How do the Primary Health Care components influence Under-5 mortality?
Learning opportunities from the Brazilian context

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cidacs PHC Primary Health Care and its Effects on Population Health

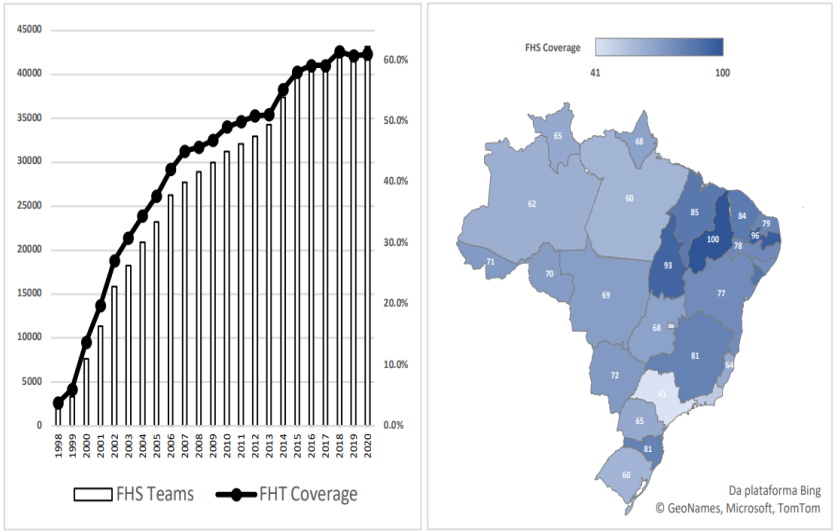
PHC in Brazil: a brief overview

Unified Health System (SUS)

- **Hospital Care**
- **Specialized Ambulatory Care**
- **Primary Health Care**

A broad range of services: **ambulatory care, promoting health activities and preventing diseases (consultations, vaccination, surveillance, home visits)**

Figure 2: Number of FHS teams and percentage of population covered



Notes: data originally from MoH - PHC indicator panel. For the map, we used data on coverage as of January of 2020.

August/2024:
~50.000 PHC facilities

Main Research Question

What is the effect of PHC components – both proximal and distal – in reducing under-5 mortality in Brazil?

Inclusion criteria:

a) born alive in 2010 and registered in the Live Birth Information System;

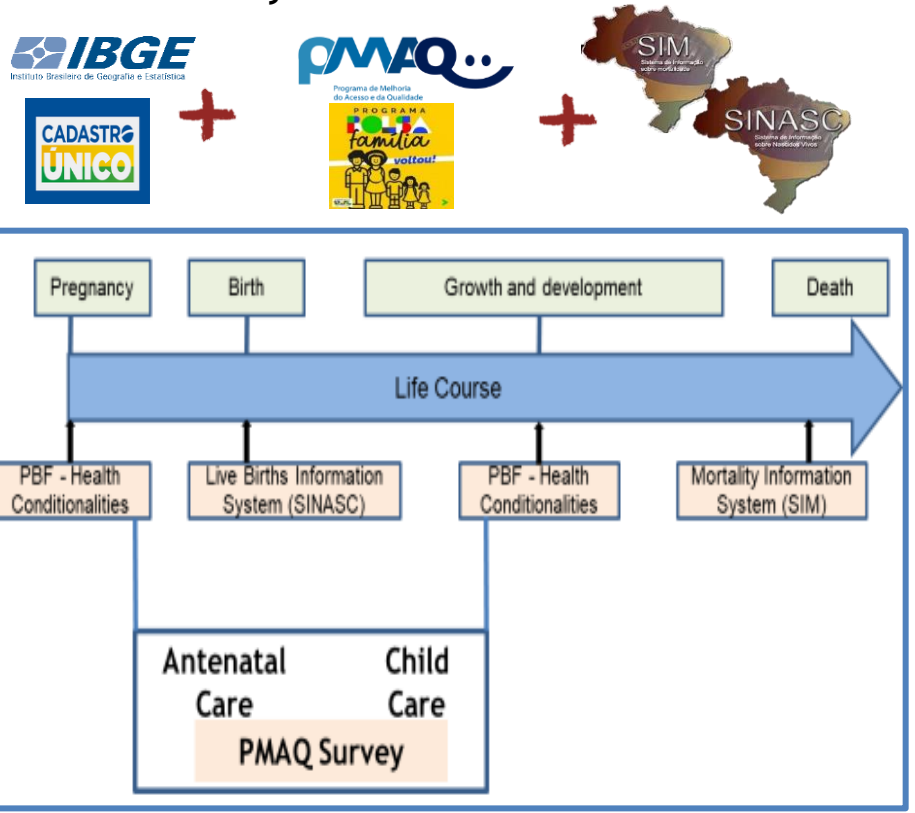
b)whose mother was registered as a beneficiary of the Bolsa Familia Program;

c) whose mother complied with the health conditionalities in the semester before the child's birth, the semester of the child's birth, or up to two semesters after the child's birth;

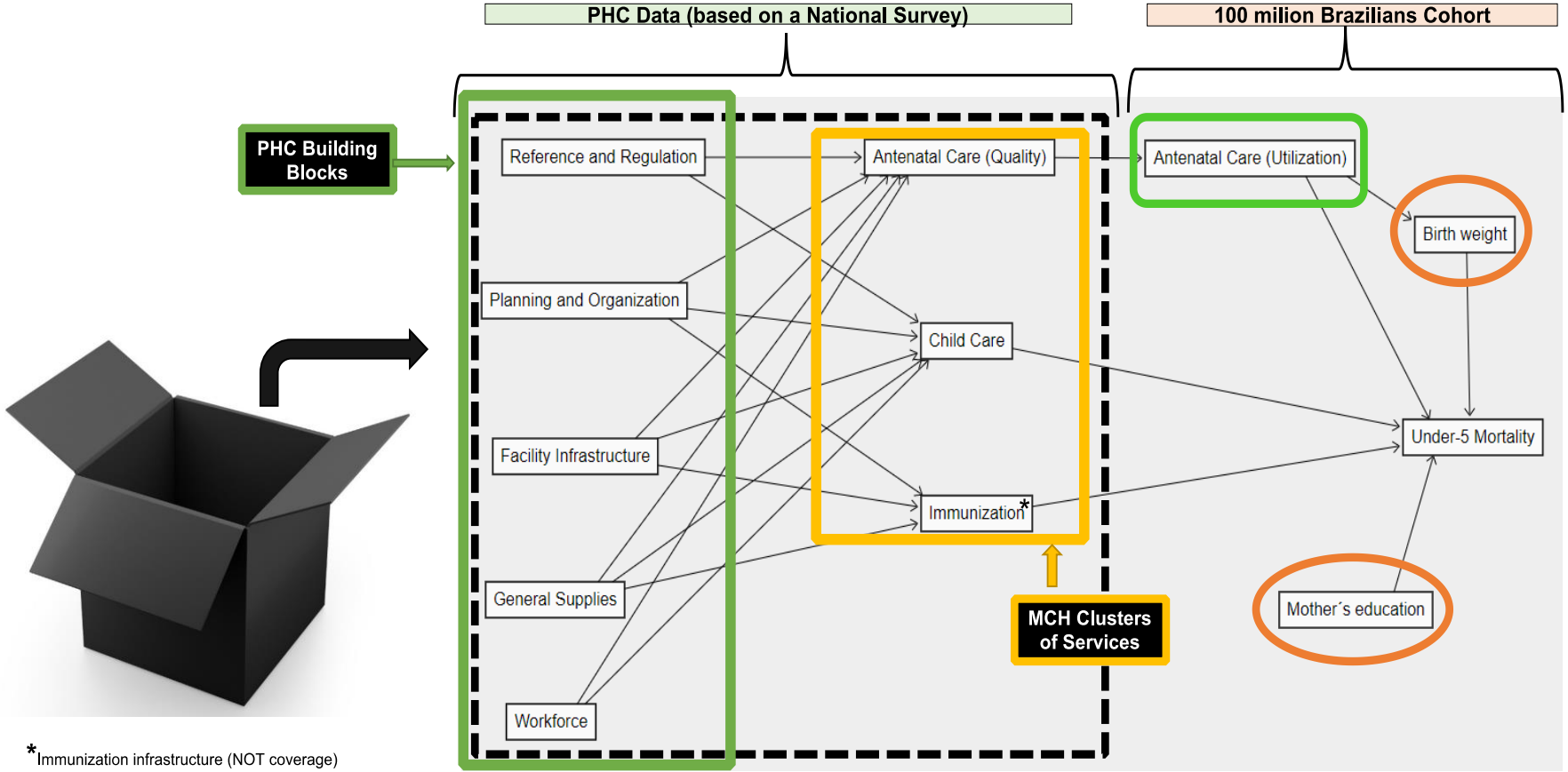
d) whose mother complied with the health conditionalities at in PHC facilities implementing the Family Health Strategy model that participated in the external evaluation survey during the first cycle of the PMAQ (2011-2012).

Data Framework:

combining individual-level data and a national health survey of PHC facilities and teams



PHC Components and Other determinants of Under-5 Mortality



*Immunization infrastructure (NOT coverage)

MEASUREMENT: STATISTICAL METHODS MEASURED COMPONENTS OF THE MODEL AND THEIR EFFECTS ON MORTALITY

1 DATA COMBINED INTO UNIQUE INDEX FOR EACH MODEL COMPONENT

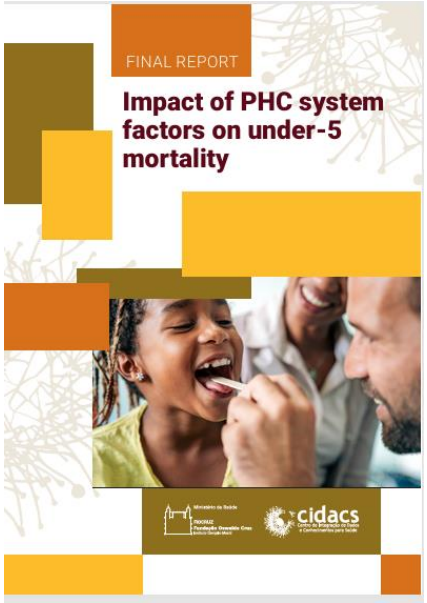
Component	Composite indicators	Observed variables
Antenatal Care Availability and Quality (ANC)	10	30
Child Health Services Availability and Quality (CHC)	9	18
Immunization Availability and Quality (IMM)	7	15
General Supplies Availability and Quality (GSU)	4	35
Facility Infrastructure Availability and Quality (FAI)	8	34
Referral and Regulation System to Specialized Services (REF)	4	6
Workforce Availability and Quality (WOR)	6	18
Planning and Organization (PLA)	6	30

Method of estimation: Bayesian confirmatory factor analysis

2 MULTILEVEL BAYESIAN PATH ANALYSIS USED TO MODEL EFFECT SIZES

- ✓ *Simultaneously estimates all pathways in the diagram*
- ✓ *Controls confounding more robustly than simpler methods*

More details on our final report...

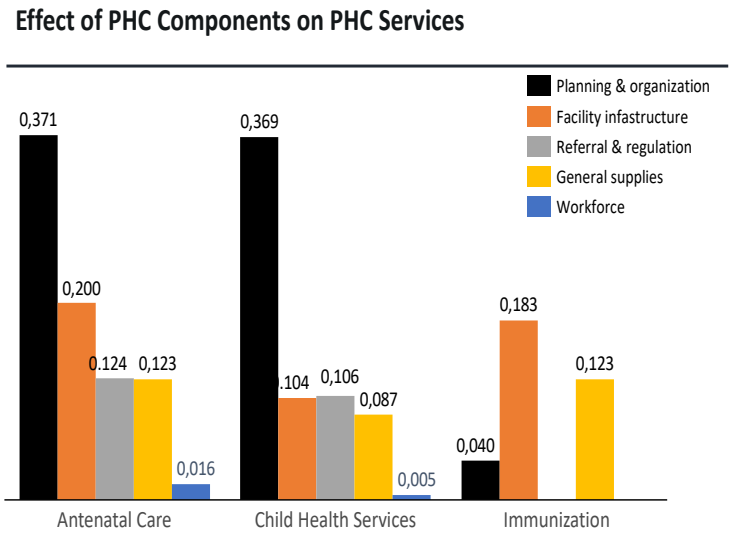


Results

Variable	Total N=143,070	
Socioeconomic Characteristics	**N**	**%**
Household location		
Urban	95,821	82.07
Rural	20,934	17.93
Household building material		
Brick/cement	87,606	76.41
Other	27,053	23.59
Water supply		
Public network	82,071	71.58
Other	32,586	28.42
Maternal Characteristics	**N**	**%**
Number of prenatal visits		
≤ 6	62,700	44.18
≥ 7	79,226	55.82
Maternal age (years)		
≤ 18	3,497	2.44
19-39	134,547	94.04
≥ 40	5,026	3.51
Maternal education (years)		
≤ 7	77,622	55.13
≥ 8	63,182	44.87

Variable	Total N=143,070	
Child characteristics	**N**	**%**
Child gender		
Female	70,014	48.94
Male	73,035	51.06
Apgar score at 5 min		
≥ 7	135,325	98.77
< 7	1,686	1.23
Preterm birth		
Term	134,572	94.06
Preterm	8,498	5.94
Type of delivery		
Vaginal	84,589	59.18
Cesarean section	58,339	40.82
Birthweight (g)		
Mean (sd)	3,237 (549)	

Planning and Organization has the strongest Effect on Quality of Care for Most PHC Services in Brazil



Key Findings

Planning and Organization has the largest effect on both Antenatal Care and Child Health Services

Facility infrastructure also significantly affects Antenatal Care and Child Health Service

Workforce has a weaker effect than expected

- PHC Workforce quantity and composition are distributed relatively uniformly in Brazil

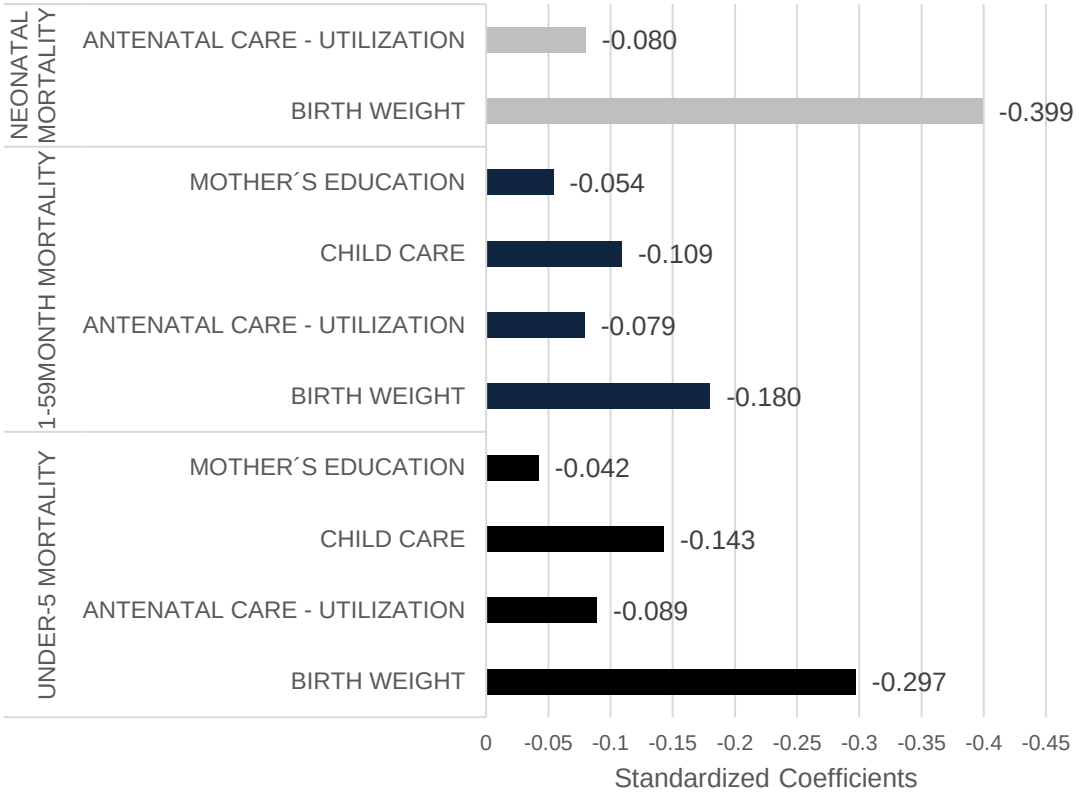
Implications

- **Investing in improving Planning and Organization practices** has the potential to have a stronger effect on the quality of Child Health Services than investing in other components in Brazil

What is Planning and Organization?

This component represents the actions necessary to coordinate the PHC team and other assets to deliver any PHC services effectively. It includes indicators about the frequency of team meetings, self-monitoring, and evaluation practices, and mapping/surveying the population they serve.

Results



Key Findings

- Birthweight is the strongest determinant of under-five mortality in the model
- Among PHC factors, the availability and quality of child health services is the strongest direct determinant of under-five mortality.
- For the 1-59 month mortality group, the determinants are similar to those observed for under-five mortality.
- In the neonatal mortality group, significant effects were observed only in antenatal care utilization and birthweight.

Conclusion

- ✓ The study revealed that Child Care quality was associated with a reduced probability of under-5 mortality among Bolsa Família Program beneficiaries.
- ✓ By "opening the PHC black box," the study highlighted the importance of the Planning and Organization component
- ✓ The PHC model framework developed in this study can serve as guidance for global efforts to evaluate and improve PHC systems.
- ✓ A solid PHC model is crucial for delivering high-quality health services, addressing socioeconomic inequalities, and improving health outcomes.

Scan the QR Code and visit our video on YouTube!

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