Alcohol-related illness and death in Scottish neighbourhoods: is there a relationship with the number of alcohol outlets?

Report for Alcohol Focus Scotland by:

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CONTENTS **PAGE**

KEY MESSAGES

- **There are large variations in numbers of alcohol outlets within neighbourhoods across Scotland.**

- **Across the whole of Scotland, neighbourhoods with higher numbers of alcohol outlets had significantly higher alcohol-related death rates.** Alcohol-related death rates in neighbourhoods with the most alcohol outlets were more than double the rates in those with the fewest outlets. There were 34 alcohol-related deaths per 100,000 people in neighbourhoods with the most off-sales outlets, compared with 13 per 100,000 in neighbourhoods with the fewest.

- **Across the whole of Scotland, alcohol-related hospitalisation rates were significantly higher in neighbourhoods with the most alcohol outlets.**

INTRODUCTION

Scotland has one of the highest levels of alcohol-related harm in Western Europe (Beeston et al. 2013). In Scotland one in every twenty deaths and one in every twenty hospital episodes is attributable to alcohol (Grant et al. 2009). Scotland has the highest rate of alcohol-related deaths in the UK (Breakwell et al. 2007); male alcohol-related death rates in Scotland were more than double those in England and Wales for most years in the last two decades (Beeston et al. 2013). The negative consequences of alcohol use were conservatively estimated to cost Scottish society £3.6 billion in 2007, of which £267 million were incurred by health services. (Scottish Government 2010).

The availability of alcohol retail outlets may influence alcohol-related harms, via a number of pathways. Greater local availability of alcohol retailers and increased visibility of their advertising can increase the physical availability of alcohol, reduce the prices of alcohol products due to retailer competition, and shape and reinforce local attitudes and norms around drinking behaviours and drunkenness (Livingston et al. 2007; Pasch et al. 2007; Pasch et al. 2009). In other countries, studies show that populations of neighbourhoods with higher alcohol outlet availability have higher levels of alcohol consumption (Bryden et al. 2012), and related harms (Gruenewald et al. 2006; LaScala et al. 2001; Livingston 2008; Pereira et al. 2013; Theall et al. 2009; Treno et al. 2007).

Different types of alcohol outlet are likely to encourage distinct types of drinking behaviours and hence may influence health in varying ways. A key distinction is whether the outlet is licensed to sell alcohol for consumption on the premises ('on-sales' outlets, such as bars and restaurants) or off the premises ('off-sales' outlets, such as convenience stores and supermarkets). While political and media attention has often been concerned with binge drinking in public spaces dominated by on-sales premises, such as city-centre 'entertainment districts', less attention has been paid to the less visible drinking conducted at home, with alcohol purchased from off-sales premises (Holloway et al. 2008). Off-sales outlets may have greater potential for alcohol-related harm than on-sales premises, due to their cheaper product, potentially easier accessibility for under-age drinkers, large volumes obtainable, and absence of control over the final recipient (Forsyth and Davidson 2010). Australian research found that chronic health outcomes (mental and physical) were strongly related to off-sales outlet densities (Livingston 2011). This finding might be because 'problematic' drinkers seek to acquire alcohol from the cheapest available sources (i.e., for off-premise consumption).

Researchers at the Centre for Research on Environment, Society and Health (CRESH), at the Universities of Edinburgh and Glasgow, were asked by Alcohol Focus Scotland (AFS) to investigate whether alcohol-related illness and deaths in Scotland was related to the local availability of alcohol outlets.

METHODS

Summary:
We investigated whether alcohol outlet availability was associated with alcohol-related health outcomes (hospitalisations or deaths) for Scottish datazones.

Geographical unit:
Datazones, of which there are 6505, are the main administrative geography in Scotland, and have populations between 500 and 1000. The datazone is the key small-area geographical unit used by the Scottish Government in the dissemination of official statistics[1].

Alcohol outlet availability:
The locations of outlets licensed to sell alcohol for consumption on the premises (on-sales) and off the premises (off-sales) were obtained in 2012 from each local licensing board. The close correspondence of the resulting dataset with official figures (counts by local authority) from the Scottish Liquor Licensing Statistics 2011-12[2] is described in Appendix 1. We measured alcohol outlet availability for each datazone as the number of on-sales, off-sales, or total outlets within 800 m of the population centre of the datazone (800 m represents a 10-minute walk at average pace). This 800 m zone (area 2.0 km^2) was assumed to represent the typical neighbourhood experienced by the population of a datazone, and was unaffected by artificially-imposed datazone boundaries or differing datazone sizes. The example in Figure 1 shows that a circle with a radius of 800 m around this datazone's population centre (red star) contains 73 on-sales outlets: including a number within neighbouring datazones. Datazones were grouped into five availability groups, from lowest (group 1) to highest (group 5).

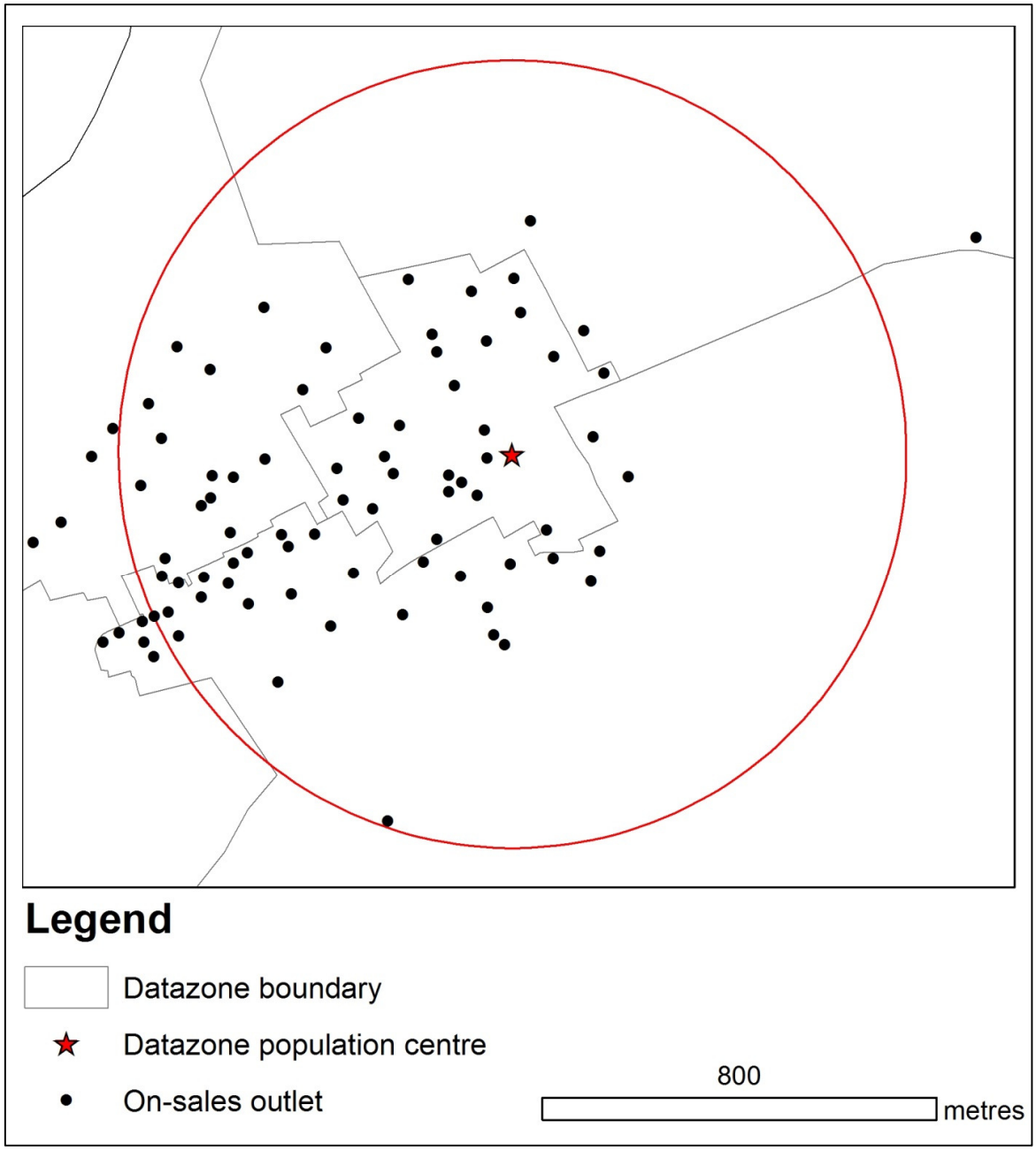
Alcohol-related deaths:
We extracted alcohol-related deaths between 2002 and 2011 from General Register Office for Scotland (GROS) data. For each datazone we summed counts of deaths related to alcohol consumption (see Appendix 2) by age group and sex.

Alcohol-related hospitalisation:
We obtained the alcohol-related hospitalisation indicator used in the calculation of the Health domain of the Scottish Index of Multiple Deprivation 2012 (SIMD). The indicator is a *ratio* of the number of alcohol-related hospitalisations in each datazone to the number that would have been 'expected' based on the average rates for Scotland, by age group and sex. Alcohol-related hospitalisations were defined as the number of continuous inpatient stays (2007-2010) with a diagnosis of any alcohol-related condition (see Appendix 3). The Scottish average hospitalisation ratio was 100, and a datazone with a larger (/smaller) value has a worse (/better) rate than this average.

Analyses:
We ran regression analyses to quantify the size and strength of the relationships between alcohol outlet availability and health outcomes *independently* of other factors that are likely to be important in the relationship: income deprivation (from SIMD 2012) and urban/rural status (from Scottish Government's Urban-Rural Classification 2011-2012). Datazone populations by age group and sex (average 2002-2011, from GROS) were included in the mortality analyses. Further details of the regression analyses are given in Appendix 4.

[1] http://www.scotland.gov.uk/Publications/2005/02/20697/52626
[2] http://www.scotland.gov.uk/Topics/Statistics/Browse/Crime-Justice/PubLiquor/LiquLic201112

Figure 1. Calculating alcohol outlet availability for a datazone.



RESULTS

Alcohol outlet availability

Across Scotland, datazones had an average of 11 on-sales and 5 off-sales outlets within 800 m of their population centre. Some datazones had no outlets within this distance, while the maximum availability was 384 on-sales and 54 off-sales outlets (for central Edinburgh's Royal Mile: datazone S01002117). On- and off-sales outlet availabilities were closely correlated: hence datazones with high availability of one type were likely to have high availability of the other.

Alcohol outlet availability and alcohol-related deaths

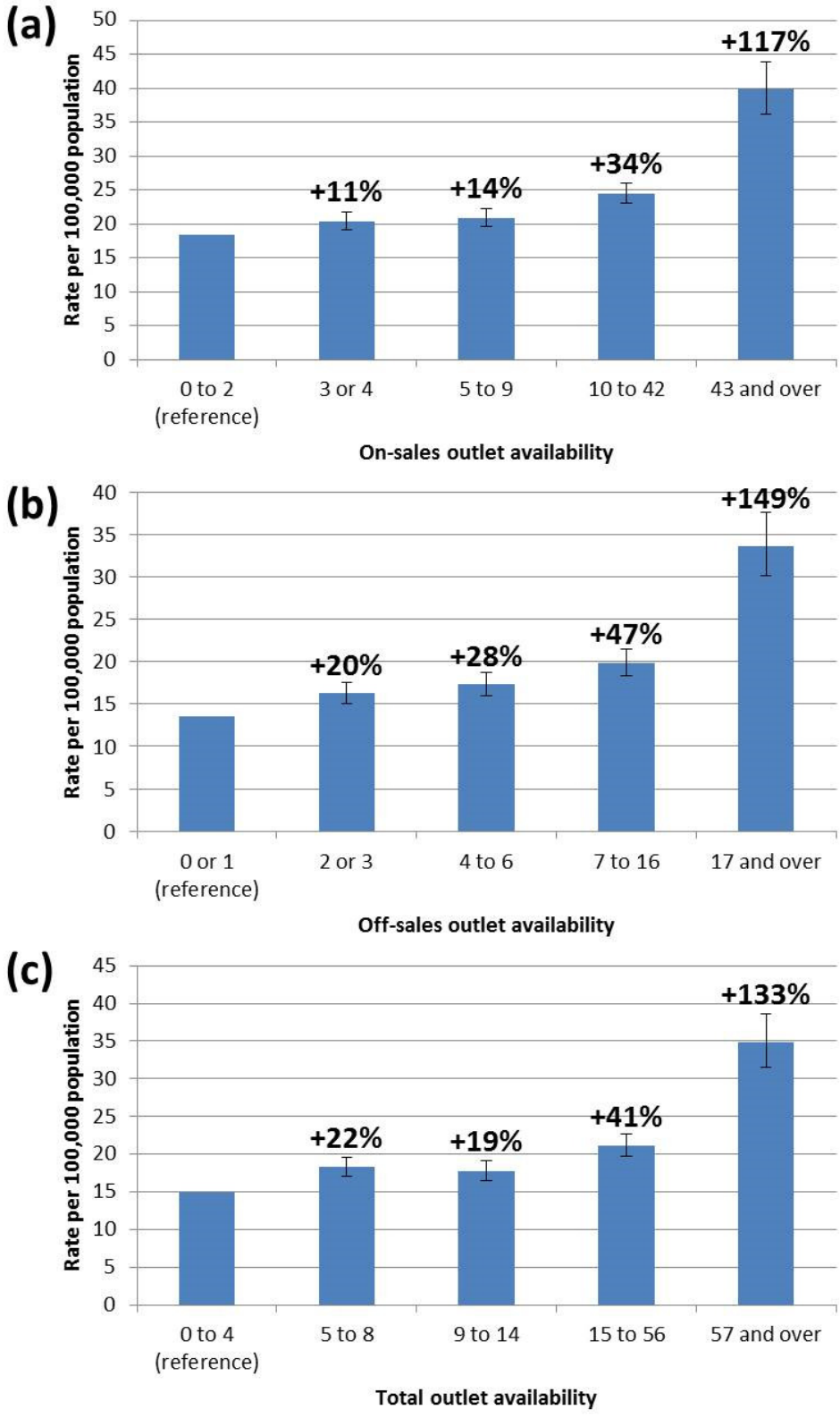
There were 12,835 alcohol-related deaths in Scotland over the 10 year period: an average annual rate of 25 per 100,000 people. We compared alcohol-related death rates across the five outlet availability groups – from lowest to highest – using regression models.

Interpreting the results

The graphs in this section show the death rates in each outlet availability group. The lines with a wall at each end show 'confidence intervals', which indicate how confident we can be, in statistical terms, that each rate is different from the reference group (the lowest availability group): if the confidence interval does not include the rate for the reference group we can be confident that the rates are 'significantly' different (meaning that they are very unlikely to have occurred by chance).

Compared with datazones with the lowest outlet availability, alcohol-related death rates were significantly higher in datazones with higher outlet availabilities, and the differences increased markedly as availability increased (Figure 2). For the intermediate availability groups the differences were modest (up to 47% higher), although statistically significant. However, alcohol-related death rates in the highest availability datazones were more than double those in the lowest availability datazones (i.e., rate differences exceeded 100%). Datazones with the highest availabilities of on-sales, off-sales and total outlets had alcohol-related death rates of 40, 34 and 35 per 100,000, respectively. The increases in death rates, compared with the reference group, were higher for off-sales outlets (up to 149% increase) than on-sales and total outlets.

Figure 2. Scotland-wide alcohol-related death rates for (a) on-sales, (b) off-sales, and (c) total outlet availability groups*.



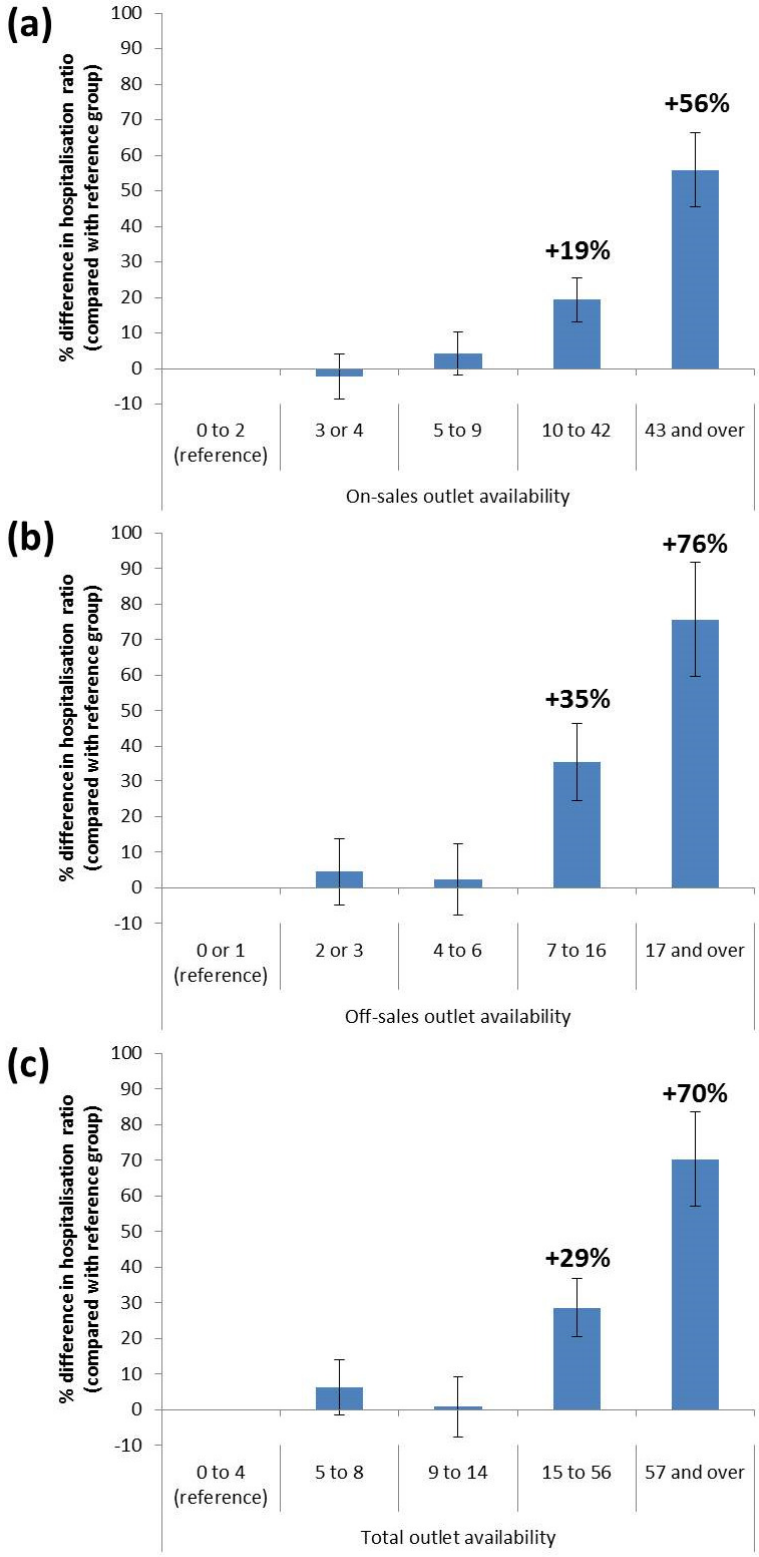
* Explanatory notes:
Outlet availability measured as number of outlets within 800 m of a datazone's population centre. Numerical labels give % increase from reference group rate. The rates were predicted from regression models (see Appendix 4), which adjusted for age, sex, income deprivation and urban/rural status. Wide bars indicate the predicted rate for each outlet availability group. Lines with a wall at each end indicate 95% confidence intervals.

Alcohol outlet availability and alcohol-related hospitalisation
Similar to the above analyses, we compared alcohol-related hospitalisation ratios across different outlet availability groups – from lowest to highest.

Interpreting the results
The graphs in this section show the *percentage difference* between the hospitalisation ratio in each availability group and the reference group (datazones with the lowest outlet availability). Values above 0 indicate a higher alcohol-related hospitalisation rate than in datazones with the lowest outlet availability. If the confidence intervals (shown by the lines with a wall at each end) do not cross the horizontal axis at 0 we can be confident that the differences are 'statistically significant'.

Alcohol-related hospitalisations were significantly related to alcohol outlet availability in datazones with the most alcohol outlets (Figure 3). Compared with datazones with the lowest alcohol outlet availability (0 to 2 on-sales outlets, 0 or 1 off-sales outlet, or 0 to 4 total outlets within 800 m) the hospitalisation rates in datazones with low or medium availability (up to 9 on-sales, 6 off-sales, or 14 total outlets within 800 m) did not differ significantly. But hospitalisation rates in higher-availability datazones were significantly higher. Above these thresholds the hospitalisation ratios increased substantially. Datazones with the highest alcohol outlet availability had hospitalisation ratios more than 50% higher than datazones with the lowest outlet availability. The differences were marginally higher for off-sales outlets than for on-sales or total outlets.

Figure 3. Scotland-wide hospitalisation ratio differences (%) between (a) on-sales, (b) off-sales, and (c) total outlet availability groups, and the reference group*.



* Explanatory notes:
Outlet availability measured as number of outlets within 800 m of a datazone's population centre. Wide bars indicate the % difference between the hospitalisation ratio in each outlet availability group and that in the lowest availability group (reference category). The % differences were derived from regression models (see Appendix 4), which adjusted for income deprivation and urban/rural status. Numerical labels give the difference if statistically significant. Lines with a wall at each end indicate 95% confidence intervals.

INTERPRETATION

The relationships between alcohol outlet availability and health outcomes were clearer and stronger for deaths than hospitalisations. It is likely that alcohol-related deaths represent a more sensitive response to the local alcohol environment for a number of reasons. First, alcohol-related deaths are usually attributable to chronic health problems (e.g., cirrhosis) resulting from long-term sustained drinking at harmful levels, while alcohol-related hospitalisations will include a higher proportion of cases due to short-term excessive drinking episodes. Compared with short-term episodes, long-term excessive drinking may be more sensitive to the local convenience and affordability of alcohol. Second, a range of other factors may influence whether a serious alcohol-related condition results in hospitalisation, including proximity to a hospital, or attitudes towards seeking medical help. Third, recording of alcohol misuse on hospitalisation records may vary from hospital to hospital, and where alcohol misuse is suspected but not confirmed it may not be recorded as a contributing factor[3]. Hence, it is understandable that we found a clearer link between the alcohol retail environment and deaths than with hospitalisations.

The alcohol-related hospitalisation results suggest the existence of outlet availability thresholds – over 6 off-sales, 9 on-sales, or 14 total outlets within 800 m – below which hospitalisation rates did not differ, but above which rates increased significantly. Such a threshold was not found for alcohol-related deaths – each increase in outlet availability was associated with a higher death rate. Locations with high concentrations of on-sales outlets may encourage harmful drinking episodes through the coming together of drinkers and competitive drinks markets. High concentrations of off-sales outlets also create more competitive markets, with alcohol promotion tactics such as loss-leading and discounting used to compete with other stores. Competitive pressures on smaller convenience stores can also result in alcohol being sold to street drinkers, or sold as single cans. Hence above certain outlet availability thresholds the drinks market may become competitive enough to encourage significantly more harmful drinking episodes that result in hospitalisation.

Comparing our results for on-sales and off-sales outlets should be done with caution, but we suggest that the relationships found were stronger for off-sales outlets. This supports claims that off-sales outlets have the greatest potential for alcohol-related harm, due to their cheaper product, large volumes obtainable, accessibility for under-age drinkers, and the absence of control over the final recipient (Forsyth and Davidson 2010).

A limitation of our work is that the broad on- and off-sales categories rouped together outlets likely to have widely differing levels of influence on alcohol consumption – grouping restaurants with nightclubs, and convenience stores with supermarkets, for example. Hence, our outlet availability measures were a relatively crude way of measuring the actual availability of *alcohol* in a neighbourhood.

Finally, we should caution that our study was cross-sectional – it looked at a single point in time – hence while it suggested significant associations between outlet availability and alcohol-related harm we cannot conclude that the relationship is causal. Further analyses over time will be required to establish whether the links are causal, but currently alcohol outlet data for Scotland are only available for a single point in time. Better quality time-series licensing statistics, disaggregated into finer categories than simply on- or off-sales, would allow for research into longitudinal relationships between availability and harm.

[3] http://simd.scotland.gov.uk/publication-2012/technical-notes/domains-and-indicators/health-domain/

APPENDICES

APPENDIX 1: Comparison of the dataset used for the work ('CRESH data') and the Scottish Liquor Licensing Statistics 2011-2012[4].

Our outlet dataset (collected in Autumn 2012) had 1.3% fewer on-sales, 1.4% fewer on-sales, and 1.4% fewer outlets overall than reported by the Scottish Liquor Licensing Statistics 2011-12 (as of 31 March 2012) (see Table 1). Part of the discrepancy could be due to our data collection later in 2012, and part due to our careful cleaning of the dataset to remove duplicate entries from the licensing board data we were provided with. At the local authority level most discrepancies were also small. The largest discrepancies were found for Clackmannanshire (32 more on-sales and 23 fewer off-sales outlets, although balancing to only a 6.7% difference overall), Argyll and Bute (19 fewer off-sales outlets) and Stirling (27 fewer off-sales outlets).

[4] http://www.scotland.gov.uk/Topics/Statistics/Browse/Crime-Justice/PubLiquor/LiquLic201112

Table 1. Comparison of the dataset used for the work ('CRESH data') and the Scottish Liquor Licensing Statistics 2011-2012[1].

		On-sales outlets			Off-sales outlets			Total outlets		
	n datazones	Official (no.)	CRESH data (no.)	Difference (%)	Official (no.)	CRESH data (no.)	Difference (%)	Official (no.)	CRESH data (no.)	Difference (%)
SCOTLAND	6505	11512	11357	-1.3	4867	4800	-1.4	16379	16157	-1.4
Aberdeen City	267	449	447	-0.4	181	189	4.4	630	636	1.0
Aberdeenshire	301	434	444	2.3	192	193	0.5	626	637	1.8
Angus	142	270	266	-1.5	80	77	-3.8	350	343	-2.0
Argyll & Bute	122	426	435	2.1	166	147	-11.4	592	582	-1.7
Clackmannanshire	64	107	75	-29.9	27	50	85.2	134	125	-6.7
Dumfries & Galloway	193	476	478	0.4	159	158	-0.6	635	636	0.2
Dundee City	179	302	300	-0.7	120	123	2.5	422	423	0.2
East Ayrshire	154	206	198	-3.9	123	125	1.6	329	323	-1.8
East Dunbartonshire	127	116	117	0.9	64	65	1.6	180	182	1.1
East Lothian	120	209	200	-4.3	91	86	-5.5	300	286	-4.7
East Renfrewshire	120	113	109	-3.5	45	43	-4.4	158	152	-3.8
City of Edinburgh	549	1359	1296	-4.6	492	459	-6.7	1851	1755	-5.2
Eilean Siar	36	69	66	-4.3	31	33	6.5	100	99	-1.0
Falkirk	197	228	223	-2.2	138	137	-0.7	366	360	-1.6
Fife	453	714	727	1.8	331	334	0.9	1045	1061	1.5
Glasgow City	694	1230	1224	-0.5	518	512	-1.2	1748	1736	-0.7
Highland	292	896	882	-1.6	316	308	-2.5	1212	1190	-1.8
Inverclyde	110	137	136	-0.7	67	69	3.0	204	205	0.5
Midlothian	112	133	133	0.0	59	59	0.0	192	192	0.0
Moray	116	232	233	0.4	82	84	2.4	314	317	1.0
North Ayrshire	179	279	275	-1.4	120	120	0.0	399	395	-1.0
North Lanarkshire	418	425	415	-2.4	281	280	-0.4	706	695	-1.6
Orkney Islands	27	77	80	3.9	37	36	-2.7	114	116	1.8
Perth & Kinross	175	451	444	-1.6	137	138	0.7	588	582	-1.0
Renfrewshire	214	288	282	-2.1	140	140	0.0	428	422	-1.4
Scottish Borders	130	369	360	-2.4	94	93	-1.1	463	453	-2.2
Shetland Islands	30	97	97	0.0	43	42	-2.3	140	139	-0.7
South Ayrshire	147	300	304	1.3	120	122	1.7	420	426	1.4
South Lanarkshire	398	470	479	1.9	230	215	-6.5	700	694	-0.9
Stirling	110	255	253	-0.8	137	110	-19.7	392	363	-7.4
West Dunbartonshire	118	146	140	-4.1	93	94	1.1	239	234	-2.1
West Lothian	211	249	239	-4.0	153	159	3.9	402	398	-1.0

[1] http://www.scotland.gov.uk/Topics/Statistics/Browse/Crime-Justice/PubLiquor/LiquLic201112

APPENDIX 2: Causes of death related to alcohol consumption.

ICD10 code	Description
E51.2*	Wernicke's Encephalopathy
F10	Mental & behavioural disorders due to use of alcohol
G31.2	Degeneration of nervous system due to alcohol
G62.1	Alcoholic polyneuropathy
I42.6	Alcoholic cardiomyopathy
K29.2	Alcoholic gastritis
K70	Alcoholic liver disease
K73	Chronic hepatitis, not elsewhere classified
K74.0-K74.2, K74.6	Fibrosis and cirrhosis of liver (Excluding biliary cirrhosis)
K86.0	Alcohol-induced chronic pancreatitis
X45	Accidental poisoning by and exposure to alcohol
X65	Intentional self-poisoning by and exposure to alcohol
Y15	Poisoning by and exposure to alcohol, undetermined intent

* Identified by ISD as a condition wholly attributable to alcohol for the purposes of hospitalisation statistics (Appendix 4 to Alcohol Statistics Scotland 2009) but not as an alcohol-related cause of death (Appendix 6). Included here as an alcohol-related cause of death because it was the primary cause of death for some individuals in the dataset.

Source: ISD's Alcohol Statistics Scotland 2009: https://isdscotland.scot.nhs.uk/Health-Topics/Drugs-and-Alcohol-Misuse/Alcohol/Historic-Publications/_docs/Alcohol-Bulletin2009.pdf

APPENDIX 3: Causes of hospitalisation related to alcohol consumption

ICD10 code	Description
E24.4	Alcohol induced Pseudo-Cushing's syndrome
E51.2	Wernicke's Encephalopathy
F10	Mental & behavioural disorders due to use of alcohol
G31.2	Degeneration of nervous system due to alcohol
G62.1	Alcoholic polyneuropathy
G72.1	Alcoholic myopathy
I42.6	Alcoholic cardiomyopathy
K29.2	Alcoholic gastritis
K70	Alcoholic liver disease
K86.0	Alcohol-induced chronic pancreatitis
O35.4	Maternal care for (suspected) damage to foetus from alcohol
P04.3	Foetus and newborn affected by maternal use of alcohol
Q86.0	Fetal alcohol syndrome (dysmorphic)
R78.0	Finding of alcohol in blood
T51.0	Toxic effect of ethanol
T51.1	Toxic effect of methanol
T51.9	Toxic effect of alcohol, unspecified
X45	Accidental poisoning by and exposure to alcohol
X65	Intentional self-poisoning by and exposure to alcohol
Y15	Poisoning by and exposure to alcohol, undetermined intent
Y57.3	Alcohol deterrents
Y90	Evidence of alcohol involvement determined by blood alcohol level
Y91	Evidence of alcohol involvement determined by level intoxication
Z50.2	Alcohol rehabilitation
Z71.4	Alcohol abuse counselling and surveillance
Z72.1	Alcohol use

Source: ISD's Alcohol Statistics Scotland 2009: https://isdscotland.scot.nhs.uk/Health-Topics/Drugs-and-Alcohol-Misuse/Alcohol/Historic-Publications/_docs/Alcohol-Bulletin2009.pdf

APPENDIX 4: Details of regression modelling

We ran regression analyses to quantify the size and strength of the relationships between alcohol outlet availability and health outcomes *independently* of other factors that are likely to be important in the relationship. Judgments as to the statistical significance of each result were made throughout by applying a 95% significance level ($p<0.05$). Analyses were conducted using the statistical software Stata/SE 13.1.

For the alcohol-related deaths data – counts by age and sex – we used Poisson regression models, adjusted for datazone income deprivation (continuous variable, from SIMD 2012), urban/rural status (urban/small town/rural from Scottish Government's Urban-Rural Classification 2011-2012) and population by age and sex (average 2002-2011, from GROS). The models adjusted for the clustering of counts within datazones. Due to small numbers of alcohol-related deaths at younger ages the models were constrained to persons 18 and over.

The models produced Incidence Rate Ratios, relative to the reference group (lowest availability datazones), which we converted into percentage difference by subtracting 1 and multiplying by 100. We translated these percentage differences into rates, by applying them to the crude annual alcohol-related death rate for the reference group (i.e., lowest outlet availability). This method was advantageous over calculating crude rates for all groups, because the regression modelling had held constant all other datazone characteristics (age and sex structure of the population, income deprivation, and urban/rural status), hence the resulting rates were directly comparable with each other.

For the alcohol-related hospitalisation data – hospitalisation rate ratios relative to the Scottish average from SIMD 2012 – we used Ordinary Least Squares regression models. These were adjusted for datazone income deprivation and urban/rural status. The models produced coefficients, which represent the difference in the hospitalisation rate ratio for each availability group compared with the reference group (lowest availability datazones). Expressing each regression coefficient as a percentage of the average hospitalisation ratio for the reference group gave percentage differences between each availability group and the reference group.

APPENDIX 5: Summary of population, datazones and alcohol outlet availabilities for Scotland and each Local Authority area.

(Min.=minimum; Max.=maximum; Med.=median). Outlet availability is measured as outlet count within 800 m of the datazone's population centre.

	Population	Datazones			On-sales outlet availability				Off-sales outlet availability				Total outlet availability			
Local Authority	(2010)	No.	% Urban	% Rural	Min	Max	Mean	Med	Min	Max	Mean	Med	Min	Max	Mean	Med
SCOTLAND	5,222,100	6505	69.0	31.0	0	384	11.0	4	0	54	5.1	4	0	438	16.1	8
Aberdeen City	217,120	267	94.0	6.0	0	234	17.9	4	0	39	7.7	5	0	273	25.6	8
Aberdeenshire	245,780	301	26.2	73.8	0	29	3.9	2	0	10	1.9	1	0	39	5.8	4
Angus	110,570	142	59.2	40.9	0	49	9.5	5	0	17	3.2	2	0	62	12.7	9
Argyll & Bute	89,200	122	18.9	81.2	0	47	7.2	3	0	18	2.6	2	0	62	9.8	4
City of Edinburgh	486,120	549	96.2	3.8	0	384	32.7	8	0	54	11.5	7	0	438	44.2	15
Clackmannanshire	50,630	64	54.7	45.3	1	21	6.3	4	0	12	4.3	4	1	32	10.6	9
Dumfries & Galloway	148,190	193	28.0	72.1	0	70	7.7	3	0	15	2.9	2	0	83	10.6	6
Dundee City	144,290	179	99.4	0.6	0	111	14.6	5	0	33	7.1	5	1	128	21.7	10
East Ayrshire	120,240	154	37.0	63.0	0	48	6.0	4	0	15	3.9	3	0	62	9.8	7
East Dunbartonshire	104,580	127	88.2	11.8	0	21	5.0	3	0	10	3.3	3	0	28	8.3	6
East Lothian	97,500	120	35.0	65.0	0	30	7.9	6	0	11	3.3	3	0	40	11.3	8
East Renfrewshire	89,540	120	85.8	14.1	0	18	6.0	5	0	10	2.9	2	0	27	9.0	8
Eilean Siar	26,190	36	0.0	100.0	0	21	1.7	0	0	6	1.0	0	0	27	2.7	0
Falkirk	153,280	197	90.9	9.1	0	52	6.9	4	0	15	4.5	4	0	67	11.4	8
Fife	365,020	453	64.7	35.3	0	64	7.3	4	0	13	4.2	4	0	71	11.4	9
Glasgow City	592,820	694	99.7	0.3	0	275	18.8	8	0	36	8.6	7	1	307	27.5	15
Highland	221,630	292	24.3	75.7	0	93	6.4	2	0	25	2.4	1	0	112	8.8	4
Inverclyde	79,770	110	88.2	11.8	0	56	9.4	4	0	14	4.6	4	1	69	14.1	7
Midlothian	81,140	112	67.9	32.2	0	23	6.0	4	0	11	3.1	3	0	29	9.1	7
Moray	87,720	116	23.3	76.7	0	38	6.1	3	0	10	2.3	2	0	47	8.4	5
North Ayrshire	135,180	179	70.4	29.6	0	30	6.7	4	0	11	3.9	4	0	37	10.6	9
North Lanarkshire	326,360	418	82.8	17.2	0	42	6.3	4	0	18	4.5	4	0	56	10.8	8
Orkney Islands	20,110	27	0.0	100.0	0	26	5.4	1	0	9	2.2	1	0	35	7.6	2
Perth & Kinross	147,780	175	33.7	66.2	0	96	8.9	4	0	21	3.0	2	0	116	11.9	6
Renfrewshire	170,250	214	85.5	14.5	0	74	8.1	4	0	18	4.7	3	0	92	12.8	7
Scottish Borders	112,870	130	26.2	73.9	0	38	8.5	5	0	12	2.4	2	0	50	10.9	7
Shetland Islands	22,400	30	0.0	100.0	0	21	4.0	1	0	7	1.6	1	0	27	5.6	2
South Ayrshire	111,440	147	69.4	30.6	0	85	9.7	3	0	15	4.5	4	0	97	14.2	7
South Lanarkshire	311,880	398	77.9	22.1	0	63	7.3	5	0	14	3.8	3	0	73	11.1	8
Stirling	89,850	110	53.6	46.3	0	65	7.6	3	0	21	4.3	3	0	86	11.9	6
West Dunbartonshire	90,570	118	99.2	0.8	0	20	6.6	5	0	14	5.2	5	0	30	11.8	11
West Lothian	172,080	211	82.5	17.5	0	33	5.9	4	0	13	4.2	4	0	45	10.1	8

Percentages might not sum to 100.0 due to rounding.

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