Bureaucratic Incentives and Data Production: Evidence from Social Registries

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Individual or household-level administrative data

A comparatively recent development:

- Land cadasters: 16th-18th century (Kain and Baigent, 1992)
- Vital statistics: 19th century (Europe) and 20th century (US) (U.S. HSS, 1997)

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Primary obstacles to adoption: "bureaucracy"

- Resource constraints
- Few incentives for information sharing
- Interaction between central and decentralized bureaucracies

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1. Lots of information about lots of households $\longrightarrow$ **effort intensive**
   - Require routine updating (in contrast to, e.g., vital statistics)
2. **Targeted population** less likely to be otherwise "legible" to state
   - Esp. in settings with high levels of informality
   - Former "outsiders" in the context of recently-developed social programs
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Variation in quality, comprehensiveness of registries at all levels of capacity:

- Example: No national registry of SNAP recipients in the US

Intergovernmental relations and register production

Most social registries are produced for **central government** by bureaucrats working in **state or local** governments.

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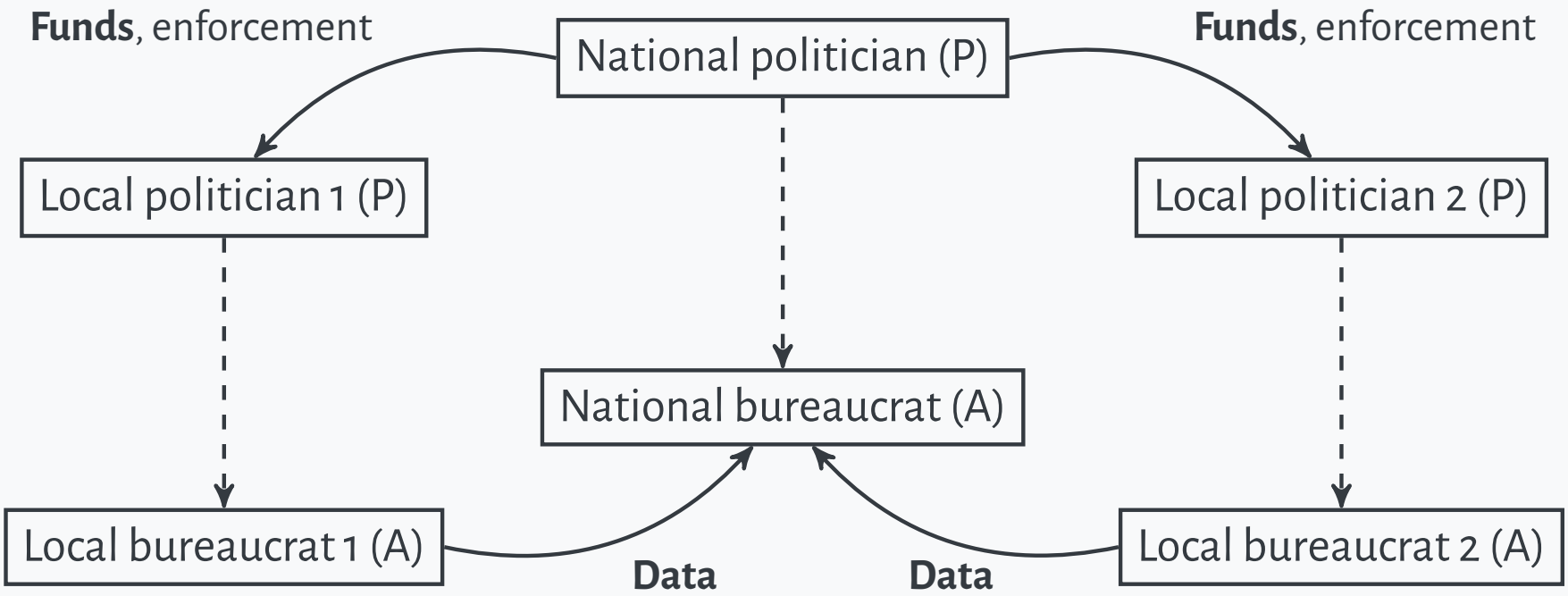

This paper: Bureaucratic incentives $\longrightarrow$ data quality

Framework: Local politicians rely on bureaucrats to secure constituents' access to social transfers by producing social registry data for central government.

Local politician uses:

i.) Selection of bureaucrats

ii.) Design of oversight

to pull bureaucrats' reports toward greater enrollment, consumption benefits for municipality.

This paper: Bureaucratic incentives $\longrightarrow$ data quality

Framework: Local politicians rely on bureaucrats to produce social registry data.

Empirics: Link features of bureaucratic incentives and social registry data outputs in Brazil and Colombia.

- Treatments:
  - **Original survey** of registry-producing bureaucrats in Colombia: SISBÉN administrators
  - **Employer-employee data** (RAIS) on registry-producing bureaucrats in Brazil: CadUnico interviewers
- Outcomes: **Administrative microdata** from social registries

This paper: Bureaucratic incentives $\longrightarrow$ data quality

Framework: Decentralized data collection as a set of related agency problems

Empirics: Link features of bureaucratic employment to data outputs.

Results: Bureaucratic turnover, independence from local politician leaves detectable footprint in administrative microdata.

- Mayors induce $\uparrow$ effort (# of interviews) through appointment of registry bureaucrats $\longrightarrow \uparrow$ more benefits to municipality
- Cost: learning/expertise at task $\longrightarrow$ may depend on registry design

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Empirics: Link features of bureaucratic employment to data outputs

Results: Bureaucratic turnover, independence from local politician leaves detectable footprint in administrative microdata.

Implications:

- Data production as challenge for design, implementation of means-tested social programs.
- (Local) bureaucrats as omitted actor with oft-overlooked role with distributive consequence.

Related literature

1. Quality of state data e.g., Jerven (2013), Edmond (2013), Lorentzen (2014) Wallace (2016), Kerner et al. (2017), Guriev and Treisman (2019), Martínez (2021), Brambor et al. (2020), Angrist et al. (2021)

2. Role of bureaucrats in state data production Cook and Fortunato (2022); Eckhouse (2022); Garbiras-Díaz and Slough (2025); Slough (2025)

3. Design and implementation of social programs in Latin America de la O (2015); Garay (2017); Niedzwiecki (2018); Arza et al. (2024)

4. Role of local actors in national social policy Camacho and Conover (2011); Camacho et al. (forthcoming); Labonne (2013); Frey and Santarrosa (forthcoming)

Argument

Social policy environment

Central government (agency) policy defines a:

- Latent measure of household eligibility (e.g., income, assets, or consumption): a_i
- A threshold for qualification for a given program: $\widehat{a}$

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Policy output: Central government transfer, $T_i \in \{0, 1\}$ allocated to household i if $s_i \leqslant \widehat{a}$.

Transfer allocations

Can classify household outcomes as follows:

	Transfer granted ($T_i = 1$)	Transfer not granted ($T_i = 0$)
Eligible ($a_i \leqslant \widehat{a}$)	Correct allocation $s_i \leqslant \widehat{a}$	Type-II error $s_i \in \{(\widehat{a}, \infty] \cup \emptyset\}$
Ineligible ($a_i > \widehat{a}$)	Type-I error $s_i \leqslant \widehat{a}$	Correct denial $s_i \in \{(\widehat{a}, \infty] \cup \emptyset\}$

Table: Possible relationships between latent eligibility (a_i) and transfer outcomes (T_i). "Correct" is defined relative to the central government's targeting policy, $\widehat{a}$.

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Two conflicts:

- Central gov't pays for transfer but local gov't scores (potential) recipients
- Within local gov't: (elected) principal internalizes household outcomes but relies on agent to do work ⟵ focus of paper

Disaggregating the local government: the principal

Politician: elected principal benefits from ↑ number of social policy recipients, given central government policy

- ↑ consumption in municipality (Fiszbein and Schady, 2009)
- Potential electoral rewards for ↑ access to social program (Labonne, 2013; Camacho and Conover, 2011; Camacho et al., forthcoming)

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Bureaucrat: tasked with completing interviews or survey, reporting to national government

- Effort is costly: not scoring ($s_i = \emptyset$) is easier than doing interviews $\longrightarrow$ bias toward denial of transfer
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All else equal, easier for politician to motivate effort from bureaucrat that shares politician's preferences over policy implementation.

Political control of bureaucrat

Politician pursue some combination of two strategies to affect data production by bureaucrat:

- Selection of the bureaucrat via transfer or new hire
  - Effort to (partially) align preferences over social policy with politician
  - Frequent turnover may limit: (1) efficiency; or (2) ability to (mis-)align scores with eligibility
- Design monitoring, incentives for bureaucrat
  - Management practices (i.e., oversight frequency, quotas etc.)
  - Penalties, rewards for performance

In practice, relationship between selection and design of monitoring presents some ambiguities:

- Are these choices distinct?
- Are they complements or substitutes?

Implications

In a bid to mobilize central government resources to their jurisdiction, mayors:

- Select/transfer bureaucrat to collect social registry data
- Incentivize bureaucrat via monitoring

Bureaucratic reporting behavior affects quality of social register via:

- Effort/share of households surveyed $\longrightarrow$ completeness
- Scores reported $\longrightarrow$ accuracy of household-level data

Politician's choice of bureaucrat, monitoring practices is endogenous.

Agency problems at local level can insulate—to some degree—central gov't program from mayors' desired distortions.

Contexts: Brazil and Colombia

Registries: CadUnico and SISBÉN-IV

	Brazil	**Colombia**
Registry	Cadastro Único para Programas Sociais (CadUnico)	Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales (SISBÉN-IV)
Created	2002	1995 (1997)
Households in registry	16.7m (in 2012)	9.2m (in 2022)

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Eligibility based on	(Self)-reported income	Unknown mapping: survey data $\longrightarrow$ vulnerability categories

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Timing relative to local politics

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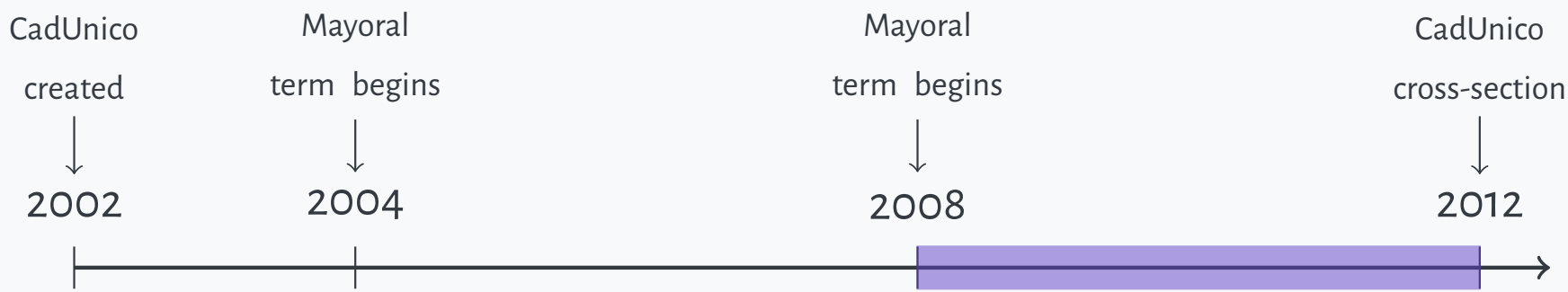

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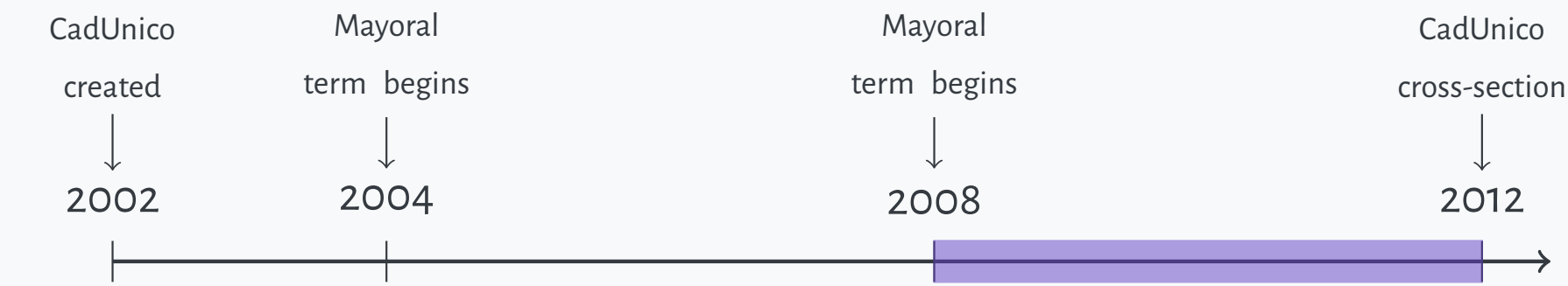

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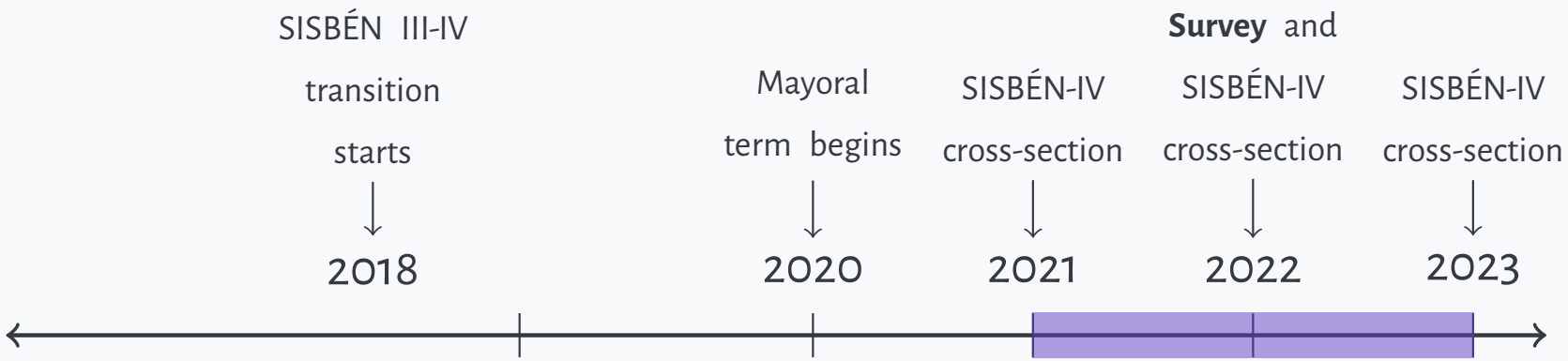

Mayors and local bureaucrats

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- Bureaucrats collect, report data in social registries
  - In Colombia: National government (DNP) aims to circumvent local politicians' "participation" in SISBÉN through training, guidance of local bureaucrats

Bureaucratic tenure in local government, job

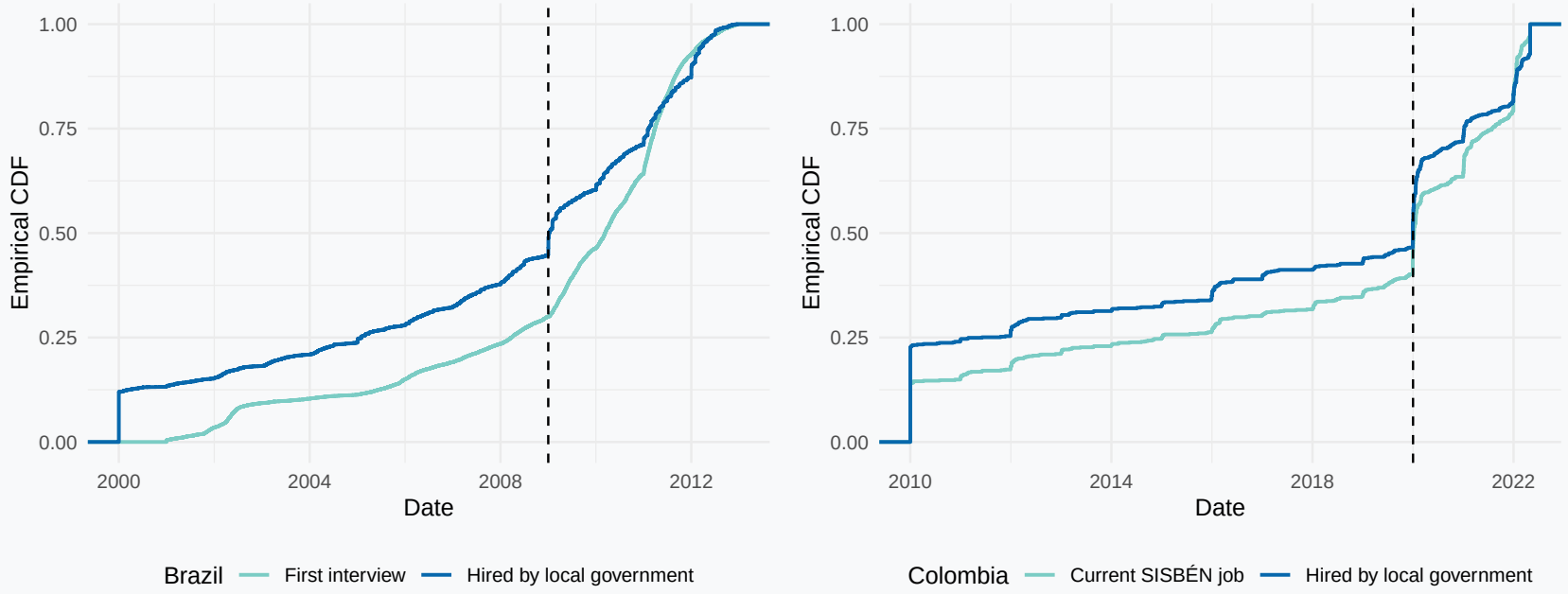

Figure: Tenure of bureaucrats (a) in local governments and (b) as agents running/administering social registries in Brazil (left) and Colombia (right). Tenures are censored to 12 years.

ATT of mayoral turnover (Brazil)

Research Design

Overview

Examine bureaucratic employment $\longrightarrow$ bureaucrats' social registry reports.

Two contexts predicted to exhibit **similar** dynamics: Colombia and Brazil.

Different research designs $\longrightarrow$ different empirical targets (Slough and Tyson, 2024, 2025)

- Distinct sources of data on bureaucratic employment: survey (Colombia) and employer-employee data (Brazil).
- Different design of social registries: outcomes of interest.

Approach:

1. Comparison of directional (qualitative) effects where "related" estimates are feasible.
2. Analysis in a single context where warranted.

Brazil: Employer-employee data (RAIS)

Start with universe of employees of local governments between 2008 and 2012, at the bureaucrat-locality level ($n = 8,181,729$).

- Features of employment: tenure, contract type, monthly salary
- Individual-level covariates: age, gender, education etc.

Merge with reported CadUnico interviewers (from register data) on individual ID and municipality $\rightarrow$ $n = 33,669$ unique bureaucrats in $5,385$ municipalities

- Median of 122 household interviews/bureaucrat (IQR: [22, 407])

Note: Data comes from Anderson Frey and Rogerio Santarrosa, with thanks!

- I do not have real bureaucrat ID numbers or municipality indicators!
- Working on plan for examining heterogeneity across municipalities $\rightarrow$ adding noise to municipal covariates.

Colombia: Survey of SISBÉN administrators

Original survey of SISBÉN administrators (1 per municipality):

- Administered by email and phone from May-July 2022
- Measure attributes of bureaucrats, (perceived) management by principals, contact with central government

Sample:

- Identified 1,074/1,102 SISBÉN administrators through FOI requests
- Response rate: 754/1,074 (70.2%)
- Respondents' municipalities resemble all municipalities in terms of: population, geography (regions), municipal administrative classifications/governance indices, and SISBÉN enrollment

Characteristics of bureaucrats

Comparable covariates drawn from Brazilian employer-employee data, Colombian survey data:

	Brazil CadUnico Interviewers				Colombia SISBÉN Administrators			
Variable	Min.	Max.	Mean	St. Dev.	Min.	Max.	Mean	St. Dev.
Age	15	79	34.98	10.04	19	65	39.35	9.98
Female	0	1	0.75	0.43	0	1	0.63	0.48
High school complete	0	1	0.89	0.31	0	1	0.99	0.08
Undergraduate degree complete	0	1	0.32	0.47	0	1	0.40	0.49
Postgraduate degree complete	0	1	0.004	0.068	0	1	0.08	0.28
Resident of municipality	–	–	–	–	0	1	0.94	0.24
Civil servant (indicator)	0	1	0.93	0.25	0	1	0.66	0.47
Tenure in job (years)	0	12	3.26	2.94	0	30.32	5.19	6.57
Tenure in local government (years)	0	42.84	5.56	6.33	0	39.49	7.36	8.89

Table: Characteristics of CadUnico interviewers and SISBÉN enumerators from the RAIS data (Brazil) and survey data (Colombia).

Outcomes data: Registries

Attribute	CadUnico (Brazil)	SISBÉN-IV (Colombia)
	Panel A: Raw data	
Cross-section	Household	Household or individual
Time	December 2012	Annual from 2021-2023
Sample	Universe of households	Random sample by municipality-zone

Table: Raw administrative social register data and aggregate units of analysis.

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Sample	Universe of households	Random sample by municipality-zone
	Panel B: Processed data	
Unit of analysis	Bureaucrat	Municipality-zone year
Years analyzed	2009-2012	2021, 2022, (2023)
Total municipalities	5,568	1,102
Municipalities in sample	5,385	754
Sample restrictions	Municipality present in CadUnico ($n = 5554$), municipal government present in RAIS ($n = 5,554$), in which any interviewer from 2009-2012 term is located in RAIS data ($n = 5,385$).	SISBÉN administrator answered survey ($n = 754$).

Table: Raw administrative social register data and aggregate units of analysis.

Outcome variables from registers

Outcome	CadUnico (Brazil)	SISBÉN-IV (Colombia)
Effort	- # of interviews conducted by bureaucrat	- Per-capita rate of SISBÉN enrollment within municipal-zone
Scores	- Share of households under BF unconditional transfer threshold - Share of households under BF conditional transfer threshold - Share of households at BF unconditional threshold - Share of households at BF conditional threshold	- Distribution of scores by ranked poverty category
Program receipt	- Share enrolled in BF	

Table: Outcomes of interest

Plan

1. Examine relationship between selection and oversight using Colombia survey data.

2. Bureaucratic selection and registry data production in Colombia and Brazil
   - Are new bureaucrats appointed by mayor more productive? And contractors?
   - Do bureaucrats report different data as a function of appoiintment status?

3. Examine how reporting changes over course of bureaucrat's tenure as interviewer using Brazilian data

Results

#1: Describing selection and incentives (Colombia)

In Colombian survey data, how do measures of bureaucratic selection covary with perceived and/or observed oversight and punishment?

For measures of perceived oversight, Y_i, regressions of the form:

$$Y_i = \beta_0 + \beta_1 \text{Short-tenured}_i + \beta_2 \text{Contractor}_i + \boldsymbol{\gamma}\mathbf{X}_i,$$

where $\mathbf{X}_i$ is a matrix of bureaucrat characteristics.

For punishments of different severity, estimate:

$$E\left[I[\text{Observed contractor punished}_i] - I[\text{Observed civil servant punished}_i]\right]$$

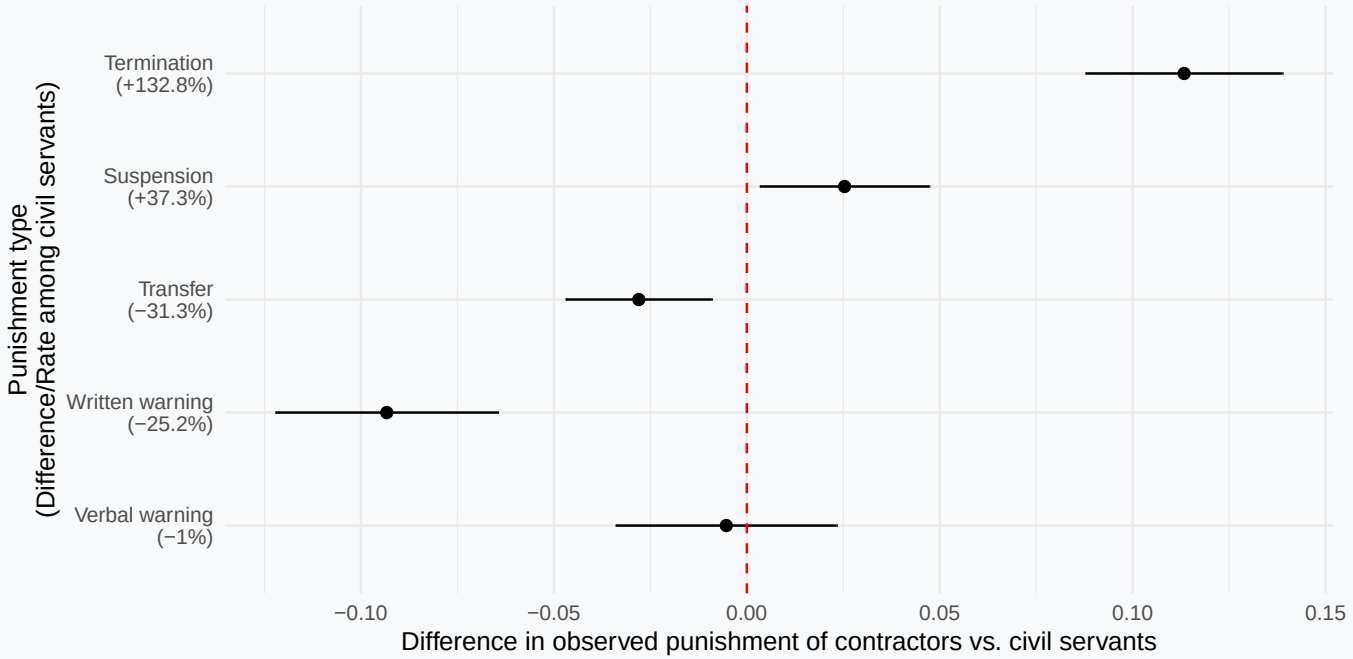
Colombia: Tenure, contract type and perceived oversight

	Oversight frequency		Oversight by mayor		Quotas set		Perceived freedom		Weekly hours	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Bureaucratic tenure										
Short-tenured	0.441***	0.418***	0.052	-0.011	0.085*	0.117**	-0.071	0.021	2.663	1.727
	(0.096)	(0.109)	(0.036)	(0.040)	(0.035)	(0.039)	(0.083)	(0.095)	2.091)	(2.414)
Observations	738	734	750	745	741	737	739	735	695	692
Panel B: Bureaucratic contracts										
Contractor	0.478***	0.455***	0.026	-0.035	0.066+	0.097*	-0.115	-0.019	4.082+	3.843
	(0.085)	(0.097)	(0.038)	(0.042)	(0.035)	(0.040)	(0.088)	(0.098)	(2.169)	(2.375)
Observations	715	711	727	722	718	714	716	712	675	672
Panel C: Bureaucratic tenure and contracts										
Short-tenured	0.314**	0.323**	0.050	-0.003	0.070+	0.095*	-0.017	0.037	0.945	0.569
	(0.108)	(0.114)	(0.040)	(0.042)	(0.038)	(0.042)	(0.090)	(0.100)	(2.302)	(2.551)
Contractor	0.351***	0.372***	0.005	-0.034	0.037	0.072+	-0.108	-0.029	3.695	3.694
	(0.095)	(0.102)	(0.041)	(0.043)	(0.038)	(0.041)	(0.094)	(0.101)	(2.345)	(2.457)
Observation	715	711	727	722	718	714	716	712	675	672
Bureaucrat characteristics		✓		✓		✓		✓		✓
DV scale	{0, ..., 5}		{0, 1}		{0, 1}		{1, ..., 5}		[1, 100]	
DV mean, std. dev.	3.133 (1.249)		0.367 (0.482)		0.703 (0.457)		3.667 (1.101)		57.850 (26.887)	

$^{+}p < 0.1, ^{*}p < 0.05, ^{**}p < 0.01, ^{***}p < 0.001$

Table: Bureaucratic characteristics include age, age^2, education level categories, gender.

Colombia: Contract type and observed punishment



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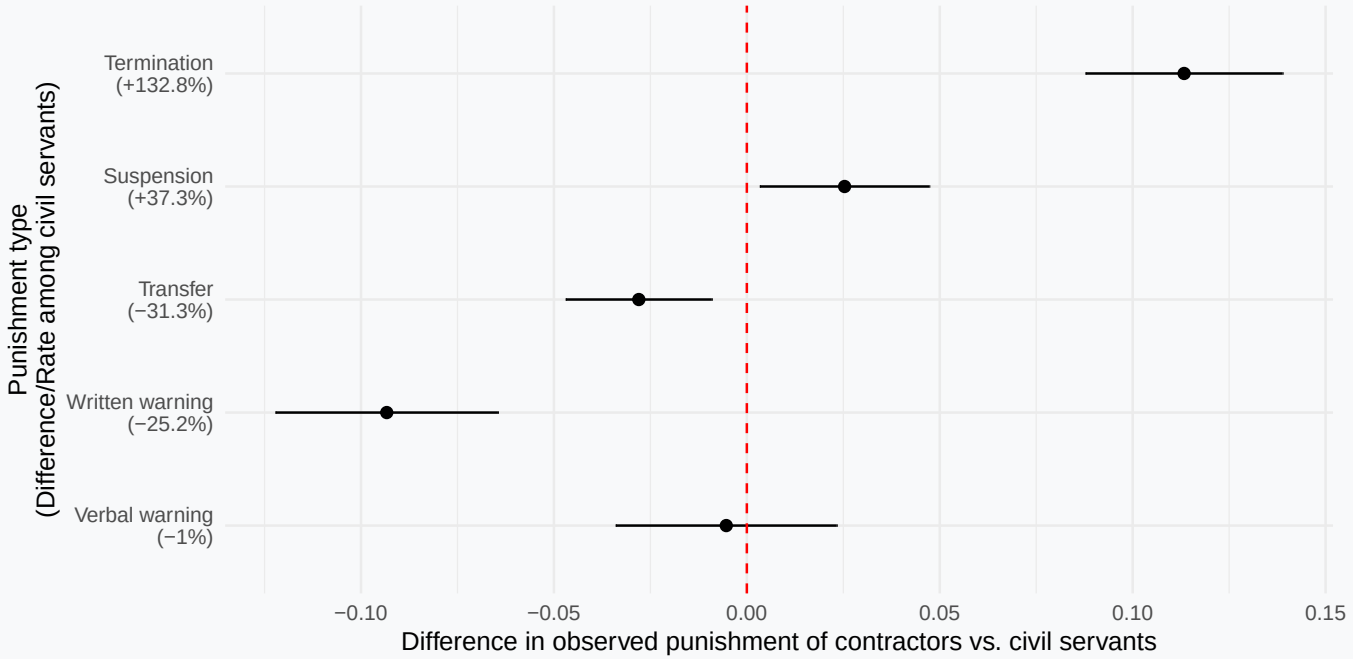


Implications:

- Mayors ↑ oversight, target setting for SISBÉN administrators they appoint
- Contractors subject to harsher penalties than civil servants
  - ↑ Removal consistent with shorter tenures for contractors in Brazil as well.
- Compound treatment: appointment + monitoring ⟶ rationale?

#2: Bureaucratic selection and registry production

In Colombia, first difference models measure changes in data submitted between 2021 and 2022:

$$Y^{(c)}_{mz,2022} - Y^{(c)}_{mz,2021} = \beta_1 \text{Short tenure}_m + \beta_2 \text{Contractor}_m + \boldsymbol{\kappa}\mathbf{X}_m + \boldsymbol{\gamma}\mathbf{X}_m + \varepsilon_{mz}$$

for both enrollment changes (effort) and poverty classifications (c).

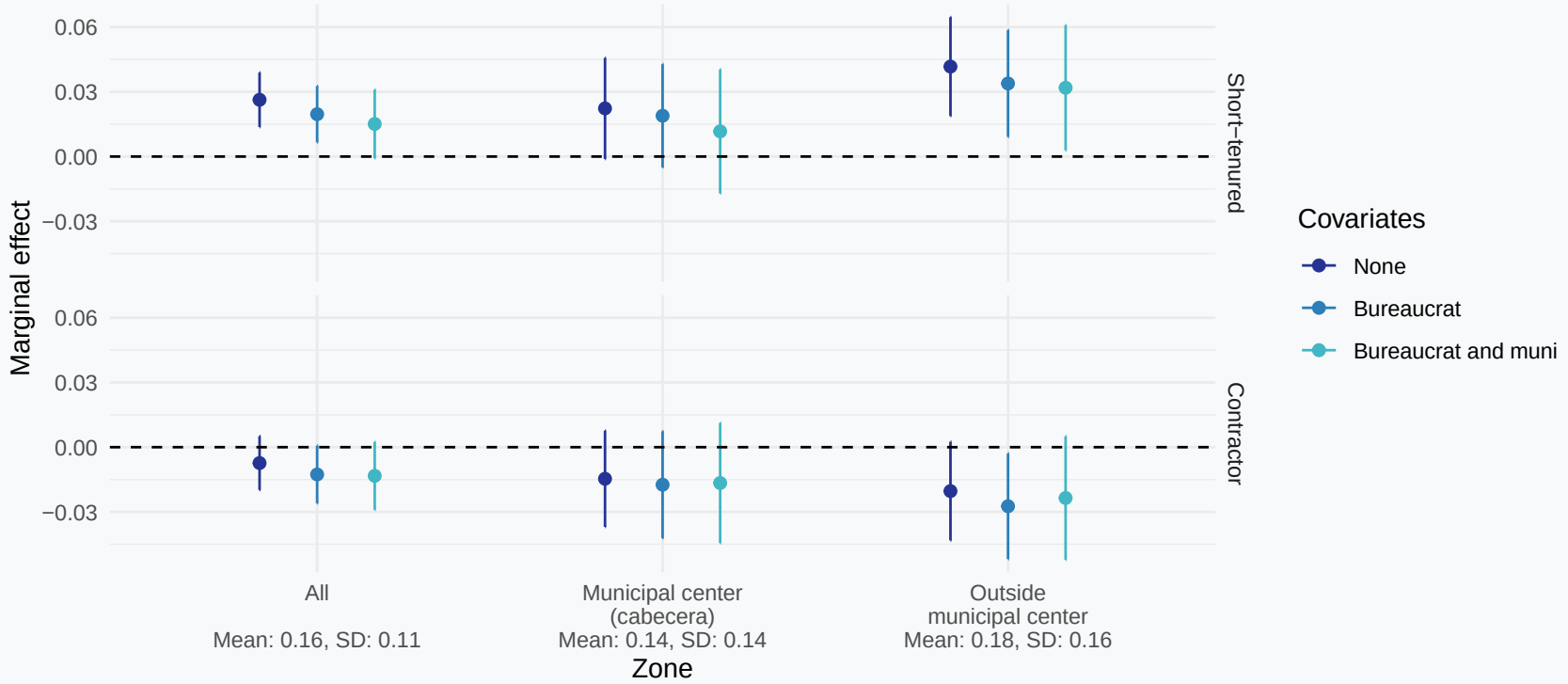
In Brazil, comparisons across bureaucrats under a common principal.

$$Y_{imt} = \beta_1 \text{Short tenure}_i + \beta_2 \text{Contractor}_i + \boldsymbol{\psi}_m + \boldsymbol{\kappa}_t + \boldsymbol{\gamma}\mathbf{X}_i + \varepsilon_{imt}$$

Colombia: Changes in enrollment

Short-tenured bureaucrats $\longrightarrow \uparrow$ # of registered households.

No distinguishable increase, decrease for contractors (vs. civil servants).



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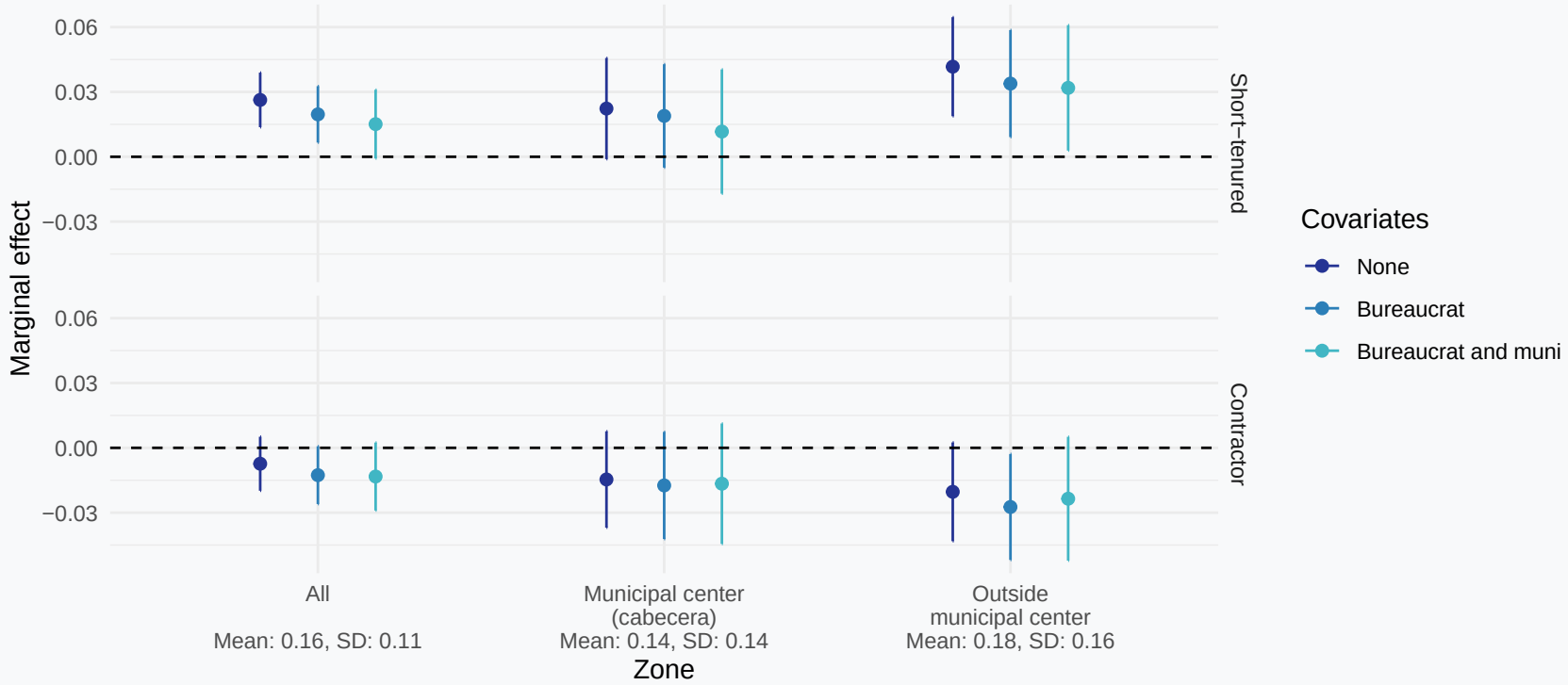


$\Rightarrow$ Not mechanically due to differences in baseline registration.

Colombia: Changes in classification

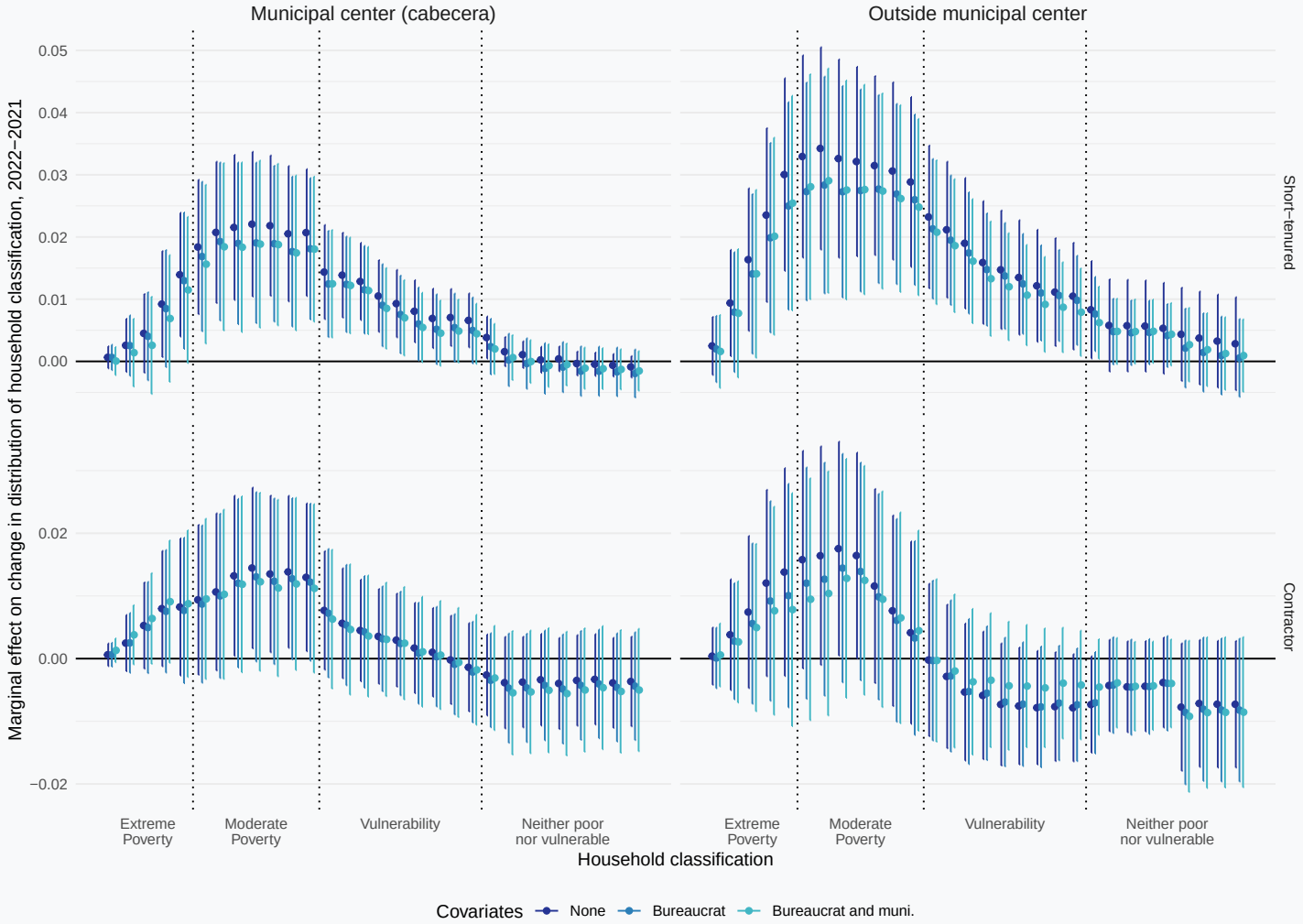


Figure: Changes in CMF of household classification across 30 ranked categories.

Sample CMF | Average changes by category

Colombia: Interpretation

Shifts toward greater poverty are driven by some combination of:

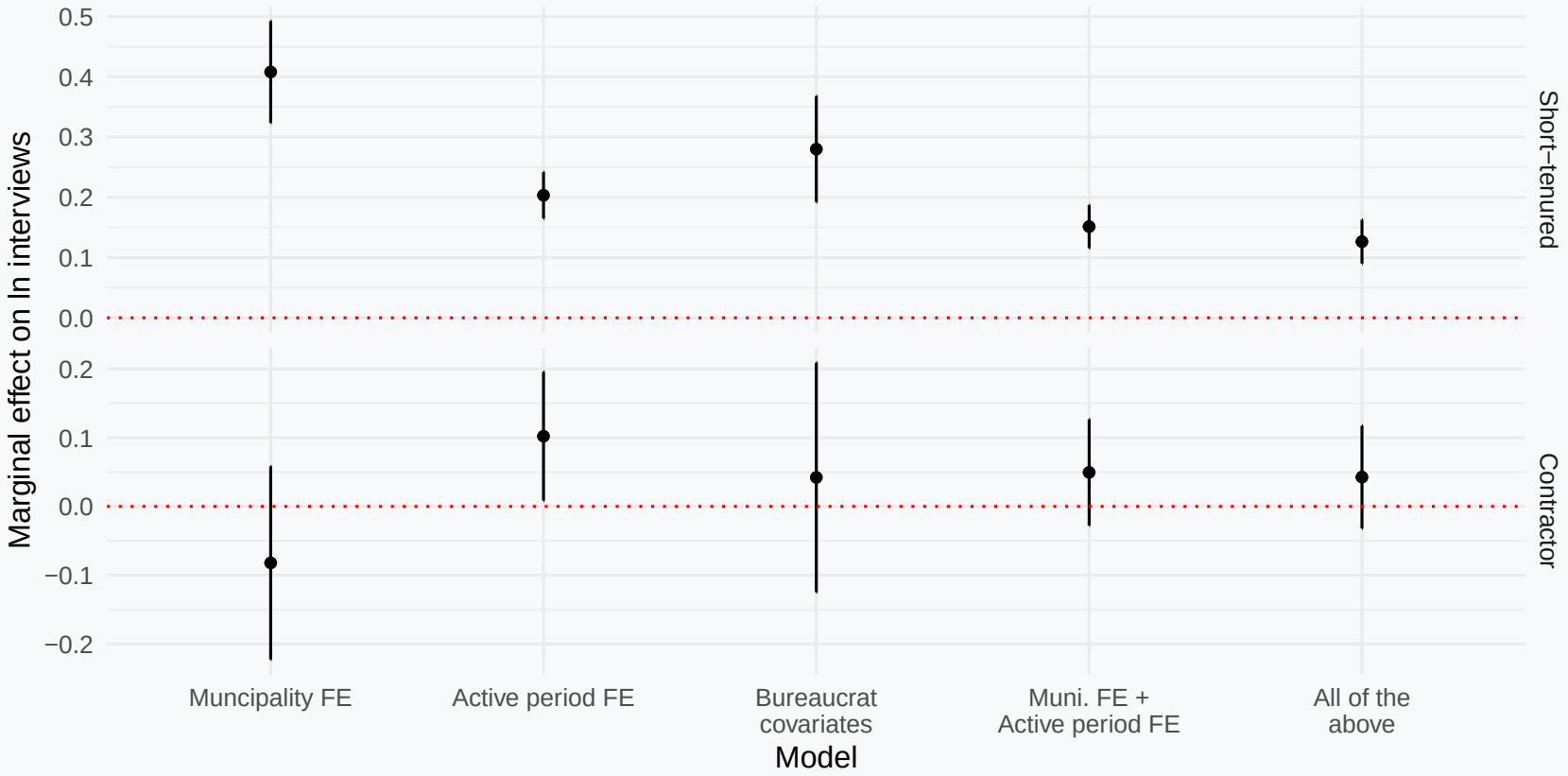
- Reclassification of surveyed households toward poorer classifications:
  - Non-poor categories more likely to *shrink* with short-tenured or contractor bureaucrat
  - … despite 15% growth in SISBÉN registrations
- New households are more likely to be poor.
  - Growth greater (17% vs. 14%) outside the municipal center $\longrightarrow$ poorer.

Note: From 2021-2022, Colombia's economy grew by 11%. No detectable change in inequality.

Brazil: Between-bureaucrat differences in enrollment

Short-tenured bureaucrats interview ≈ 13% more households (≈ 42 interviews).

No detectable difference between contractors and civil servants.

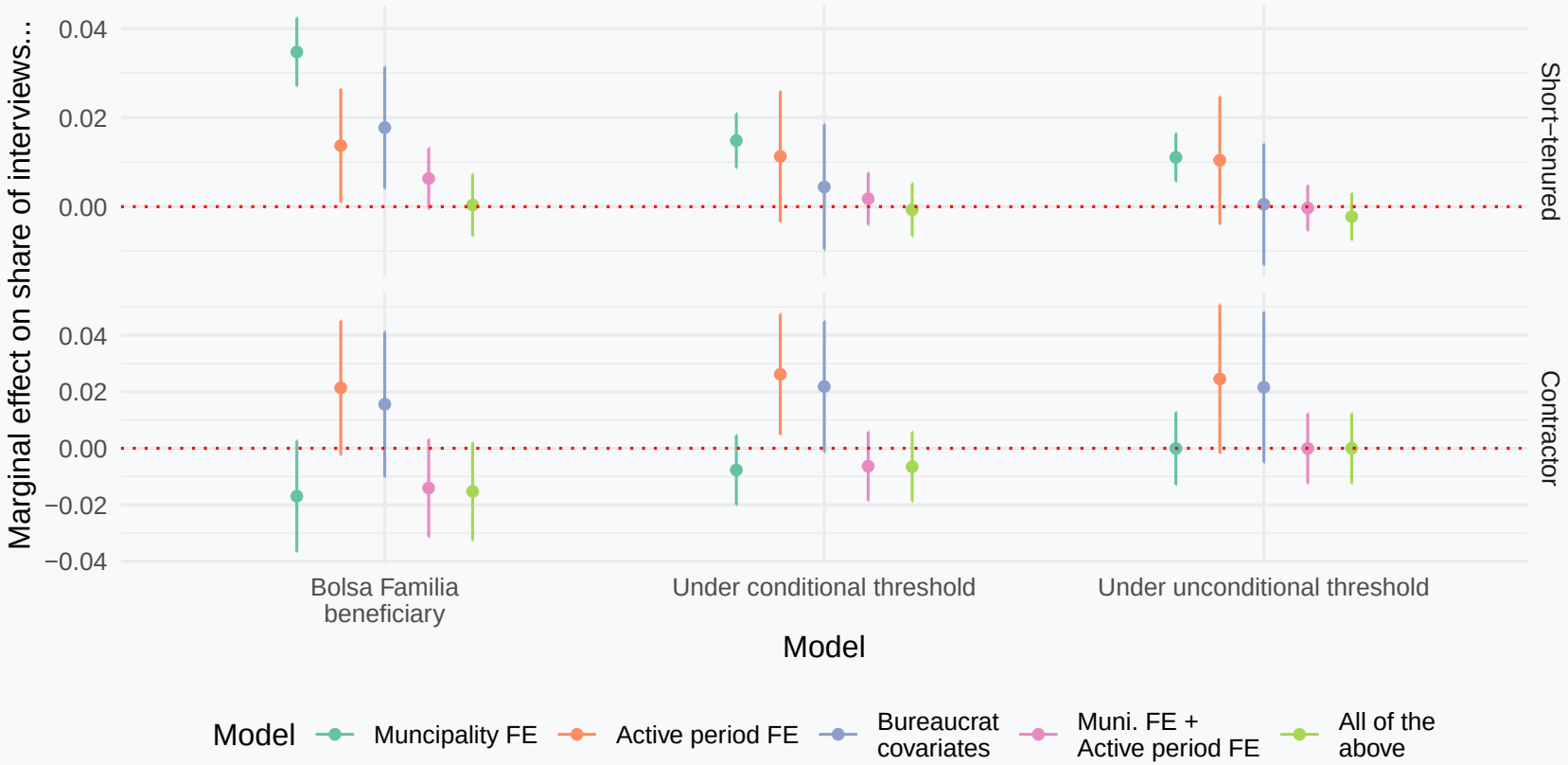


Brazil: Between-bureaucrat differences in data, eligibiility

Short-tenured bureaucrats ↑ poverty, BF eligibility in simplest specification

- ...but, differences disappear in finer-grained comparisons

Combined with effort result ⟶ short-tenured bureaucrats produced ≈440k additional BF eligible households.



Interpretation

We observe "footprints" of bureaucratic selection/incentives in CadUnico and SISBÉN data:

1. Bureaucrats appointed by current mayor exert more effort $\longrightarrow \uparrow$ registry enrollment.
2. In Colombia, short-tenured bureaucrats also shift aggregate distribution of poverty index $\longrightarrow \uparrow$ poverty.

No detectable heterogeneity in political attributes of mayors:

- Mayoral ideology (to the extent it exists) in Colombia
- Reelection of mayors in Brazil

Are mayors over-retaining long-tenured bureaucrats? Are there trade-offs?

#3: Within-bureaucrat changes in data production

How does bureaucratic data production change through a bureaucrat's tenure?

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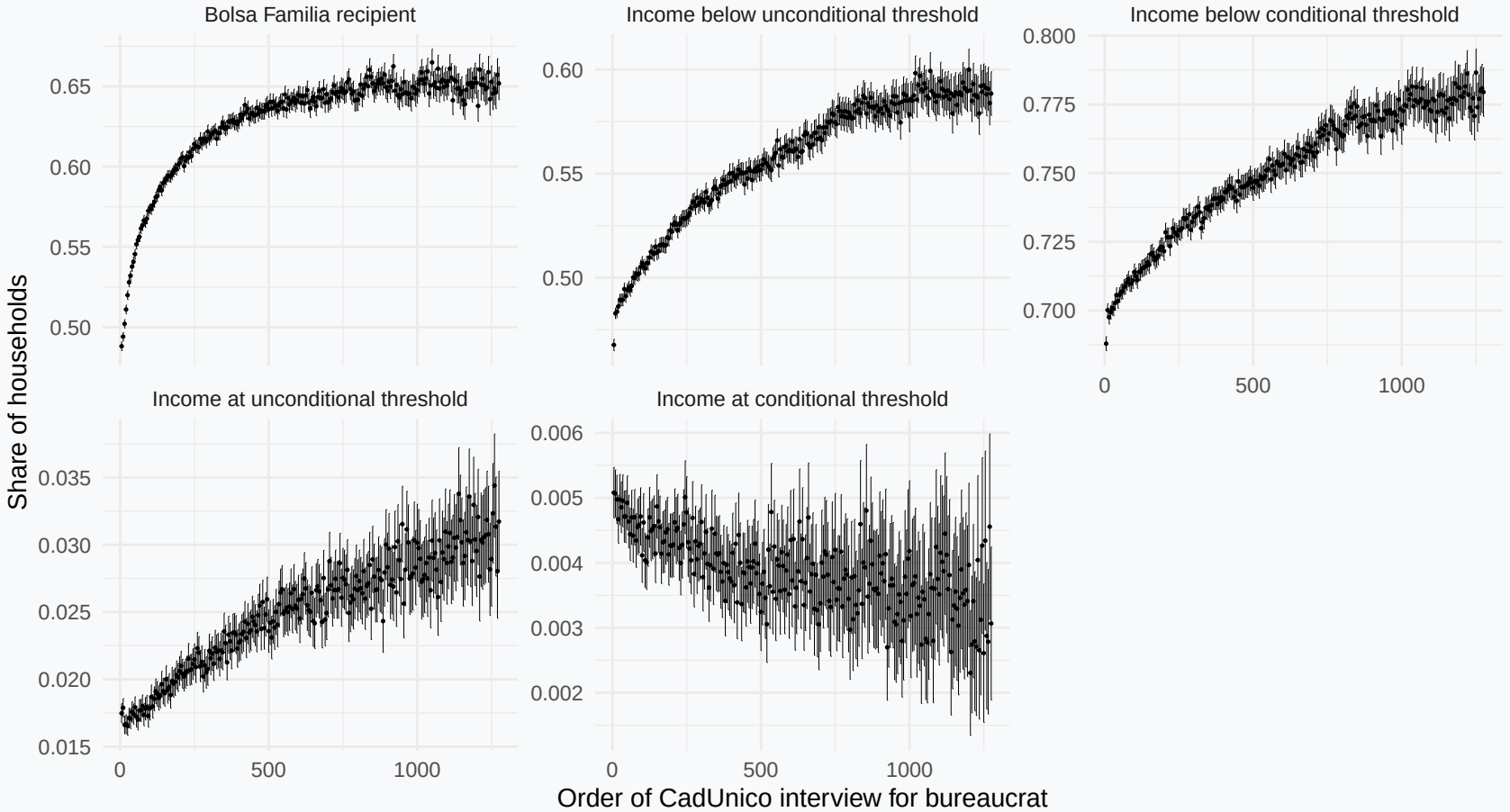
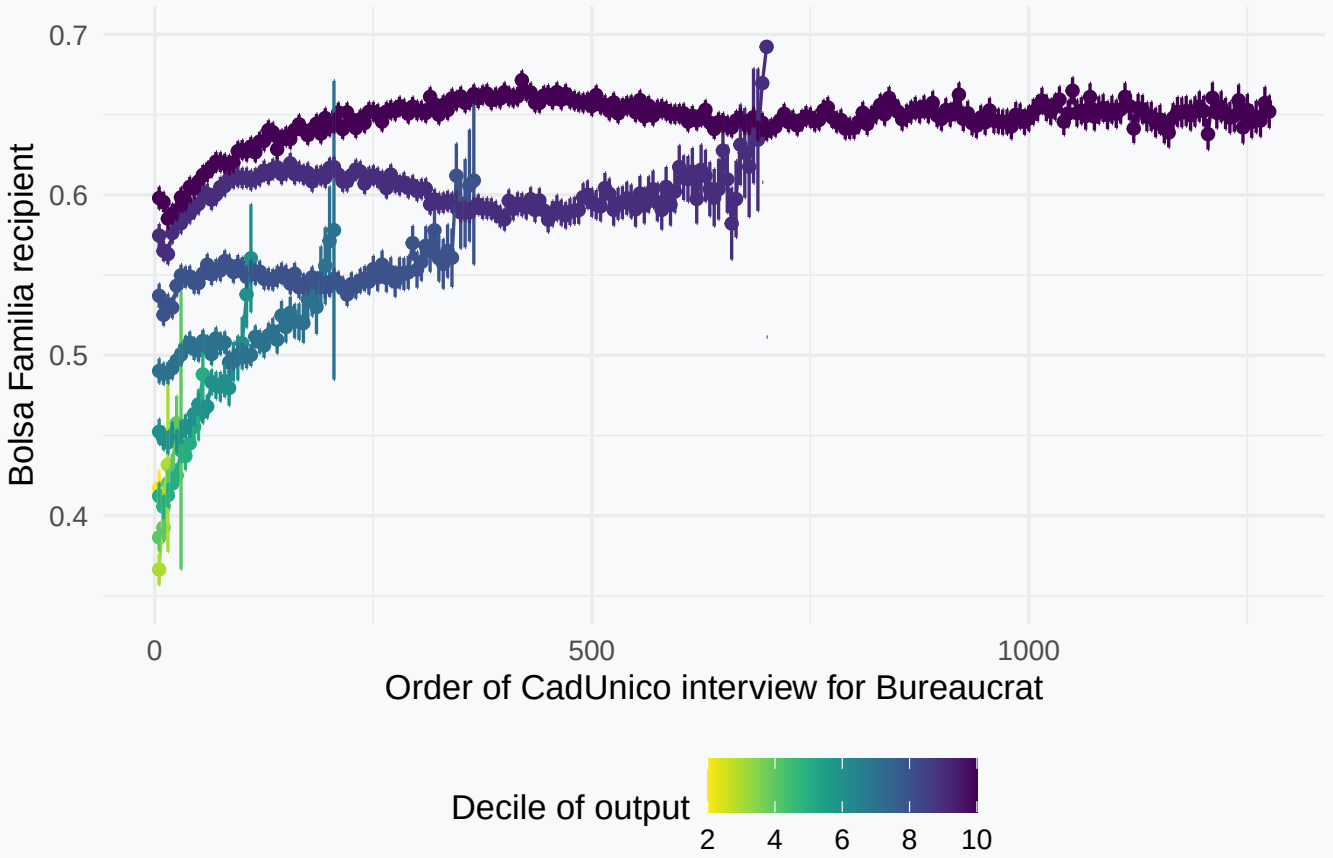


Figure: Points and intervals represent bins of five interviews.

Selection (retention) vs. learning

Aggregate patterns reflect both:

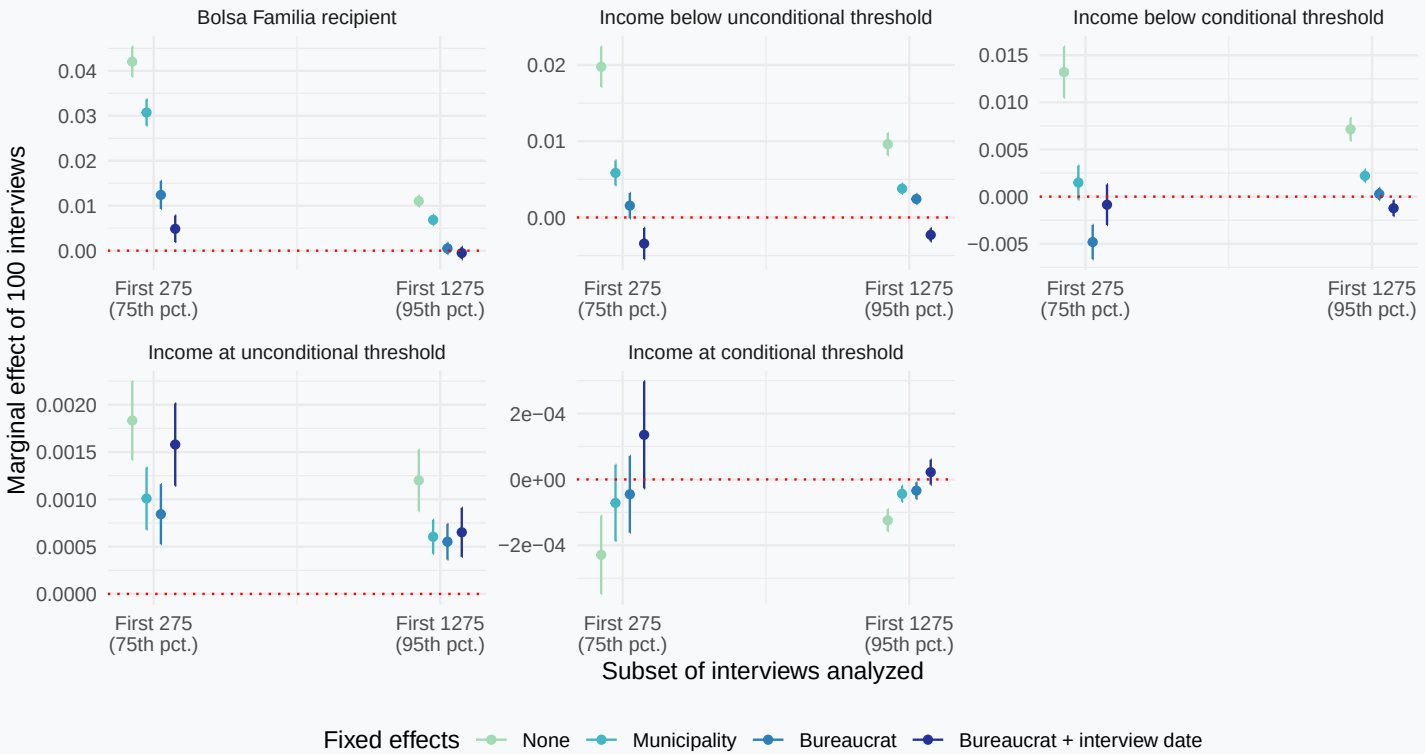
- Differential retention: Bureaucrats that ↑ BF hhs are retained longer
- Learning: (Initial) experience ↑ Pr(BF recipient)



Within-bureaucrat changes in reporting

Learning effects are generally small, move bureaucrat toward:

- Reporting lower incomes/greater eligibility
- Increasing Bolsa Familia qualification



Scope for more learning in Colombia? Formula is not known.

Discussion

Implications

Social registries crucial for means-testing programmatic social programs, administratively challenging to maintain.

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Accountability and attribution of programmatic social policy to local mayors.

Thank you!

Comments welcome!
tara.slough@nyu.edu

Increased bureaucratic hiring subsequent to mayoral turnover

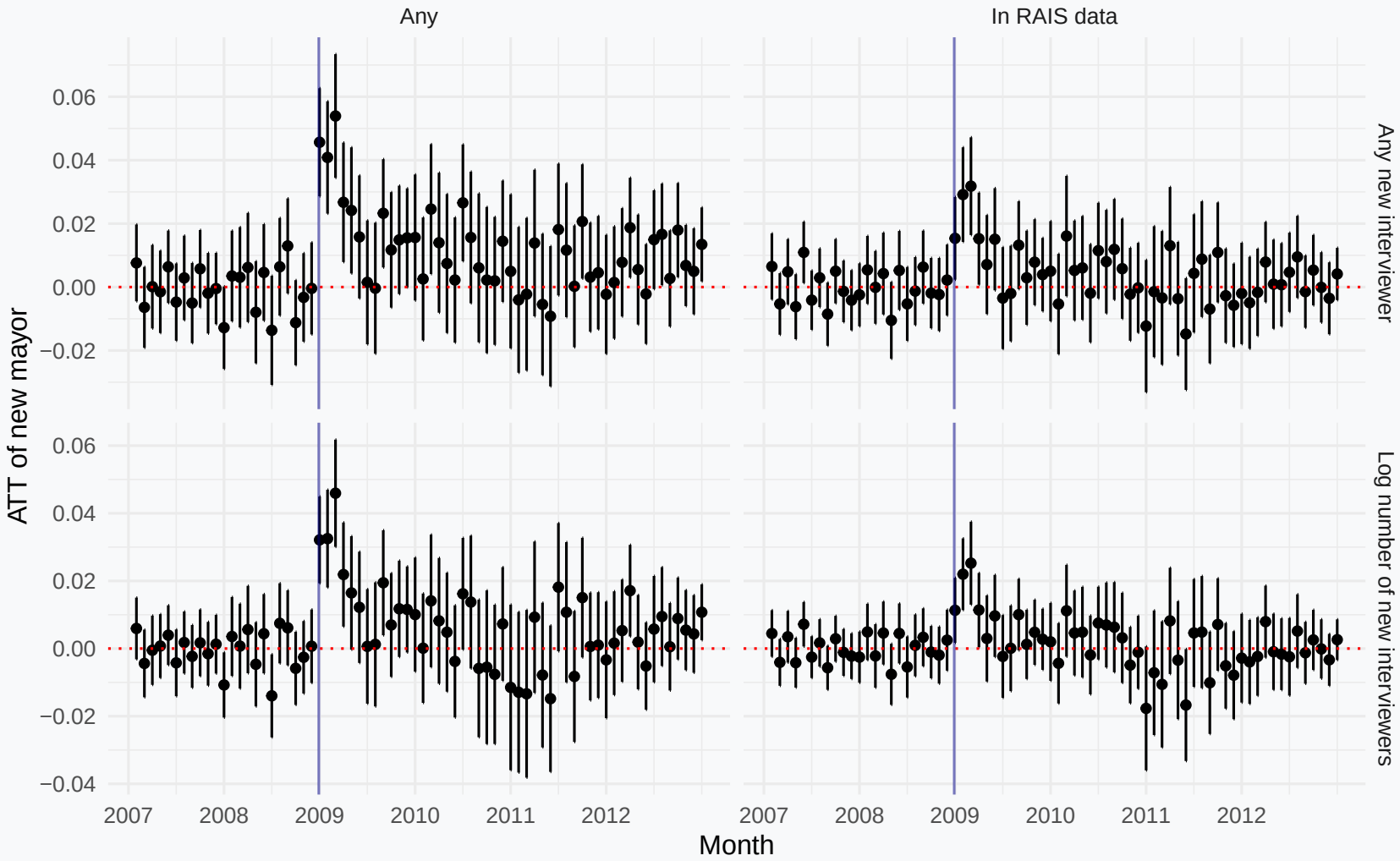
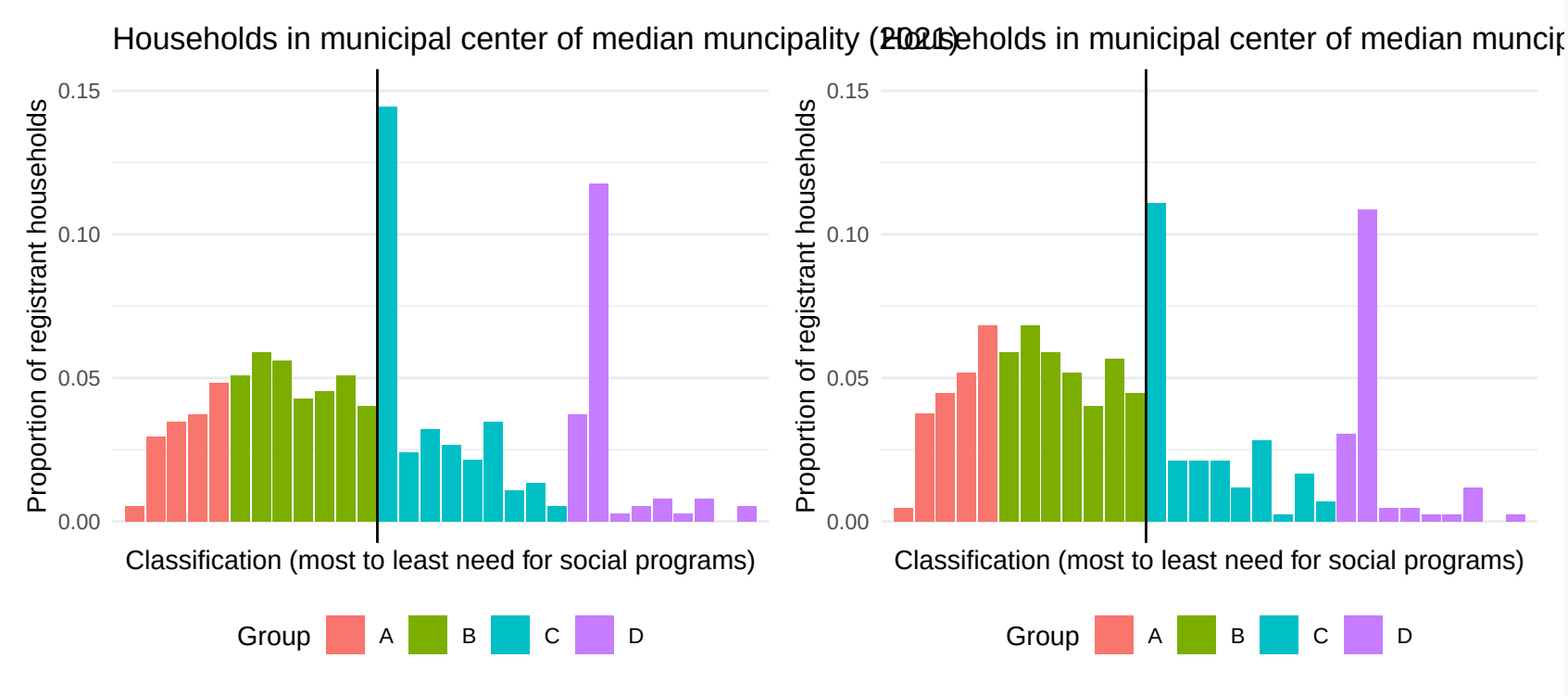


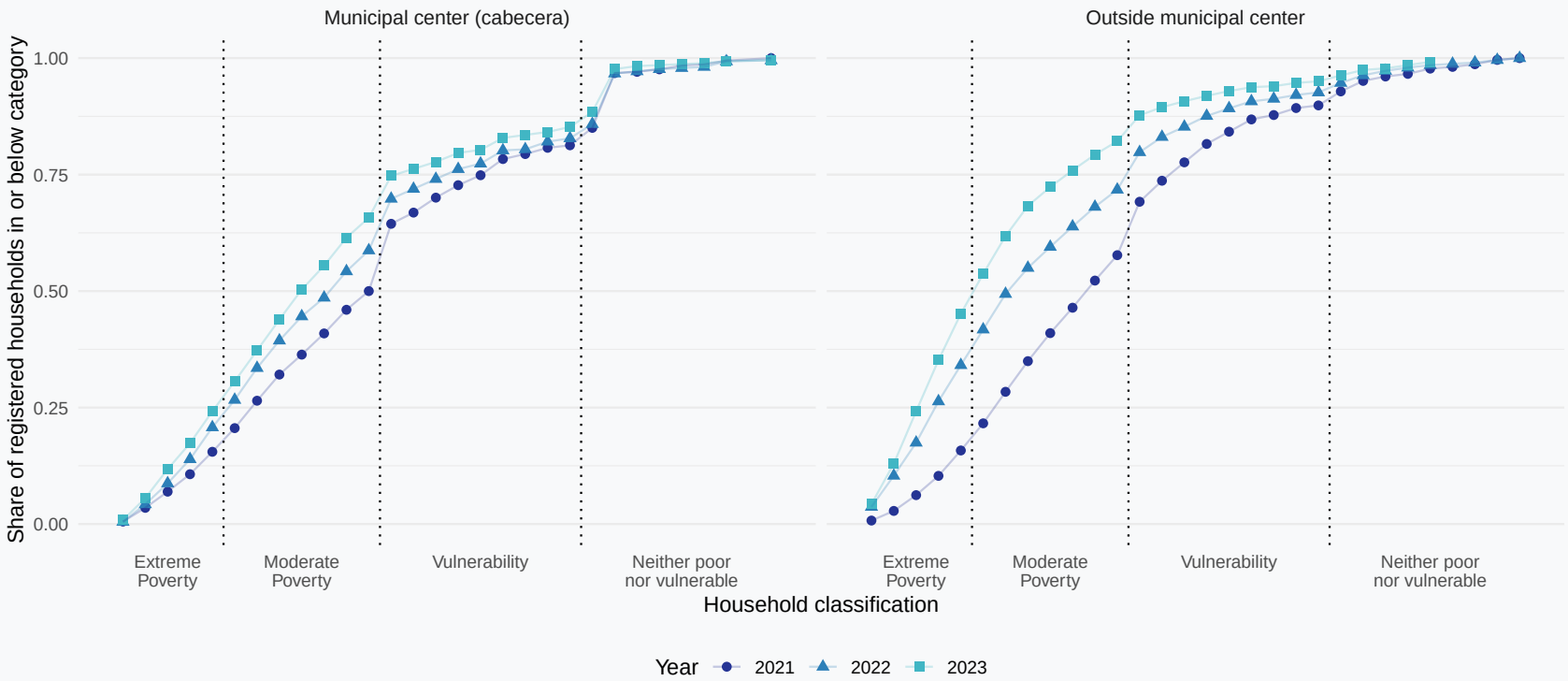
Figure: Dynamic ATT estimates use Callaway Sant'Anna (2021) estimator.

Sample municipal SISBÉN-IV classification



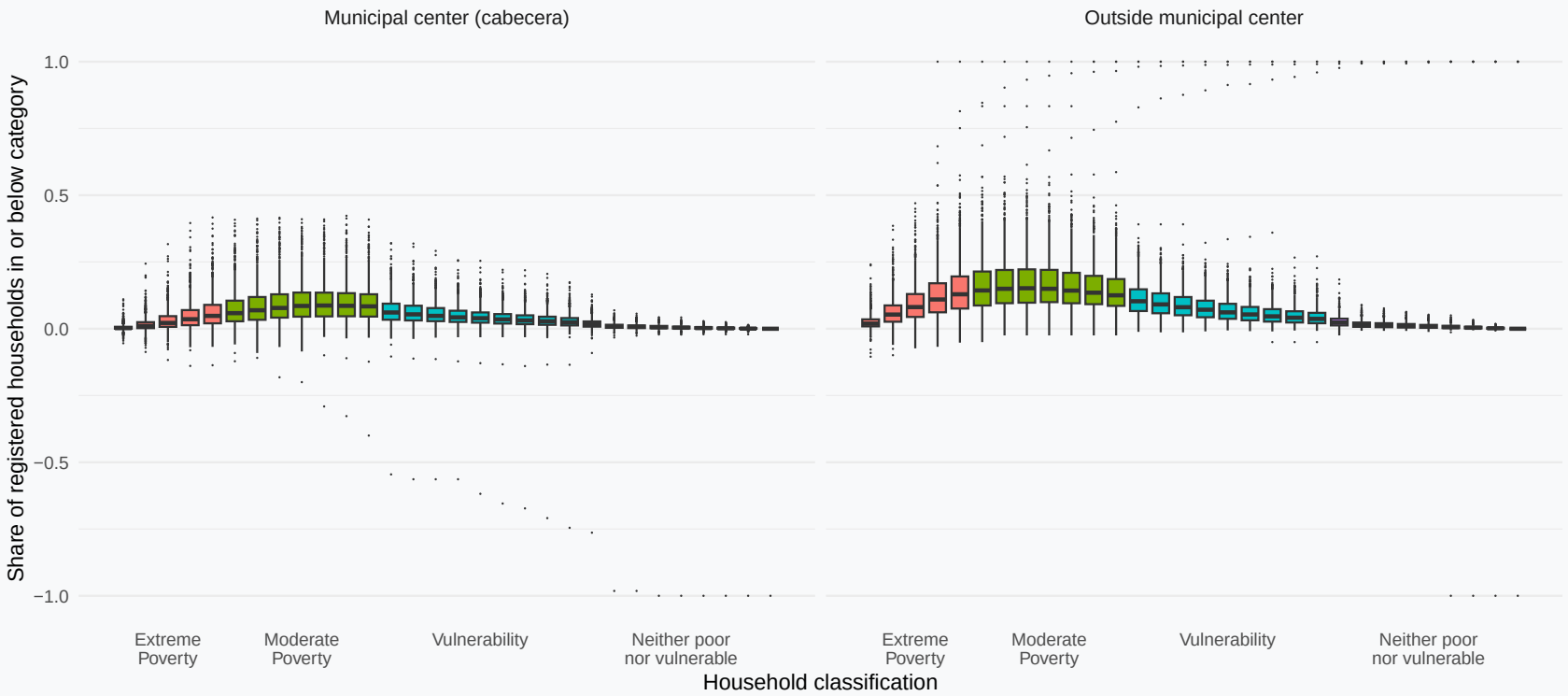
Research design

Cumulative mass functions in one municipality



SISBÉN results

Average change in classification, 2021-2022



SISBÉN results

SISBÉN: Interpretation

These shifts are *not* driven by:

- Differences in baseline (2021) enrollment per capita
- Differences in rate of new enrollments between 2021 and 2022

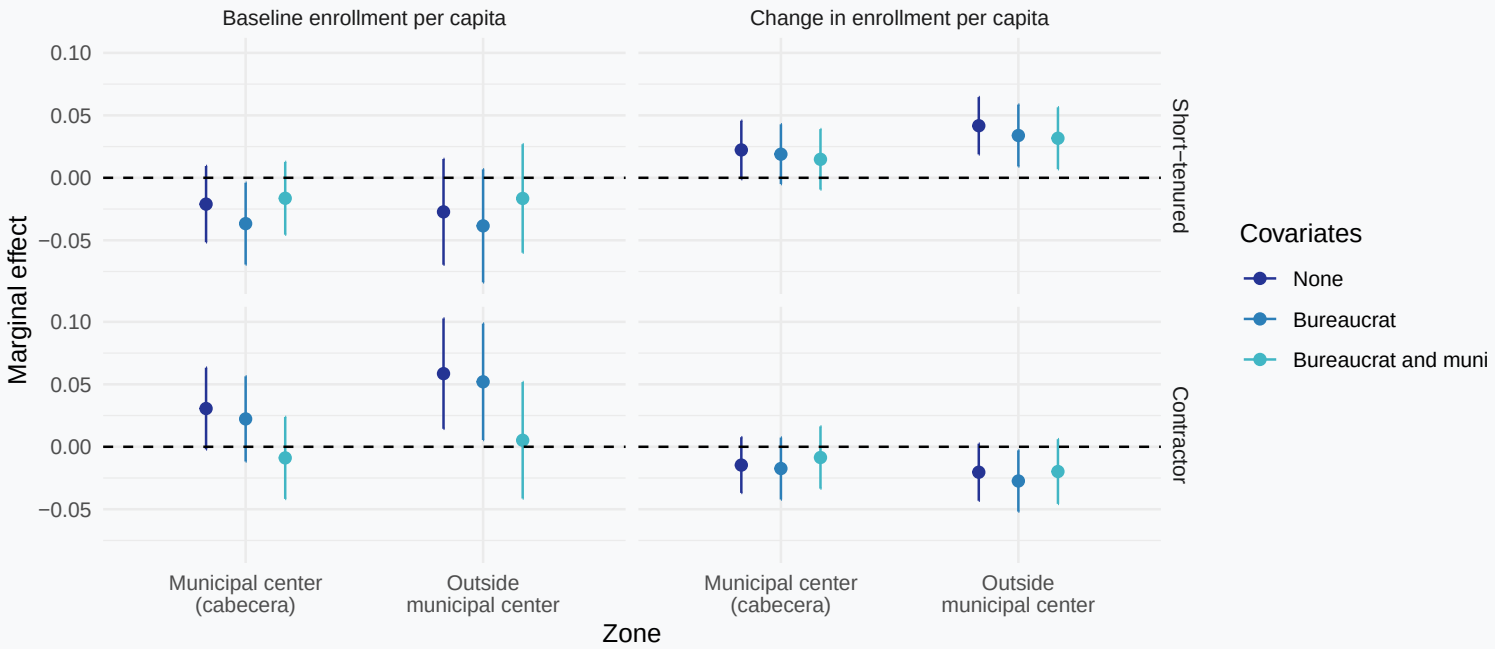


Figure: Marginal effects of bureaucratic employment on baseline enrollment (left) and changes in enrollment per capita (right).