

Managing COVID-19 transmission risks in bars: an interview and observation study

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Abstract

Objective: Licensed premises face particular challenges to operating safely within COVID-19 restrictions. The ability and willingness of customers to comply with guidance may be compromised due to alcohol intoxication, increasing virus transmission risks. Government responses include guidance, closure orders, curfews, or prohibition of alcohol sales.

Following a UK national lockdown from 20th March 2020, we explored and observed business practices and behaviours in licensed premises to inform COVID-19 policies. To our knowledge, no previous study worldwide has examined these issues.

Method: Prior to premises re-opening in Scotland, we conducted in-depth telephone interviews (May-June 2020) with participants from hospitality trade associations, licensed premises, or in related roles (n=18). Interviews focused on anticipated business practices and challenges relevant to minimising Covid-19 transmission. Following re-opening (July-August 2020), we conducted observations of relevant practices and behaviours in 29 bars purposively sampled for diversity, using a structured schedule. Interviews and observation reports were analysed thematically.

Results: Interviewees generally sought clarity, flexibility and balance in government guidance on re-opening, and cited commercial and practical challenges to doing so safely. Alcohol consumption was perceived as an additional but potentially manageable challenge. Most observed premises had made physical and operational modifications, however, practices were variable. Observed incidents of concern included close physical interaction between customers and with staff, frequently featuring alcohol intoxication and rarely effectively stopped by staff.

Conclusions: Despite the efforts of bar operators and guidance from government, potentially significant risks of COVID-19 transmission persisted in a substantial minority of observed bars, especially when customers were intoxicated.

Funding: Scottish Government Chief Scientist Office (STG/20/15).

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Introduction

Globally, many countries responded to the outbreak of coronavirus 2019 (COVID-19) with the imposition of strong public health measures intended to suppress transmission. In many cases, these measures involved unprecedented changes, including the closure of all outlets (bars, restaurants, clubs) where alcohol may be consumed (Janssen et al., 2020). As the virus was suppressed and/or pressure grew to protect jobs and the economy, most countries permitted such premises to gradually re-open (Janssen et al., 2020).

All businesses re-opening after COVID-19 lockdowns have to consider operational changes to minimise risk; however, there are particular challenges that apply to hospitality, and especially premises licensed to serve alcohol (Collins and Fitzgerald, 2020; Enos, 2020; Janssen et al., 2020). Firstly, such premises are social spaces, where distancing and protective measures designed to reduce viral transmission may be less accepted, than in, say, a shop (Evans et al., 2007). Secondly, where alcohol consumption is a central element, particular risks arise (Collins and Fitzgerald, 2020; Graham and Homel, 2011; Tutenges and Bøhling, 2019). Alcohol affects judgement and co-ordination, including ability to judge distances, and reduces inhibitions (Alcohol.org, 2020; Brumback et al., 2007; Monico, 2020). It impairs hearing, meaning people may have to lean in closer to hear or shout to be heard (Clason, 2019) and has diuretic effects (Eggleton, 1942).

These factors are likely to reduce the ability and willingness of people to distance or comply with guidance, creating an increased risk of virus transmission. The culture, design and size of premises are also important (Evans et al., 2007). Increased risk may potentially be associated with smaller, busier or noisier premises, poor ventilation, and predominantly ‘wet’ premises (where the bulk of sales are alcohol, rather than food or soft-drinks). In recognition

of these risks, the re-opening of licensed premises has sometimes been staggered: in Ireland ‘wet pubs’ did not open until months after food-led venues; no date has yet been given for nightclub re-opening in the UK. Internationally, re-opening has typically been accompanied by government measures such as earlier closing times, party size or capacity restrictions, a requirement to serve food, and hygiene and physical distancing measures (Failte Ireland, 2020; HM Government, 2020; Janssen et al., 2020; Queensland Government, 2020; US Center for Disease Control, 2020; Welsh Government, 2020). Nonetheless, outbreaks of COVID-19 linked to licensed premises have occurred worldwide, including major clusters of infection (Choi et al., 2020; Forster, 2020; Gunia, 2020; Packham, 2020; Palliez, 2020; Tara Parker-Pope, 2020).

In order to inform future guidance and policy and minimise the risk of further such outbreaks, it is important to understand how government guidance, premises management and consumer behaviour interact when premises re-open. No previous study, to our knowledge, has explored virus transmission risks in licensed premises, nor directly observed premises operation under new measures designed to mitigate such risks.

We aimed to examine the management of COVID-19 transmission risks in bars upon re-opening after a COVID-19 lockdown, including business practices, and consumer and staff behaviour.

Methods

Overview: This study consisted of interviews with stakeholders prior to re-opening, and semi-structured bar observations. Ethical approval was granted by the University of Stirling’s General University Ethics Panel (Reference 911 for interviews; 944 for observations).

Observations were subject to a detailed risk assessment and safety protocol submitted to the Ethics Panel and approved by university health and safety staff.

Context: In Scotland, bars are numerous (52 per 100,000 people) and highly varied in size, style and offering, with a majority independently owned (Foley, 2020). They include traditional/local ‘public houses’, family-oriented food-led premises, modern hybrid premises, and music-led bars. All bars serve alcohol, and some serve food, but customers also routinely attend without ordering food unlike in restaurants. Bars and restaurants are not distinguished in law: all are licensed to sell alcohol under the same Scottish licensing laws, administered locally (Scottish Government, 2005). In response to the COVID-19 pandemic, the Scottish Government (SG), in tandem with the UK government, initiated a national lockdown requiring all premises, including bars, restaurants and nightclubs, to stop trading from 20th March 2020. From May 2020 onwards, there was a public debate about when premises might be permitted to re-open, and under what restrictions, with a particular focus on whether customers and staff would be required to adhere to 1 or 2 metre physical distancing in premises. In Scotland, re-opening of outdoor hospitality such as beer gardens, pavement terraces or other outdoor licensed spaces was expected on 18th June 2020, but was postponed until 6th July 2020 pending a further review of the evidence requested by the First Minister. After this review (Scottish Government COVID-19 Advisory Group, 2020), both indoor and outdoor areas were permitted to open from 15th July 2020. Premises were also permitted to operate with 1m physical distancing from that date, subject to additional measures including ‘1m zone’ signage, all customers being seated, face coverings for staff, improved ventilation and noise reduction (*Covid-19 Supplementary Q&A-Hospitality Sector*, 2020). Following a large outbreak linked to more than 20 licensed premises in Aberdeen City in early August 2020 (Dennett, 2020), collection of customer details for contact tracing was made a legal requirement, and more stringent guidance was put in place (Sturgeon, 2020). This stated that: there should be no indoor queuing in premises; outdoor queuing should be avoided unless for

safety reasons; people should not be standing together in premises, but seated only, with table service to them; and customers should be 1m apart unless from the same household group. Premises were also advised to ‘challenge any large gatherings forming’ in breach of the law, which permitted meeting indoors in groups of no more than eight people from a maximum of three different households. Finally, the guidance stated that there should be no background music to avoid people having to shout or lean into each other to be heard (Sturgeon, 2020). Some of this guidance has since changed (Scottish Government, 2020). The timeline and guidance for premises re-opening as well as our data collection points, are summarised in Figure 1.

Semi-structured Telephone Interviews: *Sample:* We proactively sought and achieved interviews with representatives of all major relevant Scottish and UK trade associations, owners of different sizes and types of premises in varied locations, and a convenience sample of other relevant stakeholders. We did not seek to include hotel operators, as issues regarding overnight accommodation were outside our remit. In total, we conducted 17 interviews (16 individual and one paired) with 18 professionals: most were either owner/operators (n=7) or represented trade organisations (n=6), with others including a licensing lawyer, local government official, a police officer, and a trade union representative. Interviewees represented or had a remit for a range of premises – some for 100-999 premises (n=3) or over 1,000 premises (n=4), mainly in Scotland only (n=15). Many were experienced, with 15-30 years (n=7) or over 30 years (n=4) in relevant roles. We took a pragmatic decision to stop data collection once the intended sample was achieved. A full breakdown of interviewee characteristics is included in supplementary data (Table S1). *Recruitment and consent:* Participants meeting our sample criteria were identified through public information, direct contact, referral and snowball sampling. They were provided with an information sheet and consent form, which was completed in writing or recorded verbally immediately prior to the

interview. *Data Collection:* Experienced qualitative researchers (NF, IU, AB, DE, MS, AF) conducted telephone interviews in May/June 2020 prior to re-opening of premises (Figure 1) guided by a semi-structured topic guide (Table 1). All interviews were audio-recorded and transcribed by professional transcribers. *Analysis:* Interview data were thematically analysed. AB indexed transcripts against a set of categories created using both deductive (e.g. reviewing research questions and topic guides) and inductive (e.g. reading transcripts) approaches. The development of categories was iterative; with ongoing refinements made. Once transcripts were indexed, extracts on topics relevant to our aim were reviewed in detail by AB, including anticipated business practices and consumer and staff behaviour on re-opening. AB wrote up the findings of her interim analysis, which NF reviewed by reading the data extracted under relevant categories. AB and NF then met to discuss, refine, and finalise themes. NVivo 12 was used to facilitate analysis.

Bar Observations: *Sample:* We used online information, in person ‘walkabouts’, fieldworker local knowledge, and telephone calls to bars to scope out and purposively sample bars for diversity. We aimed for and achieved a range in terms of (i) the rurality of venue location using Scottish Government urban-rural 6-fold classification (Scottish Government, 2016): UR1:17 venues; UR2:7; UR3:2; UR4:1; UR5/6:2, (ii) the deprivation level of the venue location using Scottish Index of Multiple Deprivation quintiles: Q1:4; Q2:3; Q3:4; Q4:9; Q5:9, (iii) the weekend day/time of observation, and (iv) venue characteristics including size, available food and style/offer (e.g. family oriented, sports screens, food). Online searches were conducted for bars/premises of the desired characteristics in local areas meeting the rurality and deprivation criteria. Venue characteristics (such as crowdedness) were also judged either by fieldworkers visiting local areas in advance of the observation day to observe venues mainly from outside (venues 1-20) or by telephoning to ask about how busy they would be at the proposed observation time (venues 21-29). Final venue choices were

discussed and agreed between fieldworkers and the research team. Full details of the intended and achieved sample breakdown are included in supplementary data (Table S2 for intended, Table S3 for achieved). Later (August 2020) observations took place after a significant COVID-19 outbreak linked to bars in Aberdeen (Dennett, 2020) in which images of queues and standing crowds in premises not adhering to social distancing drew widespread condemnation. We therefore restricted August observations to premises offering advance booking to ensure that fieldworkers would have a table and reduce the need for them to queue (Table S23). We also asked fieldworkers to avoid very quiet premises to ensure that they would be able to observe how the systems in place worked when premises were busier. Data collection: To protect fieldworkers and minimise sample and performance bias, bar staff were not informed or aware of observations at any stage. Pairs of fieldworkers spent up to two hours in 29 different bars at weekends in July and August 2020. They were provided with a budget for non-alcoholic beverages and a small meal/snack. A semi-structured observation schedule (included in supplementary data, Table S4) was developed based on our research questions and informed by interview data and prevailing government guidance (Figure 1) and included sections on venue description, the physical set-up of the venue including access, queues, toilet management and ordering systems, hygiene measures including personal protective equipment and cleaning, and incident reporting. All fieldworkers were trained over two 2-hour online sessions led by IU, AB & NF, on safety, data collection and reporting procedures informed by prior work (Graham, 2000) and expertise. Fieldworkers discreetly used smartphones to record brief notes of their observations. Semi-structured observation reports were written up within 24 hours, including detailed qualitative descriptions of relevant incidents of good practice or concern. Analysis: Structured data was extracted into a spreadsheet in eleven categories (venue characteristics, reservations, staffing, layout, signage, contact tracing, ordering, hygiene, queues, toilets, noise) with accompanying qualitative notes

extracted from reports. Incident descriptions were also analysed thematically by underlying factors (system success/failure, behaviours, intoxication). Findings were integrated, discussed and checked by IU, NF and MS.

Results

We present our results chronologically below, outlining the themes arising in our interviews (conducted prior to re-opening) and observations (conducted in re-opened premises).

Stakeholder interviews

Potential barriers to and enablers of safe and successful re-opening were discussed under three main themes with a high degree of overlap in perspectives across interviewees, and some variation in emphasis. Relevant supporting quotes not included in full below (Q1-15) refer to Table 2.

Management of premises and risks associated with COVID-19

Identified factors that may support management of COVID-19 risks in premises included: an expressed willingness of businesses to work to government requirements to protect staff/customer safety, support consumer confidence and enable a return to trading; perceptions that it was in premises' own interests to help control the spread of the virus (Q1); and a belief that many premises were well managed prior to the pandemic (Q2). Even so, several challenges were discussed. Commercial challenges included costs associated with control measures at a time when premises were experiencing substantial financial pressures (Q3) and a risk of compromising the core characteristics and customer experience of a hospitality venue (e.g. by creating less sociable, more controlled, 'sterile' environments) (Q4) and, ultimately, risking business viability (Q5).

“...I, also, think if we make it too restricted and so we don't allow for the freedom of movement...there is a risk that that would cause damage and people would say, 'oh, I can't be bothered'...There is a balance that has to be, kind of, be met...hospitality is the name of the game, and, you know, we've got to make it hospitable and attractive to go into rather than it being too...yes, too structured and too rigid.” (Q4, Interviewee 12: Trade organisation)

Practical challenges included premises size and layout making physical distancing difficult e.g. at entry/exit points, when moving around venues and in and around toilets (Q6).

Interaction between consumers and use of alcohol in premises

Participants drew partly on analogies with shops to describe expectations of varied levels of customer adherence to control measures (Q7). They generally suggested that non-compliance was a greater risk in environments such as bars, where consumers normally have higher levels of interaction and alcohol is being consumed (Q8, Q9). Several factors were reported as having the potential to moderate COVID-19 transmission risks including legal duties on licensed premises (e.g. a prohibition on selling to customers who are already drunk), industry expertise in managing customer behaviour including drunkenness (Q10), measures such as 'table service only', and public anxieties about COVID-19 potentially leading to more responsible behaviours. It was felt that staff would need to be trained and skilful (Q8, Q10), but that some customers might not appreciate or respond to intervention (Q8).

“... as the drink gets flowing, people will start getting stropky and are not going to – well potentially it is there for them not to take to kindly to being told to keep their distance.... They [premises staff] are going to have to do an awful lot more than they have been up till now and there will obviously be techniques involved in how to accomplish that.” (Q8, Interviewee 2- Trade Organisation)

Managing customer breaches might ultimately involve asking customers to leave or involving the police (Q10). Staff-customer interactions involving close contact would potentially be complicated by COVID-19 risks, such as if a customer was drunk and unresponsive, belligerent and/or had to be removed from a venue. The need for clear government messaging, diligence among operators (Q9), and consumers acting responsibly was discussed (Q11), with some divergent views on where the balance of responsibility for safe operation should rest.

Plans and Guidance for Re-opening

Participants identified challenges balancing risks to health, livelihoods, businesses, and the economy in plans for the reopening of hospitality.

“...underlying all of that has to be the viability of the business and the safety of the customers. Those have got to be the due drivers and what’s really difficult is that it’s not a zero sum game, you can’t talk about one without talking about the other...it’s very difficult to try and find a way through that without it being emotional and to find that balance, that sweet spot.” (Interviewee 4-Other)

Concerns were expressed about unintended adverse consequences (e.g. Q12). Uncertainty about forthcoming government measures was particularly frustrating and challenging for trade interviewees (Q13) who desired clarity and flexibility, although risks in providing too much discretion were also mentioned (Q14). Some doubts were raised about whether local governments would be adequately resourced to successfully enforce compliance (Q15).

Premises Observations

We first describe physical and operational modifications introduced by bars to moderate COVID-19 transmission risks, with key aspects also summarised venue by venue in Table S3. We then describe relevant incidents and contributing factors observed. Venue numbers

(V1-29) given refer to Table S3, whereas extract numbers (E1-13) refer to examples from observation notes which can be read in Table 3.

Physical modifications

Venues introduced new layouts, signage, queueing systems, noise and toilet management, as well as providing hand sanitising stations. In most venues, tables were distanced at 1m or more, however several had tables less than 1m apart (V2, V5, V8, V10, V19, V28). Some others had partitions or perspex screens between some booths or one way systems to regulate the flow of people, though the latter were sometimes ignored (E1, E2). Nearly all venues made use of posters or floor markings to communicate the new expectations particularly around physical distancing and hand washing. One venue used a large standing banner (V6). Tape was used to condemn some toilet cubicles in one venue (V5) or to cordon off the bar service counter (V4, V21, V28, V19), though the latter was not always enforced (E2). Pinch points were a problem in all but a few venues, with entrances, corridors, doorways and bar counter areas leading to bottlenecks and people congregating, often unchallenged (E3, E8, E11-12). One or more alcohol hand gel sanitising stations were provided by all venues (ten in V6) but were infrequently used during observations. Two venues routinely administered sanitiser to customers' hands on entry (V17, V26).

Fewer than half of venues had at least a basic system (typically a sign on the door) in place, to limit numbers using the toilet areas at the same time. Most had no system in place to ensure physical distancing in toilet areas with no cubicles or sinks condemned. Overcrowding and poor physical distancing was observed to be a problem at toilets in some premises (E3-E5).

Operating procedures

Changes to venue operation included collection of customer contact details, hygiene measures, queue management, service changes, and noise control. Most venues required customers to provide contact details to support contact tracing, though a sizeable minority (nine) did not. These nine included one venue (V26) observed in August after this was made mandatory by government. Staff were observed to be wearing PPE in most venues; however, in several, staff wore no PPE during the observation period, wore masks inappropriately (e.g. under the chin) or removed them to talk to other staff or to customers (see Table S3). Most venues were observed to carry out regular cleaning and hygiene practices even when busy. Routine toilet cleaning was not generally observed: seven premises displayed a signed cleaning time sheet.

Queues outside venues were generally small and short-lived and most venues had a staff member at the door managing entry. Fewer than half offered table service only, enabling patrons to remain seated throughout thus avoiding any possibility of queuing for service at the bar. Others had no system in place to prevent queuing at the bar, and in at least one a continuous queue formed in the 1m space between rows of tables (E6). Notwithstanding the stricter government guidance in place in August 2020 (Figure 1), queues for or upon entry (E7) and/or indoor queues for bar service were observed in some venues at that time (V21, V22, V25, V26), whereas background noise (from music) was observed in just one (V26). Customers were observed singing loudly or shouting in all but one of the August venues and in most cases were unchallenged by staff (E8); only one example of effective staff intervention to suppress customer noise was observed (E9).

Incidents

Fieldworkers observed a wide range of incidents with potential to increase transmission risk, which varied in frequency and seriousness. No incidents were observed in three venues (V6,

V9, V15) and multiple incidents were observed in most. Many observed incidents were relatively simple (e.g. short-lived breaches of physical distancing, E6) and/or involved a very small number of customers or staff such as a drunk customer standing up and dancing with a customer from another group, or a staff member without a face covering leaning into customers to serve food.

Several observed incidents were of greater concern due to the repeated or continuous nature of the potential risks arising, the larger number of customers involved, or involvement of staff (E2, E6, E8, E10-12). Customer drunkenness was observed to contribute to most of these incidents which featured various combinations of singing, shouting or playing music (E8, E10), mixing between groups or standing and moving around the bar without distancing (E2, E8, E10), and customers taking 'selfies' with other customers and staff (E11), shaking hands (E10), or embracing others (E10, E11, E12) apparently not in their household. Several factors generally interacted to underpin these incidents: physical modifications in premises, operating procedures, the social atmosphere, customer behaviour, alcohol consumption, and staff practices. The venues where the potential transmission risk appeared greatest involved most of these factors combined (V1, V13, V14, V16, V18, V19, V23, V25, V26, V27, V28). Considering any common features of these venues, all but one were observed in the evening, all but two were located in a town or village rather than a city, all but three allowed bar service and customers were often judged to be 'regulars' (Table S3). They varied in terms of other venue features including how busy they were during observations (Table S3).

In more than half of all premises, no staff intervention in incidents or attempt to enforce restrictions was observed. In some, staff intervened in a light-hearted way, such as by gently or playfully reprimanding customers, but such interventions were largely ineffective in stopping the behaviours (E13). Staff effectively, promptly and consistently intervened with

customers to enforce restrictions at one venue (E9/V22). Fieldworkers did not observe any enforcement activity by external agencies such as environmental health or police officers.

Discussion

The operation of licensed premises during the COVID-19 pandemic has been highly contested (BBC News, 2020; Hayes and Sanderson, 2020). Guidance and regulations have developed within a fast-moving context, and some have been challenged by the hospitality sector as lacking a sound evidence base (Hayes and Sanderson, 2020). This study makes a unique contribution by providing the first evidence, including direct observation data, of how premises operated in practice when allowed to re-open. We found that, towards the end of first COVID-19 lockdown in Scotland (May/June 2020), licensing stakeholders expressed an intention to work within government guidance but cited commercial and practical challenges to successfully and safely re-opening. Unlike other recent public health measures applying to licensed premises, such as smoke-free public places legislation, the COVID-19 measures were complex, evolving, and a mix of mandatory and recommended measures, posing challenges for operationalisation. Upon re-opening however, substantial efforts to reduce virus transmission risks were observed and appeared to be working well in many diverse bars. Good practices observed in relation to the physical set-up of premises appeared to be informed by government advice (Scottish Government, 2020). Nonetheless, there remained many premises where PPE was not consistently worn by staff, and some had poorly prepared to prevent breaches of distancing measures in queues, pinch points, and toilets.

The unique nature of licensed premises as social spaces where alcohol is consumed was recognised by interviewees, however risks arising from this were presented as potentially manageable, with expertise and effort in premises. In practice, customers were observed shouting, embracing or routinely interacting closely with different groups from other

households and staff in several premises; and staff intervention was rare or ineffective. Alcohol intoxication was observed in most sustained incidents involving multiple risks or greater numbers of customers. Government guidance lacked detail on exactly how staff might be expected to effectively intervene when breaches of distancing occur, or the management of situations which would normally require close contact between customers and staff such as the removal of very drunk or belligerent customers from the premises. Controlling COVID-19 risk in licensed premises involves attempting to modify complex and long-established norms and interactions between premises characteristics, operation, alcohol consumption, and the behaviour of customers and staff. Routine, effective staff intervention to prevent hugging, mixing and shouting that was previously normal, likely poses a genuine challenge. Whilst customers must bear some responsibility for complying with guidance, the direct effects of alcohol impair their ability to do so; the same effect applies when drinking alcohol in the home but the potential for interaction with strangers is lower. Overall, our findings suggest grounds for uncertainty about the extent to which new rules can be consistently and effectively implemented in a sector where alcohol is routinely consumed.

Our data suggests that a substantial minority of bars failed to ensure adherence to recommended safety measures upon re-opening, even after stricter guidance was provided. After our data collection, later in 2020, bars and pubs in large parts of Scotland were ordered to close again, or opened with restricted hours or with indoor alcohol sales prohibited: the First Minister of Scotland noted at the time that ‘the presence of alcohol can of course affect people’s willingness to physically distance’. The evolving measures in Scotland reflect attempts in many countries to find the optimal balance between restrictions and business recovery. Blanket closures, curfews or alcohol sales bans are blunt instruments, but may be seen as necessary to control virus spread and are likely to be less resource-intensive to enforce than measures to reduce transmission risks within bars. Such blanket actions may

have an ancillary benefit of protecting emergency services from alcohol-related injuries or disorder (de Goeij et al., 2015; Matzopoulos et al., 2020; Morris et al., 2020; Rossow and Norström, 2012; Wilkinson et al., 2016), though attention needs to be paid to the impact on businesses, economic activity, employees and ownership patterns in the sector (Dube et al., 2020; Gursoy and Chi, 2020), and diversion of drinking to the home with associated risks of gender-based violence or alcohol-use disorders for a minority (Callinan and MacLean, 2020; Nadkarni et al., 2020; Stockwell et al., 2020).

Attempts to implement laws prohibiting sale of alcohol to people who are drunk may provide a useful model here. Such laws are longstanding, also attempt to modify previously normal practices, and have been found to be poorly adhered to in several studies (Hughes et al., 2014; Toomey et al., 2017). The ‘Drink Less, Enjoy More’ (DLEM) intervention successfully reduced ‘sales to drunks’ in Liverpool and included three interacting components: community mobilisation and awareness-raising (including radio adverts, t-shirts and outreach); face to face ‘responsible bar server’ training; and active enforcement including unannounced police visits (Quigg et al., 2018). Whilst interviewees in our study reported plans for online staff training, other aspects of the DLEM intervention may be adaptable and helpful for implementing COVID-19 measures. A proactive inspection regime and/or encouragement of community reporting of poor practice may be helpful but would need to be adequately resourced.

Further research is needed to understand (1) the impact of the various hospitality restrictions in place worldwide (Callinan and MacLean, 2020; Morris et al., 2020; Nadkarni et al., 2020); (2) if and how higher levels of compliance/reduced risks can be achieved in hospitality venues without penalising low-risk premises, including optimal inspection, support and sanction regimes, and (3) the potential role of Scotland’s unique licensing regime. The latter system includes ‘protecting and improving public health’ as one of five statutory licensing

objectives (Fitzgerald et al., 2017; Scottish Government, 2005). This public health objective was not presented (publically at least) as a basis for any of the measures taken in Scotland to reduce transmission risks in hospitality, perhaps because case law constrains its application to matters relating to the sale of alcohol (Inner House of Court of Session of Scotland, 2011). Our data provide clear evidence of a link between the sale of alcohol and COVID-19 transmission risks, raising the possibility of legitimate action by licensing authorities under the public health objective. This is also relevant to ongoing debate about the potential introduction of a similar objective for licensing in England/Wales and merits further exploration.

Strengths and Limitations

This study achieved a balanced and varied sample of interviewees and premises types, but it cannot be assumed that our findings are representative of premises more generally or elsewhere. Observations were sustained, detailed, and conducted safely and unannounced by fieldworkers posing as ‘normal’ customers, thus minimising the risk of performance bias. However, we visited each premises just once. Fieldworkers were trained, but may have missed practices or incidents of interest. To minimise risks to observers, we did not observe after 11pm when intoxication or violence is more likely (Graham and Homel, 2011; Wilkinson et al., 2016), and several observations were in the afternoon when incidents of concern were less common. It was beyond the scope of the study to assess ventilation or the duration of customer visits, though both are increasingly recognised as important influences on transmission. A larger scale study across multiple jurisdictions could shed further light on our aim.

Conclusion: Despite efforts on the part of premises, and detailed guidance from government, potentially significant risks of COVID-19 transmission persisted in a substantial minority of

observed bars, especially when customers were intoxicated. Blanket closures, curfews or alcohol sales bans are more likely to be deemed necessary, if such risks cannot be acceptably, quickly and cost-effectively reduced through support and sanctions for premises operators.

Acknowledgments

This project was funded by the Scottish Government Chief Scientist Office (STG/20/15). We thank Eilidh Sutherland for co-ordinating fieldworker recruitment and interviews, for assisting with tables, co-ordinating interview transcription and supporting manuscript submission. We thank all interviewees for giving up their time to take part in the study and the transcribers of the interviews. We are very grateful to our fieldworkers for their support with sampling and conduct of the bar observations.

Contributors

NF was the lead researcher on the study, led the design and execution of the study, oversaw all analyses and interpretation, and wrote the first draft of the introduction, methods and discussion. NF, AB, DE, AF, IU and MS conducted interviews; NF, IU and AB planned the bar observations and trained the fieldworkers. AB led the analysis of interview data, with verification of analysis by NF. AB wrote the first draft of the interview results. IU led the analysis of observation data, with verification of analysis by MS. IU wrote the first draft of the observation results. JL, MS, IU, AB, DE and AF contributed to the overall design and to drafting the manuscript. NF led the final drafting and editing of the manuscript.

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Tables & Figures

Table 1: Summary of Interview Schedule

Interview Schedule Topic Summary
1) Background information about the participant and the organisation/business represented
2) Current trading position and views on Scottish Government (SG) plans for re-opening
3) Physical Distancing and infection control in Bars/Pubs/Clubs/Restaurants: <ul style="list-style-type: none">a) What measures or solutions are being considered or proposed for physical distancing or infection control? E.g. Capacity and entry, space planning, hygieneb) How feasible and acceptable are these solutions for premises (in general/yours/your members)? How will they be implemented and communicated to customers? What may it mean for the customer experience?
4) What support is available/ needed to guide decision-making?
5) What are the implications of reopening of licensed premises for public services?
6) If we do not 'go back to normal' after the pandemic, what might the 'new normal' look like?
7) Any other issues with respect to re-opening of licensed premises you would like to add?

Table 2: Stakeholder interviews, supporting extracts

Quote Number	Participant Number, Category and Quote.
Q1	12-Trade organisation: many businesses they are owner operated, they've been built up over the years. Those individuals who are responsible and want to protect their licenses and everything else will do so, because they can't afford not to and if there is...ever get a time when they can, definitely, not afford to be in a position of vulnerability or being caught out for bad practices now...
Q2	10-Other: ...the vast majority of people behave themselves. The vast majority of premises these days do their best to control the more unpleasant aspects of the trade regarding behaviour. That's not going to change. I don't honestly know...whether that will make any difference. I mean, the challenges of hygiene measures and social distancing are there...But it's down to the premises and the managers to establish how they're going to comply.
Q3	11-Trade organisation: I spoke to somebody this morning, who's actually going to completely shut off their bar, other than a small hatch where they can serve the product to. We have businesses looking at screening, you know, between the tables. But again, you know, that's quite a substantial cost, and as I said before, you know, the financial situation of a lot of these businesses won't stretch that far...
Q4	12-Trade organisation: I think, a booking culture is good for business anyway in the sense that it gives that comfort and the reassurance that they're going to get the trade and, you know, we've, unfortunately, perhaps not seen...you know, we've seen too many cases where people have booked and then not shown up.....but I, also, think if we make it too restricted and so we don't allow for the freedom of movement...there is a risk that that

	would cause damage and people would say, 'oh, I can't be bothered'... There is a balance that has to be, kind of, be met...hospitality is the name of the game, and, you know, we've got to make it hospitable and attractive to go into rather than it being too...yes, too structured and too rigid.
Q5	09-Owner/operator: The difference between the 1 m and the 2 m [physical distancing requirement] is...I cannot, you know, the whole industry is screaming out for this. It is absolute life and death, you know, it's the difference between survival and non-survival.
Q6	11-Trade organisation: The big issue is the toilets, that is something that, you know, we've been speaking to our members. They would basically have to be monitored, and policed. And I think that's the sort of thing that we see our members doing, because that is, the pinch point, the toilets, the entrance. For businesses that have maybe two entrances, well, one way in, one way out, sort of thing. But I mean, some of the smaller pubs, because I saw one that mentioned that the entrance is less than two metres from his bar, because of the shape of the building, so he can't actually let anybody in the building. So, you know, the shape, the style, you know, the age of the building, brings all sorts of issues. But the toilet, I keep repeating it, that is the one that, you know, we have got the biggest concerns about, how do we actually monitor, and hygiene levels, et cetera, how do we work that.
Q7	07-Owner/operator: if we deal with someone who's within two metres of each other, you know, without getting out a tape measure, how do you...you've got to say well, you're too close together. I do think that is going to be quite difficult...you see it now in...you know, when I go to [supermarket] or somewhere like that, at the beginning everybody was very respectful to the rules, walked around with their trolley one behind the other. Now, you know, people are getting closer and closer, overtaking each other, that sort of stuff. So it's a different scenario but it will be a challenge for us.

<p>Q8</p>	<p>02-Trade Organisation: This is where additional staff costs come in, because as the drink starts flowing, people start relaxing and forgetting. Some women, when they get into the pub, they get all very cuddly and if they haven't seen friends for a long time, there will be the temptation to get much closer than they should be.</p> <p>Interviewer: Is it the bar staff's responsibility to stop people hugging their pals when they are not supposed to, or how do you see that?...</p> <p>02- Trade Organisation: Well there is nobody else that can do it, because the only people who can really ... Again as the drink gets flowing, people will start getting stropky and are not going to – well potentially it is there for them not to take to kindly to being told to keep their distance.... They [premises staff] are going to have to do an awful lot more than they have been up till now and there will obviously be techniques involved in how to accomplish that.</p>
<p>Q9</p>	<p>17-Other: You know, I suppose, it's all with the alcohol factor change in terms of that and, you know, I think, I've already alluded to the fact that, you know, as the night draws on or if people have had alcohol before they come to the premises, you know, for whatever reason end up under the influence of alcohol within a licensed premises, maybe they are watching football, there is the potential that very quickly social distancing could become more of a challenge and, again, that's where, I think, there has to be that greater, you know, push back to the premises to make sure that they have sufficient measures, sufficient staffing, and early intervention with their patrons, to make sure that they're in control at all times as best they can</p>
<p>Q10</p>	<p>13-Other: I mean, as an operator, you deal with that all the time, you deal with drunk people all the time, and you need to go and have a conversation with them. And it's not, grab them by the arm, and throw them out, or call the police, you try and de-escalate the</p>

	<p>situation and appeal to their better nature. Like, listen guys, if you want to continue drinking here tonight, then you need to adhere to these social distancing rules, or stick to your table, you can't really be up and down, talking to different tables, it's just the way life is at the moment. And if you don't, I'm going to have to ask you to leave. And then obviously if it gets to a situation where you just can't control it, then there's no other option but to call the authorities.</p>
Q11	<p>06-Trade Organisation: ...if there's a...folk who are, yes, obviously, and, continually, encroaching upon that...the distance, then...the premises will, obviously, have to, sort of, step in here and, sort of, make a point in the same way they'd maybe make a point if there was something else going on which was unsafe, but...It's not a case of as soon as you enter a premise you, sort of, absolve yourself of all responsibility... We have to work in tandem, I think, with customers to try and communicate guidance around what is safe and what is not.</p>
Q12	<p>16- Owner/operator: I'm not sure that a balanced approach is being taken between keeping the virus under control but allowing the economy to restart again. I fear that many, many businesses, not just in the hospitality sector but across retail and other industries, are going to fail and that there will be a tsunami of redundancies that will follow from that. I know it's a difficult trick for any politician and any government to find that balance...to...keep the virus under control and when exactly to start to release those restrictions and controls. But I'm looking at how Scotland is doing that compared to Westminster, Europe and the rest of the world, my view is that they're just being too cautious and in the long term there will be consequences to pay.</p>
Q13	<p>01-Owner/operator: ...we've spent the entire time scenario planning, trying to guess what's going to happen, when we re-open, trying to look at what other countries and other cities are doing when they re-open and try to almost plan for that and say what if that</p>

	<p>means we could do this or open this. And I think that's quite frustrating because I'd love to just be getting cracking with, I'd love a set of guidelines and I'd love to just go and say right ok that means we can only do this, this, this and this, you know, and from there we can decide whether premises will be able to open or not able to open depending on what these guidelines are. so it's been a, frustrating is a word I've heard used by quite a lot of people I've been chatting to because I think everyone's in the same boat and they do want to get things done.</p>
<p>Q14</p>	<p>14-Owner/operator: I think the positive thing is that it's [the government guidance] showing a roadmap but it's not showing the bumps in the road. I'm acutely aware that the government and the local councils who apply conditions to any licences, aren't aware of operational issues. So they're trying they're trying to make it [plans for reopening of premises] as ambivalent as possible, I suppose, because everyone will operate things slightly differently. I'm aware that all the government officials and most UK and Scottish have said, get people to use their common sense. That's a really worrying thing as far as I'm concerned. Because my common sense is different from your common sense, et cetera. But everyone's common sense changes once they've had a few alcoholic drinks. So, you know, it is a bit muddled, it is a bit grey and fluffy. But I get the difficulty being a bit more direct, but I think there are many difficulties.</p>
<p>Q15</p>	<p>05-Trade Organisation: I think EHOs [Environmental Health Officers] if they visit the premises will look at that [management of COVID-19 risks]. But having said that, I mean, EHOs have a much reduced capacity even to do food hygiene inspections and if they're inspecting on a risk based programme, how they EHOs are going to take this on board with their other responsibilities, I don't know.</p>

Table 3. Supporting extracts from venue observations

Extract/ Venue Number	Summary description and observation note extract
E1/V10	<p>One-way system ignored by customers and staff</p> <p>On several other occasions throughout the night, next to the observers’ table was a walkway that was supposed to be a one-way system. This was ignored by the waitress serving the observers, who then had to take a step closer to their table in order to let people pass along going the wrong way behind her. The waitress, instead of encouraging the man to go the long way round and indeed follow the instruction guidelines for the venue, simply moved closer to the observers’ table, smiling. The man was not wearing a mask. It was often the same tables which were affected by this throughout the night especially around where the observers were seated, in the middle against the stairs and the walkway was quite tight between those tables and the booths.</p>
E2/V19	<p>Disrespecting physical modification/operating procedures (one-way system and bar area) leading to poor physical distancing</p> <p>In the conservatory of the venue there was a party of 7 customers at one table. They left the conservatory several times over the course of the first hour, each time exiting and entering by the lounge door in breach of the one-way system ostensibly in place. They were quite loud and evidently were drinking, although none appeared fully intoxicated. They used the bar counter to place drinks on temporarily while they stood and chatted nearby or used the toilets, despite tape having been place in a large cross over the bar counter area so it would not be</p>

	<p>used. None of the patrons acknowledged that the tape was there. No members of staff attempted to engage with them at any time to ask them to follow the procedures. The bar counter in the bar area had been draped with black and yellow tape printed with a warning to keep 2 metre distance. However patrons encountering this barrier consistently moved to the opening in the bar where staff enter and exit the bar. They then stood at the end of the bar and chatted with staff, placing their drinks on the counter which was supposedly condemned there. This happened at least on 5 occasions during the observation. Staff were not observed to clear that area or otherwise intervene.</p>
E3/V3	<p>Customer mixing and overcrowding in toilet areas</p> <p>Two women from different groups... bumped into each other outside the toilet and started screaming and hugging and jumping about together. They then entered the toilets and went into a cubicle together, they were then observed washing their hands for about two seconds when they left, despite signs being everywhere recommending a 20 seconds hand wash. They seemed intoxicated due to being loud and a lack of inhibition. On the way through the pinch-point into the toilet there were five other women, three looking in the mirror and two standing chatting. This narrow section was about 3m long and 1m wide. All the women stood together in that narrow section.</p>
E4/V8	<p>Customer mixing and overcrowding in toilet areas</p> <p>A man was occupying the disabled toilet. Two women from the separate groups met and waited at the entrance to this toilet, having small talk and discussing when the last time they saw each other was. They were within 1m of each other but did not hug or touch each other. It seemed that they knew each other quite well. Once the man left the toilet, he walked past the women, within 1m of them</p>

	<p>with no attempt to social distance as he walked past. The women were still chatting and one was heard saying “Oh I’ll just come in with you” So the 2 women walked in to the disabled toilet together and locked the door. The toilet room was only about 6 square meters. The women were in the toilet for around 10 mins before they walked out together. They walked past the observers’ table and returned to their own separate tables (one woman joined a man at her table, and the other joined a table of 3 at her respective one).</p>
<p>E5/V29</p>	<p>Overcrowding at toilets</p> <p>One of the observers left the table to use the toilets. As they approached the corridor that led to the toilets, one middle-aged male was queuing outside, at the spot designated by floor stickers. One elderly man then came out of the toilets and engaged in conversation with the team member. He complained about people not adhering to the toilet system earlier in the afternoon, with multiple men using the facilities at the same time. The man was standing less than 1m away himself during the short conversation with the observer. The observer then entered the toilet and noticed that the lock to the toilet room was broken. The observer thus left the room door unlocked and continued to use a cubicle. After emerging the cubicle he noticed that three other men were in the toilets – 1 using the other cubicle with the door open, 1 using the urinal and 1 washing their hands. It was unclear if they knew each other, none were talking. The same observer went to use the toilets at the end of the observation again and stood in the queue. Two young men began to queue also, asking the observer if they were queuing for the toilets also, which they confirmed. Moments later two middle-aged men emerged separately from the toilets. As the observer entered the toilets, the two men behind followed them into the toilets also. When the</p>

	<p>observer pointed out that there was a system in place of one in and one out, they pointed out that two men had just left the toilet, indicating that the system was broken anyway and continued to use the facilities regardless. Another man was already using the urinals upon entry, bringing the total amount of people in the small toilet facility to 4 instead of 1.</p>
<p>E6/V18</p>	<p>No physical modification and operating procedures leading to poor physical distancing during queuing for bar service</p> <p>During the observation, there was a continuous queue to the bar. No system was in place and people did queue directly behind each other with less than 1ft at times between them) at the bar for drinks. Due to the layout, this involved them also standing in between two tables, bridging the 1m distancing gap between those two tables behind them as well. At one point, a patron sat at one of the tables and began interacting with people within the line, chatting and drinking with them while they waited on making new orders. There was no staff intervention. Patrons would also regularly turn and converse with each other, whilst waiting in the queue.</p>
<p>E7/V26</p>	<p>No physical modification and operating procedures leading to poor physical distancing during queuing on entry</p> <p>On walking into the venue there was no hand sanitiser nor signage indicating where to go. A member of bar staff shouted to patrons to walk to the other side of the bar where there was a queue forming in front of the front of house table where people were being greeted and given their seating. When the observers got into the queue there was four people in front of them and a number of staff. All within less than 1ft distance of each other in the queue.</p>

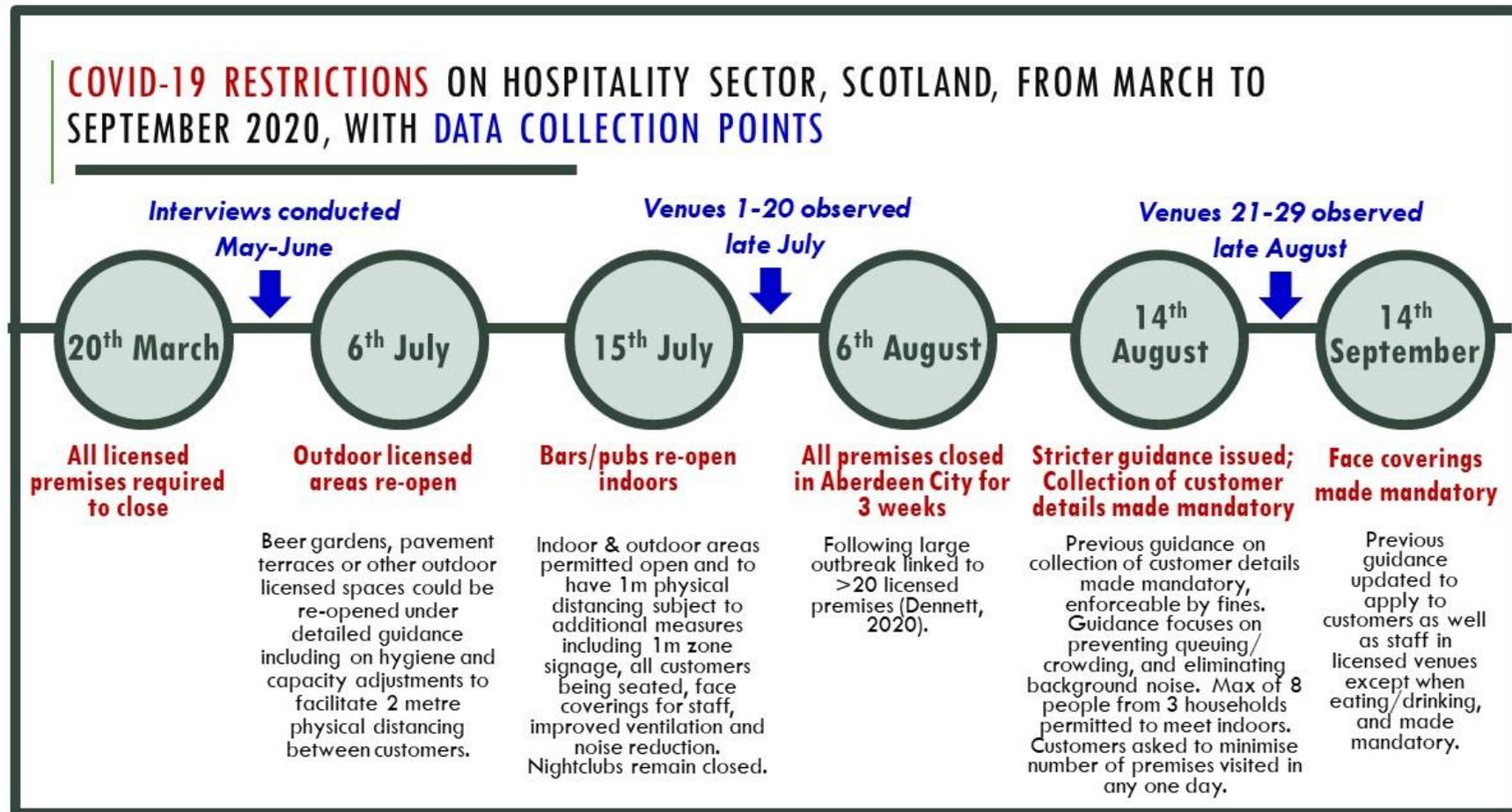
<p>E8/V28</p>	<p>Customer groups mixing with other groups within the premises</p> <p>At the beginning of the observation, there were three patrons (male, middle aged) who were grouped by the stairs; they caused a pinch point meaning anyone who had to go up and down the stairs had to pass within half a meter of one of them. The bar staff providing menus, cutlery, and drinks also had to walk past this group of men repeatedly and they were not asked to disperse. The group seem to be intoxicated and enjoying themselves as they were talking loudly and used colourful language. One of the males started playing music loudly. The music was loud enough that the 3 men had to raise their voices to hear each other and the volume in the rest of the bar got noticeably louder too. There was no intervention by the staff. One of the men from the group at the top of the stairs left and his two companions went down into the lower bar, joining a table down there. It appears the men were intoxicated as they spoke much louder than necessary. The four tables in the lower bar were having shouting conversations across the room. This continued throughout the night leading to the barmaid lowering her mask to join in the conversation multiple times.</p>
<p>E9/V22</p>	<p>Effective intervention to limit loud noise in the venue</p> <p>As the football kicked off a brief bit of singing arose from one of the rooms, a staff member who was stationed in one of the throughways between the two rooms disappeared into that room and the singing quickly dissipated ...Upon the football match finishing, again a brief bit of singing arose. This time it seemed to cascade across a few tables. It was nipped in the bud by staff. People very quickly rectified their behaviour and resumed chatting normally within their own groups.</p>

<p>E10/V1</p>	<p>Multiple incidents of customer groups mixing with other groups within the premises.</p> <p>Two tables on either side of the main thoroughfare appeared to be mixing. Two men appeared drunk and were shouting and talking very loudly, they were also slurring their words. A woman [from another table] approached one table and was then hugging and talking very closely with another woman at the table.</p> <p>Another woman came into the pub and was introduced to another man at a different table from hers with whom she shook hands. One man went up to a table opposite and was shaking hands with the two men sitting there. Another man then came up to the same table and was shaking hands with them all....One woman joined two other women from another tables and they all walked out for a cigarette. Shortly after this they all moved to the top room near the bar. They were observed at a larger table with another 2 people all sitting together.</p>
<p>E11/V26</p>	<p>Customers mixing with staff for a ‘selfie’</p> <p>A middle-aged woman who was heavily inebriated approached two waitresses and a waiter with two of her friends and began conversing with them. This was by the front of house table, in the middle of a pinch point. She was overheard telling the waiter that he was ‘good looking’ and she would like a picture with him. She then instructed her friends to take a picture of them together – passing her phone to her friend. She then put her arm around the waiter and they took the picture. She then instructed both of her friends to get a picture too, pushing them into the waiter for a photo. Both women put their arms around the waiter for this picture and continued speaking to the two waitresses. During this time, the first woman leant in and kissed the waiter on the left cheek, thanking him for the photo and began speaking loudly about how handsome he was again. She</p>

	<p>then began speaking to one of the young waitresses (approx. 16 years old). It seemed as if they knew each other and the women leant in, hugged the young waitress and kissed her on the cheek too. One of the friends of this women then hugged the waiter. The women then said their goodbyes and left.</p>
<p>E12/V18</p>	<p>Customers mixing with other groups in the bar area–</p> <p>At the beginning of the observation, it was noted that there was five men in their mid to late twenties drinking at a table for four. They had brought a spare chair up to the table. They were very rowdy and when it came to ordering more drinks, they all stood up and went to the queue for the bar. They queued in the line for the bar with no social distancing measures in place. When going back to their table, two of the men stopped and began speaking to another table with a different household of two women in their early twenties. They were leaning over the table and one of the men made contact with one of the women on numerous occasions, hugging them before returning to their own table. It was observed that one of the members of security saw this, but no intervention made. These men then began interacting with another table directly behind them, chatting, etc. Observers continued watching this group of men, watching them make close contact with six tables in total in this way, with no intervention from staff .They then seemed to leave their table and go outside but returned 10 minutes or so later. At this time they crowded around the area with the sanitizer. Two groups of other young men were walking past and they ended up making up a big group, with three groups combined.</p> <p>Then an elderly lady came down to get out from the bar side. This lady seemed very uncomfortable and was trying to avoid the group but as she went to do this</p>

	<p>she ended up in the area where the bar queue pinch point was forming. At this point a member of security supported the lady in leaving the premises by escorting her out and blocking her from direct contact with the groups. The three combined groups were not dispersed by staff, instead dispersing of their own accord approximately 5 minutes later. This group of men were observed interacting with another table of three patrons sat by the bar when observers were leaving. No intervention took place again.</p>
<p>E13/V24</p>	<p>Customer groups mixing with other groups within the premises/attempted staff intervention</p> <p>Throughout the observation, a group of young women would occasionally try and socialise with another table with young men, to their immediate left, and make the number of the people at the table too high given the restrictions. The staff dealt with this by telling them they could not do this and instructed them to move back to their tables or to potentially get kicked out of the venue.</p> <p>Nonetheless, because the venue was busy and the staff were serving constantly every now and then, the young women would get away with continuing with this behaviour for periods of time whilst more alcohol was consumed.</p>

Figure 1: Timeline, guidance for premises re-opening and data collection points



Supplementary Tables

Table S1: Profile of Interviewees

Participant role(s)	
<i>Owner/operator</i>	7
<i>Trade organisation</i>	6
<i>Other*</i>	8
Approximate years of relevant professional experience	
<i>15-30 years</i>	7
<i>>30 years</i>	4
<i>Not recorded</i>	7
Premise type	
<i>Pubs/bars</i>	3
<i>Other premise type</i>	2
<i>Multiple premise types</i>	13
No. of outlets	
<i>1-10</i>	5
<i>11-25</i>	1
<i>26-99</i>	0
<i>100-999</i>	3
<i>1000+</i>	4
<i>Not recorded</i>	4
<i>N/A</i>	1
Jurisdiction	
<i>Scotland only</i>	15
<i>UK-wide</i>	2
<i>International</i>	1
Location	
<i>City centre only</i>	4
<i>Varied</i>	14
Sex	
<i>Male</i>	16
<i>Female</i>	2

*Other roles = licensing solicitor/licensing forum member/local government/consultant/trade union/police; three interviewees in the 'other' category were also representatives of trade organisations or were owner/operators of licensed premises; hence the sum of the categories is >18.

Table S2: Sampling Strategy: Criteria for Selecting Venues for Observation

Bar no.	Time of Observation	Urban Rural Classification (1=most urban), Local Authority, Location within UR1	Deprivation Quintile (1=most deprived)	Venue Feature	Venue size
JULY OBSERVATIONS					
1	Friday early evening	UR1 Glasgow City Centre	3	Minimal Food	1 small & 1 medium
2	Saturday mid-afternoon	UR1 Glasgow Suburban	1	Sports	
3	Saturday later evening	UR1 Glasgow City Centre	4	Busier	Large
4	Friday later evening	UR1 Glasgow Suburban	1	Minimal Food	1 small, 1 medium, 1 large
5	Saturday mid-afternoon	UR1 Glasgow Suburban	5	Sports	
6	Saturday later evening	UR1 Glasgow Suburban	5	Busier/Minimal Food	
7	Friday early evening	UR1 Edinburgh Suburban	2	Minimal Food	1 small, 1 medium &
8	Saturday mid-afternoon	UR1 Edinburgh City Centre	3	Family oriented	1 large
9	Saturday later evening	UR1 Edinburgh Suburban	5	Any	
10	Friday later evening	UR1 Edinburgh City Centre	3	Minimal Food	1 small, 1 medium &
11	Saturday mid-afternoon	UR1 Edinburgh City Centre	3	Sports	1 large
12	Saturday later evening	UR1 Edinburgh Suburban	1	Minimal Food	
13	Friday early evening	UR3 Clackmannanshire	4	Family oriented	1 small, 1 medium &
14	Saturday mid-afternoon	UR3 Clackmannanshire	3	Family oriented	1 large
15	Saturday later evening	UR2 Clackmannanshire	1	Minimal food	
16	Friday early evening	UR2 North Lanarkshire	1-2	Family oriented/Minimal food	1 small, 1 medium &
17	Saturday mid-afternoon	UR2 East Dunbartonshire	5	Family oriented/Minimal food	1 large
18	Saturday later evening	UR2 East Dunbartonshire	2	Busier	
19	Friday later evening	UR4 Moray	4	Minimal food	1 small & 1 medium
20	Saturday later evening	UR5 Moray	3	Minimal food	
AUGUST OBSERVATIONS					
21	Friday/Saturday later evening	UR1 Glasgow Suburban	1-3	Busier	Any
22	Saturday early evening	UR1 Glasgow City Centre	1-3	Sports (showing football)	Any
23	Friday/Saturday later evening	UR1 Edinburgh Suburban	1-3	Busier	Any
24	Friday/Saturday later evening	UR1 Edinburgh Suburban	2-4	Busier	Any
25	Friday/Saturday later evening	UR5/6 Perth & Kinross or Stirling	2-4	Busier	Any
26	Friday/Saturday later evening	UR2 East Dunbartonshire	2	Busier	Any
27	Friday/Saturday later evening	UR2 Falkirk or UR5 Stirling	1-2	Busier	Any

28	Friday/Saturday later evening	UR5/6 Perth & Kinross or Stirling	3-5	Busier	Any
29	Saturday early evening	UR1 Edinburgh	2 5	Sports (showing football)	Any
TOTALS					
	Saturday mid-afternoon: 6	UR1: 17	1: 4-9	Busier: at least 10	Small: at least 7
	Friday early evening: 4	UR2: 5-6	2: 3-6	Family-oriented: at least 5	Medium: at least 7
	Saturday early evening: 2	UR3: 2	3: 6-13	Minimal food: at least 11	Large: at least 6
	Friday or Saturday later evening: 17	UR4: 1	4: 3-5	Sports: at least 5	
		UR5/6: 3-4	5: 4-6		

Table S3: Premises Observation Sample & Observed Venue Characteristics

Ve nu e No	Date Observ & Start time ^a	Locatio n/Local Authorit y ^b	Pub Owner ship ^c	Rur ality	Depr ivati on ^e	Pre- Covid Indoor /Outdoo r Capacit y ^f	Occupa ncy ^g	Staff h	Co nta ct Tra cin g ⁱ	Servic e Optio ns ^j	Staff PPE ^k	Nois e Cont rol ^l	Que ues Outs ide ^m	Qu eue s Insi de; n	Short Venue Description ^o
JULY OBSERVATIONS															
1	24/07/2020 19:05	CC; Glasgow	Indep	1	4	S- M/None	Full	3/0	No	Bar, table, app	None	NR	No/N M/N S	NR	TR/SP. Clientele: mixed ages (mostly over 50), mixed genders (mostly male). Crowd: post-work, couples/small groups, regulars.
2	25/07/2020 15:20	SU; Glasgow	Appear s Indep	1	1	M/None	Half full	2/0	No	Bar, table	Masks , Visor	NR	No/N M/N S	NR	TR/MB/GM. Clientele: mostly older, mixed genders (mostly male). Crowd: regulars.
3	25/07/2020 20:00	CC; Glasgow	UK- Wide PubCo	1	4	L/None	Full	12/1	Yes	Bar, app	Masks , gloves , apron	NR	No/M /S	NR	MO/SP/MB/GM. Clientele: mostly young, mixed genders. Crowd: nightlife.
4	24/07/2020 20:55	SU; Glasgow	Appear s Indep	1	1	L/None	Fairly empty	2/0	No	Bar	Visor	NR	NR; M/N S	NR	TR/MB/GM. Clientele: mostly older, mixed genders. Crowd: couples/small groups, regulars.
5	25/07/2020 15:10	SU; Glasgow	UK Pub Co	1	5	M-L/S	Half full	5/0	Yes	Table, app	None	NR	No/M /S	NR	TR. Clientele: mixed ages, mixed genders. Crowd: couples/small groups.
6	25/07/2020 21:00	SU; Glasgow	Indep	1	5	L/S	Half full	7/0	No	Bar	Masks , visor	NR	Yes/ M/S	NR	TR. Clientele: mixed ages, mixed genders. Crowd: couples/small groups, regulars.
7	24/07/2020 18:10	SU; Edinbur gh	Appear s Indep	1	5	NR/S	Fairly empty	2/0	No	Bar	None	NR	No/N M/N S	NR	TR/MB/GM. Clientele: mostly older, mixed genders. Crowd: couples/small groups.
8	25/07/2020 15:35	CC; Edinbur gh	UK- Wide PubCo	1	3	L/NR	Full	3/0	Yes	Table	None	NR	Yes/ NM/ S	NR	MO. Clientele: mixed ages, mixed genders. Crowd: couples/small groups.

9	25/07/2020 20:15	SU; Edinburgh	Other PubCo	1	5	M/S	Half full	8/0	NR	Table	None	NR	No/N M/S	NR	TR/FO. Clientele: mixed ages, families with children, mixed genders. Crowd: couples/small groups.
10	24/07/2020 21:00	CC; Edinburgh	Small PubCo	1	3	L/None	Full	12/2	Yes	Table	Mask, apron	NR	Yes/ M/S	NR	MO/FO. Clientele: mostly young; mixed genders. Crowd: post-work, couples/small groups.
11	25/07/2020 15:05	CC; Edinburgh	UK-Wide PubCo	1	4	M/S	Half full	8/0	Yes	Bar, app	Masks	NR	Yes/ M/S	NR	SP/GM. Clientele: mostly older, families with children, mixed genders. Crowd: football, couples/small groups, regulars, post-work.
12	25/07/2020 20:40	SU; Edinburgh	Small PubCo	1	2	S-M/S	Fairly empty	3/0	NR	Table	Visors, apron	NR	No/M /NS	NR	TR/MB. Clientele: mixed ages, mostly male. Crowd: football, regulars.
13	24/07/2020 18:00	T; Clackmannanshire	Indep	3	4	M/S	Full	4/0	Yes	Table	Masks	NR	No/N M/N S	NR	TR/MB. Clientele: mostly older, families with children, mixed genders. Crowd: regulars.
14	25/07/2020 15:55	T; Clackmannanshire	Leased from UK Chain	3	2	L/S	Fairly empty	4/0	yes	Table	Masks	NR	No/N R/NS	NR	GM. Clientele: mostly older, families with children, mostly male. Crowd: regulars.
15	25/07/2020 21:05	T; Clackmannanshire	Appears Indep	2	1	M-L/None	Half full	3/0	No	Table	Visors	NR	No/M /S	NR	TR/MB/GM. Clientele: mostly older, mostly male. Crowd: regulars.
16	24/07/2020 18:55	T; N. Lanarkshire	UK-Wide PubCo	2	5	L/S	Fairly empty	5/0	Yes	Bar	None	NR	No/M /S	NR	FO. Clientele: mixed ages, mixed genders (50/50). Crowd: couples/small groups.
17	25/07/2020 14:00	T; East Dun	UK-Wide PubCo	2	5	M/S	Half full	10/0	Yes	Table	None	NR	No/M /S	NR	Clientele: mixed ages, families with children, mixed genders. Crowd: couples/small groups.
18	25/07/2020 20:25	T; East Dun	UK-Wide PubCo	2	5	L/S	Full	20/3	No	Bar, app	Masks	NR	No/N M/S	NR	Clientele: mixed ages, mixed genders. Crowd: nightlife, couples/small groups, regulars.
19	31/07/2020 19:25	T; Moray	Indep	4	4	M-L/NR	Fairly empty	4/0	No	Bar, table	Masks	NR	No/N M/N S	NR	TR/MB/GM. Clientele: mixed ages, mixed genders. Crowd: couples/small groups, regulars, holiday-makers.

20	01/08/2019: 50	V; Highland	Appears Independ	2	4	M/M	Nearly full	8/0	Yes	Bar, table	Masks	NR	Yes/M/S	NR	TR/FO. Mixed ages, families with children, mixed ages. Crowd: couples/small groups, regulars.
AUGUST OBSERVATIONS															
21	21/08/2020: 20	CC; Glasgow	Appears Independ	1	4	M/M	Full	5/1	Yes	App	Masks, visors, apron	TV muted	Yes/M/S	No	MO/MB. Clientele: mostly young (mostly 20-30); mixed genders/ Crowd: couples/small groups.
22	22/08/2020: 20	CC; Glasgow	Independ	1	5	M-L/S	Full	6/0	Yes	Table	Masks, apron	TV muted	Yes/NM/S	Yes	SP/MB/GM. Clientele: mixed ages, mixed genders. Crowd: football, regulars, couples/small groups.
23	21/08/2019: 55	SU; Edinburgh	Appears Independ	1	4	S/None	Half full	1/0	NR	Bar	None	TV muted	No/NM/S	No	TR/MB. Clientele: mostly older, mostly male. Crowd: post-work, regulars.
24	21/08/2020: 55	SU; Edinburgh	Appears Independ	1	5	S/S	Full	3/1	Yes	Table, app	Masks, apron	None	No/M/S	No	MO/MB. Clientele: mostly young, mixed genders. Crowd: nightlife, couples/small groups.
25	28/08/2020: 20	T; Perth & Kinross	Independ	5	4	Indoors not used/L	Full	5/0	Yes	Bar	None	None	Yes/M/N/S	No	TR/MO. Clientele: mixed ages, families with children, mixed genders. Crowd: couples/small groups.
26	22/08/2019: 55	T; East Dun.	Appears Independ	2	2	M/S	Full	18/0	No	Table	None	Music	No/NM/S	Yes	FO. Clientele: mixed ages, mixed genders. Crowd: couples/small groups.
27	22/08/2020: 10	T; Falkirk	Independ	2	1	M-L/None	Half full	4/0	Yes	Table, bar	Masks	TV muted	No/NM/S	No	TR/SP/MB/GM. Clientele: mostly young, mixed genders. Crowd: post-work, nightlife, couples/small groups, regulars.
28	21/08/2020: 20	V; Stirling	Independ	5	3	M/L	Half full	3/0	Yes	Table, bar	Masks	None	No/M/NS	No	TR/MB/GM. Clientele: mostly older, mostly male. Crowd: couples/small groups, regulars.
29	22/08/2017: 05	SU; Edinburgh	Appears Independ	1	3	M/S	Full	5/1	Yes	Table	Masks, visor, apron	TV muted	No/M/S	No	TR/SP/MB/GM. Clientele: mostly older, mostly male. Crowd: football, couples/small groups.
Totals for Sample Criteria in Table 3															

Fri early eve: 3 Sat mid- afterno on: 6 Sat early eve: 2 Fri/Sat later eve: 18	Edinbur gh: 9 Glasgow : 8 Clacks: 3 E.Dun: 3 Falkirk: 1 Highlan d: 1 Moray: 1 N. Lan: 1 Perth & Kinross: 1 Stirling: 1	Ind: 8 Appear s Ind: 10 Small PubCo: 2 UK PubCo. : 7 Leased from UK Chain: 1 Other Pub Co: 1	UR1 : 17 UR2 : 7 UR3 : 2 UR4 : 1 UR5 /6: 2	1: 4 2: 3 3: 4 4: 9 5: 9	(Indoor venue size) S: 2 S-M: 2 M: 10 M-L: 5 L: 8 Indoors not used: 1 NR: 1	Full: 12 Nearly full: 1 Half full: 11 Fairly empty: 5
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^a All observations were 1.5 – 2 hours long; ^b CC=city centre; SU=suburban; T=Town; V=Village; ^c Independent; chain; tenanted. ^d Scottish Government 6-fold Classification (1=most urban; 6=most rural).

^e Scottish Index of Multiple Deprivation (1-5, 1=most deprived; 5=least deprived); ^f S/M/L: S=under 50 people; M=50-100 people; L=over 100 people; NR=no response; ^g Fairly empty; full; half-full;

^h Number of front of house /security; ⁱ Details (phone number/name were taken for at least one person in the party): Yes/No/optional; ^j Where drinks/food could be ordered whether: Table service, via app, at the bar

^k Type of PPE worn by staff: paper or cloth mask, visor, apron, gloves, none; ^l Music; TVs on but muted; no music or TVs on, Not recorded (N/R) for venues 1-20;

^m Queue recorded at time of observation (yes/ No/ Not recorded [NR]); Queue management: whether marked (e.g. with clear spacing marked on the ground or poster/sign at entrance telling patrons to distance or not to queue) (M/NM) and/or staffed (by a host or security guard) (S/NS). ⁿ Queue recorded at time of observation (yes/ No/Not recorded [NR]); ^o FO=Food-oriented; MB= mostly bar oriented (no food); SP=Sports bar; TR=Traditional pub; MO=Modern bar; FA=Family oriented; GM=Slot/game machines/music/darts/quiz/pool; Other characteristics as observed e.g. description, age, and gender of clientele.

Table S4: Summary of Premises Observation Schedule

Observation Report Sections Summary
Section A (pre-observation) Booking System
Section B (report from observation)
What kind of venue is this? 1a) Type of venue 1b) Clientele 1c) Size (Indoor/ outdoor) 1d) Location 1e) How busy? 1f) Noise level (Music/ TV) (<i>included in August observations only</i>) 1g) Staffing levels
How is the venue set up physically? 2a) Access (queues outside/ entry management) (<i>further details added in August observations regarding queue management</i>) 2b) Outdoor Layout 2c) Indoor Layout (number of tables/distance between tables) 2d) Pinch points Queues inside premises/ management of queues (<i>included in August observations only</i>) 2e) Ordering system (bar/ table; any queue for ordering/ -) (<i>further details added in August observations regarding queue management for ordering food/drink</i>) 2f) Toilet (management of access to toilets/ queuing system/ signage; limit on numbers) (<i>further details added in August observations regarding queue management for toilets</i>) 2g) Signage (Posters; Stickers; measuring tape)
What hygiene routines are in place? 3a) PPE (type; whether worn properly and consistently) 3b) Cleaning (tables, door handles; toilets) 3c) Touching shared surfaces/items (cutlery, glasses; payment methods; hand sanitisers)
How is it all working? Incident reporting Please report all incidents whether positive or negative, referring back to the training manual regarding how to best report incidents with rich descriptions) <i>Include start and end times for the incident(s); details of incidents; behaviour or system that started the incident; order of events; behaviour of each patron; any patron intent or motivation if apparent. Levels of intoxication; details of who got involved in the incident -including staff- or to diffuse the situation (or not). If several incidents, describe if they are related; also description of how the incident ended.</i>

