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 form an instrument for English skills to obtain a consistent estimate of β

Motivation
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Background
○○
Empirical strategy
○○●○○
Data
○
Results
○○○○○○○○○○○○○○○○○○○○
Conclusion
○○
Appendix
○○○○○○○

States with and without the policy

Treatment
Comparison

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 (SDD)

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 state 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

▸ PTA

Data ⟫ Descriptive Stats

Household survey (2014 BIARE)

- Individual level data (cohorts 1981-1996 years old)
- 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

Motivation
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Background
○○

Empirical strategy
○○○○○

Data
○

Results
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Conclusion
○○

Appendix
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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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Motivation
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Background
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Empirical strategy
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Data
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Results
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Conclusion
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Appendix
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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⟩
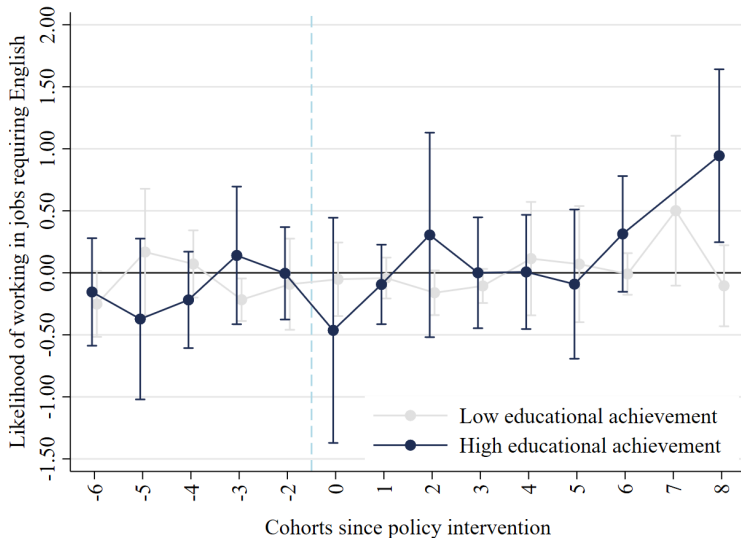
- Narrower cohorts ⟨▸ Narrow⟩
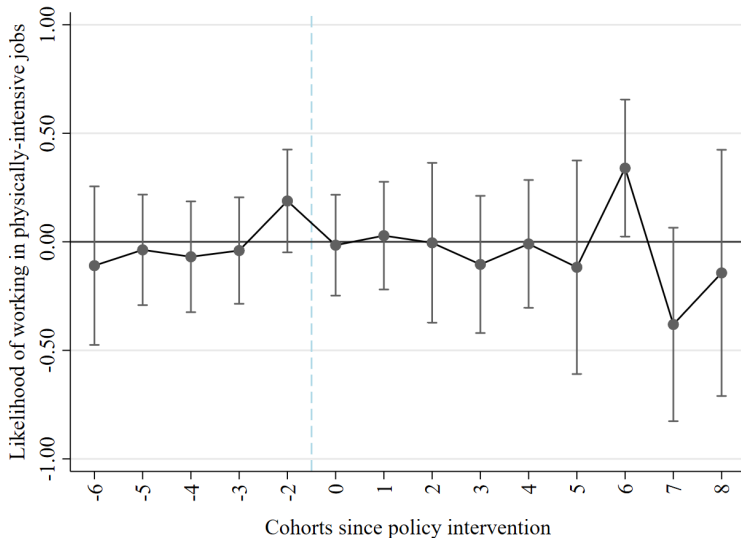
Mechanisms

- 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
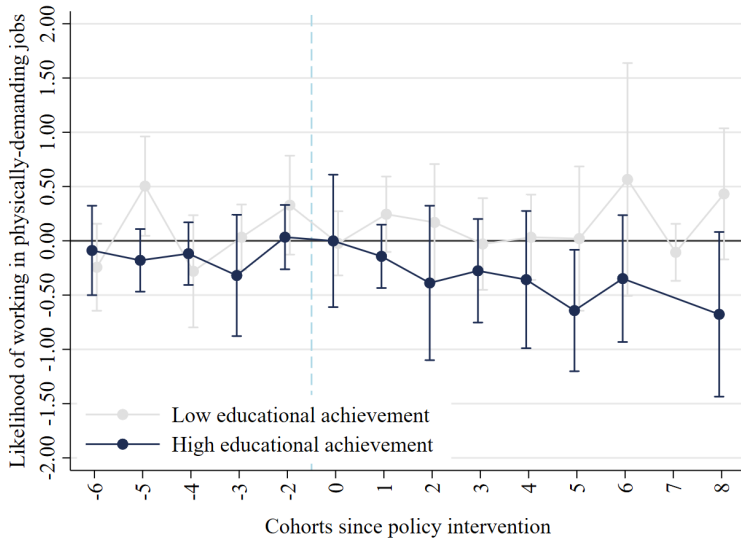 - Zero effect on wages in the short-run, but positive in the long-run?

Motivation
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Background
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Empirical strategy
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Data
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Results
ooooooo●ooooooooooooo

Conclusion
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Appendix
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More likely to work in English-intensive jobs? ▸ Distribution

Likelihood of working in jobs requiring English

Cohorts since policy intervention

More likely to work in English-intensive jobs?

Mechanisms

- Cognitive skills
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Motivation
oo
Background
oo
Empirical strategy
ooooo
Data
o
Results
ooooooooooo●oooooooo
Conclusion
oo
Appendix
ooooooooo

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

Cohorts since policy intervention

Physically demanding jobs by educational achievement

Figure axes: Likelihood of working in physically-demanding jobs (y-axis) vs Cohorts since policy intervention (x-axis)

Legend:
- Low educational achievement
- High educational achievement

Jobs requiring communication skills ⟶ Distribution

Cohorts since policy intervention
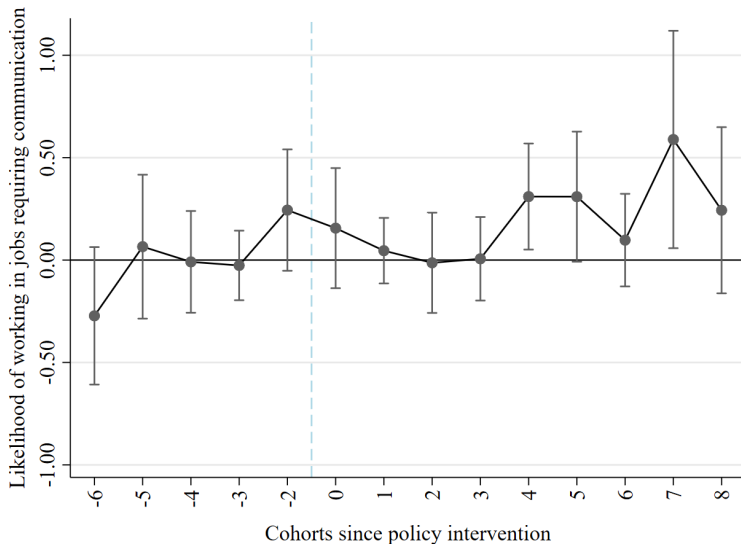
Jobs requiring communication skills by education
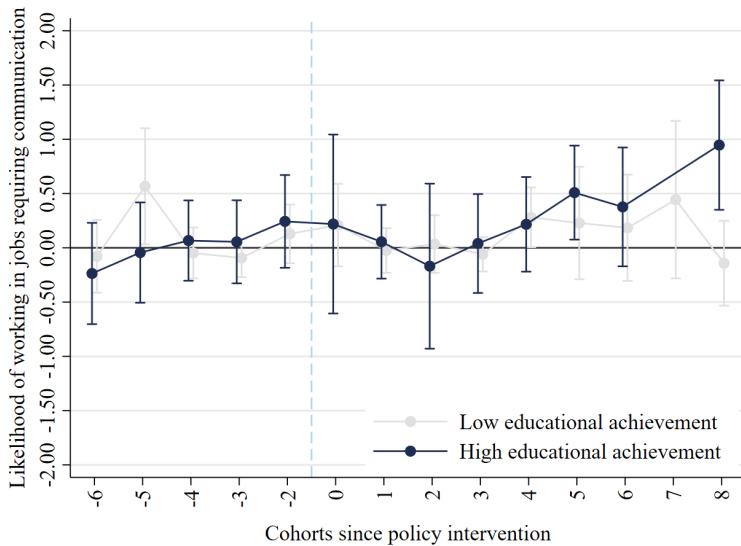
Better labor conditions and better SOL?
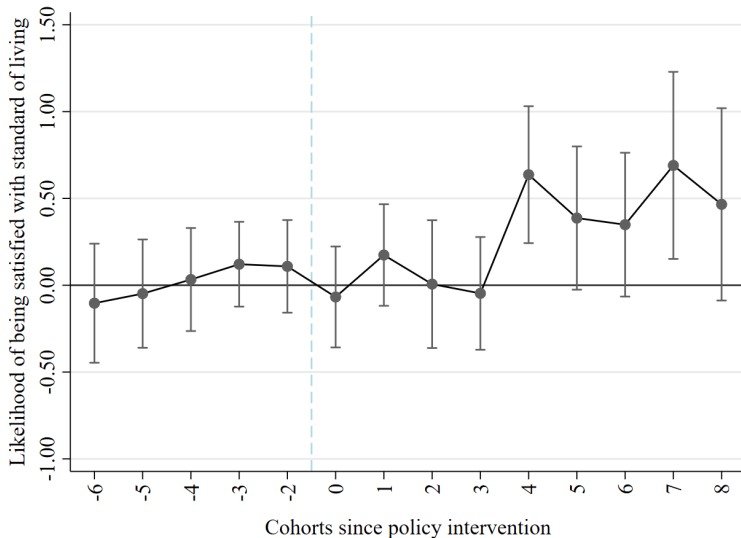
Better labor conditions and better SOL? (by education)
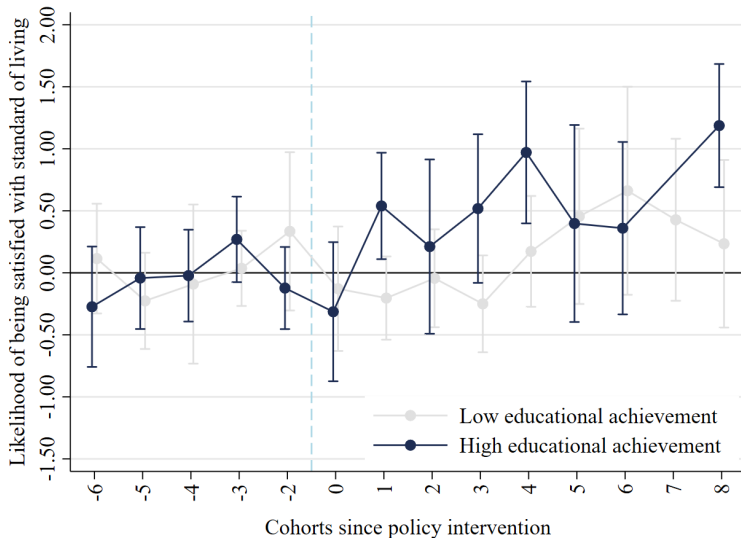
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    - Acquisition of English skills
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- Occupational choices
    - Better paid jobs or better working conditions?
    - Subjective well-being measures

- School enrollment
    - Zero effect on wages in the short-run, but positive in the long-run?

School enrollment

Figure 6: Educational decisions after exposure to English instruction
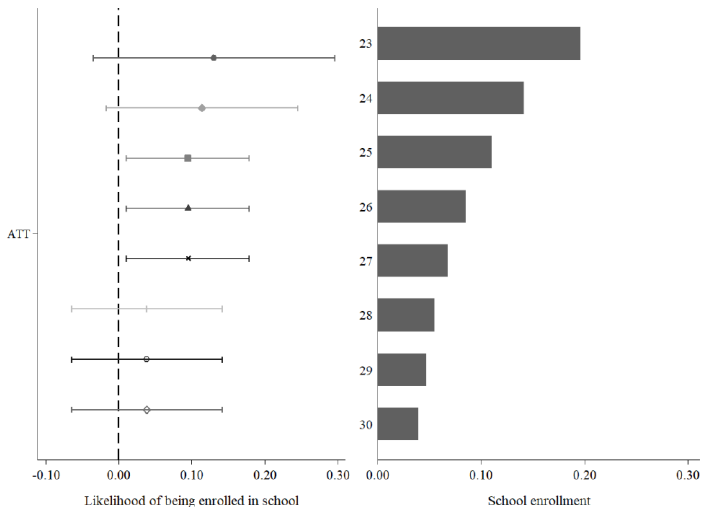
Conclusion

- 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

Motivation
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Background
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Empirical strategy
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Data
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Results
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Conclusion
○●

Appendix
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Thank you!

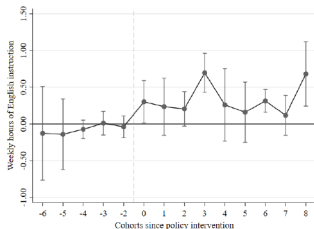*For more about me and my research, please scan here:*

English speakers different from non-Eng speakers ↪ Back
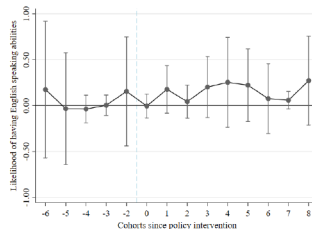
Table 2: Descriptive statistics

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

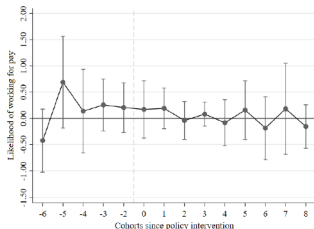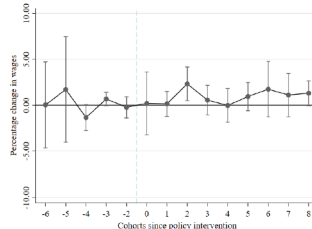# PTA Staggered DiD: All states ⟲ Back

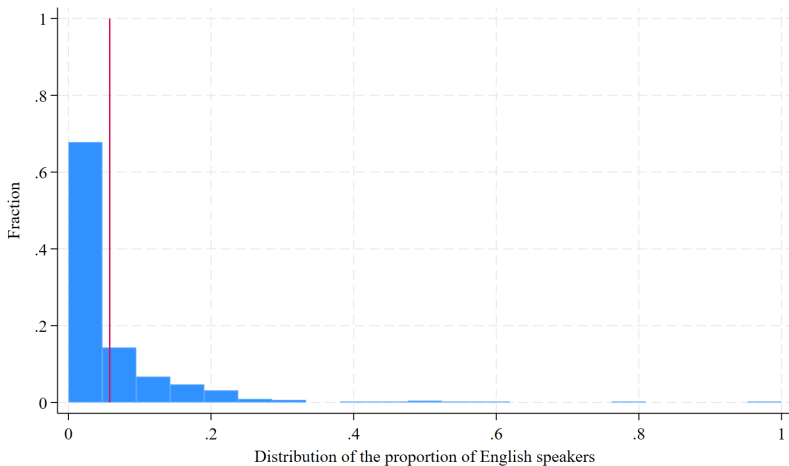(a) Hours of English

(b) Speak English

(c) Paid work

(d) Ln(wage)

Motivation
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Background
○○

Empirical strategy
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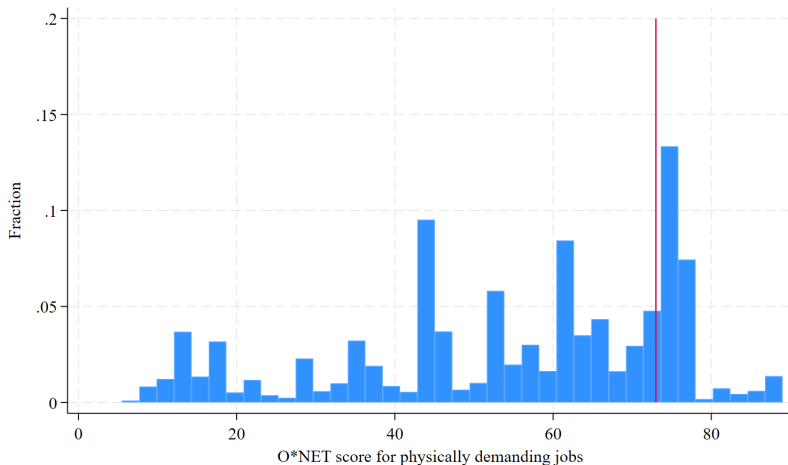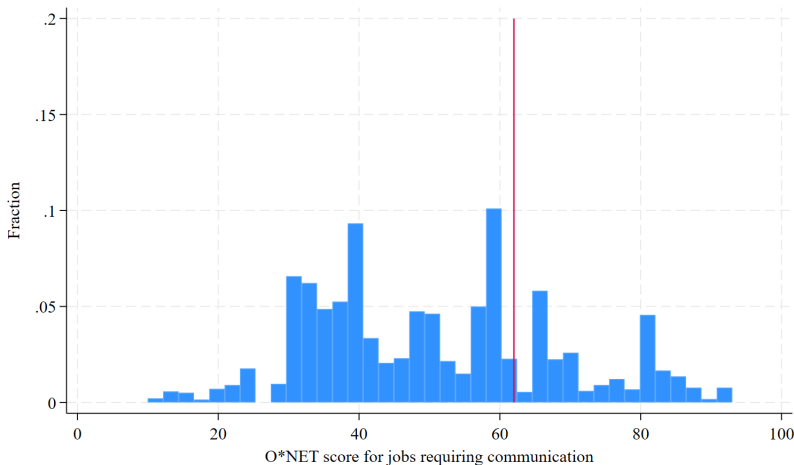Data
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Results
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Conclusion
○○

Appendix
○○○●○○○○○

Distribution of English-intensive jobs ↪ Back

Distribution of physically demanding jobs ⟜ Back

Distribution of jobs requiring communication ↪ Back

Staggered DiD correction   ↪ Back

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 ↪ Back

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 ▸ Back

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]