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# The regional geography of alcohol consumption in England: Comparing drinking frequency and binge drinking



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#### ABSTRACT

Alcohol consumption frequency and volume are known to be related to health problems among drinkers. Most of the existing literature that analyses regional variation in drinking behaviour uses measures of consumption that relate only to volume, such as 'binge drinking'. This study compares the regional association of alcohol consumption using measures of drinking frequency (daily drinking) and volume (binge drinking) using a nationally representative sample of residents using the Health Survey for England, 2011–2013. Results suggest the presence of two differentiated drinking patterns with relevant policy implications. We find that people in northern regions are more likely to binge drink, whereas people in southern regions are more likely to drink on most days. Regression analysis shows that regional variation in binge drinking remains strong when taking into account individual and neighbourhood level controls. The findings provide support for regional targeting of interventions that aim to reduce the frequency as well as volume of drinking.

#### 1. Introduction

Drinking alcohol is an integral part of the culture, social, family and occupational life in the UK (Fuller, 2008; Smith and Foxcroft, 2009). Although heavy alcohol consumption exists across a wide range of countries globally, comparison of per capita alcohol consumption among people aged 15 years and over shows the UK to be among the countries with heaviest alcohol intake in Europe Smith and Foxcroft, 2009). Harmful use of alcohol consumption is associated with over 40 medical conditions in the UK population including: cancer, stroke, obesity, hypertension or diabetes (NHS, 2010) and was associated with more than 1 million hospital admissions in 2012-13 (Health and Social Care Information Centre, 2014). The financial burden is estimated to be over £25.1 billion and therefore alcohol misuse emerges as one of the main public health challenges currently faced by both the NHS and other public service providers (NHS, 2010). Trends suggest the problem has worsened in the last 25 years. In England and Wales, alcohol-related deaths doubled between 1991 and 2008, although, since 2008, there has been a small decrease in alcohol related deaths (ONS, 2013).

The harm associated with alcohol consumption is not uniformly distributed across the UK, with considerable variation between its constituent countries and between all regions in England (Breakwell et al., 2007). Geographical variations in alcohol-related deaths have

become more pronounced as patterns of alcohol consumption increase more rapidly in some areas than others. Robinson et al. (2015) found that alcohol-related mortality was higher in regions with greater per capita alcohol consumption (North East, North West and Yorkshire and The Humber). In order to direct policy makers towards appropriate local interventions to reduce alcohol related harm, it is important to determine whether these geographical variations can be explained by known determinants of alcohol consumption, or whether region is an independent predictor accounting for other explanatory factors. What follows is a description of the empirical evidence on regional variation in alcohol consumption in the UK.

One of the first explorations of regional differences in drinking habits in the UK was conducted by Balarajan and Yuen (1986) using the General Household Survey. They found higher levels of 'heavy drinking', which they define as women who drink more than 28 units per week and men who drink more than 35 units, in northern regions of England as compared to England's southern regions. Duncan, Jones and Moon (1993) confirmed these findings by showing a north versus south gradient, with northern English regions reporting higher levels of alcohol consumption than southern regions and London emerging as the region with lowest rates of alcohol intake. However, regional differences in this study were largely explained by individual factors.

An issue with comparing studies internationally and even within the UK is the variation in drinking volume definitions such as heavy

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drinking or binge drinking. Different studies establish different definitions and recommended guidelines depending on the amount of alcohol, the period of consumption, the variation of consumption between sexes and the definition of the consumption measurement 'unit' (Twigg and Moon, 2013). In 1995, the UK government introduced their 'sensible drinking guidelines', which included daily maximum units alcohol recommended both for men (3–4) and for women (2–3) (DoH, 1995). Thus, the broadly accepted definition for binge drinking in England draws from the level of daily consumption that is twice the recommended 'sensible guidelines' (Shelton and Savell, 2011). The literature conducted in the field uses this concept as an agreed definition of binge drinking.

A recent cross-sectional study from the Health Survey for England found lowest levels of binge drinking in London, East of England and West Midlands as compared with the greatest prevalence of binge drinking in the North East and Yorkshire and the Humber (Shelton and Savell, 2011). Furthermore, Twig & Moon (2013) included the concept of 'episodic binge drinking' in their analyses. This concept captured individuals who binge drink in one day while maintaining every other day in the week alcohol free. In fact, the results for episodic binge drinking showed higher levels in northern regions as compared to southern regions as well as males being more likely to engage in this drinking pattern than women.

Most previous literature in the field is based on self-reported alcohol consumption in social surveys, which only constitutes 60% of all alcohol sales in England (Bonniface and Shelton, 2013). The question raised is who is drinking the other 40% of alcohol purchased. A study conducted by Boniface & Shelton (2013) addressed the discrepancy between self-reported consumption and alcohol sales as well as how this affects regional variations in England. Their findings suggested an inverse pattern in binge drinking such that the South West had the highest levels of binge drinking when taking into account age, gender, income and neighbourhood deprivation. Moreover, when analyses accounted for under-reporting the results were consistent with previous literature, with the North East showing significantly higher levels of binge drinking than any other region, except the North West, which showed similar levels of binge drinking compared with the North East.

The research conducted to date on regional variations has focused on measures of heavy drinking, binge drinking or episodic binge drinking, often with reference to the UK government established guidelines published in 1995. A criticism of these definitions is that they may not capture the frequency of regular drinking within or marginally above recommended guidelines. The study of a concept that accounts for the variability of alcohol free days is noteworthy because this pattern of drinking has been reported to be related with heart disease, cancer and liver disease (NHS, 2010). For example, Hatton et al. (2009) conducted a study of drinking patterns in 234 participants with liver disease. Their findings concluded that liver deaths were a result of daily or near daily frequent drinking, instead of episodic or binge drinking. There is also emerging literature using Mendelian randomisation, that suggests small reductions in alcohol consumption among light to moderate drinkers (>0 to <21 units per week) can have a positive effect on cardiovascular health (Chen et al., 2008; Holmes et al., 2014). These results are consistent with previous literature which shows that moderate persistent drinking was associated with increased risk of hemorrhagic stroke, cancer and a wide range of accident and injuries (Ashley, et al., 1994; Doll et al., 1994). Furthermore, these results are also consistent with recent recommendations from the Royal College of Physicians (OECD, 2015) that warn about the risk of liver disease, alcohol dependence and serious illness increases if people drink every day.

The publication of the 2016 UK Chief Medical Officers' Alcohol Guidelines have brought to the public's attention the risks of binge drinking as well as drinking frequency, which has previously received much less attention as a public health issue. The guidelines on frequency now state:

"there are adverse effects from drinking alcohol on a range of cancers – this was not fully understood in 1995 [previous release of government guidelines] – and these risks start from any level of regular drinking and then rise with the amounts of alcohol being drunk." (DoH, 2016: 3).

The NHS now recommends that people should have several drink-free days per week.

Although recent literature has consistently demonstrated the existence of regional variation in binge drinking in England, less is known about how other drinking patterns; especially how frequency of consumption varies across regions. The current paper adds to the literature by exploring whether regional inequalities in drinking behaviour in England are influenced by different ways of measuring alcohol intake. To this end, we extend existing knowledge of binge drinking diversities in England by moving beyond a single alcohol consumption factor and adding a measure of drinking frequency. Drawing on data of alcohol intake from the Health Survey for England, 2011–2013, we also consider whether the north versus south gradient that emerges in binge drinking is different when assessing frequency of drinking and whether individual factors may explain regional diversities in alcohol consumption.

#### 2. Method

#### 2.1. Sample

This paper used pooled data from the nationally representative 2011, 2012 and 2013 cross-sectional Health Survey for England (HSE) samples. These were the latest collections available at the time of writing. The rationale for combination of collections was to increase the sample size enabling us to look at regional variations and control for many different confounders. More detailed information about the study sampling and instrument techniques are explained elsewhere (Craig and Mindell, 2014). In HSE 2011, 2012 and 2013 a total of 31,930 respondents were included with 10,617, 10,333 and 10,980 respectively for each year. Our sample was restricted to 15,305 respondents aged 16 or above who had a drink in the last seven days and who provided detailed information on the amount that they drank. The decision to restrict the sample to current drinkers was taken on the basis of HSE questioning format, which only asked drinkers about the heaviest drinking day. The Oxford A Research Ethics Committee provided ethical approval for the HSE.

#### 2.2. Measures

Binge drinking was analysed by looking at the number of units consumed on the heaviest drinking day of those that drank in the last seven days in relation to the UK government sensible drinking guidelines. Binge drinkers were defined as those that drank twice the amount recommended on their heaviest drinking day, which amounts to greater than 8 units in men and greater than 6 units in women (Health and Social Care Information Centre, 2015; NHS, 2016).

Daily drinking was explored in relation to the number of alcohol free days in the last seven days. Participants were dichotomised into non-daily drinking (having two or more alcohol free days per week) or daily drinking (having one or less alcohol free days per week). This definition is based on several European governments' guidelines that recommend having at least two alcohol free days per week (AIM, 2012; NHS, 2010) and on recent research which has suggested that daily drinking is associated with increased risk of chronic diseases (House of Commons Science and Technology Committee, 2012; OECD, 2015).

The current study employed a geographical division consistent with previous literature, nine regions were included: North East, North West, Yorkshire and the Humber, East Midlands, West Midlands, East Download English Version:

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