From the Pitch to the Classroom: Football Role Models and Educational Outcomes *

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Abstract

We study how exposure to role models in a superstar labor market affects progress in formal education. Such examples may improve educational outcomes by raising perceived returns to effort in general, or could redirect effort toward a riskier career in the superstar industry. We examine this tradeoff using the staggered timing of Brazilian footballers' professional debuts, combining novel data on their career histories with the administrative education records of students in their home municipalities. A difference-in-differences design shows that these local success shocks raise pass rates and reduce dropout. Effects are amplified in municipalities with football academies, suggesting that local institutions can turn aspirations sparked by superstar success into complements to formal schooling rather than substitutes for it.

Keywords: education, role models, beliefs, aspirations, football, dropout, Brazil
JEL Codes: I21, I25, J24, Z20

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1 Introduction

How educational investment responds to beliefs about mobility opportunities is a central question in economics (Atkin, 2016; Adukia et al., 2020). Which paths to success appear open, and to whom? These beliefs are shaped in part by salient examples of success, and exposure to role models with whom young people identify can raise aspirations and educational investment.[1] Yet many of the most visible success stories emerge from risky, winner-take-all sectors such as sports, music, and entertainment, where rewards are highly concentrated and the probability of success is low. The implications of such examples for schooling are therefore ambiguous. On the one hand, a salient local success may strengthen the perceived value of sustained effort, encouraging broader investment in the future. On the other hand, it may redirect effort toward a narrow, low-probability career path and away from school. Whether such role models generate positive spillovers into human-capital investment or instead crowd out schooling is therefore an empirical question.

This paper studies that question in the context of Brazilian football. Football is a natural setting for our question because it is both unusually salient and a quintessential superstar market (Rosen, 1981). Rewards are highly skewed, success is exceptionally visible, and the debut of a player from one's own municipality provides a locally meaningful signal of attainability in a risky labor market (Soares et al., 2011; Melo et al., 2014; Grove et al., 2021). We exploit the staggered timing of footballers' debuts in top teams, combining novel data on the career histories of professional players with administrative education records.

We find that local football success improves school progression rather than undermining it. Using a difference-in-differences strategy, we estimate that when a footballer becomes the first from a municipality to debut in a top team, the share of high-school students in his hometown who successfully complete their grade rises by 1.14 percentage points. This increase is driven mostly by a reduction in dropout, which falls by 1.08 percentage points. The effects are economically meaningful, corresponding to a 12% decline relative to a pre-treatment dropout rate of 8.8%. Consistent with the interpretation that footballers are identity-relevant role models, the effects are concentrated among boys, although we also find smaller positive effects for girls. These findings are robust across several alternative specifications, and event-study estimates show no evidence of differential trends prior to the footballer debut.

[1] See, among others, Kipchumba et al. (2024), Breda et al. (2023), Beaman et al. (2012), Dee (2007), Carrell et al. (2010), Riley (2024), and Moreira and Estevan (2026). Related work emphasizes that role models are especially influential when they are identity-relevant and appear attainable, shaping self-efficacy, future orientation, and motivation (Morgenroth et al., 2015; Gladstone and Cimpian, 2021; Quinn et al., 2024).

Why does local football success improve school outcomes? Our evidence points to two complementary mechanisms. First, the treatment generates a broad motivational effect that operates mainly on the continuation margin: students become less likely to drop out, consistent with a greater belief that effort can pay off. Second, local institutions shape how this motivational shock translates into academic outcomes. In municipalities with extracurricular football academies ("*escolinhas*"), the positive effect on pass rates is larger. We interpret this pattern as consistent with *escolinhas* helping channel risky aspirations into school-complementary behavior, either through explicit academic requirements, positive spillovers from structured football training, or both. These patterns point to a broader implication: local institutions critically shape how students respond to exposure to a risky local role model.

Our paper contributes to the literature on role models and human capital investment. A large body of work studies role models who are institutionally embedded in students' lives, such as same-sex teachers, mentors, or leaders (Dee, 2007; Muralidharan and Sheth, 2016; Paredes, 2014; Carrell et al., 2010; Porter and Serra, 2020; Breda et al., 2023; Kofoed and McGovney, 2019; Gong et al., 2018; de Gendre et al., 2023). Other papers show that highly visible figures can affect aspirations and behavior more broadly: soap operas changed fertility behavior in Brazil (La Ferrara et al., 2012), female political leaders raised girls' aspirations and educational attainment in India (Beaman et al., 2012), and a film about a successful Ugandan girl chess player improved educational persistence (Riley, 2024). Particularly close in spirit, Moreira and Estevan (2026) show that Brazilian Math Olympiad champions generate positive learning spillovers for their peers. Relative to this literature, our paper studies a different kind of role model: a naturally occurring, locally salient success story in a risky non-academic sector. This difference matters because the sign of the effect is not obvious ex ante. Unlike teachers, political leaders, or academic champions, football players may either reinforce educational investment or pull aspirations away from school. Our contribution is to show that, on net, local success in sport can improve school progression, especially for boys, while also generating meaningful spillovers to girls. The effects on boys are substantively important in light of evidence that boys' educational trajectories are especially vulnerable to family and social disadvantage (Autor et al., 2019; Chetty et al., 2016; Bertrand and Pan, 2013).

We also contribute to the literature on educational investment and perceived returns. A large body of work shows that schooling choices respond to labor-market opportunities and to information about the returns to education (Atkin, 2016; Black et al., 2005; Cascio and Narayan, 2022; Moeeni and Tanaka, 2023; Shah and Steinberg, 2017, 2021; Jensen, 2012; Adukia et al., 2020; Oster and Steinberg, 2013; Heath and

Mushfiq Mobarak, 2015; Kuka et al., 2020; Abarcar and Theoharides, 2024; Sandholtz, 2024; Jensen, 2010; Batista et al., 2026; Evans and Mendez Acosta, 2026). Relative to this literature, we study a different kind of salience shock. The debut of a local footballer does not mechanically change the wage return to schooling in the municipality, nor does it provide formal information about Mincer returns. Instead, it changes what students observe about possibility, mobility, and the relationship between effort and success. This difference matters because it shows that educational investment can respond not only to prices and explicit information, but also to salient local examples that reshape beliefs. At the same time, because the example comes from a risky sector, the direction of the response is an empirical question rather than a mechanical implication.

Finally, we contribute to the literature on sports and economic behavior. Prior work shows that sports affect outcomes as varied as stock returns, civil conflict, racial prejudice, and domestic violence (Edmans et al., 2007; Depetris-Chauvin et al., 2020; Alrababa'h et al., 2021; Card and Dahl, 2011; Ivandić et al., 2024; Arabe, ress). Within education, American college sports success increases the quantity and quality of applications but can reduce the academic performance of male non-athlete students (Pope and Pope, 2009; Lindo et al., 2012), while participation in school sports is often positively associated with educational attainment and aspirations (Eide and Ronan, 2001; Lipscomb, 2007; Pfeifer and Cornelißen, 2010). The closest paper to ours is Marein and Palsson (2026), who find no effect of Major League Baseball recruitment on boys' school attendance in the Dominican Republic. Our paper differs by focusing on the hometown footballer's debut and on the educational trajectories of non-athlete students in the world's most salient football setting. This difference matters because it isolates a local success channel more cleanly and shows that success in a highly visible risky occupation can improve, rather than crowd out, mainstream educational investment.

The remainder of the paper proceeds as follows. Section 2 presents a simple framework that highlights the tension between a broad effort-belief channel and a risky-path attraction channel. Section 3 describes the Brazilian football setting and the data. Section 4 presents the empirical strategy. Section 5 reports the main results, Section 6 explores mechanisms, and Section 7 concludes.

2 Conceptual framework

We propose a simple and stylized conceptual framework to formalize the tension that motivates the empirical analysis. A local success story may affect students through two conceptually distinct channels. First, it may raise beliefs about the returns to effort more generally. Observing a successful individual from one's own locality may make it more plausible that sustained effort can generate upward mobility. Second, when the successful individual comes from a risky non-traditional sector such as professional sports, the same shock may also increase the perceived attractiveness of that sector relative to more traditional educational and occupational paths. The key implication is that local success shocks can increase total effort while having an ambiguous effect on traditional educational investment. That ambiguity is central to the empirical question.

A student allocates effort across two broad paths: a traditional path and a risky path. Let $e_T \geq 0$ denote effort directed toward the traditional path and $e_R \geq 0$ effort directed toward the risky path.[2] The student chooses (e_T, e_R) to maximize

$$U(e_T, e_R; \theta, \phi) = V_T(e_T; \theta) + V_R(e_R; \theta, \phi) - C(e_T + e_R), \tag{1}$$

where V_T and V_R denote the value of the traditional and risky paths, respectively, and C is the cost of total effort. We assume that V_T and V_R are increasing and concave, while C is increasing and convex. The parameter θ captures beliefs about the general productivity of effort and affects both paths. By contrast, ϕ is a risky-path-specific utility shifter that captures the relative attractiveness of the risky path beyond this general effect. In reduced form, ϕ may reflect aspirations, salience, identity, or sector-specific perceived returns. A local success shock affects these two objects differently:

$$\theta' = \theta + \Delta_\theta, \qquad \phi' = \phi + \Delta_\phi, \tag{2}$$

with $\Delta_\theta > 0$ and $\Delta_\phi > 0$. The increase in θ captures a broad effort-belief channel: effort appears more productive in general, not only in school but also in other forward-looking activities. The increase in ϕ captures a risky-path attraction channel: the non-traditional path becomes more attractive relative to the

[2] Appendix B.1 maps e_T into pass, fail, and dropout outcomes through separate continuation and performance relationships. That mapping is useful because it clarifies how the same increase in school-oriented effort may improve progression either by keeping students attached to school or by improving performance among those who remain enrolled.

traditional one.[3]

This framework implies two qualitative results. First, local success in a risky sector can increase effort even outside that sector. Because the shock raises beliefs about the general productivity of effort, it may stimulate broader investment in the future rather than only sector-specific imitation. In our setting, this means that a local football success may increase school-oriented effort even though the success itself occurs outside the classroom.

Second, the effect on school-oriented investment is theoretically ambiguous. The increase in θ tends to raise effort more broadly, including in school. By contrast, the increase in ϕ makes the risky path more attractive and tends to reallocate effort toward it. A convenient reduced-form summary is

$$\frac{\mathrm{d}e_T}{\mathrm{dshock}} = \underbrace{\frac{\partial e_T}{\partial \theta}\Delta_\theta}_{\text{general effort channel}} + \underbrace{\frac{\partial e_T}{\partial \phi}\Delta_\phi}_{\text{risky-path reallocation channel}}, \tag{3}$$

with $\frac{\partial e_T}{\partial \theta} > 0$ and $\frac{\partial e_T}{\partial \phi} < 0$. If the first term dominates, traditional educational investment rises; if the second dominates, educational investment falls.[4]

3 Setting and data

3.1 Setting

Football as a salient mobility signal. A key feature of our setting is that football in Brazil is not merely a popular sport: it is also a highly salient social marker of upward mobility. Football is the country's most popular sport and one of the few domains in which children across socioeconomic backgrounds are exposed to a common set of highly visible aspirational success stories (Dias and Monteiro, 2020; Maillane-Vanegas et al., 2018; Proni, 2021). It is also unusually visible as a route of mobility and widely associated with trajectories of advancement from disadvantaged backgrounds (Uehara et al., 2021; Proni, 2021). In a context where conventional paths to mobility are often narrow, football success may signal not

[3]The broad belief-updating channel is not unique to football or to risky sectors: any salient local success may raise beliefs about mobility and the returns to effort more generally. What makes football distinctive in our setting is that it is also a highly visible, risky, and non-traditional path, so the same success shock may redirect effort toward a narrow, low-probability career and away from school. Riskiness therefore matters mainly for the ambiguity of the overall effect.

[4]Appendix B.2 extends the baseline framework to analyze the mechanisms through which local football academies may interact with the effect of the local success shock on students' decisions, while Appendix B.3 introduces gender heterogeneity.

only the allure of a risky occupation but also that sustained effort can pay off despite adverse circumstances (Morgan et al., 2021).

Football as a risky winner-take-all market. Football is also a highly risky labor market. Brazil is the largest exporter of footballing talent worldwide: 3,020 Brazilians played abroad between 2020–2025 (CIES Football Observatory, 2025). This international workforce emerges from a vast domestic ecosystem: around 88,000 players are registered as professionals, though only about 12,000 hold active contracts in a given season (Ernst & Young and Confederação Brasileira de Futebol, 2019). Most play only part of the year, often in *campeonatos estaduais* and regional competitions. Roughly 4,500 to 5,000 play in the four divisions of the national league pyramid — Séries A, B, C, and D — linked by annual promotion and relegation.[5] Série A is the top tier and includes the country's highest-quality players, largest budgets, broadcast revenues, and attendances, while Séries B, C, and D are fully professional but progressively less visible and less remunerative. The average annual compensation of players contracted domestically in Série A is roughly US$317,000, falling sharply to US$59,000, US$22,000, and US$8,100 in Séries B, C, and D respectively (Agência Nacional de Regulação e Sustentabilidade do Futebol and CBF Academy, 2026).[6] For comparison, the average Brazilian worker earned about US$7,900 per year in 2025 (Instituto Brasileiro de Geografia e Estatística, 2026). Football therefore combines extreme visibility with extreme skewness.

Escolinhas (football academies). In our setting, *escolinhas* are institutions outside the formal school system that offer football-related activities. They vary in their objectives. One common type provides football training and practice for a monthly fee, often as part of a social club. *Escolinhas* may also be nonprofit or community-based initiatives, sometimes with public financial support.[7] A third type focuses on identifying potential professional athletes. Many of these initiatives are run by professional football clubs, which use them to attract promising players into their youth divisions. Others are stand-alone organizations that identify and train talented young players and then place them with professional clubs in exchange for financial compensation.

Escolinhas can shape investment in formal schooling in various ways. Those which receive public financial support, as well as those engaged in athlete formation, are legally required to condition participation

[5] Computed by applying the federation's per-club registration limits to the 2026 season—20 clubs each in Séries A, B, and C and 96 in Série D, with Série A and B clubs registering a minimum of 35 and 30 players respectively, Série C up to 50, and Série D a minimum of 25 (Confederação Brasileira de Futebol, 2026). These means also mask strong within-tier skew, since a small number of high-paid stars pull the averages upward.

[6] Converted from R$1.71M, R$318,000, R$121,000, and R$44,000 respectively at R$5.4/US$.

[7] Such support can take the form of tax-deductible donations under Brazil's sports-incentive legislation, the *Lei de Incentivo ao Esporte*, or direct public funding from federal or local government budgets.

on school attendance and academic progress.[8] Escolinhas outside these categories do not face formal schooling requirements, but may still encourage good academic standing. Such practices may reflect intrinsic motivation among coaches and administrators who view schooling as valuable, or perceived complementarities between academic discipline and athletic development. They may also serve families by helping parents enforce academic performance, tying continued participation in football to progress in school. Anecdotal evidence suggests that such practices are common.[9]

3.2 Data and sample

Footballers. We construct a database of notable male Brazilian professional footballers by scraping Wikipedia.[10] As of 2023, when the database was constructed, most players' Wikipedia pages contained structured information on the key inputs to our analysis: birthplace, national team appearances, and career history, including the sequence of clubs and corresponding years. We scrape each club's page to identify the league in which it competed in each relevant year, allowing us to code each player's league by year. This process yields a database of 7,463 male Brazilian footballers for whom both birthplace and career history are available.

Treatment definition. We define municipality m as treated in the first year t in which a player born in m plays for a top football team. In our main analyses, a top team is any club in Séries A–D of the Brazilian national league, any club in Europe, or the Brazilian National Team.[11] We also assess the sensitivity of our results to alternative definitions of a top team.

Education data. Our outcome data on educational attainment come from the Brazilian Ministry of Education's *Censo Escolar*. The data contain annual pass, fail, and dropout rates for middle and high school at the grade-age-sex level. They are available from 2011 to 2019.[12]

[8] These requirements include documented minimum school attendance and grades sufficient to ensure promotion at the end of the academic year. *Escolinhas* must keep formal records for each participant and take action when compliance with these criteria is at risk.

[9] See, for example, policies adopted by the franchise network of Grêmio, a major football club in Brazil: https://www.gremio.net/noticias/detalhes/22328/escola-do-gremio-realiza-premiacao-atletas-nota-dez.

[10] Ours is not the first paper to use Wikipedia as a data source; see, e.g., Stemper (2026); Serafinelli and Tabellini (2022).

[11] Among Brazilian footballers listed on Wikipedia, 6.4% never played for a club in Brazil or Europe, or for the Brazilian National Team. This may reflect players whose careers took place entirely in other countries, or errors in our algorithm for identifying leagues. We exclude these players from the sample. Table A9 lists the countries we classify as 'Europe.'

[12] The data are available beginning in 2007, but contain a large share of missing values through 2010. We therefore restrict attention to 2011 onward, the first year with essentially full coverage.

Outcomes. Our main outcomes capture distinct margins of school progression. The pass rate measures successful grade completion at the end of the school year. The failure rate captures students who remain enrolled but do not meet the academic requirements to advance, while the dropout rate captures students who leave school before completing the year. Because these three outcomes are mutually exhaustive, the pass rate is mechanically equal to one minus the failure and dropout rates. Decomposing pass rates into these two margins allows us to distinguish whether local football success strengthens attachment to school, improves academic performance among enrolled students, or both.

Escolinhas. We measure the local presence of *escolinhas* using the 2011 *Relação Anual de Informações Sociais* (RAIS), an administrative census of formal employment. We classify a private-sector establishment as an escolinha if its industry code (CNAE 2.0) is sports instruction (*ensino de esportes*), or if it is a sports or social club that employs at least one worker in a sport-instruction occupation (CBO 2002). For each municipality we then count the number of such establishments.

Sample restrictions. To focus on places where a player's success is likely to be salient locally, our main analyses restrict attention to municipalities with fewer than 50,000 residents.[13] We also restrict treatment events to players whose first appearance for a top team occurs between 2012 and 2019, given the availability of education data.[14] In total, 240 municipalities first become treated during this period. 4,041 municipalities never produced a top footballer in our data and serve as controls. The remaining 646 municipalities within the population range had already produced a top footballer before our sample period and are therefore excluded.

Figure A1 maps Brazilian municipalities by treatment status. Treated municipalities are geographically dispersed across the country. Table 1 compares baseline characteristics between eventually treated and never-treated municipalities. Treated municipalities are larger and richer on average, and they have slightly lower baseline pass rates and slightly higher failure rates. Dropout rates, however, do not differ significantly before treatment.

[13] Table A2 shows that the results are robust to including larger municipalities.

[14] The education outcomes data begin in 2011, as described above. We therefore restrict attention to football debuts from 2012 onward, so that every treated municipality has at least one pre-treatment year.

Table 1: Descriptive Statistics: Treated vs. Never-Treated Municipalities

	Never Treated	Treated	Difference	SE
Population (1000s)	11.3	19.7	8.3***	(0.767)
HH Income P.C.	478.0	567.4	89.4***	(15.710)
IDEB 5th Grade	4.5	4.7	0.2***	(0.067)
IDEB 9th Grade	3.8	3.8	0.1*	(0.048)
GDP P.C.	23.6	30.4	6.8***	(2.459)
Bolsa Familia P.C.	231.8	192.4	-39.3***	(8.103)
Pass Rate (HS)	74.5	71.9	-2.6***	(0.789)
Dropout Rate (HS)	13.5	13.9	0.4	(0.627)
Fail Rate (HS)	12.0	14.2	2.2***	(0.610)
N	4036	240		

Notes: Comparison of 2010 municipal characteristics between eventually treated and never-treated municipalities. Sample restricted to municipalities with 2010 population below 50,000 that are either never treated or first produce a top footballer between 2012 and 2019. Municipalities treated before 2012 or after 2019 are excluded. Difference and standard errors from two-sample t-tests with unequal variances. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

4 Empirical Strategy

Our goal is to estimate the causal effect of the debut of a municipality's first professional footballer on the educational outcomes of local students. In our empirical setup, a municipality is "treated" the first time a male footballer from that municipality starts playing professionally in the system of national leagues (i.e., Série D or above), in a European league, or on the national team. We consider this definition of entry into the football labor market as a shock that is publicly legible and locally meaningful.[15] Thus, even if most local debuts in our data do not correspond to players who will become global household names, they still represent entry into a highly visible, locally salient, and economically distinctive sector.

We follow a difference-in-differences approach, comparing the evolution of educational outcomes in municipalities that produce a top footballer to the evolution of outcomes in comparable municipalities that do not, before and after the footballer's debut. This design identifies the treatment effect under the standard parallel trends assumption: absent the debut, outcomes in treated and comparison municipalities would have evolved in parallel.

A single before-and-after comparison is not available in our setting because treatment timing is staggered. As described in Section 3, treated municipalities produce their first professional footballer in different years between 2012 and 2019, while the remaining municipalities are never treated within our sample

[15]Movement to Série A, transfer abroad, or selection to the national team marks further progress up a steeply hierarchical career ladder. In the Appendix we include analyses with alternate treatment definitions corresponding to entry into these more prestigious leagues.

window. A design that pools multiple treatment cohorts is therefore required, and we build this design in three complementary steps.

First, we estimate an event study using the Callaway and Sant'Anna (2021) estimator, which is robust to the well-known problems that arise when treatment timing is staggered and treatment effects are heterogeneous. We then summarize these estimates in a single overall treatment effect. Finally, we introduce a more parsimonious two-way fixed-effects (TWFE) specification. Although less robust in principle, this specification is better suited to the heterogeneity analysis that forms the core of the paper. We evaluate whether the two estimators agree when measuring the main effect, and use this comparison to support our reliance on TWFE for these extensions.

Event study. Let t_m^* denote the debut year of the first top footballer from municipality m, which defines its treatment cohort. The building block of the Callaway and Sant'Anna (2021) estimator is the group-time average treatment effect,

$$\mathrm{ATT}(g,t) = \mathbb{E}\left[\, Y_{mt}(g) - Y_{mt}(\infty) \;\middle|\; t_m^* = g \,\right], \tag{4}$$

the effect at calendar year t on municipalities that debut in year g, where $Y_{mt}(g)$ and $Y_{mt}(\infty)$ denote potential outcomes under debut in year g and under no debut, respectively. Each $\mathrm{ATT}(g,t)$ is identified by a doubly-robust comparison of cohort g to municipalities that have not yet been treated by year t (including those never treated), conditioning on a vector of covariates X_m. In our preferred specification, X_m includes the municipality's pass, fail, and dropout rates in 2011, the year before the beginning of our sample.

We aggregate the $\mathrm{ATT}(g,t)$ into event-study coefficients by averaging over cohorts at each horizon relative to debut,

$$\theta_e = \sum_g \omega_{g,e}\, \mathrm{ATT}\big(g,\, g+e\big), \tag{5}$$

where $e = t - t_m^*$ is the number of years since debut and $\omega_{g,e}$ weights each cohort by its size.[16] We report θ_e for $e \in \{-3,\ldots,+3\}$, normalizing the debut year ($e = 0$) to zero so that it serves as the reference period.[17] The pre-debut coefficients ($e < 0$) provide a test of the identifying parallel trends assumption, while the post-debut coefficients ($e > 0$) trace the dynamics of the response.

[16] Following Callaway and Sant'Anna (2021), $\omega_{g,e}$ is the population-weighted share of treatment cohort g among the cohorts observed at relative period e. For each e, the weights are normalized to sum to one across all such cohorts.

[17] We also consider an alternative specification that sets $e = 0$ as the first treated year.

Overall treatment effect. Following Callaway and Sant'Anna (2021), we summarize the group-time effects in a single overall ATT. Specifically, we average ATT(g, t) across all post-debut municipality-years, weighting each cohort-by-year cell by the population of the treatment cohort. Under the same assumptions as the event study, this recovers the population-weighted average treatment effect on treated municipalities.

Two-way fixed effects. To uncover mechanisms, we also characterize heterogeneity in the effect with respect to characteristics of both municipalities and students. These exercises require interacting treatment with municipality or student characteristics and adding flexible controls, which is statistically underpowered within the Callaway–Sant'Anna framework. For these purposes, we use a static two-way fixed-effects specification,

$$Y_{mt} = \beta\, D_{mt} + \delta_m + \delta_t + X_m'\gamma_t + \varepsilon_{mt}, \tag{6}$$

where $D_{mt} = \mathbf{1}\{t > t_m^*\}$ indicates the post-debut period and equals zero for never-treated municipalities, δ_m and δ_t are municipality and year fixed effects, and $X_m'\gamma_t$ flexibly interacts baseline covariates with year fixed effects. In our preferred specification, X_m includes the same covariates used in the event study. Heterogeneity is then captured by interacting D_{mt} with the characteristic of interest. Regressions are population-weighted, with standard errors clustered by municipality.

Reconciling the two estimators. With staggered treatment timing and heterogeneous effects, the TWFE coefficient β in equation (6) can be a poorly behaved weighted average of the underlying treatment effects, because already-treated municipalities may serve as effective controls for later-treated cohorts (Callaway and Sant'Anna, 2021). When treatment effects are stable across cohorts and event time, this concern is attenuated and β recovers the same average effect as the Callaway–Sant'Anna estimator. To assess whether this is a concern in our setting, we compare the results from the two approaches in the full sample before relying on the TWFE specification for the heterogeneity analysis.

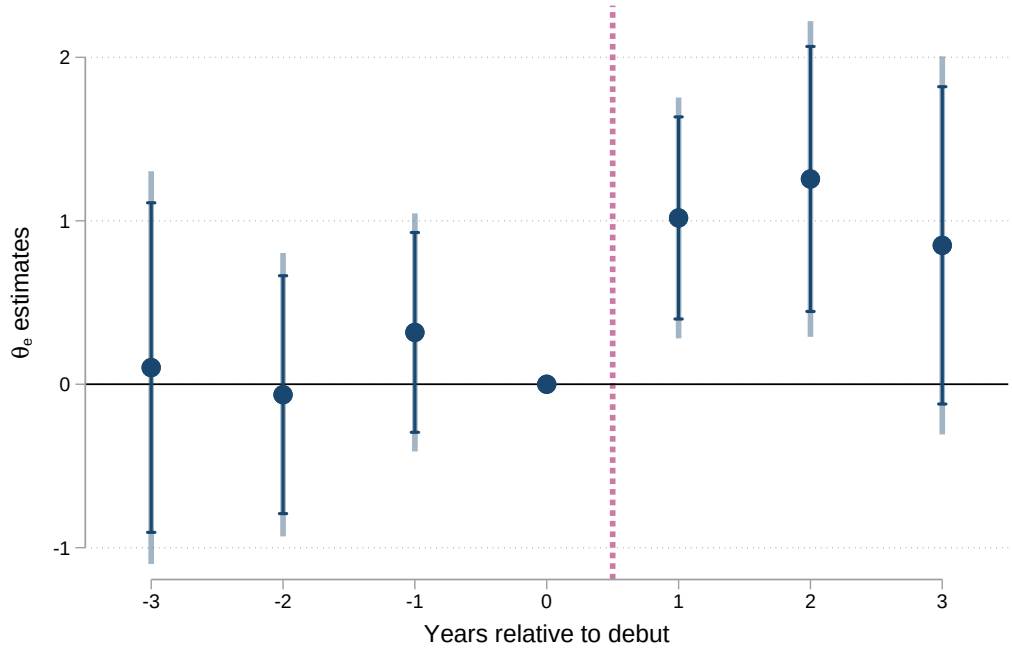
5 Main Results

We now implement the three-step strategy laid out in Section 4. We first trace the dynamic response of high-school pass rates to the debut of the municipality's first male professional footballer, using the event

study to test for pre-trends and to characterize the timing of the effect. We then summarize the response in a single overall effect and decompose it into its dropout and failure components. Finally, we show that the Callaway–Sant'Anna and two-way fixed-effects estimators deliver nearly identical estimates in the full sample, validating our use of the more parsimonious TWFE specification in the heterogeneity analysis that follows.

Pass rates rise after a local footballer's pro debut. Figure 1 plots the Callaway–Sant'Anna event-study coefficients θ_e from Equation (5) for high-school pass rates, in the three years before and after a municipality's first top-footballer debut. Two features stand out. First, the pre-debut coefficients are small and statistically indistinguishable from zero: treated and comparison municipalities are on parallel trajectories in the years leading up to the debut, as our identifying assumption requires. Second, pass rates rise once a local player debuts as a professional. The effect appears in the first year after the debut—when schooling outcomes can first respond—and the point estimates remain positive throughout the post-period, on the order of 0.8 to 1.3 percentage points.

Figure 1: Event Study: Effect on High School Pass Rates



Notes: Callaway-Sant'Anna event-study estimates for pass rates in high school, window −3 to +3 years relative to debut. Period 0 (debut year) is the omitted reference. Controls include baseline (2011) pass, dropout, and fail rates. Observations weighted by population. Thin lines show 95% confidence intervals; thick capped bars show 90% confidence intervals. The sample includes municipalities with population under 50,000.

The increase in pass rates mostly reflects fewer dropouts. Panel A of Table 2 aggregates the dynamic effects into a single overall treatment effect and decomposes it across the three mutually exclusive ways a school year can end: passing, failing, or dropping out. The estimated effect on the pass rate is 1.01 percentage points. Because the three outcomes sum to one hundred by construction, this gain must come from lower failure, lower dropout, or both. The decomposition shows that it is driven almost entirely by dropout: the dropout rate falls by 0.99 percentage points, a roughly 11 percent decline relative to its pre-treatment mean of 8.8 percent, while the effect on failure is small and statistically indistinguishable from zero. Figure A2 shows no evidence of pre-trends for either failure or dropout.

TWFE and Callaway–Sant'Anna agree. Panel B of Table 2 re-estimates the same three effects using the static two-way fixed-effects specification in Equation (6). The two estimators produce very similar results: the TWFE estimate for passing is 1.14 percentage points, compared with 1.01 under Callaway–Sant'Anna; the corresponding estimates for dropout are −1.08 and −0.99 percentage points; and the effect on failure is again small and statistically insignificant. As discussed in Section 4, the TWFE coefficient can be a poorly behaved average of the underlying group-time effects when treatment timing is staggered and effects are heterogeneous. The close agreement between the two panels suggests that this issue is not quantitatively important in our setting, supporting our use of TWFE for the heterogeneity analysis.

Table 2: Main Results: Decomposition and Estimator Bridge

	Panel A: Callaway-Sant'Anna			Panel B: TWFE		
	Pass	Dropout	Fail	Pass	Dropout	Fail
	(1)	(2)	(3)	(4)	(5)	(6)
ATT	1.009**	-0.985***	-0.0234			
	(0.458)	(0.375)	(0.426)			
Treat × Post				1.135***	-1.075***	-0.0599
				(0.376)	(0.257)	(0.301)
Pre-treatment mean	81.378	8.752	9.871	81.378	8.752	9.871
Observations	38374	38374	38374	38374	38374	38374

Notes: Panel A reports Callaway-Sant'Anna simple ATT estimates. Panel B reports TWFE estimates. Both use baseline (2011) pass, dropout, and fail rates interacted with year fixed effects as controls. All regressions include municipality and year fixed effects and are population-weighted. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

Gender. Our sample of footballers includes only male players, so local player success may provide a more salient role model for boys than for girls. Comparing the two groups therefore offers a first window

into the mechanism: if the effect operates through aspirational identification with the role model, existing literature suggests it would be stronger among boys (Dee, 2007; Riley, 2024). Table 3 estimates the effects of local player success allowing for gender heterogeneity. The response is concentrated among boys, consistent with the role-model interpretation. Figure A3 presents event studies by gender and shows no evidence of differential pre-trends.

Takeaways. Under the conceptual framework in Section 2, the effect of a salient local non-academic success story on educational outcomes is theoretically ambiguous. Such success may raise perceived returns to effort in general, but it may also make the non-academic path itself more attractive. Our estimates show that affected students remain enrolled and progress through high school at higher rates, indicating that the general "effort pays off" channel dominates any diversion of effort toward football. The magnitudes are comparable to those of targeted schooling interventions, despite arising from a naturally occurring local success shock rather than an explicitly educational aspirations treatment. For example, attending a university campus visit raised Portuguese middle school students' GPAs by .08 standard deviations and reduced failure rates by 3 percentage points (Batista et al., 2026). Moreira and Estevan (2026) show that a given student's success in the Brazilian Math Olympiad increases classmates' probability of participating in the exam by 4.5% in the next year. Few other papers study the effects of non-academic role models on school outcomes; most closely related is Riley (2024) who shows that screening a movie about a Ugandan chess phenom raised math scores for Ugandan lower secondary students by 0.11 standard deviations.

5.1 Robustness

In this subsection, we subject our main results to a battery of robustness checks. Our conclusions remain unchanged across several alternative specifications.

Socioeconomic imbalance. As shown in Table 1, treated and untreated municipalities differ in important ways. For example, treated municipalities have higher average income. If high- and low-income municipalities follow different trends, these differences could bias our estimates. Column (2) of Table A1 shows that adding baseline socioeconomic characteristics—household income, IDEB scores, and GDP per

Table 3: Gender Heterogeneity

	Pass	Dropout	Fail
	(1)	(2)	(3)
Female	8.137***	-2.708***	-5.429***
	(0.0705)	(0.0391)	(0.0512)
Treat × Post	1.286***	-1.444***	0.159
	(0.464)	(0.286)	(0.389)
Treat × Post × Female	-0.395	0.762***	-0.367
	(0.300)	(0.129)	(0.248)
Pre-treatment mean	81.052	8.883	10.066
Observations	76747	76747	76747

Notes: TWFE estimates on a reshaped panel stacking male and female outcomes. "Treat × Post" gives the treatment effect for boys (omitted gender category). "Treat × Post × Female" gives the additional effect for girls. All specifications include baseline (2011) outcome controls (pass, dropout, fail rates) interacted with year fixed effects, plus municipality and year fixed effects. Population-weighted. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

capita—interacted with year fixed effects does not meaningfully affect our estimates.[18] One remaining concern is that differences in these baseline variables may not capture all time-varying shocks correlated with treatment status. To address this issue, column (3) further adds year-by-year GDP per capita as a control. The results remain unchanged.

Sample and treatment definition. We make three discretionary choices in our preferred specification: the population ceiling used to define the municipality sample, the threshold for what constitutes "success" for a local player, and the timing convention for treatment. We assess the first two in Table A2, which varies both the population ceiling and the success threshold; the estimates remain robust. We assess the third in Table A3. Our main specification treats the debut year as the last pre-treatment period, while the alternatives either count the debut year as treated or drop it entirely. The estimates remain similar and statistically indistinguishable from our baseline specification.

School inputs. Another channel through which the success of a local footballer could affect educational outcomes is by improving schools directly—for instance, through donations to schools in his hometown or by attracting public investment to the municipality. In that case, the academic gains would reflect improved school resources rather than a behavioral response by students. We assess this possibility

[18]The IDEB (*Índice de Desenvolvimento da Educação Básica*) is a composite index of basic-education quality computed biennially by Brazil's Ministry of Education (INEP). It combines student performance on the national SAEB standardized assessments in Portuguese and mathematics with grade-progression (pass) rates.

by re-estimating our main specification while controlling for a broad set of contemporaneous school characteristics. Table A4 adds these controls in three groups—infrastructure, capacity, and staffing—and shows that the estimated effects of local player success are essentially unchanged.

Effects by grade. A remaining concern is that the aggregate effects could mask substantial heterogeneity across grades rather than a broad improvement in educational progression. For example, older students, who are past the age at which a professional football career is realistic, might respond by investing more in school, while younger students might be drawn away from it. We examine this in Table A5. The estimates show positive effects across all grades, although the relevant margins differ: for 10th graders, the dropout margin is stronger, while for 11th and 12th graders, the failure margin is stronger.

6 Mechanism: The Role of Football Academies

As highlighted by the framework in Section 2, the net effect of salient local football success is theoretically ambiguous. It can raise perceived returns to effort generally, but it can also make football more attractive relative to school. Section 5 showed that, in our setting, the former force dominates: students in treated municipalities are more likely to remain enrolled and to progress through high school. This section studies whether that response differs with the local presence of football academies, or *escolinhas*.

Section 3.1 described the institutional setting of *escolinhas*. These institutions vary in their objectives, but some are explicitly linked to formal schooling through requirements on school attendance and academic progress. Appendix B.2 formalizes how *escolinha* presence may interact with the treatment through three channels. First, an *outside-option channel*: academies may make football more feasible and attractive, pulling effort away from school. Second, an *eligibility channel*: if continued participation in football depends on remaining engaged in school, academy presence may make school effort more valuable. Third, a *discipline channel*: organized sport may reinforce persistence, structure, and responsiveness to feedback, thereby lowering the marginal cost of sustained effort. The empirical question is which of these forces appears to dominate in the data.

Although our research design does not identify the causal effect of *escolinhas* themselves, heterogeneity by academy presence can provide suggestive evidence on the mechanism through which local football success affects schooling. To assess this, we interact the treatment with the number of escolinhas in the

municipality.

Table 4 reports the results. The "Treat × Post" coefficients capture the effect in a municipality with no academy and reproduce the pattern in our main results: pass rates rise and dropout falls, while the effect on failure is essentially zero. The interaction terms reveal how *escolinhas* shape this response. Each additional academy increases the pass-rate effect by 0.66 percentage points, an increment roughly three-quarters as large as the baseline pass-rate effect itself. This additional gain does not come from a further reduction in dropout: the dropout interaction is small and statistically indistinguishable from zero. Instead, it operates through the failure channel. Each additional academy reduces the failure rate by a further 0.58 percentage points, turning the near-zero failure response in municipalities without academies into a substantial decline.

These results map naturally into the framework in Appendix B.2. In municipalities without academies, the treatment improves school progression mainly through lower dropout, consistent with the baseline role-model effect operating on the continuation margin. In municipalities with academies, the additional gains arise mainly through lower failure rather than through further reductions in dropout. This pattern is difficult to reconcile with the outside-option channel alone, under which academies would make football more attractive and tend to pull effort away from school. Instead, it is more consistent with the eligibility and discipline channels: academy presence appears to make football aspirations more compatible with school persistence and to strengthen performance among students who remain enrolled.

Why do academies affect failure rather than dropout? Within the logic of Appendix B.2, at least two interpretations are plausible. First, the schooling requirements described in Section 3.1 may matter not only for remaining enrolled, but also for remaining in good academic standing. For students who want to keep training, the relevant constraint may therefore be not merely staying in school, but also avoiding failure. Second, the two margins may reflect different intensities of the same underlying response. A salient local success may be sufficient to retain students at risk of dropping out, while the stronger and more sustained response generated by a concrete local pathway may also improve performance among those who remain enrolled. Our design cannot distinguish between these explanations, and they need not be mutually exclusive. Both are consistent with the interpretation that *escolinhas* help translate local football success into more sustained school-oriented effort.

Table 4: Escolinha Heterogeneity

	Pass	Dropout	Fail
	(1)	(2)	(3)
Treat × Post	0.905**	-1.047***	0.142
	(0.410)	(0.274)	(0.322)
Treat × Post × Escolinha	0.660***	-0.0817	-0.578**
	(0.242)	(0.199)	(0.239)
Pre-treatment mean	81.378	8.752	9.871
Observations	38374	38374	38374

Notes: TWFE estimates. Escolinha is the number of youth football academies (escolinhas) in the municipality, measured from RAIS administrative records. "Treat × Post" gives the treatment effect at zero escolinhas; "Treat × Post × Escolinha" gives the additional effect per escolinha. All specifications include baseline (2011) outcome controls (pass, dropout, fail rates) interacted with year fixed effects, plus municipality and year fixed effects. Population-weighted. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

Validating the *escolinha* mechanism. A natural concern is that academy municipalities differ from other municipalities in ways that also shape educational outcomes. Table A7 confirms that municipalities with and without academies differ along several socioeconomic dimensions. We address this concern in two ways. First, Table A8 shows that adding a rich set of baseline socioeconomic characteristics interacted with year fixed effects, as well as time-varying GDP per capita, leaves the estimates essentially unchanged. Second, the event studies in Figure A4, estimated separately for municipalities with and without an academy, show no evidence of differential pre-trends. Together, these results increase our confidence that the heterogeneity is not driven by observable municipal differences or by differential trends preceding treatment.

We further assess this interpretation by exploiting heterogeneity by gender. Because soccer academies in our setting primarily serve boys, we expect their amplifying effect to be concentrated among male students. Table A6 reports estimates from a quadruple-difference specification that interacts gender, academy presence, and the local-success treatment. The differential effect associated with academies is indeed concentrated entirely among boys: each additional academy amplifies both the increase in passing and the reduction in failure. For girls, by contrast, the effects of local success do not differ significantly between municipalities with and without *escolinhas*. This pattern is harder to reconcile with the alternative explanation that academy municipalities simply provide more favorable environments, since factors such as better schools or richer families should also benefit girls.

These findings suggest two broader conclusions. First, local football talent-development infrastructure

is not necessary for local success shocks to improve school progression: positive effects are already present in municipalities with no professional football academies. Second, where institutions link football participation more closely to schooling, the educational response to local success appears to be stronger. Taken together, the evidence is consistent with the view that *escolinhas* do not create the motivational force behind the treatment, but can shape how that force translates into educational outcomes. Although policy cannot readily produce salient hometown success stories, it can influence the institutional environment through which students respond to them.

7 Conclusion

This paper shows that students who see local role models succeed in a risky superstar market can respond by increasing their formal educational investment. To the best of our knowledge, this is the first paper to provide causal evidence on how hometown sports success stories affect students' schooling outcomes. When a municipality produces its first top footballer, students there become more likely to remain in school and progress successfully through high school. These gains are driven mainly by lower dropout rates; they are strongest for boys, but also extend to girls. We observe these effects even in municipalities without football academies, which suggests that the broad belief channel is strong on its own. But the effects are larger where football academies exist, suggesting that institutions such as escolinhas play a role in directing students' motivation. Rather than pulling students away from school, this institutional support appears to align risky aspirations with educational investment.

These findings also open a broader question. Football in Brazil may be a source of unusually strong signals: role models are highly visible, come from a background students can recognize, and are widely understood to have succeeded through repeated effort under adversity. Other success stories may not carry the same message. Likewise, the effects we document may depend on the social meaning of success in a setting like Brazil, where professional success often implies overcoming substantial barriers. An important avenue for future research is therefore to study whether the power of a role model depends on the degree of disadvantage and struggle embodied in the successful figure. Understanding when salient examples broaden investment in education, rather than diverting it away from school, remains an important question for research on aspirations, mobility, and human capital formation.

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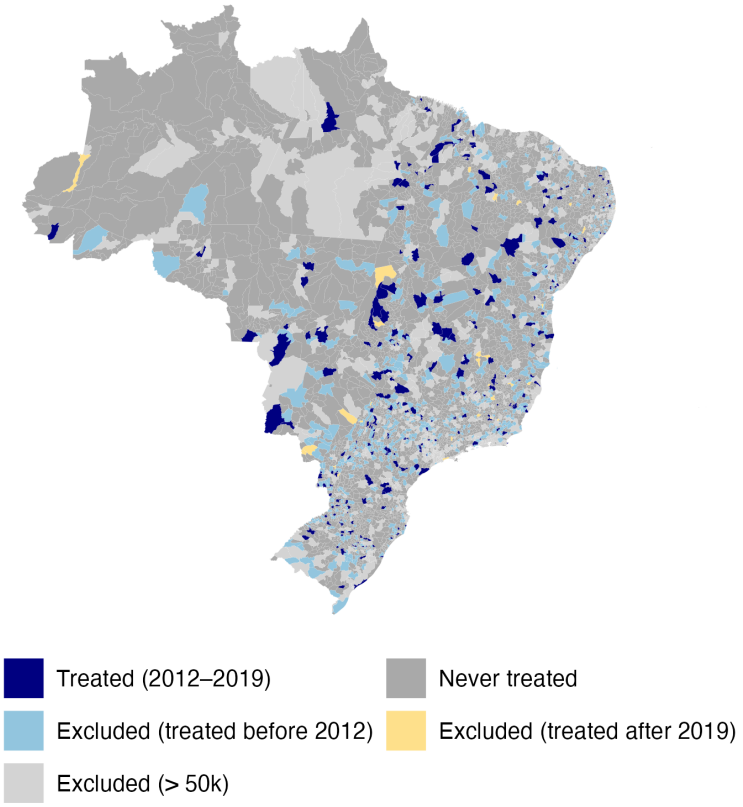
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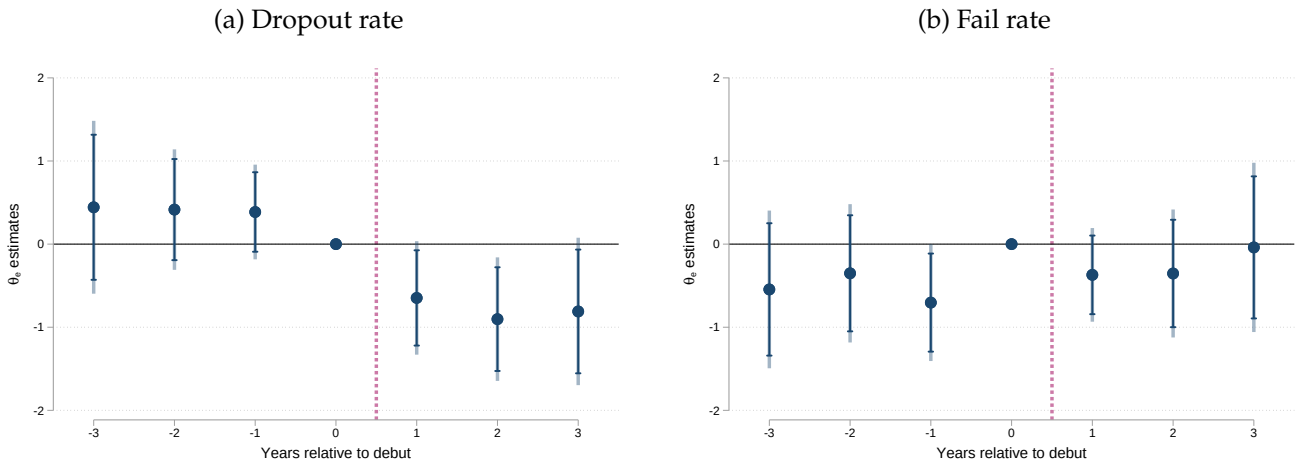
A Supplemental Figures and Tables

Figure A1: Geography of Treatment



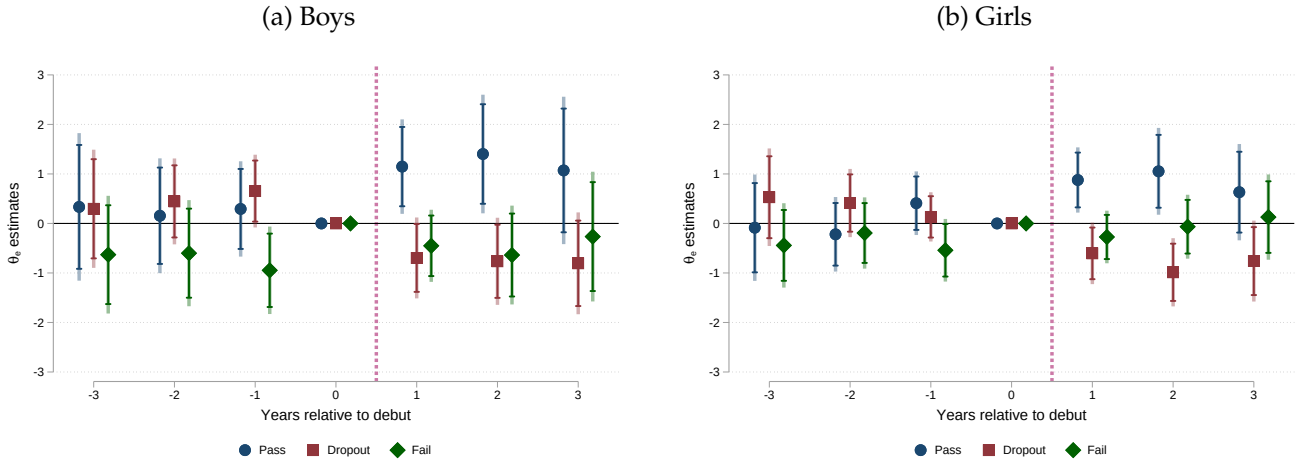
Notes: Map of Brazilian municipalities by treatment status. "Treated (2012–2019)" municipalities experienced a local player's debut in a top team during the sample period. "Never treated" municipalities serve as controls. Municipalities treated before 2012, treated after 2019, or with population above 50,000 are excluded from the estimation sample.

Figure A2: Event Studies: Dropout and Fail Rates



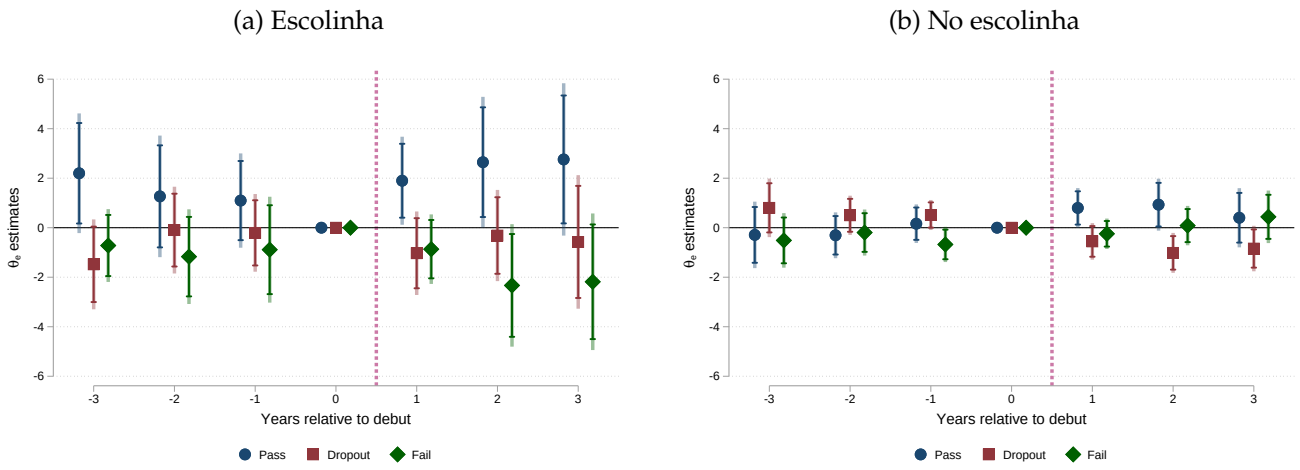
Notes: Callaway-Sant'Anna event-study estimates for high school dropout rates (panel a) and fail rates (panel b), window −3 to +3 years relative to debut. Same specification as Figure 1: period 0 (debut year) is the omitted reference; controls include baseline (2011) pass, dropout, and fail rates; observations weighted by population. Thin lines show 95% confidence intervals; thick capped bars show 90% confidence intervals. The sample includes municipalities with population under 50,000.

Figure A3: Event Studies by Gender: All Outcomes



Notes: Callaway-Sant'Anna event-study estimates for high school pass, dropout, and fail rates, separately for boys (panel a) and girls (panel b), window −3 to +3 years relative to debut. Same specification as Figure 1: period 0 (debut year) is the omitted reference; controls include baseline (2011) pass, dropout, and fail rates; observations weighted by population. Thin lines show 95% confidence intervals; thick capped bars show 90% confidence intervals. The sample includes municipalities with population under 50,000.

Figure A4: Event Studies by Escolinha Status: All Outcomes



Notes: Callaway-Sant'Anna event-study estimates for high school pass, dropout, and fail rates, separately for municipalities with an escolinha (panel a) and without one (panel b), window −3 to +3 years relative to debut. An escolinha is a youth football academy, measured from RAIS administrative records. Same specification as Figure 1: period 0 (debut year) is the omitted reference; controls include baseline (2011) pass, dropout, and fail rates; observations weighted by population. Thin lines show 95% confidence intervals; thick capped bars show 90% confidence intervals. The escolinha subsample is small, so its confidence intervals are wide; both panels share a common vertical scale. The sample includes municipalities with population under 50,000.

Table A1: Robustness to Additional Controls

	(1)	(2)	(3)
Panel A: Pass rate			
Treat × Post	1.135***	1.206***	1.204***
	(0.376)	(0.376)	(0.375)
Pre-treatment mean	81.378	81.378	81.378
Panel B: Dropout rate			
Treat × Post	-1.075***	-1.019***	-1.019***
	(0.257)	(0.257)	(0.257)
Pre-treatment mean	8.752	8.752	8.752
Panel C: Fail rate			
Treat × Post	-0.0599	-0.186	-0.185
	(0.301)	(0.295)	(0.295)
Pre-treatment mean	9.871	9.871	9.871
Municipality & year FE	✓	✓	✓
Baseline outcome × year	✓	✓	✓
Baseline SES × year		✓	✓
Time-varying GDP p.c.			✓
Observations	38374	36286	36286

Notes: TWFE estimates for the three high-school outcomes (pass rate in Panel A, dropout rate in Panel B, fail rate in Panel C) with progressively richer controls; only the Treat × Post coefficient is reported. Column (1) is the baseline specification, with interactions of baseline (2011) pass, dropout, and fail rates with year fixed effects. Column (2) adds interactions of baseline SES controls (household income per capita, IDEB 5th and 9th grade, GDP per capita) with year fixed effects. Column (3) further adds time-varying real GDP per capita. All regressions include municipality and year fixed effects and are population-weighted; the controls entering each column are indicated in the lower panel. The Treat × Post estimates are essentially unchanged across columns within each outcome. The sample shrinks from column (1) to columns (2)–(3) because the baseline SES controls are missing for some municipalities. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

Table A2: Effect on Pass Rate: Sensitivity to Treatment Definition

	Panel A: Population Thresholds					Panel B: Top-Team Definition		
	<50k	<100k	<150k	<200k	All	Europe/ Selecao	+ Serie A	+ Below Serie A
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treat × Post	1.135***	0.783**	0.803**	0.880**	1.133***	1.644**	0.844**	1.135***
	(0.376)	(0.383)	(0.395)	(0.400)	(0.361)	(0.716)	(0.397)	(0.376)
Pre-treatment mean	80.908	80.908	80.908	80.908	80.908	81.378	81.378	81.378
Treated municipalities	240	271	286	287	294	99	223	240
Observations	38374	39481	39697	39742	39832	38374	38374	38374

Notes: TWFE estimates for pass rates. Panel A varies the population threshold for sample inclusion. Panel B varies the definition of a "top team": "Europe/Selecao" includes only players reaching European leagues or the national team; "+ Serie A" adds Brazil's top domestic league; "+ Below Serie A" further adds lower domestic leagues. All specifications include baseline (2011) outcome controls (pass, dropout, fail rates) interacted with year fixed effects, plus municipality and year fixed effects. Population-weighted. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A3: Robustness to the Classification of the Debut Year

	Panel A: Pass			Panel B: Dropout			Panel C: Fail		
	control	dropped	treated	control	dropped	treated	control	dropped	treated
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treat × Post	1.135***	1.180***	0.837**	-1.075***	-1.133***	-0.933***	-0.0599	-0.0469	0.0957
	(0.376)	(0.421)	(0.371)	(0.257)	(0.272)	(0.227)	(0.301)	(0.335)	(0.306)
p-value (diff)		0.717	0.113		0.533	0.322		0.908	0.379
Pre-treatment mean	81.378	81.386	81.386	8.752	8.757	8.757	9.871	9.857	9.857
Observations	38374	38134	38374	38374	38134	38374	38374	38134	38374

Notes: TWFE estimates of the headline decomposition (Table 2, Panel B) under three alternative conventions for how the debut year—event time $e = 0$—is classified. Within each outcome (Panel A: pass rate; Panel B: dropout rate; Panel C: fail rate), the "control" column treats $e = 0$ as a pre-treatment period (the main-text convention, Post = $\mathbf{1}\{\text{year} > \text{debut}\}$); the "dropped" column excludes $e = 0$ observations; and the "treated" column counts $e = 0$ as a treated period (Post = $\mathbf{1}\{\text{year} \geq \text{debut}\}$). "p-value (diff)" reports the p-value for the difference between each column and its "control" column, computed from a single stacked model with specification-interacted fixed effects and controls, clustered on the municipality. All specifications include baseline (2011) pass, dropout, and fail rates interacted with year fixed effects, plus municipality and year fixed effects, and are population-weighted. The estimates are essentially unchanged across conventions—none of the differences from the "control" column is statistically significant—so our conclusions do not depend on this discretionary choice. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

Table A4: Robustness to School-Input Controls

	(1)	(2)	(3)	(4)
Panel A: Pass rate				
Treat × Post	1.135***	1.156***	1.180***	1.134***
	(0.376)	(0.371)	(0.379)	(0.377)
Pre-treatment mean	81.378	81.378	81.378	81.378
Panel B: Dropout rate				
Treat × Post	-1.075***	-1.058***	-1.085***	-1.082***
	(0.257)	(0.255)	(0.258)	(0.259)
Pre-treatment mean	8.752	8.752	8.752	8.752
Panel C: Fail rate				
Treat × Post	-0.0599	-0.0972	-0.0944	-0.0517
	(0.301)	(0.296)	(0.302)	(0.302)
Pre-treatment mean	9.871	9.871	9.871	9.871
Municipality & year FE	✓	✓	✓	✓
Baseline outcome × year	✓	✓	✓	✓
Infrastructure controls		✓		
Capacity controls			✓	
Staff controls				✓
Observations	38374	38374	38374	38374

Notes: Each column re-estimates the main two-way fixed-effects specification for the three high-school outcomes, adding a group of contemporaneous school characteristics as controls; only the Treat × Post coefficient is reported (control coefficients are omitted). Column (1) is the main specification. Column (2) adds *infrastructure* indicators (sports court, covered and uncovered court, library, science and computer labs, internet and broadband, playground, covered patio, auditorium, cafeteria, kitchen, teachers' room, principal's office, and special-needs facilities); column (3) adds *capacity* measures (number of classrooms available and in use, computers, computers available to students, and multimedia equipment); column (4) adds *staff* measures (total staff and number of teachers). All school-input variables are municipality-level aggregates over public schools offering high school, taken from the INEP School Census; values for years in which a variable was not collected are set to zero, so the estimation sample is identical across columns. Every column includes baseline (2011) outcome controls (pass, dropout, fail rates) interacted with year fixed effects, plus municipality and year fixed effects, and is population-weighted. The Treat × Post estimates are essentially unchanged across columns, indicating that the schooling effects do not operate through, and are not confounded by, measured changes in school inputs. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

Table A5: Grade Heterogeneity: TWFE

	Pass Rate		Dropout Rate		Fail Rate	
	(1)	(2)	(3)	(4)	(5)	(6)
Treat × Post	1.100***	1.197*	-1.054***	-1.777***	-0.0463	0.581
	(0.361)	(0.616)	(0.248)	(0.319)	(0.281)	(0.509)
Treat × Post × 11th Grade		-0.189		0.823***		-0.634
		(0.480)		(0.179)		(0.395)
Treat × Post × 12th Grade		-0.101		1.347***		-1.246**
		(0.667)		(0.256)		(0.555)
Pre-treatment mean	82.413	82.413	8.341	8.341	9.246	9.246
Observations	115009	115009	115009	115009	115009	115009

Notes: TWFE estimates of high school outcomes on a long panel stacking 10th, 11th, and 12th grade observations. Odd columns report the pooled Treat × Post effect; even columns interact it with grade dummies (10th grade omitted). All specifications include municipality and year fixed effects, grade fixed effects, and baseline (2011) outcome controls (pass, dropout, fail rates) interacted with year. Observations weighted by population. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

Table A6: Gender × Escolinha: Quadruple Difference

	Pass	Dropout	Fail
	(1)	(2)	(3)
Treat × Post	0.999**	-1.407***	0.408
	(0.507)	(0.304)	(0.418)
Treat × Post × Female	-0.262	0.738***	-0.476*
	(0.329)	(0.139)	(0.271)
Treat × Post × Escolinha	0.939***	-0.0992	-0.840***
	(0.315)	(0.241)	(0.312)
Treat × Post × Female × Escolinha	-0.616**	0.0510	0.565***
	(0.256)	(0.145)	(0.219)
Pre-treatment mean	81.052	8.883	10.066
Observations	76747	76747	76747

Notes: TWFE estimates on a reshaped panel stacking male and female outcomes. Escolinha is the number of youth football academies (escolinhas) in the municipality, measured from RAIS administrative records. "Treat × Post" gives the baseline treatment effect (boys, zero escolinhas); "× Female" the differential for girls; "× Escolinha" the additional effect per escolinha; and the quadruple interaction the gender differential in the per-escolinha effect. All specifications include baseline (2011) outcome controls (pass, dropout, fail rates) interacted with year fixed effects, plus municipality and year fixed effects. Population-weighted. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

Table A7: Balance by Escolinha Status

	Escolinha	No Escolinha	Difference	SE
Population (1000s)	25.2	11.3	13.8***	(1.033)
HH Income P.C.	703.2	475.6	227.6***	(18.368)
IDEB 5th Grade	5.1	4.4	0.7***	(0.069)
IDEB 9th Grade	4.2	3.8	0.4***	(0.052)
GDP P.C.	43.7	23.3	20.5***	(4.163)
Bolsa Familia P.C.	125.0	233.1	-108.0***	(8.350)
Pass Rate (HS)	72.7	74.4	-1.7	(1.059)
Dropout Rate (HS)	11.7	13.6	-1.9***	(0.658)
Fail Rate (HS)	15.7	12.0	3.7***	(0.824)
N	139	4137		

Notes: Comparison of 2010 municipal characteristics between municipalities with and without an escolinha (youth football academy, measured from RAIS administrative records). Difference and standard errors from two-sample t-tests with unequal variances. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A8: Escolinha Heterogeneity: Robustness to Additional Controls

	(1)	(2)	(3)
Panel A: Pass rate			
Treat × Post × Escolinha	0.660***	0.659***	0.653***
	(0.242)	(0.246)	(0.244)
Pre-treatment mean	81.378	81.378	81.378
Panel B: Dropout rate			
Treat × Post × Escolinha	-0.0817	-0.0422	-0.0430
	(0.199)	(0.195)	(0.195)
Pre-treatment mean	8.752	8.752	8.752
Panel C: Fail rate			
Treat × Post × Escolinha	-0.578**	-0.616**	-0.610**
	(0.239)	(0.248)	(0.246)
Pre-treatment mean	9.871	9.871	9.871
Municipality & year FE	✓	✓	✓
Baseline outcome × year	✓	✓	✓
Baseline SES × year		✓	✓
Time-varying GDP p.c.			✓
Observations	38374	36286	36286

Notes: TWFE estimates of the escolinha-heterogeneity coefficient (Treat × Post × Escolinha) on the three high-school outcomes (pass in Panel A, dropout in Panel B, fail in Panel C), under progressively richer controls. Escolinha is the number of youth football academies in the municipality, measured from RAIS. Column (1) includes baseline (2011) pass, dropout, and fail rates interacted with year fixed effects; column (2) adds baseline SES controls (household income per capita, IDEB 5th and 9th grade, GDP per capita) interacted with year; column (3) further adds time-varying real GDP per capita; the controls entering each column are indicated in the lower panel. All columns include municipality and year fixed effects and are population-weighted. The coefficient is essentially unchanged across columns, indicating the escolinha heterogeneity is not an artifact of municipal socioeconomic differences. Standard errors clustered at the municipality level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The sample includes municipalities with population under 50,000.

Table A9: Countries Whose Leagues Are Classified as "Europe"

Denmark	England	Finland
France	Germany	Greece
Italy	Netherlands	Norway
Poland	Portugal	Spain
Sweden	Switzerland	Turkey

Notes: Countries whose domestic leagues are classified as "Europe" when determining whether a player reached a top team. A player is coded as having played in Europe if any of his club spells occurred in a top-division league of one of the countries listed above.

B Conceptual Framework: Details and Extensions

B.1 Mapping the Model to Pass, Fail, and Dropout

This appendix maps the broad conceptual framework to the observed schooling outcomes. Let school-oriented investment remain $I = e_T$. After effort is chosen, the student remains enrolled with probability

$$q(I; X), \qquad q'(I) > 0, \tag{7}$$

and, conditional on remaining enrolled, passes the grade with probability

$$r(I; X), \qquad r'(I) > 0, \tag{8}$$

where X collects background conditions such as household resources or school quality. These two objects generate the three observed outcomes:

$$P(I; X) \equiv q(I; X)r(I; X), \qquad \text{pass}, \tag{9}$$

$$F(I; X) \equiv q(I; X)\big[1 - r(I; X)\big], \qquad \text{fail}, \tag{10}$$

$$D(I; X) \equiv 1 - q(I; X), \qquad \text{dropout}. \tag{11}$$

By construction, $P + F + D = 1$.

Differentiating with respect to any treatment that changes I yields

$$\frac{\mathrm{d}P}{\mathrm{d}T} = \big[q'(I; X)r(I; X) + q(I; X)r'(I; X)\big]\frac{\mathrm{d}I}{\mathrm{d}T}, \tag{12}$$

$$\frac{\mathrm{d}F}{\mathrm{d}T} = \big[q'(I; X)(1 - r(I; X)) - q(I; X)r'(I; X)\big]\frac{\mathrm{d}I}{\mathrm{d}T}, \tag{13}$$

$$\frac{\mathrm{d}D}{\mathrm{d}T} = -q'(I; X)\frac{\mathrm{d}I}{\mathrm{d}T}. \tag{14}$$

Thus, if treatment raises school-oriented investment, pass must rise and dropout must fall. The effect on fail depends on the relative strength of the continuation and performance margins. This decomposition is useful because it reveals whether gains in progression come from keeping students attached to school, improving performance among those who stay, or both.

B.2 The Role of Football Academies (*Escolinhas*)

We now consider how local football academies (*escolinhas*) may interact with the treatment. Their effect is theoretically ambiguous. On the one hand, *escolinhas* may make the risky path appear more feasible, thereby strengthening the reallocation of effort toward football. On the other hand, they may require students to remain engaged in school and may also reinforce discipline, sustained effort, and responsiveness to feedback. These forces work in opposite directions.

Let $A \in [0, 1]$ denote an index of local football-academy presence, where higher values of A correspond to a more developed *escolinha* environment. We extend the baseline utility function as

$$U(e_T, e_R; \theta, \phi, A) = V_T(e_T; \theta, A) + V_R(e_R, e_T; \theta, \phi, A) - C(e_T + e_R; A),$$

where, as in the baseline equation, e_T denotes effort directed toward the traditional path and e_R effort directed toward the risky path. Relative to the baseline model, we now allow the value of the risky path to depend not only on risky effort e_R, but also on school effort e_T. The reason is that, in the presence of academies, school engagement may increase the return to effort in football—for example, if students must remain enrolled, attend school regularly, or meet minimum academic standards in order to be eligible to participate in training.

Academies may affect outcomes through three channels. First, they may raise the value of the risky path directly:

$$\frac{\partial V_R}{\partial A} > 0. \tag{15}$$

This *outside-option effect* captures the idea that a denser academy environment makes football more feasible or attractive, thereby increasing the value of investing effort in the risky activity.

Second, academies may make school effort more valuable for success in the risky sector, for example if students must remain enrolled, attend school regularly, or meet minimum academic standards in order to be eligible to participate in training. We capture this by assuming that academy presence strengthens the marginal effect of school effort on the value of the risky path:

$$\frac{\partial^2 V_R}{\partial e_T \partial A} > 0. \tag{16}$$

This *eligibility effect* makes football aspirations more compatible with staying engaged in school.

Third, academies may lower the marginal cost of sustained effort:

$$\frac{\partial^2 C}{\partial e \partial A} < 0, \qquad \text{where } e = e_T + e_R. \tag{17}$$

This *discipline effect* captures the possibility that organized sport reinforces monitoring, persistence, and responsiveness to feedback, thereby making sustained effort less costly.

These channels imply an ambiguous academy interaction. If academies mainly operate through the outside-option effect, they may attenuate the positive schooling effect of local success by pulling effort toward football. If instead the eligibility and discipline effects are strong enough, academies may amplify the positive schooling effect by making football aspirations more compatible with school persistence and by improving performance among those who remain enrolled. This extension helps rationalize our empirical heterogeneity. In municipalities without academies, the treatment can still reduce dropout through the baseline role-model channel, which raises school-oriented investment and strengthens continuation. In municipalities with academies, this dropout effect may be reinforced by the eligibility channel, while the discipline channel operates primarily on the intensive margin, reducing failure among students who remain enrolled. The empirical pattern we identify is that local success shocks reduce dropout across all municipalities, but negative effects on failure rates are limited to academy municipalities. We interpret the empirical pattern as evidence that academies help channel risky aspirations into school persistence and academic performance, despite also increasing the attractiveness of the risky path itself.

B.3 Gender Heterogeneity

The framework can also rationalize positive but weaker treatment effects for girls. The key distinction is between a broad effort-belief channel and a risky-path-specific attraction channel. The first, captured by θ, reflects an updating in beliefs about the general productivity of effort and operates through both the traditional and risky paths. The second, captured by ϕ, reflects the relative attractiveness of football as a risky personal career path. A natural possibility is that local football success shifts both parameters for boys and girls, but that the broad effort-belief channel is stronger for boys because the shock is more identity-relevant or salient for them.

Let $g \in \{b, \ell\}$ index gender, where b denotes boys and ℓ girls. Write utility as

$$U_g(e_T, e_R; \theta_g, \phi_g) = V_T(e_T; \theta_g) + V_R(e_R; \theta_g, \phi_g) - C_g(e_T + e_R). \tag{18}$$

A local success shock changes beliefs according to

$$\theta_g' = \theta_g + \Delta_\theta^g, \qquad \phi_g' = \phi_g + \Delta_\phi^g. \tag{19}$$

A natural restriction is

$$\Delta_\theta^\ell > 0, \qquad \Delta_\theta^b > 0, \qquad 0 \le \Delta_\phi^\ell < \Delta_\phi^b. \tag{20}$$

That is, the local success shock raises beliefs about the general productivity of effort for both genders, but more strongly for boys, and it also raises the risky-path-specific attractiveness of football more strongly for boys. Under the logic of the baseline model, school effort responds according to

$$\mathrm{d}e_{Tg} \approx \frac{\partial e_{Tg}}{\partial \theta_g}, \mathrm{d}\theta_g + \frac{\partial e_{Tg}}{\partial \phi_g}, \mathrm{d}\phi_g, \qquad \frac{\partial e_{Tg}}{\partial \theta_g} > 0, \quad \frac{\partial e_{Tg}}{\partial \phi_g} < 0. \tag{21}$$

Girls can therefore exhibit positive treatment effects because the broad effort-belief channel remains operative for them. At the same time, these effects may be weaker than for boys if the increase in θ is smaller for girls. Boys may experience both a larger positive θ-shock and a larger negative ϕ-shock, so stronger positive effects for boys are not automatic; they arise when the stronger broad effort-belief channel dominates the stronger risky-path attraction channel. The female results are thus consistent with a framework in which local football success affects both genders through a generalized updating about effort and mobility, but has a stronger overall effect on boys because the broad motivating force of the shock is larger for them.