

Alcohol purchasing behaviour of drinkers

National and local purchasing times

Version 2 - July 2019



COLLEGE
OF HEALTH
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This version 2 report includes a small number of updates to the original report published in January 2019. A list of the updates is provided in Appendix 2.

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Alcohol purchasing behaviour of drinkers: national and local purchasing times

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Key summary

Trading hours of alcohol premises are important because late hours of trading are related to heavier drinking and alcohol-related harms. This study reports drinkers' purchasing behaviour, including late purchasing, from on/off-licensed premises in 2015.

Key points

Late alcohol purchasing

- Relatively few drinkers purchased after 2am from on-licensed premises or after 10pm from off-licensed premises in the last six months nationally (with little variation across the country).
- Around 20% of drinkers purchased between midnight and 2am from on-licensed premises or between 8pm -10pm from off-licensed premises nationally (with some variation across the country).
- The number of times an alcohol purchase was made between midnight and 4am *in the last six months* nationally from on-licensed premises was 8.5 million.¹ Most of these purchases were made between midnight and 2am.
- The number of times an alcohol purchase was made between 8pm and 11pm *in the last six months* nationally from off-licensed premises was around 2.9 million.¹ Most of these purchases were made between 8pm-10pm.

Late alcohol purchasers

- Of the drinkers who purchased between midnight and 4am from on-licensed premises or between 8pm and 11pm from off-licensed premises, two thirds drank at levels placing them at risk of harm. The majority were young people (18-24 year olds).

Other alcohol purchase times: off- licensed premises only

- For off-licensed premises, the most common times at which drinkers purchased were before 6pm and between 6pm and 7pm. Early morning purchases between 7am and 9am from off-licensed premises were generally low (2% nationally).

Implications

- In 2013, 24-hour trading was no longer permitted in New Zealand and national maximum trading hours of 8am to 4am for on-licensed premises and 7am to 11pm for off-licensed premises were introduced. In 2015, most drinkers that purchased later at night did so well prior to the national maximum restrictions, that is, between midnight and 2am for on-licensed premises or between 8pm and 10pm for off-licensed premises.
- Since two thirds of the drinkers purchasing later from on/off-licensed premises drank at levels placing them at risk of harm, further restricting closing times is in line with the aim of the Sale and Supply of Alcohol Act 2012, to minimise the harm from alcohol.

¹ This measure does not take into account the quantity or number of items purchased.

- Closing times should be set to ensure sufficient numbers of drinkers will be impacted by the restrictions to reduce harm.

Background

Why are trading hours of on/off-licensed premises important in New Zealand?

The trading hours of alcohol premises are important in New Zealand, as elsewhere, because outlets and their late hours of trading are related to heavier drinking and alcohol-related harms (Casswell et al., 2014; Kypri et al., 2014; Rossow & Norström, 2012).

Further, in 2013, the Sale and Supply of Alcohol Act 2012 (SSAA) (New Zealand Parliament, 2012b) removed 24-hour trading in New Zealand and introduced national maximum trading hours. For on-licensed premises, these are 8am to 4am and for off-licensed premises, 7am to 11pm.

Later time of purchase is related to heavy drinking in New Zealand

Later time of purchase, at both on/off-licensed premises, in New Zealand is associated with heavier drinking. Drinkers purchasing after 10pm from off-licensed premises and after 2am from on-licensed premises are more likely to consume six or more drinks on a typical occasion (a drink defined as 15ml absolute alcohol) compared to those purchasing at earlier times (e.g. Casswell, et al., 2014).

Contribution of on/off-licensed purchase to consumption

The overall proportion of alcohol consumed from on/off licensed purchasing is heavily skewed towards off-licensed premises. In New Zealand, 75% of the alcohol consumed by 16-65 year olds is from off-licensed premises in comparison to 25% from on-licensed premises (Gray-Phillip et al., 2018).

Similarly, of all the alcohol consumed in heavier drinking occasions in New Zealand (which is nearly half of the alcohol market) (Casswell et al., 2018), 74% is from off-licensed premises and 26% from on-licensed premises² (Huckle et al., 2018a).

The study

This study reports purchasing behaviour of drinkers from on/off-licensed premises in 2015 including:

- the proportions of drinkers purchasing late from on/off-licensed premises (nationally and locally)
- the number of times an alcohol purchase was made from on/off-licensed premises by time of purchase (nationally and locally)

² Heavier drinking occasion defined as 6+/8+ drinks on a typical occasions for females and males respectively (a drink was defined as 15ml absolute alcohol).

- the characteristics of late purchasers (nationally).

Additional analyses comparing alcohol purchasing behaviour before and after the introduction of the national maximum trading hours will be published at a later date.

Methods

This study uses survey data collected in 2015 as part of the New Zealand arm of the International Alcohol Control (IAC) Study (International Alcohol Control Policy Evaluation Study, 2018). The survey collected data from 2,499 randomly selected drinkers aged 16-65 years via landline telephone and cell phone. The response rate was 66%. All survey measures below were asked about in the last six months.

Purchase times: Respondents reported when they purchased alcohol within specified time periods, outlined below, from a range of premises (yes/no), i.e. at least once. Respondents could report purchasing in more than one time period.

On-licensed premises: All on-licensed premises drinkers answered the on-licensed premises purchasing times questions below.

- times asked about were: between midnight and 2am, 2am–3am, 3am–4am and after 4am.
- the types of on-licensed premises respondents reported on were bars, nightclubs, sports clubs, other clubs, restaurants, cafes or coffee shops, theatres or cinemas, at sports events, and special events such as festivals, music events or dance parties.
- a derived variable was created that combined these premises into a single on-licensed premises variable for analysis.

Respondents also reported the number of times they purchased alcohol within each of the specified time periods.

Off-licensed premises: All off-licensed premises drinkers answered the off-licensed premises purchasing times questions below.

- Times asked about were: before 6pm, between 6pm and 7pm, 7pm and 8pm, 8pm and 10pm, 10pm and 11pm, after 11pm and early morning purchases between 7am and 9am.
- The types of premises respondents reported on were bottle shop, supermarket, dairy/small grocery outlet, over the internet, by phone order, vineyard/winery/brewery, and duty-free shop.
- A derived variable was created that combined these premises into a single off-premises variable for analysis. Purchases that occurred from duty free shops outside of national maximum trading hours were excluded, as duty free shops are exempt from the trading hours as stipulated in SSAA (New Zealand Parliament, 2012a).

Respondents also reported the number of times they purchased alcohol within each of the specified time periods.

As respondents reported purchasing alcohol within the specified time periods, outlined above, we were unable to further disaggregate purchase times.

Alcohol consumption measures: These were collected using a beverage- and location-specific measure. Respondents reported on their drinking in a number of specified locations plus any additional locations they drank at. For each place, they were asked how often they drank there and what they would drink on a typical occasion at that location (for further details, see Huckle et al., 2018b).

Measures for analysis were then derived as drinking risk level. The risk levels we used in this analysis were designed to reflect evidence presented previously i.e. in Rehm et al. (2008).

- *Low-risk:* Up to four drinks on an occasion OR 4–6 drinks on an occasion less than once a week.
- *Increased-risk:* 4–6 drinks on an occasion at least once a week OR 6+ drinks on an occasion less than once a week.
- *Harmful-risk:* 6+ drinks on an occasion at least once a week

Analysis

As the 2015 survey included both a cohort sample and a random replenishment sample, multiple imputation via chained equations was used to control for any bias due to attrition. Imputation could not be undertaken for the off-licensed premises purchase time periods before 6pm, between 6pm -7pm and between 7pm and 8pm,³ as such the unimputed data are reported in the text.

All analysis was performed in SAS software (Version 9.4). Frequency tables were created using PROC FREQ to calculate percentages with accompanying confidence intervals where relevant.

The denominator for the on-licensed premises analysis was all on-licensed premises drinkers. For the off-licensed premises analysis, the denominator was all off-licensed premises drinkers.

For the analysis estimating the number of times respondents purchased at either on- or off-licensed premises at the specified time periods, survey responses were scaled up to the New Zealand population level in the following way. First, we obtained the 16-64 year old population by location area from the NZ.Stat⁴ population projections for 2015. Then we calculated the number of people in each area location from our survey and divided the survey number of participants in an area by the population projection to get the weights we would use to scale up the data to the population level. We assumed that 80% of the population were drinkers⁵ and that 80% of that were off-premises drinkers and 80% were on-premises drinkers based on Gray-Phillip et al. (2018).

³ The data were not available to undertake imputation. The questions were not asked in earlier survey years and were needed in order to predict values for those lost to follow-up in 2015.

⁴ <http://nzdotstat.stats.govt.nz/wbos/index.aspx>

⁵ <https://minhealthnz.shinyapps.io/nz-health-survey-2015-16-annual-update/>

Results

In 2015, the proportion of drinkers that purchased at least once in the last six months from on-licensed premises was 76.3% and 81.5% from off-licensed premises.

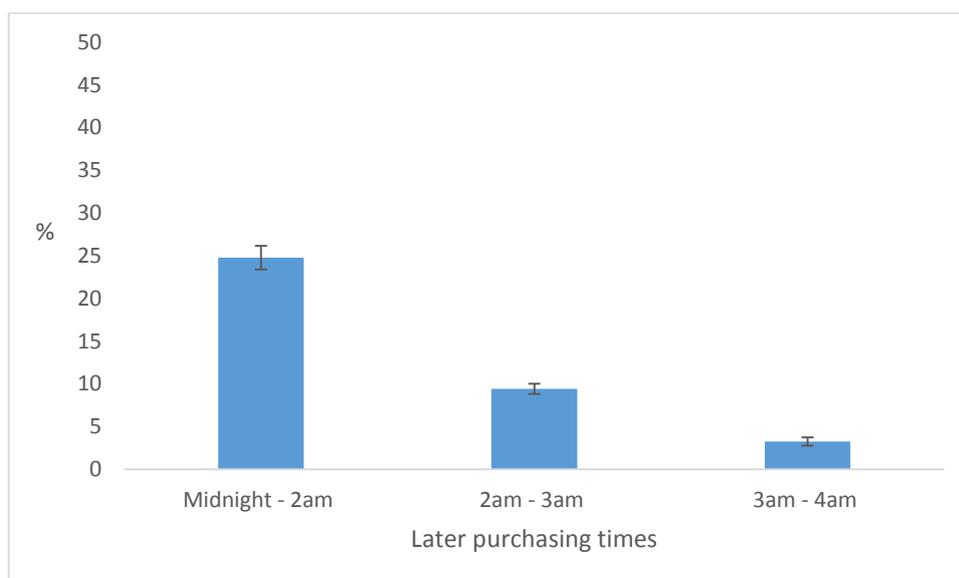
The proportion of alcohol consumed from on-licensed premises was 19.8% versus 80.2% from off-licensed premises.

Purchasing at on-licensed premises

What proportion of drinkers purchase later at night from on-licensed premises?

Respondents who drank at on-licensed premises reported purchasing within the time periods that were specified in the survey. The time periods asked about were: between midnight -2am, 2am-3am and 3am-4am and after 4am. Respondents could report purchasing in more than one time period.

Figure 1: Proportions of on-licensed premises drinkers purchasing later at night from on-licensed premises nationally (in the last six months)*



Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499.

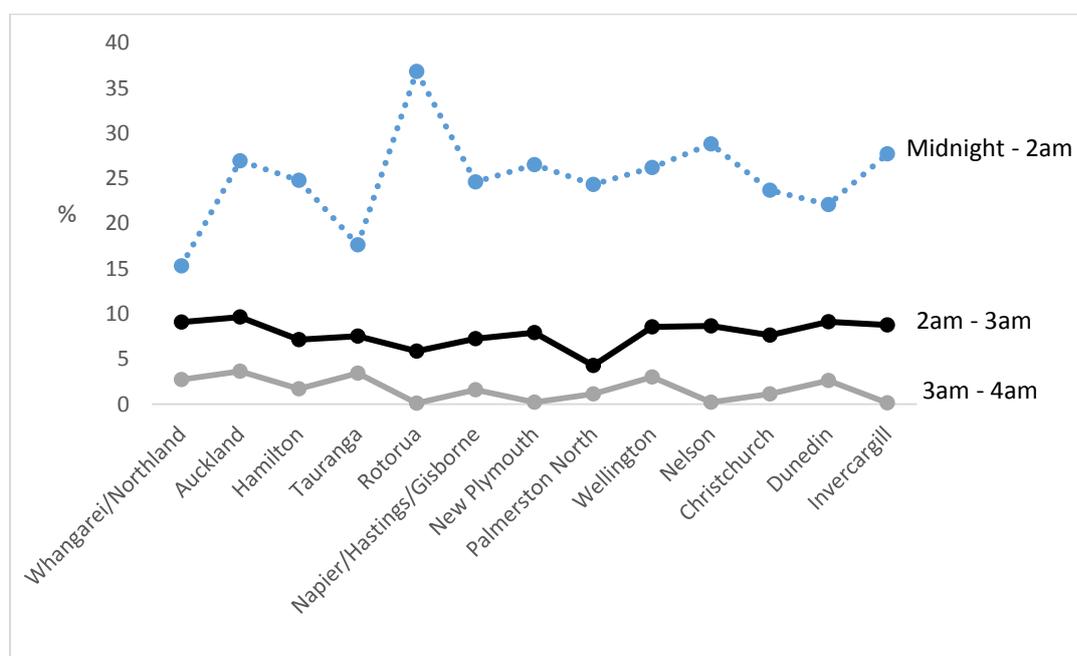
*Very small proportions of drinkers reported purchasing after 4am for on-premises (0.9%) and were excluded from all analysis.

Three percent of on-licensed premises drinkers purchased between 3am and 4am, 9% purchased between 2am and 3am and 25% between midnight and 2am in 2015. The survey did not ask about purchasing behaviour at earlier times from on-licensed premises (Figure 1).

How do later purchasing times from on-licensed premises vary across the country?

The survey allowed for some disaggregation of data on purchasing times into local areas. Some local areas were combined to provide sufficient numbers for analysis. Tables are in the Appendix.

Figure 2: Proportions of on-licensed premises drinkers purchasing later from on-licensed premises by local area (in the last six months)



Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499.

The proportions of on-licensed premises drinkers in Figure 2 purchasing between:

3am and 4am: varied from 4% in Auckland to less than 4% in other areas.

2am and 3am: varied from 10% in Auckland to 6% in Rotorua.

Midnight to 2am: varied from 37% in Rotorua to 15% in Whangarei/Northland.

Purchasing at off-licensed premises

What proportion of drinkers purchase from off-licensed premises early morning, daytime and evening?

Respondents who drank at off-licensed locations were asked to report on purchasing in a wider range of time periods than for on-licensed purchasing and these were: before 6pm, between 6pm and 7pm, 7pm and 8pm, 8pm and 10pm, 10pm and 11pm, after 11pm and early morning purchases between 7am and 9am. Respondents could report purchasing in more than one time period.

Early morning purchase

- 2% of off-licensed drinkers purchased between 7am and 9am in 2015.

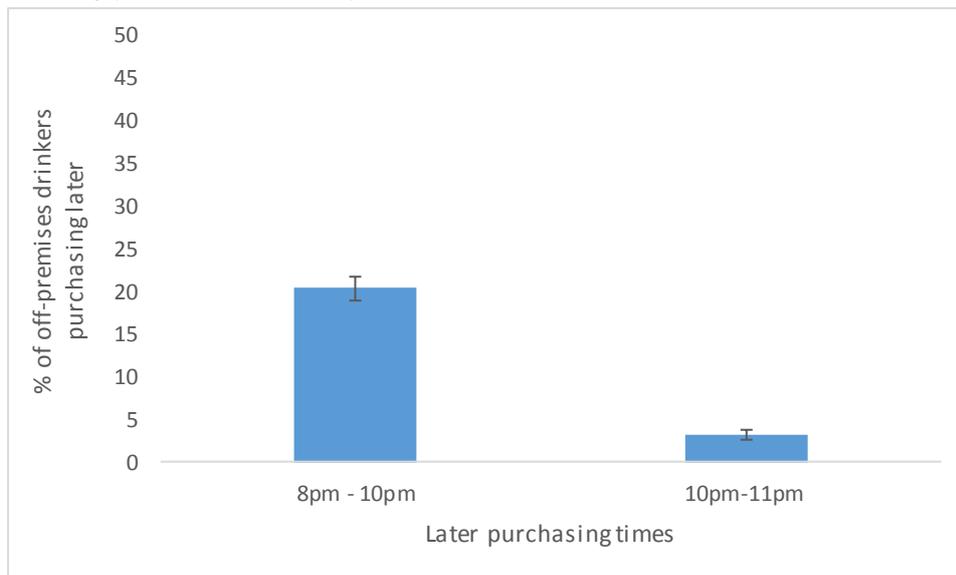
Daytime and evening purchase

- 86% of off-licensed premises drinkers reported purchasing alcohol before 6pm⁶ in 2015.
- 59% between 6 pm - 7pm
- 40% between 7pm - 8pm.

What proportion of drinkers purchase later at night from off-licensed premises?

Three percent of off-licensed premises drinkers reported purchasing between 10pm -11pm in 2015, with 20% purchasing between 8pm and 10pm (Figure 3).

Figure 3: Proportions of off-licensed premises drinkers purchasing later at night from off-licensed premises nationally (in the last six months)



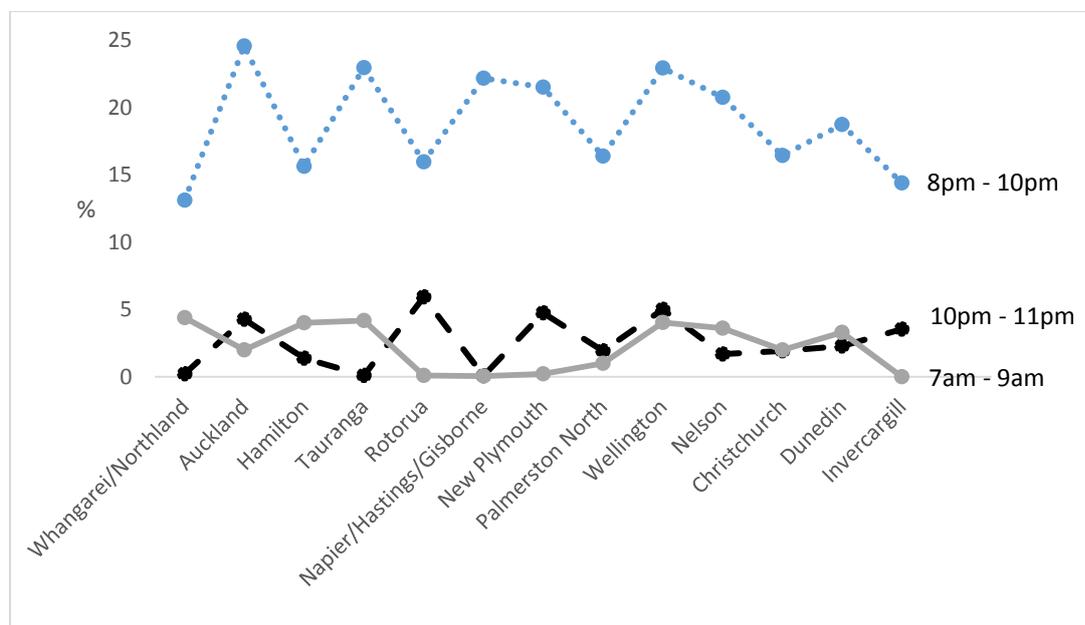
Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499.

*Very small proportions of drinkers reported purchasing after 11pm for off-premises (0.4%) and were excluded from all analysis.

⁶The survey response option specified “before 6pm”. It is possible respondents included early morning purchases (2%) in this category.

How do later purchasing times from off-licensed premises vary across the country?

Figure 4: Proportions of off-licensed premises drinkers purchasing later from off-premises by area (in the last six months)



Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499.

The proportions of off-licensed premises drinkers in Figure 4 purchasing between:

- **10pm and 11pm:** varied from 6% in Rotorua to less than 6% in the other areas. .
- **8pm and 10pm:** varied from 25% in Auckland to 13% in Whangarei/Northland
- **7am and 9am:** varied from 4% in Whangarei/Northland, Wellington, Hamilton, Tauranga and Nelson to less than 4% in the other areas.

How many times is alcohol purchased later at night from on/off-licensed premises?

Drinkers told us when (i.e. at specified times), and the number of times, they made a purchase of alcohol in the last six months from on/off-licensed premises. This measure captured the number of times drinkers purchased alcohol and not the quantity or the number of items they purchased. We scaled these survey responses up to the New Zealand population level. As these data reflect purchases at specified times only, they represent only a subset of purchases.

We undertook checks on the validity of these data reported in the Appendix.

Table 1: On-licensed premises: number of times a purchase of alcohol was made later at night (in the last six months)

Number of times alcohol was purchased from on-licensed premises in the past six months in New Zealand (count)*	Midnight-2am	2am-3am	3am-4am	Total
National	6,915,286	1,342,739	300,908	8,558,933

* number of times any alcohol was purchased. This is not a count of the number of items or quantity purchased. Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499

We estimated that there were around 8.5 million purchases of alcohol from on-licensed premises between midnight and 4am nationally in the last six months. Most of these purchases occurred between midnight and 2am (Table 1).

There was variation by local area, with the major cities having the most purchases. This is in part because of the larger population numbers in the major cities (Table 2).

Table 2: On-licensed premises: number of times alcohol was purchased later at night locally (in the last six months)

Number of times alcohol was purchased from on-licensed premises in the past six months in New Zealand (count)*	Midnight-2am	2am-4am
Auckland**	3,260,809	826,914
Hamilton	418,314	s
Palmerston North	320,634	s
Wellington	503,748	s
Christchurch	547,559	s

* number of times any alcohol was purchased. This is not a count of the number of items or quantity purchased. Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499

** Data are reported where cell *n* were ≥ 30 .

Table 3: Off-licensed premises: number of times alcohol was purchased later at night nationally (in the last six months)

Number of times alcohol was purchased from off-licensed premises in the past six months in New Zealand (count)*	8pm-10pm	10pm-11pm	7am -9am	Total
National	2,818,998	148,646	243,028	3,210,672

* number of times any alcohol was purchased. This is not a count of the number of items or quantity purchased. Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499

The number of times alcohol was purchased from off-licensed premises between 8pm and 11pm in the last six months nationally was estimated at around 2.9 million. Most of these (88%)

occurred between 8pm and 10pm. Approximately 240,000 occurred early in the morning (between 7am and 9am) (Table 3).

There was variation by local area, with the major cities having the most purchases. This is in part because of the larger population numbers in the major cities (Table 4).

Table 4: Off-licensed premises: number of times alcohol was purchased later at night locally (in the last six months)

Number of times alcohol was purchased from off-licensed premises in the past six months in New Zealand (count)*	8pm-10pm	10pm-11pm
Auckland**	1,016,430	83,401
Wellington	520,632	s
Christchurch	211,606	s

* number of times any alcohol was purchased. This is not a count of the number of items or quantity purchased. Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499

** Data are reported where cell *n* were ≥ 30 .

Who are the drinkers that purchase late?

Drinkers who purchased from **on-licensed premises** between midnight and 4am in the last six months were:

- **Young:** 18-24 year olds comprised 77% of the drinkers who purchased from on-licensed premises between midnight and 4am.
- **NZ European:** 75% of those purchasing from on-premises between midnight and 4am were NZ European (this reflected the proportion of NZ Europeans in the sample overall).
- **Similar sex:** 52% were males and 48% were females.
- **At-risk drinkers:** 34% were low-risk drinkers, 66% were at-risk drinkers (drinkers who drank at levels that place them at risk of harm).⁷

Drinkers who purchased from **off-licensed premises** between 8pm and 11pm in the last six months were:

- **Young:** 18-24 year olds comprised 67% of the drinkers who purchased from off-premises between 8pm and 11pm.

⁷ *Low-risk:* Up to four drinks on an occasion OR 4–6 drinks on an occasion less than once a week. *Increased-risk:* 4–6 drinks on an occasion at least once a week OR 6+ drinks on an occasion less than once a week. *Harmful-risk:* 6+ drinks on an occasion at least once a week

- **NZ European:** 74% of those purchasing from off-premises between 8pm and 11pm were NZ European (this reflected the proportion of NZ Europeans in the sample overall).
- **Males:** 55% were males and 45% were females.
- **At-risk drinkers:** 39% were low-risk drinkers, 61% were at-risk drinkers (drinkers who drank at levels that place them at risk of harm).⁶

Limitations

As the purchasing data used in this study are self-reported there is potential for recall bias. Validity checks were undertaken and provided confidence in the data. Other aspects of purchasing patterns found in this study were similar to results found in other research e.g. that young people are more likely to be out late at night purchasing from on-premises relative to other age groups.⁸ We did not have a full distribution of purchasing times for on-licensed-premises, i.e. we did not ask about purchasing times before midnight.

Conclusion

In 2015, most drinkers that purchased later at night did so well prior to the national maximum restrictions. As two thirds of the drinkers purchasing later from on/off-licensed premises drank at levels placing them at risk of harm, further restrictions to closing times is in line with the aim of the Sale and Supply of Alcohol Act 2012, to minimise the harm from alcohol. Closing times should be set to ensure sufficient numbers of drinkers will be impacted by the restrictions to reduce harm.

⁸ <https://www.hpa.org.nz/research-library/research-publications/new-zealand-alcohol-supply-and-demand-structures-research-report>

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Appendix 1: Additional tables and analyses

Additional tables

Table 5: Proportions of on-licensed drinkers purchasing later from on-licensed premises by local area (in the last six months)

	Midnight - 2am (%)	2am - 3am (%)	3am - 4am (%)
National	25	9	3
Whangarei/Northland	15	9	3
Auckland	27	10	4
Hamilton	25	7	2
Tauranga	18	8	3
Rotorua	37	6	0
Napier/Hastings/Gisborne	25	7	2
New Plymouth	27	8	0
Palmerston North	24	4	1
Wellington	26	9	3
Nelson	29	9	0
Christchurch	24	8	1
Dunedin	22	9	3
Invercargill	28	9	0

Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499.

Table 6: Proportions of off-licensed drinkers purchasing later (and early morning) from off-licensed premises by local area (in the last six months)

	8pm - 10pm (%)	10pm - 11pm (%)	7am - 9am (%)
National	20	3	2
Whangarei/Northland	13	0	4
Auckland	25	4	2
Hamilton	16	1	4
Tauranga	23	0	4
Rotorua	16	6	0
Napier/Hastings/Gisborne	22	0	0
New Plymouth	22	5	0
Palmerston North	16	2	1
Wellington	23	5	4
Nelson	21	2	4
Christchurch	16	2	2
Dunedin	19	2	3
Invercargill	14	4	0

Source data: New Zealand arm of the International Alcohol Control (IAC) Study 2015. Sample size n=2499.

Data validity checks

Internal validity

We have two separate sources of self-reported frequency of purchase events in the last 6 months in the APINZ 2015 survey: a) purchase events within different time periods (i.e. the question used in this brief report) and b) purchase events not asked by time periods. We checked them against each other and there was only a 2.7% difference in the number of purchase events between the measures i.e. asking by time of purchase did not seem affect respondent reports as opposed to asking about purchasing more generally.

Was the purchasing data underestimated?

To assess if our purchasing data were underestimated we compared our volume of off-premise purchase to our off-premise consumption data. We know our consumption data generally accounts for over 90% of the alcohol available for consumption as documented by Statistics New Zealand. Volume of off-licensed purchasing was not under-estimated in comparison to off-licensed consumption suggesting confidence in the purchasing data reported in the survey.

Appendix 2: List of updates from original publication

This version of the report has been updated so that small numbers in the local purchasing data are suppressed, to ensure the survey data that are presented are reliable for local areas.

We have followed the protocol used by the New Zealand Health Survey⁹, and have only presented data when there are at least 30 people in the denominator (the population group being analysed). For the analysis in this report presenting proportions of respondents purchasing at various times locally (Figures 2 and 4 and Tables 3 and 4 in the original report), all areas had many more than 30 people in the denominator. Hence, these figures and tables remain the same.

For the purchase event data, while there were many more than 30 people in each local area, we were not reporting proportions in these tables and the numbers in some cells were <30. Hence, these data (and accompanying text) have been updated as follows:

- Table 1 in the original report has been replaced by Table 1 (version 2) which reports the number of times a purchase was made late at night at **on-licensed premises** nationally and Table 2 (version 2) which reports on local variations of this purchasing, but only for Auckland, Hamilton, Palmerston North, Wellington and Christchurch (original Table 1 included all regions). The comment in the original text about zero purchases in some areas has been removed, as this is no longer relevant.
- Table 2 in the original report has been replaced by Table 3 (version 2) which reports the number of times a purchase was made late at night at **off-licensed premises** nationally and Table 4 (version 2) which reports on local variations of this purchasing, but only for Auckland, Wellington and Christchurch (original Table 2 included all regions). The comment in the original text about zero purchases in some areas has been removed, as this is no longer relevant.

⁹ Ministry of Health. (2017). *Methodology Report 2016/17: New Zealand Health Survey*. Wellington: Ministry of Health