

# Brazil: socioeconomic intervention for TB

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## Effectiveness of a conditional cash transfer programme on TB cure rate: a retrospective cohort study in Brazil

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# Background



**Surface:** 8,514,877 km<sup>2</sup> (5<sup>th</sup> largest country)

**States:** 27

**Borders:** 10 countries (Argentina, Bolivia, Colombia, French Guyana, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela)

**Population (2015):** 204.482.459 inhab. (5<sup>th</sup> largest population)

**Urban population:** 85%

**Social indicators (2014)**

- Total GDP: US\$ 2,417 trillions USD
- GDP/per capita: US\$ 11.790 USD
- Gini coefficient: 0.49
- HDI (2014): 0.755 (75<sup>th</sup>)
- Life expectancy: 74 year
- Child mortality: 12/thousand
- Literacy: 90.4%

# Background

- 70,000 new cases per year
- Since the end of the 1990s- decline in TB incidence and mortality
- Cure rates: 70.6% in 2012
- The End TB Strategy identifies conditional cash transfer interventions as powerful tools to improve TB control indicators

**Evaluation the role of the Bolsa Familia Programme (BFP) on TB cure rates in Brazil**

# Methods

- Retrospective cohort study
- Linkage:

**Notifiable Diseases  
Information System (SINAN)**



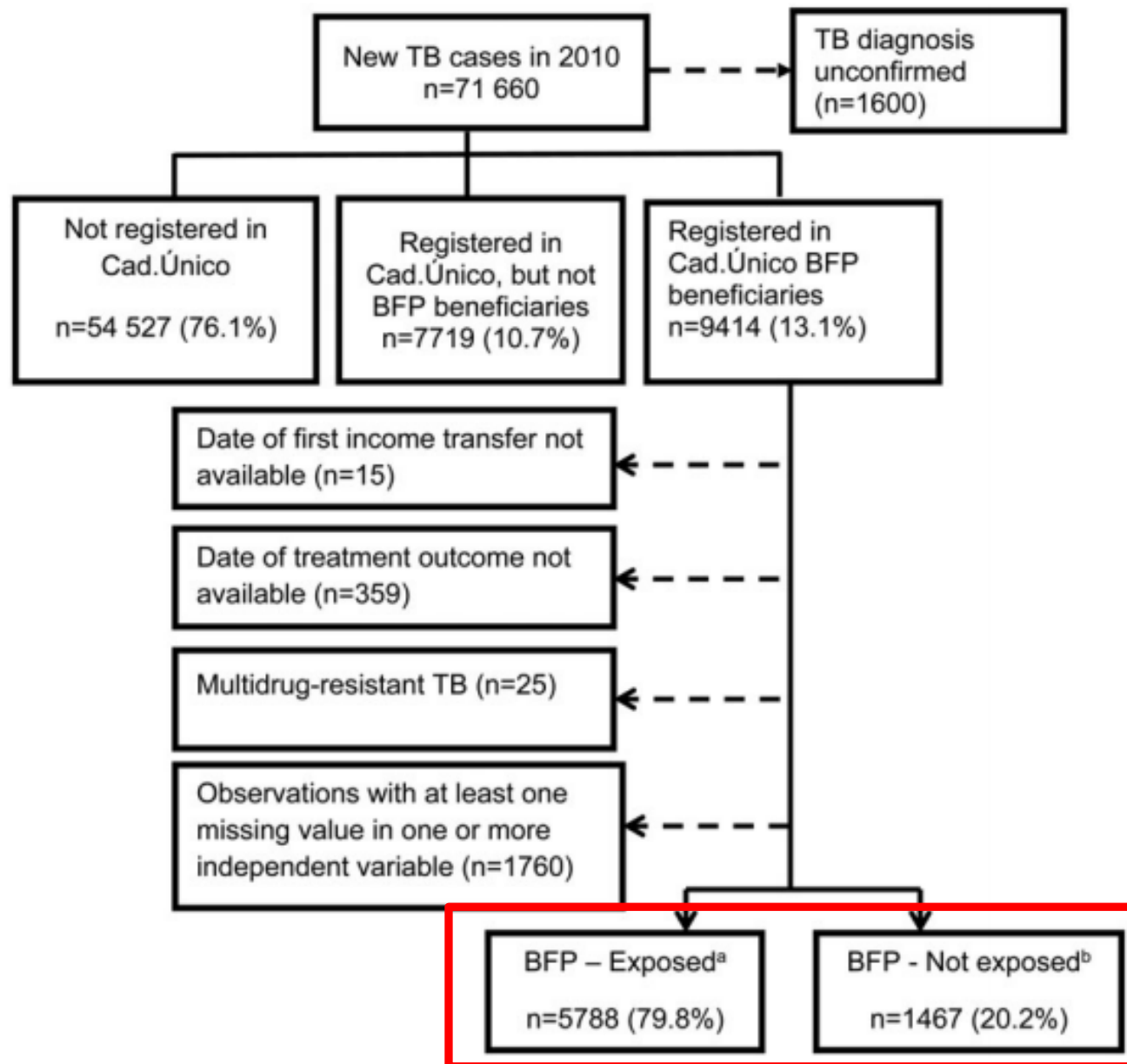
**TB individual data**

**CadÚnico**



**Individual who are eligible for social  
assistance or governmental programs**

# Methods



# Methods

- Multivariate analysis
  - dependent variable: treatment outcome (cure or not cure)
  - main independent variable: receiving BFP cash transfers during the treatment
- Adjusted by potential confounders
- Poisson regression with robust variance

# Results

- After excluding missing information a total of 7255 individuals were included
  - 5788 (79.8%): receiving BFP cash transfers during treatment
    - The mean value of the benefit received monthly of US\$55.6
- TB cure rate:
  - **82.1% (4752/5788)** patients exposed to BFP during TB treatment
  - **76.9% (1128/1467)** patients not exposed to BFP during TB treatment

# Results

## Demographic and clinical characteristics of the study population according to the BFP benefits exposure: Brazil, 2010

Demographic and clinical characteristics	Exposed during TB treatment n (%)	Not exposed during TB treatment n (%)	Total n
Total	5788 (100.0)	1467 (100.0)	7255
Gender			
Female	2950 (51.0)	767 (52.3)	3717
Male	2838 (49.0)	700 (47.7)	3638
Age group, years			
<15	500 (8.6)	123 (8.4)	623
15–49	4423 (76.4)	1163 (79.3)	5586
≥50	865 (14.9)	181 (12.3)	1046
Ethnicity			
Black	4085 (70.6)	995 (67.8)	5080
Other	1703 (29.4)	472 (32.1)	2175
TB type			
Pulmonary	5051 (87.3)	1290 (87.9)	6341
Extrapulmonary	737 (12.7)	177 (12.1)	914



# Results

## Demographic and clinical characteristics of the study population according to the BFP benefits exposure: Brazil, 2010

Demographic and clinical characteristics	Exposed during TB treatment n (%)	Not exposed during TB treatment n (%)	Total n
<b>Comorbidity</b>			
<b>HIV</b>			
Positive	373 (6.4)	116 (7.9)	489
Negative	3044 (52.6)	800 (54.5)	3844
Unknown	2371 (41.0)	551 (37.6)	2922
<b>DM</b>			
Yes	342 (5.9)	57 (3.9)	399
No	5446 (94.1)	1410 (96.1)	6856
<b>Alcoholism<sup>o</sup></b>			
Yes	640 (11.2)	171 (11.8)	811
No	5072 (88.8)	1280 (88.2)	6352
<b>Outcome</b>			
Cure	4752 (82.1)	1128 (76.9)	5880
Not cure	1036 (17.9)	339 (23.1)	1375

# Results

**Table 3.** TB treatment outcome according to the Bolsa Familia Programme (BFP) cash transfer exposure: Brazil, 2010

Variables	Cure Adjusted RR (95% CI)
BPF cash transfer	<u>1.07 (1.04 to 1.11)</u>
Age group, years	
<15	1.0
15–50	0.94 (0.90 to 0.97)
≥50	0.95 (0.91 to 0.99)
Ethnicity: Black	0.95 (0.93 to 0.97)
DM comorbidity	0.99 (0.95 to 1.04)
HIV positive	0.78 (0.73 to 0.82)
HIV status unknown	0.92 (0.90 to 0.94)
Extrapulmonary TB	1.01 (0.97 to 1.04)
Self-administered treatment (not DOT)	0.88 (0.86 to 0.90)
Rural area	0.98 (0.96 to 1.02)
Number of rooms <4	1.00 (0.98 to 1.02)
Inappropriate floor material <sup>a</sup>	0.96 (0.94 to 0.99)
Baseline household monthly per capita income (before BFP) <US\$20	0.97 (0.96 to 1.00)
Illiteracy	0.98 (0.95 to 0.99)
Total number of observations	7255

# Conclusions

- Supports the latest recommendations included in the WHO End TB Strategy
- This is the first evidence of effectiveness of a cash transfer program in TB cure rate
- More rigorous impact and process evaluations are urgently needed to understand the effectiveness and cost-effectiveness of such an integrated approach

# Acknowledgment



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