

Alcohol-related harm to others in New Zealand: evidence of the burden and gaps in knowledge

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Abstract

Aim To identify and summarise existing New Zealand data quantifying any aspects of harm experienced from the drinking of others.

Methods Surveys, research data, and administrative databases were identified through literature searching, examination of websites of relevant agencies, and direct enquiry among those working in research, government agencies and relevant NGOs. Accessible data were analysed, and published or collated data were summarised.

Results The prevalence of self-reported harm from others' drinking was higher than harm from own drinking (18% vs 12% in the past year) and was higher in women and young people. Most available data described aggression and crime, and unintentional injury due to traffic crashes and fires. No useable data were obtained on harm to children. Police records suggested that a third to a half of offences involved someone who had been drinking, and alcohol involvement increased with seriousness.

Self-reported violence involved a drinking perpetrator in about half of cases; more likely in stranger violence than family violence, but common in both. About 40% of those injured in alcohol-related traffic crashes were not the drinker responsible, and this represented about one in eight of all traffic injuries. Approximately one in eight unintentional residential fire deaths were innocent victims of alcohol-related fires.

Conclusion The range and magnitude of harms from others' drinking are substantial, but not well described. Shortcomings in the data systems of agencies dealing with people harmed by the drinking of others hamper surveillance, monitoring of effectiveness of interventions and advocacy for policy to reduce alcohol-related harm.

Alcohol consumption can have a range of adverse impacts on the consumer, and these have been the subject of considerable study. Recently, researchers have started to focus on alcohol-related harms to people other than the drinker; described as the "collateral damage", "second-hand effects", or "negative externalities" of drinking.¹⁻⁵

Taking a systematic approach to describing and quantifying harm to others from drinking is important for two reasons. The first is to identify problems for specific attention that might otherwise be invisible or neglected. The second is to provide a more complete picture of the burden of drinking in communities to inform decision-making about policy on alcohol control. Advocacy based on harm to "innocent victims" has been a powerful influence in tobacco control.⁶

Despite the obvious relevance to policy, attempts to quantify and cost the many impacts of alcohol on people other than the drinker, or to separate that burden from the overall toll of alcohol in the population have previously been uncommon.⁷⁻⁹ A number of countries, including New Zealand,¹⁰ have adapted the methodology of the

Global Burden of Disease Comparative Risk Assessment (CRA)¹¹ to demonstrate the scale of alcohol-related health harm, by synthesising data on alcohol's effects into summary measures of burden.

The global CRA has shown harm worldwide to be almost equal to that of tobacco using these methods.¹² However, because the CRA focuses on health conditions alone, and there is a lack of good data on many alcohol-related outcomes, substantial harm is unaccounted for in these analyses, particularly harm to others.

People may be affected by the drinking of their partners, their families, their friends, their work mates, other people they know, or strangers. The collective drinking habits of communities also have an effect on people's lives. The impacts vary widely in nature and severity, from noisy neighbours to child neglect to fatal injuries.

Some of those harmed by the drinking of others come to the attention of health and social agencies or the police, and such contacts are recorded in administrative databases. Many other affected individuals leave no discoverable trace of their experience, and the size of the burden will only be uncovered by a systematic approach such as a population-based survey. Thus, service use data and self-report provide complementary views of harms from the drinking of others.

As a first step to address the lack of documentation of the range and magnitude of adverse effects of other peoples' drinking this study aimed to:

- Identify, analyse, and collate data on alcohol-related harm to others from existing administrative and survey databases in New Zealand; and
- Identify gaps in the data systems needed to estimate the magnitude of harm to others and monitor changes over time.

Methods

Surveys, research data, and administrative databases were identified through literature searching, examination of websites of relevant agencies, and direct enquiry among those working in research, government agencies and relevant NGOs. Accessible data were analysed, and published or collated data were summarised. No relevant useable data from the time period 2003-8 were excluded.

Individual level data

Health Behaviour Surveys 2003 and 2004 (HBS03/4)—Data were combined from the 2004 Health Behaviours Survey (HBS) – Alcohol Use and the 2003 Health Behaviours Survey–Drug Use, conducted for the Ministry of Health. The combined sample was made up of 16,480 New Zealand adults, aged 18–65, living in private residential dwellings. Data were collected between September 2003 and August 2004 for the alcohol survey (n=8397) and from April 2003 to November 2003 for the drug survey (n=7083). A full description of the methods used for these surveys is available.^{13 14}

The questionnaires were based on previous National New Zealand Alcohol Surveys 1995 & 2000,¹⁵ and the same questions were used in the Alcohol Use and Drug Use surveys for all of the items about alcohol consumption and experience of assault reported here. The surveys were weighted to adjust for sampling design, and a scaling factor was used to form new sample weights when combining data from the two surveys. Response rates were 59% for the alcohol survey and 68% for the drug survey.

GENACIS–New Zealand survey (Gen07)—This 2007 national survey of 18–70 year olds (n=1924) sampled from the electoral roll and used postal questionnaires. It was carried out by researchers at the University of Otago and the response rate was 49%.

The investigators used the core questionnaire from the GENACIS study, an international collaborative study of gender, alcohol and culture¹⁶ Further details of methods have been published¹⁷ Respondents reported their own and their partner's alcohol consumption, and details of the most severe incident of

partner aggression by the respondent and towards the respondent in the past 2 years. Mean scores for severity, anger and fear associated with these incidents of victimization and perpetration were analysed by gender and involvement of alcohol. Multinomial models estimated associations of drinking patterns with aggression to and from the respondent.

Crash Analysis System (CAS)—Descriptive information about traffic crashes and injuries in New Zealand is available from the Crash Analysis System (CAS) of Land Transport New Zealand.¹⁸ CAS data are derived from traffic crash reports completed by police attending crashes and although reporting of crashes involving injury within a 24 hour period is mandatory, reporting is known to be incomplete.¹⁹ The reports classify injuries as fatal, serious or minor and typically all fatal crashes are reported.

CAS data for 2003–2007 were extracted and analysed.²⁰ Numbers of non-fatal crash injuries were adjusted for under-reporting, using conversion factors provided by the Ministry of Transport.²¹ Crashes where a driver or other protagonist had a blood alcohol of more than 0.03g/100ml were considered to be alcohol-involved. Innocent victims in alcohol-related crashes were those who were injured when they were not either a drinking driver or a drunk pedestrian, cyclist or passenger who caused the crash. Motorcyclists were classified as drivers or passengers and combined with car occupants. Average costs of minor, serious and fatal injuries were obtained from the New Zealand Ministry of Transport.²¹

New Zealand Fire Service Commission (NZFSC)—The involvement of alcohol in fatal unintentional residential fires for the period mid-1997 to mid-June 2003 was reported in a study by Dr Ian Miller in 2005.²² Subsequently we analysed Dr Miller's database for the period mid-1995 to the end of 2006.

Only deaths in residential settings and fires of unintentional causation were included (i.e. fires attributed to arson, suicide or homicide were excluded). Data were originally obtained from two sources:

- The NZFS Fire Incident Risk Management System (FIRMS), which records information collected at or near the time of the incident; and
- Inquest records, obtained through Coronial Services of the Ministry of Justice.
(Inquest records provided a wealth of contextual information, such as behaviour of those involved before and during the fire, intention, and cause of death, that is obtained during the judicial process.)

Community Sentiment Surveys—In July 2007, Brett MacLennan (University of Otago PhD candidate) surveyed residents of 7 local government areas of New Zealand to assess community sentiment toward alcohol problems and their regulation. An electoral roll sample (18+ years of age) and postal questionnaires were used. The overall response rate was 58% (n=1306). Further details of methods are available.²³

Alcohol harm to others survey (SHORE 08/9)—This nationally representative telephone survey was conducted in 2008/09 by SHORE and Whariki Research Centre, Massey University. The sample comprised 12–80 year olds, using a complex sampling frame similar to the HBS03/04 surveys. The response rate was 64% (n=3068).²⁴

Published data

NZ Alcohol and Drug Use Survey 2007 (ADUS07)—This nationally representative survey of New Zealanders aged 16–64 years was carried out by the Ministry of Health in August 2007–April 2008 (n=6784). It measured self-reported alcohol and drug use behaviours among the usually-resident New Zealand population living in private dwellings, using a multi-stage, stratified, probability proportional to size (PPS) sample design. Interviews were conducted in respondents' homes, using a combination of face-to-face computer-assisted personal interview and audio computer-assisted self-interview. Response rate was 60%.²⁵

New Zealand Crime and Safety Survey (NZCASS)—The 2006 NZCASS was conducted by the Ministry of Justice in a nationally representative random sample of 5416 people aged 15 and over living in private households. Face-to-face interviews were conducted in homes in February–June 2006. Participants were asked about being a victim of a type of crime covered by the survey since 1st January 2005. They reported the circumstances and impact of any offences they had experienced. The response rate was 59%.²⁶

New Zealand Police (Police)—In 2009 the New Zealand Police published the National Alcohol Assessment report,²⁷ summarising data for the 2007/8 year on alcohol involvement in crime, based on 15 police databases. These include the National Intelligence Application (NIA), National Homicide Monitoring System (NHMS), New Zealand Alcohol and Drug Abuse Monitoring Programme (NZ-ADAM), Communications and Resource Deployment (CARD), Family Violence database, Alco-link, Tactical Options Reports, Auckland Central Adult Sexual Assault Team (ASAT)

Results

In 2007, one in six adults aged 16–64 years (18.1%, 16.7–19.4) reported that they had experienced harmful effects on their friendships or social life, home life or financial position in the past year due to someone else's alcohol use (ADUSO7). This was higher than the proportion experiencing any harmful effects from their own drinking (12.2%), and differentially affected women (22.8% vs 17% of men) and younger people, with 35% of women between 18 and 24 years of age reporting harm. There was no overall association with socioeconomic deprivation, but those living in the lowest socioeconomic quintile reported significantly more harm to home life and financial position than the highest socioeconomic quintile as measured by NZDep06.

Violence and crime: police data

New Zealand Police reported that in the 2007/2008 year at least 31% of all recorded offenders were affected by alcohol (118,829 of 377,911 offences). This finding was consistent between three different data sources. (NIA, Alco-Link, NZ-ADAM). However, alcohol status was unknown in more than a quarter of cases. The proportion of offences perpetrated under the influence of alcohol amongst those with known status was estimated to be 46%, and this was considered a more realistic estimate overall.²⁷

In the case of *violent* offending, the offender had consumed alcohol before committing the offence in at least 33% of cases (n=20,447).

Police reported that in 49.5% of 489 homicides occurring between Jan 1999 and June 2008 either a suspect or a victim consumed alcohol prior to the incident (NHMS). The proportion of offenders affected by alcohol was greater (44%) than the proportion of victims who were affected by alcohol (35%). Almost one half (49.3%; n=241) of all homicides were *family violence related homicides* and 37% of these (n=89) involved either a suspect or a victim drinking alcohol prior to the offence (NHMS).

Of alcohol-involved homicides, 56% occurred in residential areas, 31% in public places, 7% in licensed premises and 6% unknown location. All but one of the homicides on licensed premises were alcohol-related (NHMS).

There were 19,388 recorded family violence assault victims in the 2007/2008 year, of whom 82% were women. The proportion of offenders affected by alcohol was recorded as 34%, and the proportion of victims who were affected by alcohol was estimated to be between 14% and 16% (Family Violence Database).

Data from the Auckland Central police district revealed that 28% of *victims* of sexual offences were judged to have consumed alcohol prior to the incident (ASAT). At the same time, the national data on all recorded sexual offences (n=3652) showed that the proportion of sexual *offenders* affected by alcohol at the time of offending was 15%.

The low proportion of offenders recorded to have been affected by alcohol was considered an artefact of the delay in apprehending the offenders (ASAT).

Table 1. Police data: proportion (%) of offences where the offender, the victim, or either the offender or the victim were affected by alcohol

Type of offence	Either (%)	Offender (%)	Victim (%)
Violent offending		33	
Family violence		34	14–16
Homicide	49.5	44	35
Family violence related homicide	37		
Sexual offence		15*	28

*known to be very incomplete

In incidents where police officers used *tactical options* (“use of force”) it was estimated that 59% of offenders were affected by alcohol (Tactical Options Report), and the proportion was 35% in cases when police officers employed Tasers (electro-shock weapon).

Across all categories of offences, where alcohol was involved 42% of alleged offenders reported having had their last drink at a private residence, 18% at licensed premises, 18% in a public place, and for 20% location was unknown (Alco-link).

Violence and crime: self-reported assault

Health Behaviour Surveys—Using self-reported data from HBS 03/4 we estimated the 12-month prevalence of physical assault to be 6.8% (6.2–7.4) for men and 3.0% (2.6–3.3) for women, between the ages of 18 and 65 years. More than half (54%) of assaults involved a perpetrator who had been drinking. The 12-month prevalence of sexual assault was 0.4% (0.2–0.5) for men and 1.0% (0.8–1.2) for women, with 57% perpetrator drinking. For both types of assault, alcohol use was more strongly associated with a perpetrator from outside the family.

These findings suggest that more than 62,000 physical assaults and 10,000 sexual assaults occur in New Zealand every year where the offender has been drinking.

About half of all physical assaults reported in the surveys, whether or not they involved alcohol, were by a stranger. The distributions of “person responsible” differed by involvement of alcohol. In particular, where alcohol is not involved assaults were more likely to involve a member of the respondent’s family; 35% compared with 23% in the alcohol-involved group. Alcohol-involved assaults were more likely to occur in a pub, bar or club, or on the street than assaults not involving alcohol, which more commonly occurred at the respondent’s home.

Medical attention was sought for 15% of physical assaults involving drinking by the assailant and 10% of those not involving drinking ($p=0.17$). Police involvement was reported for similar proportions of assaults with and without drinking by the perpetrator (26% vs 28%; $p=0.70$). Overall, in one year, about 17,000 assaults by someone who has been drinking involved police, and 10,500 required medical attention.²⁸

NZCASS—In the NZ Crime and Safety Survey conducted by the Ministry of Justice²⁹ 41% of victims of interpersonal violence reported that the *offender* was under the influence of alcohol. This was most common for offences by strangers (49%) followed by sexual offences against women (44%), partner offences (37%), and offences by people well known (31%). On average 20% of *victims* of interpersonal crimes reported themselves to have been drinking alcohol prior to the violence.

The offender only was reported to have been drinking in 31% of offences by strangers, 27% of sexual offences against women, 19% of offences by people well known and 17% of partner offences. The proportion of offences when only the victim was drinking was very small and similar across offence categories.

Table 2. The involvement of alcohol in interpersonal violence (NZCASS)

Variables	Offences by strangers (n=426)	Offences by partners (n=276)	Offences by people well known (n=296)	Sexual offences against women (n=137)	All offences (n=1135)
Person drinking	%	%	%	%	%
Offender only	31	17	19	27	23
Victim only	<1	2	2	5	2
Both offender and victim	18	19	13	17	17
Neither offender nor victim	44	58	53	41	50
Don't know	7	5	14	9	9

Adapted from Table 13 in *Family Violence Statistics Report 2009*²⁹

For offences involving force or threat of force, alcohol was reported to be more involved in crime in public places (47 %) than in private places (31%). Offences occurring in *places of entertainment* were most likely to involve an offender who had been drinking (79%), and a victim who reported drinking themselves (45%).

Table 3. Proportion of victims of aggression reporting the involvement of alcohol at the time of offence (NZCASS)]

Person drinking	Public places %	Private places %	Places of entertainment %
Offender	47	31	79
Victim	26	9	45

Violence and crime: partner aggression

Data from a 2007 general population survey (Gen07) showed approximately 15% of men and 12% of women reported an aggressive act by a partner, and 11% of men and 16% of women reported being aggressive towards a partner in the past 2 years. A minority of these respondents (about 4% of the whole population) reported both. Reported aggression showed a negative gradient with age, with younger people more likely to report both victimisation and perpetration.

Among respondents who reported aggressive acts, women reported alcohol involvement more often than men, and particularly male-only drinking when they were victimised (Table 4).

Men reported more often than women that both partners were drinking when a man was aggressive towards a partner, and a higher proportion of incidents when the woman was the only one drinking.

Table 4. Involvement of alcohol in most aggressive act reported (Gen07)

Variables	FEMALE respondents		MALE respondents	
	Aggression from partner	Aggression to partner	Aggression from partner	Aggression to partner
	%	%	%	%
Both drinking	14.4	14.5	14.9	16.9
Respondent only	0.7	3.1	4.6	3.4
Partner only	22.2	12.0	5.8	4.5
Neither	62.8	70.4	74.7	75.3

When reporting victimization, women scored severity, anger and fear higher than men except when they were the only one drinking. Mean scores were significantly different depending on who was drinking when the incident occurred, with highest levels of anger and fear when the partner only was drinking, followed by situations where both partners were drinking.

A pattern of heavy episodic drinking by the respondent was associated with a three-fold increase in reported victimisation involving drinking (OR 2.9, 95% CI 1.4–6.2), and a doubling of reported perpetration involving drinking (OR 2.2, 95% CI 1.0–4.7). Partner drinking frequency and partner usual volume were also positively associated with both victimisation and perpetration that involved drinking, although less strongly.³⁰

Road traffic injuries

In national survey in 2007 (ADUS07) 1.2% (0.9–1.5) of 16–64 year olds reported being involved in a motor vehicle crash in the past 12 months due to someone else's drinking, and this was similar for men and women. On a population basis this represents 30,700 adults per year.

CAS—For the period 2003–2007 we calculated that 28% (n=64,328) of road traffic injuries across all road user groups involved alcohol. Of this total, 43% were injuries to someone other than the drinking person responsible. This equated to 12% of all traffic crash injuries being due to some one else's drinking across all age groups. However, amongst 15–19 year olds, almost one in five of all traffic injuries (19%) were due to some one else's drinking, making up half of all alcohol-related crash injuries at this age.

Amongst children under 15, virtually all injuries in alcohol-related crashes were attributable to some one else's drinking, and 90% were sustained as car passengers.

For 90% of the children who died and more than 70% of those injured by a drinking driver, the responsible driver was in their car.

Car crashes involving someone else's drinking were responsible for an annual average of 5,535 injuries to innocent victims, including 60 deaths. 381 of those injured were children under 15 years of age. The estimated cost of crash injuries due to someone else's drinking in the 5-year period was 2.5 billion NZ dollars, or 0.5 billion dollars per year.²⁰

Residential fires

A recent study of unintentional residential fires in New Zealand, in the period 1 July 1997–30 June 2003, revealed that there were 131 deaths in 108 fires with 14 multiple fatalities.²² The proportion of primary fire victims with a BAC above 0.08 (the legal driving limit) was 34%. Secondary deaths in fires unintentionally ignited those affected by alcohol (n=14) comprised 11% of all unintentional residential fire deaths and 24% of all alcohol-related fire deaths. In one of the alcohol related incidents there were five secondary deaths.

Table 5. Deaths in 44 unintentional residential fires where the blood alcohol level of the primary victim was greater than 0.08 g/100ml (1997–2003)

Victim	Number of deaths	% of all unintentional residential fire deaths
Primary	44	34%
Secondary	14	11%
Total	58	44%

Adapted from Table 5.4a in Human Behaviour Contributing to Unintentional Residential Fire Deaths 1997–2003²²

We obtained further data from the author of this study and extended the series to encompass 15 July 1995 to Dec 2006. The total number of fatalities in unintentional residential fires was 302, with 93 (31 %) fatalities due to 78 residential fires where the primary victim had a BAC over 0.08. There were 22 secondary victims representing almost one quarter (24%) of all residential fire fatalities due to alcohol. Of these, 10 (45 %) were children and 12 (54 %) were adults. Three-quarters of adult secondary victims were men.

Table 6. Secondary victims of alcohol-related unintentional residential fires, by ethnicity (July 1996–Dec 2006)

Variables	Adult		Child	
	NZ Maori	NZ European	NZ Maori	NZ European
Male	6	3	5	1
Female	2	1	4	0
Total	8	4	9	1

Effects on children

As already discussed for traffic crashes and fires, unintentional injury due to alcohol-impaired caregivers is a risk to children. We did not identify any data sources for other external causes of unintentional injury, and very little other documentation of harms to children from drinking.

Fetal alcohol spectrum disorder (FASD)—There are no reliable data on the prevalence or severity of FASD in New Zealand, although the NZ Paediatric Surveillance Unit monitors new diagnoses.³¹ There is no organised screening in infancy or childhood.

Studies that include self-reported prevalence of drinking during pregnancy indicate that some exposure of the fetus to alcohol occurs in at least a quarter of pregnancies. Most women of childbearing age are current drinkers, a substantial proportion expose the fetus before they are aware of pregnancy, and the vast majority reduce their drinking or stop during pregnancy. In ADUS07, 28.7% (24.7–32.7) of women who had been pregnant on the last 3 years reported consuming alcohol during pregnancy.²⁵

In a 2005 study, 40% reported having consumed alcohol before they realised they were pregnant, 53% reported having consumed alcohol some time during pregnancy, and 20% had drunk 4 or more standard drinks on one occasion at least once during pregnancy. Most of the heavy drinking episodes occurred before the pregnancy was known.³²

A survey in 2006 of mothers delivering babies at a single hospital found 28% drank during pregnancy, 10% continued drinking more than 70g per week, with 4% drinking more heavily. Nine percent reported one or more heavy drinking episodes during pregnancy.³³

In the USA the prevalence of FAS is estimated to be 0.5 to 2 per 1000 live births, the prevalence of FAS and ARND combined (FASD) at least 10 per 1000.³⁴ If this estimate is applied to New Zealand, where there are about 60,000 births per annum, there would be at least 600 children born with FASD each year. However, we would expect this to be conservative given that drinking during pregnancy in New Zealand is higher than in the US where an estimated 12.5% of women drink alcohol during pregnancy, and 3.4% of women binge drink.³⁵ A more recent US estimate³⁶ has put the prevalence of FASD in populations of younger school children as high as 2–5%.

Prevalence of emotional, physical and sexual abuse—In the SHORE survey conducted in 2008/9²⁴ 17% of respondents with children in the household reported that the children had been negatively affected by the drinking of someone else in the last 12 months; 11% reported children were yelled at, criticised or verbally abused, 7% reported children had witnessed serious violence in the home, 2% reported children were physically hurt and 2% reported that a protection agency or family service had been called because of someone else's drinking.

In New Zealand, the Child, Youth and Family Service (CYFS) in the Ministry of Social Development deals with child abuse and neglect notifications. Our requests to access to administrative data from CYFS were declined on the basis that the data were not sufficiently reliable for our purposes.

Published data indicate there were care and protection notifications for 50,301 children in 2006, with about one in four being found to have been sexually, physically or emotionally abused or neglected (n=12,453). This a rate of 12.1 per 1000 New Zealanders aged 0–16 years.³⁷

Recent Australian research based on similar agency data from Victoria³⁸ suggests that 33% of these (n=4109) are likely to be associated with alcohol use by the perpetrator, and that alcohol use is associated with seriousness of the outcome. However, the annual rate of substantiated cases was lower in Australia than in New Zealand (6.7 per 1000 in 2005), and the comparability of the data may be limited.

Data from the NZ Police Family Violence database³⁹ shows 15% of victims documented in Police reports of family violence incidents in 2006 were children. Overall, alcohol was considered to be a contributing factor in 29% of family violence incidents, but this is not reported separately for child victims. Other drug use was not considered to be a definite factor in any family violence incident in 2006.

A recent report on family homicides between 2002–2006⁴⁰ found that of a total of 141 deaths in the 5-year period, 38 were child homicides. The investigators found that alcohol and/or drug abuse featured at the time of the incident or as a background factor, or both, in half of child homicides, and that lack of awareness of the risks of alcohol and drug use in the context of the care of children was evident in some cases.

No other data concerning the effects of others' drinking on children were identified that were available for review.

Effects on coworkers

There is little documentation of impacts of other people's drinking through places of work in New Zealand. However, self-reports of effects on people's own work suggest this could be a substantial issue. In ADUS07 3.2% of adults reported harmful effects of drinking on their work, study or employment opportunities in the previous 12 months.

Nearly 10% (estimated population n=251,900) had worked while feeling under the influence of alcohol at least once. Men and younger people were over-represented in both cases. Based on the survey sample an estimated 68,900 people had operated machinery while feeling under the influence of alcohol.

Alcohol-related absenteeism was also common, with 5.6% of adults (estimated population n=147,500) reporting at least one day off work or school due to drinking in the past 12 months. Many reported multiple days off, resulting in approximately 392,800 workdays lost per year.²⁵ This gives no indication of the loss of productivity or the effect of this on coworkers or employers.

Data from the SHORE 08/09 survey give some indication of the impact on coworkers.²⁴ Two percent of adults reported a heavy drinking coworker and of these 44% reported that their own productivity was reduced as a result. In addition, 31% reported having to cover for the drinker, and 26% having to work extra hours.

The HBS data on assault²⁸ show 7.3% of physical assaults and 11.4% of sexual assaults occurred at work and that more than half of these involved a perpetrator who had been drinking. The NZCASS found that 31% of all personal property offences

and 18% of all assaults and threats occurred work and at least 17% of all offences in the workplace involved alcohol.

Community amenity

In addition to the specific effects of individuals' drinking on others there are a range of collective effects of the drinking patterns and culture of a community on the nature of the living environment. Low-level offending and antisocial behaviour by a visible minority of drinkers, combined with knowledge of the real risks of alcohol-related harm, affect the perceptions of residents and their behaviour.

In the Community Sentiment Surveys in 2007, MacLennan found that exposure to alcohol's effect on community amenity was common but varied considerably between communities, as seen in Table 7 (Data collected as part of PhD research).

Table 7. Percentage of residents in seven NZ communities who had experienced adverse effects of alcohol on community amenity at least once in the previous 12 months

Adverse effects	N	% (95% CI)	Range across communities (%)
Seen someone drunk in public	1278	77 (75–79)	51–92
Seen a person disoriented or passed out on the street because they had too much to drink	1277	45 (42–48)	14–68
Seen vomit on footpaths or in shop doorways	1280	61 (58–64)	29–78
Seen alcohol bottles smashed or lying on streets	1296	92 (90–93)	82–96
Seen someone urinating in the street	1272	45 (42–47)	24–58
Seen a fight where one or more of the people involved were drunk	1284	37 (34–40)	16–48

The perception that alcohol played a major role in community problems was widespread, and problem drinking among young people was considered by a majority of those surveyed to be a major problem (Table 8).²³

Table 8. Opinions about role of alcohol in community problems, among residents of seven NZ communities

Variables	% issue is a major problem in their community (n=1236)	% alcohol plays a major role (n=1239)
Violent Crime	25%	79%
Family Violence	31%	85%
Vandalism	39%	46%
Problem drinking among under 25 year olds	58%	100%
Problem drinking among 25+ year olds	22%	100%
Public drunkenness	23%	100%
Traffic accidents	26%	57%
Dangerous driving	39%	62%
Litter	24%	17%

In the SHORE 08/09 survey approximately half of both men and women reported having avoided drunk people and places, and been kept awake or disturbed at night due to the drinking of others in the past 12 months. More than 60% had been annoyed by vomit, urination or littering related to alcohol.

Feeling unsafe while waiting for public transport was reported by more women than men (18 vs 11%), but feeling unsafe in a public place because of strangers' drinking was reported by about 20% of both sexes. A quarter of women and a third of men had been verbally abused in the last 12 months by a stranger who had been drinking.²⁴

As well as intimidation and nuisance, these alcohol-related behaviours divert considerable police resources from other activities. In 2007/8, there were 21,263 incidents where police were diverted from other duties to pick up intoxicated people from the streets to avoid harm to themselves or others.²⁷

Box 1. Summary of available data on harm due to some one else's drinking

Variables	Alcohol-involved cases per year	% of total cases	Years of data
Police records			
All offences	118,829	31–46%	2007/8
Violent offences	20,447	33%	2007/8
Homicides	23 (mean)	44%	1999–2008
Family violence homicides		37%	1999–2008
“Use of force” incidents		59%	2007/8
Taser incidents		35%	2007/8
Self-reported physical assault (HBS)	62,832	54%	2003/4
Self-reported sexual assault (HBS)	10,053	57%	2003/4
Self-reported all violence (NZCASS)		41%	2006
Self-reported partner aggression (Gen07)		21% women 37% men	2007
Self-reported traffic crashes (ADUS07)	30,700		2007/8
Injuries due to road traffic crashes (CAS)	5,535	12%	2003–7
Deaths due to road traffic crashes (CAS)	60		2003–7
Deaths in residential fires	2	11%	1997–2003
Fetal Alcohol Spectrum disorder	Approx 600	1%	US data
Substantiated child abuse/neglect	Approx 4109	33%	Australian data

Discussion

The information summarised in this paper focuses on aggression and violence, and on unintentional injury due to fire and traffic crashes. While these are two substantial areas of harm to others from drinking, the summary reflects the availability of data, and therefore to some extent the limited awareness of the range and magnitude of collateral damage from drinking.

Police data suggest that at least a third of offences involve someone who has been drinking, although information about alcohol is not always available and 50% of all offences is a better estimate. The involvement of alcohol is more often reported in more serious offences.

In general, the proportion of violent incidents involving alcohol is higher when people are reporting their own experiences. Several data sources report that stranger violence is more likely to involve alcohol than family violence, although common in both.

We have also estimated the number of secondary victims in traffic crashes and fires due to drinking. About 40% of all those injured in alcohol-related traffic crashes and 24% of those killed in alcohol-related fires are not the drinker responsible, making up about one in eight of all traffic injuries and fire deaths.

Self-reported data and administrative or service use data provide different perspectives on harm. From services such as the police we see a subset of harm that is usually at the serious end of the spectrum and may have taken time and an element of chance to come to attention.

The level of service provision may affect these data, both for the population as a whole and for subgroups in the population. On the other hand, survey data from the general population give us a picture of how widespread the secondary effects of drinking are, including less severe impacts on wellbeing. These data usually suffer from under-representation of the members of the community most affected, and low prevalence of the most serious outcomes, due to non-response biases.^{41 42} Thus, both official data and surveys are likely to produce estimates that are conservative.

One of the limitations of existing data is that different criteria for alcohol involvement have been used in different sources. Of particular note is the use of a BAC of 0.08 in the Fire Service study, so that if the person responsible had a BAC of 0.05 this was not considered alcohol-involved. In the analysis of car crash data we included crashes where the driver had a BAC of 0.03 or more, based on evidence about the effects of alcohol on driving ability.⁴³

When considering these data there is an implied causal attribution of events to drinking, but it is not possible to establish this. In general, where alcohol consumption is associated with a much higher risk of an event occurring, such as a ten-fold increase in risk, the proportion of events that would be avoided if no one drank alcohol (the attributable fraction) is very high, and so a causal attribution is reasonable.⁴⁴ However, there are many unknown quantities in these data and the true attributable fraction is not known.

Gaps

Harm from others' drinking has had little research attention in New Zealand and there are several important areas where there is no accessible research or administrative data. The value of routinely collected data being usable and available for research does not seem to have been widely recognised or adequately resourced in the agencies and services dealing with these issues. A notable exception is the system of traffic crash information, designed and maintained to enable research by a government department, and made accessible.

Even in the police, where data are collected, they are not easily used. For example NZ Police data are not regularly extracted from the numerous databases as they were for the report on 2007/8, and therefore reliable trend data are not available. Police data are very difficult to access by independent researchers even when de-identified, and this is particularly so for Alco-link data, and family violence data.

A very significant gap in current knowledge is the harm to children. Children of heavy drinkers may be at risk of violence and emotional abuse, but also unintentional injury, loss of educational opportunities, conduct disorders, poor mental health, drug and alcohol problems of their own, and poor models of behaviour and of parenting.⁴⁵

⁴⁶ The range and extent of such harm in the population remains unmeasured. In the main government agency information dealing with abuse and neglect of children no data are accessible for research.

Other gaps included any existing data on harm from others' drinking in the workplace, or any service use information from community agencies that could produce reliable estimates of the burden relating to other people's drinking.

The first attempt to gain reliable self-reported information about harm from others' drinking in a survey of a representative population sample in New Zealand has recently been made.²⁴

Implications

The range and magnitude of harm from other peoples' drinking are substantial, but not well described. The lack of adequate data systems in public agencies means that effective surveillance cannot be carried out.

Public health surveillance, defined as "the ongoing, systematic collection, analysis, and interpretation of data on specific health events for use in the planning, implementation and evaluation of public health programmes"⁴⁷ is what is required for control of the public health problem of alcohol-related harm.

The inability to estimate magnitude of problems and characterise who is most affected also contributes to a weak policy response and makes advocacy difficult. Where interventions are being developed and implemented, monitoring of effectiveness is hampered, and patchy information creates the misperception that the issues that are best measured are the most important.

There are other costs to society accompanying current drinking patterns, beyond those described here. These include the burden on the police, the judicial system, the penal system, healthcare resources, the traffic safety agencies, and education provision. The costs of these public services dominate public spending and alcohol-related harm creates a diversion of resources from more constructive uses.

As well as this, individuals experience the trauma and distress of alcohol-related crime and violence, loss of productivity, costs of theft and vandalism, the increased need to be vigilant about ones safety, and the loss of neighbourhood amenity that may result from others' drinking. It affects the way people feel about their communities and how they function in them.

The alcohol scenario contrasts with the harms resulting from tobacco which are predominantly contributions to disease. While the emergence of evidence about the health effects of passive smoking by non-smokers has strengthened political resolve to control damage from tobacco, evidence of secondary effects of alcohol use is sparse and has been more difficult to disentangle from its social context. Much more

of the harm from alcohol occurs as a result of its effect on social interactions with others.

While it is true that some of the harms to families, friends, strangers and communities are intangible, many have simply not been measured systematically. Until they are accounted for, the burden of alcohol in communities will continue to be underestimated, which could result in an inadequate level of policy response.

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