UNDER-REPORTING OF ACCIDENTS

Theories and research methods in traffic safety
Who am I?

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Agenda

• Brief overview of my phd.-study
• Self-reporting
  • What do I mean by *self-reporting*?
  • Methodological concerns
  • Results from a case study
  • Further work
• Ideas for discussion
Facts of relevance

- In Denmark, accident data are registered by the police. The hospital and/or emergency room registers if the damage happened in a traffic accident or not – but not the location, time etc.

- Police catch rate in percentage of people registered in emergency room 2007. Results taken from (Janstrup, Hels et al. 2014):

<table>
<thead>
<tr>
<th>Car</th>
<th>Cyclist</th>
<th>Pedestrian</th>
</tr>
</thead>
<tbody>
<tr>
<td>severe</td>
<td>slight</td>
<td>severe</td>
</tr>
<tr>
<td>68%</td>
<td>25%</td>
<td>14%</td>
</tr>
<tr>
<td>severe</td>
<td>slight</td>
<td></td>
</tr>
<tr>
<td>62%</td>
<td>23%</td>
<td></td>
</tr>
</tbody>
</table>

- For now, let us define under-reporting as “the number of accidents that we as technical specialists does not know about because they are not registered by the police”
My ph.d.-study: "Under-reporting of accidents"

- How do we minimize the level of under-reporting of traffic accidents and its consequences?

<table>
<thead>
<tr>
<th></th>
<th>Data from the National Patient Register (LPR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>- How many are involved in an accident?</td>
</tr>
<tr>
<td></td>
<td>- How severe are the accidents?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Data from ambulance services</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>- Where do accidents occur?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Self-reported accident data</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>- How did the accident happen?</td>
</tr>
<tr>
<td></td>
<td>- Where did it happen?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>InDeV:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>- App to detect motions of vulnerable road users (VRUs)</td>
</tr>
<tr>
<td></td>
<td>- Socio-economic cost of traffic accidents with VRUs</td>
</tr>
</tbody>
</table>
Self-reporting of accidents

What do I mean by ”self-reporting”? 
• Questionnaire sent out asking about an accident 
• Qualitative and quantitative questiona – eg. ”Describe your accident” or ”What time did the accident happen?”

Consists of 3 studies: 
• Almost finished: Case: Project with Flourescent Bikewear
• Next step: Self-reporting from National Patient Register
• Third step: Self-reporting in 5 countries (InDeV)

Lots of data – but is it valid?
General methodological concerns about self-reports

- **Biased respondents?**
  - Who chooses to answer a self-report questionnaire?

- **Can the respondents give the information asked?**
  - Do they understand what they are being asked?
  - Do they possess the skills for answering (e.g., locating accident on a map)
  - Memory loss and recollection of traumatic events
  - Cognitive difficulties – did respondents actually notice the answer to what was asked (for instance speed prior to accident)?

- **Will the respondents be honest?**
  - Social desirability
  - Fear of reprocussions (insurance/legal issues due to culpability)
Findings from the case-study

N=6,308

Questionnaire sent out every month for a whole year (2012-2013)

Reported 833 bicycle accidents during the test period of one year

“Dedicated participants”: A high return rate – 97.5% of the monthly inquiries about accidents was answered by the participants
Can they locate the place of accident?

Task:
- Open maps.google.dk and right-click on the accident location. Select to copy coordinates and paste them into the questionnaire.
- Correct format:
  xx.xxxxxx, xx.xxxxxx
- Wrong format:
  +xx° xx' x.xx", +xx° xx' xx.x
- Not understood:
  Leaving field blank, writing address or pasting link to maps.google
Do the respondents understand the questions?

- Difficult to measure!

- Expected difficulty in regards to quite theoretical terms, eg. "parties" – for instance: One car with three passengers equals one party.

- "How many parties were involved in the accident?"
  - Of 833 accident reports 47 (6%) had to be corrected on the answer

![](image.png)
Do they report real accidents? 
... or do they make up accidents?

- Near misses:
  - When reading the accident description one can conclude that there wasn’t any accident

- Not meeting criterias:
  - Not in Denmark
  - Not on bicycle
  - Not on public road (mountain biking)
  - Unfinished questionnaire

![Pie chart showing reported accidents]

- Used for further study
- Near-misses
- Not meeting criterias
Are self-reports in accordance with police records?

- "Has there been written a police report on your accident?"
- Answering "yes": 23 out of 694
- In reality only 6 out of 694 (0.9% of total claimed accidents)
Self-reports and hospital data - accordance?

- "Did you seek medical attention in relation to the accident?"
- 99 answered that they went to the hospital and/or emergency room.
- 87 was to be found in hospital records
Self-reports and hospital data - accordance?

<table>
<thead>
<tr>
<th>Category</th>
<th>LPR (N=87)</th>
<th>Self-registered (N=99)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian (EUM1)</td>
<td>5.75/5.05</td>
<td>0/0</td>
</tr>
<tr>
<td>Bicyclist (EUM2)</td>
<td>18.18</td>
<td>9.2</td>
</tr>
<tr>
<td>Moped (EUM3)</td>
<td>2.32/2.02</td>
<td>2.3/2.01</td>
</tr>
<tr>
<td>Motorcycle (EUM4)</td>
<td>2.3/1.01</td>
<td>16.09</td>
</tr>
<tr>
<td>Car (EUM5)</td>
<td>19.19</td>
<td>19.19</td>
</tr>
<tr>
<td>Truck/bus (EUM7)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not specified (EUM9)</td>
<td>0</td>
<td>1.15/1.01</td>
</tr>
<tr>
<td>Animal (does not exist in EUM-codes)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

No significant differences
Conclusion based on case study

- The case-study does not show anything about the likeness between self-reports and police reports – only that very few self-reported accidents are to be found in the police database…

- Approximately 7% of reports are near-misses; important fact in designing a self-report study

- Approximately 14% claim to have visited a hospital; 13% is to be found in records.

- Self-reported facts of counterpart does not differ significantly from hospitals recordings
Re-visiting methodological concerns...

- **Biased respondents?**
  - The participants from the case are not representative
  - Highly motivated bicyclists could explain the many near misses recorded as accidents
  - A new questionnaire sent out to people registered in the National Patient Register will shed more light on this

- **Can the respondents give the information asked?**
  - Copy-pasting coordinates is too difficult a task
  - New design of the locating technique will be tested
  - Hopefully: Testing self-reported accident location against GPS-location from Ambulance Services
  - Self-reported accident description – how to test the validity of this?

- **Will the respondents be honest?**
  - Not enough police reports to investigate this yet
Discussion
Some questions to you…

• How do we assess the validity of a self-reported accident description (what, where and how did the accident happen)?
  • Especially the accidents where we cannot compare the description with police reports?

• What are your greatest concerns about self-reported accident data?

• Do you think a qualitative, self-reported accident description could be beneficial for traffic safety research purposes?