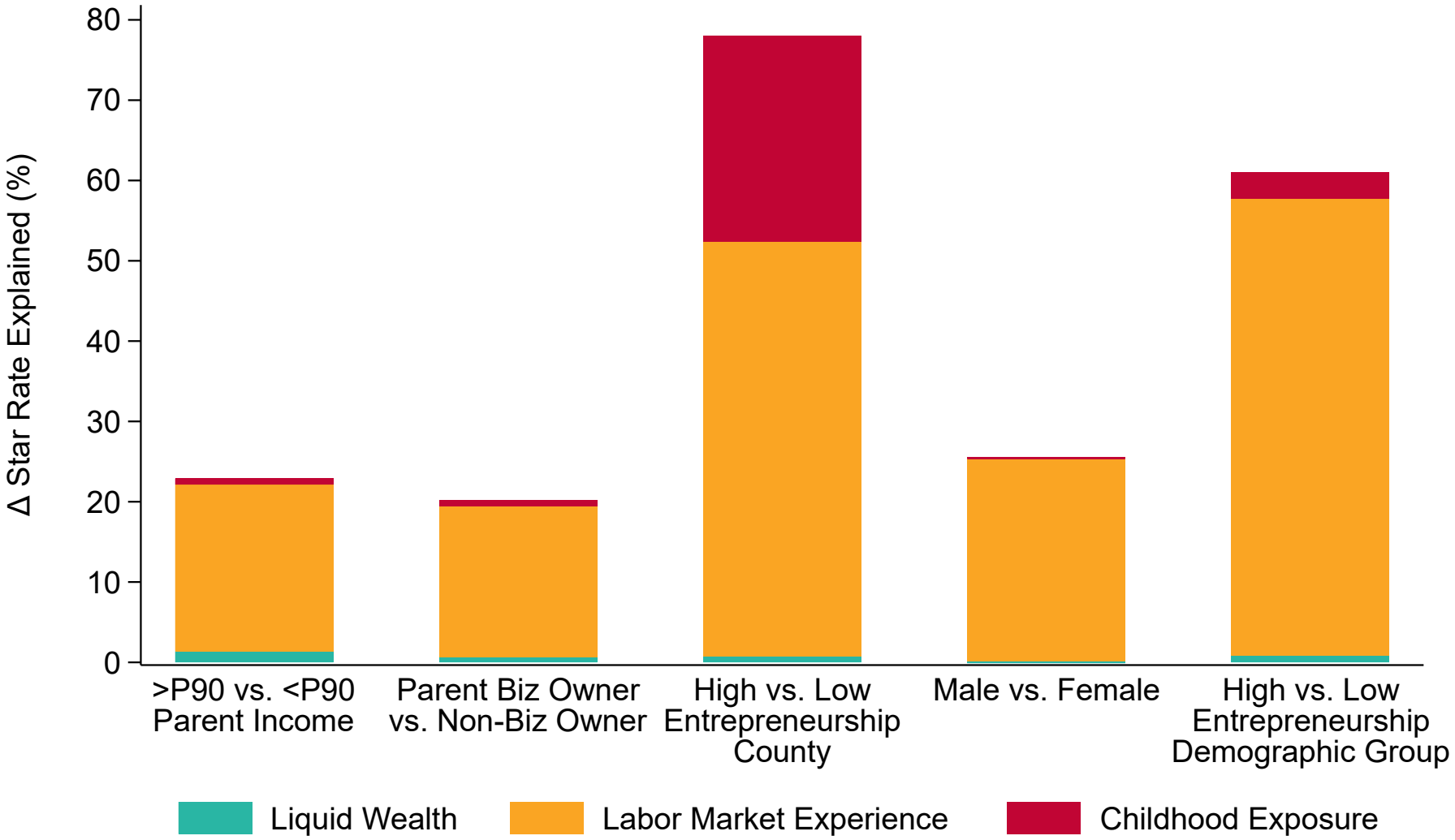
Effect of Childhood Exposure on Future Entrepreneurship: Movers Design



Effect of Childhood Exposure on Future Entrepreneurship: Movers Design

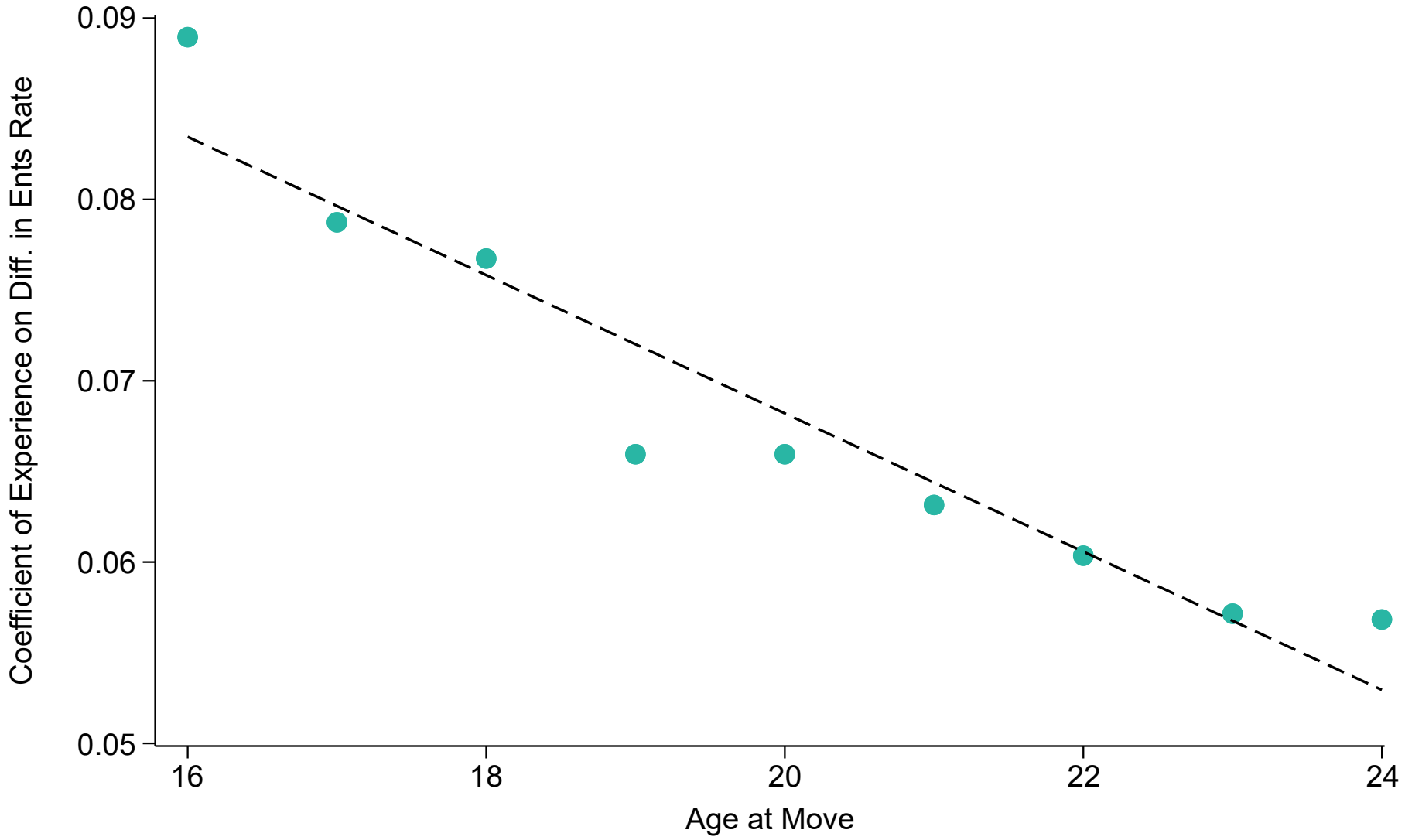


Differences in Childhood Exposure to Ents Explain Small Share of Gaps



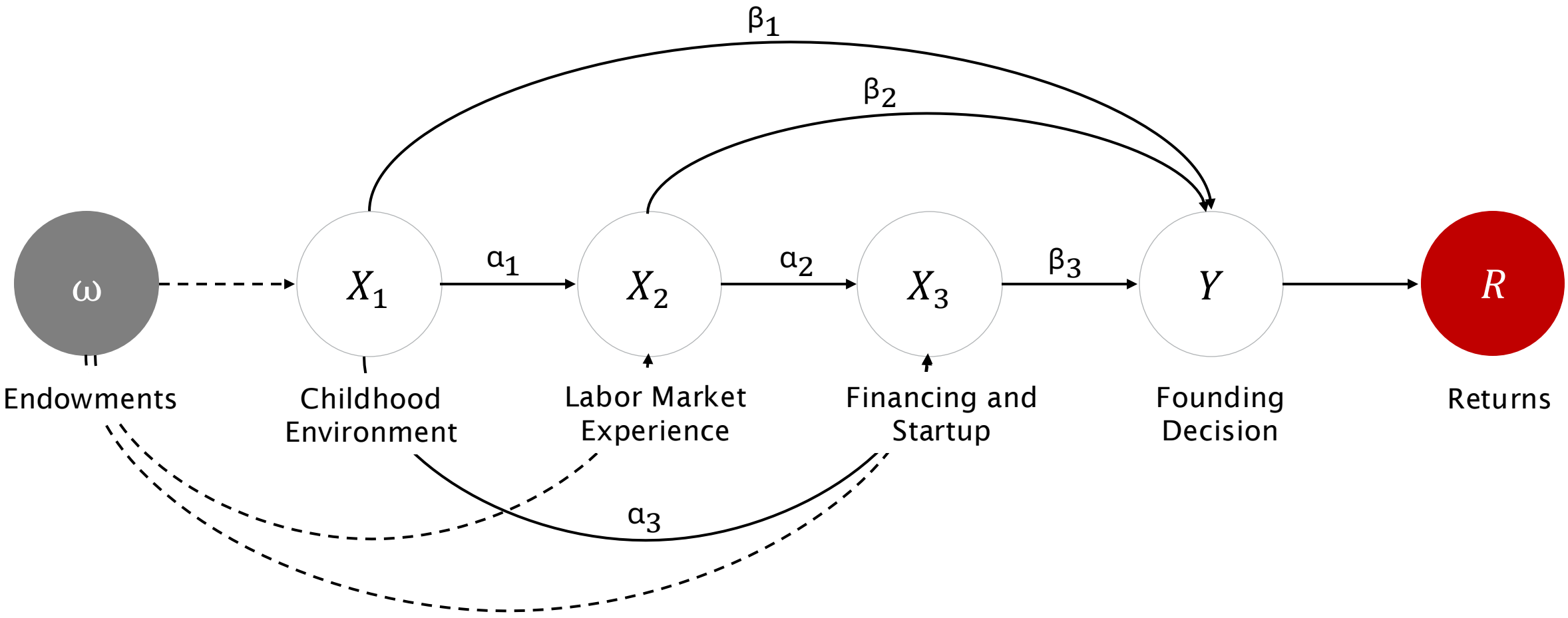
Share of gap explained by exposure = $\hat{\beta}_1 \times \Delta$ Exposure / Δ Entrepreneurship

Impact of Childhood Exposure on Entrepreneurial Experience in Labor Market

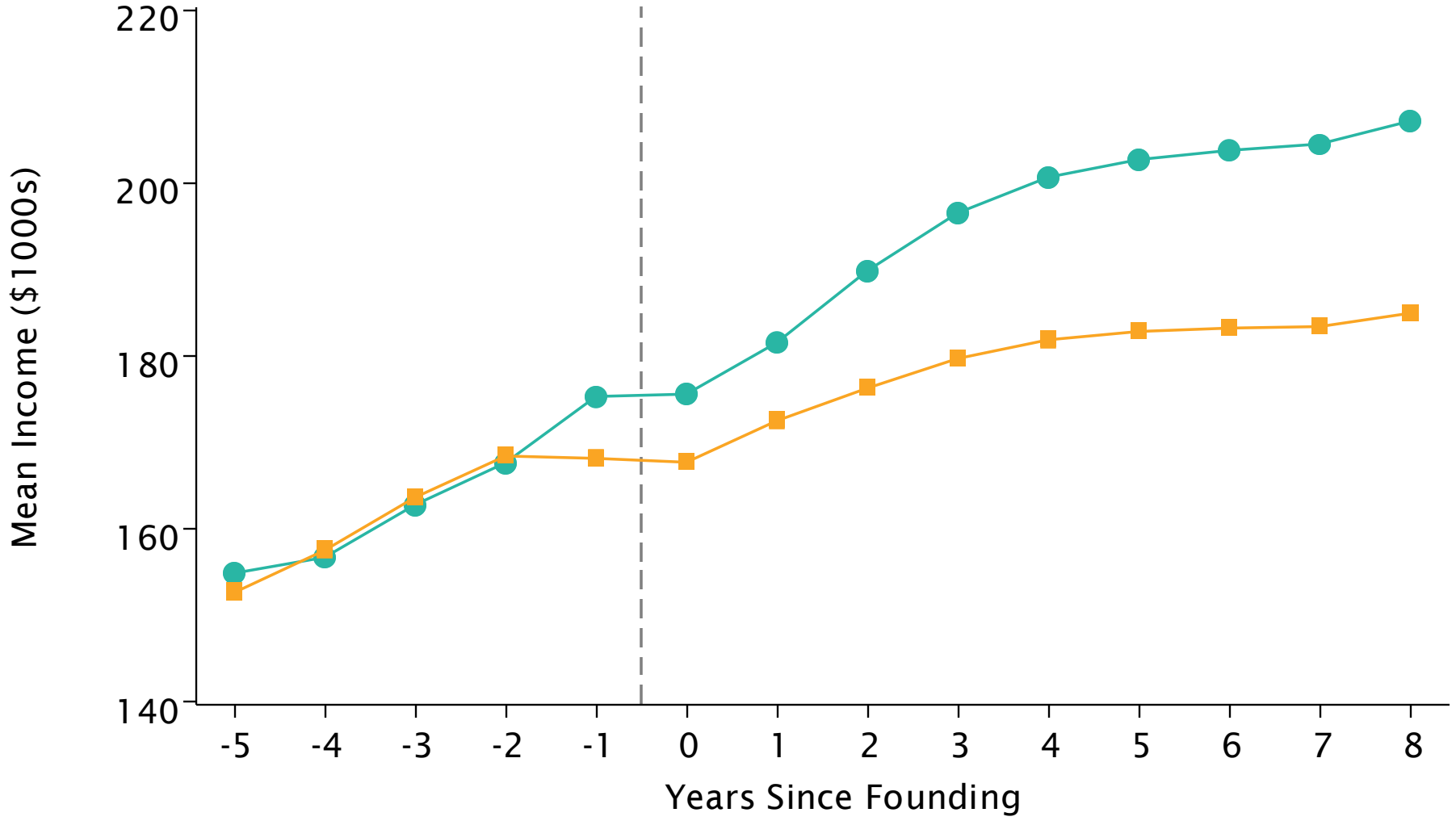


Marginal Entrepreneurs' Returns

The Entrepreneurial Pipeline: Returns

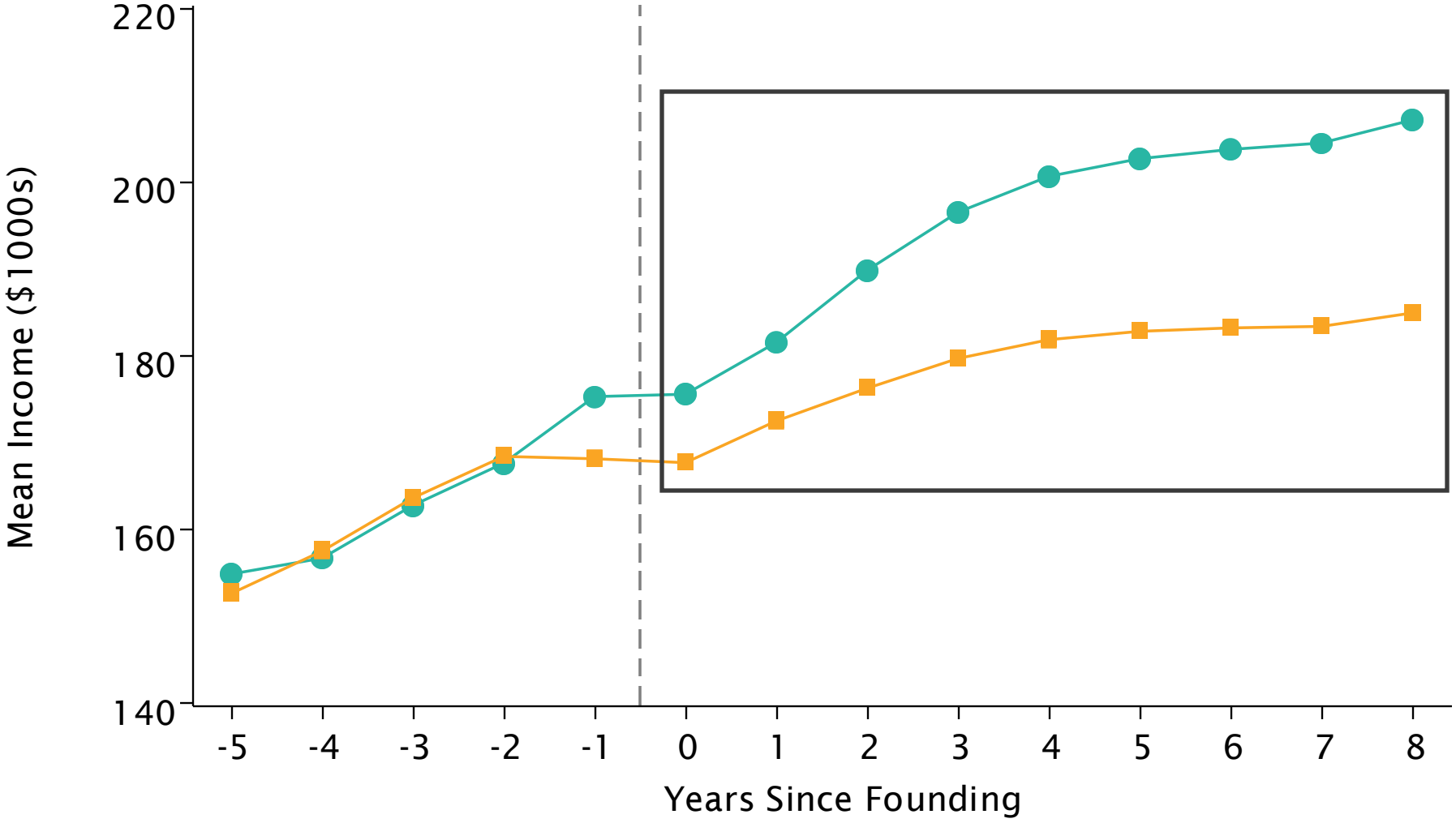


Average Financial Returns are Positive



(Workers with same: AGI vingtile and NAICS2 in the 3 years before founding, sex, filing status, age, region)

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Mean annual returns over 8 years of $16K (~9% baseline income)

(Workers with same: AGI vingtile and NAICS2 in the 3 years before founding, sex, filing status, age, region)

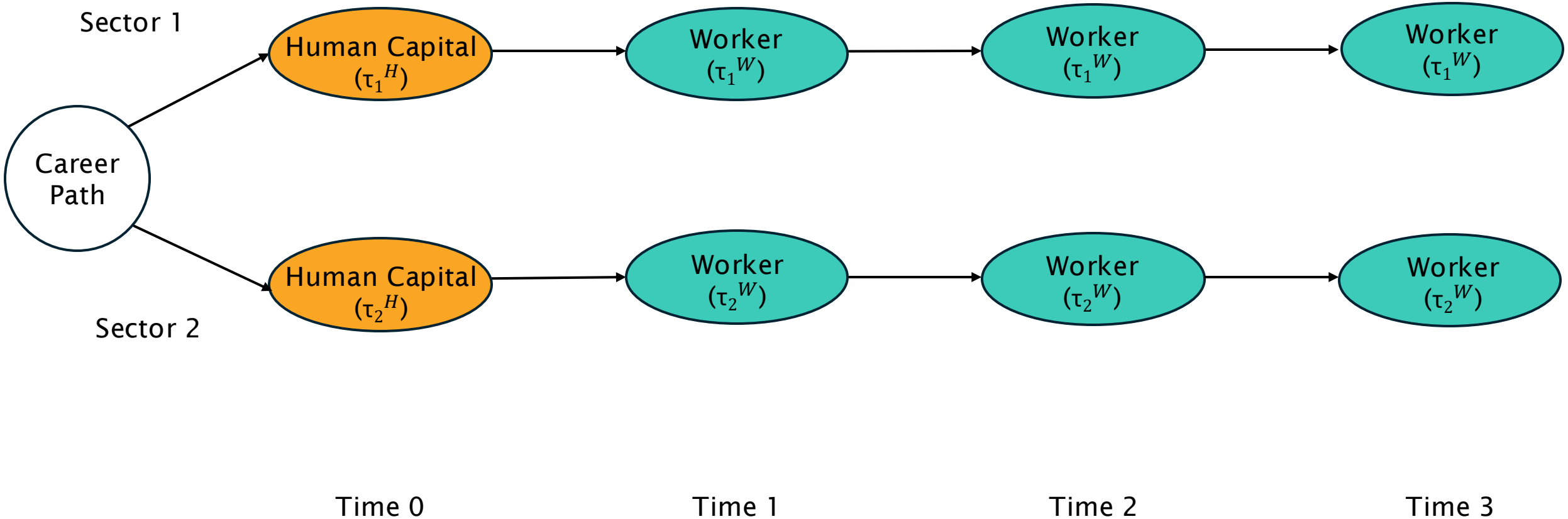
Are Returns of Marginal Founder Significantly Different from Average?



How Many Missing Entrepreneurs?

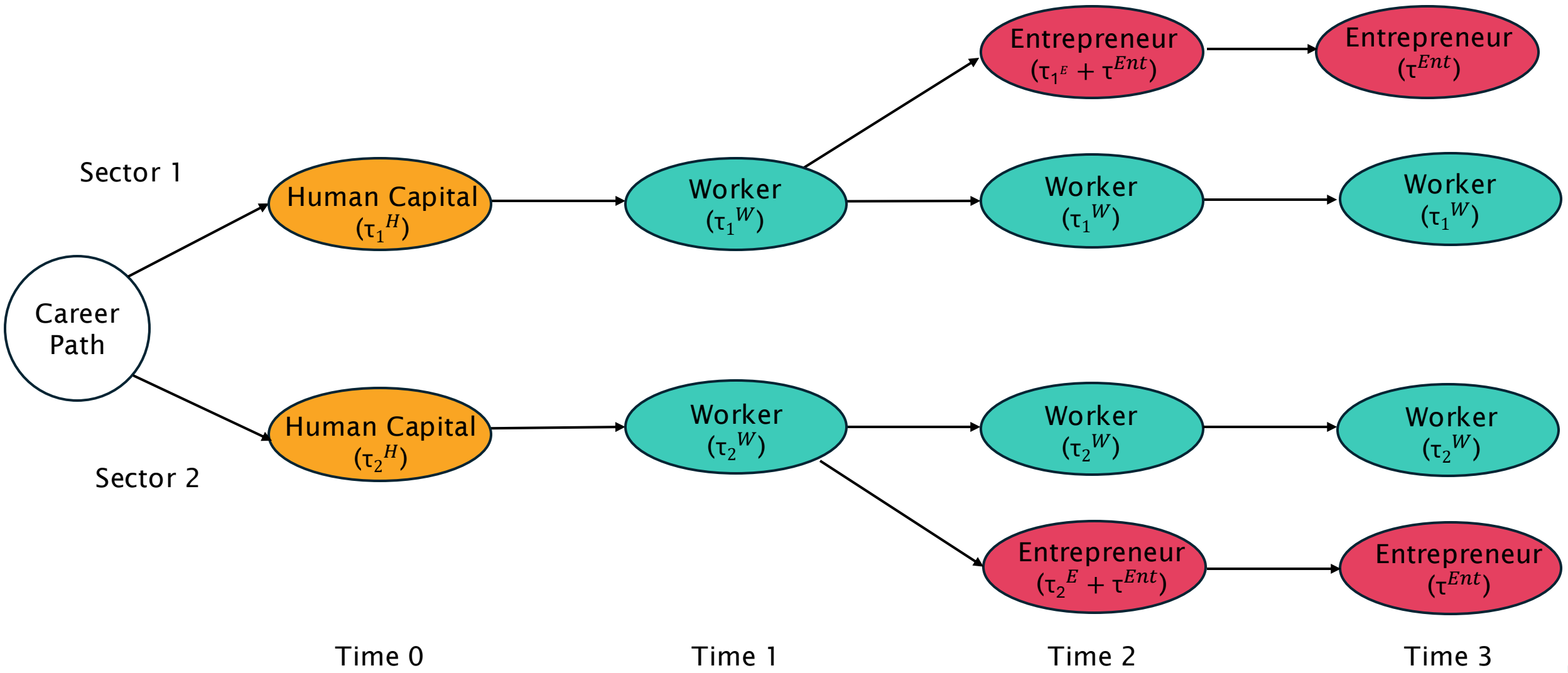
Effects of Removing Barriers for Under-Represented Groups in Equilibrium

GE Roy Model of sector choice built on Hsieh Hurst Jones Klenow (2019)

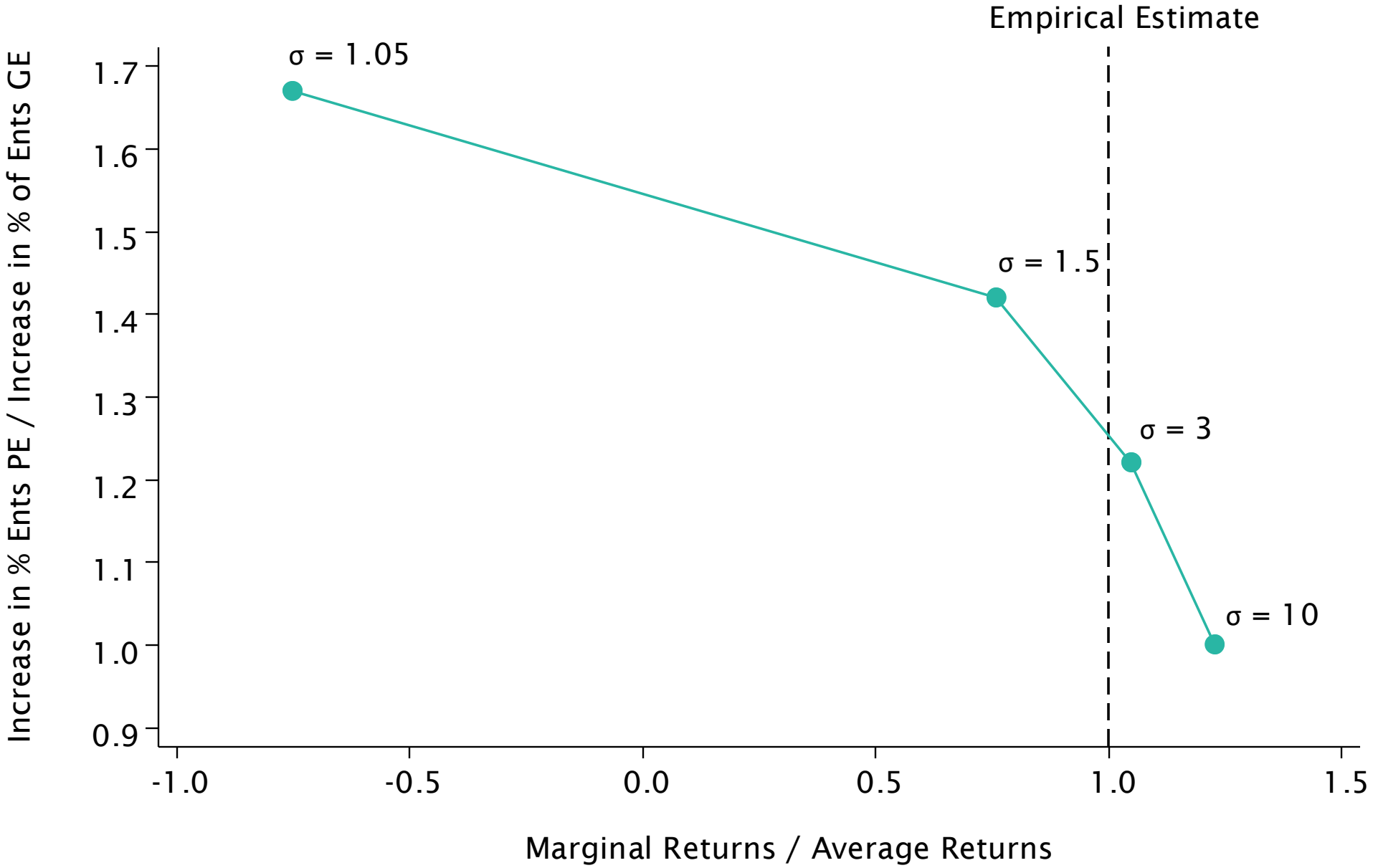


Effects of Removing Barriers for Under-Represented Entrepreneurs

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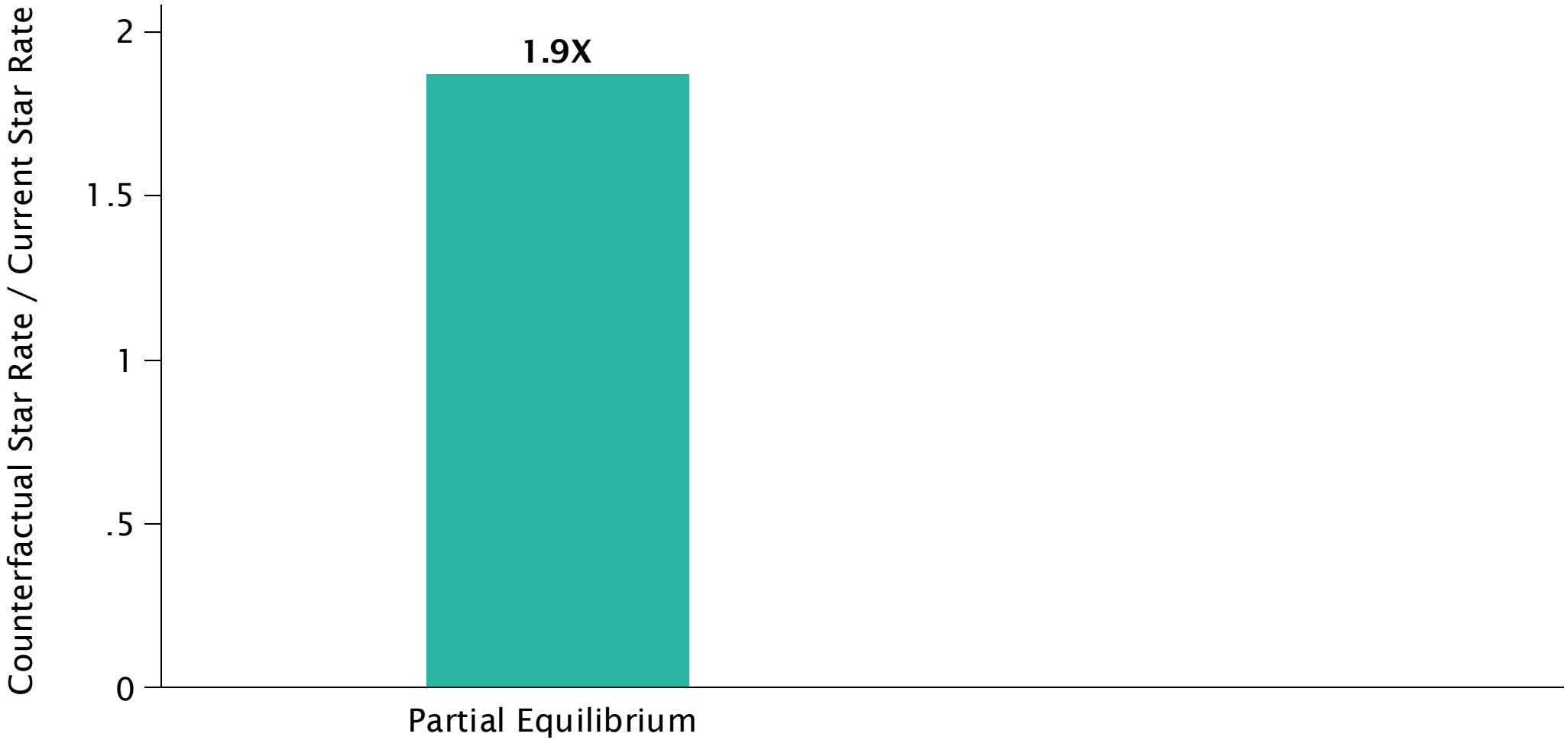


Cross-Sector Substitution Elasticities vs. Marginal Returns



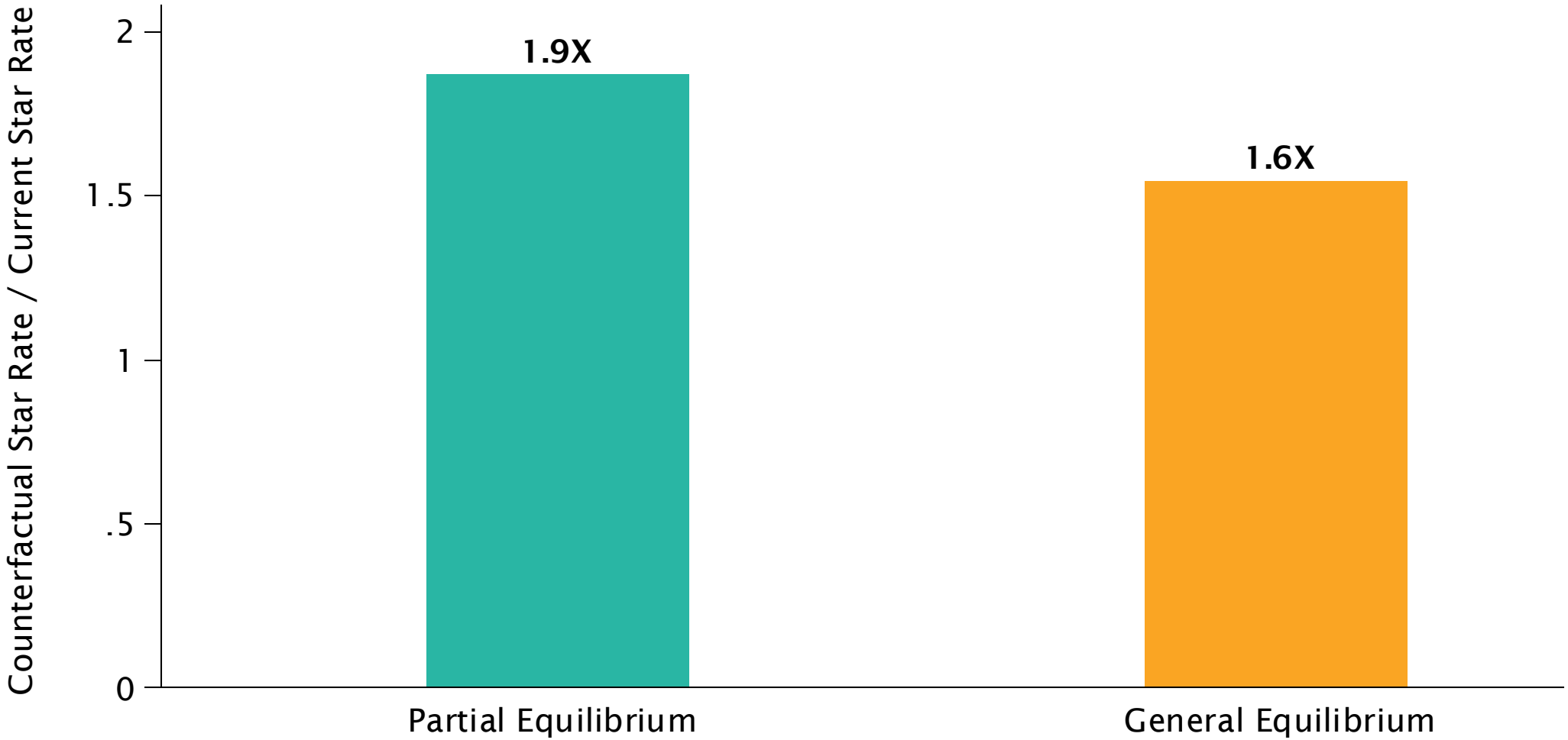
How Many Missing Entrepreneurs?

Effects of Equating Experience of all Groups to That of Top-Income-Decile High-Ent Men



How Many Missing Entrepreneurs?

Effects of Equating Experience of all Groups to That of Top-Income-Decile High-Ent Men



Implications for Increasing Entrepreneurship Rates

1. Many existing efforts to stimulate entrepreneurship focus on addressing gaps in financing at startup; our findings suggest these efforts may have modest impacts

2. Instead, closing gaps requires targeting upstream pipeline, particularly at point of labor market entry (e.g., apprenticeships, incubators)

3. Labor market experience mechanism could potentially generate self-perpetuating secular decline in entrepreneurship rates [Decker et al. 2014, Karahan et al. 2024]

Thanks!