Health differences at birth between Roma and non-Roma children in Hungary: Long-run trends and decomposition

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Sziráki munkatudományi konferencia
2018/11/09
Background

- Health at birth predicts important outcomes in later in life
- It is important to quantify and understand the disadvantages of ethnic and racial minorities in infant health
  - the extent to which such differences may be due to poverty, education, or geographic isolation
- The Roma are one of the largest and poorest ethnic minorities in Europe
  - however, most studies on the Roma analyze small samples, in selected regions within countries, and as single cross sections
- We measure the health gap at birth between the children of the Roma minority and the non-Roma majority in Hungary
  - using comprehensive data from more than 2.5 million birth records (1981-2010)
Data

- We linked two administrative datasets for this analysis: birth records and the census of 2011
- Birth records contain information on:
  - date of birth
  - gender
  - place of residence at birth
  - indicators of health at birth
  - characteristics of the mother and the father
- BUT they do not contain ethnic markers
- We linked the records of singleton births to the census of 2011 to identify the ethnicity of the mother
  - Roma newborn = infant of Roma mothers
- All characteristics of the newborns and their parents come from the birth records, except ethnicity
Data

- The proportion of linked records is high (births where the mother’s ethnicity is identified)
  - 90% of live births after 1995 are successfully linked
  - the success rate is still above 50% in 1981

- Systematic differences between linked and not linked births are small
  - linked births appear somewhat healthier over the time period
  - we check the robustness of our results by correcting for selection using inverse probability weighting
Health at birth indicators

1. Birth weight
2. Low birth weight (< 2500 g)
3. Gestational age (length of pregnancy)
4. Preterm birth (< 37 weeks)
30-year trends (Roma and non-Roma)

(A) Birth weight

(B) LBW

(C) Gestation length

(D) PTB

non-Roma
Roma

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Ethnic differences in health at birth
Szirák 2018
Gap decomposition

- 2008-2010, pooled linear regressions

Table 1. Raw gaps (A) and residual gaps (B) in the health indicators of births to Roma mothers versus non-Roma mothers

<table>
<thead>
<tr>
<th></th>
<th>(1) Birth weight</th>
<th>(2) Low birth weight</th>
<th>(3) Gestation age</th>
<th>(4) Preterm birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Roma mother</td>
<td>$-313^{**}$</td>
<td>$0.083^{**}$</td>
<td>$-0.498^{**}$</td>
<td>$0.047^{**}$</td>
</tr>
<tr>
<td>Controls</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>N</td>
<td>249,200</td>
<td>249,200</td>
<td>249,159</td>
<td>249,159</td>
</tr>
<tr>
<td>(B) Roma mother</td>
<td>$-72^{**}$</td>
<td>$0.015^{**}$</td>
<td>$-0.083^{**}$</td>
<td>0.001</td>
</tr>
<tr>
<td>Controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.09</td>
<td>0.04</td>
<td>0.04</td>
<td>0.02</td>
</tr>
<tr>
<td>N</td>
<td>249,200</td>
<td>249,200</td>
<td>249,159</td>
<td>249,159</td>
</tr>
<tr>
<td>Non-Roma average</td>
<td>3336</td>
<td>0.056</td>
<td>38.86</td>
<td>0.065</td>
</tr>
</tbody>
</table>

Notes. Coefficient estimates on the Roma indicator variable from OLS regressions. Live births in Hungary in 2008–2010 matched to the 2011 census to obtain ethnic markers. Controls: gender of the newborn child, month of delivery, whether information on father is missing; marital status of the mother if father is known; age, education, labor force status of mother and father; number of previous abortions, miscarriages, and live births, county of residence interacted with settlement type of residence (Budapest, large city, small town, rural).
## Gap decomposition: robustness

### Residual gap estimates using alternative models

<table>
<thead>
<tr>
<th>Method</th>
<th>(1) Birth weight</th>
<th>(2) Low birth weight</th>
<th>(3) Gestation length</th>
<th>(4) Preterm birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighted least squares</td>
<td>-70.8**</td>
<td>0.015**</td>
<td>-0.082**</td>
<td>0.001</td>
</tr>
<tr>
<td>(4.9)</td>
<td>(0.003)</td>
<td>(0.018)</td>
<td>(0.003)</td>
<td></td>
</tr>
<tr>
<td>Logit regression (marginal effects)</td>
<td></td>
<td>0.008**</td>
<td></td>
<td>0.002</td>
</tr>
<tr>
<td>(NA)</td>
<td>(0.002)</td>
<td></td>
<td>(0.002)</td>
<td></td>
</tr>
<tr>
<td>Oaxaca-Blinder decomposition (linear)</td>
<td>-68.5**</td>
<td>0.014**</td>
<td>-0.070**</td>
<td>-0.000</td>
</tr>
<tr>
<td>(5.0)</td>
<td>(0.003)</td>
<td>(0.019)</td>
<td>(0.003)</td>
<td></td>
</tr>
<tr>
<td>Oaxaca-Blinder decomposition (logit)</td>
<td></td>
<td>0.014**</td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>(NA)</td>
<td>(0.003)</td>
<td></td>
<td>(0.003)</td>
<td></td>
</tr>
<tr>
<td>Propensity score matching (ATET)</td>
<td>-52.2**</td>
<td>0.014**</td>
<td>-0.053*</td>
<td>-0.002</td>
</tr>
<tr>
<td>(6.9)</td>
<td>(0.004)</td>
<td>(0.026)</td>
<td>(0.004)</td>
<td></td>
</tr>
</tbody>
</table>

(C) and (D): non-Roma coefficients used in estimating composition effects. Robust standard errors are in parentheses. + p<.10, * p<.05, ** p<.01
Gap decomposition: explanatory power of subsets of the control variables

- Oaxaca–Blinder decompositions (using the non-Roma coefficients on the covariates to remove composition effects)

The share of parental characteristics in explaining the raw gap

<table>
<thead>
<tr>
<th></th>
<th>Birth weight</th>
<th>Low birth weight</th>
<th>Gestation age</th>
<th>Preterm birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>53%</td>
<td>52%</td>
<td>49%</td>
<td>60%</td>
</tr>
<tr>
<td>Labor force status</td>
<td>10%</td>
<td>13%</td>
<td>12%</td>
<td>15%</td>
</tr>
<tr>
<td>Pregnancy history</td>
<td>–3%</td>
<td>2%</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>Geography</td>
<td>4%</td>
<td>3%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Marital status</td>
<td>18%</td>
<td>30%</td>
<td>29%</td>
<td>60%</td>
</tr>
<tr>
<td>Age</td>
<td>–3%</td>
<td>–17%</td>
<td>–18%</td>
<td>–46%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Residual gap</td>
<td>21%</td>
<td>17%</td>
<td>13%</td>
<td>–1%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Trends in ethnic gaps (Roma vs. non-Roma)

▶ for five-year periods between 1981 and 2010

(A) Birth weight

(B) LBW

(C) Gestation length

(D) PTB
Conclusions

- We documented the health differences at birth between Roma and non-Roma children in Hungary between 1981 and 2010.
- Large gaps in all indicators over the 30 years, with a small narrowing of the gap in absolute terms but not in relative terms.
  - Roma children were more than twice as likely to have low birth weight, and almost twice as likely to be preterm births.
- 80-100% of the gaps is explained by differences in socio-economic characteristics of the parents.
  - Education is the most important.
- Improved education is likely to hold high potential for narrowing the ethnic gap.
  - Substantial progress in closing the educational gap at the lower end.
  - Progress is possible only through increased participation in secondary and tertiary education.
Thank you for the attention!

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Our research was supported by the Hungarian National Research, Development and Innovation Office (grant no. NKFI-101409) and the European Union’s Horizon 2020 research and innovation programme (grant no. 691676, EdEN). Tamás Hajdu and Gábor Kertesi were also supported by the Momentum ("Lendület") Program of the Hungarian Academy of Sciences.
Trends in educational attainment of Roma and non-Roma mothers

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Ethnic differences in health at birth

Szirák 2018
Systematic differences in outcomes by linkage
Systematic differences in outcomes by linkage

![Graph showing fraction with low birth weight from 1981 to 2006](image)