

FINDINGS Your selected document

This entry is our analysis of a study added to the Effectiveness Bank. The original study was not published by Findings; click on the [Title](#) to obtain copies. Free reprints may also be available from the authors – click [prepared e-mail](#) to send a ready-made e-mail message or compose your own message. Links to source documents are in [blue](#). Hover mouse over [orange](#) text for explanatory notes. The Summary is intended to convey the findings and views expressed in the study. Below is a commentary from Drug and Alcohol Findings.

Send email address for updates

[SEND](#) [About update service](#)

▶ [Title and link for copying](#) ▶ [Comment/query to editor](#) ▶ [Tweet](#) 0

▶ [Mortality of harmful drinkers increased after reduction of alcohol prices in northern Finland: A 10-year follow-up of head trauma subjects.](#)

Vaaramo K., Puljula J., Tetri S. et al.

Neuroepidemiology: 2012, 39, p. 156–162.

Unable to obtain a copy by clicking title? Try asking the author for a reprint by adapting this [prepared e-mail](#) or by writing to Dr Puljula at jpuljula@paju.oulu.fi.

Evidence from Finland that the 2004 decreases in alcohol taxes and increase in availability of cheaper drink from abroad led to an increase in alcohol-related deaths and in deaths overall among harmful drinkers.

SUMMARY The huge annual number of alcohol-related head injuries makes it important to know whether this total is influenced by political decisions. More drinking across a population and particularly more drinking to intoxication will increase alcohol-related harm including head injuries. In turn, consumption may be influenced by the price and availability of alcohol; the cheaper and more available alcohol is, the more is consumed and the more harm results. Alcohol taxation is a key policy lever for reducing harm by reducing consumption.

In Finland reduced taxes in 2004 on many alcoholic beverages and increased access to much cheaper alcohol from neighbouring Estonia offered a 'natural experiment' through which to assess the impact of taxation and price on drinking and resultant harm. The changes were followed by a marked and rapid increase in consumption across Finland and in particular in Oulu province, where the featured study took place and where alcohol sales rose the following year by 9.3%. Across Finland, alcohol-related mortality simultaneously increased.

The featured study assessed the impact of the taxation changes on all 827 patients who in 1999 were recorded as having attended the emergency room of Oulu University Hospital, the only hospital with a trauma team and neurosurgical services in the province. At issue was whether among this cohort, which included many heavy drinkers, death trends between the years 2000 and 2009 changed after alcohol became more affordable and accessible in 2004.

Any such changes might be more apparent among those known to have been drinking in a harmful manner. Totalling 101 out of the 827 patients, they were identified on the basis of hospital records which noted a diagnosis of alcohol-related disease or acute intoxication preceding admittance during the follow-up period 2000 to 2009.

Whether alcohol contributed to any the 160 deaths recorded from 2000 to 2009 was identified from its presence being noted on death certificates, or from hospital records if the deceased had been in hospital immediately before their death. These were presumed to have been deaths which occurred under the influence of alcohol.

Main findings

During the follow-up period there were clear indications that overall and among harmful drinkers in particular, deaths increased after the 2004 alcohol policy changes. During 2000–2009 the proportion of all deaths which were presumed to have occurred under the influence of alcohol increased significantly, closely paralleling the increase in per capita alcohol consumption in Oulu province. Up until 2004 harmful drinkers died at about the same rate as the other patients, but after then their death rate markedly increased, and their chance of surviving progressively diverged from that of the



Key points From summary and commentary

The sole emergency trauma unit in a Finnish province tracked deaths among head injury (commonly caused by intoxication) patients to assess whether alcohol tax and resultant price decreases in 2004 affected their risk of death.

Over the period 2000 to 2009 increases in the proportion of 'under the influence' deaths among the patients paralleled increases in alcohol consumption in the province.

After 2004 death rates markedly increased among patients whose medical records were indicative of harmful drinking, but not among other patients.

The conclusion was that in Finland as elsewhere, alcohol price and availability strongly influence alcohol-related deaths.

remaining patients. The result was that after other factors had been taken into account, they were over the whole follow-up period two to three times as likely to have died.

The authors' conclusions

The most striking finding was the significantly increased mortality of harmful drinkers directly after the alcohol price reductions in 2004. Until then harmful drinkers had a similar survival rate to other patients. Moreover, the number of deaths under the influence of alcohol significantly increased after the price reductions.

Such findings have important public health implications. While the example of Finland shows that tax and price decreases increase alcohol-related deaths, the example of the former Soviet Union shows that alcohol control policies which feature price rises can have the opposite effect, dramatically reducing deaths. The lesson from these two 'natural experiments' is that political decisions may strongly support or counteract attempts to save lives of hazardous drinkers or those dependent on alcohol.

FINDINGS COMMENTARY The featured study adds weight to UK simulation studies which estimate that increasing the price of currently cheaper sources of alcohol would save lives, especially among the heaviest drinkers. These studies are referred to in an Effectiveness Bank [hot topic](#), to which readers are referred for more on price-based strategies as a way to reduce alcohol-related harm.

As the hot topic entry notes, a [comprehensive review](#) widely relied on for its assessment of tax and price policies has strongly suggested that tax/price increases and decreases respectively reduce and increase numbers of alcohol-related deaths. However, it found only [one study](#) capable of addressing not just deaths due to drink, but *net* health harm/benefit, because it related tax to *overall* mortality, whatever the cause. In this study US state alcohol taxes were weakly related to fewer deaths overall, but not with sufficient strength or consistency to [eliminate the possibility](#) that the relationship was due to chance rather than to a real link with tax levels.

This too is a gap in the featured study from Finland, which shows that alcohol-implicated deaths (either presumed under the influence or among harmful drinkers) increased after the tax/price reductions in 2004, but did not test whether the overall death rate among the patients also responded in the same way. From the graph showing survival rates, it seems possible that after 2004 the death rate turned down somewhat among the majority of patients not identified as harmful drinkers at the same time as it turned up among the harmful drinkers. The net impact across all patients is unclear.

Other analyses of the impact of the tax changes in 2004 have found that across Finland [sudden deaths](#) due to drinking increased steeply in the following months, and that assessed up to the end of 2005, so too did [alcohol-related deaths](#) in general, though in the capital Helsinki [interpersonal violence](#) did not increase and domestic violence decreased.

Last revised 28 July 2015. First uploaded 25 July 2015

- ▶ [Comment/query to editor](#)
- ▶ [Give us your feedback on the site](#) (two-minute survey)
- ▶ [Open Effectiveness Bank home page](#)
- ▶ [Add your name to the mailing list](#) to be alerted to new studies and other site updates

Top 10 most closely related documents on this site. For more try a [subject](#) or [free text search](#)

- STUDY 2014 [Potential benefits of minimum unit pricing for alcohol versus a ban on below cost selling in England 2014: modelling study](#)
- STUDY 2008 [Independent review of the effects of alcohol pricing and promotion](#)
- STUDY 2010 [Policy options for alcohol price regulation: the importance of modelling population heterogeneity](#)
- STUDY 2014 [Model-based appraisal of minimum unit pricing for alcohol in Wales](#)
- REVIEW 2010 [The effectiveness of tax policy interventions for reducing excessive alcohol consumption and related harms](#)
- STUDY 2010 [Estimated effect of alcohol pricing policies on health and health economic outcomes in England: an epidemiological model](#)
- STUDY 2009 [Model-based appraisal of alcohol minimum pricing and off-licensed trade discount bans in Scotland](#)
- REVIEW 2010 [Effects of alcohol tax and price policies on morbidity and mortality: a systematic review](#)
- REVIEW 2011 [The likely impacts of increasing alcohol price: a summary review of the evidence base](#)
- REVIEW 2008 [Identifying cost-effective interventions to reduce the burden of harm associated with alcohol misuse in Australia](#)