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Easy Like Sunday Morning

Organizational Design and Physician Agency in Birth Timing

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Motivation: Argentina's Cesarean Epidemic

- WHO recommends 10–15% — Argentina far exceeds this threshold
- CS rates have risen **steadily since 2010** across both sectors
- The gap between sectors is **persistent and growing**

~74%
CS rate, private
(PBA, 2021)

~48%
CS rate, public
(PBA, 2022)

~30pp
Gap — persistent
and growing

Sources: Private — IOMA-affiliated facilities, Librandi et al. (2023) and Ariovich et al. (2025). Public — SIP-G, Ministerio de Salud, 2022. *Cohort data (2010–2011) reflect lower baseline rates consistent with the upward trend.*

Why Standard Explanations Fall Short

✖ **Price-based demand?**
No fee differential between cesarean and vaginal delivery in *either* sector

✖ **Patient preferences?**
Globally only a minority of women prefer cesarean. Stated preference for cesarean is 8.1% (public) vs. 6.5% (private) — nearly identical across sectors in our data.

? **Different physician pools?**
Both sectors draw from the same Buenos Aires metropolitan obstetric labor market. Many physicians hold dual practices yet behave differently in each setting.

✓ **Our answer:**
Organizational design — specifically, **who is the residual claimant of the physician's schedule**

The Lever: Organizational Design

PUBLIC hospitals

- Team-based shift work
- Patient sees different physicians across visits
- On-duty team attends delivery
- Fixed salary — tied to hours worked

→ **Physician does NOT capture value of time saved**

PRIVATE hospitals

- Individualized continuity of care
- Designated physician follows patient through pregnancy
- Same clinician attends delivery
- Per-delivery fee (no price differential by mode)

→ **Physician IS residual claimant of her schedule**

- Financial incentives are **shut down** as a driver
- Private physicians **internalize the time-saving benefit** of cesarean delivery.
- 45 min. vs. 10 hours (unpredictable). The incentive **is not money — it's time.**

Model: Physician Utility Under Convenience Incentives

Three primitives

1. CS is faster & more predictable ($L_N > L_C$)
2. Professionalism cost ϕ for non-indicated CS, $\phi \sim F(\cdot)$ on $[0, \bar{\phi}]$
3. $\rho_{\text{priv}} > \rho_{\text{pub}}$: private physicians internalize the time saved

$$U^s = \underbrace{-\rho^s \omega_t L_a}_{\text{time cost}} - \mathbf{1}\{a = C\} \underbrace{(\phi + \mathbf{1}\{\tau = N\}\gamma)}_{\text{friction}}$$

CS optimal iff $\rho^s(L_N - L_C) > \phi + \mathbf{1}\{\tau = N\}\gamma$

$\omega_t = \alpha > 1$ on weekends/holidays: physicians prefer not to work those days

Scope: Covers **discretionary** cases only: both modes clinically feasible.

When the anticipated onset falls on an inconvenient day, the physician can shift delivery to an adjacent boundary working day (convenient day).

From the Model: Lemma and Three Predictions

Lemma 1. *Among those who intervene, discretionary CS with anticipated weekend onset are always scheduled on boundary working days.*

P1 **Preference margin:** CS preference raises elective CS probability, more strongly in private where the physician can capture time benefit

P2 **Timing margin:** elective CS concentrate on Mon/Fri, especially in private hospitals (Lemma 1)

P3 **Intrapartum gradient:** intrapartum CS higher on working days in private, discretionary cases were already shifted out (this is a selection effect, not a new decision margin)

Sorting Amplifies the Gap (Proposition 1)

Physicians choose their sector. Those with lower professionalism cost ϕ — more willing to perform non-indicated CS — find private practice more rewarding and sort into it.

Proposition 1. Sorting is **positively assortative**: lower-ϕ physicians sort into the higher-ρ (private) sector.

Within-physician channel

Higher ρ_{priv} raises the optimal cesarean rate for any given physician

Composition channel

Physicians in private have systematically lower ϕ by selection

Both channels endogenous to organizational form $\Rightarrow$ reduced-form estimate captures the total policy-relevant effect.

Data: Prospective Cohort Study, Buenos Aires Metro

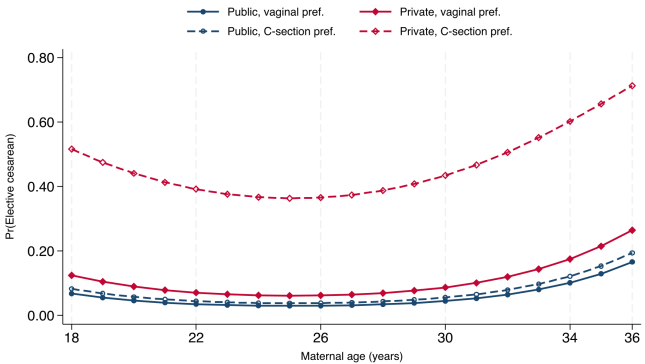
- IECS prospective cohort (Mazzoni et al. 2016), Sep 2010–Dec 2011 — **379 nulliparous low-risk women** at 5 hospitals: 2 public, 3 private
- **Ex ante** preferences elicited in 3rd trimester — rules out justification bias
- Medical records distinguish **elective** (pre-labor) from **intrapartum** CS

Delivery modes by sector

	Public	Private
N births	197	182
CS rate	34.5%	44.0%
Elective CS	4.6%	**14.8%**
Intrapartum CS	30.3%	34.2%
Prefers CS	8.1%	6.5%

Gap concentrated in **elective CS** (3:1 ratio) — not intrapartum. Same preferences across sectors $\Rightarrow$ the gap is institutional, not demand-driven.

P1: Preference Margin — Predicted Probability of Elective CS



Private:
CS pref. $\rightarrow$ 52% prob.
Vaginal pref. $\rightarrow$ 11%

Public:
4% vs. 7%
statistically indistinguishable

Oster (2019): $\delta \approx 1.53$ — unobservables must outweigh all observed covariates.

Fig. 6b. Probit with hospital FE.

The interaction *Private* $\times$ *PrefersCS* is positive and significant with hospital fixed effects.

P2: Timing Margin — Elective CS Concentrate on Mon/Fri in Private

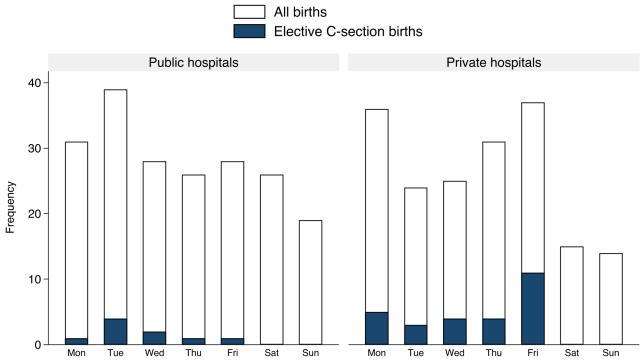


Fig. 7. $N = 36$ elective CS (9 public, 27 private).

Private:
55.6% of elective CS on Mon or Fri

Public:
22.2%

Boundary $\times$ Private:
coeff. $= 0.87$ ($p = 0.053$)

Consistent with Lemma 1: Shift-C dominates CS on the weekend.

The interaction *Private* $\times$ *Boundary* is positive and significant with hospital fixed effects.

P3: Intrapartum Calendar Gradient (Selection Effect)

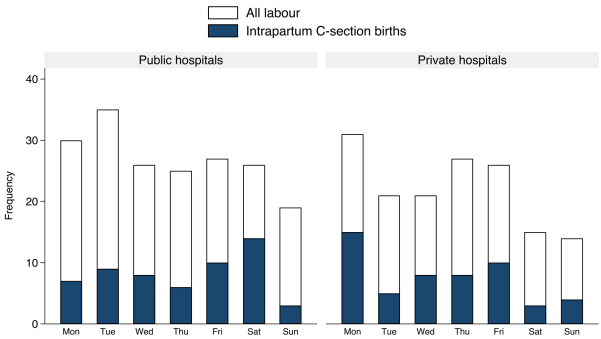


Fig. 8. Intrapartum CS by day of week and sector.

PRIVATE

Working days	**38%**
Non-working	21%
Δ	**+17pp***

PUBLIC

Working days	28%
Non-working	34%
Δ	−6pp (n.s.)

Robust to excluding induced labors: coeff. rises to 0.77 ($p = 0.050$); defs. (2)&(3) both $p < 0.05$.

Robustness

- ✓ **Selection on unobservables (P1)**
  The unobserved differences would need to matter 1.5 times more than everything we observe to overturn the result.

- ✓ **Induction scheduling not driving P3**
  Maybe private physicians induce more labors on working days, and those convert to cesarean. We drop all induced labors and the coefficient (*Private* $\times$ *conv*) rises. It's not inductions.

- ✓ **Definition of "convenient day"**
  Intrapartum gradient stable across three alternative definitions of convenient day.

- ✓ **Placebo: vaginal deliveries**
  No day-of-week pattern in vaginal births across sectors. The effect operates through scheduling decisions, not biological onset.

Contributions and Policy Implications

01 Physician agency literature
Organizational design isolated as a lever distinct from prices, holding prices fixed and varying organizational form.

02 Economics of cesarean delivery
We test the preference and timing margins jointly, both derived from the same model, both confirmed in the data.

03 Mixed health system design
Price interventions can miss the dominant distortion. When the price channel is already inactive, the lever is schedule structure, not fees.

Policy levers: shared-call arrangements · group practices · hospitalist-style coverage · audit/feedback on elective CS rates

Conclusion

1. **Organizational design, not procedure prices, is the primary lever behind discretionary cesarean use in Buenos Aires.**

2. All three predictions confirmed: preferences accommodated in private (P1), deliveries shifted to Mon/Fri (P2), intrapartum gradient consistent with selection (P3).

3. Small sample, but a rare combination: ex-ante preferences *and* the elective/intrapartum distinction, untested jointly before.

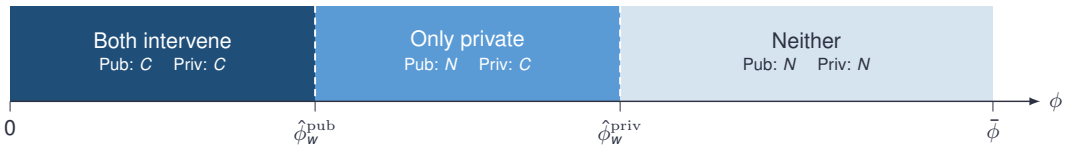
4. Price interventions can miss the dominant distortion. Reforms targeting *schedule structure* are the candidate levers.

Thank you · ferraroj@udesa.edu.ar

Backup Slides

Model: Policy Regions by Professionalism Cost ϕ

Panel A. Working-day onset, $t(d) \in \{0, 1\}$



Panel B. Weekend/holiday onset, $t(d) = 2$

Cutoffs shift right from A to B: higher opportunity cost on weekends amplifies incentive to intervene. Gap widens in private $\Rightarrow$ source of the timing margin (P2 & P3).

Sorting: The Rent Differential $\Delta V(\phi)$

The net rent advantage of private practice over public, $\Delta V(\phi) \equiv V^{\text{priv}}(\phi) - V^{\text{pub}}(\phi)$, is **weakly decreasing** in ϕ.

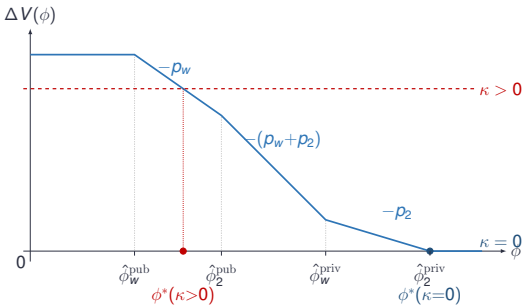
$$\Delta V(\phi) = (1-\xi)\left[p_w R_w^{\text{priv}}(\phi) + p_2 R_2^{\text{priv}}(\phi)\right] - (1-\xi)\left[p_w R_w^{\text{pub}}(\phi) + p_2 R_2^{\text{pub}}(\phi)\right]$$

- For ϕ below all cutoffs: ΔV is constant (both sectors always intervene, rent gap fixed)
- For intermediate ϕ: ΔV declines piecewise linearly as private incentives switch off
- For ϕ above all cutoffs: $\Delta V = 0$ (neither sector intervenes, sectors indifferent)
- Physician chooses private iff $\Delta V(\phi) \geq \kappa$ (κ = non-pecuniary advantage of public)

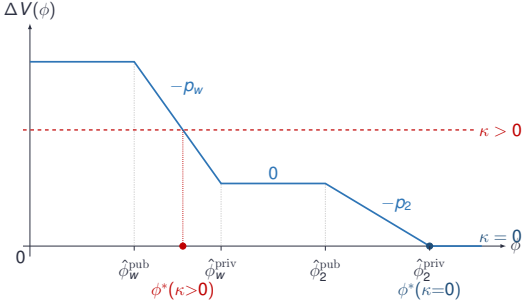
See Figure 3 of the paper for calibrated plots under parameter variation. $\Delta V(\phi)$ remains weakly decreasing across all parameterizations (Proposition 1).

Sorting: $\Delta V(\phi)$ and the Sector Cutoff ϕ^*

Panel A. Sector gap dominates



Panel B. Calendar effect dominates



Physician chooses private when $\phi < \phi^*$, where $\Delta V(\phi^*) = \kappa$. In both panels $\Delta V(\phi)$ is weakly decreasing — single crossing guaranteed (Proposition 1).

Data: Maternal Characteristics by Sector

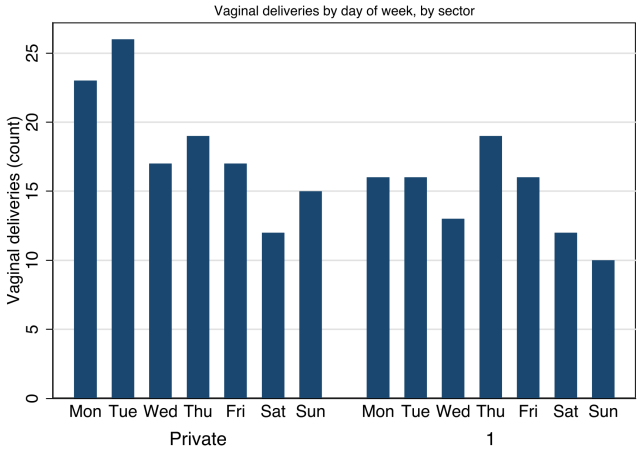
Table A3 — Selected characteristics

	Public	Private
Age (mean)	22.8	29.9
Tertiary/university	10.7%	81.9%
Employed	15.7%	83.1%
Married/cohabiting	69.9%	93.4%
Insured	0%	96.7%
Prefers CS	8.1%	6.5%

Strong compositional differences absorbed by hospital fixed effects. **Preferences nearly identical across sectors** (8.1% vs 6.5%): demand-side explanations cannot account for the gap.

Selection concern addressed via Oster (2019) bounds (Backup 7). Hospital FE absorb catchment-area vulnerability differences (Table A11).

Placebo: Vaginal Deliveries Show No Day-of-Week Pattern



Pearson $\chi^2(6) = 2.07$
$p = 0.91$

No sectoral difference in the day-of-week distribution of vaginal births.

Vaginal births are not subject to scheduling. The absence of a calendar pattern confirms the effect operates through physician **scheduling decisions**, not through differential biological onset across sectors.

Fig. A1. Vaginal deliveries by day of week and sector.

P1: Elective Cesarean Probit Estimates (Table 3)

Dependent variable: elective (scheduled) cesarean

Variable	(1) No FE	(2) Hospital FE
Private hospital	0.339 (0.289)	
Age (centered at 18)	−0.109 (0.077)	−0.109 (0.083)
Age^2	0.008* (0.004)	0.007* (0.004)
Prefers CS	0.106 (0.532)	0.041 (0.578)
PrH × Prefers CS	1.087 (0.670)	**1.388* (0.741)**
N	367	338

Robust SE in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Col (1) shows the raw public-private gap. Col (2) adds hospital FE: the sector main effect is absorbed, but the interaction survives, confirming the preference channel operates within hospitals.

Interaction positive and significant with hospital FE.
Main effect of preference insignificant in public — consistent with P1.

P3: Intrapartum Cesarean Probit Estimates (Table 5)

Dependent variable: intrapartum cesarean, convenience definition (1)

Variable	(1) No FE	(2) Hospital FE
Private hospital (PrH)	−0.534 (0.326)	
Conv. day	−0.203 (0.209)	−0.251 (0.214)
PrH × Conv. day	**0.595* (0.347)**	**0.664* (0.357)**
Prefers CS	0.305 (0.344)	0.327 (0.354)
PrH × Prefers CS	−0.131 (0.682)	−0.156 (0.695)
N	334	331

Robust SE in parentheses. * $p < 0.1$. Under defs. (2) and (3): PrH × Conv. day = 0.690** and 0.696**.

Col (1) shows the raw public-private gap. Col (2) adds hospital FE: interaction remains significant.

Interaction positive and significant across all convenience definitions. Preference effects near zero conditional on labor: elective margin is the main channel.

Robustness: Oster (2019) Sensitivity Analysis (Table C1)

Coefficient of interest: PrefCS $\times$ Private, LPM with hospital FE

	(A) Baseline	(B) + Educ	(C) + Educ $\times$ Pref
$\hat{\beta}$ uncontrolled	0.470	0.470	0.470
$\hat{\beta}$ controlled	0.400	0.400	**0.486**
β^* (bias-adjusted)	0.289	0.291	0.495
Breakdown δ	1.532	1.533	∞
N	364	363	363

$\delta = 1$, $R_{\max} = 1.3\tilde{R}^2$. In (C), adding Educ $\times$ Pref increases the coefficient: observable selection works against the estimate, so the true effect is if anything larger.

Unobservables would have to be **1.5$\times$ more important** than all observed covariates to overturn P1. Even controlling for education and assertiveness, the private-sector differential grows stronger.

The Two Channels and Why We Cannot Decompose Them

Our reduced-form estimate captures the **total effect** of organizational design, which operates through two channels both endogenous to organizational form:

Within-physician channel

For a given physician, moving to the higher-ρ private sector raises her optimal cesarean rate. Identified by within-physician variation across sectors.

Composition channel

Physicians in private have systematically lower ϕ by sorting. Identified by distribution of behavior across single-sector physicians.

Why we cannot decompose: our data do not link physicians across sectors. A dataset tracking the same doctor in both sectors would allow decomposition via physician fixed effects — a natural avenue for future work.

If sorting dominates, diluting schedule control alone has attenuated effects without complementary changes in physician recruitment and monitoring.

Sample Characteristics

	Public	Private
Age	22.8	29.9
Education		
Elementary school	17.9%	0.0%
High school	71.4%	18.1%
Tertiary or university	10.7%	81.9%
Married or in couple	69.9%	93.4%
Working	15.7%	83.1%
Insured	0.0%	96.7%
Prefers CS	8.1%	6.5%
Had CS	34.5%	44.0%