

Integrating retrospective impact evaluations with microsimulation models to forecast the effects of social protection

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Global Health

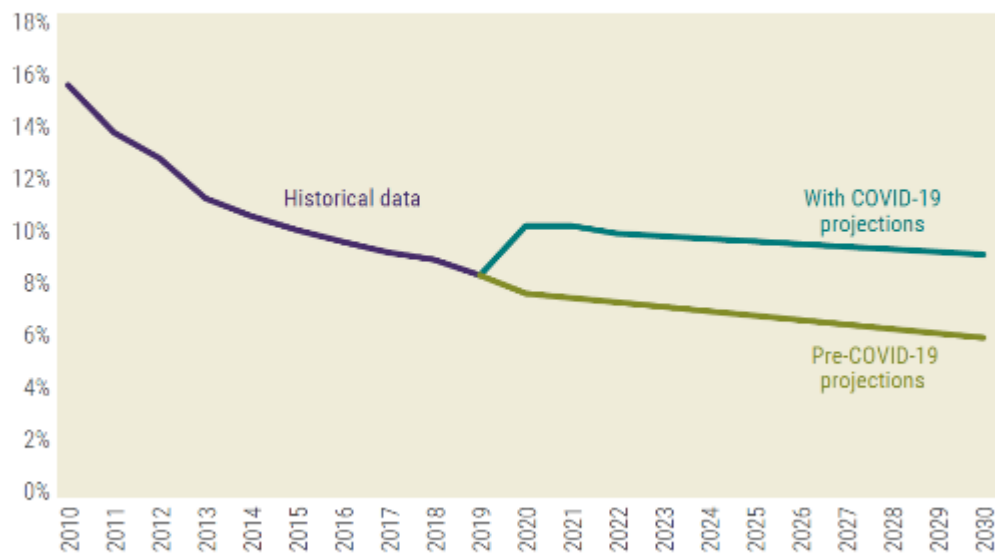
Summary

1. The importance of **Social Protection in an era of multiple global crises**
2. **The impact of Cash Transfers on HIV/AIDS, TB and other outcomes:** evidence from retrospective impact evaluations using Big Longitudinal Data at the aggregate and individual level in Brazil
3. **The integration of retrospective evaluation with microsimulation to forecast the mitigation effects of Social Protection during crises**
4. The **Brazilian Platform for Health Projections (ProBraS)**

Why Social Protection Now?

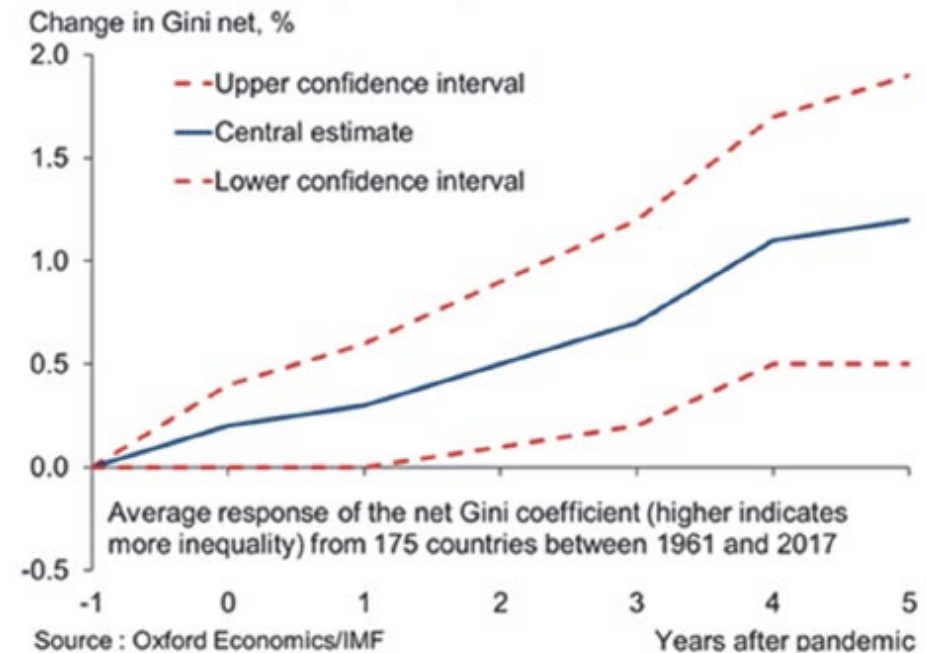
- The pandemic pushed back 120 million people into extreme poverty, totaling more than 700 million individuals, the war in Ukraine expected to push other 70 more million into severe poverty (UNDP, 2022; UN, 2021)
- We are in an era of multiple global crises, expected to threaten the achievement of several SDGs in the majority of LMIC (UN, 2023)
- We need, more than ever, Social Protection for the most vulnerable.

Figure 2
Extreme poverty headcount ratio, SDG target 1.1, pre-COVID-19 and with COVID-19, 2010–2019 and projections to 2030



Source: UN DESA calculations, based on data from United Nations (2021c).

Income inequality after pandemics



Average response of the net Gini coefficient (higher indicates more inequality) from 175 countries between 1961 and 2017

Source: Oxford Economics/IMF

Years after pandemic

**Evidence From Retrospective
Health Impact Evaluations
of
Social Protection**

Creating Datasets in Social Epidemiology

- **Social epidemiology** is a branch of epidemiology that studies the impact social conditions and social interventions have on population health outcomes.
- Very few epidemiological and clinical studies collect an **adequate number of socioeconomic and social protection-related variables**
- Social Epidemiology often relies **on linkage of socioeconomic datasets** (from socioeconomic surveys/admin data), policies/intervention datasets, and health datasets (from health surveys/admin registries):
 - a) **Aggregate level:** usually deterministic linkages with area codes
 - b) **Individual level:** usually probabilistic linkages using names and other personal identifiers

In Brazil aggregate-level linkages allowed to create panel data of municipalities over the last two decades, **representing all the Brazilian population.**

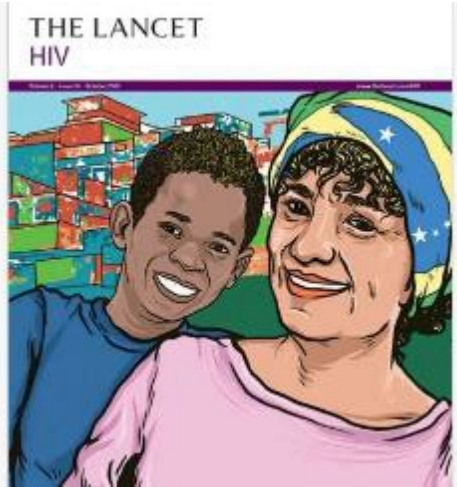
Individual-level linkages have been developed using social registries of the **poorest half of the population**, linked to health data (the 100mi Brazilian Cohort)

The impact of CCT on HIV/AIDS: aggregate-level studies

Lancet HIV 2022; 9: e690–99

NIH National Institute of Allergy and Infectious Diseases

DSAIDS Determinantes Sociais do HIV/AIDS



Effect of a conditional cash transfer programme on AIDS incidence, hospitalisations, and mortality in Brazil: a longitudinal ecological study

Gabriel Alves de Sampaio Morais, Laio Magno, Andrea F Silva, Nathalia S Guimarães, José Alejandro Ordoñez, Luís Eugênio Souza, James Macinko, Inês Dourado, Davide Rasella

| | AIDS incidence | | | | AIDS hospitalisations | | | | AIDS mortality | | | |
|---------------------------------------|--|---------|--|---------|--|---------|--|---------|--|---------|--|---------|
| | Unadjusted incidence rate ratio (95% CI) | p value | Adjusted incidence rate ratio (95% CI) | p value | Unadjusted incidence rate ratio (95% CI) | p value | Adjusted incidence rate ratio (95% CI) | p value | Unadjusted incidence rate ratio (95% CI) | p value | Adjusted incidence rate ratio (95% CI) | p value |
| BFP target population coverage | | | | | | | | | | | | |
| Low (0–29%) | 1 (ref) | .. | 1 (ref) | .. | 1 (ref) | .. | 1 (ref) | .. | 1 (ref) | .. | 1 (ref) | .. |
| Intermediate (30–69%) | 0.971 (0.931–1.012) | 0.16 | 0.950 (0.911–0.991) | 0.018 | 0.756 (0.707–0.808) | <0.0001 | 0.861 (0.800–0.926) | 0.0001 | 0.964 (0.900–1.032) | 0.29 | 0.905 (0.841–0.974) | 0.0074 |
| High (≥70%) | 0.967 (0.928–1.008) | 0.11 | 0.949 (0.909–0.991) | 0.018 | 0.708 (0.663–0.756) | <0.0001 | 0.857 (0.795–0.923) | <0.0001 | 0.900 (0.842–0.962) | 0.0020 | 0.880 (0.816–0.948) | 0.0008 |

Table 2: Fixed-effect negative binomial models of the association between BFP coverage and AIDS incidence, hospitalisations, and mortality in Brazil, 2004–18

The impact of CCT on HIV/AIDS: individual-level studies using big data

The effect of a conditional cash transfer program on AIDS morbidity and mortality among the poorest: a cohort study of 22.7 million individuals in Brazil



Silva A, Dourado I, Lua I,....., Rasella D.

Table 2. Estimates of the average effect of the *Programa Bolsa Familia* (PBF) adjusted Poisson model (with robust standard errors) on AIDS incidence, mortality, and the case-fatality rate, 2007-2015.

| Adjusted Model | RR ^a (95%CI ^b) | | |
|---------------------------------------|---------------------------------------|---------------------|---------------------|
| | Incidence | Mortality | Case-Fatality |
| PBF | 0.59*** (0.57-0.61) | 0.61*** (0.57-0.64) | 0.75*** (0.66-0.85) |
| Race or ethnicity | | | |
| White | 1 (base) | 1 (base) | 1 (base) |
| Mixed-race | 1.24*** (1.19-1.29) | 1.24*** (1.15-1.32) | 1.07 (0.92-1.25) |
| Black | 1.66*** (1.57-1.75) | 1.78*** (1.64-1.94) | 1.01 (0.83-1.22) |
| Indigenous | 1.36* (1.00-1.85) | 0.89 (0.49-1.62) | 0.57 (0.20-1.61) |
| Education | | | |
| More than high school | 1 (base) | 1 (base) | 1 (base) |
| High school | 1.04 (0.91-1.18) | 1.45** (1.07-1.94) | 1.95* (1.06-3.58) |
| Elementary school | 1.40*** (1.23-1.60) | 2.61*** (1.96-3.49) | 2.77** (1.53-5.02) |
| Literate, attended pre-school | 0.91 (0.72-1.15) | 1.20 (0.75-1.91) | 1.00 (0.35-2.78) |
| Illiterate, never attended school | 1.28*** (1.11-1.47) | 2.74*** (2.03-3.70) | 3.62*** (1.95-6.74) |
| <i>Other Adjusting Variables.....</i> | | | |

The impact of CCT on Tuberculosis: aggregate-level studies

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 © 2017 The Union
<http://dx.doi.org/10.5588/ijtld.16.0599>

Effect of Brazil's conditional cash transfer programme on tuberculosis incidence

J. S. Nery,* L. C. Rodrigues,[†] D. Rasella,* R. Aquino,* D. Barreira,[‡] A. W. Torrens,[‡] D. Boccia,[†] G. O. Penna,[§] M. L. F. Penna,[¶] M. L. Barreto,* S. M. Pereira*

Table 3 Association between the incidence rate ratio of TB and BFP coverage, Brazil, 2004–2012

| | TB incidence rate | | | |
|---|--|-------------|--|-------------|
| | Models with no time variable (adjusted) IRR (95%CI) | | Models with time variable (adjusted) IRR (95%CI) | |
| BFP coverage target population | | | | |
| Low (0.0–29.9%) | 1 | | 1 | |
| Intermediate (30–69.9%) | 0.95 | (0.92–0.98) | 0.99 | (0.96–1.02) |
| High (≥70%) | 0.88 | (0.85–0.91) | 0.96 | (0.93–0.99) |
| FHP coverage | | | | |
| 1st tertile (≥0 and <49.8%) | 1 | | 1 | |
| 2nd tertile (≥49.8% and <88.25%) | 0.99 | (0.97–1.01) | 1.01 | (1.00–1.03) |
| 3rd tertile (≥88.25%) | 1.01 | (0.99–1.04) | 1.05 | (1.03–1.08) |
| Illiteracy rate | | | | |
| ≥10% and <20% | 1.08 | (1.05–1.12) | 1.05 | (1.02–1.08) |
| ≥20% | 1.20 | (1.14–1.26) | 1.14 | (1.09–1.20) |
| Percentage of poor people in the municipality ≥24.88% | 1.11 | (1.08–1.13) | 1.07 | (1.05–1.10) |
| Number of observations | 22 122 | | 22 122 | |
| Number of municipalities | 2 458 | | 2 458 | |

IRR = incidence rate ratio; TB = tuberculosis; BFP = Bolsa Família Programme; CI = confidence interval; FHP = Family Health Programme

The impact of CCT on Tuberculosis: individual-level studies using big data

Impact of a conditional cash transfer program on tuberculosis incidence, mortality, and case fatality-rate in a cohort of 54 million poor individuals

Jesus J, Pinto P, Silva A, Boccia D,....., Rasella D.

Table 2. Estimates of the average effect of the Bolsa Família Program (BFP) adjusted Poisson model (with robust standard errors) on Tuberculosis incidence, mortality and case-fatality rate, Brazil, 2004-2015.

| Adjusted Model | Outcomes (RR ^a – CI ^b 95%) | | |
|------------------------------------|--|---------------------|---------------------|
| | Incidence | Mortality | Case-Fatality |
| PBF | 0.57*** (0.55-0.60) | 0.69*** (0.65-0.73) | 0.90 (0.76-1.05) |
| Race or ethnicity | | | |
| White | 1 (base) | 1 (base) | 1 (base) |
| Mixed-race | 1.42*** (1.40-1.44) | 1.70*** (1.60-1.81) | 1.02 (0.86-1.21) |
| Black | 1.11*** (1.00-1.22) | 1.38*** (0.90-1.13) | 3.30* (1.28-8.51) |
| Indigenous | 3.63 *** (3.43-3.84) | 4.50*** (3.59-5.65) | 1.58* (0.92-2.70) |
| Education | | | |
| Illiterate, never attended school | 1 (base) | 1 (base) | 1 (base) |
| Elementary school | 1.83 (1.80-1.86) | 1.05*** (0.99-1.11) | 0.94 (0.79-1.12) |
| High school | 2.21*** (2.17-2.25) | 0.99*** (1.93-1.06) | 0.77** (0.62-0.94) |
| More than high school | 1.74*** (1.70-1.77) | 0.60*** (0.54-0.67) | 0.52*** (0.37-0.73) |
| <i>Other Adjusting Variables..</i> | | | |

The impact of Primary Health Care on Tuberculosis: individual-level studies using big data

The effect of primary health care on tuberculosis in a nationwide cohort of 7.3 million Brazilian people: a quasi-experimental study

Lancet Glob Health 2022

Published Online

January 24, 2022

[https://doi.org/10.1016/S2214-109X\(21\)00550-7](https://doi.org/10.1016/S2214-109X(21)00550-7)



TB Modelling and Analysis Consortium

Gabriela S Jesus, Julia M Pescarini, Andrea F Silva, Ana Torrens, Wellington M Carvalho, Elzo P P Junior, Maria Y Ichihara, Mauricio L Barreto, Poliana Rebouças, James Macinko, Mauro Sanchez, Davide Rasella

| | Incidence | Mortality | Cure rate | Case-fatality rate |
|--------------|------------------|------------------|------------------|--------------------|
| FHS 100% | 0.78 (0.72–0.84) | 0.72 (0.55–0.94) | 1.04 (1.00–1.08) | 0.84 (0.55–1.30) |
| Observations | 7 308 968 | 7 308 968 | 3379 | 5 368 |

Data are RR (95% CI), unless otherwise indicated. Reference variables were male sex, never attended education, White ethnicity or race, person by domicile ≤ 2 , brick household material, family per capita income below the median (0.5 \$BR per month). FHS=Family Health Strategy. RR=rate ratio.

Table 3: Inverse probability of treatment weighting Poisson regression models, adjusted for all demographic and socioeconomic variables, for the association between tuberculosis outcomes and FHS coverage in the study cohort (Brazil, 2004–13)

Several other studies have been developed with the same datasets and methodologies

THE LANCET

Published Online
May 15, 2013
[http://dx.doi.org/10.1016/S0140-6736\(13\)60715-1](http://dx.doi.org/10.1016/S0140-6736(13)60715-1)

Effect of a conditional cash transfer programme on childhood mortality: a nationwide analysis of Brazilian municipalities

Daide Rasella, Rosana Aquino, Carlos A T Santos, Rômulo Paes-Sousa, Mauricio L Barreto



BMJ 2014;348:g4014 doi: 10.1136/bmj.g4014 (Published 3 July 2014)

Impact of primary health care on mortality from heart and cerebrovascular diseases in Brazil: a nationwide analysis of longitudinal data

Daide Rasella *postdoctoral researcher*¹, Michael O Harhay *PhD student*³, Marina L Pamponet *researcher*¹, Rosana Aquino *associate professor*^{1,2}, Mauricio L Barreto *professor*^{1,2}

Rasella et al. *BMC Public Health* 2010, 10:330
<http://www.biomedcentral.com/1471-2458/10/330>



RESEARCH ARTICLE Open Access

Impact of the Family Health Program on the quality of vital information and reduction of child unattended deaths in Brazil: an ecological longitudinal study

Daide Rasella¹, Rosana Aquino and Mauricio L Barreto

Reducing Childhood Mortality From Diarrhea and Lower Respiratory Tract Infections in Brazil

AUTHORS: Daide Rasella, MPH, Rosana Aquino, MD, PhD, and Mauricio L. Barreto, MD, PhD
Instituto de Saúde Coletiva, Federal University of Bahia, Salvador, Brazil

KEY WORDS: primary health care, family health program, Brazil, health services evaluation, under-5 mortality, diarrhea, lower respiratory infections

ABBREVIATIONS: PHC—primary health care
FHP—Family Health Program
BR—Brazilian reais
www.pediatrics.org/cgi/doi/10.1542/peds.2009-3197
doi:10.1542/peds.2009-3197
Accepted for publication May 14, 2010

WHAT'S KNOWN ON THIS SUBJECT: The FHP, one of largest PHC programs in the world, was created in Brazil in 1994 and experienced a dramatic expansion, but few studies have analyzed its general impact, and none has analyzed specific causes of preventable mortality.

WHAT THIS STUDY ADDS: The FHP succeeded in reducing mortality rates for children younger than 5 years in Brazil; it had a stronger effect on diarrheal diseases and lower respiratory infections, even after controlling for environmental, social, and economic variables.

Rasella et al. *BMC Medicine* (2021) 19:127
<https://doi.org/10.1186/s12916-021-01994-7>

BMC Medicine

RESEARCH ARTICLE

Open Access



Long-term impact of a conditional cash transfer programme on maternal mortality: a nationwide analysis of Brazilian longitudinal data

Daide Rasella^{1†*}, Flávia Jôse Oliveira Alves^{2,3†}, Poliana Rebouças^{2,3}, Gabriela Santos de Jesus⁴, Maurício L. Barreto^{2,3}, Tereza Campello^{3,5} and Enny S. Paixão^{3,6}



GLOBAL HEALTH

By Thomas Hone, Daide Rasella, Mauricio Barreto, Azeem Majeed, and Christopher Millet

Large Reductions In Amenable Mortality Associated With Brazil's Primary Care Expansion And Strong Health Governance

RESEARCH ARTICLE

Association between expansion of primary healthcare and racial inequalities in mortality amenable to primary care in Brazil: A national longitudinal analysis

Thomas Hone^{1*}, Daide Rasella^{2,3}, Mauricio L. Barreto^{2,3}, Azeem Majeed¹, Christopher Millet^{1,4,5}

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© 2017 The Union
<http://dx.doi.org/10.5588/ijtld.16.0599>

Effect of Brazil's conditional cash transfer programme on tuberculosis incidence

J. S. Nery,¹ L. C. Rodrigues,¹ D. Rasella,¹ R. Aquino,¹ D. Barreira,¹ A. W. Torrens,¹ D. Bocchia,¹ G. O. Penna,⁵ M. L. F. Penna,¹ M. L. Barreto,¹ S. M. Pereira¹

**Integrating Retrospective
Impact Evaluations
with
Microsimulation Models
for
Health Projections**

The Brazilian Platform for Health Projections

The Brazilian Platform for Health Projections (ProBraS) has been developed at the Institute of Collective Health by a **multidisciplinary team**: epidemiologist, mathematicians, statisticians, economists and IT specialists.

ProBraS is based on theoretical frameworks, algorithms, codes, and data to **integrate retrospective impact evaluations with dynamic multilevel microsimulation models for forecasting**. The integration allow to respect:

- 1) Structure of the **Datasets** (variables distributions, correlations, previous trends)
- 2) Structure of the **Effects** (heterogeneity, contextual, synergies, lag and duration effects)
- 3) Knowledge of the **retrospective evaluation Context** (limitations of the dataset, study design, analyses, intervention implementation, etc)

ProBraS:

a) Consolidated datasets and validated models **at the aggregate level of more than 5,000 municipalities in Brazil, and of more than 10,000 municipalities in Latin America over the last two decades.**

b) **Developing codes for large individual-based microsimulation**, including a pilot algorithm to simulate 22 million individuals in Brazil.

The Brazilian Platform for Health Projections

The ProBraS algorithms and codes have been developed to simulate:

- 1) Potential Changes in Socioeconomic and Demographic Scenarios** (secular trends, shocks)
- 2) Alternative Policy Responses** (Social Protection and Healthcare) and **Policy Implementations** (temporal, geographical, and population targeting options).

Scenarios are compared in terms of:

- a) Rate Ratios** of Morbidity and Mortality,
- b) Averted** Cases, Hospitalizations, and Deaths
- c) Changes in Health Inequalities** (Concentration Ind., Ratios/Differences betw. strata)

An User-Friendly Open Access Dashboard of ProBraS for policy makers is under construction.

Integrating Retrospective Impact Evaluations with Dynamic Microsimulation

THE LANCET

Published Online
May 15, 2013
[http://dx.doi.org/10.1016/S0140-6736\(13\)60715-1](http://dx.doi.org/10.1016/S0140-6736(13)60715-1)

Effect of a conditional cash transfer programme on childhood mortality: a nationwide analysis of Brazilian municipalities

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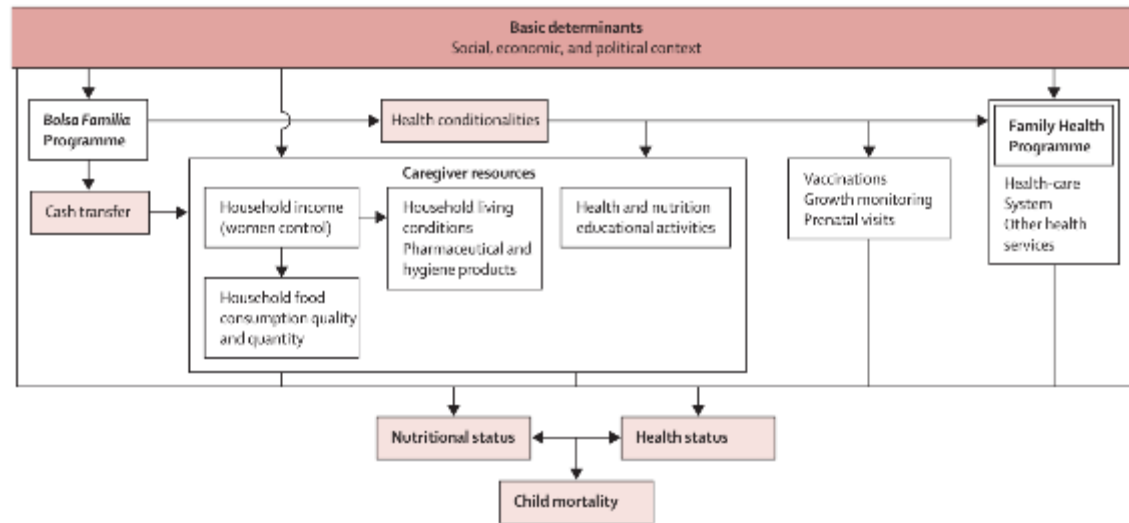


Figure: Mechanisms linking the Bolsa Família Programme and the Family Health Programme to child nutritional and health outcomes

Child morbidity and mortality associated with alternative policy responses to the economic crisis in Brazil: A nationwide microsimulation study

Daive Rasella^{1,2*}, Sanjay Basu^{3,4,5,6}, Thomas Hone², Romulo Paes-Sousa⁷, Carlos Octávio Ocké-Reis⁸, Christopher Millett^{2,9}

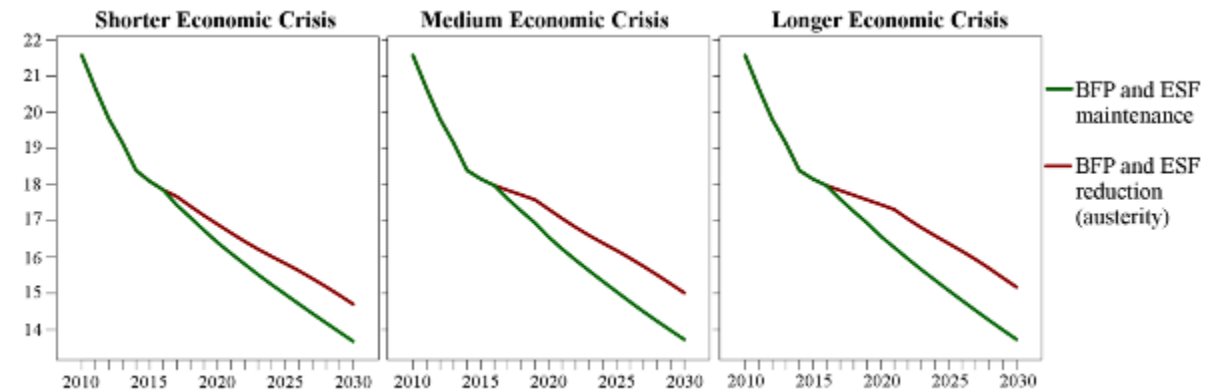


Fig 4. Mean municipal under-five mortality rates (per 1,000 live births) under different economic crisis and policy response scenarios for 2010–2030. BFP, Bolsa Família Programme; ESF, Estratégia Saúde da Família.

Integrating Retrospective Impact Evaluations with Dynamic Microsimulation II

RESEARCH ARTICLE

Open Access



Impact of primary health care on mortality from heart and cerebrovascular diseases in Brazil: a nationwide analysis of longitudinal data

Davide Rasella *postdoctoral researcher*¹, Michael O Harhay *PhD student*³, Marina L Pamponet *researcher*¹, Rosana Aquino *associate professor*^{1,2}, Mauricio L Barreto *professor*^{1,2}

Mortality associated with alternative primary healthcare policies: a nationwide microsimulation modelling study in Brazil

Davide Rasella^{1,2*}, Thomas Hone², Luis Eugenio de Souza¹, Renato Tasca³, Sanjay Basu^{4,5,7} and Christopher Millett^{2,6}

GLOBAL HEALTH

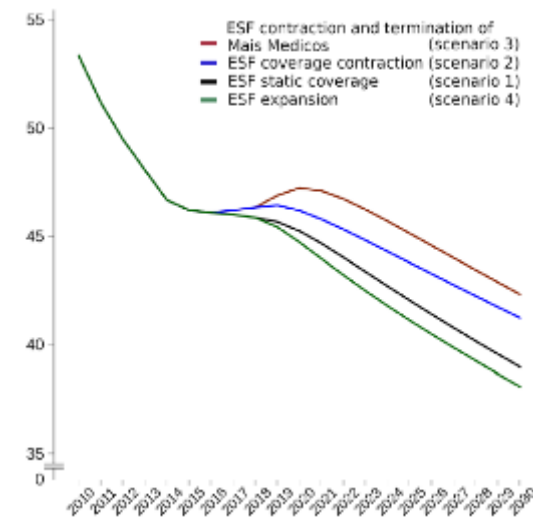
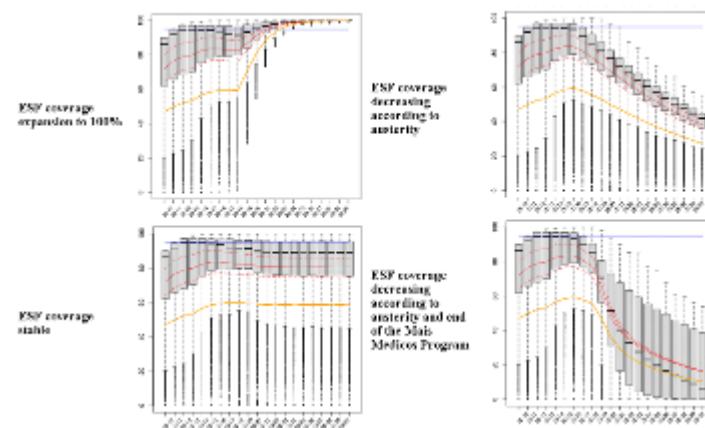
By Thomas Hone, Davide Rasella, Mauricio Barreto, Rifat Atun, Azeem Majeed, and Christopher Millett

Large Reductions In Amenable Mortality Associated With Brazil's Primary Care Expansion And Strong Health Governance

DOI: 10.1377/hlthaff.2016.0966
HEALTH AFFAIRS 36,
NO. 1 (2017): 149-158
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The People-to-People Health
Foundation, Inc.



Figure A. Box plots of municipal ESF coverage by ESF scenarios for the period 2010-2030.



Integrating Retrospective and Prospective with Multiple Interventions

The Comprehensive Health Impact of Cash Transfers, Social Pensions and Primary Care in Brazil: An Integrated Evaluation and Forecasting Analysis to Mitigate the Effects of the COVID19-Related Economic Crisis

29 Pages • Posted: 10 Jun 2022

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Figure 1: Scenarios of poverty, social welfare policies, and overall mortality predictions, 2020-2030

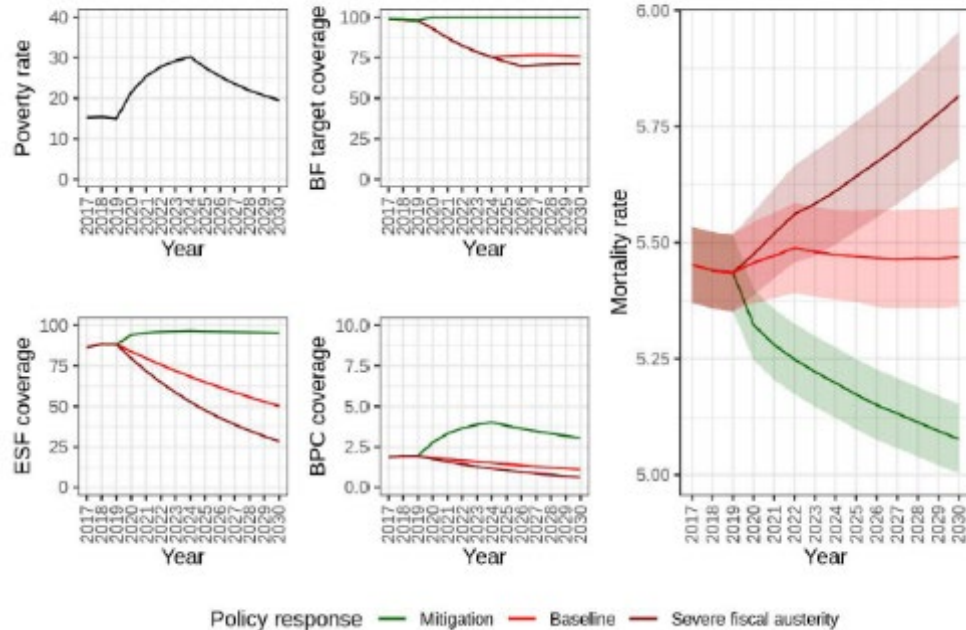


Figure 1: Mechanisms linking the Social Pension Program, Bolsa Familia Program and the Family Health Program to health outcomes.

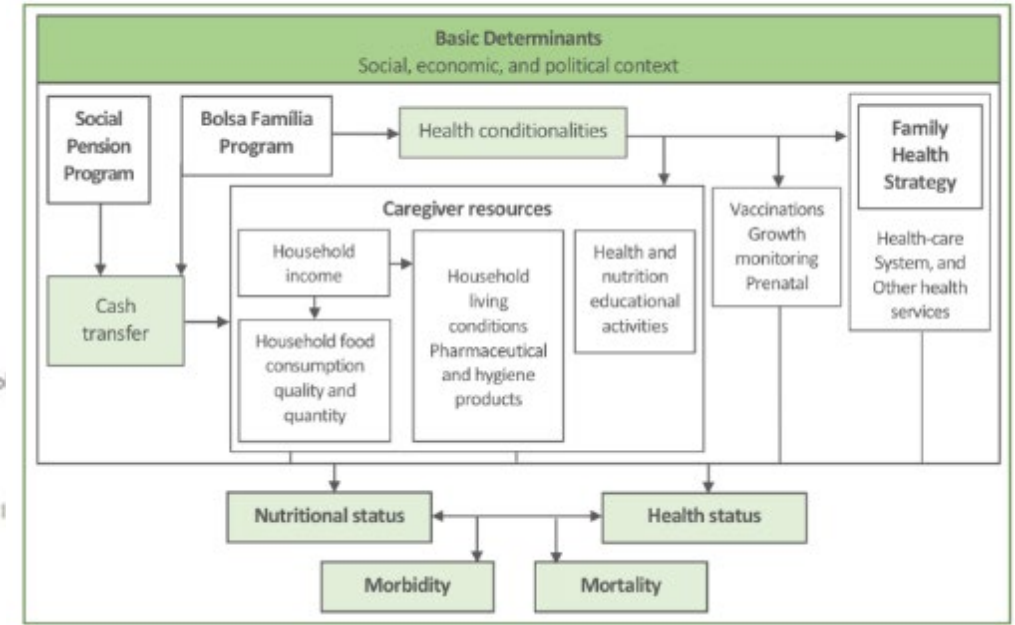


Table 4: Rate Ratios and avoidable deaths from the comparison of forecast scenario of mitigation, baseline and austerity scenarios from 2020 to 2030.

| | Mortality | | | |
|--------------------------|------------------------|----------------------------|-------------------------|----------------------------|
| | Mitigation vs Baseline | | Mitigation vs Austerity | |
| Year | Rate Ratio (Number) | [95% Prediction Intervals] | Rate Ratio (Number) | [95% Prediction Intervals] |
| Overall mortality | | | | |
| 2020 | 0.977 | [0.970 - 0.984] | 0.974 | [0.967 - 0.988] |
| 2025 | 0.950 | [0.937 - 0.962] | 0.921 | [0.904 - 0.935] |
| 2030 | 0.934 | [0.916 - 0.951] | 0.878 | [0.859 - 0.905] |
| Avoidable deaths | (778,845) | [665,074 - 893,674] | (1,424,624) | [1,264,552 - 1,587,859] |
| Child mortality | | | | |
| 2020 | 0.906 | [0.888 - 0.935] | 0.893 | [0.867 - 0.927] |
| 2025 | 0.803 | [0.759 - 0.851] | 0.693 | [0.635 - 0.733] |
| 2030 | 0.729 | [0.671 - 0.791] | 0.632 | [0.573 - 0.698] |
| Avoidable deaths | (128,079) | [107,614 - 148,896] | (205,399) | [175,043 - 236,251] |

ProBraS
Brazilian Platform
for Health
Projections

PILLAR
Primary Health Care and
Population Health in Latin America

UKRI Medical
Research
Council

Integrating Retrospective and Prospective in Multi-country Studies



The Impact of Two Decades of Conditional Cash Transfers on Child Health in Latin America: A Multicountry Evaluation and Forecasting Analysis to Mitigate the Effects of the Global Economic Crisis

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...

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MEXICO (2019)

PROGRESA/ OPORTUNIDAD (1997-2004)/ PROPERA (2014-now)

- Start: 1997 (25 Years);
- Health cond. (children): Under 5
- Budget (2019): USD 4.3 bi (0.35% GDP)
- Cash transference (min/max): 10 to 254 USD;
- Beneficiary families: > 6.5 mi
- Crude coverage: 24.8%



These 3 countries concentrate more than 60% of beneficiary families and almost 80% of the budget of all LAC CCTs Programme.

ECUADOR (2019)

BONO DE DESARROLLO HUMANO

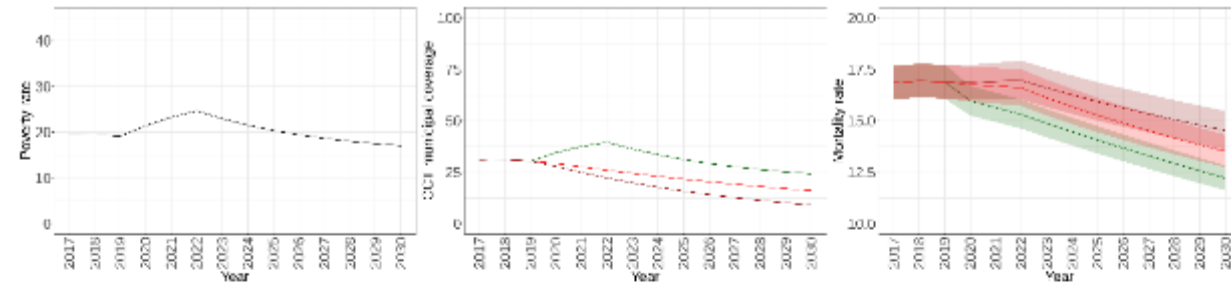
- Start: 2003 (19 Years);
- Health cond. (children): Under 5;
- Budget: USD 0.24 bi (0.24% GDP);
- Cash transference: 10 to 50 USD;
- Beneficiary families: > 0.4 mi
- Crude coverage: 6.3%

BRAZIL (2019)

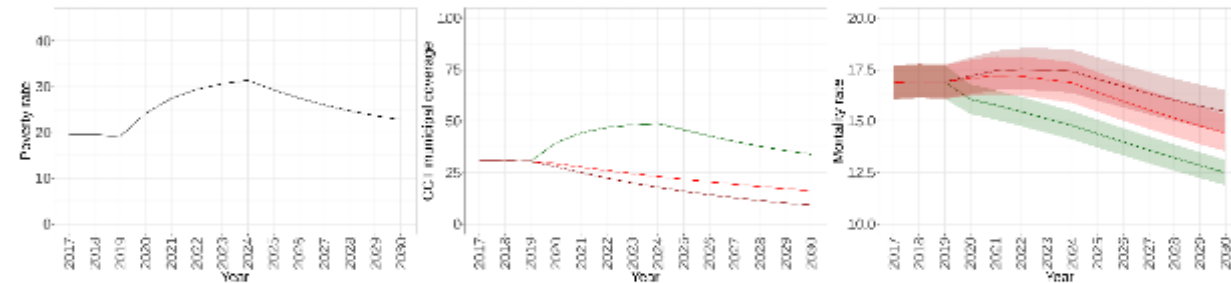
BOLSA FAMILIA (2004-2021)/ AUXILIO BRASIL (2021-now)

- Start: 2004 (18 Years);
- Health cond. (children): Under 7 Y.o.
- Budget: USD 8.4 bi (0.45% GDP)
- Cash transference: 11 to 92 USD
- Beneficiary families: >13.2 mi
- Crude coverage: 25%

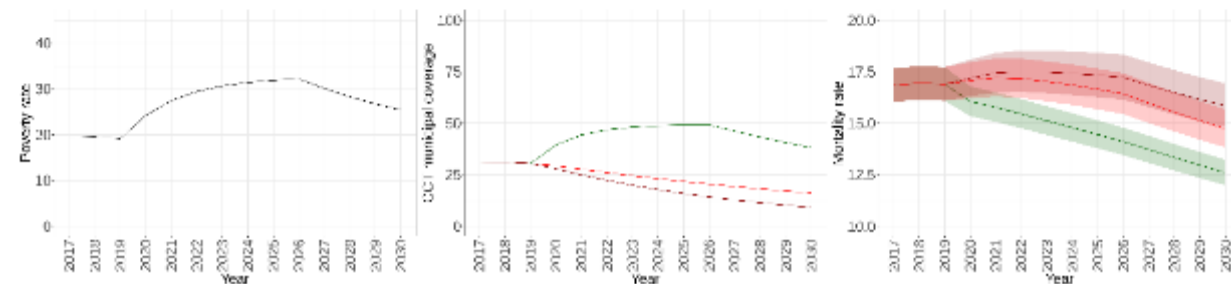
Crisis scenario 1



Crisis scenario 2



Crisis scenario 3



Policies behavior — Mitigation — Baseline — Fiscal austerity

Integrating Retrospective and Prospective National-Level Compartmental Models for Infectious Diseases

Posted Date: February 4th, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1316131/v1>



Impact of the COVID19-related economic crisis and mitigation effects of social protection on HIV/AIDS and Tuberculosis: an integrated economic, mathematical and epidemiological modelling study

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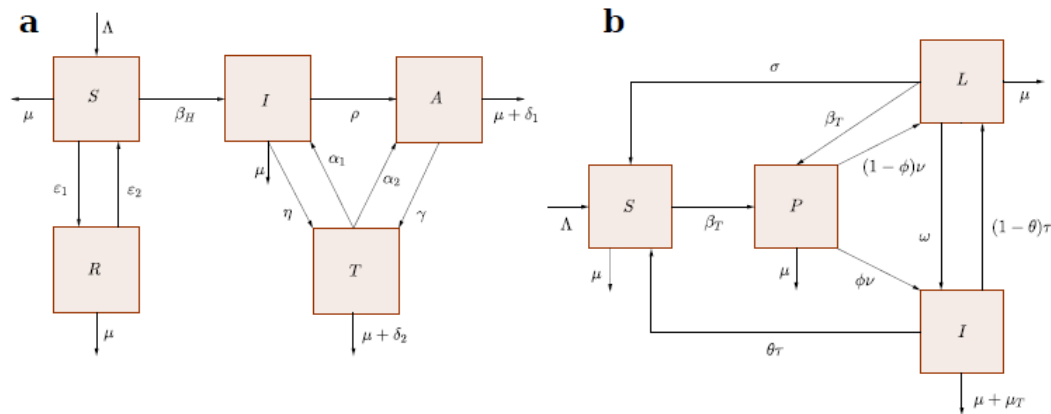
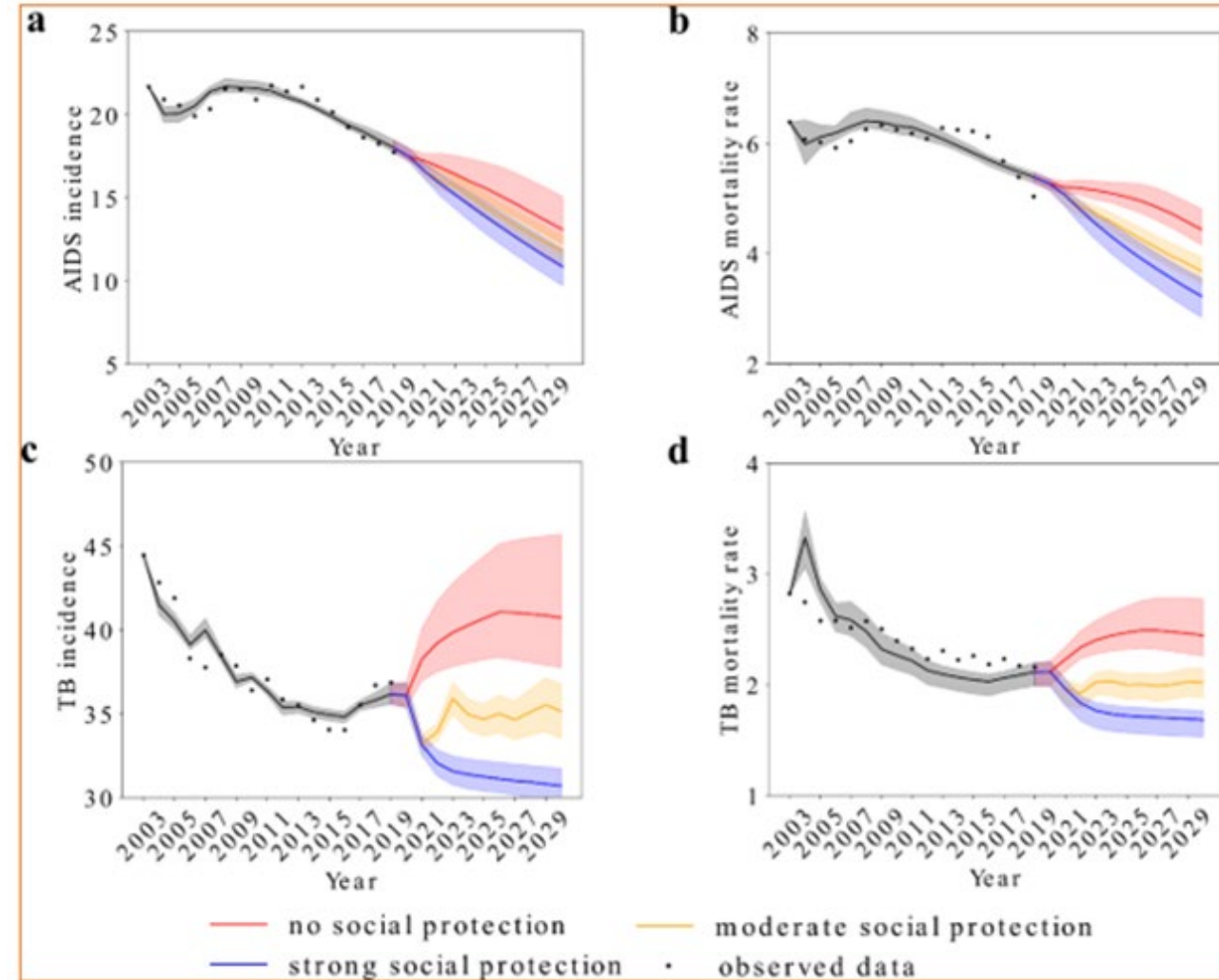


Fig. 2 Epidemiological scheme of the mathematical models. **a.** HIV/AIDS transmission model (1). **b.** Tuberculosis transmission model (2).



Developing Integrated “big data” Microsimulation Models

PLOS ONE

STUDY PROTOCOL

Evaluating the impact of social determinants, conditional cash transfers and primary health care on HIV/AIDS: Study protocol of a retrospective and forecasting approach based on the data integration with a cohort of 100 million Brazilians

Davide Rasella^{1,2,3*}, Gabriel Alves de Sampaio Morais¹, Rodrigo Volmir Anderle¹, Andréa Ferreira da Silva¹, Iracema Lua¹, Ronaldo Coelho⁴, Felipe Alves Rubio¹, Laio Magno^{1,5}, Daiane Machado³, Julia Pescarini³, Luis Eugênio Souza¹, James Macinko⁶, Inês Dourado¹

PLOS ONE

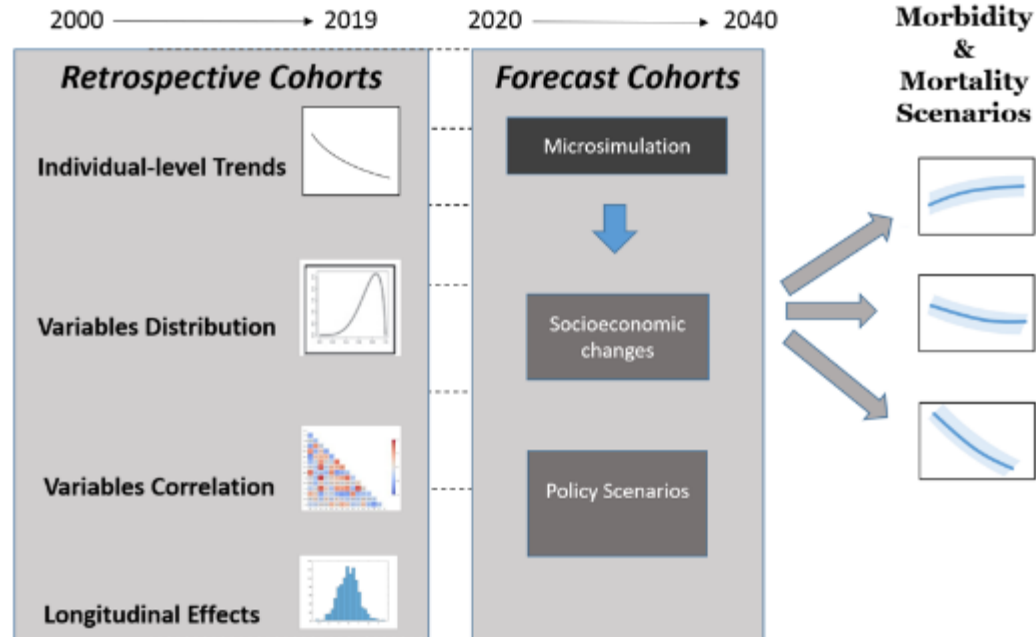
STUDY PROTOCOL

The impact of social drivers, conditional cash transfers and their mechanisms on the mental health of the young; an integrated retrospective and forecasting approach using the 100 million Brazilian Cohort: A study protocol

Daiane Borges Machado^{1,2*}, Jacyra Azevedo Paiva de Araujo¹, Flávia Jôse Oliveira Alves¹, Luis Fernando Silva Castro-de-Araujo^{3,4}, Elisângela da Silva Rodrigues^{1,5}, Erika Fialho Morais Xavier¹, Rodrigo Lins Rodrigues^{1,6}, Davide Rasella¹, John Naslund², Vikram Patel², Mauricio L. Barreto¹



R01AI152938



R01MH128911



ProBraS
Brazilian Platform
for Health
Projections



Future Expansions: Other Diseases

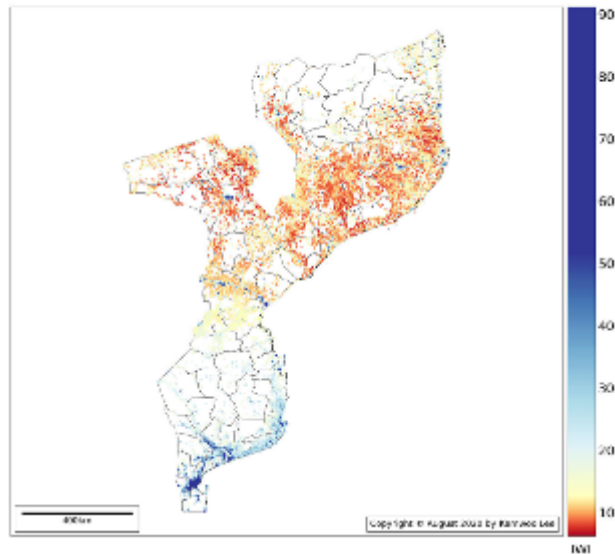
- **Tuberculosis:** big longitudinal data and robust individual-level retrospective impact evaluations of cash transfers and primary health care already available.
- **Other Poverty-Related Infectious Diseases - Malaria, Leprosy, Leptospirosis, among others:** big longitudinal data already available
- **Poverty-Related Non-Infectious Diseases and Health Conditions**

Difficult to get support by the main research funders, focused more on biomedical/clinical studies than social determinants of health and social protection

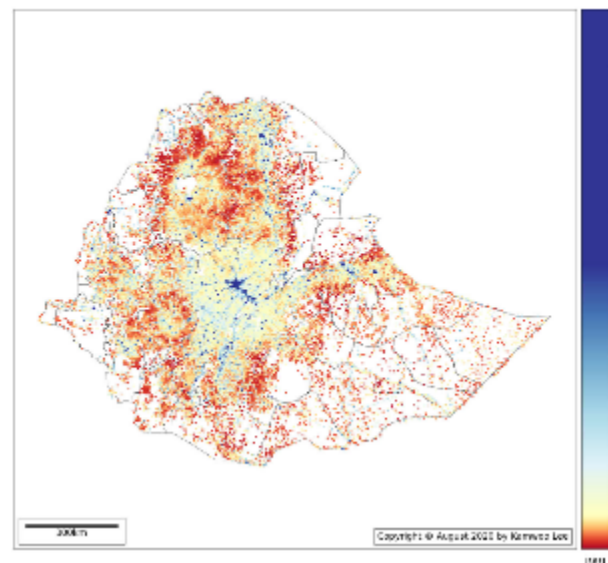
Future Expansions: Sub-Saharan Africa

- Working Package within EU-funded Project (Echilibrist): building spatial microsimulation to evaluate the effectiveness of **alternative incorporation strategies of a Point of Care Test**: temporal, geospatial, and targeted implementation strategies.

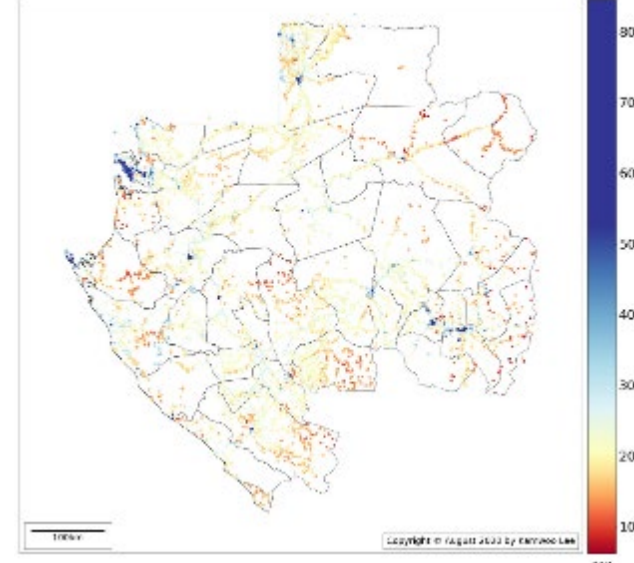
Mozambique



Ethiopia



Gabon



ECHILIBRIST

Funded by
the European Union

- With additional support, **potentiality to develop integrated microsimulation models** that include a social epidemiology perspective

Conclusions

In the **current context of rising inequalities and poverty rates due to multiple global crises**, we need to provide policy-makers with models, tools, and scenarios **to effectively protect the most vulnerable individuals**.

The integration of retrospective health impact evaluations with microsimulation models **allow to produce more reliable country and subpopulation-specific scenarios**, and to evaluate **the impact of interventions' alternative implementations**, including the targeting of most vulnerable groups.



Thanks!

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