Measuring and decomposing the wealth-based inequality in adolescent maternity in Brazil

Franciele Hellwig¹, Cesar Augusto Oviedo Tejada, Anderson Moreira Aristides dos Santos

¹ Post-graduate Program in Epidemiology, International Center for Equity in Health, Federal University of Pelotas

Las Palmas de Gran Canaria, Spain, June 2018
“Health inequality is related to observed divergences in health status between groups of individuals of a population, in a way that is not fair.”

Determinants of Health-Dahlgren & Whitehead's model
(Source: Dahlgren G and Whitehead M, (1998), Health Inequalities, London HMSO)
Inequalities in Brazil

Source: World Inequality Database
Fertility rate, total (births per woman)

Adolescent fertility rate (births per 1,000 women ages 15-19)
Trends: Brazilian AFR higher than the global level

Adolescent fertility rate (births per 1,000 women ages 15-19, each year)

Source: World Bank
Background

I. What is the magnitude of wealth-based inequality in early motherhood in Brazil?
II. How much of it is due to its elasticity of associated factors and to socioeconomic inequality in associated factors?

• Why are we concerned with adolescent maternity?
  • Infant and mother’s health risks
  • Psychological immaturity for childbearing
  • Sometimes associated to violence and abuse
  • Lower educational achievement, and unequal work opportunities
  • Leading to social reproduction of poverty
Data

- 2006 PNDS (National Survey on Demographic and Health of Women and Children)
  - Nationally-representative
  - Representative of all regions and urban-rural residences
  - Multiple stage sampling
  - Women in reproductive age (15-49 yrs)
Data

Prevalence of condom use in the 1st sexual intercourse

34%
Concentration curve and concentration index of inequality (CIX)

\[ CIX_y = 1 - 2 \int_0^1 L_h(p)dp \]

\[ CIX_{Wagstaff} = \frac{CIX_y}{1 - \mu} \]

where

\( y = \frac{\text{proportion of women between the ages of 20 and 24 who had their 1st live-born child before the age of 20}}{\text{number of women between the ages of 20 and 24}} \)

\( \mu = \text{average of } y \)
Results

Cumulative frequency of women between the ages of 20 and 24 (poorest first)

CIX = -0.38
**Decomposition of the CIX**

\[
CIX_y = \sum_j \left( \frac{\beta_j \bar{x}_j}{\mu_y} \right) CIX_{x_j} + \frac{CIX_{\epsilon}}{\mu_y}
\]

→ $\beta_j$ estimated using Logistic regression.

where $x$ is:

- Wealth
- Skin color
- Region
- Urban–rural residence
- Woman’s education
- Contraceptive use at the time of her first pregnancy
- Age at the first union
- Age at first sexual intercourse
- Age at which woman began to use contraception
# Decomposition of the CIX

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\text{Elast}_{y/x_j}$</th>
<th>$\text{CIX}_{k}$</th>
<th>% Cont.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of Wealth Index</td>
<td>-1.06 (0.23)*</td>
<td>0.09 (0.00)*</td>
<td>37.0 (0.06)*</td>
</tr>
<tr>
<td><strong>Region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Northeast</td>
<td>-0.01 (0.02)</td>
<td>-0.38 (0.04)*</td>
<td>-1.1 (0.31)</td>
</tr>
<tr>
<td>Southeast</td>
<td>-0.01 (0.04)</td>
<td>0.18 (0.03)*</td>
<td>0.4 (0.03)</td>
</tr>
<tr>
<td>South</td>
<td>0.01 (0.01)</td>
<td>0.22 (0.04)*</td>
<td>-0.6 (0.01)</td>
</tr>
<tr>
<td>Midwest</td>
<td>0.01 (0.01)</td>
<td>0.07 (0.05)</td>
<td>-0.2 (0.00)</td>
</tr>
<tr>
<td>Area of residence = urban</td>
<td>-0.02 (0.03)</td>
<td>0.17 (0.03)*</td>
<td>1.0 (0.02)</td>
</tr>
<tr>
<td>Skin Color = white</td>
<td>-0.02 (0.03)</td>
<td>0.17 (0.03)*</td>
<td>1.0 (0.02)</td>
</tr>
<tr>
<td><strong>Women education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 4 years</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5-8 years</td>
<td>-0.05 (0.08)</td>
<td>0.10 (0.01)*</td>
<td>2.0 (0.03)</td>
</tr>
<tr>
<td>9-11 years</td>
<td>-0.04 (0.06)</td>
<td>0.09 (0.02)*</td>
<td>1.4 (0.02)</td>
</tr>
<tr>
<td>12 years or more</td>
<td>0.01 (0.03)</td>
<td>0.58 (0.06)*</td>
<td>9.6 (0.07)</td>
</tr>
<tr>
<td>Age of the first sexual intercourse</td>
<td>-0.14 (0.06)*</td>
<td>0.07 (0.02)*</td>
<td>3.6 (0.02)*</td>
</tr>
<tr>
<td>Becoming pregnant before using contraceptive method for the first time</td>
<td>0.06 (0.01)*</td>
<td>-0.30 (0.05)*</td>
<td>7.1 (0.02)*</td>
</tr>
<tr>
<td>Age at which women started using contraception methods</td>
<td>-0.17 (0.07)*</td>
<td>0.03 (0.02)</td>
<td>-2.0 (0.02)</td>
</tr>
<tr>
<td>Age at which women started to live with first life partner</td>
<td>-0.42 (0.04)*</td>
<td>0.16 (0.02)*</td>
<td>27.7 (0.03)*</td>
</tr>
</tbody>
</table>

Standard errors were generated by bootstrapping with 300 replications.

*p<0.05.
Early motherhood is concentrated among the poorest adolescents.

Inequality mainly given by wealth, education, and behavioral aspects.

Maternity decision should be a woman’s personal choice instead of a consequence of lack of policies.

Brazil needs more and better sexual and reproductive health services for adolescents - equity should be aimed, not just overall progress.

Facilitating access to contraceptives only is insufficient, it is also necessary to empower adolescents to use them efficiently.

Importance of school as institution to prevent adolescent pregnancy.
Thank you!

¡Muchas gracias por su atención!

Franciele Hellwig
fhellwig@equidade.org