Rural Education, Nation-Building, and Ethnic Assimilation in Post-Revolutionary Mexico

Ariel Gómez

Harvard University

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Outline

Introduction

Rural Education, Literacy, and Assimilation

Land Reform

Conclusion

Motivation

- Education & public goods empower recipients economically and politically (Glaeser, Ponzetto & Shleifer, 2007)
- Why would a non-democratic government invest in education?
  - Education may increase political support and teach obedience (Paglayan, 2020, 2022)
  - Curriculum can promote a national identity and culture (Alesina, Giuliano & Reich, 2021)
  - Assimilation & nationalism/nation-building may be important for development (Alesina & La Ferrara, 2005)
- Can schools effectively homogenize diverse populations? Might they play a role in implementing other policies?

Context

- Mexican Revolution: 1910-1920 ▸ History
- Reconstruction: 1920-1934
  - Foundations for single-party rule
- From 1922 to 1926, 2,600 rural schools established ▸ *Casa del Pueblo*
  - Increase literacy
  - Cultivate national sentiment
  - Assimilate indigenous population ▸ *Indigenistas*
  - Establish a foothold in rural areas

Research Questions

1. Did rural education induce language homogenization in indigenous communities?
   - Adoption of Spanish?
   - Reduction in use of indigenous languages?
2. Did schools play a role in the implementation of land redistribution, a central demand of the Revolution?
   - Redistribution from large landholdings (*haciendas*) to landless peasants and dispossessed indigenous communities

Empirical Approach

- Empirical challenge: Schools not randomly allocated
- Approach: Difference-in-differences
  - Geographic variation in school locations
  - Cross-cohort variation from 1930 Census
  - Accounts for time-invariant determinants of school allocations

Literature

- Nationalism, Nation-building, and Education
  - Anderson (1983); Weber (1976); Blanc and Kubo (2021); Alesina, Giuliano, and Reich (2021); Paglayan (2020, 2022), Bazzi, Hilmy, and Marx (2021); Assouad (2021); Almargo and Andrés-Cerezo (2019)
- Nation-building in Post-Revolutionary Mexico
  - Meyer (1976); Vaughan (1982); Elizalde, Hidalgo, Salgado (2021); Sánchez-Talanquer (2018); Garfias and Sellars (2021)
- History of indigenous populations in the Americas
  - Angeles and Elizalde (2017); Elizalde (2020); Valencia Caicedo (2019)
  - Assimilation: Diaz-Cayeros (2011); Diaz-Cayeros et al.(2021); Diaz-Cayeros and Jha (2022); Feir (2016); Feir and Auld (2021); Gregg (2018)
- Assimilation and identity
  - Akerlof and Kranton (2000), Dahis, Nix, and Qian (2020); Abramitzky, Boustan, and Eriksson (2014); Fouka, Mazumder, and Tabellini (2022); Antman, Duncan, and Trejo (2020)

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Data Sources

- *Federal* Rural School lists from 1925 and 1926
  - Newly digitized, observe state, municipality, and locality
  - Approximately 2000 in 1925 and 2600 in 1926
  - **Treatment**: *locality*-level indicator
- 10% Sample of 1930 Census ▸ Summary Statistics
  - Digitized by researchers at *Universidad Autónoma Chapingo*
  - **Outcomes**: literacy, Spanish fluency, speaks any indigenous language
- Focus on predominantly indigenous localities ▸ Sample Restrictions

Difference-in-differences

$$Y_{ilt} = \alpha + \beta \text{Young}_t \times \text{School}_l + \gamma_t + \delta_l + \phi_{mt} + \psi X_i + \epsilon_{ilt} \quad (1)$$

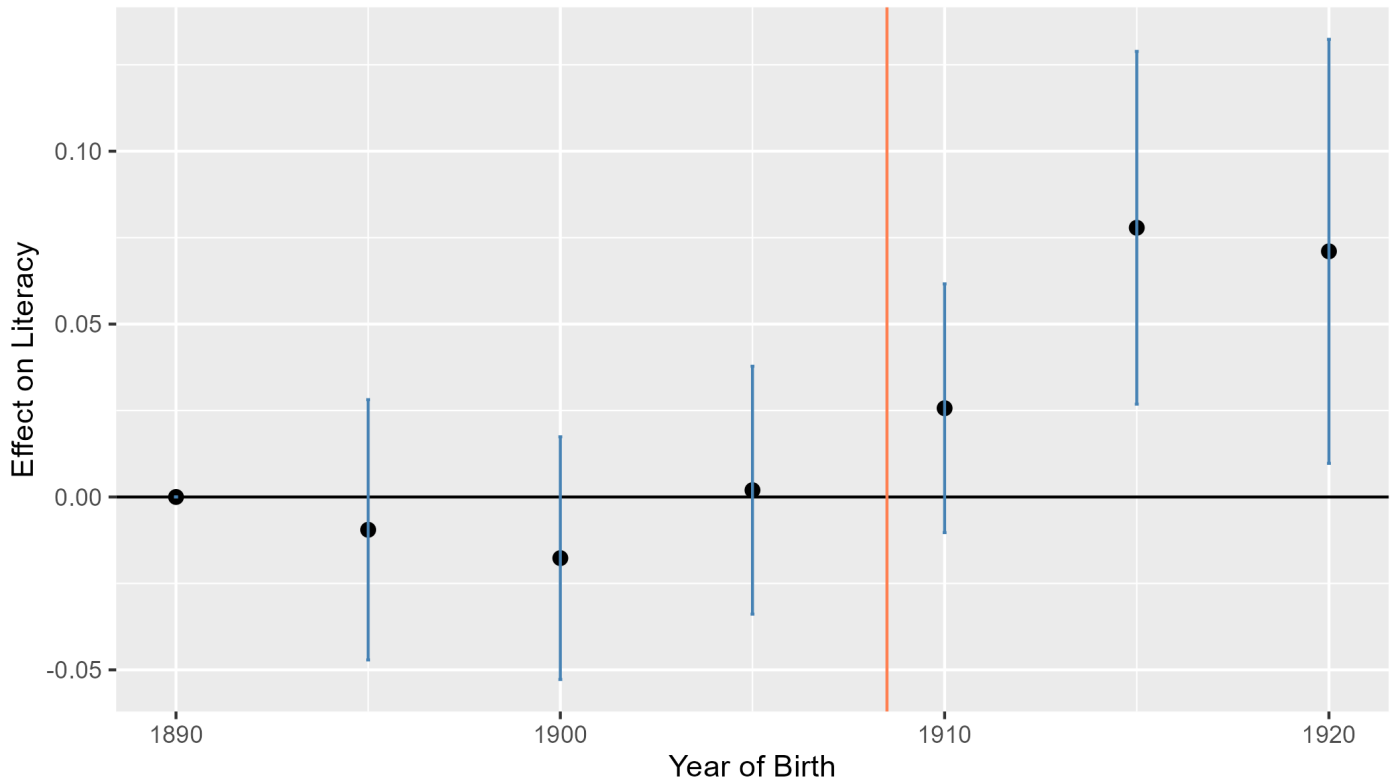
- individual i, born in year t, residing in locality l in municipality m in 1930
- $Young_t$: indicator for cohorts born between 1920 and 1924 Exposure
- $School_l$: indicator for federal rural school in 1925 or 1926
- γ_t, δ_l, and ϕ_{mt}: cohort, locality, and municipality-cohort fixed-effects
- X_i: i's disability status and sex/gender
- Standard errors clustered at locality-level

Dynamic Specification

$$Y_{ilt} = \alpha + \sum_t \beta_t \text{School}_{lt} + \gamma_t + \delta_l + \phi_{mt} + \psi X_i + \epsilon_{ilt} \quad (2)$$

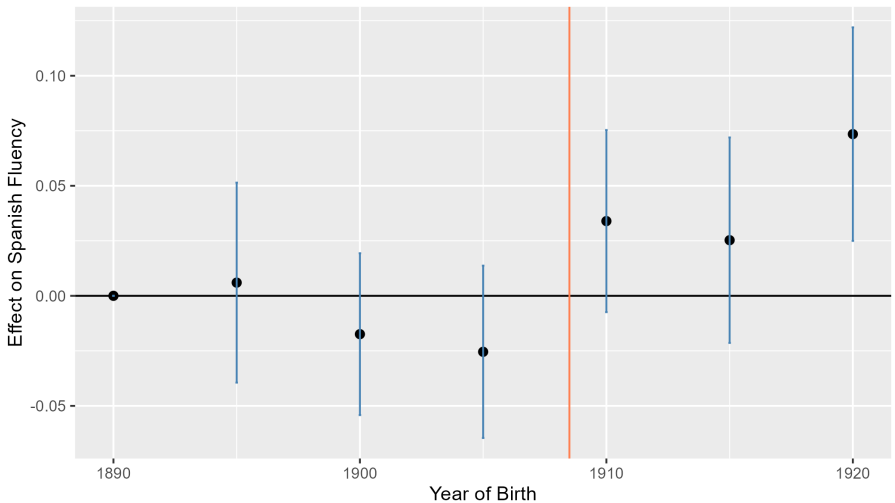
- individual i, born in year t, residing in locality l in municipality m in 1930
- $School_{lt}$: indicator equal to 1 for individuals born in year t residing in treated locality l in 1930

Effects on Literacy

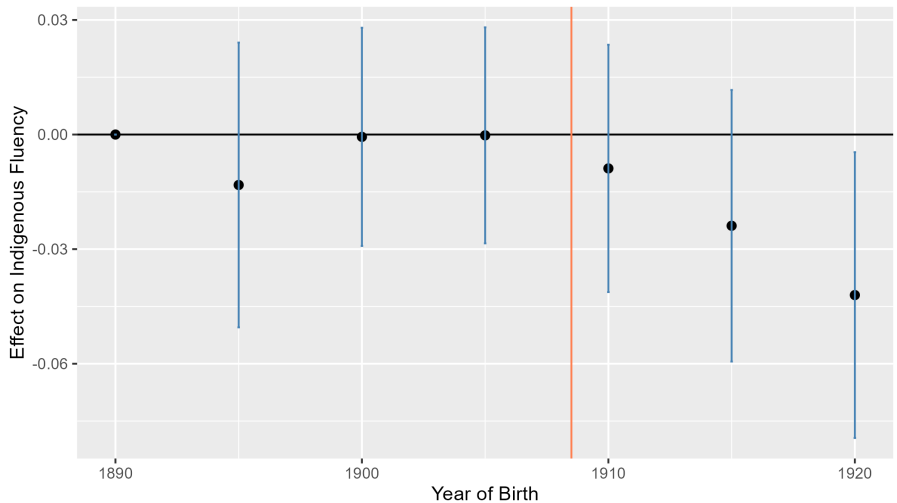


▸ Regression ▸ Non-Indigenous Localities ▸ Three-Year Bins ▸ Male ▸ Female

Language Homogenization



Spanish



Indigenous Language

▸ Regression ▸ Non-Indigenous Localities ▸ Three-Year Bins ▸ Male ▸ Female

▸ Regression ▸ Non-Indigenous Localities ▸ Three-Year Bins ▸ Male ▸ Female

Summary of Findings on Literacy and Language

- Children in indigenous localities:
  - More likely to be literate and fluent in Spanish
  - Less likely to speak an indigenous language
- Placebo checks
  - Little evidence of pre-trends
  - No effects on language in non-indigenous localities
- Policy successfully induced language homogenization among indigenous populations
  - An important dimension of nation-building and cultural assimilation

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Land Reform in Mexico

- Land inequality historically high
- 1917 Constitution: Redistribution from *haciendas* to peasants
  - Land redistributed as *ejidos* ▸ *Ejido* System
  - Land restitution for indigenous communities through *comunidades*
- To access land, communities had to submit a petition
  - Regulatory burden may have been high for rural communities

Land Reform as Nation-Building

- Central to legitimizing post-Revolutionary state
  - Key demand of Revolution, popular support
  - Weakened local elites
  - Incorporated rural sector into state
- Schools may have played a role in implementing redistribution
  - Teachers as government representatives, social workers, and community organizers

Teachers as Community Organizers?

"David Muñoz...is **an indefatigable teacher**, *a man of action and enthusiasm...***He has completely organized [the village]**, *such that today there are now streets formed, a small plaza, and a magnificent building functioning as a school...And that's not all. Muñoz* **organized the fieldworkers** *and as their head handled the* **granting of ejidos to [the village] and the surrounding areas**."

Land Reform Data

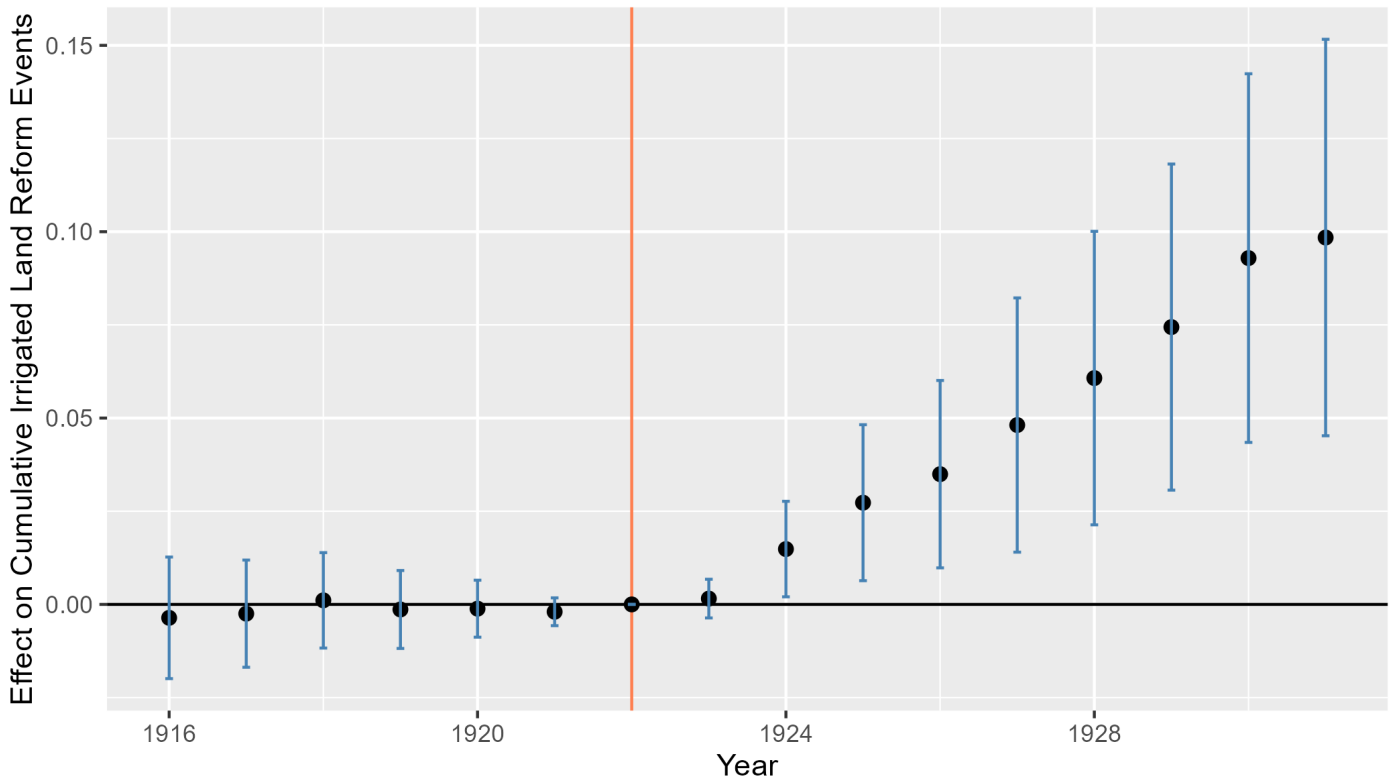
- Municipality-level: Data from Garfias (2018) and Sanderson (1982)
  - Municipalities with *haciendas*
  - Irrigated land, *ejidos*, *comunidades*
  - Approval/denial of petitions
- Locality-level: Link cadastral registry to *ejido* shapefiles
  - Use date of land grant of nearest *ejido* within 5 km

Land Reform Specification

$$Y_{mt} = \alpha + \sum_t \beta_t \text{SchoolsPer10k}_{mt} + \gamma \mathit{logPop}_m \times \mathbb{1}_t + \delta_t + \phi_m + \eta_{st} + \epsilon_{lt} \quad (3)$$

- year t, municipality m in state s
- Y_{mt}: Number of specified land reform events
- $\text{SchoolsPer10k}_{mt}$: Rural schools per 10,000 people in 1930
- $\mathit{logPop}_m \times \mathbb{1}_t$: Log of 1930 population interacted with year fixed-effects
- γ_t, δ_m, and ϕ_{st}: year, municipality, and state-year fixed effects
- Standard errors clustered at the municipality level ▸ Locality-level specification

Land Reform and Rural Schools



▸ All Municipalities ▸ All Land Reform Events ▸ *Ejidos* ▸ *Comunidades*

▸ Locality-level ▸ Petition Approval Rate

Interpretation

- Caveats:
  - Petitions versus land grants
    - Petitions as measure of collective action?
    - Grants required government approval
    - Lag between petitions and grants
  - Change in policy in 1922, land reform rare before 1920
    - No change in approval rate
- Teachers may have organized communities to petition for land
  - Places with more schools experience more land reform
  - Redistribution required organized, literate individuals
  - Anecdotal evidence on teacher activism

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- Rural education in 1920s Mexico induced language homogenization in indigenous communities
  - Increased literacy and Spanish fluency
  - Loss of indigenous-language fluency
- Places with schools more likely to experience land reform
  - Teachers may have helped to implement redistribution
- Rural schools were an effective nation-building policy
  - Schools, land, and nationalism may have contributed to consolidation of political support for increasingly authoritarian Mexican state

Outline

Appendix

Revolution and Aftermath

- Revolution (1910-1920)
  - Land reform enshrined in 1917 Constitution
  - Gradually formalized as *ejido* system
- Post-Revolutionary Period (1920-1934)
  - Reconstruction of state in midst of continued unrest
  - Foundation for one-party rule established
- *Secretaría de Educación Pública* (SEP) founded in 1921
  - Department of Public Education
  - Wave of education programs

◂ Context

Education and *Indigenismo*

- *Indigenistas* like José Vasconcelos directed SEP and education policy
- Revolutionary intellectual movement, advocated for indigenous welfare
  - *Mestizaje*: racial and cultural mixing of indigenous and Spanish heritage
  - Assimilation of indigenous groups through education

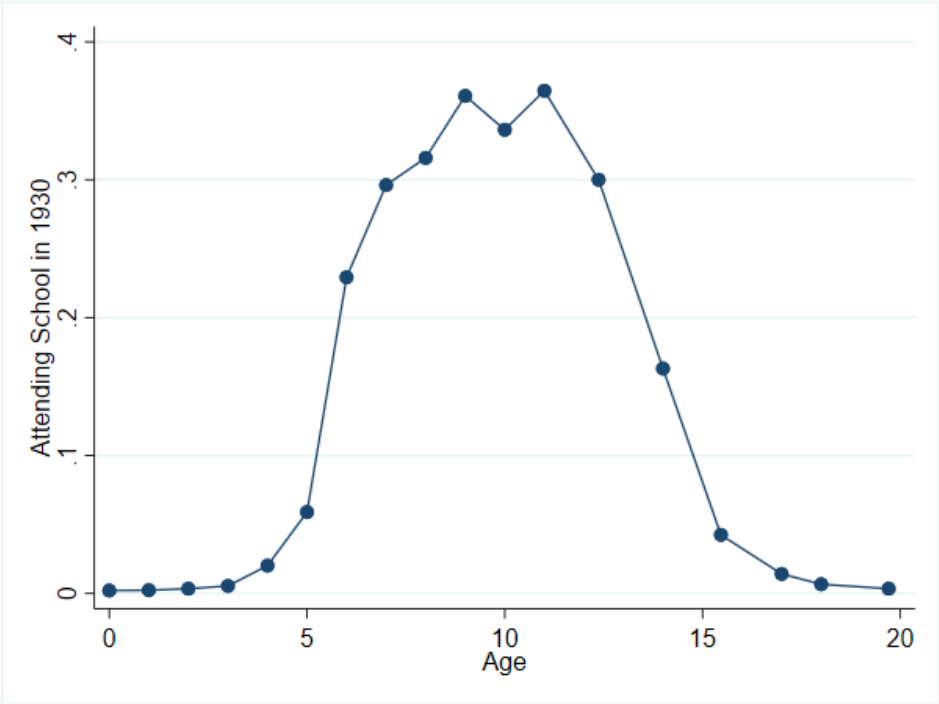
◂ Context

Federal Rural Education Program

- *Casa del Pueblo*
  - About 300 schools in 1922, 2,600 by 1926
  - Basic primary schooling
- Teachers as community leaders:
  - Organized community meetings, construction of local infrastructure
  - Historical accounts of teachers organizing communities to petition for land
- From 1924 on, schools increasingly played role in socialization
  - Government sought to displace Catholic influence
  - May have helped spark *Cristero* War

◂ Context

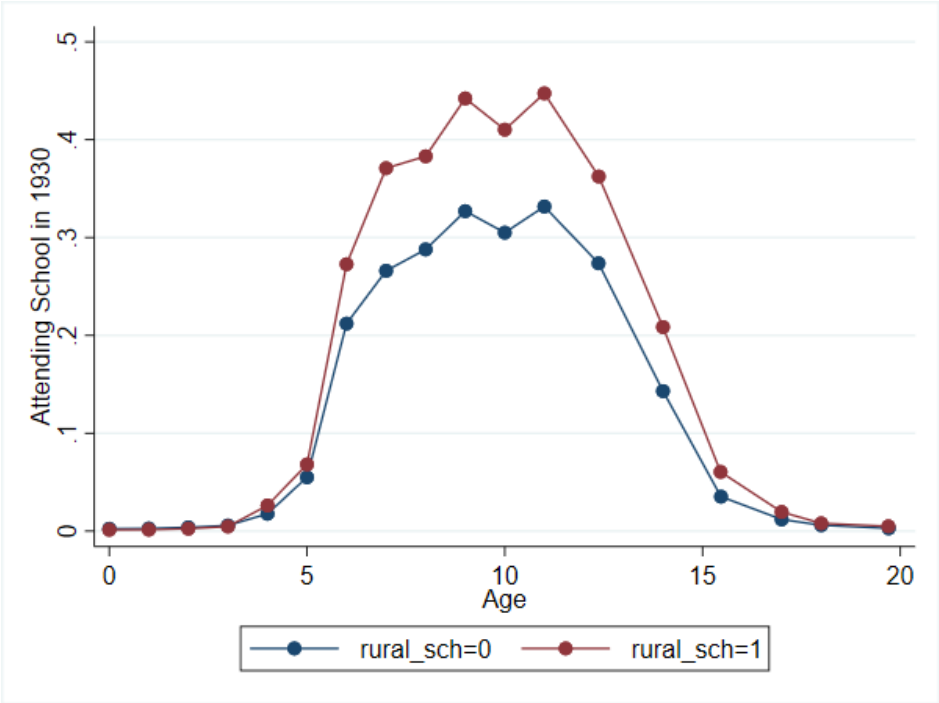
Which cohorts were exposed to treatment?



- School going ages in 1930: approximately 6 to 13
- Earliest plausible exposure: 13 in 1922 (born 1909)
- First fully treated cohort: 6 in 1926 (born 1920)

◂ Specification

Which cohorts were exposed to treatment?



- School going ages in 1930: approximately 6 to 13
- Earliest plausible exposure: 13 in 1922 (born 1909)
- First fully treated cohort: 6 in 1926 (born 1920)

◂ Specification

Regression: Literacy

VARIABLES	(1)	(2)	(3)	(4)
	Respondent Can Read and Write			
	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	0.0751***	0.0791***	0.0448**	0.0441**
	(0.0290)	(0.0291)	(0.0192)	(0.0190)
	[2.593]	[2.719]	[2.338]	[2.313]
Born 1909-1919 (Partial) X Rural School		0.0574***		0.0447***
		(0.0148)		(0.00927)
		[3.870]		[4.824]
Outcome Mean	0.146	0.155	0.273	0.289
Observations	22,120	31,895	74,804	114,345
Localities	521	523	2110	2120

◂ Dynamic ▸ Female ▸ Male ▸ Placebo

Regression: Spanish

VARIABLES	(1)	(2)	(3)	(4)
	Respondent Speaks Spanish			
	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	0.0834***	0.0852***	-0.00231	-0.00208
	(0.0232)	(0.0233)	(0.00157)	(0.00153)
	[3.592]	[3.648]	[-1.476]	[-1.357]
Born 1909-1919 (Partial) X Rural School		0.0391***		-0.00275
		(0.0134)		(0.00169)
		[2.922]		[-1.628]
Outcome Mean	0.501	0.503	0.990	0.990
Observations	22,120	31,895	74,804	114,345
Localities	521	523	2110	2120

◂ Dynamic ▸ Female ▸ Male ▸ Placebo

Regression: Indigenous

VARIABLES	(1)	(2)	(3)	(4)
	Respondent Speaks an Indigenous Language			
	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	-0.0393***	-0.0410***	0.00276	0.00292
	(0.0146)	(0.0146)	(0.00211)	(0.00208)
	[-2.698]	[-2.803]	[1.308]	[1.402]
Born 1909-1919 (Partial) X Rural School		-0.0166		0.00183
		(0.0104)		(0.00225)
		[-1.592]		[0.814]
Outcome Mean	0.906	0.903	0.0204	0.0192
Observations	22,120	31,895	74,804	114,345
Localities	521	523	2110	2120

◂ Dynamic ▸ Female ▸ Male ▸ Placebo

Placebo: Literacy

	(1)	(2)	(3)
	Respondent Can Read and Write		
VARIABLES	Pooled	Female	Male
Born After 1900 X	-0.00428	0.0186	-0.0169
Rural School	(0.0118)	(0.0130)	(0.0233)
	[-0.363]	[1.430]	[-0.724]
Outcome Mean	0.0911	0.0392	0.142
Observations	14,866	7,192	6,944
Localities	519	506	505

◂ Literacy Results

Placebo: Spanish

	(1)	(2)	(3)
	Respondent Speaks Spanish		
VARIABLES	Pooled	Female	Male
Born After 1900 X Rural School	-0.0251*	-0.0110	-0.0402**
	(0.0144)	(0.0203)	(0.0195)
	[-1.748]	[-0.540]	[-2.064]
Outcome Mean	0.488	0.429	0.541
Observations	14,866	7,192	6,944
Localities	519	506	505

◂ Spanish Results

Placebo: Indigenous

	(1)	(2)	(3)
	Speaks an Indigenous Language		
VARIABLES	Pooled	Female	Male
Born After 1900 X	0.0128	0.000337	0.0339**
Rural School	(0.00950)	(0.0157)	(0.0135)
	[1.342]	[0.0214]	[2.515]
Outcome Mean	0.925	0.926	0.927
Observations	14,866	7,192	6,944
Localities	519	506	505

◂ Indigenous Results

Results: Male Literacy

VARIABLES	(1)	(2)	(3)	(4)
	Respondent Can Read and Write			
	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	0.0813**	0.0890***	0.0188	0.0179
	(0.0336)	(0.0338)	(0.0217)	(0.0214)
	[2.421]	[2.636]	[0.870]	[0.834]
Born 1909-1919 (Partial) X Rural School		0.0690***		0.0271**
		(0.0222)		(0.0138)
		[3.113]		[1.969]
Outcome Mean	0.196	0.210	0.314	0.322
Observations	10,619	15,111	35,919	55,341
Localities	512	516	2088	2102

▸ Dynamic Spec. ◂ Literacy Results

Results: Female Literacy

VARIABLES	(1)	(2)	(3)	(4)
	Respondent Can Read and Write			
	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	0.0742**	0.0713**	0.0708***	0.0704***
	(0.0308)	(0.0313)	(0.0213)	(0.0212)
	[2.411]	[2.277]	[3.324]	[3.324]
Born 1909-1919 (Partial) X Rural School		0.0449***		0.0721***
		(0.0145)		(0.0119)
		[3.086]		[6.047]
Outcome Mean	0.0955	0.0991	0.230	0.254
Observations	10,610	15,456	36,774	55,948
Localities	512	518	2087	2103

▸ Dynamic Spec. ◂ Literacy Results

Results: Male Spanish Fluency

VARIABLES	(1)	(2)	(3)	(4)
	Respondent Speaks Spanish			
	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	0.0834***	0.0836***	-0.00174	-0.00148
	(0.0291)	(0.0295)	(0.00210)	(0.00211)
	[2.868]	[2.836]	[-0.829]	[-0.701]
Born 1909-1919 (Partial) X Rural School		0.0266		-0.00445**
		(0.0173)		(0.00179)
		[1.537]		[-2.487]
Outcome Mean	0.545	0.553	0.991	0.991
Observations	10,619	15,111	35,919	55,341
R-squared	0.677	0.671	0.408	0.405
Localities	512	516	2088	2102

▸ Dynamic Spec. ◂ Spanish Results

Results: Female Spanish Fluency

	(1)	(2)	(3)	(4)
	Respondent Speaks Spanish			
VARIABLES	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	0.0910***	0.0905***	-0.00248	-0.00270
	(0.0277)	(0.0279)	(0.00246)	(0.00239)
	[3.289]	[3.248]	[-1.006]	[-1.129]
Born 1909-1919 (Partial) X Rural School		0.0561***		-0.000801
		(0.0186)		(0.00234)
		[3.020]		[-0.342]
Outcome Mean	0.449	0.446	0.989	0.990
Observations	10,610	15,456	36,774	55,948
Localities	512	518	2087	2103

▸ Dynamic Spec. ◂ Spanish Results

Results: Male Indigenous Fluency

VARIABLES	(1) Respondent Speaks an Indigenous Language		(3) Indigenous Language	(4)
	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	-0.0226	-0.0243	0.00513	0.00487
	(0.0175)	(0.0172)	(0.00314)	(0.00304)
	[-1.288]	[-1.414]	[1.637]	[1.600]
Born 1909-1919 (Partial) X Rural School		-0.00346		0.00515
		(0.0128)		(0.00331)
		[-0.271]		[1.558]
Outcome Mean	0.906	0.903	0.0208	0.0192
Observations	10,619	15,111	35,919	55,341
Localities	512	516	2088	2102

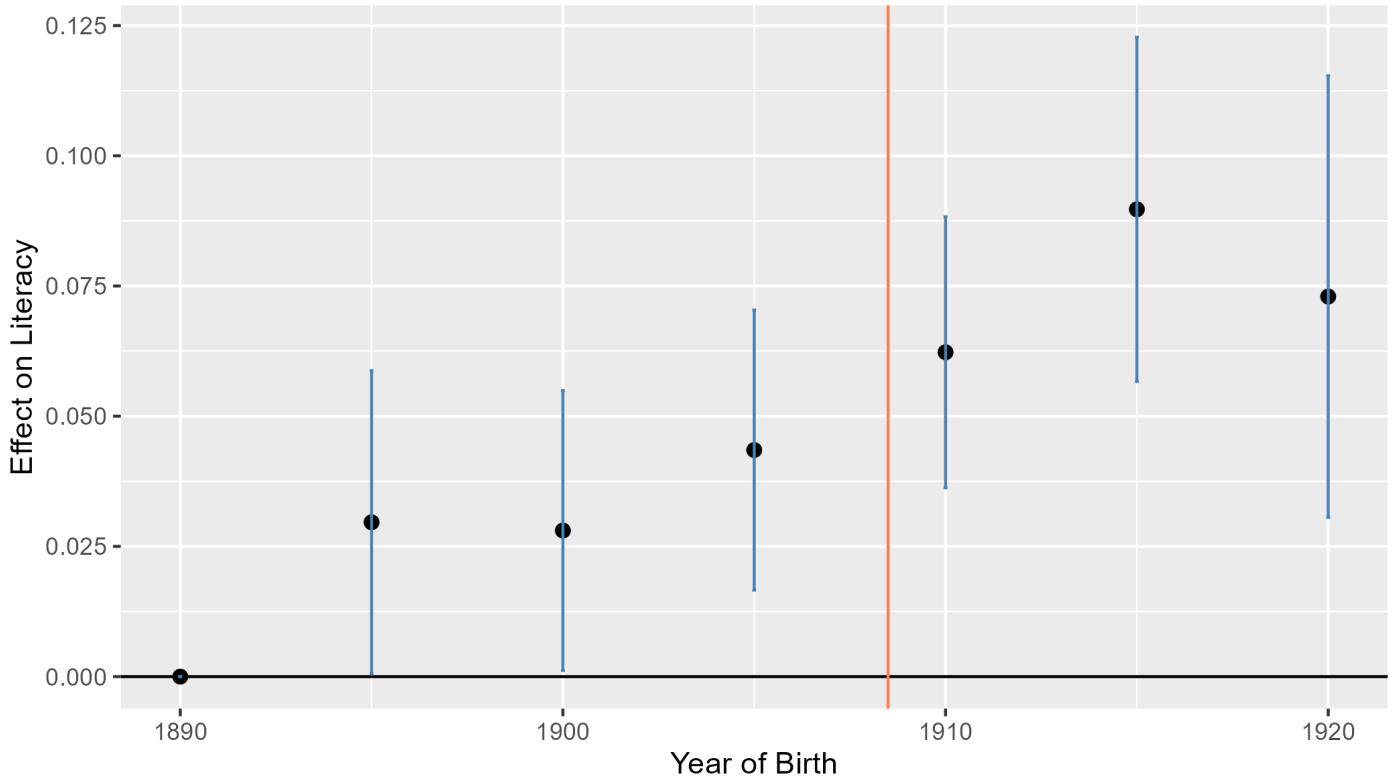
▸ Dynamic Spec. ◂ Indigenous Results

Results: Female Indigenous Fluency

VARIABLES	(1)	(2)	(3)	(4)
	Respondent Speaks an Indigenous Language			
	Indigenous Localities		Non-Indig. Localities	
Born After 1920 (Full) X Rural School	-0.0425**	-0.0448**	0.000817	0.00107
	(0.0175)	(0.0175)	(0.00285)	(0.00278)
	[-2.427]	[-2.557]	[0.287]	[0.383]
Born 1909-1919 (Partial) X Rural School		-0.0279*		-0.00132
		(0.0145)		(0.00280)
		[-1.933]		[-0.473]
Outcome Mean	0.908	0.907	0.0197	0.0186
Observations	10,610	15,456	36,774	55,948
Localities	512	518	2087	2103

▸ Dynamic Spec. ◂ Indigenous Results

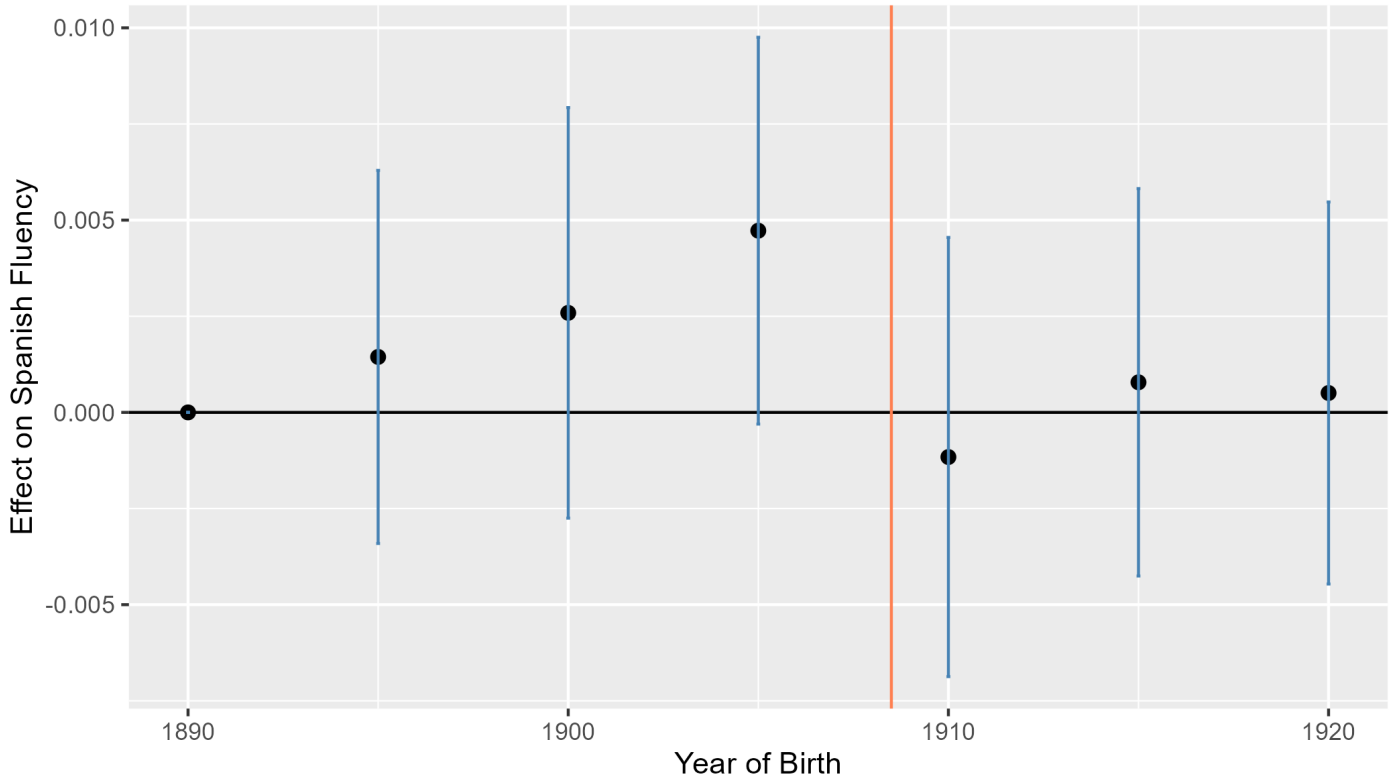
Effects on Literacy: Non-Indigenous Localities



Dynamic DiD with Five-Year Bins: Effects on Literacy

◂ Indigenous Localities

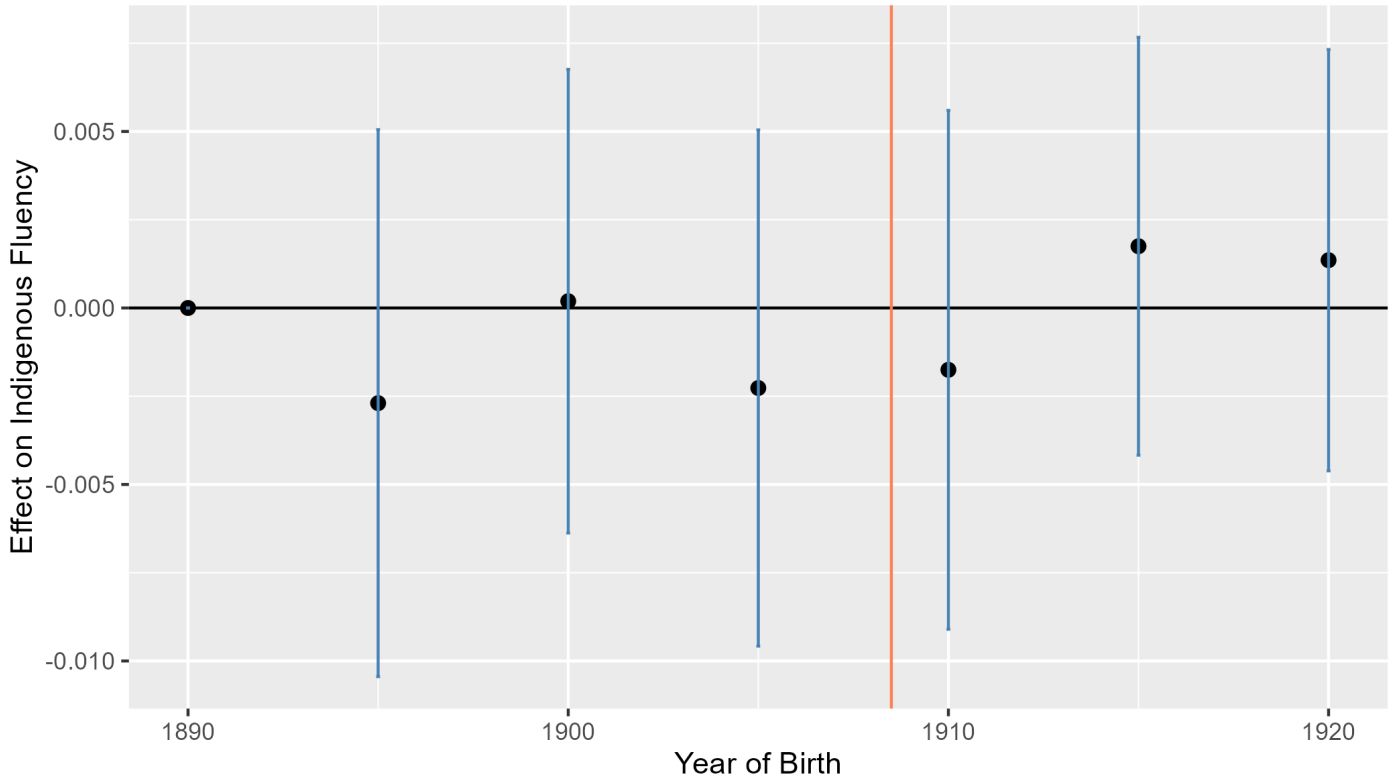
Effects on Spanish: Non-Indigenous Localities



Dynamic DiD with Five-Year Bins: Effects on Spanish

◂ Indigenous Localities

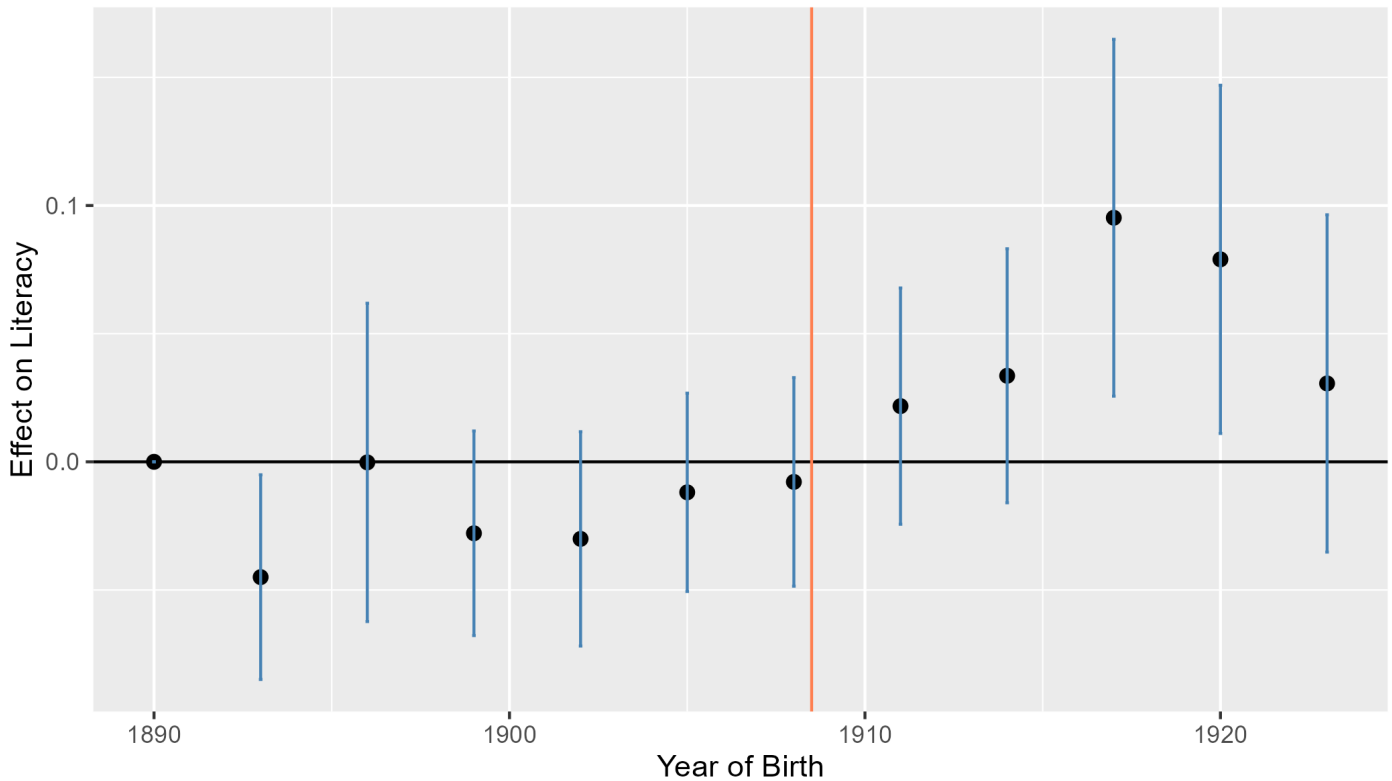
Effects on Indigenous: Non-Indigenous Localities



Dynamic DiD with Five-Year Bins: Effects on Indigenous

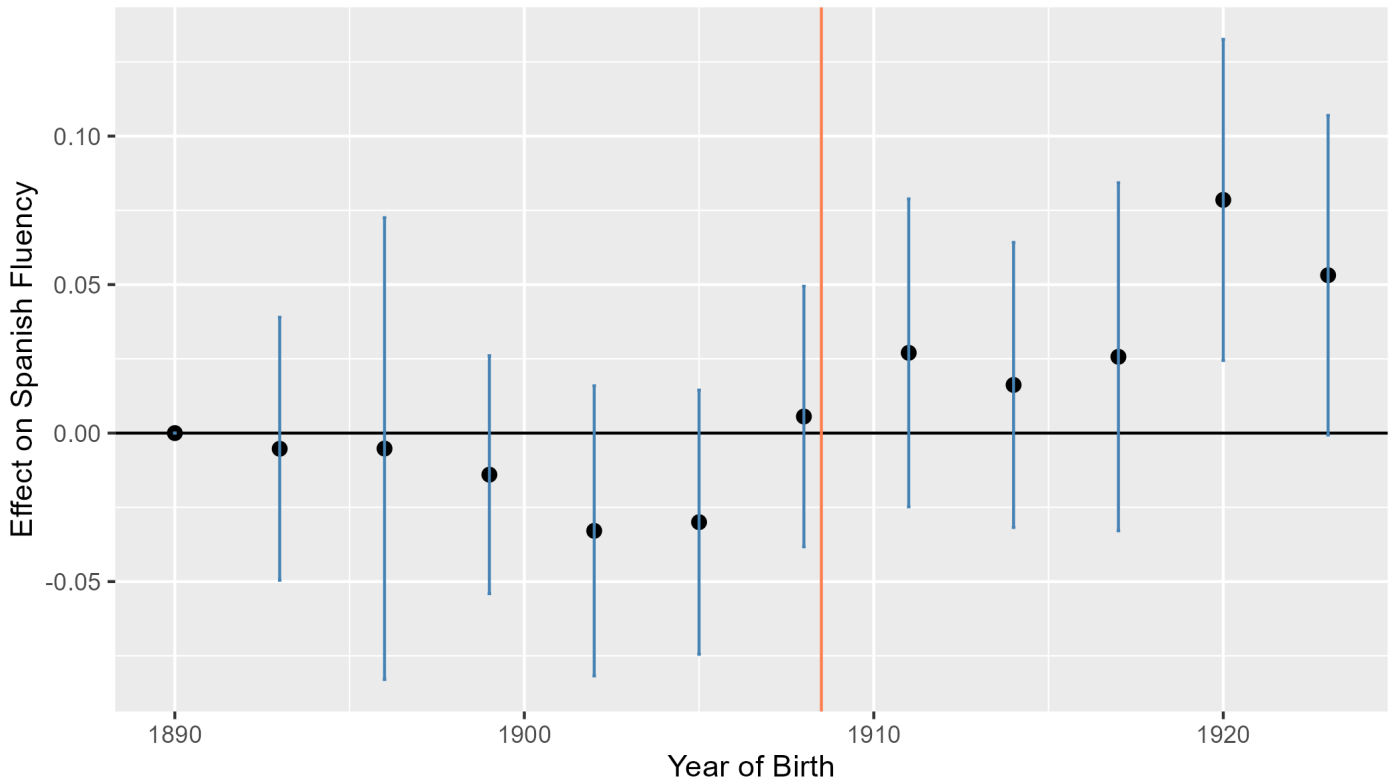
◂ Indigenous Localities

Three-Year Bins: Literacy



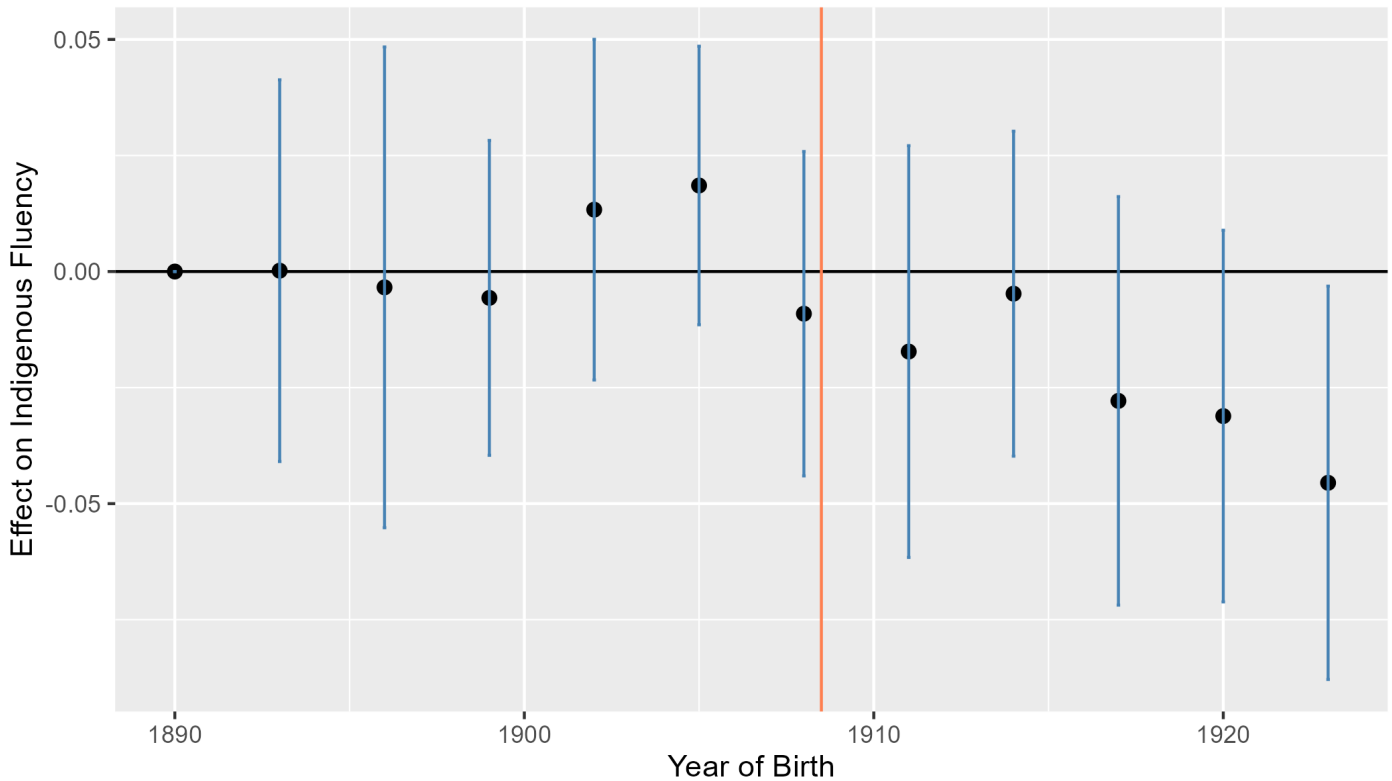
◂ Literacy Results

Three-Year Bins: Spanish



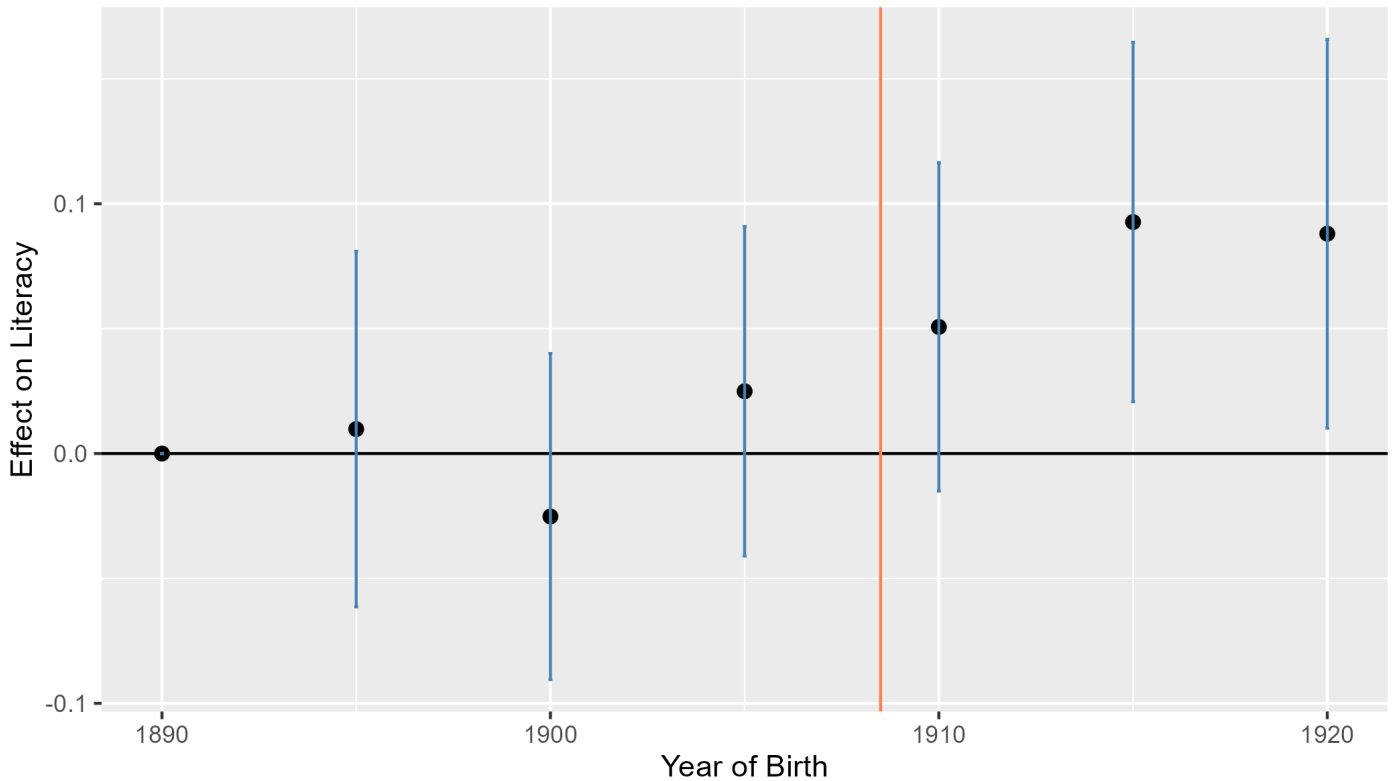
◂ Spanish Results

Three-Year Bins: Indigenous



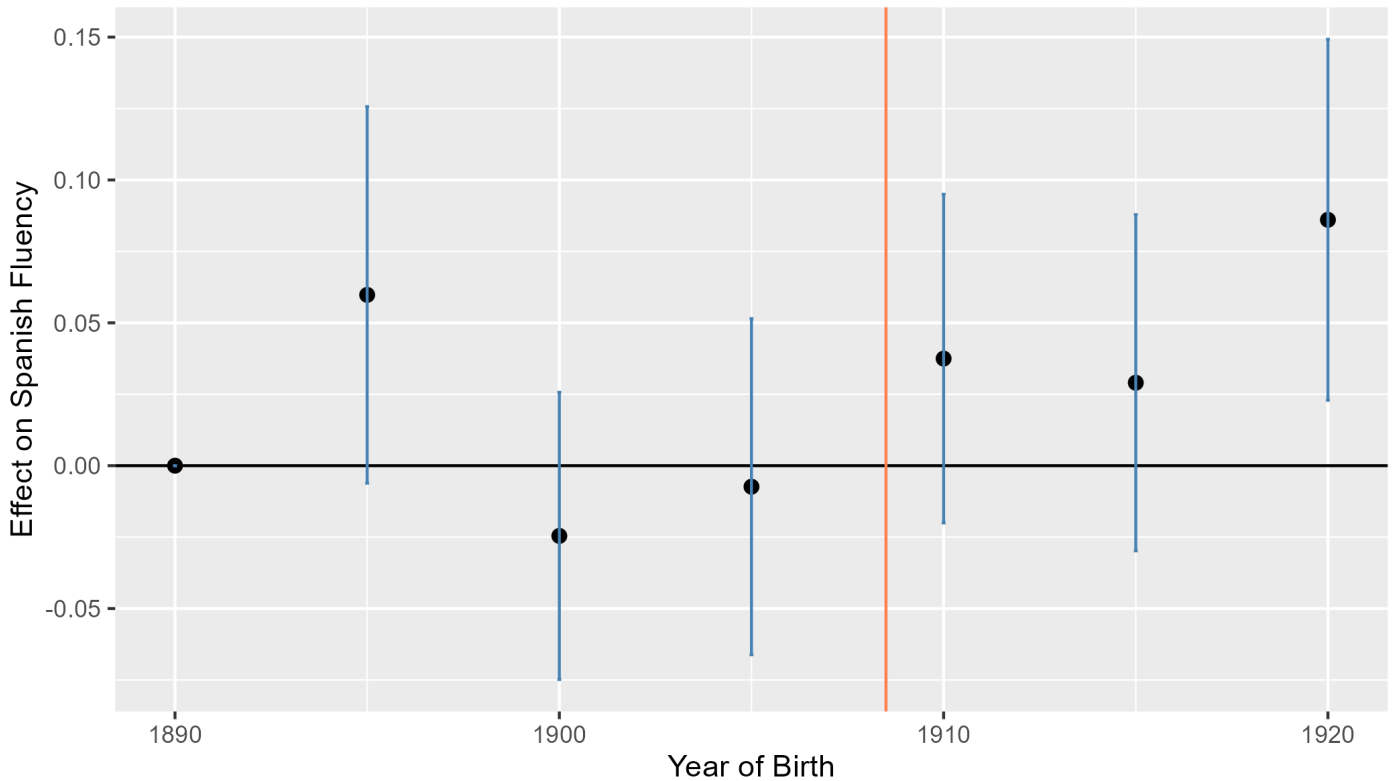
◂ Indigenous Results

Five-Year Bins: Male Literacy



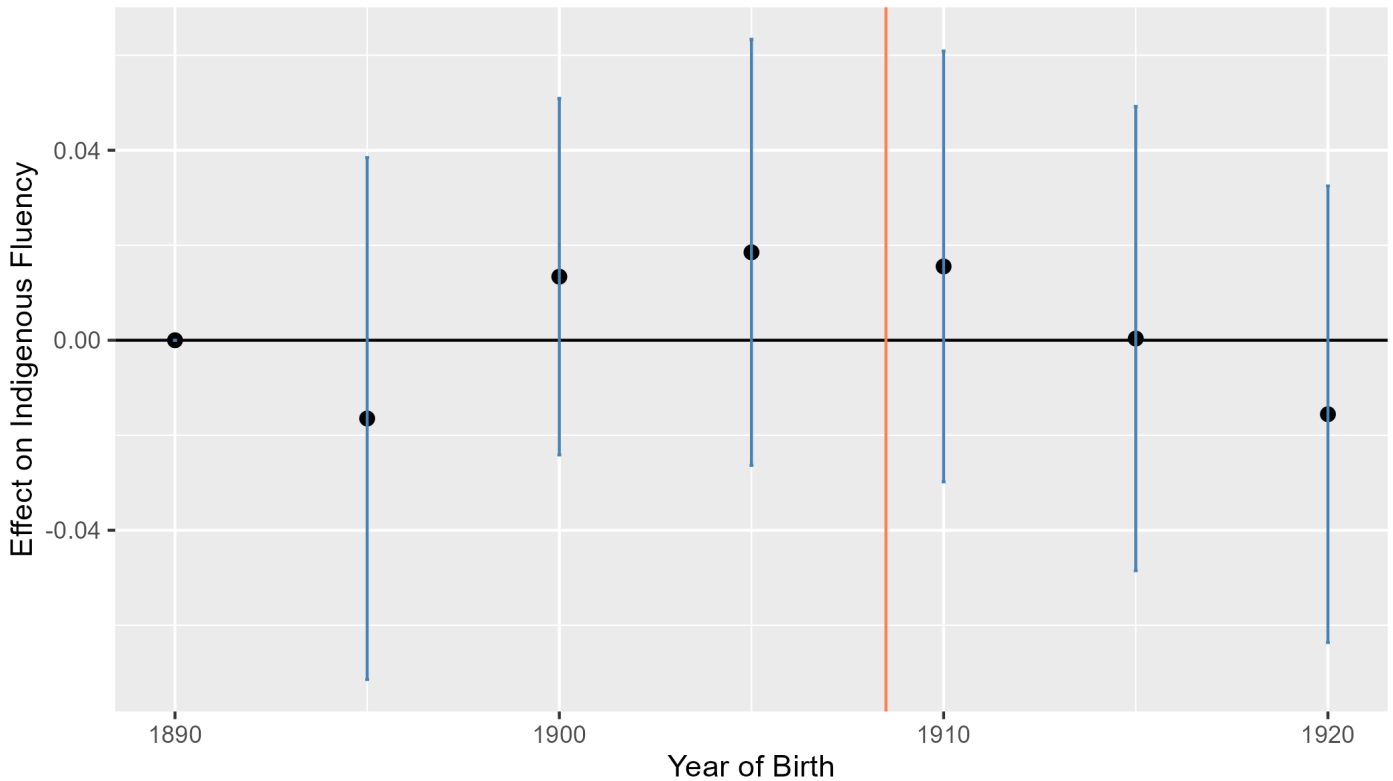
◂ Regression ◂ Main Results

Five-Year Bins: Male Spanish



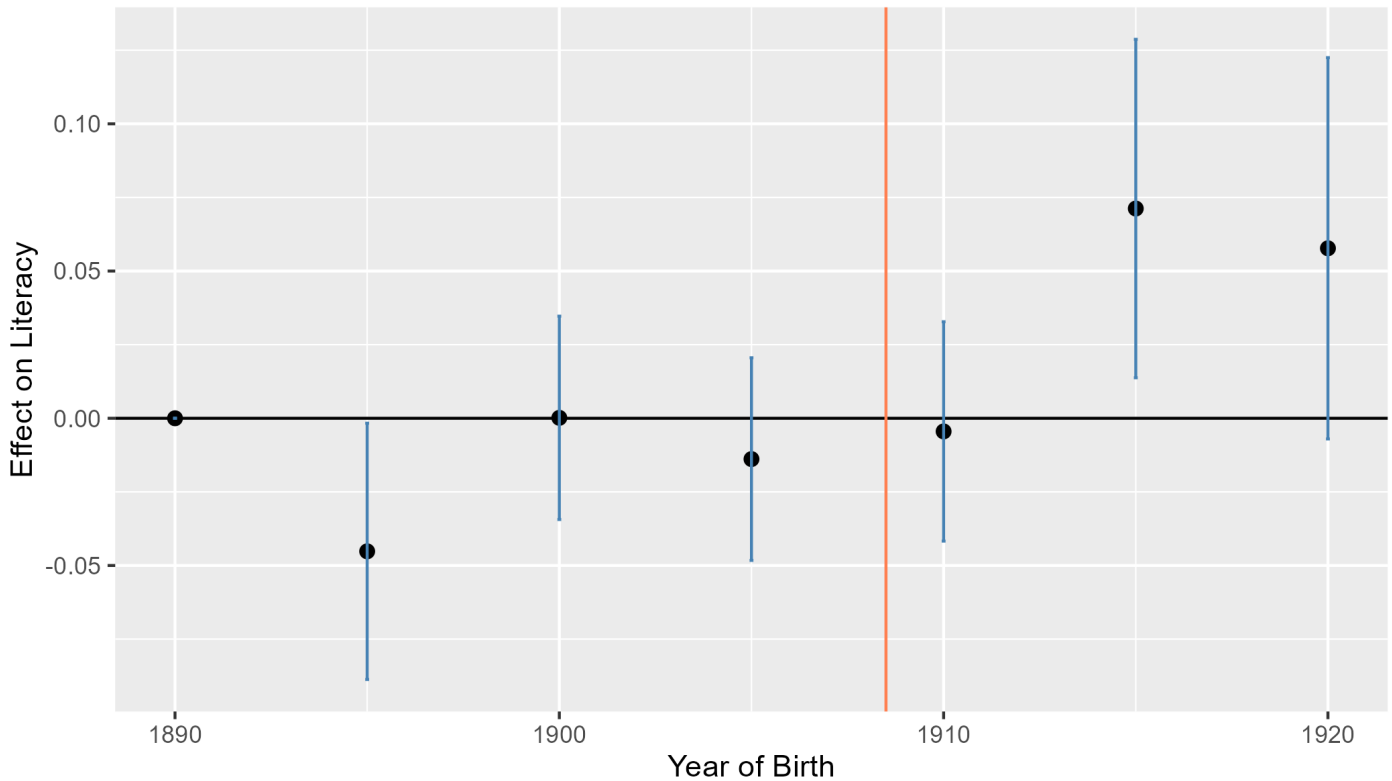
◂ Regression ◂ Main Results

Five-Year Bins: Male Indigenous



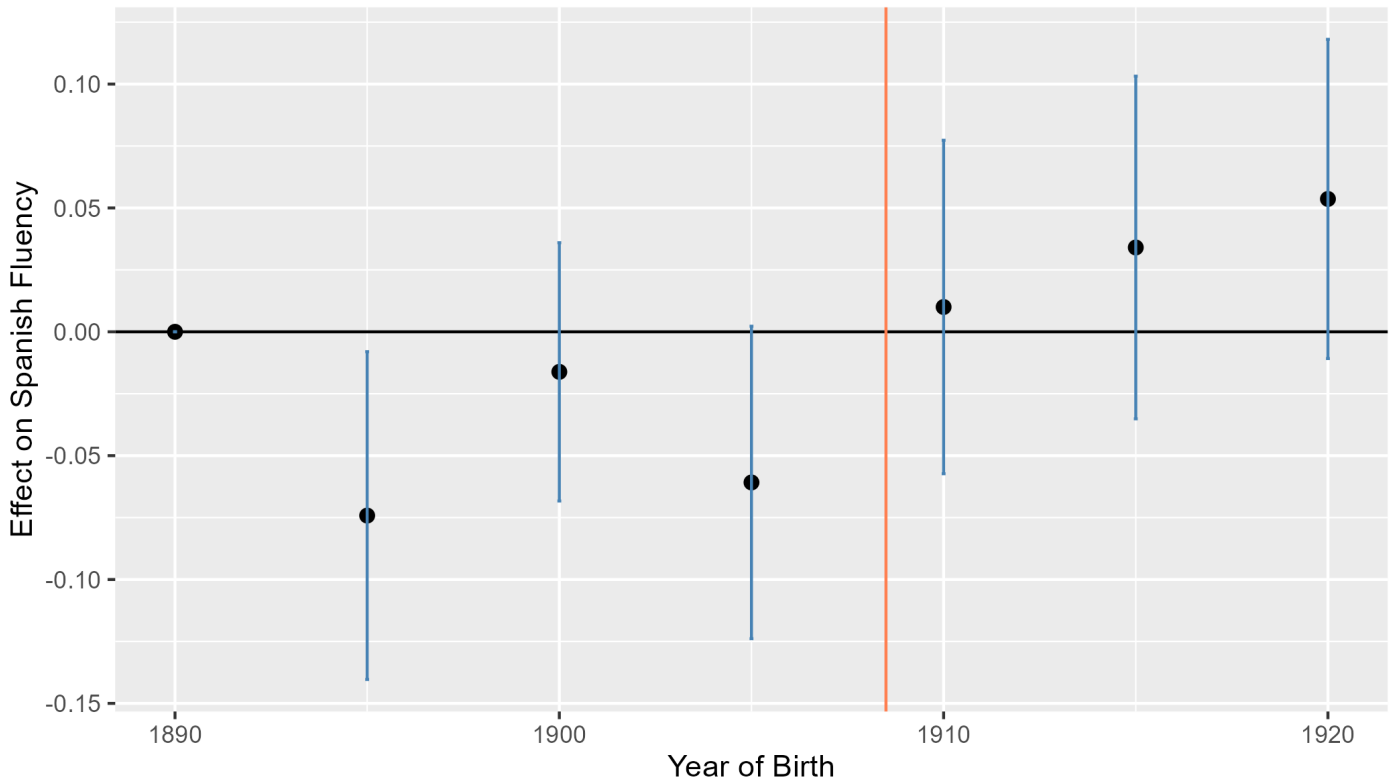
◂ Regression ◂ Main Results

Five-Year Bins: Female Literacy



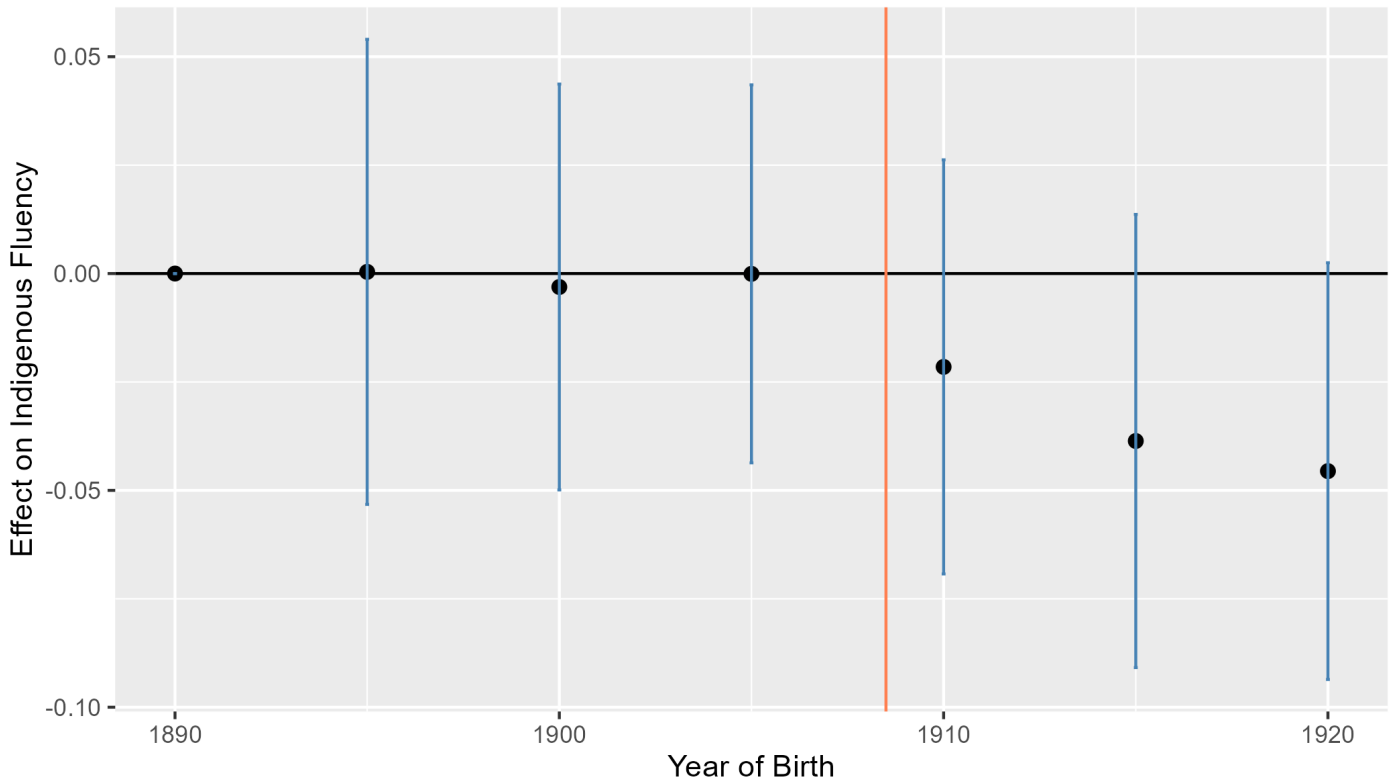
◂ Regression ◂ Main Results

Five-Year Bins: Female Spanish



◂ Regression ◂ Main Results

Five-Year Bins: Female Indigenous



◂ Regression ◂ Main Results

Summary Statistics: 1930 Census

VARIABLES	(1) N	(2) Mean	(3) SD
Literate	239,506	0.199	0.399
Attendance (6-15)	57,212	0.272	0.445
Speaks Spanish	239,506	0.742	0.437
Speaks Indig. Lang.	239,506	0.174	0.379
Non-Migrant	239,506	0.959	0.198
Age	239,452	22.38	18.14
Male	239,471	0.503	0.500
Treat	239,506	0.293	0.455
Field Worker (M 15+)	120,493	0.436	0.496
Homemaker (F 15+)	71,029	0.955	0.208

◂ Data

Sample Restrictions

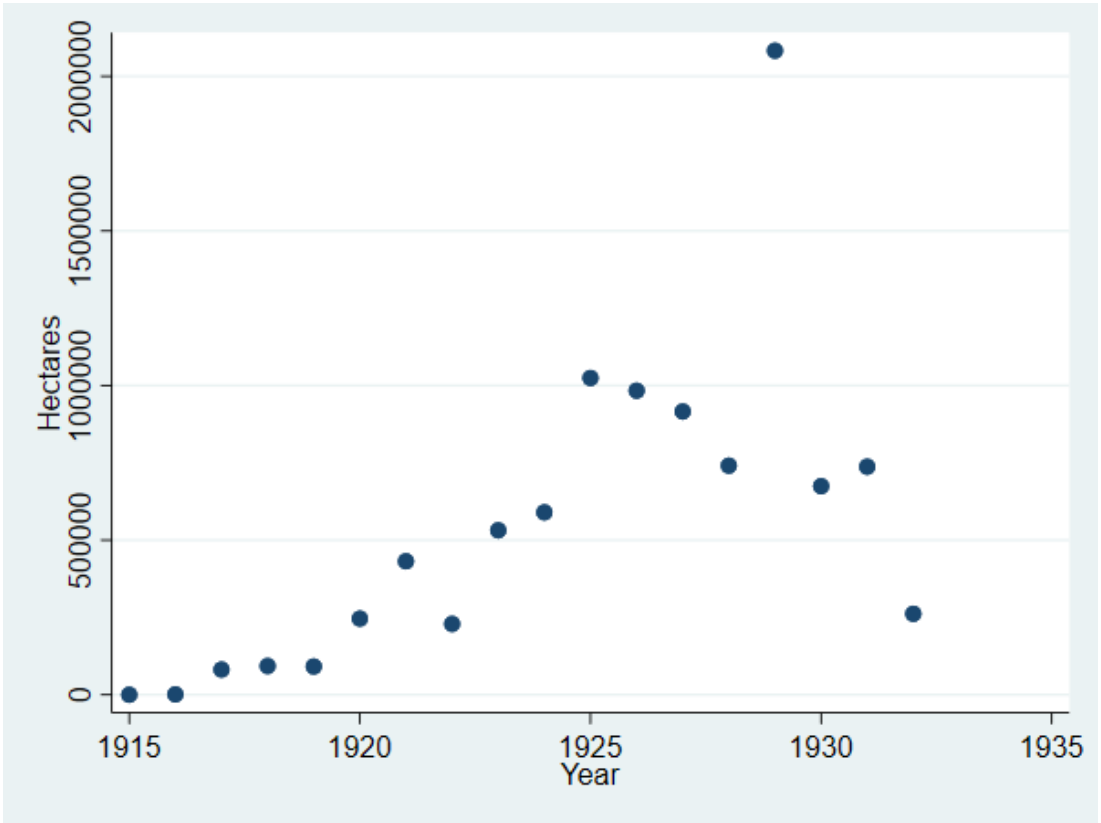
- Localities in municipalities with at least one rural school
- Localities with populations of no more than 3000 in 1930
- Exclude municipal capitals and localities classified as cities or train stations in 1930 or earlier
- In individual-level regressions, restrict to individuals residing in state of birth in 1930
- Additional specifications restrict to localities with indigenous speaking populations (born before 1900) above 50% and 70% ◂ Data

Ejido System

- Land redistributed as *ejidos* ▸ *Ejido* Facts in 1935
  - Semi-communal, incomplete property rights ▸ Details
    - Political capture of public provision of inputs & credit (Yates, 1981)
    - May have led to labor misallocation, limited returns to scale (De Janvry, Gonzales-Navarro, Sadoulet, 1981)
  - Communities initiated petitions
  - President had ultimate authority to approve/deny
- Historical evidence suggests land reform selectively implemented (Krauze et al., 1981)
  - Appease rural agitators...
  - ...while avoiding expropriation of most powerful landlords

◂ Context

Ejidos: 1915-1932



Hectares Redistributed

◂ Context

Ejido Facts in 1935

- More than 7000 *ejidos*
- 10% of all localities had definitive or provisional *ejidos*
  - 30% of the population
- 900,000 *ejidatarios*, 25% of all agricultural workers
- 6% of total surface area, 28% of area harvested
- 27% of value of agricultural production

◂ Context

Ejido Land Tenure

- Each *ejidatario* received an individual parcel
  - Use-rights/incomplete property rights
  - Could not sell, put up for collateral, hire labor
- Communal plot for *ejidatarios* and their families
- Formed local council to make collective decisions

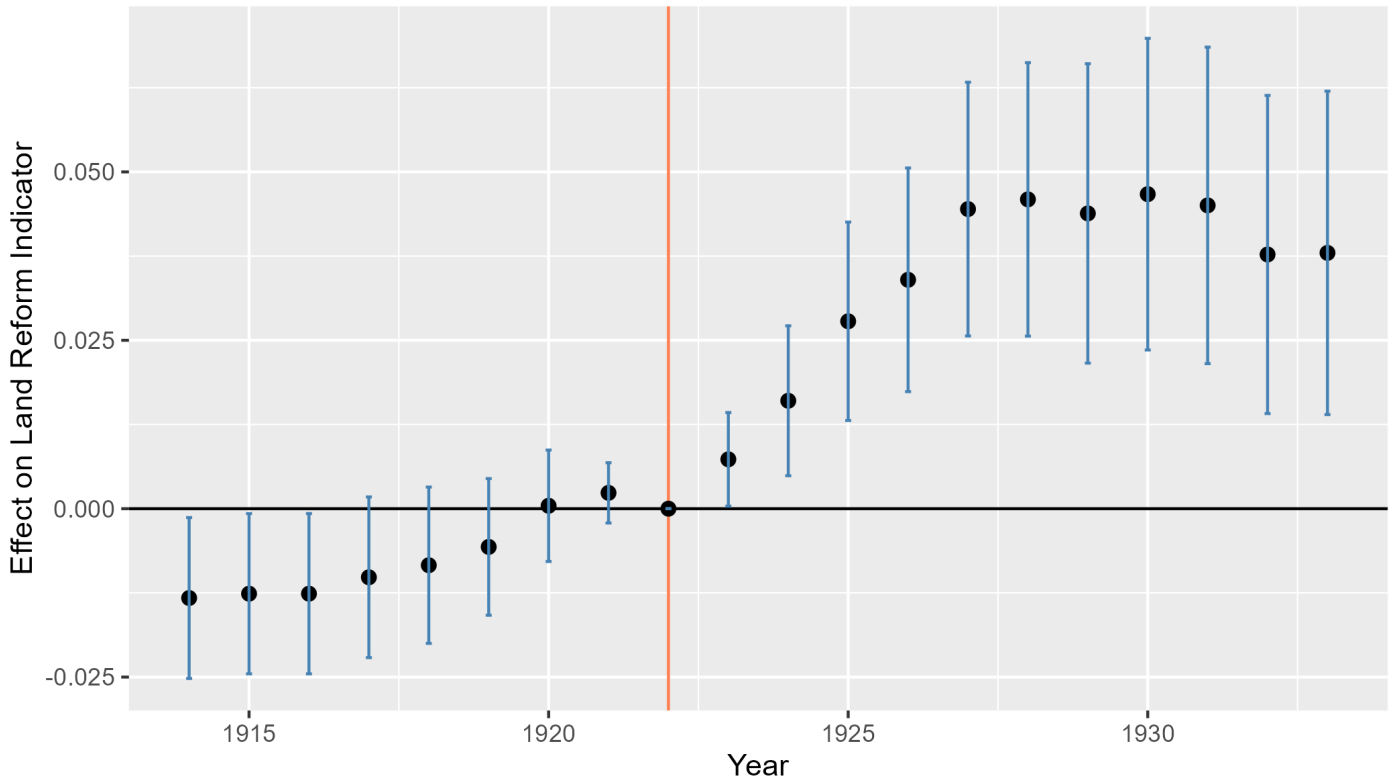
◂ Context

Locality-Level Specification

$$Y_{lt} = \alpha + \sum_{t} \beta_t \text{School}_{lt} + \gamma_t + \delta_l + \phi_{mt} + \epsilon_{lt} \tag{4}$$

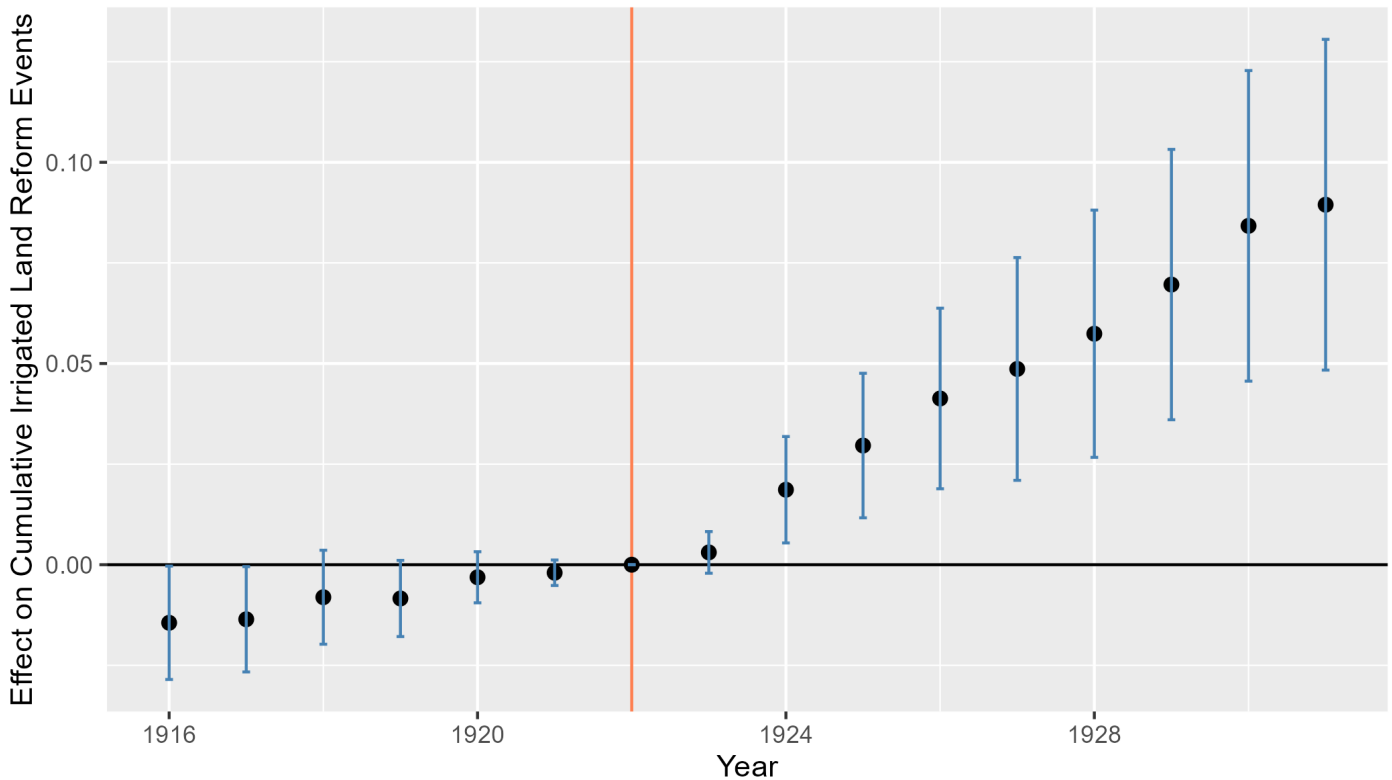
- year t, locality l in municipality m
- Y_{lt}: indicator equal to one if locality previously exposed to land redistribution
- Schools_{lt}: indicator equal to one for treated locality l in year t
- Rest defined as in Equation 1 ◂ Municipality-level specification

Land Reform: Locality-level Analysis



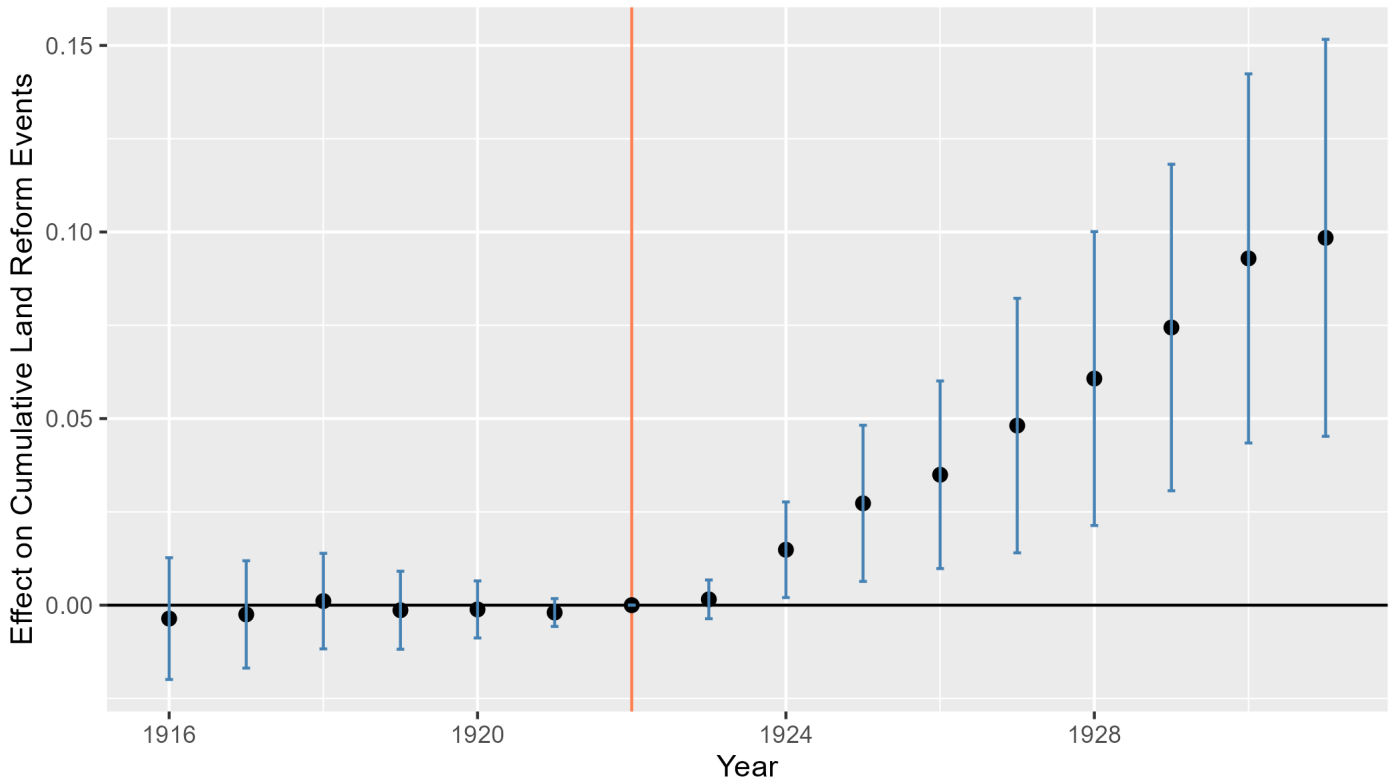
◂ Main Land Reform Results

Land Reform: Irrigated Land, All Municipalities



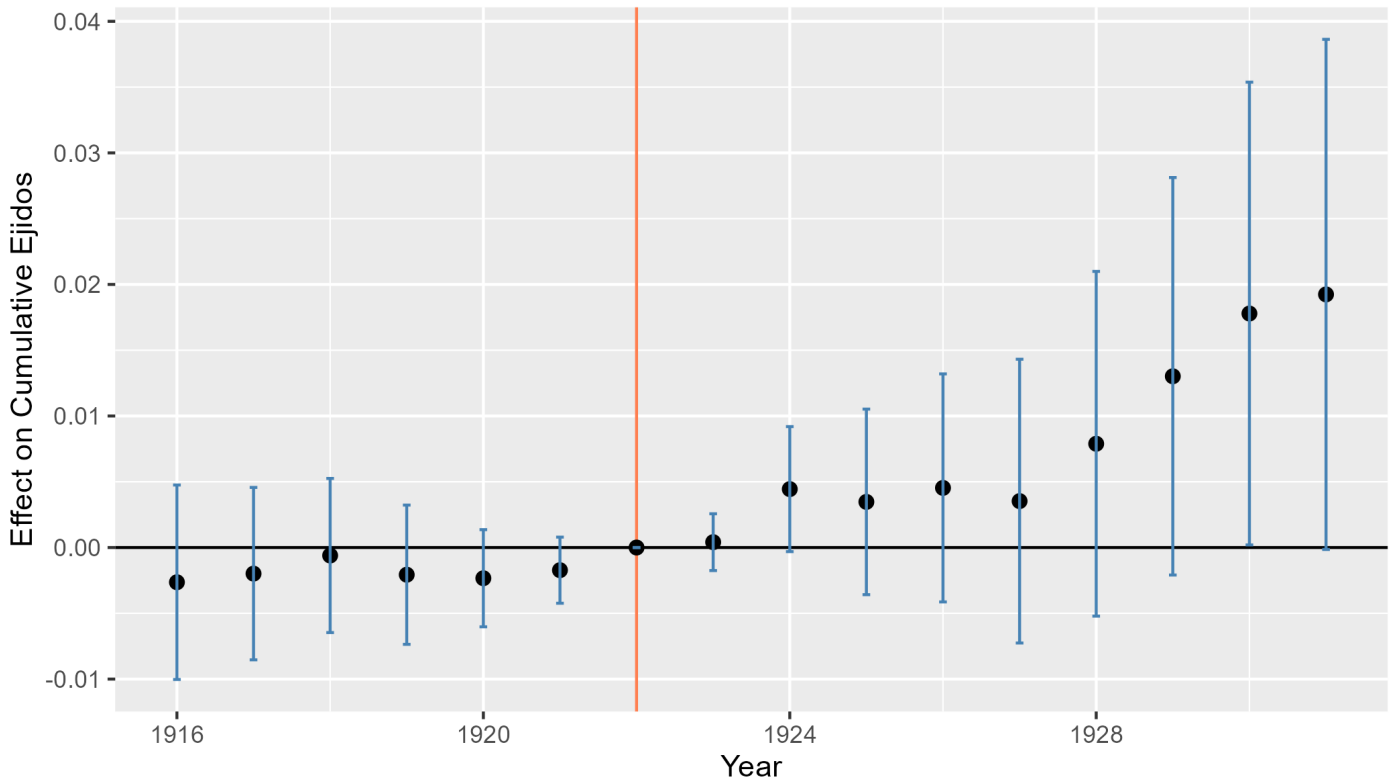
◂ Main Land Reform Results

Land Reform: All Land Reform Events



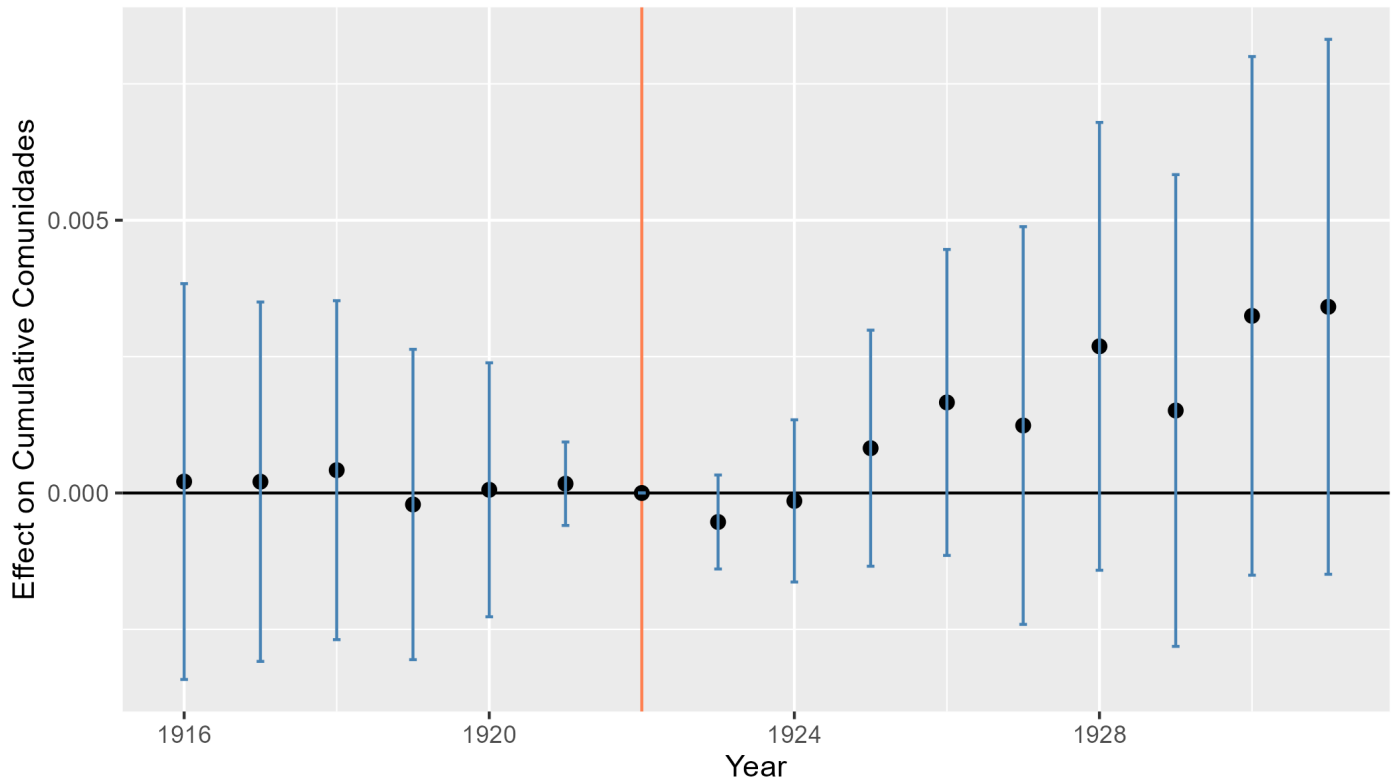
◂ Main Land Reform Results

Land Reform: *Ejidos*



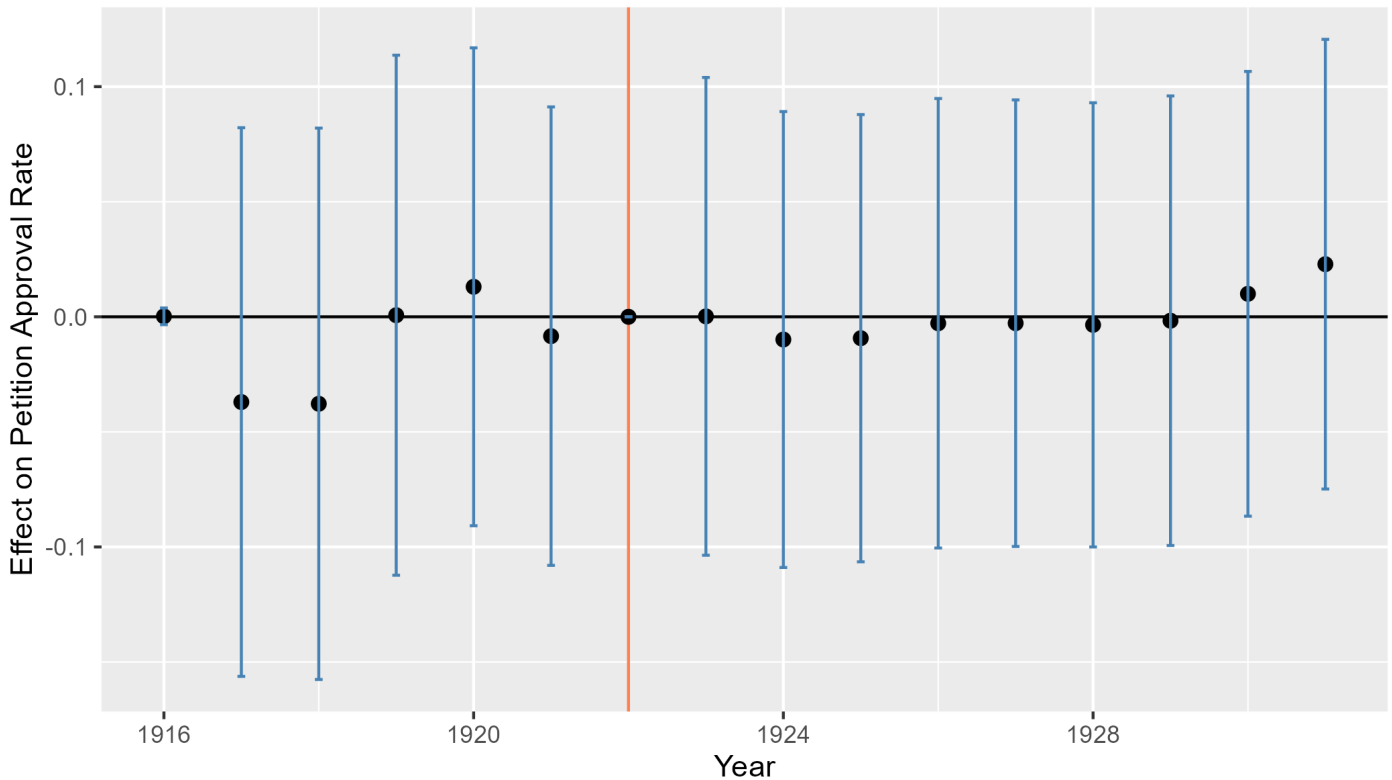
◂ Main Land Reform Results

Land Reform: *Comunidades*



◂ Main Land Reform Results

Land Reform: Petition Approval Rate



◂ Main Land Reform Results