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# ***'Binge' drinking in the UK: a social network phenomenon***

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***July 2008***

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We are grateful for comments from anonymous referees for the European Social Simulation Association conference, Brescia, Italy, September 2008

## ***Abstract***

*In this paper, we analyse the recent rapid growth of 'binge' drinking in the UK. This means the rapid consumption of large amounts of alcohol, especially by young people, leading to serious anti-social and criminal behaviour in urban centres.*

*British soccer fans have often exhibited this kind of behaviour abroad, but it has become widespread amongst young people within Britain itself. Vomiting, collapsing in the street, shouting and chanting loudly, intimidating passers-by and fighting are now regular night-time features of many British towns and cities. A particularly disturbing aspect is the huge rise in drunken and anti-social behaviour amongst young females.*

*Increasingly, policy makers in the West are concerned about how not just to regulate but to alter social behaviour. Smoking and obesity are obvious examples, and in the UK 'binge' drinking has become a focus of acute policy concern.*

*We show how a simple agent based model approach, combined with a limited amount of easily acquired information, can provide useful insights for policy makers in the context of behavioural regulation.*

*We show that the hypothesis that the rise in binge drinking is a fashion-related phenomenon, with imitative behaviour spreading across social networks, is sufficient to account for the empirically observed patterns of binge drinking behaviour.*

*The results show that a small world network, rather than a scale-free or random one, offers the best description of the data.*

## 1. Introduction

In this paper, we analyse the recent growth of ‘binge’ drinking in the UK. By this, we mean the rapid consumption of large amounts of alcohol, especially by young people, leading to anti-social behaviour in urban centres. British soccer fans have often exhibited this kind of behaviour abroad, but it has become widespread amongst young people within Britain itself. Vomiting, collapsing in the street, shouting and chanting loudly, intimidating passers-by and fighting are now regular night-time features of many British towns and cities. A particularly disturbing aspect is the huge rise in drunken and anti-social behaviour amongst young females.

The phenomenon is of serious concern to the British government, not merely for the anti-social behaviour related to it, but because of the longer term health implications for young people of massive intakes of alcohol in very short periods of time.

Ref [1] suggests that the experience of the UK is part of a more general pattern of heavy, rapid drinking which is emerging in a number of countries of the world, and uses the phrase ‘extreme drinking’ rather than that of ‘binge’ drinking to characterise it.

There is a growing literature which demonstrates the importance of social networks for consumer choice in what might be termed ‘regular’ consumer markets. A popular reference, for example, on this is [2]. The concept of the ‘tipping point’ is used to explain on why some books, films and music emerge out of obscurity with small marketing budgets to become popular hits when many *a priori* indistinguishable efforts fail to rise above the noise. A much more formal analysis of the importance of social networks in determining success or failure in the film industry is [3].

In many social and economic contexts, individuals are faced with a choice between two alternative actions, and their decision depends, at least in part, on the actions of other individuals. Ref [4] describes this class of problem as one of ‘binary decisions with externalities’. An important feature of such systems is that they are ‘robust yet fragile’ [5,6]. In other words, behaviour may remain stable for long periods of time and then suddenly exhibit a cascade in which behaviour changes on a large scale across the individuals within the system.

Two recent American studies [7,8] using the Framingham Heart Study data base [9] have demonstrated the importance of social networks in determining the behaviour of individuals on matters of public health, specifically obesity and smoking. The Framingham data base contains detailed information on over 12,000 individuals, monitored over more than three decades since 1971.

The social networks of individuals on this data base have been important determinants of both the spread of obesity and the reduction in smoking over this period. In terms of obesity, for example, the chance of any individual being obese increased by 57 per cent if he or she had a friend who became obese. When a spouse stopped smoking, the other was 67 per cent less likely to smoke.

The aim of this paper is to examine the extent to which the sudden emergence of the binge drinking problem in the UK can be explained as a social network phenomenon.

We use the methodology developed in [10]. We consider a small amount of straightforward and readily accessible information. An agent based model is set up in which agents face the binary decision on whether or not to binge drink. Transmission of binge drinking behaviour across agents connected on a social network is determined according to a threshold rule.

The theoretical model is calibrated against empirical evidence. We deduce from this, using an agent-based model, the type of social network across which information flows and agents influence each other's behaviour in this context. Specifically, we show that information appears to flow across a small world network.

The approach described here can be used more generally in areas where policy makers are interested in regulating and altering agent behaviour. An important aspect of the methodology is that it is feasible both to construct empirically grounded agent based models and to draw useful implications from them, whilst at the same time requiring only small amounts of data.

Section 2 describes the basic data, Section 3 the initial evidence for the existence of imitative behaviour on social networks, Section 4 the theoretical model and results. Section 5 examines the robustness of the results, and Section 6 gives a brief discussion.

## **2. The data**

In this particular context, no longitudinal survey such as the Framingham Heart Study exists. So data was gathered using standard survey techniques. The market research company FDS interviewed 504 18-24 year-olds in the UK using an online survey based on MyVoice Panel. Of the respondents, 258 (51 per cent) were male and 246 (49 per cent) were female. The sample group was selected to reflect a demographic which is believed to represent a particular problem in terms of alcohol consumption.

Definitions of heavy drinking vary widely [11] and changes to the standard definitions can have a significant impact on the reported incidence of alcohol misuse. For example, the latest Office for National Statistics report on alcohol consumption in the UK [12] introduced a revised methodology for estimating the proportions of heavy drinkers within the population, taking into account increased alcohol strengths and larger drink sizes. This results in increased counts of heavy drinkers in all age and gender categories, even though the underlying data have not changed. For people aged 16-24, for example, the proportion of women identified as heavy drinkers rises from 29 per cent to 40 per cent.

The focus of this study is not on heavy drinking as such, but on drinking behaviour which is likely to lead to anti-social behaviour i.e. binge drinking.