

The price of violence

Connecting alcohol use and violence

- There is a vast literature associating alcohol consumption with violence, but no clear causal link has been identified.
- Dr Kent Matthews, with other members of the research team from the Violence Research Group, Cardiff University, Wales, uses econometric modelling to examine the effect of various factors, especially drink prices, on alcohol-related violence conduct.
- The research reveals that higher alcohol prices are widely associated with reduced incidents of violence, suggesting a simple way to tackle the problem via alcohol duties.

There is strong academic and anecdotal evidence associating heavy drinking with violence, but no clear agreement on the connections between these two behaviours. Violent conduct can also be associated with other factors, such as being male, young, living in a deprived area, and being unemployed. Even the weather could be an aggravating factor – a ‘heat hypothesis’ that attributes violence to unusually high temperatures.

The link between alcohol and violence is also not straightforward. Alcohol could cause violent behaviour, an aggressive mood could encourage heavy drinking, or some people could be prone to both violence and alcohol abuse for other reasons. But there is a potential influence that is straightforward to consider: the price of alcoholic drinks. The basic assumption is that higher prices discourage consumption, reducing violence. Violent behaviour obviously does not affect the price of alcohol, so there can only either be this clear connection or no connection.

Combining regional price differences across time with regional incidents of violent injury revealed a clear relationship.

An economist's eye

Professor Kent Matthews from Cardiff University Business School has cast an economist's eye over many possible factors that explain violent injury, particularly the influence of alcohol pricing. To test the idea of a price effect, he used a technique called ‘dynamic econometric modelling’. This can identify cause-and-effect relationships between various factors over time. In this case, Matthews and others from the Violence Research Group at Cardiff University designed a model to discover the effect of changes in the price of alcoholic drinks on the number of violent injuries over ten years across England and Wales.

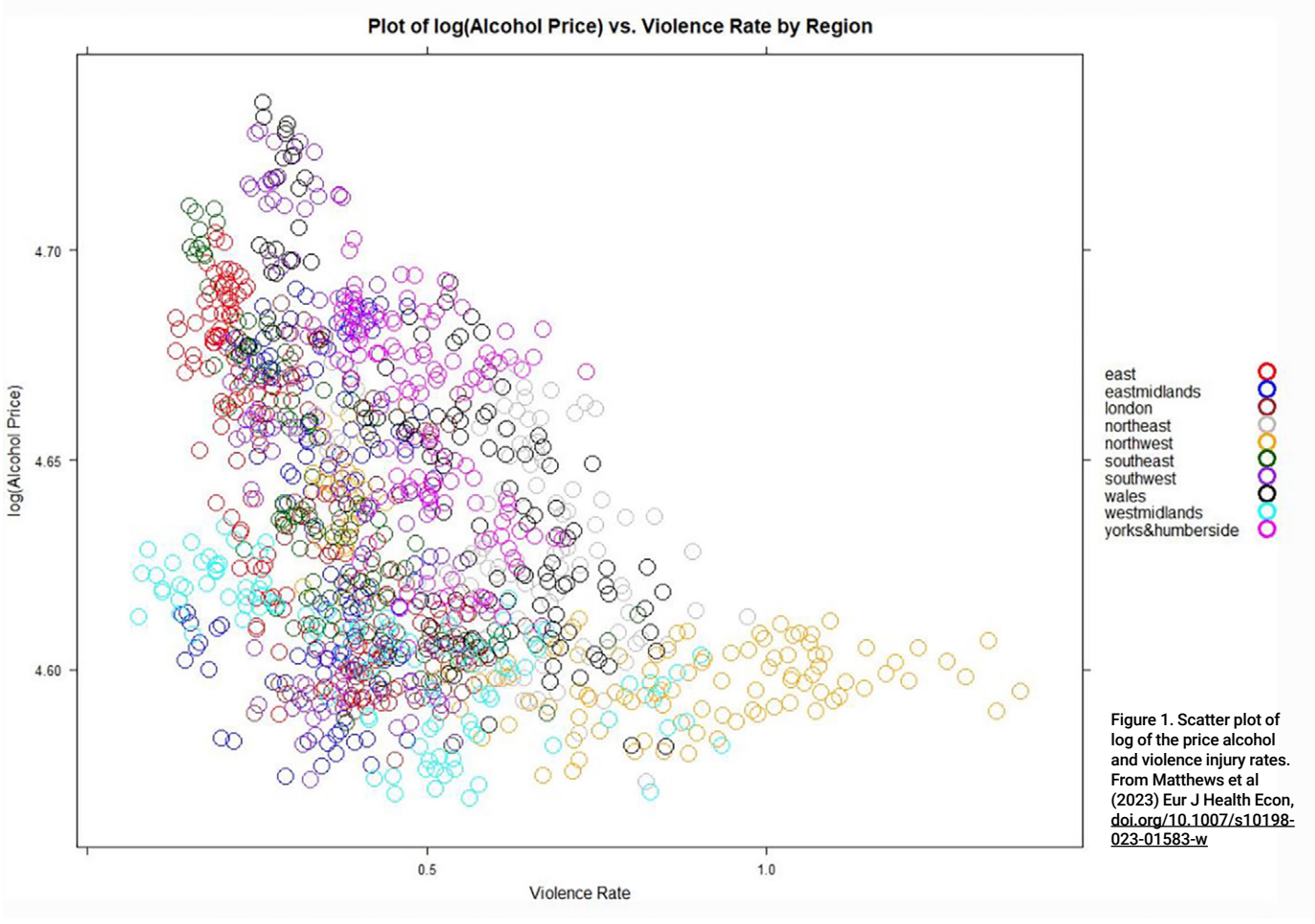
They also used the model to reveal the contribution of other factors, such as income equality and the weather.

Casualties of violence

The research used emergency department attendances across England and Wales from 2005 to 2014 for violence-related injury as the indicator of an act of violence. Information from emergency departments provides clear daily evidence of the number of relatively serious incidents across regions, ages, and genders at the hospital level. This captures a far broader and deeper picture than official crime statistics, which are only produced periodically and identify only reported cases. Analysis of this data revealed clear regional differences. Violent injuries are far more common across the north of England and Wales. To provide further insight, the team then introduced other factors into the equation, with the key variable being alcohol price.

Kent Matthews and colleagues investigated possible factors that explain violent injury, particularly the influence of alcohol pricing.





The real price of alcohol
Alcoholic drink prices across regions of England and Wales are collated by the Office of National Statistics (ONS). To identify the impact of actual alcohol prices on violent injury, the researchers constructed a combined price for the individual prices and then removed background inflation from price changes to discover variations in the ‘real price’ of alcoholic drinks as felt by consumers.

Raising the price of alcoholic drinks is an effective policy tool to reduce serious violence.

Combining these regional price differences across time with regional incidents of violent injury revealed a clear relationship. Lower prices are associated with a greater number of violent incidents. Higher prices are associated with fewer violent incidents.



The April effect
Each year, in April, the UK government produces a budget that alters the duty on alcoholic drinks, changing prices across the board in a single sweep. Alcohol duty rates tend to move in line with background inflation, which creates no obvious impact. But in 2008, the Chancellor risked the ire of drinking voters by hiking duty levels to 6%, well above inflation.

The 2008 Budget provided an excellent opportunity for the team to further test the link between alcohol price changes and violence levels. The model revealed that allowing for all factors, the price hike did coincide with a significant reduction in emergency department (ED) attendances for violent injuries across the country, reinforcing the initial findings.

Further factors for greater insight
Data from hospital ED admissions segments violent injury cases by

Personal response

What brought you from studying banking and finance to working on the social problem of alcohol-related violence?

I was approached by Professor Jonathan Shepherd who was then the head of the [Violence Research Group](#) and co-director of the Security, Crime and Intelligence Innovation Institute. I was lucky. His phone call came through to me.

Are there any examples from other countries of alcohol duties being successfully used to reduce cases of violence?

The domestic and international evidence is very convincing and reviewed in Wagenaar, et al, 2010, [Effects of alcohol tax and price policies on morbidity and mortality: A](#)

[systematic review](#), Am J Pub Health.

What is next for your research?

We are seeking support to conduct three related studies. First, to undertake field experiments to understand how changes in the environment could influence alcohol-fuelled violence. Second, use lab-in-the-field experiments to further understand how alcohol consumption and the drinking environment affect drinkers’ behavioural traits. Third, expanding on the research featured here in two dimensions: how drinker age affects their response to price changes and whether changes in the price of ‘gateway’ drinks affects the number of violent incidents reported to emergency departments.

gender and age. The team added these variables into the model to provide greater insight. The ONS data also segments its drinks pricing data between beer, lager, wine, and spirits. The type of alcoholic drink was shown to be a factor. Spirits prices, both regionally across time and for the one-off April effect, had a stronger effect on incidents of violent injury than beers. Interestingly, there was no discernible relationship with wine.

The violent injury rate for men was far more linked with alcohol prices than for women. Data for youth unemployment and income inequality from the ONS was also fed into the model to shed light on these environmental factors. Higher youth unemployment was shown to contribute significantly to violent injury cases, but interestingly, income inequality had the reverse effect. House price data from the Nationwide Building Society, used as a proxy for regional income levels, told the same story.

The team also tested the ‘heat hypothesis’ by feeding in temperature and rainfall data from the UK Met Office, and this did indeed have a small but noticeable effect on violent injury rates.

A taxing solution

The core focus of the Violence Research Group’s research – whether alcohol prices affect levels of alcohol-related violence – has clearly revealed that they do. This shows that raising the price of alcoholic drinks is an effective policy tool to reduce serious violence.

Kent acknowledges that ideally, the price of violence itself should be increased to reduce its occurrence. This involves numerous high-cost policy initiatives, such as increasing policing and court resources. Taxation, on the other hand, is a quick and simple instrument.

Estimates from the research suggest that a 1% increase in the real price of alcohol could reduce violent injury cases by approximately 7,000 a year. That’s 7,000 people and their families and friends saved from direct harm and the stress and trauma of these serious incidents. It could also directly reduce hospital emergency treatment costs by almost £100 million per year. This is without factoring in the wider benefits to public health of reduced alcohol abuse. The drivers of alcohol-related violence are multi-faceted, but the VRG’s research clearly shows that alcohol duty is an effective tool.

Details



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Bio

Kent Matthews is professor of banking. Saeed Heravi and Peter Morgan are professors of quantitative methods. Nicholas Page is a research associate in the School of Social Science, Jonathan Shepherd is professor emeritus oral and maxillofacial surgery at Cardiff University, and Vaseekaran Sivarajasingam is professor and Clinical Director at the University Dental Hospital.

Collaborators

- Professor Peter Morgan (Cardiff Business School)
- Professor Saeed Heravi (Cardiff Business School)
- Dr Nicholas Page (Cardiff University School of Social Science)
- Professor Jonathan Shepherd (Cardiff University School of Dentistry)
- Professor Vaseekaran Sivarajasingam (Cardiff University School of Dentistry)

Further reading

Matthews, K, et al, (2023) [Alcohol prices, the April effect, and the environment, in violence-related injury in England and Wales](#), Eur J Health Econ.

