Racial inequities in cervical cancer mortality and the role of a conditional cash transfer (Bolsa Família) programme: results from the 100 Million Brazilian Cohort

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Introduction

- Racial inequities in cervical cancer mortality are due to structural factors linked to access to healthcare, early diagnosis and treatment

- In Brazil, structural racism mainly affects Black, Parda(“Brown”) and Indigenous women, who are less likely to receive adequate healthcare

Introduction

- Brazil's Bolsa Família Programme (2004) is the world's largest conditional cash transfer programme

- Requires beneficiaries to comply with conditionalities (prenatal visits for women, vaccination for children, minimum children school attendance)

- Evidence shows that cash transfer programmes may improve health and access to healthcare

Aims

- Using data from a large-scale population-based cohort in Brazil (2004-2015), we investigated:

1. The association between race and cervical cancer mortality
2. The interaction between race and receipt of the Bolsa Família Programme (BFP)

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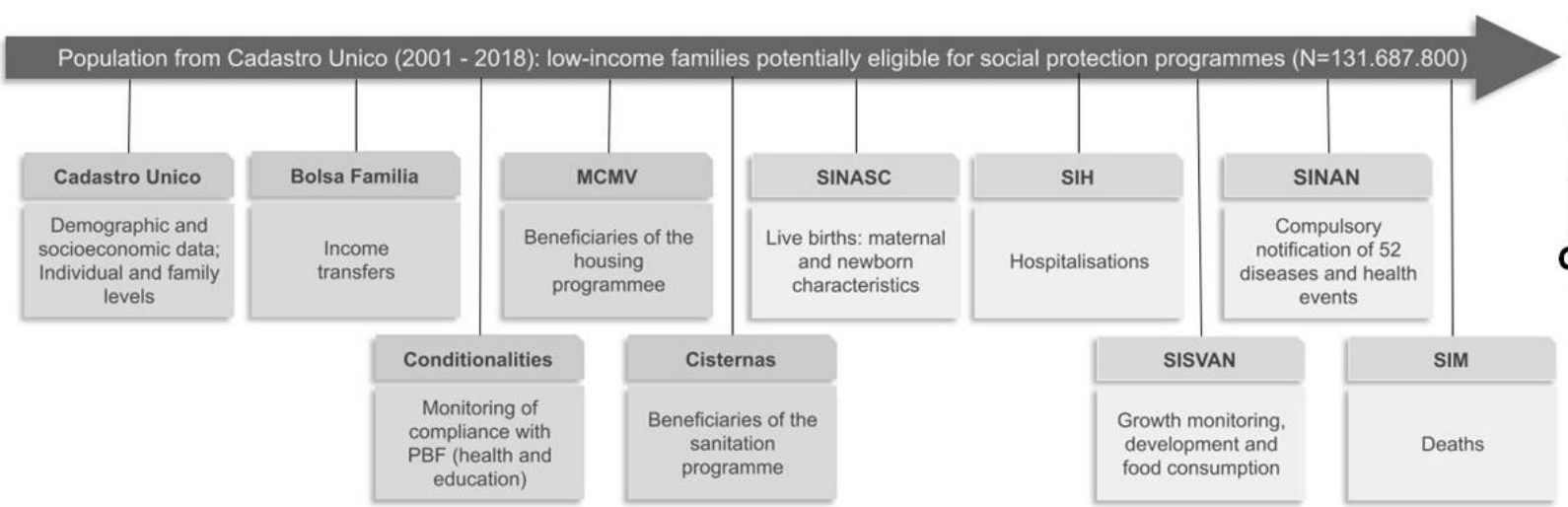
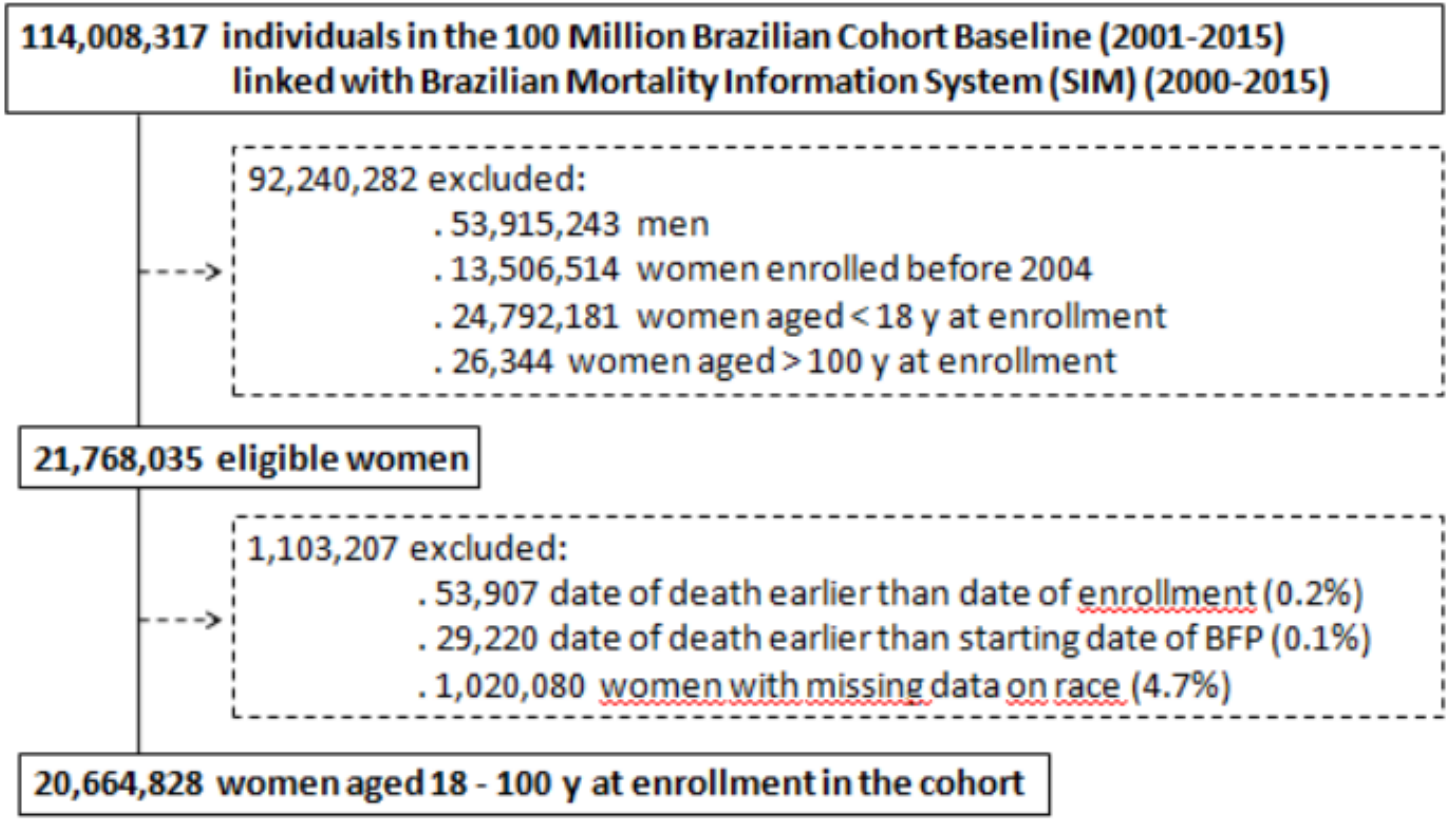
THE 100 MILLION BRAZILIAN COHORT (~131 MILLION)



Aims to evaluate the impact of social protection policies on health
Over half of the Brazilian pop
Linkage of national administrative, social and health datasets from Braz Government
Deterministic linkage (based on NIS - social ID number)
Non-deterministic linkage (name, mother's name, birthdate, gender, municipality)


IEA
Cohort Profile
Cohort Profile: The 100 Million Brazilian Cohort

Methods – Study participants



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Methods - Measures

- Exposure: Individual self-reported race/skin color (White/Black/Parda("Brown")/Asian/Indigenous women), obtained at enrollment in CadUnico

- Outcome: Individual cervical cancer deaths during follow-up 2004-2015 (ICD-10, code C53), obtained from the national mortality database

- Effect modifier: being a recipient of BFP (yes/no)

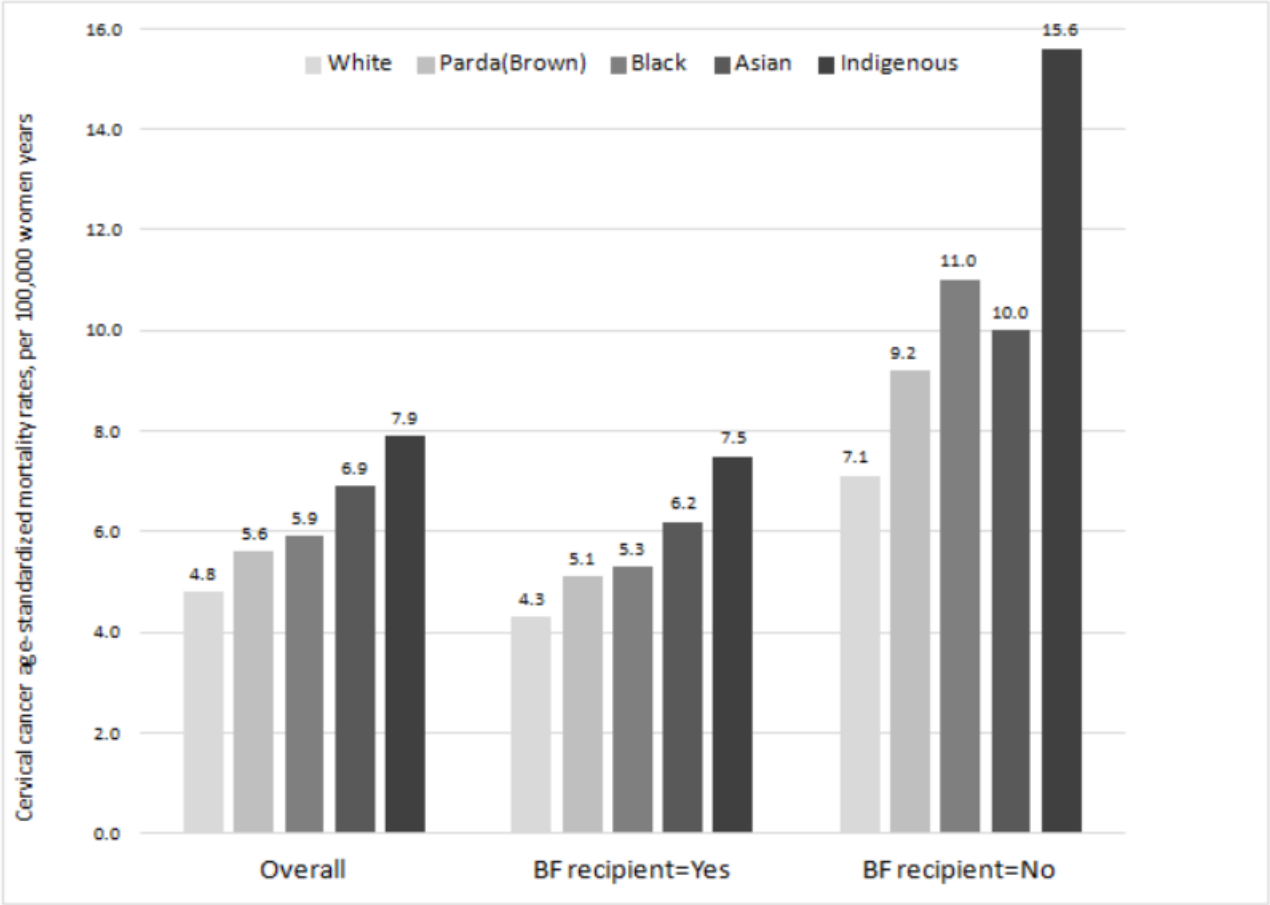
Methods – Statistical analysis

- Poisson regression models used to estimate MRR (95%CI)
- Adjustments for age, education, area of residence (rural/urban) and year of enrollment in CadUnico

- To test the interaction hypothesis, a multiplicative interaction term race*BFP
- If *P* <0.05, MRR were estimated within strata of BFP receipt

Results

Age-standardized mortality rates, by BF recipient



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Results - Regression models

	Mortality rate ratios (95%CI)			
	Model 1	Model 2	Model 3	Model 4
Race				
Parda (Brown) vs White	1.32 (1.26,1.38)	1.30 (1.24,1.36)	1.32 (1.26,1.38)	**1.28 (1.23,1.34)**
Black vs White	1.29 (1.20,1.38)	1.27 (1.18,1.36)	1.24 (1.15,1.34)	**1.20 (1.12,1.29)**
Asian vs White	1.46 (1.10,1.93)	1.50 (1.13,2.00)	1.56 (1.17,2.08)	**1.55 (1.17,2.06)**
Indigenous vs White	1.92 (1.53,2.40)	1.62 (1.28,2.06)	1.88 (1.48,2.38)	**1.78 (1.40,2.26)**
Age at baseline per 1-year increase	1.05 (1.05,1.05)	1.04 (1.04,1.04)	1.04 (1.04,1.04)	1.04 (1.04,1.04)
Education				
6-9 years vs >9 years	-	1.89 (1.73,2.06)	1.76 (1.61,1.92)	1.72 (1.58,1.88)
<= 5 years vs >9 years	-	2.43 (2.23,2.63)	2.31 (2.12,2.51)	2.25 (2.06,2.44)
Area of residence		-		
Rural vs Urban	-	-	0.70 (0.67,0.74)	0.70 (0.66,0.74)
Year of enrollment per 1-year increase	-	-	0.95 (0.95,0.96)	0.97 (0.96,0.98)
Bolsa Família Program recipient				
No vs Yes	-	-	-	0.67 (0.63,0.71)

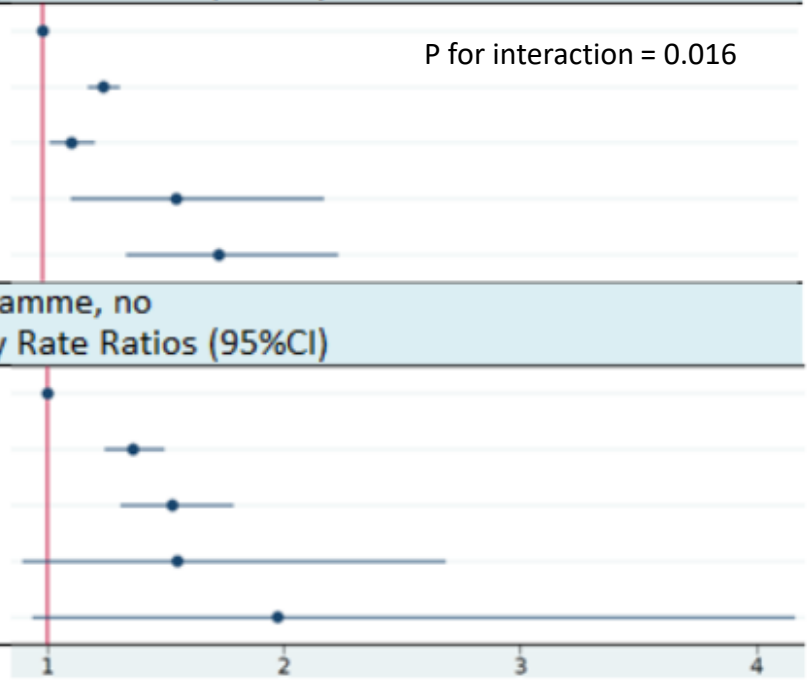
Results – By BFP receipt strata

A - Bolsa Família Programme, yes

Race	N deaths	N participants	Mortality Rate Ratios (95%CI)
White	2,217	4,628,002	1 [ref]
Parda(Brown)	4,909	8,877,566	**1.25 (1.19-1.32)**
Black	806	1,388,222	**1.12 (1.03-1.22)**
Asian	37	61,194	1.56 (1.12-2.18)
Indigenous	69	94,838	**1.74 (1.35-2.24)**

B - Bolsa Família Programme, no

Race	N deaths	N participants	Mortality Rate Ratios (95%CI)
White	812	2,494,329	1 [ref]
Parda(Brown)	1,156	2,687,888	**1.36 (1.24-1.49)**
Black	206	388,254	**1.53 (1.31-1.78)**
Asian	13	35,004	1.55 (0.89-2.68)
Indigenous	7	9,531	**1.97 (0.94-4.16)**



P for interaction = 0.016

* MRR adjusted for age + education + area of residence (Rural/urban) + year of enrollment + Interaction term race x BFP receipt.

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Discussion

- Cervical cancer mortality was higher for Indigenous, Black and Parda women in Brazil

- Racial inequities in mortality might be mitigated by the BFP, possibly by improving women's income and access to preventive cancer care services, leading to early detection and treatment and ultimately reducing mortality

Strengths and limitations

- 100 Million Brazilian Cohort: uniquely positioned to study the effects of social policies on the health of specific population subgroups (e.g. marginalized minority groups), using individual data

- Limitations: it lacks data on access to healthcare and cancer stage at diagnosis

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