

Styles of analysis of GENACIS data: the relation between alcohol consumption and alcohol problems

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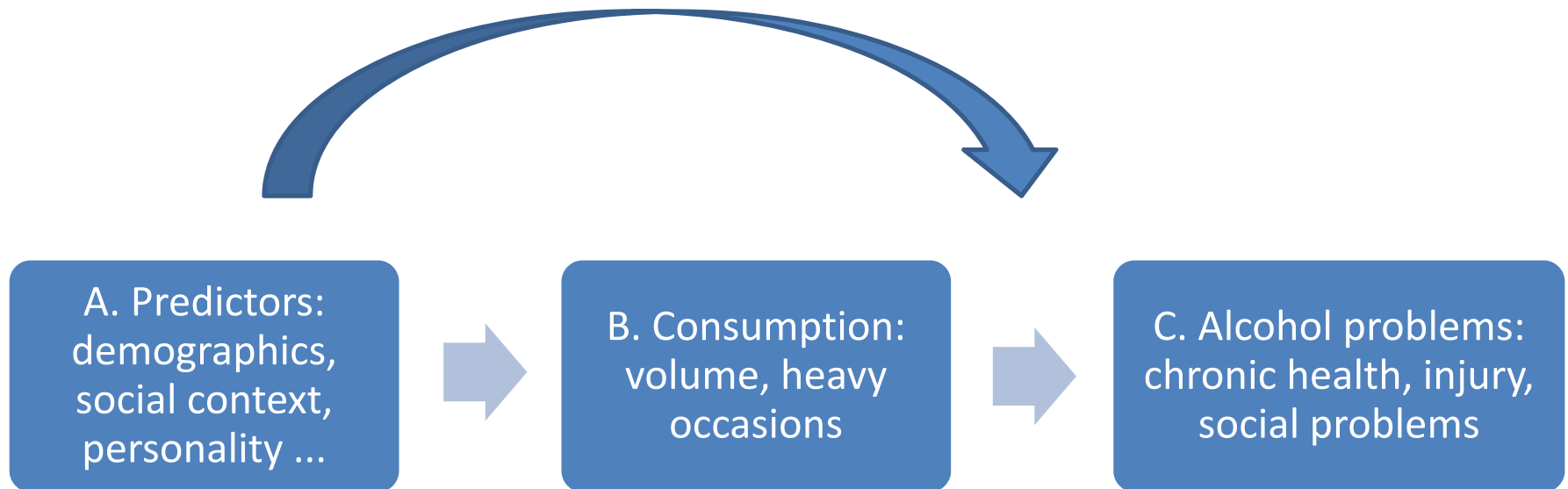
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Relationships:

predictors → consumption → problems



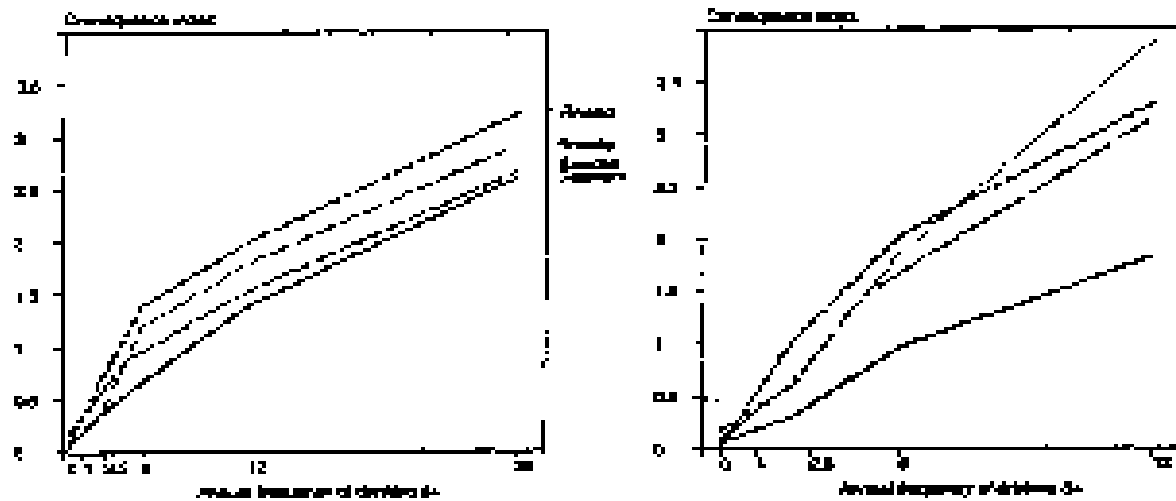
1. B→C: Relation of amount & patterns of consumption to alcohol problems
2. A→C: relation of predictors to alcohol problems
3. A→C controlling for B: relation of predictors to the risk of problems for a given consumption
4. B→C controlling for A: context etc. intermediating relation of consumption & problems

B→C

**Relation of amount & patterns of consumption
→ alcohol problems**

1.a. Relation of amount and pattern of consumption to problems: problem score

Figure 8. Average consequence index as a function of annual frequency of drinking 6+ drinks, by country. Men on the left and women on the right



Pia Mäkelä et al., *Drinking habits in the Nordic Countries*.
Oslo: SIFA Report No. 2/99, 1999.

1.b. Relation of amount and pattern of consumption to problems: number of harms from drinking

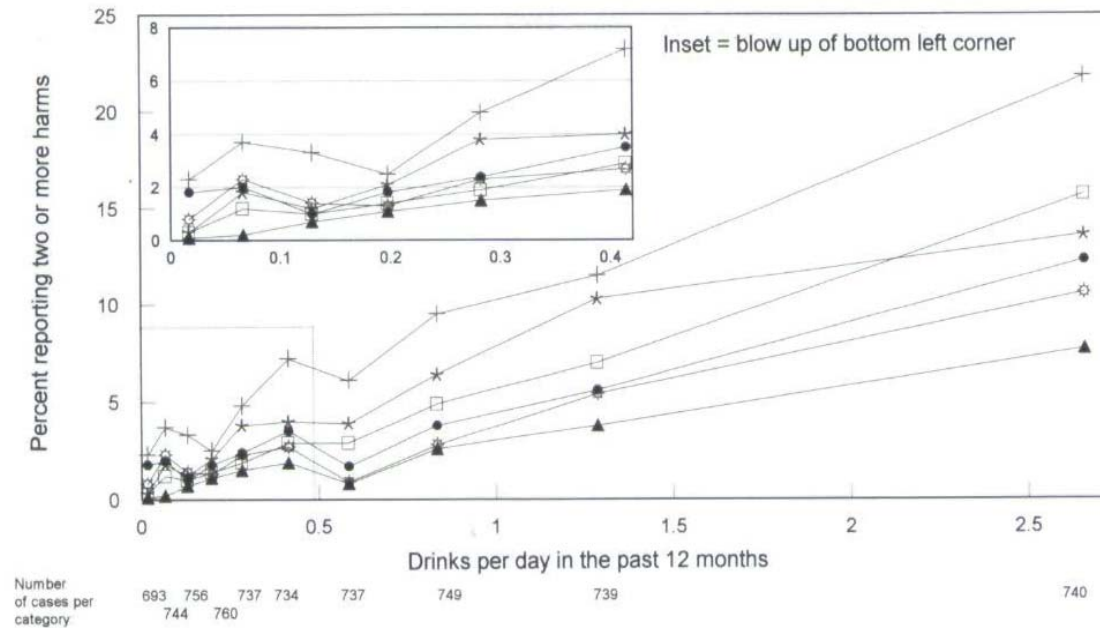


Figure 1. Harm to life-areas from drinking by volume of drinking: two or more harms reported in the last 12 months (* friendships; + health; ● happiness; ⊕ homelife; ▲ work, study, employment; □ finances).

Room, R., Bondy, S.J. & Ferris, J. The risk of harm to oneself from drinking, Canada, 1989. *Addiction* 90:499-513, 1995. (mislabelled: should be “Percent reporting each harm”)

1.c. Relation of amount and pattern of consumption to problems:

different aspects of drinking →
specific types of problem consequences

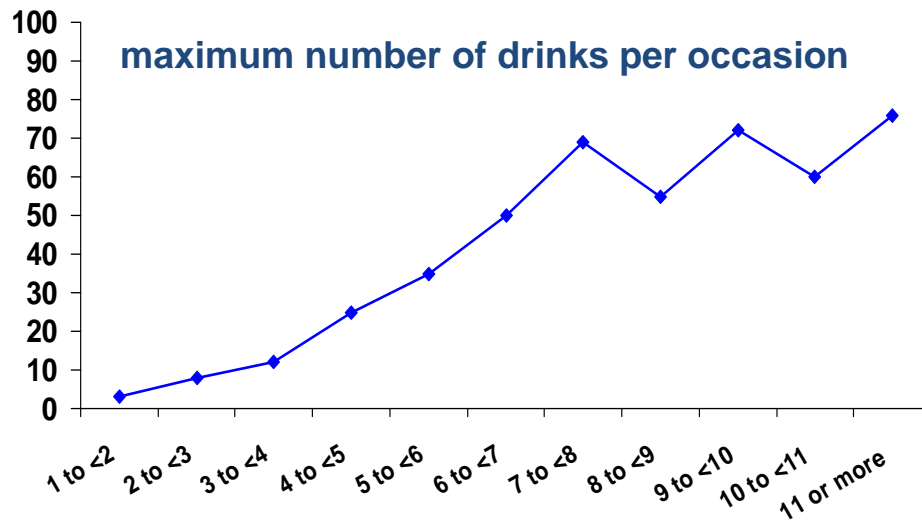
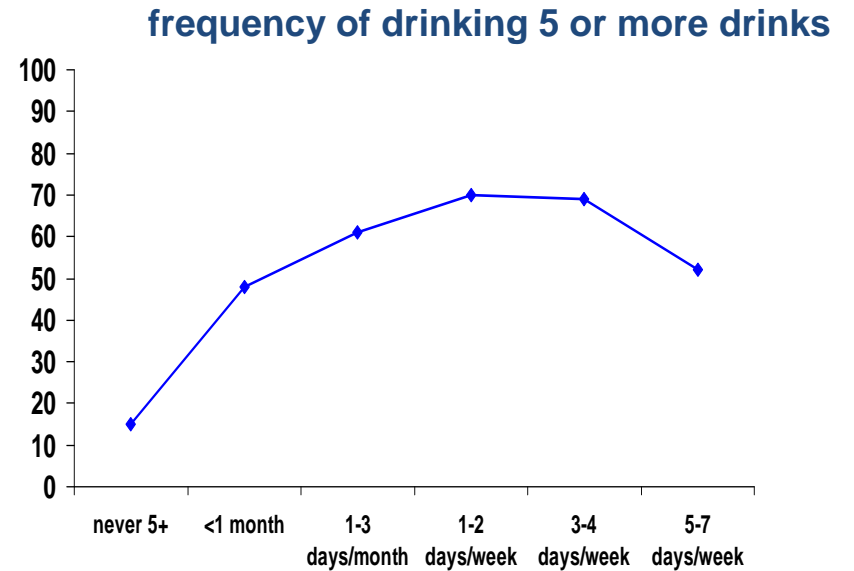
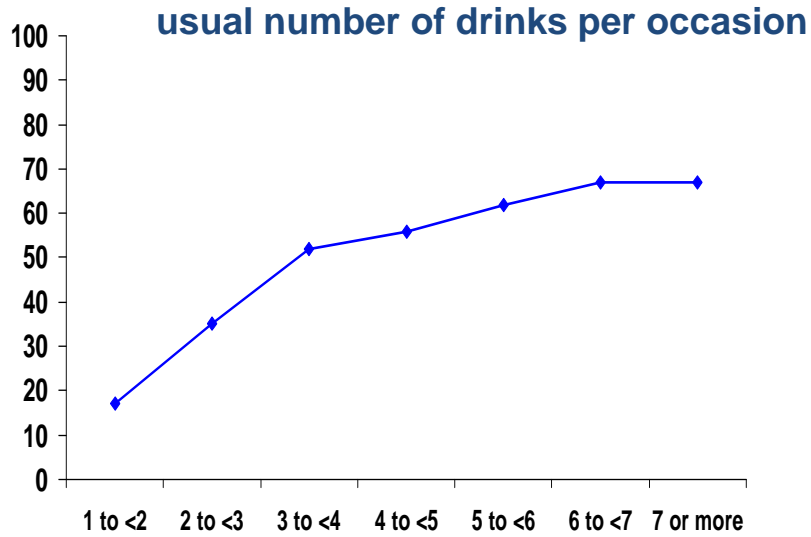
How much drinking is too much?

It depends on the problem

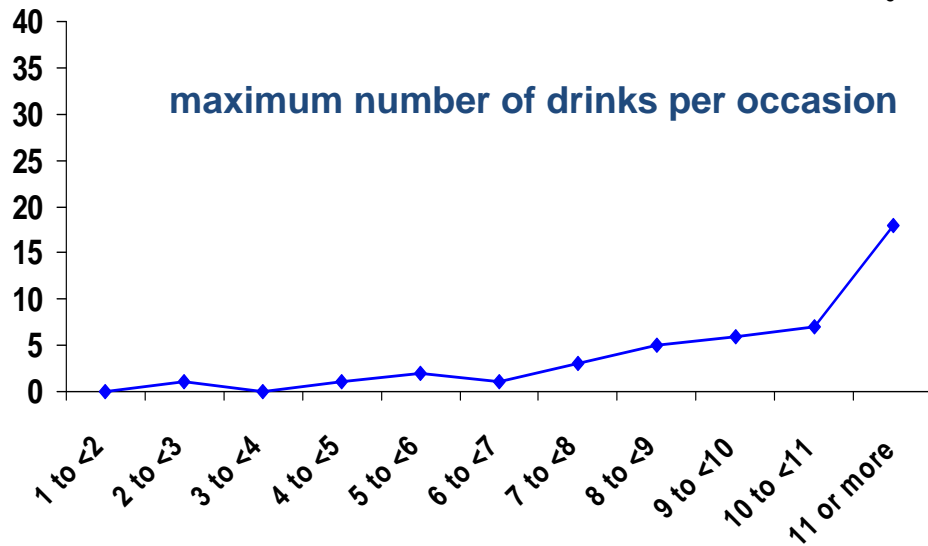
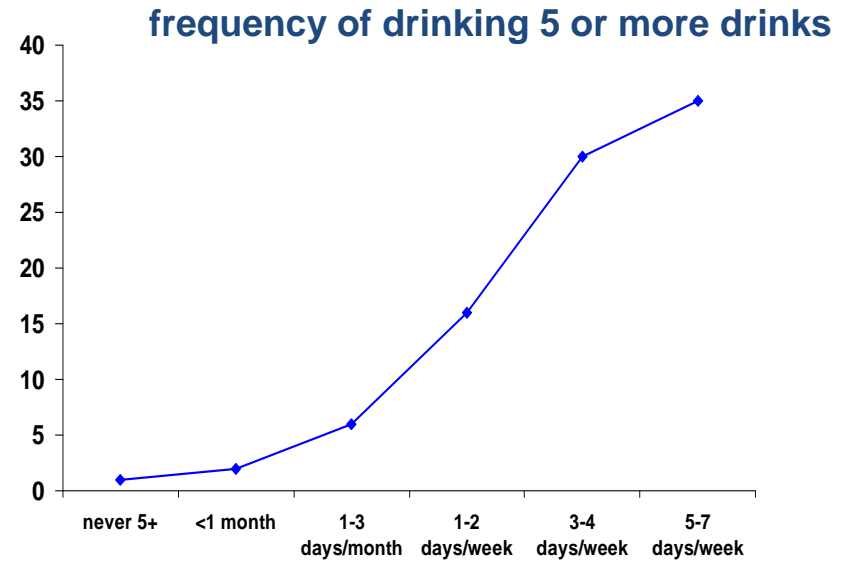
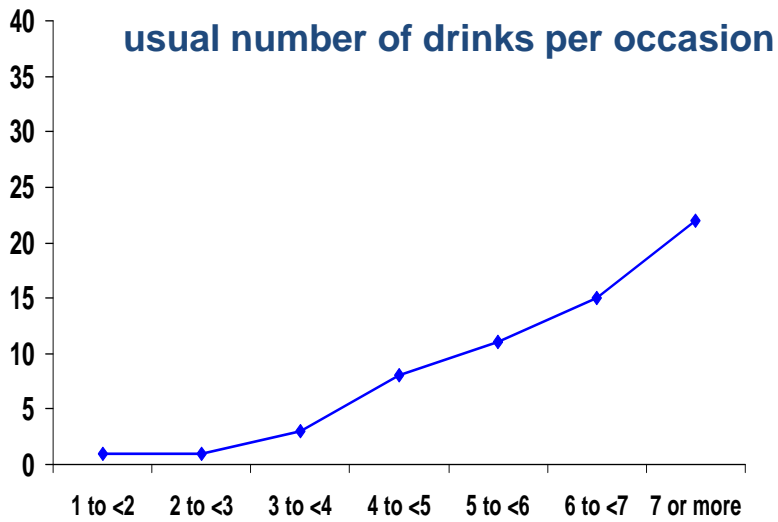
(examples of different patterns of relationship for
headache/nausea, finances and fighting)

From Graham, K. (March, 2007). *Drinking and drinking problems among Canadian men*. The Canadian Conference on Men's Health: Raising the Standard, Victoria, BC.

Percent of men who had a headache or nausea after drinking

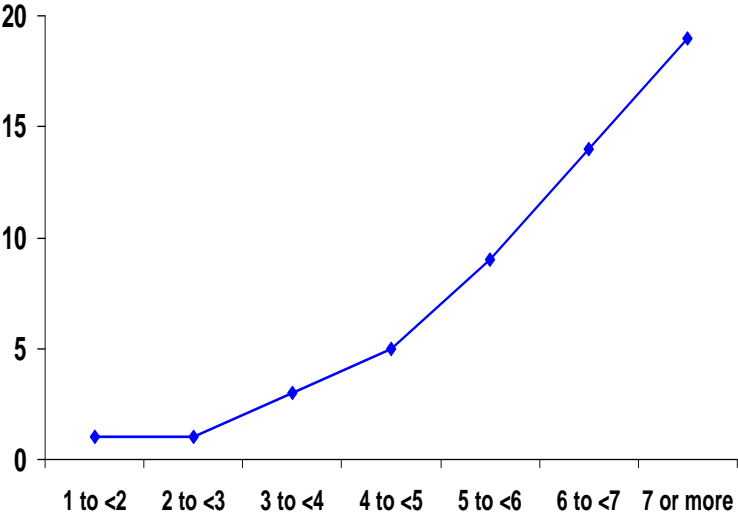


Percent of men reporting harmful effects on finances from drinking

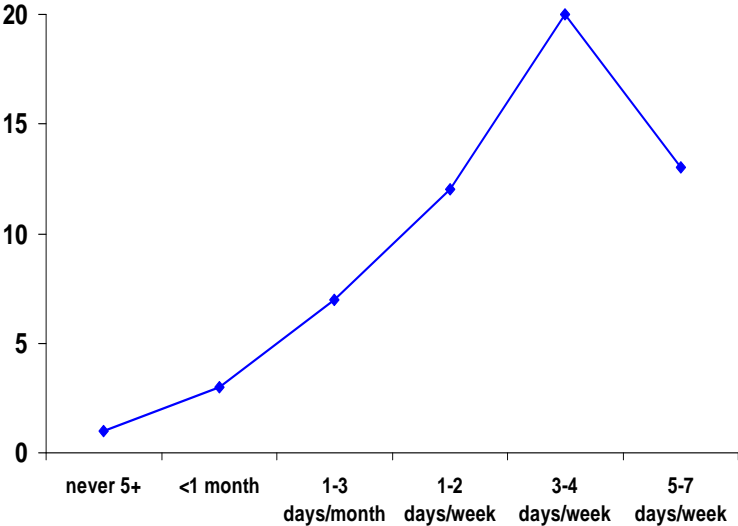


Percent of men who had gotten into a physical fight when drinking

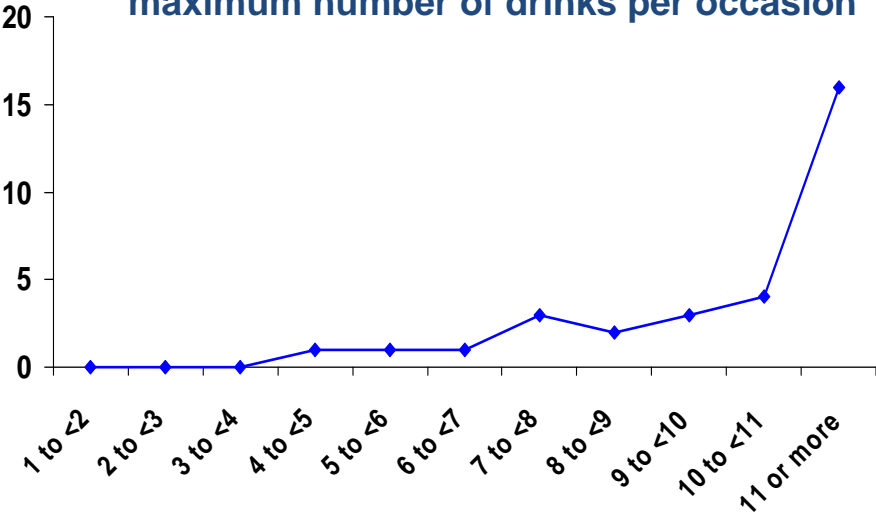
usual number of drinks per occasion



frequency of drinking 5 or more drinks



maximum number of drinks per occasion



1.d. Relation of amount and pattern of consumption to problems: amount crossed with pattern

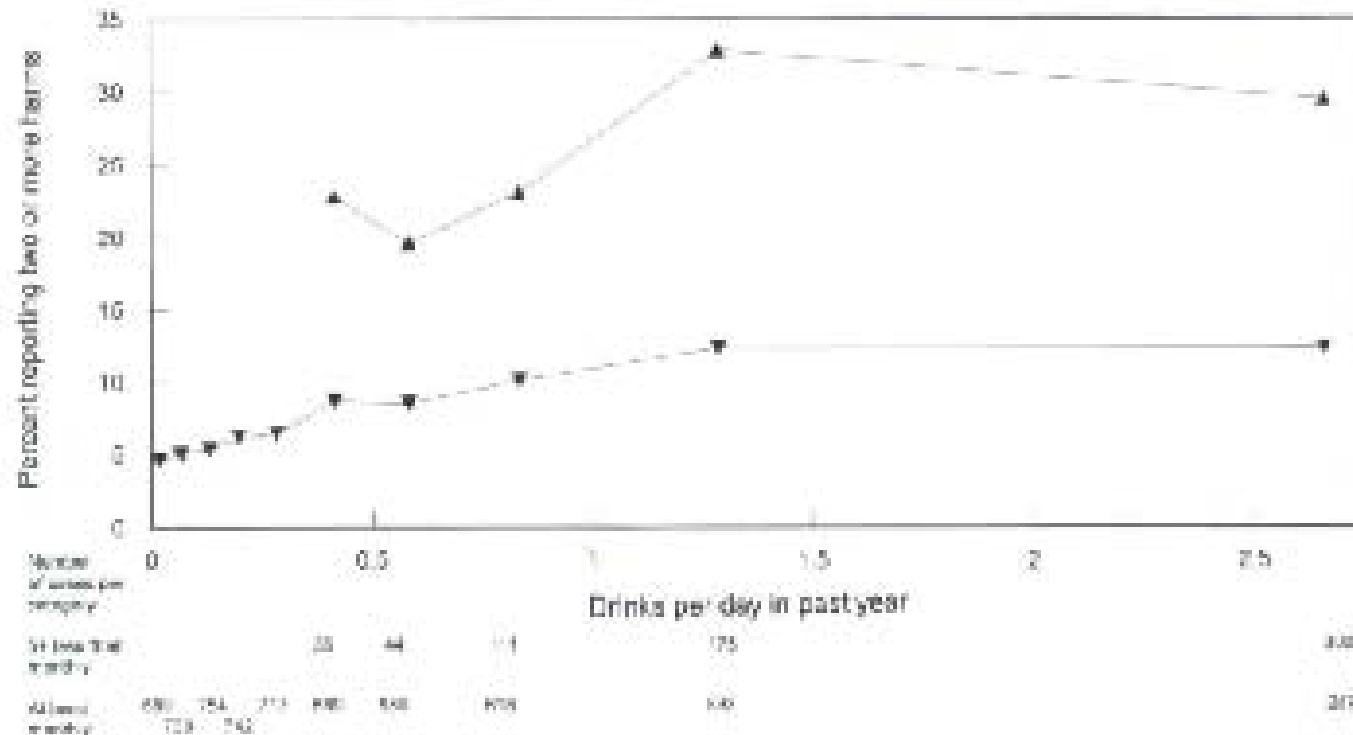


Figure 3. Harms to life-area from drinking by volume of drinking and drinking 5+ per occasion; two or more harms reported in the last 12 months (▼ 5+ less than monthly or not at all; ▲ 5+ at least monthly).

Room, R., Bondy, S.J. & Ferris, J. The risk of harm to oneself from drinking, Canada, 1989. *Addiction* 90:499-513, 1995.

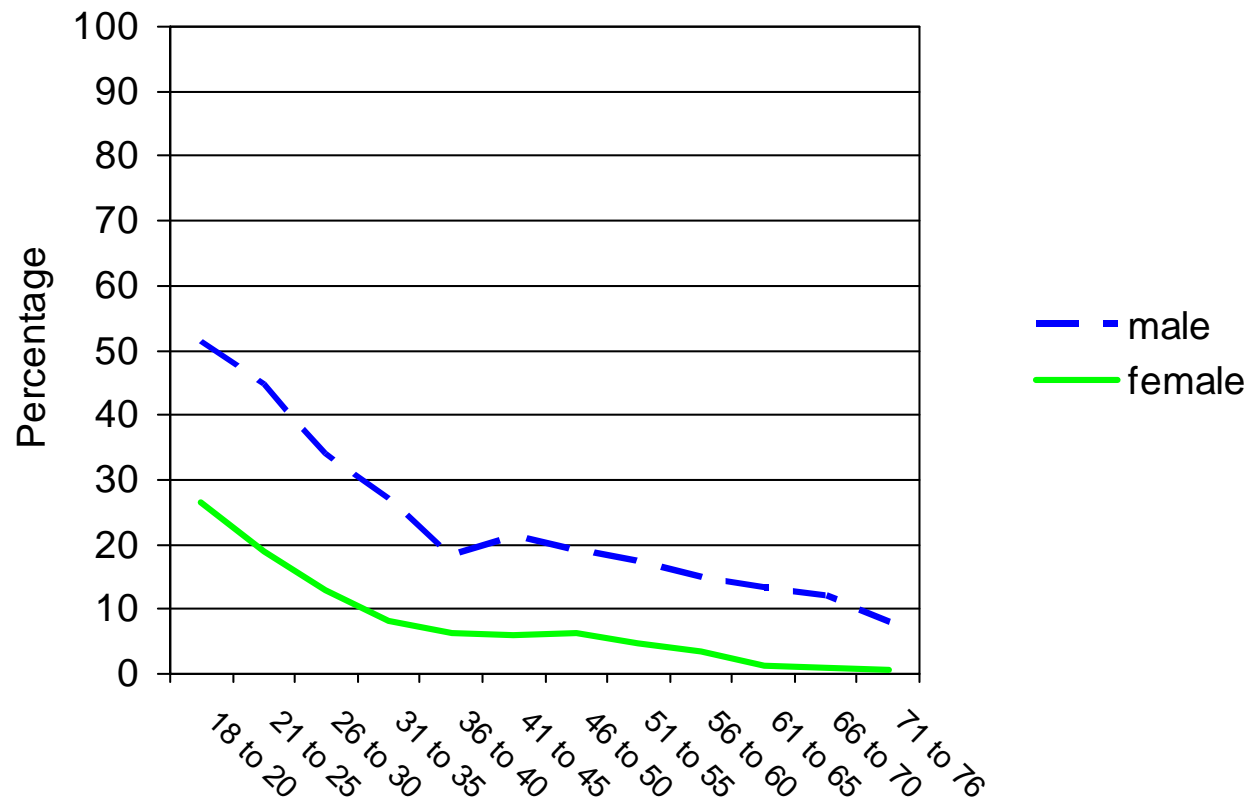
$A \rightarrow C$

Relation of nondrinking predictors
 \rightarrow alcohol problems

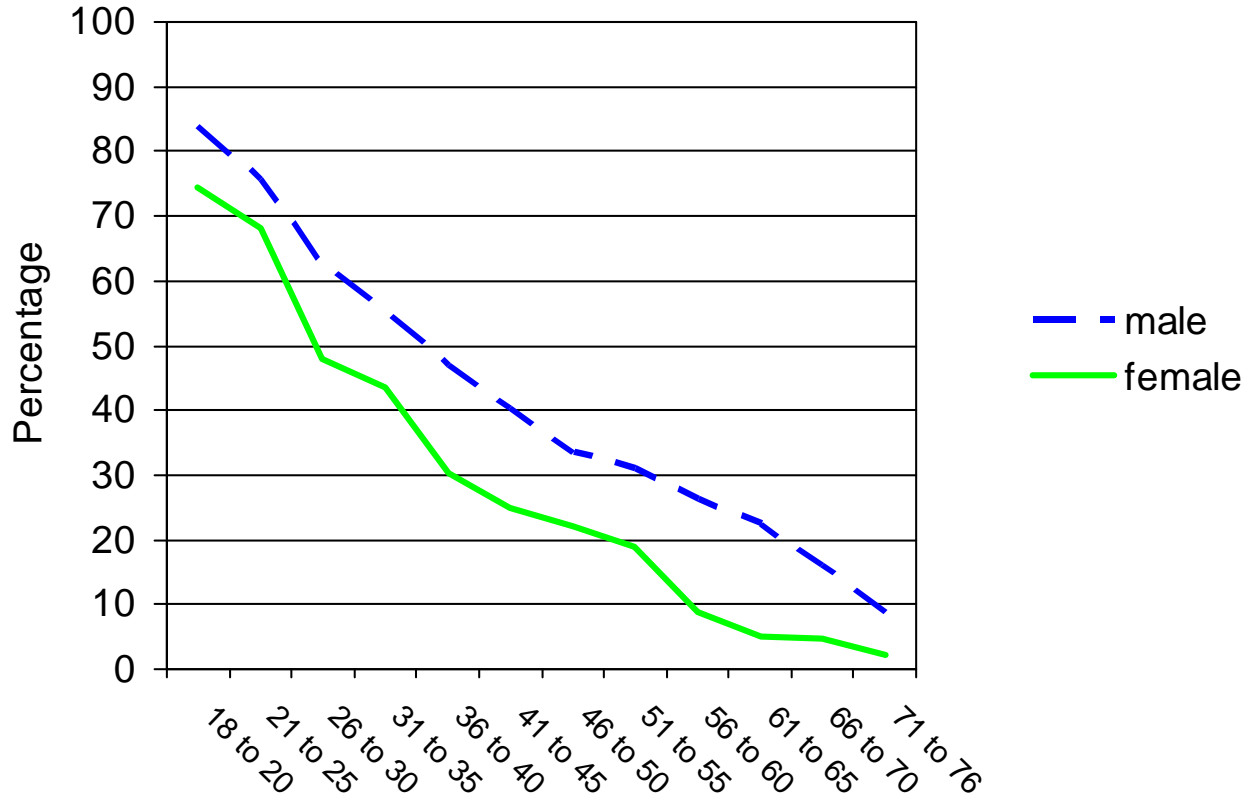
2.a. Relation of predictors to alcohol problems -- gender and age

Graham, K., Demers, A., Bernards, S. with Dell, C., George, A., Kairouz, S., Nadeau, L., Poulin, C., Rehm, J., Wells, S. (November, 2005). *Regional, gender and demographic variations in alcohol problems in Canada: Results from the GENACIS Canada Survey*. Paper presented at "Issues of Substance" Canadian Centre on Substance Abuse National Conference, Markham, Ontario.

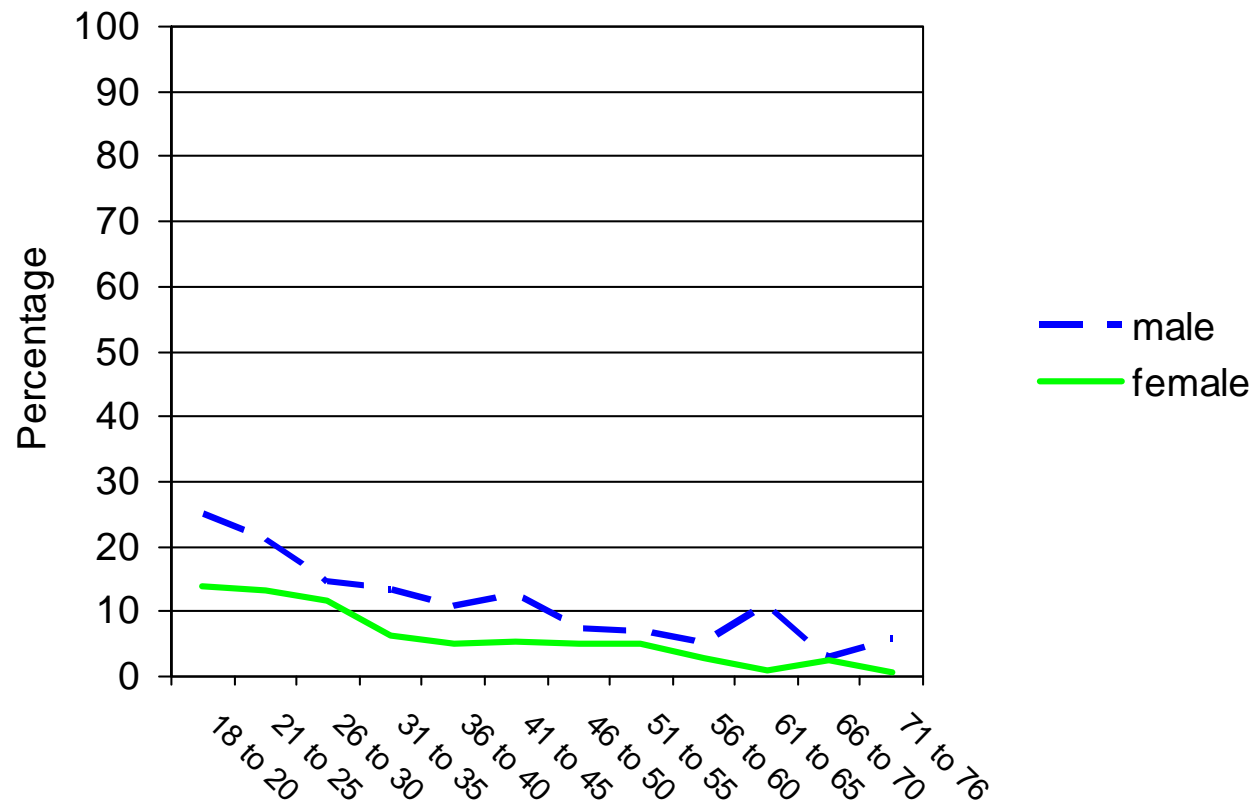
Percent of all respondents scoring 8 or more on the AUDIT by gender and age group (abstainers and light infrequent=0)



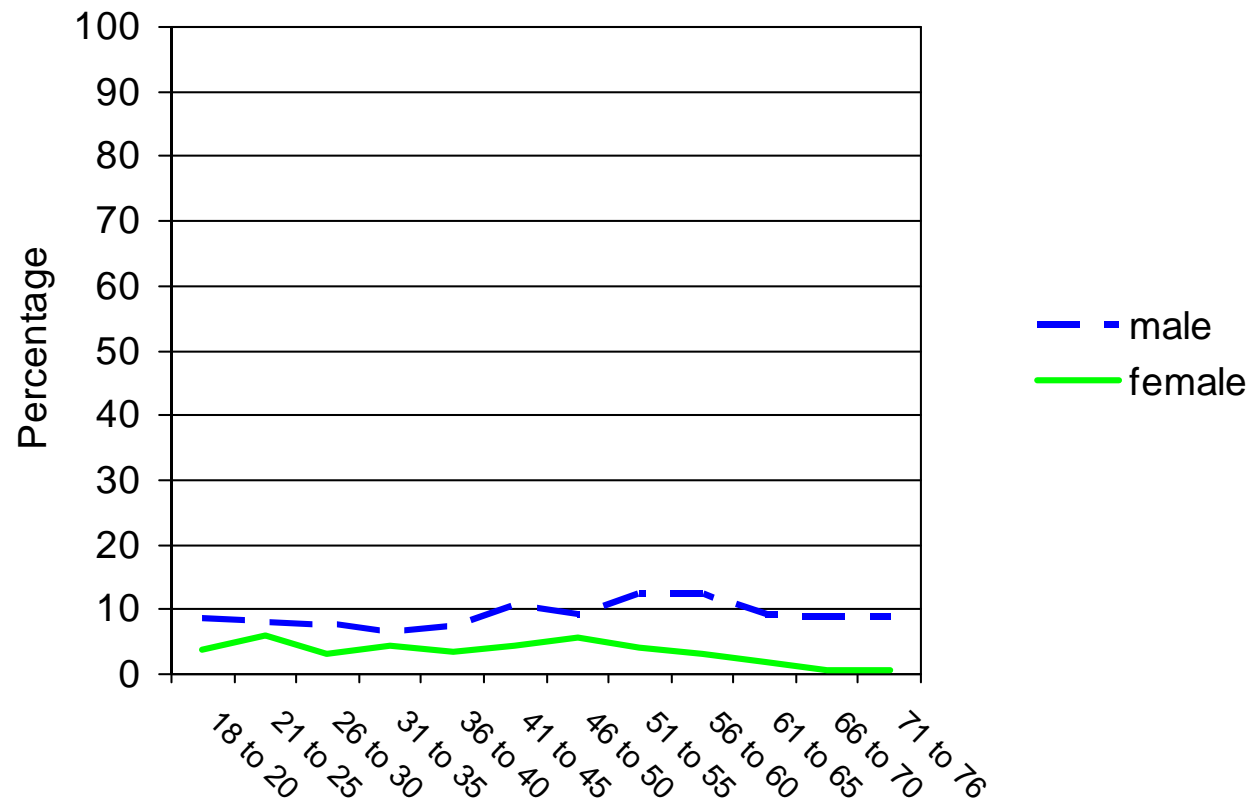
Had enough to drink so that you felt the effects of the alcohol for example, your speech was slurred or you had trouble walking steadily (by gender and age group)



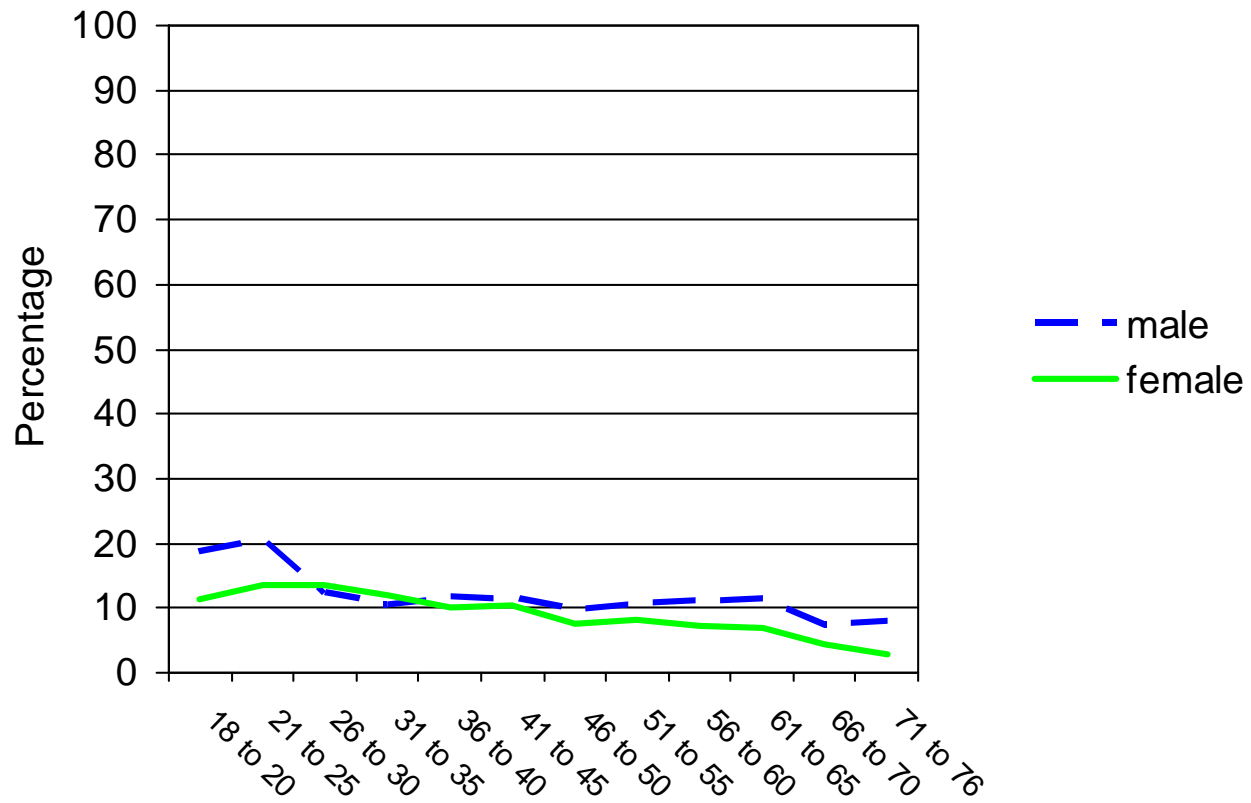
Found that you were not able to stop drinking once you had started (by gender and age group)



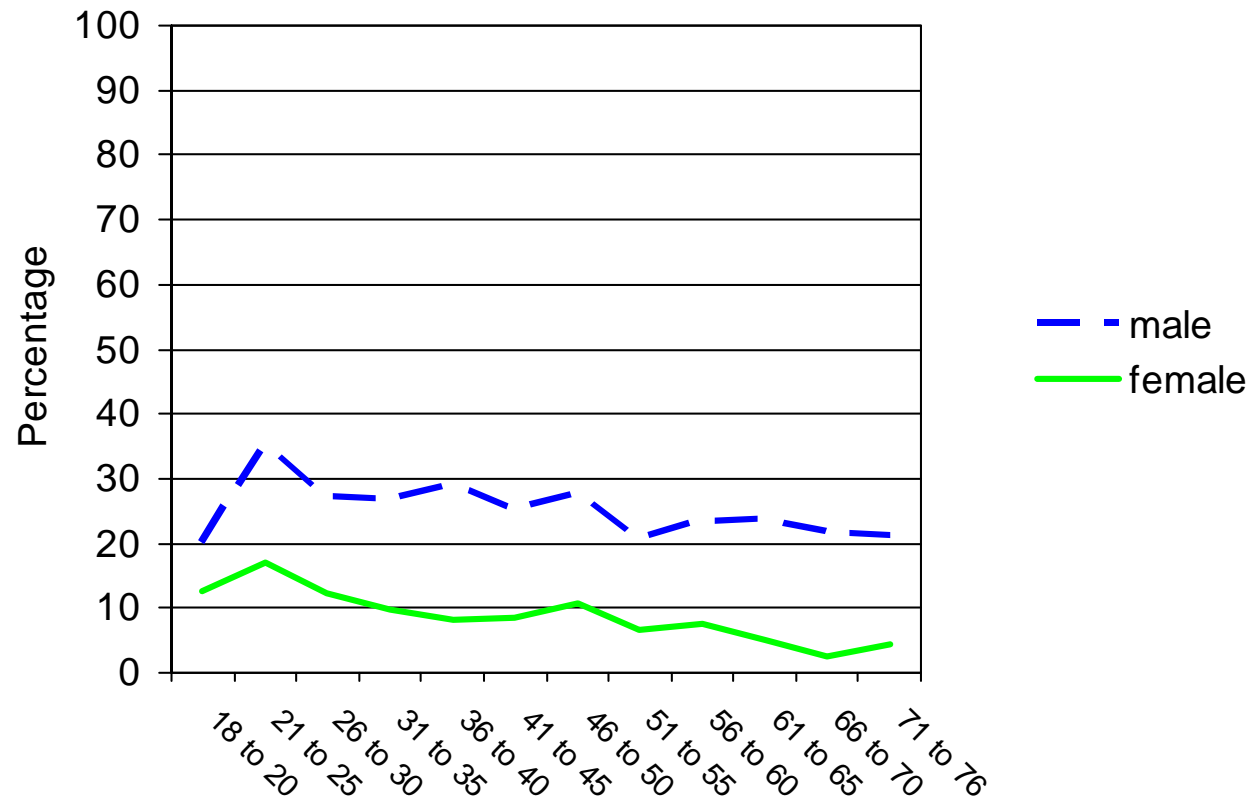
The following persons tried to get you to cut down on your drinking –partner, child or health worker/doctor
(by gender and age group)



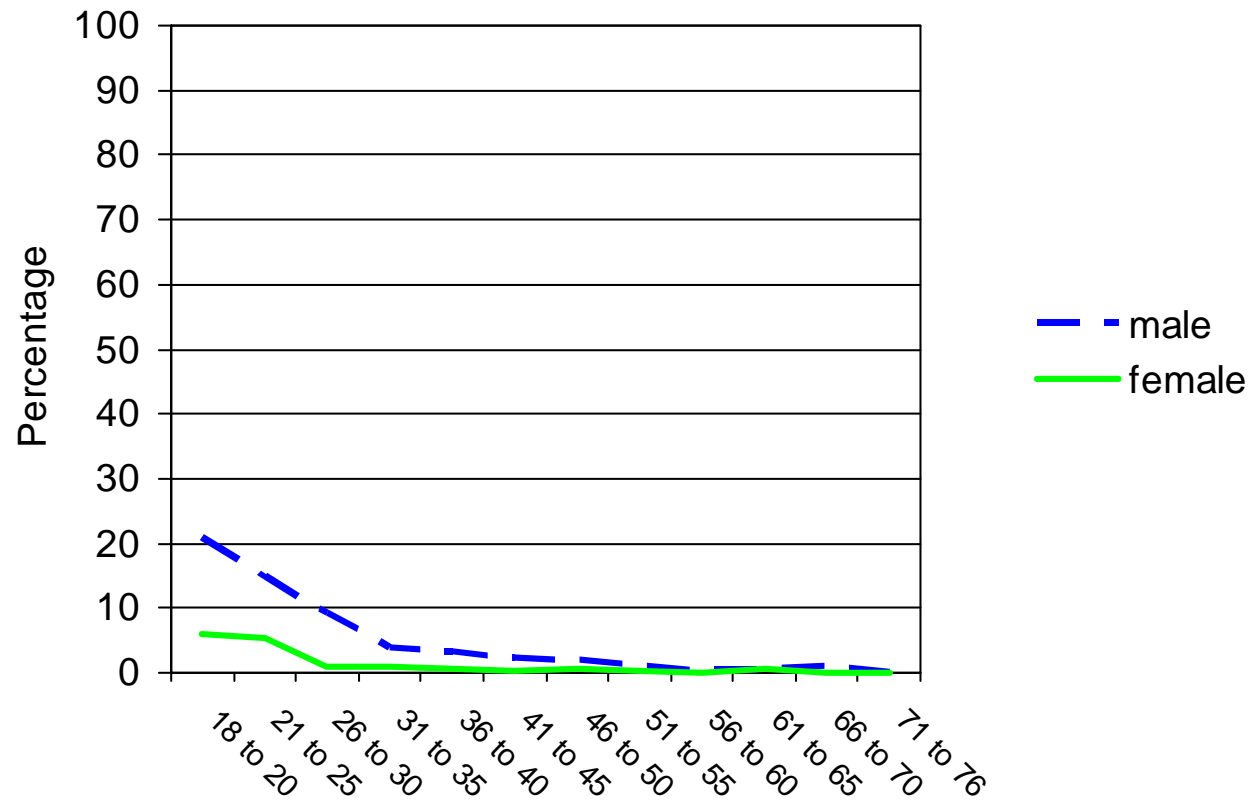
Tried to cut down or quit drinking (by gender and age group)



Driven after having 2 or more drinks in the previous hour (by gender and age group)



Gotten into a physical fight while drinking (by gender and age group)



$$A \mid B \rightarrow C$$

Relation of different measures of consumption

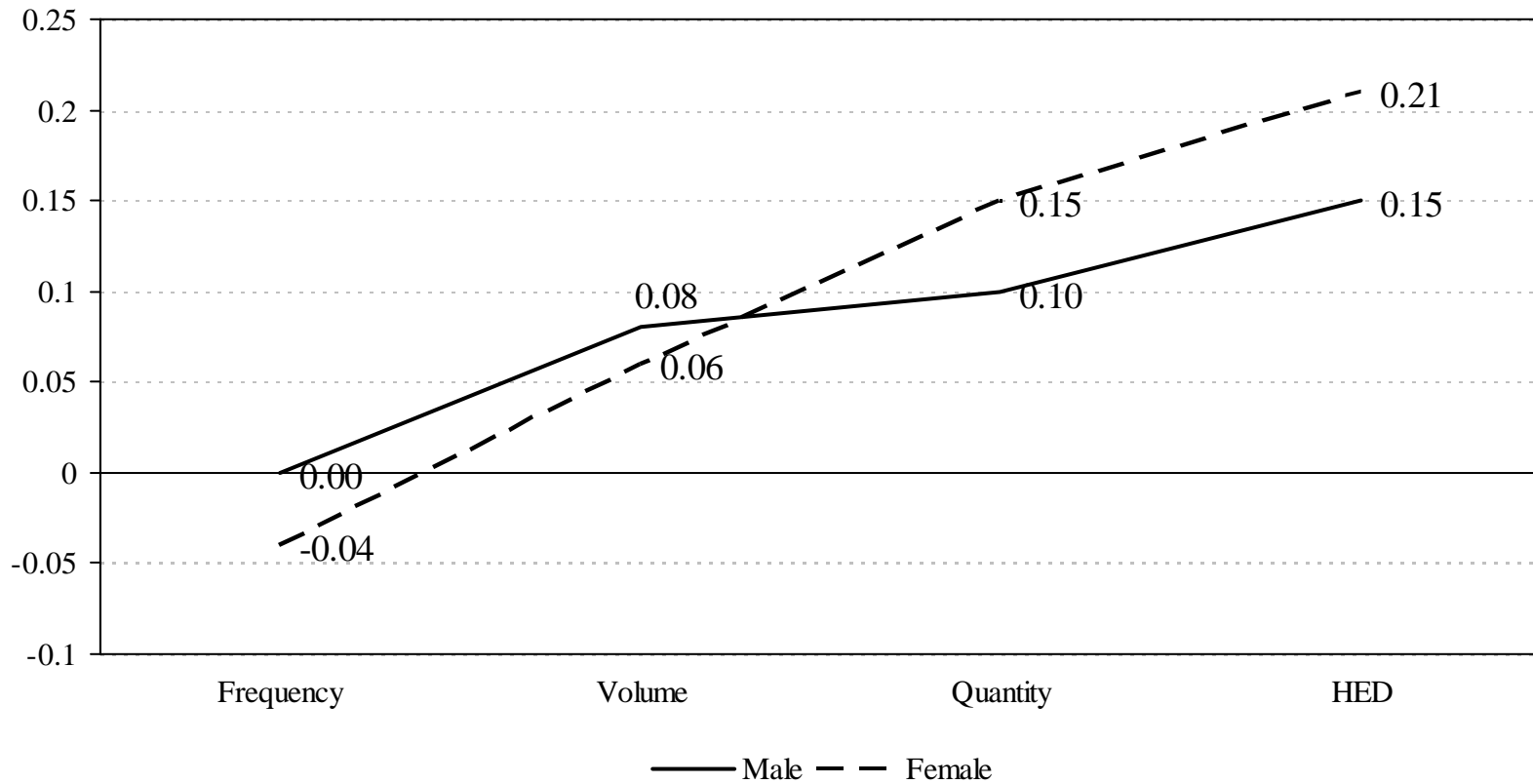
→ problems in predictor categories

2b. Relation of different measures of consumption to problems in predictor categories – example of correlations between different measures of drinking and depression for males compared to females

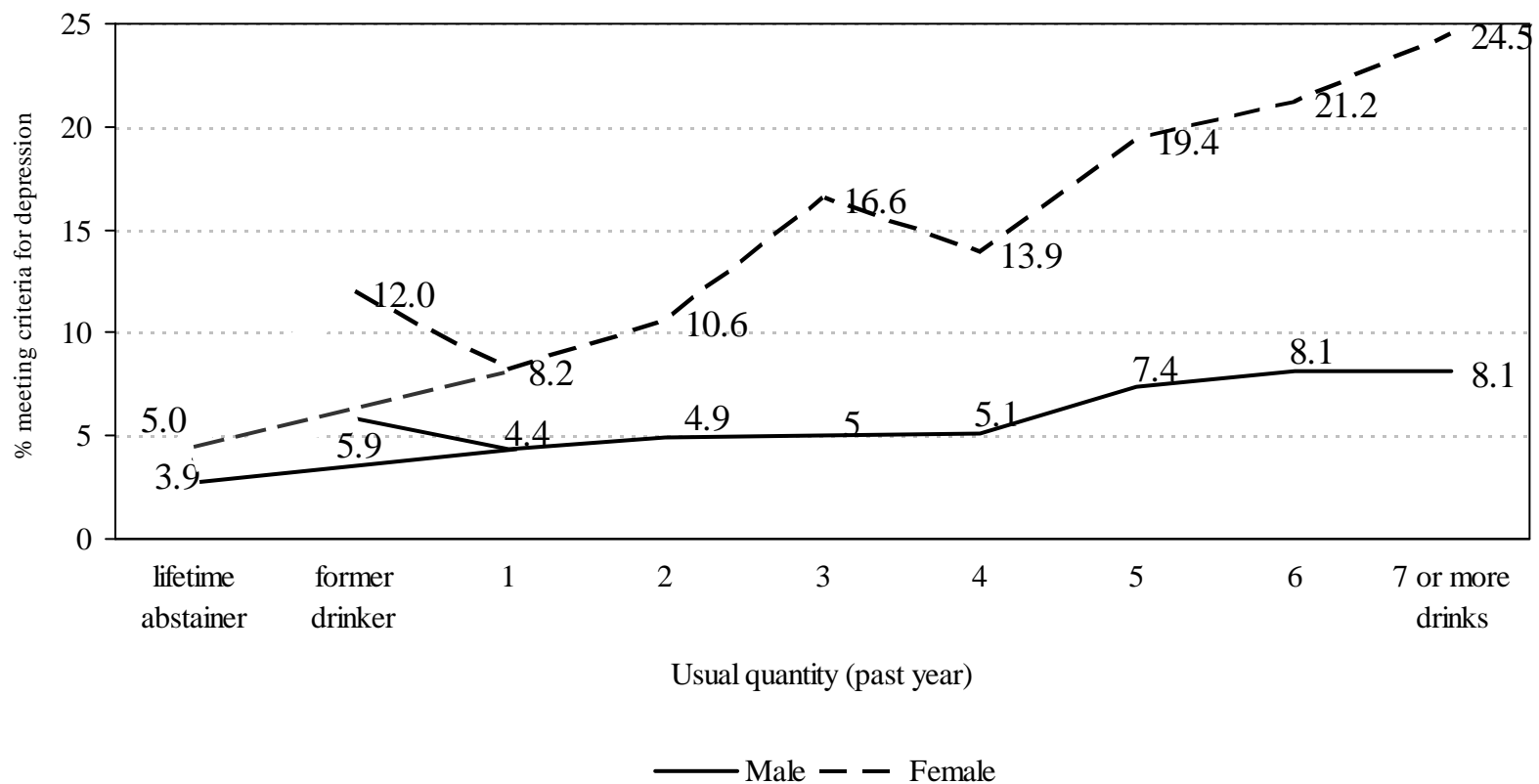
Graham, K., Massak, A., Demers, A, & Rehm, J. (2007) Does the association between alcohol consumption and depression depend on how they are measured? *Alcoholism: Clinical and Experimental Research* 31:78-88.

Depression and drinking:

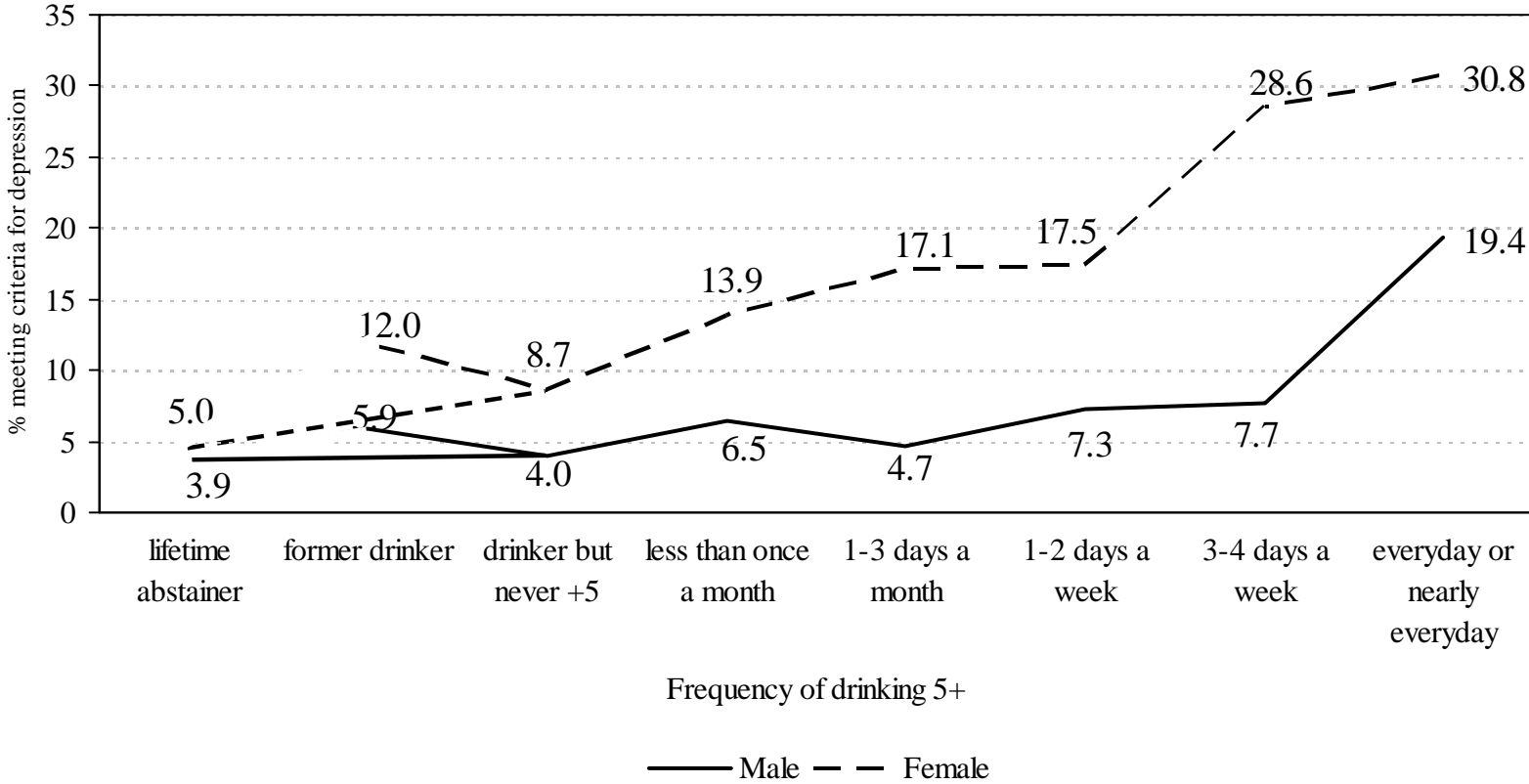
1. Average correlation between depression and four types of alcohol measures (frequency, volume, usual and maximum quantity and heavy episodic drinking) for males and females



Percent of males and females who met the criteria for a diagnosis of major depression based on the CIDI by usual quantity per drinking day for past 12 months



Percent of males and females who met the criteria for a diagnosis of major depression based on the CIDI by frequency of drinking 5 or more drinks per occasion in the past year

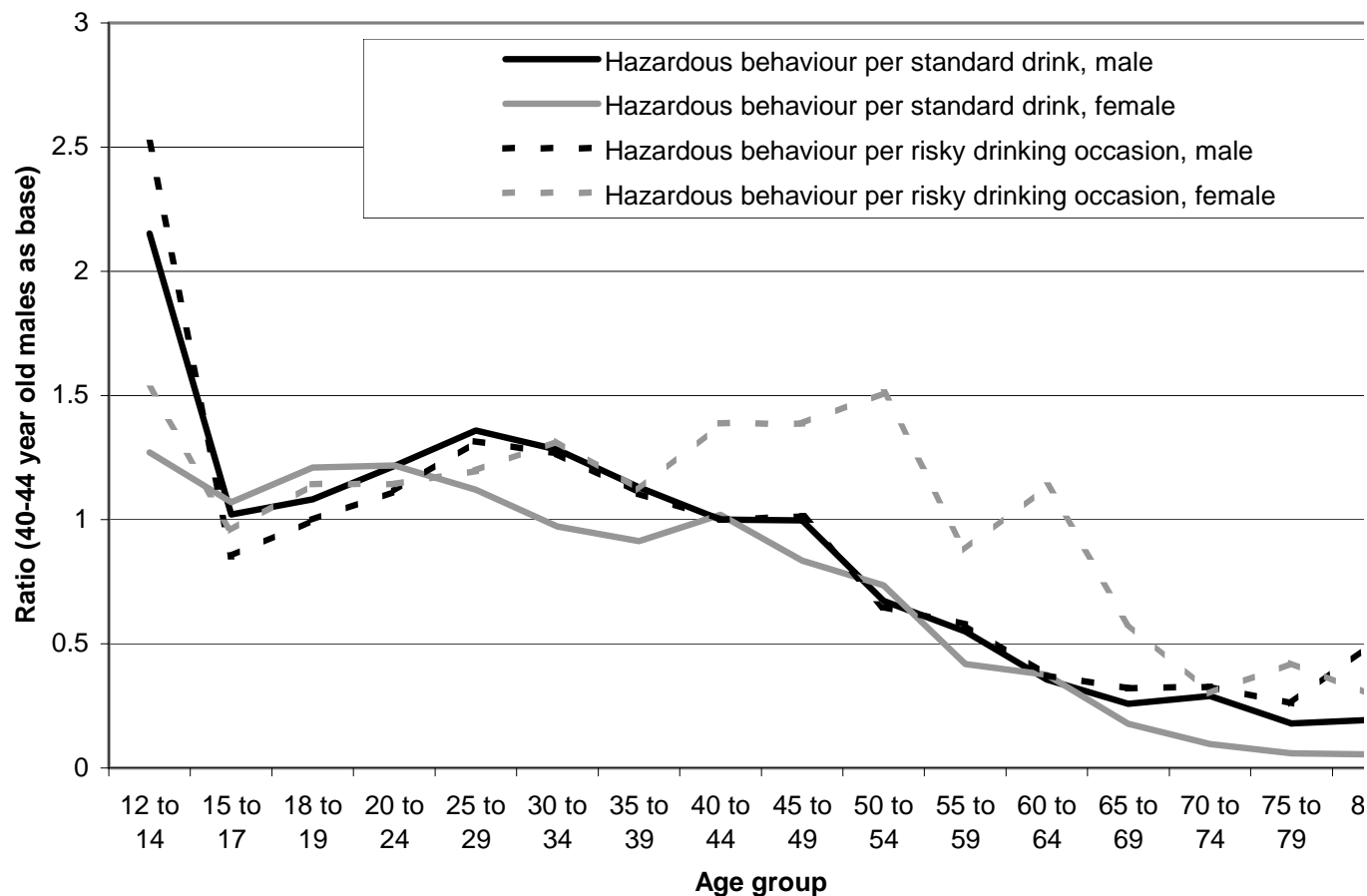


$A \rightarrow C$ controlling for B

Relation of predictors to the risk of problems at a given
consumption

3.a. Relation of predictors to the risk of problems for a given consumption: ratio of harm per litre/per binge

Hazardous behaviour score per drinking volume and occasions drinking five or more drinks, by age and sex (ratio with males aged 40 to 44 as baseline), National Drug Strategy Household Survey, 2004 (Livingston & Room, working paper, 2008)



3.b. $A \rightarrow C$ controlling for B:

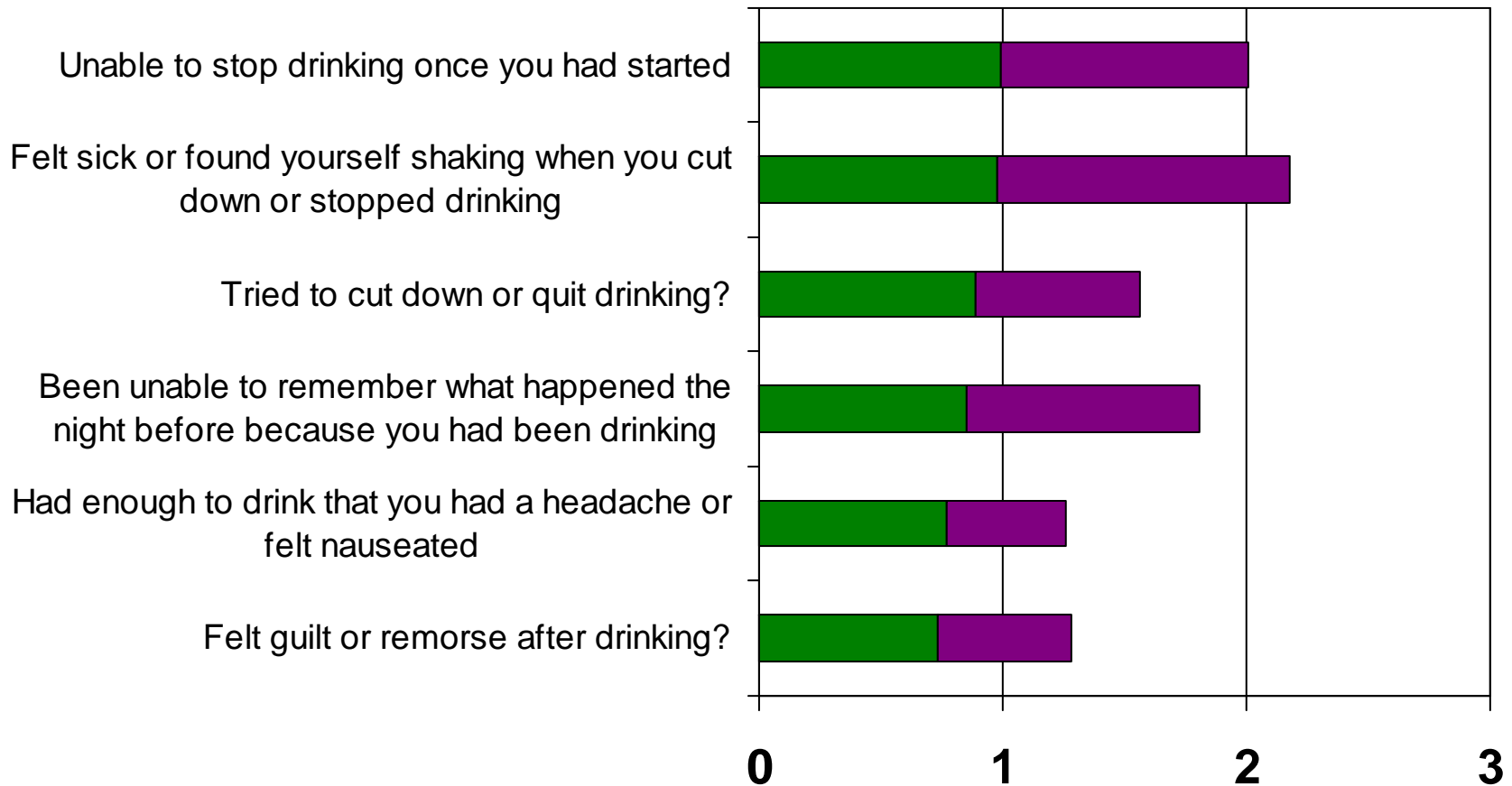
does the relation between a predictor and rate of problems disappear when consumption is controlled?

Gender differences in problem rates
controlling for alcohol consumption

- Gender difference disappears for some problems but not others

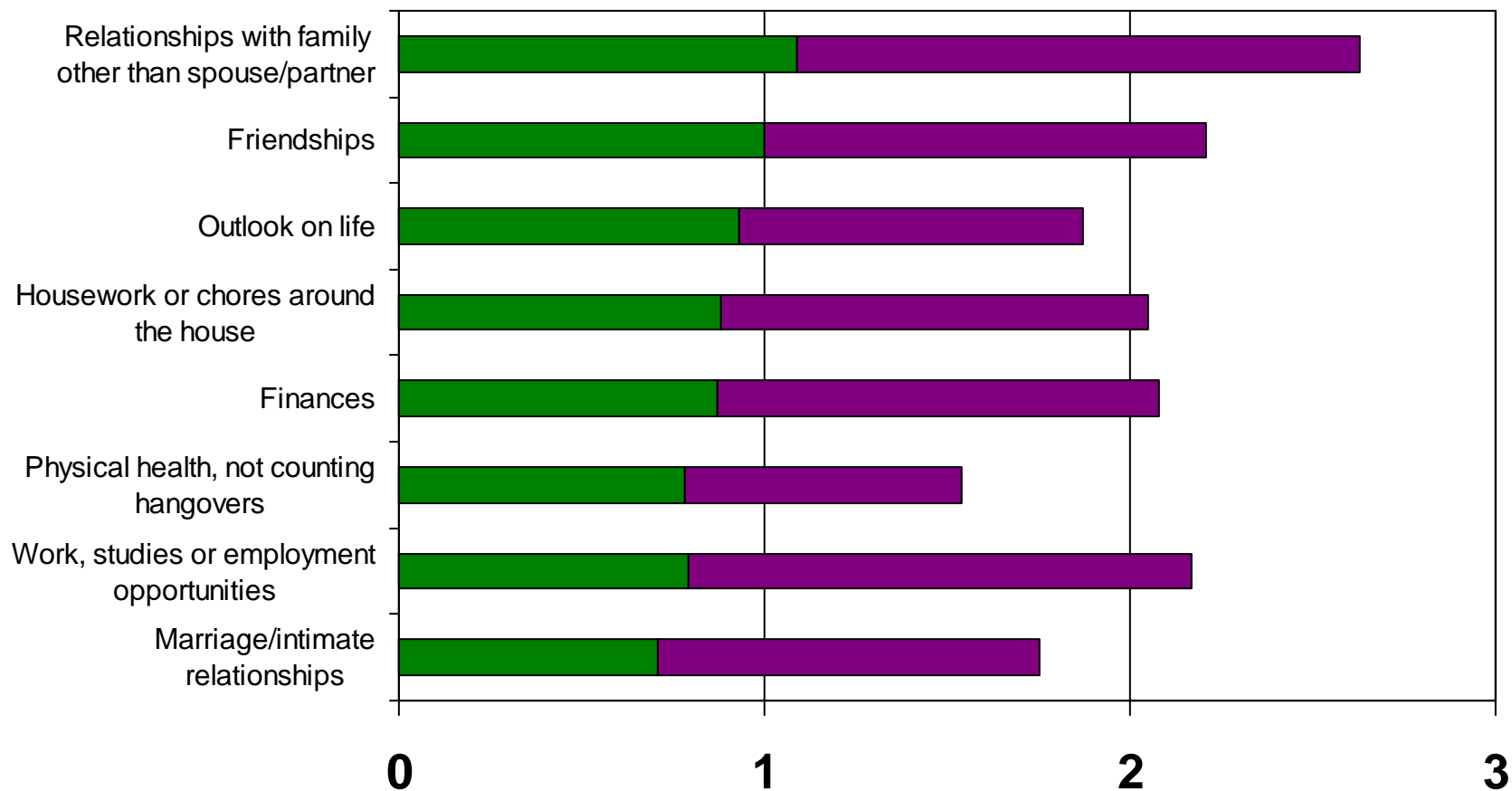
Graham, K. (March, 2007). *Drinking and drinking problems among Canadian men*. The Canadian Conference on Men's Health: Raising the Standard, Victoria, BC.

Odds of experiencing problem consequences from drinking for men compared to women



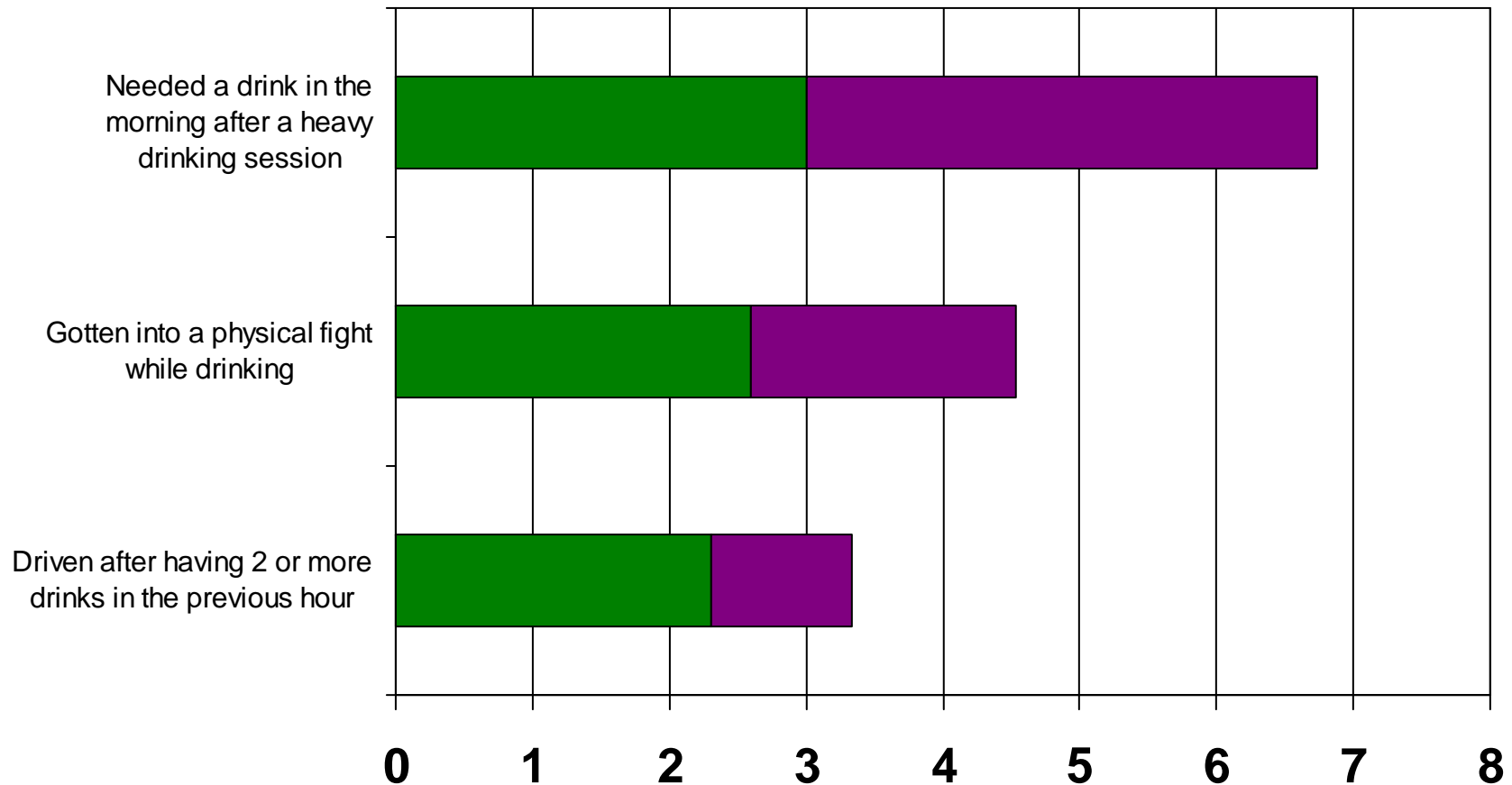
The extended bar shows the raw odds; the dark green bar shows the odds ratio controlling for drinking pattern and context

Odds of reporting perceived harmful effect of drinking for men compared to women



The extended bar shows the raw odds; the dark green bar shows the odds ratio controlling for drinking pattern and context

Odds ratios for consequences that were more likely to be reported by men than by women controlling for level of alcohol consumption



The extended bar shows the raw odds; the dark green bar shows the odds ratio controlling for drinking pattern and context

$B \rightarrow C$ controlling for A

Relationship between consumption and problems controlling for predictors such as demographics and context

4.a. B→C controlling for A: Relationship between consumption and specific types of problems (drinking to intoxication, guilt or remorse, driving after drinking and trying to cut down or quit)

- controlling for (a) drinking context and (b) respondent characteristics

Graham, K., Demers, A., Bernards, S. with Dell, C., George, A., Kairouz, S., Nadeau, L., Poulin, C., Rehm, J., Wells, S. (November, 2005). *Regional, gender and demographic variations in alcohol problems in Canada: Results from the GENACIS Canada Survey*. Paper presented at “Issues of Substance” Canadian Centre on Substance Abuse National Conference, Markham, Ontario.

**Drinking pattern, drinking context and respondent characteristics
predicting consequences of drinking to intoxication (odds ratios)**

Alcohol consumption variables

Frequency of drinking (days per year)	1.003***
Usual number of drinks consumed	1.080***
Maximum number of drinks consumed in a day	1.355***

Drinking context variables

Proportion of alcohol consumed that was wine	.959
Proportion of drinking done with meals	.876†
Proportion of drinking done at a bar	1.660***
Proportion of drinking done at a restaurant	1.175†

Respondent characteristics

Male gender (female comparison)	.839**
Age	.956***
Level of education	1.058***
Whether born in Canada (not born in Canada comparison)	1.398***
Population of place of residence of respondent	1.028***

† p<.10, *p<.05, **p<.01, ***p≤.001

Drinking pattern, drinking context and respondent characteristics predicting feelings of guilt or remorse after drinking

Alcohol consumption variables

Frequency of drinking (days per year)	1.003***
Usual number of drinks consumed	1.065***
Maximum number of drinks consumed in a day	1.093***

Drinking context variables

Proportion of alcohol consumed that was wine	.826
Proportion of drinking done with meals	.881
Proportion of drinking done at a bar	1.571***
Proportion of drinking done at a restaurant	.927

Respondent characteristics

Male gender (female comparison)	.702***
Age	.979***
Level of education	1.044***
Whether born in Canada (not born in Canada comparison)	1.272*
Population of place of residence of respondent	1.022†

† p<.10, *p<.05, **p<.01, ***p≤.001

Drinking pattern, drinking context and respondent characteristics predicting driving after drinking

Alcohol consumption variables

Frequency of drinking (days per year)	1.004***
Usual number of drinks consumed	.995
Maximum number of drinks consumed in a day	1.099***

Drinking context variables

Proportion of alcohol consumed that was wine	.765*
Proportion of drinking done with meals	1.022
Proportion of drinking done at a bar	1.676***
Proportion of drinking done at a restaurant	1.456***

Respondent characteristics

Male gender (female comparison)	2.163***
Age	1.003
Level of education	1.019†
Whether born in Canada (not born in Canada comparison)	1.340**
Population of place of residence of respondent	.973**

† p<.10, *p<.05, **p<.01, ***p≤.001

Drinking pattern, drinking context and respondent characteristics predicting trying to cut down or quit drinking

Alcohol consumption variables

Frequency of drinking (days per year)	1.004***
Usual number of drinks consumed	1.061***
Maximum number of drinks consumed in a day	1.045***

Drinking context variables

Proportion of alcohol consumed that was wine	.913
Proportion of drinking done with meals	.811*
Proportion of drinking done at a bar	1.053
Proportion of drinking done at a restaurant	.939

Respondent characteristics

Male gender (female comparison)	.831*
Age	.988***
Level of education	.953***
Whether born in Canada (not born in Canada comparison)	.985
Population of place of residence of respondent	1.008

† p<.10, *p<.05, **p<.01, ***p≤.001

Some conclusions

- Relationship between consumption and problems varies with the measure of consumption (and the measure & type of problem)
 - multicollinearity between consumption measures as an issue
- Predictors of problems may or may not be the same as predictors of consumption
- Controlling consumption may “wipe out” relations between predictors and problems
 - Two step prediction (Lee Robins): demographics predict heavy drinking; personal history/personality predicts who among heavy drinkers get in trouble??
 - Whether you want to control for consumption depends on intended use for data:
 - You would not want to control if the objective is to identify high risk groups
 - You would want to control if the objective is to understand the relationship between demographics etc. and problem consequences from drinking

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Some conclusions continued

- “Trouble per litre” or per heavy occasion as a way of presenting differential risk of harm for different demographics
 - \$ tendencies: gender differences washed out, age differences remain
- or show different regression models side by side, with and without consumption
- \$ Controlling for context, etc. may intermediate relation between consumption and problems
- \$ There are a number of ways of presenting results from analyses across the three domains