

Can we live with confidence intervals?

SANNA RÖNKÄ

Problem drug users are a challenging population to reach for research purposes. They often live in unstable conditions and are not within easy reach of postal or telephone surveys on alcohol and drug use. The illicit nature of drug use similarly leads to underreporting of drug use in surveys. New statistical methods have therefore been developed in order to estimate how many people use drugs in a harmful way. Dahlberg and Anderberg (2013) raise important questions on the reliability and validity of these methods, and my commentary reflects on their critical assessment of the capture-recapture method in the light of Finnish studies on problem drug use.

Capture-recapture methods have been used to assess the number of problem drug users in Finland since the mid-1990s, when the European Monitoring Centre for Drugs and Drug Addiction EMCDDA started to develop methodologies for estimates in co-operation with national experts. Capture-recapture is a method of statistical modelling where the whole population of problem drug users is estimated based on the findings and overlaps of several information sources, typically administrative registers.

The first Finnish assessment was conducted in the Greater Helsinki area in 1995. The assessment was extended to the whole of Finland in 1997 as a joint effort of expertise in the drug field. National

and local estimates were then produced at 1–3-year intervals until 2005 (Partanen et al., 2007). They showed that problem drug use had increased from the turn of the millennium till the last estimate, following the increase of drug use since the mid-1990s. Such a trend is considered reliable: it took some years since the new, higher consumption levels for problems to emerge, and the number of problem drug users started to increase.

Also, the results have accorded remarkably with other data from the field. There have been no major discrepancies between capture-recapture estimates and other data sources such as population survey data, drug-related admissions to social and health care, and drug offences. Contrary to the overestimations in Dahlberg and Anderberg's analysis, the latest estimate of opiate users in the Greater Helsinki Area was lower than the needle exchange point visitor statistics would lead us to assume. This was most likely the result of double counting in the visitor statistics.

This is not to say that there are no methodological difficulties and that the Finnish estimates are free from limitations. As Dahlberg and Anderberg thoroughly discuss, the inability of meeting the basic assumptions of the method is bound to cause challenges. They have estimated the number of problem drug users in Gothenburg by using case-finding, capture-recapture and truncated Poisson methods. Because

of the “highly variable and unreasonably large” estimates given by the analyses, they suggest that local studies and case-finding studies be favoured.

Indeed, they can be helpful for regional administrative purposes. However, I would still argue for the utility of national estimates. They are needed for policy planning, guidance and evaluation. An estimate based on a robust model is still better than an educated guess. Obviously the estimates should be used with caution. As the estimates are applied widely and have great significance, the results should be interpreted with great care. It should be emphasised that the number in question is an *estimate*. To the dread of journalists and policymakers, the Finnish estimates have been always presented as confidence intervals and not as a point estimate which is easily misinterpreted as an accurate number. According to the latest estimate, there were 14,500–19,000 problem drug users in Finland in 2005.

I would interpret the variation in results as a feature of data and models, and there is still room to improve study designs for more accurate estimates. The heterogeneity of problem drug users may be an eternal problem, but other assumptions can be addressed by developing data collection and statistical models. Statistical models attempt to take into consideration such flaws in the data as the dependence of different data sources.

The Finnish series of capture-recapture studies on problem drug use was interrupted in the late 2000s when notable alterations were made to the registering practices of two register sources. A new, redesigned study is being planned for the years 2011 and 2012, which attempts to find new data sources to diminish the dependence between sources of information. Also, for cross-validation purposes, multiplier method estimates are planned to be produced.

Declaration of interest None.

Sanna Rönkä, Researcher

Centre for Research on Addiction, Control and Governance (CEACG),

University of Helsinki

Finnish Foundation for Alcohol Studies

E-mail: sanna.ronka@helsinki.fi

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