Public Health Scotland

Evaluating the impact of Minimum Unit Pricing (MUP) on sales-based alcohol consumption in Scotland at three years post-implementation: briefing paper

November 2022

Translations and other formats are available on request at:

phs.otherformats@phs.scot

0131 314 5300

Public Health Scotland is Scotland's national agency for improving and protecting the health and wellbeing of Scotland's people.

www.publichealthscotland.scot

Introduction

Minimum unit pricing (MUP) came into effect in Scotland on 1 May 2018. From that date, every drink containing alcohol has had a minimum price based on the amount of pure alcohol it contains. The minimum price in Scotland is currently set at £0.50 per unit of alcohol.

The Monitoring and Evaluating Scotland's Alcohol Strategy (MESAS) MUP Evaluation Portfolio comprises a number of research studies that are being undertaken to assess the impact of MUP. The portfolio contains studies assessing compliance with and implementation of MUP, its impact on the alcoholic drinks industry in Scotland, changes in alcohol consumption, and changes in health and social harms.

The aim of this briefing paper

This briefing paper presents the main findings from the report[1] of a package of work that uses alcohol retail sales data to examine the impact of MUP on alcohol consumption at a population level. It specifically examines the impact of MUP on alcohol sales after three years of implementation.

The study addressed the following research questions:

1. What is the impact of the introduction of MUP on the volume of pure alcohol sold in Scotland?
2. What is the impact of the introduction of MUP on the volume of pure alcohol sold by off-trade retailers in Scotland?
3. What is the impact of the introduction of MUP on the volume of pure alcohol sold by on-trade retailers in Scotland?
4. To what extent did any impact of the introduction of MUP on the volume of pure alcohol sold in Scotland vary by drink type?

What we did

We used alcohol retail sales data to estimate weekly alcohol consumption at a population level. We obtained retail sales data for the on-trade (pubs and restaurants) and the off-trade (supermarkets and other shops) separately and aggregated this to give total weekly alcohol sales. We converted natural volume (the volume of beverage sold) into pure alcohol volume using category-specific percentage alcohol by volume (ABV). Per-adult alcohol sales were calculated using mid-year population estimates for the adult population aged 16 years and over and presented in litres of pure alcohol per adult. Weekly per-adult estimates were calculated for all alcohol combined and by drink category. The total time period covered in this report is from January 2013 to May 2021. Due to the availability and robustness of some data sources, pre- and post-intervention periods will differ for some analyses.

We used a statistical method called interrupted time series regression, which is recommended for estimating the impact of population-level interventions. The method enabled underlying trends and seasonal patterns in the data, such as increased alcohol sales over Christmas and New Year, to be taken into account. By incorporating alcohol sales for a geographical control area, we were able to compare what happened in Scotland to what happened in an area where MUP was not implemented. In this analysis England & Wales was our best available geographical control area and using this method allowed us to estimate the overall effect of MUP in Scotland; we refer to this as the **controlled** model. The method also allowed us to take into account other factors that could affect our results: household income, alcohol sales through outlets such as pubs and clubs (the 'on-trade'), and switching between drink types; we refer to this as the **adjusted** model. For this briefing we focus on the results from the model that was both controlled and adjusted, which we refer to as our main model. The main report[1] presents full results of all the models (uncontrolled, controlled, and adjusted).

We have previously shown that the measures introduced in the UK in response to the COVID-19 pandemic, including the closure of on-trade premises, impacted on both the volume and location of pure alcohol sold in the UK.[2,3] We incorporated data from the Oxford COVID-19 Government Response Tracker[4] into our models to account for that

impact. Finally, in controlled models we accounted for the introduction of MUP in Wales, part of our control area, in our post-intervention time period.

We performed a range of additional analyses, including using an alternative source of off-trade retail sales data and truncating our post-intervention time series to exclude the impact of the COVID-19 pandemic and MUP in Wales, to test the robustness of our results to changes in the analytical approach deployed.

The methods, data sources and all the additional analyses are described in full in the main report.[1]

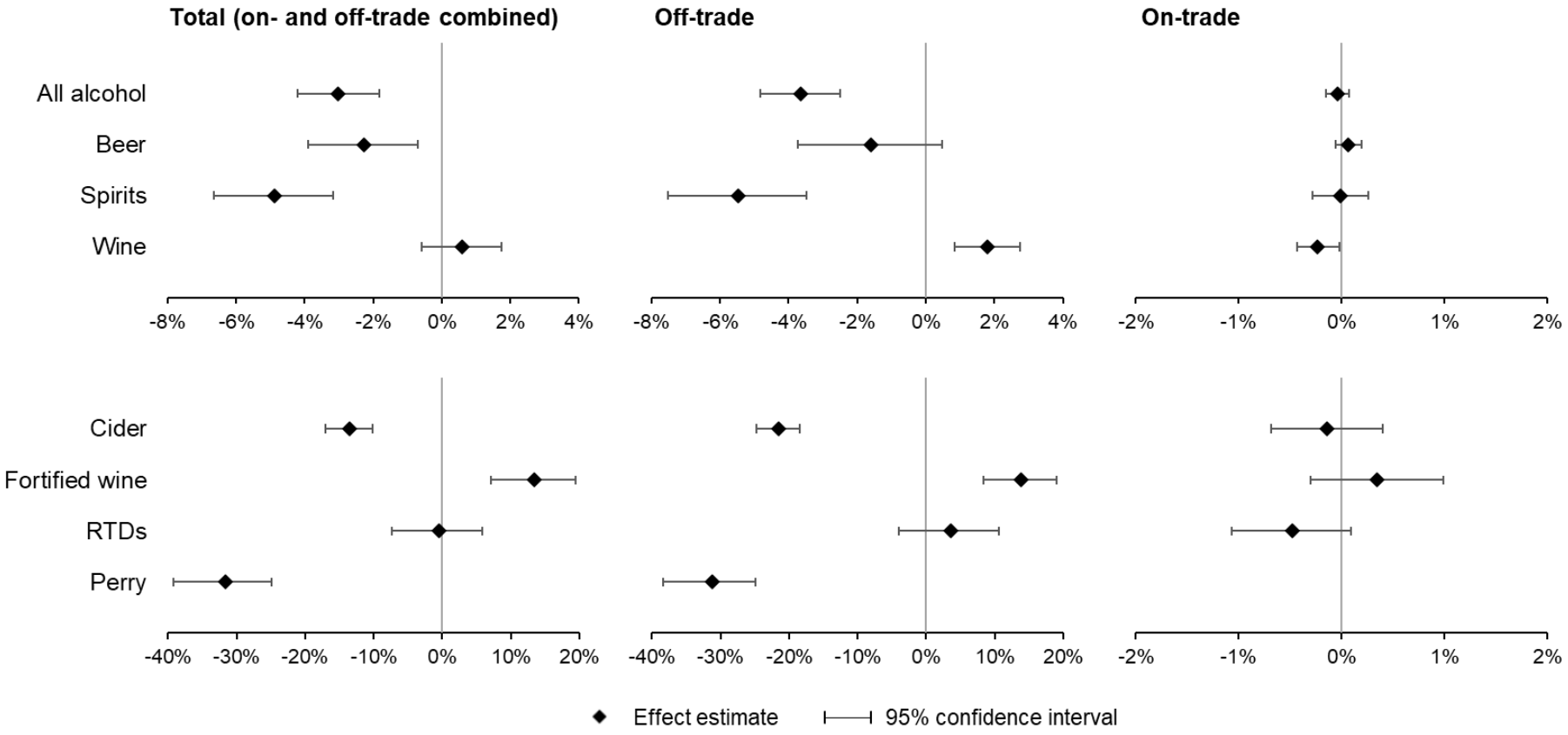
What we found

We found that the introduction of MUP in Scotland on 1 May 2018 was associated with a net reduction in the total volume of pure alcohol sold, when controlling for sales in the best available geographical control area and adjusting for other factors. Using our main model, we found MUP to be associated with a net reduction of 3.0% in total per-adult sales in the three years following implementation; this was driven by a 3.6% reduction in sales through the off-trade (Figure 1). This net reduction reflects a 1.1% fall in alcohol sales in Scotland (1.3% in the off-trade) in contrast to a 2.4% increase in England & Wales (2.5% in the off-trade) over the same time period. No change to per-adult sales of pure alcohol through the on-trade was observed over the study period (Figure 1).

The largest net reductions in per-adult alcohol sales were observed for cider and perry. Smaller net reductions were observed for spirits and beer. Given the relatively large proportion that spirits and beer add to the volume of pure alcohol sold in Scotland, these smaller relative reductions make an important contribution to the reduction overall. An increase in the volume of pure alcohol sold per adult as fortified wine, and of wine through the off-trade, was observed over the same time period, which partly offset the overall reduction.

The results from the main models for both total and off-trade sales were robust to a range of different conditions as tested through our additional analyses.

Figure 1: Estimated effect (%) of MUP on alcohol sales after three years of implementation



Note: Results are from controlled and adjusted Scottish models and include trends in alcohol sales in England & Wales (controlled); trends in disposable income and, for drink category analyses, sales of the other drink categories (adjusted); adjustment for underlying seasonal and secular trends. On-trade analyses truncated to 22 months post-MUP (Feb 2020) due to incomplete data following the introduction of COVID-related restrictions. Effect estimates are statistically significant to the 95% level where the confidence interval (bars) does not cross zero. Scale on the y axis varies.

Our understanding of the impact of MUP on alcohol sales and purchasing

The findings reported here – a 3.0% net reduction in per-adult sales of pure alcohol and a 3.6% net reduction in off-trade sales – are in line with those we reported at one year after MUP implementation (a 3.5% net reduction in per-adult off-trade sales).[5] As with the earlier study, the largest relative reductions were observed for cider and perry, with smaller reductions being observed for spirits and beer.

The observed reductions in sales are consistent with the expected mechanism for the policy, namely an increase in the price of products sold below the minimum unit price before the policy was implemented. Those drink categories with the greatest reduction in sales demonstrated here are typically those that are most impacted by an increase in price.[6,7,8] Similarly, where little or no change in price per unit occurred as a result of the policy[6,7,8] then either no change or an increase in per-adult sales was seen, as for fortified wine.

The observed changes were entirely driven by changes to sales through the off-trade with no discernible impact to on-trade sales. This indicates that the implementation of MUP did not cause a substantial shift towards on-trade alcohol consumption.

Our findings are largely consistent with those reported in research led by the University of Newcastle where an initial reduction of 7.6% in off-trade alcohol purchases was found[9] and a reduction in alcohol purchasing in Scotland, relative to Northern England, was maintained during the first half of 2020.[10]

Conclusion

MUP has been effective in reducing per-adult sales of pure alcohol in Scotland, when adjusting for the best available geographical control and other external factors. The observed reduction was largely driven by a decrease in sales of cider, perry, spirits and beer through the off-trade, and was partially offset by increased sales of fortified wine and,

to a lesser extent, wine. We found little evidence to suggest that MUP was associated with changes in per-adult sales of alcohol through the on-trade. Our main finding was robust to a range of different conditions. We conclude that MUP has been effective in reducing alcohol consumption at the population level in the first three years of implementation.

References

[1] Giles L, Mackay D, Richardson E et al. Evaluating the impact of Minimum Unit Pricing on sales-based alcohol consumption in Scotland at three years post-implementation. Edinburgh: Public Health Scotland; 2022. **https://publichealthscotland.scot/publications/evaluating-the-impact-of-minimum-unit-pricing-mup-on-sales-based-alcohol-consumption-in-scotland-at-three-years-post-implementation/**

[2] Richardson E, Mackay D, Giles L et al. The impact of COVID-19 and related restrictions on population-level alcohol sales in Scotland and England & Wales, March–July 2020. Edinburgh: Public Health Scotland; 2021. **www.publichealthscotland.scot/publications/the-impact-of-covid-19-and-related-restrictions-on-population-level-alcohol-sales-in-scotland-and-england-wales-march-july-2020/**

[3] Richardson E, Giles L, Fraser C. Alcohol sales and harm in Scotland during the COVID-19 pandemic. Edinburgh: Public Health Scotland; 2022. **www.publichealthscotland.scot/publications/alcohol-sales-and-harm-in-scotland-during-the-covid-19-pandemic/**

[4] Thomas Hale, Noam Angrist, Rafael Goldszmidt et al. (2021). 'A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker).' Nature Human Behaviour. **https://doi.org/10.1038/s41562-021-01079-8**

[5] Giles L, Richardson E and Beeston C. Using alcohol retail sales data to estimate population alcohol consumption in Scotland: an update of previously published estimates. Edinburgh: Public Health Scotland; 2021. **https://publichealthscotland.scot/publications/using-alcohol-retail-sales-data-to-**

estimate-population-alcohol-consumption-in-scotland-an-update-of-previously-published-estimates/

[6] Giles L, Robinson M and Beeston C. Minimum Unit Pricing (MUP) Evaluation. Sales-based consumption: a descriptive analysis of one year post-MUP off-trade alcohol sales data. Edinburgh: NHS Health Scotland; 2019. **www.healthscotland.scot/publications/evaluating-the-impact-of-minimum-unit-pricing-mup-on-sales-based-consumption-in-scotland-a-descriptive-analysis-of-one-year-post-mup-off-trade-alcohol-sales-data**

[7] Ferguson K, Giles L and Beeston C. Evaluating the impact of Minimum Unit Pricing (MUP) on the price distribution of off-trade alcohol in Scotland. Edinburgh: Public Health Scotland; 2021. **www.publichealthscotland.scot/publications/evaluating-the-impact-of-minimum-unit-pricing-mup-on-the-price-distribution-of-off-trade-alcohol-in-scotland/**

[8] Ferguson K, Giles L, Beeston C. Evaluating the impact of MUP on alcohol products and prices. Edinburgh: Public Health Scotland; 2022. **https://publichealthscotland.scot/publications/evaluating-the-impact-of-mup-on-alcohol-products-and-prices-2022/**

[9] O'Donnell A, Anderson P, Jané-Llopis E et al. Immediate impact of minimum unit pricing on alcohol purchases in Scotland: controlled interrupted time series analysis for 2015–18. BMJ 2019;366:l5274. **http://dx.doi.org/10.1136/bmj.l5274**

[10] Anderson P, O'Donnell A, Kaner E et al. Impact of minimum unit pricing on alcohol purchases in Scotland and Wales: controlled interrupted time series analyses. Lancet Public Health 2021; 6: e557–65. **https://doi.org/10.1016/S2468-2667(21)00052-9**