September 2014

IAS response to *Monitoring drink driving: A statistical consultation on the Department for Transport's drink drive statistics*

The Institute of Alcohol Studies (IAS) welcomes the opportunity to respond to the Department for Transport's (DfT) *Monitoring drink driving* consultation. IAS is an independent organisation that seeks to increase awareness and scientific understanding of public policies designed to reduce alcohol harm. For more information, please visit our website www.ias.org.uk.

C.1   What use do you make of the provisional and final drink driving estimates at present?

 The IAS relies on both sets of figures as the basis for informing our stakeholders – including policy makers and the general public – of the facts surrounding drink driving issues, and to advocate for effective policies to reduce alcohol-related harm on Britain's roads based on the available evidence.

At present, figures from both the provisional and final estimates are used in a number of our publications concerning drink driving (e.g. policy papers, briefings, factsheets, etc).

We agree with the DfT that the systematic bias towards overestimating the number of drink drive deaths must be addressed. Persistent downward revisions to the provisional figures make it harder for research organisations such as ours to understand, interpret and accurately convey patterns and trends in the data to interested parties.

However, given the length of time needed to produce the final estimates (18 months), we believe that the publication of interim figures remains essential for tracking the progress of drink driving policies, and for responding swiftly to any drastic increases in the number of drink driving deaths with suitable recommendations.

C.2   Which, if any, of the proposed options below do you think is the best future form for the provisional estimates and why?

From the options available, we would advocate a combination of options 3 and 4 (the list of suggested options are illustrated in Figure 1 of the Appendix). Such a combination would go some way to addressing the DfT's twin problems of systematic bias and accuracy.

On its own, option 3 (an adjusted method) is best for reducing systematic bias towards overestimation by using the data from the previous (three) years' final estimates, which in turn reduces the likelihood of persistent downward revisions to the provisional estimates.

Option 4 (an estimated range) alone would reduce uncertainty and therefore improve the accuracy of the provisional estimates. Having a likely upper and lower limit (to a confidence level of 95%) for drink drive deaths also gives a clear signal that the provisional figures are indeed just that – preliminary data that are subject to change when the final figures are released.

C.3   If option 2 is your preferred option, when in the year do you think the provisional estimates should be published?

Option 2 is not our preferred option.

If produced later in the year, the publication of provisional estimates would still lack the accuracy of the final estimates (to a significant degree), which themselves rely on toxicology data available for as few as 60 per cent of relevant cases. In other words, there are many killed drivers without a known blood-alcohol-concentration (BAC) level from the final annual estimates (two out of every five), so a great deal of uncertainty remains even after 18 months.

However, delaying the date of the provisional estimates nearer to that of the final figures fails to address the real issue; that is, the systematic bias in the provisional figures towards overestimating drink driving deaths. Furthermore, the release of data six months after publication is crucial for policymakers to be able to monitor "ongoing" trends in the number of drink driving fatalities.

C.4   If option 3 is your preferred option, do you have any suggestions for an improved adjustment methodology?

Option 3 is a preferred option.

The example given in the consultation document (Table 2; see Appendix Figure 2) displays the results from adopting an adjusted methodology calculating a three-year moving average for provisional estimates of the number of drink drive deaths.

However, the process produces a curious result. Although the provisional estimates are less likely to be revised downwards for the final estimates, the discrepancies between them are smaller than the existing method for only two years' worth of data since 2006. Therefore, there may be scope to extend the length of time for calculating moving averages to five years.

Ultimately, the accuracy of moving averages – whether for three or five-year periods – is limited by the systematic bias in the data collected, which would still be subject to the risk of overestimation. As is noted by the DfT, "the fundamental problem of unpredictability in the magnitude of the [systematic] bias" remains.[1]

Therefore, that underlying bias must be addressed in order to guarantee improvements in the accuracy of provisional estimates.

However, refinements to the adjustment methodology may prove useful in conjunction with the idea of a numerical range, which would account for much of the uncertainty around the provisional estimates (option 4).

C.5   If option 4 is your preferred option, do you have any other suggestions on how to construct a sensible range?

Option 4 is a preferred option.

Presenting provisional data on drink driving deaths as a range "explicitly demonstrates the uncertainty and scope for revision" ahead of the final estimates.[2] Therefore, even as an approximation, an estimated range masks revisions between provisional and final figures that normally stem from both sampling uncertainty and bias in the current data.

The DfT rightly states that the range methodology would be useful for giving a timely "snapshot" to identify whether there has been a big change in drink drive deaths, which would be "particularly useful for getting an early indication of whether a new [policy] initiative has had a big impact."[3] The most likely approach for constructing a useful range would be to use a 95% confidence interval.

C.6   Do you have any views on hybrid options, combining aspects of options 2, 3 or 4

We would recommend a combination of options 3 and 4, for the reasons explained in response to Question C.2.

C.7   Do you have any other suggestions on improved methodologies for the provisional estimates?

The IAS would like to make the following additional suggestions concerning methodologies for the DfT's consideration:

(1) <u>Add a further provisional estimate for drink driving deaths to the time series</u>
It may possible to solve the timeliness issue in a way that satisfies both those who are for and those who are against adopting option 2 (delaying publication). Where the DfT currently publishes estimates six and 18 months after year end on an annual basis, there may be scope to add another estimate of drink driving deaths between both dates, i.e. at 12 months after year end.

By staging the estimates in an evenly spaced manner, the data becomes easier to plot statistically. The additional data point also allows policymakers to track the accuracy of the estimates more smoothly over the 18-month period.

Below is an example of how the data might be collected in this new system:

Release date	After 6 months	After 12 months	After 18 months
Data published	Provisional estimates	Provisional estimates	Final estimates
In what form?*	as a range with a 95% confidence interval*	as a single figure estimate*	as a single figure estimate

* provisional figures adjusted from a three or five-year moving average

Overall, the introduction of an additional data point could help to achieve the twin aims of increased accuracy and timeliness by producing a figure drawn from an increasingly representative sample over time while maintaining the immediacy of the six-month release.

(2) Dealing with the underlying problem of systematic bias
Studying the causes of systematic bias is the single most important factor in improving the quality of drink drive data. One way of achieving this would be to examine the ways in which data on BAC levels from toxicology reports are collected.

It is thought that in some cases there may be structural delays e.g. processing of data as per point 3.12, whereas in others it may be due to some aspect of individual cases e.g. complexity of the coronial inquiry delaying a finding. A clearer understanding of the nature of the problem will enable the DfT to find robust solutions that will improve the methodology for the provisional estimates.

C.8   Do you have any other comments or feedback?

On the separate, but related, subject of drink drive injuries, we welcome efforts to better synchronise hospital admissions records of road casualties with that of the police. We understand that this has been a serious concern for the DfT for some time and that despite the introduction of initiatives such as the new police Collision Recording and Sharing (CRASH) data collection system for road casualty statistics – which will not only "improve the quality and consistency of future data", but may also contribute towards the improved pairing of records with Hospital Episode Statistics (HES) – the number of unrecorded and unreported casualties will continue to impede the accuracy of recorded figures to an unknown degree.[4]

However, although the police and hospital datasets lack any common identifying variables, we believe it may be possible to make it easier to synchronise reported cases between them, by having a standardised set of definitions for seriously injured and slightly injured drink drive casualties.

Furthermore, we would recommend that alongside an examination of how data on BAC levels from toxicology reports are collected, the DfT ought to investigate other means of monitoring the efficacy of drink drive policies and trends that could complement the annual road casualties datasets – e.g. by monitoring BAC levels of all drivers stopped at the roadside – which would further support the call for an extension of police powers to carry out random roadside breath tests.

Appendix

Figure 1. Options for the provisional statistics

Options for the provisional statistics

Option 0

- Retain provisional statistics with their current form and timing

Option 1

- Stop publishing provisional statistics entirely

Option 2

- Delay provisional statistics to later in the year to allow a larger, more representative sample to be gathered

Option 3

- Adjust the estimates to account for the bias

Option 4

- Produce the estimate as a range, rather than a single "best" estimate

Figure 2. Comparison of provisional death estimates using the existing methodology and an adjusted methodology

Year	Provisional		Final	Revision between provisional and final		
	Existing method	Adjusted method	Final estimate	Using existing method	Using adjusted method	Does the adjustment reduce the revision?
2006	540	530	560	4%	6%	no
2007	460	460	410	-11%	-11%	no
2008	430	410	400	-7%	-2%	yes
2009	380	360	380	0%	6%	no
2010	250	230	240	-4%	4%	no
2011	280	270	240	-14%	-11%	yes

[1] Department for Transport (July 2014), 'Monitoring drink driving: A statistical consultation on the Department for Transport's drink drive statistics', p. 23

[2] Department for Transport, 'Monitoring drink driving', p. 23

[3] Department for Transport, p. 26

[4] UK Statistics Authority (January 2011), 'Proposals to improve the reporting of road casualties', Monitoring Brief, p. 11