The Long Lasting Effects of War on Disability

- Daniel Mont
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Joint Paper with...

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Does war have effects on disability in the long run?

This paper estimates the long-term impact of US bombing over the period 1965-1975 on disability prevalence in Vietnam four decades later.
Motivation

• The toll of warfare is typically assessed in terms of the number of people killed during war.

• Wars may also have long lasting impacts after wars end through the continued exposure to unexploded ordinance, chemical weapons and indirectly through damaged infrastructure.

• In Vietnam, an estimated one million Vietnamese lives were lost during the 1964-75 wartime period (Hirschman et al., 1995). The long-term impacts of the war on the health of the Vietnamese population remain little documented.
Data, Measures, and Models

Warfare intensity

- The data is from a database assembled by US Govt
- Density of bombs, measured by the total number of bombs, missiles and rockets per km² dropped by allied forces.
- This measure picks up exposure to correlated weapons including UXO, mines and dioxin.
Disability: difficulty of any degree (some difficulty, a lot of difficulty or unable to do) in at least one functional domain.

Severe disability: a lot of difficulty or unable to do in at least one functional domain.

Washington Group Short Set minus the self-care and communication questions: Namely, The disability questions are four of the six questions recommended by the United (a) seeing, (b) hearing, (c) walking/climbing stairs, (d) concentrating or remembering things.

15-percent sample of 2009 Vietnam Population and Housing Census
Bombing and Severe Disability Prevalence

Data, Measures and Models

Number of bombs, missiles and rocket per km²

Percentage of people with severe disability in any domain

Daniel Mont and Nora Groce (University College London)
## Disability rates by birth dates

### Data, Measures and Models

**District-level prevalence rate of disability for people born before and since 1976 (%)**

<table>
<thead>
<tr>
<th>Districts by quintiles of the number of bombs, missiles, and rockets</th>
<th>Lowest</th>
<th>Near lowest</th>
<th>Middle</th>
<th>Near highest</th>
<th>Highest</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People born before 1976</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disability</td>
<td>12.59</td>
<td>11.11</td>
<td>11.53</td>
<td>11.36</td>
<td>12.47</td>
<td>11.81</td>
</tr>
<tr>
<td>Severe disability</td>
<td>2.71</td>
<td>2.44</td>
<td>2.57</td>
<td>2.58</td>
<td>2.88</td>
<td>2.63</td>
</tr>
<tr>
<td><strong>People born since 1976</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disability</td>
<td>1.59</td>
<td>1.33</td>
<td>1.45</td>
<td>1.39</td>
<td>1.51</td>
<td>1.44</td>
</tr>
<tr>
<td>Severe disability</td>
<td>0.53</td>
<td>0.53</td>
<td>0.57</td>
<td>0.56</td>
<td>0.64</td>
<td>0.57</td>
</tr>
</tbody>
</table>
Estimation Strategy: Ordinary Least Squares

\[ \log(Disability_i) = \alpha + \beta \log(bomb_i) + \theta X_i + u_i \]

where ... \nLog(bomb_i) is the log of bomb density of district i \nXi includes district area and elevation, the share of urban population, district capital and Northern region dummies, and distance to the major cities Da Nang, Hanoi and Ho Chi Minh city
We use the distance from the centroid of each district to the 17th parallel north latitude as an instrument of bombing density (Miguel and Roland 2011).

\[
\text{Log} (\text{Disability}_{i}) = \alpha + \beta \text{Log} (\text{bomb}_{i}) + \theta X_i + \epsilon
\]

\[
\text{Log} (\text{bomb}_{i}) = a + b \text{Log} (\text{Distance 17lat}_{i}) + cX_i + u_i
\]

where \text{Log}(\text{Distance 17lat}_{i}) the distance from the centroid of each district to the 17th parallel north latitude
## IV regression of log of disability prevalence rates in selected domains

<table>
<thead>
<tr>
<th></th>
<th>Seeing</th>
<th>Hearing</th>
<th>Walking</th>
<th>Remembering</th>
<th>Disability in any domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of bombs, missiles, rockets per km²</td>
<td>0.050*** (0.013)</td>
<td>0.052*** (0.010)</td>
<td>0.052*** (0.011)</td>
<td>0.080*** (0.012)</td>
<td>0.061*** (0.010)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.099</td>
<td>0.357</td>
<td>0.254</td>
<td>0.214</td>
<td>0.26</td>
</tr>
</tbody>
</table>
### Results

**IV regression of log of severe disability prevalence rates in selected domains**

<table>
<thead>
<tr>
<th></th>
<th>Seeing</th>
<th>Hearing</th>
<th>Walking</th>
<th>Remembering</th>
<th>Disability in any domain</th>
<th>Mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of bombs, missiles, rockets per km(^2)</td>
<td>0.090***</td>
<td>0.079***</td>
<td>0.078***</td>
<td>0.102***</td>
<td>0.088***</td>
<td>0.066***</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.013)</td>
<td>(0.014)</td>
<td>(0.013)</td>
<td>(0.012)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.159</td>
<td>0.287</td>
<td>0.197</td>
<td>0.226</td>
<td>0.219</td>
<td>0.211</td>
</tr>
</tbody>
</table>
## IV regression of other outcomes

<table>
<thead>
<tr>
<th>Log of bombs, missiles, rockets per km²</th>
<th>Per capita expenditure</th>
<th>Poverty rate</th>
<th>Years of schooling</th>
<th>Hospitals per one million people</th>
<th>Patient beds per one million people</th>
<th>Doctors per one million people</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0.008</strong> (0.010)</td>
<td><strong>0.005</strong> (0.021)</td>
<td><strong>-0.093</strong> (0.045)</td>
<td>0.012 (0.045)</td>
<td>0.031 (0.044)</td>
<td>0.032 (0.060)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>612</td>
<td>612</td>
<td>612</td>
<td>63</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.734</td>
<td>0.731</td>
<td>0.558</td>
<td>0.144</td>
<td>0.242</td>
<td>0.274</td>
</tr>
</tbody>
</table>
The estimated effect of log of bomb density on log of the proportion of people with disability.
Conclusions

• The toll of warfare is often assessed in terms of the number of people killed.

• However, the long-term effect of warfare on disability is significant and deserves closer attention.

• These findings from Vietnam highlight the importance of cleaning up the consequences of war and developing health and disability services and increase capacity to prevent disability and to address the health needs of people with disabilities in conflict-affected countries.

• More broadly, improved opportunities for education and secure livelihoods and the removal of barriers in the environment will help to raise functioning levels of persons with war-induced impairments.