

Health New Zealand
Te Whatu Ora

Alcohol use in Tāmaki Makaurau Auckland

**A summary of regional data from
the New Zealand Health Survey,
2017–2020**

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Executive summary

Purpose

This report summarises New Zealand Health Survey (NZHS) data on alcohol consumption for adults (aged 15+ years), pooled across the years 2017–2020, for the Tāmaki Makaurau Auckland region. This is based on the most recent data publicly available from the NZHS Regional Data Explorer¹.

Indicators of alcohol use include past-year drinking, heavy episodic drinking (at least monthly), heavy episodic drinking (at least weekly) and hazardous drinking. We described the prevalence of these indicators by age, ethnicity, gender and neighbourhood socio-economic deprivation.

1. The NZHS Regional Data Explorer is available at <https://minhealthnz.shinyapps.io/nz-health-survey-2017-20-regional-update/>

Background

Alcohol causes many harms and inequities in Aotearoa New Zealand. In particular, Māori and Pacific communities have experienced more harms from being more exposed to environments in which alcohol and its marketing are widely available.

As the largest city in Aotearoa New Zealand, Tāmaki Makaurau Auckland is home to diverse and growing Māori, Pacific and Asian communities, each with different levels of drinking. The annual NZHS provides insights on the patterns of alcohol use amongst New Zealanders, both nationally and regionally.

Findings

Overall levels of alcohol use in Tāmaki Makaurau Auckland were high, with:

- almost 3 in 4 adults (74.2%) reporting drinking in the past year
- nearly 1 in 5 adults (19.8%) and 1 in 4 past-year drinkers (26.4%) reporting heavy episodic drinking at least monthly
- 1 in 10 adults (10%) and 1 in 8 past-year drinkers (13.2%) reporting heavy episodic drinking at least weekly and
- almost 1 in 6 adults (17.1%) and close to 1 in 4 past-year drinkers (22.9%) reporting drinking to hazardous levels.

These figures were slightly lower than those for Aotearoa New Zealand nationally.

Patterns of drinking differed by age, ethnicity, gender and neighbourhood socio-economic deprivation. Past-year drinking was least common in the youngest age group (15–24 years), while heavy episodic drinking and hazardous drinking were least common among the oldest age group (65+ years).

For heavy episodic drinking and hazardous drinking, higher rates were reported in men than women; similarly Māori adults were more affected than non-Māori. Pacific adults were less likely to be past-year drinkers than non-Pacific adults, but were more likely to report hazardous drinking. Asian adults were less likely than non-Asian adults to report all patterns of drinking.

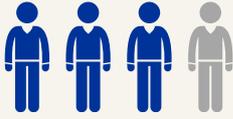
Past-year drinking was less common in areas of Tāmaki Makaurau with the highest socio-economic deprivation, while hazardous drinking was more common among past-year drinkers in these areas.

Implications

The high levels of alcohol use and inequities in Tāmaki Makaurau Auckland indicate the need for effective and comprehensive policy interventions aimed at reducing the affordability, availability and marketing of alcohol. The finding that past-year drinking was less common among young people, women, Pacific peoples and Asian communities highlights the need to protect these groups from exposure to alcohol marketing, which is linked to drinking initiation. Our findings also suggest the presence of the 'alcohol harm paradox', whereby communities with higher socio-economic deprivation consume less alcohol overall but may experience more alcohol-related harm.

This report will help guide where local public health efforts should be prioritised to reduce alcohol harm, support the aspirations of the diverse communities in Tāmaki Makaurau, and address the broader social and commercial drivers of health.

ALCOHOL USE IN TĀMAKI MAKĀURAU



Almost

3 in 4

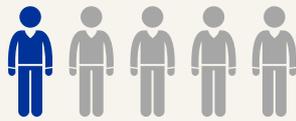
adults reported drinking in the past year



And...

1 in 6

adults reported drinking to hazardous levels.



Almost

1 in 5

adults reported heavy episodic drinking at least monthly...



While

1 in 10

adults reported heavy episodic drinking at least weekly

Amongst past-year drinkers...



1 in 4

reported heavy episodic drinking at least monthly



1 in 8

reported heavy episodic drinking at least weekly



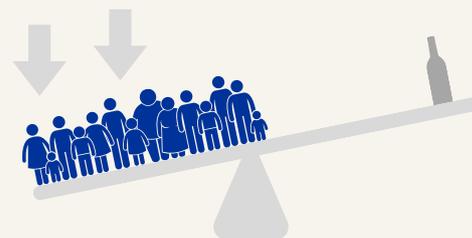
Almost...

1 in 4

reported drinking to hazardous levels



While communities in areas with the highest socio-economic deprivation reported lower levels of past-year drinking...



drinkers in these areas were more likely to report hazardous drinking.

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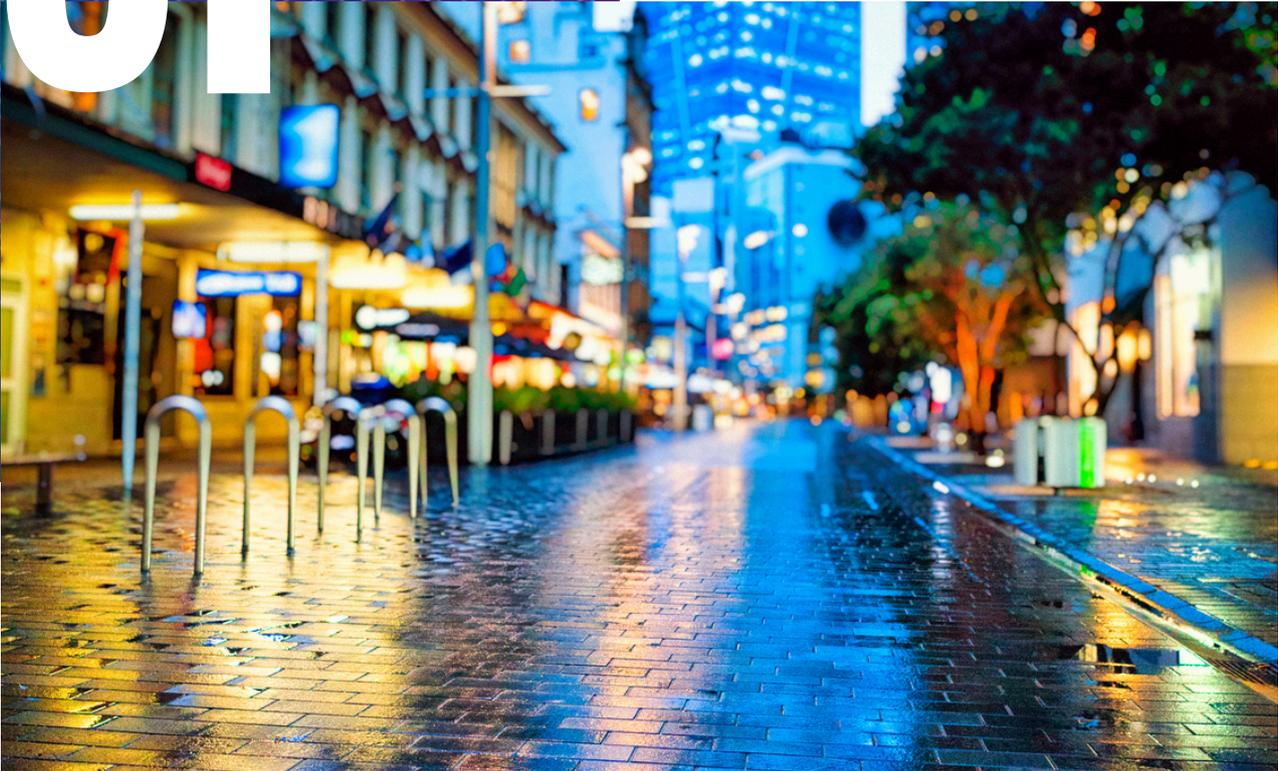
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01



Introduction

1.1 Alcohol harms and inequities

The annual New Zealand Health Survey (NZHS) provides insights on the health and wellbeing of New Zealanders and monitors population health status over time (1). Data on alcohol consumption, along with a wide range of socio-demographic information, are collected from respondents across different regions in Aotearoa New Zealand.

Alcohol causes significant harms to drinkers and others (2). As reported by the World Health Organization (WHO), the harmful use of alcohol is a leading risk factor for death and disability, responsible for 5.1% of the global burden of disease (3). Alcohol is

associated with a wide range of health and social harms, such as cancer, digestive disease, cardiovascular disease, alcohol dependence, foetal alcohol spectrum disorder, injuries and violence (4). These harms are not distributed equally; for instance, populations with higher socio-economic deprivation experience more harm from any given amount or pattern of drinking (3).

Alcohol was introduced to Aotearoa New Zealand by European settlers and Māori initially resisted its introduction into their communities, naming it 'waipiro' (stinking water) (5). Despite this initial resistance, Māori have been inequitably impacted by alcohol harm (6). These

inequities can be linked to colonisation, from which Māori have endured persistent systemic racism and discrimination (6). Alcohol harm for Māori continues to reflect institutional racism as well as unequal access to the social determinants of health, including adequate income, housing and employment (7,8).

Commercial determinants of health also contribute to inequities in alcohol harm. Some populations are disproportionately harmed by commercial practices such as targeted marketing of alcohol products (9). This is evident in Aotearoa New Zealand, where Māori and Pacific children experience higher exposure to alcohol marketing in their neighbourhoods than New Zealand European children (10). Māori and Pacific young people also have higher availability of alcohol outlets in their neighbourhoods (11).

Under Te Tiriti o Waitangi, the Crown has an obligation to achieve equitable health outcomes for Māori (6). There have been many calls to give Māori tino rangatiratanga in reducing the burden of alcohol harm for Māori. Specifically, the claim Wai 2624, led by David Ratu, challenges the lack of consultation with Māori and the omission of Te Tiriti o Waitangi in the Sale and Supply of Alcohol Act (12).

1.2 Alcohol use and its relationship with harm

Aotearoa New Zealand has relatively high levels of alcohol use per capita (APC) compared to other countries in the Western Pacific region (3). From 2015–2017, the average total APC in Aotearoa New Zealand amongst those 15 years and older was 10.7 litres of pure alcohol compared to the Western Pacific region average of 7.3 litres of pure alcohol (3).

The relationship between alcohol use and harm is complex. The likelihood of alcohol-related harm is largely determined by the total volume of alcohol used, particularly heavy drinking patterns (13). However, individual and societal factors such as age, gender and socio-economic status also affect the risk of harm (13). For instance, those living in areas with higher socio-economic deprivation experience more alcohol-related harms despite similar or even lower levels of alcohol use compared to more affluent communities (14). This phenomenon is known as the 'alcohol harm paradox', illustrating how the environments in which we live and work impact health and wellbeing. Access to the social determinants of health may buffer the harms of alcohol experienced by communities.

1.3 Alcohol use in Tāmaki Makaurau Auckland

As the largest city in Aotearoa New Zealand, Tāmaki Makaurau Auckland has a diverse and growing population, and is home to large Māori (12%), Pacific (16%) and Asian (28%) communities (15). Further demographic information can be found in Appendix 1.

This report summarises NZHS data on alcohol use among people aged 15 years and over in Tāmaki Makaurau Auckland. Other data sources such as the Youth 2000 survey series (16) and

the Alcohol Use in New Zealand (AUiNZ) survey (17) provide data at a national level on alcohol use.

Through this brief, this report aims to provide an understanding of alcohol consumption patterns in the Tāmaki Makaurau Auckland region for local communities and policymakers.

02

Aims & objectives

The aim of this report is to summarise the patterns of alcohol use among people aged 15 years and above in Tāmaki Makaurau Auckland, using data from the NZHS.

The objectives of this report are to:

- provide an overview of the NZHS and the methods used to collect data
- define the indicators of alcohol consumption and socio-demographic variables used in the NZHS
- provide a profile on alcohol consumption in Tāmaki Makaurau Auckland using pooled regional data from the NZHS across the years 2017–2020

03



Methodology of the NZHS

3.1 Data sources

This report is based on the latest publicly available NZHS regional data on alcohol consumption (2017–2020). The NZHS pooled data over three-year periods to increase the sample size, allowing examination of indicators by regions and population sub-groups.

We downloaded the pooled regional dataset for the three years (2017–2018, 2018–2019 and 2019–2020) for the Auckland Public Health Unit (18) from the NZHS Regional Data Explorer (19).²

2. The NZHS Regional Data Explorer is available at <https://minhealthnz.shinyapps.io/nz-health-survey-2017-20-regional-update>

We used the methodology report (20) and content guide (21) for the NZHS to summarise the survey's methodology and definitions of alcohol consumption indicators.

Data collection in quarter four of the 2019–2020 survey was stopped as Aotearoa New Zealand moved into Alert Level 4 during the 2020 Covid-19 outbreak, resulting in a smaller sample size for this year (18). The combination of three years of data meant the sample size across all regions could be increased (18). However, wider margins of error can exist within smaller regions and sub-populations (such as age and ethnic groups) (18).

3.2 Survey population

About 99% of the 'usually resident' population is eligible to participate in the NZHS (20). Adults (aged 15 years and over) included for participation were:

- usual residents who live in rest homes or aged care facilities
- students who live away for at least four weeks from their household in student accommodation (i.e. in hostels or boarding schools)
- usual residents who live in a household and are away for less than four weeks per year
- overseas visitors who plan to stay in New Zealand for longer than 12 months.

For practical reasons, the following people were excluded from participating in the NZHS (20):

- those in most types of non-private dwellings, such as prisons, hospitals, hospices and hospital-level care
- non-New Zealand diplomats, diplomatic staff and their dependents
- people who usually reside in a household but are away for at least the next four weeks (not including students who are based in hostels or boarding schools)
- people in households located on islands other than the North, South and Waiheke Islands.

The NZHS involves selecting a sample of people from the 'usually resident' population using a complex, multi-stage design. Statistical weights are then applied to the survey data to ensure that calculated estimates are representative of the target population.

Appendix 2 provides further details of how the survey samples were selected. The methodology is also described in full in the annual reports available on the NZHS website (1).

3.3 Socio-demographic variables

One of the high-level objectives of the NZHS is to assess differences between socio-demographic groups within the population, including age, gender, ethnicity and socio-economic status (21). The NZHS utilises standard demographic questions developed by Statistics New Zealand (21). Definitions of the socio-demographic variables recorded in the NZHS survey years 2017–2018, 2018–2019 and 2019–2020 (20–24) are described in Table 1.

3.4 Indicators of alcohol use

The NZHS includes core questions on alcohol use, under the 'health behaviours and risk factors' domain. Survey questions relate to the frequency and quantity of alcohol consumed, and the subsequent experience of harm based on WHO's Alcohol Use Disorders Identification Test (AUDIT) (25). Table 2 summarises the definitions of the indicators assessed.

Questions relating to the 'quantity of alcohol' consumed use a standard drink measurement, defined as 10g of pure alcohol (21). A show-card illustrating the number of standard drinks in common types of beverages is used during the interview to help participants indicate the number of standard drinks they have had on one occasion (20).

Table 1: Description of socio-demographic variables in the NZHS, 2017–2020

Variable	Measure
<p>Age (years) 15 – 24 25 – 44 45 – 64 65 and over</p>	<p>The target population was approximately 4.4 million adults (aged 15 years and over), as per the Statistics NZ estimated resident population as of September 2021 (20). Children aged under 15 years were out of scope for this report.</p>
<p>Gender Female, male</p>	<p>The NZHS questionnaire used a binary field to collect information on gender (female or male). An additional question on sex at birth and a third response option for gender ('another gender') were only included for the first time in the 2022–2023 NZHS survey (22).</p>
<p>Ethnicity Māori Pacific Asian European/other</p>	<p>NZHS used 'total response ethnicity', which means a person can identify with more than one ethnic group (20).</p> <p>Respondents who chose not to state their ethnicity, or who identified themselves as 'New Zealander' were classified as 'European/other' (20).</p>
<p>Neighbourhood socio-economic deprivation Quintile 1 Quintile 2 Quintile 3 Quintile 4 Quintile 5</p>	<p>The 2017–2018 (23) and 2018–2019 (24) surveys used the New Zealand Index of Deprivation (NZDep) 2013 to measure socio-economic deprivation within each neighbourhood.</p> <p>The 2019–2020 survey used the NZDep 2018 to measure socio-economic deprivation within each neighbourhood (20).</p> <p>NZDep was derived from a combination of indicators obtained from census data, such as income, home ownership, qualifications and employment status. (20)</p> <p>Each of the five quintiles represents 20% of the population. The first quintile (Q1) represents the least deprived areas and the fifth quintile (Q5) represents the most deprived areas.</p>

Table 2: Definition of alcohol consumption indicators used in the NZHS

Indicator	Definition (extracted from the NZHS Regional Data Explorer) (19)
Past-year drinkers	The percentage of adults who have had a drink containing alcohol in the past year.
Heavy episodic drinking at least monthly (total population)	The percentage of adults who have had six or more drinks on one occasion 'monthly', 'weekly' or 'daily or almost daily', among the total number of respondents.
Heavy episodic drinking at least monthly (past-year drinkers)	The percentage of adults who have had six or more drinks on one occasion 'monthly', 'weekly' or 'daily or almost daily', among the respondents who had a drink containing alcohol in the last year.
Heavy episodic drinking at least weekly (total population)	The percentage of adults who have had six or more drinks on one occasion 'weekly' or 'daily or almost daily', among the total number of respondents.
Heavy episodic drinking at least weekly (past-year drinkers)	The percentage of adults who have had six or more drinks on one occasion 'weekly' or 'daily or almost daily', among the respondents who had a drink containing alcohol in the last year.
Hazardous drinkers (total population)	<p>The percentage of adults who obtained a score of 8 or more on WHO's Alcohol Use Disorders Identification Test (AUDIT), among the total number of respondents. AUDIT is a 10-item questionnaire that covers three aspects of alcohol use: alcohol consumption, dependence, and adverse consequences. An AUDIT score is the total of the scores obtained for each of the 10 items (25).</p> <p>Hazardous drinkers were those who obtained an AUDIT score of 8 or more, representing an established pattern of drinking that carries a high risk of future damage to physical or mental health. One can reach a score of 8 from the alcohol consumption items alone, for example, someone who has had six or more drinks on one occasion, twice a week.</p>
Hazardous drinkers (past-year drinkers)	The percentage of adults who obtained an AUDIT score of 8 or more, among the respondents who had a drink containing alcohol in the last year.

The indicators 'heavy episodic drinking' and 'hazardous drinking' are provided for the total population and past-year drinkers. This allows us to examine changes within each cohort (total population or past-year drinkers) and to understand observed trends. For example, a decreasing prevalence of past-year drinkers in the total population may partly explain a declining trend in heavy episodic drinkers amongst past-year drinkers.

3.5 Summary of data

Regional data for the latest combined survey years 2017–2018, 2018–2019 and 2019–2020 were downloaded from the NZHS Regional Data Explorer (19) in Microsoft Excel format and presented as tables and bar graphs. The extracted and summarised data were checked by another team member to ensure accuracy.

Findings from the NZHS are presented as the prevalence (or proportion) of the survey sample affected by a particular alcohol consumption indicator. 95% confidence intervals (CIs) are also presented. CIs are used to represent the sampling error associated with an estimated value. A 95% CI means that if the sample selection were repeated many times, 95% of the CIs constructed would contain the true population value. In general, the larger the sample is, the narrower the CIs, or the smaller the sampling errors. When CIs do not overlap, there is likely a significant difference between the prevalence estimates. No formal analysis was done to assess for trends in alcohol consumption across different

categories of a socio-demographic variable (for example, age groups).

As this report aims to draw comparisons between different population groups, we have presented age-standardised prevalence rates for each alcohol consumption indicator throughout. Because age affects health, age standardisation means any differences between population groups (for example, ethnic groups) with different age structures are taken into account, making comparisons more meaningful.

Rate ratios (RRs) were used in the NZHS to compare the prevalence of alcohol consumption indicators between two population groups, including men and women, Māori and non-Māori, Pacific and non-Pacific, Asian and non-Asian, and people living in the most and least socio-economically deprived areas. An RR of 1 means there is no difference between the group of interest (for example, men) and the reference group (for example, women). An RR larger than 1 means that the indicator is more common in the group of interest than in the reference group. Conversely, an RR lower than 1 means that the indicator is less common in the group of interest than in the reference group.

When the 95% CIs for the RR do not overlap with 1 (meaning no difference between the groups), we can conclude there is a statistically significant difference between the two groups being compared.

In the NZHS, the RRs were adjusted for differences in socio-demographic factors between the two groups being compared that may influence

(confound) the comparison. Adjustment reduces the effect of these confounding factors, again making comparisons more accurate and meaningful. The comparison by gender was adjusted for age. The comparisons by ethnicity were adjusted for age and gender. Total response ethnicity methods apply for RRs by ethnic group.

Data on alcohol consumption patterns in Tāmaki Makaurau Auckland are presented in Figures 1 – 10 and Tables 3-5. Age-standardised prevalence with 95% CIs for each alcohol consumption indicator are included in Supplementary Tables S4 – S13 in Appendix 3.

04



Findings

4.1 Alcohol consumption patterns in Tāmaki Makaurau Auckland and Aotearoa New Zealand

Alcohol consumption patterns among the total adult population and past-year drinkers in Tāmaki Makaurau Auckland, compared to Aotearoa New Zealand, are shown in Figures 1 and 2. Overall levels of alcohol use were high in Tāmaki Makaurau, with almost 3 in 4 adults (74.2%) reporting drinking in the past year. Nearly 1 in 5 adults (19.8%) and 1 in 4 past-year drinkers (26.4%) reported heavy episodic drinking at least monthly. One in 10 adults (10%) and 1 in 8 past-year drinkers (13.2%) reported heavy episodic drinking at least weekly. Almost 1 in 6 adults (17.1%) and close to 1 in 4 past-year drinkers (22.9%) reported drinking to hazardous levels. These figures for Tāmaki Makaurau were all slightly lower compared to those for Aotearoa nationally.

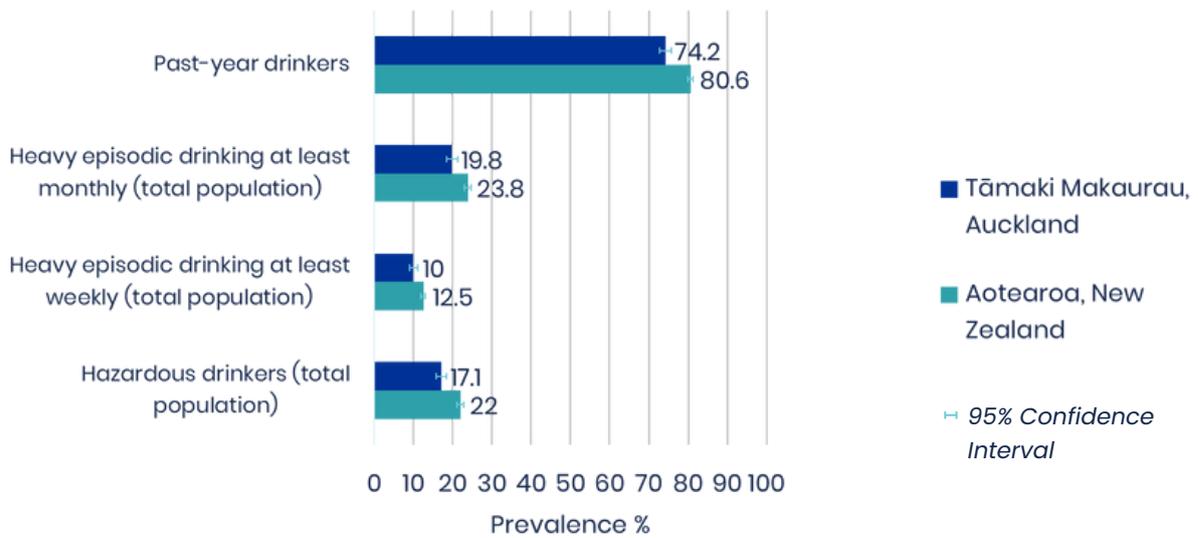


Figure 1: Prevalence of alcohol consumption patterns in Tāmaki Makaurau Auckland and Aotearoa New Zealand, 2017-2020

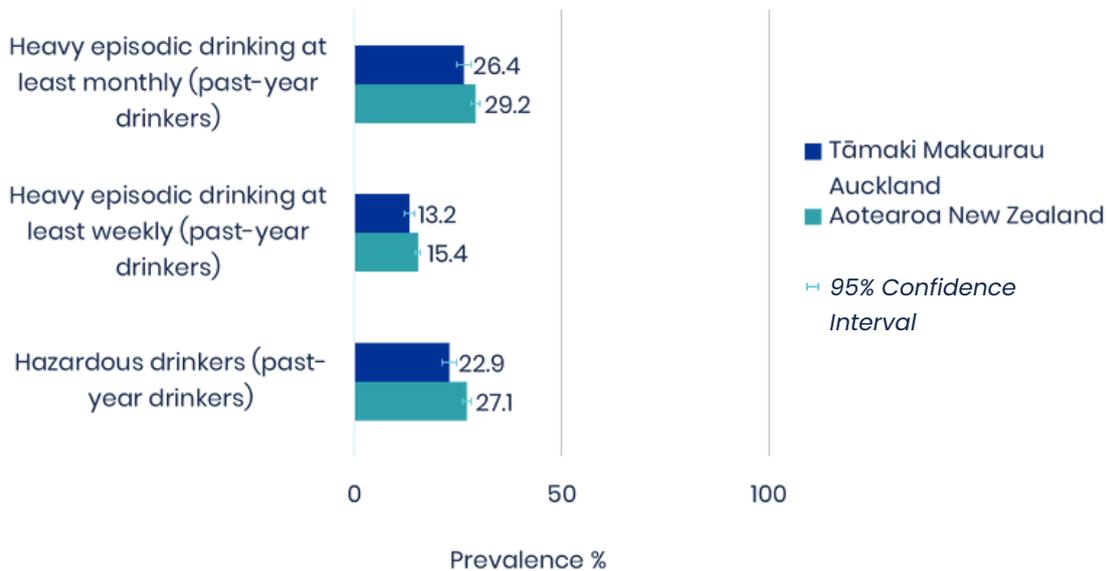


Figure 2: Prevalence of alcohol consumption patterns among past-year drinkers in Tāmaki Makaurau Auckland and Aotearoa New Zealand, 2017-2020

4.2 Alcohol consumption patterns by age group in Tāmaki Makaurau Auckland

The prevalence of past-year drinkers by age group is shown in Figure 3. The youngest age group (15-24 years) had the lowest level of past-year drinking compared to the older age groups, who had similar levels of past-year drinking. The prevalence of heavy episodic drinking (weekly/monthly) and hazardous drinking by age group are shown in Figure 4. Among both the total population and past-year drinkers, heavy episodic drinking and hazardous drinking were least common in the oldest age group (65+ years), with the younger age groups showing similarly high levels.

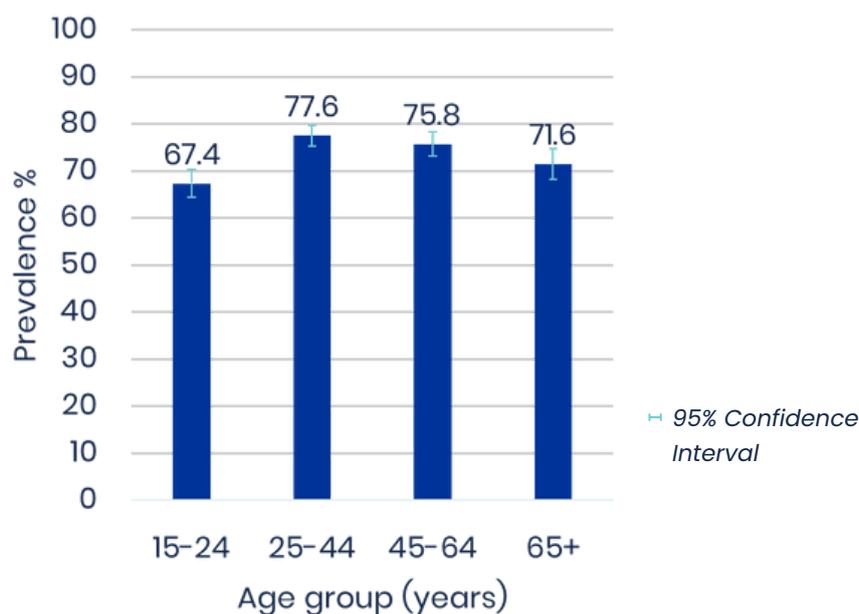


Figure 3: Prevalence of past-year drinkers by age group in Tāmaki Makaurau Auckland, 2017-2020

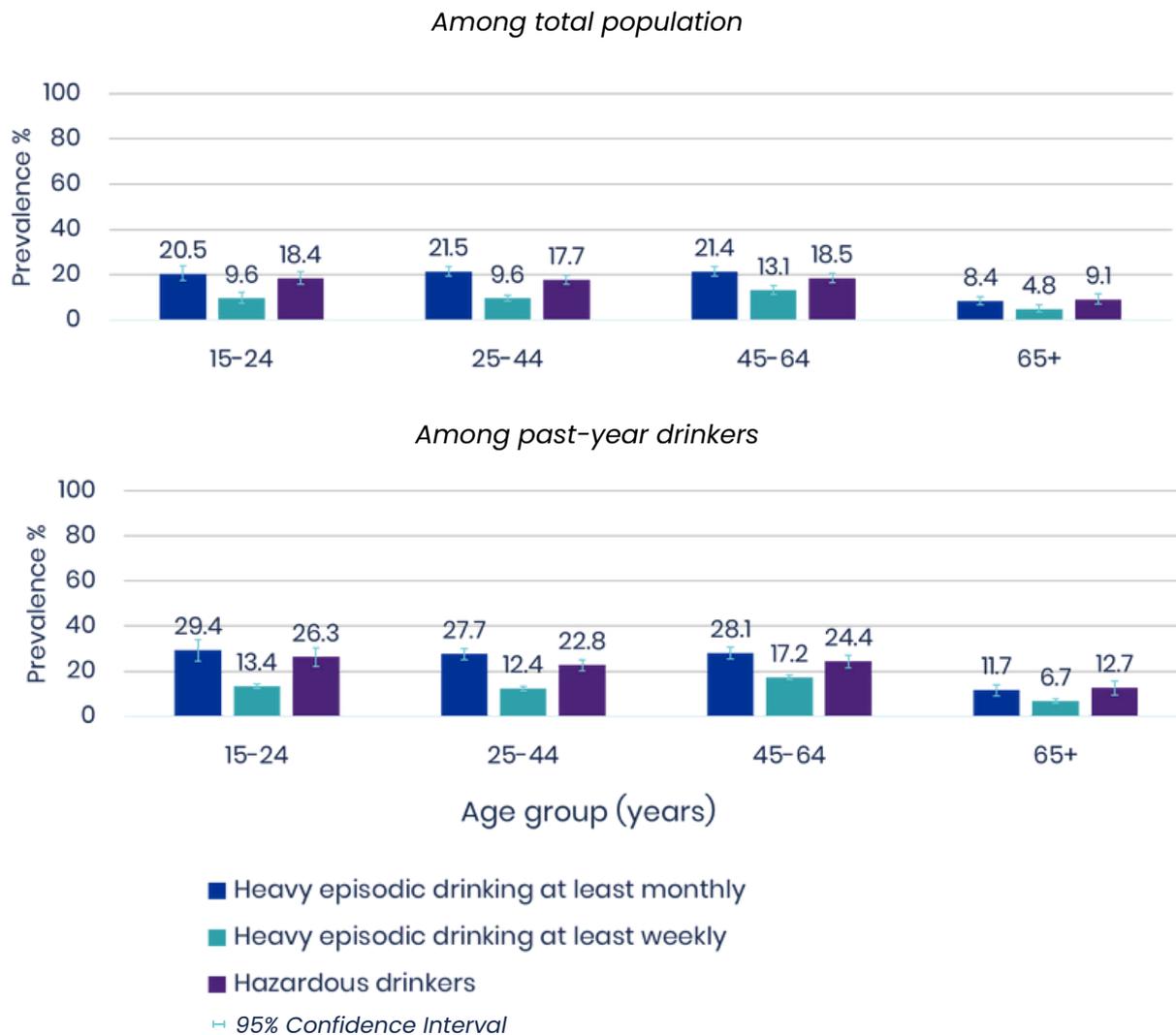


Figure 4: Prevalence of heavy episodic drinking and hazardous drinking by age group in Tāmaki Makaurau Auckland, 2017–2020

4.3 Alcohol consumption patterns by ethnicity in Tāmaki Makaurau Auckland

The prevalence of past-year drinkers by ethnicity is shown in Figure 5. Past-year drinking was most common among European/other ethnicities (85.1%), followed by Māori (79.5%), Asian (59%) and Pacific (54.5%) adults. Pacific and Asian adults were less likely than non-Pacific and non-Asian adults to be past-year drinkers (RR 0.73 and 0.74 respectively), as shown in Table 3. Māori adults were slightly more likely to be past-year drinkers compared to non-Māori adults (RR 1.1).

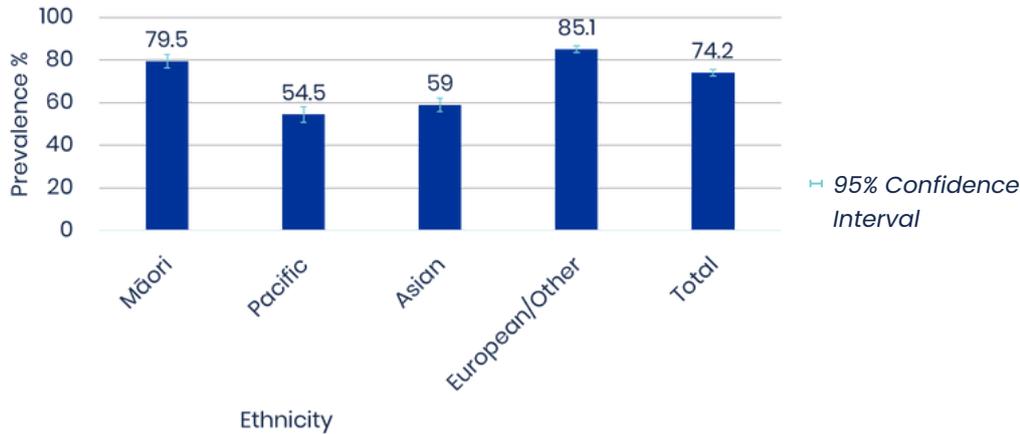


Figure 5: Prevalence of past-year drinkers by ethnicity in Tāmaki Makaurau Auckland, 2017-2020

Table 3: Adjusted rate ratios for past-year drinkers by ethnicity in Tāmaki Makaurau Auckland, 2017-2020

	Adjusted RR	95% CI
Māori compared to non-Māori	1.1	1.06-1.15
Pacific compared to non-Pacific	0.73	0.67-0.78
Asian compared to non-Asian	0.74	0.7-0.78

The prevalence of heavy episodic drinking (weekly/monthly) and hazardous drinking by ethnicity is shown in Figure 6. Asian adults had lower levels of heavy episodic drinking at least monthly (7.1%) and at least weekly (3.2%) than other ethnic groups: Māori (30.8%, 16.4%), European/other (25.4%, 12.7%) and Pacific (20.3%, 11.3%). Similar patterns were seen for past-year drinkers.

Table 4 shows that of the total population, Asian adults were less likely than non-Asian ethnicities to report heavy episodic drinking at least monthly (RR 0.27) and weekly (RR 0.24). Māori adults were more likely than non-Māori adults to report heavy episodic drinking at least monthly (RR 1.73) and weekly (RR 1.87). These ratios were similar in past-year drinkers. Among past-year drinkers, Pacific adults were more likely than

non-Pacific adults to report heavy episodic drinking at least monthly (RR 1.43) and weekly (RR 1.69).

Among the total population, Asian adults also had lower levels of hazardous drinking (5.2%) than other ethnic groups: Māori (30.9%), European/other (21.7%) and Pacific (19.8%), with a corresponding RR of 0.22. Māori and Pacific adults were more likely than non-Māori and non-Pacific adults to report hazardous drinking (RR 2.11 and 1.26 respectively), as shown in Table 4. These patterns were similar for past-year drinkers.

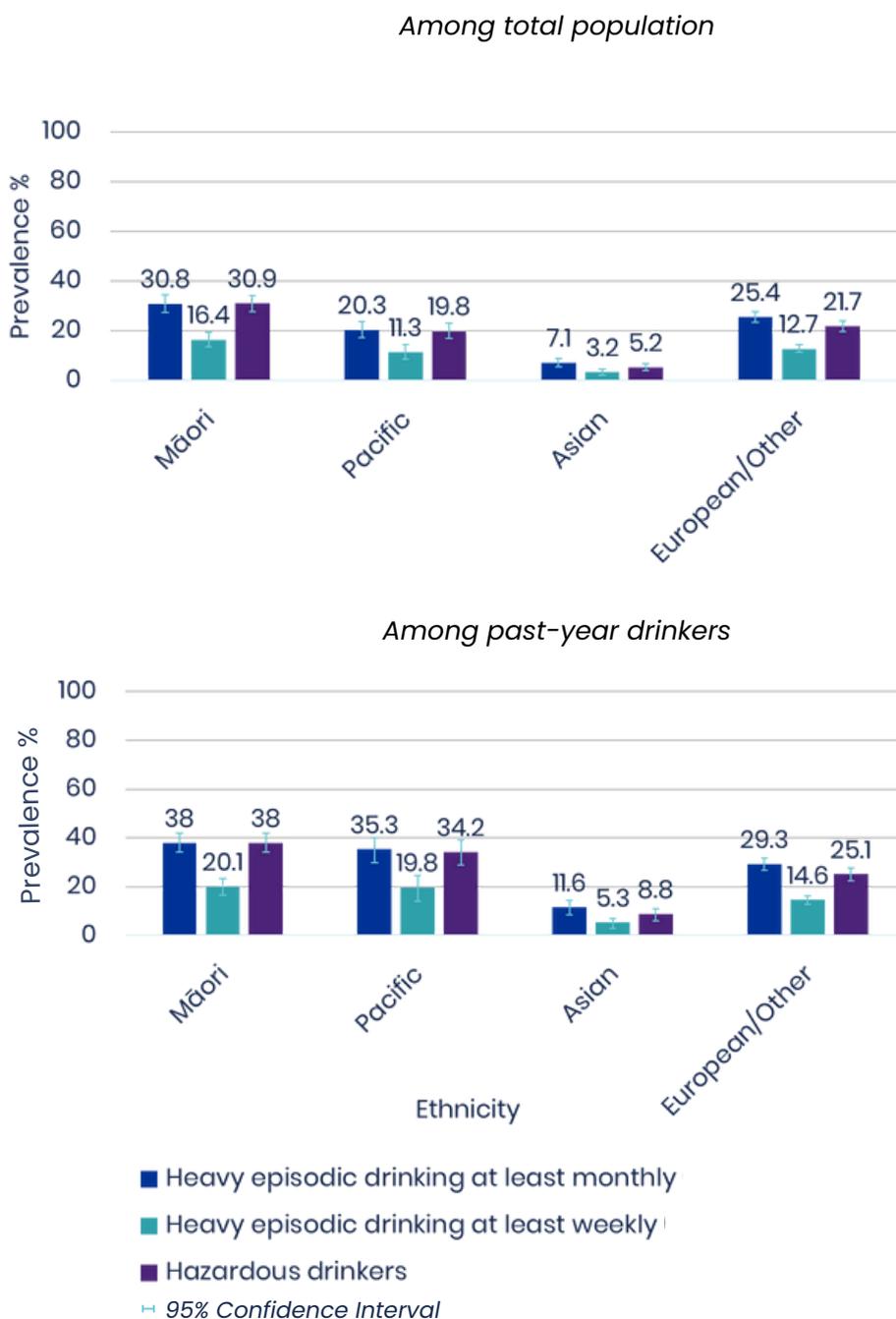


Figure 6: Prevalence of heavy episodic drinking and hazardous drinking by ethnicity in Tāmaki Makaurau Auckland, 2017–2020

Table 4: Adjusted rate ratios for heavy episodic drinking and hazardous drinking by ethnicity in Tāmaki Makaurau Auckland, 2017–2020

	Heavy episodic drinking at least monthly		Heavy episodic drinking at least weekly		Hazardous drinkers	
	Adjusted RR	95% CI	Adjusted RR	95% CI	Adjusted RR	95% CI
Total population						
Māori compared to non-Māori	1.73	1.52-1.97	1.87	1.49-2.35	2.11	1.85-2.4
Pacific compared to non-Pacific	1.08	0.92-1.27	1.25	0.96-1.63	1.26	1.05-1.52
Asian compared to non-Asian	0.27	0.22-0.35	0.24	0.17-0.34	0.22	0.17-0.29
Past-year drinkers only						
Māori compared to non-Māori	1.58	1.4-1.78	1.73	1.4-2.17	1.92	1.69-2.19
Pacific compared to non-Pacific	1.43	1.24-1.66	1.69	1.24-2.19	1.7	1.44-2.01
Asian compared to non-Asian	0.35	0.28-0.44	0.31	0.28-0.43	0.28	0.22-0.37

4.4 Alcohol consumption patterns by gender in Tāmaki Makaurau Auckland

The prevalence of past-year drinking by gender is shown in Figure 7. Men had higher levels of past-year drinking compared to women (77.7% vs 70.5%) (RR 1.11, 95% CI 1.08 – 1.15).

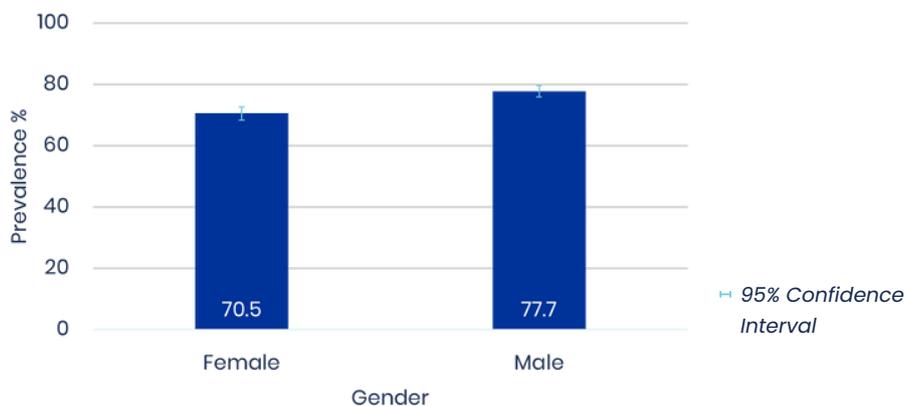


Figure 7: Prevalence of past-year drinkers by gender in Tāmaki Makaurau Auckland, 2017-2020

The prevalence and adjusted rate ratios for heavy episodic drinking (weekly/monthly) and hazardous drinking by gender is shown in Figure 8 and Table 5. Men were more likely than women to report heavy episodic drinking at least monthly (26% vs 13.5%, RR 1.99) and at least weekly (13.9% and 6%, RR 2.37). Men were also more likely than women to report hazardous drinking (22.5% vs 11.7%, RR 1.99). There were similar patterns among past-year drinkers.

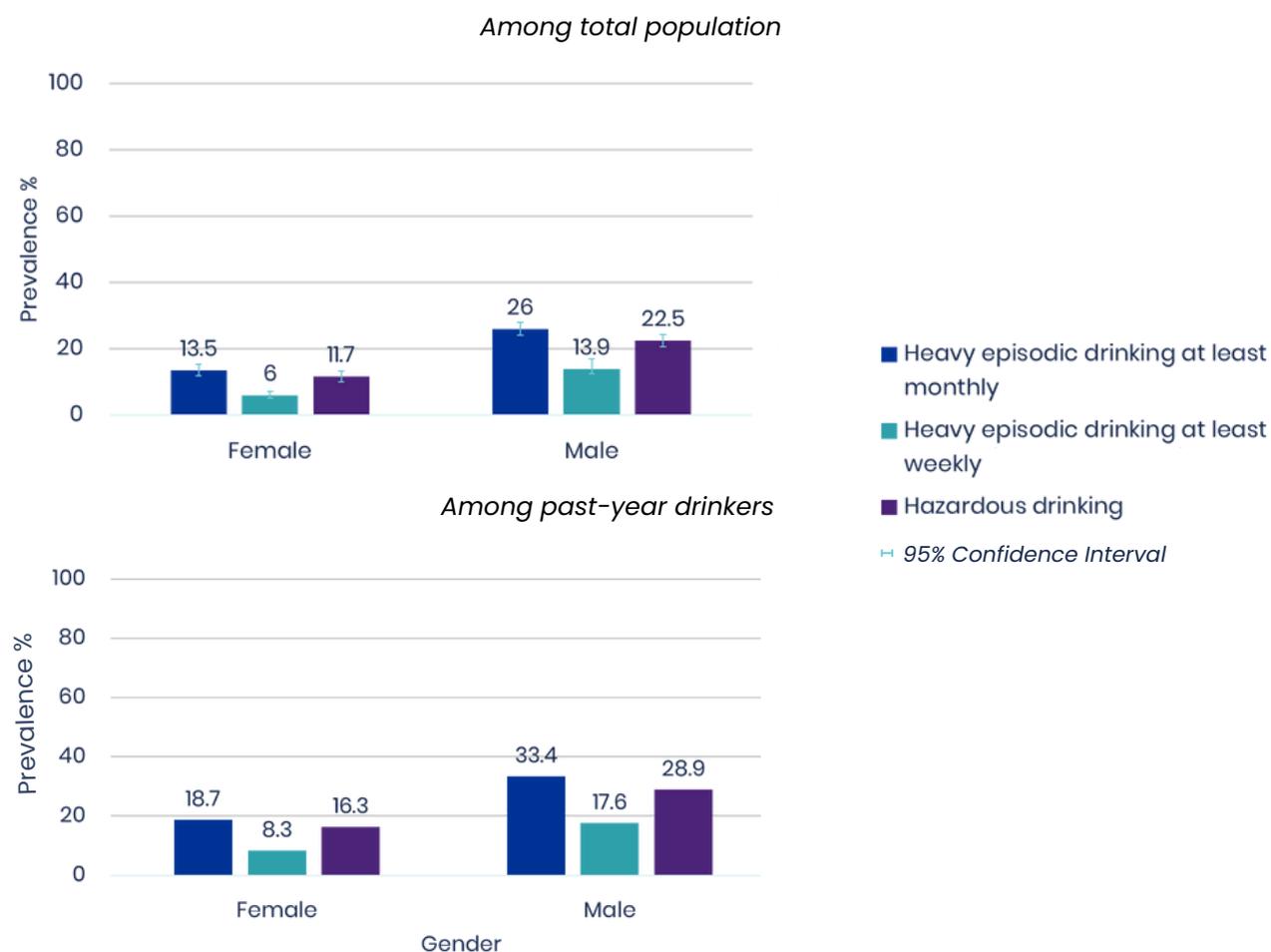


Figure 8: Prevalence of heavy episodic drinking and hazardous drinking by gender in Tāmaki Makaurau Auckland, 2017-2020

Table 5: Adjusted rate ratios for heavy episodic drinking and hazardous drinking by gender in Tāmaki Makaurau Auckland, 2017–2020

	Heavy episodic drinking at least monthly		Heavy episodic drinking at least weekly		Hazardous drinkers	
Total population						
	Adjusted RR	95% CI	Adjusted RR	95% CI	Adjusted RR	95% CI
Males compared to females	1.99	1.76-2.26	2.37	1.98-2.84	1.99	1.74-2.28
Past-year drinkers only						
Males compared to females	1.81	1.6-2.04	2.15	1.81-2.55	1.81	1.59-2.05

4.5 Alcohol consumption patterns by neighbourhood socio-economic deprivation in Tāmaki Makaurau Auckland

The prevalence of past-year drinkers by neighbourhood socio-economic deprivation is shown in Figure 9. Past-year drinking was most common among adults living in the least deprived neighbourhoods (83%), and least common among adults living in the most deprived neighbourhoods (58%).

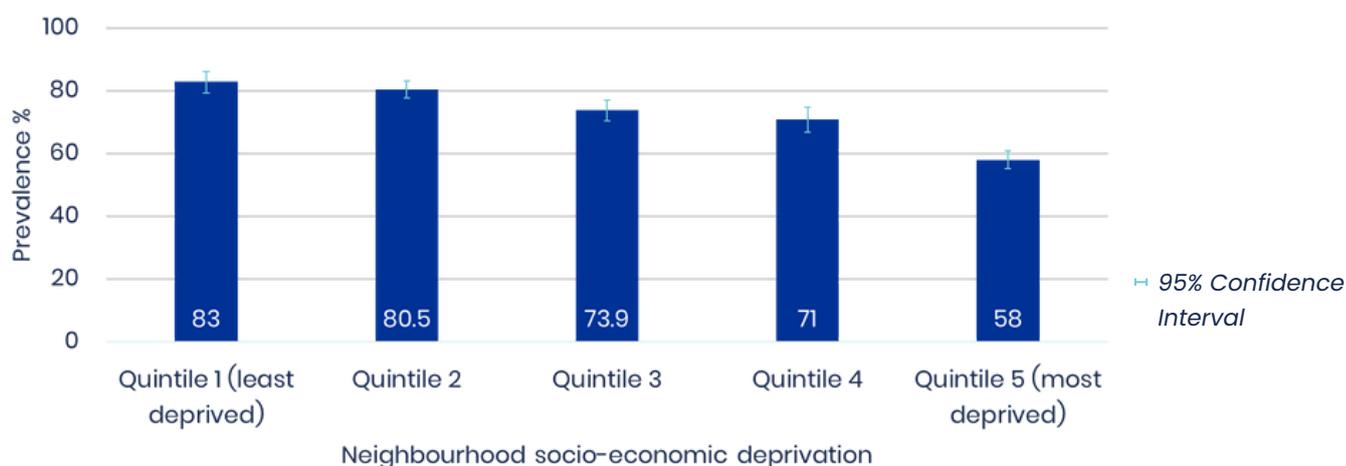


Figure 9: Prevalence of past-year drinkers by neighbourhood socio-economic deprivation in Tāmaki Makaurau Auckland, 2017–2020

The prevalence of heavy episodic drinking (weekly/monthly) and hazardous drinking by neighbourhood socio-economic deprivation is shown in Figure 10. In the total population, levels of heavy episodic drinking and hazardous drinking were similar across different quintiles of neighbourhood socio-economic deprivation. Among past-year drinkers, those in neighbourhoods with the highest socio-economic deprivation (quintile 5) had higher rates of hazardous drinking than most areas with lower deprivation (quintiles 1, 2 and 4).

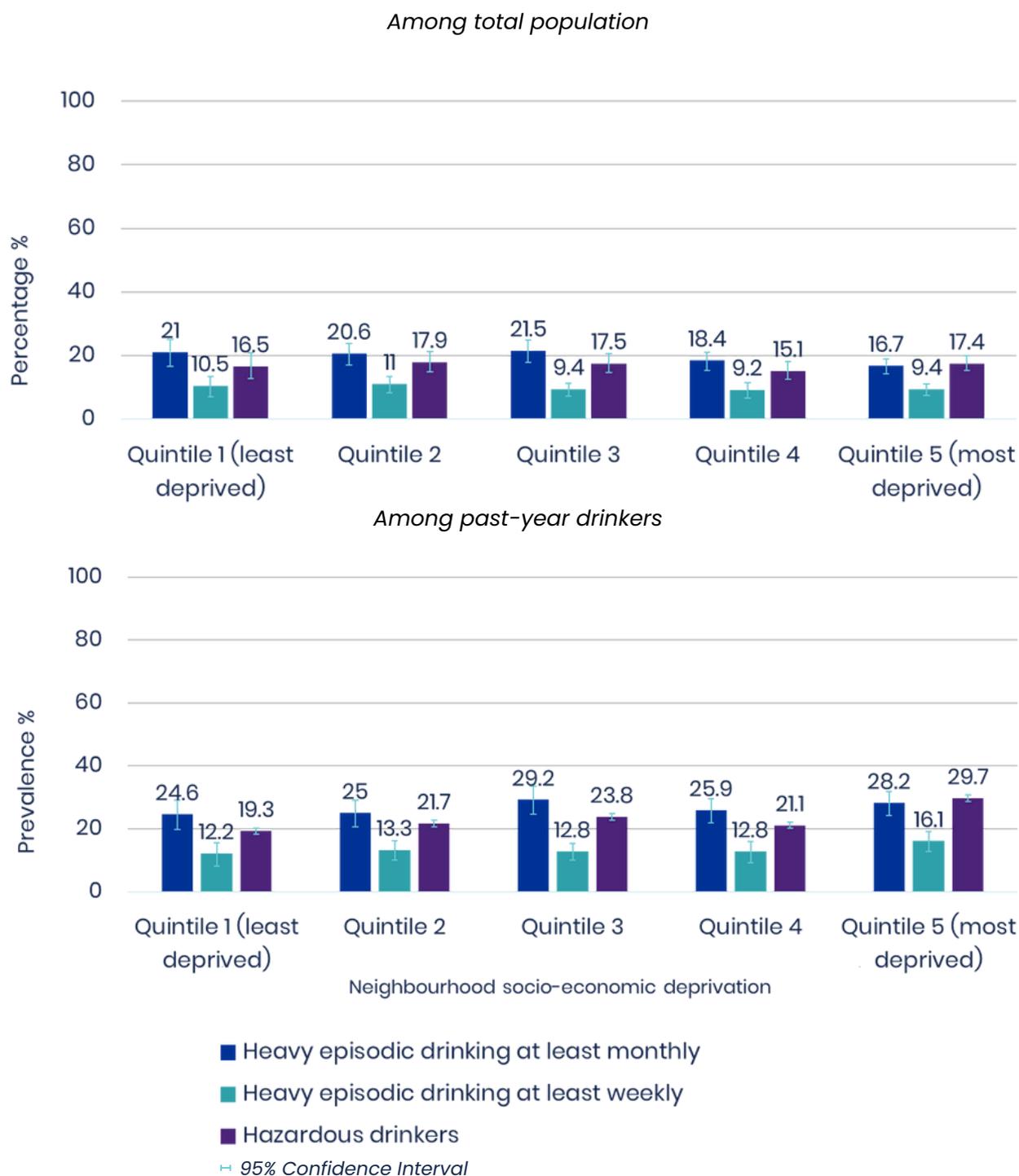


Figure 10: Prevalence of heavy episodic drinking and hazardous drinking by neighbourhood socio-economic deprivation in Tāmaki Makaurau Auckland, 2017–2020

05



Discussion

5.1 Summary of key findings

This report summarises NZHS data to provide insight into the patterns of alcohol use across different communities in Tāmaki Makaurau Auckland between 2017 and 2020.

Overall levels of alcohol use were high in Tāmaki Makaurau, although they were slightly lower than those nationally.

In Tāmaki Makaurau, almost 3 in 4 adults (74.2%) reported past-year drinking. Nearly 1 in 5 adults (19.8%) and 1 in 4 past-year drinkers (26.4%) reported heavy episodic drinking at least monthly, while 1 in 10 adults (10%)

and 1 in 8 past-year drinkers (13.2%) reported heavy episodic drinking at least weekly. Almost 1 in 6 adults (17.1%) and close to 1 in 4 past-year drinkers (22.9%) reported drinking to hazardous levels. In particular, heavy episodic drinking and hazardous drinking were common among those who drink.

Patterns of alcohol use differed by age, gender, ethnic groups and neighbourhood socio-economic deprivation. Past-year drinking was least common in the youngest age group (15–24 years) while heavy episodic drinking and hazardous drinking were least common among the oldest age group (65+ years). There were clear disparities by gender and ethnicity for heavy episodic drinking

and hazardous drinking, with men and Māori adults more affected than women and non-Māori adults respectively. Pacific adults were less likely to be past-year drinkers, but were more likely to report hazardous drinking than non-Pacific adults. Among past-year drinkers, Pacific adults were also more likely than non-Pacific adults to report heavy episodic drinking and hazardous drinking. Asian adults were less likely than non-Asian adults to report all patterns of alcohol use.

Notably, past-year drinking was less common in areas of Tāmaki Makaurau with the highest socio-economic deprivation, while hazardous drinking was more common among past-year drinkers in these areas.

5.2 Strengths and limitations

This report provides a regional view of the patterns of alcohol use not otherwise available. Other surveys on alcohol consumption such as the Youth 2000 series (16) and Alcohol Use in New Zealand survey (17), while large and rigorous in design, are focused at a national level.

The NZHS uses methods to ensure that the sample is representative of the target population. These standardised methods also enable comparisons over time and the ability to pool data over several years (20). High participation rates were achieved, although the 2019/20 survey year was impacted significantly by the Covid-19 pandemic resulting in lower response rates (21). The use of area-based and electoral roll sampling, along with calibrated weighting of data, provided reliable estimates for the smaller population

groups (20). Additionally, the use of total response ethnicity meant when people identified with more than one ethnic group, they were counted once in each group.

Nonetheless, there were also several limitations. At the time of writing, NZHS regional data for 2020–2023 were yet to be published. When this dataset becomes available, future reports can examine regional trends in alcohol use over time. More recent annual data at the national level can be accessed from the NZHS Annual Data Explorer.³

Secondly, alcohol consumption surveys may underestimate alcohol use due to errors in recalling the amount and frequency of alcohol consumed over the past 12 months (26).

Thirdly, as data on sex at birth were only included from 2022–2023 (22), and disability status from 2018–2019 (20), they were not included in the current report. Future reports would benefit from examining how patterns of alcohol use may vary for these groups.

Lastly, interpretation of these findings should consider that this report only provides a snapshot of alcohol use and does not look at the wider determinants that influence consumption. This is particularly important in Aotearoa New Zealand, where colonisation continues to impact Māori health gains and aspirations (5).

3. National-level data up to 2022–2023 are available from the NZHS Annual Data Explorer at <https://minhealthnz.shinyapps.io/nz-health-survey-2022-23-annual-data-explorer/>

5.3 Implications

The high levels of alcohol use and inequities in Tāmaki Makaurau indicate the need for effective and comprehensive policy interventions aimed at reducing the affordability, availability and marketing of alcohol, as recommended by WHO (4). Heavy episodic drinking and hazardous drinking remain common, particularly among those who drink. This is consistent with research showing that almost half of the alcohol in Aotearoa New Zealand is consumed during harmful drinking occasions (27).

That past-year drinking was less common among young people, women, Pacific peoples and Asian communities further highlights the need to protect these groups from exposure to alcohol marketing, which is linked to drinking initiation (28). This is particularly relevant in Tāmaki Makaurau where many young people as well as Asian and Pacific peoples reside. That Māori in Tāmaki Makaurau were disproportionately affected by heavy episodic drinking and hazardous drinking is further evidence of unacceptable health inequities between Māori and non-Māori. This points to the Crown's obligations under Te Tiriti o Waitangi to achieve equitable health outcomes for Māori. It also highlights the role of social and commercial determinants of health, including the ongoing effects of colonisation, in influencing alcohol use.

Finally, our findings suggest the presence of the 'alcohol harm paradox', where communities with higher socio-economic deprivation consume less alcohol overall but may experience

more alcohol-related harm compared to more privileged communities (14). Previous research in Aotearoa has shown that alcohol outlets are more concentrated in areas with higher socio-economic deprivation, which is associated with more alcohol-related harm (29,30).

These findings may support local Māori, iwi, hapū and other community groups to enable tino rangitiratanga in their decision-making around alcohol-related harm within their own hāpori (community); for example, through objections to alcohol licence applications.

For policymakers and public health practitioners in Tāmaki Makaurau, this report may inform how they can support community aspirations to reduce alcohol harm. This may include promoting equitable access to the social determinants of health such as healthy living environments, addressing institutional racism in the alcohol licensing and health systems, and acting on the commercial determinants of health such as alcohol availability and marketing.

Continued monitoring of alcohol consumption patterns and disparities within Tāmaki Makaurau Auckland will allow changes in alcohol use and progress in reducing inequities to be monitored over time. This will contribute to the wider surveillance of alcohol use in Aotearoa New Zealand and inform local measures to minimise harm.



References

1. Ministry of Health. New Zealand Health Survey [Internet]; 2024 [cited 2024 Jun 21]. Available from: <https://www.health.govt.nz/nz-health-statistics/surveys/new-zealand-health-survey>
2. Casswell S, Huckle T, Romeo JS, Moewaka Barnes H, Connor J, Rehm J. Quantifying alcohol-attributable disability-adjusted life years to others than the drinker in Aotearoa/New Zealand: A modelling study based on administrative data. *Addiction*. 2024 Feb 26 [cited 2024 Jun 24];119(5):855–862; Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/add.16435>
3. World Health Organization. Global status report on alcohol and health; 2018. Available from: <https://iris.who.int/bitstream/handle/10665/274603/9789241565639-eng.pdf?sequence=1>
4. World Health Organization. The SAFER technical package: five areas of intervention at national and subnational levels; 2019. Available from: <https://www.who.int/publications/i/item/9789241516419>
5. Darrah T, Waa A, Jones A, Mizdrak A. Māori perspectives on alcohol. *Int J Crit Indig Stud*. 2021;14(1)51–64. Available from: <https://doi.org/10.5204/ijcis.v14i1.1809>
6. Maynard K. Te Tiriti o Waitangi and alcohol law. Wellington: Te Hiringa Hauora – Health Promotion Agency; 2022. Available from: <https://www.hpa.org.nz/sites/default/files/Te%20Tiriti%20o%20Waitangi%20and%20alcohol%20law.pdf>
7. Waitangi Tribunal. Hauora: Report on Stage One of the Health Services and Outcomes Kaupapa Inquiry; 2023. Available from: https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_195476216/Hauora%202023%20W.pdf
8. Randerson S, Gordon L, Casswell S, Lin J, Borell B, Rychert M, et al. “I feel it’s unsafe to walk”: Impacts of alcohol supply on public space in eight neighbourhoods, and residents’ input to alcohol licensing decisions. Wellington: Te Whatu Ora; 2022. Available from: <https://www.hpa.org.nz/sites/default/files/Inclusivity%20report%20FINAL.pdf>
9. World Health Organization. Commercial determinants of health [Internet]; 2023 [cited 2024 Jun 24]. Available from: <https://www.who.int/news-room/fact-sheets/detail/commercial-determinants-of-health>
10. Chambers T, Pearson AL, Kawachi I, Stanley J, Smith M, Barr M, et al. Children’s home and school neighbourhood exposure to alcohol marketing: Using wearable camera and GPS data to directly examine the link between retailer availability and visual exposure to marketing. *Health & Place* 2018;54:102–9. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S1353829218307408>

11. Ayuka F, Barnett R, Pearce J. Neighbourhood availability of alcohol outlets and hazardous alcohol consumption in New Zealand. *Health & Place* 2014; 29:186–99. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S135382921400094X?via%3Dihub>
12. Waitangi Tribunal. Wai 2624, #2.5.3. Decision on application for an urgent hearing; 2019. Available from: https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_148205985/Wai%202624%2C%202.5.003.pdf
13. World Health Organization. Fact sheet – alcohol [Internet]; 2022 [cited 2024 Jun 21]. Available from: <https://www.who.int/news-room/fact-sheets/detail/alcohol>
14. Institute of Alcohol Studies. Alcohol and health inequalities; 2020. Available from: <https://www.ias.org.uk/wp-content/uploads/2020/12/Alcohol-and-health-inequalities.pdf>
15. Statistics New Zealand. 2018 Census place summaries: Auckland Region [Internet]; [accessed 2024 Jun 21]. Available from: <https://www.stats.govt.nz/tools/2018-census-place-summaries/auckland-region#ethnicity-culture-and-identity>
16. Youth19 – A Youth2000 Survey. About us [Internet]; [accessed 2024 Jun 21]. Available from: <https://www.youth19.ac.nz/>
17. Nielsen. Alcohol Use in New Zealand Survey (AUiNZ) 2019/20: Methodology report. Wellington: Te Hiringa Hauora – Health Promotion Agency; 2021. Available from: <https://www.hpa.org.nz/sites/default/files/Alcohol%20Use%20in%20NZ%20Survey%20%28AUiNZ%29%202019-20%20methodology%20report.pdf>
18. Ministry of Health. Regional Results 2017–2020: New Zealand Health Survey [Internet]; 2021 [cited 2024 Jun 21]. Available from: <https://www.health.govt.nz/publication/regional-results-2017-2020-new-zealand-health-survey>
19. Ministry of Health. New Zealand Health Survey: Regional Data Explorer Results 2017–2020 [Internet]; 2021 [cited 2024 Jun 21]. Available from: <https://minhealthnz.shinyapps.io/nz-health-survey-2017-20-regional-update/>
20. Ministry of Health. Methodology Report 2019/20: New Zealand Health Survey; 2020. Available from: <https://www.health.govt.nz/publication/methodology-report-2019-20-new-zealand-health-survey>
21. Ministry of Health. Content Guide 2019/20: New Zealand Health Survey; 2020. Available from: <https://www.health.govt.nz/publication/questionnaires-and-content-guide-2019-20-new-zealand-health-survey>
22. Ministry of Health. Methodology Report 2022/23: New Zealand Health Survey; 2023. Available from: <https://www.health.govt.nz/publication/methodology-report-2022-23-new-zealand-health-survey>

23. Ministry of Health. Methodology Report 2017/18: New Zealand Health Survey; 2019. Available from: <https://www.health.govt.nz/publication/methodology-report-2017-18-new-zealand-health-survey>
24. Ministry of Health. Methodology Report 2018/19: New Zealand Health Survey; 2019. Available from: <https://www.health.govt.nz/publication/methodology-report-2018-19-new-zealand-health-survey>
25. World Health Organization. AUDIT: the Alcohol Use Disorders Identification Test: guidelines for use in primary health care; 2001. Available from: <https://www.who.int/publications/i/item/WHO-MSD-MSB-01.6a>
26. Stockwell T, Zhao J, Greenfield T, Li J, Livingston M, Meng Y. Estimating under- and over-reporting of drinking in national surveys of alcohol consumption: identification of consistent biases across four English-speaking countries. *Addiction*. 2016 Apr 21;111(7):1203–13. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/add.13373>
27. Viet Cuong P, Casswell S, Parker K, Callinan S, Chaiyasong S, Kazantseva E, et al. Cross-country comparison of proportion of alcohol consumed in harmful drinking occasions using the International Alcohol Control Study. *Drug and Alcohol Review*. 2018 Feb 14;37(S2). Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/dar.12665>
28. Jernigan D, Noel J, Landon J, Thornton N, Lobstein T. Alcohol marketing and youth alcohol consumption: a systematic review of longitudinal studies published since 2008. *Addiction*. 2016 Nov 8; 112(S1):7–20. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/add.13591>
29. Connor J, Kypri K, Bell M, Cousins K. Alcohol outlet density, levels of drinking and alcohol-related harm in New Zealand: a national study. *J Epidemiol Community Health*. 2010; 65(10):841–6. Available from: <https://jech.bmj.com/content/65/10/841.short>
30. Hay G, Whigham P, Kypri K, Langley J. Neighbourhood deprivation and access to alcohol outlets: A national study. *Health Place*. 2009;15(4):1086–93. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S1353829209000550>
31. Auckland Council. Older Aucklanders: A Quality of Life Status Report; 2017. Available from: <https://knowledgeauckland.org.nz/media/1147/tr2017-014-older-aucklanders-a-quality-of-life-status-report-2017-summary-report.pdf>



Appendix 1

About the National Public Health Service (Health New Zealand – Te Whatu Ora) and Tāmaki Makaurau Auckland

The National Public Health Service (NPHS) is a division of Health New Zealand – Te Whatu Ora, and leads the delivery of health protection, health promotion and prevention services. Within the NPHS, the Northern Region is the regional public health service for Tāmaki Makaurau Auckland and Te Tai Tokerau Northland, working alongside whānau, iwi, communities and other organisations to help create healthier environments.

Tāmaki Makaurau Auckland is a vibrant and diverse city, home to the largest urban population in Aotearoa New Zealand. It is also home to a growing community enriched with diversity as shown below (15):

- people who identify as European make up 54% of the Tāmaki Makaurau population
- Māori make up 12% of the population of Tāmaki Makaurau
- Pacific peoples make up 16% of the population in Tāmaki Makaurau and as a group includes over thirty different Pacific groups, all with distinct identities
- people who identify with an Asian ethnicity make up 28%
- other ethnicities make up 3% of the Tāmaki Makaurau population*
- the population of Tāmaki Makaurau is increasing through natural increase and immigration
- one third of our nation’s young people (under 25 years) live in Tāmaki Makaurau
- over the next 20 years, the population of those aged over 65 years is expected to double (31)

Te Tiriti o Waitangi—in particular, Article 3 (Ōritetanga)—guides the approach to public health in Aotearoa New Zealand. The NPHS Northern Region’s approach and role as a Crown agent is to uphold Te Tiriti o Waitangi to ensure equitable physical, mental and social well-being and health outcomes, for all in the Northern Region.

NPHS has an important role in reducing harms from alcohol through health promotion and compliance activities. The NPHS, through its Medical Officers of Health, is a statutory entity in the Sale and Supply of Alcohol Act 2012 and inquires into alcohol licensing applications in Aotearoa New Zealand.

*Note: where a person reported more than one ethnic group, they were counted in each applicable group which means the total percentage is greater than 100%. Percentages have been rounded to the nearest number.

Appendix 2

Methodology of the New Zealand Health Survey

Survey content

The NZHS features a set of core questions that remain the same each year and cover nine key domains: health status, long-term health conditions, health behaviours and risk factors (including tobacco, alcohol and drug use), nutrition, mental health, oral health, health service utilisation, patient experience, and sociodemographics. There is also a shorter 'clip-on' component that changes year to year to address urgent or emerging issues for which further insights are required to inform policy development (21).

Sample selection across the motu

To obtain a representative sample of respondents across Aotearoa New Zealand, both an area-based sample and a list-based electoral roll sample are utilised. This aims to increase the sample size of smaller population groups including Māori, Pacific and Asian ethnicities (20).

Area-based sampling utilises the main sampling unit created by Statistics New Zealand, known as primary sampling units (PSU). PSUs are equivalent to one to three meshblocks and are more even in population and dwelling numbers than meshblocks. In area-based sampling, a higher probability is assigned to those PSUs where more Pacific or Asian people reside, based on the 2013 census. A systematic sample is

then taken from the list of households in the selected PSUs.

Electoral roll sampling is used to increase the sample size of people who self-identify as Māori. A sample of PSUs within each area is taken and the electoral roll is used to select addresses where at least one member of the household has identified as Māori.

NZHS uses a randomised system for sample selection within a PSU, with only one eligible adult and one eligible child for each dwelling interviewed to minimise the impact on the household. This process is the same for both area-based and electoral roll sampling methods.

Consent and participation

Survey participation is a voluntary process which relies on the goodwill of respondents (20). Consent is obtained through an electronic consent form with a written copy provided to the participant. Each interview takes about 43 minutes to complete with adults and 22 minutes for children (20).

Participants are able to stop the interview at any time and pass on responding to certain questions. Interpreters are available in ten different languages to support whānau to participate in their preferred language. A welfare guardian or person with power of attorney is able to consent to and participate in the survey, on behalf of the person selected, if required.

Interviews are usually conducted face-to-face at the respondents' home. Most interview responses are recorded on a laptop by the interviewer using Computer-Assisted Personal Interviewing (CAPI) software (20). From the 2018–2019 NZHS onwards, adult respondents were given the option to complete some sensitive questions themselves using a laptop (24).

To acknowledge their participation, respondents are given a small token of appreciation, a thank you card and a list of organisations should they wish to discuss any health issues or needs that arose during the consultation.

Response rates and coverage rates

NZHS is designed to maximise response amongst participants and coverage rates across the motu, to ensure it is as closely representative of the New Zealand population as possible.

The response rate measures how many people who were invited to take part in the survey, actually participated in it (20). The higher the response rate, the more representative participants are of the New Zealand population. Response rates and sample sizes for the survey years 2017–2018 (23), 2018–2019 (24) and 2019–2020 (20), in Aotearoa New Zealand, are presented in Table S1. Response rates were stable at 80% for adults and 79% for children for the 2017–2018 and 2018–2019 years. However, the Covid-19 outbreak interrupted data collection for the 2019–2020 year, resulting in a lower response rate of 75% for adults and 74% for children.

Supplementary Table S1: Sample sizes and response rates for the NZHS in Aotearoa New Zealand, 2017–2020

	Sample size		Response rate	
	Adults	Children	Adults	Children
2017/18	13,869	4,723	80%	79%
2018/19	13,572	4,503	80%	79%
2019/20	9,699	3,290	75%	74%

By ethnic group, the number of adults and children by survey year 2017–2018 (23), 2018–2019 (24) and 2019–2020 (20) are presented in Table S2. As total response ethnicity is used, the totals for adults and children will be greater than the sample sizes presented in Table S1.

Supplementary Table S2: Sample sizes by ethnicity for the NZHS in Aotearoa New Zealand, 2017–2020

	Māori		Pacific		Asian		European	
	Adults	Children	Adults	Children	Adults	Children	Adults	Children
2017/18	2,856	1,722	921	710	1,319	637	10,434	3,232
2018/19	2,686	1,559	846	643	1,530	740	10,134	2,984
2019/20	1,906	1,115	613	491	1,018	537	7,406	2,243

Coverage rate is an alternative survey response rate measure which calculates the discrepancy between the responding sample and the population. It allows for the impact of non-response rates as well as exclusions, such as new dwellings that may have not been included in the sample frame (20).

Coverage rates across different population groups, for Aotearoa New Zealand, for the survey years 2017–2018 (23), 2018–2019 (24) and 2019–2020 (20), are summarised in Table S3.

Supplementary Table S3: Coverage rates (%) for the NZHS by population groups, 2017–2020

	Adults	Children	Māori	Pacific	Asian	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
2017/18	61	74	65	65	70	64	67	68	63	63
2018/19	62	72	69	61	71	71	65	63	60	60
2019/20	62	72	69	71	71	71	65	63	60	60

Data weighting

Data is weighted to ensure estimates are representative of the target population and that no group is under or over represented (20). NZHS uses a calibrated weighting method. Respondents are assigned a selection weight, calculated in different ways for each area-based sample and electoral roll sample. Higher weighting is assigned to groups with a lower chance of selection and vice versa. Population benchmark information for age, gender, ethnicity and socio-economic position is obtained quarterly from the Census. This is combined with selection weights to determine the calibrated weight of the data.

To account for missing data and non-response, an additional adjustment is made to the data before analysis. This is to ensure that non-response does not dilute the prevalence of the condition or behaviour in the sample.

Lastly, in terms of practical techniques, visits to make contact take place over a two to three month period, at different times of the day and up to 10 visits are made to each household. This is to ensure people who are away on holiday or who work certain hours/days are still able to be included.

Appendix 3

Prevalence of alcohol consumption patterns across population groups within Tāmaki Makaurau Auckland

Supplementary Table S4: Prevalence of alcohol consumption patterns for Tāmaki Makaurau Auckland and Aotearoa New Zealand, 2017–2020

	Tāmaki Makaurau Auckland		Aotearoa New Zealand	
	Prevalence %	95% CI	Prevalence %	95% CI
Past-year drinkers	74.2	72.6–75.7	80.6	79.9–81.3
Heavy episodic drinking at least monthly	19.8	18.4–21.2	23.8	22.9–24.7
Heavy episodic drinking at least weekly	10	9.0–11.0	12.5	12–13.1
Hazardous drinkers	17.1	15.8–18.5	22	21.2–22.9

Supplementary Table S5: Prevalence of heavy episodic drinking and hazardous drinking among past-year drinkers for Tāmaki Makaurau Auckland and Aotearoa New Zealand, 2017–2020

	Tāmaki Makaurau Auckland		Aotearoa New Zealand	
	Prevalence %	95% CI	Prevalence %	95% CI
Heavy episodic drinking at least monthly	26.4	24.7–28.2	29.2	28.2–30.3
Heavy episodic drinking at least weekly	13.2	12–14.6	15.4	14.7–16
Hazardous drinkers	22.9	21.2–24.7	27.1	26.1–28.1

Supplementary Table S6: Prevalence of past-year drinkers by age group in Tāmaki Makaurau Auckland, 2017–2020

	Past-year drinkers	
Age group	Prevalence %	95% CI
15-24 years	67.4	64.4-70.3
25-44 years	77.6	75.3-79.8
45-64 yeras	75.8	73.2-78.3
65+ years	71.6	68.2-74.8

Supplementary Table S7: Prevalence of heavy episodic drinking and hazardous drinking by age group in Tāmaki Makaurau Auckland, 2017–2020

Age group	Heavy episodic drinking at least monthly		Heavy episodic drinking at least weekly		Hazardous drinkers	
	Prevalence %	95% CI	Prevalence %	95% CI	Prevalence %	95% CI
Total population						
15-24 years	20.5	17.3-24	9.6	7.3-12.3	18.4	15.7-21.4
25-44 years	21.5	19.5-23.6	9.6	8.3-11	17.7	15.8-19.8
45-64 yeras	21.4	19.3-23.6	13.1	11.2-15.2	18.5	16.4-20.8
65+ years	8.4	6.7-10.4	4.8	3.5-6.6	9.1	7-11.5
Past-year drinkers only						
15-24 years	29.4	24.8-34.3	13.4	10.1-17.3	26.3	22.3-30.5
25-44 years	27.7	25.3-30.2	12.4	10.7-14.2	22.8	20.4-25.4
45-64 yeras	28.1	25.4-30.8	17.2	14.8-19.8	24.4	21.7-27.2
65+ years	11.7	9.3-14.3	6.7	4.8-9.1	12.7	9.9-15.9

Supplementary Table S8: Prevalence of past-year drinkers by ethnicity in Tāmaki Makaurau Auckland, 2017–2020

	Past-year drinkers	
Ethnicity	Prevalence %	95% CI
Māori	79.5	76.2–82.5
Pacific	54.5	50.9–58.2
Asian	59	55.9–62.1
European/Other	85.1	83.5–86.7

Supplementary Table S9: Prevalence of heavy episodic drinking and hazardous drinking by ethnicity in Tāmaki Makaurau Auckland, 2017–2020

Ethnicity	Heavy episodic drinking at least monthly		Heavy episodic drinking at least weekly		Hazardous drinkers	
	Prevalence %	95% CI	Prevalence %	95% CI	Prevalence %	95% CI
Total population						
Māori	30.8	27.4–34.4	16.4	13.6–19.4	30.9	27.7–34.2
Pacific	20.3	17.3–23.5	11.3	8.7–14.3	19.8	16.9–23.1
Asian	7.1	5.5–8.9	3.2	2.2–4.5	5.2	3.9–6.8
European/Other	25.4	23.4–27.5	12.7	11.2–14.4	21.7	19.6–24
Past-year drinkers only						
Māori	38	34.1–41.9	20.1	16.9–23.6	38	34.2–41.8
Pacific	35.3	30.4–40.6	19.8	15–25.4	34.2	29.3–39.4
Asian	11.6	8.9–14.8	5.3	3.5–7.7	8.8	6.5–11.6
European/Other	29.3	27–31.7	14.6	12.8–16.5	25.1	22.6–27.7

Supplementary Table S10: Prevalence of past-year drinkers by gender in Tāmaki Makaurau Auckland, 2017–2020

	Past-year drinkers	
Gender	Prevalence %	95% CI
Female	70.5	68.4–72.7
Male	77.7	75.9–79.5

Supplementary Table S11: Prevalence of heavy episodic drinking and hazardous drinking by gender in Tāmaki Makaurau Auckland, 2017–2020

	Heavy episodic drinking at least monthly		Heavy episodic drinking at least weekly		Hazardous drinkers	
Gender	Prevalence %	95% CI	Prevalence %	95% CI	Prevalence %	95% CI
Female	13.5	11.9–15.2	6	5.1–7.1	11.7	10.1–13.4
Male	26	24.1–27.9	13.9	12.4–15.5	22.5	20.7–24.4

Supplementary Table S12: Prevalence of past-year drinkers by neighbourhood socio-economic deprivation in Tāmaki Makaurau Auckland, 2017–2020

	Past-year drinkers	
Neighbourhood socio-economic deprivation	Prevalence %	95% CI
Quintile 1 (least deprived)	83	79.4–86.2
Quintile 2	80.5	77.6–83.2
Quintile 3	73.9	70.5–77.1
Quintile 4	71	66.8–74.8
Quintile 5 (most deprived)	58	55.2–60.8

Supplementary Table S13: Prevalence of heavy episodic drinking and hazardous drinking by neighbourhood socio-economic deprivation in Tāmaki Makaurau Auckland, 2017–2020

Neighbourhood socio-economic deprivation	Heavy episodic drinking at least monthly		Heavy episodic drinking at least weekly		Hazardous drinkers	
	Prevalence %	95% CI	Prevalence %	95% CI	Prevalence %	95% CI
Total population						
Quintile 1	21	17–25.4	10.5	7.7–13.9	16.5	12.7–20.9
Quintile 2	20.6	17.3–24.2	11	8.6–13.8	17.9	14.8–21.3
Quintile 3	21.5	18.1–25.1	9.4	7.6–11.6	17.5	14.6–20.6
Quintile 4	18.4	15.7–21.5	9.2	6.9–11.8	15.1	12.5–18.1
Quintile 5	16.7	14.5–19.2	9.4	7.7–11.4	17.4	15.2–19.9
Past-year drinkers only						
Quintile 1	24.6	20.1–29.5	12.2	8.9–16.2	19.3	15–24.2
Quintile 2	25	21–29.3	13.3	10.5–16.6	21.7	18–25.7
Quintile 3	29.2	24.9–33.7	12.8	10.2–15.6	23.8	20–27.8
Quintile 4	25.9	22.2–30	12.8	9.7–16.5	21.1	17.7–24.8
Quintile 5	28.2	24.5–32.1	16.1	13.1–19.4	29.7	25.8–33.9



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