



Fatal occupational injuries underreported in Norway

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Overview

1. Background and aim of study
2. Material: two main sources: Death registers in Norwegian Labour Inspection Authority and in Statistics Norway
3. Methods: Comparing two registers by means of unique personal number of deceased, estimation of total number by a capture-recapture model
4. Results: An underreporting in both registers of 30-43%
5. Conclusions



1 Background and aim of study

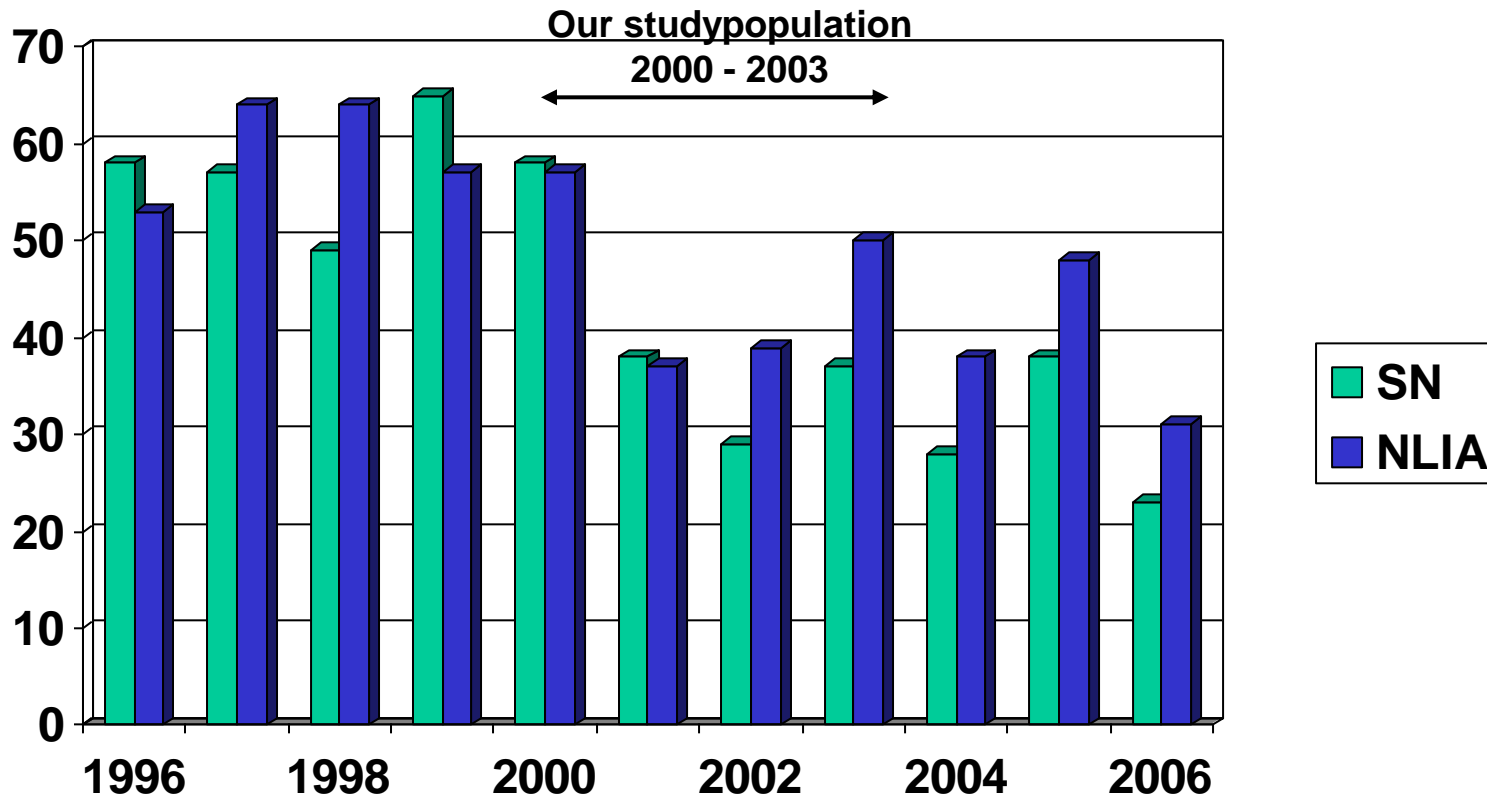
- Norwegian population ab. 4.5 million, number of employees ab 2.2 million
- 2/3 of all fatal occupational injuries (OI) in Norway are recorded by the Norwegian Labour Inspection Authority (NLIA)
- The other 1/3 are recorded by authorities of aviation, shipping, fishing and oil production
- The NLIA register of fatal OI is regarded as complete
- Aim of study: to assess the completeness of the register of fatal OI at NLIA (Norwegian Labour Inspection Authority)



2 Material: two main sources

- Death register at the Norwegian Labour Inspection Authorities (NLIA)
 - based on reports from employers and police
 - fatal occupational injury irrespective of residence
 - occupational injury: only mainland based activities
- Death register in Statistics Norway (SN)
 - all deaths of residents in Norway (no non-residents)
 - occupational injuries from mainland plus air, sea, offshore

Fatal occupational injuries in Norway 1996-2006 registered in the two sources: Statistics Norway (SN) and Norwegian Labour Inspection Authority (NLIA)

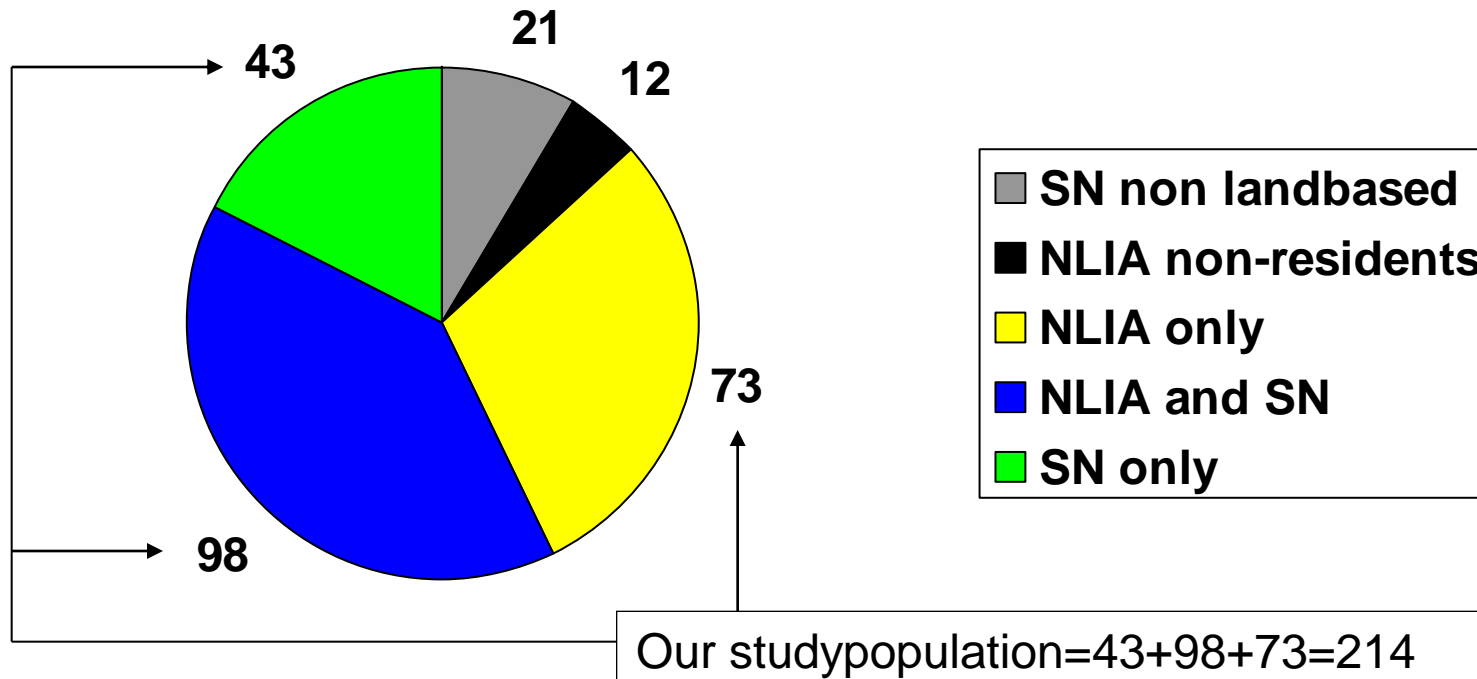


3 Methods

- Comparing NLIA case-wise with Statistics Norway by means of unique personal number for
 - residents in Norway
 - mainland based activity
- Estimate true number of fatal occupational injuries in this population with a capture-recapture model
 - Chao et al, Stat Med 2001;20:3123-57
 - McCarty et al: Int J Epidemiol 1993;22:559-65

4 Results

Total registered fatal OI in Norwegian Labour Inspection Authority (NLIA) and in Statistics Norway (SN) for the period 2000-2003, N=247





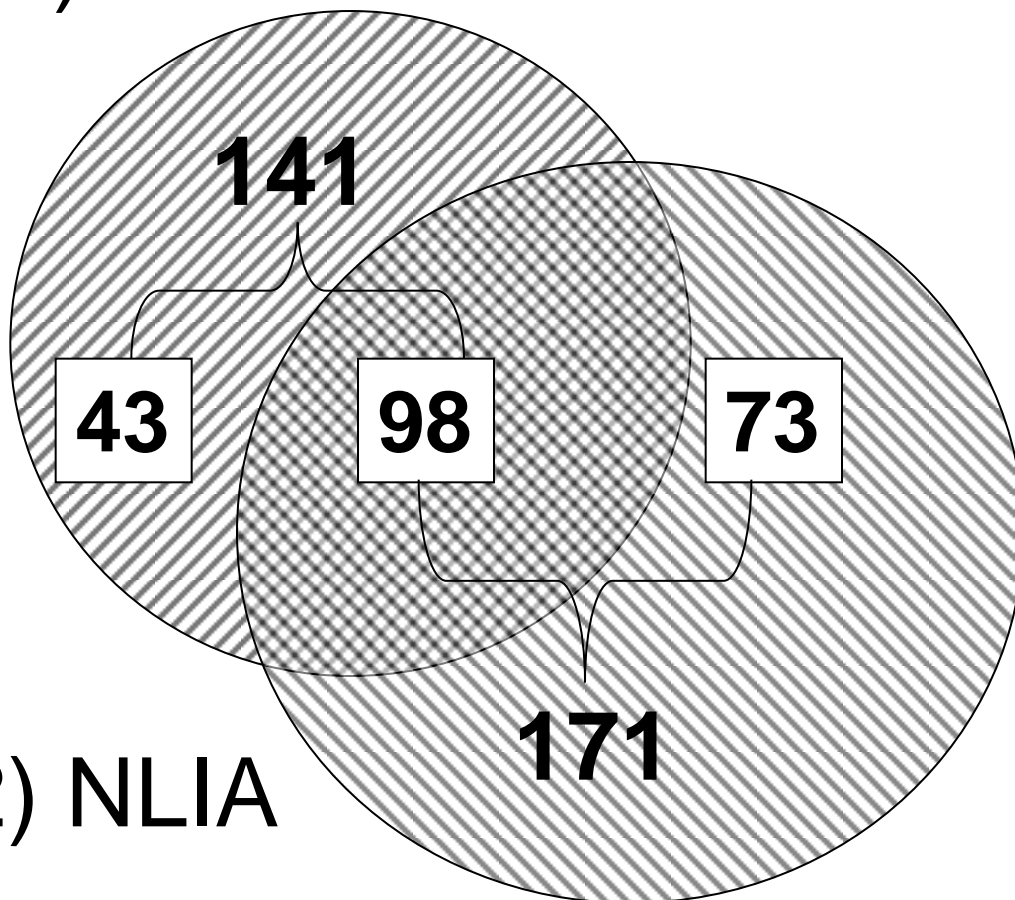
Capture-recapture

- Probability of being registered by source A (SN) is the same for all (true number) fatal occupational injuries as for those registered by source B (NLIA),
- if the two sources are independent:
 - $p_A \cdot \text{true number} = 141$
 - $p_A \cdot 171 = 98$
 - $\text{true number} = 141 \cdot 171 / 98 = 246$



To find true number of fatal occupational injuries of residents in Norway, employed in mainland based activities, two more registers will now be studied

1) SN



2) NLIA

Registers in:

3) Insurance companies

4) National Insurance Administration

$1+2+3+4 =$
true number
246?



Fatal occupational injuries

Annual averages vs. persons employed

| | | |
|--------------------------|----|-----|
| • Norway 2000-3 (NLIA) | 43 | |
| – Pr 100.000 (2,3 mill) | | 1,9 |
| • Norway 2000-3 estimate | 62 | |
| – Pr. 100.000 estimate | | 2,7 |
| • Sweden 2000-3 (SLIA) | 59 | |
| – Pr 100.000 (4,2 mill) | | 1,4 |
| • Denmark 2001-4 (DLIA) | 51 | |
| – Pr 100.000 (2,7 mill) | | 1,8 |



5 Conclusions

- NLIA underreported (2000-3) in particular:
 - Traffic accidents (small vehicles)
 - Military personell (not in war)
 - Health and social sector
- SN underreports due to poor classification of activity
- Underreporting may lead to misinterpretation of risks
- One third of all recorded fatal occupational injuries (both sources) were due to transport accidents (V01-V99, ICD-10)
- Underreporting in NLIA may be worse for individuals who are residents abroad