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Did liberalising bar hours decrease traffic accidents?

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ABSTRACT

Legal bar closing times in England and Wales have historically been early and uniform. Recent legislation liberalised closing times with the object of reducing social problems thought associated with drinking to "beat the clock." Indeed, using both difference in difference and synthetic control approaches we show that one consequence of this liberalisation was a decrease in traffic accidents. This decrease is heavily concentrated among younger drivers. Moreover, we provide evidence that the effect was most pronounced in the hours of the week directly affected by the liberalisation: late nights and early mornings on weekends. This evidence survives a series of robustness checks and suggests at least one socially positive consequence of extending bar hours.

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1. Introduction

Excessive alcohol consumption is responsible for tens of thousands of deaths annually and billions of dollars of economic costs in both the US and the UK (Hahn et al., 2010; NICHE, 2010). Across developed countries, alcohol ranks third among 26 risk factors in terms of contributions to disease, disability and mortality (WHO, 2002). At the same time alcohol consumption is viewed by many as an individual right and is associated with entrenched economic interests. As a consequence, the regulation of alcohol consumption remains a highly contentious area of public policy that has generated large literatures in both public health and economics (see Anderson et al., 2009 and Carpenter and Dobkin, 2011 for recent reviews). The forms of governmental regulation are numerous (Anderson et al., 2009 set out the range of interventions) and so are the outcomes of concern including disease, death, lost worker productivity and crime. We add to this literature by using the recent liberalisation in England and Wales to examine the influence of bar closing hours on traffic accidents. No previous study has examined as fundamental a change in hours on so large a population and no study of changing hours has endeavoured exactly as we do to find a suitable control. Moreover, our study of bar hours represents a change in focus from the large US and Canadian literature that studies the impact of retail, off-premise, alcohol availability on accidents.

In late 2005 new legislation allowed much later serving hours as part of a government push to liberalise drinking regulations. The previous restrictions typically required closing by 11 pm and were considered by the government a *source* of social problems. The initial government White Paper, *Time for Reform* (UK Home Office, 2000), contended that the uniform and early closing hour meant "that large numbers of drinkers come out onto the streets late at night at the same time causing disorder." It also contended that early closing caused a "beat the clock" game that encouraged binge drinking. Famously, MP Jane Griffiths is quoted claiming that "The effect of compulsory closure has been for people to drink 'against the clock', with whole generations of young people learning to drink as much as possible in a short space of time. . .. Most of these young people are drunker than they would be if they drank at their own pace (IAS, 2007, p. 3)." The government claimed that deregulated closing times might create a more European-style cafe culture but that, in any event, it would spread out peak dispersal time and result in reductions in both binge drinking and in drinking related legal offences.

This paper examines how liberalisation in on-premise alcohol availability influences one particular source of concern, and concerted government effort, road traffic accidents. We use

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administrative data to examine the effect of the dramatic extension of licensed on-premise drinking hours on traffic accidents. The hypothesised influence of the policy is theoretically ambiguous. At its base, the policy change increased access to alcohol with an anticipated increase in the underlying risk of motor vehicle casualties. Yet, if the government is right, less homogenous closing times could reduce accidents by reducing the congestion of intoxicated drivers on the road (Levitt and Porter, 2001) and by shifting such drivers to later at night when fewer other vehicles are on the road. Similarly, it remains possible that reductions in binge drinking also cut against the longer hours and could result in fewer accidents. Critically, it seems possible that the policy reduced the amount of driving as there would be less driving from the pub which closed early to either late night illegal pubs or home parties.

We provide difference in difference estimates that compare pre- and post-policy traffic accidents in English and Welsh jurisdictions to pre- and post-accidents in Scottish jurisdictions in which the policy change did not apply. In a range of estimates, we show that the policy change led to a decrease on the order of 3.9 accidents for each of 384 local jurisdictions per month in England and Wales. While Scotland seems the most immediate control, we recognise that it could simply not be suitable. In response, we utilise a synthetic control approach to best match the pre-policy accidents of a weighted average of Scottish jurisdictions to our treatment area, England and Wales (Abadie and Gardeazabal, 2003). Again this reveals a marked negative effect of liberalisation on traffic accidents. This result also remains robust to standard approaches designed to address the parallel trends assumption in difference in difference models. We demonstrate that the reduction is concentrated almost entirely among the group likely to be most affected by the policy, young people. Likewise, the magnitude of this effect is substantially larger during late nights and early mornings on the weekend. Hence, the policy effect is concentrated in the subsample and times where it 'bites' hardest.

In what follows, we briefly review the literature on the consequences of alcohol regulation paying particular attention to their consequences on traffic accidents. We then describe in detail the changes created by the liberalisation policy and outline our data. We follow this with a description of our methodology and the key results. We present a series of tests for treatment heterogeneity, and make robustness checks. We conclude with suggestions for further research.

2. Setting the stage

Governments act as the chief regulator of alcohol, helping set its availability, price (through taxes) and terms of sale (such as age of the buyer). This availability is set by conditions associated with issuing alcohol licenses. Thus, the number of outlets can be regulated, the permissible days of the week for selling can be set (for instance Blue Laws in some US states), and the times during the day for selling can also be set. In the latter case, typical on-premises licenses include mandatory closing hours that eliminate legal access during late nights and early mornings. A range of jurisdictions have liberalised these closing hours. For instance, in the UK an earlier 9:30 pm closing time was eventually made 11:00 pm, restrictions on Sunday trading were loosened and required 'afternoon breaks' were eventually abolished in the Licensing Act of 1988.[1] Over this same post-war period, there has been increased effort to mitigate the negative consequences of alcohol consumption many of which happen on the road.

In seminal work, Levitt and Porter (2001) estimate the effects of drinking on traffic fatalities and quantify the negative externalities imposed by drunk drivers. Drivers with alcohol in their blood are seven times more likely to cause a fatal crash and legally drunk drivers are thirteen times more likely to cause a fatal crash than sober drivers. Most of the literature on drinking and driving investigates the influence of public policies, including regulating alcohol availability, on traffic accidents. These policies include those targeted directly at detection and deterrence of drunk driving and those that influence the level or timing of alcohol consumption. The former include mandatory jail time for driving under the influence (DUI), random roadside breath tests and zero tolerance laws. The latter includes taxation and day, time and age restrictions on availability.

Empirical evidence is mixed, but there certainly exist studies that find more restrictive alcohol laws reduce traffic accidents. Ruhm (1996) finds a significant effect of beer taxes, but not of DUI policies on motor vehicle fatality rates. Ruhm also demonstrates that higher legal drinking ages are strongly related with reduced fatalities among those 18–20 years old. Dee (1999) finds that beer taxes have a relatively small and insignificant impact on teenage drinking. Yet, the higher drinking age reduces teen drinking by at least 8% and traffic fatalities by at least 9%. Carpenter and Dobkin (2009, 2011) find that a higher drinking age reduces traffic mortality. Carpenter (2004) finds that zero tolerance laws reduce binge drinking among underage males by 13% but fails to find a robust effect on either drinking participation or drunk driving.[2]

A literature related to our examination studies legislation regarding the sale of alcohol off-premise on Sundays in the US (so called 'blue laws'). The evidence from this literature again appears mixed. For instance, Lovenheim and Steefel (2011) show only a modest negative effect of the introduction of Sunday blue laws on motor vehicle fatalities in US states. McMillan and Lapham (2006) demonstrate a positive effect of repealing blue laws on traffic fatalities in New Mexico. However, in a multi-state study Stehr (2010) demonstrates that New Mexico is the only case where this is true claiming it reflects uniquely larger increases in alcohol consumption due to the repeal and more frequent and longer distance driving in this state. Finally, Heaton (2012) finds no effect of these laws on arrests for driving under the influence.

Somewhat further afield, interesting work has examined the relationship between the nature of leisure time regulation that influences drinking behaviour and traffic accidents. Thus, Adams et al. (2012) argue that minimum wage increases give more earnings to those youth who work but also potentially more leisure to teenagers in general due to negative employment effects. They follow this line of logic with evidence that increases in the minimum wage in the US generate increased alcohol-related traffic fatalities among teens. In earlier work, Adams and Cotti (2008) argue that local jurisdiction bans on smoking in bars cause more driving to other jurisdictions without bans to drink. Their evidence shows that such local bans generate increased alcohol-related traffic fatalities. Again emphasising the increase in driving, Cotti and Walker (2010) show that the opening of U.S. casinos is associated with increases in alcohol-related traffic fatalities. They point out that the casinos (often on Native American reservations) likely increase the amount of driving by those intoxicated.

The specific form of regulation that we examine is on-premise licensing hours. While, Green and Navarro (2012) have shown that the longer hours in the UK are associated with greater on-premise

[1] Until this act all pubs had to close between lunch and evening for at least two and a half hours.

[2] Dee and Evans (2001) and Eisenberg (2003) find that zero tolerance laws reduce teenage traffic fatalities.

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