



Off-trade alcohol availability and violence: Assessing the impact of on-trade outlet closures

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Executive summary

- There is strong and consistent evidence that on-trade alcohol availability is related to violence, but evidence regarding a similar association between off-trade availability and violence is more mixed.
- Partly, this is because it can be difficult to disentangle the effects of off-trade (e.g., supermarkets, off-licences) and on-trade (e.g., pubs, bars) availability because consumer decisions and behaviours can be affected by both.
- Further, while violence is a reasonably common outcome measure in availability studies, domestic violence is less commonly investigated.
- In England, COVID-19 restrictions significantly altered alcohol availability nationwide, with periods in which access to on-trade premises like pubs and restaurants was closed off entirely. This unique situation, while complicated by other effects of the pandemic, presents a novel opportunity to isolate and examine the impact of off-trade availability on alcohol-related violence.
- Police-recorded violent crime data was used to explore changes in the proportion of alcohol-related (i) violence as well as (ii) domestic violence using growth curve models.
- Average monthly alcohol-related violence rates were higher when on-licensed premises were open, compared to periods in which they were closed.
- In months of on-trade closure, the proportion of violence which was recorded as alcohol-related fell by 2.7 percentage points (from 15.5% to 12.8%; or, on average, 89 fewer alcohol-related incidents a month per police force).
- On-trade closures did not lead to significant differences in levels of alcohol-related domestic violence, nor in the proportion of domestic violence which was recorded as alcohol-related.
- The findings suggest attempts to address alcohol-related violence cannot solely consider on-trade settings – especially those interventions targeting alcohol-related domestic violence.

Background

There is strong evidence of an association between alcohol availability and violence – that is to say, as opportunities (in space and in time) to purchase alcohol increase, so do levels of violence. Such an association has been identified across a variety of locations globally, and has been isolated through a variety of research designs, including systematic reviews bringing together the findings of multiple studies investigating this. Table 1 offers an overview of this literature.

Table 1: Selected evidence of association between alcohol availability and violence

Study site; geographic coverage	Design	Findings
England; national (neighbourhoods ¹ across the country)	Analysed violence levels across English neighbourhoods between 2011 and 2018 using police-recorded crime data.	Levels of violence were higher “in areas with increased...alcohol availability” (Lightowlers et al. 2021 p. 1).
Cardiff, Wales; local (districts within city)	Evaluation of Home Office policing intervention introduced in 2000 (data sharing between hospital emergency departments and police) on alcohol-related violence, comparison of assault data from intervention and control districts in city before intervention and during two intervention periods.	“Street assault correlated significantly with numbers and capacity of premises” (Warburton & Shepherd 2006 p. 12).
Scotland; national (neighbourhoods across the country)	Examined crime levels in 2014-15 (“violence, sexual offences, domestic house breaking, vandalism, drug offences and common assault” (Alcohol Focus Scotland and Centre for Research on Environment Society and Health at the Universities of Edinburgh and Glasgow 2018 p. 13)) and outlet density in individual neighbourhoods across Scotland.	“Across Scotland, neighbourhoods with the most alcohol outlets had crime rates over 4 times higher than neighbourhoods with the least” (Alcohol Focus Scotland and Centre for Research on Environment Society and Health at the Universities of Edinburgh and Glasgow 2018 p. 8).
Systematic review; no geographic limit	Reviewing 59 studies published between 2000 and 2008, evaluating impact of alcohol availability (temporal or spatial) on outcomes including “overall alcohol consumption, drinking patterns and damage from alcohol” (Popova et al. 2009 p. 500).	Multiple studies reviewed included a measure of violence as an outcome variable. Overall, spatial and temporal availability was found to impact “overall alcohol consumption, drinking patterns [and/or] damage from alcohol” in “the majority of studies” included in this review (Popova et al. 2009 p.500).
Systematic review; no geographic limit	Reviewing 65 studies published between January 2009 and October 2014, examining outlet density and “assaultive violence” (as well as some examining outlet density and other outcomes) (Gmel et al. 2016 p. 43).	A positive association identified between some form of availability (e.g., on- or off-trade) in “almost all” of the ecological studies reviewed assessing this (Gmel et al. 2016 p. 43).

Alcohol is available for sale in England through what are known as on-trade and off-trade outlets. An outlet is classed as on-trade if alcohol is sold for consumption on the premises (e.g., a bar or restaurant), and off-trade if it is to be

taken away (e.g., a supermarket or off-licence). Some investigations of alcohol availability and its association with violence disaggregate these kinds of sale location (e.g., as outlined in Holmes et al. (2014)). This is important, as

1 Small administrative areas used for statistical analysis known as Lower Super Output Areas (LSOAs).

on and off-trade premises are hypothesised to have “a differential theoretical impact... on violence” (Lightowlers et al. 2021 p. 4). Consider how different outlet types might contribute to “varying pathways to violent crime” (Horsefield et al. 2023 p. 1) – for example, the “social context” of an on-licensed venue (the presence of many intoxicated individuals, the attitudes and approaches of staff amongst other dimensions) might interact with intoxication to contribute to violent incidents in unique ways (Graham & Wells 2003 p. 546).

There exists strong evidence of an association between violence and on-trade availability. Using police-recorded crime data to investigate any association between alcohol availability and violence at the local level in England, Lightowlers et al. found “on-licence availability... drove variability in recorded violent crime more than off-licence availability” (2021 p. 12). Similarly using police data to examine this in New Zealand, Cameron et al. found that density of bars, nightclubs and other licensed clubs (all on-trade sites) was positively associated with violence, and that at the local level “an additional bar or night club [was] associated with nearly 5.3 additional violent events per year” (2016 p. 280). Assessing a sample of 65 Californian bars (including through observation and licensing data), Morrison et al. found neighbourhood features including “greater bar density” (2015 p. 1) were associated with higher levels of violence as recorded in police data. Further, using municipal and police data to examine this in Valencia, Spain, Marco et al. found “bar density was positively associated with alcohol-related calls-for-service” (2017 p. 1).

There exists a comparatively more mixed evidence base for a similar association between off-trade availability and violence. In Cameron et al.’s work discussed previously, any association between off-trade outlet density and violence was found to be spatially inconsistent, finding “significant spatial variation in the relationship between violent events and both off-licence outlet density and restaurant/café density” (2016 p. 285). However, using licensing and

police data, Livingston conducted a longitudinal examination of outlet density and night-time violence in Melbourne, Australia, finding that while outlet density was positively associated with this violence, “[the] results do not give clear indications that particular license categories are more problematic than others” (2008 p. 1077). Further, their longitudinal work examining this same association and location, but using hospital admission data, found density of pubs and nightclubs as well as off-trade sites “were both positively associated with rates of assault hospital admissions, with similar effect sizes” (Livingston 2011a p. 520). Indeed, reflecting on this body of literature in their systematic review, Gmel et al. note how there was “often contradictory evidence between studies” explaining that “[sometimes] bars were most predictive of violence, sometimes off-premise liquor stores, sometimes clubs” (2016 p. 50).

In light of these mixed findings, many have theorised that while there may be an association between both on- and off-trade availability and violence, this is mediated by other factors – as Gmel et al. note, “[it] may be that very specific circumstances of outlet types play a role across different study locations” (2016 p. 50). Indeed, using police-recorded crime data for neighbourhoods across England, Horsefield et al. examined this, finding the violence-availability association to be “spatially complex” (2023 p. 7) – while the strongest positive associations between on-trade availability and violence were identified surrounding city centres, a positive association between off-trade availability and violence was identified in some suburban areas.

Considering the evidence presented, further examination of off-trade availability and its contribution to violence appears valuable. Beyond the mixed findings discussed, this evidence base also faces limitations. Measuring any association between alcohol availability and violence for each kind of sales location comes with challenges, as isolating the impact of each in a market where both exist is complex. There are some ways these different kinds of sale site become further enmeshed, for example, through

the practice of ‘pre-loading’, where alcohol bought from off-trade locations is consumed before going on to purchase more drinks in an on-trade location (e.g., Foster & Ferguson 2014).

There are also barriers to capturing the impact of off-trade availability specifically. Holmes et al. (2014) critically reviewed 138 studies investigating alcohol availability and harm, including those featured in two other systematic reviews. They identified gaps in this body of research, including that analysis to date tends to overlook “the spatial range of individuals’ lives” (2014 p. 519). That is, people purchase alcohol from and consume alcohol in a range of locations near and far from home day-to-day. This means attempts to identify an association between alcohol availability and violence that rely on connecting recorded violent incidents in a specific site with the nearby alcohol outlets (a common approach in the literature) will struggle to account for this. This could be theorised to affect investigations of off-trade availability to a greater degree than those examining on-trade outlets – Holmes et al. (2014) cite online delivery and out of town supermarkets as examples of this phenomenon. Indeed, this has been identified by others as “a key limitation of ecological studies” examining off-trade alcohol availability and violence (e.g., Horsefield et al. 2023 p. 7) and Holmes et al. suggest this problem warrants “analytic innovation” to address this (2014 p. 522).

Alongside this, while violence is a reasonably common outcome measure of availability studies, the sub-category of domestic violence is less often disaggregated, and as such, the detail of any association between alcohol availability and domestic violence is comparatively underexplored. For example, in the systematic review from Holmes et al. (2014) previously discussed, violence was found to be an outcome measure in 38 of the 138 studies reviewed, but what they term intimate partner violence was an outcome measure in only 11. Similarly, in the systematic review conducted by Popova et al. (2009), only two studies examined a related

outcome (violence against women and violence between partners). This is a limitation that might be of particular concern regarding investigations of off-trade availability as one might expect the home to be a common site for consumption of off-trade alcohol and for incidents of this violence. Indeed, in a longitudinal examination, Livingston found alcohol outlet density was positively associated with domestic violence, with “packaged (off-premise) licences having a more substantial impact” (2011b p. 923).

COVID-19 and the associated restrictions offer the opportunity to examine these questions through the kind of “analytic innovation” Holmes et al. (2014 p. 522) call for. These restrictions significantly altered alcohol availability nationwide, with periods in which access to on-trade premises like pubs and restaurants was closed off entirely. In March 2020, the UK Government instituted a variety of restrictions in an effort to slow the spread of COVID-19 across England. These restrictions, colloquially termed ‘lockdown’, included the closure of on-trade alcohol outlets such as pubs, bars, and nightclubs (Brown et al. 2021). Between this and July 2021, COVID-19 restrictions remained in place in some form across England, including further periods of on-trade closures (Brown et al. 2021). This means there were periods in which all incidents of alcohol-related violence and alcohol-related domestic violence which occurred were linked to consumption of off-trade alcohol.² This poses a unique opportunity to examine how violence and domestic violence are associated with off-trade alcohol availability. Shepherd et al. (2021) have already identified that violence outside the home decreased in this period through investigation of emergency department admissions.

The pandemic has also brought renewed urgency to these questions, as reports of domestic violence increased dramatically under tiered restrictions and lockdowns (Stripe 2020; UN Women n.d.; World Health Organization 2020a). As we face future uncertainty surrounding the COVID-19 pandemic and its longer-term

2 Notwithstanding the possibility that any on-trade business may have operated unlawfully.

indirect effects, including shifts in where and how alcohol is consumed (Boniface et al. 2022), it is essential we understand how heightened home drinking will affect rates of violence, particularly domestic violence. More generally, crime prevention policy has tended to focus on night-time economy settings when considering alcohol-related violence (e.g., Hadfield et al. 2009), neglecting alcohol-related violence in the home (Wilson et al. 2022).

COVID-19 restrictions and violence – some considerations

As described, the restrictions introduced during the COVID-19 pandemic present a unique opportunity to study the impact of alcohol availability on violence, as the on-trade was essentially ‘switched off’. However, this change took place as part of a complex arrangement of non-pharmaceutical interventions during a public health emergency, and there are other pathways by which levels of violence may have been affected during this period.

Lockdown restrictions were generally designed to minimise social contact. This altered both the sites people visited and their social networks. First, people were generally confined to their homes, and many of the sites where they previously might have encountered public violence were closed (e.g., on-trade premises) or they would have spent much less time there (e.g., outdoor space like public parks). It is known that features of a setting can contribute to the incidence of violence there (e.g., Graham & Wells 2003). Second, social networks changed, getting smaller and becoming generally limited to families and partners, with only some exceptions (e.g., childcare bubbles, some work colleagues). Again, it is known that social groups can influence violent behaviour (e.g., Levine et al. 2012), but this also altered who might experience violence (e.g., partners and family members as opposed to strangers). COVID-19 and the restrictions placed in response to this also changed the emotional and psychological environment. This period saw shifts in employment, with some losing work; the restrictions on social life meant some experienced

isolation or could not access their support systems in the ways they might have done previously; and, of course, many faced illness and grief. It is reasonable to expect this too may have altered patterns of violence. Indeed, for these and other reasons, the World Health Organization suggested COVID-19 might “exacerbate risks of violence for women...as family members spend more time in close contact and families cope with additional stress and potential economic or job losses” (2020b p. 1).

Alongside this, COVID-19 restrictions brought changes to policing practices; most obviously, police were the primary enforcers of the restrictions (Fatsis & Lamb 2021). Without insight into how policing practices changed at this time, it is difficult to theorise how, if at all, this affected violence levels, or the collection of police-recorded crime data on which this work is based. But it is enough to say there were changes (e.g., Grierson 2020), and as such, any potential effect cannot be disregarded out of hand.

In summary, there were many interventions and restrictions during the COVID-19 period – over and above closures of on-licensed premises – and many potential pathways that could explain changes in patterns of violence. This study aimed to use the unique event of on-trade closures as a valuable source of triangulation for the availability literature outlined previously. Rather than purporting to model how off-trade availability affects levels of violence in everyday life, it uses the pandemic period to explore the broad effect of total on-trade closure (e.g., is this small or large, what is its direction?) and theorise what this could tell us about everyday availability effects. Particularly, policymakers often focus on the on-trade as a site of intervention (Wilson et al. 2022), meaning that any further insight into the role of the off-trade as a criminogenic site could be valuable to their decision-making.

Method

This study aims to use changing patterns in on-trade availability to assess the impact of off-trade availability on violence. Using police recorded violent crime data, the following research questions are addressed:

- a. How did overall levels of alcohol-related violence, and alcohol-related domestic violence, change between periods of on-trade operation and closure?
- b. How did levels of alcohol-related violence, and alcohol-related domestic violence, as a proportion of violence overall, change between periods of on-trade operation and closure?

Data

Data on the number of violent crimes³ recorded by the police in England and Wales, for financial years 2019/20, 2020/21 and 2021/22 was obtained from the Home Office Data Hub (HODH). The HODH collects police-recorded crime data monthly from all 43 regional police force areas (PFAs) in England and Wales. Lockdown laws

and associated hospitality restrictions differed in Wales, so data from these four forces have been excluded from this analysis. Similarly, four other forces were unable to supply all necessary data for the study period and so too have been excluded.⁴ Given these exclusions, 35 PFAs in England were included in this analysis.⁵ Two of these forces were unable to supply all necessary data for some portion of the study period, and so have been excluded for these periods of analysis only.⁶

Outcome variables

The outcome variables investigated in this work were the amount and proportion of violent incidents flagged as alcohol-related by police,⁷ and the amount and proportion of domestic violence incidents⁸ flagged as alcohol-related by police. These figures are available by police force, by month, and proportions were calculated by dividing the number of incidents flagged as alcohol-related by the total number of (domestic) violent incidents. Assessing the proportion of alcohol-related incidents over

3 Violent crime comprises offences against the person such as stalking and harassment, grievous bodily harm and homicides (see Home Office, 2022).

4 Gloucestershire, Greater Manchester, Kent and Wiltshire police were unable to supply all necessary data for 2019/20 to 2021/22, and so have been excluded.

5 Avon & Somerset, Bedfordshire, Cambridgeshire, Cheshire, Cleveland, Cumbria, Derbyshire, Devon & Cornwall, Dorset, Durham, Essex, Hampshire, Hertfordshire, Humberside, Lancashire, Leicestershire, Lincolnshire, City of London, Merseyside, Metropolitan Police, Norfolk, North Yorkshire, Northamptonshire, Northumbria, Nottinghamshire, South Yorkshire, Staffordshire, Suffolk, Surrey, Sussex, Thames Valley, Warwickshire, West Mercia, West Midlands, and West Yorkshire.

6 Staffordshire police were unable to supply data for 2020/21 and 2021/22, and West Midlands police were unable to supply data for 2021/22, and so have been excluded from these periods respectively.

7 Police are required to indicate through a 'flag' in their records whether offences are thought to be alcohol-related. This judgement is made based on guidance from the Home Office, directing use of this flag where "it is perceived, by the victim or any other person, that the effects of alcohol consumption on the offender or victim was an aggravating factor" (2022, p. 357). How police must record incidents of violence is further detailed in the National Standard for Incident Recording. Here, it is stated that an alcohol flag should be used to "capture the characteristics and motivating factors around an incident where the consumption and effects of alcohol are more than merely incidental...where the consumption of alcohol has affected someone's behaviour and been a major contribution to the activities leading up to the incident" (Home Office, 2011, p. 30).

8 In England, "police forces are asked to "flag" crimes as being domestic abuse-related if the offence meets the government definition of domestic violence and abuse" (Office for National Statistics, 2022). These figures are not available for 2021/22, so analysis using this variable is presented for 2019/20 and 2020/21 only.

time allows this analysis to account for broader shifts in overall violence and domestic violence during the study period.

This is necessary as, in general, the proportion of violence thought to be attributable to alcohol consumption has been relatively stable over recent decades (having only recently declined according to crime survey estimates (Bryant 2023)).

Covariates

A measure of monthly on-licensed premise availability was calculated based on date ranges for which hospitality was legally permitted to trade, due to the national pandemic restrictions (as detailed in Brown et al. (2021) and relevant legislation). For each month, the percentage of days was calculated on which trading was prohibited due to pandemic restrictions, and months were then categorised as ‘closed’ if any day’s trading was prohibited, or otherwise as ‘open’.⁹ The categorisation of each month during the study period can be found in the Appendix. To confirm the approach taken was suitable, months were recategorised, this time as ‘closed’ if 30% or more days’ trading was prohibited due to pandemic restrictions. This affected only one month in the study period¹⁰ and this was found to not materially alter the findings or interpretation of the results.

Analysis

First, descriptive statistics detailing levels of violence, alcohol-related violence, domestic violence and alcohol-related domestic violence by year, nationwide, and across the study period were produced. These provide context for the study period and may highlight the impact

COVID-19 restrictions had on levels of these kinds of violence, including through altering on-trade operation when these premises were open (e.g., reduced hospitality opening hours, table service). Analysis of Variance (ANOVA) tests were also used to assess the significance of any variation in violence by year across the pre- to post-pandemic period. Following this, the proportion of violence which was alcohol-related each month was modelled using longitudinal multilevel models (growth curve models), a valuable methodological tool for examining changes in violence over time (e.g., Lightowlers et al. 2014; Lightowlers et al. 2021). This allowed for exploration of the variability in alcohol-related violence geographically (by PFA) and through time, together with the effect of on-trade closures.¹¹ Within these models, steps were taken to control for different average levels of violence between PFAs (given that the monthly violence counts taken from any given police force are not independent from one another), in order to examine the impact of these closures more accurately. The final model was developed in stages (see Table 5). Firstly, each model included a date variable, allowing change in the proportion of alcohol related (domestic) violence across time to be captured.¹² Subsequently a second model then included the variable previously described which indicates months as ‘open’ and ‘closed’ for on-licensed premises.

9 This includes months within the study period during which the on-trade was not permitted to operate in certain locations (during periods of geographically ‘tiered’ restrictions) or only a subset of the on-trade was permitted to operate (e.g., those sites with outdoor space). Months were categorised as ‘closed’ where this was judged to constitute a relevant change in on-trade availability - see appendix for full details.

10 Only four months across the study period contained a mix of ‘open’ and ‘closed’ days; March 2020 (65% open); July 2020 (90% open); October 2020 (open 42%); and May 2021 (open 48%).

11 An alternative analytic approach includes accounting for changes in overall levels of violence through the use of an offset variable, rather than by modelling the proportion of violence which was alcohol-related. This approach was taken as part of a sensitivity analysis and the results did not differ meaningfully from those presented here.

12 As well as a (random) effect to account for the varying levels of alcohol-related violence in PFAs.

Results

Descriptive statistics – annual patterns in violence

Table 2 presents annual violence incidence across the study period. From 2019/20 to 2020/21, police-recorded violence fell by 4%. This was followed by an annual increase of 9% as England moved into what could be considered as a ‘post-pandemic’ restrictions period.

Table 2: Number of violent incidents reported to the police by financial year

Year	Total	% change
2019/20	1,358,397	-
2020/21	1,299,531	-4
2021/22	1,410,482	+9

Table 3 presents the amount and proportion of this violence flagged as alcohol-related each year. From 2019/20 to 2020/21,

the number and proportion of violent incidents flagged as alcohol-related fell – by 14% and 1 percentage point respectively. Moving to the ‘post-pandemic’ year (2021/22), the number and proportion of violent incidents flagged as alcohol-related increased, by 25% and 1 percentage point respectively. However, no significant difference was identified¹³ in the proportion of violence flagged as alcohol-related between 2019/20-2020/21 and between 2020/21-2021/22.

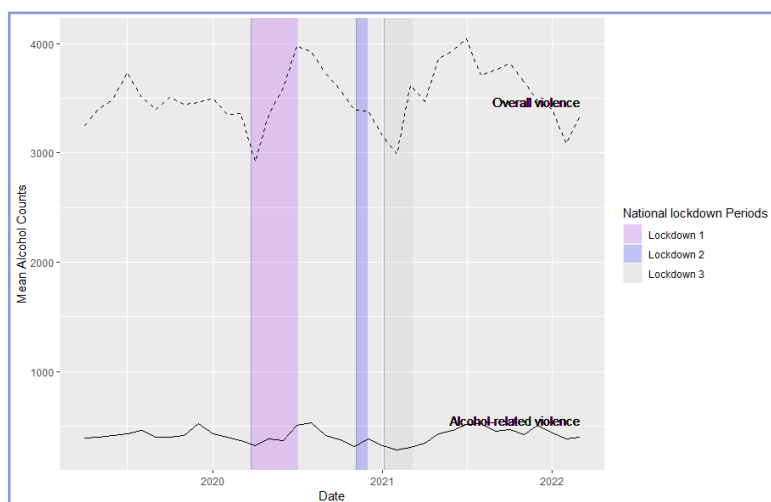
Table 3: Percentage of overall violence reported to the police flagged as alcohol-related by financial year

Year	Total	% change	% violence which was alcohol-related
2019/20	161,891	-	12
2020/21	139,481	-14	11
2021/22	174,878	+25	12

Descriptive statistics – monthly patterns in violence

Figure 1 presents a time series of the average number of violent incidents flagged as alcohol-related by forces in England each month across the study period. It shows levels of these incidents fell each time the country entered lockdowns, periods in which on-trade outlets closed.

Figure 1: Monthly time series of violence, and alcohol-related violence, April 2019 to March 2022¹⁴



13 Through analysis of variance (ANOVA) tests, at $p > 0.05$ level; ($F(2) = 0.872, p = 0.419$).

14 Please note, the three major lockdown periods affecting England are indicated on this figure; for a full outline of all the periods of closure for on-licensed premises included in the analysis presented in this report (e.g., including relevant regional restrictions), please see the appendix.

Average monthly levels of alcohol-related violence were higher (a mean of 109 incidents, standard deviation of 133) when on licensed premises were open when compared to periods in which they were closed (a mean of 88.7 incidents, standard deviation of 112).¹⁵

Monthly averages for the percentage of violence flagged as alcohol-related were also higher in 'open' months. The monthly average percentage of violence flagged as alcohol-related was higher when the on-trade was open (15.5%), compared to when the on-trade was closed (12.8%) (a reduction of 2.7 percentage points).

Descriptive statistics - annual and monthly patterns in domestic violence

Table 4 presents annual domestic violence incidence for England between 2019/20 and 2020/21. From 2019/20 to 2020/21, police-recorded domestic violence rose by 1%. No significant difference was identified¹⁶ in the proportion of violence flagged as domestic violence between 2019/20-2020/21.

Table 4: Percentage of overall violence reported to the police flagged as domestic violence by financial year¹⁷

Year	Total domestic violence incidents	% change	% violence which was domestic violence
2019/20	488,997	-	36
2020/21	494,521	+1	38

Table 5 presents annual alcohol-related domestic violence incidents for England between 2019/20-2020/21. From 2019/20-2020/21, police-recorded alcohol-related domestic violence increased by 3%. There was no change in the proportion of

domestic violence flagged as alcohol-related between 2019/20-2020/21.¹⁸ When comparing average monthly levels of domestic violence flagged as alcohol-related in months when the on-trade was closed or open, no significant difference was identified.¹⁹ The monthly average percentage of domestic violence flagged as alcohol-related was slightly higher when the on-trade was open (14.5%), compared to when the on-trade was closed (13.4%) (an increase of 1.1 percentage points).

Table 5: Percentage of domestic violence reported to the police flagged as domestic and alcohol-related by financial year²⁰

Year	Total alcohol-related domestic violence incidents	% change	% domestic violence which was alcohol-related
2019/20	56,501	-	12
2020/21	57,951	+3	12

Modelling – violence

Table 6 presents results of models assessing levels of alcohol-related violence as a proportion of violence overall, and how this was related to date (month), and whether licensed premises were open or closed.²¹ Essentially, this model captures the proportion of violence experienced by a police force area each month which was alcohol-related,²² and how this changed in months when on-trade outlets were closed.

Model 1 included a date variable (indicating the month of the observation), allowing change in the overall proportion of violence which was alcohol-related across time to be captured. Whilst significant, the effect of the date variable was of minimal consequence (M1, $\beta=0$, $p=0.032$).

15 This difference was found to be statistically significant (ANOVA test, at $p>0.05$ level; ($F(1)=28.82$, $p<0.001$)).

16 Through ANOVA test, at $p>0.05$ level; ($F(1)=0.124$, $p=0.725$).

17 Figures not available for 2021/22.

18 Through ANOVA test, at $p>0.05$ level; ($F(1)=0.037$, $p=0.848$).

19 Through ANOVA test, at $p>0.05$ level; ($F(1)=0.014$, $p=0.906$).

20 Figures not available for 2021/22.

21 Sensitivity analyses were performed, first including a seasonality variable in the model, and second substituting the binary open/closed on-trade variable for one indicating the proportion of days open in the month. Results of neither altered the conclusions of this investigation.

22 Differences in the proportion of alcohol-related violence were identified across police force areas and so this variation was accounted for in the multi-level specification of the model.

Model 2 included the same date variable and a measure of monthly on-licensed premise availability. Closure of on-licensed premises was negatively associated with the proportion of alcohol-related violence, with a 3 percentage point reduction in the proportion of violence which was alcohol-related observed when on-licensed premises were closed (M2, $\beta=-0.03$, $p<0.001$). This equates to an average of 89 fewer alcohol-related incidents a month, per force.²³ This mirrors the bivariate analysis presented earlier which found the average monthly proportion of violence flagged as alcohol-related was 2.7 percentage points lower when on-trade sites were closed.

Table 6: Linear growth curve model results, modelling the proportion of violence that was alcohol-related²⁴

Coefficient	M1			M2		
	Estimates	Conf. Int (95%)	P-Value	Estimates	Conf. Int (95%)	P-Value
(Intercept)	0.02	-0.09 – 0.14	0.714	-0.02	-0.12 – 0.09	0.735
Date	0.00	0.00 – 0.00	0.032	0.00	0.00 – 0.00	0.001
On-licence premises closed				-0.03	-0.03 – -0.02	<0.001
ICC	0.80			0.83		
Marginal R ² / Conditional R ²	0.001 / 0.803			0.030 / 0.833		

Modelling – domestic violence

Table 7 presents similar modelling exploring the association between alcohol-related domestic violence and on-licensed premise availability (once again, accounting for the PFA in which these occurred, as well as over time through the study period).²⁵ Model 1 indicates a 1 percentage point monthly reduction in the proportion of domestic violence which was alcohol-related across the study period (M1, $\beta=-0.01$, $p<0.040$). However, this effect was no longer significant (M2, $\beta=-0.00$, $p=0.713$) once the variable denoting periods of on-licensed premises closures was added. The latter was also found not to significantly impact on the proportion of domestic violence that was alcohol-related (M2, $\beta=-0.01$, $p=0.175$).

Table 7: Linear growth curve model results, modelling the proportion of domestic violence that was alcohol-related²⁶

Coefficient	M1			M2		
	Estimates	Conf. Int (95%)	P-Value	Estimates	Conf. Int (95%)	P-Value
(Intercept)	13.84	0.75 – 26.93	0.038	3.81	-15.68 – 23.31	0.702
Date	-0.01	-0.01 – -0.00	0.040	-0.00	-0.01 – 0.01	0.713
On-licence premises closed				-0.01	-0.02 – 0.00	0.175
ICC	0.78			0.78		
Marginal R ² / Conditional R ²	0.001 / 0.784			0.002 / 0.785		

23 Established by re-running the model to predict overall levels of violence through the use of an offset variable.

24 All models run on 1224 monthly observations across 35 police force areas.

25 Sensitivity analyses were performed, first including a seasonality variable in the model, and second substituting the binary open/closed on-trade variable for one indicating the proportion of days open in the month. Results of neither altered the conclusions of this investigation.

26 All models run on 828 monthly observations across 35 police force areas.

Conclusion

The restrictions introduced to tackle the COVID-19 pandemic, and the effect of these on the operation of on-licensed premises in England, presented the opportunity to investigate how off-trade alcohol sales contribute to violence. The findings add to an already significant literature examining the association between alcohol availability and violence, and disaggregate on- and off-trade availability, as well as violence and domestic violence.

There was an increase in annual violence levels across the study period. This is of interest as this sits within a longer-term decline in overall violence recorded in England and Wales (Office For National Statistics 2021), as well as in other nations in North America and Europe (e.g., Farrell et al. 2014), although some have unpicked and problematised the more recent trajectory of these trends (e.g., Walby et al. 2016). These data represent only a three-year period, however, so continued monitoring will be needed to draw any broader conclusion regarding long-term trends.

There were also patterns in violence and alcohol-related violence levels relating to COVID-19 restrictions. For example, annual police-recorded violence and alcohol-related violence decreased moving into the pandemic year (between 2019/20 and 2020/21), and monthly data suggested levels of alcohol-related violence fell when on-trade outlets closed. This aligns with findings from Shepherd et al. who examined emergency department admissions in Cardiff, Wales, finding a similar decline “[following] the UK lockdown” (2021 p. 886) as well as with the availability and violence literature reviewed in the opening of this report – that reductions in alcohol’s availability are associated with declines in violence (e.g., Gmel et al. 2016). In the present study, moving to the ‘post-pandemic’ year (2021/22), annual violence and alcohol-related violence rose (although, there were no significant differences

in the proportion of violence flagged as alcohol-related in the pandemic year compared to either non-pandemic year). In some ways, this pattern is what one might expect to see as hospitality and the night-time economy (including on-trade alcohol outlets) re-opened, alongside other parts of everyday life.

Findings from modelling offered further insight into the relationship between on- and off-trade availability and violence. In months of on-trade closure, the proportion of violence which was alcohol-related fell by 3 percentage points – a fall perhaps of a lesser degree than anticipated based on some common assumptions about the contribution the NTE plays to the volume of such crime. While falls in the level of alcohol-related violence were to be expected with on-trade closures – as this represents a notable decrease in the physical availability of alcohol – that the proportion of violence which was alcohol-related altered only subtly suggests that on-trade availability may not be significantly more criminogenic than off-trade availability.

Further to this, there was no significant difference in levels of alcohol-related domestic violence between months when the on-trade was open or closed. Findings from modelling also show no significant change in the proportion of domestic violence which was alcohol-related. This might suggest that, even when on-trade sites are operating, off-trade availability and the home drinking which takes place as a result of this are more impactful factors in this kind of violence. This reaffirms calls to consider off-trade alcohol sales in discussions of domestic violence (Wilson et al. 2022).

What can these findings tell us about off-trade availability and violence? As outlined in the Background section of this report, there were interventions introduced during the pandemic period beyond the closure of on-licensed premises, and more broadly, the period represented a significant upheaval in our social,

economic, and emotional lives. These changes, alongside those to alcohol availability, could have affected patterns of violence, making it essential that the findings presented here are carefully interpreted.

Findings presented here should not be considered to represent the effects of an alcohol market operating in normal times. It is not the intention of the authors to suggest levels of alcohol-related violence at any other time would respond in an identical fashion to the closure of on-trade premises. However, these findings do suggest that off-trade alcohol availability plays a role in levels of violence, and that this role might be comparable to that of on-trade availability. The findings counter any assumption that on-licensed premises and the night-time economy districts in which they cluster overwhelmingly drive alcohol-related violence and emphasise that attempts to address alcohol-related violence cannot solely consider on-trade settings – especially those interventions targeting alcohol-related domestic violence.

As well as the potential confounding effects of the pandemic, there are other limitations of this work which are important to consider. Police-recorded crime statistics offer wide offence and population coverage, but these are generally considered to face certain limitations. As incidents must be reported to or detected by, as well as recorded by, police to be included, these statistics are not considered to provide an objective account of the phenomenon of crime (Reiner 2016). Of relevance to this paper, police data on alcohol-recorded violence are known to be limited by both conceptual and operational obstacles and are generally accepted to underestimate the extent to which alcohol features in violence (Lightowlers et al. forthcoming). It should also be noted that policing practice is thought to have changed (in hard to quantify ways) during the pandemic period. Police were the principle enforcers of ‘lockdown laws’ (Fatsis & Lamb 2021), and some forces were seen to visibly alter their operations at this time – for example, the Metropolitan Police increased stop and search

practices during this period to such an extent that they searched an equivalent to “30% of all young [Black] males in London” between March-May 2020 (Grierson 2020). It has not been possible to triangulate findings from these data with victimisation survey data (a commonly used alternative alcohol-related violence data source (e.g., Bryant & Lightowlers 2021)), as traditional Crime Survey for England and Wales data collection was suspended due to pandemic restrictions and so these data were not available for the study period at the time of this investigation – a limitation raised regarding other contemporaneous research (Marsden et al. 2020).

However, it should also be noted that this study has addressed a persistent limitation in the availability literature, through methods future research could capitalise on further. As Horsefield et al. explain:

“...when consumption takes place away from an off-trade outlet...consequently any associated violence will occur further away. For on-trade outlets, consumption takes place on-site and subsequent violence will be concentrated nearer – or indeed on – the premise.” (2023 pp. 7-8)

By removing this requirement to attach violence to a place of either on- or off-trade sale – because all of the on-trade was closed – the present study sidesteps this. This analysis does not distinguish between different types of off-trade availability – a limitation others have raised in relation to this body of literature more broadly (Gmel et al. 2016). However, the design employed here – if coupled with geographically-coded data on different kinds of off-trade availability – could make even more headway into this persistent issue in the availability literature. It is apparent that lockdowns and other restrictions affected individuals’ off-trade purchases by limiting these to a greatly reduced geographic area close to the home. This offers the potential to conduct improved analysis of any association between off-trade availability and violence using traditional methods, without the added complication of “the spatial range of individuals’

lives” (Holmes et al. 2014 p. 519). That is to say, local harms could be better linked to local off-trade availability in a way that studies of this kind have previously struggled to do.

The findings presented here have relevance for future policy and practice. The findings add weight to existing calls for a distinct focus on off-licensed premises and their contribution to violence. The valuable insight provided into the role of off-trade alcohol sales in alcohol-related violence and domestic violence is applicable to policy areas including alcohol licensing and violence reduction – particularly in light of the unequal impact of alcohol-related violence felt by those from lower socioeconomic backgrounds (Bryant & Lightowlers 2021). Attempts to address this violence and these inequalities must engage measures targeting off-trade sites.



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