Alcohol consumption among older adults in Aotearoa/New Zealand: a comparison of ‘baby boomers’ and ‘over-65s’

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The AUDIT-C screening measure for hazardous and heavy episodic drinking was included in a 2006 postal survey of a representative population sample of New Zealanders aged 55–70 years (N = 6642) funded by the Health Research Council of New Zealand. Results from logistic regressions showed that New Zealand Europeans and Māori, males, those with higher incomes, and those with a good standard of living were significantly more likely to drink hazardously. Heavy episodic drinking was more likely among men, Māori, and those with secondary or no school qualifications. The findings warrant further research into alcohol consumption among older people as this cohort moves into retirement.

Keywords: advanced statistical analysis; substance use (tobacco; alcohol; and other drugs); elderly; health policy

The health-related behaviours of older people are a matter of public health interest at present owing to the steadily increasing proportion of elders in world populations. Although it is often assumed that adults decrease their alcohol use as they age, patterns of alcohol use among older people are not well understood, particularly those in the ‘baby boomer’ cohort who have different attitudes about alcohol consumption than their predecessors (McEvoy, Kritz-Silverstein, Barrett-Connor, Bergstrom, & Laughlin, 2013) with alcohol being an integral part of many social and cultural events formed in an age when alcohol advertising was widespread and viewed as an ‘accoutrement of postwar prosperity’ (Babatunde, Outlaw, Forbes, & Gay, 2014, p. 604) that is ‘carried’ into old age (Moos, Schutte, Brennan, & Moos, 2010). The present paper provides an initial report on the drinking behaviour of older people in two related age groups (55–64 and 65–70 years) in Aotearoa/New Zealand. Immediate enquiry into the patterns of drinking among this generation is timely to support health promotion action before the health effects of hazardous drinking become increasingly evident as this large cohort moves into old age.

Studies of alcohol use in Western countries show that a substantial percentage of older adults engage in excessive drinking and incur substantial health and functioning consequences from
drinking (e.g. Culberson, 2006a; Moos, Schutte, Brennan, & Moos, 2009). While alcohol consumption has tended to decrease with age in Western populations, particular cohorts have shown increased consumption that may continue into older age (Bjørk, Thygesen, Vinther-Larsen, & Grønbæk, 2008). At present the proportion of older people drinking in most Western countries is steadily increasing (Moore et al., 2005; Morgan et al., 2009; Smith & Foxcroft, 2009) and reports from the Substance Abuse and Mental Health Services Administration (SAMHSA, 2007) in the USA suggest that rates of ‘hazardous drinking’ by elders have increased since the 1990s and will likely continue to increase as the baby boomers enter their later years.

Population health concerns about any increases in alcohol consumption in this generation are compounded by individual changes in physical health status after around 65 years. There is physiological evidence to support reduced levels of safe alcohol intake for elders which must be weighed against any health benefits of drinking. Moderate consumption of alcohol (two standard drinks per day) amongst aged and elderly adults has been posited to protect against cognitive decline and dementia (Mukamal et al., 2005), considered to display cardio-protective effects (Mukamal et al., 2006), and shown to be associated with increased quality of life (Chen & Hardy, 2009). However, when heavier or hazardous amounts of alcohol are consumed such benefits are lost and detrimental health effects such as falls-related injury (Kool, Ameratunga, Robinson, Crengle, & Jackson, 2008), cognitive decline (Xu et al., 2009), and earlier death (Chen & Hardy, 2009; Moos et al., 2009) have been observed. ‘Binge’ drinking, (more than five drinks in one session) exacerbates these issues and brings additional functional health problems (Dufour & Fuller, 1995; Gordon et al., 2001).

There are physiological and health changes in older age that suggest a need to reduce the levels at which alcohol may be considered beneficial or safe. First, physiological changes, such as poorer metabolism of alcohol and higher blood alcohol concentration, mean that older people are more likely to develop problems at relatively low levels of alcohol consumption (Dufour & Fuller, 1995). Pozzato et al. (1995) report that gastric alcohol dehydrogenase activity decreases in older adults, resulting in increased toxicity of alcohol for men and reduction of their tolerance to equal the lower levels of younger women. Lucey, Hill, Young, Demo-Dananberg, and Beresford (1999) found significant age differences between a younger (21–40 years old) and an elderly cohort (≥60 years old) in line with previous studies (Jones & Neri, 1985; Mishara & Kastenbaum, 1980; Vogel-Sprott & Barrett, 1984) that demonstrate a higher blood alcohol concentration for elders following ingestion of the same amount of alcohol. These authors additionally showed that this effect is greater for women than for men and suggest increased caution for older drinkers, females in particular.

Secondly, possible interaction with medications must be considered since older people in most Western countries routinely use a wide range of medications. For example, a national study of non-institutionalised US adults showed that 90% of those 65 years or older used at least 1 medication per week, more than 40% used 5 or more medications per week, and 12% used 10 or more per week (Kaufman, Kelly, Rosenberg, Anderson, & Mitchell, 2002). Surveys show that around two-thirds of Australians over the age of 60 years use four or more medications (Elliot, 2006). Data from the second wave of the present Health, Work and Retirement (HWR) study which included 2484 New Zealanders aged 57–72 years (HWR, 2008) show that 84.1% of adults aged 56–72 reported taking one or more prescription medications, with that percentage rising to 89% for those over 65 years of age only. While physicians remain concerned about the growing number of pharmaceuticals prescribed for elders, there is often little consideration of their interaction with alcohol. Many of the drugs commonly used by elders (such as Coumadin, antidepressants, NSAIDS, and opioids) have well-known side effects such as severe sedation, bleeding risk, and decreased cough reflex when combined with alcohol (Culberson, 2006b). Because of these issues, the National Institute on Alcohol Abuse and Alcoholism in the USA
has recommended that people age 65 and older consume no more than one standard drink per day or seven standard drinks per week (Dufour & Fuller, 1995).

Despite these understandings and recommendations, there is growing alcohol use among elders, and furthermore, concerns that hazardous drinking and related morbidity in this population is not being detected in clinical settings (Buchsbaum et al., 1992; McInnes & Powell, 1994) despite evidence indicating that older adults are highly responsive to treatment (Berks & McCormick, 2008; Loukissa, 2007). Khan, Davis, Wilkinson, Sellman, and Graham (2002) surveyed both community members and physicians in one city in New Zealand. They reported a high prevalence of alcohol use and misuse among community-dwelling elderly despite low estimates by their own General Practitioners (GPs). Khan et al. attributed this discrepancy to under-recognition by the medical practitioners and lower rate of consultation among hazardous alcohol users (although they were twice as likely to have been admitted to hospital). Culberson (2006a) suggested that the main barriers to GP identification and treatment of hazardous use by elders include ageist assumptions, denial, co-existing disabilities, as well as resistance among the patients themselves. Both GPs and patients may perceive alcohol-related problems such as cognitive functioning deficits or increased falls as being the result of ageing per se, rather than recognising the relationship between alcohol consumption and health. Long-term heavy drinkers will have difficulty recognizing the increasingly negative effects of alcohol itself.

Apart from the Khan et al. study cited above, there is very little published research that outlines hazardous drinking among older New Zealanders. In Aotearoa/New Zealand, alcohol is the most commonly used recreational drug (Ministry of Health, 2010); however, the New Zealand Alcohol and Drug use Survey included only adults up to the age of 64 (Ministry of Health, 2010). Khan et al. (2002) found that 11.3% of the 141 New Zealanders 65 years of age and older interviewed in the study reported regularly consuming more than two standard drinks per day; 9.9% of those interviewed also reported hazardous alcohol consumption, as measured by the Alcohol Use Disorders Identification Test (AUDIT) alcohol consumption questions (AUDIT-C). In this sample, hazardous drinking was more likely to be reported by males, those with postgraduate qualifications, and those who were married or living with a spouse. Researchers in the USA (Barnes et al., 2010) have also reported positive associations between higher socio-economic status (SES) and alcohol consumption among older people and general population surveys in Aotearoa/New Zealand have shown that higher SES markers such as educational qualifications, income, and occupation were associated independently with alcohol consumption (Huckle, You, & Casswell, 2010). Such social contextual factors may be among the key determinants of substance use across the life span and into older age, although, again, there has been minimal research devoted to alcohol consumption patterns among older people, New Zealanders in particular. In addition to SES, work with younger people has suggested that cultural variation in alcohol consumption should be a key variable explored in future research (Chartier, Hesselbrock, & Hesselbrock, 2009).

Gender must also be taken into account as older women are increasing their alcohol use (Moore et al., 2005; Smith & Foxcroft, 2009) and women have differing susceptibility to levels of alcohol.

The aim of the present study is to provide a population-based study of the prevalence of hazardous and heavy episodic (binge) drinking in a representative sample of New Zealanders aged 55–70 years. This age range has been selected to enable comparisons between members of the ‘baby boomer’ cohort (aged 55–64 who are entering older age) and a group aged between 65 and 70 years (the older cohort who are expected to have moderated their alcohol use). The literature reviewed showed physiological, cultural, and economic differences between these two groups. The following variables were included in the analysis: sex, ethnicity, marital status, living
situation, and SES. In addition, because Aotearoa/New Zealand has a high proportion of rural dwellers, they will be compared with urban dwellers.

Method
Participants
Participants were surveyed in 2006 as part of the HWR study (Towers, 2008). The New Zealand Electoral Roll was the source for selection of a sample of 13,045 New Zealanders aged 55–70 from a population of approximately 588,560, with 36,410 (6%) of those identifying as Māori (Statistics New Zealand, 2010). Registration on the roll is mandatory for all citizens eligible to vote in government elections and in 2007, 96% of all eligible New Zealanders were registered. Equal probability random sampling procedures were used to select two independent samples to represent the general population (N = 5264) and the Māori only population (N = 7781). Māori were over-sampled for this study using the Māori descent indicator on the general electoral roll to maximise participant recruitment and provide sufficient numbers for statistical analysis.

The total response rate (after exclusions, e.g., unable to be contacted, deceased, or institutionalised) was 53% (N = 6495). Before weighting the data to account for the over-sampling (New Zealanders of Māori descent were oversampled to ensure there were sufficient Māori participants to enable meaningful comparisons with New Zealand European and to counter the higher attrition rates over time for Māori in the continuing longitudinal study) of Māori in the sample, and using a prioritised ethnicity variable (participants are assigned a single ethnicity from those indicated, with Māori and minority ethnicities prioritised over NZ European), of the 6642 individuals in the final sample, 3117 (48%) identified their primary ethnicity as Māori and 3378 (52%) were classified as non-Māori. Of this latter group, 3121 were of European descent, 52 identified as Pacific Islander, 83 as Asian, and 122 as other. Age was well distributed with a mean of 61.56 (SD = 4.52). The general and Māori samples generally represent their respective reference Aotearoa/New Zealand populations. Both samples have a slight sex imbalance with more females (general sample = 53.7%; Māori sample = 54.8%) than their target populations (51% and 52.4%, respectively). However, the proportion in each age group was representative of the 55–70-year-old general and Māori populations in the Aotearoa/New Zealand 2006 Census of Population and Dwellings (Statistics New Zealand, 2006), with fewer older Māori (aged 65–70) in the HWR study (13%) than in the 2006 Census data (24%). There was a higher proportion of white-collar and professional workers, and higher income levels and standards of living in the present samples compared to the older age group in the 2006 census. A higher proportion in both the general and Māori sample (the latter in particular) also lacked any formal educational qualifications.

Measures
The following measures used in this study were included in a postal questionnaire designed to assess individual factors related to retirement and well-being.

Hazardous and binge drinking. The AUDIT-C (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998) comprises three alcohol consumption questions from the AUDIT (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) and is an internationally recognised screen for hazardous alcohol consumption with demonstrated validity in older age groups (Berks & McCormick, 2008). In particular, the AUDIT-C has been shown to detect hazardous levels of drinking amongst those older than 65 when compared to younger groups (Gómez et al., 2006). Items assess the past year’s frequency of drinking, quantity typically consumed, and frequency of consuming 6 or more drinks on one occasion. Scores range from 0 to 4 on each item, with a combined score ranging from 0 to
While the standard threshold for hazardous drinking is $\geq 3$ (Bush et al., 1998), recent findings (e.g. Barnes et al., 2010; Bradley et al., 2003; Rumpf, Hapke, Meyer, & John, 2002) show that the standard threshold over-estimates the prevalence of hazardous drinking as the AUDIT-C measure is less sensitive in detecting drinking patterns where prevalence is lower (Cherpitel, 1998). Dawson, Grant, Stinson, and Zhou (2005) found that a threshold of $\geq 4$ best identified hazardous drinking in older drinkers irrespective of gender in the general population, which was confirmed by Aalto, Alho, Halme, and Seppä (2011). The higher, $\geq 4$, threshold will be used throughout this paper. Heavy episodic (binge) drinking was defined as having ‘five or more drinks on the same occasion on at least 1 day within the past 30 days’ (Blazer & Wu, 2009). The question used in the HWR study asks ‘how often do you have six or more drinks on one occasion?’ meaning the current analysis will underestimate binge drinking levels when compared to US levels.

SES was assessed with measures of economic living standards, income, and educational qualifications.

The Economic Living Standards Index-Short Form (ELSI-SF; Jensen, Spittal, & Krishnan, 2005) was developed in Aotearoa/New Zealand to measure levels of consumption, social activity, and asset ownership, rather than the economic resources that enable them. The scale assesses restrictions in ownership of assets (8 items), restrictions in social participation (6 items), the extent to which respondents economise (8 items), and a self-rated indicator of standard of living (3 items). The ELSI-SF scores on each of the items were combined to form an ordinal variable with three levels: severe or some hardship; comfortable; and good or very good (see Towers et al., 2011).

Participants were also categorised as having no educational qualifications, secondary qualifications, or tertiary educational qualifications. Annual income was measured in four categories: $0–$20,000; $21,000–$35,000; $36,000–$70,000; and plus $70,000.

Other demographic variables

Age was two groups, 55–64 and 65–70 years. Gender was female or male. Marital status was partnered (married or de factor), separated, widowed, or divorced. Ethnicity was New Zealand European, Māori, Pacific Islander, Asian, or other according to self-identification by participants from NZ census categories. Urban areas included towns with 1000–10,000 individuals, secondary urban (e.g. satellite towns) with a population between 10,000 and 30,000, and cities with populations of 30,000 or greater.

Analysis

Before analysis, data were weighted to account for over-sampling of Māori and for unequal sampling of age, gender, and other ethnicities from the population. It cannot be assumed that those reporting a Māori ethnicity in the general sample have the same characteristics as those reporting a Māori ethnicity in the Māori descent over-sample. Accordingly, a design weight was calculated that corrects for the differing probabilities of selection in each sample. In addition, post-stratification weights were applied to all analyses using the weight cases option in the SPSS statistical analysis package (IBM Corp., 2010) to adjust for any unequal sampling of age groups, gender, and ethnicity (accounting for the design weight). The weighting variable was based on estimates for the 55–70-year-old population from the 2006 New Zealand population census (Statistics New Zealand, 2006).

The prevalence of hazardous and binge drinking is reported as simple percentages for each demographic group. The Logistic regression procedure in SPSS was used to show significant differences between groups, while accounting for relationships with other demographic variables.
All categorical variables (gender, ethnicity, marital status, persons living in household, education, annual income, ELSI, and urbanicity) were included in the first step as covariates with the same variables also entered at the second step as an interaction with age (as a dichotomous variable split at 55–64 and 65–70 years of age). There was a reduction of the sample size owing to missing data. From this sample, 4493 (3122 aged 55–64; 1371 aged 65–70) had responded to all the study variables required for the hazardous drinking regression analysis and 3920 (2727 aged 55–64; 1193 aged 65–70) for the heavy drinking regression analysis. Furthermore, the reported Ns vary between the sub-groups, due to the effects of the weighting variable.

Results

The logistic regression equations were all significant \( (p < .001) \). Estimates of Nagelkirk’s \( R^2 \) ranged from 0.18 to 0.22, and prediction success was estimated at 12% to 98% for binging, and 57% to 73% for hazardous drinking (see Table 1). Prediction accuracy is related to the size of each category and the cut-off for eventual classification (0.5 in SPSS) with predicted group membership in one group (e.g. binge drinking) improved at the expense of the other category (non-binge drinkers). Thus, as both models were accurate overall (better than chance) with hazardous drinking achieving an overall prediction rate of 66% and binge drinking a rate of 80%, the eventual success of the logistic model in fitting the observed data is based on a number of criteria; a Hosmer and Lemeshow test \( (\chi^2 = 7.88, p = .446) \) indicates that the binge drinking logistic model fits the data, which in combination with an acceptable Nagelkirk’s \( R^2 \) of .22 supports accepting the model as it stands.

As we were interested in how the factors were related to hazardous and binge drinking rather than predicting group membership, the model indicates factors of concern and reveals that there is still a great deal more to do to form a complete picture of drinking behaviour in older New Zealanders.

Reporting simple prevalence rates, the rate of hazardous drinking reported was very high at 45.2% across the whole sample (Table 1). Those aged 55–64 years reported a similar prevalence (45.4%) to those aged 65–70 years (44.8%). A fifth (20.4%) reported binge drinking with no significant differences in binge drinking between the two age groups (22% for those aged 55–64 and 18% for those 65–70 years old).

Table 1 also reports the percentages and odds-ratios of hazardous and heavy episodic drinking for each demographic group for the entire sample. High levels of hazardous drinking were reported by men (56.8%) compared to women (32.3%); New Zealand Europeans (48.2%) and Māori (48.3%) compared to other ethnicities (Pacific Islander (16.7%) and Asian (10.5%)); and those on annual incomes over $70,000 (66.1%) when compared to those earning less (48.5% of those earning $35,000–$70,000; 44.1% of participants earning $20,000–$35,000; and 33.1% of those earning less than $20,000). The results of the logistic regressions show that New Zealand Europeans and Māori are hazardously drinking at similarly high levels. Men, those with higher incomes ($70,000+), those with a good standard of living, and those living in rural areas were significantly more likely to drink hazardless. Least likely to drink at hazardous levels were those who live alone compared to those who are married or partnered. Heavy episodic (‘binge’) drinking was reported by 20.5% of the sample. A much higher proportion of men were likely to binge drink (31.3%) than women (7.7%), those in living arrangements where a person other than their partner was residing with them (26.8%) compared to participants living alone (14%) or living with their partner (21.2%), and those with no school qualifications were also more likely to binge drink (26%) versus participants with secondary (20.4%), post-secondary (18.7%), or tertiary qualifications (15%). Māori reported the highest levels of binge drinking (35.2%) compared to New Zealand Europeans (20.5%), Pacific Islanders
As with hazardous drinking, those with a high income ($70,000+), those with a good economic living standard, and those in rural areas were more likely to binge drink (30.6%, 22.3%, and 24%, respectively).
Significant interactions ($\alpha = .05$) of the dichotomous age variable by the SES variables (gender, ethnicity, marital status, persons living in household, education, annual income, ELSI, and urbanicity) are summarised in Table 2. Generally there was little difference between the two age groups, except for participants with ethnicities other than the four main groups used, income and economic living standards. While younger ‘other’ ethnicities were more likely to drink hazardously than older groups (38.8% compared to 26.2%), little can be ascertained from this without a more comprehensive understanding of who comprised this category. Younger participants (55–64 years old) earning between $35,000 and $70,000 drank more hazar-
dously (50.1%) and binged more (22.9%) than older participants (44.1% and 16%, respectively). The pattern was different when looking at economic living standards; older participants experi-
encing economic hardship were drinking more hazardously (38.3%) than younger participants who were also experiencing hardship (28.8% were drinking hazardously), with a reversed pattern for binge drinking where younger participants were more likely to binge (20.2%) than older ones (16.4%).

Table 2. Prevalence rates (%) and interaction effects Betas ($\beta$) for significant age × predictor. Significant effects ($p < .05$) are in bold.

| Ethnicity | Age | n   | Prevalence % (SE%) | $\beta$ (SE) | Age | n   | Prevalence % (SE%) | $\beta$ (SE) |
|-----------|-----|-----|-------------------|-------------|-----|-----|-------------------|-------------|
| NZ European | 55–64 | 2515 | 48.5 (1.0)       | Reference | 55–64 | 2276 | 21.6 (0.9)       | Reference |
|           | 65–70 | 1125 | 47.3 (3.6)       |            | 65–70 | 1790 | 17.9 (1.2)       |            |
| Maori     | 55–64 | 197  | 48.2 (3.6)       | 0.01 (0.30) | 55–64 | 161  | 34.8 (3.7)       | 0.39 (0.38) |
|           | 65–70 | 72   | 48.6 (5.9)       |            | 65–70 | 58   | 36.2 (6.3)       |            |
| Pacific   | 55–64 | 55   | 12.7 (4.5)       | 0.77 (0.80) | 55–64 | 35   | –                | –           |
| Islander  | 65–70 | 11   | 36.4 (14.5)      |            | 65–70 | 5    | 7.5 (4.1)        |            |
| Asian     | 55–64 | 140  | 7.9 (2.3)        | 1.03 (0.59) | 55–64 | 97   | 10.3 (3.1)       | 0.87 (0.81) |
|           | 65–70 | 22   | 27.3 (9.5)       |            | 65–70 | 13   | 23.1 (11.7)      |            |
| Other     | 55–64 | 214  | 38.8 (3.1)       | $-0.66 (0.27)^c$ | 55–64 | 159  | 18.2 (2.9)       | $-0.22 (0.39)$ |
|           | 65–70 | 141  | 26.2 (3.0)       |            | 65–70 | 286  | 15.4 (1.2)       |            |
| Annual income |      |     |                  |            |      |     |                  |            |
| 70,001+   | 55–64 | 485  | 64.9 (2.2)       | Reference | 55–64 | 463  | 30.5 (2.1)       | Reference |
|           | 65–70 | 141  | 70.2 (3.8)       |            | 65–70 | 138  | 31.2 (3.9)       |            |
| 35,001–70,000 | 55–64 | 1149 | 50.1 (1.5)       | $-0.64 (0.25)^c$ | 55–64 | 1033 | 22.9 (1.3)       | $-0.61 (0.29)^c$ |
|           | 65–70 | 415  | 44.1 (2.4)       |            | 65–70 | 382  | 16.0 (1.9)       |            |
| 20,001–35,000 | 55–64 | 584  | 43.0 (2.0)       | $-0.20 (0.28)$ | 55–64 | 509  | 22.4 (1.8)       | $-0.17 (0.32)$ |
|           | 65–70 | 292  | 46.2 (2.9)       |            | 65–70 | 253  | 21.7 (2.6)       |            |
| 0–20,000  | 55–64 | 903  | 30.5 (1.5)       | $-0.29 (0.28)$ | 55–64 | 722  | 12.9 (1.2)       | 0.08 (0.33)  |
|           | 65–70 | 524  | 37.6 (2.1)       |            | 65–70 | 421  | 14.3 (1.7)       |            |
| Economic living standards |      |     |                  |            |      |     |                  |            |
| Good      | 55–64 | 1750 | 52.5 (1.2)       | Reference | 55–64 | 1600 | 23.3 (1.0)       | Reference |
|           | 65–70 | 783  | 50.2 (1.8)       |            | 65–70 | 697  | 20.2 (1.5)       |            |
| Comfortable | 55–64 | 994  | 39.3 (1.5)       | 0.01 (0.16) | 55–64 | 839  | 18.6 (1.3)       | 0.11 (0.22)^c |
|           | 65–70 | 440  | 37.3 (2.3)       |            | 65–70 | 379  | 18.2 (2.0)       |            |
| Hardship  | 55–64 | 378  | 28.8 (2.3)       | $0.72 (0.25)^b$ | 55–64 | 287  | 20.2 (2.4)       | $-1.20 (0.45)^b$ |
|           | 65–70 | 149  | 38.3 (4.0)       |            | 65–70 | 116  | 16.4 (1.8)       |            |

$^a$Significant at $p < .001$.

$^b$Significant at $p < .01$.

$^c$Significant at $p < .05$. 
Discussion

The rates of alcohol use reported in this sample, both ‘hazardous’ (45%) and heavy episodic drinking (20%), are very high compared with studies of similar age groups or using similar cut-off scores on the AUDIT-C. In the USA, Dawson et al. (2005) found a 32% prevalence rate of hazardous drinking in a general population survey of US adults aged 18 and over, using AUDIT-C scores with the same threshold score as the present study. In regard to older adults, the 2006 National Survey on Drug Use and Health (SAMHSA, 2007) reported that 38–52% of adults aged over 55 were current drinkers, with 1–5% using alcohol heavily and 7–16% binge drinking. Blazer and Wu (2009) analysed these data in more detail to report that at-risk alcohol use and binge drinking were more frequent among respondents 50–64 years of age relative to respondents aged 65 years or older and general use rates were lower. In the over 65 age group, 13% of men and 8% of women reported at-risk alcohol use, and around 14% of men and 3% of women reported binge drinking. In comparison to these studies, the present data provide cause for concern and underscore the need for further investigation of alcohol use by older people in Aotearoa/New Zealand. The level of alcohol consumption within the 55–70 year olds in this study suggests a basis for future health problems as this large group in the population age.

The estimates of prediction success indicate a poor ability for these models to predict hazardous or binge drinking. This suggests that there are more variables to consider in regard to forming a complete picture of drinking behaviour in older New Zealanders. Nevertheless, the regression models do indicate particular factors for concern. These results suggest avenues for future research focused on the measurement of alcohol use, age-related changes in drinking levels, the meaning of demographic differences in drinking patterns, and the culture of alcohol use in Aotearoa/New Zealand. These issues will be addressed below.

Age-related physiological changes suggest that alcohol consumption should be moderated after around 65 years of age (Lucey et al., 1999; Pozzato et al., 1995). However, the 65–70-year-old group in the present sample reported a similar prevalence rate as the younger group, and their hazardous and binge drinking prevalence rates were very high in comparison to international samples. While almost all participants showed a clear trend of increasing hazardous prevalence rates with increasing income and for older participants to drink more hazardously than younger, those aged 65–70 and earning $35,000–$70,000 ‘bucked’ this trend and fewer were drinking hazardously than 55–64 year olds in the same income bracket ($35,000–$70,000). A possible explanation is that this group reflects a cohort continuing to work past retirement age (of those aged 65–70, 82% of participants earning $35,000–$70,000 were still working compared to 65% earning $25,000–$35,000, and 21% earning $20,000 or less) with differing attitudes and behaviours to participants still of working age in the same income bracket.

As alcohol consumption levels in older people may be rising internationally (Moore et al., 2005; Morgan et al., 2009; Smith & Foxcroft, 2009; SAMHSA, 2007) and cohort effects may be separate from chronological ageing (Bjørk et al., 2008), it is possible that the higher drinking levels reported by the 55–64 year olds in this sample will not moderate as this New Zealand cohort ages. At present, their intentions to moderate alcohol consumption with age are unclear and this suggests a need for ongoing enquiry into the behaviours of this large ‘baby boomer’ cohort. An obvious question for future research is whether this group is aware of the need to cut down on alcohol use as they get older due to physiological changes.

There are particular patterns in the demographic differences in these groups which could provide the basis for future enquiry into patterns of alcohol use. Khan et al. (2002) found that hazardous drinking in older New Zealanders was more likely to be reported by males, those with postgraduate qualifications, married, and living with a spouse. This pattern of results is
supported in the present national sample with some additional details worth noting. Differential effects of alcohol for men and women are well established but indications that women’s use of alcohol is increasing (Smith & Foxcroft, 2009) highlight the need for further investigation. Māori are more likely to engage in binge drinking across both age groups and these findings accord with previous research (Bramley, Broad, Harris, Reid, & Jackson, 2003) and evidence that Māori may experience more harm as a result of hazardous alcohol use (Ministry of Health, 2009). These demographic patterns of drinking are important when considering health impacts of drinking. The present findings suggest that relationships between ethnic and socio-economic differences and inequalities in health are possibly an important aspect of these differences. Those with higher income and a higher standard of living tend to drink regularly at hazardous levels and to drink heavily on particular occasions. New Zealand researchers (Huckle et al., 2010) have already pointed to a complex relationship between SES and alcohol use, which is an important area to explore in ongoing enquiries.

Additional demographic differences for those who reported heavy episodic drinking are also worth considering in regard to the care of older people whose living situations are most likely to change as they age. Generally there was no difference between the two age groups, excepting those earning between $35,000 and $70,000 for whom the younger cohort was more likely to drink hazardedly (50% compared to 44% for those 65–70) and binge (23% compared to 16% for the older cohort). The reverse situation existed among those retiring or retired and experiencing economic hardship with higher rates of hazardous drinking compared to those nearing retirement. Binge drinking showed a similar relationship to income with the younger cohort in economic hardship more likely to binge drink than the older cohort. Additionally, the reduction in income and economic living standards with retirement may mask differences between the two age groups in the current analysis, instead framing difference in drinking behaviour as one of economics and not of lifestyle or behavioural change with retirement.

Although the standard measures used (AUDIT C) are useful in screening for hazardous drinking (Berks & McCormick, 2008) they do not include details such as when and where alcohol is consumed, or the meaning of ‘a drink’ for different groups. They also do not tell us what understandings older adults have about ‘moderate drinking’ or about the health effects of alcohol consumption in older age. Also importantly for health promotion, they do not help us understand the role and social meanings of alcohol consumption for this cohort. New Zealanders apparently drink at higher levels of consumption than some other populations but the ways in which people include alcohol in their lives as they age is unclear. For example, it may be that high levels of lifetime drinking are carried into older age, or that older people begin consuming at higher levels in response to lifestyle (such as loss of dependents and higher income) or environmental (such as availability of particular drinks) changes. Both longitudinal and ethnographic enquiries are needed to enquire into these aspects of alcohol use.

The present findings represent a snapshot of the levels of alcohol use by 55–70-year-old people in Aotearoa/New Zealand and they must be interpreted with caution for several reasons. First, the threshold scores used in this study may not be appropriate for this population. Researchers in the USA (Dawson et al., 2005) and Finland (Aalto et al., 2011) suggest that a threshold of ≥4 as used in the present study is more appropriate to identify older people whose drinking could be classified as ‘hazardous’. Reinert and Allen’s review (2007) of research findings of the AUDIT recommends a cut-off of 4 for men and 3 for women to detect hazardous drinking. Comparisons of different threshold scores for the AUDIT-C in this sample showed that the standard threshold of ≥3 may classify up to a third (33%) more older adults as hazardous drinkers, although even the most conservatively assessed rates remain high. Results for different threshold scores in this sample are provided elsewhere (Towers et al., 2011). Despite these issues about defining ‘hazardous’ levels, the pattern of results are in accord with other findings.
A second limitation is that the alcohol use behaviours were obtained from self-reports, which were subject to a variety of memory and reporting errors, although these are usually found to include underreporting (Blazer & Wu, 2009). Third, the HWR sample was based on a 53% response rate. In particular, the sample had a greater average income than the age-matched general population (Dulin, Stephens, Alpass, Hill, & Stevenson, 2011), and given the strong link between income and hazardous drinking, the overall prevalence rates reported may be inflated. Despite these limitations, the HWR provides a nationally representative sample, and, although there are issues about defining ‘hazardous’ levels, the pattern of results are in accord with other findings.

In general, these findings warrant some concern about the health effects of alcohol consumption among present ageing cohorts, particularly the ‘baby boomer’ cohort whose members may be accustomed to drinking at higher levels; specifically, a need to improve public awareness of the increased hazards of moderate drinking levels in older age, and inform public health and primary health care practitioners on the patterns and prevalence of drinking in the present ageing cohort. Additionally, further research to examine the culture of alcohol use, changes in use across time, and health outcomes is required as these groups move into old age.

Disclosure statement
No potential conflict of interest was reported by the authors.

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