

Review: Trends in alcohol related hospital use by young people by Access Economics

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The following is a brief review, prepared without prejudice, of a report compiled by Access Economics for the Distilled Spirits Industry Council of Australia. The authors of the latter report caution against firm conclusions and recommend further monitoring having identified inadequate length of observations subsequent to the April 2008 tax change as a shortcoming. It is noted that the Access Economics report does not indicate that it has been peer reviewed, a key element of traditional scientific publication.

The validity and reliability of the findings presented in the report are affected in a number of substantive regards, which have not been clearly detailed by the authors. These include, but not are not limited to:

1. choice of measure;
2. study design;
3. data presentation and analysis.

Given these methodological concerns, in their current form, the results provided and the conclusions drawn from them are unlikely to meet the rigorous scientific standards required by scientific peer review. In short, reiterating the point made by Access Economics, we concur that that the data presented and the analyses conducted do not allow bold conclusions to be drawn.

Choice of measure

The report focuses on diagnoses related to alcohol-attributable mental health conditions such as alcohol dependence and abuse (ICD F10 and subgroups) with some partial and inconsistent use of ICD codes applicable to alcohol poisoning and intoxication. Mental health related diagnoses constitute only a small subset of all the alcohol-attributable conditions for which young people are hospitalised. Among 15-24 year olds, the most common causes of male (66%) and female (59%) alcohol-attributable hospitalisations are unintentional and intentional injuries. Alcohol dependence and abuse account for about 14% of male and 19% of female alcohol-attributable hospitalisations (Chikritzhs & Pascal 2004). It is a substantial concern therefore that the analyses focus on only a small sub-set of alcohol-attributable conditions, and exclude the injury conditions which predominate among this age group.

The F10 mental health sub-groups include conditions which are typically long-term in nature such as the diagnosis of 'alcohol dependence'. The impact of alcohol availability interventions on long-term conditions may take a significant amount of time to appear in administrative data collections.

Hospital data are readily influenced by reporting practices which may vary widely between regions and over time. As such they may reflect over- and under-reporting depending on the direction of the bias (e.g. increased media attention of young people and drinking may lead to an increased likelihood of reporting by authorities and/ or help-seeking behaviours by individuals).

Study design: absence of control observations

Given the limited design of the study, it is not possible to know how apparent trends in alcohol-attributable mental health disorders compared to trends in non-alcohol-related hospitalisations/ED presentations over time. That is, the report did not include any analysis that applied a control group. This precludes conclusions regarding the cause of any apparent observation as the effects of other potential confounding factors have neither been identified nor controlled for.

Data presentation and analysis

In all but Figure 1, the manner in which the data are graphically presented (i.e. years given in parallel instead of in series) and analysed does not clearly reveal or take into account the characteristics of the time series data upon which the analysts rely.

Table 5 (p. 20) in the report apparently presents total hospital separation/ED presentation rates found in Figure 1 (p. iv). Given these summary data it was possible to re-graph the hospitalisation and the ED series separately (i.e. without a total series which may dampen component trends). As shown in Figures A and B, it was also possible to apply a simple and commonly used statistical smoothing technique (not apparently employed in the Access Economics report) which reveals underlying trends in time series data (SPSS exponential smooth procedure).

When these time series data are presented appropriately, both the hospitalisation and ED series exhibit upward trends which were apparent many months before April 2008. That is, overall, rates have increased as time has progressed. Given the context of increasing rates over time, attempts to compare unadjusted specific monthly means in 2008 to parallel months in earlier years (as appears to have been the case in this report) in order to establish an association with an intervention is inappropriate. Where a trend is known of or implicated in time series data, the correct analytical response to interrupted time series hypothesis testing is to statistically control for its presence prior to attempting interpretation. This is a critical omission in the report presented by Access Economics.

In addition, when applied to these two summary trends, another commonly applied time series test (SPSS autocorrelations procedure) reveals that the data points are serially autocorrelated, whereby one point in time is significantly predicted by others in the series. As with trend and seasonality, these autocorrelated data errors should be statistically adjusted for prior to drawing inference regarding potential change over time. As far as can be ascertained from the methodological description provided in the report, none of these critical statistical requirements have been addressed.

Figure A: Hospital separations rates from “Figure 1: All states, alcohol-related hospitalisation rates, 12-24 years, 2005-2008”
 (Source: Access Economics, Table 5. p 20)

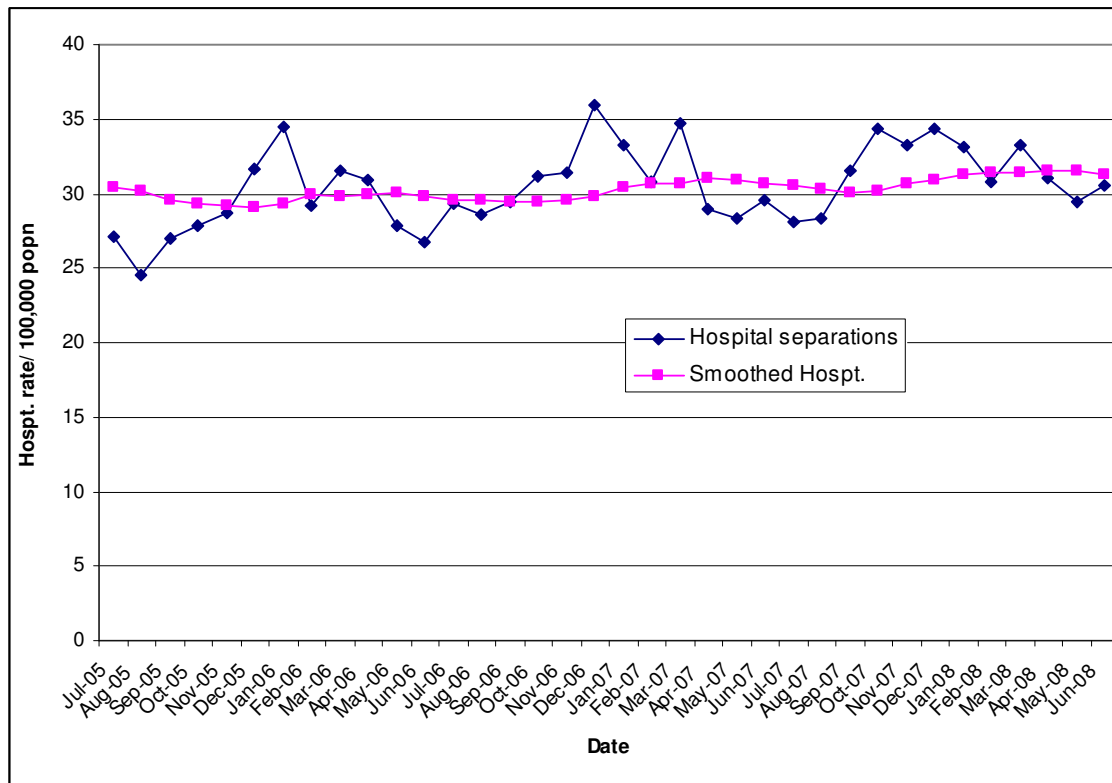
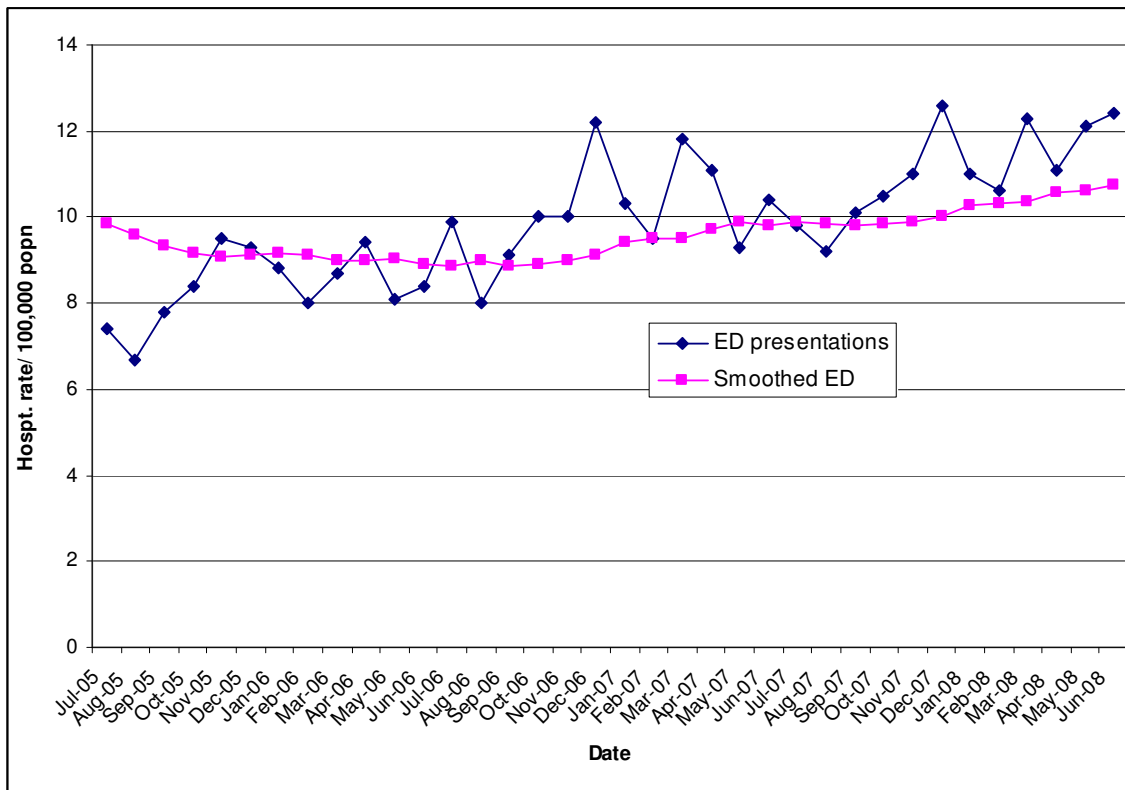


Figure B: ED presentation rates from “Table 5: All states, alcohol-related hospitalisation rates, 12-24 years, 2005-2008”
 (Source: Access Economics, Table 5. p 20)



References

Access Economics. *Trends in alcohol related hospital use by young people*. Access Economics, 2009.

Chikritzhs, T. & Pascal, R. (2004). *Trends in youth alcohol consumption and related harms in Australian jurisdictions, 1990–2002*. National Alcohol Indicators, Bulletin No.6. Perth: National Drug Research Institute, Curtin University of Technology.