

# THAT CAN'T BE TRUE!

Exaggerated media claims about alcohol:  
A guide to critical analysis

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RESEARCH EDUCATION EVALUATION POLICY

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*The whole problem with the world is that fools and fanatics are always so certain of themselves and wiser people so full of doubts.*

**Bertrand Russell**

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## **INTRODUCTION**

We've all seen the following type of headline at one time or another:

### **ALCOPOPS PRICE RISE CUTS CRIME**

You might feel instinctively that such pronouncements are either exaggerated or false, or you might believe them to be true. Don't assume that if it is printed in a newspaper, magazine, or reported on TV it must be true. But how do you find out? And if a claim turns out to be false or exaggerated, what do you do about it?

The impetus for this guide comes from a growing concern among scientists and the business community about the reporting of alcohol-related issues in the press. While most media editors have a good understanding of the difference between fact and fabrication and do not over-sensationalise information, others fuel the kind of misinformation that directly affects lives and business.

The aim of this guide is *not* to imply that all news stories are fabricated, or that all information about drinking is based on flawed science; the aim of this guide is to help you to recognise "bad science," as reported in the media or as used by Government authorities to justify policies and programmes, so that you can structure an appropriate response based on full critical analysis of the claims.

Although we refer to The Media throughout this guide, it is unfair to responsible journalists to make no distinction between good and bad reporting. There are varying degrees of scientific literacy and social responsibility within the print, broadcast and Internet organisations of the world. The best of them provide critical review not only of poor reporting of science issues, but of poor science itself. Several of these 'watchdog' articles have been reproduced in this guide.

## **SAMPLE ARTICLE ONE**

THE SUN

Edition 2RB WED 06 AUG 2003, Page Eire 2

### **ALCOPOPS PRICE RISE CUTS CRIME**

by RONAN O'REILLY

#### **Amazing claim by TD as attacks fall**

PUSHING up the price of alcopops has led to a drop in violent street crime, a TD claimed last night. Serious public disorder offences for the first six months of this year were down by almost a THIRD on 2002. The news follows measures introduced in December's Budget aimed at curbing booze binges-including a massive 35c- a-bottle price rise on alcopops.

#### **Tax**

Delighted Fianna Fail TD Barry Andrews said: "The 30 per cent fall in violent assaults coincided with Government efforts to place alcopops beyond the reach of teenagers through tax increases, as well as other measures to curb public disorder." Overall, crime dropped by seven per cent according to Department of Justice statistics. There has been an 11 per cent drop in murder cases, 16 per cent fewer rapes and druggpushing has fallen by 15 per cent. But there was a 46 per cent INCREASE in "unlawful carnal knowledge" - usually sex with a minor.

Despite that, Deputy Andrews insisted: "The new figures show that the approach that has been taken has been a sensible one. While the Opposition has indulged in scare-mongering about street crime and offered no solutions we have adopted a multi-pronged approach- making it harder for teenagers to get drink, putting more gardai on the beat and bringing in tougher sentences for violent incidents."

Finance Minister Charlie McCreevy also upped spirits by 20c a shot in the Budget, while Justice Minister Michael McDowell has announced strict new legislation to cut back on "happy hours". Mr McDowell last night welcomed the latest statistics, but warned: "These type of figures need to be dealt with carefully.

"These are two quarters' figures, not even a full year's data." Labour frontbencher Roisin Shortall agreed, saying that although the figures showed some improvement on 2002 they "still indicate a serious breakdown in law and order throughout the country". She added: "It is highly unlikely that Mr McDowell will find one Irish citizen who believes that they are much safer in their homes or on the streets than at the same time last year."

#### **Keys**

Fine Gael justice spokesman John Deasy said: "While the overall crime figures may have improved slightly, they are still well above the 2001 levels. "There is a lot that can still be done and we have a long way to go before people start leaving keys in their front doors again."

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## **SAMPLE ARTICLE TWO**

THE DAILY MAIL  
January 27, 2004  
(Excepts from the article)

### **'LADETTES' RISKING HEART DISEASE**

More evidence of the dangers to women's health of the binge drinking "ladette" culture has been revealed in new research.

A study of more than 3,000 women found that those who exceeded the guidelines of limiting alcohol intake to 21 units a week increased their risk of coronary heart disease by 57%.

The researchers from University College London said their study, published in the journal *Addiction*, gave a "snapshot" of what could happen to a generation of binge-drinking women in the future.

Dr Annie Britton and Professor Michael Marmot used data from an 11-year study of more than 10,000 civil servants to find out whether their alcohol consumption led to an increased risk of heart disease and overall death rates.

In the group of 3,374 women, they found that death rates in those who drank two or more times a day were seven times higher than women who drank only one or two drinks a week.

The difference in men was much smaller - those who did not drink at all had an 80% increased risk of heart disease compared with those who had a couple of drinks a week.

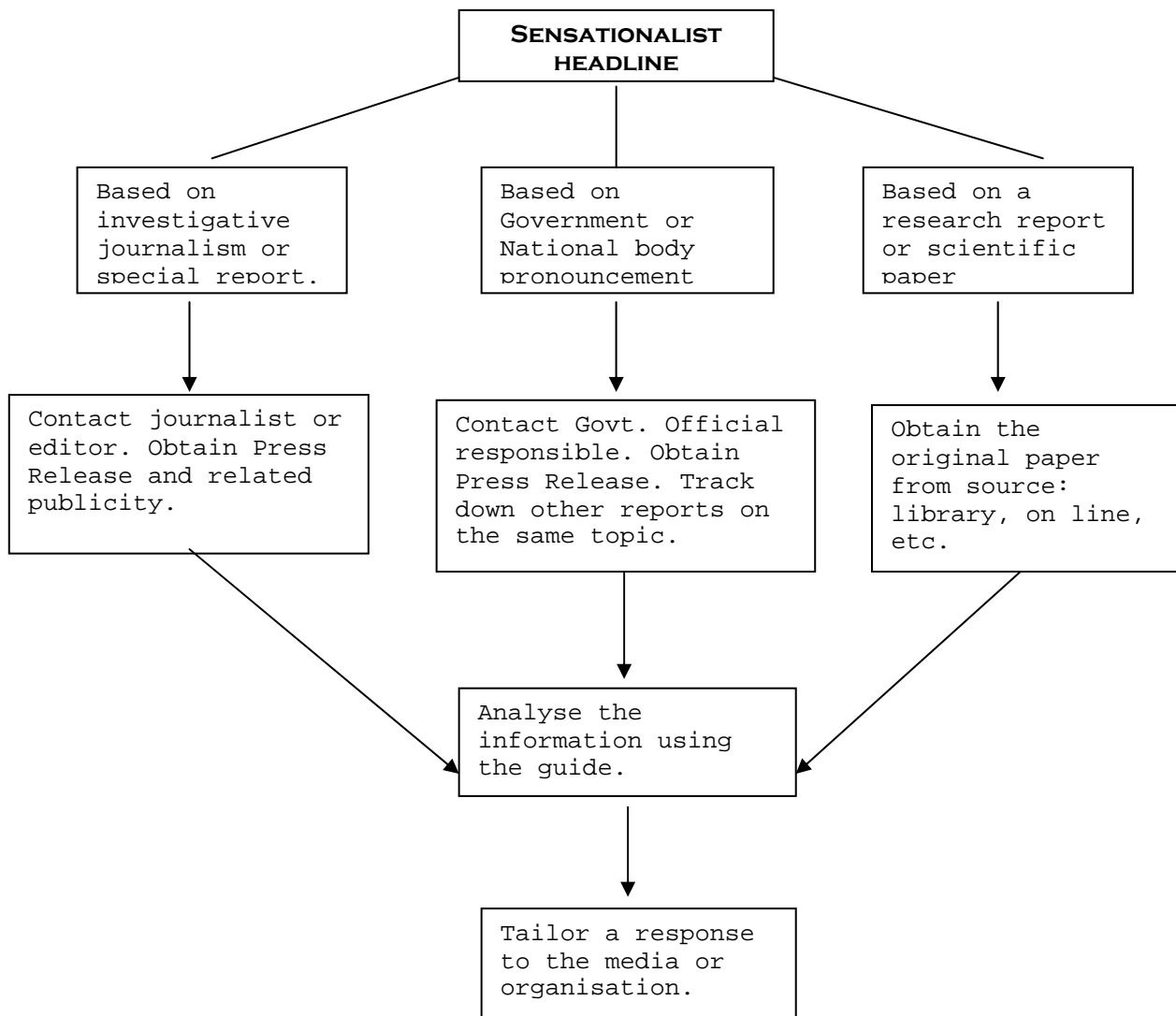
But the researchers said this did not mean that women who did not drink should now start, due to the many other risk factors associated with both heart disease and alcohol consumption.

"The best advice is not to drink more than the Government's guidelines of around 21 units for women."

The researcher said that the study produced more evidence to support fears about the increasing "ladette" culture.

See the critique of this story on page 17

## QUICK REFERENCE FLOW CHART



## **PART ONE: CHECKING THE STORY**

### **1 FIND THE SOURCE**

In the Eire Sun article reproduced above (Sample Article One), the claim came directly from a key Government official interpreting statistical information on crime.

Another article might say, for example “research has shown that ...” In this case, ask the reporter or editor what the research was and how the research reports might be obtained.

If the article or reporter does not name the source of the information, call the editor of the newspaper, radio or television station and ask to have the relevant press release or to know the source of the information. Is it a first- or second-hand source? Was it based on a conversation with a scientist? A policeman, or someone who might not be qualified to make such assertions?

Read the article carefully to determine if the claim is based on:

- **A research study** published in a scholarly (or peer-reviewed) journal, such as Sample Article Two above, which is based on research published in the journal *Addiction*. If yes, find the article in a library or online. Main libraries such as the British Library keep nearly every published book or journal. Peer-reviewed journal articles/official reports are likely to be robust, as they are not published without independent scientific scrutiny. So articles in the *British Medical Journal* or *Nature* will usually be based on sound science. It is the way the results are presented and the implications drawn from them which may be unfair or misleading. In some cases, researchers will misrepresent their own findings in an effort to conform to accepted wisdom or a ‘party line’. For an example of this, turn to page 17 for a critique of the Daily Mail article excerpted above.
- **A conference paper.** Call the organisation responsible for organising the conference and ask for a delegate list. Contact the person who delivered the paper directly (or their organisation/university) and ask for a copy of the paper. Some organisations make conference packs and press releases available to the public.
- **A survey** conducted by a research group or university. The University should make, at the very least, a press release available to the public. This should be followed by a published report.

- **A market-research survey** conducted by a non-academic group. Contact the group directly for a copy of the research or press release.
- **Journalistic “research”** – i.e. a collection of observations made by a journalist. In this case, request more information from the journalist about his or her methods in obtaining the data.

## 2 QUESTION THE INFORMATION

Assuming you have found the source of the information, you must now decide whether it was obtained through accepted and valid scientific means. Social-science research increasingly influences public policy and law. Unfortunately, many people are unfamiliar with the scientific and statistical methods used in such studies, and can easily be misled by the news stories. Responsible journalists will correctly interpret scientific information; irresponsible ones will inflate or exaggerate research to generate eye-catching headlines.

In recent years, there has been a drive for government policy to be “evidence-based”. A new tax on spirits, a decrease in the drink-drive limit, a ban on alcohol advertising, all have to be backed by clear evidence of a need for regulation or intervention. The question is: what constitutes evidence? There are various types of evidence:

- Testimony (or anecdote)
- Examples
- Statistics

But these types of evidence cannot be used interchangeably to prove any argument.

- **Testimony:** The testimony of 6 old-age pensioners frightened by young people drinking in their neighbourhoods does not support the claim that binge drinking by underage drinkers is on the increase.
- **Example:** One murder committed by someone who was drunk cannot be used to support the claim that alcohol causes pathological aggression.
- **Statistics:** Statistics are often thought of as providing ‘hard evidence.’ If it is generated and analysed in a scientifically correct way, statistical information can be used to support or refute ‘common-sense’ notions or claims about people’s behaviour, but statistics alone cannot be used to prove a cause-and-effect relationship – they don’t provide either biological or psychological explanations for why or how things happen. Unfortunately, many journalists ignore this, and create news stories from isolated statistics. Researchers and scientists are also prone to fall into the statistics = science trap. Epidemiologist Nick Black observes that



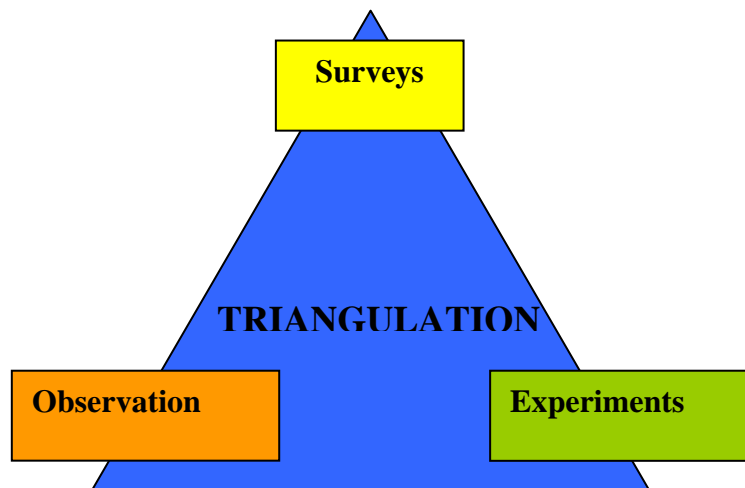
most people are happier to accept the truth of something if it is expressed in numbers. For example, although there is little scientific validity to such statements as “One in ten people are homosexual” or even “Alcoholism affects one in twenty people” most of us, says Black, will happily accept such simple, reductionist and often blatantly incorrect statements, if they contain at least one number.

## 2.1 Social-Science Evidence

Evidence regarding the causes of drinking behaviour is collected by scientists primarily through:

1. **Surveys**
2. **Observation**
3. **Experiment**

The most reliable method of explaining drinking trends or phenomena is “Triangulation”, a process whereby all three methods of data collection are analysed together to get the ‘big picture’ about what is happening.



### 2.1.1 Surveys

Statistical information about drinking behaviour comes mainly from surveys. If the claim you are investigating has its roots in a survey, don't assume that it is justified. All surveys are not created equal.

## Opinion is not science

Many journalists try to make opinion stories seem like science by spicing them up with numbers. For example:

*In a recent poll conducted by this newspaper, 80% of adults surveyed thought that RTDs encouraged teenagers to binge-drink.*

What is wrong with this kind of reporting?

- 1) There is no information about how the survey was conducted
- 2) We are not told what question was asked or how it was asked.
- 3) 80% of adults sounds like a lot, but if the journalist had asked 5 of her colleagues sitting closest to her desk, and 4 of them had said yes to the question then she'd have "80% of adults surveyed"

This kind of bad journalism is rare, but not unknown. For example, Mixmag, a magazine covering the UK club scene, conducts an annual survey of drug use among its readers. The results are widely quoted by other journalists, scientists and politicians, as one indication of the scale of illegal drug use among young people. When we called Mixmag to find out what the sample size was, we were told that this information could not be revealed, because it might give away the size of their readership – apparently a trade secret. In a separate conversation with one of the editors, however, it was revealed that under 1000 questionnaires were actually returned. To their credit, Mixmag did state that the survey was only conducted among their readers, but did not state that the results were derived from under 1000 returns. When the editor finally boasted a readership of 100 times that, one wonders what the characteristics were of the 1% of readers who bothered to return a questionnaire about drugs.

So, rather than being an indication of the scale of drug use among young people in general, the survey should only have been used to indicate the

### **A hypothetical example of triangulation**

Police reports from a major UK city indicate that a significant number of violent incidents are occurring in and around pubs. The headlines report:

#### **ALCOHOL FUELS INNER-CITY VIOLENCE**

A **survey** of pub owners and managers is conducted. The findings indicate that the problem is concentrated in a few establishments. An **observational** study is conducted, to find out why these pubs experience more violence. Findings indicate that fights occur more often in poorly designed pubs – those whose layout frustrates customers trying to relax on a night out.

Observations also reveal that fights seem to occur where management and staff have a tolerant or permissive attitude towards anti-social or violent behaviour. To test these findings, controlled **experiments** are designed that will validate the hypothesis that layout of the drinking environment and attitude to violent behaviour cause an increase in violent incidents. The experiments confirm the findings of the observation and thus explain the statistics of the survey.

(This example is based on actual research. For further reading, see: [Drinking and Public Disorder](#) by Peter Marsh and Kate Fox-Kibby; and [Keeping the Peace: A guide to the prevention of alcohol-related disorder](#). Both available from: The Portman Group, London)

scale of drug use among a small minority of readers of a club-related magazine. A very different picture.

The results of such surveys are often used inappropriately to justify laws and policies that affect millions of people.

Surveys allow for a lot of information to be gathered in a quick and economic way. There is no perfect survey, and nearly every report about alcohol that is based on survey methods alone can be subjected to critical analysis. Since the 1990s, surveys on drinking conducted by market-research companies have proliferated, at the expense of more comprehensive investigations into drinking behaviour.<sup>1</sup>

The techniques used by journalists themselves can ALSO be used to verify survey-based claims. All journalists are taught that a good story must answer six key questions about the issue:

Who; what; why; when; where; and how?

We can ask the same test questions about surveys:

**Who** was included in the survey?  
Who was excluded? Who conducted it?

**What** questions were asked?

**Why** were those people selected? **Why** was the survey conducted?

**When** did the interviews take place?

**Where** did the interviews take place?

**How** was the survey conducted? How were results interpreted?

In scientific terms, the crucial 'test' questions for survey results focus on:

- **Reliability:** Are the results reliable? How were subjects asked to participate? Was the survey based just on those who agreed? Would another researcher have obtained the same results if they used the same techniques and tools?
- **Validity:** Does the survey provide a true picture of the phenomenon or trend?

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<sup>1</sup> Brain, K. & Parker, H. (1997) *Drinking With Design: Alcopops, designer drinks and youth culture*. The Portman Group. London

### Hypothetical example 1

A newspaper has commissioned a research company to survey people's attitudes towards banning smoking in bars and restaurants. After the survey report is delivered, the journalist writes the story. The headline published in the newspaper reads:

#### **60% IN FAVOUR OF SMOKING BAN**

*Where* were the people surveyed? After obtaining the report from the editor, we find that 80% of respondents questioned in restaurants supported a complete smoking ban, whereas only 40% of those questioned in bars or pubs supported a complete ban. The 60% figure was a result of 'collapsing' the two samples into one. But doing this is misleading, as the real result would indicate that most people would favour a smoking ban in restaurants but not necessarily in pubs. Was the journalist being either truthful or honest when he wrote the 60% of people are in favour of a complete ban?

We would also need to ask whether the restaurants were smoking, non-smoking or mixed, as the clientele for each might be different. Was the sample representative of the general population?

- **Representation:** Is the sample that was studied typical of the whole population being discussed? Can we generalise some truth that applies to the whole population from the findings of a sample study? [See the Mixmag example]
- **Analysis:** How were the results analysed? Were they reviewed by qualified scientists?
- **Implications:** what is the interpretation of the results? Is it based on association or on a real cause and effect?

So we see that *poor sampling* can be compounded by *poor analysis* which in turn leads to *dubious implications* being drawn and exaggerated or false claims being made. Always make sure you have the original source or report before drawing conclusions about the validity of methods used. Good scientists should not be blamed for faulty or inaccurate reporting by bad journalists.

#### 2.1.1.1 *Estimating drinking levels*

Most drinking surveys rely on ‘self report’ questionnaires. How reliable can these be?

Many people are curiously baffled by the question: How much do you drink? It sounds simple, but it isn’t. Many people would respond in the following ways:

*I haven’t a clue! Probably too much.*

*Not much at all, unless it’s a special occasion.*

*I go over the top sometimes but not by much.*

*I don’t actually drink. Except the odd glass of wine with a meal.*

“Too much” for one person could be anything over one drink; for another, anything more than ten.

Many drinkers switch between beers, wines, cocktails, bottled drinks and shorts and are unsure about the alcohol content of each, or how many units of alcohol there are in various products. Unless they are carefully questioned, many will under- or over-estimate their alcohol intake.

### Hypothetical example 2

#### **PROFESSIONAL WOMEN IN THEIR THIRTIES ARE DRINKING TOO MUCH, TOO OFTEN**

Imagine that the journalist has based this claim on the results of a survey-based study conducted by a non-profit organisation:

To assess the validity of the claim, we need to ask:

- How did the study define “professional”?
- How did the organisation obtain a sample of such “professional women”? Was the sample appropriate to gauge levels of drinking among *all* professional women? Was the sample drawn from more than one profession or geographical area?
- What was considered to be “too much?” or “Too often?” By whose estimation?
- How did the survey measure frequency of drinking and amounts consumed?
- Did the study identify drinking *patterns* as well as amounts? Did it identify significant ‘breaks’ in drinking periods, such as not drinking when pregnant, for example? Was the survey conducted during a festive season when drinking might increase?

The actual questioning techniques used in surveys are crucial, as they affect the results and thus the analysis. For instance, using different types of questions about quantity and frequency of alcohol use can produce more accurate estimates than asking a single question.

Trends in drinking patterns should not be extrapolated from just one or two surveys. One survey of young people might indicate that consumption levels are increasing. But if one looks at many similar surveys, conducted over a 10-year period, it might become clear that there is a steady reduction in consumption over time.

An increase in the numbers of one type of drink consumed by young people should not necessarily be taken as an indication of an increase in overall consumption levels. For example, a four-year Australian study, that tracked the consumption levels of young people, found that young female high-risk drinkers increased their intake of pre-mixed spirit drinks (RTD, alcopops) from 11% of total consumption to 27% over two years, but their intake of other spirit-based drinks declined in similar proportion. In 2000, pre-mixed drinks and spirits together accounted for 47% of the drinks consumed by this sample of women; in 2002, this combination accounted for 50% -- a non-significant increase. The claim that young women are drinking *more*, now that new and cleverly-marketed pre-mixed drinks have been introduced, is, most likely, unfounded. Young women in Australia are still drinking the same proportion of spirit-based drinks now as they were 2 years ago – it is only the drink *format* that has changed. One could argue that this actually signifies a trend towards safer, more sensible consumption, as pre-mixed drinks are fixed in terms of the alcohol content (bar-mixed cocktails can be ‘doubles’ or even ‘triples’) and they are less likely to be spiked with illegal drugs or additional alcohol.

### 2.1.2 Observation

Many news reports are based on case studies. If these are gathered as part of a comprehensive study, they may be reliable sources of information about a particular behaviour. But bear in mind that however well observational studies are conducted, they can rarely prove that one thing causes another – that drinking spirits causes aggression, for example. At best, they can only show a ‘correlation’ or an association between two events.

In the absence of such studies, journalists will often create the data for themselves. News reports based on ‘case studies’, are often the result of a journalist on the prowl for a few good ‘soundbites’.

It is also important to distinguish this kind of journalism from that based on well-conducted *explanatory* research—research that looks behind the statistics to uncover the reasons behind drinking behaviours.

For example, we often see reports of the numbers of younger people who visit city centres each weekend (e.g. 70,000 revellers visit Nottingham's bars and 'clubland' on Friday nights). To ascertain *why* those in the 'going-out' crowd head for the city centres in such large numbers, researchers use *explanatory* research. This type of research can make use of surveys, but also relies on detailed interviews with smaller samples to gather 'qualitative' information about attitudes, reasons for drinking, the functions of 'going out' and lifestyles of consumption, etc. These studies are very different from the quick pass around the bar that a reporter might do.

But, just as survey-based or quantitative research can be either objective and credible or biased and flawed, qualitative research into drinking does not guarantee 'quality' research. At best, there will be well-conducted and reported studies, using qualitative methods such as face-to-face interviews, observational studies or even participant observation, in which a researcher joins the target population. (For example, some researchers have taken jobs as door staff, in order to research 'ethnographies' of drinking and drug-using venues.) At worst, media reports will involve a journalist undertaking 'keyhole' sociology and pandering to certain stereotypes and 'common-sense' beliefs by presenting 'case studies' interspersed with out-of-context 'facts' and convenient quotes from experts and stakeholders. Such tabloid or TV 'special reports' triggered by 'real' events often produce a media feeding frenzy – they stimulate a whole clutch of similar 'shock' news stories. The introduction of 'alcopops,' starting with *Hooch*, produced one such media moral panic in the UK and Ireland in the mid 1990s, which was repeated several years later in Australia and elsewhere.

Again, there are tenets of good science to apply to such published reports. The same issues of sampling, representativeness, methods of collecting data, interpretation and analysis of conclusions and implications should all be applied to these 'softer' studies. Clear, logical thinking, and simple but careful scrutiny, supported by reference to more robust and representative research, can offer an effective challenge to most editors, and occasionally result in a retraction.

In the UK, for instance, linking under-age troublesome binge-drinkers with 'alcopops', as the media often do, is not consistent with the research. In fact, such binge-drinkers are far more likely to be drinking premium ciders, lagers and fortified wines bought in bulk.

### 2.1.3 Experiments

When properly controlled and conducted, experimental studies can offer explanations of alcohol's effects on, for example, motor coordination, aggression, and health, that are better than observational studies. But the same rules of representativeness, sampling and validity apply to them as to surveys. Conclusions drawn from experiments that used 12 middle-aged

white European males, (or white mice) do not necessarily hold true, for example, for Japanese women or Kenyan teenagers.

## 2.2 Cause and coincidence

*Correlation* refers to the relation between two or more things; *causation* is that which causes or produces an effect. One of the first lessons taught in introductory statistics is that *correlation is not causation*. A failure to recognise this is the most common error found in reports of science and health news. A deliberate confusion of correlation and causation is also the basis of great comedy. This has been going on for centuries.

Torricelli, a pupil of Galileo's, set up a water barometer to measure atmospheric pressure and changes in the weather. Because he used water instead of mercury, the tube had to be very tall and, in fact, came right out of the roof of his house. To tell how high the water level was on any given day, Torricelli floated a wooden figure on the water. His neighbours noticed that the figure popped out of the roof on bright sunny days and disappeared on rainy days. Not understanding the relationship between the weather and pressure change, they assumed Torricelli was in league with the devil to control the weather. As the story goes, they broke into his house and smashed the barometer.

Although we may like to think that we are now living in a scientifically literate age, the natural inclination of all humans is to attribute 'common-sense' causes to things we cannot easily explain. These explanations then become entrenched 'wisdom' and are very difficult to dislodge – even with good science. For example, when studies find "links" between a simple substance, like alcohol, and a complex behaviour, like violence, the natural inclination is to assume that the one causes the other. It is far easier to yoke two things together as 'cause and effect' than it is to explain the complex relationship between them.

The article in the Sun (Eire) reproduced on page 4 attempts to associate reduction in crime, including murder rates, with an increase in the price of alcopops and consequent reduced availability to young people.

Did a reduction in the price of alcopops *really* cause a decrease in crime? Here's what the article quoted:

"The 30-per-cent fall in violent assaults coincided with Government efforts to place alcopops beyond the reach of teenagers through tax increases, as well as other measures to curb public disorder."

So, in fact, the price rise was something that "coincided" with a fall in crime rates. One assumes that the 30% fall in violent crime also coincided with many other government measures, none of which are mentioned as being related. It is also possible that the change in levels of crime coincided with increased rainfall during the period, or the increased availability of cheap heroin, or the airing of a particular sport event.

The comments are a good illustration of the ‘pick-and-choose’ method of statistical manipulation – attributing cause and effect to two events that occur at the same time, but ignoring a plethora of other possibilities. For example, the reporter notes a 46% *increase* during the same period, in incidents of unlawful sex with minors. The elected official, however, did not claim that an increase in the price of alcopops caused *this* to happen.

Are we also expected to believe that the rapes and homicides mentioned are all committed by teenagers drinking alcopops?

This is not science. It is closer to a belief in witchcraft.

Just because a town has a high unemployment rate *and* a high crime rate does not mean that unemployed people are committing the crimes. An association between A and B tells us nothing about the direction of causality. That is, one may not necessarily cause the other. In the Sun article, the author leads the reader to the assumption that reduced availability of alcopops alone has somehow caused a reduction in crime.

Why are such claims about alcopops made by elected and government official? A clue can be found in the soap-box pronouncement made by TD Barry Andrews:

*"While the Opposition has indulged in scare-mongering about street crime and offered no solutions we have adopted a multi-pronged approach- making it harder for teenagers to get drink ..."*

The reason behind the story seems to have been to create the impression that the Party’s approach to crime is more robust than that of the opposition, to make the voters believe that the Party understands the cause of crime and have taken measures to prevent it. Blaming rapes and homicides on a new kind of drink gives them an easy target – much easier than poverty or unemployment, for example.

### **2.3 Understanding risk – a crash course**

Many news reports tell us that eating a certain substance, or engaging in a certain activity, will increase our risk of “Disease Y” by X%. Usually, an alarming headline, such as the Daily Mail’s “Ladettes Risking Heart Disease”, grabs our attention. This article told us that young women who drink more than 21 units a week increase their risk of heart disease by 57%. Sounds like a big deal. But is it? Jeremy Laurance, a reporter for the Independent, did what the Daily Mail reporter should have done, and went to the source. After reading the research report in *Addiction*, he found something odd, and published a response, reproduced (in part) below.

#### **‘WATCHDOG’ ARTICLE 1**



**HEALTH CHECK: 'THERE WAS SOMETHING STRANGE ABOUT THE STUDY. THE DATA APPEARED TO CONTAIN MUCH THAT WAS GOOD NEWS FOR DRINKERS'**

By Jeremy Laurance

02 February 2004

How much is it safe to drink? For anyone who likes a couple of pints after work, a large G&T when they get home or a few bottles of Burgundy at the weekend, this is a question for our times. Research published last week, which received widespread press coverage, purported to give some answers. It was a study of more than 10,000 civil servants followed for 11 years in the famous Whitehall II study, led by one of Britain's foremost epidemiologists, Professor Sir Michael Marmot of University College, London.

But there was something strange about the study, published in the journal *Addiction*. The data appeared to contain much that was good news for drinkers, yet the paper was couched in negative terms with warnings about the high risk of heart disease to women who drank heavily.

This was the line followed in most of the press reports. "Ladettes at high risk of heart disease" said the *Daily Mail* and others had similar headlines. It was a story that chimed with public concern about rising levels of drinking, especially among the young, and reinforced the Government's "sensible drinking" message.

But a glance at the tables that accompanied the paper suggested a different message, different even from the spin put on the data by the researchers themselves.

The paper said that men and women who drank heavily - more than 31 units a week (16 pints of beer) for men and 21 units (three and a half bottles of wine) for women - were at approximately twice the risk of dying prematurely.

But the tables showed that while the male drinkers were at increased risk (though by 40 per cent not 100 per cent), the women who drank most - more than three and a half bottles of wine a week - were at lower risk than those who drank one bottle a week.

The paper also said the "optimal drinking frequency was once or twice a week". But that was only true for women. For men, those who drank "almost daily" had a lower risk of heart disease and premature death than those who drank less often.

Moreover, binge drinkers of both sexes, who liked to sink at least five pints of beer (men) or most of a bottle of wine (women) in a session, had a lower risk of dying and of developing heart disease than those who drank even more moderately, according to the tables. Yet the paper said those who drank in binges "increased the risk of mortality and coronary heart disease."

I put these discrepancies to the lead author of the study, Annie Britton. She defended the paper and said some of the data were not statistically significant because the numbers involved were too small. In response to the detailed points, she said: "You haven't said anything that is factually incorrect but I would urge caution on that interpretation."

But I wonder whether the anxiety not to undermine the "sensible drinking" message did not cloud the researchers' judgement.

...Did the researchers subconsciously edit their paper to fit with the received wisdom on drinking?

We rely on scientists to tell the world as it is, not as it is meant to be. That is the basis of our trust in science. When we suspect scientists are operating to someone else's agenda, public confidence is undermined.

**The full article can be obtained online at [www.independent.co.uk](http://www.independent.co.uk)**

The above example illustrates the value of checking the original research data yourself, even when they have been published in a reputable scientific, peer-reviewed journal.

What reporters rarely explain is the crucial difference between *relative* risk and *absolute* risk. Relative risk compares the ratio of those people exposed to a certain hazard to the ration of those not exposed to it – a statistical comparison. Absolute risk looks at the real number of occurrences in the two samples, or how common a disease or affliction is in real life.

If the risk was very small to begin with, a relative increase or decrease can look dramatic. Consider the risks to women of taking birth-control pills. For non-smoking women between 25 and 29, the risk of death from side-effects of the pill is about 1 in 100,000. For women aged 30 to 34, the risk of death doubles. This sounds very dramatic, but it still means only 2 in 100,000. This represents only a 0.001% increase in risk. But one can guarantee that the newspaper headline will read: "Older women at twice the risk of death from the Pill". If a disease is very common (say, one in 50 people get it), then doubling the risk of getting the disease is fairly serious: it means that 2 in 50 people may get it. But if the disease is rare, affecting, say, 1 in a million people, then doubling the risk is far less dramatic. But saying that eating a certain food "doubles" the risk of a deadly disease can cause some people to panic or dramatically alter their behaviour. This kind of disinformation can lead people to believe that avoidance = protection: so long as you don't smoke, drink, experience stress, live near power lines or eat red food colouring, you will be safe from cancer. What they fail to understand is that the distribution of disease in society is not quite so rational. Non-smokers die of lung cancer; teetotallers get cirrhosis of the liver; people who never sunbathe get skin cancer. Rarely do major diseases or social behaviours have a single cause.

## 'WATCHDOG' ARTICLE 2

### SHOCK NEWS: HEAVY DRINKING BAD FOR YOU

November 13 2002

#### **A new study has reputable results, but they shouldn't surprise anyone**

CBS News reported last night that a new study from the UK had demonstrated a link between drinking and breast cancer. Although CBS claimed that the study "analyzed 150,000 women around the world" it was actually a re-analysis of 53 separate studies. These "meta-analyses" are always questionable because different studies generally apply different methods, and accounting for differences may be difficult.

Nevertheless, the study is reputable. It does not claim to show that drinking causes breast cancer, but it does demonstrate that the risk of the disease increases as more alcohol is consumed daily (a "dose-response relationship"). It also postulates a credible biological pathway -- a damaged liver hinders the metabolization of estrogen, increasing breast cancer risk.

Yet the actual risks of drinking in itself are pretty small. It is only when one drinks heavily that the risk becomes appreciably large. A woman who has, on average, one alcoholic drink a day, suffers only a 3% increased risk of breast cancer. Two drinks implies a 13% increased risk, three a 20% increased risk, and so on (six drinks a day gives a 46% increased risk).

Given that, according to the CDC, only 3% of women drink 5 or more drinks in a day 12 times or more a year, this particular health risk will affect very few people. Moreover, the health risks of such abuse of alcohol are already well-known. This adds to the litany of reasons why it is bad for you to drink so heavily.

In short, the study shows that there is one more increased health risk for women who drink heavily. For the average woman who enjoys a drink or two every now and then, there is nothing to worry about. Indeed, as CBS says, women with no family history of breast cancer but with a family history of heart disease should not be swayed from the beneficial effects provided by a moderate intake of alcohol.

## **PART TWO: RESPONSE**

### **3 MEDIA GUIDELINES**

A 1999 report by the House of Commons Science and Technology Committee recommended that:

*“...media coverage of scientific matters should be governed by a Code of Practice which stipulates that scientific stories should be factually accurate. Breaches of the Code of Practice should be referred to the Press Complaints Commission.”*

A set of guidelines for scientists, editors and journalists has now been produced by the Social Issues Research Centre (SIRC), the Royal Institution, and the Royal Society. The House of Lords Select Committee on Science and Technology has now endorsed these guidelines, recommending that the principles be adopted not just by specialist science correspondents but by:

*“... all journalists who find themselves dealing with science, including those on the news desk.”*

The Press Complaints Commission, who also endorsed the guidelines warned that:

*“... publications must take care to be accurate – and also ensure they differentiate clearly between comment, conjecture and fact.”*

Unfortunately, the guidelines are still voluntary, and not generally adopted as a matter of course. SIRC is working to promote their understanding and use, but it is still up to the public, business and industry to expose irresponsible reporting of scientific issues in the media. Although the guidelines were developed primarily to prevent irresponsible reporting of health issues, they apply equally to the reporting of issues related to social behaviour.

The 'checklist' for print and broadcast journalists is intended to prevent inappropriate interpretation of scientific findings. It also serves as a retrospective tool to determine if a breach of good practice has been committed. An abbreviated version is in the panel at right.

We cannot expect that this checklist will be tacked on every journalist's wall within the next few years. Until then, it is up to responsible, concerned people to fight for accuracy in reporting. Luckily, The Press Complaints Commission encourages submissions regarding irresponsible reporting.

For a formal complaint to the PCC to be made, the article or broadcast in question must not only be inaccurate or misleading, but must also have directly affected the person or organisation making the complaint.

To the press complaints commission with an official complaint, the article or broadcast must prove to have been both misleading and detrimental to business.

Letters to editors from individuals can, however, have a powerful effect. The cumulative effect of such complaints can force editors to raise their standards. Editors may respond by publishing the letter, a correction, a balancing article or even a personal letter of apology to the complainant.

Don't hesitate to write to elected officials to complain about shoddy science being used by government to prop up policy. In Australia, complaints from scientific and business leaders about policy based on very small and unscientific surveys of young drinkers caused the government to reverse its position on key issues regarding alcohol.

In the case of the SUN alcopops article,

## **1.1 CHECKLIST FOR RESPONSIBLE REPORTING**

### **1. Credibility of sources**

- Have the findings been published in a peer-reviewed journal?
- Do the researchers have an established track record in the field, and are they based at a reputable institution or organisation?

### **2. Procedures and methods**

- Were the research methods appropriate
- What do other professionals in the field think of the methods

### **3. The significance of findings**

- Are the findings preliminary or inconclusive?
- Do these findings appear to contradict mainstream scientific opinion?
- Are these findings based on small or unrepresentative samples?
- Do these conclusions generalise to humans from animal studies?
- Have the researchers only found a statistical correlation?

### **4. Communicating risk**

- Has the risk been expressed in absolute as well as relative terms?
- Have the researchers been asked 'how safe is it' instead of 'is it safe'?
- Can the risk be compared with anything else?

### **5. Anticipating the impact**

- Will the report cause undue anxiety or optimism among audiences or readers? [Regarding, for example, headlines about 'cures' for diseases.]
- Have important caveats been prominently included?

### **7. The role of specialist correspondents and editors**

- What do specialist journalists think about the report?

### **8. The role of sub-editors**

- Is the headline or caption a fair reflection of the report?

### **9. Expert contacts**

- What do other professionals in the field think of the research?

Adapted from: Guidelines on Science and Health Communication. Available at [www.sirc.org](http://www.sirc.org)

letters should have been sent to the editor, and directly to Fianna Fail TD Barry Andrews for claiming that teenage drinkers of alcopops are responsible for rapes and homicides.

### **Find an academic ally**

If you are unsure of your findings, find an academic ally. Read through published articles or books on the topic to identify a respected scientist for advice. Most academics are willing to offer confidential consultancy on issues related to their field.

### **Let someone else do the work for you!**

Useful websites to start with are:

- 1) At the National electronic Library for Health (NeLH) [www.nelh.nhs.uk](http://www.nelh.nhs.uk). reviewers will unpick the science behind the headlines and pass judgement on whether the research was accurate or not. Click on the "Hitting the Headlines Archive".
- 2) The Statistical Assessment Service at [www.stats.org](http://www.stats.org) "monitors the media to expose the abuse of science and statistics before people are misled and public policy is distorted."
- 3) The Social Issues Research Centre (SIRC) at [www.sirc.org](http://www.sirc.org) has an insightful "MediaWatch" section as well as a "naming and praising" page to spotlight the work of responsible journalists.
- 4) Ben Goldacre's weekly column "Bad Science" in the Guardian offers excellent critical analysis of media 'witchcraft.' [www.guardian.co.uk/life/badscience](http://www.guardian.co.uk/life/badscience)
- 5) The story you are questioning may have been reviewed on one of these sites already.

## **'WATCHDOG' ARTICLE 3**

### **PUNCH DRUNK SCIENCE**

February 25 2003

Trevor Butterworth

#### **Does fighting alcohol abuse justify abusing statistics?**

America has a big drinking problem and big business is to blame, according to a new study that appears in the Journal of the American Medical Association (JAMA). The study from Columbia University's National Center on Addiction and Substance Abuse (CASA) claims that adults who drink excessively and youths who drink illegally account for over half of the alcohol consumed in the United States, and that the alcoholic beverage industry makes too much money from these groups to ever voluntarily address the problem. What the country needs, the authors say, is "an aggressive public health campaign similar to those that address smoking and illegal drug use." That means the federal government should raise taxes on alcohol and restrict advertising and marketing of alcoholic beverages.

There is only one problem with launching a public health campaign based on these claims: they don't add up. "Excessive drinking" sounds like it refers to people that have a serious alcohol problem. But the study significantly lowers the bar on "excessive," by defining it as any more than two drinks per day. That means that one glass of wine or beer at lunch and dinner and a brandy at bedtime makes you an "excessive" drinker. The researchers take their baseline from government dietary guidelines on moderate drinking, which are defined as two drinks per day for a man and one for a woman. Then they simply assume that anything more can be described as excessive. But an actual scientific definition of "excessive" drinking depends on factors such as a person's body weight and metabolism. In research on alcohol abuse that has appeared before in JAMA, seven drinks per day has been used as a baseline for heavy consumption. Moreover, recent scientific studies on the benefits of alcohol consumption have shown that there's considerably more latitude in the definition of moderate than the researchers would like to make their case.

In one study, researchers combined the results from 51 existing studies and concluded that the protective role of alcohol extended to three drinks per day. Another major study of almost a half million men and women found that even those who consumed as many as five drinks a day had lower mortality rates from all causes than those who did not drink at all. Alcohol's biggest impact is on coronary heart disease, preventing the narrowing of coronary arteries through the buildup of plaques. In a study of over 80,000 American women, moderate drinkers had half the risk of heart attack than those who were teetotalers, even when exercise, smoking and weight were taken into account. For many years, this benefit has been described as the "French Paradox" - due to the low rate of heart disease in France despite a diet high in both fat and alcohol. But studies have shown that there is a German Paradox, an Italian Paradox and a Japanese Paradox as well.

One might say that there is a CASA paradox too, and that it involves over-estimating the impact of underage drinking on alcohol consumption despite evidence to the contrary. Their claim that underage drinkers account for 20 percent of all alcohol consumption not only rings false, it has the ring of *deja vu*. Almost exactly a year ago, CASA president Joseph Califano made headlines by claiming that a quarter of all alcohol was consumed by teenagers. The next day, embarrassed news organizations ranging from The New York Times to CNN were forced to run retractions, after critics pointed out that CASA's math was wrong, and that the accepted figure among researchers in the field was about 11 percent. Now CASA are back with another figure, this time the result of combining data from two very different surveys so as to produce a higher number.

This is just the latest in a series of highly publicized studies warning the nation of the perils of drink, especially among the young. A study last September by the Center on Alcohol Marketing and Youth charged that the industry was "targeting" underage drinkers by advertising in teen-oriented magazines. However, they defined "teen-

oriented" in such a broad way that it caught such unlikely offenders as Popular Science, Popular Mechanics, and People magazine.

Then in May 2002, the National Institute on Alcohol Abuse and Alcoholism released a report blaming alcohol for the deaths of 1,400 college students, and a staggering 600,000 assaults on campus each year. On closer inspection, these shocking numbers turned out to reflect some shockingly dubious assumptions. Although the NIAAA referred to "on campus" problems, they defined "student" in a way that extended to anyone who enrolls in a college course after work for one night a week. And though most of the alcohol-related fatalities came from traffic accidents, the researchers included any accident in which the victim or anyone else had consumed any measurable amount of alcohol. In other words, a pedestrian who drank a glass of wine hours before being struck by a teetotal driver could be classified as an alcohol-related fatality. Finally, they reached their massive count of 600,000 assaults, not from crime reports, but from a survey that asked students whether they had been "assaulted, pushed, or hit" sometime during the school year "because of other students' drinking." Only in the fight against demon drink can you cite a push from a student, who may have actually been sober, as an alcohol-related assault.

You might think that the health risks and social problems of alcohol abuse are obvious enough to require no exaggeration. But increasingly public health advocates are pursuing their agendas by first finding a substance unsafe and then suing the industry for making an unsafe product. This is reflected in recent campaigns against alcohol, fast foods, and even guns and bullets. CASA's new study is simply another example of agenda-driven research crafted to scandalize the public and spur reform. The trick is to catch the attention of the media by identifying a legitimate problem, and then spin the numbers to exaggerate its gravity.

But why should we care if a little exaggeration leads people to act on genuine problems they might otherwise ignore? Because good intentions never justify bad science, and false or unproven claims have real social and economic costs - not least of which is betraying the public's faith in science as a guide to solving our most challenging problems.



## 'WATCHDOG' ARTICLE 4

### **TV DIVERSITY DRIVES AFRICAN AMERICAN YOUTH TO DRINK**

June 27 2003

Trevor Butterworth

#### **Can USA Today back up its controversial charge?**

In a week when the Supreme Court took on race as a factor in college admissions, USA Today decided to tackle a hitherto unknown aspect of diversity - the "hidden costs" of increasing numbers of minorities on primetime TV.

According to the paper, the problem began in 1999, when the networks agreed to hire more minority actors, directors and writers after the NAACP complained that primetime television was "a virtual whitewash". As primetime opened its doors to more and more black actors, it gained more black viewers. So far, so good, you might think.

But now, a new study argues that African American teens are disproportionately targeted with alcohol advertising in these prime time shows, and the USA Today article concludes that diversity must take some of the blame. Attracted to shows with more black actors, African American teens see more ads for alcohol, and so are at greater risk of under-age drinking.

This is a heavy responsibility to throw on the hard won gains of black actors and producers. But it should come as some relief to find that these "hidden costs" rest on assumptions that are either unproven or clearly wrong. The new study - from Georgetown University's Center on Alcohol Marketing and Youth (CAMY) - actually provides no information that might link trends in television viewing by black youth with the advertising that is supposedly aimed at them.

If you really wanted to prove that increasing diversity on primetime TV is putting African American youth at greater risk of abusing alcohol, you would need to answer the following questions:

Are African-American youth watching more television than in 1999, and are the shows that they watch the ones to which black actors or producers contribute? Many of the most popular shows among black youth, such as The Simpsons and Wonderful World of Disney, are also the most popular among white youth. In fact, many are also popular with white and black adults.

Are young African-American viewers exposed to more alcohol advertising today than in 1999? The CAMY study reports only that the 15 programs currently most popular with black youth all contain at least one alcohol ad. We don't know how many ads they contain individually or collectively, or whether this number has increased recently. Nor do we know how this

compares to the number of alcohol ads in other prime time shows.

Are African-American youth more likely to use alcohol than their white peers? The authoritative National Household Survey on Drug Abuse (NHSDA), which the CAMY study cites, shows that African American youth were almost 40 percent less likely than white youth to have used alcohol in the past month. In fact, under-age drinking among African Americans has declined by 14 percent since 1998 - a year before the networks' agreement with the NAACP.

Finally, are black youth increasingly consuming the products that are advertised most heavily? By far the biggest spender on these shows is Heineken beer. Has Heineken's popularity recently increased among young African-American adults?

In short, the USA Today story (and the study on which it is based) provide no information on trends in alcohol consumption, prime time programming, and viewing habits that would warrant the headline: "Blacks pay price for better TV roles." Surely, after years of struggling to make it onto prime time television, black actors deserve a break.

## **FURTHER READING:**

*The Tyranny of Health: Doctors and the Regulation of Lifestyle* by Michael Fitzpatrick.

*The Rise and Fall of Modern Medicine* by James Le Fanu.

*Sorry Wrong Number: the abuse of measurement* by John Brignell.

*Culture of Fear: risk-taking and the morality of low expectation* by Frank Furedi

*The Manufacture of News: Deviance, Social Problem and the Mass Media* by Stanley Cohen and Jock Young

The above books can be obtained from [www.amazon.co.uk](http://www.amazon.co.uk) or good bookshops.

*The Drinks Pocket Handbook*

A good source of statistical information regarding trends in alcohol sales. This can be obtained from: [www.warc.com](http://www.warc.com)