

# Intro

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# ¿Para qué sirven los modelos de regresión?

- ▶ Predicción
- ▶ Extrapolación
- ▶ Inferencia causal
  - ▶ Experimentales
  - ▶ Observacionales

# Predictión

## Mapas de valor de la Tierra Urbana en Córdoba

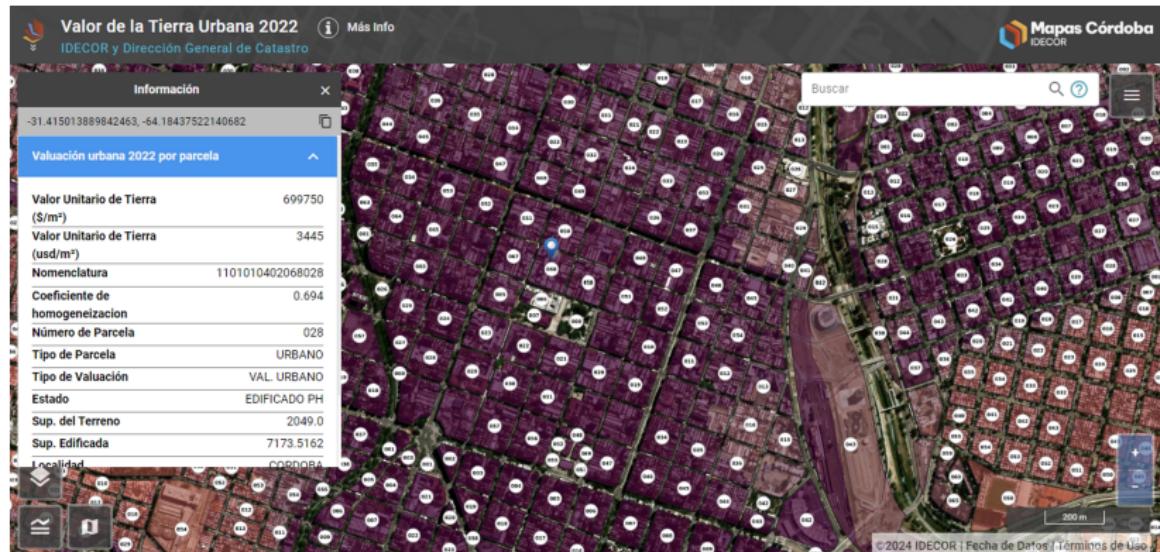


Figure: IDEDECOR <https://mapascordoba.gob.ar/viewer/mapa/401>

# Predicción

## Sistemas de recomendación

Startups

# Airbnb Adds A Pricing Recommendation Tool For Renters

Matthew Lynley / 10:34 AM PDT • June 4, 2015

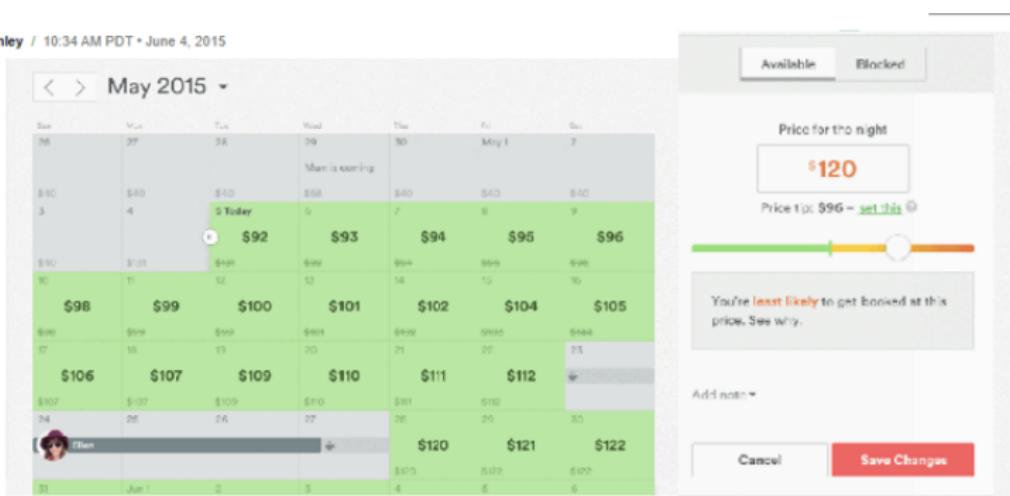


Image Credits: Airbnb

Figure: <https://techcrunch.com/2015/06/04/airbnb-adds-a-pricing-recommendation-tool-for-renters/>

# Extrapolación

## Regresión y Post-estratificación para predecir votación

Forecasting elections with non-representative polls

Wei Wang<sup>a,\*</sup>, David Rothschild<sup>b</sup>, Sharad Goel<sup>b</sup>, Andrew Gelman<sup>a,c</sup>

### ABSTRACT

Election forecasts have traditionally been based on representative polls, in which randomly sampled individuals are asked who they intend to vote for. While representative polling has historically proven to be quite effective, it comes at considerable costs of time and money.

Moreover, as response rates have declined over the past several decades, the statistical benefits of representative sampling have diminished. In this paper, we show that, with proper statistical adjustment, non-representative polls can be used to generate accurate election forecasts, and that this can often be achieved faster and at a lesser expense than traditional survey methods. We demonstrate this approach by creating forecasts from a novel and highly non-representative survey dataset: a series of daily voter intention polls for the 2012 presidential election conducted on the Xbox gaming platform. After adjusting the Xbox responses via multilevel regression and poststratification, we obtain estimates which are in line with the forecasts from leading poll analysts, which were based on aggregating hundreds of traditional polls conducted during the election cycle. We conclude by arguing that non-representative polling shows promise not only for election forecasting, but also for measuring public opinion on a broad range of social, economic and cultural issues.

Figure: <https://www.microsoft.com/en-us/research/wp-content/uploads/2016/04/forecasting-with-nonrepresentative-polls.pdf>

# Extrapolación

## Regresión y Post-estratificación para predecir votación

Forecasting elections with non-representative polls

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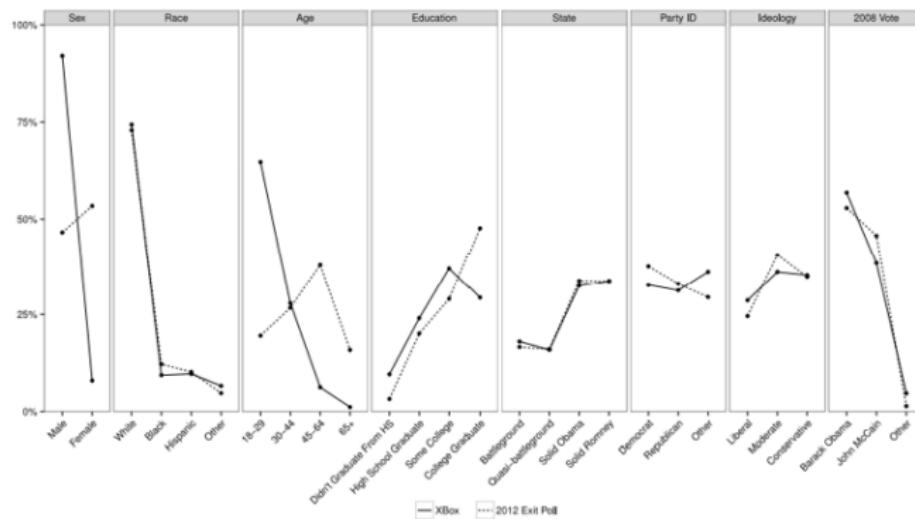


Fig. 1. A comparison of the demographic, partisan, and 2008 vote distributions in the Xbox dataset and the 2012 electorate (as measured by adjusted exit polls). As one might expect, the sex and age distributions exhibit considerable differences.

Figure: <https://www.microsoft.com/en-us/research/wp-content/uploads/2016/04/forecasting-with-nonrepresentative-polls.pdf>

# Extrapolación

## Regresión y Post-estratificación para predecir votación

Fig. 5. Comparison of the two-party Obama vote share for various demographic subgroups, as estimated from the 2012 national exit poll and from the Xbox data on the day before the election.

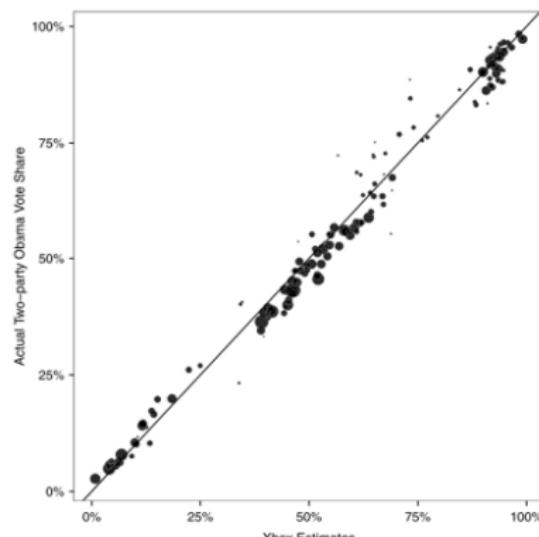
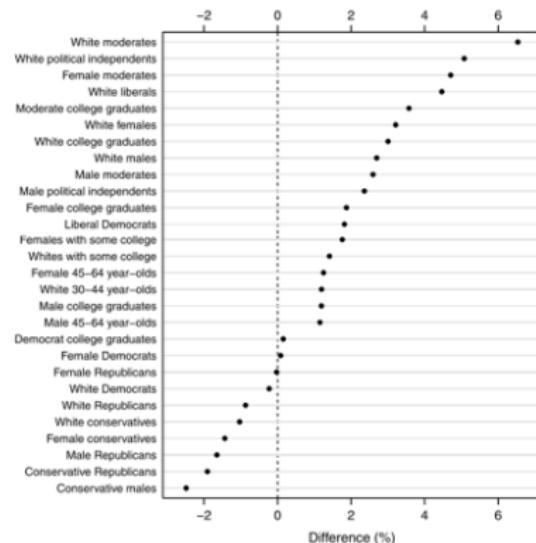


Figure: <https://www.microsoft.com/en-us/research/wp-content/uploads/2016/04/forecasting-with-nonrepresentative-polls.pdf>

# Inferencia Causal - Experimental

## Prácticas ESG y atracción de empleo

Polarizing Corporations: Does Talent Flow to "Good" Firms?

Emanuele Colonnelli, Timothy McQuade, Gabriel Ramos, Thomas Rauter, and Olivia Xiong

NBER Working Paper No. 31913

November 2023

JEL No. D2,G0,G3,G4,J0,O10,P0

### ABSTRACT

We conduct a field experiment in partnership with the largest job platform in Brazil to study how environmental, social, and governance (ESG) practices of firms affect talent allocation. We find both an average job-seeker's preference for ESG and a large degree of heterogeneity across socioeconomic groups, with the strongest preference displayed by highly educated, white, and politically liberal individuals. We combine our experimental estimates with administrative matched employer-employee microdata and estimate an equilibrium model of the labor market. Counterfactual analyses suggest ESG practices increase total economic output and worker welfare, while increasing the wage gap between skilled and unskilled workers.

**Figure:**

[https://www.nber.org/system/files/working\\_papers/w31913/w31913.pdf](https://www.nber.org/system/files/working_papers/w31913/w31913.pdf)

# Inferencia Causal - Experimental

## Prácticas ESG y atracción de empleo

### POLARIZING CORPORATIONS

TABLE 4. Job-Seekers' Preferences for Corporate ESG

	Interest (1)	Interest (2)	Interest (3)
ESG	0.098*** (0.026)	0.099*** (0.025)	0.085*** (0.020)
Ln(Wage)	1.117*** (0.031)	1.130*** (0.030)	1.205*** (0.026)
Nonwage Amenities	0.059*** (0.014)	0.060*** (0.014)	0.064*** (0.011)
Financial Strength	-0.003 (0.041)	-0.006 (0.040)	0.015 (0.032)
Observations	24,120	24,120	24,120
Individual FE	No	No	Yes
Strata FE	Yes	Yes	Yes
<b>Controls</b>			
Gender	No	Yes	-
Race	No	Yes	-
Age	No	Yes	-
Income	No	Yes	-
Employment Status	No	Yes	-
Political View	No	Yes	-

**Notes:** This table reports the regression coefficients for the following specifications. Column (1) specification:  $Interest_{ij} = \alpha + \beta_1 ESG_{ij} + \beta_2 \ln(Wage_{ej}) + \beta_3 NW A_{ij} + \beta_4 FS_{ij} + e_{ij}$ . Column (2) specification:  $Interest_{ij} = \alpha + \beta_1 ESG_{ij} + \beta_2 \ln(Wage_{ej}) + \beta_3 NW A_{ij} + \beta_4 FS_{ij} + Demographic\ controls_i + e_{ij}$ . Column (3) specification:  $Interest_{ij} = \alpha + \beta_1 ESG_{ij} + \beta_2 \ln(Wage_{ej}) + \beta_3 NW A_{ij} + \beta_4 FS_{ij} + IndividualFE_i + e_{ij}$ ,  $i$  is the  $i$ -th individual and  $j$  is the  $j$ -th job posting rated by individual  $i$ .  $ESG$  is an indicator variable equal to one if the job posting displays at least one ESG sentence (see Appendix Table A21) or ESG certification (see Appendix Table A22).  $\ln(Wage)$  is the natural logarithm of the monthly wage displayed in the job posting.  $NW A$  is equal to the number of nonwage amenities.  $FS$  is an indicator variable equal to one if the job posting displays a signal of financial strength (see Appendix Table A19). Robust standard errors are reported in parentheses. \* $p<0.1$ ; \*\* $p<0.05$ ; \*\*\* $p<0.01$ .

Figure:

[https://www.nber.org/system/files/working\\_papers/w31913/w31913.pdf](https://www.nber.org/system/files/working_papers/w31913/w31913.pdf)

# De la Teoría a la Evidencia

- ▶ Teoría ⇒ Proposiciones ⇒ Hipótesis
- ▶ Traducimos las proposiciones en hipótesis testeables

# De la Teoría a la Evidencia

Representación de relaciones teóricas como un gráfico causal

Figure 4: Measurements and Hypotheses

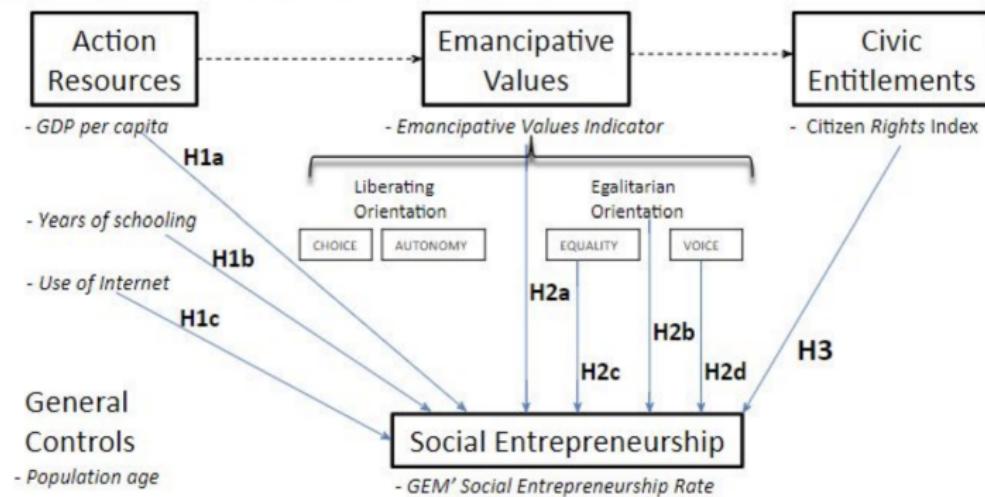


Figure: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3400084](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3400084)

# De la Teoría a la Evidencia

Representación del Modelo como una Ecuación

$$SE_{i,t} = f(ActionResources_{i,t}, EmancipativeValues_{i,t}, CivicEntitlements_{i,t})$$

- ▶ Notar que  $i$  (un país) es la unidad de análisis
- ▶  $SE_i$  es una medida del Emprendedorismo Social en el país  $i$  en el año  $t$
- ▶  $f()$  es una función cuya forma desconocemos
- ▶ *Action Resources* se aproximarán con el PBI per cápita, los años de escolaridad y el uso de internet.
- ▶ *Emancipative Values* es una medida de los valores emancipativos en una sociedad (Welzel)
- ▶ *Civic Entitlements* es aproximado por un indicador de derechos de la ciudadanía.

# De la Teoría a la Evidencia

## Representación como un Modelo de Regresión

$$SE_{i,t} = \beta_0 + \beta_1 ActionResources_{i,t} + \beta_1 EmancipativeValues_{i,t} + \beta_2 CivicEntitlements_{i,t} + \varepsilon_{i,t}$$

- ▶ El modelo de Regresión propone una forma lineal para la función en cuestión que podremos estimar.
- ▶ Notar la inclusión del término de error