



The impact of recession on drinking and smoking behaviours in Canada



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ABSTRACT

Using longitudinal data from the Canadian National Population Health Survey (1994–2009), this study examined the impact of macroeconomic conditions as measured by the provincial unemployment rate on individual alcohol drinking and smoking behaviour. After controlling for unobserved individual specific heterogeneity, the study found that for the overall sample, unemployment rate has a significant positive impact on weekly alcohol consumption as well as on the probability of being a binge drinker. The study further found that unemployment rate has a significant positive impact on the number of cigarettes smoked by the daily smokers. However, unemployment rate has no impact on the probability of being a smoker. The study further examined whether or not there is a gender difference in the impact of unemployment rate on drinking and smoking behaviour. The results suggest that the impact of unemployment rate on drinking and smoking behaviour is more pronounced for males than for females.

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1. Introduction

The World Health Organization's (WHO) study of the burden of disease indicates that tobacco and alcohol rank first and second respectively among the 19 leading risk factors of disease and disability in high income countries including Canada (WHO, 2011). Based on 2002 data, the estimated total economic burden of tobacco in Canada was \$17.7 billion, which included approximately \$4.7 billion in hospital, physician, and drug costs and an additional \$13 billion due to productivity losses from premature death and disability resulting from tobacco related diseases (Rehm et al., 2006). The estimated total direct and indirect cost of alcohol in Canada based on 2002 data was \$14.6 billion (Rehm et al., 2006). Clearly, tobacco and alcohol constitute a significant economic burden for Canada. A number of studies used Canadian data to examine determinants of alcohol consumption and tobacco smoking (Gospodinov and Irvine, 2006; Ogwang and Cho, 2009; Qi et al., 2006; Sen and Wirjanto, 2010). However, these studies did not focus on the impact of macroeconomic conditions on alcohol drinking or tobacco smoking. Recently, the issues of macroeconomic conditions have come to the forefront because of the 2008–2009 recession, which is considered to be one of the severest in Canadian history. Though the recession is officially over, unemployment rate is still above the pre-recession level. Unemployment is generally associated with deterioration of individual mental health, because of financial stress and job uncertainty (Latif, 2010). It will be interesting to examine whether economic recession impacts alcohol consumption and tobacco smoking. Given the economic burden associated with alcohol consumption and tobacco

smoking, the results of such a study will have important implications for policy.

Henkel (2011) summarized the results of a comprehensive review of the international research on the relationship between unemployment and substance use published between 1990 and 2010. The results show that unemployment increased alcohol use and the incidence of alcohol disorders. The results also suggest that the main effect of unemployment on smoking behaviours among the adults pertained to their increasing frequency of tobacco consumption. The results of this review further suggest that drinking and smoking pattern appeared to be pro cyclical implying a negative relationship between unemployment rate and drinking and smoking. A number of studies, using data from the United States, found that unemployment led to an increase in alcohol consumption and alcohol related disorders (Dooley and Prause, 1997; Dooley et al., 1992; Ettner, 1997; Gallo et al., 2001; Mossakowski, 2008). A few studies using data from a number of European countries also found that unemployment was associated with an increased level of alcohol consumption and alcohol abuse (Eliason and Storrie, 2009; Janlert and Hammarström, 1992; Montgomery et al., 1998). A number of studies, using data from the United States and European countries, found that unemployment was associated with an increase in cigarette consumption (Falba et al., 2005; Hammarström and Janlert, 1994; Khat et al., 2004; Okechukwu et al., 2012). A few studies also found that unemployment led to an increase in probability of being smoker (Khat et al., 2004; Merline et al., 2004; Montgomery et al., 1998).

A number of studies, primarily using data from the United States, have examined the relationship between macroeconomic conditions and drinking behaviour. Ruhm (1995) used aggregate data for the 48 contiguous states over the 1975–1988 time period to investigate the relationship between unemployment rate and alcohol consumption. The

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study found that alcohol consumption varied pro-cyclically. [Freeman \(1999\)](#) used an extended data set and utilized growth rates instead of levels to examine the same question. The study confirmed the pro-cyclical variation of alcohol consumption. [Dee \(2001\)](#) estimated fixed-effect models using individual level data from the 1984–1995 years of the Behavioral Risk Factor Surveillance System (BRSS) and found that state unemployment rate was associated with the reduction of overall drinking and the probability of consuming 60 or more drinks per month. However, the study also found that the probability of consuming five or more drinks on a single occasion increased during economic downturn. Using individual-level data from the 1987–1999 years of the Behavioral Risk Factor Surveillance System (BRFSS), [Ruhm and Black \(2002\)](#) examined the relationship between macroeconomic conditions, alcohol use, and drinking problems. The study concluded that alcohol consumption was pro-cyclical and a decrease in consumption during downturns was concentrated among heavy rather than recreational drinkers. [Charles and DeCicca \(2008\)](#) used pooled cross-sectional data from the National Health Interview Surveys for 1997–2001 to examine the effect of local labor market conditions on binge drinking and several health measures. The study did not find any systematic evidence for a relationship between drinking behaviour and the local unemployment rate. Using data from the US National Epidemiological Survey on Alcohol and Related Conditions (NESARC), [Dávalos et al. \(2012\)](#) investigated the effect of changing macroeconomic conditions (measured by state unemployment rates) on excessive alcohol consumption. The study found that changes in the unemployment rate were positively related to changes in binge drinking, alcohol-involved driving, and alcohol abuse and/or dependence.

As for smoking behaviour, [Ruhm \(2005\)](#), used microdata for adults from 1987 to 2000 years of the Behavioral Risk Factor Surveillance System (BRFSS) to show that smoking declined during temporary economic downturns. [Charles and DeCicca \(2008\)](#) found an increase in smoking behavior for those least likely to be employed; however, reductions in smoking for those in the highest employment decile.

This study aims to make a number of contributions to the literature. First, though a number of studies examined the relationship unemployment rate and individual drinking and smoking behaviours, the results are conflicting as some studies found that drinking or smoking behaviour was pro-cyclical while others found either counter-cyclical pattern or no pattern. So the debate on the relationship still persists, and this paper wishes to contribute to this debate. Second, to the best of the knowledge of this author, no study so far has examined the relationship between unemployment rate and drinking or smoking behaviour using Canadian data. Thus, this study also expects to make a contribution to Canadian health economics literature. A Canadian study will be interesting as there are a number of important differences between the Canadian labour market and the US labour market with respect to labour market policy and performance ([Kahn, 2012](#)).¹ Third, with the exception of [Dávalos et al. \(2012\)](#), all other studies used either a state fixed effect approach or a Metropolitan Statistical Area (MSA) fixed effect approach. Similar to the study of [Dávalos et al. \(2012\)](#), this study utilized individual specific fixed effect approach, and thus the results [Dávalos et al. \(2012\)](#) can be compared with the results of this study.

The paper is structured as follows: [Section 2](#) discusses data and methodology; [Section 3](#) presents results of the study; [Section 4](#) provides concluding remarks.

¹ Wage setting is relatively more coordinated in Canada than in the United States. Canada has both higher levels of union membership and collective bargaining coverage than the United States. Compared to the United States, Canada has relatively more regulations of its labor market with respect to employment protection. There are differences between Canada and the United States with respect to generosity of unemployment benefit level and duration, statutory minimum wages, and provision for parental leave.

1.1. Data

The study used longitudinal data from the Canadian National Population Health Survey (NPHS) covering a period from 1994 to 2009. The NPHS collects information related to the health of the Canadian population and related socio-demographic information. This survey has three components: households, health institutions, and the North components. This study used data from the household components survey. The Household component started in 1994/1995 and is conducted every two years. The target population of the longitudinal NPHS Household component includes household residents in the ten Canadian provinces in 1994/1995, excluding persons living on Indian Reserves and Crown Lands, residents of health institutions, full-time members of the Canadian Forces Bases and some remote areas in Ontario and Quebec. For each cycle, a common set of health questions is asked from the respondents. In addition to the common set of questions, the questionnaire includes focus content and supplements that change from cycle to cycle. The present study restricts the sample to individuals aged 16 and 64, yielding 31171 person-wave observations.

This study has a number of dependent variables: weekly alcohol consumption, binge drinking behavior, number of cigarettes smoked daily and smoking behavior. The variable 'Weekly Alcohol Consumption' is a derived variable indicating the sum of the total of drinks consumed, on all days, in the week prior to the interview. The variable 'Binge Drinking' is derived using the NPHS question 'How often in the past 12 months have you had 5 or more drinks on one occasion?' The variable 'Number of Cigarettes Smoked Daily' uses the responses of NPHS question 'How many cigarettes do you smoke each day now?' Finally, the binary variable 'Smoking Behaviour' is derived from the NPHS question 'At the present time do you smoke cigarettes daily, occasionally or not at all?'

The provincial unemployment rate was estimated by taking the average of the monthly provincial unemployment rates over the survey year.² The unemployment rate data was gathered from the publicly available Statistics Canada website.

The independent variable 'Age' is a continuous variable and 'Squared Age' is included in the models to capture the nonlinear impact of age on the dependent variable. Marital status is a dummy variable with three categories: single, married, and divorced/separated/widowed. The base category is 'single'. Education is also a dummy variable with four categories: less than secondary education, secondary graduate, college/university degree, and some post-secondary education. The base category is 'less than secondary education'.³ The dummy variable 'Having Own Home' indicates whether or not the individual owns a home. Another dummy variable 'Living in Urban Area' represents whether or not the individual lives in an urban area. The dummy variable 'Immigrant' indicates whether or not the individual is immigrant. The variable 'Household Income' is a continuous variable showing the total income earned by the members of the household. The variable 'Depression' represents individual's mental health outcome measured by the short form depression scale.

1.2. Conceptual framework

From a theoretical point of view, it is difficult to predict whether or not unemployment rate positively or negatively impacts health related behaviours such as alcohol drinking and tobacco smoking. Unemployment may lead to reduction in income, and with less money available for spending, unemployed individuals may reduce drinking and smoking ([Freeman, 1999](#); [Ruhm, 1995](#); [Ruhm and Black, 2002](#)). [Dávalos et al. \(2012\)](#) suggest that unemployed individuals may have

² The survey years are: 1994–1995, 1996–1997, 1998–1999, 2000–2001, 2002–2003, 2004–2005, 2006–2007, and 2008–2009.

³ An important unobserved variable related to risky behaviour is individual's time preference. However, education provides a good proxy for time preference.

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