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Distilling our changing relationship with alcohol during COVID-19

Drug Policy Modelling Program
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INTRODUCTION

The COVID-19 pandemic currently sweeping the globe poses a major public health crisis and is likely to have profound and lasting effects on most elements of society; it has produced a public health intervention on a scale never before seen. A noteworthy aspect of the containment measures has been the progressive closure of all licensed venues. Alcohol policy scholars have long argued that reducing the availability of alcohol is one of the most effective measures to reduce alcohol-related harm (Babor, Caetano, & et al., 2010). However, in the last 70 years, there have been few opportunities to study the effects of the reduction of alcohol availability. COVID-19 responses in Australia have led to a dramatic reduction of certain modes of alcohol availability. While 'on-premise' alcohol availability has all but ceased in NSW, 'off-premise' alcohol is still available and early data suggests a 50 to 75% increase in sales by one source (Waters, 2020) combined with an uptick in purchasing from on-line alcohol delivery services. These dramatic changes to the availability of alcohol and limits on the places and settings in which it can be consumed are certain to impact on consumption and alcohol-related harms. However, we do not know in which direction(s).

Within liberal democracies, alcohol consumption has multiple constructions; it can be a marker of celebrations, a tool for socializing and bonding, a transformative ritual marking the end of a task and the beginning of pleasure (Vallee, 1998). However, for many it is also a coping mechanism (DeMartini & Carey, 2011) and for some, associated with domestic violence (Devries, Child, Bacchus, Mak, Falder, Graham, Watts, & Heise, 2014) and a struggle with addiction (Cunningham & McCambridge, 2012). In this context, COVID-19 containment measures may inadvertently be increasing harm (Gearing, 2020). While a body of work on the relationship between recessions and alcohol-related harm suggests that recessions are associated with lower alcohol-related harms (Ritter & Chalmers, 2011), the current physical distancing and containment measures add a significant layer of complexity to the picture, with the attendant effects on stress and mental health (de Goeij, Suhrcke, Toffolutti, van de Mheen, Schoenmakers, & Kunst, 2015). Problematic consumption of alcohol contributes to all the leading causes of death in Australia, including but not limited to heart disease, cancer, respiratory failures and family violence (Ogeil, Gao, Rehm, Gmel, & Lloyd, 2016). Heavy drinking is also associated with increased utilisation of emergency healthcare facilities due to an increase in falls, accidents, and antisocial behaviour (Fulde & Duffy, 2006). The current changes to alcohol policy represent a unique and vital opportunity to study alcohol consumption and purchasing under high level restrictions, with the potential to inform the future of alcohol policy in Australia and internationally.

Many countries have responded to COVID-19 with a range of changes to alcohol policy. In India, a complete prohibition on alcohol was introduced (Ghosh, Choudhury, Basu, Mahintamani, Sharma, Pillai, Basu, & Mattoo, 2020). In many other countries, the closure of licensed venues was accompanied by concerns about increased home drinking, for example in the UK (Finlay & Gilmore, 2020). In Australia, there have been a number of reports regarding spikes in alcohol sales (Koziol, 2020; Waters, 2020), and concerns raised about online sales (Colbert, Wilkinson, Thornton, & Richmond, 2020), and increased home drinking (FARE, 2020) although this phenomenon long predates COVID-19.

The arrangements for purchasing alcohol have changed considerably under COVID-19. Much has been reported earlier this year in the media about an increase in overall liquor sales in March, relying on credit card data released by CBA¹ which compared expenditure in the week ending 20

¹ <https://www.commbank.com.au/guidance/business/an-early-look-at-how-the-coronavirus-is-affecting-household-spen-202003.html>

March 2020 (i.e. the first week of lockdown in NSW) and a year prior (dates not released). According to CBA data overall alcohol spending was reported to be up 20.4% with bottle shops spending up 36.8% and alcohol services (pubs, hotels etc.) down 6%. Relying on anecdotal data supplied by internet retailers, there has reportedly been an increase in online alcohol sales as of April (Waters, 2020).

Though academic research into online alcohol purchasing is in its nascent stage, market research led and commissioned by the alcohol industry has identified online alcohol sales as a growth industry for the last five years. In 2019 IBISWorld reported that the online alcohol sector is in a growth period, averaging 14% annual growth over the last five years (Colbert, Thornton, & Richmond, 2020). In March IBISWorld released an adjusted growth prediction for the sector of 16.7% increased annual revenue over the five years through 2019-2020, to \$1.3 billion. Revenue for 2020-2021 is expected to increase by a further 16%. It is worth noting that this adjusted assessment was released a week before lockdown came into effect in NSW, suggesting that, much like other online retailers they were a growth industry in a position to continue trading under lockdown. VicHealth conducted a survey in April using an established research panel and found that 1 in 10 of their respondents used on-demand alcohol delivery services. However, Roy Morgan's Alcohol Retail Report² released on 22 May 2020 reported that supermarket alcohol retailers were the ones to see a spike in sales, and now hold the largest market share (40.5%) in Australia's alcohol industry.

Increases in solitary drinking associated with COVID-19 have also been of concern. Wardell et al (2020) found that "living alone was associated with increased solitary drinking (controlling for pre-COVID 19 levels)". Other research has found that solitary drinking is associated with and a predictor of alcohol problems (for example Corbin, Waddell, Ladensack, & Scott, 2020). Solitary drinking has been identified as a marker for alcohol-related harms for some time (Skrzynski & Creswell, 2020), exacerbated by the confinement measures associated with lockdown (McPhee, 2020; The Lancet Gastroenterology, 2020). Similarly concerns with drinking at home have been raised (Callinan & MacLean, 2020).

These factors are compounded by the stress and uncertainty associated with COVID-19 and the imposed isolation from lockdown. The psychological impacts of lockdown have been summarised from a systematic review: "Most reviewed studies reported negative psychological effects including post-traumatic stress symptoms, confusion, and anger. Stressors included longer quarantine duration, infection fears, frustration, boredom, inadequate supplies, inadequate information, financial loss, and stigma" (Brooks, Webster, Smith, Woodland, Wessely, Greenberg, & Rubin, 2020, p. 912). It is unsurprising that alcohol consumption may increase under these circumstances. On the other hand, lockdown has been seen as a catalyst for behaviour change, including attempts to quit smoking and reduce alcohol consumption (Jackson, Garnett, Shahab, Oldham, & Brown, 2020). The positive opportunities arising from lockdown have received substantially less focus.

The research to date on alcohol consumption in association with COVID-19 has been mixed. Biddle et al (2020) conducted a national online survey in May, 2020 asking about alcohol consumption in the last 12 months. They reported that, of those who drank 20.2% increased their consumption (3.5% by "a lot"); and 27% decreased their consumption (15% by "a lot"). Gender was a significant variable: more males decreased their consumption whereas more females increased their consumption. Overall though, the majority of those sampled did not significantly change their alcohol consumption. In the Biddle et al study, it is not entirely clear which data relate specifically to COVID-19 (because they asked about drinking over the last 12 months). Callinan and colleagues (2020) surveyed people who drank at least monthly (between 16th April and 11th May). They found a

² <http://www.roymorgan.com/findings/8412-alcohol-market-share-may-2020-202005180658>

decrease in harmful drinking, in particular among younger women. Neill et al (2020) administered an online survey on the 1st April, asking respondents whether they had increased or decreased their drinking (the COLLATE study which focusses largely on mental health, and is administered monthly). The predictors of increased drinking included previous drinking history, higher income, depression, and age (with middle aged people more likely to report increased drinking compared to younger and older samples). In a survey of people who regularly consume illicit drugs, Sutherland et al (2020) found that 41% increased their alcohol consumption, 33% decreased and 26% had not changed their consumption (Wave 1 of the ADAPT study). The Australian Bureau of Statistics (ABS, 2020) has been regularly surveying Australians about household impacts. Wave 3 (29 Apr-4 May) and Wave 7 (24-29 June) asked about alcohol consumption changes: at Wave 3, 14.4% reported increased consumption; 9.5% decreased consumption, and 47.1% no change (of those who consumed alcohol). At Wave 7, 14% reported increased consumption, 15% decreased, and 72% no change (of the total sample). None of this work to date has been designed to ask detailed questions about alcohol consumption and purchasing patterns, but it seems clear that there is a diversity of patterns occurring.

Untangling the influences of alcohol availability restrictions, the economic impacts, the social distancing measures, and attendant stress and uncertainty on alcohol consumption and purchasing behaviours is very difficult. Isolating any one specific alcohol policy variable, such as the changes to liquor licensing and alcohol availability, is not possible. But confining ourselves to one state, NSW, carefully tracing the policy changes over time, matched to survey responses and conducting longitudinal research provides an opportunity to start to untangle the impacts.

This study sought to:

1. Detail the NSW policy and retail changes to alcohol availability from early February through to end July 2020;
2. Examine changes in alcohol consumption associated with the lockdown measures in NSW;
3. Assess the extent to which changes to alcohol consumption during lockdown were subsequently sustained;
4. Evaluate the links between alcohol policy changes and changes in alcohol purchasing and consumption patterns to inform future alcohol policy.

METHODS

In this study, we employed three different methods:

- Documentation of policy activity;
- A quantitative repeated measures longitudinal survey;
- A series of in-depth qualitative interviews.

This report focusses on the first two study components, with use of in-depth interview data to highlight quantitative findings.

Policy documentation

Initial construction of the policy timeline in May 2020 used searches of media releases and announcements of key NSW and Commonwealth government departments and ministers for all policy relating to COVID-19 from the beginning of 2020. Additional searches were conducted in Factiva (limiting sources to ABC News and the Sydney Morning Herald) with key words including ‘coronavirus’ or ‘COVID-19’ and ‘alcohol’, ‘announcements’, ‘announced’, ‘restrictions’ and/or ‘licensing’. From 1 May onwards, ABC News and Sydney Morning Herald were read daily, with new updates and announcements directly recorded.

The policy data were then categorised into five types (liquor licensing, economic, licensing with social distancing, social distancing – other, and travel) based on the area of impact, and with reference to existing COVID-19 policy taxonomies (Peña, 2020). The policy documentation was also the central source for informing the timing of the longitudinal survey waves, as detailed next.

Longitudinal survey

We conducted a longitudinal study of drinking behaviours in NSW, inviting any members of the public who had consumed alcohol in the last year, to complete an online survey. Participants were recruited through convenience sampling via advertisements in social media, digital noticeboards, and community emails. The waves of the survey matched significant alcohol-related policy changes, as detailed in Table 1.

Table 1: Longitudinal survey waves, matched to policy changes

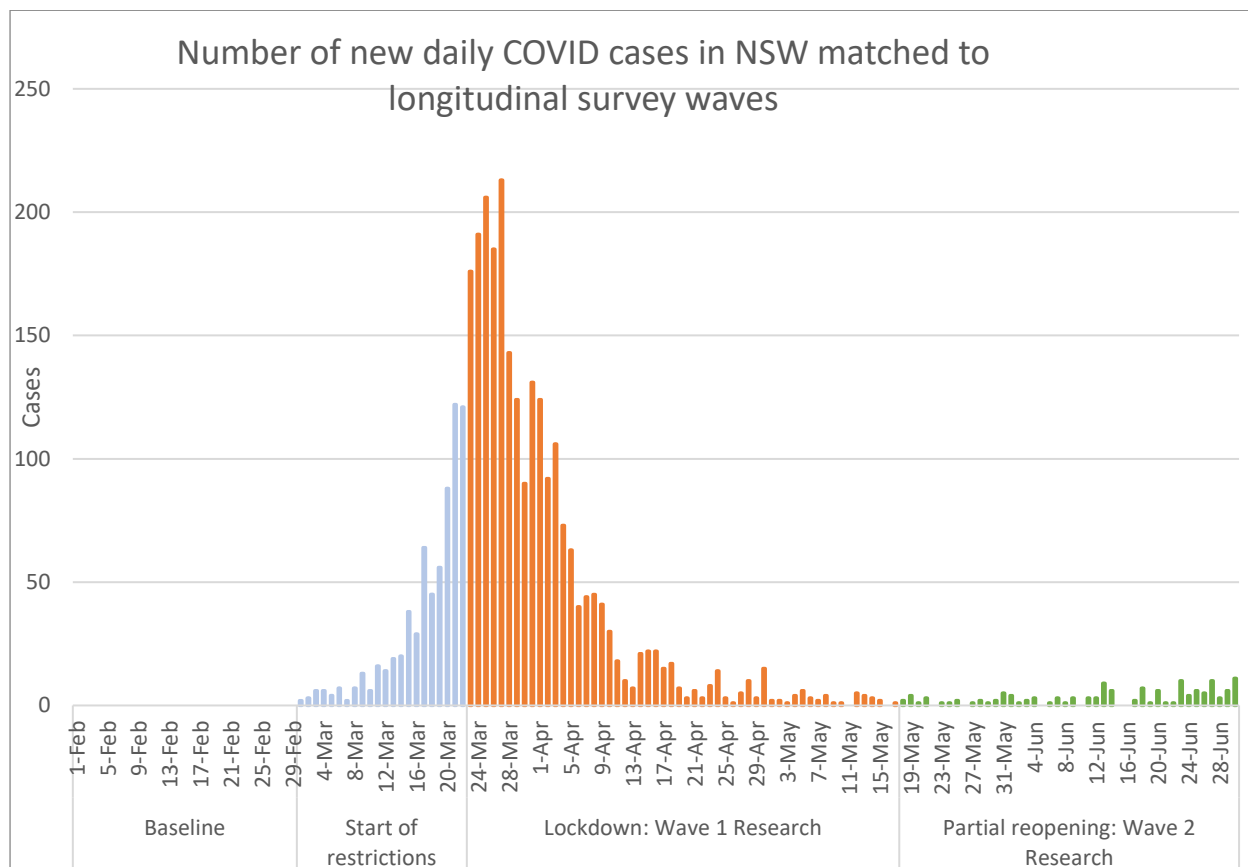
Survey wave	Policy environment	Survey reference period	Overview of policy changes
Baseline	Pre-lockdown	Reference period: February 2020. The survey was completed between 6 th and 18 th May, retrospective data collected for February. The survey asked about the month of February.	Policy changes start with restrictions on international arrivals.
Wave 1: Lockdown	NSW lockdown	Reference period: 23 March – 14 May. The survey was completed between 6 th and 18 th May. (Note: Lockdown ended on 14 th May, n=5 completed the survey between 15 th and 18 th May). The survey asked about the period “since 23 rd March” and “since CV19 containment measures”.	Lockdown in NSW begins on 23/3/2020. Between 23 March and 14 May licensed and other venues close and gatherings of more than 2 people banned.
Wave 2: Easing of restrictions	Easing of restrictions /Partial reopening	Reference period: 15 May – 30 June. The survey was completed by respondents between 10 th and 25 th June. The survey asked about the last month, and “current typical pattern of drinking”	From 15 May some easing of social restrictions with businesses allowed to reopen with strict social distancing guidelines, caps on patrons in licensed venues.

Note: further details of the policy activities are described in Part 1 of the results.

The first survey collected retrospective information about drinking habits and behaviours in February 2020 (Baseline), as well as information about these behaviours during lockdown (Wave 1). We resurveyed the same people again in June, asking about their drinking behaviour over the last month (which covered the period after the lockdown had ended, with partial reopening, Wave 2). We have also resurveyed the same group, administered from 26th July to 11th August (Wave 3) with those data pending, and a fourth and final Wave is planned towards the end of the year.

The relationship between the daily number of COVID-19 cases in NSW, and the survey waves reported on here can be seen in the below figure.

Figure 1: Daily COVID cases, NSW matched to longitudinal survey waves



The survey

The surveys were conducted online using Qualtrics. The first survey (Baseline and Wave 1) took on average 18 minutes to complete, the Wave 2 survey took 10 minutes on average to complete. Survey items comprised both pre-existing, validated items and new items created specifically for this study. A copy of the survey is available from the first author.

The survey asked participants about typical drinking for that month³, and then they completed a detailed drinking diary. The drinking diary asked about a ‘typical week’ during the reference period. In the diary each day of the week was listed and respondents were asked to identify the number of standard drinks on Monday, Tuesday and so on; the time at which drinking commenced each day, and the time when they finished drinking each day; who they drank with each day; where they had

³ These two questions: ‘frequency of drinking in last month’, and ‘typical number of standard drinks per drinking occasion’ were only used to compare those who completed the surveys with those who did not (these were the first two questions). All the other drinking data analysed herein was taken from the seven-day drinking diary.

purchased the alcohol from that they consumed on that day; and the location of the drinking each day. A pictorial of what made up a standard drink was provided twice within the questionnaire to attempt to ensure that standard drinks were recorded. The drinking diary data was used to generate the number of standard drinks per week (summed), and details about drinking times, places and with whom.

A separate set of questions to the drinking diary asked about the frequency of purchasing behaviours (take-away alcohol purchasing, on-premise alcohol purchasing for immediate consumption, and home delivery (online) alcohol purchasing). These questions were used to generate the purchasing variables.

A 14-item questionnaire on motives associated with drinking was included, drawing items from the Drinking Motives Short Form and the Modified Drinking Motives Scales (Grant, Stewart, & Birch, 2007; Kuntsche & Kuntsche, 2009). Five sub-scales were calculated: general coping motives (2 items), social motives (3 items), anxiety motives (3 items), depression motives (3 items) and enhancement motives (3 items). In this report we focus on the social motives and have combined the anxiety and depression motives into one sub-scale (negative affect). The three questions that comprised social motives for drinking (on a Likert scale 1-5) were: “to celebrate a special occasion with a friend”; “because it makes social gatherings more fun”; and “because it improves parties and celebrations”. The six questions that comprised drinking to manage negative feelings were: “to stop me dwelling on things”; “because it helps you when you feel depressed or nervous”; “to cheer you up when you are in a bad mood”; “to reduce my anxiety”; “to relax”; and “to stop me from feeling so hopeless about the future”.

We also collected data about participants’ perceptions of the health harms or benefits from their drinking, and information about their personal circumstances including who they live with, their household income, their relationship status, and household type. At each survey wave, we asked about changes in income since the last survey, the type of social isolation they were experiencing, and the amount of time spent at home. Age at time of the survey and gender were recorded. Age groups were created from the raw data using generations: Gen Z (born between 1996 and 2010); Millennials (born between 1981 and 1995); Gen X (born between 1965 and 1980) and Baby Boomers (born between 1946 and 1964).

The second survey (Wave 2) differed from the first survey (Baseline and Wave 1) in very minor ways. We configured the drinking diary slightly differently to provide drop-down response selections for all the entries other than number of standard drinks (the first survey was all free-form text). The list of the questions administered at each wave is provided in Appendix 1.

Participants were informed that they were not obliged to complete the survey and that they could exit at any time. They were also informed that by completing the survey, they were providing consent for their data to be used (UNSW Ethics committee approval #: HC200305). Respondents were invited to participate in a prize draw (a Coles voucher, valued at \$200).

Data analysis

All data were cleaned, outliers checked for any implausible responses, and variables recoded where required. Analyses were undertaken in excel, SPSS and R (version 4.0.2). The most appropriate statistical tests were chosen for each variable and research question: χ^2 where proportions at a single time point were being compared between groups, t-tests for comparisons between groups for continuous variables, mixed effects regressions for time effects, and finally multinomial logistic regressions for predicting group membership (increase, decrease, and remain the same), according to change in alcohol consumption.

The sample sizes

A total of 2,018 people started the first survey. More than half (n=1,446) dropped out early with the vast majority (n=1,249 62%) stopping the survey after the first 3 questions (and where the seven-day diary started). A less detailed questionnaire (asking for example about average monthly consumption) would have retained many more people, but would not be sufficient to confidently examine changes in drinking patterns. Of concern, however, is that the high drop out rate early in the survey may reflect a biased sample. A comparison between those who dropped out and those who completed the survey, on responses to the first three questions, was undertaken. The details are given in Table A1 (question 1), A2 (question 2), and A3 (question 3).

The first question asked whether February 2020 was a typical drinking month. For 19% of the respondents who dropped out the answer was no, for those who completed, 13% said no. The second question asked about typical monthly drinking patterns at Baseline. A smaller proportion of the sample of N=572 were consuming alcohol daily (8% compared to 13% in the N=1446) and on 5 to 6 days per week (9% compared to 12%), but otherwise the frequency of consumption appeared very similar between those who completed the survey and those who dropped out after the first three questions (for example 25% in both samples consumed alcohol 3- 4 days per week; 4% in both samples consumed alcohol about 1 day a month, see Table A2). This second question seems to suggest that the people who left the survey after three questions may have been drinking more frequently than the retained sample. To examine whether there were differences in quantity consumed, we compared to responses to the third question, typical number of standard drinks consumed per drinking occasion. As can be seen in Table 2 below, the two groups had remarkably similar proportions in each of the response categories.

Table 2: Comparison of those who completed the survey and those who dropped out, Question 3, average number of standard drinks consumed per drinking occasion

	Respondents who dropped out (n=1446)		Respondents who completed the survey (n=572)	
	N	%	N	%
Typical SD consumption				
20 or more standard drinks	31	2%	8	1%
16-19 standard drinks	41	3%	10	2%
13-15 standard drinks	66	5%	26	5%
11-12 standard drinks	68	5%	25	4%
9-10 standard drinks	116	9%	60	10%
7-8 standard drinks	131	10%	79	14%
5-6 standard drinks	230	17%	81	14%
3-4 standard drinks	327	25%	129	23%
2 standard drinks	227	17%	105	18%
1 standard drink	68	5%	42	7%
Half a standard drink	20	2%	7	1%
Total (excl missing)	1325		572	

This gives us confidence that despite the very high numbers who commenced the survey but did not move beyond the first three questions, there were not substantial differences in the quantities consumed between these two samples.

The final sample (n=572) at Baseline and Wave 1 comprised more females than males, as is common with online survey research advertised via social media (Thornton, Batterham, Fassnacht, Kay-

Lambkin, Calear, & Hunt, 2016). 64% of the sample were female and 34% were male⁴. The sample comprised 33% Gen Z (18-24 years), 32% Millennials (25-39 years), 23.3% Gen x (40-55 years), 11.2% Baby Boomers (56-74 years) and 0.5% of the 'Silent Generation' (75 years +). (See Table A4, appendix). In this sample, younger people are over-represented compared to the 2019 NSW adult population figures⁵.

The majority of the respondents came from urban areas (62%), with 24% coming from regional NSW and 11% from rural NSW (as self-reported). (See Table A5, appendix).

For Wave 2: Easing of restrictions, the survey link was sent to 562 people who had consented at the first survey. We received responses from n=389, a 69.2% response rate⁶. We then needed to match those who had completed the survey at Wave 2 to their Baseline/Wave 1 responses. A self-generated unique alphanumeric identifier was used,⁷ completed by respondents in the first and subsequent surveys. At Wave 2, 60 people (of the 389) did not complete the alphanumeric details. This meant that there were n=329 people who could potentially be matched. Using both exact unique ID matches and fuzzy set matches (on the unique ID coupled with gender, age and relationship status) resulted in n=287 (87%) people being matched. This sample of n=287 formed the basis for the Part 4 of the results.⁸

Qualitative in-depth interviews

In addition to the longitudinal survey, we also interviewed 38 people in-depth about their experiences of alcohol and the changing circumstances that everyone found themselves in. These interviews took place between 26th May and 14th August. The qualitative interview data are the subject of separate analysis and report, but here we have used quotes from these interviews to complement the survey findings.

⁴ Nine respondents (2%) either selected 'non-binary' or 'prefer not to say'

⁵ ABS population statistics for NSW 2019 show Gen Z comprise 12% of the adult population, Millennials 28%, Gen Z 26%, Baby Boomers 25% , and the Silent Generation 9%

⁶ There were N=410 survey completions, of which n=21 were duplicates. The second responses have been removed from the survey.

⁷ The unique ID comprised first letter of mother's name, first letter of father's last name, first letter of middle name, first letter of city/town where born, and birth month, resulting in a 5 item code unique to each respondent.

⁸ Further analysis of all responses, and comparisons between those able to be matched compared to those who were not able to be matched are underway.

RESULTS

The results are divided into four parts:

- Part 1 details the policy changes over time in NSW that we hypothesise impact on alcohol consumption and purchasing behaviours.
- Part 2 examines the Baseline (February) drinking patterns and then compares those to what occurred under lockdown (Wave 1) for the same individuals. This part also examines the changes in alcohol consumption, patterns of drinking, purchasing behaviour, and drinking motives that occurred under lockdown (Wave 1).
- Part 3 then identifies factors that predicted whether people decreased or increased their drinking in association with lockdown
- Finally, Part 4 describes what happened to people’s drinking at Wave 2, after lockdown was eased. Did people return to their baseline levels of drinking or were the changes that occurred to drinking during lockdown (Wave 1) sustained at Wave 2?

The results herein should be seen as preliminary – there are two waves remaining to be collected and analysed, and further analysis of all the data, including the qualitative analysis of the in-depth interviews is pending.

PART 1: COVID-19 policy changes

As our outcome of interest was alcohol consumption, we have tracked all policy changes that may have influenced alcohol consumption in some way. This included policy changes enacted as COVID-19 containment strategies, made in relation to social distancing and social restrictions, household economics, travel, and anything to do with licensed venues. We tracked policy from February 1st to the end of June 2020. All announcements by the Commonwealth and NSW governments were tracked. Other state and territory government announcements were included where there was an impact on NSW (i.e. through border closures or declaration of NSW ‘hot spots’).

Table 3 provides an overview of key policy changes between the beginning of February and end of June 2020. Dates given indicate the date whereby policies came into effect unless otherwise stated. Broadly, the policy changes that have occurred can be categorised into four stages:

- February: Pre-lockdown
- 1st -22nd March: Gathering restrictions
- 23rd March – 14th May: NSW lockdown – non-essential businesses shut and restrictions on social gatherings and leaving place of residence
- 15th May - 30 June: Partial reopening/easing of restrictions

Table 3: Overview of key policy changes between February and June 2020

Policy environment	Timeframe	Key policy changes
Pre-lockdown	February 2020	Policy changes related to international travel: 1/2/2020: Commonwealth (CW) announces travel restrictions to people arriving from Wuhan on 1/2/2020 followed by a ban on all travellers from China and then Iran
Gathering restrictions	1 – 22 March	Social distancing policy changes occur in rapid succession over a relatively short period of time from 13 March onwards. 13/3/2020: First major restrictions on public gatherings announced, with cancellation of events of more than 500 people announced by Commonwealth. Non-essential gatherings of more than 100 people banned (impacting licensed venues) a few days later.

Policy environment	Timeframe	Key policy changes
NSW lockdown	23 March – 14 May	Lockdown in NSW begins on 23/3/2020. NSW pubs and all other licensed venues closed. Gyms, sporting venues, places of worship all closed. Restrictions on number of people allowed at weddings and funerals. Parents urged to keep their children home from school. Outside gatherings of more than 2 people banned. Becomes unlawful to leave place of residence except for a few limited reasons.
Easing of restrictions/Partial reopening	15 May – 30 June 2020	From 15 May some easing of social restrictions starting with outdoor gatherings of up to 10 people permitted. Restaurants and pubs allowed to seat up to 10 people at a time as long as they serve food. Up to 5 visitors allowed in household. Restrictions ease further from 1 June with some businesses like museums and libraries opening and pubs, cafes and restaurants customer cap lifted to 50. From this time alcohol can be purchased without food but customers must remain seated. More businesses reopened through June (gyms and pools on 13/6), and from 11 June up to 20 people allowed to gather inside and outside of homes.

Table 4 provides a detailed mapping of all policy enactments and announcements between 1st February and 30th June 2020. We categorise policy into five types:

- 1) liquor licensing (where changes were only to licensed venues)
- 2) economic (any changes related to household economics)
- 3) licensing with social distancing (where restrictions on social distancing included changes to the operations of licensed as well as non-licensed venues)
- 4) social distancing other (where restrictions on social distancing did not include licensed venues)
- 5) travel (includes both domestic and international restrictions).

Liquor licensing

Looking at licensing changes tells a more complex story than a simple set of policy shifts from “normal” to “lockdown” back to “normal”. While licensed venues were shut down entirely from 23rd March to 15th May, and partly from 15th May onwards, on the 25th March the NSW government responded by loosening restrictions on alcohol sales so that restaurants and bars with existing liquor licences could both sell take-away alcohol and provide alcohol delivery – a significant change to licensing arrangements, especially for those venues who had not previously sold take-away alcohol or provided home delivery. Additionally, for a limited time (between 25th March and 27th April), liquor retailers voluntarily enacted restrictions on alcohol sales to customers as a response to panic buying⁹. While licensed venues were reopened from 15 May, throughout May and June they could only operate under new guidelines and with social distancing and customer caps. From 15 May to 1 June alcohol could only be purchased with food. From 1 June onwards, alcohol could be purchased without food, but all patrons were required to remain seated.

Economic

Major policies were announced that had significant impacts on household finances that were mostly related to income support, schooling, or housing. The Job Seeker supplement was announced on the day before full lockdown in NSW (22 March) with an additional \$550 per fortnight available for some workers also in receipt of Newstart, followed by JobKeeper (announced 30 March) providing an

⁹ Retail Drinks Australia: Retail Drinks Announces Voluntary National Initiative. Available at: <https://www.retaildrinks.org.au/news/retail-drinks-announces-voluntary-national-initiative> (accessed 7 April 2020).

income of \$1500 per fortnight to employees via their employer. Households with children in childcare were provided with fee-relief, with free childcare (announced 2 April) and remaining so throughout the research period. Those with school aged children were 'encouraged' by the NSW government to keep them at home on the 23rd March (the start of lockdown) for most of the next two months with full-time face to face learning resuming on 25 May.

In terms of housing and policies to avert homelessness, banks announced on 20 March that mortgage holidays and reduced payments would be available for people whose income had been impacted by COVID-19. The NSW government announced a 6 months evictions moratorium for renters in NSW on 18 April, and on the 18 May announced funding for crisis accommodation for international students.

Licensing with social distancing

Venues with and without liquor licensing were firstly restricted in terms of crowd size, until they were shut down completely between 23rd March and 15 May. Non-licensed venues included in the shutdown included sites of social and religious gatherings, entertainment, fitness and recreation including cinemas, children's parks, gyms, museums, art galleries and swimming pools. Restrictions have been gradually lifting since May 15 (when cafes and restaurants were able to sit up to 10 patrons at a time as long as they serve food), with all impacted venues reopened by the end of June, albeit with indoor venues still subject to social distancing restrictions, and caps on customer numbers.

Social distancing other

Significant restrictions were placed on the ability of people to socialise and gather with others outside of their place of residence during lockdown with a ban on public gatherings of more than 2 people in NSW on 31 March, and a new public health order that made it unlawful to leave your place of residence except "to obtain food or other goods and services", work and education that cannot be done from home, exercise, medical or caring reasons, and a limited number of other reasons".¹⁰ These restrictions lasted a month with visits by two adults and their dependent children to another household being allowed from 1 May. While restrictions lifted progressively throughout May and June, attendance at weddings, places of worship, and funerals and some limits to the number of people who can meet at any one time remained at the end of June 2020.

Travel

Restrictions on travel were the first COVID-related policy changes, with travellers from Wuhan, China, subject to extra screening announced 23 January. Progressive policy changes removed the ability of people to travel internationally and then interstate between 23 January and 30 June.

¹⁰ <https://www.smh.com.au/national/nsw/six-months-in-jail-11-000-fine-for-leaving-home-without-a-reasonable-excuse-20200330-p54fg8.html>

https://gazette.legislation.nsw.gov.au/so/download.w3p?id=Gazette_2020_2020-65.pdf

Table 4: Timeline of detailed policy changes and policy announcements impacting residents of NSW between 1 Feb and 30 June 2020

Date	Policy change	Areas of policy impact
01-Feb-20	Travel from mainland China banned	Travel
06-Feb-20	NSW government announce 30 venues across NSW can now offer live entertainment as part of their licenses	Liquor/licensing
13-Feb-20	Extension of travel ban to travellers arriving from China (further extensions throughout Feb not listed here)	Travel
15-Mar-20	Immediate cancellation of major events with more than 500 people in NSW	Licensing with social distancing
16-Mar-20	Compulsory 14-day self-isolation introduced for all those returning from overseas travel	Travel
18-Mar-20	Non-essential indoor gatherings of more than 100 people suspended, includes cap on licensed venues. Aged care visits restricted. Suggestion that venues implement 1.5m distancing and distribution of hand cleaning materials	Licensing with social distancing
19-Mar-20	Borders closed to all non-Australian residents and citizens	Travel
20-Mar-20	New guidelines on non-essential gatherings state for indoor gatherings under 100 and outdoor gatherings under 500, a density of no more than one person per four square metres of floor space	Licensing with social distancing
20-Mar-20	ABA members (including big four banks) announce they will give small businesses a reprieve from loan repayments and consider 6-month mortgage repayment holidays for those affected by coronavirus	Economic
22-Mar-20	Job seeker payment announced - Coronavirus supplement of \$550 per fortnight available to those on some income supports (job seeker payment). Individuals can access \$10,000 of their superannuation	Economic
23-Mar-20	Non-essential activities shutdown in NSW including pubs, registered clubs, gyms, indoor sporting venues, cinemas, entertainment venues, casinos, religious gatherings, places of worship and night clubs. Restaurants and cafes restricted to (food) take-away and/or home delivery	Licensing with social distancing
23-Mar-20	Parents in NSW 'encouraged' to keep their children home from school	Economic
24-Mar-20	All Australians advised to stay at home except for essential outings, including work, grocery shopping, and medical appointments and supplies. Exercising outside alone or with one friend is fine.	Social distancing other
24-Mar-20	Ban on Australians travelling overseas	Travel
25-Mar-20	Further businesses closed including gyms, swimming pools, galleries and museums, auctions, and open houses. Restrictions placed on weddings (limited to 5 people), funerals (limited to 10 people) and outdoor training (limited to 10 people)	Social distancing other
25-Mar-20	NSW liquor laws relaxed to allow licensed venues, restaurants, and cafes to sell alcohol off-site and delivery. No limits on volume or type of alcohol that can be sold	Liquor/licensing
25-Mar-20	In response to panic buying, Woolworths group (BWS, Dan Murphy's) announces that some of its nationwide liquor retailers will impose restrictions on amount of alcohol one person can purchase (e.g. limits of 3 cases of beer)	Liquor/licensing
25-Mar-20	NSW Police have new powers to issue \$1000 on-the-spot fines for individuals and \$5000 for corporations not complying with ministerial directions relating to COVID-19.	Social distancing other
29-Mar-20	Gatherings of more than 2 people in NSW banned. Unlawful to leave your place of residence except "to obtain food or other goods and services", work and education that cannot be done from home, exercise, medical or caring reasons, and a limited number of other reasons	Social distancing other
30-Mar-20	Job keeper payments announced for some employers. Eligible people can receive \$1,500/fortnight	Economic
31-Mar-20	Retail Drinks Australia (RDA) announce a voluntary initiative by participating liquor retailers to place temporary limits on the amount of product customers can purchase in one transaction in response to fears of panic buying.	Liquor/licensing

Date	Policy change	Areas of policy impact
02-Apr-20	Free childcare announced (services to temporarily stop charging fees to parents)	Economic
08-Apr-20	Liquor & Gaming NSW and NSW Fair Trading issued a Statement of Regulatory of Intent to allow clubs, pubs, small bars, cafes and restaurants to sell take-away food and alcohol on Good Friday and ANZAC Day	Liquor/licensing
09-Apr-20	Free preschool in NSW for up to 6 months announced	Economic
13-Apr-20	Six-month moratorium on residential evictions in NSW by landlords of tenants who have lost more than 25% of their income	Economic
15-Apr-20	12-month license fee waivers for small businesses including liquor licenses	Liquor/licensing
21-Apr-20	NSW government flags plan for return to face-to-face teaching in public schools starting 28 April at 1 day a week	Economic
27-Apr-20	RDA voluntary limits on alcohol purchasing lifted	Liquor/licensing
01-May-20	Two adults and their dependent children will be allowed to visit another household	Social distancing other
15-May-20	Some easing of social distancing measures in NSW. Now allowed: 10 people limit allowed at outdoor gatherings, weddings and religious gatherings/places of worship. Cafes and restaurants can seat 10 patrons at any one time as long as they serve food. Up to 5 visitors to a household at any one time, funerals allowed up to 30 mourners	Licensing with social distancing
18-May-20	NSW Government announce funding for temporary crisis accommodation for stranded international students	Economic
19-May-20	Students across NSW to return to school full-time	Economic
01-Jun-20	Museums, galleries and libraries across NSW reopen with restrictions on number of patrons	Social distancing other
01-Jun-20	Lifting of travel restrictions within NSW	Travel
01-Jun-20	Pubs, clubs, cafes and restaurants can have up to 50 customers, subject to strict social distancing guidelines: 4sqm rule per person must be adhered to. Alcohol can now be purchased without food but customers must be seated. Restaurants can't take bookings of more than 10 people. Poker machines available as long as there is a 1.5m distance between them	Licensing with social distancing
01-Jun-20	Beauty salons across NSW reopened for services including manicures, pedicures, tanning and waxing	Social distancing other
01-Jun-20	Up to 20 people will be able to attend weddings and 50 people can gather at funerals and their places of worship	Social distancing other
08-Jun-20	Government announces free childcare to end 12 July with a return to CSS (although with some increased flexibility around the activity test until 4 October) and Jobkeeper for childcare sector will end also	Economic
11-Jun-20	Up to 20 people allowed to gather outside and in homes	Social distancing other
13-Jun-20	NSW gyms, yoga classes, dance studios, indoor pools, and barre studios reopened	Social distancing other
14-Jun-20	Announcement that 50-person limit on pubs and restaurants will be lifted next month (1 July) with social distancing. Outdoor venues of 40,000 or more can seat 1/4 of their capacity for sporting events and concerts	Licensing with social distancing
24-Jun-20	Victoria records double digit increase in coronavirus cases for 8th day straight. NSW premier calls the outbreak a 'wakeup call' and for residents to rethink travel to Victoria	Travel

*Note that no other significant policy changes enacted or policy announcements between 24 and 30 June 2020.

PART 2: Changes in drinking behaviours before and during lockdown

Typical drinking behaviour for this sample (Baseline)

Data presented here come from the first reference period (Baseline, February) and comprise retrospective self-reports on drinking behaviours pre-restrictions from N=572 people. For the 94% of people in our sample who consumed alcohol in February¹¹, they were drinking a median of 12.0 standard drinks (SD) per week with an interquartile range (IQR) of 15.6 SD per week. The mean was 17.3 standard drinks (SD) per week, with a standard deviation of 18.1 SD. The range was between 0.5 SD (min) and 140 SD (max) per week¹².

Males consumed higher amounts of alcohol than females in this sample, consistent with most research (French, Sargent-Cox, Kim, & Anstey, 2014; Wilsnack, Wilsnack, Kristjanson, Vogeltanz-Holm, & Gmel, 2009), drinking on average 4 days of the week, with an average of 6.3 standard drinks consumed per drinking day. Females consumed alcohol on average 3 days per week, with an average of 4.9 standard drinks on those days. Comparing males and females on the average number of drinking days per week, an independent t-test shows a statistically significant difference ($t(350.63) = 4.159, p < 0.001$). For the average number of standard drinks consumed on drinking days, an independent t-test shows a statistically significant difference ($t(300.44) = 3.51, p < 0.001$). In addition, the median number of standard drinks per week in males and females was 18.0 SD and 10.0 SD, respectively; the distributions in the two groups differed significantly (Mann–Whitney $U = 44642, p < 0.001$).

Using the 2020 draft NHMRC guidelines of greater than 10 standard drinks per week as indicative of lifetime risk of dying from an alcohol-related disease or injury, 52.9% of the sample were drinking more than 10 SD per week. This differed by gender: for females, 45.3% were drinking more than 10 SD/week; for males, 67.4% were drinking more than 10 SD/week.

Participants provided an indication of what time they started and finished drinking over a one-week reference period. At Baseline (February) it was estimated that, on average across weekdays and weekends, people started drinking at 5:35pm and finished drinking at 9:36pm. Of course, drinking times varied across days of the week. As expected, the average drinking start times were the earliest on the weekend (Saturday and Sundays), and the average drinking end times were the latest on Friday and Saturday nights (see Table A6, appendix).

Respondents were asked about the frequency of purchasing alcohol in licensed premises, take-away (off-licence) purchasing, and online (via the internet) purchasing. At Baseline (February), more than half of the respondents consumed alcohol within licensed premises (29% weekly, 28% a few times a month). Around one third of the sample purchased take-away alcohol at least weekly (31%). In February, a minority of respondents purchased alcohol online (19% had purchased alcohol online).

The survey asked about motives for drinking alcohol – here we refer to two types of motives: social motives and motives associated with managing negative feelings. At Baseline, social motives predominated (69% of the sample noted social motives for drinking half the time, most of the time or always). Just under half the sample (41%) said that managing negative feelings was never a motive for drinking; for 42% this motive occurred some of the time. Only a minority of this sample consumed alcohol in association with negative feelings most of the time or almost always (7%) at Baseline (see Table A7 in appendix).

¹¹ Note: our inclusion criteria were people who had consumed alcohol in the last year. But for 6% of them, their drinking diary data for a typical week in February indicated zero alcohol consumption.

¹² Data were checked for invalid responses, and only valid responses were included.

Motivations for drinking did not differ significantly according to gender (see Table A8, appendix). with both unlikely to drink for negative affect at Baseline (males 82%, females 84%: $\chi^2(4, 556) = 1.4077, p = 0.8429$). There were some small differences between females and males in the frequency of social motives for drinking, with 12.6% of females reporting that they drank alcohol for social motives almost always, compared to 9.3% for males. However this difference was not statistically significant ($\chi^2(4, 559) = 4.6554, p = 0.3245$).

Most research concerned with alcohol consumption in Australia has shown a declining pattern of consumption among younger age groups (Livingston, Callinan, Raninen, Pennay, & Dietze, 2018; Livingston, Raninen, Slade, Swift, Lloyd, & Dietze, 2016), and more young adults abstaining from alcohol (NDSHS 2019, 24% aged 25-29 years of age). There were differences in the average amount of alcohol consumed by age group, see Table 5. The highest average weekly consumption was amongst the Baby Boomers (56-74 years of age). This is consistent with national samples of alcohol consumption in Australia. (Further details of the age differences can be found in Table A9, appendix).

Table 5: Average weekly standard drinks consumed by generational group at Baseline

	% (n)	# SD/week			
		Mean	Std. Deviation	Min	Max
Gen Z (18-24 years)	33.2% (189)	15.73	15.20	0.00	83.00
Millennials (25-39 years)	32.2% (183)	14.06	15.01	0.00	94.00
Gen X (40-55 years)	23.4% (133)	17.56	22.63	0.00	140.00
Baby boomers (56-74)	11.2% (64)	21.63	22.14	0.00	98.00
Total sample average	100% (569)	16.28	18.08	0.00	140.00

Note: Three participants were over the age of 74 years, the so-called 'silent generation'. These 3 respondents have been excluded in this and any following generational age analyses. N=569.

Overall, while many features of alcohol consumption and purchasing in this sample were consistent with the national averages and trends in terms of age and gender, this sample was one which consumed alcohol at a higher rate than a nationally representative sample. For example, 10.8% of this sample consumed alcohol seven days of the week, compared to a 5.7% national average (NDSHS 2019). The median number of drinks consumed per drinking day for men in this sample was 3 SD/day, the national average is 2 SD/day. Similarly, for women, the median number of drinks consumed per drinking day in this sample was 3 SD/day, the national average is 1.4 SD/day (NDSHS 2019).

Appreciating that this sample is drinking alcohol at a higher rate than other surveys have detected, and that it comprises a greater proportion of females and younger persons than the Australian population, we now turn to examine what happened to alcohol consumption during the NSW lockdown (March-April).

What happened to drinking behaviours during lockdown?

Overall, there appears to be little change in the average amounts of alcohol consumed. The average weekly standard drink consumption at Baseline was 17.3 SD/week (std dev = 18.1), with the median of 12.0 SD per week and the interquartile range (IQR) of 15.6 SD per week. At Wave 1 the average weekly standard drink consumption was 17.5 SD/week (std dev = 22.1)¹³ with the median of 11.0 SD per week and the interquartile range (IQR) of 15.0 SD per week¹⁴. These are not significantly different.

¹³ A t-test for change in the average number of SD for the whole sample confirmed that the difference was not statistically significant ($t = -0.971, df = 1023.1, p\text{-value} = 0.33$).

¹⁴ A paired sample Wilcoxon Signed-Ranks test indicated that the median number of standard drinks for the whole sample at Wave 1 was not statistically significantly different to the median number of standard drinks for the whole sample at Baseline ($V = 44610, p = 0.065$).

At Baseline, 6% of the sample did not consume any alcohol across a typical drinking diary week. At Wave 1: Lockdown, 10.6% of the sample did not consume any alcohol in the typical week. As one respondent noted:
I did not drink any alcohol whatsoever from about a week or two before lockdown until 3 weeks after lockdown because I was highly anxious and it made me worse (survey respondent, 43 year old female)

Whilst males and females had different starting levels of average drinking (see Table 6 below), the change in drinking between Baseline and Wave 1 for males and for females was not significantly different as confirmed by a repeated measures test using mixed effects regression method, with the effects of change (wave, and Gender*wave) both being non-significant ($p=0.437$ and $p=0.88$, respectively). “Gender” is statistically significant ($p<0.0001$) confirming that males and females had different starting levels of average drinking¹⁵.

Table 6: Changes in alcohol consumption Baseline to Wave 1: Lockdown, males and females

	Baseline average SD/week (standard deviation)	Wave 1: Lockdown, average SD/week (standard deviation)
Males	22.36 (21.67)	23.50 (27.13)
Females	13.20 (15.06)	14.42 (18.48)
Grand Total	16.28 (18.09)	17.49 (22.12)

Note: Missing values: gender=9. In addition, there are 3 missing values for average SD at Baseline and there are also 3 missing value for average SD at wave 1.

In terms of what has been described as ‘episodic heavy drinking’, defined as 11 drinks or more on a single occasion (as reported in the NDSHS tri-annual survey of Australian alcohol and drug consumption patterns), at Baseline, of those who drank¹⁶, 15.5% of the sample consumed in excess of 11 drinks or more on a single occasion in the course of a typical week (drinking diary data). At Wave 1: Lockdown, this reduced to 12.9% of the sample who were drinking alcohol in their typical week. For some there was awareness of the problem:

I’ll be honest with you, I’m a binge drinking alcoholic. That’s what I would classify myself as (interviewee #7, 39 year old male)

We compared drinking times between Baseline and Wave 1: Lockdown. Compared to the pre-lockdown period, drinking during lockdown started on average 24 minutes earlier on weekdays, and 12 minutes earlier on weekends, with small significant effects yielded (see Table 7). Again, respondents were aware of the changing patterns to their drinking times. As one noted:

there was a change for me. To begin with, I started to drink at 5 o’clock in the afternoon rather than 6 o’clock.....I think it was boredom, I think it was opportunity, I think because we’re at home, it was also coming into autumn, so the days were getting much shorter, so it was getting darker, so earlier, it was getting darker, there was nothing much else to do, and it was sort of a case of like, “Oh, what the hell, let’s have a drink.” (interviewee #18, 68 year old female)

Drinking end times did not significantly change between Baseline and Wave 1: Lockdown.

¹⁵ A t-test was also conducted to confirm the results of mixed effects regression. T-test for change in the average number of SD for the sub-group of females was not statistically significant ($t = -0.939$, $df = 669.81$, $p\text{-value} = 0.34$). T-test for change in the average number of SD for the sub-group of males was also not statistically significant ($t = -0.438$, $df = 330.94$, $p\text{-value} = 0.66$).

¹⁶ At Baseline 33 participants did not drink in February; at Wave 1, 56 participants did not drink at Wave 1.

Table 7: Changes in drinking times between Baseline and Wave 1: Lockdown

	Time (mean)		Paired samples t-test	
	Baseline (pm)	Wave 1 (pm)	p-value	Effect size Cohen's d (magnitude)
Start times (Mon-Thu)	5:47	5:23	<0.001	0.24 (small)
Start times (Fri-Sun)	5:21	5:09	0.012	0.12 (small)
Finish times (Mon-Thu)	9:01	8:57	0.638	-
Finish times (Fri-Sun)	9:46	9:41	0.632	-
Cohen's d effect sizes: 0.2 = small, 0.5 = medium, 0.7 = large				

While drinking times showed some changes between Baseline and Wave 1, the number of days per week of drinking was not different on average for the whole sample. At Baseline, respondents were drinking on average three days per week (2.97 days). At Wave 1: Lockdown, the average was also three days per week (3.34).

As noted earlier, at Baseline social motives for drinking were more common than negative affect motives. At Wave 1: Lockdown, however, social motives all but disappeared (46% said never or almost never at W1 for social motives for drinking, see Table 8). For some, drinking was strongly associated with socialising, as explained here:

I'd say I just pretty much completely stopped drinking, because I only usually drink on special occasions or social settings. I pretty much didn't drink at all. (interviewee #25, 23 year old female)

Interestingly, there appeared to be little change in drinking associated with negative affect between Baseline and Wave 1: Lockdown (see Table 8 below).

Table 8: Changes in drinking motives between Baseline and Wave 1: Lockdown

Frequency	Baseline social motives		Wave 1 social motives		Baseline neg affect motives		Wave 1 neg affect motives	
	n	%	n	%	n	%	n	%
almost never/never	38	6.7%	252	45.9%	233	41.2%	190	34.9%
some of the time	140	24.6%	135	24.6%	236	41.8%	213	39.1%
half of the time	175	30.8%	72	13.1%	56	9.9%	68	12.5%
most of the time	150	26.4%	62	11.3%	31	5.5%	54	9.9%
almost always/always	65	11.4%	28	5.1%	9	1.6%	20	3.7%
Total	568	100.0%	549	100.0%	565	100.0%	545	100.0%

Note: missing n=4 for B social motives and missing n=7 for B neg affect.

Purchasing behaviour, as would be expected, changed considerably between Baseline and Wave 1: Lockdown. The purchase of alcohol on-premise (in licensed venues), common at Baseline, all but disappeared, with 92.8% reporting that they had not purchased alcohol from a licensed premise during lockdown. The remaining 7.2% had purchased alcohol from a licensed premise during lockdown, consistent with the NSW government provisions for take-away alcohol sales from licensed premises. (see Table A10, appendix).

if we go out to dinner to one of our local restaurants we would buy alcohol while having dinner at the venue. And so the only change has really been now we're taking the alcohol home with us along with the food. So, both of those things we would prefer to be having in the venue. (interviewee #5, 36 year old, male)

Take-away alcohol purchasing (from a retail outlet rather than a licensed venue) at baseline at least weekly occurred for 31% of the sample; at Wave 1 lockdown this was 41%. (see Table A11 for details).

As one of the respondents in the qualitative interviews said:

...come February and lockdown, March, when I heard that bottle shops, the things were locked down, I immediately went into a bit of a panic about it. Because I thought, "Oh my god, does that mean I can't access alcohol?" Probably like another million other people. And I thought, "Oh, I can't go into lockdown like this." (interviewee #36, 57 year old female)

As another respondent said:

Q: did you ever buy alcohol to have at home?

A: Take away? See, that's the thing. Since COVID, I mean now I've been getting into takeaway. (interviewee #30, 23 year old male)

In this sample, there was a 10% point increase in online alcohol purchasing between Baseline and Wave 1 (from 19% at Baseline who had purchased alcohol online, to 28% at Wave 1 who had purchased alcohol online. This difference was statistically significant (McNemar $\chi^2(1)=14.78, p<0.001$). The increase in online purchasing was more striking for females (17% at baseline compared to 29% at Wave 1), compared to males (21% at Baseline compared to 26% at Wave 1). The difference between Baseline and Wave 1 for females was statistically significant (McNemar $\chi^2(1)=15.41, p<0.001$). However, the difference between Baseline and Wave 1 for males did not reach statistical significance (McNemar $\chi^2(1)=1.19, p=0.275$).¹⁷ (See Table A12, appendix).

In our sample, at Baseline, of those who drank alcohol, 26.6% of the sample said they drank alone on at least one day of the week. At Wave 1: Lockdown, this had risen to 36.1% of the sample (see Table 9). This difference was statistically significant (McNemar $\chi^2(1)=15.56, p<.001$). Drinking alone among males was higher than among females. For males, drinking alone increased from 32.6% at Baseline to 41.3% at Wave 1 and this increase was marginally statistically significant (McNemar $\chi^2(1)=3.78, p=0.052$). For females, drinking alone increased from 23.5% at Baseline to 33.0% at Wave 1 and this increase was statistically significant (McNemar $\chi^2(1)=9.79, p=0.0017$).

Table 9: Changes in drinking alone (any time) between Baseline and Wave 1 (of those who drank)

	Baseline			Wave 1		
	Total sample (n=523)	Males (n=178)	Females (n=340)	Total sample (n=461)	Males (n=155)	Females N=306
Yes	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
	26.6% (139)	32.6% (58)	23.5% (80)	36.1% (168)	41.3% (64)	33.0% (101)

Recalling that this sample comprises a high proportion of younger people, and people who drank more heavily at Baseline compared to a representative population sample, in summary, there was no significant change in the average amount of alcohol consumed at Baseline compared to Wave 1: Lockdown; there was no difference by gender, and no change in the average number of drinking days. For the whole sample, there was a decrease in licensed venue drinking, an increase in online alcohol purchasing, an increase in

¹⁷ Mixed effects regression model was conducted, and the results show that wave is significant with $p<0.001$ (because 'female' was the reference category, therefore "Wave" is the estimate for 'female'). There was no statistical difference between males and females at Baseline (Gender[male] OR=1.30, $p=0.27$). The rate of change in odds ratios is smaller for males OR=0.66. However, this difference is not statistically significant ($p=0.183$).

drinking alone, and a decrease in drinking associated with social motives. These last four changes are consistent with the lockdown environment of Wave 1.

The story could end at this point, however these total sample comparisons between Baseline and Wave 1 belie substantial within individual changes. The ability to pick up on such changes is one of the strengths of a longitudinal analysis of the same people over time.

Diversity of patterns: decreased drinking, increased drinking and remaining the same

Some people significantly increased their alcohol consumption, and others significantly decreased their alcohol consumption. Three groups, based on changes in the amount of alcohol consumed, have been constructed. There is no standardised metric for what might represent a significant change in drinking. For these analyses, we took a change of greater than 2 standard drinks per week (either more or less) between Baseline and Wave 1 to form three groups: those who decreased their drinking by more than 2 standard drinks, those who increased their drinking by more than 2 standard drinks, and those who remained the same between Baseline and Wave 1. Using this cut-off, we see the following patterns among our sample: around one third of the sample decreased their drinking from Baseline to Wave 1, one third increased their drinking, and one third remained the same with reference to the amount of alcohol consumed per week (Table 10).¹⁸

Table 10: Patterns of drinking: proportions who decreased, increased their drinking or remained the same

Pattern of changes	N	% of the sample
Some people decreased their alcohol consumption at Wave 1: Lockdown	152	29%
Some people increased their alcohol consumption at Wave 1: Lockdown	189	36%
Some people consumed the same amounts at Baseline and at Wave 1: Lockdown	189	36%
	530	100%

Note: n=42 people had missing data so a change in alcohol consumption was unable to be accurately recorded. For the remaining analyses the sample is N=530, unless otherwise stated due to missing data.

As can be seen in Table 11, those who decreased their drinking were drinking on average 22 SD per week at Baseline. This decreased to an average of 9.6 SD at Wave 1: Lockdown, (below the NHMRC guidelines). This indicates that for around one third of people, there were positive health behaviours during lockdown. Interestingly this group of people who decreased their drinking was the heaviest drinking group to start with. This is a good news story, suggesting that at least some of the claims about excessive alcohol consumption during lockdown do not apply to a third of the NSW population (especially given that our sample comprised slightly heavier drinking than the nationally representative data, NDSHS, show).

For some people, the lockdown enabled significant agency and a decision to stop drinking altogether:

Since the COVID 19 pandemic, I made a decision to stop drinking. I was a heavy drinker prior and had difficulty stopping. I have experienced instant sobriety during this period - probably because I knew that times were going to get tough and I didn't want to rely on alcohol to get me thru it (survey respondent, 50 year old female)

On the other hand, one third of people increased their drinking to a large degree, from an average of 17 SD/week at Baseline to an average of 31.6 SD/week at Wave 1: Lockdown. While this second group were not drinking as heavily as the first group for whom lockdown was associated with substantial declines in

¹⁸ Some readers may feel that a difference of more than or less than two standard drinks is insufficiently sensitive. We tested the distribution arising from a change of more than five standard drinks per week. This resulted, as expected, in a larger number in the 'remained the same' group, n=287, 54.1% of the sample with n=112 in the decrease group (21% of the sample) and n=131 (24.7%) in the increase group. This issue is taken up later under the future research section. What is clear is that with a difference of greater than 5 SD/week, there remain three distinct groups.

consumption, this group were drinking above the NHMRC guidelines at Baseline, and under lockdown, were drinking significantly more each week.

So I started to purchase and drink more alcohol. I started working from home mid-March and actually didn't drink for a week because I wasn't going out. But then, and I connect this directly to feeling really anxious at the time, I ordered 10 bottles of wine and then started drinking every day, which is really unusual for me. And it was concerning to me even at the time. (interviewee #1, 38 year old female)

For the final third of NSW respondents, there was little change, with this group drinking on average below the NHMRC guidelines at Baseline and likewise at Wave 1: Lockdown over the course of the typical week. As seen in the quotes below from survey respondents, the pattern of drinking may have changed but overall the weekly consumption did not change:

I'm drinking more frequently, but less volume per occasion as enjoy one glass with dinner now. Whereas previous I wouldn't drink entire week, and just drink weekends, but more volume across 3 days. So overall weekly volume remained the same, just consuming less per occasion more frequently (survey respondent, 42 year old female)

I feel I'm drinking the same, but less beers with mates at the pub on Friday's (and Saturday lunch), more craft beers, wine and whisky with movies or on the balcony at home (survey respondent, 36 year old male)

There were statistically significant differences in the drinking amounts between the three groups¹⁹.

Table 11: Three different groups: decreased, increased, and remained the same, standard drinks per week

	N	Baseline SD/week	Wave 1 SD/week	Paired samples t-test	
				p-value	Effect size Cohen's d (magnitude)
Decreased consumption	152	22.63	9.64	<0.001	0.96 (large)
Increased consumption	189	17.58	31.60	<0.001	0.88 (large)
Remained the same	189	9.59	9.66	0.370	-
Total	530	16.18	17.43	0.060	-
Cohen's d effect sizes: 0.2 = small, 0.5 = medium, 0.7 = large					

The following three sections, respectively, examine alcohol consumption patterns, alcohol purchasing and places of consumption, and demographic characteristics by these three different groups²⁰.

Patterns of alcohol consumption by three groups

Clearly the changes in the amount of alcohol consumed (decreased, increased, remained the same) defined the three groups examined here. In terms of the number of days of drinking by group, there were also differences (see Table 12).

¹⁹ At Baseline there was a statistically significant difference between the three group's SD/week ($F(2,256)=25.32, p<.001$). Likewise at Wave 1: Lockdown), the three groups were significantly different ($F(2,257)=77.58, p<.001$).

²⁰ Part 3 of the report provides the results for a multinomial logistic regression, predicting group membership. Here univariate statistics are reported comparing the groups on various aspects of their drinking patterns and purchasing behaviours.

Table 12: Numbers of days drinking per week, Baseline and Wave 1 stratified by group (decreased, increased, remained the same)

	Baseline Average # of days drinking per week	Wave 1 Average # of days drinking per week
Decreased consumption	3.45	2.14
Increased consumption	3.19	5.10
Remained the same	2.35	2.53
Total	2.97	3.34

Note: N=530, Baseline and Wave 1

The people who decreased their drinking in Wave 1: Lockdown drank on fewer days (on average 2 days) compared to their baseline drinking (3 days), whereas the group that increased their drinking spread it across a greater number of days during lockdown (from 3 days on average at baseline to five days per week in Wave 1: Lockdown).

But then, as you were doing that, not typically on a Monday, but it would be still a couple of drinks Monday, Tuesday, but then Wednesday was like, "Shit, that's nearly a whole bottle." By Thursday, because I still hadn't gone back to the gym at that stage either, and by Thursday or Friday you're kind of feeling sluggish, I'm not feeling good, it's because I've been drinking all week, there's no reward at the end of the week either, because I don't even feel like having a drink. So, it became like this. (interviewee #37, 49 year old male)

I started to drink a bottle of wine every night without any alcohol free nights at all. And so every fortnight, when my husband would need some beer, I would either go and buy it, or go with him, take him, and then I always bought more wine. I've bought more wine this year than I've ever bought ever, and drunk it. (interviewee #18, 68 year old female)

There were also significant differences between the groups on heavy episodic drinking (≥ 11 SD on single occasion), see Table 13. The group that decreased their consumption had the highest proportion of heavy episodic drinking at baseline (21.7% yes to ≥ 11 SD/occasion in the reference week). At Wave 1, the group that increased their drinking had the highest proportion of heavy episodic drinking (26.5%).

Table 13: Heavy episodic drinking, Baseline and Wave 1 stratified by group (decreased, increased, remained the same)

	Baseline: ≥ 11 SD on single occasion	Wave 1: Lockdown ≥ 11 SD on single occasion
	% (n)	%
Decreased consumption	21.7% (33)	7.2% (11)
Increased consumption	14.9% (28)	26.5% (50)
Remained the same	7.9% (15)	6.3% (12)
Total yes	14.4% (76)	13.8% (73)

Note: n=529 baseline; n=530 Wave 1

A chi-square test of independence showed that there was a significant difference between group membership and heavy episodic drinking at Baseline, $\chi^2(2, 529) = 13.06, p = 0.0015$; likewise at Wave 1 ($\chi^2(2, 530) = 39.83, p < 0.0001$). This indicates that heavy episodic drinking was strongly implicated in the changes in drinking that occurred from Baseline to Wave 1. Those who decreased their drinking during lockdown were people who engaged in heavy episodic drinking most frequently before lockdown.

How did the drinking times vary between the three groups? Unsurprisingly those whose drinking remained the same between Baseline and Wave 1: Lockdown, did not change the times they drank across the period. However, those who decreased their alcohol consumption during lockdown reported a significant change in the time they finished drinking on weekends, from an average end time of 9:43pm reported at Baseline, to 9:20pm at Wave 1 (medium effect size, $d = 0.55$). The opposite direction was observed for the group that increased their drinking – they reported a weekend end time of 9:37pm at Baseline, but this got later during lockdown, extending to an average end time of 10:12pm (small effect size).

The increase group also reported drinking earlier on weekdays as well during lockdown (small effect size) – meaning they were drinking for longer under lockdown.

Yeah, look, I think it's definitely easier to drink in lockdown. It sounds like a copout, but just not having anything to do, just sort of think, "Oh yeah." Not that I stopped training or anything, but before you'd get up, go to the gym. You had to be up a lot earlier as well. So you just tend to be up later into the night. ...Whereas pre-COVID, when I had to get the gym in before work, I had to be in bed by 11:00, 11:30 so I could be up at 6:00 to be done with the gym at 7:30, which is when I wake up now.

But that just means the time you're up longer means you can have another glass of wine or you feel okay about having another drink because you can effectively sleep it off. (Interviewee #6, male, aged 34).

The drinking times of both the group that decreased their alcohol consumption and the group that increased their alcohol consumption were impacted by the lockdown period, but in different ways (see Table 14). For the increase group, the lockdown period coincided with them ending drinking later on weekends and starting earlier on both weekdays and weekends. The decrease group reported ending drinking at 10:43pm on weekends before lockdown, which was more than 1-hour later than both the remained the same group (9:10pm) and increase group (9:37pm).

Table 14: Drinking times between Baseline and Wave 1 stratified by group (decreased, increased, remained the same)

		Time (mean)		Paired samples t-test	
		Baseline (pm)	Wave 1 (pm)	p-value	Effect size Cohen's d (magnitude)
Decreased	Start times (Mon-Thu)	5:25	5:18	0.528	-
	Start times (Fri-Sun)	5:14	5:15	0.913	-
	Finish times (Mon-Thu)	9:29	9:02	0.111	-
	Finish times (Fri-Sun)	10:43	9:19	<0.001	0.55 (medium)
Increased	Start times (Mon-Thu)	5:45	5:14	<0.001	0.35 (small)
	Start times (Fri-Sun)	5:17	4:44	<0.001	0.34 (small)
	Finish times (Mon-Thu)	8:56	9:11	0.121	-
	Finish times (Fri-Sun)	9:37	10:12	0.017	0.19 (small)
Remained the same	Start times (Mon-Thu)	6:07	5:42	0.110	-
	Start times (Fri-Sun)	5:35	5:36	0.757	-
	Finish times (Mon-Thu)	8:49	8:31	0.276	-
	Finish times (Fri-Sun)	9:10	9:20	0.288	-
Cohen's d effect sizes: 0.2 = small, 0.5 = medium, 0.7 = large					

The group that decreased their alcohol consumption, reduced the number of hours of drinking (amounting to a total of 5 and a half fewer hours²¹ of consumption over a reference week under lockdown). The group that increased their drinking had 5 more hours of drinking over the reference week.¹⁵

It also seems that people are quite aware of the relationship between consumption levels and drinking times:

I have felt like drinking earlier in the day and drinking more days per week but I have made a conscious effort not to. (Survey respondent, 34 year old female)

Examining differences between the groups in terms of the proportions who drank alone (at both Baseline and Wave 1) adds to the picture. At Baseline, there were significant differences in the proportions who drank alone in each group ($\chi^2(2)=8.713, p=0.013$). The group who increased their consumption had the highest proportion at Baseline who were drinking alone (32.8%). This increased further at Wave 1 to half of this group drinking alone (49.7%: Wave 1 proportions also significantly different from each other: $\chi^2(2)=29.344, p<0.0001$). This suggests that drinking alone before restrictions were introduced is associated with increased alcohol consumption under lockdown conditions.

Table 15: Drinking alone, Baseline and Wave 1 stratified by group (decreased, increased, remained the same)

	Baseline: % who drank alone		Wave 1: % who drank alone	
	n	%	n	%
Decrease consumption	35/151	23.2%	29/122	23.8%
Increase consumption	62/182	34.1%	94/186	50.5%
Remained the same	35/166	21.1%	44/157	28.0%
Total (who drank alone)	132/499	26.5%	167/465	35.9%

Note: Excludes those who did not drink at B, n=26; or at Wave 1, n=56.

Missing n=5 Baseline; missing n=9 Wave 1

The reasons people give for their drinking, especially motives associated with managing negative feelings, have recently been reported to be associated with higher alcohol consumption during lockdown (McPhee, 2020; Wardell, 2020). In our sample, social motives, which were the dominant drinking motive at Baseline, were no longer common at Wave 1, but without an increase in negative affect motives at Wave 1 for the full sample. It was not the case that social motives were simply replaced by or shifted to negative affect motives.

But motives for drinking may importantly differ between those who decreased their drinking and those who increased their drinking (see Table A13, appendix for details). Of particular interest is the motives associated with negative affect including drinking because of feelings of depression or anxiety, see Table 16.

In our sample, there does not appear to be a substantial change in negative affect motives over the two time periods: both the group that decreased their drinking and the group that increased their drinking had a slightly higher proportion reporting 'most of the time' or 'almost always' to negative affect motives at Wave 1, but while we had expected that the group that increased their drinking would be higher on negative affect motives than others, this does not appear to be the case.

²¹ Taking only the significant differences between average start and finish times weekdays (x 4 days) and weekends (x 3 days), summed.

Table 16: Drinking motives associated with negative affect, Baseline and Wave 1 stratified by group (decreased, increased, remained the same)

	Baseline: % with negative affect motives		Wave 1: % with negative affect motives	
	Almost never/never	Most of the time/always	Almost never/never	Most of the time/always
	% (n)	% (n)	% (n)	% (n)
Decreased consumption	38.0% (57)	6.1% (9)	37.4% (55)	10.9% (17)
Increased consumption	30.9% (58)	10.3% (21)	29.9% (56)	12.5% (25)
Remained the same	57.8% (107)	4.3% (8)	38.7% (72)	16.1% (30)
Total	42.4% (222)	7.3% (38)	35.1% (183)	13.8% (72)

Note: n=7 missing at Baseline (n=523), n=8 missing at Wave 1 (n=522)

While for some people, alcohol consumption was motivated by managing stress and uncertainty:

My increase in drinking is in part to help reduce stress and anxiety (survey respondent, 35 year old male)

For the majority this was not the case:

I tend to drink less if I feel anxious or worried about things (survey respondent, 43 year old female).

Patterns of alcohol purchasing and places of consumption stratified by the three groups

At baseline, alcohol was purchased as take-away and/or purchased and consumed at licensed venues. There were significant differences at Baseline between the three groups in terms of take-away alcohol purchasing (see Table 17) with the group that remained the same, reporting less take-away alcohol purchasing at Baseline (44.4%), significantly lower than the other two groups ($X^2 = 29.0844$, $df = 2$, $p = .0000$). At Wave 1, there were no longer any differences between the three groups ($X^2 = 3.8553$, $df = 2$, $p = .1455$), with all three groups reflecting similar frequencies of take-away alcohol purchasing.

Table 17: Take-away alcohol purchasing at least/more than monthly, Baseline and Wave 1 stratified by group (decreased, increased, remained the same)

	Baseline	Wave 1
	At least/more than monthly	At least/more than monthly
	% (n)	% (n)
Decreased consumption	69.7% (106)	63.2% (96)
Increased consumption	67.2% (127)	68.3% (129)
Remained the same	44.4% (84)	58.5% (110)
Total	59.8% (317)	63.3% (335)

Note: Excludes those who did not drink at B, n=26; or at Wave 1, n=56.

Missing: n=1 at Wave 1

Online purchasing (see Table 18), on average at 19% of the full sample, did not significantly differ between the three groups at Baseline (see Table 17; $\chi^2(2) = 2.2550$, $p = .3238$), noting that the group that remained the same had the highest proportion of people purchasing alcohol online at Baseline (21.7%). At Wave 1, all three groups had increased their online purchasing of alcohol (to 28% of the sample). While the three groups did not differ significantly at Wave 1 ($\chi^2(2) = 3.9946$, $p = .1357$), the change for the group that increased their alcohol consumption was the largest (going from 15.9% at Baseline purchasing alcohol online, to 32.2% at Wave 1 purchasing alcohol online).

Table 18: Online alcohol purchasing, Baseline and Wave 1 stratified by group (decreased, increased, remained the same)

	Baseline: online purchase of alcohol (yes)	Wave 1: online purchase of alcohol (yes)
	% (n)	% (n)
Decreased consumption	17.2% (26)	22.5% (34)
Increased consumption	15.9% (30)	32.2% (61)
Remained the same	21.7% (41)	27.5% (52)
Total	18.4% (97)	27.9% (158)

Note: Excludes those who did not drink at B, n=26; or at Wave 1, n=56.

Missing: n=2 at baseline, n=1 at Wave 1

The places where alcohol was consumed shifted with the closure of licensed venues during Wave 1 lockdown. Table 19 provides the proportions of people in each of the three groups who were drinking at licensed venues at Baseline and at Wave 1²². A chi-square test for the difference in the proportion of people drinking at licensed venue at baseline across the three groups shows a significant difference ($\chi^2(2)=27.2607, p<0.0001$): those who decreased their consumption were more likely to drink at licensed venues at baseline. For the group that decreased their alcohol consumption, the lockdown removed their usual places of consumption.

I usually only drink when with friends. My reduced drinking is linked to reduced time with friends and the closures of bistros and restaurants for eating out (survey respondent, 51 year old male)

For the group that increased their alcohol consumption, many had also lost a frequent place of consumption (56.7% of sample) but this was not equated with a decrease in consumption (that is the on-premise drinking shifted to off-premise consumption).

Table 19: Drinking at licensed venues, Baseline and Wave 1, stratified by group (decreased, increased, remained the same)

	Baseline: % licensed venue drinking	Wave 1: % licensed venue drinking
	% (n)	% (n)
Decreased consumption	73.5% (111)	1% (2)
Increased consumption	56.7% (102)	3% (5)
Remained the same	44.6% (74)	2% (4)
Total	57.7% (287)	2% (11)

Note: Excludes those who did not drink at B, n=26; or at Wave 1, n=56.

Missing: n=7 at Baseline

Drinking at home, rather than at a licensed venue was also, for some a social activity, involving 'virtual drinks'. We did not collect information about the extent of this practice in the surveys, but the qualitative interview data contains descriptions of this, with two respondents noting:

...., we'd have a catch-up every Friday for video drinks. Yeah, everyone's having a drink and everyone's got their different scotches and beers and whatever else. There's 14 of us having this virtual drink. So Friday night doing that, I did this once, and this chat went on probably for two hours, this session, and then all of a sudden I'm like, "Well, I'm out. I'll see you guys later," and then

²² The n=11 people who reported drinking at a licensed venue during lockdown, noted the locations as private club, bar, or a pub as the venues – presumably these were private, 'unofficial' locations of drinking.

I'm sitting there as drunk as a skunk with my family around me going, "Oh well, what do I do now? I'm not doing that again." (interviewee #37, 49 year old male)

we did have a couple of Zoom parties. Yeah. Again, with a group of friends that we might not necessarily have socialised with before. But I think it was just like, "Oh yeah, someone's got like this Zoom dinner or Zoom pizza night type thing." (interviewee #12, 34 year old male)

Demographics: gender, age, household structure, isolation type, income changes

Gender

Are there differences in the distribution of females and males between the three groups? Firstly the proportions in each of the groups is noteworthy for its similarity (see Table 20): there were no significant differences in the proportions of men and women in each of the groups ($\chi^2(2)=0.1533$, $p=0.9262$). That is, it was not more likely that men decreased (or increased) their drinking than women in our sample.

Table 20: Distribution of females and males within each group

	Females	Males
	% (n)	% (n)
Decreased consumption	28.7% (100)	29.3% (51)
Increased consumption	35.1% (122)	36.2% (63)
Remained the same	36.2% (126)	34.5% (60)
Total	100.0% (348)	100.0% (174)

Note: n=9 missing data for gender (from n=530)

Despite similar proportions of males and females across the three groups, the amount of alcohol consumed did vary by gender (see Table 21). The amount of alcohol consumed, consistent with past research, shows that men consumed more in February (for each group). As shown in the table below, the decreases (or increases) for men and women were not dissimilar. For those who decreased their drinking, both men and women decreased it by more than half. For those who increased their drinking, neither men nor women quite doubled their drinking despite large increases. The lack of statistically significant differences in the rate of change between men and women was confirmed in a mixed effects regression (results not shown).

Table 21: Gender differences in standard drinks per week, Baseline and Wave 1 stratified by group

		Baseline SD/wk	Wave 1 SD/wk
Decreased consumption	Males	28.6	12.6
	Females	19.7	8.1
Increased consumption	Males	24.0	40.2
	Females	14.0	26.9
Remained the same	Males	15.0	14.9
	Females	7.2	7.3

Note: n=9 missing data on gender

Age

There are age differences between the three groups. The group that decreased their alcohol consumption had an average age of 31.28 years (SD 14.21); the group that increased their alcohol consumption had an average age of 35.87 (SD 14.18); and the group that remained the same had an average age of 37.93 years

(SD 15.14). These differences, statistically significant for age as a continuous variable²³, confirm that younger people were more likely to be in the group that decreased their consumption at lockdown.

When examined by generations (see Table 22), the result is the same, with significant differences in the proportions within each group ($\chi^2(6) = 31.854, p < 0.001$). Gen Z were more likely to be in the decreased consumption group, Millennials in the increased consumption group, and Gen X and Baby boomers in the remained the same group.

Table 22: Generational age groups, stratified by group (decreased, increased, remained the same)

	Gen Z 18-24 yrs	Millennials 25- 39 yrs	Gen X 40-55 yrs	Boomers 56-74 yrs
	% (n)	% (n)	% (n)	% (n)
Decreased consumption	43.6% (75)	22.1% (38)	20.2% (25)	22.0% (13)
Increased consumption	30.8% (53)	41.9% (72)	34.7% (43)	35.6% (21)
Remained the same	25.6% (44)	36.0% (62)	45.2% (56)	42.4% (25)
Total	100.0% (172)	100.0% (172)	100.0% (124)	100.0% (59)

Note: Missing n=3

The group that decreased their drinking comprised the highest proportion of Gen Zers. Gen Z is the predominant generation going out and were more likely to reduce their drinking in the absence of sociality. Increased drinking at Wave 1: Lockdown was most common in Millennials.

Household structure

Household structure varied across the three groups at the time of lockdown (see Table 23). The most common household structure across all groups was living in a share household (reflective of the larger number of younger people in our sample). The proportions of people in each of the four household structure categories were different across the three groups and this difference was statistically significant ($\chi^2(6)=18.7981, p < 0.001$). Those with children at home were less likely to be in the decreased consumption group; those in a share household were more likely to be in the decreased consumption group. For couples (living with or without adult children) they were more likely to be in the remained the same group.

Table 23: Household structure, Wave 1 stratified by group

	Children at home	Couple without/with adult children	Living alone	Share household
	% (n)	% (n)	% (n)	% (n)
Decreased consumption	20.2% (18)	25.6% (34)	26.0% (19)	34.8% (80)
Increased consumption	39.3% (35)	27.1% (36)	38.4% (28)	37.4% (86)
Remained the same	40.4% (36)	47.4% (63)	35.6% (26)	27.8% (64)
Total	100.0% (89)	100.0% (133)	100.0% (73)	100.0% (230)

Note: Missing n=5

Type of isolation experienced

At Wave 1 the isolation type being experienced (measured on a four-point scale: total isolation, mostly isolated except to buy essentials; somewhat isolated but still going to work; no isolation), did not differ between the three groups ($\chi^2 = 2.0689, df = 6, p = .9133$), See Table 24.

²³ ANOVA test result to compare age across the three groups is significant: $F(2,527)=9.03, P < 0.001$

Table 24: Type of isolation being experienced at Wave 1 stratified by group

	Total isolation	Mostly isolation, except to buy essentials	Somewhat isolated but still going to work	No isolation
	% (n)	% (n)	% (n)	% (n)
Decreased consumption	40.0% (4)	28.7% (80)	27.6% (63)	33.3% (3)
Increased consumption	40.0% (4)	35.8% (100)	35.5% (81)	22.2% (2)
Remained the same	20.0% (2)	35.5% (99)	36.8% (84)	44.4% (4)
Total	100.0% (10)	100.0% (279)	100.0% (228)	100.0% (9)

Note: Missing n= 4

When collapsed into a dichotomous variable (total and mostly versus some and none), there remain no statistically significant differences between the three groups ($\chi^2(2) = .2745, p = .8718$).

Income changes

From previous research on the impact of recessions on alcohol consumption, it would not be unreasonable to suspect that the group that increased their drinking would be more likely to experience a drop in income, assuming a stress hypothesis. Alternatively the group that increased their drinking may also be ones who have increased their income at Wave 1: lockdown (greater spending power) (Chalmers & Ritter, 2011; Harhay, Bor, Basu, McKee, Mindell, Shelton, & Stuckler, 2014; Ritter & Chalmers, 2011). The stimulus packages and social support (including one-off payments, Job Seeker and Job Keeper, and free childcare) have had a dramatic effect on people's incomes, especially those from lower socio-economic groups (Coates & et al., 2020; Davidson, Bradbury, Wong, & Hill, 2020).

In our sample, 71 people experienced a complete loss of income (13.5%), and a further 28.6% experienced a decrease in income. Some people experienced an increase in their income at Wave 1 (11.6%) and most people had no change to their income at the time of the Wave 1 survey (46.3%).

Table 25 shows the distribution of those income categories for the three groups. Those whose income ceased were spread between all three groups – 33.8% in the decrease consumption group, 40.8% in the increase consumption group, and 25.4% in the remain the same consumption group. There was not a statistically significant difference between the three groups on income change ($\chi^2(6) = 9.468, p = 0.149$). That is, people who lost their income (or increased their income) were not more likely to be in the group that decreased or increased their alcohol consumption (see Table 25).

Table 25: Income changes at Wave 1 stratified by group

	Income ceased	Income decreased	Income increased	Income stayed the same
	% (n)	% (n)	% (n)	% (n)
Decreased consumption	33.8% (24)	30.5% (46)	34.4% (21)	24.6% (60)
Increased consumption	40.8% (29)	37.7% (57)	29.5% (18)	34.0% (83)
Remained the same	25.4% (18)	31.8% (48)	36.1% (22)	41.4% (101)
Total	100.0% (71)	100.0% (151)	100.0% (61)	100.0% (244)

Note: missing n=3

However, the qualitative data highlight that for some people who lost their job or experienced a decrease in working hours, there were impacts on consumption:

A: Well, my drinking habits changed when I started losing work. Because when I was still teaching five days, I still had to be un-hungover and onto it every morning, so I was still basically a

Thursday, Friday, Saturday, sometimes Sunday afternoon drinker. So, for the first few weeks I don't think my habits changed.

Q: *Yep. And then your work started to drop off?*

A: *And then when I went down to three days, that was kind of like, "Oh, so I've got a couple of extra mornings that I don't have to wake up early for." And [partner] also, he's lost his job. So he's got lots of free time. So, probably seeing him a little bit more and take a bottle of wine to his house if we're going to watch a movie or something. So, I guess my drinking increased when I went down to three days, which was probably two months ago. (interviewee #24, 52 year old female)*

Of course, this was not everyone's experience, as noted earlier where a 22 year old female lost her job and saw this as a chance to cease drinking for a while.

Summary

In association with the COVID-19 lockdown measures in NSW, three very different patterns of alcohol consumption emerge. All roughly make up one-third of our total sample.

People who decreased their alcohol consumption:

- Were equally likely to be male or female
- Were more likely to be younger (18-24 years of age)
- Were drinking at high levels at Baseline (22.6 SD/week, compared to 17.6 SD/week in increase group and 9.5 SD/week in the group that did not change their consumption)
- Drank on fewer days at Wave 1 than at Baseline
- Were less likely to drink alone prior to lockdown (23% compared to 34.1% increase)
- Were more likely to be drinking in licensed venues at Baseline (73.5% compared to 56.7% in the increase group)
- Were more likely to be engaged in heavy episodic drinking at Baseline
- Were most commonly living in a share household, and less likely to have children at home.

People who increased their alcohol consumption in association with lockdown were:

- Equally likely to be male or female
- Were more likely to be aged between 35-44
- Were drinking at high levels at Baseline (but not as high as the decrease group)
- Drank on more days during Wave 1 (5 days)
- Were more likely to drink alone at Baseline
- Were less likely (than the decrease group) to drink at licensed venues prior to lockdown
- Were spread across all household types – people with children at home, couples, people living alone, and people living in share households.

People whose alcohol consumption remained the same were:

- Equally likely to be male or female
- Were more likely to be 45 and over
- Were drinking on average within the levels suggested in the NHMRC guidelines prior to lockdown
- Were the most likely to purchase alcohol online prior to lockdown
- Were the least likely to drink at licensed venues prior to lockdown
- Were the least likely to be engaged in heavy episodic drinking at Baseline
- Started drinking the latest on weekdays, and finished drinking the earliest on weekdays and weekends prior to lockdown
- Were more likely to be living as a couple with or without adult children.

Of course these groups are not fixed categories, nor are they mutually exclusive – people move between the groups.

As we have been in lockdown for 2 months our drinking habits have changed since lockdown started. We were drinking heavily to begin with and now have reduced quite a lot (survey respondent, 37 year old female)

So we've all been chatting about this as well, in this group with my team, and people have gone through these stages but at varying times and lengths. (interviewee #37, 49 year old male)

In addition, while it seems that there might be some clear characteristics that differentiate the groups (based on univariate comparisons), many of the characteristics examined above interact with each other (such as licensed venue drinking and age). Looking at single variables alone masks interaction effects between different variables. In addition the very difference that defines the three groups, amount of alcohol consumed at Baseline, needs to be controlled for in multivariate analysis, as discussed next.

PART 3: What predicts a decrease or an increase in drinking associated with lockdown

There are several different ways of analysing longitudinal data. Predicting an outcome, such as alcohol consumption at multiple time points often assumes that the direction of the change is singular – that is, there is an expected decrease (in symptoms or behaviours) or an expected/hoped for/intended increase across a sample. A mixed effects regression model handles these types of data well. Here, however, we have observed multi-directional change (perhaps a feature of policy research, where impacts go in different directions for certain sub-populations). As a result, given the heterogenous nature of change in drinking, a multinomial logistic regression that predicts group membership allows us to identify which variables (either those at Baseline or those at Wave 1) predict decreased or increased drinking compared to those whose consumption remained the same.

As a first step, the following variables were examined in univariate multinomial regressions:

Demographic variables:

1. Age (generation group)
2. Gender
3. Area (urban, regional, rural)
4. Household income at Baseline

Alcohol consumption habits at Baseline

5. Standard drinks per week at Baseline
6. Drinking alone (any time) at Baseline
7. Heavy episodic drinking at Baseline
8. Licensed venue drinking (any day) at Baseline
9. Online alcohol purchasing at Baseline

Motives for drinking at Wave 1

10. Social motives for drinking at Wave 1
11. Negative affect motives for drinking at Wave 1

Circumstances at Wave 1

12. Household structure at Wave 1
13. Income change at Wave 1
14. Isolation type at Wave 1

(see Appendix 2 for all the univariate analysis results).

Variables were retained in the subsequent multivariate analysis for two reasons: those with p-values of ≤ 0.20 in the univariate analyses; and those with a meaningful theoretical premise (this applied to gender, and to the negative affect motives; all other variables were significant at $p \leq 0.20$ in the univariate analyses).

The following variables were not statistically significant at the $p \leq 0.20$, and were excluded from the multinomial regressions:

- Area – we had insufficient sample size to meaningfully measure differences in group membership between urban and rural/regional respondents
- Household income range – due to multicollinearity of the income range variable with multiple other variables in the model (age group, household structure, income change, licensed venue drinking, and drinking alone) it was excluded from the final model²⁴.
- Isolation type – we did not have a baseline variable for type of isolation. At Wave 1 the isolation type being experienced (measured on a four point scale: total isolation, mostly isolated except to buy essentials; somewhat isolated but still going to work; no isolation) had very large differences in sample sizes, with 96.3% of respondents answering mostly and somewhat isolated (and only 4% of

²⁴ For interest, higher household income was statistically significantly associated with greater licensed venue drinking at Baseline, less drinking alone at Baseline, both having income ceased or increased at W1, living with spouse/family members at W1 (compared to living alone or in a shared household), and being middle aged.

respondents in either total isolation or no isolation). There were no significant univariate differences between group membership.

Despite a non-significant univariate result on gender (see earlier for more discussion of this), we retained it in the multinomial model to account for any possible interactions between gender and other variables. We also included an interaction variable gender * baseline SD/week.

The final model included the following variables:

1. Baseline drinking – SD per week
2. Age expressed as generations
3. Gender
4. Interaction term gender*baseline drinking level
5. Household structure at Wave 1
6. Income change at Wave 1
7. Licensed venue drinking (any day) at baseline
8. Drinking alone (any time) at baseline
9. Heavy episodic drinking at baseline
10. Online alcohol purchasing at baseline
11. Social motives for drinking at Wave 1
12. Negative affect motives for drinking at Wave 1

The multinomial regression results (final model) are given below.

Table 26: Multinomial logistic regression, final model, predicting group membership

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.26	0.08 – 0.82	0.022	decrease
Baseline SD/week	1.10	1.06 – 1.14	<0.001	decrease
Baby boomers (56-74) ¹	0.27	0.09 – 0.83	0.023	decrease
Gen X (40-55 years)	0.24	0.10 – 0.57	0.001	decrease
Millennials (25-39 years)	0.44	0.21 – 0.90	0.024	decrease
Gender [Male]	1.64	0.69 – 3.91	0.261	decrease
Household structure [children at home] ²	1.66	0.68 – 4.06	0.266	decrease
Household structure [living alone]	1.37	0.54 – 3.49	0.512	decrease
Household structure [share household]	2.43	1.16 – 5.10	0.019	decrease
Income change [Ceased] ³	0.93	0.40 – 2.15	0.860	decrease
Income change [Decreased]	1.84	0.97 – 3.47	0.061	decrease
Income change [Increased]	1.14	0.50 – 2.60	0.756	decrease
Licensed venue drinking B [Yes]	3.70	2.10 – 6.53	<0.001	decrease
Drinking alone B [Yes]	1.08	0.55 – 2.11	0.825	decrease
Heavy episodic drinking B [Yes]	0.55	0.22 – 1.38	0.204	decrease
Online alcohol purchasing B [Yes]	0.57	0.28 – 1.13	0.108	decrease
Social motives W1	0.97	0.90 – 1.05	0.473	decrease
Negative affect motives W1	0.96	0.92 – 1.00	0.056	decrease
Gender [Male] * SD/week B	0.95	0.91 – 0.99	0.021	decrease
(Intercept)	0.19	0.07 – 0.55	0.002	increase
Baseline SD/week	1.08	1.04 – 1.12	<0.001	increase
Baby boomers (56-74) ¹	0.86	0.34 – 2.20	0.757	increase
Gen X (40-55 years)	0.71	0.33 – 1.50	0.369	increase
Millennials (25-39 years)	1.45	0.74 – 2.86	0.281	increase
Gender [Male]	1.48	0.68 – 3.22	0.319	increase
Household structure [children at home] ²	1.92	0.90 – 4.08	0.091	increase

Predictors	Odds Ratios	CI	p	Response
Household structure [living alone]	1.74	0.79 – 3.84	0.170	increase
Household structure [share household]	2.73	1.41 – 5.27	0.003	increase
Income change [Ceased] ³	1.13	0.52 – 2.43	0.763	increase
Income change [Decreased]	1.76	1.00 – 3.09	0.049	increase
Income change [Increased]	0.91	0.42 – 2.01	0.822	increase
Licensed venue drinking B [Yes]	1.51	0.93 – 2.47	0.097	increase
Drinking alone B [Yes]	1.72	0.97 – 3.04	0.063	increase
Heavy episodic drinking B [Yes]	0.65	0.27 – 1.56	0.332	increase
Online alcohol purchasing B [Yes]	0.53	0.29 – 0.98	0.042	increase
Social motives W1	1.02	0.96 – 1.09	0.512	increase
Negative affect motives W1	0.98	0.94 – 1.02	0.278	increase
Gender [Male] * Baseline SD/week	0.96	0.92 – 1.00	0.037	increase
Observations	475			
R ² Nagelkerke	0.471			

Reference categories:

1. for age, the youngest generation (18-24 years) was the reference category
2. for household structure, couples with or without adult children was the reference category
3. for income change, no change was the reference category

The amount of alcohol consumed at baseline is a key determinant of group membership. A higher number of standard drinks at baseline was associated with *higher likelihood* of being in both the “decrease” group and the “increase” group relative to being in the “remained the same” group, after controlling for other variables in the model. Specifically, one more standard drink at baseline is associated with 10% increase in the likelihood of being in the “decrease” group relative to being in the “remained the same” group. And one more standard drink at baseline is associated with 8% increase in the likelihood of being in the “increase” group relative to being in the “same” group, after controlling for other variables in the model. This suggests that the biggest impacts of the lockdown with respect to alcohol consumption, was on those people who consumed more prior to lockdown – but in terms of predicting the direction under lockdown conditions – change went in both directions: increased consumption or decreased consumption. The direction of change was dependent on other factors discussed below.

Age was a key predictor of the likelihood of being in the group that decreased their alcohol consumption, relative to staying the same. Compared to Gen Z (18-24 years), people in the other three generations (Baby boomers (56-74), Gen X (40-55 years), and Millennials (25-39 years)) were less likely to be in the “decrease” group relative to being in the “same” group (evidenced by Odds Ratios <1), after controlling for other variables in the model (such as baseline drinking amount). Generation clearly matters for predicting membership of the group that decreased their drinking (suggesting a focus of some policy measures on older generations). Compared to the people in Gen Z (18-24 years), there was no statistically significant difference between people of all other age groups in the likelihood of being in the “increase” group relative to being in the “same” group.

While age clearly matters, on its own gender does not. Despite an apparent concern with women’s drinking, these concerns appear unfounded. This study found no effect of gender on the likelihood of changing consumption under lockdown. As indicated in Section 2, males and females had different starting levels of average drinking (with men drinking at higher levels than women). Here, in the multinomial model, the amount of alcohol consumed at Baseline (on its own) is a key determinant of group membership. But this also differs by gender. As expected, an interaction term confirms that the effect of the number of standard drinks at Baseline in predicting group membership differs between gender. Given an identical number of standard drinks at Baseline, males were less likely than females (OR = 0.95) to be in the “decrease” group compared to the “remained the same” group; and also less likely than females to be in the “increase” group (OR=0.96) compared to being in the “remained the same” group. This suggests that

for equivalent alcohol consumption, females are more likely to change their drinking at lockdown (either to decrease or increase their drinking) than males, indicating perhaps a greater sensitivity towards change (in either direction).

Household structure predicted membership of the decrease and increase groups. Compared to those people living as a couple with or without adult children, people who lived in a share household were **more likely** to be in both the “decrease” group (OR = 2.43) and the “increase” group (OR = 2.73) relative to being in the “same” group, after controlling for other variables in the model, including age. This suggests a malleability or propensity to change in those within share households. There was no significant statistical effect for households with children at home when all other variables are controlled for, despite anecdotal reports of the increased stress for people schooling their children at home during lockdown. While the odds ratio (at 1.66 for decrease drinking and 1.92 for increase drinking) are relatively high, the confidence intervals are large, demonstrating high uncertainty.²⁵ Similarly there was no significant statistical effect for living alone.

Licensed venue drinking appears to be an important predictor. People who consumed alcohol at licensed venues anytime during the week at Baseline **were more likely** to be in the “decrease” group (OR = 3.7) relative to being in the “same” group, after controlling for other variables in the model. The closure of licensed venues during lockdown has driven decreases in alcohol consumption for people in the decrease group.

A change in income, more specifically a decrease in income, relative to no change in income during lockdown, predicted membership of the “increase” group (OR=1.76). Compared to the reference group (people whose income remained the same), people whose income “decreased” **were more likely** to be in the “increase” group relative to being in the “same” group, after controlling for other variables in the model. At the same time, however, there were no statistically significant effects for cessation of income.

Online purchasing of alcohol significantly predicted membership of the “increase” group (OR=0.53) but not in the expected direction. People who purchased alcohol online at Baseline **were less likely** to be in the “increase” group relative to being in the “same” group, after controlling for other variables in the model.

Once baseline alcohol consumption, generation and the other variables covered above are entered, there were no significant predictive effects for drinking alone at baseline, nor for motives associated with drinking, either social motives or negative affect motives.

In summary, the variables that play an important role in predicting changed alcohol consumption under lockdown were: baseline drinking amounts, licensed venue drinking (which had the highest odds ratio), the age cohort of the respondent, income changes (notably decreases in income), and living in a shared household.

²⁵ This uncertainty arises from the cell sizes, given multiple response categories for household structure, n=18 in the decreased consumption group with children at home.

PART 4: What happened next?

Wave 2: Easing of restrictions, covered the period from mid-May to mid-June, and reflected alcohol consumption patterns during this time of eased restrictions. From mid-May 2020 there were various announcements of loosened restrictions. For example, NSW announced a 10-person limit at outdoor gatherings, cafes, and restaurants, and up to 5 visitors to a household at any one time. From June 1st up to 50 persons were allowed in an on-premise venue.

Did people return to their Baseline drinking patterns, was this a temporary bounce, or were the changes during Wave 1: Lockdown maintained? And for whom?

A sub-sample of 287 people able to be matched to their Baseline and Wave 1 data were re-surveyed in mid-June 2020 (Wave 2). This section reports on this matched Wave 2 sample. Table 27, and Figure 2 provide a summary of what happened to average drinking for each of the three groups.

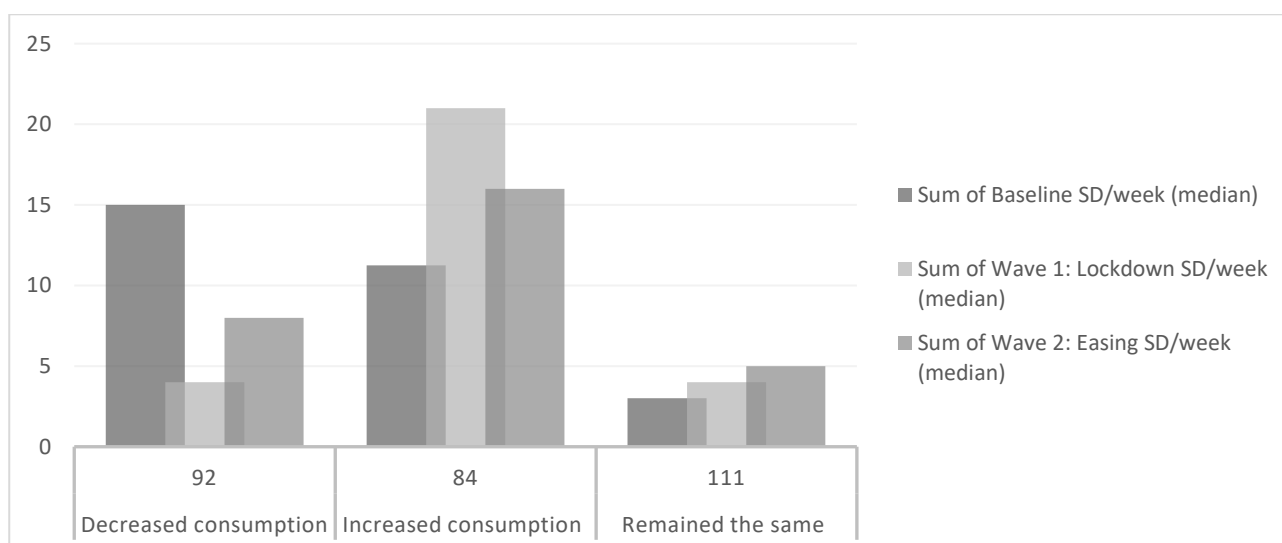
Table 27: What happened to the decrease, increase and remained the same group?

	Baseline SD/week Mean (median)	Wave 1: Lockdown SD/week Mean (median)	Wave 2: Easing SD/week Mean (median)
Decreased consumption (n=92)	22.33 (15)	8.14 (4)	11.19 (8)
Increased consumption (n=84)	14.72 (11.25)	27.11 (21)	19.57 (16)
Remained the same (n=111)	7.43 (3)	7.49 (4)	8.88 (5)

Note: due to the reduced sample for Wave 2 (n=287), the means for Baseline and Wave 1 are different from the means reported for the full sample.

On average, the group that decreased their consumption at Wave 1 were drinking on average 11 standard per week at Wave 2, that is a sustained reduction from their average baseline consumption of 22 SD. For the group of people who increased their consumption at Wave 1, consumption at Wave 2 remained higher on average (at 19.57 SD/week) than their baseline consumption (which was 14.27 SD). For those whose alcohol consumption remained the same between Baseline and Wave 1, it also remained the same, on average, at Wave 2 (8.88 SD/week). This suggests that the patterns commenced during Wave 1 lockdown have largely been sustained through Wave 2 with an easing of restrictions.

Figure 2: Post lockdown effects for all groups



However, as with the earlier analyses, these statistical averages belie a complex set of further changes within each of the groups, which we explore next.

What happened for people who decreased their alcohol consumption during lockdown?

There were 92 people from our original ‘decreased consumption’ group (n=152) who completed the Wave 2 survey²⁶.

For just under half of them (47%, n=43), their drinking continued to remain much lower at Wave 2 compared to their Baseline drinking. At Wave 1: Lockdown they were drinking a median of 2 SD per week (from an original 12 SD/week in February). At Wave 2: Easing, they had sustained that lower level of consumption (at 2 SD/week). It seems that there has been some ‘lasting’ effect (or to put it differently, the curtailed restrictions to June also continued to curtail consumption).

Another, much smaller group (12%, n=11) experienced further reductions during the initial easing of restrictions compared to lockdown. It seems these people were drinking very heavily at Baseline (median of 31 SD/week), further reinforcing that for these individuals to reduce their alcohol during Wave 1 lockdown (to 23 SD/week) and then further to 13 by Wave 2 is definitely a positive health impact.

For the remaining (41%, n=38), the lockdown effect on alcohol consumption was temporary. For this group the reduction in consumption at Wave 1: Lockdown (to a median of 4 SD/week) was short-lived, and during the initial easing of restrictions (Wave 2), alcohol consumption increased (to a median of 14 SD/week) although not quite to the levels seen at Baseline (18 SD/week).

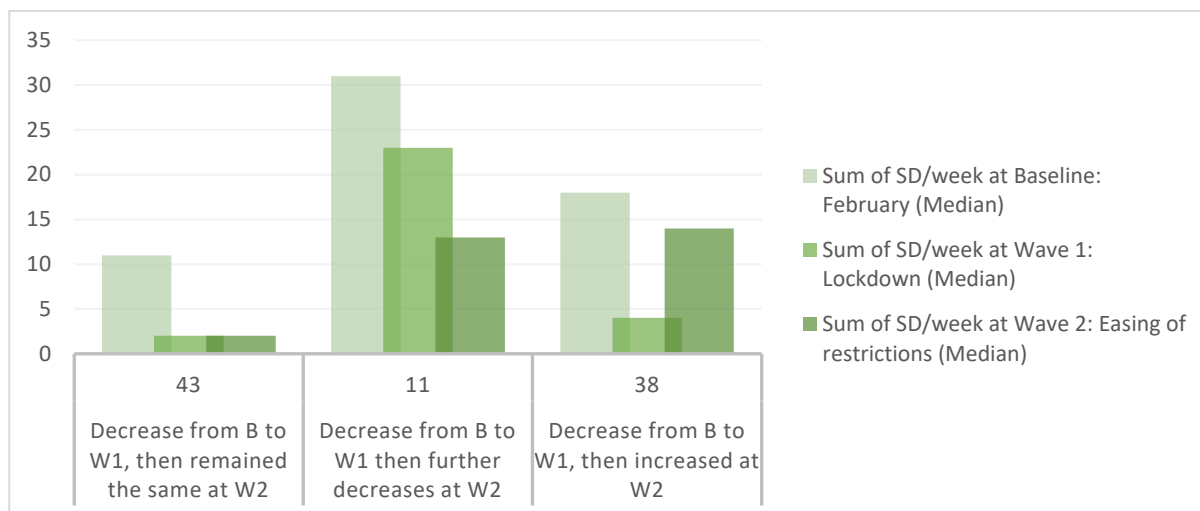
Table 28: What happened to those who decreased their drinking at Wave 1: Lockdown in Wave 2: Easing?

	Description of the change	%	SD/week at Baseline: February median	SD/week at Wave 1: Lockdown median	SD/week at Wave 2: Easing median
Lockdown sustained positive effect (n=43)	Decrease from B to W1, then remained the same at W2	47%	11	2	2
Lockdown escalating positive effect (n=11)	Decrease from B to W1 then further decreases at W2	12%	31	23	13
Lockdown temporary positive effect (n=38)	Decrease from B to W1, then increased at W2	41%	18	4	14

Represented visually (see Figure 3):

²⁶ Note: for these sub-group analyses, medians are reported rather than means due to skewed data (and small sample sizes in some cells)

Figure 3: Post-lockdown effects for those who decreased consumption during lockdown



What happened for people who increased their consumption during lockdown?

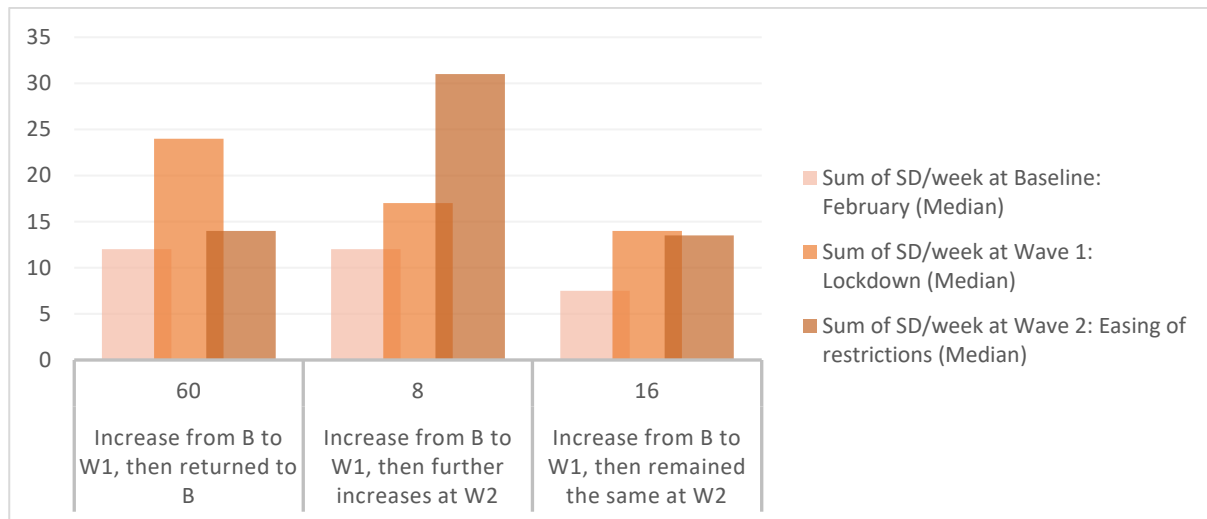
What happened after lockdown for people who significantly increased their drinking during lockdown? For most of them (n=60, 71%), they returned to their Baseline consumption levels (in Feb, their median SD was 12, at Wave 2 it was 14). Clearly for these people, Wave 1: Lockdown was associated with a temporary and substantial increase in alcohol consumption. Of the remaining 24 people, 8 further increased their drinking at Wave 2 (to a median of 31 SD at Wave 2) – clearly the lockdown precipitated an increase in drinking which further escalated after restrictions began to be lifted. For the other 16 people, their drinking during initial easing remained the same as that under lockdown: that is, the increases at Wave 1 (to median of 14 SD/week) were sustained into Wave 2 but without further escalation (Wave 2 median SD/week is 13.5).

Table 29: What happened to those who increased their drinking at Wave 1: Lockdown in Wave 2: Easing?

	Description of the change	%	SD/week at Baseline: February median	SD/week at Wave 1: Lockdown median	SD/week at Wave 2: Easing median
Lockdown temporary negative effect (n=60)	Increase from B to W1, then returned to B	71.5%	12	24	14
Lockdown escalating negative effect (n=8)	Increase from B to W1, then further increases at W2	9.5%	12	17	31
Lockdown sustained negative effect (n=16)	Increase from B to W1, then remained the same at W2	19.0%	7.5	14	13.5

Represented visually (see Figure 4):

Figure 4: Post-lockdown effects for those who increased consumption during lockdown



What happened for people whose drinking remained the same during lockdown?

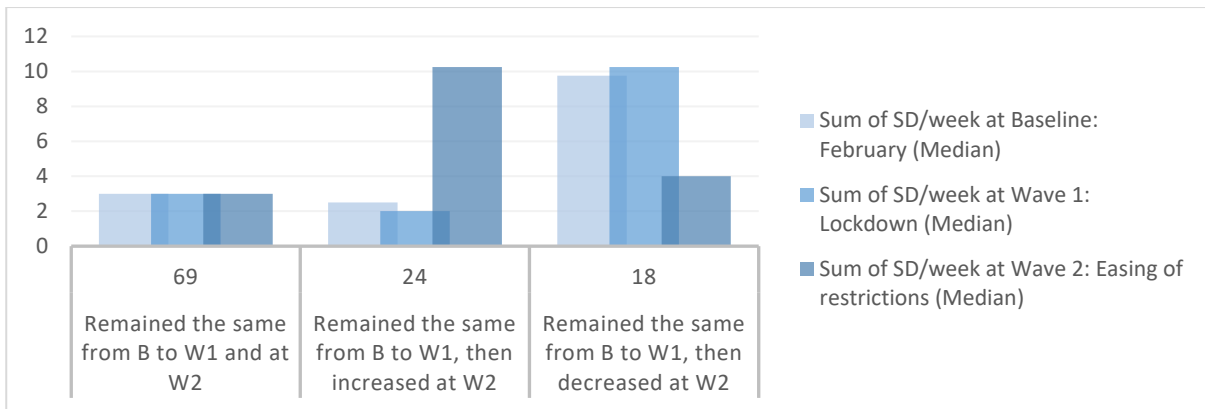
Around 29% of people increased their drinking during lockdown, and a similar 32% decreased their drinking during lockdown. The remaining 39% stayed much the same between Baseline and Wave 1: lockdown. What happened after restrictions were eased? The majority (n=69, 62%) had no changes between Baseline and Wave 2: Easing to their drinking (at a median of 3 SD/week at each of the three periods). A group of those who experienced no change in their alcohol consumption during Wave 1: Lockdown (n=24, 22%) subsequently increased their drinking at Wave 2 (to a median of 10.25 SD/week). And a not dissimilar proportion (n=18, 16%) decreased their drinking at Wave 2 from their stable Baseline (9.75 SD/week) and Wave 1 (10.25 SD/week) to a median of 4 SD/week at Wave 2.

Table 30: What happened to those whose drinking did not change at Wave 1: Lockdown in Wave 2: Easing?

	Description of the change	%	SD/week at Baseline: February median	SD/week at Wave 1: Lockdown median	SD/week at Wave 2: Easing median
No change (n=69)	Remained the same from B to W1 and at W2	62.2%	3	3	3
No lockdown effect, post negative (n=24)	Remained the same from B to W1, then increased at W2	21.6%	2.5	2	10.25
No lockdown effect, post positive (n=18)	Remained the same from B to W1, then decreased at W2	16.2%	9.75	10.25	4

Represented visually (see Figure 5):

Figure 5: Post-lockdown effects for those whose consumption remained the same during lockdown



Further analyses of these changes at Wave 2 are underway and will be conducted in conjunction with Wave 3 analyses, providing the opportunity to assess the evolving patterns over time.

CONCLUSIONS AND POLICY IMPLICATIONS

Overall, the most important finding is the diversity of patterns of change in alcohol consumption over this period. There is no single clear pattern, nor one story – some people increased their consumption during lockdown, and then decreased it again during the time of easing restrictions, others decreased their consumption temporarily under lockdown and returned to February drinking levels after restrictions were eased, and for a significant proportion of people, consumption was unchanged. Sweeping conclusions about increased alcohol consumption (or decreased alcohol consumption) are not true to the experiences reported herein.

Importantly, most changes happened for people who were drinking at greater levels pre-lockdown. Both the people who decreased their consumption and the people who increased their consumption in association with lockdown were, on average, consuming around 20 standard drinks per week (compared to around 10 standard drinks per week for those whose consumption did not change). This shows that people are able to change – from high levels of consumption pre-lockdown to much lower levels of consumption; and females seem to have a higher propensity towards change – in both directions.

While we did not ask about strategies or help-seeking in association with decreased alcohol consumption, it seems that people were able to reduce or cease alcohol intake without assistance. This is consistent with the literature showing that the majority of people experiencing harmful alcohol consumption do reduce or cease their use without help (Mellor, Lancaster, & Ritter, 2019). This study reinforces the resilience and agency shown by people, especially during these tumultuous times. For the minority of people who increased their alcohol consumption under lockdown conditions, most of them returned to their Baseline levels of drinking once restrictions were eased.

One of the most significant alcohol-related policy changes was the closure of licensed venues. Indeed, of all the variables assessed in this study, licensed venue drinking had the largest effect (odds ratio) in predicting a decrease in consumption. For younger people (especially the Gen Z 18-24 year-olds), the lack of licensed venues was strongly associated with decreased alcohol consumption. Licensed venues are places of sociality, and in their absence, young people reduced their alcohol consumption. People older than this, across all three generations (Millennials, Gen X, and Boomers), however, did not. For those generations who increased their consumption during lockdown, 57% of them consumed alcohol at licensed venues prior to lockdown. For these people, they increased their drinking at a time when these usual places of consumption were no longer available.

While there is a large body of alcohol policy research concerned with regulating licensed venues, including restricting trading hours, this study suggests that such restrictions may reduce consumption in one segment of the population (younger people). Without further investigation it is not possible to assess the impact that venue closures had on the other third of our group who increased their consumption (who were also consuming alcohol at licensed venues pre-lockdown).

During lockdown, off-premise outlets remained open, and the purchase of alcohol online increased in this sample. Whilst it appeared that online purchasing was associated with being in the group that increased their drinking, once all variables were controlled for (the multinomial analysis), this effect was in the direction of lower online purchasing amongst the group that increased their consumption, relative to the group who remained the same. We did not collect data on the various types of online alcohol purchasing (same day delivery versus wine clubs versus regular ordering). Further research into the impact of online alcohol sales seems warranted, without necessarily assuming that online sales are associated with problematic alcohol consumption patterns.

Certainly, alcohol was available throughout the lockdown period, whether through off-premise purchase or through online purchasing or because people already had alcohol at home. In Western Australia, the

government introduced rationing and across Australia the industry also rationed. Woolworths group and then Retail Drinks Australia briefly voluntarily implemented purchase limits in response to panic buying, asking people to “purchase responsibly” to stop supply interruptions²⁷. This may have reduced the availability of alcohol for some respondents, but taken as a whole, the decreased consumption appeared to be much more closely associated with licensed venue closure for younger people than with other supply restrictions.

Drinking at home is known to be risky. There is no ‘responsible service of alcohol’ at home, portion sizes are not contained (once a bottle is open), labelling of standard drinks remains limited (in visibility and in consumers knowledge), and there are fewer constraints (such as driving home). Despite these things, the majority of people did not increase their drinking at home (the groups that decreased and remained the same in term of alcohol consumption all drank at home). So while, by itself, drinking at home may be the target for future policy, it operates as a risk factor only in particular circumstances (yet to be identified) and not for everybody.

What are the implications of these findings for policy? Alcohol policy has historically been a blunt tool largely favouring untargeted interventions (with policies explicitly aimed at Aboriginal and Torres Strait Islander populations as a notable exception) and concerned with regulating licensed venues, alcohol sales and advertising, and using price mechanisms (such as taxation) to reduce alcohol consumption. The findings herein suggest that beyond these measures, alcohol policy could also be better targeted. The success of public health messaging rests on its ability to address the specific needs of different groups and segments within the population. Smarter, more targeted regulations of alcohol are required that speak to specific population groups. For example, the closure of licensed venues was only associated with decreased consumption in one sub-population, without impacting on those people who increased their consumption.

We could for example consider adopting interventions proposed in different parts of the world to preserve the sociality of licensed venues, while controlling for licensees incentives to increase alcohol-related revenue, such as limiting alcohol advertising, special offers and speed drinking devices (Tutenges & Bøhling, 2019). A policy worth considering is the policy rolled out early on in the easing and replaced too soon to be studied in these data, which tied the purchasing of in-house alcohol with the purchase of in-house food. Tying the consumption of alcohol with the consumption of food, mimicking the drinking culture in licensed venues in Spain, may have a regulating effect on both intoxication levels, as well as increasing in-house consumer spending without increasing in-house alcohol consumption.

Relaxing licensing laws to facilitate take-away and delivery of alcohol sales from licensed premises such as restaurants is a significant policy shift to have occurred during COVID-19. Only a small proportion of our sample (7%) purchased alcohol from licensed premises as take-away in lockdown, so our data is too small to draw any definitive conclusions on the impacts of these changes. However, initially, it seems that there has been a limited impact on consumption. Evaluation of this change is needed, but it is possible to view its consequences as a step away from incentivising licensees to focus on increasing in-house spending via in-house consumption.

Our findings also support a targeted rather than universal approach towards public health messaging. One third of the group decreased consumption, and messaging should support those positive behaviours, resilience, and the agency that has been shown by people during lockdown. At the same time, there is a need to target messaging for those people who have increased their drinking. In particular this should concentrate on older generations.

Greater policy attention to those who drink alone may also be warranted with our findings suggesting that drinking alone is a risk factor for increased alcohol consumption under lockdown conditions (and literature

²⁷ <https://www.retaildrinks.org.au/news/retail-drinks-announces-voluntary-national-initiative>

also associating drinking alone with the development of alcohol dependence (Corbin et al., 2020; Skrzynski & Creswell, 2020). Wardell et al (2020) found that living alone was associated with increased solitary drinking (controlling for pre-COVID 19 alcohol consumption levels). Alcohol policy should not be seen in isolation, and should be connected with other social policies, for example, policies focussed on reducing loneliness (Gardiner, Geldenhuys, & Gott, 2018; Holt-Lunstad, Robles, & Sbarra, 2017).

Limitations

There are important differences between alcohol consumption and alcohol-related harm. This study focussed on consumption alone. Future work should examine the relationship between policy changes and indicators of alcohol-related harms, such as road traffic injuries, treatment seeking or hospitalisations. This study was also limited to NSW: while this meant the policy environment was contained, it also limits ability to compare to other places where policy changes, such as closure of licensed venues, have also occurred. The Baseline (February) data were collected retrospectively, and hence relied on accurate recall. (Waves 1 and 2 were collected prospectively). All the data are self-report. We did not ask about time at home at Baseline, so we could not control for impact of changes in the amount of time at home. We had missing data, although for most respondents this only occurred for a few questions. More importantly was the large drop-out after the first 3 questions. However, the analyses showed that the people who only completed three questions were not significantly different from those who completed the full survey, increasing our confidence. Matching between waves relied on a self-generated alphanumeric code. We matched 87% of Wave 2 respondents, but the final sample size for Wave 2 was only 287. Some statistical tests may have reached significance with a larger sample.

The three groups in this study were generated from a difference between Baseline and Wave 1 of greater than 2 standard drinks, applied unilaterally to the sample. But it might be the case that a change in 2 standard drinks has different meaning for different people, depending on how much they are actually drinking. For instance, someone reporting 4 standard drinks at Baseline and 2 standard drinks at Wave 1 has cut their drinking in half (50% decrease) and would rightfully be placed in the decrease group. Whereas a drop from 20 drinks to 18 drinks only represents a 10% decrease in consumption, yet these people share group membership in the analyses. Thus, a criterion of 2 standard drinks might overstate change (in either direction) for those who consume more alcohol at Baseline. A range of sensitivity analysis could be conducted in the next phase of the project, varying the definition of 'change' and analysing the impact this has on the size of the groups, and the regression models. Alternatively, change could also be defined as a proportion of Baseline drinking, for instance a 10% increase or decrease in Baseline drinking, circumventing the issues addressed above when relying on a gross measure of change.

Further work

It should be noted that this is an initial report of findings from Baseline, Wave 1, and Wave 2. Waves 3 and 4 are still pending and further analyses across waves will be underway shortly. Many more analyses are in train, for example drinking alone and living alone were two separate variables we have yet to analyse for relationships (and relationship to consumption levels and changes). The Wave 2 data is yet to be analysed statistically, and we will use complex modelling for the three wave analysis.

We leave the last words to some of the research participants:

I hadn't actually thought about the change in my drinking habits during COVID 19. But it's definitely there when asked these questions. Interesting! (survey respondent 25 year old female)

I need a drink after this (survey respondent, 24 year old female).

REFERENCES

- ABS. (2020). *Household Impacts of COVID-19 Survey. Catalogue No. 4940.0*. Canberra: Australian Bureau of Statistics.
- Babor, T., Caetano, R., & et al. (2010). *Alcohol: No Ordinary Commodity*. Oxford, UK: Oxford University Press.
- Biddle, N., Edwards, B., Gray, M., & Sollis, K. (2020). *Alcohol consumption during the COVID-19 period: May 2020*. Canberra: ANU Centre for Social Research and Methods.
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*, 395(10227), 912-920. doi:10.1016/S0140-6736(20)30460-8
- Callinan, S., & MacLean, S. (2020). COVID-19 makes a stronger research focus on home drinking more important than ever. *Drug and Alcohol Review*, 10.1111/dar.13125. doi:10.1111/dar.13125
- Callinan, S., Smit, K., Mojica-Perez, Y., D'Aquino, S., Moore, D., & Kuntsche, E. (2020). Shifts in alcohol consumption during the COVID-19 pandemic: early indications from Australia. *Addiction*, n/a(n/a). doi:10.1111/add.15275
- Chalmers, J., & Ritter, A. (2011). The business cycle and drug use in Australia: Evidence from repeated cross-sections of individual level data *International Journal of Drug Policy*, 22(5), 341-352. doi:doi:10.1016/j.drugpo.2011.03.006
- Coates, B., & et al. (2020). *Shutdown: estimating the COVID19 employment shock*: Grattan Institute.
- Colbert, S., Thornton, L., & Richmond, R. (2020). Content analysis of websites selling alcohol online in Australia. *Drug and Alcohol Review*, 39(2), 162-169. doi:10.1111/dar.13025
- Colbert, S., Wilkinson, C., Thornton, L., & Richmond, R. (2020). COVID-19 and alcohol in Australia: Industry changes and public health impacts. *Drug and Alcohol Review*, 39(5), 435-440. doi:10.1111/dar.13092
- Corbin, W. R., Waddell, J. T., Ladensack, A., & Scott, C. (2020). I drink alone: Mechanisms of risk for alcohol problems in solitary drinkers. *Addictive Behaviors*, 102, 106147. doi:<https://doi.org/10.1016/j.addbeh.2019.106147>
- Cunningham, J. A., & McCambridge, J. (2012). Is alcohol dependence best viewed as a chronic relapsing disorder? *Addiction*, 107(1), 6-12. doi:10.1111/j.1360-0443.2011.03583.x
- Davidson, P., Bradbury, B., Wong, M., & Hill, T. (2020). *Inequality in Australia, Part 1: Overview. Supplement: The impact of COVID-19 on income inequality*: Australian Council of Social Service and UNSW (Sydney).
- de Goeij, M. C., Suhrcke, M., Toffolutti, V., van de Mheen, D., Schoenmakers, T. M., & Kunst, A. E. (2015). How economic crises affect alcohol consumption and alcohol-related health problems: a realist systematic review. *Soc Sci Med*, 131, 131-146. doi:10.1016/j.socscimed.2015.02.025
- DeMartini, K. S., & Carey, K. B. (2011). The role of anxiety sensitivity and drinking motives in predicting alcohol use: A critical review. *Clinical Psychology Review*, 31(1), 169-177.
- Devries, K. M., Child, J. C., Bacchus, L. J., Mak, J., Falder, G., Graham, K., . . . Heise, L. (2014). Intimate partner violence victimization and alcohol consumption in women: a systematic review and meta-analysis. *Addiction*, 109(3), 379-391. doi:10.1111/add.12393
- FARE. (2020). *Alcohol sales and use during COVID-19*: FARE.
- Finlay, I., & Gilmore, I. (2020). Covid-19 and alcohol—a dangerous cocktail. *BMJ*, 369, 1987. doi:10.1136/bmj.m1987
- French, D. J., Sargent-Cox, K. A., Kim, S., & Anstey, K. J. (2014). Gender differences in alcohol consumption among middle-aged and older adults in Australia, the United States and Korea. *Australian and New Zealand Journal of Public Health*, 38(4), 332-339. doi:10.1111/1753-6405.12227
- Fulde, G. W., & Duffy, M. (2006). Emergency department frequent flyers: unnecessary load or a lifeline? *Med J Aust*, 184(12), 595.
- Gardiner, C., Geldenhuys, G., & Gott, M. (2018). Interventions to reduce social isolation and loneliness among older people: an integrative review. *Health & Social Care in the Community*, 26(2), 147-157. doi:10.1111/hsc.12367

- Gearing, A. (2020). Coronavirus and 'domestic terrorism': how to stop family violence under lockdown. *The Conversation*, April 1st 2020.
- Ghosh, A., Choudhury, S., Basu, A., Mahintamani, T., Sharma, K., Pillai, R. R., . . . Mattoo, S. K. (2020). Extended lockdown and India's alcohol policy: a qualitative analysis of newspaper articles. *International Journal of Drug Policy*, 85, 102940. doi:<https://doi.org/10.1016/j.drugpo.2020.102940>
- Grant, V. V., Stewart, S. H., & Birch, C. D. (2007). Impact of positive and anxious mood on implicit alcohol-related cognitions in internally motivated undergraduate drinkers. *Addictive Behaviors*, 32(10), 2226-2237. doi:<https://doi.org/10.1016/j.addbeh.2007.02.012>
- Harhay, M. O., Bor, J., Basu, S., McKee, M., Mindell, J. S., Shelton, N. J., & Stuckler, D. (2014). Differential impact of the economic recession on alcohol use among white British adults, 2004–2010. *European Journal of Public Health*, 24(3), 410-415. doi:10.1093/eurpub/ckt134
- Holt-Lunstad, J., Robles, T. F., & Sbarra, D. A. (2017). Advancing social connection as a public health priority in the United States. *Am Psychol*, 72(6), 517-530. doi:10.1037/amp0000103
- Jackson, S. E., Garnett, C., Shahab, L., Oldham, M., & Brown, J. (2020). Association of the Covid-19 lockdown with smoking, drinking, and attempts to quit in England: an analysis of 2019-2020 data. *medRxiv*, 2020.2005.2025.20112656. doi:10.1101/2020.05.25.20112656
- Koziol, M. (2020). The booze epidemic: with no boss in sight, workers can drink from home. *Sydney Morning Herald March 28th 2020*.
- Kuntsche, E., & Kuntsche, S. (2009). Development and validation of the Drinking Motive Questionnaire Revised Short Form (DMQ-R SF). *J Clin Child Adolesc Psychol*, 38(6), 899-908. doi:10.1080/15374410903258967
- Livingston, M., Callinan, S., Raninen, J., Pennay, A., & Dietze, P. (2018). Alcohol consumption trends in Australia: Comparing surveys and sales-based measures. *Drug and Alcohol Review* 37, 9-14.
- Livingston, M., Raninen, J., Slade, T., Swift, W., Lloyd, B., & Dietze, P. (2016). Understanding trends in Australian alcohol consumption—an age–period–cohort model. *Addiction*, 111(9), 1590-1598.
- McPhee, M., Keough, M. T., Rundle, S., Heath, L. M., Wardell, J., & Hendershot, C. S. (2020). Depression, Environmental Reward, Coping Motives and Alcohol Consumption During the COVID-19 Pandemic. *preprint server PsyArXiv*. doi:<https://doi.org/10.31234/osf.io/zvs9f>
- Mellor, R., Lancaster, K., & Ritter, A. (2019). Systematic review of untreated remission from alcohol problems: Estimation lies in the eye of the beholder. *Journal of Substance Abuse Treatment*, 102, 60-72. doi:<https://doi.org/10.1016/j.jsat.2019.04.004>
- Neill, E., Meyer, D., Toh, W. L., van Rheenen, T. E., Phillipou, A., Tan, E. J., & Rossell, S. L. (2020). Alcohol use in Australia during the early days of the COVID-19 pandemic: Initial results from the COLLATE project. *Psychiatry and Clinical Neurosciences*, n/a(n/a). doi:10.1111/pcn.13099
- Ogeil, R. P., Gao, C. X., Rehm, J., Gmel, G., & Lloyd, B. (2016). Temporal changes in alcohol-related mortality and morbidity in Australia. *Addiction*, 111(4), 626-634. doi:10.1111/add.13213
- Peña, S., Cuadrado, C., Rivera-Aguirre, A., Hasdell, R., Nazif-Munoz, J. I., Yusuf, M. (2020). PoliMap: A taxonomy proposal for mapping and understanding the global policy response to COVID-19. *OSFpreprints*. doi: <https://doi.org/10.31219/osf.io/h6mvs>
- Ritter, A., & Chalmers, J. (2011). The relationship between economic conditions and substance use and harm. *Drug and Alcohol Review*, 30(1), 1-3. doi:10.1111/j.1465-3362.2010.00282.x
- Skrzynski, C. J., & Creswell, K. G. (2020). Associations between solitary drinking and increased alcohol consumption, alcohol problems, and drinking to cope motives in adolescents and young adults: a systematic review and meta-analysis. *Addiction*. doi:10.1111/add.15055
- Sutherland, R., Baillie, G., Memedovic, S., Hammound, M., Barratt, M., Bruno, R., . . . Peacock, A. (2020). *ADAPT Study Wave 1 Bulletin*. Sydney: NDARC, UNSW.
- The Lancet Gastroenterology, H. (2020). Drinking alone: COVID-19, lockdown, and alcohol-related harm. *The lancet. Gastroenterology & hepatology*, 5(7), 625-625. doi:10.1016/S2468-1253(20)30159-X
- Thornton, L., Batterham, P. J., Fassnacht, D. B., Kay-Lambkin, F., Calear, A. L., & Hunt, S. (2016). Recruiting for health, medical or psychosocial research using Facebook: Systematic review. *Internet Interventions*, 4, 72-81. doi:<https://doi.org/10.1016/j.invent.2016.02.001>

- Tutenges, S., & Bøhling, F. (2019). Designing drunkenness: How pubs, bars and nightclubs increase alcohol sales. *International Journal of Drug Policy*, 70, 15-21.
doi:<https://doi.org/10.1016/j.drugpo.2019.04.009>
- Vallee, B. L. (1998). Alcohol in the western world. *Scientific American*, 278(6), 80-85.
- Wardell, J., Kempe, T., Rapinda, K. K., Single, A. N., Bilevicius, E., Frohlich, J. R., Hendershot, C.S., & Keough, M. T. . (2020). Drinking to cope during the COVID-19 pandemic: The role of external and internal stress-related factors in coping motive pathways to alcohol use, solitary drinking, and alcohol problems. *preprint server PsyArXiv* doi:<https://doi.org/10.31234/osf.io/8vfp9>
- Waters, C. (2020). 'Running a million miles an hour': Online alcohol sales soar. *Sydney Morning Herald*, 13.04.2020, available at: <https://www.smh.com.au/business/small-business/running-a-million-miles-an-hour-online-alcohol-sales-soar-20200407-p54hx3.html>.
- Wilsnack, R. W., Wilsnack, S. C., Kristjanson, A. F., Vogeltanz-Holm, N. D., & Gmel, G. (2009). Gender and alcohol consumption: patterns from the multinational GENACIS project. *Addiction*, 104(9), 1487-1500. doi:10.1111/j.1360-0443.2009.02696.x

Appendix 1: Survey details

Area	Data/variable	Response format	Waves	Notes
Demographics				
	Age	years	B, 1, 2, 3, 4	
	Gender	4 response options	B, 1, 2, 3, 4	
	Residing in NSW	Y/N	2, 3, 4	
	Dependents	4 response options	B + 1	2, 3, 4 this question merged with household structure
	Rurality	3 response options	B, 1, 2, 3, 4	Added to B + W1 on May 16 th following 18 completes.
	Household structure	11 response options	B, 1, 2, 3, 4	Minor wording change after B, removed "couple" as redundant/covered already
	Pre COVID restrictions, same household structure	Y/N	B only	
	How many people live in house	6 response options	B, 1, 2, 3, 4	Minor wording change B, 1 = "same house"; 2,3,4 = "your household"
	Relationship status	4 response options	B, 1, 2, 3, 4	
	Type of isolation	5 response options	1, 2, 3, 4	
	Time at home	3 response options	1, 2, 3, 4	
	Has isolation status changed since last survey	Y/N	2, 3, 4	
Income measures				
	Changes to income since COVID19?	4 response options	1, 2, 3, 4	
	Income (combined household)	18 response options	B, 1, 2, 3, 4	
	Typical drinking month	Y/N	B, 2, 3, 4	
	Typical Drinking frequency (last month)	7 response options	B, 1, 2, 3, 4	
	Typical SD/day	11 response options	B, 1, 2, 3, 4	
	5+ on one occasion (frequency)	7 response options	B, 1, 2, 3, 4	
	Not a typical weekly drinker	Y/N	B, 1, 2, 3, 4	Question format change: 2,3,4 not a typical weekly drinker can be selected: B, 1 it is determined from no data entry in diary
	# days drinking (out of 7) and SD per day (typical week)	diary data For each day of week	B, 1, 2, 3, 4	Diary layout changed between B, 1 and 2,3,4 waves, for easier completion. All data variables identical
	Start time of drinking	diary data For each day of week	B, 1, 2, 3, 4	
	End time of drinking	diary data For each day of week	B, 1, 2, 3, 4	
	With whom?	diary data 5 response categories	B, 1, 2, 3, 4	Question format changed B + 1 – text entry/open-ended. 2,3,4 – closed-ended + text entry for 'Other'.

Area	Data/variable	Response format	Waves	Notes
		For each day of week		
	Where consumed?	diary data. 5 response categories For each day of week	B, 1, 2, 3, 4	Question format changed B + 1 – text entry/open-ended. 2,3,4 – closed-ended + text entry for 'Other'.
	Where purchased?	Diary data. 7 response options. For each day of the week.	B, 1, 2, 3, 4	Question format changed B + 1 – text entry/open-ended. 2,3,4 – closed-ended + text entry for 'Other'.
	Frequency of take-away purchasing	5 response options	B, 1, 2, 3, 4	
	Frequency of on-premise purchasing?	5 response options	B, 1, 2, 3, 4	
	Frequency of home delivery purchasing?	5 response options	B, 1, 2, 3, 4	
Drinking motives				
	Drinking motives Questionnaire Short Form	14 questions, each with 5 response options	B, 1, 2, 3, 4	
Type of drinker				
		7 response options	B, 1, 2, 3, 4	
Harmful vs beneficial perceptions				
		6 response options	B, 1, 2, 3, 4	
Any additional comments				
		Free text form	B, 1, 2, 3, 4	

Appendix 2: Additional data tables

Table A1: Comparison of those who completed the survey and those who dropped out, Question 1, was February a typical drinking month for you

	Respondents who dropped out (n=1446)		Respondents who completed the survey (n=572)	
	N	%	N	%
Feb as typical drinking month (yes/no)				
yes	1171	81%	497	87%
no	272	19%	75	13%
Total (excl missing)	n=1443	100%	n=572	100%

Table A2: Comparison of those who completed the survey and those who dropped out, Question 2, frequency of drinking, monthly

Typical month frequency	Respondents who dropped out (n=1446)		Respondents who completed the survey (n=572)	
	N	%	N	%
Every day	187	13%	43	8%
5 - 6 days a week	174	12%	54	9%
3 - 4 days a week	349	25%	140	25%
1 - 2 days a week	384	27%	192	34%
2 - 3 days a month	188	13%	97	17%
About 1 day a month	59	4%	24	4%
Less often	65	5%	21	4%
Total (excl missing)	1406	100%	571	100%

Table A3: Comparison of those who completed the survey and those who dropped out, Question 3, average number of standard drinks consumed per drinking occasion

	Respondents who dropped out (n=1446)		Respondents who completed the survey (n=572)	
	N	%	N	%
Typical SD consumption				
20 or more standard drinks	31	2%	8	1%
16-19 standard drinks	41	3%	10	2%
13-15 standard drinks	66	5%	26	5%
11-12 standard drinks	68	5%	25	4%
9-10 standard drinks	116	9%	60	10%
7-8 standard drinks	131	10%	79	14%
5-6 standard drinks	230	17%	81	14%
3-4 standard drinks	327	25%	129	23%
2 standard drinks	227	17%	105	18%
1 standard drink	68	5%	42	7%
Half a standard drink	20	2%	7	1%
Total (excl missing)	1325		572	

Table A4: Age ranges of the sample (n=572)

Generation	N	%
Gen Z (18-24 yrs)	189	33.0%
Millennials (25-39 yrs)	183	32.0%
Gen X (40-55 yrs)	133	23.3%
Baby Boomers (56-74 yrs)	64	11.2%
Silent generation (75+)	3	0.5%
Total	572	

Table A5: Urban, regional and rural composition of the sample (n=572)

Urban	353	62%
Regional	137	24%
Rural	65	11%
(blank)	17	3%
Total	572	

Table A6. Average start and finish drinking times for each day of the week over a 1-week reference period at Baseline

	Average start time (pm)	Average finish time (pm)
Monday	5:22	8:41
Tuesday	5:33	8:58
Wednesday	5:42	9:03
Thursday	5:48	9:07
Friday	5:38	9:34
Saturday	5:15	10:27
Sunday	5:11	8:26
TOTAL	5:35	9:36

Table A7: Baseline drinking motives

	Baseline: social motives		Baseline: negative affect motives	
	No.	%	No.	%
almost never/never	38	6.7%	233	41.2%
some of the time	140	24.6%	236	41.8%
half of the time	175	30.8%	56	9.9%
most of the time	150	26.4%	31	5.5%
almost always/always	65	11.4%	9	1.6%
Grand Total	568	100.0%	565	100.0%

Note: missing value=4 for B social and missing value=7 for B neg affect.

Table A8: Female and male motives for drinking at Baseline

	Baseline social motives (n=559)				Baseline negative affect motives (n=556)			
	males		females		males		females	
	No.	%	No.	%	No.	%	No.	%
almost never/never	11	5.7%	25	6.8%	74	38.3%	156	43.0%
some of the time	47	24.2%	91	24.9%	84	43.5%	148	40.8%
half of the time	70	36.1%	102	27.9%	22	11.4%	34	9.4%
most of the time	48	24.7%	101	27.7%	10	5.2%	19	5.2%
almost always/always	18	9.3%	46	12.6%	3	1.6%	6	1.7%
Grand total	194	100.0%	365	100.0%	193	100.0%	363	100.0%

Note: missing value=13 for B social and Gender combined (from the total sample of 572, therefore n=559); and missing value= 16 for B neg affect and Gender combined (from the total sample of 572, therefore n=556).

Table A9: Average weekly standard drinks consumed by age group at Baseline (February 2020)

	# Standard Drinks/week			
	Mean	Std. Deviation	Min	Max
18-24	15.73	15.20	0.00	83.00
25-34	13.76	16.24	0.00	94.00
35-44	16.04	20.15	0.00	140.00
45-54	17.55	20.54	0.00	123.00
55-64	21.92	21.06	0.00	91.00
65+	19.19	21.48	2.00	98.00
Total sample average	16.29	18.05	0.00	140.00

Table A10: Changes in on-premise (licensed venue) alcohol purchasing between Baseline and Wave 1: Lockdown

	Baseline on-premise alcohol consumption		W1 on-premise alcohol consumption	
	No.	%	No.	%
Never	33	5.8%	468	82.7%
Less than monthly	153	26.9%	57	10.1%
2-4 times/months	161	28.3%	13	2.3%
Weekly	168	29.5%	20	3.5%
More often	54	9.5%	8	1.4%
Total	569	100.0%	566	100.0%

Note: Missing value=3 for on-premise alcohol consumption at baseline. Missing value=6 for on-premise alcohol consumption at Wave 1.

Table A11: Changes in take-away alcohol purchasing between Baseline and Wave 1: Lockdown

	B take-away		W1 take-away	
	No.	%	No.	%
Never	38	6.6%	79	13.9%
<monthly	188	32.9%	121	31.3%
2-4 times/months	171	29.9%	133	23.5%
Weekly	135	23.7%	170	30.0%
More often	40	6.9%	64	11.3%
Grant total	572	100.0%	567	100.0%

Note: Missing value=0 for take-away at baseline. Missing value=5 for take-away at wave 1.

Table A12: Changes in online alcohol purchasing between baseline and Wave 1 (of those who drank)

	B			W1		
	Total sample	Males	Females	Total sample	Males	Females
Yes	106/561 (18.5%)	41/195 (21.0%)	63/366 (17.2%)	156/556 (28.1%)	50/191 (26.2%)	106/365 (29.0%)

Table A13: Drinking motives, Baseline and Wave 1 stratified by group (decreased, increased, remained the same)

DECREASE GROUP (n=152)	B Social	W1 Social	B Neg affect	W1 Neg affect
almost never/never	4.6%	46.6%	38.3%	37.4%
some of the time	19.9%	26.4%	47.7%	40.1%
half of the time	27.8%	13.5%	8.1%	11.6%
most of the time	33.8%	11.5%	5.4%	6.8%
almost always/always	13.9%	2.0%	0.7%	4.1%
Total	100.0%	100.0%	100.0%	100.0%
INCREASE GROUP (n=189)	B Social	W1 Social	B Neg affect	W1 Neg affect
almost never/never	7.0%	46.5%	31.0%	29.9%
some of the time	24.9%	21.6%	48.4%	47.3%
half of the time	33.5%	10.8%	10.3%	10.3%
most of the time	23.8%	14.6%	6.5%	9.2%
almost always/always	10.8%	6.5%	3.8%	3.3%
Total	100.0%	100.0%	100.0%	100.0%

Appendix 3: Multinomial model building process

Each of the following variables was fitted in the univariate multinomial regression model.

1. Age
2. Age.group
3. Gender
4. Q42..Area
5. Q44..W1.Household.structure
6. Q47..B.income.range
7. Q46..W1.Income.change
8. Q48..W1.Iso.type
9. Q6.7..B.licensed..venues.any.day_recoded
10. Q6.10.alone.anytime.B_recoded
11. Q6.13.BDD.binge_recoded
12. Q12..BpurchOn.freq
13. Q34..W1DM.social
14. Q36.5..W1DM.negative.affect
15. Q47..B.Income.range

Those with p values greater than or equal to 2.0 were retained for the final model, alongside those with a strong theoretical foundation (see body text).

Univariate multinomial analyses

Univariate model with Age

Predictors	Odds Ratios	CI	p	Response
(Intercept)	2.49	1.40 – 4.41	0.002	decrease
Age	0.97	0.95 – 0.98	<0.001	decrease
(Intercept)	1.39	0.82 – 2.38	0.222	increase
Age	0.99	0.98 – 1.00	0.187	increase
Observations	530			
R ² Nagelkerke	0.038			

Note: Here, Age is a continuous variable.

Univariate model with Age.group (generations)

Predictors	Odds Ratios	CI	p	Response
(Intercept)	1.70	1.17 – 2.47	0.005	decrease
Age.group.four_recoded [Baby boomers (56-74)]	0.31	0.14 – 0.66	0.002	decrease
Age.group.four_recoded [Gen X (40-55 years)]	0.26	0.14 – 0.48	<0.001	decrease
Age.group.four_recoded [Millennials (25-39 years)]	0.36	0.21 – 0.62	<0.001	decrease
(Intercept)	1.20	0.81 – 1.80	0.362	increase
Age.group.four_recoded [Baby boomers (56-74)]	0.70	0.34 – 1.41	0.316	increase
Age.group.four_recoded [Gen X (40-55 years)]	0.64	0.36 – 1.12	0.117	increase
Age.group.four_recoded [Millennials (25-39 years)]	0.96	0.57 – 1.63	0.891	increase
Observations	527			

R2 Nagelkerke	0.077
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Note: For age group, the youngest generation Gen Z (18-24 years) was the reference category.

Univariate model with Gender

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.79	0.61 – 1.03	0.084	decrease
Gender [Male]	1.07	0.68 – 1.69	0.768	decrease
(Intercept)	0.97	0.75 – 1.24	0.800	increase
Gender [Male]	1.08	0.70 – 1.67	0.713	increase
Observations	522			
R ² Nagelkerke	0.036			

Note: For gender, Female was the reference category.

Univariate model with Q10..BDD.SD.drinks.week

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.33	0.23 – 0.46	<0.001	decrease
Q10..BDD.SD.drinks.week	1.07	1.05 – 1.09	<0.001	decrease
(Intercept)	0.52	0.38 – 0.70	<0.001	increase
Q10..BDD.SD.drinks.week	1.05	1.03 – 1.07	<0.001	increase
Observations	529			
R2 Nagelkerke	0.126			

Univariate model with Q42..Area

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.84	0.64 – 1.10	0.196	decrease
Q42..Area [remote or rural]	0.83	0.52 – 1.31	0.411	decrease
(Intercept)	1.00	0.77 – 1.29	1.000	increase
Q42..Area [remote or rural]	1.01	0.67 – 1.55	0.946	increase
Observations	516			
R2 Nagelkerke	0.069			

Note: For Area, Urban was the reference category.

Univariate model with Q44..W1.Household.structure

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.56	0.37 – 0.85	0.006	decrease
Q44..W1.Household.structure [children at home]	0.92	0.46 – 1.84	0.817	decrease
Q44..W1.Household.structure [living alone]	0.90	0.42 – 1.93	0.781	decrease
Q44..W1.Household.structure [share household]	2.39	1.41 – 4.07	0.001	decrease
(Intercept)	0.59	0.39 – 0.89	0.012	increase
Q44..W1.Household.structure [children at home]	1.60	0.86 – 2.98	0.135	increase
Q44..W1.Household.structure [living alone]	1.57	0.80 – 3.09	0.188	increase
Q44..W1.Household.structure [share household]	2.37	1.40 – 4.00	0.001	increase
Observations	525			

R2 Nagelkerke	0.068
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Note: For Household Structure, “Couple with/without adult children” was the reference category.

Univariate model with Q48..W1.Iso.type

Two variants of isolation type were examined: a five category and a dichotomous variable.

Predictors	Odds Ratios	CI	p	Response
(Intercept)	1.24	0.93 – 1.65	0.145	increase
Q48..W1.Iso.type_recoded [Somewhat and no]	1.02	0.66 – 1.57	0.944	increase
(Intercept)	1.20	0.90 – 1.61	0.212	same
Q48..W1.Iso.type_recoded [Somewhat and no]	1.11	0.72 – 1.71	0.638	same
Observations	526			
R2 Nagelkerke	0.020			

Note: For Iso Type, “Total and mostly isolated” was the reference category.

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.81	0.60 – 1.08	0.156	decrease
Q48..W1.Iso.type [No isolation]	0.93	0.20 – 4.27	0.924	decrease
Q48..W1.Iso.type [Somewhat isolated but still going to work]	0.93	0.60 – 1.44	0.740	decrease
Q48..W1.Iso.type [Total isolation]	2.47	0.44 – 13.86	0.303	decrease
(Intercept)	1.01	0.77 – 1.33	0.943	increase
Q48..W1.Iso.type [No isolation]	0.49	0.09 – 2.76	0.423	increase
Q48..W1.Iso.type [Somewhat isolated but still going to work]	0.95	0.63 – 1.44	0.826	increase
Q48..W1.Iso.type [Total isolation]	1.98	0.35 – 11.06	0.436	increase
Observations	526			
R2 Nagelkerke	0.024			

Note: For Iso Type, “Mostly isolation, except to buy essentials” was the reference category.

Univariate model with Q6.7..B.licensed..venues.any.day_recoded_2

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.43	0.30 – 0.63	<0.001	decrease
Q6.7..B.licensed..venues.any.day_recoded_2 [Yes]	3.45	2.15 – 5.54	<0.001	decrease
(Intercept)	0.85	0.63 – 1.15	0.283	increase
Q6.7..B.licensed..venues.any.day_recoded_2 [Yes]	1.63	1.06 – 2.49	0.025	increase
Observations	497			
R2 Nagelkerke	0.198			

Note: For Drinking at licenced venue at baseline, “No” was the reference category.

Univariate model with Q6.10.alone.anytime.B_recoded_2

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.89	0.69 – 1.14	0.340	decrease
Q6.10.alone.anytime.B_recoded_2 [Yes]	1.13	0.66 – 1.92	0.653	decrease
(Intercept)	0.92	0.72 – 1.17	0.488	increase
Q6.10.alone.anytime.B_recoded_2 [Yes]	1.93	1.19 – 3.13	0.007	increase
Observations	499			
R2 Nagelkerke	0.153			

Note: For Drinking alone at baseline, “No” was the reference category.

Univariate model with Q6.13.BDD.binge_recoded_2

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.77	0.61 – 0.98	0.035	decrease
Q6.13.BDD.binge_recoded_2 [Yes]	2.85	1.48 – 5.48	0.002	decrease
(Intercept)	1.00	0.80 – 1.25	1.000	increase
Q6.13.BDD.binge_recoded_2 [Yes]	1.87	0.96 – 3.63	0.066	increase
Observations	503			
R2 Nagelkerke	0.139			

Note: For Drinking alone at baseline, “No” was the reference category.

Univariate model with BpurchOnline.freq_recoded

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.84	0.67 – 1.07	0.164	decrease
Q13..BpurchOnline.freq_recoded_2 [yes]	0.75	0.43 – 1.30	0.304	decrease
(Intercept)	1.07	0.85 – 1.34	0.568	increase
Q13..BpurchOnline.freq_recoded_2 [yes]	0.69	0.41 – 1.15	0.156	increase
Observations	528			
R2 Nagelkerke	0.014			

Note: For Online purchasing at baseline, “No” was the reference category.

Univariate model with Q34..W1DM.social

Predictors	Odds Ratios	CI	p	Response
(Intercept)	0.76	0.50 – 1.17	0.215	decrease
Q34..W1DM.social	1.01	0.95 – 1.07	0.790	decrease
(Intercept)	0.76	0.50 – 1.14	0.179	increase
Q34..W1DM.social	1.05	0.99 – 1.11	0.102	increase
Observations	524			
R2 Nagelkerke	0.035			

Note: “Q34..W1DM.social” is a continuous variable.

Univariate model with Q36.5..W1DM.negative.affect

<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>	<i>Response</i>
(Intercept)	0.99	0.62 – 1.58	0.959	decrease
Q36.5..W1DM.negative.affect	0.98	0.95 – 1.02	0.313	decrease
(Intercept)	1.10	0.71 – 1.70	0.682	increase
Q36.5..W1DM.negative.affect	0.99	0.96 – 1.03	0.683	increase
Observations	525			
R ² Nagelkerke	0.027			

Note: "Q36.5..W1DM.negative.affect" is a continuous variable.

Income range

<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>	<i>Response</i>
(Intercept)	0.93	0.93 – 0.93	<0.001	decrease
Q47..B.income.range_recoded	1.00	1.00 – 1.00	0.163	decrease
(Intercept)	1.02	1.02 – 1.02	<0.001	increase
Q47..B.income.range_recoded	1.00	1.00 – 1.00	0.792	increase
Observations	478			
R ² Nagelkerke	0.232			

When income range was subsequently fitted into the first full model, the Odds Ratios and the Confidence Interval are nearly identical, evidence of serious multicollinearity in the model. The income range variable was then tested for multicollinearity, which was confirmed, and so removed from the next model iteration.