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Estimating populations of people who inject drugs to understand the epidemiology of hepatitis C

Medicine | National Drug and Alcohol Research Centre

Acknowledgements

- Matthew Hickman, Jason Grebely, Greg Dore, Louisa Degenhardt, Rebecca Guy, Richard Gray, Carolyn Day, Jo Kimber

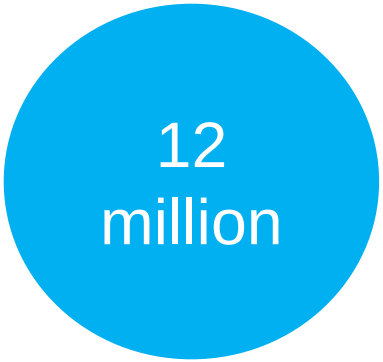
- No interests to declare

It's important to know how many people who inject drugs

- Service planning
- Burden of disease
- Secular trends

But hard to figure out

UNODC World Drug Report estimates:



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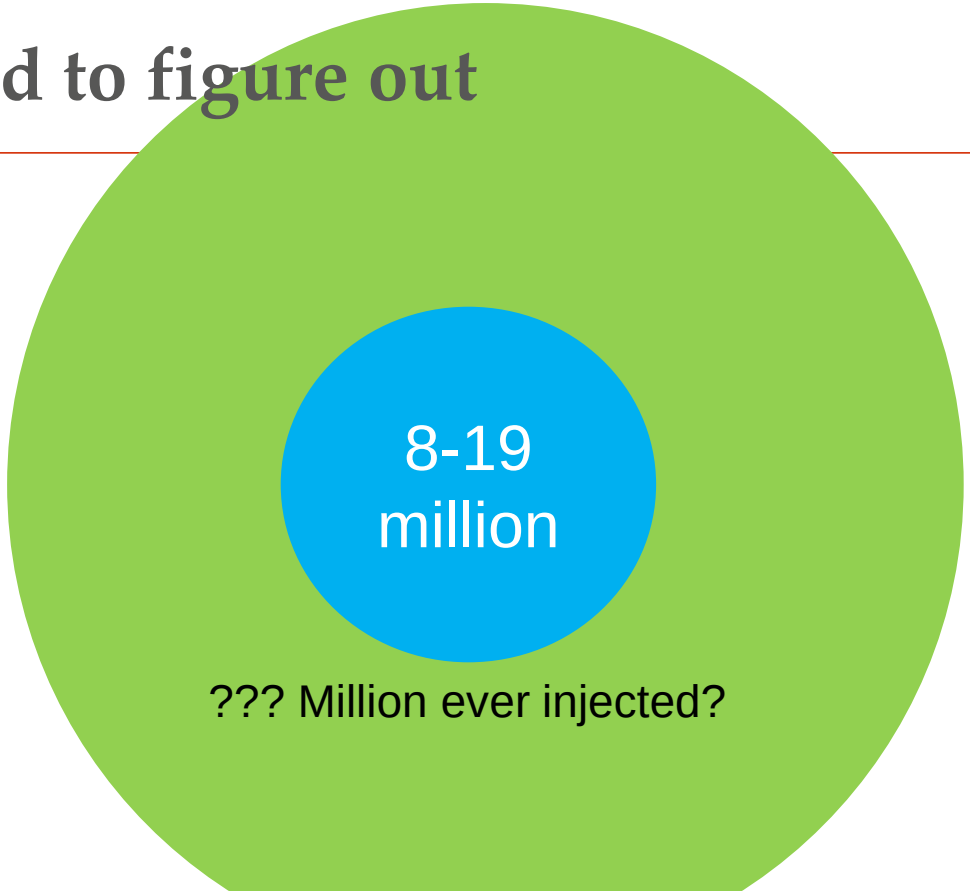

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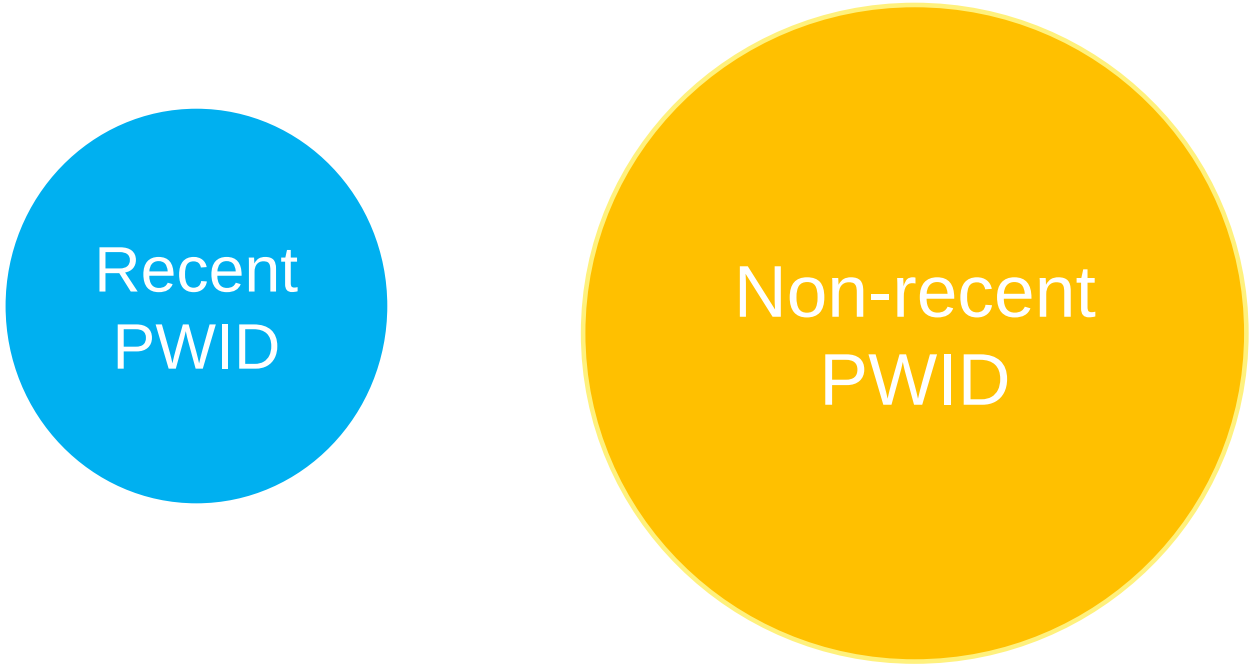
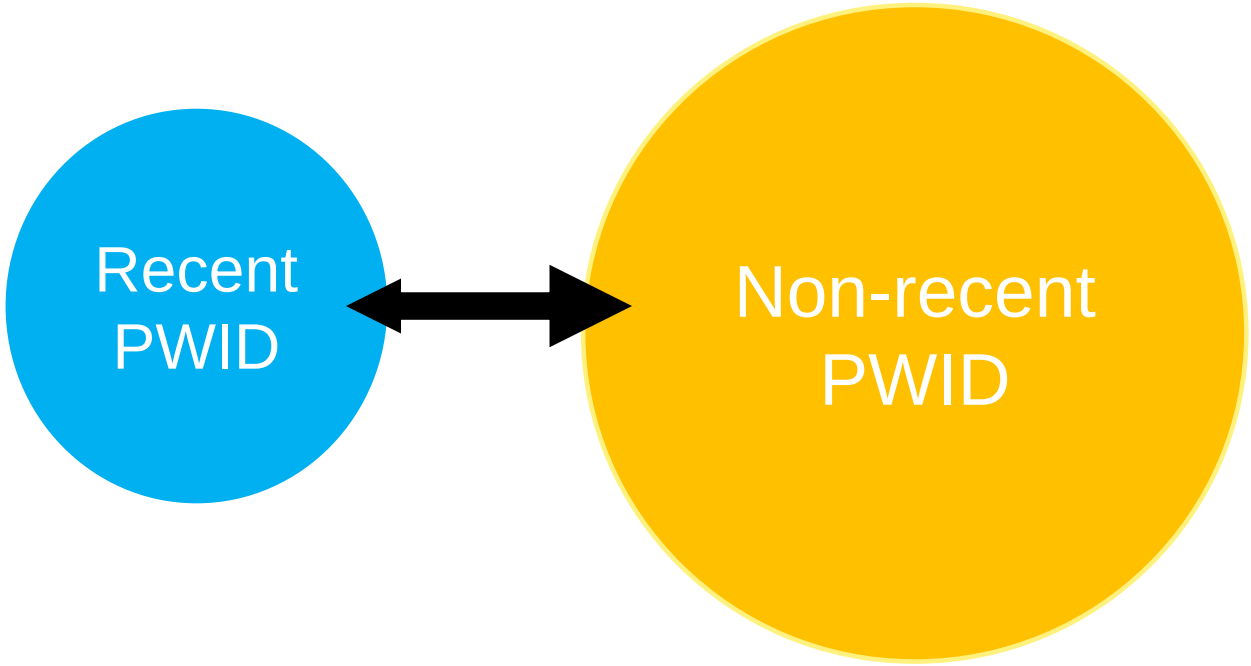
“Recent” and “non-recent” injecting



"Recent" and "non-recent" injecting



Population surveys underestimate people who inject drugs

- By an unknown margin
- Exclude people in unstable housing, institutions
- If asked, may not disclose
- Small numbers in the general population – considerable uncertainty around estimate

Indirect prevalence estimation methods preferred for 'hidden' populations

- Use indicator data e.g.:
  - Drug-related deaths
  - Needle and syringe program activity
  - Drug treatment registries (opioid substitution therapy – OST – is a common one)

Indirect prevalence estimation methods preferred for 'hidden' populations

- Scale up indicator using multiplier
  - Multiplier sourced from surveys of people who inject drugs
  - But survey may not be representative – multiplier may be incorrect
  - Only estimating 'recent' injecting

Indirect prevalence estimation methods preferred for 'hidden' populations

- Link indicator data for capture-recapture
  - Proportion in multiple datasets provides information about probable true population size
  - But data sources may not be independent, biasing estimate
  - Only estimating 'recent' injecting

Indirect prevalence estimation methods preferred for 'hidden' populations

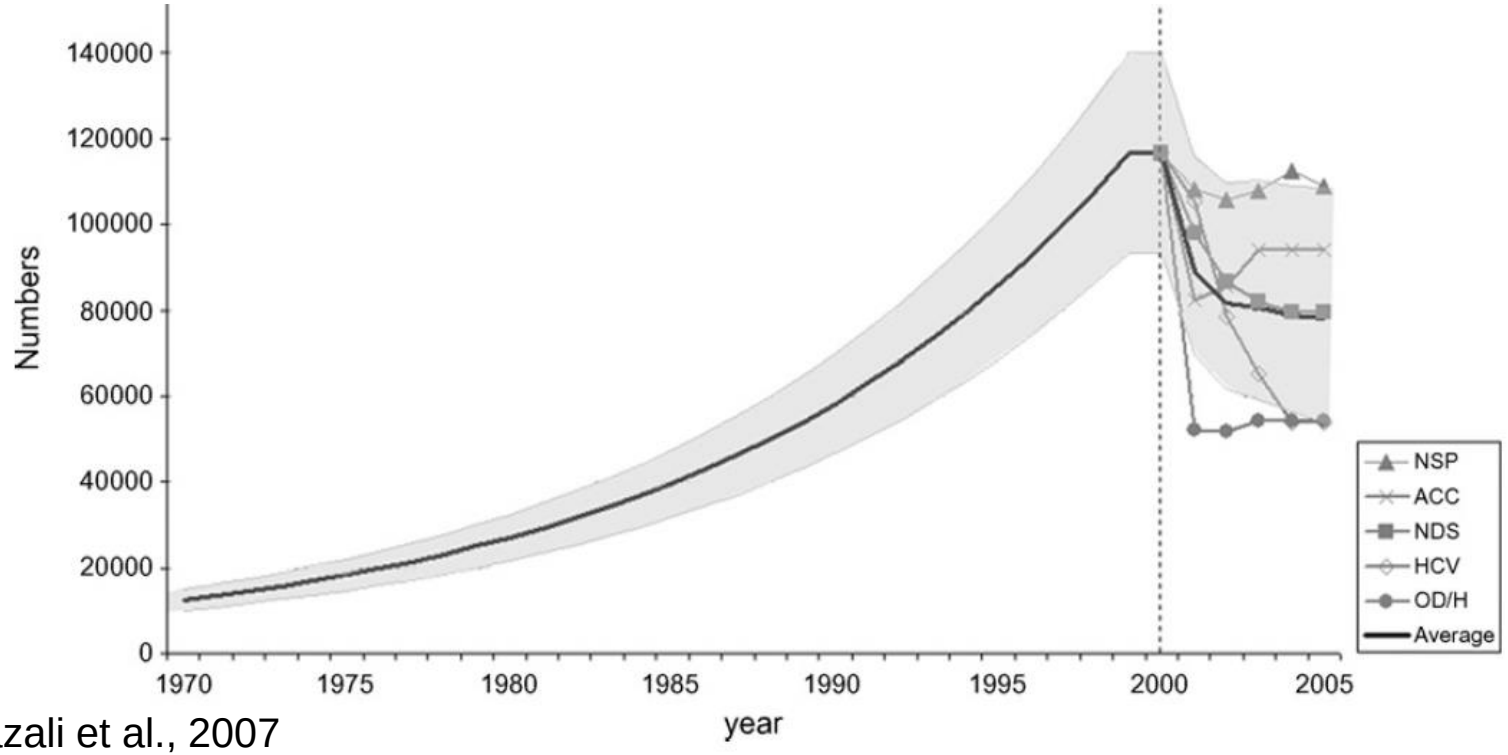
- Validation important
  - Compare estimate to other data sources not used for estimate
  - Does it seem feasible? Probable?
  - What biases may be affecting the estimate?

Multi-parameter evidence synthesis is the way forward for population estimation

- Uses all available information, direct and indirect
- Estimates past injecting as well as current
  - But still considerable uncertainty due to lack of data to inform this parameter!
  - See Hickman, Jones, De Angelis

Estimates of people who inject drugs in Australia

Australian estimates are outdated



Razali et al., 2007

Multiplier-based estimates

- Indicator data: National Opioid Pharmacotherapy Statistics Annual Data Collection (NOPSAD)
- Multiplier data: Australian Needle and Syringe Program Survey
- Multipliers for each state/territory applied to indicator for each state/territory
- Summed for national estimate

People who inject drugs, Australia, 2014

Lower	Mid	Upper
68,000	93,000	118,000

People who inject drugs, Australia, 2014

	Lower	Mid	Upper
Men	46,000	63,500	80,500
Women	22,000	30,000	38,000

People who inject drugs, Australia, 2014

	Lower	Mid	Upper
15-24	2,500	3,500	4,500
25-34	16,500	22,500	28,500
35-44	26,000	35,500	45,000
45-54	17,000	23,500	29,500
55-64	6,000	8,500	10,500

Validation suggests underestimation

- Assume mortality rate of 0.53% (MIX cohort)
- Expect 360-626 drug-induced deaths if estimate is ‘correct’
- 846 actual deaths (ABS)
  - Underestimate
  - Or not all overdose deaths related to injecting
  - Or mortality rate not applicable nationally

Sources of bias to consider

- Under-inclusion of methamphetamine injectors in needle and syringe program survey
  - Would give a multiplier that is too low

- Lack of data on injecting in OST

Summary

- Important to know how many people inject drugs
- But doing it well is technically complex
- These estimates provide the basis for a more comprehensive exercise in population estimation

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