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THE HANGOVER

The cost of minimum alcohol pricing
in Scotland

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Summary

- Minimum unit pricing (MUP) sets a floor price on a unit of alcohol to prevent the sale of 'cheap' drinks, with the aim of reducing alcohol-related harm. MUP was introduced in Scotland on 1 May 2018 at 50p per unit. This study estimates the financial cost to consumers in the four years since implementation.
- Using sales data from the Public Health Scotland evaluation, we compare off-trade alcohol sales in Scotland post-implementation with a counterfactual based on sales figures from England and Wales.
- In 2019, we estimate that off-trade sales in Scotland were four per cent lower than they would have been in the absence of MUP. This finding is similar to other published estimates. Compared to the counterfactual and excluding sales from discount retailers, 9.7 million fewer litres of pure alcohol were sold below 50p/unit, but an extra 8.2 million litres were sold at 50–64p/unit and a further 0.4 million litres were sold above 70p. The net additional cost of MUP to consumers was £93.6 million.
- Covid-19 restrictions severely disrupted the on-trade in 2020. Per capita alcohol consumption fell across the UK but sales from the off-trade increased. In Scotland, excluding sales from discount retailers, consumers bought 9.9 million fewer units below 50p than they would have done in the absence of MUP, but 8.3 million units were displaced to the 50–84p price range. In total, including sales from discount retailers, we estimate that the net additional cost of MUP in 2020 was £41.4 million.
- Extrapolated over the four years of implementation, we estimate that MUP has cost Scottish consumers £270 million. This amounts to £59.39 per adult or £71.12 per drinker. This is significantly more than was projected in models prior to implementation.

- There is little evidence of health and social benefits to offset this cost. Most indicators related to alcohol-related health, crime and employment have remained similar or worsened since MUP was implemented, although many of the projected benefits were so small it would be difficult to identify them in aggregate data.

Introduction

Minimum unit pricing (MUP) was introduced in Scotland in May 2018. This made it illegal to sell alcohol for less than 50p per unit (a UK unit is 10ml of pure alcohol). The policy aimed to reduce alcohol-related harms, including death and crime, by raising the price of the cheap, off-trade alcohol that is often associated with harmful drinking. Lacking the power to raise alcohol duty itself, the Scottish government turned to MUP as a way of using the price mechanism to reduce consumption. By reducing consumption via the price effect, it was assumed that associated harms would also decline.

The policy was primarily justified on the basis of computer modelling from a team at Sheffield University who produced a string of reports between 2009 and 2016 projecting improvements in various health and social outcomes. As the policy had not been tried elsewhere, the team had to make a number of important assumptions about cross-price elasticities and the relationship between consumption and harm. Although the principle of MUP was quite simple – being based principally on the idea that higher prices will reduce consumption – the quantitative impacts on behaviour were difficult to predict. For example, it was not known to what extent dependent drinkers would switch to illicit, home-made or cross-border alcohol, to what extent they would switch towards illegal drugs, and whether they would make cuts in other parts of their household budget to spend more on alcohol.

The policy is currently being evaluated by the Monitoring and Evaluating Scotland's Alcohol Strategy programme (MESAS) for Public Health Scotland, but it has not yet published an estimate of MUP's cost to consumers. To estimate that cost in the four years since MUP was implemented, this paper uses off-licence alcohol sales data taken from

the market analysts Nielsen and published by Public Health Scotland as part of the MESAS evaluation (Richardson and Giles 2021).¹

1 Nielsen collects and extrapolates from point-of-sale data from a wide selection of supermarkets and convenience stores.

Methodology

Table 1 shows, perhaps surprisingly, that some alcohol continued to be sold below 50p/unit after May 2018, due in part to misclassification and the loophole that permits drinks ‘despatched from outwith Scotland’ to be sold below the MUP-mandated limit (Scottish Government 2018: 8).

According to a report that accompanies the data:

... a margin of error is to be expected within each price band ... [therefore] the data presented here cannot be used to assess compliance with the MUP legislation. Nonetheless these data are the best available to describe and understand the price distribution of off-trade alcohol sales in Scotland (Richardson and Giles 2021: 31).

Table 1: Litres (000s) of pure alcohol sold between 2017 and 2020 at prices below 50p per unit, broken down by price range

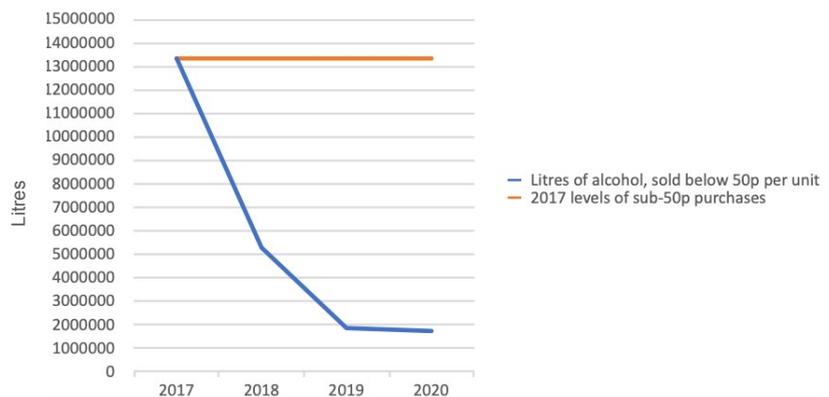
	Up to 9p	10–14p	15–19p	20–24p	25–29p	30–34p	35–39p	40–44p	45–49p	Total
2017	180	29	238	222	511	1,158	2,072	4,810	4,114	13,334
2018	79	37	116	98	163	291	614	1,512	2,380	5,290
2019	27	45	58	26	6	11	47	215	1,436	1,869
2020	52	30	26	21	14	9	22	308	1,262	1,744

As Table 1 shows, 52,016 litres of pure alcohol (or 5,201,600 units of alcohol) were still being sold at prices of 9p or lower in 2020, over a year after a price floor of 50p was introduced in May 2018. Most of this (90 per cent) was cider.

Alcohol sold below 50p/unit made up six percent of all sales in Scotland in 2020 (representing 174 million units of alcohol out of a total of 3.1 billion units), down from 45 per cent in 2017. In England and Wales, 34 percent of alcohol was sold below 50p/unit in 2020 (Richardson and Giles 2021).

Figure 1 shows the gap that emerged between sub-50p per unit alcohol consumption pre- and post-MUP. What happened to this 'missing' alcohol? If price elasticity were zero, it would all have been bought, only at a higher price. However, empirical evidence suggests – as is the case for the vast majority of goods – the price elasticity is negative. That is, an increase in alcohol's price leads to a fall in the overall quantity demanded.

Figure 1: Sales of alcohol at prices below 50p per unit in Scotland post-MUP, compared with 2017



The more inelastic the demand for alcohol, the higher the estimated monetary cost to consumers of MUP – as people will consume a largely unchanged amount of alcohol at an increased price.

Analysis using comparable English and Welsh data

Table 2 shows the number of litres of pure alcohol sold in the Scottish off-trade at various price points in 2017 (the first full year before MUP) and 2019 (the first full year after MUP), with England and Wales as a comparison.

Table 2: Price distribution of litres (000s) of alcohol sold in the off-trade (excluding discount retailers)

	2017	2019	Difference
Scotland <50p	13,334	1,869	-11,464 (-86%)
England & Wales <50p	113,651	98,418	-15,233 (-13%)
Scotland 50–54p	4,261	10,490	6,229 (+68%)
England & Wales 50–54p	37,128	34,485	-2,643 (-7%)
Scotland 55–59p	2,827	4,489	1,662 (+59%)
England & Wales 55–59p	24,242	28,938	4,696 (+19%)
Scotland 60–64p	2,295	3,156	861 (+38%)
England & Wales 60–64p	21,477	24,704	3,228 (+15%)
Scotland 65–69p	1,441	1,527	86 (+6%)
England & Wales 65–69p	13,424	14,170	746 (+6%)
Scotland 70p+	5,438	6,551	1,113 (+20%)
England & Wales 70p+	51,451	58,322	6,871 (+13%)

Even in the absence of MUP, we would expect the quantities sold at lower price points to decline as a result of inflation. In England and Wales, the quantity sold below 55p per unit did indeed fall whereas in Scotland the amount sold below 50p fell dramatically while there was a large increase in sales above 50p. There is a clear suggestion of displacement from the <50p category to the 50–54p category as a result of MUP. Interestingly, there also seems to have been significant displacement to the 55–59p and 60–64p price points and some suggestion of a shift towards alcohol costing 70p or more. All this suggests that drinkers of the cheapest alcohol in 2017 did not just switch to drinks costing the legal minimum, but often to even pricier drinks.

We can compare sales in Scotland after MUP with what happened to sales in England and Wales where MUP was not in effect. Table 3 shows the situation in 2019, the first calendar year in which MUP was in place.

Table 3: Off-trade sales in Scotland (excluding discount retailers) compared to a free market counterfactual (000s litres of pure alcohol), 2019

	2019 without MUP	2019 actual	Difference
<50p	11,601	1,870	-9,731 (-84%)
50–54p	3,962	10,490	6,527 (+165%)
55–59p	3,364	4,489	1,125 (+33%)
60–64p	2,639	3,156	517 (+20%)
65–69p	1,528	1,527	-1 (0%)
70p+	6,144	6,551	407 (+7%)
Total	29,238	28,083	-1,155 (-4%)

Compared to the counterfactual based on trends in England and Wales, the Scottish off-trade sold 9.7 million fewer litres of pure alcohol below 50p/unit than expected in 2019 but sold an extra 8.2 million litres at 50–64p/unit. Most of this (6.5 million litres) was sold just above the 50p threshold but a substantial proportion (1.7 million litres) was sold at 55–64p and a further 0.4 million litres were sold at 70p or more.

Overall, we estimate that off-trade sales (by litre of pure alcohol) were 4.0 per cent lower than they would have been in the absence of MUP. This finding is very similar to that of the MESAS evaluation, which estimated a 4.2 per cent decline (per adult) in the first twelve months of MUP (MESAS 2021: 3) and is close to the adjusted estimate of a 3.5 per cent decline by Robinson et al. (2021).

We calculate that 11.6 million litres of alcohol would have been sold in Scotland in 2019 at less than 50p/unit in the absence of MUP. The total cost to consumers would have been between £442.3 million and £488.6 million, depending on the exact price of the purchases. We take the midpoint of these values and estimate the cost as £464.7 million. Under MUP, 1.8 million litres continued to be sold at less than 50p/unit at a total cost of £81.1 million (£77.5 million–£84.6 million), creating a ‘saving’ to consumers of £383.6 million (£364.8 million–£404 million).

However, 6.5 million litres of <50p/unit alcohol were displaced to the 50–54p price range at an additional cost of £339.4 million (£316.3 million–£352.5 million). A further 1.1 million litres were displaced to the 55–59p price range at an additional cost of £64.2 million (£61.9 million–£66.4 million). 516,941 litres were displaced to the 60–64p range at an additional cost of £32 million (£31 million–£33 million) and 406,517 litres were displaced to the >70p range at an additional cost of £31.5 million (£30.5 million–£32.9 million). In total, there was additional spending above 50p/unit of £467.1 million (£439.7 million–£484.8 million). The net additional cost of MUP in 2019 was £84.2 million (£35.7 million–£120 million).

We repeated this process using data from 2020, the first year of the pandemic, when off-trade sales were unusually high due to the closure of the on-trade for approximately five months.

As shown in Table 4, we estimate that Scottish consumers would have bought 11.7 million units of alcohol below 50p/unit in 2020 in the absence of MUP, at a cost of £477.6 million (£454.2 million–£500.8 million). In fact, only 1.7 million units were sold at that price, costing £75.4 million (£71.9 million–£78.9 million) and creating a ‘saving’ of £402.2 million (£382.3 million–£421.9 million). Consumers bought 9.9 million fewer units below 50p than they would have in the absence of MUP, but 8.3 million units were displaced to the 50–84p price range at a cost of £449.4 million (£432.8 million–£466.1 million). There was a slight decline in sales at the

85p+ price point. In total, there was additional spending above 50p/unit of £439.5 million (£423.3 million–£455.1 million).

MUP therefore imposed a net cost of £37.3 million (£1.4 million–£72.8 million) in 2020. The wide confidence intervals around the midpoint estimate reflect the theoretical possibility that all alcohol was sold at the lowest or highest point in its price band pre-MUP but at the opposite extreme post-MUP. As this is highly unlikely in practice, we believe the true figure to be close to the central estimate of £37.3 million. This estimate is notably lower than that found for 2019. This is partly because alcohol priced below 50p/unit would have been slightly more expensive in 2020 in the absence of MUP (the mean price rose from 40.06p to 40.79p in England and Wales) and partly because there was less displacement towards the premium end of the market.

Overall, the decline in sales was greater in 2020 (5.1 per cent) than in 2019 (4.0 per cent) relative to the counterfactual, although the actual amount of alcohol sold in the off-trade rose year-on-year from 28.1 million units to 31.3 million units.

Table 4: Off-trade sales in Scotland (excluding discount retailers) compared to a free market counterfactual (000s litres of pure alcohol), 2020

	2020 without MUP	2020 actual	Difference	Cost
<50p	11,707	1,744	-9,963 (-85.1%)	-£402.2m (£382.3m-£421.9m)
50-54p	4,861	11,804	6,942 (+143%)	£361m (£347.1m-£374.9m)
55-59p	3,898	4,452	554 (+14.2%)	£31.6m (£30.5m-£32.7m)
60-64p	3,151	3,684	533 (+16.9%)	£33m (£31.9-£34.1m)
65-69p	1,966	1,979	13 (0%)	£0.9m (£0.87-£0.93m)
70-74p	2,123	2,226	103 (+4.8%)	£7.4m (£7.2-£7.6m)
75-79p	997	1,048	51 (+5.1%)	£3.9m (£3.8m-£4m)
80-84p	967	1,108	141 (+14%)	£11.6m (£11.3m-£11.9m)
85p+	3,390	3,280	-110 (-3.3%)	-£9.9m (-£9.4m-£11m)
Total	33,061	31,325	-1,736 (-5.3%)	-£37m (£1.4m-£72.8m)

Final estimate after adjusting for sales from discount retailers

The figures above are taken from Public Health Scotland's report by Richardson and Giles (2021) who use data from the market analysts Nielsen. However, Nielsen does not have data from the discount retailers Aldi and Lidl who sold ten per cent of off-trade alcohol in Scotland between 2017 and 2019 (Giles et al. 2021: 46). We therefore adjusted our figures to account for sales from these retailers, giving us **a net additional cost of £93.6 million in 2019 and £41.4 million in 2020.**

In 2021, consumption trends were assumed to be similar to 2020 as the on-trade was closed for a similar length of time. To get an estimate of the cost of MUP in the last eight months of 2018 and the first four months of 2022, we assumed consumption trends in these periods were similar to 2019.

This gave us a total estimate of the excess cost of MUP to Scottish consumers between May 2018 and April 2022 of **£270 million** (£82.6 million–£428.4 million). Our midpoint estimate implies a cost of **£59.39** per adult and a cost of **£71.12** per drinker in the four years since implementation.

Discussion

Demand for off-trade alcohol in Scotland seems to be quite inelastic. Although 45 per cent of off-trade alcohol was sold below 50p per unit in 2017, raising the price of these drinks was associated with only a modest reduction in overall purchases. Per capita sales of pure alcohol from the off-trade were 7.5 litres in 2017, 7.44 litres in 2018 and 7.21 litres in 2019, before rising to 8.38 litres in the extraordinary year of 2020 when the on-trade was closed for months (Richardson and Giles 2021). Assuming the drop between 2017 and 2019 to be mainly due to minimum pricing, a decline in consumption of around four per cent is a relatively small effect. Moreover, evidence of cross-border sales between England and Scotland (including online sales, which remained legal) suggests that the decline in consumption was even smaller than this in practice (Patterson et al. 2022).

An interesting finding from our research is that it suggests that consumers of <50p/unit alcohol before MUP often shifted to significantly more expensive drinks after MUP. While most of the displacement was to the 50–54p/unit price point, more than a million litres of pure alcohol were displaced to the 55–64p price point and there is evidence of some switching to even more expensive drinks. This is not so surprising. MUP effectively wiped out the bottom end of the market and pushed consumers towards the mid-range. It forced many consumers to experiment with different brands that they would not otherwise have bought but that they were familiar with from advertising, such as Famous Grouse (whiskey) or Gordon's (gin). Such mid-range brands do not compete purely on price and do not necessarily cluster around the 50p/unit price point. By shifting consumers towards mid-range and premium brands, MUP may have benefited the drinks industry. Although it is beyond the scope of the present study, there may also have been an increase in VAT revenues from the sale of more expensive drinks despite the small decline in overall consumption.

Comparison with estimate in the British Medical Journal

A study published in the *British Medical Journal* in 2019 estimated that MUP has incurred a weekly cost of 61p per adult, amounting to £31.72 per annum (O'Donnell et al. 2019). Extrapolated over four years, this amounts to £126.88 per adult or £152.87 per drinker. Both of these estimates comfortably exceed our own estimate of £59.39 per adult or £71.12 per drinker. However, estimating the cost to consumers was not the primary purpose of the *BMJ* study and it was restricted to data from the first eight months of minimum pricing only. Its mid-point estimate of 61p per week has a very wide confidence interval ranging from -5p to +£1.27, which encompasses our estimate.

Comparison with projections from the Sheffield Alcohol Policy Model

Estimates from a computer model created by academics at Sheffield University were highly influential in persuading politicians in Scotland (and later Wales) to introduce MUP. The Sheffield Alcohol Policy Model (SAPM) projected declines in alcohol-related deaths, hospitalisations and crimes from a 50p unit price. It also projected that MUP would cost the average drinker in Scotland £5 per year (Angus et al. 2016: 52). Our estimate suggests that the *annual* cost to drinkers has been more than three times higher than this (£17.78).

Projected benefits of the policy

If £270 million was the cost of the policy to consumers, what, if any, were the offsetting benefits? The objective of MUP was not to reduce alcohol consumption *per se* but to improve health and social outcomes. These were modelled in the SAPM, of which four iterations were applied to Scotland between 2009 and 2016.

The first application of the model attempted to estimate the effect of introducing MUP on alcohol consumption, sales, health, crime and workplace harms (absenteeism and unemployment) in Scotland, providing estimates of the decreases resulting from modelling various levels of MUP. The second and third iterations of the model updated estimates from the original model in the light of data that had subsequently become available. The final version of the model, published in 2016, did not include estimates related to crime or workplace harms and was intended to compare the health impact of a minimum unit price policy with increases in excise duty.

All of the models produced figures that were presumably meant to be taken seriously as accurate predictions and we can now consider the predicted impacts of MUP in Scotland in the light of events since its introduction. Of course, there are several problems in doing so, related both to the availability of data and the impact of Covid-19 on mortality and hospital activity.

Some of the putative benefits of MUP are so small that they would be difficult to identify in aggregate data. This is particularly true of unemployment and workplace absences which were projected to fall by an almost imperceptible amount. Nevertheless, it is worth studying the data for signs of any improvement following the introduction of MUP. The first and third models predicted a decline in unemployment of 1,700 and 1,300 respectively. Annual Scottish unemployment rates are shown in Table 5.² Although there is a clear decreasing trend from 2015 to 2018 it would be difficult to argue that a change in the price of alcohol in May 2018 had any noticeable impact, with rates of unemployment higher in the two subsequent years. Changes in the population structure affect the value – as it happens there was virtually no difference between the UK numbers unemployed in 2017/18 and 2018/19, and in Scotland no sign of the 1,300 new jobs predicted by the third (2012) version of the model (the last to consider workplace harms).

Table 5: Unemployment in Scotland 2015–20

Year	Unemployment rate (%)
2015	5.8
2016	5.2
2017	4.2
2018	3.9
2019	4.5
2020	4.2

2 Source: <https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/timeseries/ycnn/lms>

Absenteeism levels in Scotland in terms of total days lost are shown in Table 6.³ In the first year in which MUP was in place, days lost to sickness absence increased, reversing the trend of the previous three years. The number fell in 2019 and 2020, although the figure for 2020 was affected by furlough arrangements during the Covid pandemic. It is therefore a mixed picture with no obvious evidence of a step change, although the 32,300 fewer days of absence predicted in the January 2012 update of the SAPM is such a small number that it would be almost impossible to identify in this dataset.

Table 6: Sickness absence in Scotland 2015–20

Year	Days lost due to sickness absence (millions)
2015	13.7
2016	13.4
2017	12.3
2018	13.6
2019	11.7
2020	10.1

The same version of the SAPM projected a reduction in crime of 3,500 offences or 2.1 per cent. These figures do not relate simply to recorded crimes but to estimates of all crimes obtained by applying a multiplier to each category of crime recorded. Nevertheless, the percentage reduction would apply to recorded crimes as the same estimation procedure is used for all crimes. As can be seen in Table 7, there was remarkably little variation in the number of crimes recorded between 2018/19 and 2020/21.⁴

3 Source: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/sicknessabsenceinthelabourmarket>

4 Source: <https://www.gov.scot/publications/recorded-crime-scotland-2020-2021/pages/8/>

Table 7: Recorded crime in Scotland 2011–21

Year	Recorded crimes
2011–12	314,188
2012–13	273,053
2013–14	270,397
2014–15	256,350
2015–16	246,243
2016–17	238,921
2017–18	244,504
2018–19	246,480
2019–20	246,516
2020–21	246,511

Taking the figure for 2017–18 as baseline and applying a 2.1 per cent reduction as per the SAPM gives a figure of 239,370, over 7,000 fewer than the actual figure for 2018–19. Thus the 2018–19 figure is not only much higher than the SAPM prediction but is statistically significantly higher. (The final version of the SAPM model applied to Scotland did not consider crime or workplace harms so perhaps there had been some realisation that these aspects of the model were unsatisfactory.)

The headline figures for the impact on health of a 50p MUP in the 2016 model were a reduction in alcohol-related hospital admissions of 1,299 in the first year of implementation and a decline in alcohol-related mortality of 58 deaths in the same year. The reason for specifying the year of implementation is that the effects of the putative reductions in consumption resulting from MUP on chronic disease are supposed to build up over time, so the modelled reductions in mortality and hospitalisations increase over time.

Data on alcohol-related hospital admissions are available from Public Health Scotland (2022) and relate to conditions wholly attributable to alcohol. Table 8 shows that in the first year of implementation of MUP the

number of such admissions rose slightly, then rose again the subsequent year. The first year ‘impact’ of MUP clearly did not occur, nor was there any greater impact in the second year; in fact the number of alcohol-related admissions showed a further increase. This is consistent with a study of emergency departments in Scotland found ‘no evidence of a beneficial impact of minimum unit pricing’ (So et al. 2021).

Table 8: Alcohol-related hospital admissions, Scotland 2015–20

Year	Alcohol-related hospital admissions
2015/16	35,430
2016/17	36,249
2017/18	35,544
2018/19	35,715
2019/20	36,543
2020/21	33,015

The figure for 2020/21 shows a decrease, but this was part of a broader trend of fewer people going to hospital with non-Covid conditions in the first year of the pandemic. Indeed, overall hospital admissions for other non-Covid conditions show a much greater proportionate decline. Richardson et al. (2022: 52) found that alcohol-related hospital stays were seven per cent lower than the 2017–19 average in Scotland in 2020, but that ‘there was a 30% reduction in all admissions to general acute hospitals in Scotland between 2019/20 and 2020/21’.

It is therefore very unlikely that the decline in alcohol-related hospital admissions in 2020/21 reflects a reduction in alcohol-related harm, let alone a delayed impact from MUP. As Table 9 shows, the same year saw a large increase in alcohol-related deaths.

Table 9: Alcohol-specific deaths and death rate (per 100,000 people) in Scotland

Year	Alcohol-specific deaths	Alcohol-specific death rate per 100,000 people
2015	1,045	19.5
2016	1,139	21.1
2017	1,120	20.5
2018	1,136	20.8
2019	1,020	18.6
2020	1,190	21.5

The 2016 SAPM projected 58 fewer deaths in the first year rising to 93 in the fifth year. The model focuses on alcohol-related deaths as opposed to officially recorded alcohol-specific deaths. Alcohol-related deaths include conditions for which alcohol consumption is a risk factor but that could also arise in circumstances with no connection to alcohol consumption. Whereas figures for alcohol-specific deaths are based on death certificates, figures for alcohol-related deaths are themselves based on modelling.

Scaling from Figure 4.20 of the 2016 SAPM report suggests that approximately 22 of the anticipated 58 deaths that were projected to be prevented in the first year would be wholly attributed to alcohol, i.e. alcohol-specific. In the first year of implementation (2018) deaths of this type increased compared to the previous year before declining in the subsequent year. However, in 2020 Scotland suffered the highest number of such deaths in the last twelve years, at 1,190.⁵

The notable increase in alcohol-specific deaths in 2020 was seen in the rest of the UK and seems likely to have been caused by the stress of living with the pandemic and Covid restrictions, exacerbated by a reduction in face-to-face support for problem drinkers. Since alcohol was only available

5 Source: <https://www.nrscotland.gov.uk/files/statistics/alcohol-deaths/2020/alcohol-specific-deaths-20-report.pdf>

from the off-trade for much of 2020, it might be expected that any impact from MUP would be more pronounced (since MUP only affects cheaper alcohol that is only sold in the off-trade). There is little evidence of this, however. Scotland saw a 15.6 per cent increase in the rate of alcohol-specific deaths in 2020, which is not statistically significant from the 19.3 per cent increase seen in England.

Overall, there is little to no evidence that the introduction of a minimum unit price in Scotland has had a positive impact on any of the outcomes related to employment, crime and health modelled by the SAPM. Most of the indicators have remained largely unchanged or have worsened since the introduction of MUP. It could be said, however, that most of the projected impacts were so tiny that they would be buried in the noise of random year-to-year fluctuations even if they existed. This raises the question of whether such trivial benefits were ever likely to be worth the *projected* cost of £76 million⁶ let alone the actual cost of £270 million that we estimate has been incurred over four years.

Limitations

Our sales-based model assumes that consumption patterns in England and Wales would have been mirrored in Scotland in the absence of MUP. Although this is the underlying assumption of the MESAS evaluation and is as good as any other assumption for these purposes, it is far from certain. Overall consumption trends in the home nations of the UK have sometimes moved in different directions in the past, driven by factors such as the weather, major sports tournaments and public health campaigns that vary by nation.

Covid-19 restrictions also varied by nation. Every part of the UK was in lockdown for much of 2020 and 2021, but Scotland's restrictions on the licensed trade were typically more severe (for example, nightclubs did not reopen until January 2022 whereas they reopened in England in July 2021). Lockdowns and other restrictions gave a major competitive advantage to the off-trade, thereby making it more difficult to isolate the impact of MUP on off-trade sales.

In the absence of data from 2021, we have assumed the same costs were incurred in 2021 as in 2020, and we have used data from 2019 as the

6 £5 per drinker per annum, as projected in Angus et al. (2016), over four years.

basis for our estimates for May–December 2018 and January–April 2022 when trading was more normal. While we believe that this is sufficient to provide a broad estimate, future research based on hard data from 2021/22 will be needed to confirm this.

As noted above, Nielsen data does not include figures from discount retailers. Whilst we have adjusted our figures upwards in line with their market share, it does not necessarily reflect their market share of *cheap* alcohol. As discount retailers it is likely that they sold more cheap alcohol than average prior to MUP, but it is unclear whether they benefited or suffered from the introduction of a floor price after May 2018.

Conclusion

Our analysis suggests that minimum unit pricing cost Scottish drinkers £270 million in its first four years, equivalent to £71.12 per drinker. There do not appear to have been any savings or benefits to offset this cost. Moreover, the cost to consumers, paid in terms of higher prices, is not collected as tax, but mostly accrues as additional revenue to suppliers of alcohol.

We do not claim that correlation is causation. Our claim is that *if* the changes in alcohol consumption in Scotland relative to England and Wales after May 2018 were due to MUP, as has been claimed, the cost to Scottish drinkers over the four years is likely to have exceeded a quarter of a billion pounds.

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