Foreign language skills and labor market outcomes

The case of English in Mexico

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Motivation: Returns to English language abilities

- Language skills are a form of human capital
- English is valuable in the world economy
  - Globalization: trade, technology and information
  - Mobility and better occupations

Related literature has found positive returns in the context of

- English-speaking countries
  - Immigrants: Bleakley and Chin (2004); Chiswick and Miller (2015)
  - Former British colonies: Azam, Chin and Prakash (2013); Eriksson (2014); Chakraborty and Bakshi (2016)
- Non-English-speaking countries: Lang and Siniver (2009); Adamchik et al. (2019); Hahm and Gazzola, (2022)

This paper in a nutshell

Research question

- Can English programs improve labor market outcomes in the context of a non-English-speaking country?

What I do

- Quantify the intention to treat effect of offering English instruction on labor market outcomes in Mexico
  - Exploit state policy changes that give locality-by-cohort variation in exposure to English instruction

What I find

- Acquisition of English skills
- Zero effect on wages (positive point estimate)
- Potential improvements in working conditions

Background

- Importance of English language for Mexico
  - Neighboring country with the US
  - Investment, trade and migration
- Very little is known about English language skills in Mexico
- Very little is known about returns to English skills in Mexico
  - I use the 2014 Subjective Well-being Survey (BIARE)

English speaking ability: a rare skill in Mexico

- BIARE is a nationally representative survey with adult respondents 18 and older (ENIGH supplemental survey)
- I use the response to the following question to form a measure of English ability
  - Do you speak English?
  - I code it as one if the respondent says yes, and zero otherwise
- 7% of Mexicans speak English

Empirical framework

We want to estimate the effect of English skills, Eng_{isc}, on log-wages, ω_{isc}, which can be approximated with the following equation:

$$\omega_{isc} = \alpha + \beta\, Eng_{isc} + \boldsymbol{X_{isc}\Pi} + \epsilon_{isc}$$

where each individual i belongs to a cohort c and lives in locality s, $\boldsymbol{X_{isc}}$ is a vector of controls including: education, gender, marital status, ethnicity, cohort FE and locality FE

Empirical challenges

- Concern that English skills, Eng_i, are endogenous in the wage equation
  - Omitted variables: abilities may be correlated with both English skills and wages
  - Measurement error of English skills variable
- OLS estimation would lead to a biased estimate of β
- Take advantage of state policy changes in English instruction to propose a Difference-in-Differences strategy

States with and without the policy

Staggered Difference in Differences

I examine all these policies at once, using the following specification:

$$y_{isc} = \theta + \psi\, HadPolicy_{sc} + \delta_s + \kappa_c + \boldsymbol{X_{isc}\Psi} + \varepsilon_{isc}$$

where $HadPolicy_{sc}$ takes the value of one if individual i lives in a treated locality and he/she belongs to one of the affected cohorts (zero otherwise)

Parallel Trend Assumption

I use an event study specification to examine if pre-trends are present

$$y_{isc} = \theta + \sum_{k} \psi_{c-c_s^*} I_{(k=c-c_s^*)} + \delta_s + \kappa_c + \boldsymbol{X_{isc}\Psi} + \varepsilon_{isc}$$

where c_s^* denotes the first cohort affected by the intervention in locality s, so $c - c_s^*$ is the time relative to c_s^* with negative values reflecting older cohorts not exposed to the policy. $I_{(k=c-c_s^*)}$ is a dummy variable for $k = c - c_s^*$, so $\psi_{c-c_s^*}$ gives the effect of leads and lags of policy adoption. The omitted category is -1

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Data

Descriptive Stats

Household survey (2014 BIARE)

- Individual level data (cohorts 1981-1996)
- BIARE surveyed 44,518 households
  - Representative at national and state level
- Very rich questionnaire, including English skills

School data on exposure to English instruction

- Mexican School Census (1997-2007)
- Weekly hours of English instruction (exposure)
  - By school-cohort, average over primary school
  - By cohort, take locality average
- Merge English instruction measure to individual-level data (in BIARE) by locality and cohort

Results: Effect of English policies

Table 4: Effect of English programs

	(1) Hrs Eng	(2) Speak Eng	(3) ln(wage)	(4) Paid work
Panel A: Staggered DiD				
Had Policy	0.546***	0.082*	-0.052	-0.043
	(0.073)	(0.043)	(0.154)	(0.030)
	[0.000]	[0.034]	[0.727]	[0.144]
Observations	6,573	6,573	6,573	11,965
Adjusted R^2	0.681	0.141	0.285	0.258
Mean Dep. Var.	0.103	0.083	7.710	0.541

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Robustness checks

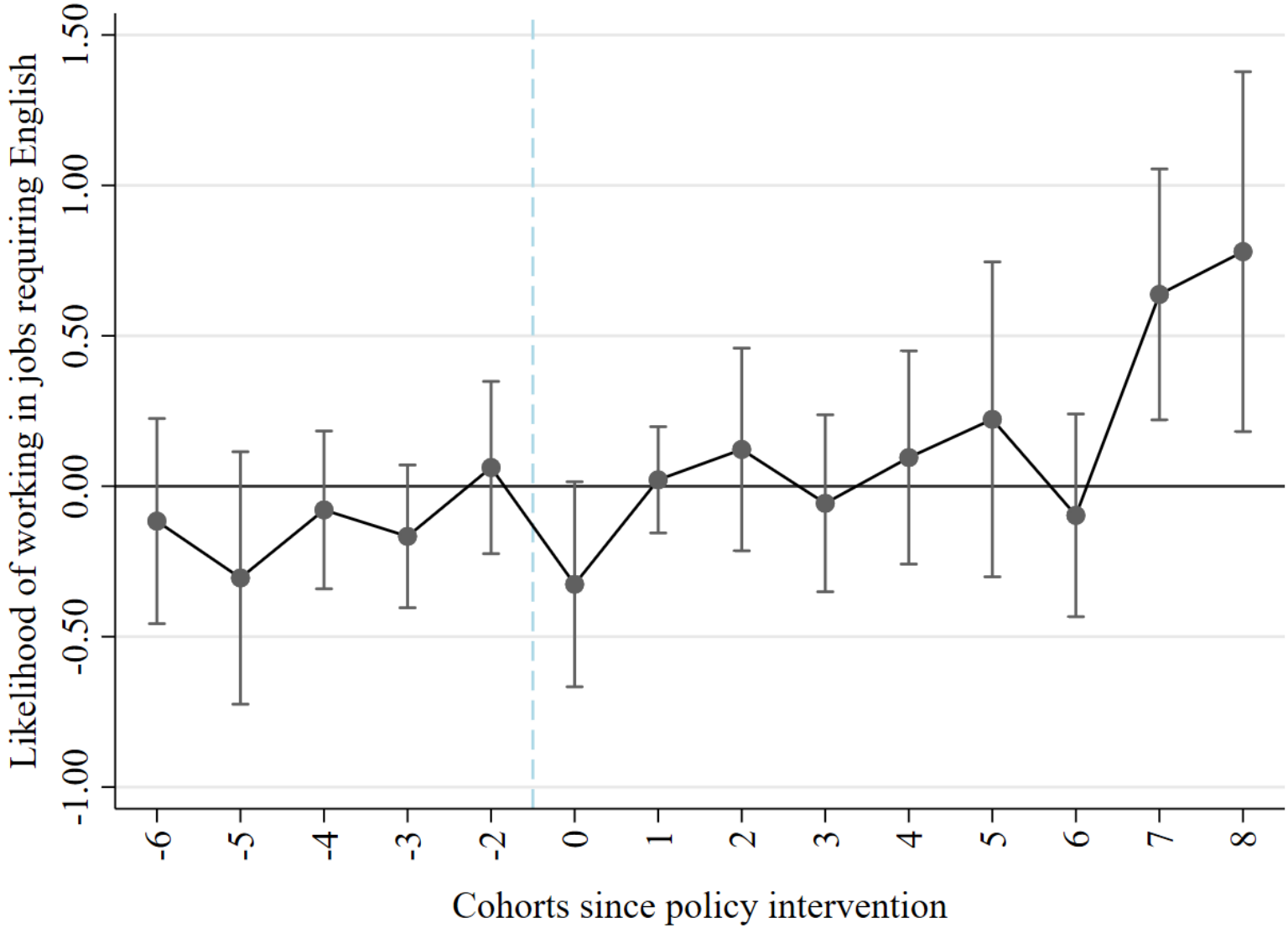
- Concern about staggered DiD estimator in the presence of heterogeneous treatment effects ▸▸ HTE
  - Sun and Abraham (2021)
  - Callaway and Sant'Anna (2021)
- Without excluding Morelos and Coahuila ▸▸ Sample
- Narrower cohorts ▸▸ Narrow

Mechanisms

- Cognitive skills
  - Acquisition of English skills
  - No effect on other skills: Language and Mathematics (Gálvez-Soriano, 2023)
- Occupational choices
  - Better paid jobs or better working conditions?
  - Subjective well-being measures
- School enrollment
  - Zero effect on wages in the short-run, but positive in the long-run?

More likely to work in English-intensive jobs?

Distribution



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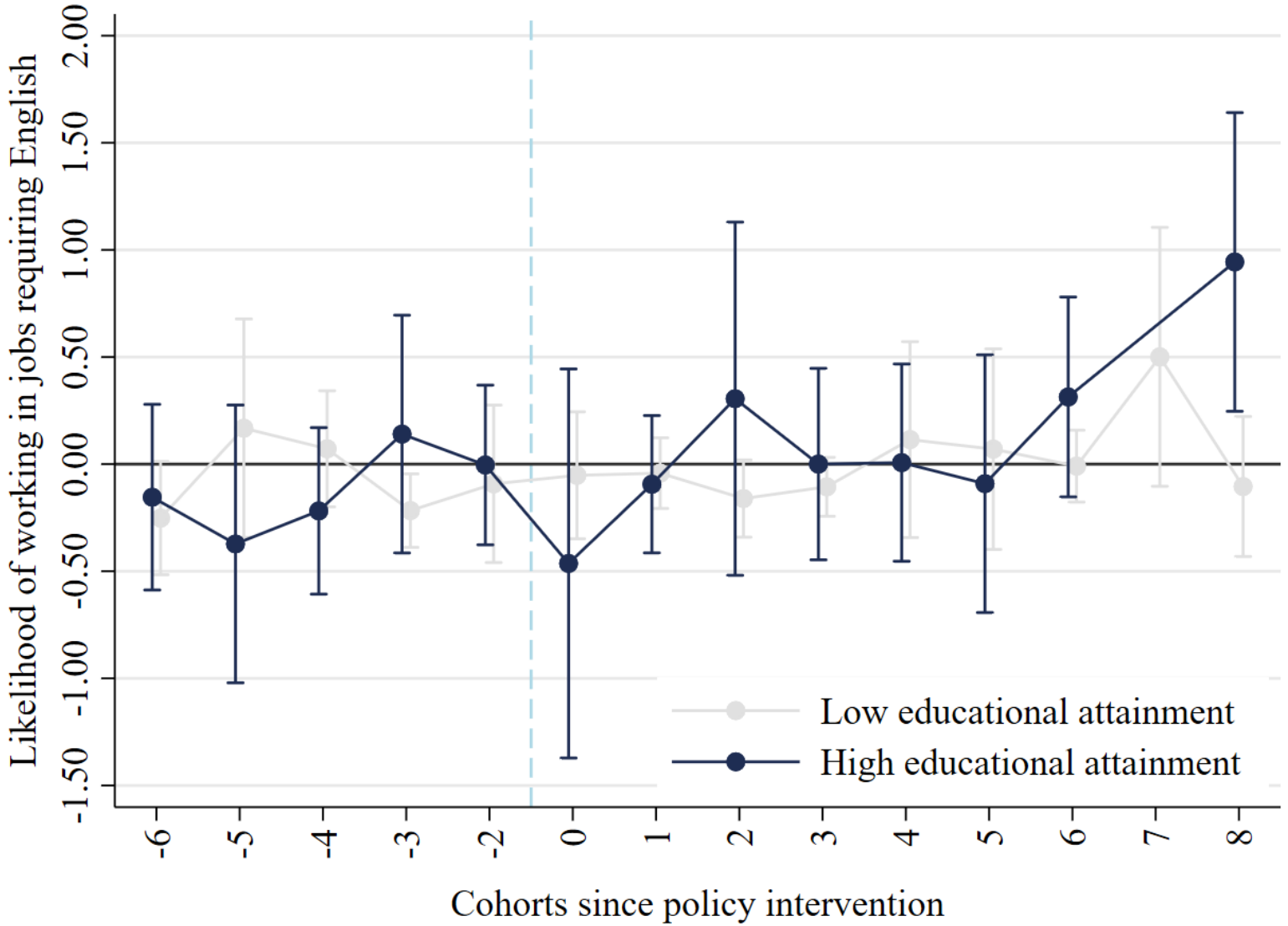

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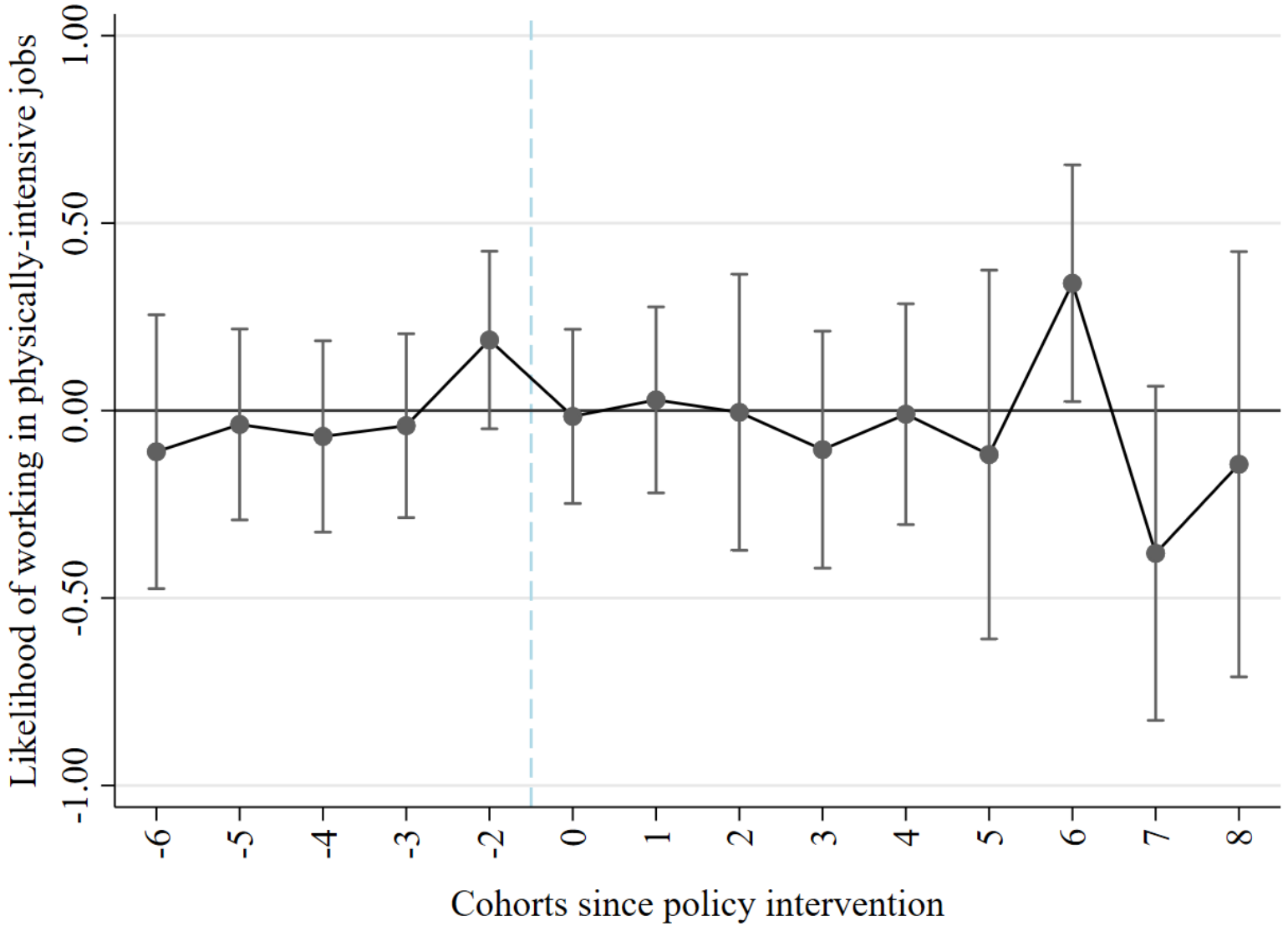
Mechanisms: Labor supply and formal jobs

Table 4: Effect of English programs

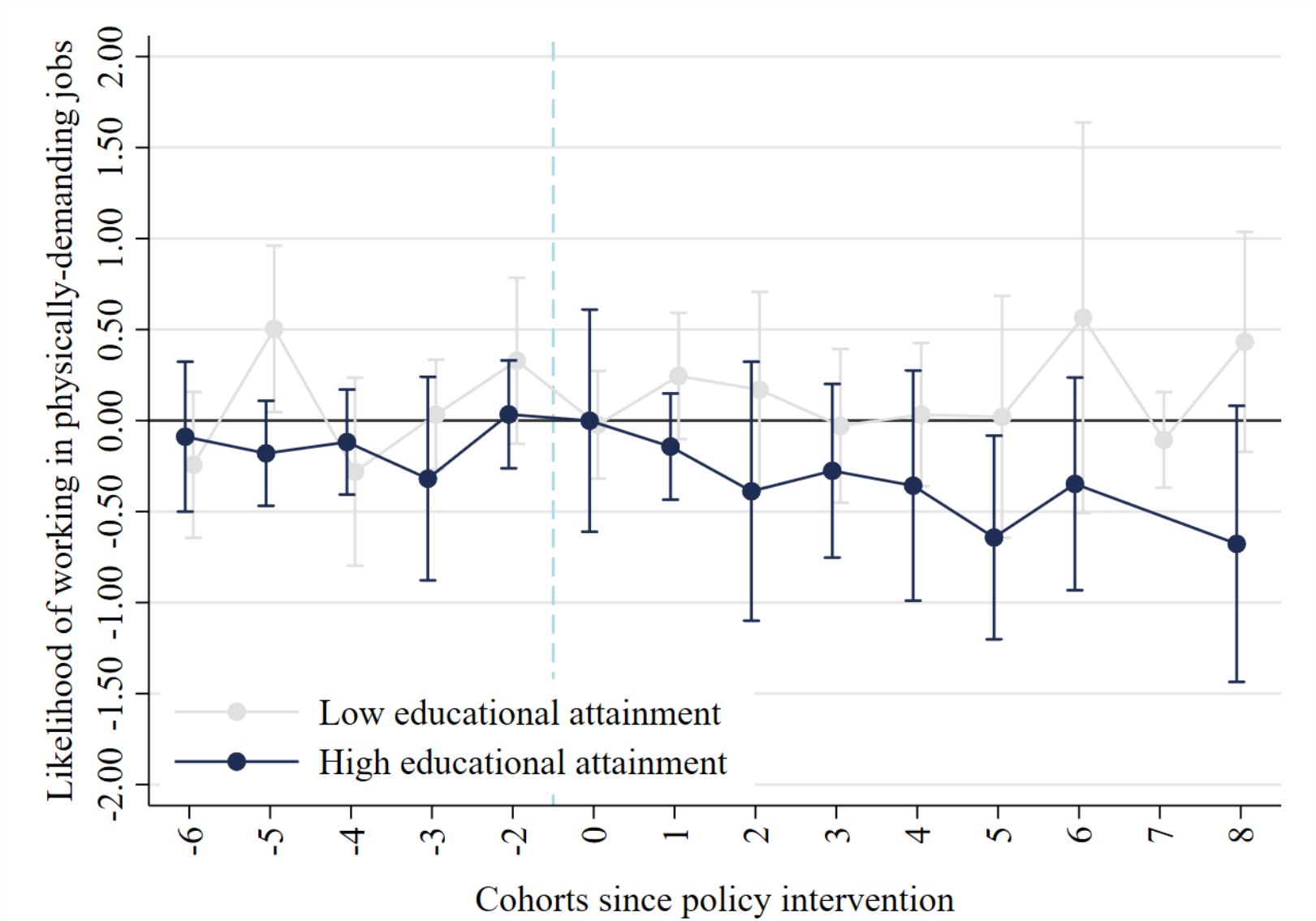
	(5) Labor supply	(6) Formal work
Panel B: Sun and Abraham (2021)		
Had Policy	-0.052	0.088*
	(0.066)	(0.052)
Observations	5,859	6,264
Adjusted R^2	0.151	0.278
Panel C: Callaway and Sant'Anna (2021)		
Had Policy	-0.051	0.474*
	(0.185)	(0.267)
Observations	6,110	6,489
Pre-trend test [p-value]	[0.843]	[0.659]
Mean Dep. Var.	3.720	0.471

Physically demanding jobs

Distribution

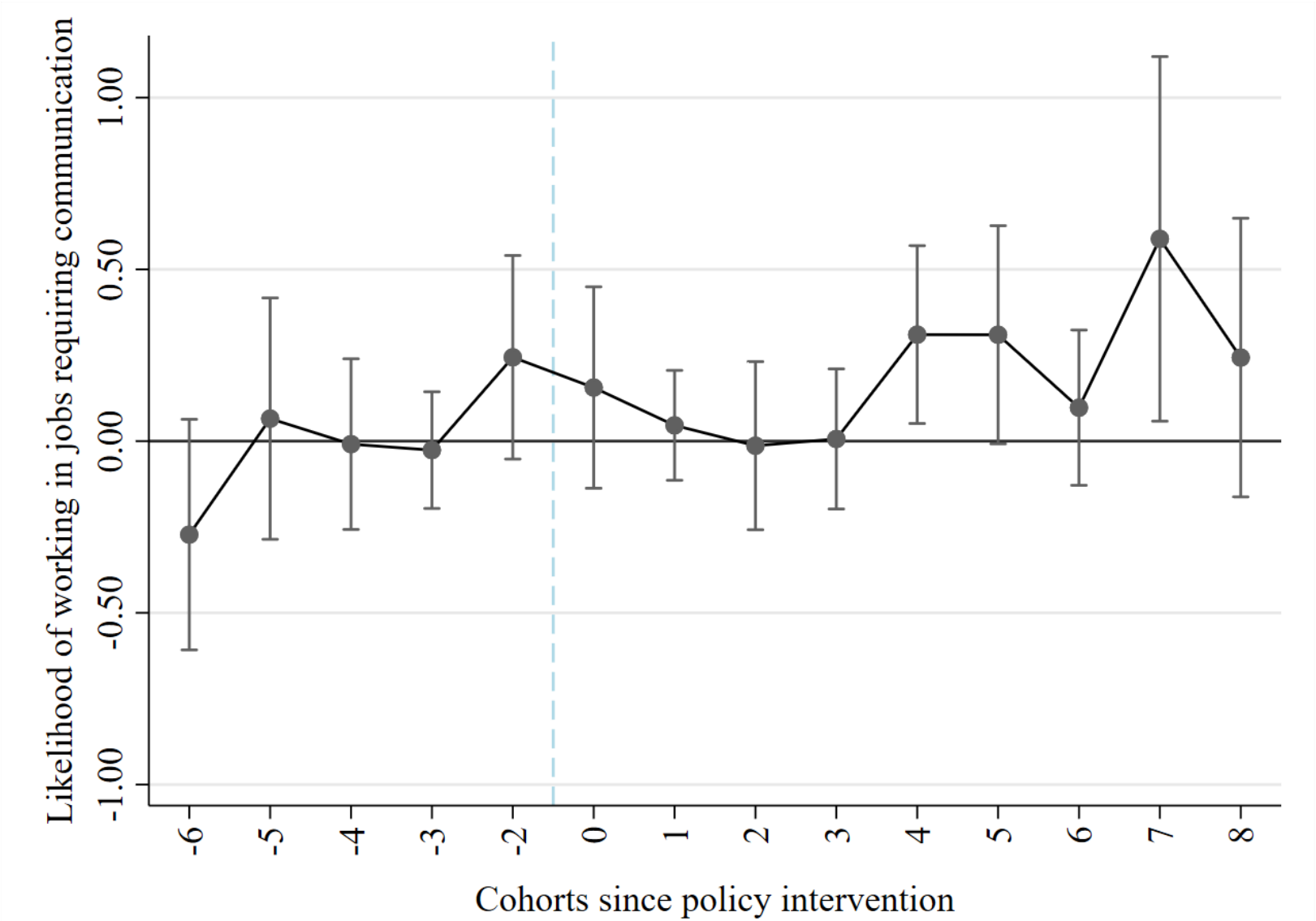


Physically demanding jobs by educational achievement

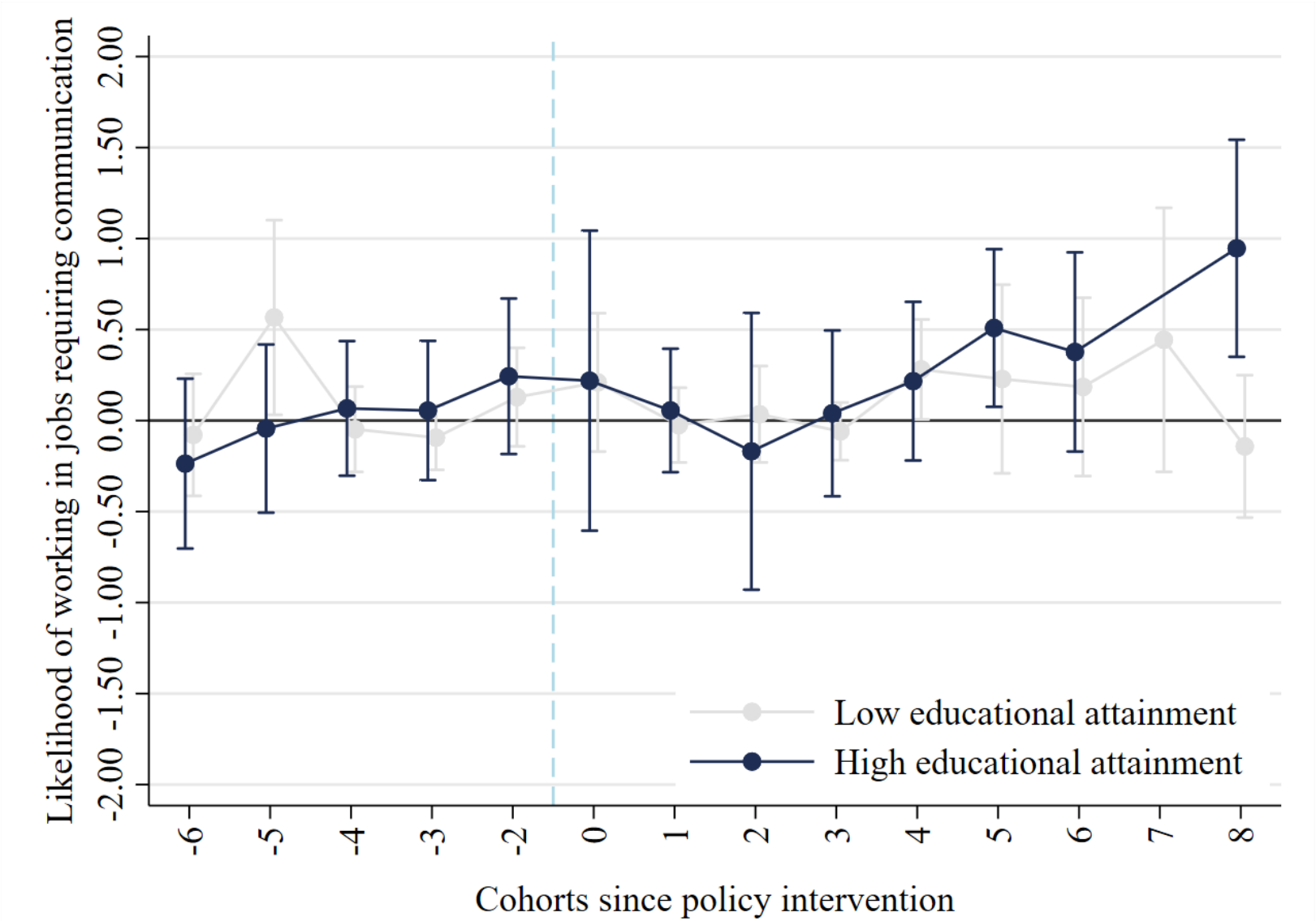


Jobs requiring communication skills

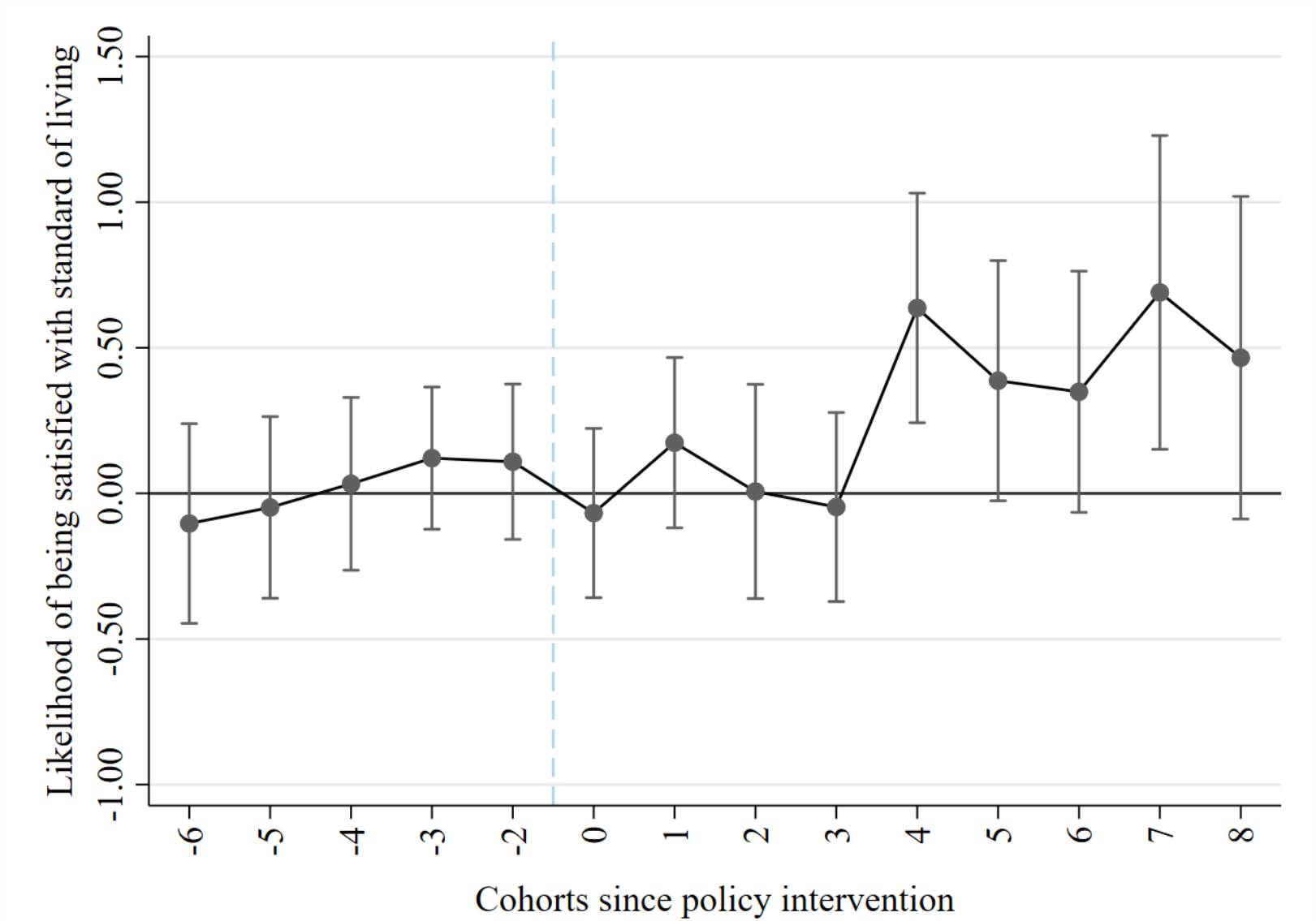
Distribution



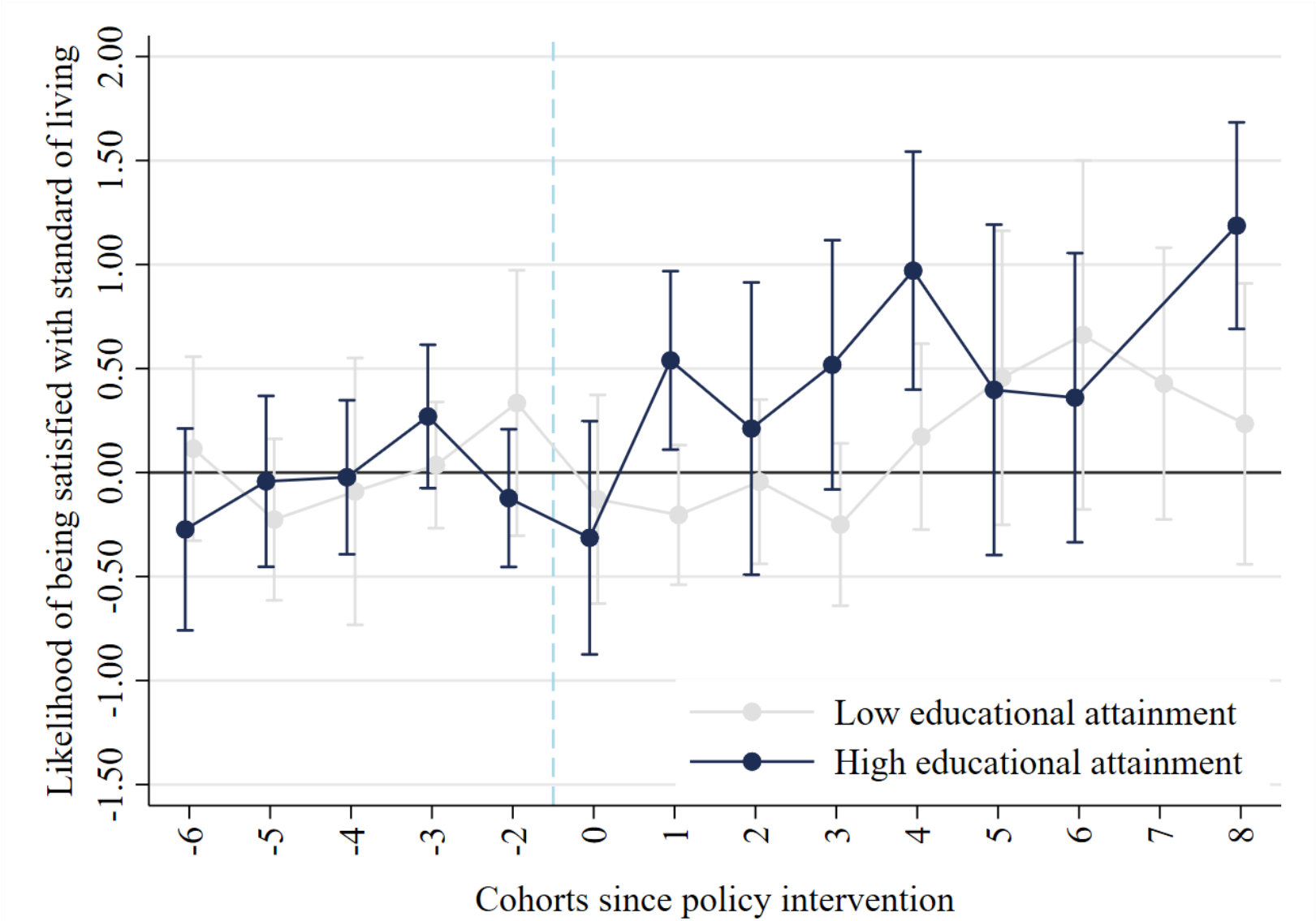
Jobs requiring communication skills by education



Better labor conditions and better SOL?



Better labor conditions and better SOL? (by education)



Mechanisms

- Cognitive skills
  - Acquisition of English skills
  - No effect on other skills: Language and Mathematics (Gálvez-Soriano, 2023)
- Occupational choices
  - Better paid jobs or better working conditions?
  - Subjective well-being measures
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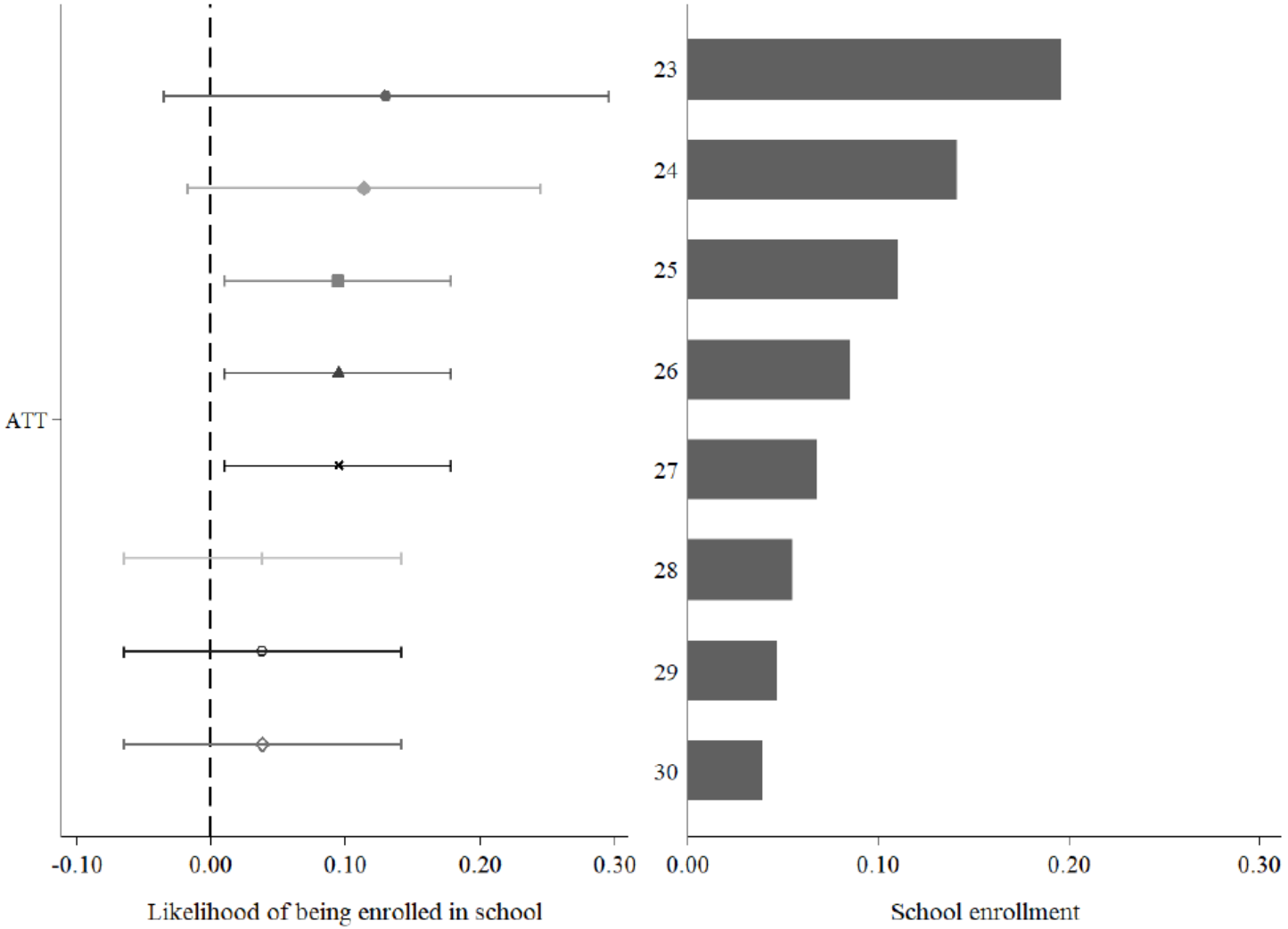
  - Zero effect on wages in the short-run, but positive in the long-run?

School enrollment

Figure 6: Educational decisions after exposure to English instruction



Conclusion

- First study to examine English skills and labor market outcomes in Mexico using large nationally representative sample
- I use variation in English skills generated by state policy changes
- Acquisition of English skills
  - Increase in likelihood of working in English intensive jobs
- I find no effect on wages, shifts across occupations. Highly educated are:
  - more likely to work in jobs requiring communication skills
  - less likely to work in physically demanding jobs
  - more satisfied with their standard of living

Thank you!

For more about me and my research, please scan here:

English speakers different from non-Eng speakers

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Table 2: Descriptive statistics

Variable	Full Sample	Speak English (a)	Don't spk English (b)	Diff. (a-b)
Dependent variable				
Wage (monthly pesos)	5,366.88	11,645.27	4,795.18	6,850.09***
Labor supply (hours)	45.97	44.99	46.06	-1.07
Formal job	0.47	0.67	0.45	0.22***
Physically demanding job	0.26	0.10	0.28	-0.18***
Job with comm. skills	0.27	0.58	0.24	0.34***
Satisfied with SOL	0.38	0.51	0.37	0.14***
Satisfied with achievements	0.44	0.58	0.42	0.16***
Independent variables				
English (speaking ability)	0.08	1.00	0.00	-
Hrs English	0.20	0.33	0.18	0.14***
Age (years)	26.81	27.71	26.72	0.99***
Education (years)	10.50	14.16	10.17	4.00***
Female (%)	0.41	0.34	0.41	-0.07**
Indigenous (%)	0.06	0.03	0.06	-0.03***
Married (%)	0.55	0.44	0.57	-0.13***
Rural (%)	0.21	0.09	0.22	-0.13***
Observations	6,573	560	6,013	6,573

PTA Staggered DiD

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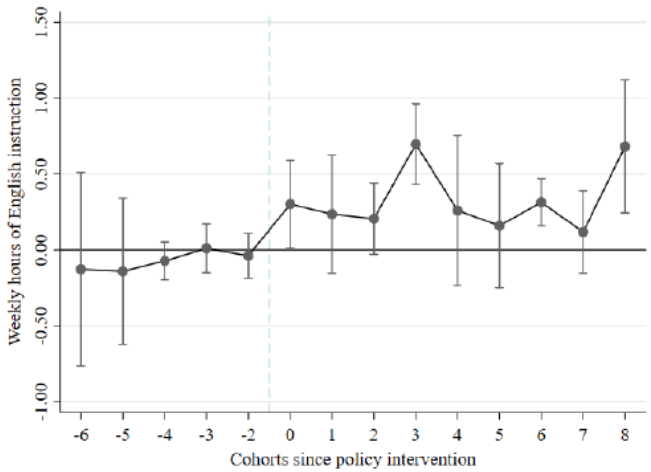
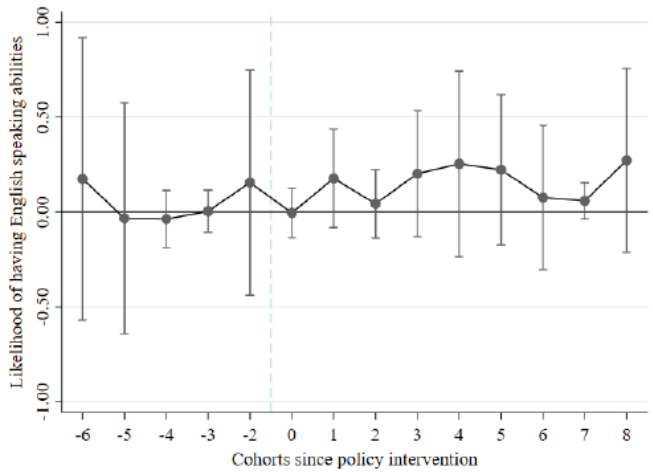
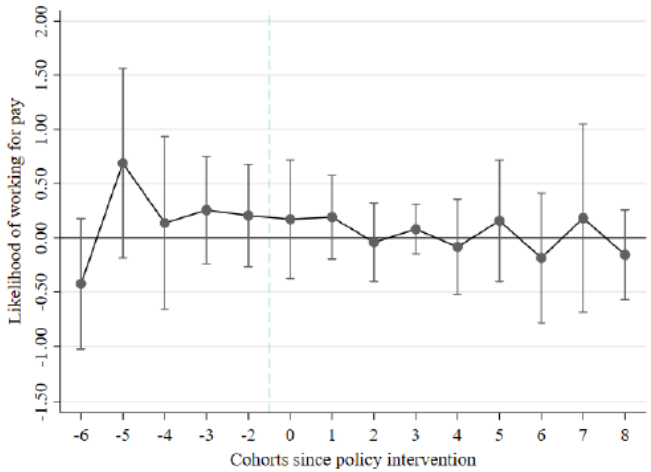


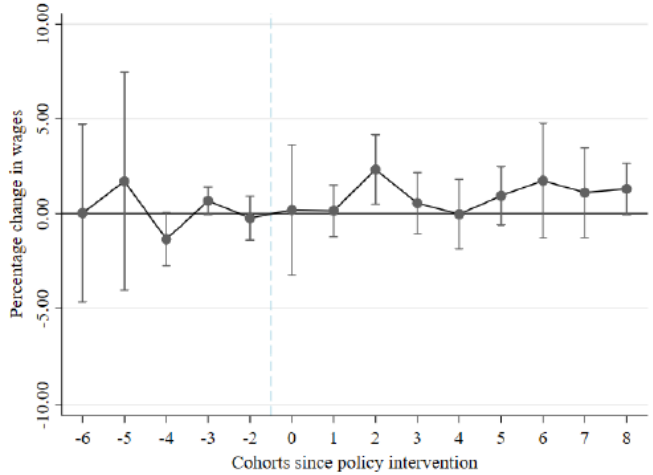
(a) Hours of English



(b) Speak English



(c) Paid work



(d) Ln(wage)

Distribution of English-intensive jobs

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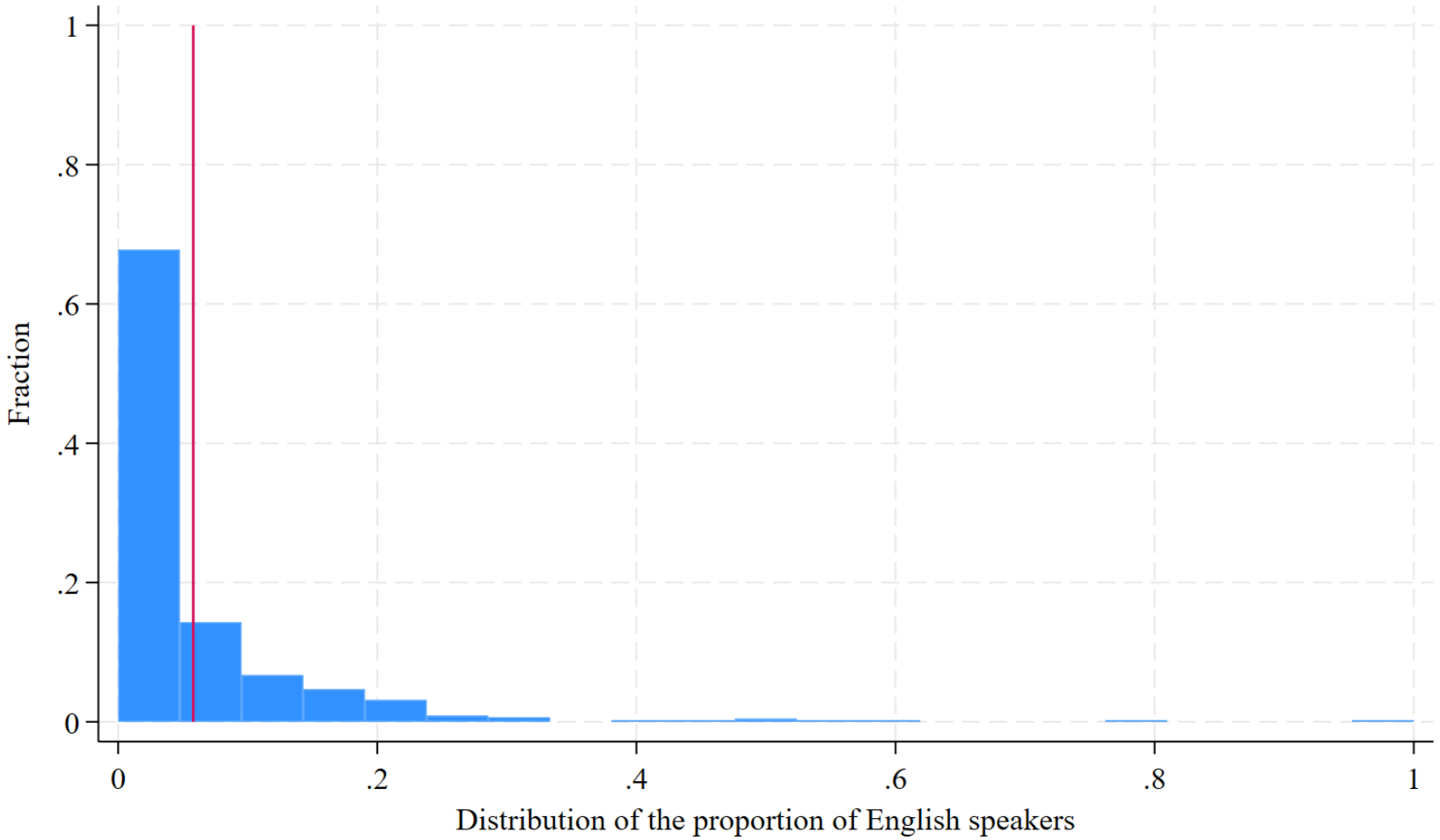

Distribution of physically demanding jobs

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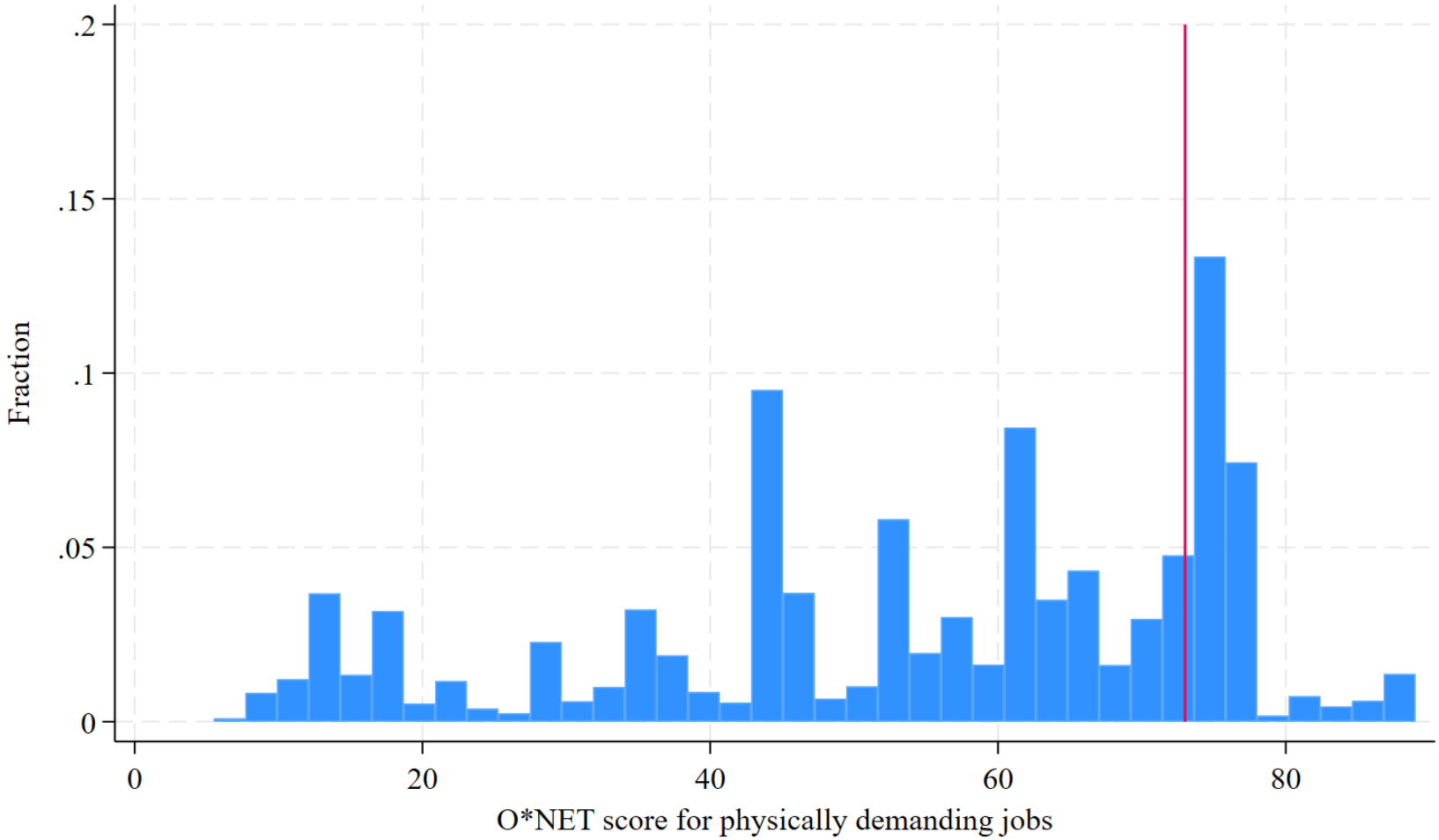

Distribution of jobs requiring communication

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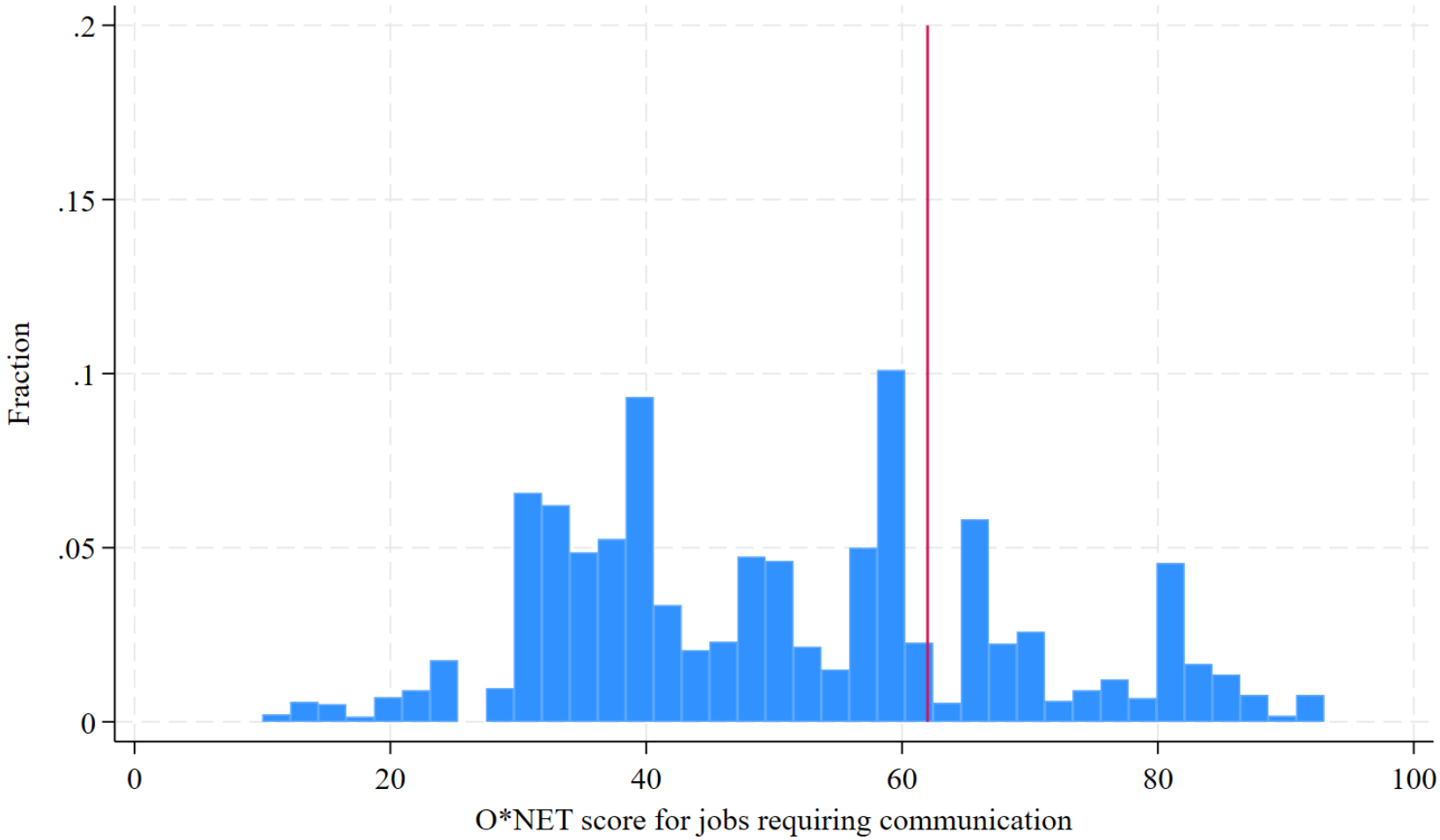

Staggered DiD correction

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Table 4: Effect of English programs

	(1) Hrs Eng	(2) Speak Eng	(3) ln(wage)	(4) Paid work
Panel B: Sun and Abraham (2021) interaction weighted estimator				
Had Policy	0.563***	0.092**	-0.120	-0.025
	(0.058)	(0.024)	(0.133)	(0.025)
Observations	6,264	6,264	6,264	11,813
Adjusted R^2	0.666	0.160	0.274	0.257
Panel C: Callaway and Sant'Anna (2021)				
Had Policy	0.355***	0.156**	0.769	0.011
	(0.075)	(0.077)	(0.508)	(0.124)
Observations	6,489	6,489	6,489	10,091
Pre-trend test [p-value]	[0.987]	[0.707]	[0.927]	[0.387]
Mean Dep. Var.	0.103	0.083	7.710	0.541

Robustness check: Narrower cohort window

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Table 4: Effect of English programs

	(1) Hrs Eng	(2) Speak Eng	(3) ln(wage)	(4) Paid work
Panel D: Callaway and Sant'Anna (2021): Narrow cohorts, 1985-1995				
Had Policy	0.348***	0.160**	0.774	0.050
	(0.076)	(0.080)	(0.512)	(0.141)
Observations	4,143	4,143	4,143	7,820
Pre-trend test [p-value]	[0.9723]	[0.760]	[0.571]	[0.439]
Mean Dep. Var.	0.103	0.083	7.710	0.541

Robustness check: Sample with all states

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Table 4: Effect of English programs

	(1) Hrs Eng	(2) Speak Eng	(3) ln(wage)	(4) Paid work
Panel E: Callaway and Sant'Anna (2021). All states				
Had Policy	0.339***	0.160**	0.705	-0.025
	(0.069)	(0.080)	(0.508)	(0.146)
Observations	6,413	6,413	6,413	9,937
Pre-trend test [p-value]	[0.927]	[0.660]	[0.677]	[0.722]