

Impact of PRONTO: results of a cluster randomized trial in Mexico

Dr. Héctor Lamadrid-Figueroa

Department of Health & Gender

National Institute of Public Health of Mexico

October 2015



*Generación de conocimiento
para el desarrollo de políticas de salud*



PRONTO
INTERNATIONAL

Team:

Dilys Walker, Jimena Fritz, Susanna Cohen, Marisela Olvera-García, Jennifer Fahey, Sarah Zelek, Dolores González, Martín Romero, Alejandra Montoya,
Héctor Lamadrid Figueroa



The Mexican Background

Access to obstetric care no longer seems to be the main factor related to high maternal mortality :



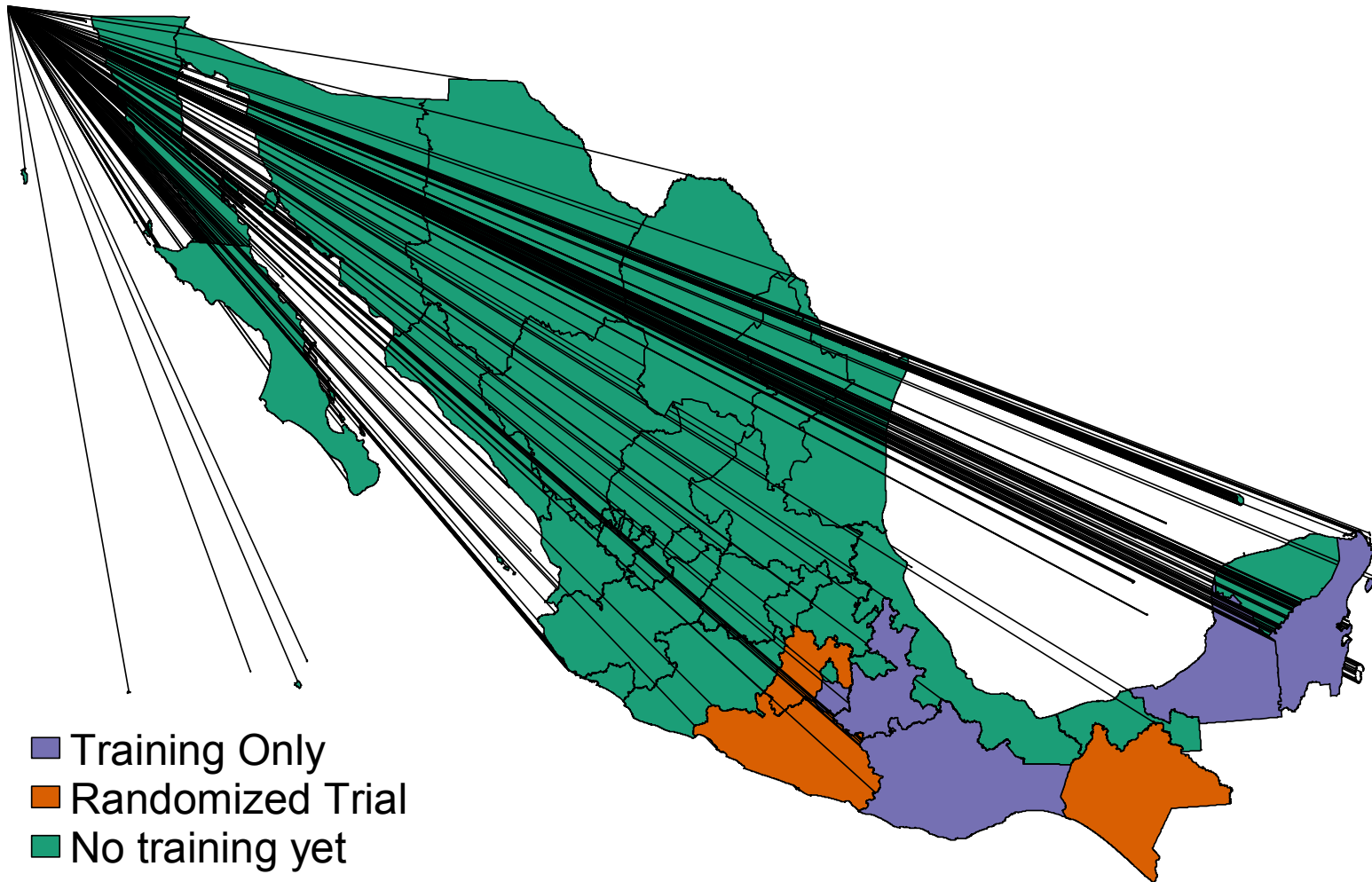
- 96 % of women deliver in clinics or hospitals ¹
- ~99 % of births were attended by trained health personnel (ENSANUT 2012) ²
- 80 % of maternal deaths occurred in a hospital³
 - ❖ 32% Preeclampsia/eclampsia.
 - ❖ 26 % Obstetric hemorrhage

1. <http://data.worldbank.org/>

2. Gutierrez JP, Rivera-Dommarco J, Shamah-Levy T, et al. Encuesta Nacional de Salud y Nutricion 2012. Resultados Nacionales. Cuernavaca, Mexico: Instituto Nacional de Salud Publica (MX), 2012.

3. Freyermuth G., Luna M. Observatorio de Mortalidad Materna en México (OMM), Numeralia 2012. Centro de Investigaciones y Estudios Superiores en Antropología Social (CIESAS). México, 2014.

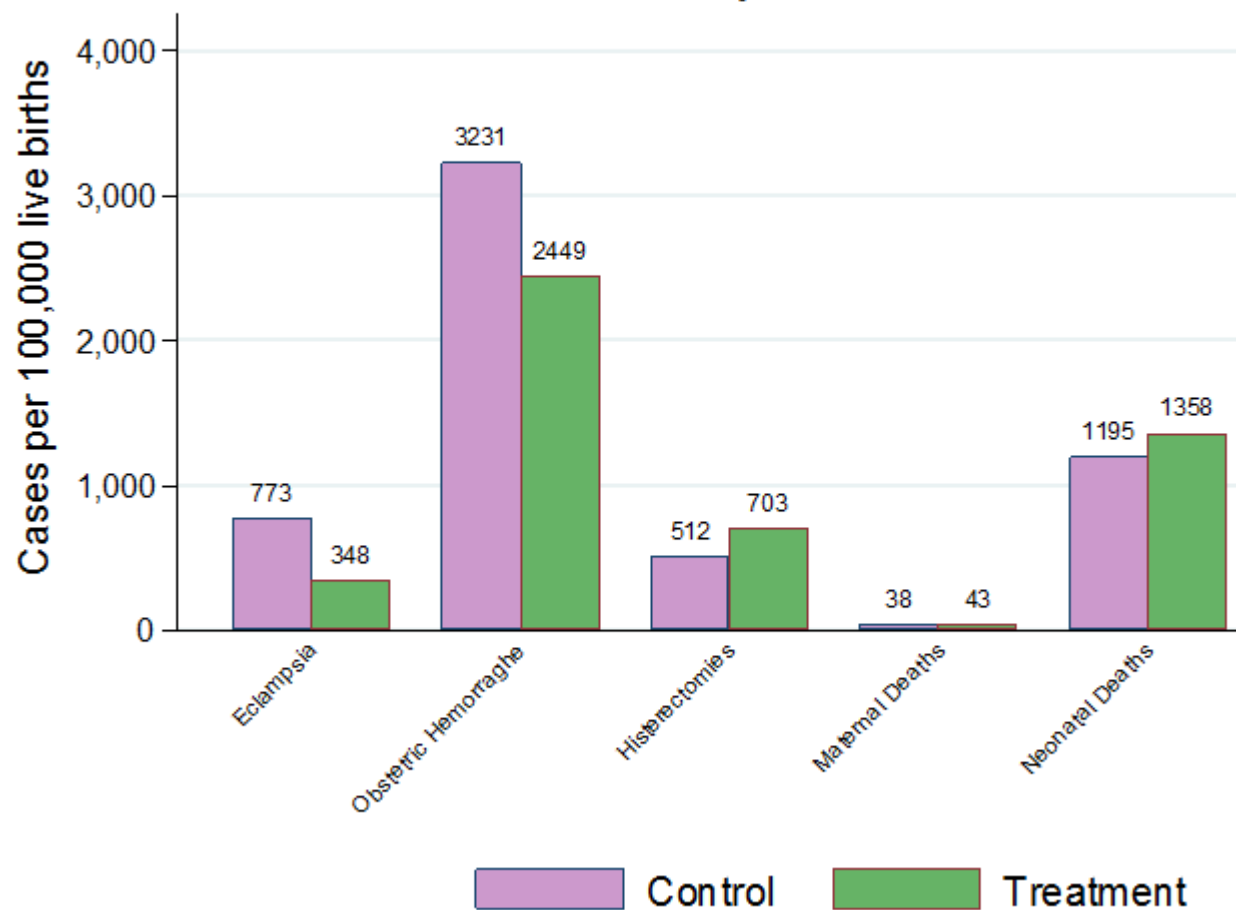
PRONTO in Mexico: 2009-2015



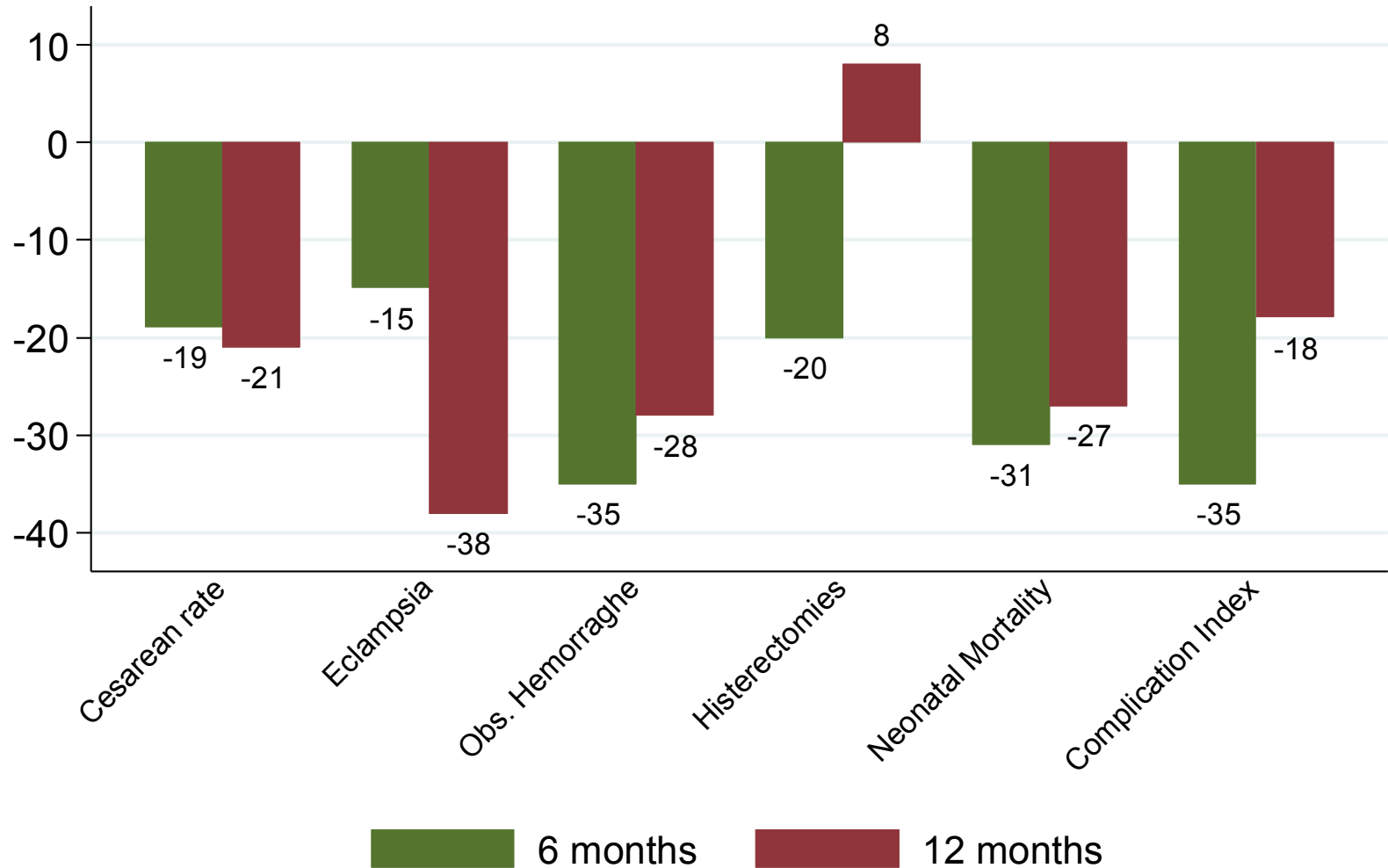
Main outcome variables

- Maternal outcomes:
 - Cesarean section
 - Obsteric Hemorraghe
 - Histerectomy
 - Eclampsia
- Neonate outcomes:
 - Deaths

Baseline Incidence of Main Outcomes by treatment

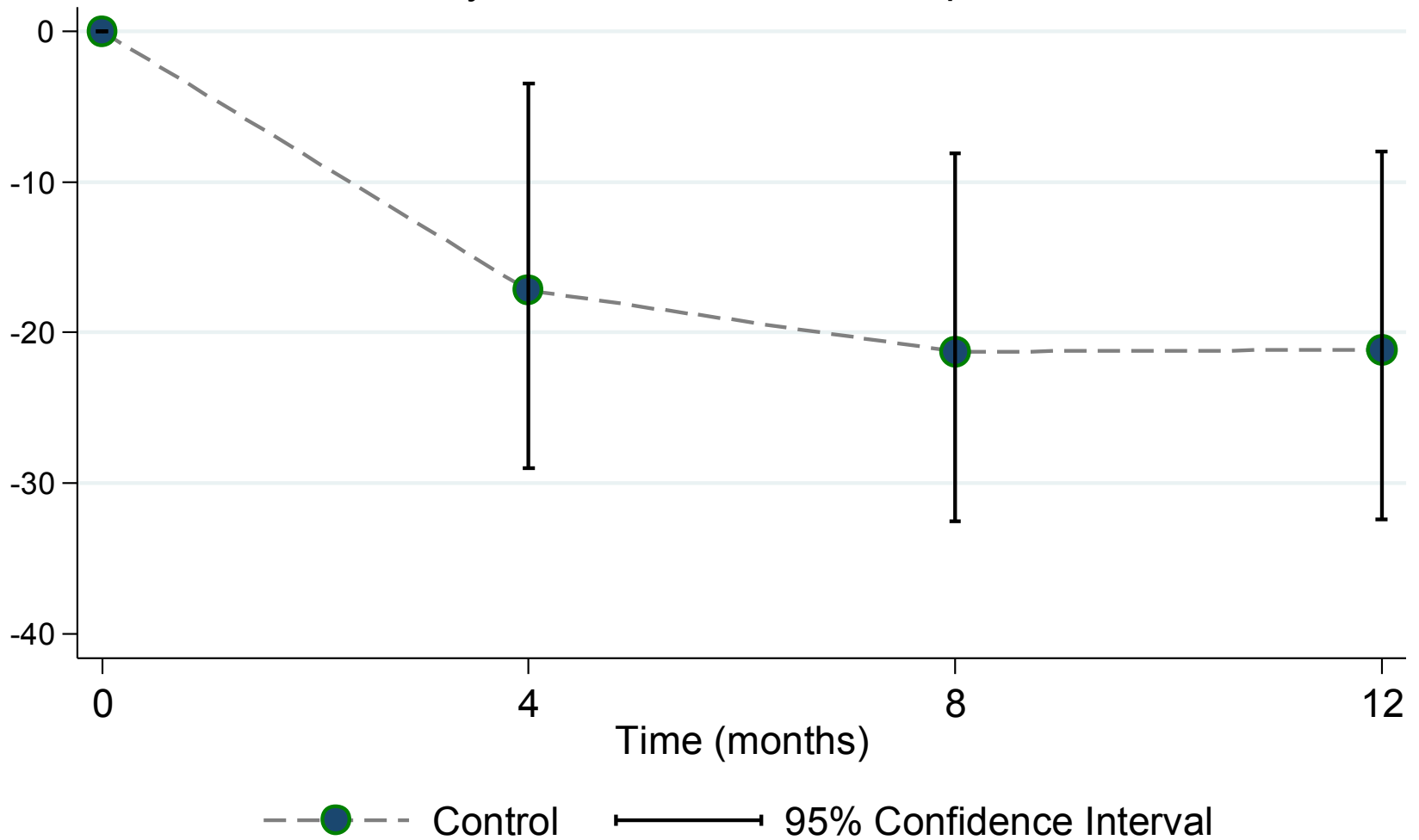


Impact of PRONTO on results indicators 2010-2013



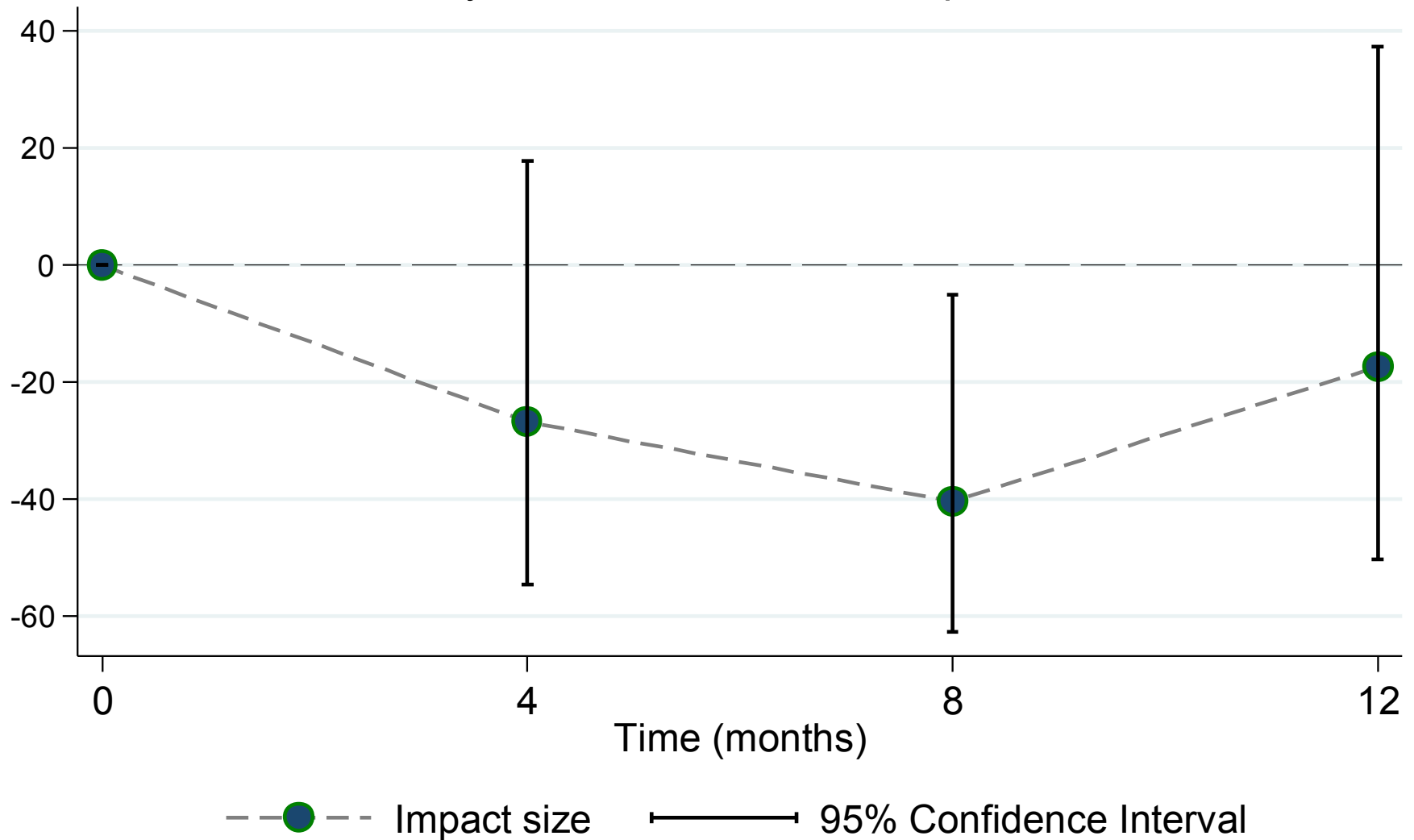
Impact of PRONTO on Cesarean Section Rates*

by time from module I inception



*Adjusted for Baseline Imbalances

Impact of PRONTO on Neonatal Mortality Rate* by time from module I inception



*Adjusted for baseline imbalances

Strengths and Limitations

Limitations

- *Small sample size*
- *Sample only representative of three Mexican States*
- *Some originally sampled hospitals were replaced*
- *Violations of random assignment for 2 hospitals*

Strengths

- Random sampling of hospitals
- Matched design
- Random assignment of intervention
- Strong statistical control for confounding
- Consistency of Results

Conclusions

The **20% decrease** in the proportion of **c-sections** is motivating, It is probably attributable to empowerment and increased self-efficacy of staff in the care of normal deliveries and obstetric emergencies.

The intervened hospitals showed a significant **decrease** in **neonatal mortality** and considerable decreases in most indicators.

The PRONTO training showed extensive **feasibility** and **acceptability** among health personnel.

The evidence on the effectiveness of PRONTO is expected to foster a country-wide adoption of simulation based training for the management of obstetric emergencies.

Impact Evaluation 2010-2013

Empirical Investigations

OPEN

Impact Evaluation of PRONTO Mexico: A Simulation-Based Program in Obstetric and Neonatal Emergencies and Team Training

Dilys M. Walker, MD;

Susanna R. Cohen, CNM, DNP;

Jimena Fritz, MD, MSc;

Marisela Olvera-García, MSc;

Sarah T. Zelek, MPH;

Jenifer O. Fahey, CNM, MSN, MPH;

Martín Romero-Martínez, PhD;

Alejandra Montoya-Rodríguez, MSc;

Héctor Lamadrid-Figueroa, MD, ScD

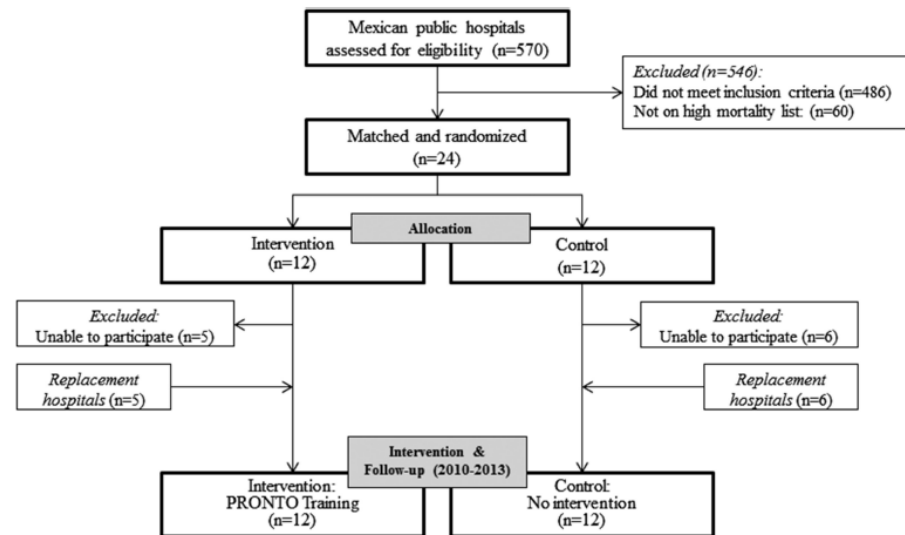


FIGURE 1. Study selection methods for eligible hospitals with 500 to 3000 annual deliveries located in the States of Guerrero, Chiapas, or Mexico.

Walker DM, Cohen SR, Fritz J, ..., Lamadrid-Figueroa H. Impact Evaluation of PRONTO Mexico: A Simulation-Based Program in Obstetric and Neonatal Emergencies and Team Training. **Simulation**

in Healthcare 2015 Aug 26.
prontointernational.org



Estimation Strategy

Negative Binomial
Regression, mixed effects

n=24

$$\ln\left(\frac{\text{cases}}{\text{births}}\right) = \beta_0 + \beta_1 P_i + \beta_2 T_t + \delta P_i T_t + \text{covariates}$$

Difference-in-Differences, approach