Information Provision and Court Performance: Experimental Evidence from Chile

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Motivation: Data-usage constraints in public sector

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- This paper: RCT with court administrators in Chile, aiming at facilitating data usage

Evidence of an unmet need in Chilean courts

- Chilean court managers responsible for organizing and monitoring day-to-day court operations
  - Important leadership and managing role; e.g., setting court schedule

- Baseline survey:
  - 70% agree that tracking court indicators is one of the most important tasks of their job
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  - Available since 2018
  - 71% of managers agree information on Quantum useful to their work

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- Managers have access to detailed court measurements through an online platform named *Quantum*
  - Available since 2018
  - 71% of managers agree information on Quantum useful to their work
  - Very limited take up: From Jul 2018-Aug 2019, average 20 logins per manager; 20% of managers never logged in

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- Subjects: Managers in 49 Family Courts

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- Outcomes of interest:

  - Quantum usage
  - Most importantly, **court performance indicators**

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- Overall research question: Can a light-touch intervention promoting and facilitating data usage improve court efficiency?

Importance of Family Courts

- Cases: Child custody and alimony, gender-based violence, and divorce
  - Disproportionally affect women and children

- Delays often force families to make tough decisions with lasting impact
  - In Chile, prolonged legal proceedings in foster care cases negatively affect crime involvement and school attendance (Cooper et al., 2023)

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- In the period we study (Jan-Jun 2021), Chilean Family Courts were overwhelmed due to COVID-19
  - In 2020, about 2 cases cleared for every 3 filed ⇒ Huge backlog
  - Pressure to deliver justice effectively despite limited resources and staff shortages

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- Case clearance
  - Email promotion has no effect
  - **Simplified** and **social comparison** feedback decrease case duration
  - Simplified feedback **increases case clearance rate by 1 sd**
  - Takeaway: Making information easier to grasp really helps

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- Greater impact on more experienced administrators
    - Less likely to use Quantum in the baseline
    - Thus our intervention helps bridging employee experience gap in data usage and technology take up

Contribution to literature

- Reducing information acquisition frictions in public institutions
    - Social protection program administrators (Dodge et al., 2021); health (Callen et al., 2020; Whidden et al., 2018); education (Dizon-Ross, 2019); tax collection (Pomeranz, 2015)
    - First paper analyzing this type of intervention in judicial sector
    - Judicial bureaucracies traditionally averse to reform (Engel, 2013; Greiner and Matthews, 2016), making our study especially important

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- Innovation adoption
  - Farming (Foster & Rosenzweig, 2010), manufacturing (Atkin et al., 2017), elected officials (Hjort et al., 2021; Wang & Yang, 2021; DellaVigna et al., 2022)
  - So far, less attention to innovation take up by within a bureaucracy
  - Rare opportunity to study intensive margin of adoption

Setting: Court managers

- Position created in early 2000s, given need to separate jurisdictional responsibilities from court administration

- Oversee 40-60 employees each

- Responsibilities: Plan, direct, and monitor work of the courts
  - Have discretion to alter court's agenda and hearing schedule
  - Can redistribute tasks among staff in response to case inflow

- Good job stability (many current managers have held position since its inception)

Setting: Quantum platform

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- Information from all courts available to all users (possible to compare courts form onset)

- Statistics at court-month and court-year level

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    $\implies$ **Possible problem with platform design**

- Potential explanation: Part of target audience may find information in platform overwhelming/unclear
  - Initial homepage provides packed table; not immediately clear how to look for information of specific kind

Quantum: Original homepage

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  or

  We trust you will all continue using Quantum to follow your indicators, evaluate the productivity of your courts and compare it with other courts

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- To all in treatment:
  - Email stressed that most users rate Quantum positively for its easy usage, clear information and trusted indicators
  - Also mentioned that Quantum users have better case-closure rate

Treatments 2 and 3: Redesigned platforms

- Treatment #2: Simplified feedback
    - Dashboard streamlining the information on main homepage
    - Focus on manager's own court
    - Emphasis on statistics in % or rate terms
      Ex: case closure rate, instead of # incoming cases and # closed cases

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- Treatment #3: Social comparison feedback
    - In addition to simplified feedback, popup window
    - Consider comparison group of similar courts
    - Highlights 3 performance indicators
        - Measure in which court performed best relative to group
        - 2 measures in which court performed worst relative to group
    - Idea: showcase courts relative strengths and weaknesses

Quantum: New homepage (simplified feedback)
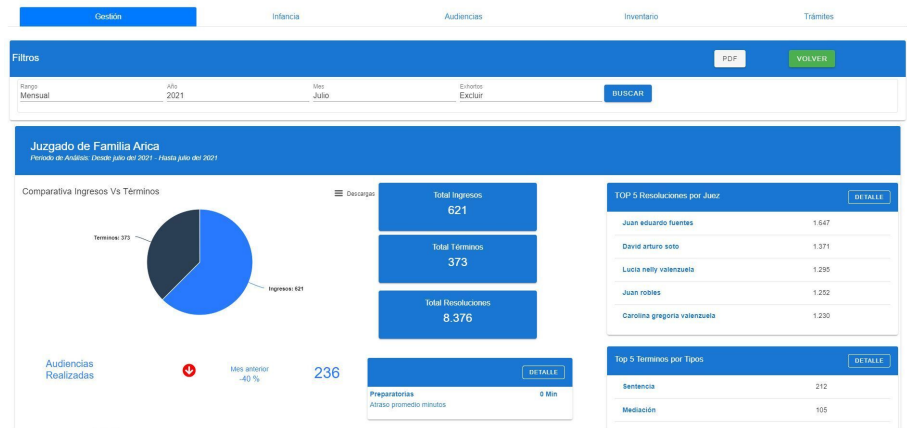
Quantum: Social comparison popup
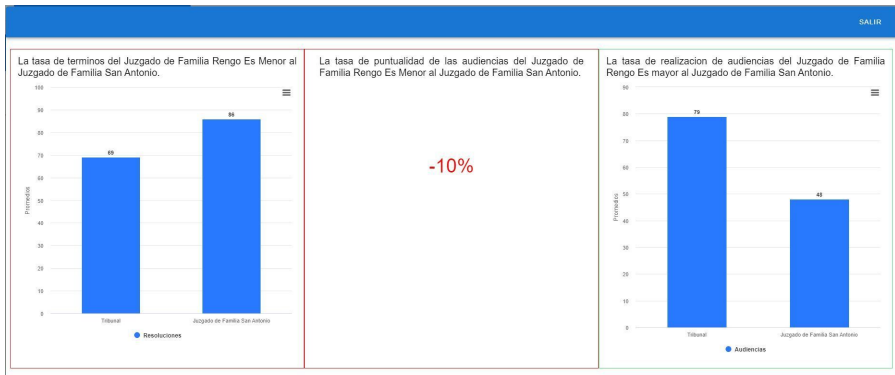
Intervention details

- Launched Jan 26 2021

- Lasted 5 months

- Managers from 49 Family Courts

- Altogether, six treatment groups (including pure control):

	C	T1	T2	T3	T4	T5
Email		✓		✓		✓
Simplified feedback			✓	✓		
Social comparison feedback					✓	✓
Feedback			✓	✓	✓	✓
Email × Feedback				✓		✓

Court-level data

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- Same data fed to Quantum

- Range: Sep 2020 (4 months before intervention) - Jun 2021 (end of intervention)

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  - Rate of timely hearings: % hearings scheduled within 70 days

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  - Rate of realized hearings: # hearings held / # scheduled hearings
  - Timely case resolution rate: % cases in inventory aged $\leq$ 2 years
  - Rate of timely hearings: % hearings scheduled within 70 days

- For all measures, higher values indicate speedier justice

Other data

- **Case-level** data
    - Downloaded from *Judicial Power in Numbers* website
    - Look at case duration; and # days hearings take to be scheduled
    - Can control for case type
    - Can also look at how cases are resolved (e.g., judgement, settlement, dismissal)

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- **Quantum usage** for each manager
  - Starting one month before intervention; and for the duration of intervention

- **Manager characteristics:** Age, sex, and tenure

Balance check: Feedback vs. no feedback (1)

	No Feedback (1)	Feedback (2)	Diff. (1-2) (3)	SE (4)
Manager's Characteristics				
Age	52.06	52.00	0.06	(1.90)
Men	0.69	0.67	0.02	(0.15)
Years in position	12.31	12.30	0.01	(1.61)
January Quantum logger	0.31	0.33	-0.02	(0.15)
# of Quantum logins (January)	0.94	0.85	0.09	(0.41)
Court Indicators (2019)				
2019 incoming cases	8799.19	8938.61	-139.42	(1668.42)
2019 hearings	5320.13	5275.33	44.79	(960.60)
2019 case clearance	75.54	74.30	1.24	(2.55)
2019 inventory $\geq$ 1 year	0.32	0.70	-0.38	(0.28)
2019 inventory $\geq$ 2 years	0.06	0.17	-0.11	(0.11)
2019 optimal # staff gap	-0.50	-0.09	-0.41	(0.46)
2019 optimal # judge gap	0.31	0.65	-0.35	(0.31)
Observations	16	33	49	49

Balance check: Feedback vs. no feedback (2)

	No Feedback (1)	Feedback (2)	Diff. (1-2) (3)	SE (4)
Court Indicators (0ct-Jan)				
Clearance rate	70.39	70.48	-0.09	(1.75)
Motion resol. rate	96.13	97.53	-1.41	(0.41)
Rate of realized hear.	69.16	60.01	9.15	(2.38)
Inventory $\leq$ 2 years	92.16	91.62	0.54	(1.90)
Rate of timely hear.	56.05	63.14	-7.09	(4.37)
Observations	16	33	49	49
Micro data (Oct-Jan)				
# hearings	288.95	235.30	53.66	(22.77)
#incoming cases	557.06	541.80	15.27	(54.23)
# concluded cases	376.05	374.24	1.80	(35.53)
Observations	64	132	196	196

The no-feedback group includes those in the control group (C) and those receiving the email promotion (T1). The dummy *January Quantum logger* indicates whether the court manager logged into Quantum at least once in Jan 2021. The optimal number of staff and judge gaps refer to indicators built by the courts to understand the deficit/surplus in the number of judges and staff given the court workload.

Balance check: Email vs. no email (1)

	No Email (1)	Email (2)	Difference (1-2) (3)	SE (4)
Manager's Characteristics				
Age	51.35	52.78	-1.44	(1.77)
Men	0.62	0.74	-0.12	(0.14)
Years in position	11.85	12.83	-0.98	(1.51)
January Quantum logger	0.35	0.30	0.04	(0.14)
# Quantum logins (January)	0.85	0.91	-0.07	(0.39)
Annual Court Indicators (2019)				
2019 incoming cases	9074.15	8688.39	385.76	(1566.84)
2019 hearings	5347.85	5224.52	123.32	(902.47)
2019 case clearance	73.39	76.18	-2.79	(2.37)
2019 inventory $\geq$ 1 year	0.67	0.46	0.21	(0.26)
2019 inventory $\geq$ 2 years	0.18	0.08	0.10	(0.10)
2019 optimal # staff gap	-0.27	-0.17	-0.10	(0.43)
2019 optimal # judge gap	0.46	0.63	-0.16	(0.30)
Observations	26	23	49	49

Balance check: Email vs. no email (2)

	No Email (1)	Email (2)	Diff. (1-2) (3)	SE (4)
Monthly Court Indicators (0ct-Jan)				
Clearance rate	70.27	70.66	-0.39	(1.65)
Motion resol. rate	97.28	96.84	0.44	(0.39)
Rate of realized hear.	62.63	63.40	-0.77	(2.32)
Inventory $\leq$ 2 years	93.00	90.43	2.57	(1.76)
Rate of timely hear.	58.72	63.20	-4.47	(4.12)
Observations	26	23	49	49
Micro data (Oct-Jan)				
# hearings	267.23	236.52	30.71	(21.59)
# incoming cases	552.95	539.80	13.15	(50.96)
# concluded cases	380.24	368.72	11.52	(33.37)
Observations	104	92	196	196

The no-email group includes those in the control group (C) and those receiving the feedback promotion (T2 and T4). The dummy *January Quantum logger* indicates whether the court manager logged into Quantum at least once in Jan 2021. The optimal number of staff and judge gaps refer to indicators built by the courts to understand the deficit/surplus in the number of judges and staff given the court workload.

Main specification - Court-level outcomes

$$Y_{nit} = \alpha_{n0} + \alpha_{n1} Email_i + \alpha_{n2} Simpl.\ Feedback_i + \alpha_{n3} Soc.\ Comp.\ Feedback_i$$
$$+ \alpha_{n4} \mathbf{X}_i + \alpha_{n5} \mathbf{Y}_{nit_0} + \alpha_{n6} \mathbf{H}_{nit_0} + \alpha_{n7} \gamma_t + \xi_{nit}$$

- Y_{nit} : Performance indicator n for court i in month t
- $\mathbf{X_i}$: Characteristics of court i (court's manager's sex, age, and tenure; as well as a dummy for large courts)
- $\mathbf{Y}_{nit_0}$: Pre-intervention dependent variable
- $\mathbf{H}_{it_0}$: Pre-intervention # hearings
- γ_t : Month FE

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- γ_t : Month FE
- Coefficients of interest: α_{n1}, α_{n2}, and α_{n3}

Court-level outcomes: Results

	Case Clear. (1)	Timely Motion Resol. (2)	Realized Hear. (3)	Tim. Case Resol. (4)	Tim. Hear. Prog. (5)
Email	0.0760	0.0461	-0.298^{***}	0.0669	-0.135^{**}
	(0.154)	(0.0436)	(0.0984)	(0.0417)	(0.0656)
Simpl. feed.	0.978^{**}	0.218^{*}	-0.570^{*}	0.0801	0.762^{***}
	(0.450)	(0.117)	(0.321)	(0.101)	(0.257)
Soc. comp.	0.959	0.444^{***}	-0.856^{**}	0.0239	-0.0133
	(0.682)	(0.140)	(0.382)	(0.148)	(0.298)
N	245	245	245	245	245

Controls: the strata variable, three manager characteristics, four pre-treatment lagged values of the dependent variable and number of hearings, pre-treatment login dummy, and month-fixed effects. Standard errors clustered at the court level and bootstrapped. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Case level data - Duration analysis

- Cox proportional hazards model

$$\lambda_i(t) = \lambda_0(t) \exp(\beta_{n1} Email_i + \beta_{n2} Simplified\ Feedback_i \\ + \beta_{n3} Social\ Comp.\ Feedback_i \\ + \beta_{n4} \mathbf{X}_i + \beta_{n5} \mathbf{Y}_{nit_0} + \beta_{n6} \mathbf{H}_{nit_0})$$

- $\lambda_i(t)$: hazard rate of case conclusion at time t
- $\mathbf{X_i}$: Characteristics of court i
- $\mathbf{Y}_{nit_0}$; $\mathbf{H}_{it_0}$: Pre-intervention dependent variable; # hearings

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$$+ \beta_{n3} \text{Social Comp. Feedback}_i$$
$$+ \beta_{n4} \mathbf{X}_i + \beta_{n5} \mathbf{Y}_{nit_0} + \beta_{n6} \mathbf{H}_{nit_0})$$

- $\lambda_i(t)$: hazard rate of case conclusion at time t
- $\mathbf{X_i}$: Characteristics of court i
- $\mathbf{Y}_{nit_0}$; $\mathbf{H}_{it_0}$: Pre-intervention dependent variable; $\#$ hearings
- Also estimate similar specification by OLS
  - Dependent variable: case length; days to schedule hearings
  - Only cases resolved within sample period

Case duration analysis: Results

	Case duration in days	Days to schedule hearings	Case resolution hazard
	(1)	(2)	(3)
Email Promotion	2.52	2.05	-0.04
	(3.70)	(2.38)	(0.03)
Simplified Feedback	-8.07	-3.60	0.06*
	(10.85)	(9.26)	(0.03)
Social Comparison Feedback	-29.24^*	-8.12	0.07*
	(14.95)	(11.54)	(0.04)
Dependent variable mean	72.43	47.39	-
N	100,111	73,165	129,887

Controls: the strata variable, three manager characteristics, four pre-treatment lagged values of the dependent variable and number of hearings, pre-treatment login dummy, and month fixed effects. Standard errors clustered at the court level.
$^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Case level data - Case resolution method

- Does case processing speed come at quality expense?

- From case-level data, we look at how cases resolve

- Estimate intervention effects using multinomial logit

$$\Pr(E_i = k) = \frac{e^{\delta_k \cdot \mathbf{X}_i}}{1 + \sum_{j=1}^{K-1} e^{\delta_j \cdot \mathbf{X}_i}},$$

where

$$
\begin{aligned}
\boldsymbol{\delta}_k \cdot \mathbf{X}_i =& \delta_0 + \delta_1 \textit{Email}_i + \delta_2 \textit{Simplified Feedback}_i \\
& + \delta_3 \textit{Social Comp. Feedback}_i \\
& + \delta_4 \mathbf{X}_{it} + \delta_5 \mathbf{E}_{t_0} + \delta_6 \mathbf{I}_{it_0} + \delta_7 \mathbf{H}_{it_0} + \delta_8 \gamma_t
\end{aligned}
$$

$\mathbf{E}_{t_0}$ and $\mathbf{I}_{it_0}$ are pre-intervention shares of k-type resolutions and inventory older than 2 years

Case resolution methods: Marginal effects

Resolution method	Baseline frequency	Marginal effects		
		Simpl. feedback	Soc. comp.	Email
Ongoing case	0.229	-0.018*	-0.002	-0.012
		(0.010)	(0.010)	(0.008)
Involuntary dismissal	0.02	-0.010***	-0.010***	$-0.006***$
		(0.003)	(0.003)	(0.002)
Settlement (I)	0.016	-0.002	0.002	0.001
		(0.002)	(0.002)	(0.002)
Conciliation	0.056	-0.000	-0.002	-0.005
		(0.003)	(0.004)	(0.004)
Voluntary dismiss (no resub.)	0.015	0.001	0.002	-0.002*
		(0.001)	(0.001)	(0.001)
Incompetent court	0.063	-0.006**	-0.007**	0.002
		(0.003)	(0.003)	(0.002)
Mediation	0.113	0.014*	0.007	0.010
		(0.008)	(0.007)	(0.008)
Motion dismiss in limine	0.160	0.012	-0.000	0.004
		(0.009)	(0.010)	(0.008)
Voluntary dismiss (resub. allowed)	0.001	0.003***	0.001	0.001
		(0.001)	(0.001)	(0.001)
Judgement	0.304	0.006	0.008	0.003
		(0.007)	(0.007)	(0.007)
Settlement (II)	0.014	0.001	0.002	0.003***
		(0.001)	(0.001)	(0.001)

Controls: the strata variable, three manager characteristics, pre-treatment shares of each case type ending, pre-treatment percentage of cases with more than two years duration, pre-treatment login dummy, and month fixed effects. Standard errors are clustered at the court level. The ongoing case category is used as the reference group for the coefficient results.
$^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Takeaway from multinomial logit

- Treatments ↓ prob. of *involuntary dismissal* and *incompetent court*

- Simplified feedback ↓ prob. of *ongoing* (echoes duration analysis)

- Simplified feedback ↑ prob. of *mediation*

- All relatively small effects

- **If anything, treatments seem to make case resolution "better"**

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- More experienced managers less active on Quantum in baseline
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- Let dummy *Experienced* indicate whether manager's tenure ≥ 10 yrs

Heterogeneous effects: Manager experience

	Case Clear. (1)	Timely Motion Resol. (2)	Realized Hear. (3)	Tim. Case Resol. (4)	Tim. Hear. Prog. (5)
Email	-0.079	0.035	-0.263	0.042	-0.099
	(0.152)	(0.098)	(0.234)	(0.079)	(0.138)
Simpl. feed.	-0.526	-0.487	-3.304*	-0.521**	1.188
	(1.120)	(0.432)	(1.946)	(0.245)	(0.999)
Simpl. feed. × exper.	1.860	1.055*	3.094	0.755**	-0.870
	(1.226)	(0.558)	(2.082)	(0.360)	(1.120)
Soc. comp.	-0.330	-0.085	-1.492**	0.191	-0.348
	(0.812)	(0.219)	(0.638)	(0.132)	(0.503)
Soc. comp. × exper.	1.503	1.348**	0.533	0.191	-0.348
	(1.108)	(0.681)	(1.157)	(0.630)	(1.077)
Experienced	-0.112	-0.369**	-0.544	-0.100	0.337
	(0.390)	(0.157)	(0.441)	(0.090)	(0.220)
N	245	245	245	245	245

Experience: dummy indicating ≥ 10 years of experience as manager.
Controls: the strata variable, three manager characteristics, four pre-treatment lagged values of the dependent variable and number of hearings, pre-treatment login dummy, and month-fixed effects. Standard errors clustered at the court level and bootstrapped.
$^* p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

Conclusion

- RCT reducing information acquisition frictions in Chilean courts

- Subjects: Court managers, who overwhelmingly agree on importance of tracking court performance

- Promotion of existing platform with court measurements increases take up but has small/no impact on court outcomes

- Redesign of platform to make information easier to grasp effectively lowers case processing time

- Effect stronger for experienced managers (arguably more innovation-averse)

- Making information easier to digest really helps! Can narrow experience gap in technology use