

Slums

Urban Economics

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Introduction to Urban Slums

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- ▶ Recent research has shown that the neighborhood where people live has important implications for short-run, long-run and even intergenerational outcomes.
- ▶ Urban populations now exceed 50% of the global population.
- ▶ Slums are informal settlements with:
 - ▶ Inadequate living space and public services.
 - ▶ Poor-quality housing.
 - ▶ Insecure tenure for residents.
- ▶ Over 860 million people lived in slums (UN-Habitat, 2012a).
- ▶ In Sub-Saharan Africa, slum populations grow by 4.5% annually.

Key Characteristics of Slums

UN-Habitat Definition

- ▶ The agreed definition classified a 'slum household' as one in which the inhabitants suffer **one or more** of the following 'household deprivations':
 - 1 Lack of access to improved water source,
 - 2 Lack of access to improved sanitation facilities,
 - 3 Lack of sufficient living area,
 - 4 Lack of housing durability and,
 - 5 Lack of security of tenure.

Key Characteristics of Slums

Sin Alcantarillado

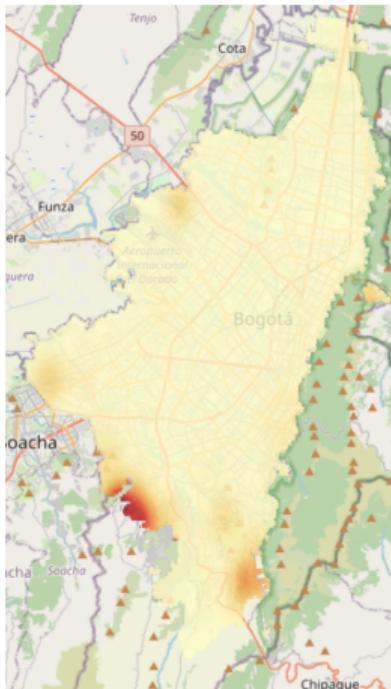


Figure 1: Bogotá

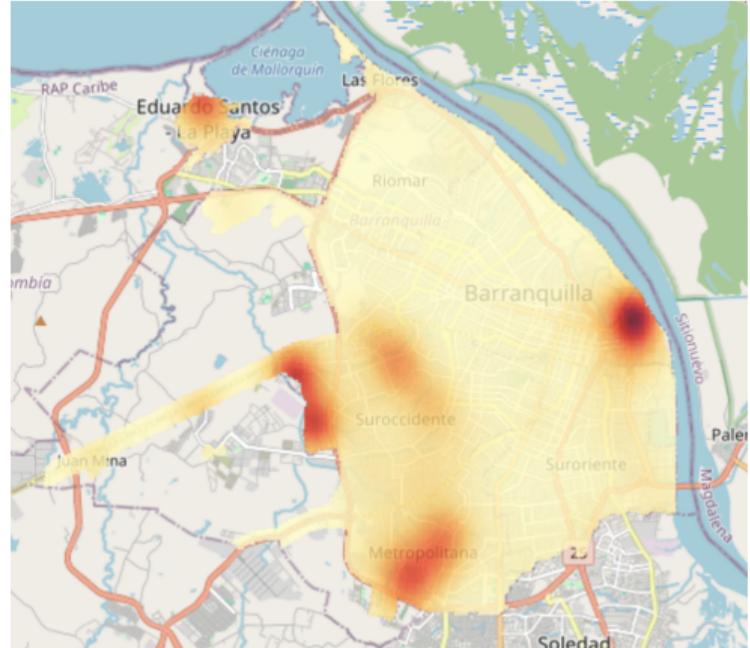


Figure 2: Barranquilla

Key Characteristics of Slums

Sin Alcantarillado

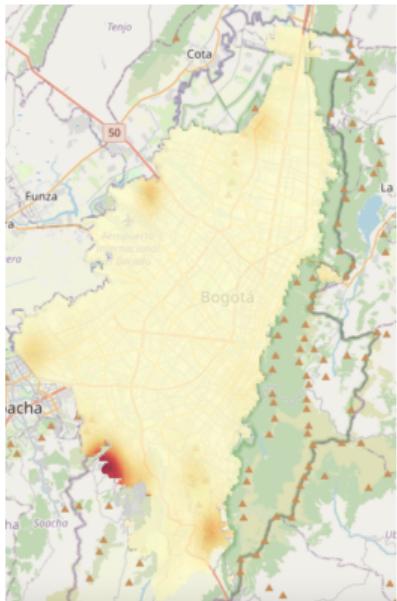


Figure 3: Bogotá

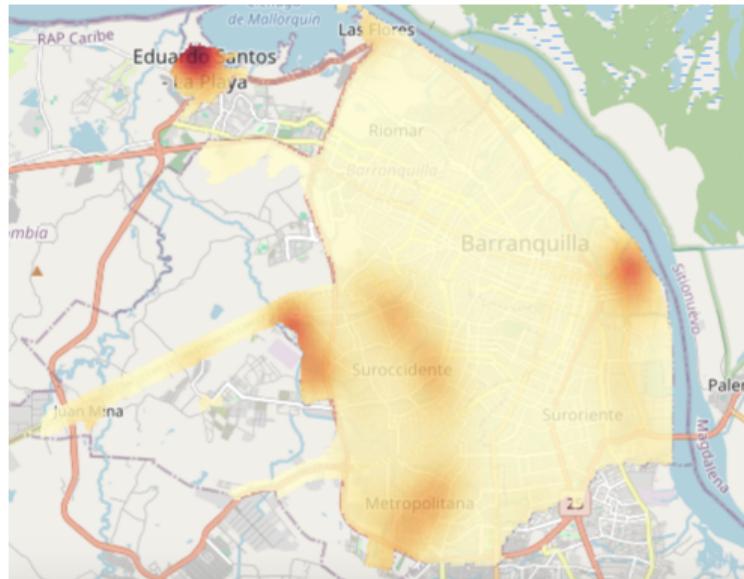


Figure 4: Barranquilla

Key Characteristics of Slums

Lack of security of tenure

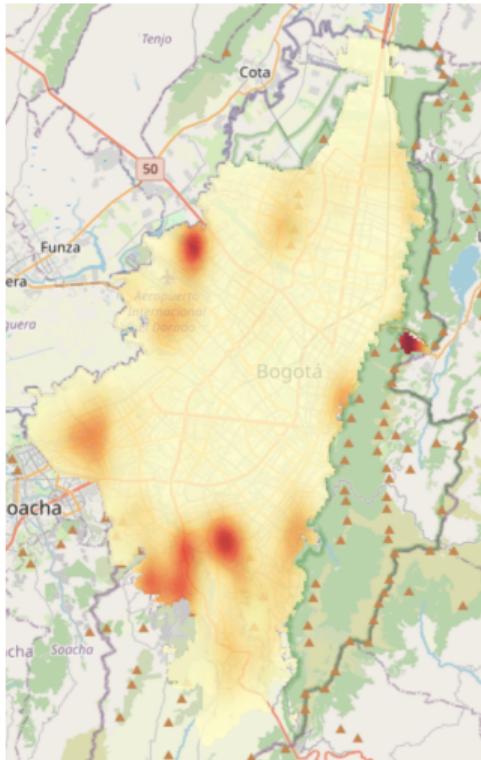


Figure 5: Bogotá

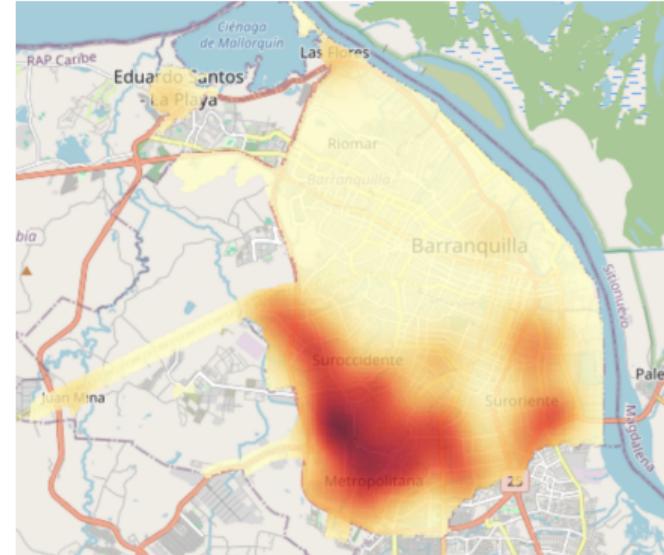


Figure 6: Barranquilla

Property Rights

- ▶ Informality of property rights limits incentives for improvement.
- ▶ Issues:
 - ▶ Slum dwellers often lack formal land titles.
 - ▶ Land ownership is often contested or illiquid.
- ▶ Evidence:
 - ▶ Formal titling can encourage investments (e.g. Galiani, 2010).

Key Characteristics of Slums

Deficit Cuantitativo

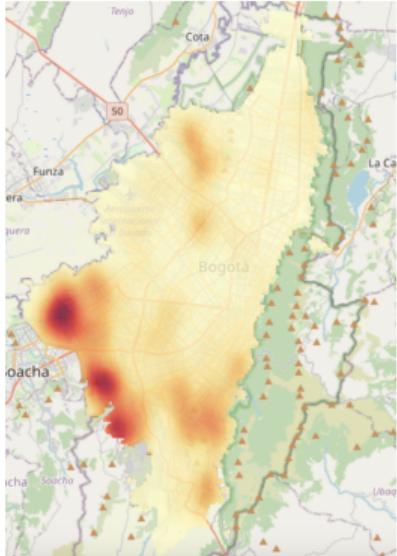


Figure 7: Bogotá

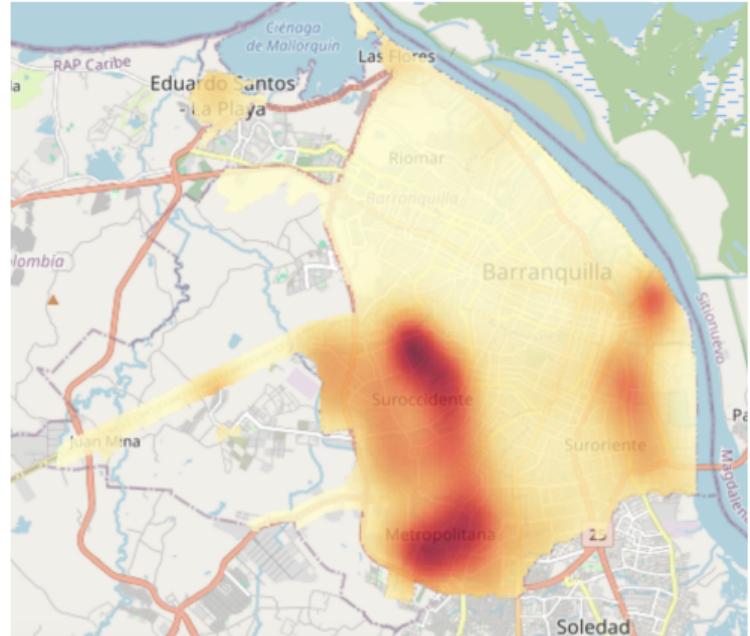


Figure 8: Barranquilla

Key Characteristics of Slums

Deficit Cualitativo

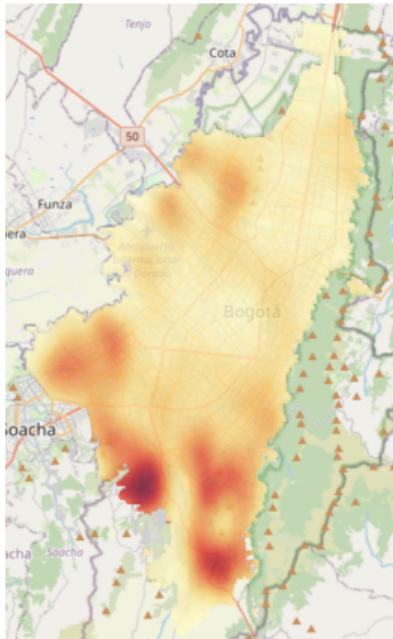


Figure 9: Bogotá

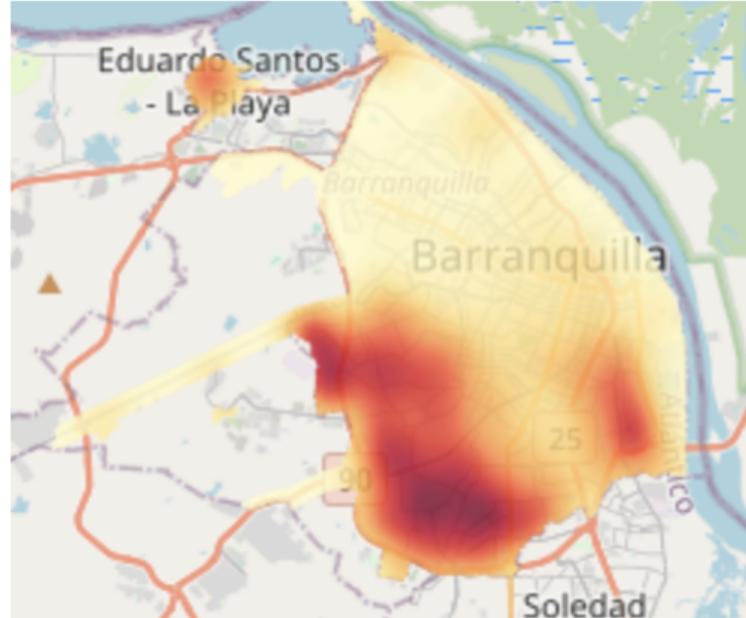


Figure 10: Barranquilla

Key Characteristics of Slums

Deficit Cualitativo: Ciudad Bolívar



Housing, Health, and Happiness

Cattaneo et al. AEj:Policy, 2009

- ▶ Poor housing conditions, such as dirt floors, threaten health:
 - ▶ Linked to parasitic infestations, diarrhea, and anemia.
 - ▶ Impacts child development and adult welfare.
- ▶ Inadequate housing affects over 600 million urban dwellers globally.
- ▶ Governments worldwide invest significantly in housing improvements.
- ▶ Few studies assess the causal effects of housing improvements.

The Piso Firme Program

- ▶ Piso Firme aims to replace dirt floors with cement in Mexico.
- ▶ Key features:
 - ▶ Provides up to 50 square meters of cement flooring.
 - ▶ Targets low-income households.
- ▶ Implemented first in Coahuila, later expanded nationally.
- ▶ Focused on improving health, housing, and quality of life.

Research Questions

- ▶ Investigate the impact of Piso Firme on:
 - ▶ Child health: Reduction in anemia, diarrhea, and parasitic infections.
 - ▶ Cognitive development of children.
 - ▶ Adult mental health and overall happiness.
- ▶ Explore housing improvements as a tool for welfare enhancement.

Overview of the Piso Firme Program

- ▶ Piso Firme ("firm floor") program replaces dirt floors with cement floors.
- ▶ Initially part of small-scale federal programs targeting rural areas.
- ▶ First large-scale implementation: Coahuila state in 2000.
- ▶ Expanded nationally by 2003, covering 300,000 homes by 2005.
- ▶ Objective: Improve living standards, particularly health, in low-income neighborhoods.

Goals of Piso Firme

- ▶ Enhance the physical environment of households:
 - ▶ Cleaner and safer homes.
 - ▶ Reduce transmission of parasites.
- ▶ Improve health outcomes, especially for children.
- ▶ Promote overall welfare and quality of life for vulnerable populations.
- ▶ Serve as a scalable model for slum upgrading.

Implementation in Coahuila

- ▶ Program launched under Governor Enrique Martínez y Martínez (2000–2005).
- ▶ Key features:
 - ▶ Eligibility: Dirt floors and home ownership required.
 - ▶ Municipalities identified beneficiaries and validated lists with state authorities.
- ▶ By 2005: Covered over 34,000 households across 650 neighborhoods.
- ▶ Total cost: 5.5 million USD.

Eligibility Criteria for Households

- ▶ Household must own the dwelling.
- ▶ Must have resided in the same house since 2000.
- ▶ Households required to have at least one dirt-floor room in 2000.
- ▶ Presence of at least one child under six years old by 2005:
 - ▶ Focused on expected health benefits for young children.

Identification

- ▶ Treatment (cement floors) was not randomly assigned.
- ▶ Retrospective nature of the study required constructing a valid counterfactual.

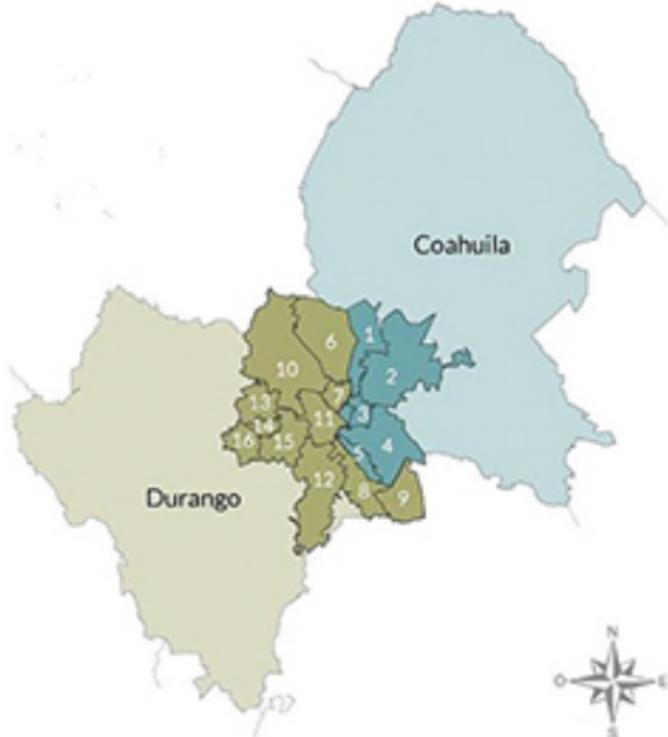
Identification

- ▶ Treatment (cement floors) was not randomly assigned.
- ▶ Retrospective nature of the study required constructing a valid counterfactual.
- ▶ Control group: households in nearby areas without Piso Firme by 2005.
- ▶ Matched treatment and control groups based on:
 - ▶ Observable characteristics from the 2000 Census.
 - ▶ Proximity within the same urban agglomeration.

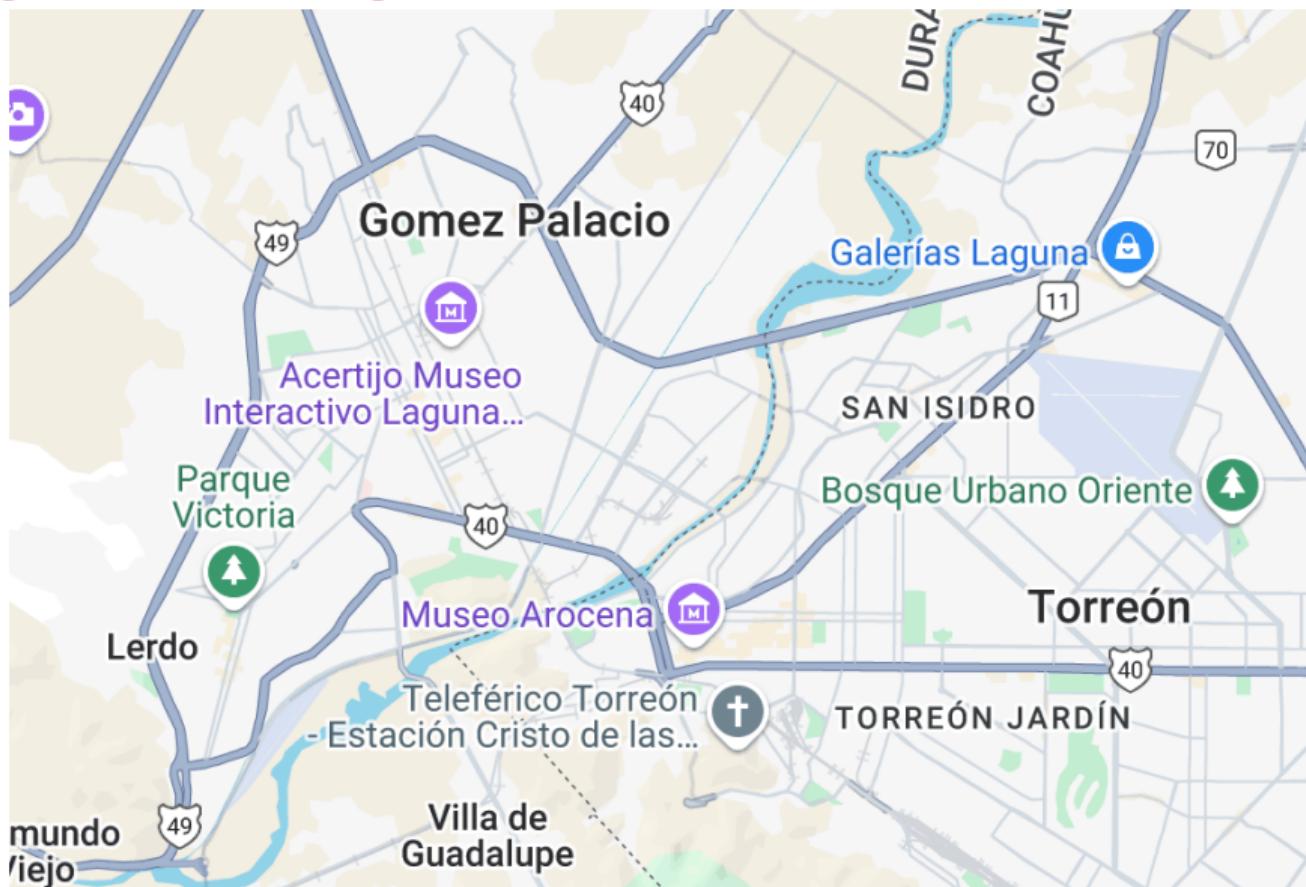
Sampling and Matching Procedure

- ▶ Restricted sampling to twin cities of Gómez Palacio, Lerdo (control), and Torreón (treatment).
- ▶ Randomly selected treated households from Piso Firme administrative records.
- ▶ Matched census blocks using a distance metric:
 - ▶ Dirt floor prevalence.
 - ▶ Demographic and housing characteristics.
- ▶ Randomly drew control households from matched blocks.

Sampling and Matching Procedure



Sampling and Matching Procedure



Treatment and Control Group Balance

- ▶ Ensuring balance between treatment and control groups is critical for causal inference.
- ▶ Used pre-intervention characteristics to compare groups:
 - ▶ Housing conditions.
 - ▶ Demographics.
 - ▶ Socioeconomic status.

Ensuring Balance Between Groups

In levels

TABLE 2—DIFFERENCE OF MEANS FOR PRE-INTERVENTION 2000 CENSUS VARIABLES

Variable	Mean treatment	Mean control	Mean difference
Proportion of blocks of houses with at least one house that has dirt floors	0.573 (0.030)	0.612 (0.042)	-0.040 (0.051)
Proportion of households with dirt floors	0.173 (0.026)	0.189 (0.026)	-0.016 (0.037)
Average number of children between 0 and 5 yrs of age	0.710 (0.014)	0.721 (0.014)	-0.011 (0.020)
Number of households	511.292 (60.381)	488.989 (38.105)	22.303 (71.399)
Number of people	2,241.586 (280.400)	2,170.597 (172.460)	70.989 (329.191)
Average number of rooms per household	2.352 (0.069)	2.353 (0.075)	-0.002 (0.102)
Average number of people per household	4.326 (0.033)	4.448 (0.109)	-0.122 (0.114)

Ensuring Balance Between Groups

In levels

Proportion of households with no water connection outside the house	0.076 (0.018)	0.043 (0.014)	0.033 (0.023)
Proportion of households with no water connection inside the house	0.392 (0.038)	0.316 (0.036)	0.076 (0.052)
Proportion of households with no water connection in the bathroom	0.507 (0.040)	0.451 (0.032)	0.056 (0.052)
Proportion of households with no gas heater	0.028 (0.004)	0.029 (0.004)	-0.001 (0.006)
Proportion of households with no refrigerator	0.204 (0.018)	0.212 (0.013)	-0.007 (0.022)
Proportion of households with no washing machine	0.379 (0.018)	0.359 (0.018)	0.020 (0.026)
Proportion of households with no telephone	0.804 (0.014)	0.786 (0.020)	0.018 (0.025)
Proportion of households with no vehicle	0.735 (0.014)	0.734 (0.018)	0.000 (0.023)

Ensuring Balance Between Groups

In levels

	Slums	Suburbs	Country
Average overcrowding index	2.302 (0.063)	2.314 (0.069)	-0.012 (0.094)
Proportion of households below the poverty line	0.140 (0.015)	0.148 (0.012)	-0.009 (0.019)
Proportion of households with illiterate members	0.063 (0.003)	0.059 (0.004)	0.004 (0.005)
Average years of schooling of head of household	6.386 (0.097)	6.514 (0.166)	-0.128 (0.192)
Average number of school dropouts among children aged 5–15 yrs	0.180 (0.008)	0.172 (0.009)	0.007 (0.012)
Average number of household members who work	1.508 (0.026)	1.592 (0.064)	-0.084 (0.069)
Average number of family members who earn an income	1.422 (0.025)	1.495 (0.060)	-0.072 (0.065)
Observations	599	370	

Ensuring Balance Between Groups

In levels

TABLE 3—DIFFERENCE OF MEANS FOR INDEPENDENT VARIABLES IN 2005 SURVEY

Variable	Observations treatment	Mean treatment	Observations control	Mean control	Mean difference
<i>Household demographics</i>					
Number of household members	1,362	5.320 (0.070)	1,393	5.374 (0.071)	-0.054 (0.100)
Head of household's age	1,362	37.537 (0.413)	1,393	37.120 (0.490)	0.418 (0.641)
Head of household's years of schooling	1,360	6.128 (0.134)	1,391	6.408 (0.115)	-0.280 (0.177)
Spouse's age	1,362	29.645 (0.475)	1,393	28.772 (0.406)	0.874 (0.625)
Spouse's years of schooling	1,207	6.338 (0.150)	1,211	6.479 (0.108)	-0.141 (0.185)

Ensuring Balance Between Groups

In levels

Characteristics of children aged 0–5

Age	1,940	2.643 (0.032)	2,112	2.579 (0.032)	0.064 (0.046)
Male (=1)	1,940	0.492 (0.011)	2,112	0.517 (0.007)	-0.024* (0.013)
Mother of at least one child in household present (=1)	1,940	0.968 (0.005)	2,112	0.964 (0.005)	0.004 (0.007)
Mother's age (if present)	1,861	27.383 (0.187)	1,992	27.465 (0.169)	-0.082 (0.252)
Mother's years of schooling (if present)	1,859	7.059 (0.135)	1,992	6.910 (0.133)	0.149 (0.189)
Father of at least one child in household present (=1)	1,940	0.797 (0.011)	2,112	0.763 (0.013)	0.034* (0.017)
Father's age (if present)	1,480	30.368 (0.303)	1,525	30.632 (0.271)	-0.265 (0.407)
Father's years of schooling (if present)	1,476	6.839 (0.155)	1,519	7.153 (0.117)	-0.313 (0.194)



Ensuring Balance Between Groups

In levels

Housing characteristics

Number of rooms	1,362	2.080 (0.054)	1,393 (0.053)	1.981 (0.053)	0.099 (0.076)
Water connection (=1)	1,362	0.970 (0.005)	1,393 (0.005)	0.977 (0.005)	-0.007 (0.007)
Water connection inside the house (=1)	1,362	0.511 (0.029)	1,393 (0.022)	0.546 (0.022)	-0.035 (0.036)
Electricity (=1)	1,362	0.985 (0.005)	1,393 (0.002)	0.993 (0.002)	-0.008 (0.005)
Share of rooms with cement floors in 2000	1,362	0.330 (0.020)	1,393 (0.021)	0.327 (0.021)	0.003 (0.029)

Ensuring Balance Between Groups

In levels

Hygienic environment

Household has animals on land (=1)	1,362	0.517 (0.014)	1,393	0.480 (0.018)	0.037 (0.023)
Animals allowed to enter the house (=1)	1,362	0.192 (0.014)	1,393	0.190 (0.013)	0.002 (0.020)
Uses garbage collection service (=1)	1,362	0.799 (0.030)	1,393	0.845 (0.033)	-0.046 (0.045)
Number of times respondent washed hands the day before	1,362	3.754 (0.057)	1,393	3.716 (0.060)	0.038 (0.083)

Ensuring Balance Between Groups

In levels

TABLE 3 — DIFFERENCE OF MEANS FOR INDEPENDENT VARIABLES IN 2005 SURVEY (CONTINUED)

Variable	Observations treatment	Mean treatment	Observations control	Mean control	Mean difference
<i>Economic characteristics</i>					
Total household income per capita	1,361	1024.703 (71.168)	1,391	1051.676 (102.976)	-26.973 (125.176)
Total value of household assets per capita	1,361	22393.733 (254.334)	1,393	22032.320 (308.994)	361.414 (400.204)
<i>Public social programs</i>					
Cash transfers per capita from government programs	1,361	16.187 (2.094)	1,392	12.604 (1.222)	3.583 (2.425)
Household beneficiary of government milk supplement program (=1)	1,362	0.060 (0.009)	1,393	0.082 (0.011)	-0.022 (0.015)
Household beneficiary of government food program (=1)	1,362	0.037 (0.007)	1,393	0.022 (0.007)	0.015 (0.009)

Ensuring Balance Between Groups

In levels

- ▶ Comparison of pre-intervention characteristics:
- ▶ No significant differences found between treatment and control groups.
- ▶ Reinforced comparability by controlling for potential covariates in analysis.

Ensuring Balance Between Groups

In trend

- ▶ Balance in observable characteristics is established.
- ▶ Key concern: Differences in secular trends between treatment (Coahuila) and control (Durango) areas.
- ▶ Investigated historical trends in key health and socioeconomic variables.
- ▶ Used publicly available datasets to compare temporal patterns.

Ensuring Balance Between Groups

In trends

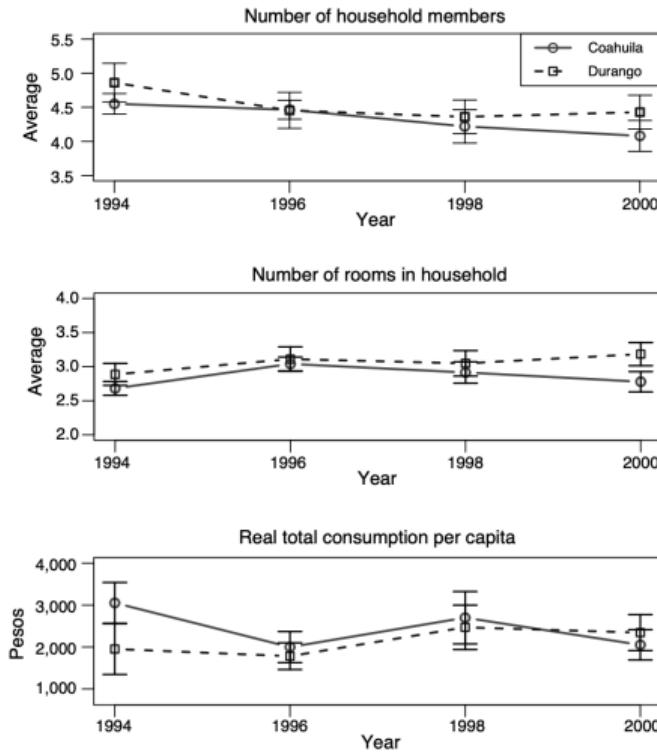


FIGURE 2A. EVOLUTION OF SOCIOECONOMIC VARIABLES

Ensuring Balance Between Groups

In trends

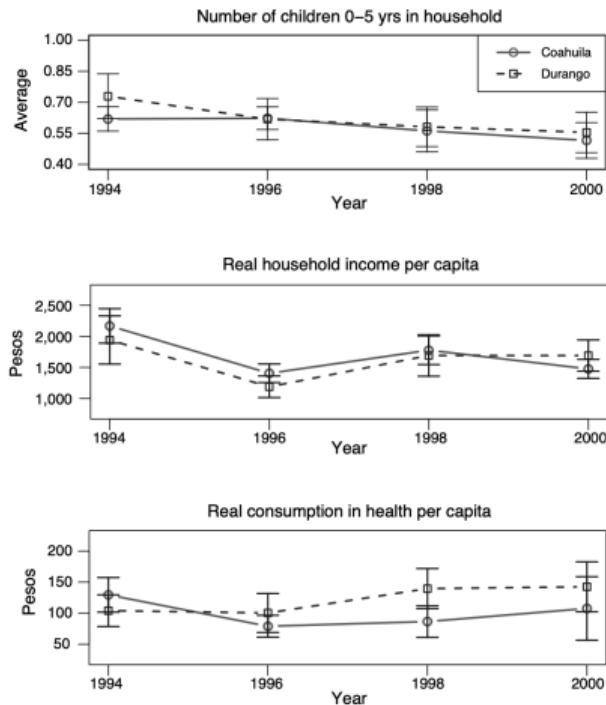


FIGURE 2B. EVOLUTION OF SOCIOECONOMIC VARIABLES

Conclusions on Secular Trends

- ▶ No significant differences in pre-intervention secular trends.
- ▶ Similar historical patterns strengthen the identification strategy.
- ▶ Provides confidence in treatment effect attribution to Piso Firme.

Program impacts

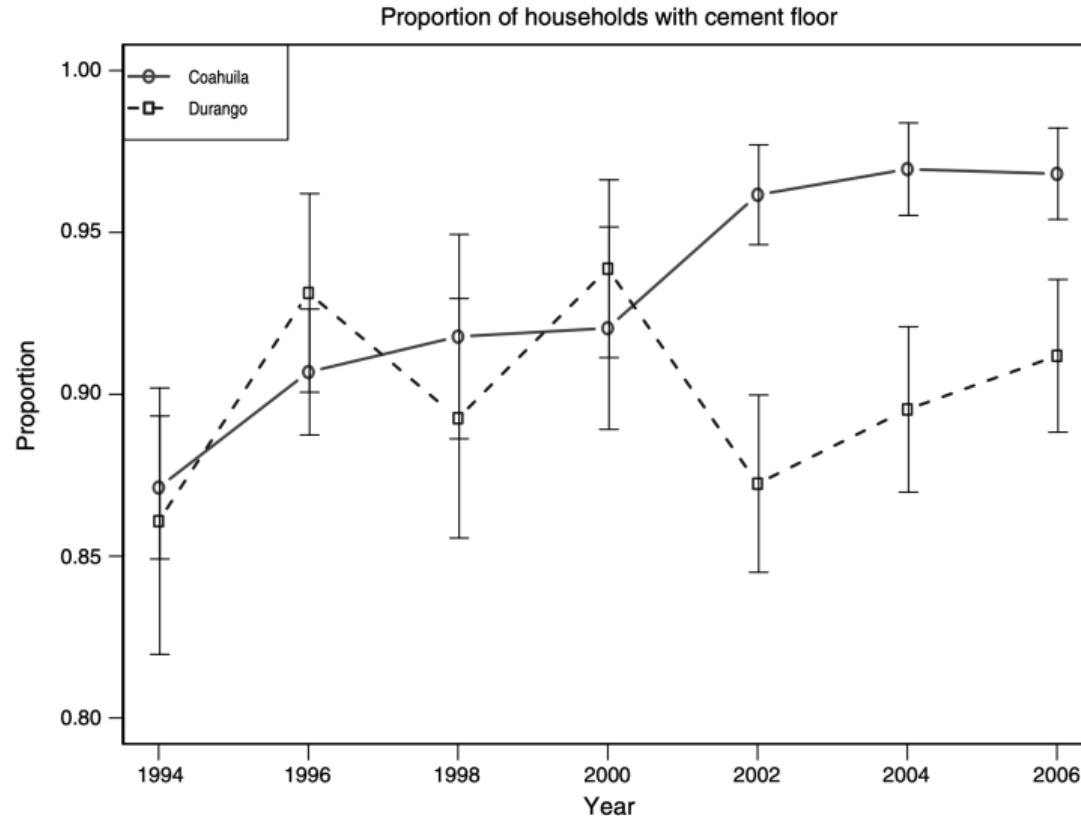


FIGURE 3. EVOLUTION OF PRESENCE OF CEMENT FLOORS IN HOUSES

Program impacts

Especifications

$$Y_i = \alpha + \gamma \text{Treatment}_i + \epsilon_i$$

- ▶ Y_i : Dependent variable (e.g., health, cognitive outcomes).
- ▶ Treatment_i : Indicator variable (1 if household was offered Piso Firme, 0 otherwise).
- ▶ γ : Treatment effect of interest.
- ▶ ϵ_i : Error term.

Program impacts

TABLE 4—REGRESSIONS OF CEMENT FLOOR COVERAGE MEASURES ON PROGRAM DUMMY

Dependent variable	Control group mean (std. dev.)	Model 1	Model 2	Model 3
Share of rooms with cement floors	0.728 (0.363)	0.202 [0.021]*** 27.746	0.208 [0.019]*** 28.512	0.210 [0.019]*** 28.876
Cement floor in kitchen	0.671 (0.470)	0.255 [0.025]*** 37.936	0.260 [0.023]*** 38.708	0.265 [0.023]*** 39.440
Cement floor in dining room	0.709 (0.455)	0.21 [0.026]*** 29.633	0.217 [0.025]*** 30.588	0.221 [0.025]*** 31.189
Cement floor in bathroom	0.803 (0.398)	0.105 [0.022]*** 13.071	0.113 [0.018]*** 14.043	0.117 [0.018]*** 14.536
Cement floor in bedroom	0.668 (0.471)	0.238 [0.020]*** 35.598	0.245 [0.021]*** 36.735	0.245 [0.020]*** 36.695

Program impacts

TABLE 5—REGRESSIONS OF CHILDREN'S HEALTH MEASURES ON PROGRAM DUMMY

Dependent variable	Control group mean (std. dev.)	Model 1	Model 2	Model 3
Parasite count	0.333 (0.673)	−0.065 [0.032]** −19.545	−0.064 [0.031]** −19.345	−0.064 [0.032]** −19.198
Diarrhea	0.142 (0.349)	−0.018 [0.009]* −12.819	−0.020 [0.009]** −13.834	−0.018 [0.009]* −12.803
Anemia	0.426 (0.495)	−0.085 [0.028]*** −20.059	−0.081 [0.027]*** −18.908	−0.083 [0.027]*** −19.388
MacArthur Communicative Development Test score	13.354 (18.952)	4.031 [1.650]** 30.182	5.652 [1.642]*** 42.325	5.557 [1.641]*** 41.609
Picture Peabody Vocabulary Test percentile score	30.656 (24.864)	2.668 [1.689] 8.702	3.206 [1.430]** 10.460	3.083 [1.410]** 10.058
Height-for-age z-score	−0.605 (1.104)	0.007 [0.043] −1.161	−0.002 [0.038] 0.279	0.002 [0.039] −0.323
Weight-for-height z-score	0.125 (1.133)	0.002 [0.034] 1.790	−0.005 [0.036] −4.119	−0.011 [0.037] −8.727

Program impacts

TABLE 6—REGRESSIONS OF SATISFACTION AND MATERNAL MENTAL HEALTH MEASURES ON PROGRAM DUMMY

Dependent variable	Control group mean (std. dev.)	Model 1	Model 2	Model 3
Satisfaction with floor quality	0.511 (0.500)	0.219 [0.023]*** 42.784	0.223 [0.024]*** 43.635	0.222 [0.026]*** 43.421
Satisfaction with house quality	0.605 (0.489)	0.092 [0.021]*** 15.136	0.087 [0.021]*** 14.369	0.084 [0.022]*** 13.892
Satisfaction with quality of life	0.601 (0.490)	0.112 [0.022]*** 18.650	0.112 [0.021]*** 18.557	0.112 [0.022]*** 18.701
Depression scale (CES-D scale)	18.532 (9.402)	-2.315 [0.616]*** -12.493	-2.417 [0.570]*** -13.043	-2.372 [0.562]*** -12.797
Perceived stress scale (PSS)	16.514 (6.914)	-1.751 [0.428]*** -10.603	-1.769 [0.396]*** -10.710	-1.742 [0.396]*** -10.551

The Importance of Housing

- ▶ Housing is central to well-being and quality of life.
- ▶ Benefits of proper housing:
 - ▶ Improves mental and physical health.
 - ▶ Protects against environmental hazards.
 - ▶ Enhances security and asset accumulation.
- ▶ Empirical evidence:
 - ▶ Better floors and sanitation improve satisfaction and health.

Shelter from the storm: Upgrading housing infrastructure in Latin American slums (JUE Galiani et al 2017)

Objectives of the Study

- ▶ Provide experimental evidence on slum upgrading effects.
- ▶ Focus on TECHO's pre-fabricated housing intervention in:
 - ▶ El Salvador.
 - ▶ Mexico.
 - ▶ Uruguay.
- ▶ Key outcomes studied:
 - ▶ Housing quality and satisfaction.
 - ▶ Well-being and safety perceptions.
 - ▶ Child health.

Who Lives in Slums?

- ▶ Slums emerge due to willingness of the poor to live in substandard housing:
 - ▶ Proximity to city center and employment opportunities.
- ▶ Typical slum conditions:
 - ▶ Dirt floors, makeshift walls and roofs.
 - ▶ Poor access to clean water, sanitation, and electricity.
- ▶ Slum life often creates a poverty trap across generations.

Economic and Housing Comparisons

- ▶ Slum dwellers generally poorer than non-slum poor in housing quality.
- ▶ Examples from surveys in El Salvador, Mexico, and Uruguay:
 - ▶ Non-slum poor households often rent or benefit from subsidies.
 - ▶ Slum households have significantly worse flooring, walls, and access to water.
- ▶ Differences highlight housing deprivation among slum dwellers.

Geographic Factors and Poverty

- ▶ Central urban slums offer better proximity to jobs:
 - ▶ Income premiums for slum residents near city centers.
- ▶ Peripheral slum dwellers face greater disadvantages:
 - ▶ Higher poverty and poorer labor market outcomes.
- ▶ Geography plays a key role in slum residents' economic opportunities.

TECHO Program Overview

- ▶ TECHO provides basic, pre-fabricated, transitional houses.
- ▶ Targets extremely poor families living in informal settlements (slums).
- ▶ Operates across 19 Latin American countries.
- ▶ Objective: Improve well-being and living standards.
- ▶ Over 100,000 houses built with volunteer assistance since inception.

TECHO House Features

- ▶ Size: 18 m² (6m x 3m).
- ▶ Construction: Insulated pinewood/aluminum walls, tin roof.
- ▶ Design:
 - ▶ Elevated floors (30–80 cm) to prevent flooding and infestations.
 - ▶ Portable and modular for flexibility in relocation.
- ▶ Limitations:
 - ▶ No bathrooms, kitchens, or indoor plumbing.



Fig. 1. TECHO house.

Benefits of Transitional Housing

- ▶ Improves living standards for vulnerable populations.
- ▶ Protects against environmental hazards:
 - ▶ Reduces dampness and exposure to rain.
 - ▶ Limits infestations and health risks.
- ▶ Provides dignity and a sense of security for households.
- ▶ Adaptable solution for families at risk of eviction.

Overview of Experimental Design

- ▶ TECHO program budget constraints limited the number of houses built.
- ▶ Beneficiaries were selected through a lottery system:
 - ▶ Ensured random assignment among eligible households.
- ▶ Geographic focus: Eligible settlements in El Salvador, Mexico, and Uruguay.
- ▶ Randomization allows robust evaluation of housing intervention impacts.

Geographic focus

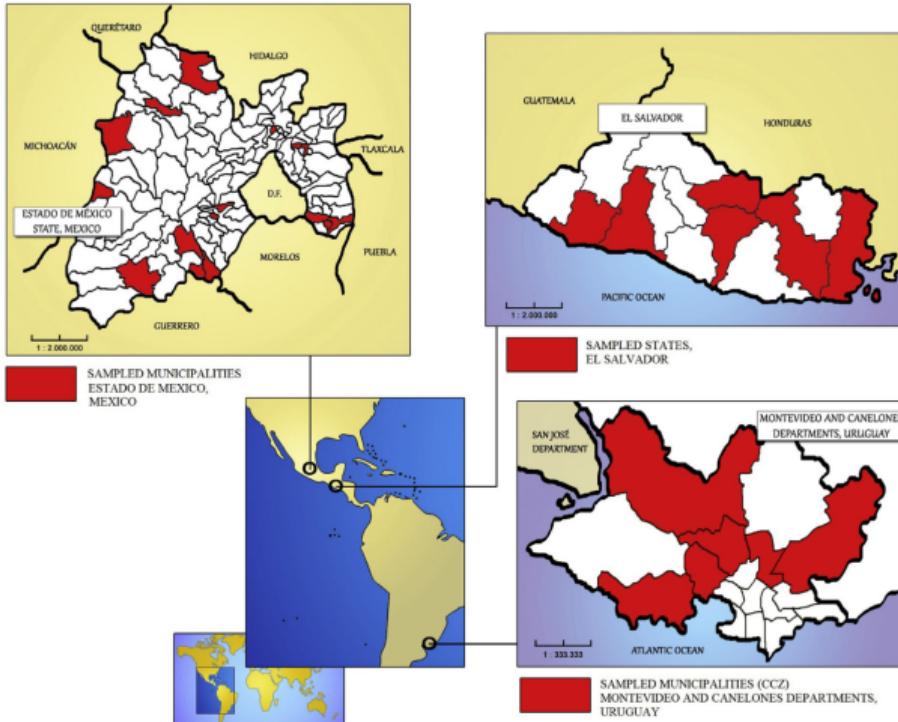


Fig. 2. Evaluation sites.

Selection and Baseline Survey

- ▶ TECHO identified eligible settlements and conducted a census to select households.
- ▶ Eligibility criteria:
 - ▶ Poor housing conditions and socioeconomic status.
- ▶ Baseline survey gathered data on:
 - ▶ Housing quality, demographics, and economic characteristics.
- ▶ Separated data collection from intervention to avoid bias.

Geographic focus

S. Ganani et al./Journal of Urban Economics 98 (2017) 187–213

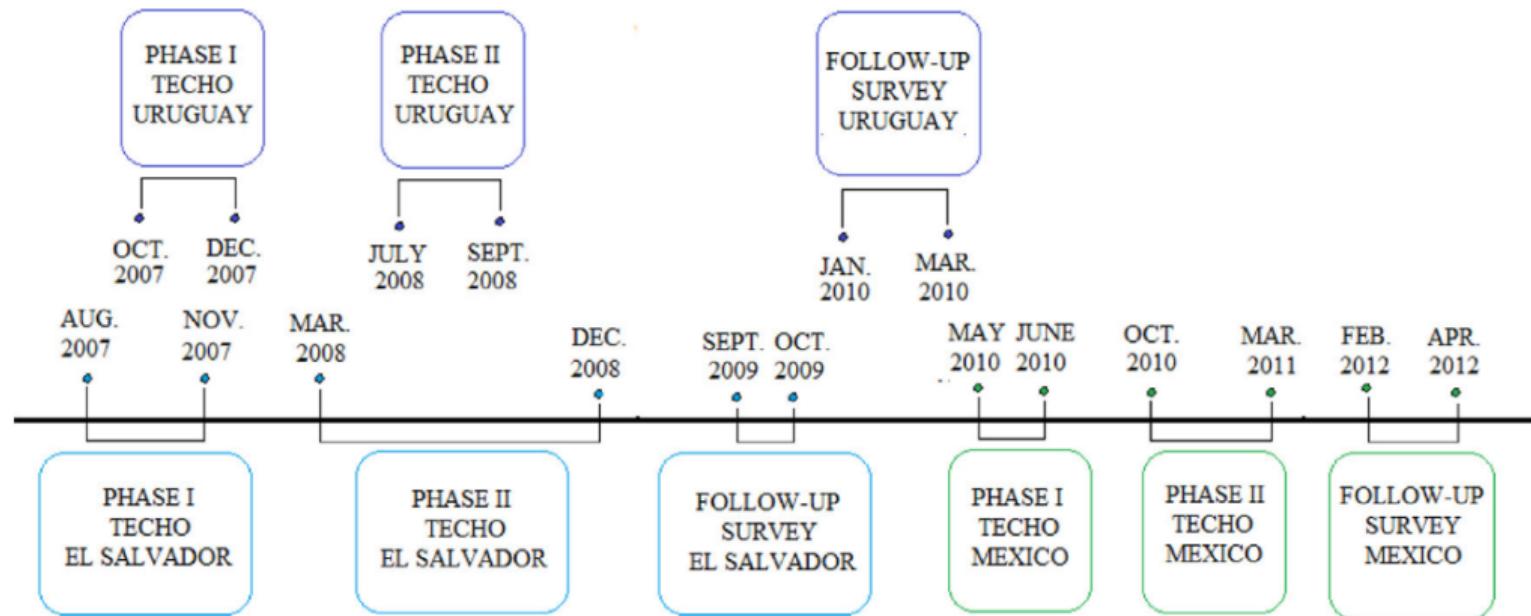


Fig. 3. Timeline of interventions.

Random Assignment to Groups

- ▶ Households in eligible settlements were randomly assigned:
 - ▶ Treatment group: Offered TECHO houses.
 - ▶ Control group: Not offered houses initially.
- ▶ Ensured similar probabilities for inclusion across groups.
- ▶ Minimizes selection bias in outcome evaluations.

Managing Bias and Attrition

- ▶ Data collection conducted independently by professional survey teams.
- ▶ Survey teams avoided mentioning TECHO to respondents:
 - ▶ Reduced desirability bias in responses.
- ▶ Attrition rates:
 - ▶ Ranged from 5.5% to 7% across groups.
 - ▶ No statistically significant differences between treatment and control groups.

Table A1

Timeline of intervention and surveys.

	El Salvador	Mexico	Uruguay
Phase 1 - construction	August–December, 2007	May–August, 2010	October–December, 2007
Phase 2 - construction	March–August, 2008	November, 2010–March, 2011	July–September, 2008
Follow-up survey	September–October, 2009	February–April, 2012	January–March, 2010

Note: Baseline surveys were conducted approximately one month before the start of each phase of construction. Given financial constraints, 5 out of 159 houses in El Salvador at Phase 2 were built in December 2008.

Estimation Approach

- ▶ Estimates average intention-to-treat effects (ITT).
- ▶ High compliance rates make ITT close to average treatment effects (ATE).
- ▶ Regression model:

$$Y_{ij} = \alpha + \gamma \text{Treat}_{ij} + \beta X_{ij} + \mu_j + \epsilon_{ij}$$

- ▶ Key components:
 - ▶ Y_{ij} : Outcome variable for household or individual i in settlement j .
 - ▶ Treat_{ij} : Indicator for experimental treatment assignment.
 - ▶ X_{ij} : Vector of pre-treatment characteristics.
 - ▶ μ_j : Settlement fixed effects.
 - ▶ ϵ_{ij} : Error term.

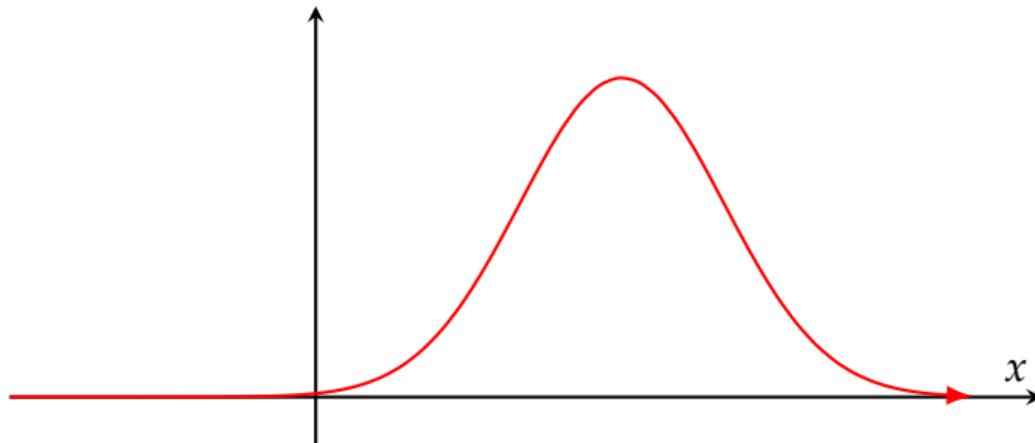
Results

Table 1

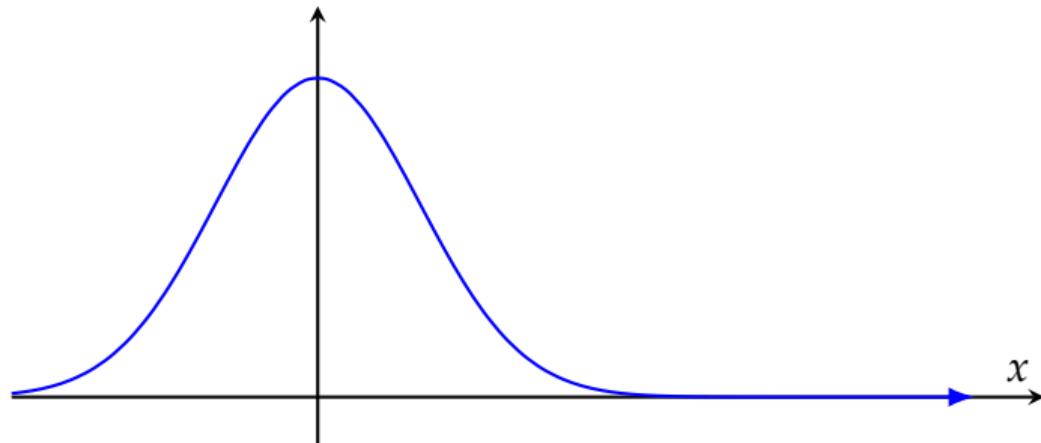
Regressions of housing quality on program dummy.

Dependent variable	El Salvador			Uruguay			Mexico			All		
	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2
Number of rooms	2.690 (1.330)	0.233 [0.117]**	0.234 [0.115]**	3.486 (1.636)	0.100 [0.132]	0.075 [0.132]	3.067 (1.285)	0.234 [0.088]***	0.214 [0.086]**	3.088 (1.440)	0.188 [0.064]***	0.175 [0.064]***
Share of rooms with good quality	0.165 (0.274)	0.284 [0.027]***	0.288 [0.026]***	0.317 (0.415)	0.197 [0.033]***	0.197 [0.033]***	0.706 (0.355)	0.111 [0.022]***	0.110 [0.022]***	0.442 (0.426)	0.182 [0.016]***	0.183 [0.016]***
floors		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Share of rooms with good quality	0.104 (0.223)	0.255 [0.026]***	0.255 [0.026]***	0.483 (0.471)	0.136 [0.035]***	0.135 [0.035]***	0.420 (0.388)	0.167 [0.024]***	0.164 [0.024]***	0.352 (0.410)	0.178 [0.017]***	0.177 [0.017]***
walls		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Share of rooms with good quality	0.283 (0.385)	0.231 [0.030]***	0.235 [0.030]***	0.312 (0.414)	0.188 [0.033]***	0.188 [0.033]***	0.599 (0.374)	0.099 [0.022]***	0.096 [0.022]***	0.427 (0.416)	0.161 [0.016]***	0.161 [0.016]***
roofs		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Share of rooms with windows	0.192 (0.274)	0.233 [0.024]***	0.235 [0.025]***	0.607 (0.336)	0.111 [0.025]***	0.115 [0.025]***	0.303 (0.329)	0.183 [0.021]***	0.178 [0.021]***	0.364 (0.358)	0.171 [0.013]***	0.171 [0.013]***
		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Housing quality summary index	0.000 (0.646)	0.960 [0.072]***	0.965 [0.071]***	0.000 (0.515)	0.328 [0.041]***	0.327 [0.041]***	0.000 (0.570)	0.387 [0.040]***	0.377 [0.040]***	0.000 (0.576)	0.507 [0.029]***	0.504 [0.029]***
		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Sett. fixed-effects controls		✓	✓		✓	✓		✓	✓		✓	✓
		✗	✓		✗	✓		✗	✓		✗	✓

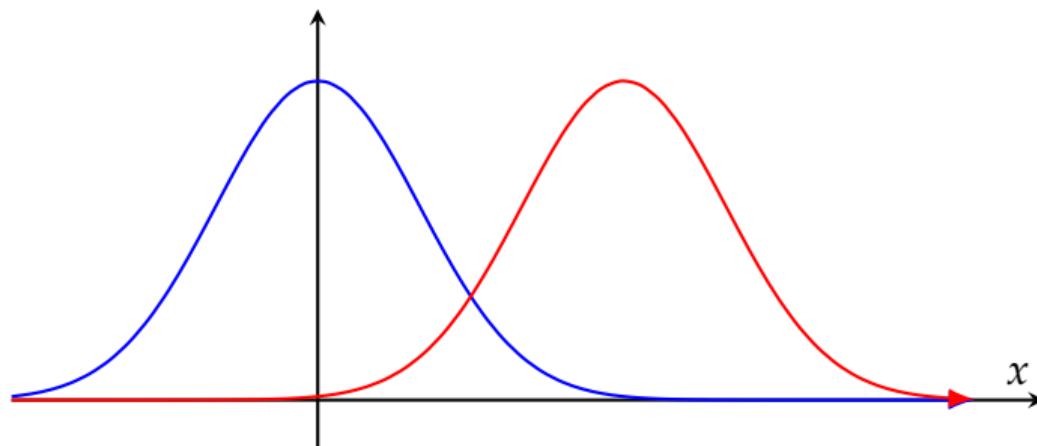
(Aside) Many Experiments: a distribution of Estimates



Distribution of Estimates if true effect is 0



(Aside) Two distributions under two hypothesis



(Aside) Four results from hypotheses testing

		What we really want to know but cannot observe	
		Reality/underlying truth	
		No impact	Impact
What we actually measure/learn		No impact detected	
Evaluation results		Impact detected	

(Aside) Four results from hypotheses testing

		Reality/underlying truth	
		No impact	Impact
Evaluation results	No impact detected	GREAT!	False negative: you conclude there is NO impact when there is
	Impact detected	False positive: you conclude there is impact when there is not	GREAT!

False Positive Rates

- ▶ Probabilidad de un falso positivo: Está dada por el nivel de significancia (α) del test estadístico.
- ▶ Si $\alpha = 0.05$, significa que estamos dispuestos a aceptar un 5% de probabilidad de cometer un error tipo I.

Results

Table 1

Regressions of housing quality on program dummy.

Dependent variable	El Salvador			Uruguay			Mexico			All		
	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2
Number of rooms	2.690 (1.330)	0.233 [0.117]**	0.234 [0.115]**	3.486 (1.636)	0.100 [0.132]	0.075 [0.132]	3.067 (1.285)	0.234 [0.088]***	0.214 [0.086]**	3.088 (1.440)	0.188 [0.064]***	0.175 [0.064]***
Share of rooms with good quality	0.165 (0.274)	0.284 [0.027]***	0.288 [0.026]***	0.317 (0.415)	0.197 [0.033]***	0.197 [0.033]***	0.706 (0.355)	0.111 [0.022]***	0.110 [0.022]***	0.442 (0.426)	0.182 [0.016]***	0.183 [0.016]***
floors		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Share of rooms with good quality	0.104 (0.223)	0.255 [0.026]***	0.255 [0.026]***	0.483 (0.471)	0.136 [0.035]***	0.135 [0.035]***	0.420 (0.388)	0.167 [0.024]***	0.164 [0.024]***	0.352 (0.410)	0.178 [0.017]***	0.177 [0.017]***
walls		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Share of rooms with good quality	0.283 (0.385)	0.231 [0.030]***	0.235 [0.030]***	0.312 (0.414)	0.188 [0.033]***	0.188 [0.033]***	0.599 (0.374)	0.099 [0.022]***	0.096 [0.022]***	0.427 (0.416)	0.161 [0.016]***	0.161 [0.016]***
roofs		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Share of rooms with windows	0.192 (0.274)	0.233 [0.024]***	0.235 [0.025]***	0.607 (0.336)	0.111 [0.025]***	0.115 [0.025]***	0.303 (0.329)	0.183 [0.021]***	0.178 [0.021]***	0.364 (0.358)	0.171 [0.013]***	0.171 [0.013]***
		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Housing quality summary index	0.000 (0.646)	0.960 [0.072]***	0.965 [0.071]***	0.000 (0.515)	0.328 [0.041]***	0.327 [0.041]***	0.000 (0.570)	0.387 [0.040]***	0.377 [0.040]***	0.000 (0.576)	0.507 [0.029]***	0.504 [0.029]***
		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Sett. fixed-effects controls		✓	✓		✓	✓		✓	✓		✓	✓
		✗	✓		✗	✓		✗	✓		✗	✓

Results

Table 2

Regressions of housing investment on program dummy.

Dependent variable	El Salvador			Uruguay			Mexico			All		
	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2
Sink on room where food is prepared	0.016 (0.123)	-0.008 [0.010]	-0.006 [0.010]	0.335 (0.472)	-0.014 [0.037]	-0.009 [0.037]	0.020 (0.140)	-0.008 [0.010]	-0.010 [0.010]	0.112 (0.315)	-0.010 [0.013]	-0.009 [0.013]
On-site water supply	0.252 (0.434)	-0.062 [0.034]*	-0.059 [0.034]*	0.897 (0.304)	0.008 [0.022]	0.001 [0.022]	0.551 (0.498)	-0.010 [0.032]	-0.014 [0.032]	0.573 (0.494)	-0.017 [0.017]	-0.019 [0.017]
Electricity connection inside the house	0.496 (0.500)	-0.046 [0.042]	-0.038 [0.042]	0.933 (0.251)	0.024 [0.018]	0.023 [0.018]	0.903 (0.297)	-0.044 [0.022]*	-0.049 [0.023]**	0.800 (0.400)	-0.021 [0.015]	-0.022 [0.015]
Use gas or kerosene stove to cook	0.167 (0.373)	0.016 [0.032]	0.022 [0.032]	0.521 (0.500)	-0.014 [0.039]	-0.022 [0.038]	0.252 (0.434)	-0.051 [0.023]**	-0.055 [0.022]**	0.309 (0.462)	-0.022 [0.018]	-0.023 [0.018]
House with own toilet	0.516 (0.500)	-0.069 [0.042]	-0.064 [0.041]	0.730 (0.444)	-0.011 [0.035]	-0.018 [0.034]	0.392 (0.488)	0.012 [0.034]	0.005 [0.034]	0.527 (0.499)	-0.016 [0.021]	-0.020 [0.021]
Housing investment summary index	0.000 (0.425)	-0.065 [0.042]	-0.054 [0.041]	0.000 (0.539)	0.006 [0.042]	-0.004 [0.042]	0.000 (0.374)	-0.052 [0.029]*	-0.063 [0.029]**	0.000 (0.442)	-0.036 [0.021]*	-0.038 [0.021]*
Sett. fixed-effects controls		√	√		√	√		√	√		√	√
		×	√		×	√		×	√		×	√

Results

Regressions of satisfaction on program dummy.

Dependent variable	El Salvador			Uruguay			Mexico			All		
	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2
Panel A. Binary outcomes												
Satisfaction with floors quality	0.163 (0.369)	0.387 [0.039]***	0.389 [0.040]***	0.314 (0.464)	0.121 [0.038]***	0.120 [0.038]**	0.551 (0.498)	0.108 [0.034]***	0.108 [0.034]***	0.374 (0.484)	0.180 [0.022]***	0.181 [0.021]***
Satisfaction with walls quality	0.132 (0.338)	[0.000]	[0.000]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.000]	[0.000]	[0.000]
Satisfaction with roofs quality	0.159 (0.366)	0.477 [0.038]***	0.479 [0.039]***	0.267 (0.443)	0.142 [0.037]***	0.140 [0.037]**	0.439 (0.496)	0.149 [0.035]***	0.149 [0.035]***	0.303 (0.459)	0.226 [0.022]***	0.227 [0.021]***
Satisfaction with protection against water	0.167 (0.373)	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Satisfaction with quality of life	0.506 (0.501)	0.426 [0.038]***	0.427 [0.039]***	0.325 (0.469)	0.166 [0.038]***	0.158 [0.038]***	0.347 (0.476)	0.094 [0.034]***	0.098 [0.035]***	0.291 (0.454)	0.199 [0.021]***	0.200 [0.022]***
Satisfaction summary index	0.000 (0.692)	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.005]	[0.005]	[0.000]	[0.000]	[0.000]
		[0.086]***	[0.087]***	(0.720)	[0.062]***	[0.062]***	(0.708)	[0.052]***	[0.052]***	(0.706)	[0.038]***	[0.038]***
		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]

Results

	OLS	IV	IV (robust)	IV (robust) + controls	IV (robust) + instruments	IV (robust) + instruments	IV (robust) + instruments	IV (robust) + instruments	IV (robust) + instruments	IV (robust) + instruments	IV (robust) + instruments	
Panel B. Standardized outcomes												
Z-score satisfaction with floors quality	0.000 (0.952)	1.126 [0.109]***	1.261 [0.111]***	0.000 (0.964)	0.323 [0.082]***	0.317 [0.082]***	0.000 (0.950)	0.189 [0.070]***	0.191 [0.070]***	0.000 (0.954)	0.496 [0.050]***	0.499 [0.050]***
Z-score satisfaction with walls quality	0.000 (0.958)	[0.000] 1.565 [0.120]***	[0.000] 1.558 [0.122]***	0.000 (0.964)	[0.000] 0.379 [0.082]***	[0.000] 0.374 [0.082]***	0.000 (0.955)	[0.007] 0.292 [0.075]***	[0.006] 0.290 [0.074]***	0.000 (0.958)	[0.000] 0.632 [0.053]***	[0.000] 0.634 [0.053]***
Z-score satisfaction with roofs quality	0.000 (0.942)	[0.000] 1.421 [0.107]***	[0.000] 1.418 [0.109]***	0.000 (0.964)	[0.000] 0.413 [0.079]***	[0.000] 0.403 [0.080]***	0.000 (0.954)	[0.000] 0.345 [0.072]***	[0.000] 0.354 [0.072]***	0.000 (0.952)	[0.000] 0.630 [0.050]***	[0.000] 0.633 [0.050]***
Z-score satisfaction with protection against water	0.000 (0.952)	[0.000] 1.339 [0.111]***	[0.000] 1.331 [0.113]***	0.000 (0.971)	[0.000] 0.373 [0.083]***	[0.000] 0.357 [0.083]***	0.000 (0.955)	[0.000] 0.263 [0.072]***	[0.000] 0.267 [0.072]***	0.000 (0.958)	[0.000] 0.562 [0.051]***	[0.000] 0.563 [0.051]***
Z-score satisfaction with quality of life	0.000 (0.915)	[0.000] 0.627 [0.088]***	[0.000] 0.634 [0.089]***	0.000 (0.964)	[0.000] 0.298 [0.077]***	[0.000] 0.300 [0.078]***	0.000 (0.942)	[0.000] 0.323 [0.071]***	[0.000] 0.322 [0.071]***	0.000 (0.940)	[0.000] 0.389 [0.045]***	[0.000] 0.390 [0.045]***
Z-score satisfaction summary index	0.000 (0.744)	[0.000] 1.242 [0.088]***	[0.000] 1.241 [0.089]***	0.000 (0.732)	[0.000] 0.357 [0.062]***	[0.000] 0.350 [0.063]***	0.000 (0.711)	[0.000] 0.281 [0.052]***	[0.000] 0.283 [0.052]***	0.000 (0.726)	[0.000] 0.540 [0.039]***	[0.000] 0.542 [0.039]***
Sett. fixed-effects controls		[0.000] √ ×	[0.000] √ √		[0.000] √ ×	[0.000] √ √		[0.000] √ ×	[0.000] √ √		[0.000] √ ×	[0.000] √ √

Results

Regressions of perception of security on program dummy.

Dependent variable	El Salvador			Uruguay			Mexico			All		
	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2
Safe inside the house during the last 12 months	0.643 (0.479)	0.175 [0.040]***	0.178 [0.041]***	0.621 (0.486)	0.029 [0.038]	0.025 [0.038]	0.718 (0.450)	0.001 [0.031]	0.002 [0.031]	0.668 (0.471)	0.053 [0.021]**	0.052 [0.021]**
Safe leaving the house alone during the last 12 months	0.601 (0.490)	[0.000] [0.043]***	[0.000] [0.043]***	0.376 (0.485)	-0.066 [0.037]*	-0.068 [0.037]*	0.551 (0.498)	0.014 [0.069]	0.018 [0.944]	0.512 [0.969]	[0.013] [0.022]	[0.014] [0.022]
Safe leaving the kids alone in the house during last 12 months	0.248 (0.432)	0.141 [0.043]***	0.144 [0.043]***	0.170 (0.376)	0.001 [0.029]	-0.002 [0.029]	0.162 (0.368)	-0.007 [0.026]	-0.005 [0.026]	0.188 (0.390)	0.032 [0.018]*	0.031 [0.018]*
The house had been robbed in the last 12 months	0.031 (0.173)	0.023 [0.019]	0.023 [0.019]	0.268 (0.443)	0.013 [0.035]	0.013 [0.035]	0.065 (0.246)	0.002 [0.017]	0.002 [0.017]	0.116 (0.319)	0.011 [0.014]	0.010 [0.014]
Perception of security summary index	0.000 (0.617)	0.210 [0.059]***	0.215 [0.000]	0.000 (0.629)	-0.029 [0.050]	-0.035 [0.051]	0.000 (0.547)	-0.017 [0.042]	-0.014 [0.042]	0.000 (0.591)	0.034 [0.029]	0.034 [0.029]
Sett. fixed-effects controls		✓ x	✓ ✓		✓ x	✓ ✓		✓ x	✓ ✓		✓ x	✓ ✓

Results

Regressions of durable goods on program dummy.

Dependent v	El Salvador			Uruguay			Mexico			All		
	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2
T.V	0.434 (0.496)	-0.013 [0.047]	0.000 [0.046]	0.926 (0.261)	0.005 [0.022]	0.010 [0.021]	0.728 (0.445)	-0.034 [0.030]	-0.037 [0.030]	0.711 (0.453)	-0.016 [0.018]	-0.014 [0.018]
Fan	0.034 (0.181)	0.015 [0.020]	0.019 [0.020]	0.535 [0.499]	0.018 [0.040]	0.017 [0.040]	0.018 [0.131]	0.001 [0.010]	0.001 [0.010]	0.177 [0.381]	0.010 [0.015]	0.010 [0.015]
Kitchen or gas stove	0.404 (0.491)	0.000 [0.044]	0.008 [0.043]	0.768 [0.423]	-0.008 [0.034]	-0.008 [0.035]	0.451 [0.498]	-0.035 [0.030]	-0.041 [0.030]	0.534 [0.499]	-0.018 [0.020]	-0.019 [0.020]
Refrigerator	0.123 (0.329)	-0.028 [0.032]	-0.016 [0.031]	0.683 [0.466]	-0.017 [0.037]	-0.017 [0.037]	0.207 [0.405]	-0.005 [0.026]	-0.010 [0.026]	0.327 [0.469]	-0.014 [0.018]	-0.013 [0.018]
Bicycle	0.323 (0.468)	0.037 [0.043]	0.044 [0.043]	0.546 [0.498]	0.014 [0.040]	0.020 [0.040]	0.279 [0.449]	-0.029 [0.030]	-0.028 [0.030]	0.370 [0.483]	0.001 [0.021]	0.003 [0.021]
Assets summary index	0.000 (0.477)	0.030 [0.050]	0.052 [0.048]	0.000 [0.541]	-0.009 [0.047]	-0.002 [0.047]	0.000 [0.472]	-0.035 [0.034]	-0.042 [0.034]	0.000 [0.494]	-0.012 [0.025]	-0.009 [0.024]
Sett. fixed-effects controls		√	√		√	√		√	√		√	√
	x	√	√	x	√	√	x	√	√	x	√	√

Results

Regressions of demographic variables on program dummy.

Dependent variable	El Salvador			Uruguay			Mexico			All		
	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2
HH size	5.453 (2.513)	-0.031 [0.273]	-0.100 [0.261]	4.954 (2.657)	0.253 [0.220]	0.269 [0.216]	5.264 (2.595)	0.002 [0.175]	-0.035 [0.171]	5.223 [2.596]	0.079 [0.124]	0.070 [0.122]
Newborns (≤ 1)	0.116 (0.321)	0.011 [0.031]	0.010 [0.032]	0.124 [0.351]	-0.009 [0.028]	-0.008 [0.028]	0.110 [0.320]	0.028 [0.025]	0.027 [0.025]	0.116 [0.330]	0.011 [0.016]	0.012 [0.016]
Newborns (≤ 2)	0.229 (0.429)	-0.018 [0.041]	-0.022 [0.041]	0.262 [0.515]	0.053 [0.041]	0.066 [0.040]	0.239 [0.477]	0.023 [0.036]	0.023 [0.035]	0.243 [0.476]	0.023 [0.022]	0.027 [0.022]
Adults (> 18)	2.791 (1.418)	-0.009 [0.146]	-0.027 [0.138]	2.376 [1.175]	-0.021 [0.092]	-0.025 [0.091]	2.633 [1.374]	-0.118 [0.096]	-0.134 [0.092]	2.599 [1.338]	-0.059 [0.062]	-0.068 [0.060]
Demographic summary index	0.000 (1.068)	0.026 [0.120]	0.008 [0.117]	0.000 [0.954]	0.063 [0.078]	0.069 [0.078]	0.000 [1.020]	0.037 [0.078]	0.023 [0.077]	0.000 [1.013]	0.043 [0.051]	0.040 [0.051]
Sett. fixed-effects controls		✓	✓		✓	✓		✓	✓		✓	✓
		✗	✓		✗	✓		✗	✓		✗	✓

Results

Regressions of labor and income variables on program dummy.

Dependent variable	El Salvador			Uruguay			Mexico			All		
	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2	Follow up control mean (Std. Dev.)	Model 1	Model 2
Monthly income per capita (USD)	31.618 (29.224)	0.704 [3.098]	1.422 [2.876]	94.862 (156.792)	-3.371 [13.443]	-3.606 [13.420]	55.422 (54.912)	-0.422 [3.759]	0.240 [3.819]	59.572 (81.054)	-1.835 [3.905]	-2.278 [3.858]
Hours worked last week by head of HH	38.033 (17.351)	1.738 [2.072]	1.050 [2.074]	39.081 (19.877)	0.025 [1.821]	0.592 [1.836]	41.086 (19.498)	0.824 [1.616]	0.651 [1.574]	39.711 (19.154)	0.704 [1.055]	0.847 [1.039]
Hours worked last week by spouse	35.500 (25.995)	4.974 [5.418]	4.412 [5.870]	39.353 (19.561)	-0.047 [2.661]	-0.140 [2.670]	28.250 (18.867)	-3.052 [3.026]	-1.656 [3.151]	34.194 (20.903)	-0.693 [1.883]	-0.399 [1.887]
Economic summary index	0.000 (0.395)	0.089 [0.053]*	0.089 [0.052]*	0.000 (0.488)	-0.006 [0.039]	-0.001 [0.039]	0.000 (0.445)	0.065 [0.044]	0.072 [0.044]	0.000 (0.445)	0.047 [0.026]*	0.051 [0.026]*
Sett. fixed-effects controls		√	√		√	√		√	√		√	√
	x	√	√	x	√	√	x	√	√	x	√	√

Results

Regressions of health variables of children on program dummy.

Dependent variable	El Salvador			Uruguay			Mexico			All			El Salvador and Mexico		
	Follow up	Model 1	Model 2	Follow up	Model 1	Model 2	Follow up	Model 1	Model 2	Follow up	Model 1	Model 2	Follow up	Model 1	Model 2
	control	mean	(Std. Dev.)	control	mean	(Std. Dev.)									
Respiratory disease during last 4 weeks	0.690 (0.463)	-0.041 [0.060]	-0.034 [0.061]	0.175 (0.381)	-0.002 [0.034]	0.005 [0.035]	0.417 (0.494)	-0.047 [0.043]	-0.041 [0.044]	0.403 (0.490)	-0.029 [0.025]	-0.025 [0.025]	0.519 (0.500)	-0.047 [0.035]	-0.045 [0.035]
Diarrhea episodes During last 4 weeks	0.168 (0.374)	-0.050 [0.042]	-0.046 [0.043]	0.158 (0.365)	-0.011 [0.034]	-0.004 [0.033]	0.135 (0.342)	-0.035 [0.028]	-0.031 [0.028]	0.151 (0.358)	-0.027 [0.019]	-0.024 [0.019]	0.147 (0.354)	-0.040 [0.023]*	-0.038 [0.023]
Health Summary index	0.000 (0.746)	0.111 [0.093]	0.098 [0.093]	0.000 (0.727)	0.016 [0.067]	-0.002 [0.068]	0.000 (0.765)	0.102 [0.063]	0.090 [0.063]	0.000 (0.746)	0.068 [0.041]*	0.059 [0.041]	0.000 (0.757)	0.106 [0.052]**	0.102 [0.052]*
Sett. fixed-effects controls	✓ x	✓ ✓		✓ x	✓ ✓										

Summary of Findings

- ▶ Slum upgrading via TECHO housing improves:
 - ▶ Housing quality and satisfaction.
 - ▶ Perceptions of safety and well-being.
 - ▶ Child health and cognitive outcomes.
- ▶ Significant impacts achieved at a relatively low cost.
- ▶ Highlights the importance of in situ housing improvements.

Overview of the Policy Trap

- ▶ Slums face extreme policy neglect beyond the lack of public goods.
- ▶ Key issues:
 - ▶ Informal nature of slum neighborhoods.
 - ▶ Enumeration challenges.
 - ▶ Conflicting governance interests.
- ▶ Result: Limited political will to address slum conditions.

Informality and Policy Neglect

- ▶ Informal settlements often excluded from urban planning.
- ▶ Public investments are avoided to prevent:
 - ▶ More entrenched occupancy rights.
 - ▶ Perceptions of legitimizing informal settlements.
- ▶ Examples:
 - ▶ Countries like Egypt and Mexico reduced slum prevalence through political commitment.

Enumeration Challenges

- ▶ Slum populations often undercounted in official surveys.
- ▶ Consequences:
 - ▶ Limited representation in policy processes.
 - ▶ Difficulty planning effective interventions.
- ▶ Example: Makoko slum in Lagos was omitted from the 2007 national census.

Consequences of the Policy Trap

- ▶ High transaction costs and opaque governance discourage investment.
- ▶ Lack of census data and underrepresentation perpetuate neglect.
- ▶ Slum governance often prioritizes private gains over community welfare.
- ▶ Policy interventions remain rare and insufficient.

Relationship Between Slum Growth and Economic Growth

- ▶ Economic growth is often associated with reductions in slum prevalence.
- ▶ Cross-country findings (Arimah, 2010):
 - ▶ Slum prevalence negatively correlated with GDP per capita.
 - ▶ Positively correlated with debt and inequality (Gini coefficient).

Challenges in Scaling Successful Policies

- ▶ Successful slum policies are often localized and hard to replicate.
- ▶ Common barriers:
 - ▶ Resource constraints.
 - ▶ Institutional inefficiencies.
 - ▶ Variability in local governance structures.
- ▶ Need for adaptable frameworks that address diverse urban contexts.

Summary of Key Findings

- ▶ Slums are complex and persistent phenomena shaped by:
 - ▶ Human capital deficits.
 - ▶ Investment inertia.
 - ▶ Policy and governance failures.

Policy Implications

- ▶ Effective slum policies require:
 - ▶ Community involvement in planning and execution.
 - ▶ Targeted investments in human capital and infrastructure.
 - ▶ Recognition of informal systems alongside formalization.
- ▶ Balance between immediate needs and long-term urban integration.