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Evaluation of the Minimum Price for Alcohol in Wales – Final report on research with retailers and quantitative analysis

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Title: Evaluation of the Minimum Price for Alcohol in Wales – Final report on research with retailers and quantitative analysis

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Glossary

Acronym/Key word: Definition

- Alcohol shop: Shops primarily supplying alcohol, such as off licences or specialist alcohol products, e.g., 'craft' beers.
- Alcohol unit: A way of expressing the quantity of pure alcohol in drinks. One unit equals 10ml or 8g of pure alcohol.
- Baseline study: Study that provides an information base against which to monitor and assess an activity's progress and effectiveness during implementation and after the activity is completed.
- Chain: Retail outlet in which multiple branches share a brand, central management, and standardised business practices.
- Enforcement notice: A fixed penalty notice issued to an alcohol retailer if they are found to be selling, or authorising the sale of, alcohol below the 50p Minimum Unit Price.
- Independent: Retail outlet with a single location or up to three locations often owned by an individual, a family or a two-person partnership.
- Minimum pricing for alcohol (MPA): A way of setting a baseline price below which no one can sell an alcoholic drink.
- Minimum Unit Price (MUP): The Minimum Unit Price (MUP) – the minimum price to be charged per unit of alcohol and used in the formula for calculating the minimum price at which the alcoholic drink can be sold. An MUP of 50p per unit of alcohol was introduced in Wales from 2nd March 2020.
- MUP app: The Welsh Government Minimum Unit Price application for calculating the correct price of a product, including special offers.
- Off-trade: Sector of the alcoholic drinks market comprising sales for consumption outside the vendor's premises.
- On-trade: Sector of the alcoholic drinks market comprising sales for consumption on the vendor's premises.
- Waves one, two and three: Wave one (baseline, autumn/ winter 2019/2020), Wave two (interim findings, autumn 2022), Wave three (final wave of findings, autumn 2023).

Executive summary

This report presents the findings from wave three of the mixed-methods evaluation of retailers' experiences and impacts of the Minimum Price for Alcohol (MPA) in Wales, commissioned by the Welsh Government.

The research also examines the impact on alcohol purchases using secondary data analysis.

Methodology

Qualitative methods

Wave three saw a reduction in the number of participants, who went from 30 at wave two to 22 in wave 3 due to sample attrition. 14 participants took part across all three waves. The sample included retailers across five Welsh regions; independent and chain retailers; micro, small, and medium-sized retailers; and a mix of on-trade, off-trade, or both on-trade and off-trade licensees.

Quantitative methods

Our analysis assessed the impact of Minimum Pricing for Alcohol (MPA) introduced in Wales in March 2020. Using comparative interrupted time series (CITS), we compared alcohol purchasing trends in Wales to those in England, where MPA was not implemented. To conduct the analysis, we used data on units of alcohol purchased and taken back into the home from Kantar's World Panel over the 2016-2023 period. CITS is a statistical method used to evaluate the impact of an intervention or treatment by comparing the changes in outcomes over time between a group that was exposed to the intervention (Wales) and a comparison group that was not (England). This approach allows researchers to estimate the effect of the intervention while controlling for underlying trends and external factors influencing both groups, increasing our confidence that any effects found are due to MPA. This approach helped isolate the effects of MPA from the concurrent period of COVID-19 protective measures, as England and Wales were both affected by the pandemic, but only Wales implemented MPA.

Context of COVID-19, high inflation, and cost of living increases

It should be noted that, across the three waves, retailers' experiences and views of the implementation and impact of the MPA were affected by COVID-19 mitigation measures, economic recovery from them and, more prominently at waves two and three, high inflation.

Baseline data collection occurred in autumn winter 2019/ 2020 just before the COVID-19 pandemic and restrictions started in March 2020. This delayed wave two data collection until autumn 2022. In the intervening period, off-trade retailers remained open, but on-trade retailers were often closed and were recovering from the measures on business at the time of data collection.

At both **waves two and three** retailers were dealing with higher than usual inflation, with this being especially the case at wave three. Over the life of the study, the minimum unit price (MUP) of 50p was not raised, and the effects of the policy at wave three need to be understood in the context of higher inflation and the cost-of-living increase.

Qualitative findings

Overall findings

Retailers felt the MPA policy is having the desired effect, reducing the sale of cheap, higher-strength alcohol by making products of this type more expensive. As a result, customers were said to buy less of them, and retailers were less likely to stock these products. This especially applied to off-trade retailers.

The policy had also now become embedded in retailers' everyday business as usual. However, the effects of the policy may have been weakened since wave two as increases in prices arising from the MUP have been overshadowed by high inflation, while the MUP has remained unchanged at 50p per unit.

Awareness and understanding

Awareness and understanding of the policy gradually improved over the three waves of data collection. Retailers tended to show more support for the policy where they understood it was targeted at harm reduction among the population in general. They showed less support where they mistakenly thought it was targeted at problem drinkers. Some retailers said they may benefit from short refresher briefings or courses on pricing discounted products.

Experiences of the MPA and its enforcement

At wave three, retailers said the MPA had become part of their everyday business-as-usual. Previous difficulties experienced in calculating promotions, offers and discounts were minimised using the Welsh Government MUP app, or by central pricing for chains at their head offices. Removal of some cheaper, higher-strength alcohol from sale meant fewer products being sold below the permitted price that needed to be checked and increased in price.

The frequency and nature of Trading Standards compliance checks varied, but the overall picture was of retailers willing to comply with their legal obligations in relation to the MPA.

Impacts and effects

Retailers said demand for higher strength alcohol decreased as prices increased. On-trade retailers reduced their stocks, gradually stopped stocking such products (e.g. high strength, low-cost cider), or replaced them with lower volume, premium products, regarded as better value for customers.

A positive effect of the MPA policy was that on-trade retailers felt it created fairer competition between them and off-trade retailers, especially with supermarkets.

Negative effects of the MPA discussed at wave two (e.g., costs of training, product wastage, and checking discounted products distributed from England) were less prominent in retailers' accounts at wave three. Retailers said there was no noticeable impact on their sales from customers going over the border to England to buy cheaper alcohol.

Retailers found it hard to gauge the impact of the MPA on problem drinkers but did notice fewer customers they described as 'troublesome' coming into their shops to buy previously cheap, high-strength alcohol.

Quantitative findings

Overall findings

Overall, there was a statistically significant impact of the MPA policy on the number of alcohol units purchased by households. Initially, there was a marked increase in alcohol purchases in Wales following the introduction of MPA, coinciding with the COVID-19 mitigation measures. However, this surge was smaller in Wales than in England, and subsequently, alcohol purchasing declined more rapidly in Wales.

Socioeconomic groups

Higher socioeconomic groups in Wales did not show a statistically significant change immediately post-MPA but experienced a more rapid decline in purchasing post-MPA compared to England. Conversely, lower socioeconomic groups in Wales had a smaller initial increase but no statistically significant difference in the declining trend thereafter.

Alcohol purchasing groups

No statistically significant differences were found when analysing the effects of MPA across groups who purchased low, medium, and high levels of alcohol.

Conclusions

Taken together, the results from the qualitative and quantitative research indicates that the implementation of the MPA policy in Wales has had the desired effect of decreasing the number of units of alcohol purchased by households.

1. Introduction

1.1 This report is part of the mixed methods evaluation of the Minimum Price for Alcohol (MPA) in Wales. This research was carried out by the National Centre for Social Research (NatCen) on behalf of the Welsh Government.

1.2 The report presents the final set of findings from longitudinal qualitative research with Welsh alcohol retailers. The baseline, conducted in autumn/winter 2019/2020, explored retailers' understanding and views of the minimum pricing policy prior to its introduction and their expectations for the effects of the policy. The second wave, undertaken in autumn 2022, explored changes to retailers' understanding and views of the policy, as well as their experiences and perceived impacts of the MPA since implementation. The third and final wave, conducted in autumn 2023, examined longer term impacts, including whether the policy had been fully implemented and was having the desired effect.

1.3 This report also incorporates quantitative analysis of time series data on alcohol unit purchasing (from Kantar Worldpanel). The quantitative analysis explored the impact of the minimum unit price (MUP) on alcohol unit sales and purchasing in Wales, and whether the impact varied depending on socioeconomic background and level of alcohol purchasing.

1.4 The effects of the implementation of the MUP were measured using comparative interrupted time series (CITS), a quasi-experimental method where an outcome variable is observed over multiple time periods before and after the introduction of a policy intervention and compared with a comparison group that did not receive the intervention. This methodology was chosen to disentangle the effects of MPA policy from those of COVID-19 mitigation measures, which were implemented concurrently with MUP in March 2020, causing severe disruption to alcohol unit purchasing and sales. England was chosen as a comparison group, since it introduced similar COVID-19 mitigation measures to Wales but did not implement MUP.

Background to the Minimum Price for Alcohol in Wales

Why minimum pricing was introduced in Wales

1.5 Alcohol consumption has been identified as a major public health issue in Wales. According to the National Survey for Wales (2019-20), 19 per cent of adult respondents reported drinking more than the weekly guideline amount (above 14 units), with 25 per cent of men reporting that their alcohol consumption exceeded the weekly guidelines (StatsWales, 2020). In 2018, the rate of alcohol-specific deaths in Wales was 13.1 deaths per 100,000. This was higher than the UK rate of 11.9 deaths per 100,000 people (ONS, 2019).

1.6 The introduction of minimum pricing sought to tackle alcohol-related harm by reducing consumption amongst hazardous and harmful drinkers. The policy constitutes an important part of the Welsh Government's strategy of reducing consumption of low-cost and high-alcohol content products and follows Scotland's alcohol strategy and implementation of the Alcohol (Minimum Pricing) Act 2012[1]. Its primary focus, however, is tackling more harmful drinking among the general population, rather than problem or alcohol dependent drinkers specifically.

The introduction of the Minimum Pricing in Wales

1.7 A MUP of 50p for alcohol was introduced in Wales from 2nd March 2020. This was intended to increase the price of alcoholic products previously sold or supplied below the minimum price and meant that retailers could not legally sell an alcoholic drink below that price. The MUP has not been increased beyond this level since its introduction.

1.8 The policy made it an offence for alcohol retailers to supply or authorise the supply of alcohol from qualifying premises in Wales at a selling price below the applicable minimum price. It included a formula for calculating the minimum price using the MUP of 50p, the percentage strength of the alcohol, and its volume. The Act established a local authority-led enforcement regime and powers to bring

[1] Following a legal challenge and a vote in the Scottish Parliament, MUP was implemented on 1st May 2018. Source: NHS Health Scotland

prosecutions (Welsh Government, 2020). The inspection regime was established in collaboration with Trading Standards Wales.

1.9 The **baseline report** reported on retailers' understanding, views, and expectations for the effects of the MPA before the policy was introduced. It found retailers' awareness and preparedness for the policy's implementation varied (Bartasevicius et al, 2021). Those who were aware and prepared had accessed information about the policy. Knowledge gaps included the date of implementation, how the MUP was calculated, and whether the policy applied to wholesalers. Retailers predicted the MPA would affect their finances, with on-trade retailers expecting to benefit through increased competitiveness with off-trade retailers, and others foreseeing a fall in sales resulting from increased prices.

1.10 The **interim report** (wave two) looked at on-going implementation and found the main difficulties retailers were experiencing were the pricing of promotions, offers and discounts. This was especially among retailers who were unaware of the Welsh Government’s Guidance and the MUP app used for calculating what the price of alcohol should be by volume of alcohol. For those who had used the MUP app, calculating the price of alcohol helped verify their calculations and avoid pricing issues.

1.11 Where retailers supported the policy at wave two, they saw ‘problem drinking’ as an illness, not a choice, and believed it would prevent illness and improve public health. Some retailers broadly agreed with the policy, but also had concerns that it would disproportionately affect the poorest and most vulnerable in society. There was least support for the policy where retailers believed some people would always drink as much as they wanted to, and that they should therefore be able to charge as much as they liked.

1.12 Retailers’ expectations that most prices would go up by wave two and effect their sales was not met. Rather, they found price increases were limited to two or three litre bottles of strong, cheaper cider; cheaper wines; and some spirits served in bars and restaurants.

1.13 Retailers said the policy had resulted in some positive outcomes including, (a) customers buying less of the cheaper, higher strength alcohol; and (b) retailers stopped stocking these products altogether or replaced them with lower volume alcohol, or premium quality and higher priced alcohol. Furthermore, on-trade retailers said this had created a 'more level playing field' on alcohol pricing between them and off-trade retailers.

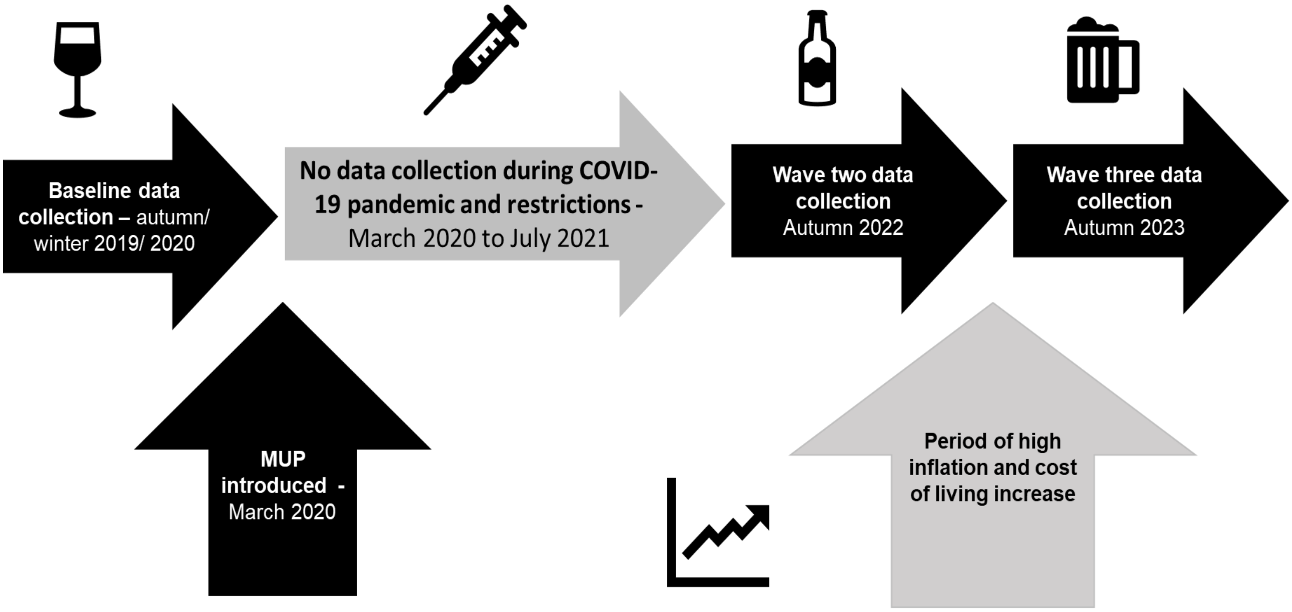
1.14 The effects of the MPA on problem drinkers at wave two were unclear. Retailers assumed this group would substitute cheap alcohol with drugs or prioritise spending on stronger alcohol over costs such as food.

Contextual changes to Minimum Pricing in Wales

1.15 It is important to note retailers' experiences and views of the MPA at both baseline and interim waves were affected by wider events coinciding with the implementation of the policy. This included the COVID-19 pandemic and associated mitigation measures introduced from March 2020, which influenced retailers' ability to operate as usual and their levels of alcohol sales. Many retailers with on-trade licences, such as bars and restaurants, closed after the pandemic started. Some had just re-opened not long before being interviewed at wave two, which meant their experience of the MPA policy being operational was limited. On the other hand, many retailers with off-trade licences remained open during the pandemic and consequently experienced increased alcohol sales during COVID-19 mitigation measures. **Figure 1.1** shows the waves of data collection and their timing.

1.16 At this **final wave**, the experiences of retailers were particularly affected by high inflation and the rise in cost of living. These factors were seen to overshadow any effects from a rise in the price of products resulting from the MPA at wave two; especially because the MUP of 50p had not been increased since its introduction in 2020.This had two other effects. First, it created a fairly settled period of implementation for retailers with no new policy changes. Second, views on the policy became more neutral or indifferent because no new MUP-related increases in price took place between wave two and wave three. Retailers therefore became more used to the policy and related pricing as part of their everyday business-as-usual.

Figure 1.1 Waves of data collection with retailers and contextual factors



Aims and objectives

1.17 The qualitative research aimed to collect feedback from retailers on their understanding, experiences, and perceived impacts from the MPA on their businesses and their customers.

1.18 To meet this aim, the research sought detailed views and perspectives from a comprehensive range of alcohol retailers in Wales to understand:

- Any changes to the level of awareness and understanding of the policy over the course of its implementation.
- On-going implementation and experiences of the policy, including compliance and enforcement.
- Perceived impacts that resulted from the policy, including potential unintended consequences.

1.19 Based on the baseline findings that some retailers lacked awareness of key details, such as how MPA was calculated, the second wave explored whether these gaps persisted, and if not, how they came to learn about and act on them. It also explored retailers' experiences, views, and perceived effects on their businesses since implementation. The third and final wave explored understanding of the policy, experiences of it, and the effects of the policy now that it was embedded after three years of implementation. It also examined experiences of support with compliance, and where applicable enforcement.

1.20 The quantitative research aim was to investigate if the implementation of a minimum pricing for alcohol in Wales was associated with a change in alcohol unit purchasing.

1.21 To meet this aim, the research was structured around the following research questions:

- RQ1: Was the introduction of MPA associated with a change in alcohol purchasing (Average Units of Alcohol Per Buying Household) in Wales, compared to England?
- RQ2: Did this impact differ by socioeconomic group (National Readership Survey (NRS) social grades)?
- RQ3: Did this impact differ between households that bought high- or low-volumes of alcohol prior to the introduction of MPA?

Reporting conventions

1.22 The qualitative results in this report avoid giving numerical findings, since qualitative research cannot support statistical analysis. This is because purposive sampling seeks to achieve range and diversity among sample members rather than to build a statistically representative sample. Moreover, the questioning methods used are designed to explore issues in depth within individual contexts rather than to generate data that can be analysed statistically. Qualitative research provides in-depth insight into the range of experiences, views, and recommendations. Wider inference can be drawn on these thematic bases rather than based on prevalence.

1.23 Verbatim quotations are used to illuminate findings. They are labelled to indicate retailer type, and whether the retailer held an on-trade or off-trade licence, or both.

1.24 For the comparative interrupted time series (CITS) analysis, the method section details how time series data was collected both before and after the intervention for both treatment and control groups. Explicit statistical techniques are employed to adjust for potential confounders, ensuring that observed changes can be attributed to the intervention rather than extraneous trends or seasonal variations. Results are typically presented through graphs and tables showing the time points, trends, and levels pre-and post-intervention, compared across both treatment and control groups. Key metrics often include the change in level (immediate effect) and change in trend (slope) after the intervention.

1.25 Statistical significance is assessed using a CITS, to confirm whether observed changes are not due to random variation. By adhering to these conventions, researchers can provide a robust and transparent account of the intervention's impact, distinguishing genuine effects from noise and temporal confounding factors. This structured approach allows for a precise and credible evaluation of the intervention's efficacy in a controlled setting.

2. Methodology

Qualitative methodology

2.1 A qualitative design, based on in-depth interviews with retailers, was chosen to generate rich and detailed insights into different experiences and opinions on the pricing changes brought by the MPA.

Sampling and recruitment

2.2 At this final wave, 22 participants took part. The intention was to conduct follow-up interviews with the same 30 retailers interviewed from wave two. However, one participant had gone out of business, five declined to take part again, and two were uncontactable.

2.3 Of the 22 participants, 14 participated across all three waves of data collection, and eight participated at waves two and three only. New participants were recruited at wave two where participants had dropped out of the study since wave one (see **Table 2.1**).

Table 2.1 Number of participants by wave of data collection

	At baseline	From baseline	New at wave two	**Total**
Baseline	30			**30**
Wave two		15	15	**30**
Wave three		14	8	**22**

2.4 Across waves, the sample was designed purposively, to reflect the diversity of alcohol retailers in Wales. The sample was structured to include:

- Retailers from the five different Welsh regions (Mid and West Wales, North Wales, South Wales Central, South Wales East, South Wales West).
- A spread of urban, rural, and suburban locations.
- Different alcohol licenses – on-trade, off-trade, and both.
- Both chain and independent retailers.

The selection also included retailers close to the Welsh-English border. Further details about the sample can be found in Annex A.

2.5 The recruitment of participants and interviews for the research were conducted by Welsh research consultancy Arad Research, to allow for retailers to participate in Welsh if they wanted to. Although one participant took part in Welsh at baseline, no participants chose to do so at wave two or three.

2.6 The composition of the achieved sample is shown in **Table 2.2** below

Table 2.2. Wave three achieved sample composition

Sampling criteria	Sampling characteristics	No. interviews
Region	Mid and West Wales	3
	North Wales	5
	South Wales Central	5
	South Wales East	3
	South Wales West Unspecified	4 2
	Total	**22**
Licence	On-trade	4
	Off-trade	9
	Both Unspecified	8 1
	Total	**22**
Retailer type	Chain	10
	Independent Unspecified	11 1
	Total	**22**

2.7 Major chain supermarkets are not represented in the sample. When approached for the baseline wave, they said they were being directly consulted by the Welsh Government and felt their views and experiences were already being registered in this way. Despite the inclusion of franchise retailers, the absence of major chain supermarkets should be considered as a limitation of the research.

Data collection

2.8 The topic guide for the interviews was designed by NatCen in collaboration with the Welsh Government. It included a mixture of prompts and probes across a range of themes structured around the research questions. Full details of the topic guide can be found in Annex B. The themes covered included:

- Retailer and participant background.
- Understanding and awareness of the policy.
- Experience of implementation now the policy had been operating for three years.
- Experience of support with compliance and enforcement.
- Impacts on retailers, and perceived impacts on customers.

2.9 The 22 interviews were conducted by telephone between September and December 2023, to offer greater convenience and flexibility to retailers. The interviews were with store owners, managers with responsibility for implementing the MPA, and staff who priced products. Interviews were designed to last 30 minutes but varied between 20 and 40 minutes. This was affected by whether retailers already sold products within the permitted range, the extent of impact on their prices, and extent of change in their business since the previous wave.

Qualitative analysis

2.10 The qualitative data was analysed using NatCen’s Framework (Ritchie, et al. eds., 2013) approach which allows in-depth exploration of the data by case and by theme. Based on the research questions and the review of a small sample of interview transcripts, the research team designed an analytical framework. This consisted of rows which represented each case and each wave of data, and columns that represented themes that were distinctive to, and similar across, waves. Interview data was then organised into this framework as data was collected at each wave. This approach allows the processing and systematic investigation of large volumes of data, both between cases (looking at what different participants said on the same issue) and within cases (looking at how an individual's opinions on one topic relate to their views on another). It also facilitated a longitudinal approach to analysis.

2.11 The framework enabled us to map the full range of views and experiences of retailers interviewed, as well as comparing the accounts of different participants, or groups of participants (e.g., off-trade retailers). Additionally, longitudinal analysis was conducted wherever possible to compare retailers' responses at different waves of data collection.

Quantitative methodology

Data

2.12 The data consisted of aggregate figures on alcohol purchasing in Wales and England, obtained from consumer panel data provided by Kantar. Kantar Worldpanel (KWP) is a continuous household shopping panel, which consists of approximately 30,000 British households selected through stratified sampling. The recruitment process considers various factors such as region, household size, age of the primary shopper, and social grade based on the primary shopper's occupation (categorised using the National Readership Survey's occupation-based social grade definition). Households dropping out of the panel are replaced, to maintain the panel's size and representativeness. Participants receive compensation in the form of vouchers from high street retailers for their involvement.

2.13 The specific dataset used for the analysis is from Kantar's Take Home Purchase Panel, a rich scanner dataset of household purchases of fast-moving consumer goods (FMCG) in Great Britain. Kantar's Take Home panel consists of c.30,000 households recording their purchases of all groceries brought back into the home - takeaways, restaurant meals and food consumed "on the go" are excluded from the take home panel. For the purposes of the analysis in this report, we looked at the alcohol purchasing of a subset of this panel, comprising c. 1,500 households in Wales and c. 26,000 households in England.

2.14 Upon joining the panel, households provide demographic details, which are updated annually. Using barcode scanners, households record all food and drink purchases brought into the home. To ensure data quality, households must meet certain criteria every four weeks, including minimum levels of data recording and spending, to be included in the final KWP datasets. Additionally, panellists upload digital images of checkout receipts, which KWP uses to verify the accuracy of the scanner data. Demographic information collected includes the number of adults in the household and the primary shopper's age, income and social grades (Ipsos, 2009). Each dataset contained the variables as shown in in Table 2.3.

Table 2.3. Variables included in the datasets

Variable	Description
Demographic Region	Whether the data refers to England or Wales
Date	Time points for the measurement every 2, 4 or 52 weeks
HML Group	High (top 20% percent of buyers based on units purchased), medium (next 30% based on units purchased) and low (lowest 50% based on units purchased) purchasing groups
Demographic	NRS social grades groupings, ABC1 (managerial, professional and upper supervisory occupations) and C2DE (manual routine, semi-routine and lower supervisory occupations and long-term unemployed).
Total Alcohol Spend	Total amount spent on alcohol within each time period (£)
Total Alcohol Units	Total number of alcohol units purchased within each time period
Buying Households	Total number of households buying alcohol in the sample within each time period
Purchase Frequency of Alcohol (trips)	Number of trips that include alcohol purchases within each time period
Average Paid Unit Price	Average price per unit paid for alcohol within each time period
Average Units Per Buying Household	Average number of units that each buying household bought (total alcohol units/buying households) within each time period

2.15 Our analysis used two separate datasets derived from KWP data. The first used data aggregated to four-week intervals covering the period from March 2016 – September 2023 and included data on all households participating in the panel at each time point. For the analysis stratified by alcohol purchasing level, we required data from households that were in the panel continuously from July 2019 – March 2021, as their purchasing group was defined based on alcohol purchases prior to the introduction of MPA and we then needed to follow up these same households post-MPA implementation. This second dataset used data aggregated to two-week intervals to increase the number of time-points available for the analysis. The characteristics of each dataset are summarised in Table 2.4. The longer four-week time series was used to answer RQs 1 and 2, while the shorter two-week series was used to answer RQ3.

Table 1.4. Timeframe and characteristics of the different datasets

Dataset	Range	Unique timepoints	Groupings	RQs
Two weeks	4 July 2019 – 21 March 2021	52	HML Groups	1 and 2
Four weeks	20 March 2016 – 3 Sept 2023	98	NRS social grades	3

2.16 We used time series analytical methods on the KWP data to answer our three research questions (Beard et al., 2019). It is important to recognise that this data only covers alcohol that is brought into the home before being drunk. It therefore excludes sales in pubs, bars, restaurants, and nightclubs. The introduction of MPA in Wales on 2 March 2020 took place as cases of COVID-19 in Wales were first being identified and less than a month before protective measures came into force on 26 March. The protective measures required the closure of non-essential retailers and restricted freedom of movement. Pubs and restaurants were also shut down at this time, with a significant displacement of alcohol purchasing to shops as a result (Giles & Richardson, 2020). Therefore, an analysis using KWP data on alcohol sales in Wales would show a sharp increase in alcohol brought into the home in March 2020. Separating the impact of MPA from these pandemic-induced changes to alcohol purchasing behaviour presents a key challenge for our analysis.

Comparative Interrupted Time Series

2.17 To address this challenge, we compared alcohol purchases in Wales, which was affected by both MPA and the pandemic in March 2020, with purchases in England, which was similarly affected by the pandemic, with broadly similar pandemic mitigation policies, but where no alcohol pricing policies were enacted at this time. The approach used was a comparative interrupted time series (CITS).

2.18 In an interrupted time series (ITS) analysis without a comparison group, data is collected at a series of time points before and after an intervention is introduced. The key idea is to compare the trend or pattern in the outcome variable before and after the intervention to determine whether there was a statistically significant change associated with the intervention.

2.19 ITS relies solely on comparing the pre-intervention and post-intervention data within the same group to estimate the intervention effect. In a single ITS we estimate whether there are statistically significant changes in the level of the outcome measure of interest and trend over time in this measure, i.e. the slope (in a linear model) following the intervention. ITS does this by using a segmented linear regression, defined using the following equation:

$$y = \alpha + \beta_1 T + \beta_2 X + \beta_3 XT + \varepsilon$$

Where:

- T = time from the first data point, starting from 1;
- X = study phase, where X = 0 before the intervention was introduced and X = 1 after
- XT = the interaction between time and study phase, so this XT is zero before the intervention is introduced and T afterwards;
- ε = the residual;
- β_1 = slope inclination before the intervention;
- β_2 = difference between the end of the pre-intervention period and start of the post-intervention; and
- β_3 = slope inclination after the intervention

2.20 A CITS analysis extends the ITS design by incorporating a comparison group that was not exposed to the intervention – MPA in this case. By comparing the changes in the outcome variable over time in the intervention group with those in the comparison group, CITS helps to statistically adjust for external factors or trends that may affect the outcome independent of the intervention. This yields a more robust estimate of the intervention effect. For a CITS, we use the following regression equation:

$$y = \alpha + \beta_1 T + \beta_2 X + \beta_3 XT + \beta_4 Z + \beta_5 ZT + \beta_6 ZX + \beta_7 ZXT + \varepsilon$$

Where the additional terms are:

- Z = whether the group received the intervention or not (Z = 1 for Wales and 0 for England);
- ZT = time for intervention group and 0 for non-intervention group;
- ZX = study phase for intervention group and 0 for non-intervention group;
- ZXT = time after interruption for intervention group and 0 for non-intervention group; and
- ε = the residual.
- β_1 = slope inclination before the intervention for England;
- β_2 = difference between the end of the pre-intervention period and start of the post-intervention for England;
- β_3 = slope inclination after the intervention for England;
- β_4 = difference between England and Wales at the first time point before the intervention;
- β_5 = slope difference between England and Wales before the intervention;
- β_6 = difference between the end of the pre-intervention period and start of the post-intervention between England and Wales;
- β_7 = slope difference between England and Wales after the intervention;

2.21 The key coefficients for the purposes of our RQs are therefore β_6 and β_7, which represent the marginal difference in changes in the level (β_6) and slope (β_7) of alcohol purchase volumes in Wales compared to England, and β_4 and β_5 showing the pre-intervention differences between Wales and England in terms of baseline (β_4) and slope (β_5).

Autocorrelation

2.22 One key assumption of CITS (an extension of the ordinary least squares regression) is that the residuals in the model are uncorrelated over time (i.e. the error terms in the model at any time point are not related to the error terms in the previous or successive time periods). However, time series data often contains some form of autocorrelation, which means that the residual at a particular point in time is correlated with residuals earlier in the series, even after adjusting for time, intervention, and study phase.

2.23 We controlled for autocorrelation by using the Prais-Winsten estimator, which takes into account the autocorrelation between each point and the preceding one (referred to as an AR(1) model), in a linear regression model. The procedure recursively estimates the coefficients and the error autocorrelation of the specified model until sufficient convergence of the AR(1) coefficient is reached.

Statistical analysis

2.24 All analyses were run in R statistical software (R Core Team, 2024), version 4.3.1, using the 1.1.2 version of the prais package (Mohr, 2015). The three Research Questions were address as follows:

- RQ1: a CITS comparing Wales and England was run on total alcohol sales recorded in KWP using the longer four-week dataset.
- RQ2: separate CITS models comparing Wales and England were run on total alcohol sales recorded in KWP for social grades ABC1 and C2DE using the longer four-week dataset.
- RQ3: separate CITS models comparing Wales and England were run on total alcohol sales recorded in KWP within each of the three alcohol purchasing groups, high, medium, and low, using the shorter two-week dataset.

3. Awareness and understanding of the MPA among retailers

3.1 This chapter explores changing levels of awareness and understanding of the MPA policy over the three waves of data collection. It investigates how understanding of the aims of the MPA affected support for the policy, and the ways in which retailers acquired further information about the policy since wave two.

Key findings

- Awareness and understanding of the policy gradually improved over the three waves of data collection. This was particularly so for off-trade retailers whose cheaper prices were most affected.
- Retailers were most likely to support the policy where they understood it was targeted at harm reduction among the population in general. Least support was found where retailers mistakenly believed it was targeted at problem drinkers for whom they thought it would make no difference.
- Some retailers said they may benefit from short refresher briefings or courses on pricing discounted products. They also wanted information on whether the policy had been effective.

Levels of awareness and understanding

3.2 Levels of awareness and understanding of the policy gradually improved over the three waves of data collection as the policy became more operational.

3.3 At baseline, the policy had not yet been implemented. At this stage, those who proactively sought information about it began to prepare for its implementation. There were also concerns that the policy would have a statistically significant effect on retailers' businesses and prices.

3.4 By wave two, retailers had a better understanding of the policy, principally through experience of its implementation. They also realised that it affected fewer products than they initially expected. Both on and off trade retailers understood the minimum price per unit was 50p, and that the policy was designed to target cheap, higher strength alcohol. There was, however, some confusion about the pricing of discounts and whether the policy was targeted at the population as a whole or at problem drinkers.

3.5 By wave three, understanding of the policy was especially good for off-trade retailers whose cheaper prices had been most affected. While on-trade retailers understood the basics of the policy (e.g., that the MUP was 50p per unit and targeted cheaper, high-strength alcohol), it was not part of their everyday experience as few, if any, of their prices were affected. It tended therefore to be less front of mind compared to off-trade retailers. **Figure 3.1** summarises the improvement in awareness and understanding of the policy and its operation by retailers across the three waves.

Figure 3.1 Changes in retailers' understanding and awareness of the MPA over time

Theme	Baseline – 2019/20	Wave two - 2022	Wave three - 2023
Expectations of impact on retailers and their businesses	• Most prices would increase • Sales would be affected	• Fewer prices affected than expected • Mainly off-trade retailers with cheaper prices affected	• Fewer products being stocked below the permitted range • On-trade retailers less affected
Understanding of the aims of MPA aims and support for them	• Uncertainty over aims • Some retailers seeking out information in preparation for implementation	• Greatest support where policy understood as harm reduction • Scepticism where policy seen as targeting problem drinkers	• Clearer understanding that the policy is about price increases on high-strength alcohol
Information needs	• Welsh Government information and MUP app introduced to meet needs as MPA implemented	• Pricing of affected products, especially involving discounts and multi-packs	• How to price discounts and multi-packs • Usefulness of MUP app • Refresher briefings/ courses needed

3.6 Improvements in levels of understanding of the MPA since wave two were seen where retailers recalled being informed about the policy by their head offices, by the Welsh Government when they received their licence (other sources of information are described in points 3.10 and 3.12 below), or during visits by Trading Standards as part of compliance and enforcement (see Chapter 4).

Awareness, understanding and support for the aim of the MPA

3.7 As in previous waves, support for the MPA was linked to whether retailers fully understood the principal aim of the policy. This was to decrease consumption of harmful, higher strength alcohol by increasing the price of such products, and thereby dissuading consumers from buying them.

3.8 Positive or supportive views of the MPA policy were linked to whether retailers understood the policy to be targeted primarily at harm reduction. Retailers who saw drinking as a health issue and not a choice, felt that the policy would be effective at promoting public health.

> 'If it's a luxury good (i.e., not a necessity) that potentially can cause harm, then there should be some frameworks in place, and a minimum pricing one doesn't seem like the worst way of doing it, to be honest.' (Specialised alcohol store, on- and off-trade, chain)

3.9 By contrast, negative views of the MPA tended to be linked to the misunderstanding that the principal aim of the policy was to target problem drinkers or those dependent on alcohol. Retailers who understood the policy in this way were more sceptical about it being effective. They saw problem drinking as an issue of dependency rather than affordability, arguing that people who wanted to drink would always find a way to do so. The policy was therefore described as a 'band-aid' as they felt it was not getting to the root of the problem why some people were drinking:

> 'I just think it's a band-aid. It isn't doing anything. I think the money would be better spent helping people break dependency rather than just trying to get them to not buy alcohol.' (Bar, on- and off-trade, independent)

Information about the MPA

3.10 There was no specific information campaign about the MPA policy between waves two and three. The same types of information source were therefore available at wave three as at wave two.

Sources of information

3.11 Where retailers had **proactively sought information,** this included: (a) searching the internet or looking at websites such as the Welsh Government and Trading Standards; (b) using the MUP app price calculator; (c) attending an annual 'liquor licensing' course (off-trade retailer); (d) looking for articles in newspapers and magazines following information about the MUP in the news media.

3.12 **Information received** about the MUP included: (a) receiving it when local authorities were carrying out licencing checks; (b) briefings from the Welsh Government at the point of licencing; (c) information about the policy from head offices; (d) trade body sources (e.g., Petrol Retailers Association) or wholesalers (e.g., Booker); and (e) word-of-mouth. There did not appear to be a link between the number of sources of information and levels of knowledge.

Requests for further information

3.13 As at wave two, retailers said it would be helpful to receive refresher briefings or short courses from the Welsh Government, including how to deal with complementary drinks promotions, especially when these were being distributed from England.

3.14 Though not essential, retailers also thought it would be helpful for them and their customers to be aware of the effectiveness of the policy, what effects it has had, and clarity over where the extra money raised goes.

4. Experiences of implementation

4.1 This chapter reports on how retailers experienced the MPA policy three years on from implementation. It focuses on how retailers dealt with any confusion over pricing arising from the MUP, and their experiences of compliance and enforcement of the policy by Welsh local authorities.

Key findings

- At wave three, retailers said the MPA had become more part of their everyday business-as-usual.
- Previous difficulties calculating promotions, offers and discounts were reduced by use of the Welsh Government MUP app, or by central pricing for chains at their head offices.
- Retailers said that removal of some cheaper, higher-strength alcohol from sale meant they had fewer products being sold below the permitted price that needed to be checked.
- The frequency and nature of Trading Standards compliance checks varied, but the overall picture was of retailers willing to comply with their legal obligations in relation to the MPA.

Experiences of implementation of pricing

4.2 At baseline, retailers presented different levels of readiness to implement the MPA policy. At wave two, off-trade retailers who remained open during the COVID-19 mitigation measures were already getting to grips with the policy, while on-trade retailers were dealing with it as they re-opened when the measures were lifted. By wave three the policy had become much more part of their everyday experience of retail and was therefore more *embedded*. This was especially the case for off-trade retailers whose cheaper prices were most affected.

Checking the prices, promotions, offers and discounts

4.3 In comparison to wave two, retailers were more comfortable calculating and checking the prices of their products. At this wave, the main issue to emerge was the checking of prices of promotions, offers and discounts. This was especially the case for retail staff who were not directly involved in decisions about pricing (e.g., chain stores where decisions about pricing were made at headquarters). In these cases, staff checked prices by using the Welsh Government MUP app calculator, which they found to be a very useful resource.

> ‘All I know is that I am not allowed to sell it under a certain price, and I rely on my lovely app to help me.’ (Off-trade, chain store)

Off-trade retailers who were part of a chain could also rely on administrative pricing support from their head offices, who would do the calculations for them.

4.4 Others, however, who had stopped stocking cheaper, higher-strength alcohol, said their checks became fewer, and were now limited to the occasions where they needed to apply the MUP to discounted or complementary products, including those coming from central distributors in England.

Compliance and enforcement

4.5 The Public Health (Minimum Price for Alcohol) (Wales) Act 2018 gave Welsh Local Authorities the power to enforce the MPA policy. This put them in charge of undertaking enforcement actions in their area to reduce incidences of underselling alcohol products, including visiting premises to ensure businesses are complying with the law. Moreover, the responsibility for enforcement within local authorities was given to Trading Standards departments and their officers.

4.6 At wave two, retailers had not yet received any visits from Trading Standards. This made the experience of compliance and enforcement of special interest at wave three.

4.7 Retailers’ experiences of Trading Standards compliance checks varied. Some reported receiving visits annually or every 18 months, with checks encompassing MUP compliance as well as other licensing issues. However, some retailers did not recall visits from Trading Standards at all.

4.8 The nature of the enforcement checks also varied. Some participants said Trading Standards visited their premises without warning, while others reported being given forewarning.

4.9 Retailers who had been visited saw the visit as part of their legal obligations and did not consider it overly burdensome or intrusive. For example, one retailer summarised their views on Trading Standards, saying that:

> ‘They're here to check that we're sticking to the rules.’ (Off trade, chain convenience store)

4.10 Even where a retailer had received an enforcement warning at wave three, this did not affect their experience of compliance and enforcement in a negative way. They added that despite receiving a warning for displaying an incorrect shelf label for an alcohol product:

> ‘It was alright. It was quite well communicated, so I didn't feel targeted or anything like that.’ (Off-trade, off-licence store)

4.11 Some retailers told us that, while they were welcoming of trading standards checks, they sometimes felt that the visits to their premises were not necessarily warranted because they were invariably compliant with the law.

5. Perceptions of impacts

5.1 This chapter covers the perceived impacts of the MPA on the pricing of alcohol products, and on retailers' businesses, between waves two and three. It explores the relative effects on prices arising from the MUP and inflation. It also examines whether the policy affected the sale of cheaper, higher strength alcohol as intended, and other positive or negative effects from the policy. Lastly, it looks at retailers' perceived impacts on their staff and customers.

Key findings

- Retailers said demand for higher strength alcohol decreased as prices increased. Off-trade retailers reduced their stocks, gradually stopped stocking them, or replaced them with lower volume, higher cost premium products, regarded as better value for customers.
- At wave three, the perceived effect of the policy was weakened because (a) the MUP had remained at the same level of 50p per unit since its implementation, and (b) the price increases from the MUP were overshadowed by higher inflation during 2022 to 2023.
- An unintended effect of the MPA policy was that on-trade retailers felt it created fairer competition between them and off-trade retailers, especially in competition with supermarkets.
- Negative effects of the MPA discussed at wave two (e.g., costs of training, product wastage, and checking discounted products distributed from England) were less prominent in retailers' accounts at wave three.
- Retailers said there was no noticeable impact on their sales from customers going over the border to England to buy cheaper alcohol.
- Retailers found it hard to gauge the impact of the MPA on problem drinkers but did notice fewer customers they described as 'troublesome' coming into their shops to buy previously cheap, high-strength alcohol.

Effects of the MPA on the sale of cheaper, higher strength alcohol

5.2 The principal aim of the MPA is to reduce the sale of cheaper, higher strength alcohol as one part of a wider approach to harm reduction. The policy continued to have the desired effect of reducing the availability of cheaper, higher strength alcohol since wave two. Retailers said sales of these products had slowed down since the previous wave. Off-trade retailers noted purchases of large – two, three or five litre – bottles of cider had slowed down, with some retailers deciding to stop selling them altogether as sales declined:

> 'So things like X cider. Now I think a three-litre bottle's minimum price, [is] like £11. We don't get people buying them anymore.' (Off trade, chain convenience store)

Other products mentioned as being affected were cheaper wines, and some spirits.

5.3 Off trade retailers also told us they had subsequently stopped stocking these products, and/ or introduced better quality, higher priced alcohol. They regarded these products as better value for customers because of their perceived premium and higher quality.

5.4 Furthermore, retailers said removing these products from sale may help change the drinking habits of younger people in future:

> 'Whether maybe people of a younger age wouldn't start, or they can't get their hands on the cheap alcohol, the affordability … You'd like to think it would stop them drinking.' (Retail store, off-trade, chain)

In other words, if young people cannot afford to purchase higher strength alcohol, they will be protected from its harm, and may not develop an interest in it.

Effects of the MUP at 50p per unit

5.5 When the MPA policy was implemented, the level of the MUP was set at 50p. This was not increased between wave two and three of data collection. As at wave two, retailers said the policy had not increased the prices of as many products as they expected. They found the policy had been more targeted than they originally thought it would be and was limited to the kind of products discussed above.

5.6 At wave three, on-trade and some off-trade retailers continued to say they were not affected by the level of the MUP at all. This was because the type of products they sold were higher priced than the MUP required, and/ or that a high mark-up on their prices meant that small increases in price from the MUP could be absorbed.

Continued support for the policy was therefore related, to some extent, to the fact that it did not affect as many products as retailers had initially expected.

Reduced effects of the policy in the context of high inflation

5.7 High inflation started to affect prices during wave two of data collection and peaked between autumn 2022 and autumn 2023. A retailer noted the particularly rapid rise in prices between waves two and three of data collection:

> 'There's been so many knock-on effects that have come down the chain that it just seems that pricing has always gone up every few months. It's probably been the biggest, or the longest, period of instability in terms of pricing that I've ever witnessed.' (Off trade, bottle shop, chain)

5.8 At this final wave, retailers said inflation had overshadowed the increase in prices for the few products that were affected by the MUP at wave two. The policy was therefore weakened in its impact, at least partly because the MUP had not increased while prices had. The overall effects of the MPA across the waves of data collection are shown below in **Figure 5.1**.

Figure 5.1 Effects of the MPA on prices and sales

Fairer competition in the market – a 'level playing field'

5.9 Another positive impact discussed at wave three was that the MPA was seen as creating fairer competition in prices between on- and off-trade retailers. At baseline, on-trade retailers had wondered whether the policy might bring the prices of supermarkets and on-trade retailers such as pubs, clubs, and restaurants closer together. By wave two, on-trade retailers viewed the policy positively for this reason and were supportive of a more 'level playing field'. This view was echoed at wave three:

> '...when it was implemented, it was a positive for us, because it brought up where there were challenges in the marketplace. So, there were people out there at the time, before it came in, selling the alcohol far too cheaply, and then that would affect our sales, in essence.' (Brewery, on- and off-trade, independent)

5.10 Some on-trade retailers still felt at wave three that supermarkets were able to sell alcohol at lower profit-margins, thereby undercutting them. Overall, however, on-trade and smaller off-trade retailers welcomed what they saw as fairer competition arising as an unintended effect of the policy.

Perceived negative effects on retailers

5.11 At wave two the negative effects of the MPA identified by retailers were: (a) the cost of training staff; (b) increased product wastage; (c) dealing with UK-wide promotions and discounts, and (d) switching from English to Welsh suppliers to avoid having to check prices on individual products. By wave three these effects were still mentioned, but were less prominent in retailers' accounts, or had been reduced in their effects.

Reduced negative effects

5.12 **Costs of training staff** to understand the MUP were mentioned less at wave three than at wave two, possibly because training had already been undertaken for some staff. The issue therefore lost its prominence among retailers at this wave.

5.13 **Product wastage** continued to be mentioned at this wave, although also less prominently. Wastage arose where retailers were unable to discount below the MUP as products neared their shelf life. One wholesaler (who was also a retailer) reported responding to the policy by adapting their forecasting and sales strategies for products that were affected by the MUP. Before the implementation of the policy, retailers would sell off unsold stock by discounting. After the implementation, they would avoid stocking and producing as much of these products in case they could not sell them:

> ‘I'm stuck with 50 cases now. What I would normally have done with that is just sell it off, but you're unable to do that. So, you have to forecast a lot better. You produce slightly less knowing you'll sell out but [then] knowing you won't have a problem on the end of it.’ (Both on-trade and off-trade, brewery)

Consequently, product wastage after best before dates was reduced.

5.14 **UK-wide promotions and discounts** continued to be a problem where pricing for shops, breweries and hotels was set centrally at head offices outside Wales. This meant that those involved in pricing products and creating special offers may not be as aware of Welsh legislation as they should be. Some retailers said that receiving products from outside Wales led to more price checking against the MUP to ensure prices were within the permitted range. However, retailers tended to see this as part of everyday business as usual now that the policy was embedded. Some retailers near the Wales-England border mentioned at wave two that they had switched to Wales-based suppliers. However, this was not raised again at wave three.

5.15 Instead, retailers checked products coming from England-based suppliers. This was not perceived as overly burdensome, and it was facilitated by the MUP app:

> ‘If I ever have to reduce anything, then I've got an app on my phone so I can put in a minimum price and it will let me know the cheapest price I can do it for.’ (Off-trade, convenience store, chain)

Cross-border sales

5.16 There was some concern when the MPA was introduced that retailers near the **Wales-England border** might be affected by some customers going over the border into England to buy cheaper alcohol not affected by the policy. These concerns were not as prominent at this wave of data collection as they were at baseline and wave two. Retailers said that, while a few customers might drive over the border to take advantage of cheaper alcohol or promotions in England, they had not seen a noticeable drop in sales.

Effects of the MPA on customers

5.17 Retailers reported that customers showed some awareness of the MPA policy at baseline and at wave two, mainly due to media reporting of the policy and notices from the Welsh Government that some retailers displayed at point of sale. A recurring view at this wave, however, was that customers did not mention the MPA as much, partly because retailers and their customers had learnt ‘to live with it’ and was no longer new news.

5.18 As at wave two, there were still concerns the policy was disproportionately affecting the poorest, not only within Wales, but also when compared with England.

> ‘I think it was just scandalous for us to be paying more than England. I think it was just the wrong move to do. I don't think we're a richer country than England. People here are generally poorer, the wages are poorer, and for us to have to pay more for something is wrong.’ (Convenience store, off-trade, chain)

5.19 However, retailers said that ‘grumbles’ from customers about increases in price of products at wave two, were outstripped by complaints due to inflationary pressures on prices at wave three.

Effects on problem drinking

5.20 Retailers found it hard to gauge the overall effects on problem drinkers because they were only aware of those people who came to their premises. While some retailers thought that price rises could lead to more crime with people stealing alcohol they could not afford, others reported a positive effect from lower sales of cheaper, higher strength alcohol. Off-trade retailers said that some staff in their shops had less contact with ‘troublesome’ customers:

> ‘I don't know how to put it correctly now - yes, I guess less troublesome customers to the door because, usually, the higher volume [x product] and such, normally does draw in alcoholics and problematic customers sometimes. I've noticed a decline in that because of, obviously, affordability.’ (Off-trade, independent shop)

So, while off-trade retailers could not be sure what had happened to some of the problem drinkers who previously came to their premises, they did notice fewer customers buying cheap, high strength alcohol.

6. Analysis of consumer purchasing data

6.1 In this analysis, we estimated the effect of the Minimum Price for Alcohol in Wales (MPA) on alcohol purchasing, measured using the average number of units of alcohol purchased per household. The analysis was conducted using a comparative interrupted time series (CITS). The analysis is a continuation of the ‘Evaluation of the Minimum Price for Alcohol in Wales – Interim Report on Research with Retailers and Quantitative Analysis’ published by the Wales Government in 2023 (Mitchell et al., 2020), which covered the September 2019 to February 2022 period. Here we have built on the analysis by using new data from the KWP that covers the March 2016 to September 2023 period (i.e., a longer timeframe). In comparison to the data in the Interim Report, which used volume of alcohol-containing drink as the primary outcome, the current report analysed the number of units of alcohol purchased per household. This new outcome measure is preferred as it differentiates accounts for the alcohol content of drinks and is in line with current published work.

6.2 The interim report also contained analysis of store sales data from the Retail Data Partnerships (TRDP). We had originally planned to analyse an updated TRDP dataset, but this was not done because: (a) the updated data was simply a longer post-implementation time series which adds little to the analysis already reported; and (b) the cost of purchasing this data was not felt to be good value for money given the additional analysis did not significantly improve on that already reported.

Key Findings

- There was a statistically significant increase in alcohol purchasing in England and Wales at the same time MPA was introduced. However, the increase in Wales was lower than in England, and followed by a subsequent greater decline over time, which indicated that MPA had an impact on alcohol purchasing in Wales.
- The impact of MPA varied by socioeconomic status: higher socioeconomic households in Wales saw a more rapid decline in purchasing post-April 2020 in comparison to England, while lower socioeconomic households in Wales

had a smaller initial increase with no statistically significant post-trend difference in comparison to England.

- Analysis by alcohol level purchasing group showed no statistically significant differences.

RQ1 Results: Impact of MPA on alcohol purchasing in Wales vs England

6.3 Figure 6.1 and Table 6.1 present the results of the CITS analysis comparing overall alcohol purchasing as recorded in KWP in Wales and England.[2] This shows that in the pre-MPA period, there was no statistically significant change in the number of alcohol units purchased in England, but in Wales, household purchasing increased by an average of 0.19 units more every four weeks in comparison to England. As we might expect, given the already-documented shift in alcohol purchasing from pubs and restaurants to shops at the start of the COVID-19 pandemic, both England and Wales saw a sharp increase in alcohol purchases brought into the home in April 2020. However, this increase was statistically significantly larger in England (+20.64 units per household per four weeks) than Wales (+13.21 units per household per four weeks). After this step change, alcohol purchasing fell in both countries, but this fall was statistically significantly faster in Wales, falling 0.29 more units every four weeks than England, relative to the pre-MPA period. The results of further analyses and individual ITS results can be found in Appendix C.

[2] In this section, we report the results of the CITS analysis. The diagnostic tests, full results of the CITS and the descriptive statistics are reported in the Appendix.

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Figure 6.1. Comparative interrupted time series graph showing the average purchased units of alcohol per household over time in Wales and England.

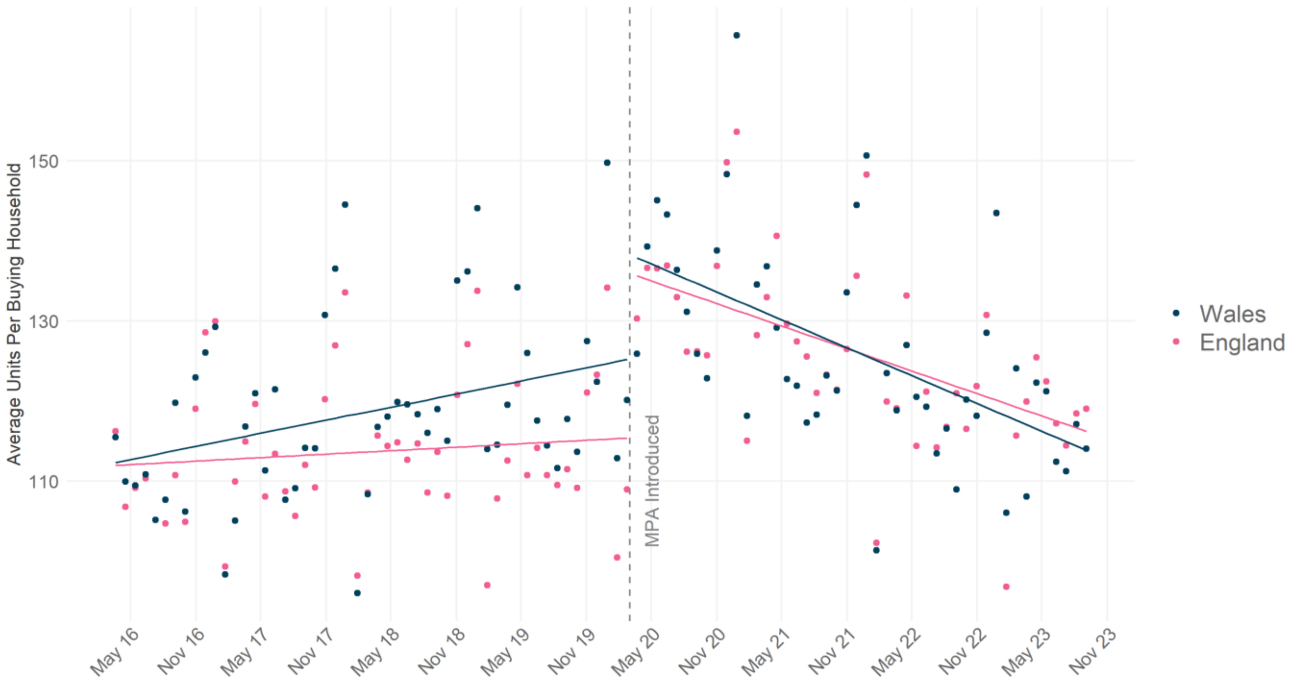

Table 6.1. Comparative interrupted time series model coefficients for four-week purchasing data, total and divided by NRS Social Grade

Parameter	Interpretation	Estimate	*SE*	*p*
	Wales vs England, Total Unit Purchasing			
β_1	England pre-trend	0.07	0.11	0.55
β_2	England post-level change	20.64	4.79	< 0.001
β_3	England post-trend change	-0.50	0.18	< 0.001
β_4	Wales vs England pre-level difference	0.16	2.49	0.95
β_5	Wales vs England pre-trend difference	0.19	0.08	0.02
β_6	Wales vs England post-level difference	-7.43	3.59	0.04
β_7	Wales vs England change in slope difference pre-to post	-0.29	0.13	0.02

RQ2 Results: The impact of MPA on alcohol purchasing in Wales vs England for different socioeconomic groups.

6.4 Results for the CITS analysis stratified by socioeconomic group are shown in Figure 6.2. and Table 6.2. They show broadly similar results for the higher socioeconomic group (ABC1) to the population total, with alcohol purchases in Wales rising prior to March 2020 while purchases in England were stable. There was no statistically significant difference in the extent to which purchases increased in higher socioeconomic groups in Wales compared to England, however post-intervention sales fell significantly quicker in Wales by 0.48 more units every four weeks on average.

6.5 The picture for the lower, C2DE, socioeconomic group was a little different, with no statistically significant difference in the pre-intervention trend between the two countries. That is, purchasing was not increasing in this period. However, while there was a statistically significant increase in purchasing in England in April 2020 (+19.20 units per household per four weeks), the increase was much smaller in Wales (+5.13 units per household per four weeks). There was no statistically significant difference in the post-intervention slopes, but both countries saw alcohol purchases fall after the initial step change.

Figure 6.2. Comparative interrupted time series graph showing the average purchased units of alcohol per household over time in Wales and England, presented by socioeconomic groups.

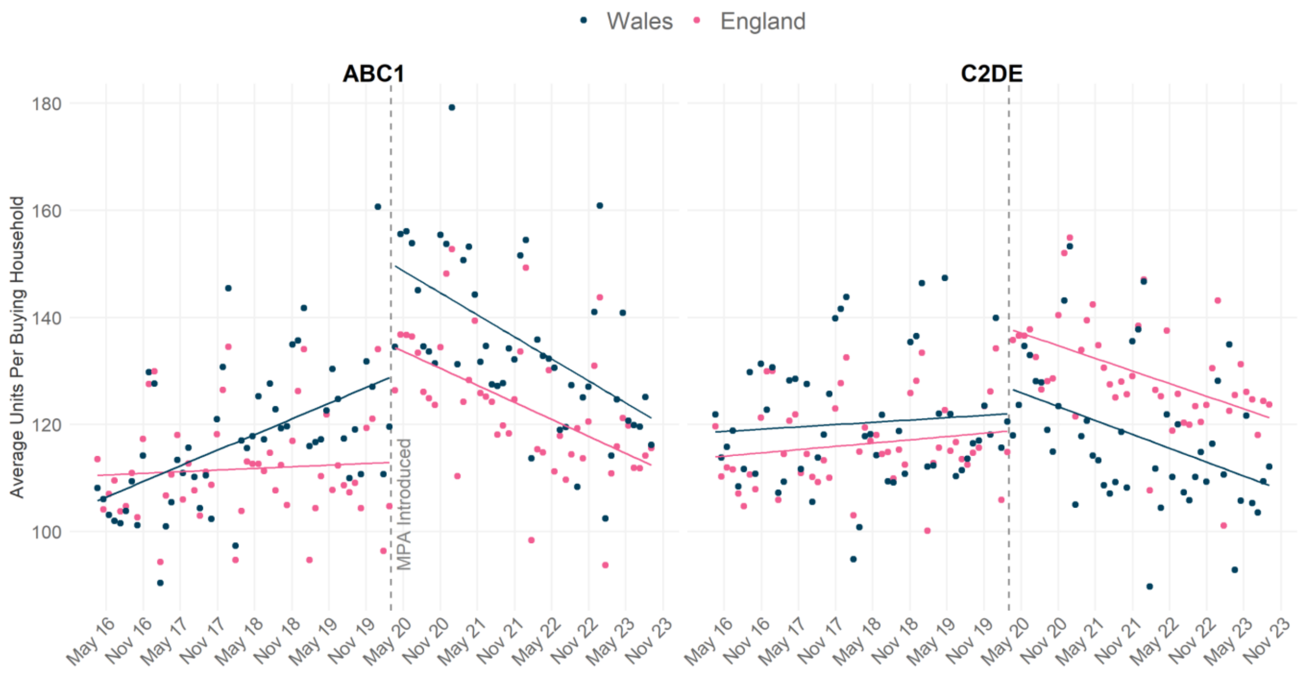

Table 6.2. Comparative interrupted time series coefficients for the four-weeks data, divided by NRS Social Grade

Parameter	Interpretation	Estimate	*SE*	*p*
	Wales vs England, ABC1 Group Unit Purchasing			
β_1	England Pre- Trend	0.05	0.12	0.70
β_2	England post-level change	21.95	5.27	< 0.001
β_3	England post-trend change	-0.53	0.19	0.006
β_4	Wales vs England pre-level difference	-5.16	2.79	0.07
β_5	Wales vs England pre-trend difference	0.40	0.09	< 0.001
β_6	Wales vs England post-level difference	-0.48	4.04	0.90
β_7	Wales vs England change in slope difference pre-to post	-0.58	0.14	< 0.001
	Wales vs England, C2DE Group Unit Purchasing			
β_1	England pre-trend	0.09	0.11	0.38
β_2	England post-level change	19.20	4.60	< 0.001
β_3	England post-trend change	-0.46	0.17	< 0.001
β_4	Wales vs England pre-level difference	4.68	2.97	0.12
β_5	Wales vs England pre-trend difference	-0.03	0.10	0.78
β_6	Wales vs England post-level difference	-14.07	4,29	0.02
β_7	Wales vs England change in slope difference pre- to post	-0.01	0.15	0.95

RQ3 Results: The impact of MPA on alcohol purchasing in Wales vs England for high alcohol purchasers.

6.6 To examine whether the introduction of MPA might have impacted high-alcohol purchasers differently in Wales and England, we used the two-week dataset ranging from 7 April 2019 to 21 March 2021. No statistically significant changes were found for any of the comparisons (see Figure 6.3. and Table 6.3 for the full results).

Figure 6.3. Comparative interrupted time series graph showing the average purchased units of alcohol per household over time in Wales and England, presented by HML alcohol purchasing groups.

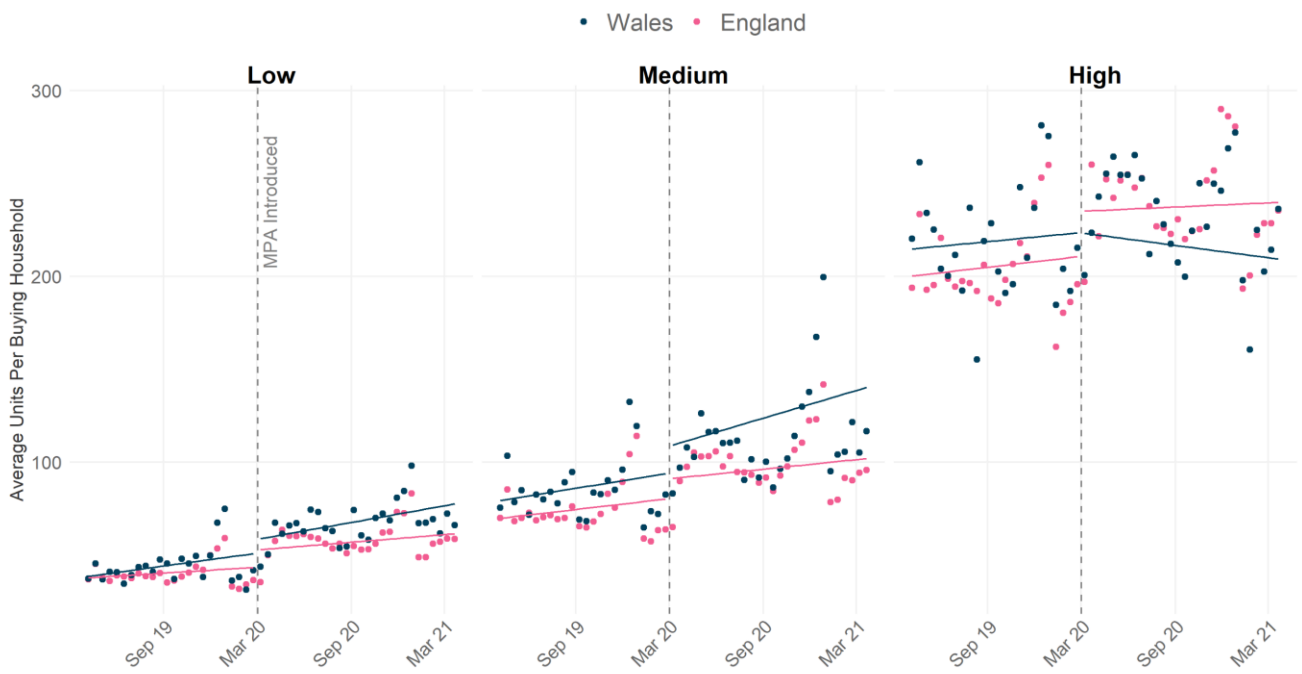

Table 6.3. CITS coefficients for the two weeks' data, total and divided by HLM Groups

Parameter	Interpretation	Estimate	*SE*	*p*
	Wales vs England, Low Purchasers			
β_1	England pre-trend	0.24	0.33	0.47
β_2	England post-level change	9.32	5.75	0.11
β_3	England post-trend change	0.07	0.45	0.88
β_4	Wales vs England pre-level difference	0.42	2.75	0.88
β_5	Wales vs England pre-trend difference	0.29	0.19	0.14
β_6	Wales vs England post-level difference	-4.00	3.63	0.27
β_7	Wales vs England change in slope difference pre- to post	0.09	0.24	0.72
	Wales vs England, Medium Purchasers			
β_1	England pre-trend	0.45	0.69	0.52
β_2	England post-level change	10.73	11.67	0.36
β_3	England post-trend change	-0.05	0.95	0.96
β_4	Wales vs England pre-level difference	9.41	5.25	0.08
β_5	Wales vs England pre-trend difference	0.18	0.37	0.63
β_6	Wales vs England post-level difference	-10.27	6.93	0.14
β_7	Wales vs England change in slope difference pre- to post	0.58	0.47	0.22
	Wales vs England, High Purchasers			
β_1	England pre-trend	0.45	0.95	0.63
β_2	England post-level change	24.38	16.86	0.15
β_3	England post-trend change	-0.28	1.26	0.83
β_4	Wales vs England pre-level difference	14.68	9.14	0.11
β_5	Wales vs England pre-trend difference	-0.08	0.64	0.90
β_6	Wales vs England post-level difference	-9.44	12.08	0.44
β_7	Wales vs England change in slope difference pre-to post	-0.61	0.81	0.45

7. Conclusions

7.1 Despite a period of significant social and economic upheaval over the life of the MPA evaluation (e.g. due to COVID-19 mitigation measures, the war in Ukraine, and particularly high price inflation), retailers thought the policy was having the desired effect.

7.2 Prices of cheaper, higher strength alcoholic drinks increased, customers bought less of them, and retailers stocked fewer of them. However, the Welsh Government may wish to take account of the fact noticeable effects of the policy were reduced as price increases from the MUP were overshadowed by a period of high inflation.

7.3 Awareness of the policy grew over the three years that it was in place, with retailers being more supportive of the policy where they understood that it was targeted at harm reduction among the population in general. Further work may be needed to overcome perceptions that the policy is targeted at problem drinkers per se, and to increase understanding that the policy is one of a broader set of measures to tackle hazardous drinking.

7.4 By the third year of implementation retailers said the policy had become part of their everyday business as usual. Previous difficulties of pricing discounts and promotions were overcome by using the Welsh Government's MUP app, or by central pricing for off-trade chains. Retailers were willing to comply with their legal obligations regarding the policy, which was reflected in that only six fixed penalty notices have been issued since it was introduced.

7.5 Retailers said the policy had not impacted on them as much as they expected it would have, with less impact on on-trade than off-trade. The experience of negative effects - such as training costs, product wastage, and pricing of discounted products distributed from England – dissipated over time as retailers adapted to the new context.

7.6 On-trade retailers said the policy had also produced fairer competition between them and off-trade retailers, whose lower prices had been most affected.

7.7 Our analysis suggests that the introduction of MPA in Wales in March 2020 was associated with a statistically significant reduction in alcohol unit purchasing in

Wales when compared to England. Looking at data from Wales only, there was a clear increase in alcohol purchases brought into the home in the immediate aftermath of the introduction of MPA, however this also coincided with the start of the COVID-19 protective measures and the closure of pubs, bars, and restaurants.

7.8 By using a comparative interrupted time series approach to compare changes in the number of units of alcohol purchased in Wales to England over the same period, we can isolate the impact of the introduction of MPA (that was introduced in Wales but not England) from the impact of the pandemic and associated restrictions (that affected both Wales and England contemporaneously). We found that the increase in alcohol purchases brought into the home, as recorded in the Kantar Worldpanel (KWP) data in the immediate aftermath of the introduction of MPA and the start of the pandemic was statistically significantly smaller in Wales than it was in England. Moreover, while purchasing fell back after this initial rise in both countries, the fall was statistically significantly greater in Wales than in England.

7.9 We found evidence that these effects differed based on NRS social grades. For households with higher socioeconomic position, we found no statistically significant difference in the step-change in alcohol purchasing in April 2020 between England and Wales, but that purchasing fell more rapidly after this in Wales than in England. In contrast, for households with lower socioeconomic position, we found a statistically significantly smaller step-change in alcohol purchasing in April 2020, but no statistically significant difference in the post-intervention trend.

7.10 In our analysis of differential impacts of MPA by purchasing group there were no statistically significant differences. Descriptively, the ‘Low’ and ‘Medium’ groups show similar patterns to each other, with higher purchasing in Wales, but similar changes over time. But in the high-purchasing households, while households in England saw an immediate increase in March 2020, Welsh households saw no increase.

7.11 Overall, our methodology makes us able to assess for causality while taking into consideration confounding effects. There are, however, two main limitations of the analysis. The first is that simultaneously with the MPA policy being implemented, Wales went into protective measures during the COVID-19 pandemic. This had a statistically significant impact on the alcohol purchasing behaviours of households, and resulted in increased alcohol purchasing, specifically from shops (Giles et al. 2020), considering the closure of restaurants, bars, and pubs.

7.12 To combat the significant confounding effect of the COVID-19 pandemic, we compared the change in alcohol unit purchasing in Wales, with that of England, where similar effects of the pandemic were seen, but no alcohol unit price policy implemented (Jackson et al. 2021).

7.13 It is clear from the results that we see a large increase in alcohol purchasing in March 2020, in comparison to February 2020, which was likely a result of the protective measures and a transferral of purchases from pubs, bars and restaurants to shops, especially for higher and moderate drinkers (Angus et al. 2024).

7.14 However, due to the strength of the CITS approach, we were able to better disentangle the policy from the pandemic and found that although alcohol purchasing increased in both countries, the reduction over time, post-policy implementation, was larger in Wales than in England. This should be interpreted in the light of pre-implementation purchasing trends in the two countries, where households in Wales were increasing their unit purchasing more over the time points prior to the MPA policy than households in England.

7.15 The design allowed us to determine the difference between outcomes we observed and our best representation of what might have happened in Wales without the MPA (as the MPA legislation was not enacted in England). We therefore have increased certainty that our findings were associated with the implementation of MPA, rather than unexplained factors impacting the number of purchased units of alcohol.

7.16 The second limitation is the use of a different and smaller dataset to assess the impact of MPA on high alcohol purchasing households. This was a necessary consequence of the fact that to define households as high-, medium- or low-purchasing prior to the implementation of MPA, we could only include households that were continuous participants in the KWP panel for a sustained period pre- and post-implementation. As a result, we had to use a shorter time series, with fewer data points, based on a smaller (although still relatively large) number of underlying households. Considering this, this analysis had lower statistical power than the analysis addressing Research Questions 1 and 2 and it is therefore less surprising that we did not find any statistically significant impacts of MPA by purchasing group.

8. Recommendations

8.1 The Welsh Government should continue to implement the policy, while taking account of the impact of inflation on the effectiveness of the policy.

8.2 If the Welsh Government increases the MUP, the Welsh Government and local authorities may want to review whether this changes retailers’ attitudes to the policy and enforcement.

8.3 The Welsh Government should consider highlighting the principal aim of the MPA policy when communicating the findings of the evaluation to avoid it being assessed solely by impact on problem drinkers.

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Annex A Retailer Profiles

Table A.1: Retailer type by region

Retailer Type	Region	Count
Pub/bar	Mid and West Wales	1
	North Wales	1
	Mid and West Wales	2
	North Wales	0
	South Wales Central	2
Convenience store	Mid and West Wales	2
	North Wales	1
	South Wales Central	0
	South Wales East	1
	South Wales West	1
Hotel	Mid and West Wales	0
	North Wales	1
	South Wales Central	0
	South Wales East	1
	South Wales West	0
Garage shop	Mid and West Wales	0
	North Wales	0
	South Wales Central	0
	South Wales East	0
	South Wales West	1

Alcohol shop	Mid and West Wales	0
	North Wales	1
	South Wales Central	0
	South Wales East	1
	South Wales West	0
Restaurant	Mid and West Wales	0
	North Wales	0
	South Wales Central	1
	South Wales East	0
	South Wales West	1
Coffee shop	Mid and West Wales	0
	North Wales	0
	South Wales Central	1
	South Wales East	0
	South Wales West	0
Grocery store	Mid and West Wales	1
	North Wales	1
	South Wales Central	0
	South Wales East	0
	South Wales West	0
Information missing		1
Total		22

Table A.2: Retailer type by chain or independent

Retailer Type	Chain/Independent	Count
Pub/Bar	Chain	0
	Independent	6
Convenience Store	Chain	5
	Independent	0
Hotel	Chain	1
	Independent	1
Garage shop	Chain	1
	Independent	0
Alcohol shop	Chain	2
	Independent	0
Restaurant	Chain	0
	Independent	2
Coffee shop	Chain	0
	Independent	1
Grocery store	Chain	1
	Independent	1
Information missing		1
Total		22

Table A.3: Retailer type by size

Retailer Type	Size	Count
Pub/bar	0 - 10 employees	4
	11 -15 employees	1
	16 - 25 employees	0
	26 - 50 employees	1
	51 - 100 employees	0
Convenience store	0 - 10 employees	1
	11 -15 employees	3
	16 - 25 employees	0
	26 - 50 employees	0
	51 - 100 employees	0
Hotel	0-10 employees	0
	11 -15 employees	0
	16 - 25 employees	0
	26 - 50 employees	1
	51 - 100 employees	1
	0 - 10 employees	1
Garage shop	11 -15 employees	0
	16 - 25 employees	0
	26 - 50 employees	0
	51 - 100 employees	0
	0 - 10 employees	2
Alcohol shop	11 -15 employees	0

	16 - 25 employees	0
	26 - 50 employees	0
	51 - 100 employees	0
	0-10 employees	2
Restaurant	11 -15 employees	0
	16 - 25 employees	0
	26 - 50 employees	0
	51 - 100 employees	0
	0 - 10 employees	0
Coffee shop	11 -15 employees	0
	16 - 25 employees	0
	26 - 50 employees	1
	51 - 100 employees	0
	0 - 10 employees	0
Grocery store	11 -15 employees	1
	16 - 25 employees	0
	26 - 50 employees	0
	51 - 100 employees	0
Information missing		3
Total		22

Table A.4: Retailer type by proportion of sales coming from alcohol

Retailer Type	% of sales from alcohol	Count
Pub/bar	1 - 25%	0
	26 - 50%	0
	51 - 75%	2
	76 - 100%	2
Convenience store	1 – 25%	3
	26 – 50%	1
	51 – 75%	0
	76 – 100%	0
Hotel	1 – 25%	1
	26 – 50%	1
	51 – 75%	0
	76 – 100%	0
Garage shop	1 – 25%	1
	26 – 50%	0
	51 – 75%	0
	76 – 100%	0
Alcohol shop	1 – 25%	0
	26 – 50%	0
	51 – 75%	0
	76 – 100%	2

Restaurant	1 – 25%	1
	26 – 50%	1
	51 – 75%	0
	76 – 100%	0
Coffee shop	1 – 25%	1
	26 – 50%	0
	51 – 75%	0
	76 – 100%	0
Grocery store	1 – 25%	2
	26 – 50%	0
	51 – 75%	0
	76 – 100%	0
Information missing		4
Total		22

Annex B – Qualitive interviews topic guide.

National Centre for Social Research

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Wave 3 Topic Guide – Existing Participants

Research aims: at this third and final wave, three years on since the policy took effect, the aim is to explore changes over time to retailers' awareness and views of the policy, experiences of implementation and get their final thoughts on the effects of the minimum price for alcohol policy in Wales.

Overview of topics to be covered in interviews:

- Any changes in participant's role, the business, or business circumstances in terms of selling alcohol since we last spoke to them
- Understanding and awareness on the MUP policy
- views
- Experiences of continued implementation and any issues arising
- Experience of visits by Trading Standards, support and enforcement
- Final thoughts on the policy

How to use this topic guide:

- This document is a guide to the principal themes and issues to be covered
- Fully formed questions are avoided to ensure researchers are responsive and flexible in their questioning
- Probes such as 'why', 'how' etc are not included in the guide. These are asked by researchers as and when appropriate

Introduction

Introduction to researcher. Thank you for agreeing to take part.

Introduction to Arad and NatCen:

- Independent research organisations, commissioned by the Welsh Government to evaluate the effects of the Minimum Price for Alcohol in Wales policy
- Arad is a Welsh research consultancy carrying out recruitment of, and interviews with, retailers for this study

Explanation of research:

- As part of this evaluation we are interviewing a range of different alcohol retailers in Wales to capture their views and experiences of the MPA policy in Wales.
- This is a three time-point study, with an interview undertaken before the policy came into effect; an interview last year exploring the effects of the policy since its implementation; and this, final, interview, which will explore changes since last year and longer-term effects of the policy.
- NatCen is also doing some quantitative analysis of Welsh retail and wholesale data. This work is part of a wider evaluation.

About the interview:

- Participation is voluntary **–** there are no right or wrong answers, you can choose not to discuss any issue, and withdraw from the study at any point.
- What you say is confidential and anonymous. We will write a report of our findings, but no names of retailers or individual participants will be included. You will not be identifiable to anyone else in the report.
- What you say is also confidential in line with General Data Protection Regulation (GDPR) 2018.
  - Data is stored securely on an encrypted recording devices and uploaded to secure folders on NatCen's computer system as soon as possible after the interview. Data will be deleted at the end of the project.
  - Only the Arad and NatCen research team will have access to the recordings.
- **NatCen and Arad will not pass any information on to the Welsh Government about anyone who has taken part in the research**.
- **Recording:** we will be audio recording the interview so that we have an accurate record of what is said, and so we can listen to you properly.
- If using MS Teams, we will not video record the interview.
- **The interview will last up to 30 minutes**
- **Questions?**
- **Ask for permission to start recording**

SWITCH ON RECORDING

Once recording has started re-confirm consent that participant is happy to take part and be audio recorded.

Background information

Section aim: Explain that we would like to start by checking if there have been any changes to their role, business or business circumstances in terms of selling alcohol since we last spoke to them

Participant-details

- **Role and responsibilities**
  - Within the organisation
  - In relation to alcohol pricing and sales
  - Any changes since last interview

Retailer-related changes

- **The business**
  - Size (no. employees, no. branches etc)
  - Opening hours
  - Type of alcohol licence they have
  - Annual turnover
  - Any changes since last interview

- **Alcohol sales**
  - On / off trade
  - Proportion of sales coming from alcohol
  - Types of alcohol sold, probe around low-cost / high strength alcohol
  - Emerging from COVID pandemic/ inflation and cost of living (esp. relative to MUP)
  - Any other changes

Understanding and awareness of the policy

Section aim: To explore retailers' understanding, awareness and views of the policy, including what they remember from the last interview and any changes. Explain that it is not a test, but merely to see what retailers know, remember about the policy, and any new information they have

Understanding of the policy

- **Understanding of the policy**
  - Understanding of aims of minimum unit price for alcohol (MUP)
    - Level of unit price (viz.50p)
    - How the pricing works
    - What types of products would be affected
    - Effects on special offers, discounts, multi packs
    - Any other key understandings

Awareness and information on the policy

- **Awareness of:**
  - Information about the MUP
  - Sources of information
  - Main source/s of information for them
    - Early on
    - More recently
  - Views on information

- **Current awareness levels**
  - Gaps/ anything they are still unclear on
  - Further information or guidance they would like about the policy

Compliance checks, support, and enforcement

Section aim: to explore experiences of checks on compliance with the MUP, experience of the checks, views on checks, whether further support is needed.

- **Compliance with policy**
  - How do they know/ check their prices are compliant
  - Support from chains/ breweries/ trades organisations
  - Use of compliance/ price checkers
  - How easy/ difficult to check correct pricing

- **Whether had any checks or visits by TS or enforcement since last interview**
  - Nature of checks
  - Frequency of visits
  - Experiences of visits/ enforcement
  - Outcome of visits
  - How felt about it/ them (e.g. whether supportive or punitive)
  - Preferred approach

Effects on retailers

Section aim: To explore the effects on retailers now the policy has been in place for some time

- **On-going effects on their business**
  - Sales
  - Types of products stocked
  - Level of checks needed
  - Competition in the market
  - Effects on staff

- **Views on the policy now**
  - Whether turned out as expected
  - Type and number of products affected
  - Relative influence of MUP in context of inflation
  - Customer feedback
    - From typical customers
    - From people with alcohol dependency

- **Overall views of the policy and its effect**
  - Feelings about the policy now looking back
  - Positives/ negatives
    - For on sale/ off sale (e.g. pub, restaurants, clubs, shops)
    - For independent businesses or bigger chains
    - For businesses near the Welsh/ English border
  - Main factors influencing views
  - Main factors influencing effects

Final thoughts on the policy

Section aim: to get retailers' concluding thoughts and reflections on the policy three years after its implementation

- **Key messages for government**
  - Anything they would have liked to be different/ to change
    - How implemented
    - Support from Welsh Government
    - Support with compliance
  - Remaining information/ support needs
  - Key messages on the policy

Close

- Any final questions or comments?
- Reiterate confidentiality and anonymity
- Interviews will be transcribed and analysed
- Findings will be written into a report
- Check if the retailer would like named acknowledgement of their participation in the study
- Explain that they will receive a £30 Love2Shop e-voucher as a thank you for taking part. **Check email to which voucher should be sent.**

Annex C – Further quantitative analyses.

As we can see in Table C.1, partial autocorrelations are significantly reduced after lag 1, suggesting that taking account of autocorrelation using Prais–Winsten addresses autocorrelation at lag 1 and longer lags.

Table C.1: Autocorrelation and partial autocorrelation for each lag, two- and four-weeks datasets

	Two Weeks Data		Four Weeks Data	
Lag	Autocorrelation	Partial Autocorrelation	Autocorrelation	Partial Autocorrelation
0	1	-	1	-
1	0.52	0.52	0.45	0.45
2	0.29	0.02	0.08	-0.15
3	0.16	0	-0.03	-0.01
4	-0.01	-0.13	-0.12	-0.11
5	-0.05	0	-0.21	-0.12
6	-0.17	-0.16	-0.34	-0.25
7	-0.17	0	-0.16	-0.11
8	-0.15	-0.04	-0.04	-0.06
9	-0.24	-0.16	-0.04	-0.08
10	-0.26	-0.12	-0.05	-0.09

Table C.2: Descriptive statistics for the two- and four-weeks datasets

	M	SD	Median	Min	Ma
Two weeks data (number of data points = 312)					
Total Alcohol Spend (£)	90109211.24	110931905.9	25700835.53	1545831.982	411260440
Total Alcohol Units	170486472.5	217142503.7	46469337.11	2716863.783	790160938.9
Buying Households	1346100.79	1236596.05	754117.11	71109.75	3691328.45
Purchase Frequency of Alcohol (trips)	4.95	1.90	4.27	2.45	9.19
Average Paid Unit Price (£)	0.55	0.04	0.56	0.42	0.64
Average Units Per Buying Household	123.48	76.53	91.80	31.36	289.98
Four weeks data (number of data points = 588)					
Total Alcohol Spend (£)	332382488.94	352074171.73	182563568.67	15438428.24	1661272713.43
Total Alcohol Units	632725383.83	661026465.00	359306491.77	32410178.32	3000526776.89
Buying Households	5248986.58	5361861.29	3117052.76	321744.46	19536104.79
Purchase Frequency of Alcohol (trips)	4.91	0.28	4.89	4.05	6.03
Average Paid Unit Price (£)	0.52	0.05	0.52	0.42	0.62
Average Units Per Buying Household	120.92	13.21	119.18	89.73	179.18

Table C.3: ITS results for the four-weeks data

Parameter	Interpretation	Estimate	*SE*	*p*
		Wales Total		
β_1	Pre- Trend	0.26	0.11	0.02
β_2	Post- Level Change	35.32	7.28	<0.001
β_3	Post- Trend Change	-0.79	0.17	<0.001
$\beta_1 + \beta_3$	Post-Trend	-0.53	-	<0.001
		Wales ABC1 Group		
β_1	Pre- Trend	0.45	0.12	<0.001
β_2	Post- Level Change	52.87	8.00	<0.001
β_3	Post- Trend Change	-1.12	0.19	<0.001
$\beta_1 + \beta_3$	Post-Trend	-0.67	-	<0.001
		Wales C2DE Group		
β_1	Pre- Trend	0.07	0.12	0.57
β_2	Post- Level Change	17.82	8.19	0.03
β_3	Post- Trend Change	-0.47	0.20	0.02
$\beta_1 + \beta_3$	Post-Trend	-0.40	-	<0.001

Table C.4: ITS results for the two-weeks data

Parameter	Interpretation	Estimate	*SE*	*p*
		Wales High Consuming Group		
β_1	Pre- Trend	0.13	1.05	0.90
β_2	Post- Level Change	20.89	19.24	0.28
β_3	Post- Trend Change	-0.78	1.38	0.57
$\beta_1 + \beta_3$	Post-Trend	-0.65	-	<0.001
		Wales Medium Consuming Group		
β_1	Pre- Trend	0.40	0.83	0.63
β_2	Post- Level Unit Change	8.20	14.80	0.58
β_3	Post- Trend Unit Change	0.53	1.12	0.63
$\beta_1 + \beta_3$	Post-Trend	0.93	-	<0.001
		Wales Low Consuming Group		
β_1	Pre- Trend Change	0.42	0.37	0.27
β_2	Post- Level Change	8.79	6.84	0.20
β_3	Post- Trend Change	0.17	0.50	0.72
$\beta_1 + \beta_3$	Post-Trend	0.59	-	<0.001