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New modelling of alcohol pricing policies, alcohol consumption and harm in Wales: an adaptation of the Sheffield Tobacco and Alcohol Policy Model v2.6.0

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New modelling of alcohol pricing policies, alcohol consumption and harm in Wales: An adaptation of the Sheffield Tobacco and Alcohol Policy Model v2.6.0

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Glossary

SARG - Sheffield Addictions Research Group

MPA - Minimum Price for Alcohol

SAPM - the Sheffield Alcohol Policy Model

STAPM - The Sheffield Tobacco and Alcohol Policy Model

TAX-sim - The Tobacco and Alcohol Tax and Price Intervention Simulation Model

Moderate drinkers - People drinking within the current UK drinking guidelines of 14 units per week

Hazardous drinkers - People exceeding the UK guidelines, but drinking less than 50 units per week (men), or 35 (women)

Harmful drinkers - People drinking above hazardous levels - over 50 units a week (men), or 35 (women)

YLLs - Years of Life Lost

WIMD - Welsh Index of Multiple Deprivation

RTDs - Ready-To-Drinks – pre-mixed alcoholic drinks such as cans of spirits with mixer or alcopops

ABV - Alcohol by Volume

NSW - National Survey for Wales

CPIH - the Consumer Prices Index

RPI - the Retail Prices Index

OBR - Office for Budget Responsibility

SA - Sensitivity Analysis

Executive summary

1. Research questions

1.1 This report was commissioned in July 2024 by the Welsh Government to build on previous analyses, published in 2018, that modelled the impact of the initial introduction of a Minimum Price for Alcohol (MPA) in Wales.

1.2 The aims of this new analysis were to use the latest available data and the most recent version of the Sheffield Tobacco and Alcohol Policy Model to assess alternative options for the future of MPA and to answer the following research questions:

1.3 What is the estimated impact of increasing the current 50p/unit MPA threshold to thresholds ranging from 55p-80p/unit, reducing the MPA threshold to 40p or 45p/unit, or removing MPA entirely?

1.4 What changes in alcohol duties would be required to achieve the same impact on alcohol-specific deaths in the overall population, or in the most deprived quintile, as each of the alternative MPA thresholds modelled?

1.5 What would the future impact be of alternative options to uprating (or not) the MPA threshold beyond 2025 under alternative mechanisms for this uprating, assuming, for illustrative purposes, that the MPA threshold were raised to 65p/unit in 2026.

2. Summary of model results

Baseline alcohol consumption, purchasing and harm

2.1 18% of adults in Wales do not drink alcohol. Of those that do drink, 77% drink at moderate levels – within the UK low risk guidelines - 19% are hazardous drinkers and 4% drink at harmful levels[1]. The 23% of adult drinkers who drink above the guideline levels consume 70% of all alcohol, with the heaviest drinking 4% accounting for 27% of all alcohol drunk in Wales.

2.2 Moderate drinkers consume an average of 4.5 units and spend £7.62 on alcohol per week. This compares to an average of 25 units and £32.20 per week for hazardous drinkers and 72 units and £77.68 for harmful drinkers.

2.3 Those in the most deprived quintile of the Welsh population are less likely to drink than those in the least deprived, consume less on average (11.5 units per week vs 12.2) and spend less on alcohol (£15.06 vs £16.89).

2.4 Hazardous and harmful drinkers pay substantially less, on average, for alcohol than moderate drinkers (£1.29 and £1.08 respectively compared to £1.71 per unit). This is through a combination of consuming a smaller proportion of their alcohol in the on-

[1] Moderate drinkers are those drinking within the UK low risk guidelines of 14 units per week. Hazardous drinkers are those exceeding these levels but drinking no more than 35 units per week for women or 50 units per week for men. Harmful drinkers are those exceeding these levels.

trade, where prices are generally higher, buying a greater proportion of their alcohol as beer and cider, which are generally cheaper per unit, and buying cheaper products within the same category.

2.5 Drinkers from lower socioeconomic groups pay less, on average, for alcohol compared to drinkers from higher socioeconomic groups, but these differences are much smaller than between moderate and hazardous/harmful drinkers. For example, the mean price paid for people from the most deprived quintile is £1.31 per unit compared to £1.38 for the least deprived quintile.

2.6 Every year an estimated 699 people die as a direct consequence of their alcohol consumption, the equivalent of 23,550 years of life lost. There are also an estimated 11,243 hospital admissions attributable to alcohol annually.

2.7 These harms are heavily concentrated in the heaviest drinkers, with the 4.3% of drinkers drinking at harmful levels accounting for 30% of alcohol-attributable admissions, 48% of alcohol-attributable deaths, and 42% of years of life lost to alcohol.

2.8 Alcohol harms are also substantially higher in the most deprived groups, despite them consuming less alcohol, on average. Overall rates of alcohol-attributable deaths in the most deprived quintile of the population are 3.1 times higher than in the least deprived quintile and rates of alcohol-attributable hospital admissions are 1.3 times higher.

Modelled effects of changes to the MPA threshold

2.9 Increasing the MPA threshold to 65p per unit would reduce population level alcohol consumption by an estimated 0.3 units per drinker per week, a 2.7% reduction. This reduction would be smaller for lower MPA thresholds (e.g. -0.6% for 55p) and larger for higher thresholds (up to -9.4% for an 80p MPA). Reducing the MPA threshold is estimated to increase alcohol consumption (e.g. +0.3% for 40p) and removing MPA entirely is estimated to lead to larger increases (+0.7%).

2.10 Increasing the MPA threshold is estimated to reduce the number of people drinking at hazardous and harmful levels (e.g. a 5.7% reduction in the number of harmful drinkers for a 65p MPA), while reducing or removing it would have the opposite effect (e.g. a 1.1% increase in harmful drinkers if MPA was removed entirely).

2.11 For all modelled MPA thresholds, the largest changes in alcohol consumption are estimated to occur in the most deprived groups (e.g. -4.0% for the most deprived quintile vs -1.8% for the least deprived under a 65p MPA, or +1.3% and +0.4% respectively if MPA was removed entirely).

2.12 Overall consumer spending on alcohol is estimated to reduce if the MPA threshold is increased (e.g. -13p per week for a 65p MPA, a 0.4% reduction) and increase if the MPA threshold is reduced or removed (e.g. +5p per week, a 0.2% increase if MPA is removed). These patterns are similar across all socioeconomic groups, although with larger changes in spending in more deprived groups (e.g. -23p per week in the most deprived vs -6p in the least deprived quintile under a 65p MPA).

2.13 Government revenue from alcohol taxes is estimated to fall if the MPA threshold is increased (e.g. -£109m per year for a 65p MPA), with the majority of this coming from falling revenue from off-trade sales (-£95m vs -£14m from the on-trade under a 65p MPA).

2.14 An increase in the MPA threshold is estimated to lead to fewer deaths overall, with 902 fewer deaths from all causes over 20 years under a 65p MPA compared to 200 additional deaths over 20 years if MPA is removed.

2.15 The impact on alcohol-specific deaths is larger, with a 65p MPA leading to an estimated 628 fewer alcohol-specific deaths over 20 years, a 4.4% reduction.

2.16 By far the largest reduction in deaths under an increase in the MPA threshold is estimated to come from the most deprived quintile of the population (389 fewer deaths in the most deprived vs 71 fewer in the least deprived quintile under a 65p MPA). The converse is true for a reduction in or removal of MPA, with a larger increase in deaths in the most deprived groups.

2.17 Modelled impacts of changes to the MPA threshold on hospital admissions follow similar patterns, with higher thresholds leading to larger falls in admissions (e.g. -7,270 over 20 years for a 65p MPA) and reductions in or removal of MPA leading to a rise in admissions (e.g. +1,830 over 20 years if MPA is removed entirely). As with deaths, the largest impacts are in the most deprived groups, with over 4 times as many admissions averted in the most vs. the least deprived quintile under a 65p MPA and 4.5 times as many additional admissions in the most vs. the least deprived quintiles if MPA is removed.

2.18 Patterns of estimated impacts on years of life lost to premature death are similar again – larger reductions for higher MPA thresholds and bigger impacts in more deprived groups.

2.19 Increasing the MPA threshold is estimated to save the NHS a substantial amount, with a 65p MPA leading to a saving of £14.9m over 20 years, while removing MPA entirely would cost the NHS £3.8m over the same period.

Comparison of changes to the MPA threshold with changes in alcohol duty rates

2.20 We estimate that to achieve the same reduction in alcohol-specific deaths as an increase in the MPA threshold to 65p, alcohol duties would have to rise by 5.8%. Conversely, removing MPA entirely is estimated to have the same impact on alcohol-specific deaths as a 2% cut in duty rates.

2.21 As MPA only affects the prices of the cheapest products, whereas duty changes affect all products in the market, larger changes in duty rates are required to achieve the same change in alcohol-specific deaths in the most deprived quintile as a change in the MPA threshold. A 7.4% increase in duties is estimated to achieve the same impact as a 65p MPA in this group, while a 2.8% cut in duty has the same impact as removing MPA entirely.

2.22 This more targeted nature of MPA compared to duty means that for the same impact on deaths, an increase in duty rates leads to a substantially larger reduction in consumption in the least deprived quintile and a smaller reduction in the most deprived quintile, compared to increasing the MPA threshold.

2.23 Increasing duty rates is estimated to lead to increases in government revenue (e.g. +£35m for a 5.8% duty rise) compared to reductions under MPA (e.g. -£109m for a 65p MPA).

2.24 As with impacts on consumption, the targeted nature of MPA means that a duty increase achieving the same reduction in population level deaths as a change in the MPA threshold is estimated to lead to a larger reduction in deaths in the least deprived quintile and a smaller reduction in the most deprived quintile compared to MPA. Both policies are estimated to reduce health inequalities, but MPA does so to a greater extent (e.g. a 65p MPA reduces deaths in the least deprived quintile by 2.4% and the most deprived quintile by 5.5%, while a 5.8% duty increase reduces deaths by 3.6% and 3.9% respectively).

Modelled impacts of alternative approaches to uprating the MPA threshold in future

2.25 Adjusting for inflation, we estimate that recent high levels of inflation mean that, by 2026, the real-terms value of a 50p MPA threshold will have fallen to the equivalent of 39p in 2020. Equivalently, the MPA threshold in 2026 would need to increase to 65p per unit to maintain the same real-terms level as 50p per unit in 2020.

2.26 If the MPA threshold was increased to 65p in 2026, then maintained at that level without further adjustment, we estimate that alcohol consumption in 2045 would be 2.1% higher and there would be 4,981 additional harmful drinkers in Wales, compared to if the MPA threshold was increased in line with CPIH inflation each year (i.e. maintained at the same level in real terms).

2.27 Alternative approaches to regularly uprating the MPA threshold – uprating annually or every 5 years in line with RPI or average earnings, are estimated to reduce alcohol consumption relative to annual CPIH uprating as they would lead to higher MPA thresholds. This is particularly true for indexing the MPA threshold to average earnings, as these typically increase above inflation.

2.28 Failing to uprate the MPA threshold in line with inflation is estimated to lead to the largest increases in consumption in the most deprived (+2.6%) compared to the least deprived (+1.2%) quintiles of the population.

2.29 Uprating the MPA threshold is estimated to reduce government revenue compared to no uprating, with total exchequer revenue £174m lower over 20 years.

2.30 Maintaining the MPA threshold at the same level in cash terms (i.e. no uprating) is estimated to lead to an additional 501 deaths over 20 years compared to annual CPIH uprating, with the largest impact in the most deprived quintile (187 additional deaths).

2.31 Failing to uprate the MPA threshold in line with inflation is also estimated to lead to an additional 16,249 Years of Life Lost to premature death, 3,889 hospital admissions and an additional cost of £7.9m to the NHS over 20 years, compared to annual uprating.

3. Conclusions

3.1 Estimates from an updated version of the Sheffield Tobacco and Alcohol Policy Model for Wales suggest that:

3.2 Increasing the MPA threshold from its current 50p/unit level would lead to further reductions in alcohol consumption and harm, with the biggest impacts in the most deprived groups.

3.3 Reducing the MPA threshold, or removing MPA entirely, would increase alcohol consumption and harms, increasing health inequalities.

3.4 Significant increases in alcohol duty rates would be required to achieve the same reductions in alcohol-specific deaths as an increase in the MPA level and increasing duty does not reduce health inequalities to the same extent.

3.5 The implementation of a mechanism to uprate the MPA threshold in line with inflation is important to prevent alcohol consumption and harms increasing as the real-terms value of the MPA is eroded over time.

1. Introduction and background

In July 2024 Welsh Government commissioned the Sheffield Addictions Research Group (SARG) to undertake new modelling work to inform a review of the current 50p per unit threshold for the Minimum Price for Alcohol (MPA) policy currently in place in Wales since 2nd March 2020. The implementation of MPA included a 'sunset clause' under which the Senedd is required to decide whether to repeal or continue the legislation within a further year (i.e. by 2nd March 2026).

SARG have previously produced a series of policy appraisals for Welsh Government which contributed to the development and implementation of the 50p MPA in Wales in 2020 [1], and also for Scottish Government prior to implementation of minimum pricing in Scotland in 2018 in 2009, 2010, 2012, and 2016 [2-5]. These previous reports used the Sheffield Alcohol Policy Model (SAPM), a widely used alcohol policy appraisal tool that has also been used to explore the potential impact of a wide range of alcohol policies across numerous other countries including England [6], Northern Ireland [7], the Republic of Ireland [8], Canada [9], and Italy [10].

In recent years SARG have developed a new model, the Tobacco and Alcohol Tax and Price Intervention Simulation Model (TAX-sim) [11], using a new modelling platform, the Sheffield Tobacco and Alcohol Policy Model (STAPM). TAX-sim is like SAPM in functionality, overall structure and methodological approach; however, it differs in two key respects discussed in detail in the methods section. The simulation-based approach in TAX-sim addresses some of the limitations of the cohort-based approach used in SAPM, however it has some important implications for the way that the model results are interpreted. These differences are highlighted in the results section of this document. The Scotland version of the TAX-sim model has previously been used to appraise options for the uprating of the minimum unit price of 50p [12], which was subsequently raised by Scottish Government to 65p per unit in 2024.

The new modelling work commissioned by Welsh Government involved the development of a Welsh version of version 2.6.0 of the TAX-sim model, which had previously been developed for England and Scotland, and the use of this new model adaptation to answer the following research questions:

1. What is the estimated impact of changing the current 50p/unit MPA threshold in Wales to a range of alternative thresholds: 40p, 45p, 55p, 60p, 65p, 70p, 75p and 80p/unit, or removing the MPA entirely?

2. What changes in alcohol duties would be required to achieve the same impact as each of these MPA thresholds on the number of:

    i. Total alcohol-specific deaths averted.

    ii. Total alcohol-specific deaths averted in the most deprived quintile of the Welsh Index of Multiple Deprivation (WIMD).

    iii. Total years of life lost (YLLs) due to premature death averted.

iv. Total years of life lost (YLLs) due to premature death averted in the most deprived quintile of the Welsh Index of Multiple Deprivation (WIMD).

3. What would the future impact be of uprating (or not) the MPA threshold beyond 2025, under alternative mechanisms for this uprating? This analysis will assume, illustratively, that the MPA threshold is uprated to 65p per unit in 2026, in line with the recommendations of the recent independent evaluation [13]. We will then model the potential future impact of:

    a) Leaving the MPA threshold at 65p per unit in perpetuity.

    b) Increasing the MPA threshold each year in line with RPI inflation.

    c) Increasing the MPA threshold every 5 years in line with RPI inflation over the preceding 5-year period.

    d) Increasing the MPA threshold each year in line with growth in average earnings.

    e) Increasing the MPA threshold every 5 years in line with growth in average earnings over the preceding 5-year period.

We have grouped these research questions into 3 distinct chapters. Within each chapter we highlight the specific methods used to answer that research question and present the modelled results for the impact on alcohol consumption, consumer spending on alcohol, revenue to the exchequer from alcohol taxation, revenue to retailers from alcohol sales, alcohol-related mortality, alcohol-related hospital admissions, and alcohol-related healthcare costs. Where appropriate these outcomes will be further disaggregated by drinker group (moderate, hazardous and harmful) and WIMD quintiles, to illustrate the potential distributional impacts of the modelled policies.

2. Methods

As part of the National Institute for Health and Care Research (NIHR) Public Health Research Board funded "SYNTAX" project, we developed the Tobacco and Alcohol Tax and Price Intervention Simulation Model (TAX-sim). TAX-sim is a joint tobacco and alcohol policy model for which detailed modules have been developed to simulate price policy effects on tobacco and/or alcohol consumption and to compute the consequent economic and health outcomes. The model is built using the functionality of the STAPM platform in R statistical software and allows us to estimate the potential health and economic impact of alcohol and tobacco tax policies. Initially an England-only model, as part of the SPECTRUM Consortium funded by the UK Prevention Research Partnership, we have extended the TAX-sim model to both Scotland and Wales. In this report we give an overview of the model, with further detail available in the technical documentation for the model [11].

Having a joint tobacco and alcohol policy model for price interventions is important to understand how pricing policies might address the combined burden of disease and death from tobacco and alcohol consumption [14]. People who drink heavily are more likely to be smokers. People who smoke and drink heavily are more likely to get ill and die sooner. Increasing alcohol tax has been shown to reduce drinking and increasing tobacco tax has been shown to reduce smoking, but no research has looked at changing alcohol and tobacco taxes together.

The TAX-sim model can jointly model tax and price policies for alcohol and tobacco products, or for either substance separately. For this investigation, the model is used only to investigate the consequences of price changes for alcohol. No effects of changes in tobacco pricing policy are investigated. No cross-over or knock-on effects of changes in alcohol pricing policy to the consumption of tobacco are investigated. Thus, the version of the model used here estimates the direct effects of alcohol pricing policy changes on health and economic outcomes attributable to alcohol consumption. This is likely to lead to conservative estimates of the full impacts of the policies modelled in this report, as alcohol and tobacco are typically complements (i.e. reductions in alcohol consumption are typically associated with reductions in smoking prevalence). In previous work using the TAX-sim model we have found that including tobacco-related outcomes increases the estimated policy effects of alcohol tax policies [15].

Key outcomes estimated by the model include (i) consumption outcomes which include the mean weekly number of units of alcohol consumed, and weekly spending on alcohol products (ii) economic outcomes including distributions of prices paid, consumer spending, total annual tax revenues to government, and total annual revenue to retailers/industry, and (iii) health outcomes including total deaths from alcohol-related conditions, hospitalisations, NHS costs of hospitalisations, and years of life lost (YLLs) due to premature death.

2.1. Model overview

The model is a dynamic micro-simulation which constructs a synthetic representative Welsh population from National Survey for Wales (NSW) data [16]. The NSW is an annual survey which is representative of the adult Welsh population and contains detailed information on demographics, alcohol consumption and tobacco consumption. In this report, we use data from the 2022/23 NSW data from the UK Data Service to construct a synthetic population with which to initialise the model in 2022.

The model incorporates ongoing trends in the consumption of alcohol and prevalence of smoking in different population subgroups, and incorporates demographic trends based on projected changes in the population. The model iterates in steps of one year until a specified time horizon is reached, and in each year of the simulation new individuals are added at the youngest age in the model (age 18), some individuals die, and others are removed from the model at the maximum age (age 89).

The effects of tax and price policies are modelled by estimating a "treatment" or "intervention" arm in which a policy intervention occurs in a specified "policy effect year". One treatment arm is modelled for each intervention of interest. Each treatment arm is compared to a "business-as-usual" or "control" arm in which the tax and price policy regime in place the year prior to the policy effect year is maintained indefinitely, meaning that future alcohol duty rates are held constant in real terms (i.e. increased annually in line with inflation).

Throughout this report (and in keeping with standard economic terminology), we use the phrase 'real terms' to refer to the value of something, relative to incomes and the costs of other goods, i.e. after accounting for the impact of inflation. We use the phrase 'cash terms' to refer to the absolute monetary value of something, ignoring the impact of inflation.

Tax policy effects on price are modelled by a sequence of calculations performed on price distributions (expressed as price per UK standard unit of alcohol) which describe the proportion of alcohol consumed in 10p price bands. There are 50 price bands in the model which cover prices from £0.00-£0.10 per unit up to £4.90-£5.00 in the first year in which the model is initialised, referred to as the "index year" which in this case is 2022. All purchases are assumed to occur at the mid-point of the price band in the index year i.e. purchases in the £0.50 to £0.60 band are assumed to be priced at £0.55 per unit. As the simulation progresses, these prices are updated for changes in tax and pricing policies.

These distributions are matched to individuals in the synthetic population based on their age, sex, Welsh Index of Multiple Deprivation (WIMD) quintile, smoking status, and drinking status. The first step calculates the "expected" price due to a tax change – the change in price which would maintain the same net revenue per unit (retail price minus duty and VAT) of product. The expected price is then adjusted for tax pass-through based on estimates for the off-trade and on-trade [17, 18]. Pass-through is the industry response to a tax rise – some products may over-shift (result in a higher price than the expected price) or under-shift (a lower price than the expected price). The new mean price and change in mean price is then calculated for all individuals in the model. Price elasticities of demand estimated by Pryce and colleagues [19] are then used to estimate the proportionate change in consumption of each product in the model from the proportionate changes in price. From these changes in consumption, changes in mortality and morbidity are calculated to obtain the health impacts.

Alcohol duty changes are modelled by decomposing each price per unit faced by consumers into specific duty, Value-Added Tax (VAT), and net revenue to retailers. As different duty rates apply at different alcoholic strengths, an average duty per unit is calculated as a consumption-weighted average of duty rates across ABV bands, which are specified to conform to the ABV bands used in the setting of alcohol duties under both the old alcohol duty system and the reformed system which was implemented in August 2023 to tax all alcohol products by alcoholic strength and harmonise duty rates and thresholds. Consumption weights were derived from an analysis of Kantar Alcovision data and stratified by moderate/hazardous/harmful drinker category. To calculate duty per unit we simply divide the duty rate by 100 units, as under the reformed alcohol duty system in place since August 2023 all products pay duty per litre of pure alcohol. Once any changes to alcohol duty per unit in the relevant year is applied, the price per unit is reconstructed using the new duty per unit and assuming net revenue to retailers is held constant. This yields the expected price, which is then adjusted for tax pass-through to account for retail response to the change in duty. The model then applies separate pass-through coefficients to products sold in the on-trade and off-trade as described above. This adjustment for tax-passthrough completes the updating of alcohol prices to reflect changes in duty rates.

It is at this stage that the MPA threshold is then applied to any prices that fall below it and the observed price distributions are updated. The methods for modelling MPA are outlined in detail in the Chapter 1 methods. Briefly, a minimum price for alcohol is modelled by raising any price point in the price distribution to match the MPA threshold for affected products in the given year. As prices in the model are expressed in real terms (i.e. after adjusting for inflation), if the MPA remains constant in cash terms (and therefore reduces in real terms), prices will gradually revert over time to the ‘reference distribution’ of prices - a counterfactual distribution of prices where there is no MPA.

2.2. Main model assumptions and differences from previous reports

The modelling presented in this report uses 2022 as the index year (year in which the simulation is initialised) for all modelling, as this is the most recent year for which all the necessary data to populate the model are available. We assume that alcohol consumption trends have reverted to pre-Covid-19 pandemic and do not attempt to model any impacts of the pandemic on future trends in alcohol consumption.

Our model is initialised with a 50p MPA already in place and levels of alcohol consumption and harm that reflect the initial impacts of MPA having been introduced in 2020. The control arm of our model (i.e. our counterfactual scenario) is that this 50p MPA remains in place, with the 50p threshold being uprated each year in line with Consumer Price Index (CPIH) inflation[2] after 2026 - our policy effect year. When modelling changes to the MPA threshold we assume these changes are introduced at the start of 2026 and that any new threshold is also uprated in line with CPIH after 2026.

[2] Note that although the MPA threshold is estimated to increase in line with CPIH, we assume alcohol prices increase each year in line with RPI – to ensure consistency with UK government assumptions in relation to alcohol duty. This difference is unlikely to have a significant effect on the overall model results, since it affects all model arms to a similar extent.

Although TAX-sim has the capacity to incorporate assumptions about how trends in alcohol consumption may continue, we assume that the age-patterns in alcohol consumption will remain at 2022 levels (i.e. as observed cross-sectionally across ages in the year 2022), in the absence of any policy impacts, across future modelled years. Because of this decision, changes in alcohol consumption in the control arm in the model are possible, but these are driven only by changes in the age distribution of the population, rather than changes over time in the alcohol consumption of any given age group.

It is also notable that TAX-sim explicitly models individuals switching between being drinkers and non-drinkers when faced with an increase in prices, whereas the previous SAPM model did not account for changes in abstention rates over time. However, note that when price policy effects are applied, they act to switch people between consumption and non-consumption of each of ten alcoholic beverage products modelled. Thus, in order for someone to become a non-drinker due to a pricing policy effect, they would have to stop consuming all of the types of alcohol that they currently consume due to the effects of changes in product price.

Another key difference between SAPM and TAX-sim is the incorporation of smoking into the STAPM framework, as discussed above. Although TAX-sim has been developed with the capacity to appraise cross-substance policy impacts (e.g. the impact of tobacco policies on alcohol consumption and vice versa), for the present project we have removed these effects from the model. As a result, the estimated impacts of the modelled alcohol policies are only their direct impacts on health through changes in alcohol consumption and do not include indirect health impacts through changes in smoking rates. However, TAX-sim does still model smoking dynamics, including explicitly accounting for underlying trends in smoking rates. As a result, the model will still capture overall improvements in population health resulting from reduced smoking rates over time, which will impact on the estimated future population demographics in the model (e.g. more people living to older ages as reduced prevalence of smoking reduces the number of premature smoking-attributable deaths).

Due to the different structures of STAPM and TAX-sim, there are some important differences in the way that some model results should be interpreted in the present report compared to previous Welsh reports that have used SAPM. These differences are highlighted where they arise throughout the text of this report, however three of the most important differences are as follows:

Firstly, the dynamic simulation nature of TAX-sim means that the model can explicitly capture the extent to which policy changes lead to drinkers transitioning between drinker groups (e.g. hazardous drinkers who reduce their consumption below 14 units/week and therefore are reclassified as moderate drinkers). This means that drinker group membership is defined differently in TAX-sim, where drinkers are categorised based on their current alcohol consumption, compared to SAPM, where drinkers are categorised at baseline and remain in that category irrespective of future changes in consumption. As a result, the drinker-group-specific results are not directly comparable between the two models. In contrast, socioeconomic position, defined using WIMD quintiles, is determined based on place of residence. As we do not model internal (or international) migration within the model, individuals do not transition between WIMD quintiles and therefore this distinction does not apply. Throughout this report, we report the modelled changes in the numbers of individuals in each drinker group alongside changes in average consumption of alcohol among the population of drinkers as a whole and by WIMD quintile.

Secondly, the health outcomes reported in SAPM represented changes in the number of alcohol-attributable deaths or hospital admissions (i.e. those outcomes that could be directly attributable to alcohol), with these sometimes presented broken down into health outcomes which were either acute (i.e. associated with intoxication) or chronic (i.e. associated with alcohol consumption over a sustained period of time), and either wholly alcohol-attributable (i.e. from conditions caused solely by alcohol) or partially alcohol-attributable (i.e. from conditions for which alcohol is one of several risk factors). Although the underlying epidemiological modelling in the STAPM framework also accounts for these differences, the outcomes reported from TAX-sim in this report are not broken down along these lines. As such, mortality outcomes represent the total number of deaths in the model from any cause, not just those directly due to alcohol. As a result, a policy which reduces alcohol consumption might avert deaths from liver disease, but some of those same individuals who no longer die from liver disease may subsequently die from other causes which are potentially entirely unrelated to alcohol within the time horizon of the model. To capture these additional years of life that arise from modelled policy scenarios we therefore also report changes in Years of Life Lost (YLLs) to premature death.

Finally, whereas in previous reports the key comparison for health outcomes is between pre- and post-intervention scenarios (i.e. comparing alcohol consumption and harm before and after a policy is implemented), in the present report we instead compare outcomes between a simulated control arm (where a 50p/unit MPA is maintained in 2026 and raised in line with CPIH inflation thereafter) and each modelled policy.

2.3. Data

The data used in TAX-sim is consistent with data used in SAPM for previous Welsh modelling, updated to the latest available years, with a few notable exceptions. Most significantly, low-level hospital admissions data for 2022 has been obtained directly from Digital Health and Care Wales, allowing us to undertake more detailed analysis of these figures than has previously been possible. As a result of this the baseline analysis uses hospital admissions as defined by the so-called ‘narrow measure’ whereby an admission is allocated to an alcohol-related condition only based on the primary diagnosis or any external causes. This is in contrast with previous SAPM analysis which have used the ‘broad measure’ which uses alcohol-related diagnosis codes in any diagnostic position. In general, the ‘narrow measure’ underestimates the total number of hospital admissions which are attributable to alcohol. However, it means we can have high confidence that all admissions attributed to alcohol consumption are genuinely alcohol-attributable, rather than alcohol playing an incidental role in the admission (see here [20] for full details and a discussion of the relative merits of both approaches).

Linked to this change in the measure of hospital admissions, TAX-sim also takes a different approach to hospital costs from SAPM. In SAPM costs were estimated for the impact of policy on healthcare costs across the whole of the health service, including inpatient admissions, A&E care, ambulance callouts and primary care. In TAX-sim, we have used more recent data, however this is only available for inpatient hospital admissions. Consequently, we trade off a wider range of costs assessed for the ability to use more recent data on costs focussed only on inpatient hospital admissions. As such, the NHS cost estimates in this report will be smaller than equivalent cost estimates from SAPM, as they are capturing a smaller proportion of the overall cost burden of alcohol, albeit using more recent NHS data. The estimated changes in NHS costs resulting from the policies modelled in this report are therefore likely to be a significant underestimate of the full cost impact across all NHS services

2.4. Preliminary modelling

To generate all required inputs to the model we first initialised two preliminary simulations with index years of 2019, before the introduction of the 50p MPA in 2020. The simulations were run until 2022, and modelled outcomes in 2022 used to calculate model inputs for the main models produced for this report, which are all initialised in 2022. The two preliminary model scenarios implemented were:

1. Modelling introduction of MPA in Wales at 50p in 2020, plus changes in duty over this period
2. Modelling changes in duty over this period but omitting the introduction of MPA

2.4.1. Estimating alcohol preferences in 2022

The first scenario was used to estimate preferences for alcohol products by subgroups in the population of Wales following the introduction of the 50p MPA. This is because the National Survey for Wales (NSW) data from the 2020-2021 survey onwards records details of alcohol consumption differently. This post-MPA data does not differentiate between normal and strong beers and ciders, does not separately record consumption of sherry, and does not separately record consumption of RTDs. We therefore cannot directly generate a synthetic population for Wales in 2022 with detailed information on alcohol consumption consistent with the assumptions which we use to generate data for pre-2020 Wales and for England and Scotland.

A further issue is the combining in the survey data of beer and cider, and of consumption in the on-trade with the off-trade. In previous modelling work we have separated beer from cider, and on-trade from off-trade, using data from the Living Costs and Food Survey (LCFS). However, these preferences are based on analyses of data with no minimum pricing applied and applying them to post-MPA Welsh consumption data will not reflect the impacts of the introduction of the 50p MPA on relative prices and consumption preferences across products and channel of sale. Specifically, given that the introduction of MPA has had the greatest impact on the prices and consumption of cider [21] it is important that our baseline population reflects this shift.

Our approach is therefore to use our first preliminary model to simulate a population initialised in 2019, and therefore constructed from more detailed alcohol consumption survey data. Modelling the implementation of 50p MPA in 2020 then adjusts baseline consumption to reflect the change in relative prices and produces a simulated population in 2022 from which we estimated the new alcohol consumption preferences.

We calculated the average weekly units consumed by 120 population subgroups defined by age group (18-24, 25-34, 35 - 49, 50+), sex (male, female), Welsh Index of Multiple Deprivation (IMD) quintile, and drinker category (moderate, hazardous, and harmful). We then calculated for each subgroup the proportion of total average weekly units of alcohol consumed made up of each of the 10 alcohol product categories in the model (beer, cider, wine, spirits, and RTDS separated into on-trade and off-trade sales). These proportions are matched to individuals in the NSW 2022/23 and used to disaggregate total weekly units of alcohol recorded in the survey data into consumption of the 10 alcohol product categories.

2.4.2. Estimating counterfactual price distributions in 2022

The second scenario - modelling the 2022 situation if MPA had never been implemented - was used to estimate reference price distributions representing what the price distribution would have been in 2022 if MPA had never been introduced. These reference price distributions are used to initialise the main modelling scenarios beginning in 2022, to provide a counterfactual distribution for scenarios where we reduce or remove MPA.

We use this modelled counterfactual distribution to estimate the proportion of all alcohol sold below 60p per unit in 2022 which would be sold in each of the six 10p price bands from £0.00-£0.10 to £0.50-£0.60, if no MPA had been introduced in 2020. We then applied these percentages to the observed price distributions for 2022 to spread out the alcohol consumption between £0.50 and £0.60 across the six price bands, to represent the counterfactual scenario where no MPA had been introduced. This adjustment to the observed price distribution is our reference price distribution for 2022 - the counterfactual distribution used to model the impacts of reducing or removing the MPA thresholds.

For example, assume 60% of observed off-trade cider transactions in 2022 are observed in the 50p to 60p price band. To construct the counterfactual distribution where there is no MPA, this 60% is distributed between the 50p to 60p price band, and each of the cheaper price bands using the modelled 2022 price distribution where no MPA was introduced in 2020. If in the modelled 2022 price distribution 50% of all transactions below 60p are in the 50p to 60p price band, and the other 50% are in the 40p to 50p price band, the counterfactual to the observed distribution is constructed so that 0.5 × 60% = 30% of off-trade cider transactions are allocated to the 50p to 60p price band, and 0.5 × 60% = 30% to the 40p to 50p price band.

3. Modelling changes to the MPA threshold

3.1. Introduction

Wales introduced a Minimum Price for Alcohol (MPA) of 50p/unit of alcohol (10ml / 8g of ethanol) in March 2020. The MPA threshold has remained at this level since its introduction. In this chapter we appraise the potential impact of changing the MPA threshold from 50p/unit - removing it entirely, reducing it to 40p or 45p/unit, or increasing it to 55p, 60p, 65p, 70p, 75p or 80p/unit - with effect from 2026. For each change in the MPA threshold we present the modelled estimates of the changes in alcohol consumption, consumer spending on alcohol, revenue to the exchequer and retailers, hospital admissions for alcohol-related health conditions, all-cause mortality and Years of Life Lost (YLLs) to premature death as well as costs to the NHS associated with hospital admissions. Results are presented at the population level as well as, where appropriate, split by drinker group (moderate, hazardous and harmful drinkers) and by WIMD quintiles.

3.2. Methods

3.2.1. MPA modelling methods

An MPA policy is applied by constructing a second price distribution in the model to the one which evolves over time with changing tax policies. The reference price distribution evolves year on year in line with changes to taxation, and in the absence of changes to tax is assumed to remain constant in real terms as defined by the Retail Price Index (RPI) measure of inflation. We use RPI for this purpose as this is the measure used by the UK government to set inflation-indexed duty rates for alcohol and tobacco. This is also consistent with the fact that RPI is used to deflate the Living Costs and Food Survey data used to construct the price distributions, as well as the data used in the estimation of price elasticities and tax pass-through coefficients which are used in the modelling.

The MPA for a given year in the model is also input in 2022 real-terms prices according to RPI. Data on all inflation indices used are obtained from a combination of the ONS and the Office for Budget Responsibility (OBR), forecasts and assumptions about future inflation being obtained from the OBR long-term economic determinants [22]. From 2030 onwards, RPI and CPIH inflation are assumed to converge at 2% per year.

After the price distribution has been updated for that year’s alcohol tax regime a copy of that distribution is taken, to which the minimum price threshold is applied. This distribution, termed the observed price distribution, is the distribution of prices faced by consumers. For prices at or above the minimum price it is identical to the reference price distribution. Prices which are below the MPA threshold for that year are shifted up to the MPA threshold. This calculation is performed each year of the model simulation.

Having both observed and reference price distributions allows the model to retain information on the assumed shape of the price distribution in the absence of MPA. This allows the modelling of scenarios where the MPA falls year on year in real-terms due to inflation, is reduced in cash terms in a particular year due to a deliberate policy decision (and therefore also in real terms) or is removed entirely (in which case the observed and reference price distributions will become one and the same). Retaining underlying reference price distribution allows the price distribution to revert to its pre-MPA shape in the part of the distribution affected by a decreasing real-terms MPA. At the end of the simulation year, the reference price distribution is then saved and passed to the next year of the simulation.

For each subgroup in the model, the average price paid for each product is calculated for the current and previous years observed price distributions, and the proportionate change in mean price calculated. The price elasticity matrix is then applied to the proportionate changes in price to obtain proportionate changes to participation and conditional consumption for each alcohol product. These effects are in turn used to adjust whether an individual in the simulation is a consumer, and then for those that are consumers after applying participation effects, the amount consumed.

3.2.2. Scenarios

The approach of the STAPM TAX-sim model is to estimate the control (or “business as usual”) arm against which each intervention is compared. All models are initialised in the year 2022, and the simulation runs until the year 2045. 2026 is the “policy effect year” - the year in which policy interventions are applied, and therefore the first year in which the intervention arms deviate from the control arm. The time horizon of 2045 is chosen to calculate health outcomes over a 20-year period from the policy effect year, allowing time for the full effect of health impacts to be realised. In the control arm, the 50p MPA is retained in 2026, and we assume that it is then uprated each year in line with the Consumer Price Index including owner/occupier housing costs (CPIH). The control arm also maintains the current tax system from the policy effect year onwards, i.e. the duty structure and rates remain unchanged in real terms from their 2025 values for the remaining duration of the model. In the intervention arms, the MPA is adjusted in 2026, and then uprated by CPIH in subsequent years.

All monetary outcomes reported are in real terms, adjusted for RPI inflation to 2026 prices. Note that as all prices in the model are expressed in RPI real-terms, the CPIH uprating represents a decreasing real-terms MPA threshold as RPI inflation is typically higher than CPI/CPIH. Throughout this report, the intervention arms are compared to this control arm - except for the three sensitivity analysis scenarios presented in this chapter, each of which involves modelling a unique control arm specific to the sensitivity analysis.

We have modelled nine intervention arms. Each intervention arm represents a hypothetical change to the cash-terms value of the MPA threshold in 2019. Two interventions are decreases in the MPA threshold (40p and 45p), six are increases (55p, 60p, 65p, 70p, 75p, and 80p) and the final intervention is the complete removal of the MPA policy. In each intervention scenario the same annual CPIH-indexed uprating from the previous year is applied after 2026 as in the control arm, as are the structure and rates of alcohol duty and VAT. The comparisons between the intervention arms and the control arm therefore represent the marginal impact of the change in MPA threshold from 50p per unit to a new value in 2026.

3.2.3. Price elasticities

One of the key parameters in the model is the price elasticity of demand. We use price elasticities estimated by Pryce et al. (2023) [19]. These price elasticities measure the responsiveness of consumption of 12 products - 10 alcohol and 2 tobacco - to changes in the prices of the 12 products, represented as a 12 by 12 matrix of elasticities capturing all own-price and cross-price effects. The Pryce elasticities consist of two matrices - one for participation and one for conditional consumption.

As this analysis is concerned with alcohol price modelling, we set all tobacco price elasticities equal to zero, effectively only using the 10 by 10 matrix of alcohol price elasticities. Furthermore, in our base case, we set all price elasticities which were not statistically significantly different from zero in the Pryce analysis to be equal to zero. We explore the sensitivity of our results to changes in our base case price elasticities.

3.2.4. Sensitivity analyses

We have undertaken three sensitivity analyses to establish the extent to which alternative model inputs might influence our results:

- SA1: We use the full matrix of Pryce participation price elasticities and conditional consumption price elasticities, including insignificant price elasticities.
- SA2: We use the Pryce elasticities but only include own-price elasticities, setting all cross-price elasticities between alcohol products equal to zero.
- SA3: We use the price elasticities estimated by HMRC and used by the Office for Budget Responsibility in their economic analysis [23].

For all sensitivity analyses we use an increase in the MPA threshold from 50p to 65p/unit as an illustrative policy scenario.

3.3. Results

3.3.1. Baseline (2026) data

At baseline, there are 2.02 million drinkers in Wales, consuming an average of 11.3 units of alcohol per week at a cost of £15.37. These figures are presented, separated by drinker group in

Table 1, showing that around 77% of drinkers in Wales are moderate drinkers, meaning that they consume within the UK Chief Medical Officers' low risk drinker guidelines of 14 units per week. Around 19% of drinkers are hazardous drinkers, meaning men who exceed the guidelines, but drinker fewer than 50 units/week and women who drink fewer than 35 units, while just over 4% of drinkers drink at harmful levels exceeding these thresholds.

Table 1 Baseline alcohol consumption and spending by drinker group

	Population	Moderate	Hazardous	Harmful
Number of drinkers	2,024,569	1,551,647	386,439	86,483
Proportion of all drinkers	100.00%	76.64%	19.09%	4.27%
Mean consumption (units/drinker/week)	11.25	4.46	24.99	71.70
Mean spending on alcohol (£/drinker/week)	£15.37	£7.62	£32.20	£77.68

Table 2 presents the same figures broken down by WIMD quintile, showing that drinkers in the least deprived quintile consume slightly more alcohol, on average – consuming on average 12.2 units per week compared to an average of 11.5 in the most deprived quintile. This difference of 0.7 units, however, is small and there is no consistent clear pattern across all five quintiles.

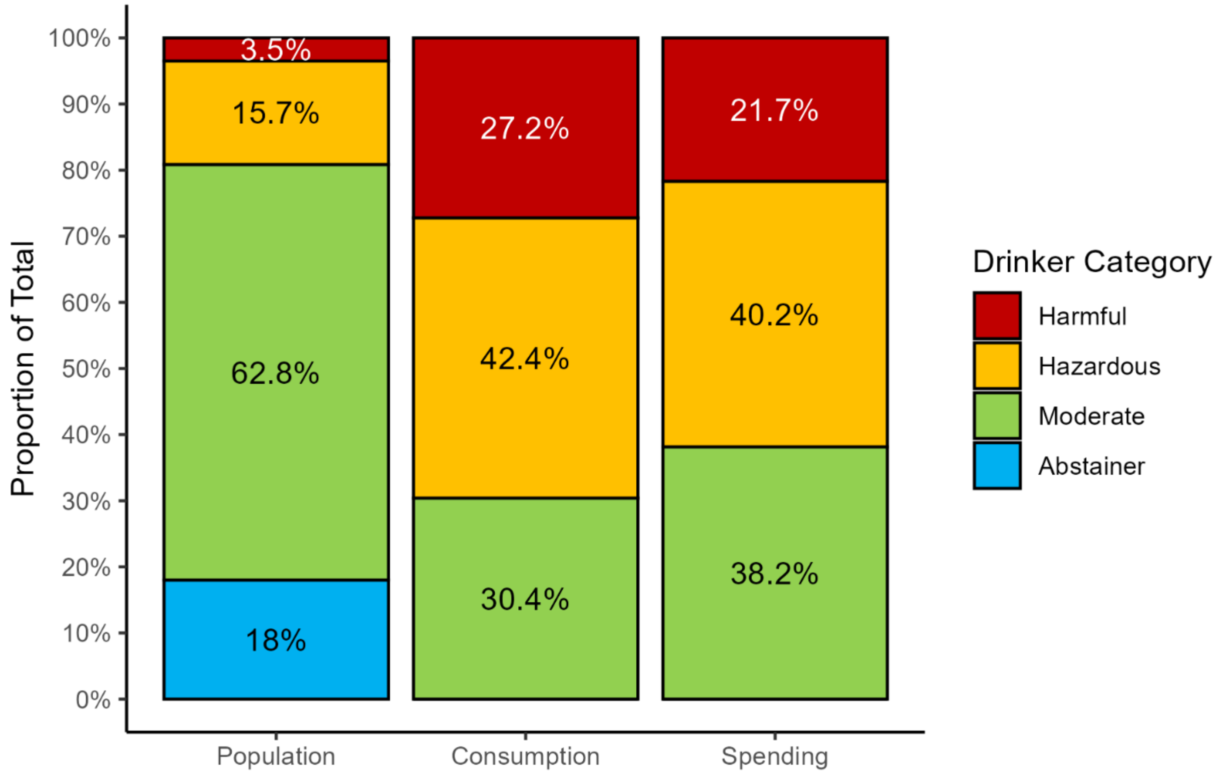
Table 2 Baseline alcohol consumption and spending by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Number of drinkers	407,110	419,687	423,884	392,429	381,458
Proportion of all drinkers	20.11%	20.73%	20.94%	19.38%	18.84%
Mean consumption (units/drinker/week)	12.24	10.68	11.39	10.46	11.50
Mean spending on alcohol (£/drinker/week)	£16.89	£15.04	£15.36	£14.45	£15.06

The implications of these figures are illustrated in

Figure 1. People drinking above the guidelines make up less than a quarter (23.4%) of the adult drinker population of Wales but consume over two thirds of all the alcohol consumed (69.6%) and account for over half (61.9%) of all spending on alcohol. More starkly, the heaviest drinking 4.3% of the adult drinker population drink 27.2% of all alcohol and spend 21.7% of all the money spent on alcohol in the country.

Figure 1 Distribution of the population, total alcohol consumption and total spending on alcohol between drinker groups at baseline



The equivalent graph for WIMD quintiles is shown in Figure 2, highlighting that not only are there slightly fewer drinkers in the most deprived group, but that they consume and spend proportionately less than drinkers in less deprived areas. Note that the population proportions differ between quintiles as we are considering only adults and the proportion of under 18s in each WIMD quintile varies.

Underlying these different patterns in alcohol consumption, and crucial to the impact of any potential future alcohol policy changes, are differences between population groups in terms of the type of alcohol that they consume – beer, cider, wine, spirits or RTDs – and where they purchase/consume that alcohol – either in the on-trade (pubs/bars/nightclubs/restaurants) or the off-trade (shops where alcohol is bought for consumption elsewhere).

Figure 2 Distribution of the population, total alcohol consumption and total spending on alcohol between WIMD quintiles at baseline

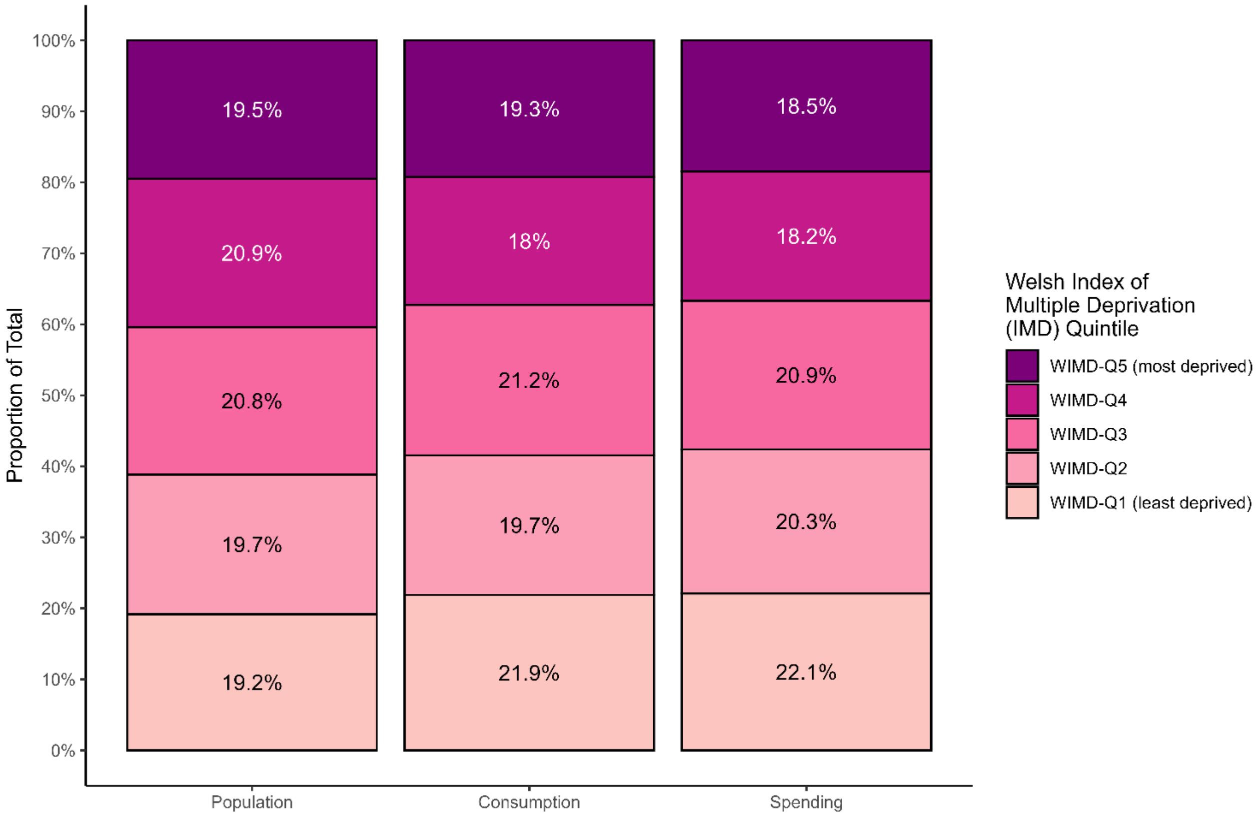


Figure 3 Baseline alcohol consumption by beverage type and drinker group

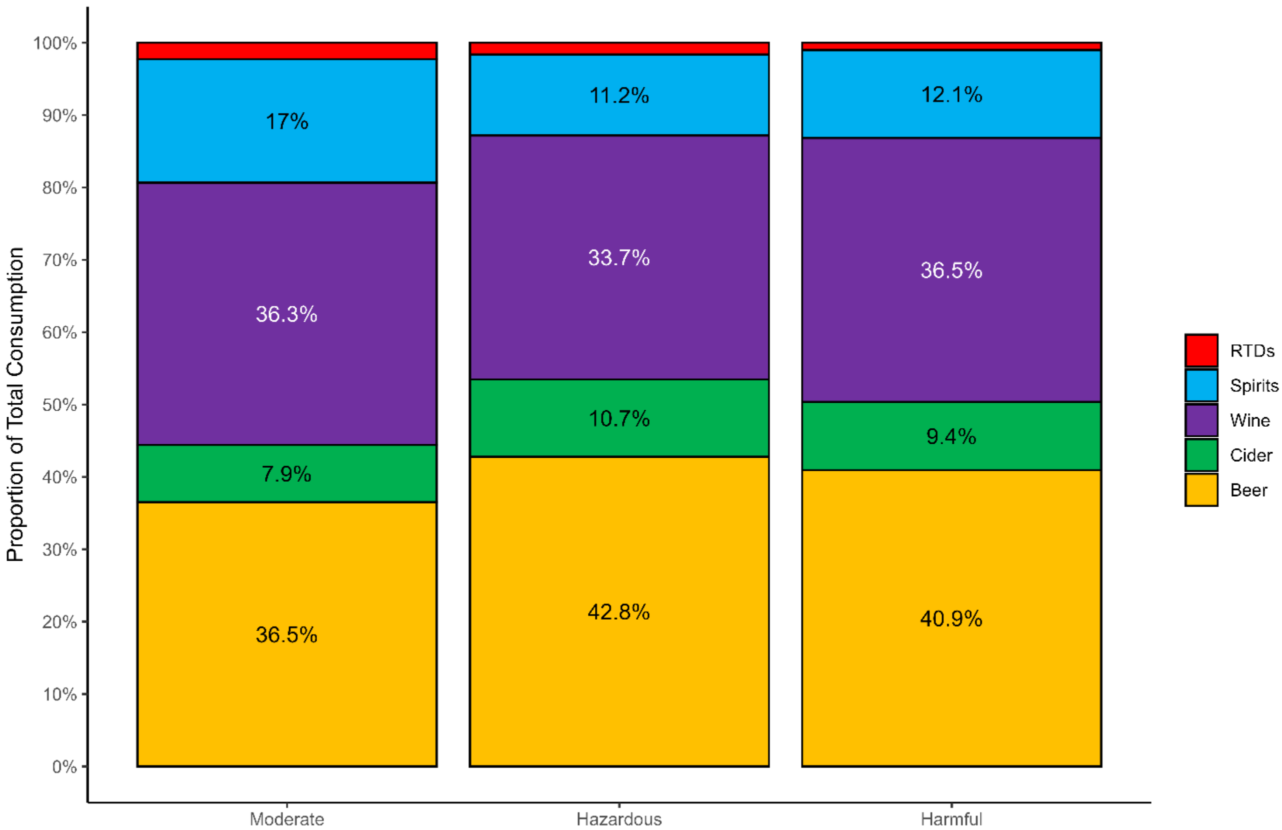
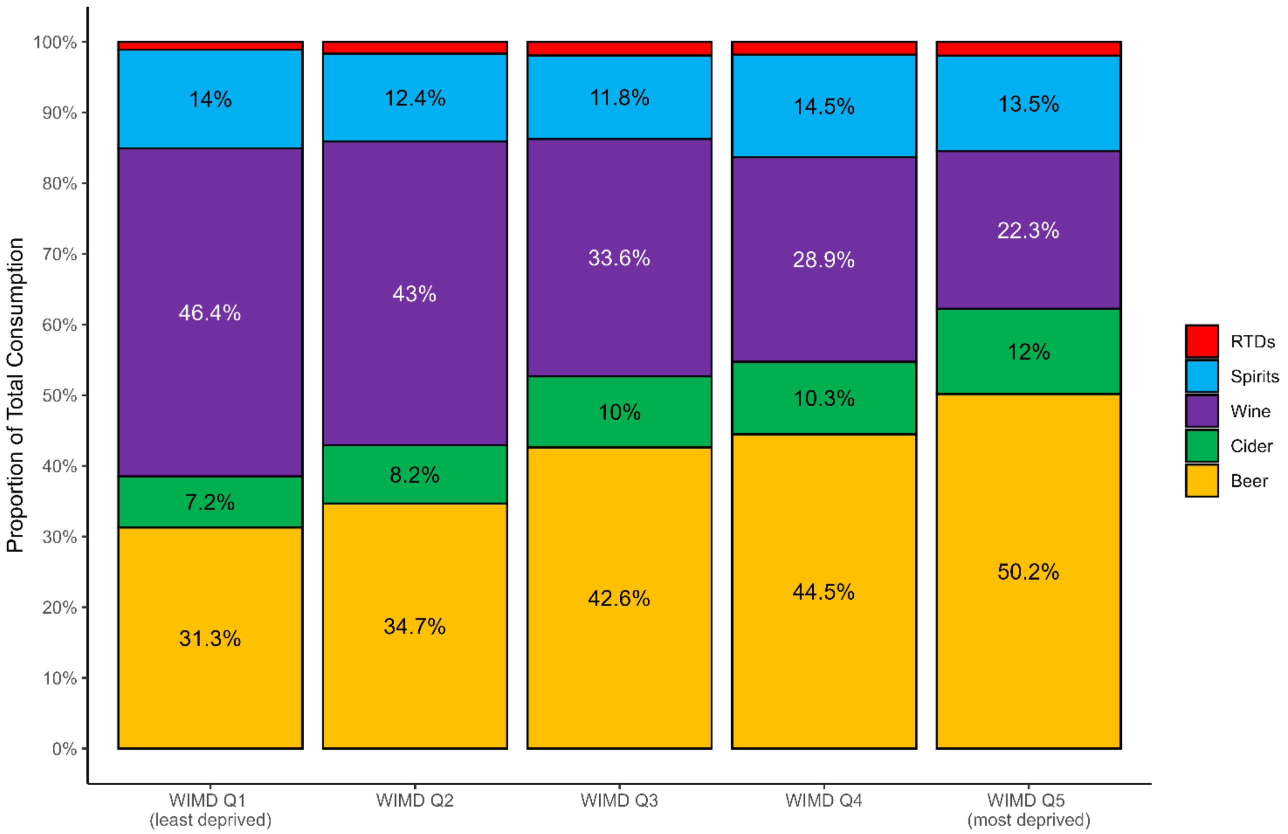


Figure 3 shows the differences between drinker groups in beverage preferences – illustrating that heavier and hazardous drinkers consume more beer and cider and less spirits than moderate drinkers (as a proportion of their total consumption – heavier drinkers still consume far more spirits on average in absolute terms). The equivalent data for WIMD quintiles is shown in Figure 4, demonstrating a clearer gradient in alcohol product preferences between socio-economic status than by drinker category. There is substantially higher consumption of beer, cider and spirits and lower consumption of wine in the most deprived quintile compared to the least deprived.

Figure 4 Baseline alcohol consumption by beverage type and WIMD quintile



A breakdown of alcohol consumption by channel (on- and off-trade) and drinker group is shown in

Figure 5, and by channel and WIMD quintile in Figure 6. These figures illustrate a huge difference in where alcohol is purchased between drinker groups, with moderate drinkers splitting their alcohol consumption almost equally between the on- and off-trades, while harmful drinkers purchase only one fifth of their alcohol in the on-trade. This differential is critical to the impact of alcohol pricing policies, as off-trade alcohol tends to be considerably cheaper than alcohol bought in pubs, bars, nightclubs and restaurants. There is also a socio-economic gradient in the proportion of alcohol bought in the on- and off-trades, though the differences between WIMD quintiles are less pronounced than between drinker groups, with the most deprived quintiles consuming around two-thirds of their alcohol from shops and this figure increasing slightly in less deprived quintiles.

Figure 5 Baseline alcohol consumption by channel and drinker group

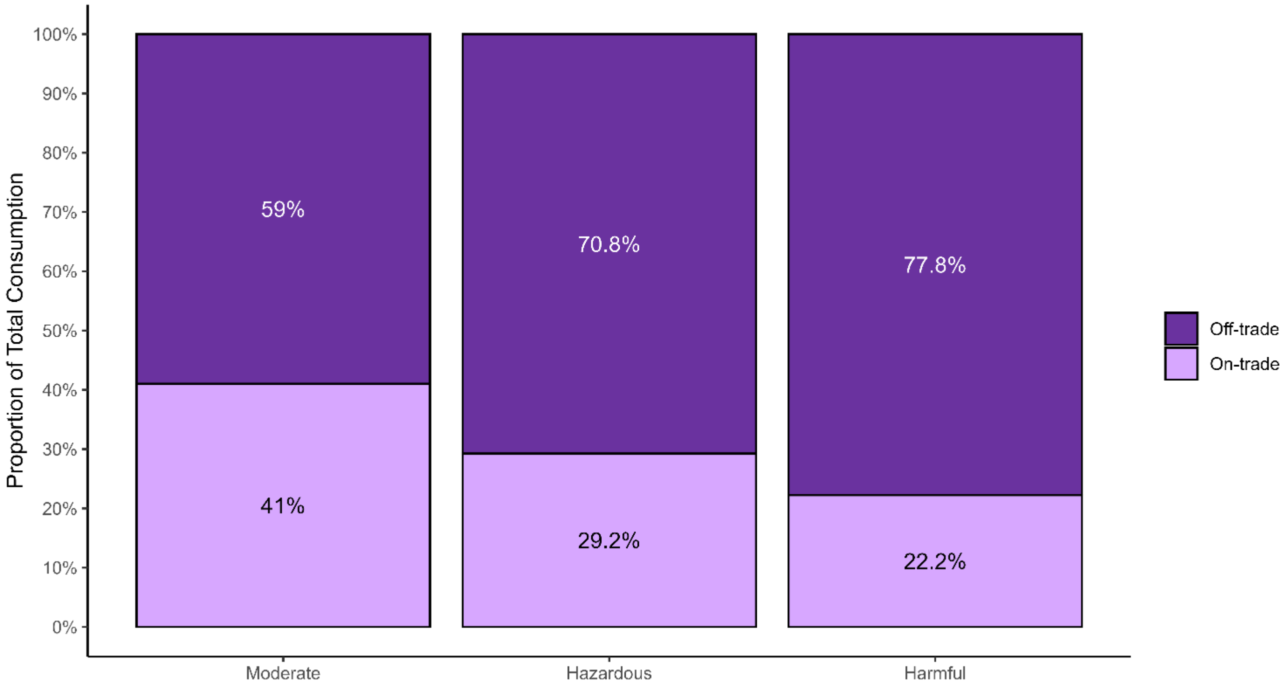
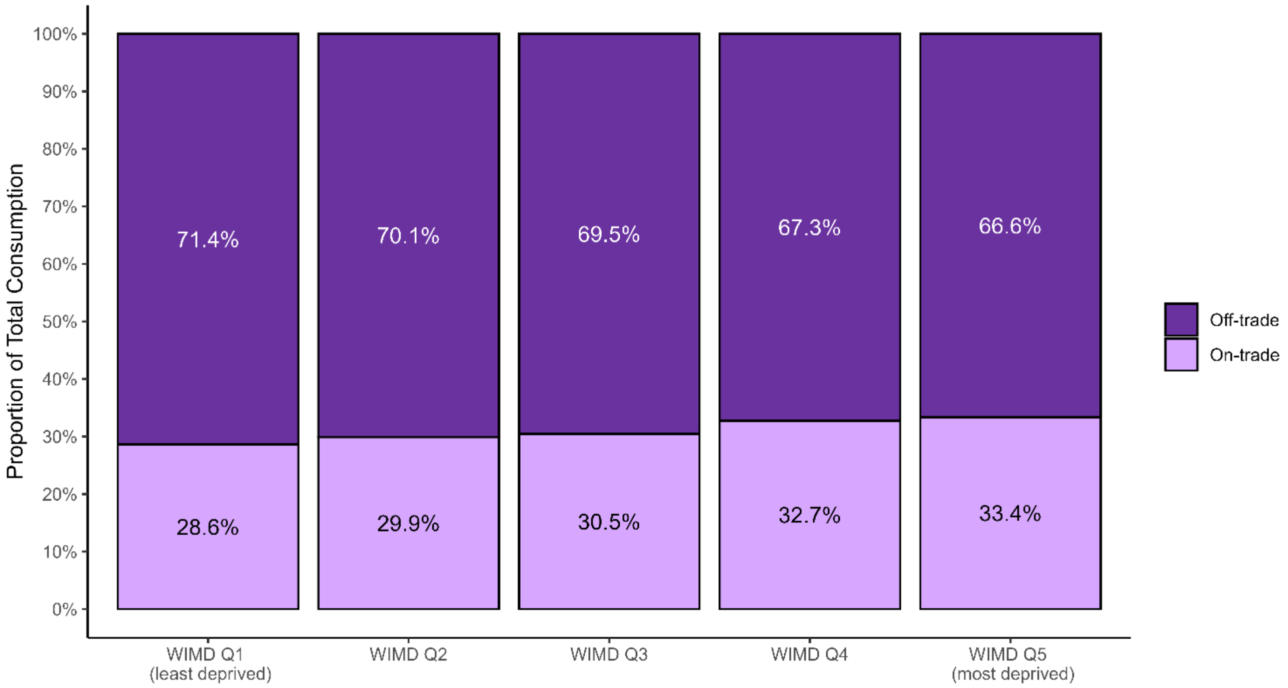


Figure 6 Baseline alcohol consumption by channel and WIMD quintile



The consequences of these differences in purchasing preferences and behaviours for the average prices paid between different drinker and deprivation groups are presented in Table 3 and Table 4 respectively. These tables demonstrate a clear price gradient over drinker groups, with heavier drinkers consuming cheaper alcohol (£1.08 per unit) than moderate drinkers (£1.71 per unit). This is despite the effect of the 50p MPA, which has not eliminated the differential in average prices paid between moderate, hazardous, and harmful drinkers.

Table 3 Baseline average prices paid for alcohol by drinker group

	Population	Moderate	Hazardous	Harmful
All alcohol	£1.37	£1.71	£1.29	£1.08
Off-trade alcohol	£0.81	£0.86	£0.81	£0.76
On-trade alcohol	£2.59	£2.85	£2.43	£2.29
Beer	£1.22	£1.40	£1.20	£1.08
Cider	£1.03	£1.15	£1.03	£0.91
Wine	£1.25	£1.46	£1.21	£1.08
Spirits	£1.79	£2.38	£1.63	£1.11
RTDs	£1.80	£2.00	£1.67	£1.64

There is also a socio-economic gradient in prices paid, with the most deprived quintile consuming at lower average prices than the least deprived in both off-trade alcohol consumption (£0.77 vs £0.83) and on-trade (£2.38 vs £2.74), though with less of a clear pattern in overall average alcohol prices.

Table 4 Baseline average prices paid for alcohol by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
All alcohol	£1.38	£1.41	£1.35	£1.38	£1.31
Off-trade alcohol	£0.83	£0.83	£0.81	£0.79	£0.77
On-trade alcohol	£2.74	£2.71	£2.55	£2.56	£2.38
Beer	£1.30	£1.27	£1.20	£1.20	£1.15
Cider	£1.09	£1.08	£1.03	£1.01	£0.97
Wine	£1.30	£1.25	£1.25	£1.22	£1.22
Spirits	£1.64	£1.91	£1.85	£1.88	£1.73
RTDs	£1.82	£1.93	£1.55	£1.85	£1.90

Further detail on the difference in prices paid between different population groups is given in

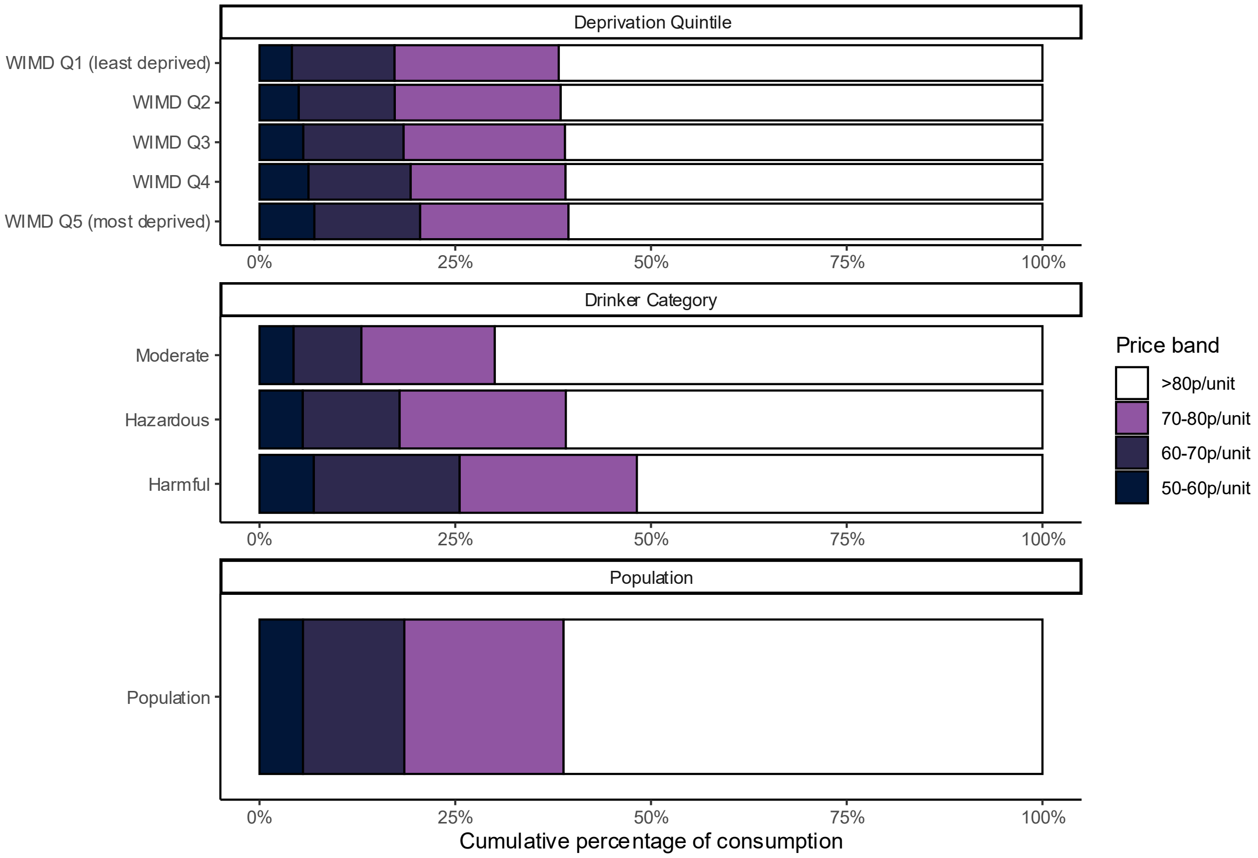
Table 5 and illustrated in Figure 7. This shows that 5.6% of alcohol sold in Wales is sold for less than 60p/unit, but only 4.4% of moderate drinkers' purchases fall below this threshold compared to 6.9% of harmful drinkers. 18.5% of alcohol sold in Wales is sold for less than 70p/unit, and 18.5% is sold for less than 80p/unit.

When looking at differences between WIMD quintiles, those in more deprived groups do buy more alcohol below 60p and 70p/unit than those in less deprived groups (4.1% and 7% respectively in the least deprived WIMD quintile compared to 17.2% and 20.5% in the most deprived).

Table 5 Baseline proportions of alcohol purchased below select price thresholds

	Proportion of alcohol purchased for less than:		
	60p/unit	70p/unit	80p/unit
Population	5.55%	18.50%	38.83%
Moderate	4.35%	13.01%	30.05%
Hazardous	5.53%	17.89%	39.12%
Harmful	6.94%	25.56%	48.20%
WIMD Q1 (least deprived)	4.14%	17.25%	38.22%
WIMD Q2	5.01%	17.27%	38.47%
WIMD Q3	5.59%	18.40%	39.02%
WIMD Q4	6.26%	19.31%	39.09%
WIMD Q5 (most deprived)	7.01%	20.52%	39.47%

Figure 7 Distribution of baseline alcohol consumption by prices paid



Moving onto the impact of this alcohol consumption on population health - Table 6 gives the estimated total number of deaths, hospital admissions and Years of Life Lost (YLLs) which are attributable to alcohol in 2026. Note that the mortality figures here include both deaths from conditions which are caused only by alcohol (known as 'alcohol-specific' deaths) and conditions for which alcohol is one of potentially many risk factors, such as breast cancer or road traffic injuries (alcohol-attributable deaths). These figures highlight the substantial burden that alcohol places on the population and healthcare services in Wales, with 699 deaths attributable to alcohol (of which 554 are alcohol-specific deaths), 11,243 hospital admissions and 23,550 years of life lost to premature mortality because of alcohol consumption.

When we break these figures out by drinker group, we can see that alcohol is estimated to reduce the number of deaths overall in moderate drinkers. This is because of putative protective effects of drinking for some health outcomes, most notably cardiovascular disease (see Angus at al. (2019) [24] for full details). Whether these protective effects represent genuine biological impacts of moderate alcohol consumption or are artefacts that arise due to limitations in the epidemiological studies that identify them remains a hotly disputed topic in alcohol epidemiology (see for example Fekjær (2013), Stockwell et al. (2016), or Chikritzhs et al. (2015) [25-27]). Whilst we (conservatively) take the underlying studies that find these effects at face value, significant caution should be exercised in interpreting these numbers. Note that these protective effects also mean that one should not simply take the number of YLLs and divide them by the number of deaths to estimate the mean number of YLLs per death due to alcohol, as the net number of deaths conceals the fact that more deaths may have been caused by drinking, while some may also have been averted. As may be expected, alcohol-attributable harms are much greater in heavier drinking groups, particularly when we account for their relatively smaller sizes by calculating rates per 100,000 drinkers.

Table 6 Baseline alcohol-attributable health harms by drinker group

	Population	Moderate	Hazardous	Harmful
Annual alcohol-attributable deaths	699	-76	442	333
Annual alcohol-attributable deaths per 100,000 drinkers	35	-5	114	385
Annual alcohol-specific deaths	554	45	333	175
Annual alcohol-specific deaths per 100,000 drinkers	27	3	86	203
Annual alcohol-attributable hospital admissions	11,243	2,284	5,576	3,383
Annual alcohol-attributable hospital admissions per 100,000 drinkers	555	147	1,443	3,912
Annual YLLs to alcohol	23,550	408	13,248	9,894
Annual YLLs to alcohol per 100,000 drinkers	1,163	26	3,428	11,440

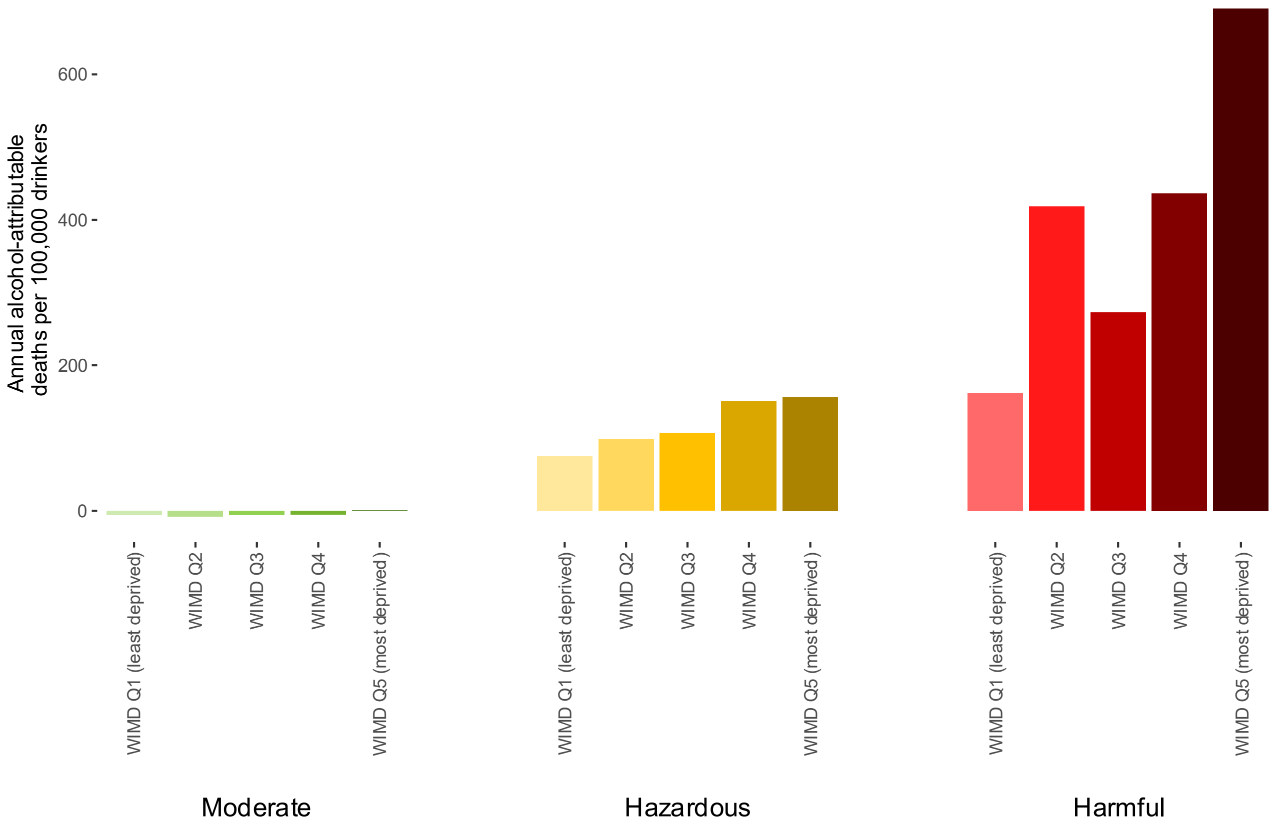
Equivalent baseline alcohol-attributable harms across WIMD quintiles are presented in Table 7. This shows starkly that, even though Table 2 shows that more deprived groups have fewer drinkers and those who do drink consume less alcohol, on average, than less deprived groups, rates of alcohol-attributable harm are vastly higher. This phenomenon is widely referred to as the ‘alcohol harm paradox’ (Beard et al. 2016, Bellis et al. 2016 [28, 29]). Overall, the most deprived quintile experiences around 3.1 times more alcohol-attributable mortality and Years of Life Lost and 1.2 times more alcohol-attributable hospital admissions per drinker than the least deprived quintile.

Table 7 Baseline alcohol-attributable health harms by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Annual alcohol-attributable deaths	82	115	118	146	238
Annual alcohol-attributable deaths per 100,000 drinkers	20	27	28	37	62
Annual alcohol-specific deaths	61	82	102	116	193
Annual alcohol-specific deaths per 100,000 drinkers	15	20	24	30	51
Annual alcohol-attributable hospital admissions	2,119	2,246	2,120	2,139	2,620
Annual alcohol-attributable hospital admissions per 100,000 drinkers	521	535	500	545	687
Annual YLLs to alcohol	2,738	3,408	4,398	4,897	8,109
Annual YLLs to alcohol per 100,000 drinkers	673	812	1,038	1,248	2,126

These differences are illustrated in Figure 8, which shows the joint gradients in alcohol-attributable mortality across both drinker groups and WIMD quintiles.

Figure 8 Baseline alcohol-attributable mortality by drinker group and WIMD quintile



3.3.2. Modelled impacts of MPA policies on alcohol consumption and spending

The estimated effects of each of the modelled MPA policies on alcohol consumption is shown in Table 8 and in Table 9 by WIMD quintile and illustrated in

Figure 9 and Figure 10 respectively. Here we are comparing alcohol consumption in 2026 following the changing of the MPA threshold to the control scenario in 2026 where the MPA threshold remained at 50p.

These estimates show that removing MPA entirely or lowering the MPA threshold from 50p to 40p or 45p is estimated to increase alcohol consumption compared to retaining the threshold at 50p (the control arm). These increases are greatest in the most deprived quintile. In contrast, raising the MPA threshold above 50p is estimated to reduce alcohol consumption, with the largest reductions coming from those in the most deprived group.

Table 8 Modelled impacts of removing or changing the MPA threshold on alcohol consumption in 2026

	All drinkers	
	Absolute change	Relative change
Drinker population	2,024,569	
Mean consumption per drinker per week	11.25	
Change in weekly consumption vs. control		
Remove MPA	0.08	0.74%
40p MPA	0.03	0.30%
45p MPA	0.02	0.16%
50p MPA (control)	0.00	0.00%
55p MPA	-0.07	-0.64%
60p MPA	-0.16	-1.39%
65p MPA	-0.30	-2.68%
70p MPA	-0.49	-4.40%
75p MPA	-0.72	-6.38%
80p MPA	-1.06	-9.42%

Table 9 Modelled impacts of removing or changing the MPA threshold on alcohol consumption by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Drinker population	407,110	419,687	423,884	392,429	381,458
Mean consumption per drinker per week	12.24	10.68	11.39	10.46	11.50
Absolute change in consumption vs. control					
Remove MPA	0.05	0.05	0.08	0.09	0.14
40p MPA	0.02	0.02	0.03	0.04	0.06
45p MPA	0.01	0.01	0.02	0.02	0.03
50p MPA (control)	0.00	0.00	0.00	0.00	0.00
55p MPA	-0.05	-0.05	-0.07	-0.08	-0.12
60p MPA	-0.11	-0.11	-0.16	-0.17	-0.25
65p MPA	-0.22	-0.20	-0.31	-0.32	-0.46
70p MPA	-0.37	-0.35	-0.52	-0.53	-0.73
75p MPA	-0.56	-0.52	-0.75	-0.76	-1.03
80p MPA	-0.86	-0.81	-1.10	-1.10	-1.46
Relative change in consumption vs. control					
Remove MPA	0.42%	0.49%	0.73%	0.87%	1.26%
40p MPA	0.18%	0.20%	0.29%	0.35%	0.51%
45p MPA	0.09%	0.11%	0.16%	0.19%	0.27%
50p MPA (control)	0.00%	0.00%	0.00%	0.00%	0.00%
55p MPA	-0.39%	-0.44%	-0.66%	-0.74%	-1.02%
60p MPA	-0.87%	-0.99%	-1.42%	-1.61%	-2.14%
65p MPA	-1.78%	-1.92%	-2.76%	-3.10%	-3.98%
70p MPA	-3.04%	-3.29%	-4.53%	-5.03%	-6.33%
75p MPA	-4.55%	-4.91%	-6.56%	-7.23%	-8.97%
80p MPA	-7.05%	-7.56%	-9.68%	-10.54%	-12.66%

When considering these changes in consumption, and the other modelled results throughout this report, it is important to understand a critical difference between the TAX-sim model used for this report and the SAPM model used in previous reports. This arises because the structure of TAX-sim allows us to track individual drinkers' consumption trajectories over time and therefore we can calculate how the number of drinkers in each consumption group change over time.

This contrasts with SAPM where drinker groups were determined by an individual's consumption at baseline (i.e. before any policies were implemented) and did not change. This represents an important conceptual difference - in any future year within the model, the results in this report represent the outcomes (be they alcohol consumption, spending or health outcomes) associated with people drinking at that level in that year. The fact that this allows individual drinkers to transition between drinker groups over time means that it is important to consider both the changes in consumption levels as well as the number of drinkers in each group.

Figure 9 Modelled impacts of removing or changing the MPA threshold on alcohol consumption in 2026

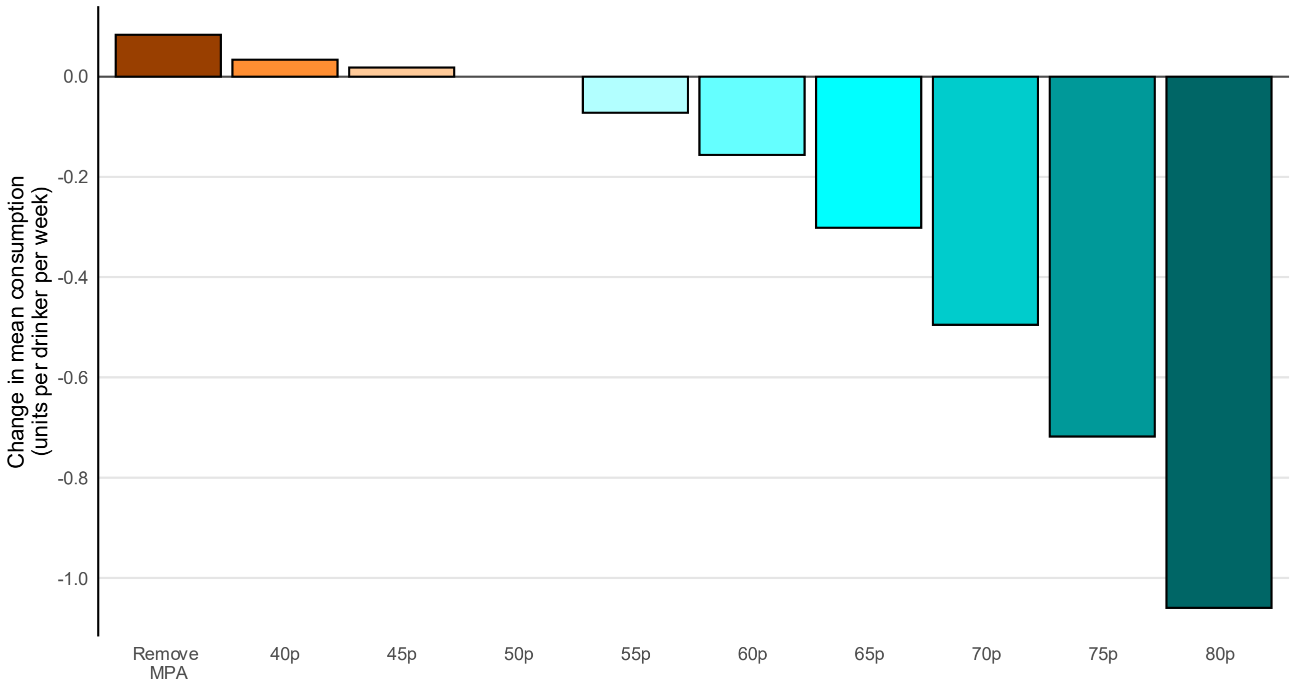


Figure 10 Modelled impacts of removing or changing the MPA threshold on alcohol consumption in 2026 by WIMD quintile

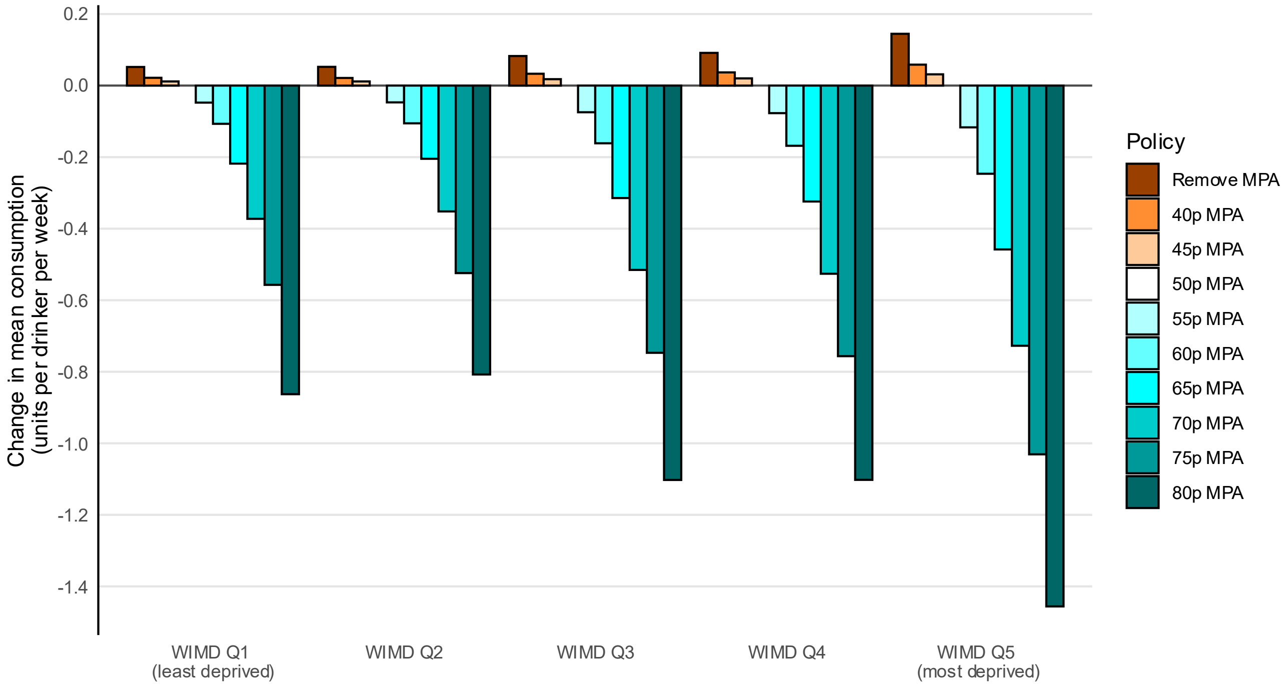


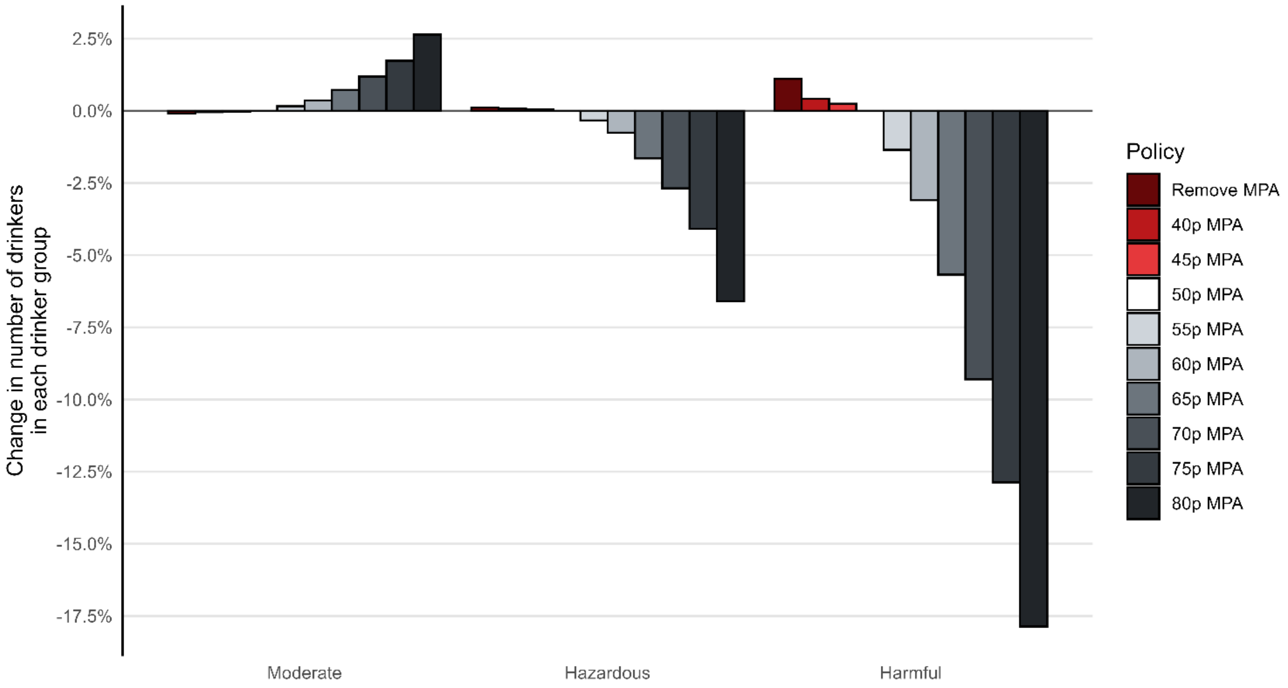
Table 10 and Figure 11 shows how these shifts between drinker groups play out across all modelled MPA policies in 2026 relative to the control scenario. This demonstrates, as might be expected, that higher MPA increases lead to bigger shifts away from hazardous and harmful drinking and a corresponding increase in the number of moderate drinkers. Raising the MPA to 65p is estimated to reduce the number of hazardous (-6,363) and harmful (-4,906) drinkers, with a corresponding increase in the number of moderate drinkers of (+11,270).

Lowering the MPA threshold from 50p to 40p or 45p, or removing it entirely, has the opposite effect, leading some drinkers to shift up from moderate to hazardous drinking and others to shift from hazardous to harmful. Removing MPA entirely is estimated to lead to an immediate increase in 2026 in the number of hazardous (+461) and harmful (+959) drinkers, with a corresponding reduction in the number of moderate drinkers of (-1,420).

Table 10 Modelled impacts of removing or changing the MPA threshold on the number of drinkers in each group in 2026

	Moderate	Hazardous	Harmful
Absolute change in number of drinkers vs. control			
Remove MPA	-1,420	461	959
40p MPA	-660	299	361
45p MPA	-374	162	212
50p MPA (control)	0	0	0
55p MPA	2,453	-1,283	-1,171
60p MPA	5,604	-2,926	-2,677
65p MPA	11,270	-6,363	-4,906
70p MPA	18,430	-10,385	-8,044
75p MPA	26,935	-15,802	-11,133
80p MPA	40,969	-25,515	-15,454
Relative change in number of drinkers vs. control			
Remove MPA	-0.09%	0.12%	1.11%
40p MPA	-0.04%	0.08%	0.42%
45p MPA	-0.02%	0.04%	0.24%
50p MPA (control)	0.00%	0.00%	0.00%
55p MPA	0.16%	-0.33%	-1.35%
60p MPA	0.36%	-0.76%	-3.10%
65p MPA	0.73%	-1.65%	-5.67%
70p MPA	1.19%	-2.69%	-9.30%
75p MPA	1.74%	-4.09%	-12.87%
80p MPA	2.64%	-6.60%	-17.87%

Figure 11 Modelled changes in the number of drinkers in each group compared to control in 2026



The extent to which changes in prices and resulting shifts in consumption combine to produce changes in overall consumer spending is shown in Table 11 and

Figure 12, and by WIMD quintile in

Table 12 and

Figure 13. Across all drinkers, reducing or removing the MPA threshold is estimated to increase spending, while raising it reduces spending. This is true across all WIMD quintiles, with larger impacts on spending estimated for drinkers in more deprived WIMD quintiles.

Table 11 Modelled impacts of removing or changing the MPA threshold on consumer spending on alcohol

	All drinkers	
	Absolute change	Relative change
Drinker population	2,024,569	
Mean spending per drinker per week (control)	£15.37	
Change in weekly spending vs. control		
Remove MPA	£0.05	0.16%
40p MPA	£0.02	0.05%
45p MPA	£0.01	0.02%
50p MPA (control)	£0.00	0.00%
55p MPA	-£0.04	-0.12%
60p MPA	-£0.09	-0.27%
65p MPA	-£0.13	-0.40%
70p MPA	-£0.20	-0.61%
75p MPA	-£0.30	-0.93%
80p MPA	-£0.49	-1.52%

Figure 12 Modelled impacts of removing or changing the MPA threshold on consumer spending on alcohol in 2026

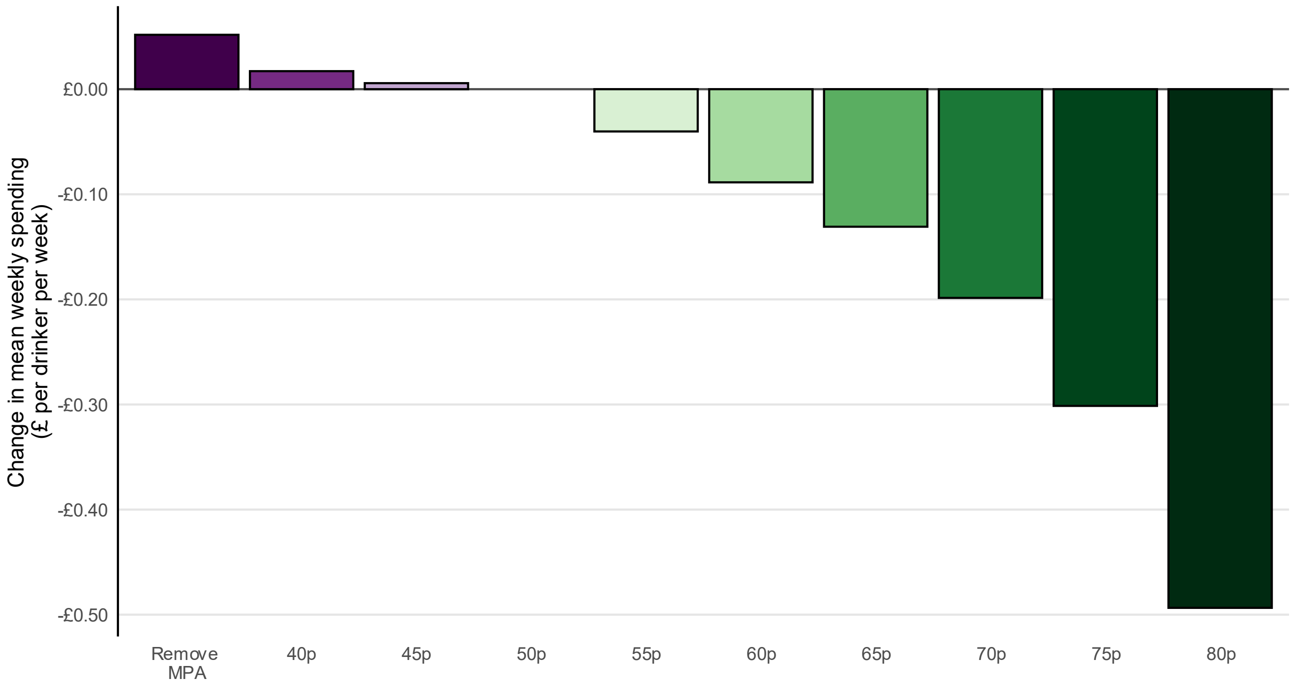


Figure 13 Modelled impacts of removing or changing the MPA threshold on consumer spending by WIMD quintile

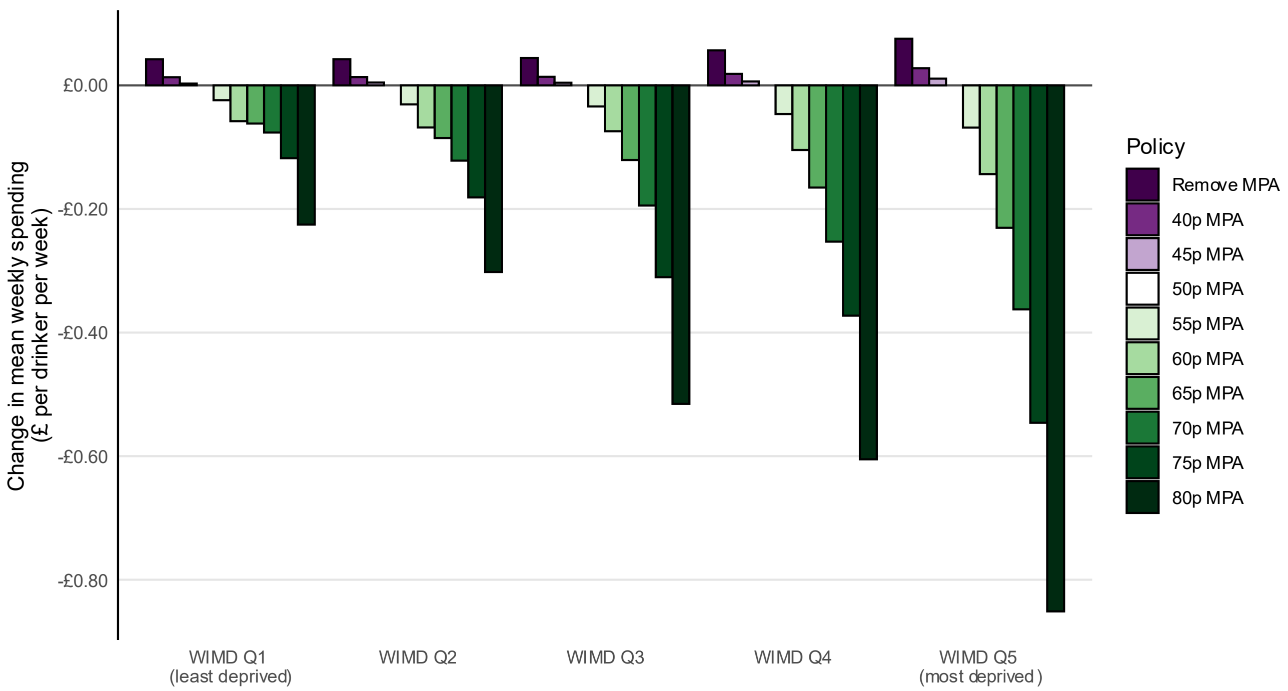


Table 12 Modelled impacts of removing or changing the MPA threshold on consumer spending on alcohol by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Drinker population	407,110	419,687	423,884	392,429	381,458
Mean spending per drinker per week	£16.89	£15.04	£15.36	£14.45	£15.06
Absolute change in spending vs. control					
Remove MPA	£0.04	£0.04	£0.04	£0.06	£0.08
40p MPA	£0.01	£0.01	£0.01	£0.02	£0.03
45p MPA	£0.00	£0.00	£0.00	£0.01	£0.01
50p MPA (control)	£0.00	£0.00	£0.00	£0.00	£0.00
55p MPA	-£0.02	-£0.03	-£0.03	-£0.05	-£0.07
60p MPA	-£0.06	-£0.07	-£0.07	-£0.10	-£0.14
65p MPA	-£0.06	-£0.09	-£0.12	-£0.17	-£0.23
70p MPA	-£0.08	-£0.12	-£0.19	-£0.25	-£0.36
75p MPA	-£0.12	-£0.18	-£0.31	-£0.37	-£0.55
80p MPA	-£0.23	-£0.30	-£0.52	-£0.61	-£0.85
Relative change in spending vs. control					
Remove MPA	0.12%	0.13%	0.14%	0.18%	0.24%
40p MPA	0.04%	0.04%	0.04%	0.06%	0.09%
45p MPA	0.01%	0.01%	0.01%	0.02%	0.03%
50p MPA (control)	0.00%	0.00%	0.00%	0.00%	0.00%
55p MPA	-0.07%	-0.10%	-0.11%	-0.15%	-0.22%
60p MPA	-0.16%	-0.21%	-0.23%	-0.34%	-0.45%
65p MPA	-0.17%	-0.27%	-0.38%	-0.54%	-0.73%
70p MPA	-0.21%	-0.38%	-0.61%	-0.82%	-1.14%
75p MPA	-0.33%	-0.57%	-0.97%	-1.21%	-1.72%
80p MPA	-0.63%	-0.95%	-1.60%	-1.96%	-2.68%

3.3.3. Modelled impacts of MPA policies on tax and retailer revenues

All modelled impacts on tax and retail revenues are presented as cumulative 5-year impacts from 2026 to 2030. The estimated impacts that these changes in alcohol consumption and spending have on revenue to the government through alcohol duty and VAT, separated into the revenue collected through the on- and off-trades, is shown in Table 13 and visualised in

Figure 14. Reducing or removing the MPA threshold is estimated to lead to increased exchequer revenue while increasing the threshold is estimated to lead to reductions in alcohol tax revenue. These changes are largest in revenue from the off-trade, as it is off-trade prices which are directly impacted by changes in the MPA threshold, while on-trade prices are generally higher than the threshold levels being modelled. Reductions in tax revenue from on-trade alcohol occurs due to cross-price elasticities which mean that as the price of off-trade alcohol increases, consumption of on-trade alcohol decreases as well as off-trade alcohol - that is, the on and off-trades are complements.

Table 13 Modelled impacts on 5-year cumulative exchequer revenue from alcohol taxes 2026-2030 compared to control

	Estimated annual change in duty & VAT revenue to government (£million)		
	Off-trade	On-trade	Total
Absolute change in revenue vs. control			
Remove MPA	£17	£5	£22
40p MPA	£7	£2	£9
45p MPA	£3	£1	£4
50p MPA (control)	£0	£0	£0
55p MPA	-£16	-£6	-£22
60p MPA	-£46	-£6	-£52
65p MPA	-£95	-£14	-£109
70p MPA	-£151	-£32	-£184
75p MPA	-£218	-£39	-£257
80p MPA	-£322	-£53	-£374
Relative change in revenue vs. control			
Remove MPA	0.50%	0.20%	0.36%
40p MPA	0.21%	0.06%	0.14%
45p MPA	0.10%	0.04%	0.07%
50p MPA (control)	0.00%	0.00%	0.00%
55p MPA	-0.49%	-0.22%	-0.37%
60p MPA	-1.37%	-0.23%	-0.86%
65p MPA	-2.85%	-0.52%	-1.80%
70p MPA	-4.55%	-1.17%	-3.02%
75p MPA	-6.55%	-1.42%	-4.23%
80p MPA	-9.66%	-1.91%	-6.15%

Figure 14 Modelled impacts on 5-year cumulative exchequer revenue from alcohol taxes 2026-2030 compared to control

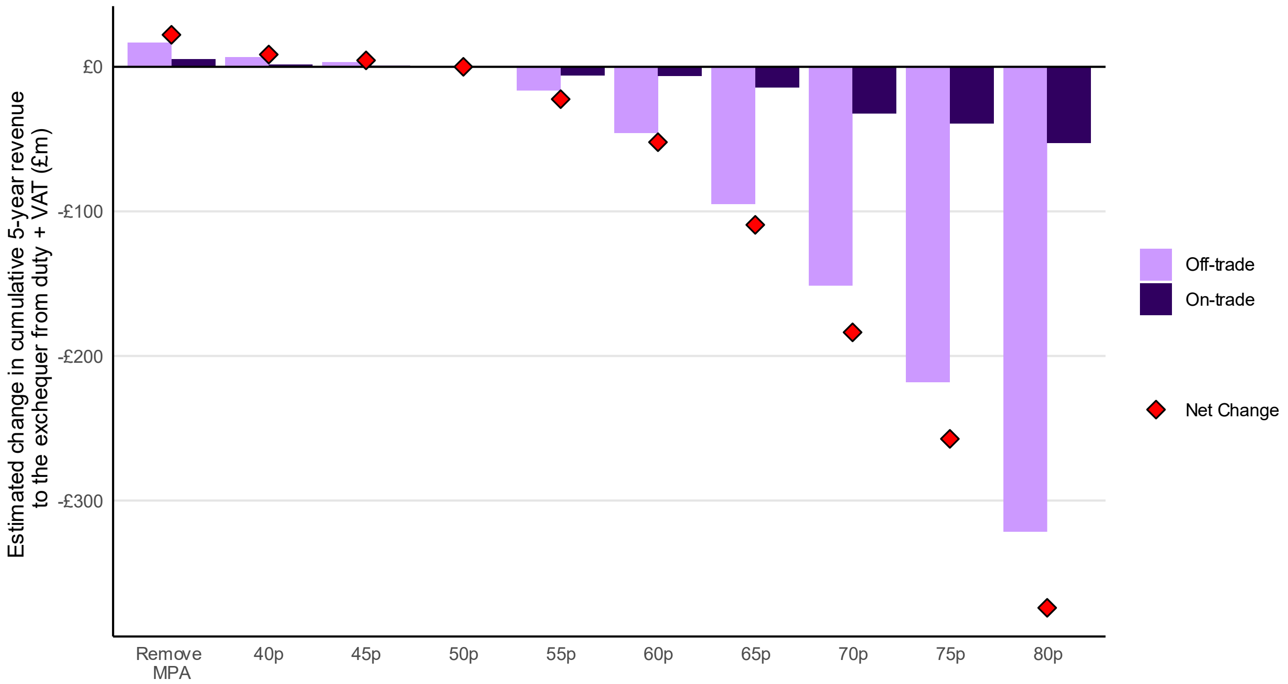
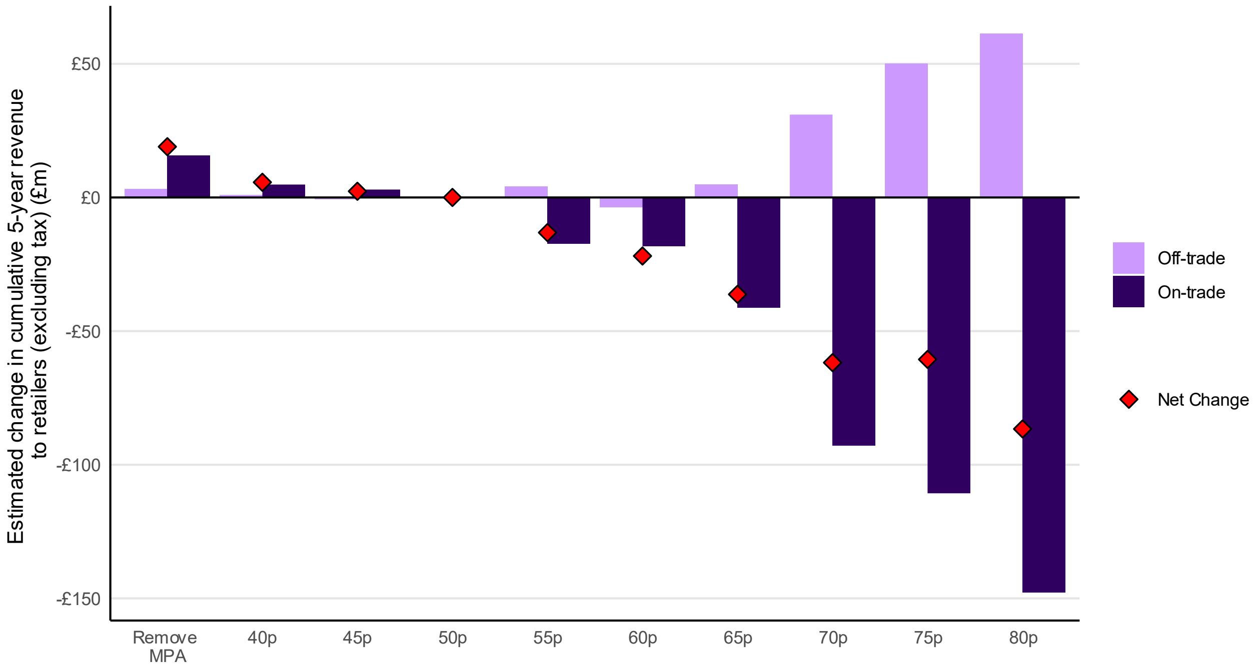


Table 14 Modelled impacts of removing or changing the MPA threshold on retailer revenue from alcohol sales

	Estimated change in annual revenue to retailers (£million)		
	Off-trade	On-trade	Total
Absolute change in revenue vs. control			
Remove MPA	£3	£16	£19
40p MPA	£1	£5	£6
45p MPA	-£1	£3	£2
50p MPA (control)	£0	£0	£0
55p MPA	£4	-£17	-£13
60p MPA	-£4	-£18	-£22
65p MPA	£5	-£41	-£36
70p MPA	£31	-£93	-£62
75p MPA	£50	-£111	-£61
80p MPA	£61	-£148	-£87
Relative change in revenue vs. control			
Remove MPA	0.09%	0.19%	0.16%
40p MPA	0.02%	0.06%	0.05%
45p MPA	-0.02%	0.04%	0.02%
50p MPA (control)	0.00%	0.00%	0.00%
55p MPA	0.11%	-0.21%	-0.11%
60p MPA	-0.10%	-0.23%	-0.19%
65p MPA	0.13%	-0.51%	-0.31%
70p MPA	0.84%	-1.15%	-0.52%
75p MPA	1.35%	-1.37%	-0.51%
80p MPA	1.66%	-1.83%	-0.73%

Figure 15 Modelled impacts of removing or changing the MPA threshold on retailer revenue from alcohol sales



After accounting for changes in taxation, we can then estimate how changes in consumer spending will lead to changes in retailer revenue. Note that without information on production costs and retailer overheads we cannot estimate changes in retailer profits. These figures are shown in Table 14 and Figure 15, illustrating that we estimate an increase in the MPA threshold to increase off-trade retailers' revenue while reducing revenue in the on-trade. This occurs because while prices in the on-trade are largely unaffected by the modelled changes in the MPA threshold, the reduction in consumption of on-trade alcohol reduces sales volumes. For the off-trade, retail revenues increase because the reductions in consumption do not offset the increase in prices i.e. demand for off-trade alcohol is, overall, price inelastic. Note that at 60p and 45p there are two apparent inconsistencies in the sign of the estimated impact for the off trade. This occurs when the effect size is small and can be explained by the differing extents to which different products are affected by the MPA threshold and their corresponding price elasticities. Overall, retail revenues are estimated to be higher if the MPA threshold is reduced or removed, and lower if the MPA threshold is increased.

3.3.4. Modelled impacts of MPA policies on health outcomes

Because changes in alcohol consumption can take up to 20 years to feed through to changes in the risk of alcohol-related health conditions (Holmes et al. 2012 [30]), the 'full effect' of each modelled policy on health is seen 20 years after implementation (i.e. in 2045). Unless otherwise stated, all results in this section are therefore presented as 20-year cumulative figures from 2026 to 2045. Table 15 and

Figure 16 shows the change in the cumulative number of deaths from any cause under each of the modelled policies, relative to the control arm assumption that the 50p MPA remains in place. Modelled impacts on all-cause mortality are presented as absolute differences from the control arm. As alcohol deaths represent a small percentage of all-cause mortality, relative impacts are reported per 100,000 years (i.e. the change in the death rate per 100,000 people per year).

Table 16 shows the figures for alcohol-specific mortality. Impacts on alcohol-specific deaths are presented as differences from the control arm in absolute terms and in percentage terms. These results highlight that removing or reducing the MPA threshold is expected to lead to a small increase in mortality (200 additional all-cause deaths which includes 160 additional alcohol-specific deaths if MPA were removed), while increasing the MPA threshold is estimated to lead to reductions in deaths (-902 all-cause deaths, which includes -628 alcohol-specific deaths for a 65p MPA).

Table 15 Modelled impacts of removing or changing the MPA threshold on all-cause mortality

	Year 1	Cumulative over 5 years	Cumulative over 20 years
Absolute change in deaths vs. control			
Remove MPA	3	41	200
40p MPA	2	17	105
45p MPA	1	9	37
50p MPA (control)	0	0	0
55p MPA	-7	-38	-178
60p MPA	-17	-92	-430
65p MPA	-37	-188	-902
70p MPA	-61	-296	-1,586
75p MPA	-93	-405	-2,272
80p MPA	-133	-557	-3,187
Change in deaths per 100,000 person years vs. control			
Remove MPA	0	0	0
40p MPA	0	0	0
45p MPA	0	0	0
50p MPA (control)	0	0	0
55p MPA	0	0	0
60p MPA	-1	-1	-1
65p MPA	-2	-2	-2
70p MPA	-2	-2	-4
75p MPA	-4	-3	-5
80p MPA	-5	-5	-7

Figure 16 Modelled impacts of removing or changing the MPA threshold on cumulative all-cause deaths over 20 years

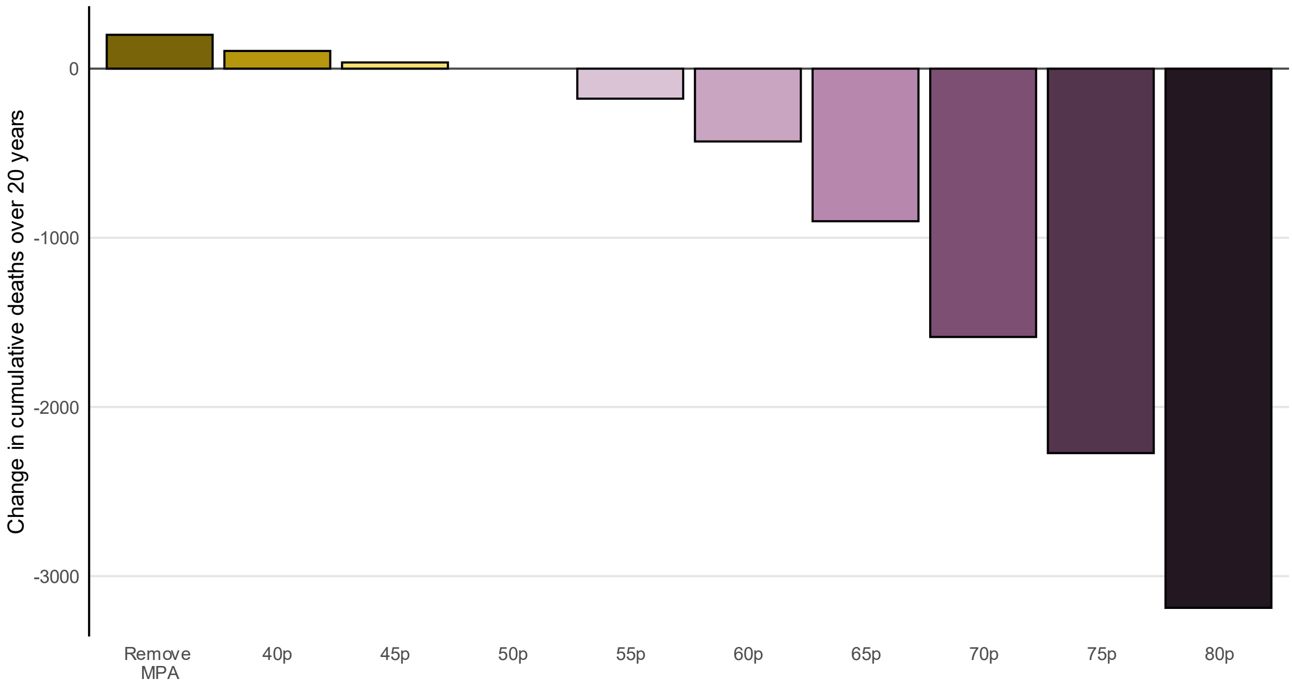


Table 16 Modelled impacts of removing or changing the MPA threshold on alcohol-specific mortality

	Year 1	Cumulative over 5 years	Cumulative over 20 years
Absolute change in alcohol-specific deaths vs. control			
Remove MPA	2	23	160
40p MPA	1	10	73
45p MPA	0	5	34
50p MPA (control)	0	0	0
55p MPA	-5	-25	-125
60p MPA	-9	-57	-312
65p MPA	-22	-116	-628
70p MPA	-33	-177	-1,063
75p MPA	-49	-237	-1,549
80p MPA	-71	-325	-2,210
Relative change vs. control			
Remove MPA	0.43%	0.73%	1.13%
40p MPA	0.21%	0.32%	0.51%
45p MPA	0.08%	0.16%	0.24%
50p MPA (control)	0.00%	0.00%	0.00%
55p MPA	-0.84%	-0.78%	-0.88%
60p MPA	-1.70%	-1.80%	-2.20%
65p MPA	-3.96%	-3.67%	-4.43%
70p MPA	-5.97%	-5.61%	-7.51%
75p MPA	-8.80%	-7.52%	-10.94%
80p MPA	-12.85%	-10.31%	-15.60%

The changes in 20-year cumulative all-cause mortality, separated by WIMD quintile, are presented in

Table 17 and

Figure 17. The largest reductions in mortality when increasing the MPA threshold are in the most deprived groups. The pattern across other quintiles is more complex with larger effects generally found in the middle quintile.

Table 17 Modelled impacts of removing or changing the MPA threshold on all-cause mortality by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Absolute change in deaths vs. control					
Remove MPA	19	28	52	15	85
40p MPA	8	11	25	18	42
45p MPA	4	5	9	9	8
50p MPA (control)	0	0	0	0	0
55p MPA	-6	-20	-35	-18	-99
60p MPA	-31	-53	-95	-54	-198
65p MPA	-71	-88	-204	-150	-389
70p MPA	-155	-158	-347	-303	-623
75p MPA	-274	-204	-545	-410	-840
80p MPA	-502	-309	-722	-565	-1089
Change in deaths per 100,000 person years vs. control					
Remove MPA	0	0	1	0	1
40p MPA	0	0	0	0	0
45p MPA	0	0	0	0	0
50p MPA (control)	0	0	0	0	0
55p MPA	0	0	0	0	-1
60p MPA	0	-1	-1	-1	-2
65p MPA	-1	-1	-2	-2	-4
70p MPA	-2	-2	-4	-3	-6
75p MPA	-3	-2	-6	-4	-9
80p MPA	-6	-4	-8	-6	-11

Figure 17 Modelled impacts of removing or changing the MPA threshold on cumulative all-cause deaths over 20 years by WIMD quintile

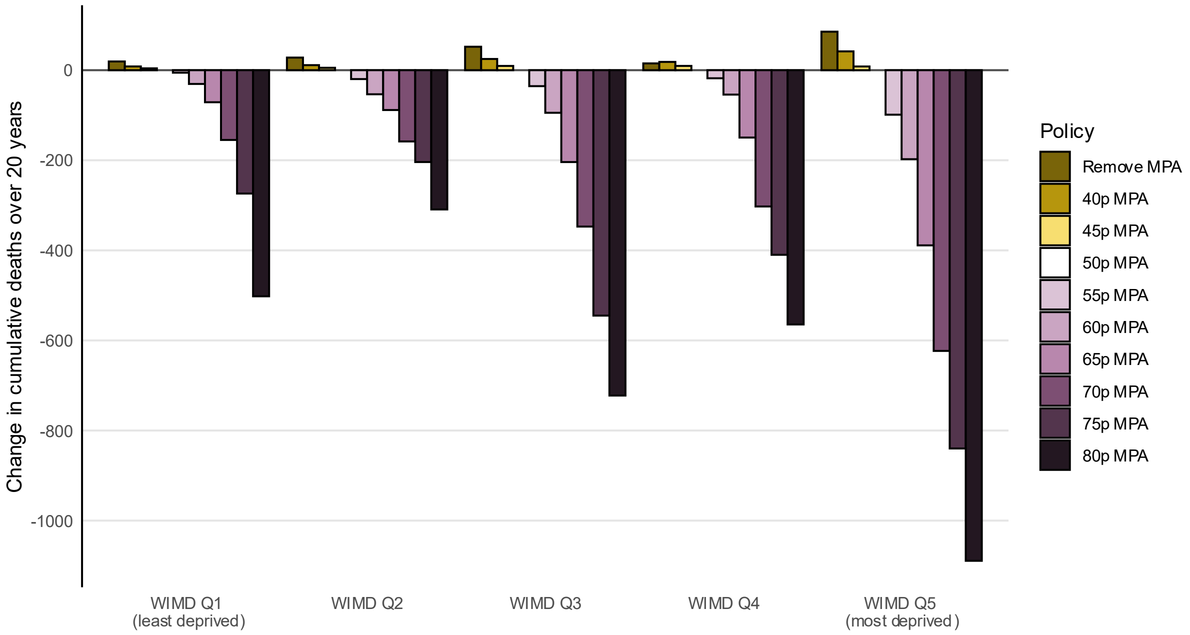
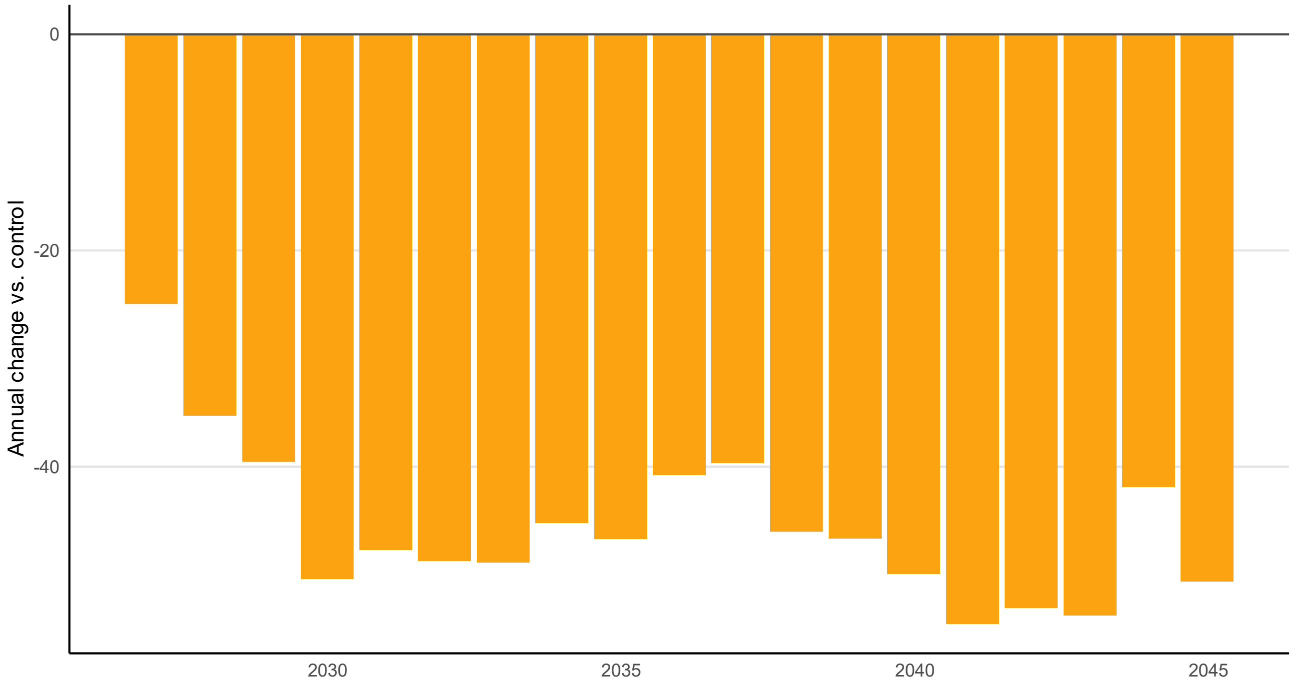


Figure 18 illustrates the year-on-year change in mortality relative to control, using the 65p MPA scenario as an example. It shows that the modelled number of all-cause deaths averted rises initially, and then stabilises after around 4-5 years. This reflects three competing effects that influence the longer-term pattern of health outcomes:

- **Time lags** Epidemiological evidence has clearly demonstrated that for many chronic health conditions, there can be a delay, or 'lag' between changes in alcohol consumption and changes in risk [30], extending up to 20 years in the cases of alcohol-related cancers. This means that some of the effects of MPA on alcohol consumption are not reflected in short-term harm outcomes, with the effect gradually increasing over time as these 'lags' come into play and the health effects are fully realised
- **Mortality selection:** TAX-sim's individual-level structure means that over time the individuals with the greatest mortality risk (i.e. those drinking at the highest levels) are most likely to die prematurely, leading to a gradual reduction in average alcohol consumption and therefore mortality over time, all else being equal.
- **Mortality displacement:** in the long-term no death can be prevented, merely postponed. Therefore, where a policy reduces mortality each year, some of the people whose lives have been extended will pass away in later years within the time horizon of the model. With TAX-sim's focus on all-cause mortality, we account for all future deaths from any cause, rather than only those attributable to alcohol. As a result, the model fully captures the displacement of deaths from earlier to later years, something which is captured in the YLL figures.

Figure 18 Modelled changes in all-cause mortality over time under a 65p MPA



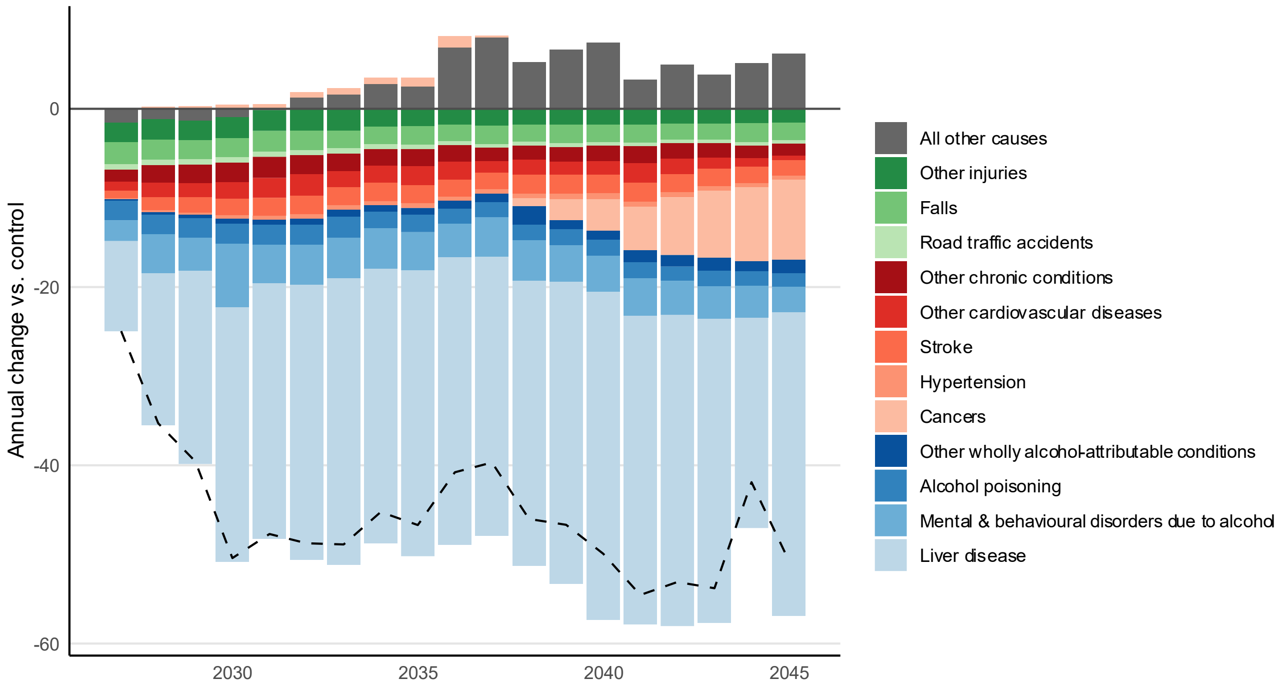
The influence of these three effects on the model results can be seen in

Figure 19, which replicates the mortality impacts of a 65p MPA from

Figure 18, but separates out the effect by health condition, with the dashed black line illustrating the net number of all-cause deaths from

Figure 18. The effect of time lags can be seen in the number of deaths averted from alcohol-related causes increasing over time and, notably, the fact that alcohol-related cancer deaths do not begin to fall until 2038 as their lagged effects kick in. The effect of mortality selection applies pressure in the opposite direction - reducing the number of deaths averted from alcohol-related conditions in the longer run.

Figure 19 Modelled changes in all-cause mortality over time under a 65p MPA by condition



The effect of mortality displacement can be seen as the grey bars above the 0 line, which represent an increase in mortality from causes which have no link to alcohol among people for whom a premature alcohol-attributable death has been averted by the modelled MUP policy. This effect also has some impact on alcohol-attributable causes, as individuals who would otherwise have died from an alcohol-related cause in the absence of the 65p MPA may subsequently die from an alcohol-related cause in a later year. It is the net combination of these three factors that drives the pattern in mortality outcomes that we see - with the health impacts of an increase in the MPA threshold leading to increasing benefits in the first few years and then these improvements stabilising in the following ~15 years.

Model results showing the impact of each policy on cumulative hospital admissions are presented in Table 18 and

Figure 20 and by WIMD quintile in

Table 19 and

Figure 21. These follow a similar pattern to the mortality results, with higher MPA thresholds leading to greater reductions in admissions, particularly in more deprived groups.

The estimated impacts of each modelled policy on Years of Life Lost to premature death is shown in Table 20 and visualised in Figure 22, with comparable results by WIMD quintile in Table 21 and Figure 23. As may be expected, these again follow a similar pattern to the mortality results.

Table 18 Modelled impacts of removing or changing the MPA threshold on hospital admissions

	Year 1	Cumulative over 5 years	Cumulative over 20 years
Absolute change in hospital admissions vs. control			
Remove MPA	29	370	1,830
40p MPA	14	151	816
45p MPA	7	75	362
50p MPA (control)	0	0	0
55p MPA	-58	-364	-1,499
60p MPA	-133	-851	-3,619
65p MPA	-308	-1,692	-7,270
70p MPA	-543	-2,782	-12,864
75p MPA	-800	-3,839	-19,010
80p MPA	-1,131	-5,332	-27,259
Change in admissions per 100,000 person years vs. control			
Remove MPA	1	3	4
40p MPA	1	1	2
45p MPA	0	1	1
50p MPA (control)	0	0	0
55p MPA	-2	-3	-3
60p MPA	-5	-7	-8
65p MPA	-12	-14	-16
70p MPA	-22	-23	-28
75p MPA	-32	-31	-42
80p MPA	-46	-44	-60

Figure 20 Modelled impacts of removing or changing the MPA threshold on cumulative hospital admissions over 20 years

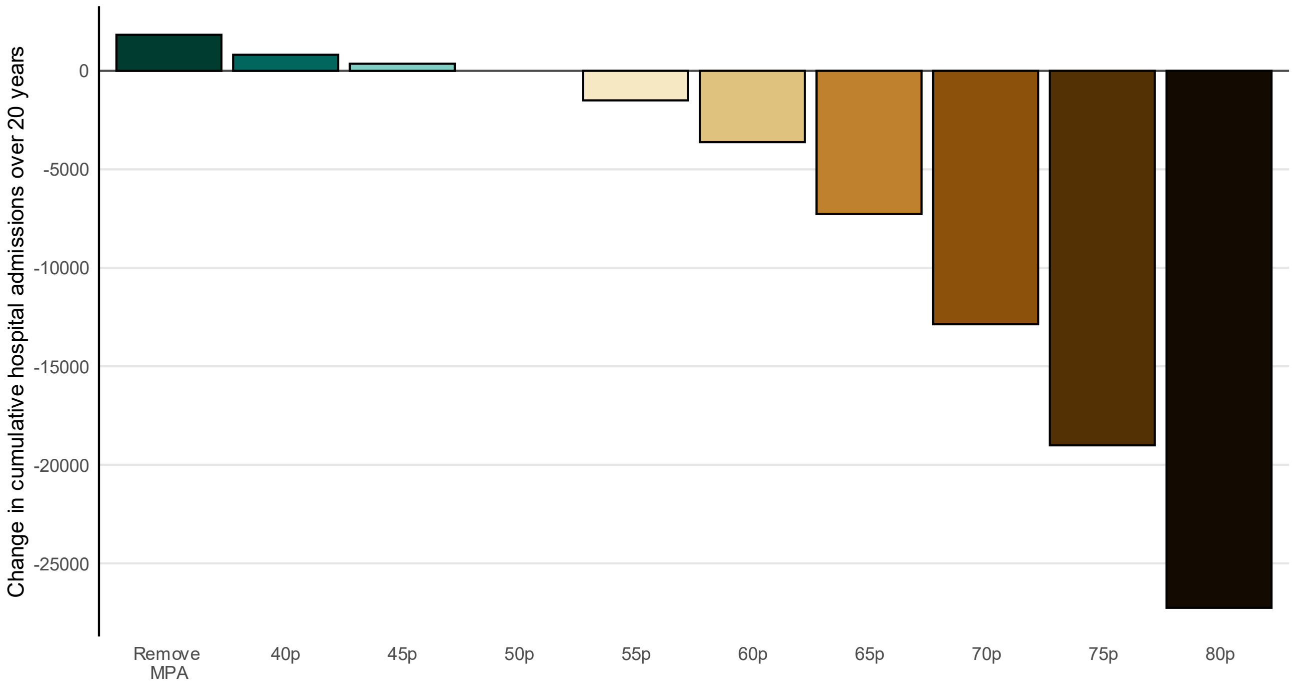


Table 19 Modelled impacts of removing or changing the MPA threshold on hospital admissions by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Absolute change in hospital admissions vs. control					
Remove MPA	170	214	371	312	764
40p MPA	72	80	152	126	385
45p MPA	35	36	67	62	162
50p MPA (control)	0	0	0	0	0
55p MPA	-84	-172	-292	-254	-697
60p MPA	-308	-435	-797	-577	-1502
65p MPA	-683	-785	-1652	-1277	-2874
70p MPA	-1473	-1382	-2851	-2386	-4772
75p MPA	-2543	-1910	-4653	-3293	-6611
80p MPA	-4638	-2863	-6200	-4595	-8964
Change in admissions per 100,000 person years vs. control					
Remove MPA	2	3	4	3	8
40p MPA	1	1	2	2	4
45p MPA	0	0	1	1	2
50p MPA (control)	0	0	0	0	0
55p MPA	-2	-2	-3	-3	-7
60p MPA	-4	-5	-9	-7	-16
65p MPA	-9	-9	-18	-14	-30
70p MPA	-18	-16	-31	-25	-49
75p MPA	-31	-22	-49	-34	-69
80p MPA	-56	-33	-66	-48	-93

Figure 21 Modelled impacts of removing or changing the MPA threshold on cumulative hospitalisations over 20 years by WIMD quintile

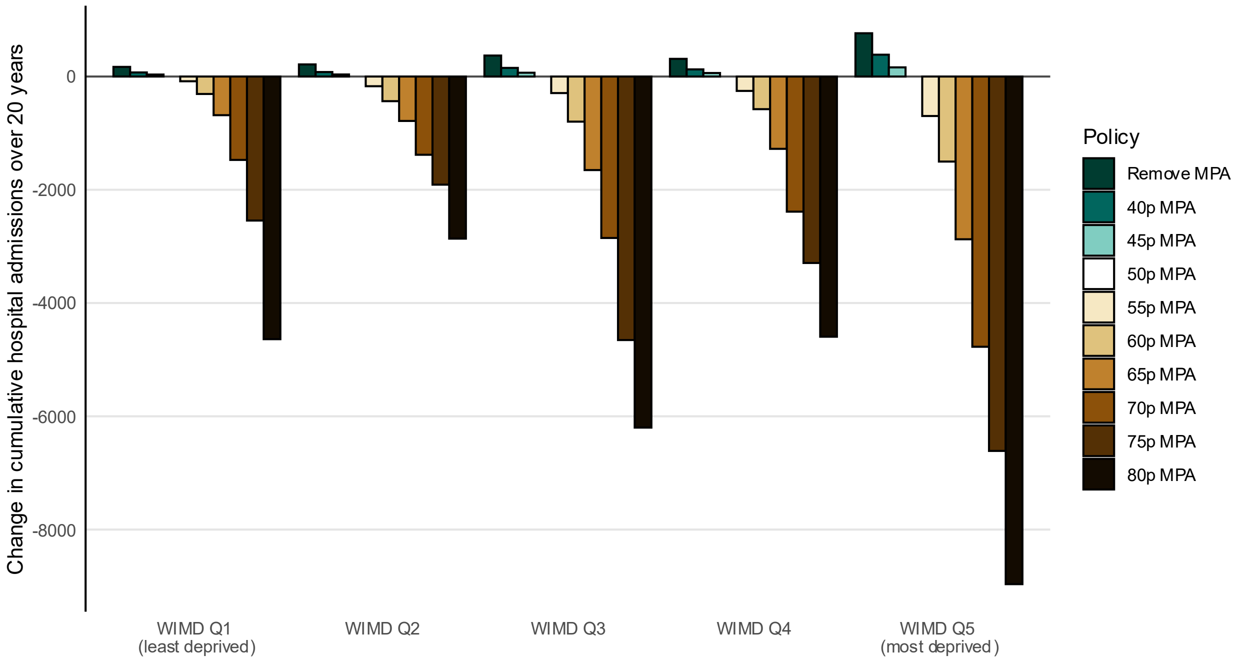


Table 20 Modelled impacts of removing or changing the MPA threshold on Years of Life Lost to premature death

	Year 1	Cumulative over 5 years	Cumulative over 20 years
Absolute change in YLLs vs. control			
Remove MPA	100	1,311	7,253
40p MPA	51	546	3,289
45p MPA	23	281	1,528
50p MPA (control)	0	0	0
55p MPA	-209	-1,199	-5,834
60p MPA	-434	-2,813	-14,691
65p MPA	-1,017	-5,867	-29,825
70p MPA	-1,678	-9,293	-51,522
75p MPA	-2,523	-12,557	-76,055
80p MPA	-3,529	-17,127	-108,600
Change in YLLs per 100,000 person years vs. control			
Remove MPA	4	11	16
40p MPA	2	4	7
45p MPA	1	2	3
50p MPA (control)	0	0	0
55p MPA	-8	-10	-13
60p MPA	-18	-23	-32
65p MPA	-41	-48	-65
70p MPA	-68	-76	-111
75p MPA	-102	-102	-163
80p MPA	-143	-140	-233

Figure 22 Modelled impacts of removing or changing the MPA threshold on cumulative YLLs over 20 years

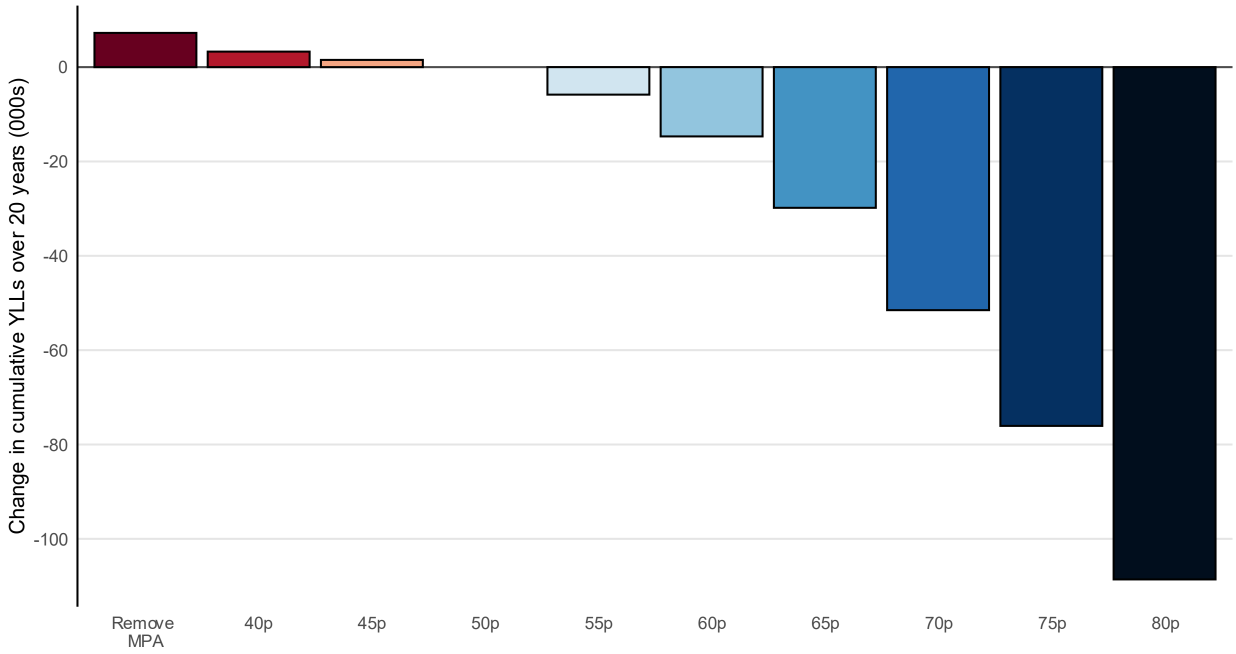
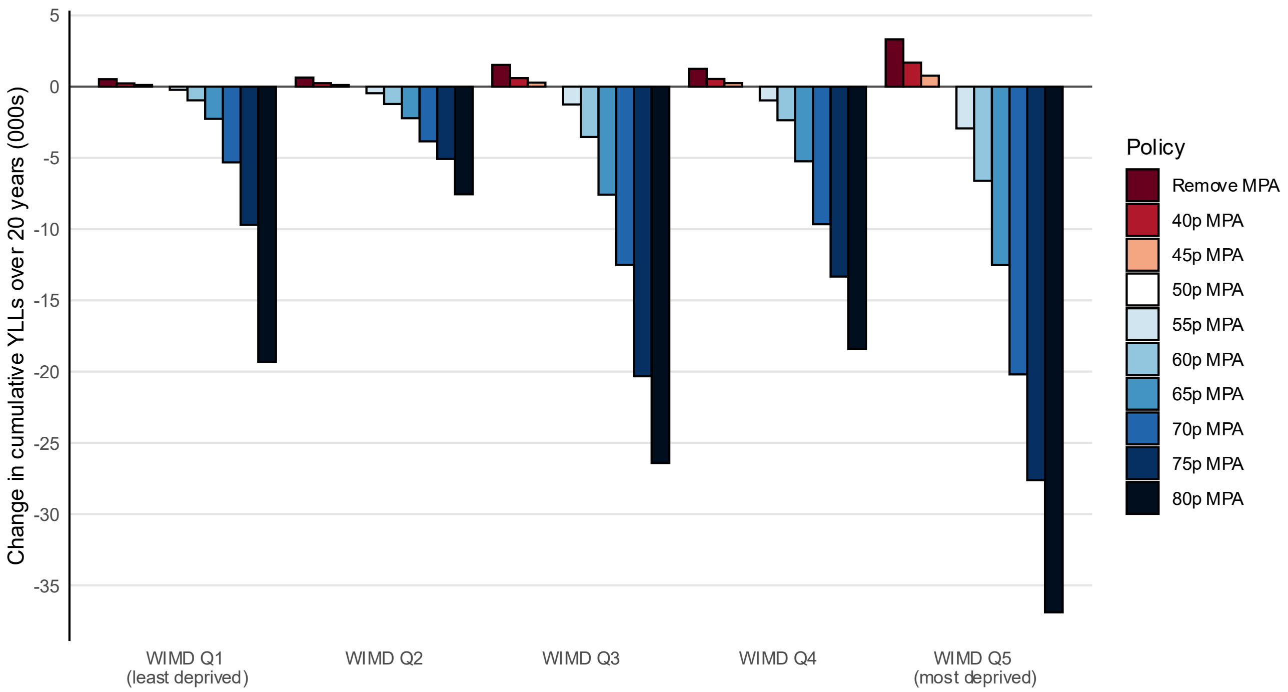


Table 21 Modelled impacts of removing or changing the MPA threshold on Years of Life Lost by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Absolute change in YLLs vs. control					
Remove MPA	522	638	1524	1247	3322
40p MPA	228	241	597	534	1688
45p MPA	115	114	282	247	770
50p MPA (control)	0	0	0	0	0
55p MPA	-225	-463	-1250	-967	-2929
60p MPA	-963	-1220	-3538	-2360	-6611
65p MPA	-2262	-2219	-7581	-5240	-12523
70p MPA	-5315	-3841	-12513	-9656	-20197
75p MPA	-9704	-5077	-20326	-13328	-27619
80p MPA	-19317	-7556	-26420	-18412	-36895
Change in YLLs per 100,000 person years vs. control					
Remove MPA	6	7	15	13	33
40p MPA	3	3	6	6	17
45p MPA	1	1	3	3	8
50p MPA (control)	0	0	0	0	0
55p MPA	-5	-5	-13	-10	-29
60p MPA	-13	-14	-38	-25	-67
65p MPA	-30	-25	-79	-53	-127
70p MPA	-64	-44	-130	-97	-204
75p MPA	-117	-60	-208	-133	-279
80p MPA	-229	-88	-272	-185	-374

Figure 23 Modelled impacts of removing or changing the MPA threshold on cumulative YLLs over 20 years by WIMD quintile



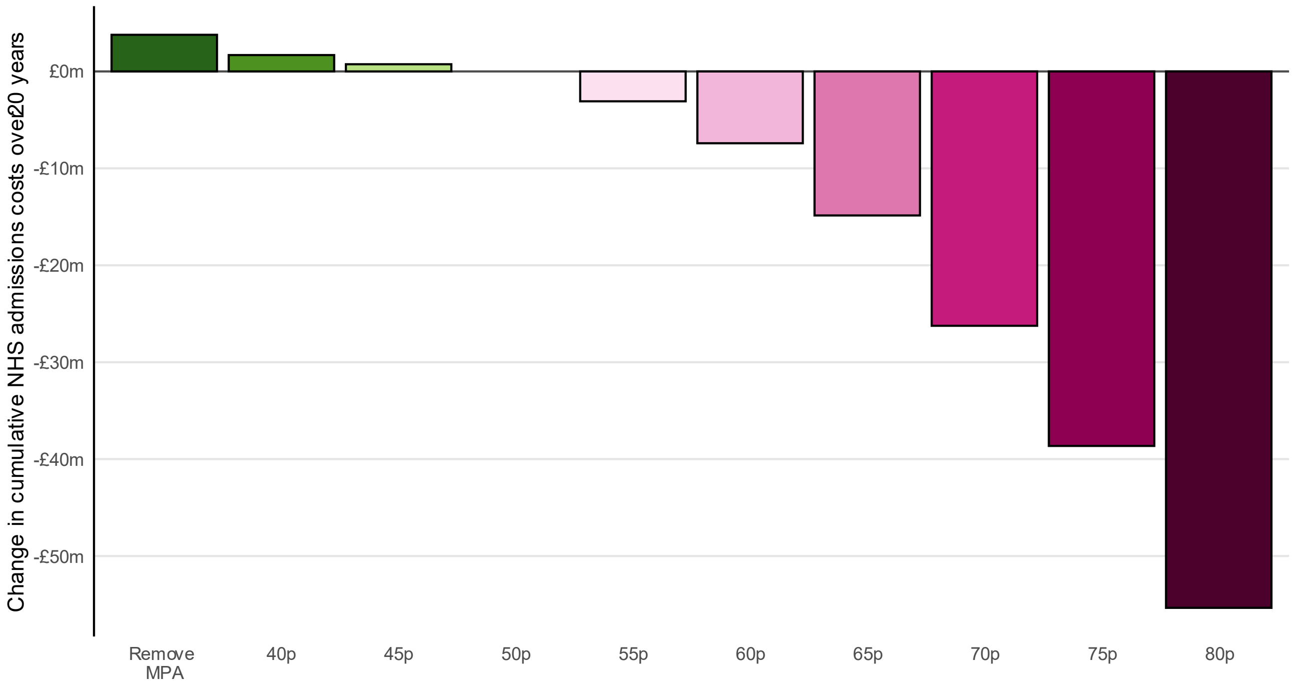
Finally, the impact of each modelled MPA policy on NHS hospital admissions costs, compared to a retaining the current 50p MPA in 2026, is shown in Table 22. This table presents the cumulative cost changes over the first 5 years of the policy and over the full 20-year modelled period. Note that these figures are presented without discounting. The 20-year cumulative impacts of each policy on hospital admissions costs are visualised in

Figure 24. This shows an almost linear relationship between MPA threshold and hospital costs.

Table 22 Modelled impacts removing or changing the MPA threshold on NHS hospital costs cumulatively over 5- and 20-years following policy implementation - undiscounted

	Change in NHS hospital admissions costs (£m)	
	Cumul. 5yr	Cumul. 20yr
Remove MPA	£0.742	£3.779
40p MPA	£0.302	£1.687
45p MPA	£0.151	£0.742
50p MPA (control)	£0.000	£0.000
55p MPA	-£0.716	-£3.083
60p MPA	-£1.683	-£7.410
65p MPA	-£3.342	-£14.859
70p MPA	-£5.512	-£26.243
75p MPA	-£7.626	-£38.640
80p MPA	-£10.639	-£55.345

Figure 24 Modelled impacts removing or changing the MPA threshold on cumulative NHS hospital costs over 20 years following policy implementation – undiscounted



3.3.5. Sensitivity analyses

Table 1.23 shows the impact of the three sets of alternative assumptions on our modelled estimates of changes in alcohol consumption and spending under a 65p MPA. This illustrates that there is a slightly larger estimated impact on consumption and spending when applying all (including insignificant) Pryce et al. elasticities (SA1) compared to our base case (statistically significant elasticities only). When we use own-price elasticities only (SA2) we see a considerably smaller estimated reduction in alcohol consumption and an increase rather than a decrease in spending. There is a similar comparison with using the OBR price elasticities (SA3), with smaller consumption reductions and an increase in consumer spending. Notably, the OBR elasticities also include own-price elasticities only.

Table 23 Modelled impacts of alternative model assumptions on alcohol consumption and spending

	Base Case elasticities	SA1 - All Pryce elasticities	SA2 - Own-price elasticities only	SA3 - HMRC/OBR elasticities
Baseline alcohol consumption (units/drinker/week)	11.3	11.3	11.1	11.1
Absolute change under 65p MPA vs.control	-0.3	-0.3	-0.2	-0.2
Relative change vs. control	-2.68%	-2.95%	-2.13%	-1.68%
Baseline spending (£/drinker/week)	£32.49	£32.71	£32.10	£32.17
Absolute change under 65p MPA vs.control	-£0.13	-£0.20	£0.04	£0.12
Relative change vs. control	-0.40%	-0.61%	0.12%	0.38%

The impact of these sensitivity analyses on health outcomes is shown in Table 24. These demonstrate a similar pattern to the consumption results in Table 23, with relatively small differences between the base case and SA1, while SA2 and SA3 show smaller overall impacts on deaths, hospital admissions and YLLs. Table 25 shows the impact of the alternative model assumptions on the impact on NHS costs of increasing the MPA threshold to 65p. These again show similar patterns to Table 24, with similar changes in the base case and SA1, and smaller impacts in SA2 and SA3.

Table 24 Modelled impacts of alternative model assumptions on health harms

	Base Case elasticities	SA1 - All Pryce elasticities	SA2 - Own-price elasticities only	SA3 - HMRC/OBR elasticities
Annual alcohol-attributable deaths	699	704	682	684
Absolute cumulative change in deaths under 65p MPA vs. control over 20 years	-902	-982	-722	-633
Annual alcohol-attributable hospital admissions	11,243	11,303	11,069	11,078
Absolute cumulative change in hospital admissions under 65p MPA vs. control over 20 years	-7,270	-7,843	-5,890	-5,142
Annual YLLs to alcohol per 100,000 drinkers	1,163	1,172	1,137	1,139
Absolute cumulative change in YLLs under 65p MPA vs. control over 20 years	-29,825	-31,983	-23,882	-20,988

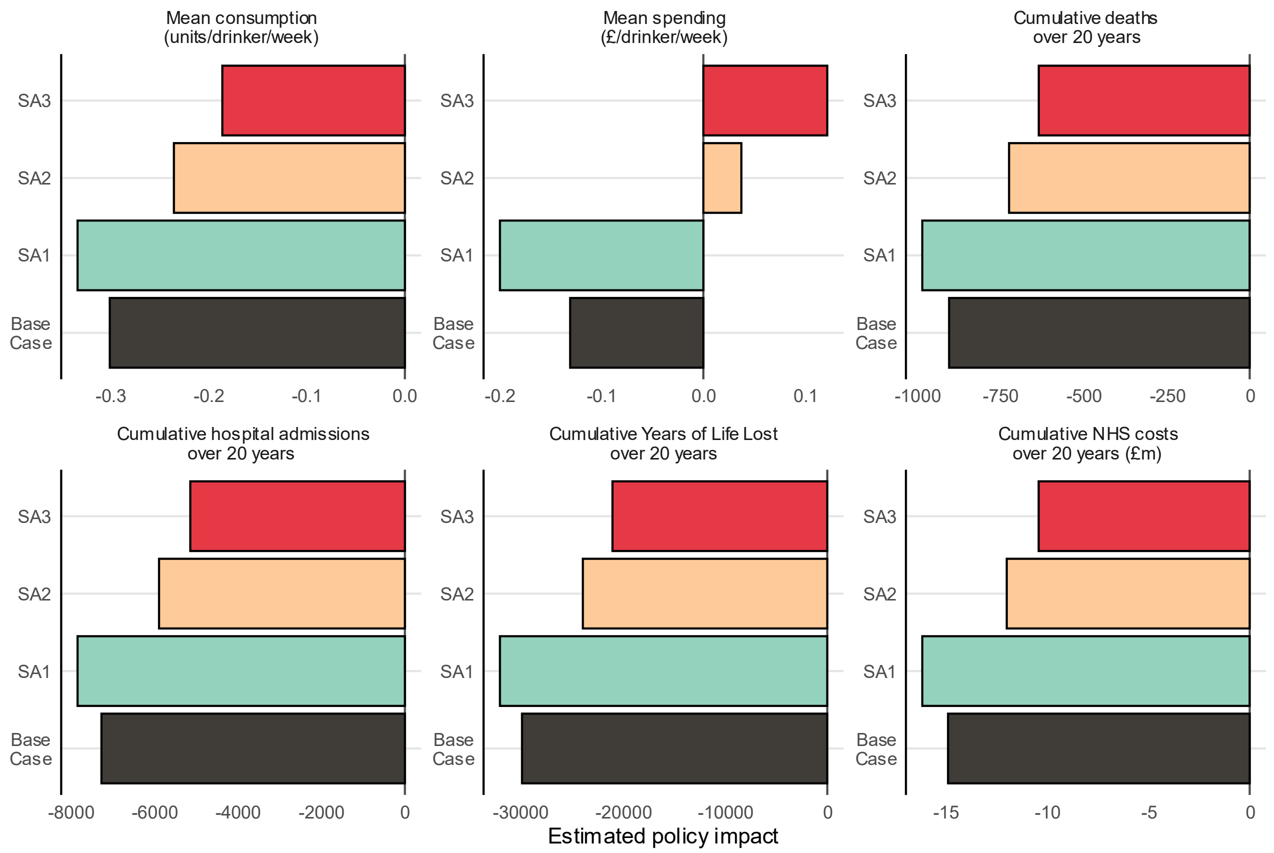
Table 25 Modelled impacts of alternative model assumptions on NHS hospital costs

	Base Case elasticities	SA1 - All Pryce elasticities	SA2 - Own-price elasticities only	SA3 - HMRC/OBR elasticities
Change in NHS hospital admissions costs in 2026 vs. control under 65p MPA (£m)	-£0.6	-£0.7	-£0.5	-£0.3
Change in NHS hospital admissions costs (cumulative 5-year) vs. control under 65p MPA (£m)	-£3.3	-£3.7	-£2.5	-£2.1
Change in NHS hospital admissions costs (cumulative 20-year) vs. control under 65p MPA (£m)	-£14.9	-£16.1	-£12.0	-£10.4

Finally, Figure 25 presents a summary overview of the impact of all three sensitivity analyses on six key model outcomes - alcohol consumption, spending, deaths, hospital admissions, YLLs and NHS costs. This illustrates that there is little difference between the base case and the alternative of using all Pryce et al. elasticities (SA1). The use of Pryce own-price elasticities only (SA2) and OBR elasticities (SA3) have similar effects to each other -

reductions in consumption and all health outcomes that are between one-third and one-half as large as the base case, and an opposite impact on consumer spending, which is estimated to increase under a 65p MPA, rather than fall as in the base case and SA1.

Figure 25 Modelled impacts of alternative model assumptions on outcomes



3.4. Discussion

The results in this chapter demonstrate that, although the introduction of a 50p MPA in 2020 reduced alcohol consumption in Wales [31], the underlying patterns in alcohol consumption and price remain similar, with heavier drinkers and (to a lesser extent) those from lower socioeconomic groups buying a greater proportion of the lower cost alcohol, although the magnitude of these differences has reduced following the introduction of MPA. As a result, increasing the MPA threshold is estimated to lead to further reductions in alcohol consumption overall and with a similar distribution of impacts to the initial introduction of MPA, with greater reductions in more deprived groups and reducing the numbers of harmful and hazardous drinkers while increasing the number of drinkers consuming at moderate levels.

Conversely, lowering the threshold from its current level or removing it entirely would lead to increases in consumption that are largest in these same groups. It is notable, however, that the estimated impacts of reducing or removing MPA are generally small and suggests that the current 50p MPA has become relatively ineffective at raising prices of the cheapest alcohol. We have estimated that 94.4% of alcohol is sold above 60p per unit, with the figure for heavy drinkers at 93.1% and for drinkers in the most deprived WIMD quintile of 93%. This indicates that, even for the groups drinking the most cheap alcohol, by 2026 the 50p MPA is affecting only a small proportion of the alcohol market.

As was noted in the evaluation of the 50p MPA, high inflation during 2022/2023 in particular has contributed to the erosion of the MPA in real terms. Using the CPIH index, the effect of inflation between 2020 and 2026 on the effectiveness of the MPA is equivalent to the 50p MPA threshold falling to 39p in 2020 prices.

The impacts of all policies on consumer spending are more complex, due to the joint impact of changes in both prices paid and volume of alcohol purchased, and substitution between different products. We find that average spending on alcohol per drinker increases when reducing or removing the MPA threshold and decreases when increasing the threshold. This finding is, however, sensitive to the assumptions made about price elasticities and these effects reverse in two of our sensitivity analysis scenarios. Raising the MPA level is estimated to reduce government revenue from alcohol taxation from both the off-trade and on-trade, and increase revenue to off-trade retailers, while reducing revenue to on-trade retailers.

Increasing the MPA threshold is estimated to lead to modest population-level reductions in all-cause mortality which reflect the modelled impacts on consumption. Results for hospital admissions and Years of Life Lost to premature death follow a similar pattern to those for mortality. Patterns of harm impacts of changing the MPA threshold across WIMD quintiles are also consistent across all outcomes. Raising the MPA threshold leads to larger reductions in harms in the most deprived WIMD quintile than the least, leading to a reduction in health inequalities, while lowering the threshold has the opposite effect. Between the least and most deprived quintiles, however, there is not a clear gradient of increasing effect. We also estimate that increasing the MPA threshold has the potential to reduce NHS hospital costs, with the cost savings rising as the MPA level increases.

Sensitivity analyses show that the direction of our results, and their patterns in terms of which groups are affected, are robust to alternative assumptions, except for estimated changes in spending, which appear more sensitive. However, where we use alternative price elasticities used by the OBR, we find that our overall estimates of the effectiveness of increasing the MPA threshold are around two-thirds to one-half as large as in our base case. While this suggests that the impacts may be more conservative than our main results indicate, the pattern of results is similar across outcomes and still indicates effectiveness of MPA in reducing alcohol consumption and harms.

Note that our base case price elasticities include two features that are not present with the HMRC elasticities. Firstly, the HMRC elasticities include own-price elasticities only and so do not allow for substitution or complementary behaviour between alcohol products. Comparing the base case to SA2 (using only own-price elasticities) indicates a more conservative result when cross-price elasticities are excluded. Secondly, the base case elasticities include participation elasticities. This means a price increase may result in an individual stopping consuming a product altogether, rather than simply reducing consumption, and this will produce larger overall estimated impacts.

Overall, the results in this chapter illustrate that increasing the MPA threshold has the potential to lead to further reductions in alcohol consumption and harm, and that these reductions would be greatest among heavier drinkers and those in the most deprived groups. Removing, or lowering the MPA level would have the opposite effect, increasing harms, particularly among heavier drinkers and deprived groups.

4. A comparison of the impacts of MPA and alcohol duty changes

4.1. Introduction

In this chapter we present an analysis of the increase in alcohol duty rates which would be required to achieve a comparable effect to minimum pricing, under a range of alternative definitions of 'comparable'. Specifically, we estimate the "equivalised" duty increase required to achieve the same number of:

i. Cumulative alcohol-specific deaths averted over 20 years.
ii. Cumulative alcohol-specific deaths averted over 20 years in the most deprived quintile of the Welsh Index of Multiple Deprivation (WIMD).
iii. Cumulative YLLs averted over 20 years.
iv. Cumulative YLLs averted over 20 in the most deprived quintile of the Welsh Index of Multiple Deprivation (WIMD).

as each of our modelled MPA thresholds. We then compare the modelled outcomes and distributional impacts of implementing these duty rises instead of increasing the MPA threshold with two of the MPA scenarios modelled in the previous chapter - 65p, and 75p. The results show the differences across a range of modelled outcomes in achieving the same outcome in terms of alcohol-specific deaths and YLLs when this is achieved by minimum pricing vs. by uniform increases in alcohol taxation.

4.2. Methods

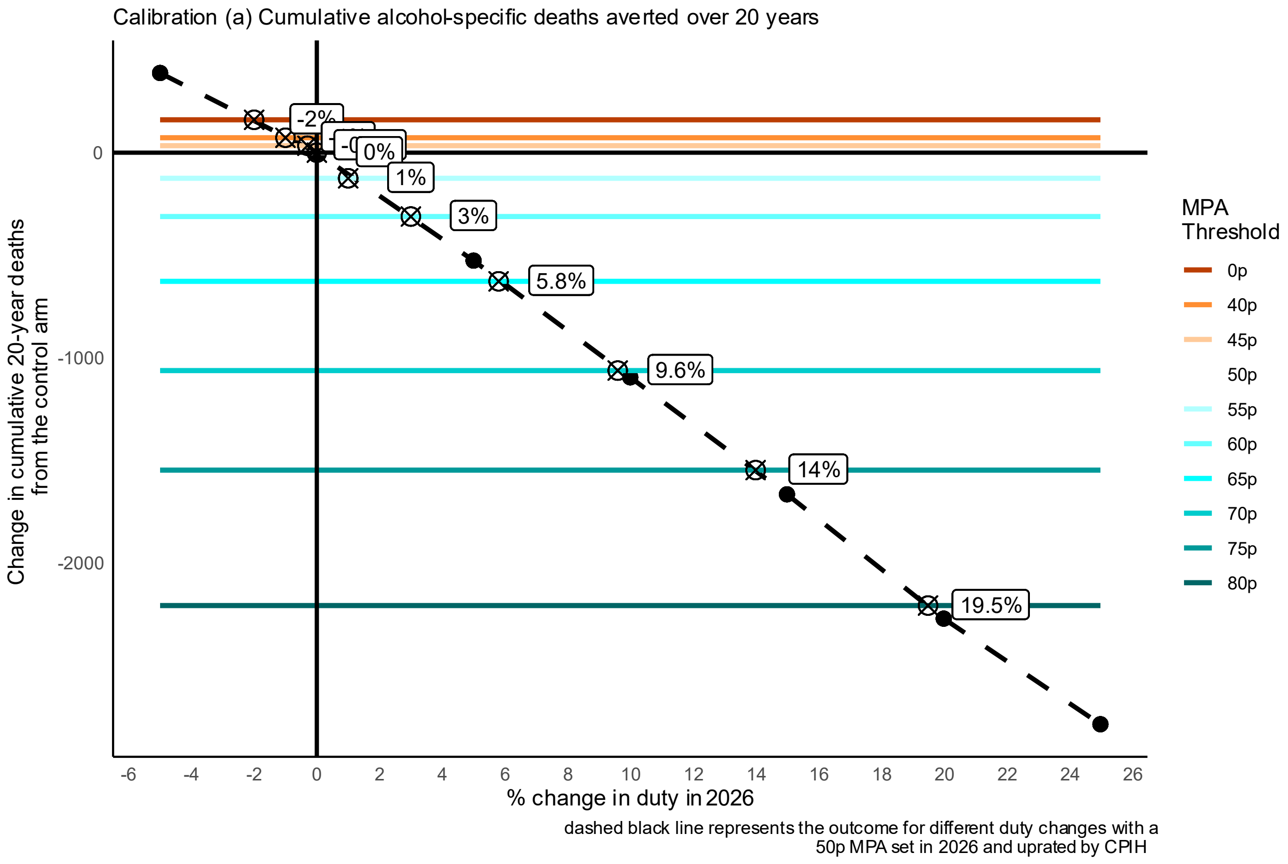
We again use 2026 as the policy effect year. Changes to duty are applied in 2026 to the duty rates that were in place in 2025 as a flat percentage increase applied uniformly across all alcohol duty rates in the model. All duty rise models reported in this chapter maintain the 50p MPA indefinitely after 2026, uprated by CPIH inflation (i.e. the MPA trajectory is identical to the control arm). Comparisons of these models with the control arm are therefore interpreted as the marginal impact of changing alcohol duties in real terms in 2026. For all tax policies modelled in this chapter we compare the policy effects relative to the control arm with the policy effects estimated for the 65p and 75p MPA threshold scenarios presented in the previous chapter on modelling changes to the MPA threshold.

The first stage of the tax equivalisation analysis is to estimate, for each MPA scenario, the equivalent duty rise (the flat percentage increase to all rates described above) required to reach the reduction in alcohol-specific deaths and YLLs relative to the 50p MPA / no duty change scenario (the control arm). Note that modelled duty rises are real-terms duty rises. The control arm of the model (and all MPA threshold arms in the previous chapter) assumes that alcohol duties are increased in line with RPI inflation in 2026, and so the duty rises modelled in this section are in addition to the duty rises required to keep the level of duty constant in real terms, which are applied to both intervention and control arms.

To do so, we ran pilot models applying duty rises in 5% increments from 5% to 25%, and also duty cuts (to equivalise with the MPA threshold reduction scenarios) of -5% to -10%. These pilot models were estimated to establish a range of results for alcohol-specific deaths and YLLs at different duty changes with which to calibrate the duty changes required to produce equivalent outcomes in the five target populations to the different MPA threshold scenarios modelled in Chapter 1.

For each of the target populations for equivalisation we plotted all of the policy effects from the pilot models and connected the points, which produced an approximately linear relationship between the magnitude of the tax rise and the estimated policy effect. We then used linear interpolation to estimate the duty rise that would be required to obtain the same policy effect in the respective target population as under each of the MPA threshold scenarios. These duty rises were obtained by reading the required duty rise visually from the plotted relationship between percentage duty rise, and deaths averted relative to the control arm. This process is illustrated in Figure 26 for equivalisation of alcohol-specific deaths, and presented in the appendix for the other three scenarios.

Figure 26 Example of the equivalisation process



This produces many potential tax equivalisation models (36 total models with four equivalising duty rises for each of eight interventions modelled in Chapter 1). We therefore focus our analysis on the 65p and 75p MPA threshold scenarios and model the four equivalising duty rises required to produce the equivalent outcomes for deaths and YLLs in the two target populations - the full adult population, and the most deprived WIMD quintile.

4.3. Results

Table 26 demonstrates the equivalised changes to duty rates required to achieve the same reduction (or increase, in the case of MPA thresholds below the current 50p level) in cumulative alcohol-specific deaths and YLLs over 20 years (2026-2045) in the relevant target population. These increases in duty range from 5.8% to match the reduction in deaths in the overall population from increasing the MPA threshold to 65p MPA up to 16.1% to match the reduction in deaths in the most deprived WIMD quintile from increasing the MPA threshold to 75p. Removing the MPA threshold corresponds to duty reductions of between -2.0% and -2.8%. Larger duty rises are needed to equivalise impacts on outcomes in the most deprived quintile than in the population overall.

Table 26 Increases in alcohol duty required to achieve the same impact as each MPA threshold for four target outcomes

	Alcohol-specific deaths	Alcohol-specific deaths (IMD Q5)	Years of Life Lost	Years of Life Lost (IMD Q5)
Remove MPA	-2.0%	-2.8%	-2.0%	-2.8%
40p	-1.0%	-1.4%	-1.0%	-1.4%
45p	-0.3%	-0.5%	-0.3%	-0.5%
50p (no change)	0.0%	0.0%	0.0%	0.0%
55p	1.0%	1.6%	1.0%	1.6%
60p	3.0%	3.9%	3.0%	4.1%
65p	5.8%	7.4%	6.2%	7.6%
70p	9.6%	11.6%	10.5%	12.2%
75p	14.0%	16.1%	15.0%	16.9%
80p	19.5%	21.6%	20.5%	23.0%

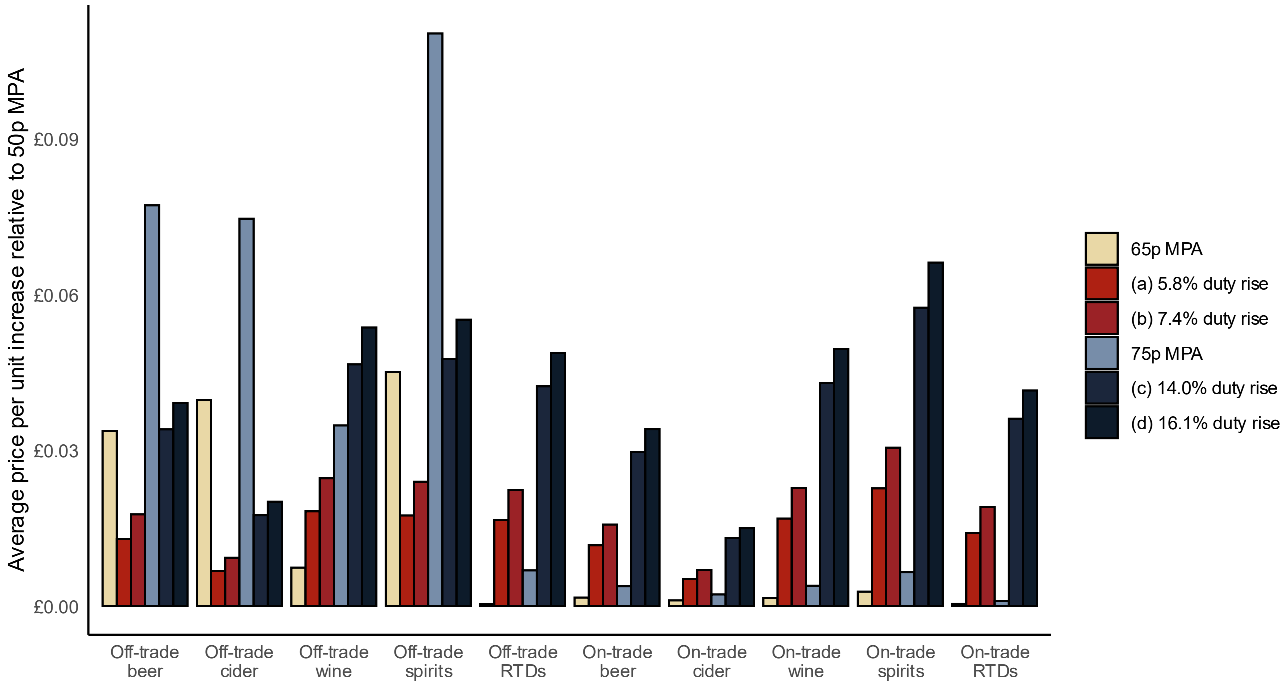
From here on, for illustrative purposes, we focus on the equivalised duty increases that correspond to the same impact on mortality in the various target populations as increasing the MPA threshold to 65p and 75p. As the equivalising duty rises are very similar for alcohol-specific deaths and YLLs, we focus on the alcohol-specific deaths equivalisation. The duty rise models we compare to the MUP threshold scenarios are therefore:

- **(a) 5.8%:** To equivalise alcohol-specific deaths in the population with 65p MPA
- **(b) 7.4%:** To equivalise alcohol-specific deaths in the most deprived WIMD quintile with 65p MPA
- **(c) 14.0%:** To equivalise alcohol-specific deaths in the population with 75p MPA
- **(d) 16.1%:** To equivalise alcohol-specific deaths in the most deprived WIMD quintile with 75p MPA

4.3.1. Impacts of equivalising duty rises on alcohol consumption

Figure 27 shows how these duty increases (5.8%, 7.4%, 14.0% and 16.1% respectively) affect the mean prices paid for different beverage types in both the on- and off-trade. As increasing the MPA threshold to 65p removes the cheapest alcohol from the market; while leaving the prices of more expensive alcohol unaffected, it has a larger impact on off-trade prices and a much smaller impact on on-trade prices, compared to any of the equivalised duty increases. Notably, the MPA scenarios increase the average price of off-trade beer, cider, and spirits by much more than the corresponding duty increases which would achieve the equivalent reductions in cumulative alcohol-specific deaths. These differences in the relative targeted-ness of duty increases, which raise the price of all products to a similar extent, compared to increasing the MPA threshold are key to understanding the results that follow.

Figure 27 Estimated changes in mean price paid for alcohol under equivalised duty rates for a 65p and 75p MPA



The modelled impact on alcohol consumption of the equivalised duty increases at a population level are compared to a 65p and 75p MPA in

Table 27 and illustrated in Figure 28. These show that the duty rises and MPA have a similar impact on population level alcohol consumption. There is, however, a substantial difference between the results when looking at drinker groups (

Table 28 and

Figure 29). Increasing the MPA threshold to 65p leads to a much larger reduction in the numbers of harmful drinkers (-6,027, -6%), compared to the duty rise that would produce the equivalent reductions in alcohol-specific deaths (-5,043, -5%).

Table 27 Comparative impacts of a 65p and 75p MPA and duty increases on mean weekly alcohol consumption

	Absolute change	Relative change
Change in weekly consumption vs. control		
65p MPA	-0.25	-1.95%
(a) 5.8% duty rise	-0.26	-2.05%
(b) 7.4% duty rise	-0.36	-2.84%
75p MPA	-0.85	-6.68%
(c) 14.0% duty rise	-0.75	-5.88%
(d) 16.1% duty rise	-0.89	-6.98%

Figure 28 Comparative impact of a 65p and 75p MPA and duty increases on mean weekly alcohol consumption

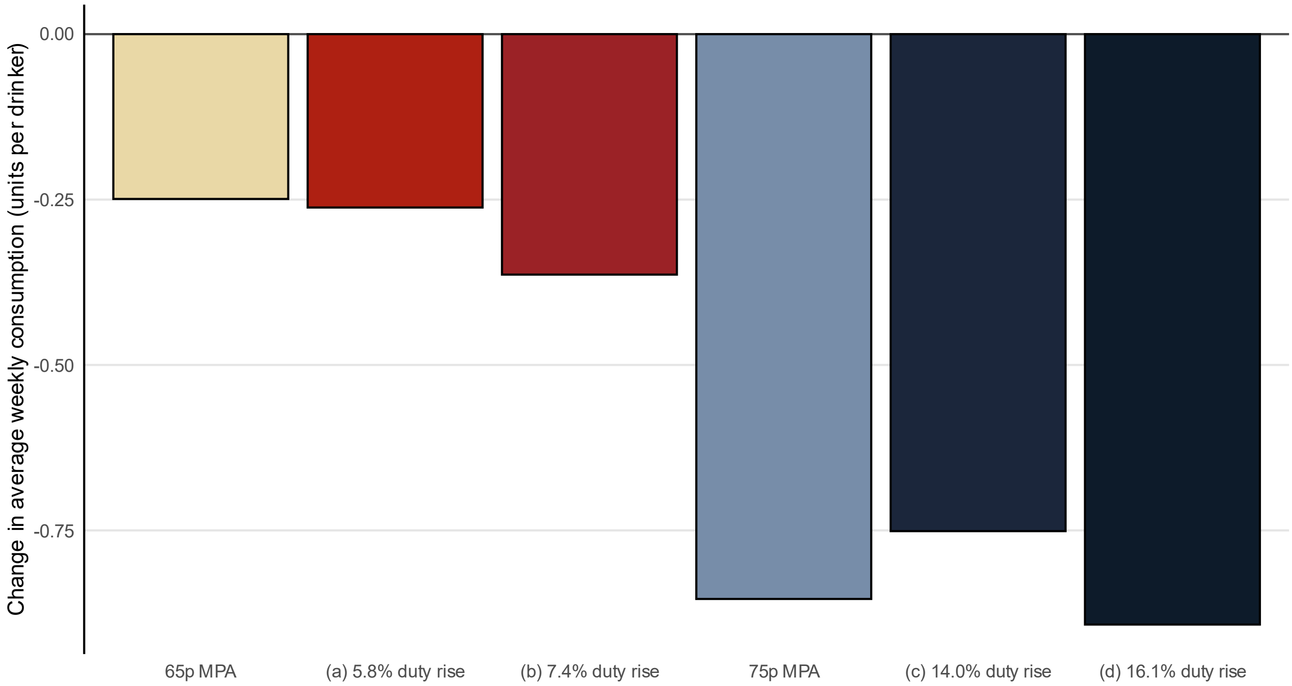
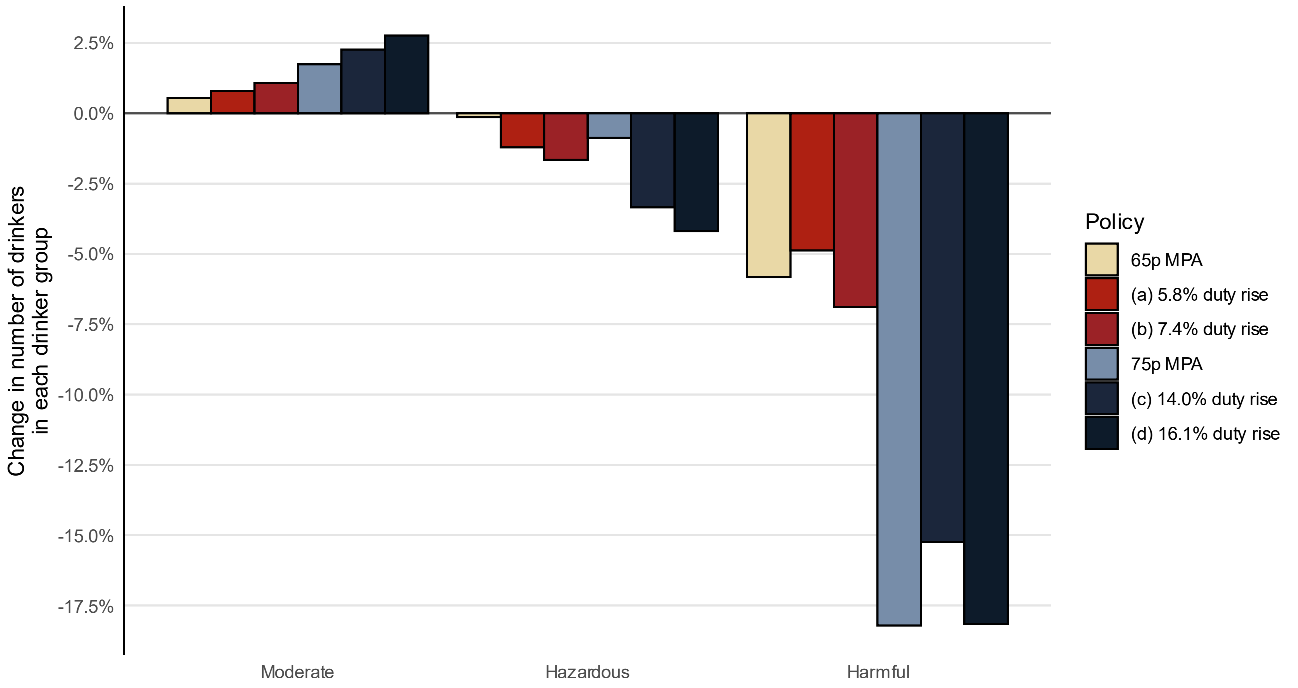


Table 28 Comparative impacts of a 65p and 75p MPA and duty increases on the number of drinkers in each group

	Moderate	Hazardous	Harmful
Absolute change in number of drinkers vs. control			
65p MPA	7,521	-573	-6,027
(a) 5.8% duty rise	11,058	-5,043	-5,043
(b) 7.4% duty rise	15,030	-6,886	-7,123
75p MPA	24,145	-3,624	-18,841
(c) 14.0% duty rise	31,418	-13,934	-15,765
(d) 16.1% duty rise	38,329	-17,471	-18,778
Relative change in number of drinkers vs. control			
65p MPA	0.54%	-0.14%	-5.83%
(a) 5.8% duty rise	0.80%	-1.21%	-4.88%
(b) 7.4% duty rise	1.08%	-1.65%	-6.89%
75p MPA	1.74%	-0.87%	-18.21%
(c) 14.0% duty rise	2.27%	-3.34%	-15.24%
(d) 16.1% duty rise	2.77%	-4.19%	-18.15%

Figure 29 Comparative impact of a 65p and 75p MPA and duty increases on the number of drinkers in each group



The equivalent figures for changes in mean weekly alcohol consumption across WIMD quintiles are presented in Table 29 and

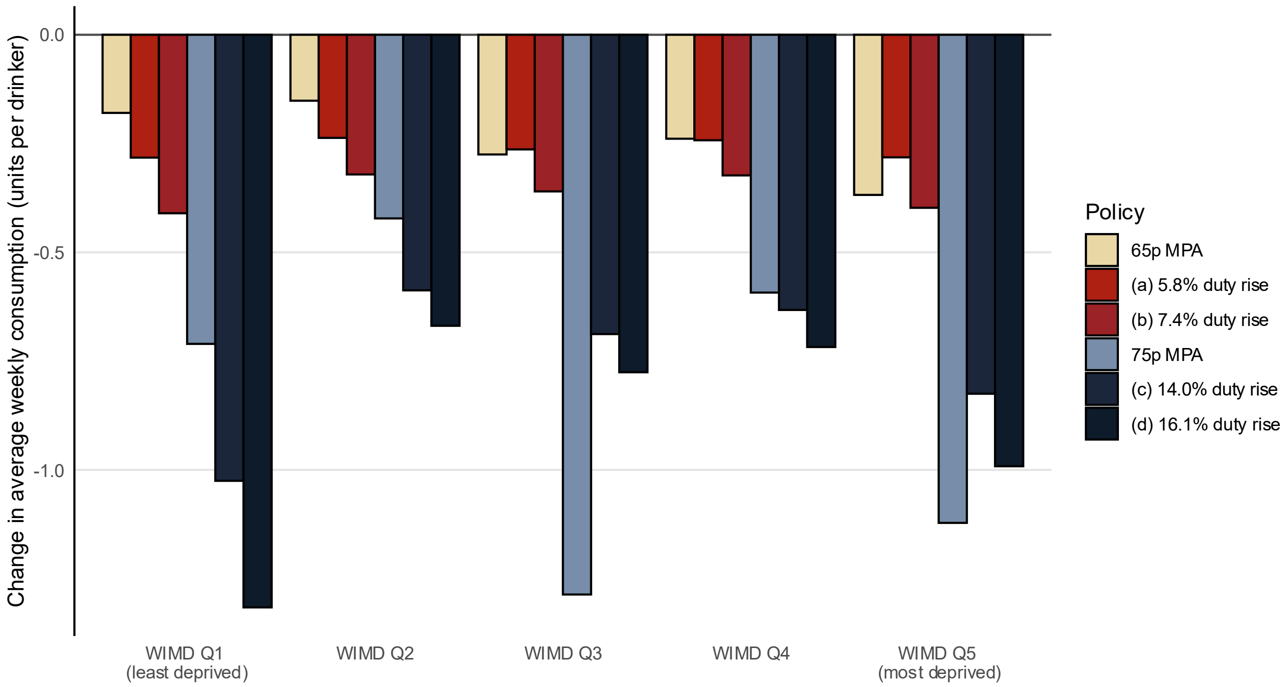
Figure 30. These show an unclear pattern of policy effects across quintiles, although these is some indication that raising the MPA level has a marginally greater impact on the drinking

of the most deprived drinkers, while the equivalised duty increases have a larger effect on the drinking of less deprived groups.

Table 29 Modelled impacts on consumption of different equivalised rates for a 65p and 75p MPA by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Absolute change vs. control					
65p MPA	-0.18	-0.15	-0.28	-0.24	-0.37
(a) 5.8% duty rise	-0.28	-0.24	-0.26	-0.24	-0.28
(b) 7.4% duty rise	-0.41	-0.32	-0.36	-0.32	-0.40
75p MPA	-0.71	-0.42	-1.29	-0.59	-1.12
(c) 14.0% duty rise	-1.03	-0.59	-0.69	-0.63	-0.83
(d) 16.1% duty rise	-1.32	-0.67	-0.78	-0.72	-0.99
Relative change vs. control					
65p MPA	-1.28%	-1.47%	-2.28%	-1.94%	-2.49%
(a) 5.8% duty rise	-2.01%	-2.29%	-2.18%	-1.97%	-1.91%
(b) 7.4% duty rise	-2.91%	-3.10%	-2.98%	-2.62%	-2.69%
75p MPA	-5.05%	-4.08%	-10.67%	-4.81%	-7.60%
(c) 14.0% duty rise	-7.28%	-5.68%	-5.70%	-5.13%	-5.59%
(d) 16.1% duty rise	-9.35%	-6.47%	-6.43%	-5.82%	-6.71%

Figure 30 Comparative impact of a 65p and 75p MPA and duty increases on consumption by WIMD quintile



4.3.2. Impacts of equivalising duty rises on tax and retailer revenues

The comparison of the MPA and duty rise models for tax revenues from alcohol duty and VAT are presented in Table 30 and

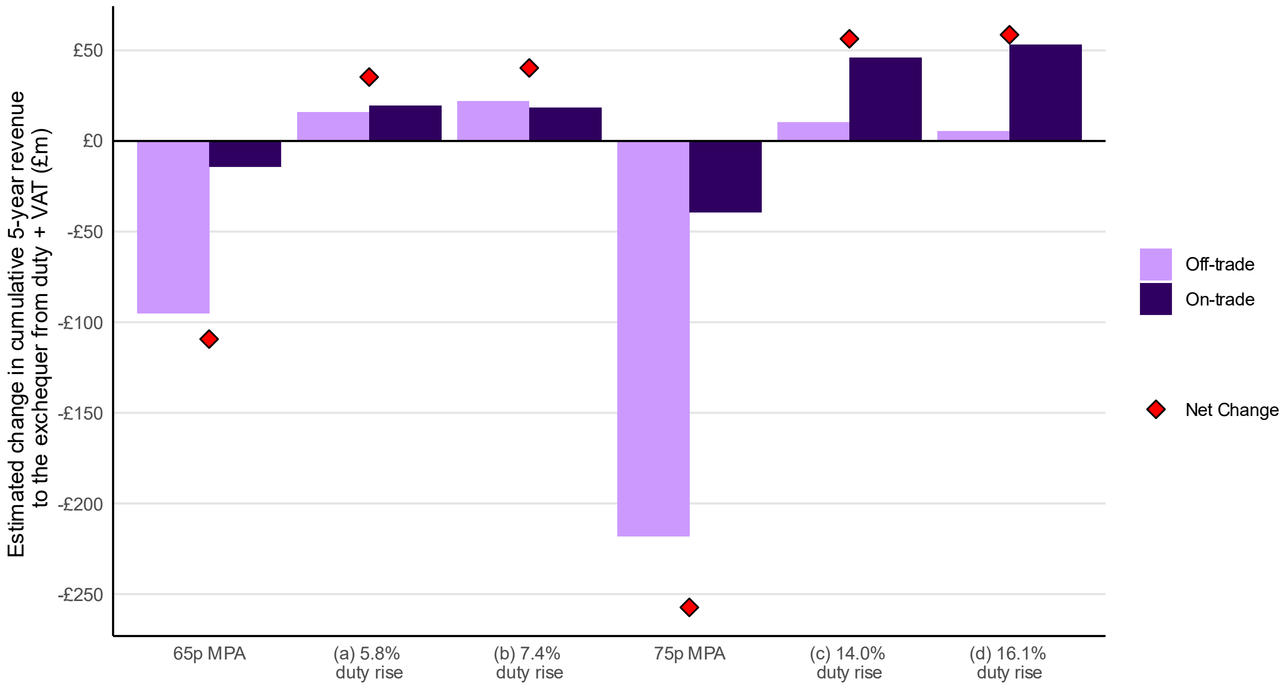
Figure 31. While an increase in alcohol duties that equivalises reductions in alcohol-specific deaths with raising the MPA threshold leads to similar overall consumption effects, the implications for tax revenue are starkly different.

While a 65p MPA is estimated to reduce tax revenues from alcohol duty and VAT by -£109 million, mostly through the off-trade (-£95 million), the equivalent duty rise scenario results in an estimated increase in total revenues of -£35 million, which is roughly evenly split between the off-trade and on-trade. The same pattern is observed when comparing the 75p MPA scenario with its two equivalising duty rise scenarios.

Table 30 Modelled impacts on cumulative 5-year revenues from alcohol duty and VAT of different equivalised rates for a 65p and 75p MPA

	Estimated annual change in duty & VAT revenue to government (£million)		
	Off-trade	On-trade	Total
Absolute change in revenue vs. control			
65p MPA	-£95	-£14	-£109
(a) 5.8% duty rise	£16	£19	£35
(b) 7.4% duty rise	£22	£18	£40
75p MPA	-£218	-£39	-£257
(c) 14.0% duty rise	£10	£46	£56
(d) 16.1% duty rise	£5	£53	£59
Relative change in revenue vs. control			
65p MPA	-2.85%	-0.52%	-1.80%
(a) 5.8% duty rise	0.47%	0.71%	0.58%
(b) 7.4% duty rise	0.66%	0.67%	0.66%
75p MPA	-6.55%	-1.42%	-4.23%
(c) 14.0% duty rise	0.31%	1.67%	0.93%
(d) 16.1% duty rise	0.16%	1.93%	0.96%

Figure 31 Comparative impact of a 65p and 75p MPA and duty increases on tax revenues from alcohol



The equivalent results for 5-year revenues to retailers are presented in

Table 31 and

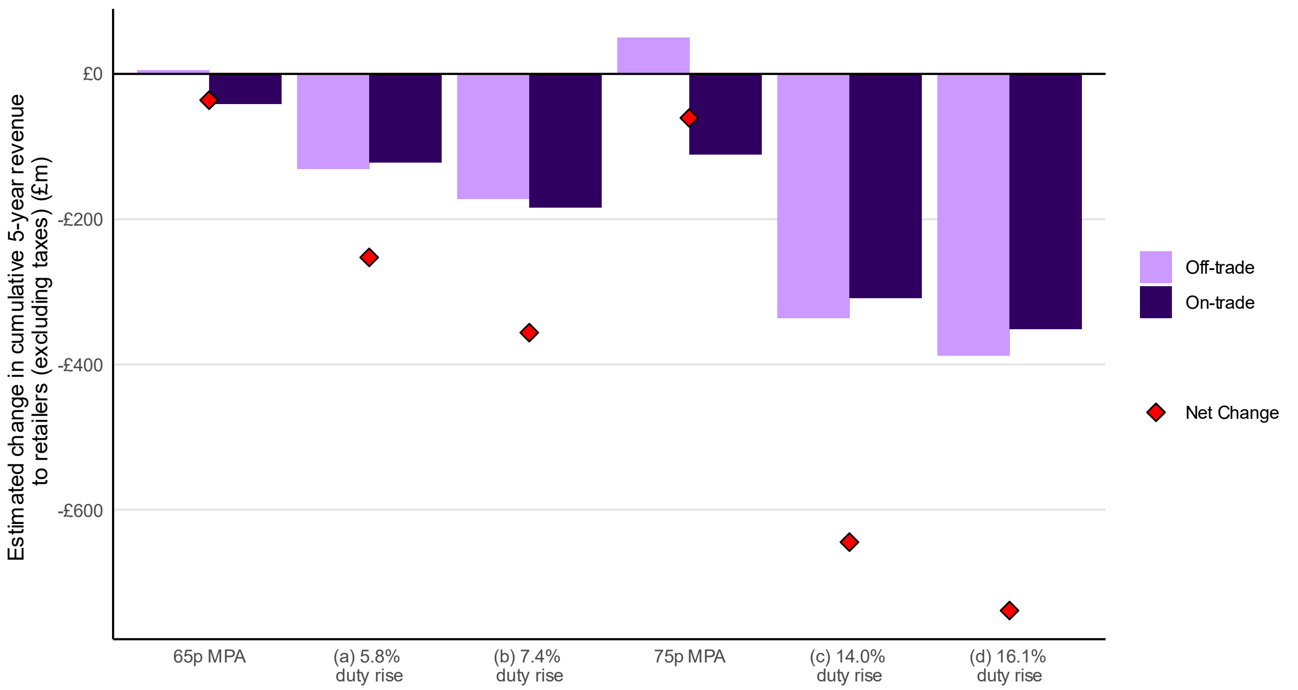
Figure 32. Again, the pattern of results from a duty rise scenario differs significantly from the equivalent MPA scenario. The modelled estimates show that retailer revenues in the off-trade are expected to increase because of an increase in the MPA threshold, while on-trade revenues decrease. This results in an overall net loss of revenue to retailers (-£36 million under a 65p MPA, -£61 million under a 75p MPA).

Comparing these results to the equivalising duty rate scenarios shows that increasing duties rather than the MPA threshold has a much larger impact on retail revenues. The 5.8% duty rise that equivalises alcohol-specific deaths in the population reduces cumulative 5-year retail revenues by -£253 million vs -£36 million with the equivalent 65p MPA. This is driven by a larger negative effect of duty rises on on-trade revenues compared to MPA, and by duty rises having a negative effect on off-trade revenues comparable in size to the on-trade effects, compared to the positive effect raising the MPA would have on off-trade revenues.

Table 31 Modelled impacts on cumulative 5-year retail revenues (excluding taxes) of different equivalised rates for a 65p and 75p MPA

	Estimated change in annual revenue to retailers (£million)		
	Off-trade	On-trade	Total
Absolute change in revenue vs. control			
65p MPA	£5	-£41	-£36
(a) 5.8% duty rise	-£131	-£122	-£253
(b) 7.4% duty rise	-£172	-£184	-£356
75p MPA	£50	-£111	-£61
(c) 14.0% duty rise	-£336	-£309	-£645
(d) 16.1% duty rise	-£388	-£351	-£739
Relative change in revenue vs. control			
65p MPA	0.13%	-0.51%	-0.31%
(a) 5.8% duty rise	-3.53%	-1.51%	-2.14%
(b) 7.4% duty rise	-4.65%	-2.28%	-3.02%
75p MPA	1.35%	-1.37%	-0.51%
(c) 14.0% duty rise	-9.09%	-3.81%	-5.47%
(d) 16.1% duty rise	-10.49%	-4.34%	-6.27%

Figure 32 Comparative impact of a 65p and 75p MPA and duty increases on revenues to retailers (excluding taxes)



4.3.3. Impacts of equivalising duty rises on health outcomes

The comparative mortality alcohol-specific impacts of a 65p and 75p MPA and the equivalised duty rates are shown in Table 32, and by WIMD quintile in Table 33 and Figure 33. The results are broadly similar across MPA threshold policies and corresponding equivalising duty rises, as alcohol-specific deaths is the outcome used as the basis for equivalisation. All policies have the largest impact on alcohol-specific mortality in the most deprived groups.

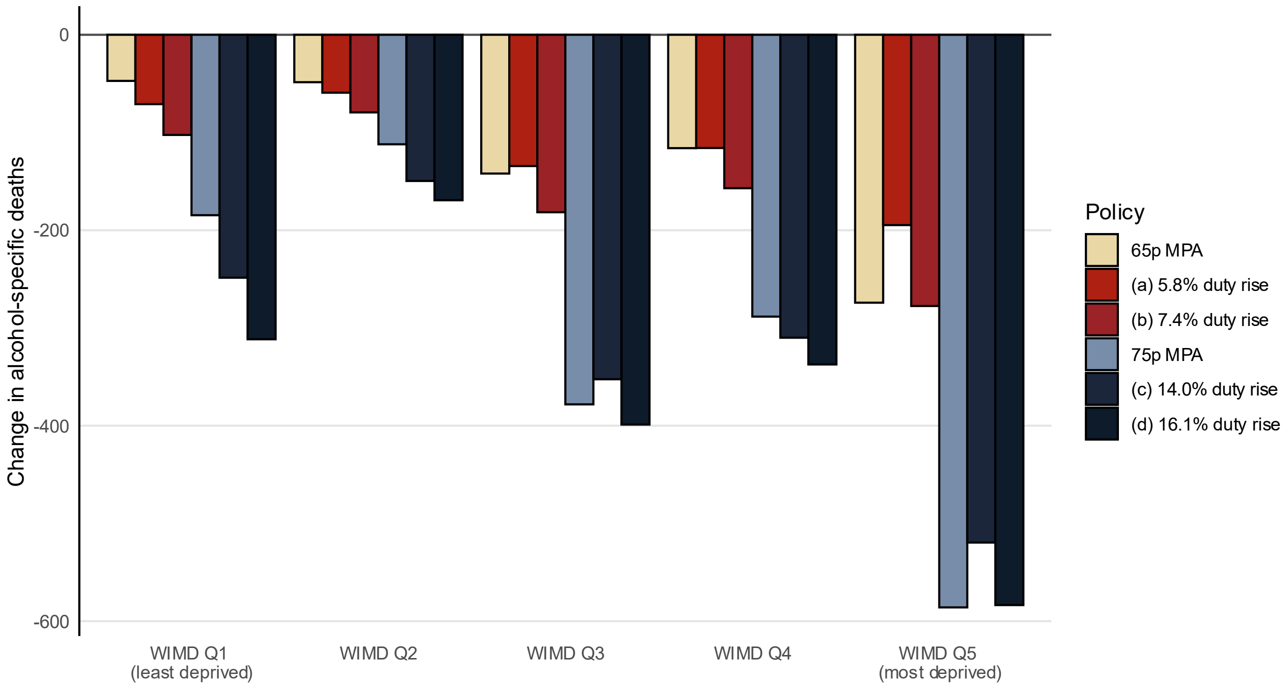
Table 32 Modelled impacts on alcohol-specific mortality of different equivalised rates for a 65p and 75p MPA

	Absolute change in deaths	Relative change in deaths
65p MPA	-628	-4.43%
(a) 5.8% duty rise	-575	-4.06%
(b) 7.4% duty rise	-798	-5.63%
75p MPA	-1,549	-10.94%
(c) 14.0% duty rise	-1,580	-11.16%
(d) 16.1% duty rise	-1,801	-12.71%

Table 33 Modelled impacts on alcohol-specific mortality of different equivalised rates for a 65p and 75p MPA by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Absolute change vs. control					
65p MPA	-47	-49	-142	-116	-274
(a) 5.8% duty rise	-71	-59	-134	-116	-195
(b) 7.4% duty rise	-102	-79	-182	-157	-278
75p MPA	-185	-112	-378	-288	-586
(c) 14.0% duty rise	-249	-150	-352	-310	-520
(d) 16.1% duty rise	-312	-169	-399	-337	-584
Relative change vs. control					
65p MPA	-2.41%	-3.28%	-5.40%	-3.76%	-5.47%
(a) 5.8% duty rise	-3.62%	-4.01%	-5.11%	-3.76%	-3.88%
(b) 7.4% duty rise	-5.24%	-5.37%	-6.91%	-5.09%	-5.53%
75p MPA	-9.43%	-7.57%	-14.38%	-9.35%	-11.68%
(c) 14.0% duty rise	-12.70%	-10.11%	-13.40%	-10.05%	-10.36%
(d) 16.1% duty rise	-15.91%	-11.44%	-15.17%	-10.94%	-11.63%

Figure 33 Comparative impact of a 65p and 75p MPA and duty increases on alcohol-specific mortality by WIMD quintile



4.4. Discussion

Overall, the analysis of this chapter demonstrates that increasing the MPA level from 50p to 65p would have a similar impact on alcohol-specific deaths to a tax increase of between 5.8% and 7.4% above inflation, increases which would be large compared to historical changes in duty over the past century. To obtain equivalent reductions in alcohol-specific deaths as increasing the MPA to 75p, alcohol taxes would have to increase by between 14% and 16.1%. Removing MPA entirely would have a similar impact on alcohol-specific deaths as a real-terms cut in alcohol taxes by between -2% and -2.8% or, equivalently, a freezing of alcohol tax rates in cash terms for a year - if inflation is at the Bank of England target rate of 2-3%.

Due to the different profiles of products which are affected - with an increase in the MPA only affecting cheaper off-trade beer, cider, and spirits products, while duty increases affect the prices of all alcohol - even these equivalised policies do not share the same distribution of effects across the population. Increasing the MPA threshold has a far greater impact on the alcohol consumption of harmful drinkers (of which there are estimated to be -6,027 (-5.8%) fewer with a 65p MPA vs. control, compared to the equivalising duty rise effect of -5,043 (-4.9%) fewer harmful drinkers vs. control), while increasing duty has a far greater impact on the consumption of moderate drinkers who consume more of their alcohol in the on-trade and consume less beer and cider as a proportion of their total alcohol consumption than hazardous and harmful drinkers. Differences in health outcomes are much smaller, as the duty increases have been chosen by design to lead to comparable mortality changes to MPA.

The distributional differences between MPA and increases in taxation presented in this report are substantially smaller than those in our previous 2018 report [1]. This is because the present analysis reflects the fact that an MPA is already in place in Wales, preventing the sale of alcohol at very low prices. As a result, the difference in average prices paid by moderate and harmful drinkers at baseline is considerably smaller than it was in 2018, prior to the introduction of MPA. For example, in the 2018 report there was an approximately 50p difference between the baseline prices paid by harmful and moderate drinks for cider. In the current report, this difference has narrowed considerably to 24p.

However, the results in this report demonstrate that there are still differences in the extent to which different groups are affected by an increase in MPA and a rise in alcohol duties, particularly for alcohol consumption. These differences should be considered alongside the fact, as demonstrated in Chapter 1, that increasing the MPA threshold is estimated to increase retailer revenue in the off trade, at the expense of the exchequer. In contrast, increasing alcohol duty rates is likely to lead to a corresponding increase in exchequer revenue while reducing off-trade retail revenues, and reducing on-trade revenues by considerably more than increasing the MPA threshold.

5. Modelling the impact of alternative approaches to uprating the MPA threshold

5.1. Introduction

Since its introduction in March 2020, Wales's Minimum Price for Alcohol (MPA) threshold has remained constant, in cash terms, at 50p/unit. In this chapter, we use the Sheffield Tobacco and Alcohol Policy Model (STAPM) to appraise the potential impact over time of implementing these alternative approaches, or the consequences of leaving the MPA at its 2026 level indefinitely. Focusing on the 65p MPA scenario modelled in Chapter 1, we explore the incremental effects of different scenarios for future regular uprating of a 65p MPA following implementation in 2026. We have selected 5 potential approaches to uprating:

1. **No uprating** - A 65p MPA is retained indefinitely with no uprating.
2. **Continuous RPI uprating** - A 65p MPA is increased in line with RPI inflation each year.
3. **Stepped RPI uprating** - As for 2., but instead of uprating by RPI each year post-2026, the MPA threshold is held constant in cash terms until 2031, when it is uprated by inflation over the previous 5 years, and so on, with uprating occurring every 5 years.
4. **Continuous earnings uprating** - As in 2. but indexing to average earnings growth in place of RPI.
5. **Stepped earnings uprating** - As in 3. but indexing to average earnings growth in place of RPI.

Note that monetary values of model outputs are still expressed in 2026 real terms as measured by RPI, regardless of the indices used to increase the MPA thresholds. Outputs on spending, costs, and revenues therefore should still be interpreted in 2026 RPI real terms.

5.2. Methods

Figure 34 and Figure 35 illustrate the uprating scenarios in nominal/cash terms and in real RPI terms respectively. As each uprating scenario is based on the 65p MPA scenario from Chapter 1, all uprating scenario results presented in this chapter are presented as incremental changes from that scenario, rather than from the control arm 50p MPA i.e. the comparator scenario is a 65p MPA with annual CPIH uprating, and the interpretation of the results for each uprating scenario is the difference from the Chapter 1 65p MPA scenario attributable to the modelled uprating mechanism.

In two of the uprating scenarios (2 and 4), uprating takes place on an annual basis. In these scenarios the MPA threshold is increased each year in line with the relevant price/earnings index. Scenario 1 has no uprating in the intervention arm. As Figure 35 shows, compared to the 65p MPA comparator (in which MPA is uprated annually in line with CPIH inflation) this means a declining MPA threshold in real terms. The stepped uprating scenarios (3 and 5) applies an increase to the MPA threshold once every 5 years and is uprated so as to reflect the change in the relevant index over the respective 5 years. Figure 34 illustrates that under this stepped approach to uprating, the MPA threshold will generally be lower (and therefore have less of an impact) than an equivalent annual uprating using the same index.

Figure 34 Illustrative overview of the uprating scenarios in cash terms

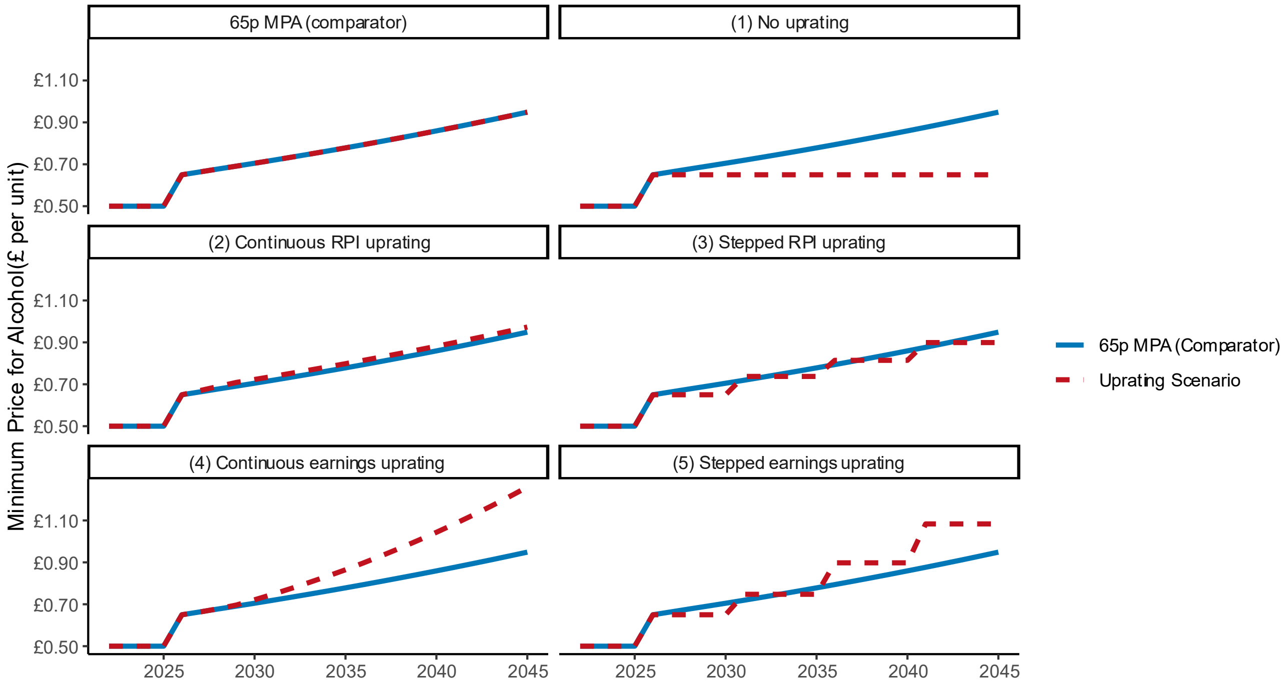
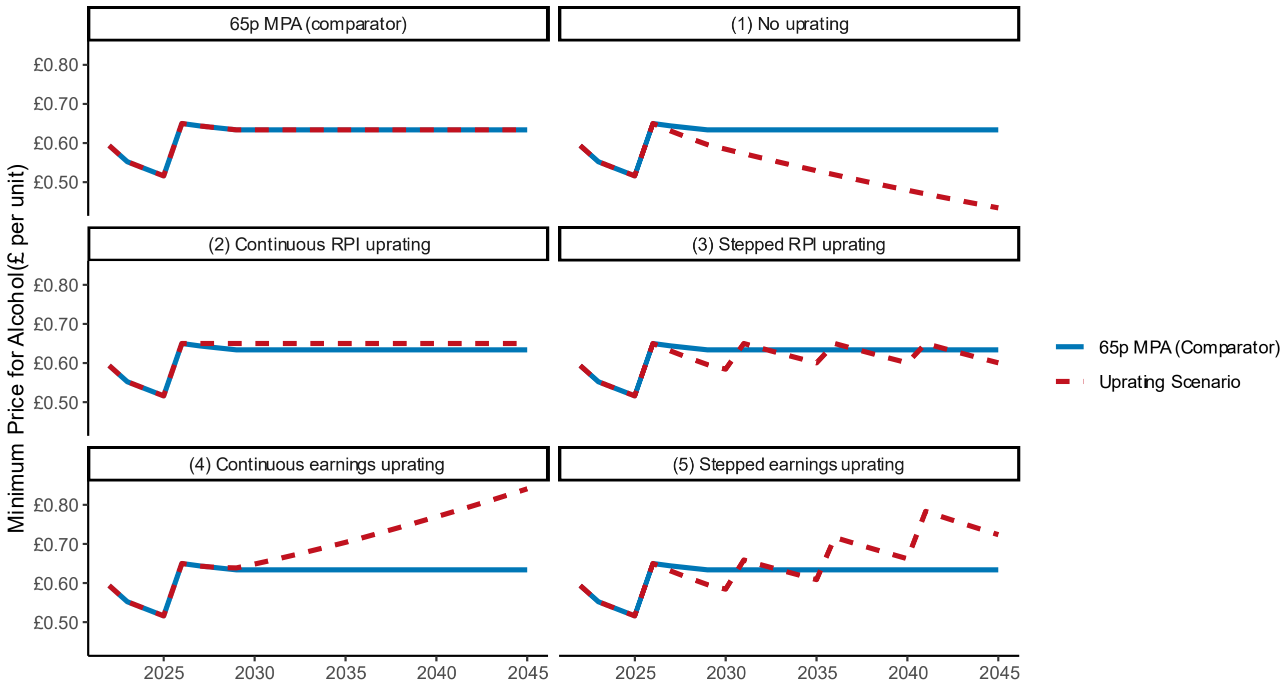


Figure 35 Illustrative overview of the uprating scenarios in real terms (2026 prices)



For the construction of different growth indices to use for uprating scenarios, additional data was required. In addition to the RPI and CPIH data already outlined in the methods description for Chapter 1, we additionally sourced data to construct indices for average earnings (in nominal terms, rather than real terms) to implement uprating scenarios 4 and 5. As with the inflation time series already discussed, data were obtained from a mixture of ONS and OBR sources. The average earnings series, as with the inflation forecast, is obtained from forecast and assumed future average earnings growth from the Office for Budget Responsibility long-term economic determinants published in March 2024 [22].

Between 2026-27 and 2029-30, RPI is expected to be between 0.6%-1.0% points higher than CPIH. After the 2028-29 fiscal year (the last year in the baseline projection), the difference is exactly 1% point (3% RPI vs 2% CPIH) and then subsequently assumed to both be 2%. The MPA threshold will therefore initially increase slightly faster under RPI-indexed uprating than the comparator CPIH case.

After the 2028-29 fiscal year the assumption for average earnings growth is 3.58%, 3.63%, and 3.68% for the three years until the 2033-34 fiscal year after which it is revised to 3.71% per year, and then 3.83% per year from 2036-37. Based on these assumptions, we constructed an index of average earnings to 2045 and used this index to uprate the MPA threshold in scenarios 4 and 5. These are larger than the projections for CPIH and RPI inflation, and therefore earnings-indexed uprating will lead to the largest increases in the MPA threshold.

The results of this chapter are presented slightly differently to the previous chapters for some outcomes. As we are comparing the impacts of uprating mechanisms which take place over several years, we report longer-term outcomes year-on-year up to 2045 (consumption and spending) or as 20-year cumulative effects (tax revenues, retail revenues) rather than 5-year cumulative.

5.3. Results

5.3.1. Impacts of uprating policies on alcohol consumption

The impact of each of the modelled uprating scenarios on mean population alcohol consumption over time is shown in Figure 36. These follow broadly the inverse pattern of the red dashed lines in Figure 35, which represents the real terms value of the MPA threshold. As the real terms value of the MPA falls, for example in the no uprating scenario (1), mean consumption increases, while where the MPA level is pegged closely to CPIH inflation, e.g. under the continuous RPI uprating scenario (2), consumption remains at similar levels to 2026.

This figure demonstrates that a stepped approach to uprating, as in scenario 3, achieves a generally similar effect to continuous uprating, but with consumption oscillating upwards during the 5-year periods of no uprating as the MPA threshold falls in real terms, and then downwards every 5-years when the MPA threshold is increased again to “catch up”. Both scenarios 2 and 3 exhibit little difference from the comparator of annual CPIH uprating, as RPI is estimated to only be slightly higher than CPIH until 2030, after which the two indices coincide under OBR assumption. Alternative approaches to uprating using earnings (scenarios 4-5), lead to falls in alcohol consumption, as earnings are forecast/assumed to rise faster than inflation in the coming years.

Figure 36 Modelled impacts of uprating scenarios on alcohol consumption compared to 65p MPA. Grey lines represent other modelled scenarios

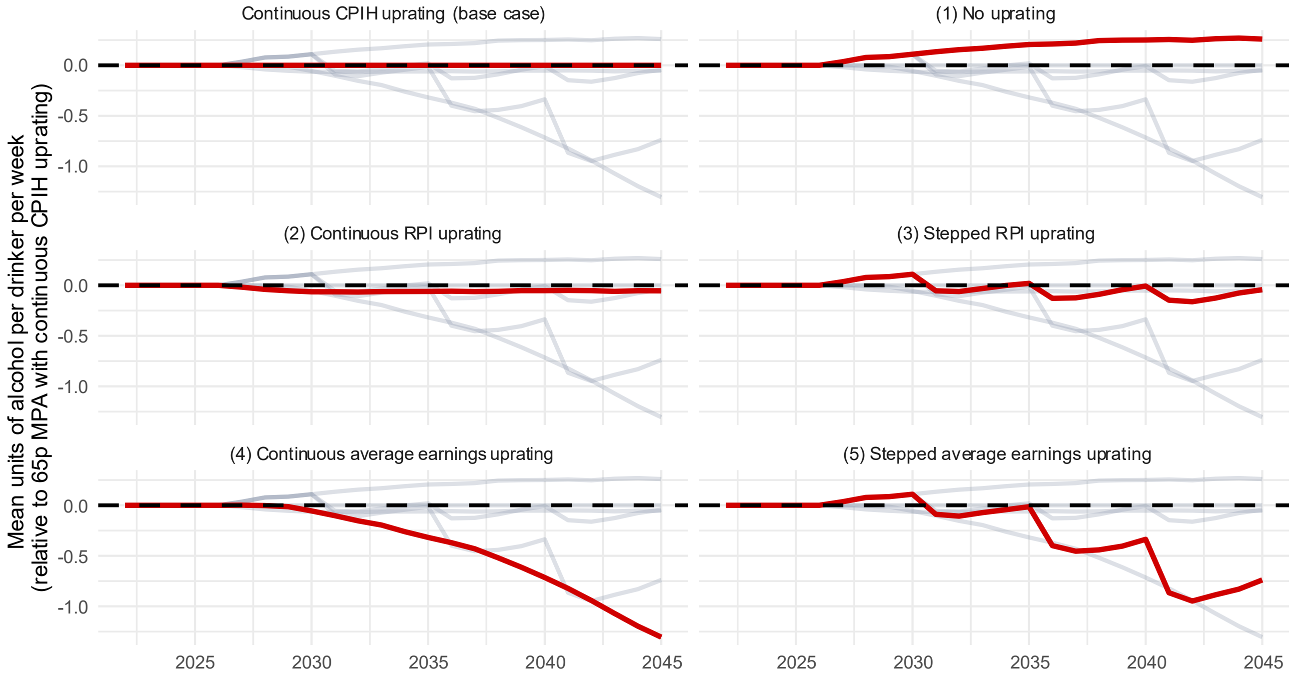


Table 34 shows that with no uprating, mean weekly alcohol consumption is estimated to be 0.26 units higher by 2045 than with continuous CPIH uprating. This would more than offset the estimated initial gain of -0.25 in 2026 from raising the threshold from 50p to 65p. This, combined with the flattening of the red line after 2035 in the "No Uprating" panel of Figure 36 suggests that by the mid-2030s, a 65p MPA would no longer be effective in raising alcohol prices.

Table 34 Modelled impacts of alternative approaches to uprating on population alcohol consumption in 2045

	Mean consumption (units/drinker/week)	
	Absolute change	Relative change
65p MPA + continuous CPIH uprating (vs. control)	-0.25	-1.95%
Uprating scenarios (vs. 65p MPA)		
(1) No uprating	0.26	2.07%
(2) Continuous RPI uprating	-0.05	-0.43%
(3) Stepped RPI uprating	-0.04	-0.35%
(4) Continuous average earnings uprating	-1.31	-10.42%
(5) Stepped average earnings uprating	-0.74	-5.90%

Table 35 Modelled impacts of alternative approaches to uprating on the number of drinkers in each drinker group in 2045

	Moderate	Hazardous	Harmful
Absolute change in number of drinkers vs. control			
65p MPA + continuous CPIH uprating (vs. control)	7,521	-573	-6,027
Uprating scenarios (vs. 65p MPA)			
(1) No uprating	-6,625	1,146	4,981
(2) Continuous RPI uprating	1,407	-187	-1,146
(3) Stepped RPI uprating	1,781	-560	-1,108
(4) Continuous average earnings uprating	42,637	-16,487	-25,441
(5) Stepped average earnings uprating	23,087	-7,534	-14,955
Relative change in number of drinkers vs. control			
65p MPA + continuous CPIH uprating (vs. control)	0.54%	-0.14%	-5.83%
Uprating scenarios (vs. 65p MPA)			
(1) No uprating	-0.48%	0.28%	5.11%
(2) Continuous RPI uprating	0.10%	-0.04%	-1.18%
(3) Stepped RPI uprating	0.13%	-0.13%	-1.14%
(4) Continuous average earnings uprating	3.06%	-3.96%	-26.12%
(5) Stepped average earnings uprating	1.66%	-1.81%	-15.35%

Table 35 shows the results for changes in the numbers of individuals by drinker group in 2045. No uprating at all results in an estimated 1146 (0.28%) more hazardous drinkers, and 4981 (5.11%) more harmful drinkers, compared to CPIH uprating. Continuous RPI uprating produces a small improvement relative to CPIH uprating, with 0.1% more moderate drinkers, and -0.04% and -1.18% fewer hazardous and harmful drinkers respectively by 2045. The largest improvements are seen under continuous average earnings uprating with an estimated -25441 (-26.12%) harmful drinkers by 2045. The same pattern of results is found across uprating scenarios within WIMD quintiles as shown in

Table 36 and

Figure 37, though there is no clear social gradient to the results, apart from the continuous RPI uprating scenario which exhibits larger effects in more deprived WIMD quintiles (though the differences are very small in magnitude).

Table 36 Modelled impacts of alternative approaches to uprating on mean alcohol consumption in year 2045 by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Absolute change in consumption vs. control					
65p MPA + continuous CPIH uprating (vs. control)	-0.18	-0.15	-0.28	-0.24	-0.37
Uprating scenarios (vs. 65p MPA)					
(1) No uprating	0.16	0.16	0.31	0.25	0.38
(2) Continuous RPI uprating	-0.04	-0.05	-0.05	-0.05	-0.08
(3) Stepped RPI uprating	-0.03	-0.01	-0.13	-0.02	-0.02
(4) Continuous average earnings uprating	-1.32	-0.77	-1.53	-1.11	-1.68
(5) Stepped average earnings uprating	-0.71	-0.35	-1.08	-0.58	-0.88
Relative change in consumption vs. control					
65p MPA + continuous CPIH uprating (vs. control)	-1.28%	-1.47%	-2.28%	-1.94%	-2.49%
Uprating scenarios (vs. 65p MPA)					
(1) No uprating	1.18%	1.57%	2.63%	2.10%	2.60%
(2) Continuous RPI uprating	-0.31%	-0.45%	-0.41%	-0.41%	-0.55%
(3) Stepped RPI uprating	-0.24%	-0.07%	-1.08%	-0.19%	-0.13%
(4) Continuous average earnings uprating	-9.52%	-7.54%	-12.98%	-9.17%	-11.64%
(5) Stepped average earnings uprating	-5.14%	-3.42%	-9.14%	-4.82%	-6.13%

Figure 37 Modelled impacts of alternative approaches to uprating on alcohol consumption on alcohol compared to 65p MPA in 2045 by WIMD quintile.

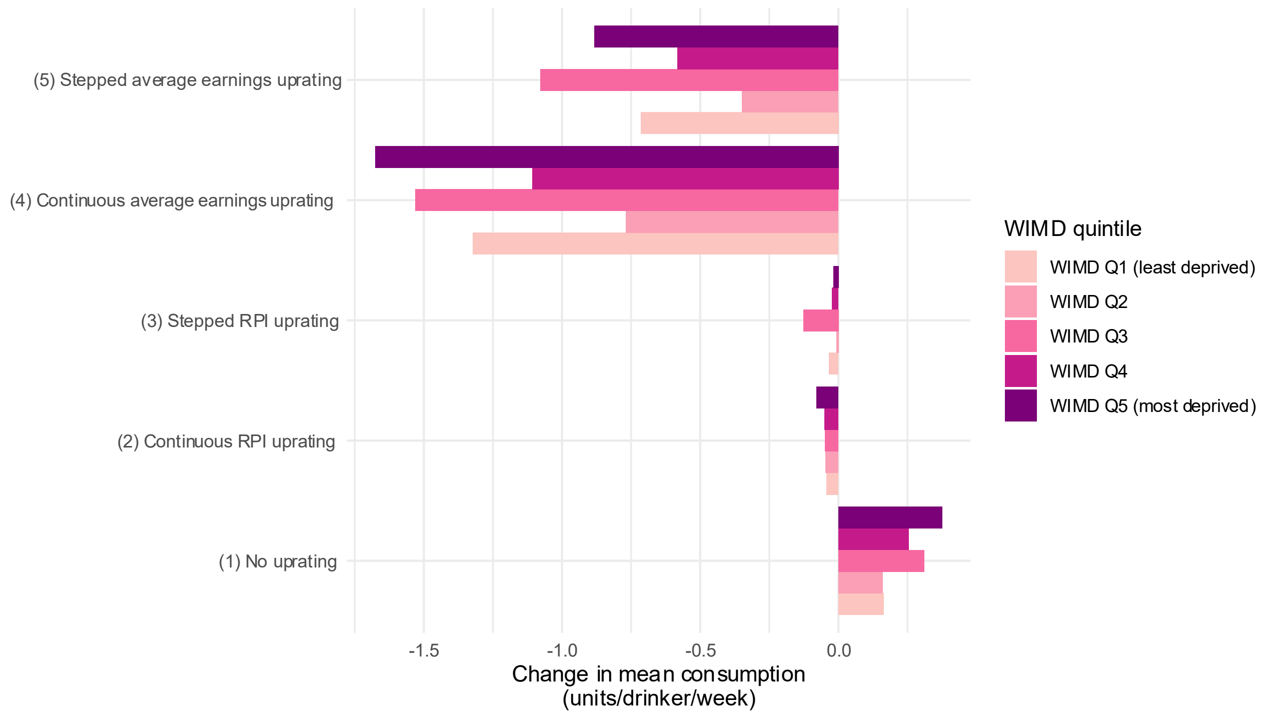


Table 37 Modelled impacts of alternative approaches to uprating on population spending on alcohol in 2045

	Mean spending (£/drinker/week)	
	Absolute change	Relative change
65p MPA + continuous CPIH uprating (vs. control)	£0.27	0.63%
Uprating scenarios (vs. 65p MPA)		
(1) No uprating	£0.05	0.11%
(2) Continuous RPI uprating	-£0.02	-0.04%
(3) Stepped RPI uprating	-£0.46	-1.09%
(4) Continuous average earnings uprating	-£1.35	-3.20%
(5) Stepped average earnings uprating	-£1.13	-2.69%

The equivalent results for changes in consumer spending on alcohol under each of the uprating scenarios are presented for 2045 in Table 37 and over time in Figure 38. These follow a similar pattern to the changes in consumption shown in Figure 36, with spending increasing if the MPA threshold is not uprated at all (scenario 1), remaining generally steady if the threshold closely follows inflation (scenarios 2 and 3) and falling where the MPA threshold rises faster than inflation (scenarios 4-5). The equivalent changes for 2045 by WIMD quintile are shown in

Table 38 and

Figure 39. These results do not show a clear pattern in results for spending across WIMD quintiles in 2045, reflecting the results for consumption.

Figure 38 Modelled impacts of alternative approaches to uprating on consumer spending on alcohol compared to 65p MPA. Grey lines represent other modelled scenarios for comparison.

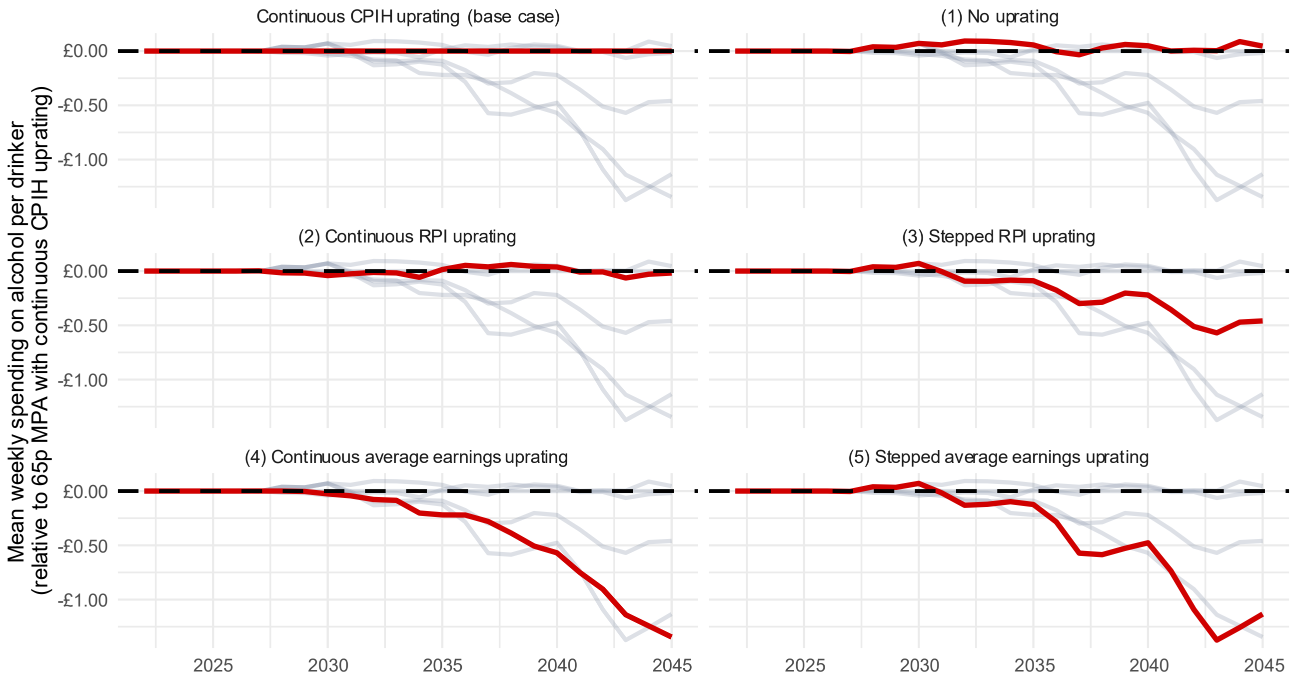
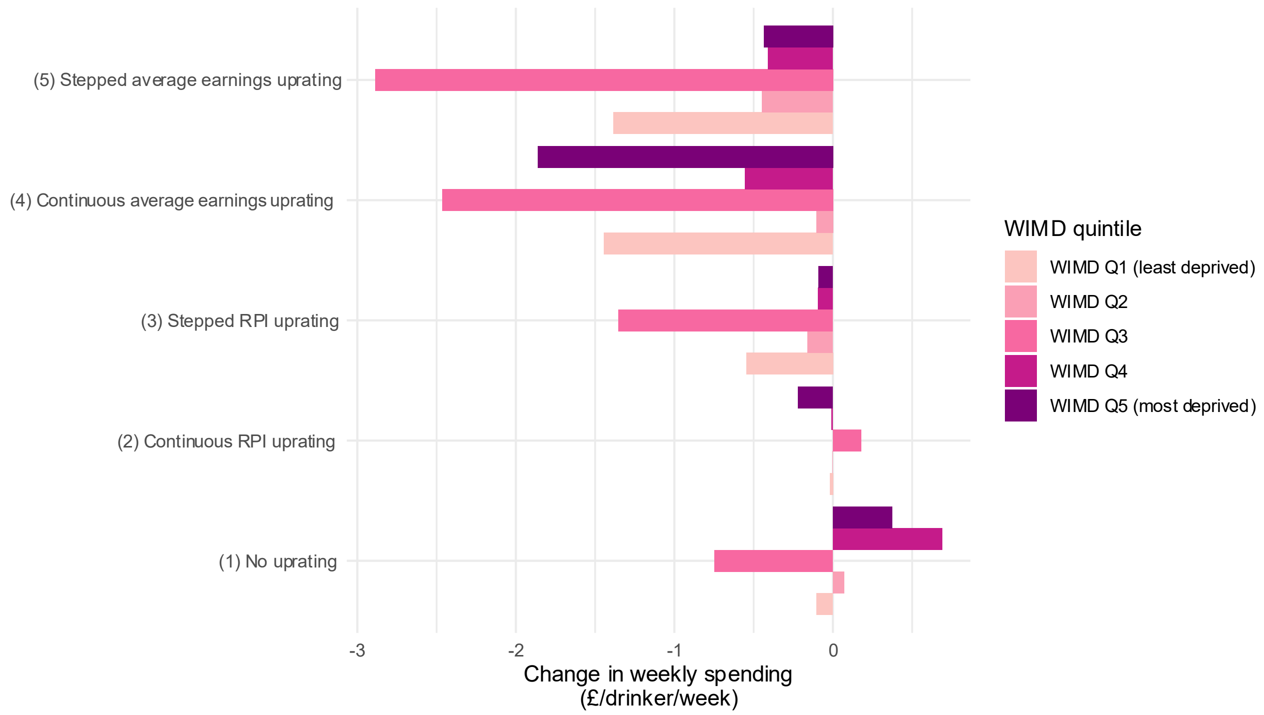


Table 38 Modelled impacts of alternative approaches to uprating on spending on alcohol in 2045 by WIMD quintile

	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Absolute change in spending vs. control					
65p MPA + continuous CPIH uprating (vs. control)	£0.01	£0.25	£1.20	-£0.56	£0.25
Uprating scenarios (vs. 65p MPA)					
(1) No uprating	-£0.10	£0.07	-£0.75	£0.69	£0.37
(2) Continuous RPI uprating	-£0.02	£0.00	£0.18	-£0.01	-£0.22
(3) Stepped RPI uprating	-£0.55	-£0.16	-£1.35	-£0.09	-£0.09
(4) Continuous average earnings uprating	-£1.44	-£0.10	-£2.46	-£0.55	-£1.86
(5) Stepped average earnings uprating	-£1.38	-£0.45	-£2.89	-£0.41	-£0.44
Relative change in spending vs. control					
65p MPA + continuous CPIH uprating (vs. control)	0.03%	0.75%	3.15%	-1.33%	0.53%
Uprating scenarios (vs. 65p MPA)					
(1) No uprating	-0.21%	0.21%	-1.90%	1.66%	0.79%
(2) Continuous RPI uprating	-0.04%	-0.01%	0.46%	-0.02%	-0.47%
(3) Stepped RPI uprating	-1.14%	-0.48%	-3.44%	-0.23%	-0.19%
(4) Continuous average earnings uprating	-3.01%	-0.31%	-6.27%	-1.34%	-3.93%
(5) Stepped average earnings uprating	-2.88%	-1.33%	-7.34%	-0.99%	-0.92%

Figure 39 Modelled impacts of alternative approaches to uprating on consumer spending on alcohol compared to 65p MPA in 2045 by WIMD quintile



5.3.2. Impacts of uprating policies on tax and retailer revenues

The modelled impact of the uprating scenarios on exchequer revenue from alcohol taxes, cumulatively over 20 years, is shown in Table 39 and Figure 40 Modelled cumulative impact on exchequer revenue from alcohol taxes over 20 years compared to 65p MPA. These show that the larger the index used to uprate, the less tax revenue is received by the UK government. The no uprating scenario leads to an increase in UK government tax revenue relative to CPIH uprating, while uprating in line with RPI leads to slight decreases, and much bigger decreases if earnings-linked uprating is used.

Table 40 and

Figure 41 Modelled cumulative impact on retailer revenue excluding taxes over 20 years compared to 65p MPA show the estimated impact on on-trade and off-trade retailer revenue from alcohol (excluding taxes). Again, this shows a mixed picture across the scenarios, although the pattern is different to that for changes in exchequer revenue. Almost all approaches to uprating, including not uprating at all, are estimated to decrease retailer revenue. Retail revenue gains are only estimated for the off-trade under scenarios 2 and 4, and scenario 1 for the on-trade.

Table 39 Modelled cumulative impact on exchequer revenue from alcohol taxes over 20 years compared to control

	Estimated annual change in duty & VAT revenue to government (£million)		
	Off-trade	On-trade	Total
Absolute change in revenue vs. control			
65p MPA + continuous CPIH uprating (vs. control)	-£338	£24	-£314
Uprating scenarios (vs. 65p MPA)			
(1) No uprating	£153	£21	£174
(2) Continuous RPI uprating	-£25	-£19	-£43
(3) Stepped RPI uprating	-£88	-£30	-£118
(4) Continuous average earnings uprating	-£435	-£155	-£590
(5) Stepped average earnings uprating	-£390	-£79	-£470
Relative change in revenue vs. control			
65p MPA + continuous CPIH uprating (vs. control)	-2.51%	0.19%	-1.21%
Uprating scenarios (vs. 65p MPA)			
(1) No uprating	1.17%	0.17%	-0.55%
(2) Continuous RPI uprating	-0.19%	-0.15%	-1.39%
(3) Stepped RPI uprating	-0.67%	-0.23%	-1.68%
(4) Continuous average earnings uprating	-3.32%	-1.23%	-3.52%
(5) Stepped average earnings uprating	-2.98%	-0.63%	-3.05%

Figure 40 Modelled cumulative impact on exchequer revenue from alcohol taxes over 20 years compared to 65p MPA

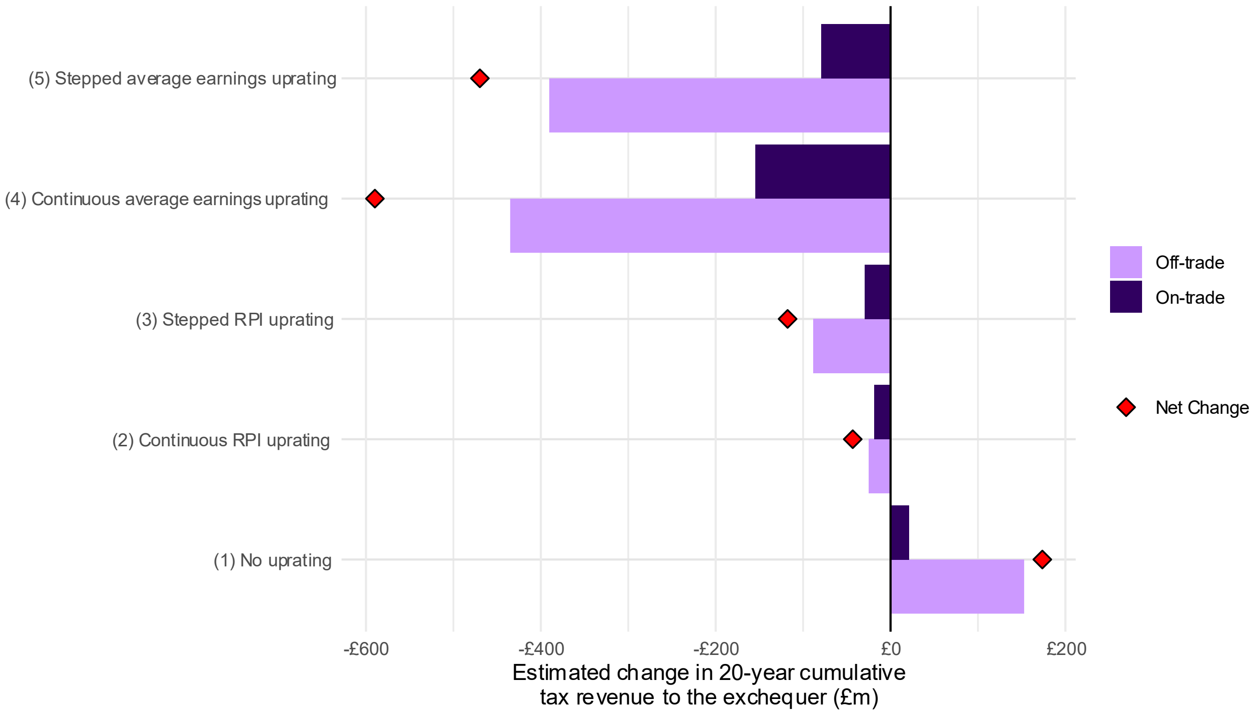
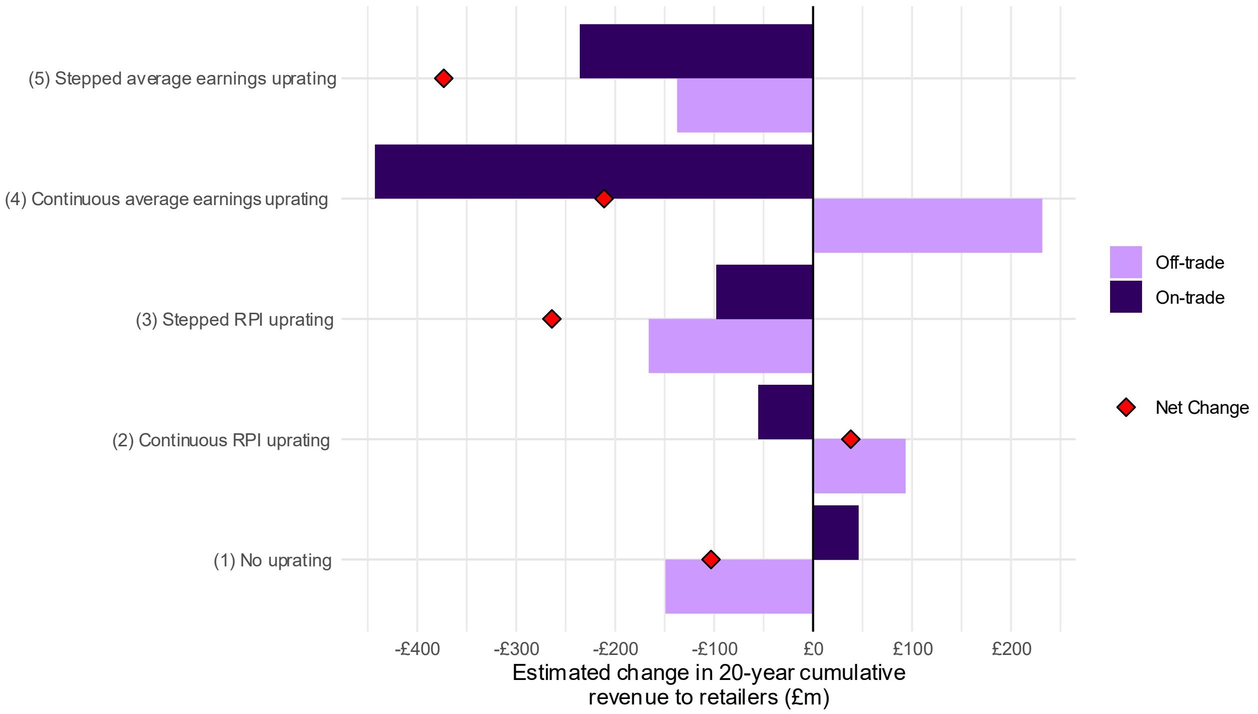


Table 40 Modelled cumulative impact on retailer revenue excluding taxes over 20 years compared to control

	Estimated annual change in revenue (excluding tax) to retailers (£million)		
	Off-trade	On-trade	Total
Absolute change in revenue vs. control			
65p MPA + continuous CPIH uprating (vs. control)	£60	£81	£141
Uprating scenarios (vs. 65p MPA)			
(1) No uprating	-£149	£46	-£103
(2) Continuous RPI uprating	£93	-£55	£38
(3) Stepped RPI uprating	-£166	-£98	-£264
(4) Continuous average earnings uprating	£232	-£443	-£211
(5) Stepped average earnings uprating	-£137	-£236	-£373
Relative change in revenue vs. control			
65p MPA + continuous CPIH uprating (vs. control)	0.40%	0.22%	0.27%
Uprating scenarios (vs. 65p MPA)			
(1) No uprating	-1.00%	0.12%	0.07%
(2) Continuous RPI uprating	0.62%	-0.15%	0.34%
(3) Stepped RPI uprating	-1.11%	-0.26%	-0.24%
(4) Continuous average earnings uprating	1.55%	-1.20%	-0.14%
(5) Stepped average earnings uprating	-0.92%	-0.64%	-0.45%

Figure 41 Modelled cumulative impact on retailer revenue excluding taxes over 20 years compared to 65p MPA



5.3.3. Impacts of uprating policies on health outcomes

Modelled population level changes in cumulative all-cause mortality over 20 years are shown in

Table 41 and

Figure 42. The pattern of results reflect that found for consumption in Figure 36 and show that not uprating is estimated to increase deaths relative to CPIH uprating, with RPI uprating leading to slightly reduced deaths. In contrast the continuous earnings uprating scenarios are estimated to lead to larger reductions in deaths.

The equivalent patterns of changes in mortality by WIMD quintile under each uprating scenario are shown in

Table 41 and in

Figure 43. These show similar patterns of increases or decreases in deaths across uprating scenarios as the population level results. The largest impacts on deaths are consistently found in the most deprived quintiles, with more than double the number of deaths prevented in the most deprived WIMD quintile compared to the least deprived quintile.

Table 41 Modelled cumulative impact on all-cause deaths over 20 years by WIMD quintile

	Population	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Cumulative difference in all-cause deaths						
65p MPA + continuous CPIH uprating (vs. control)	-902	-71	-88	-204	-150	-389
Uprating scenarios (vs. 65p MPA)						
(1) No uprating	501	40	60	100	114	187
(2) Continuous RPI uprating	-155	-11	-25	-26	-42	-51
(3) Stepped RPI uprating	-80	-10	14	-30	-33	-21
(4) Continuous average earnings uprating	-996	-120	-93	-197	-254	-332
(5) Stepped average earnings uprating	-665	-79	-32	-149	-179	-225

Figure 42 Modelled impact of uprating scenarios on all-cause deaths over time compared to 65p MPA. Grey lines represent other modelled approaches for comparison.

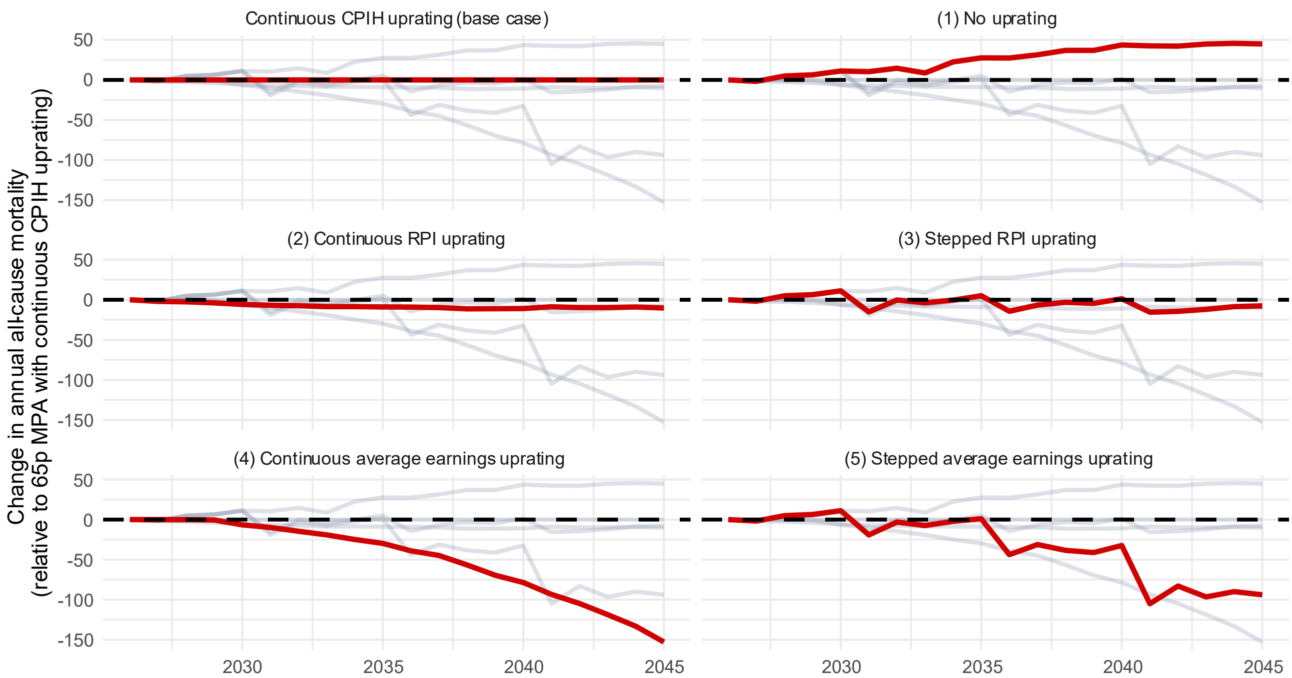
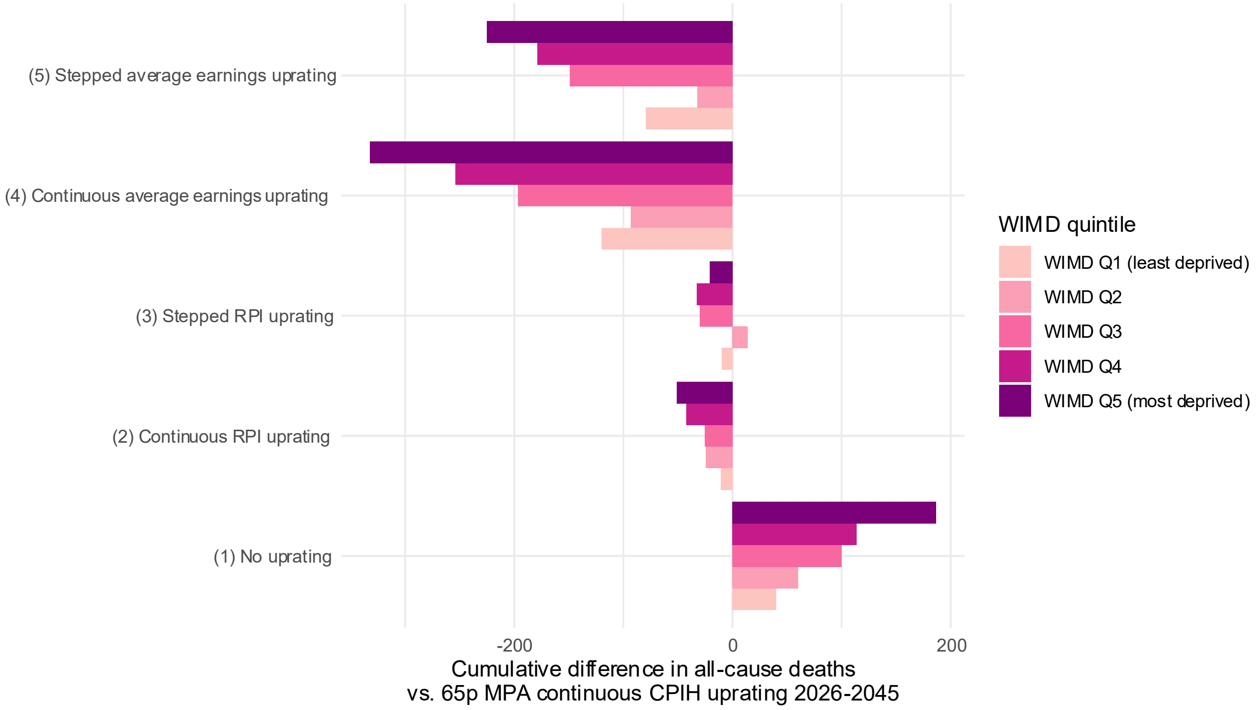


Figure 43 Modelled cumulative impact on deaths over 20 years by WIMD quintile



Patterns of changes in under each uprating scenario by population and WIMD quintile are presented for YLLs (Table 42), hospital admissions (Table 43), and NHS costs of admissions (Table 44), all being similar to those for mortality, with no uprating being associated with poorer population health outcomes, slight improvements in outcomes with RPI uprating, and significantly improved outcomes with average earnings-indexed uprating. Estimated impacts are consistently largest in the most deprived WIMD quintile. The modelled impacts on NHS costs in show that not uprating the MPA threshold is estimated to cost £7.9million relative to continuous uprating by CPIH, while the RPI uprating scenario would result in a further saving of £2.5million in reduced NHS costs over 20 years. The biggest savings to the NHS are under the continuous earnings scenario (£17.8million).

Table 42 Modelled cumulative impact on years of life lost to premature death over 20 years by WIMD quintile

	Population	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Cumulative difference in Years of Life Lost to premature death						
65p MPA + continuous CPIH uprating (vs. control)	-29,825	-2,262	-2,219	-7,581	-5,240	-12,523
Uprating scenarios (vs. 65p MPA)						
(1) No uprating	16,249	1,314	1,456	3,577	3,752	6,151
(2) Continuous RPI uprating	-4,863	-508	-473	-941	-1,317	-1,624
(3) Stepped RPI uprating	-2,390	-452	236	-1,029	-576	-568
(4) Continuous average earnings uprating	-33,614	-4,429	-2,170	-7,153	-7,911	-11,950
(5) Stepped average earnings uprating	-22,568	-3,068	-915	-5,674	-5,281	-7,630

Table 43 Modelled cumulative impact on hospitalisations over 20 years by WIMD quintile

	Population	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Cumulative difference in hospital admissions						
65p MPA + continuous CPIH uprating (vs. control)	-7,270	-683	-785	-1,652	-1,277	-2,874
Uprating scenarios (vs. 65p MPA)						
(1) No uprating	3,889	371	460	766	853	1,439
(2) Continuous RPI uprating	-1,222	-134	-163	-214	-300	-411
(3) Stepped RPI uprating	-708	-115	24	-296	-130	-192
(4) Continuous average earnings uprating	-8,823	-1,224	-900	-1,828	-1,923	-2,947
(5) Stepped average earnings uprating	-5,964	-822	-457	-1,491	-1,240	-1,953

Table 44 Modelled cumulative impact on NHS costs of hospital admissions over 20 years by WIMD quintile

	Population	WIMD Q1 (least deprived)	WIMD Q2	WIMD Q3	WIMD Q4	WIMD Q5 (most deprived)
Cumulative difference in NHS costs (£m)						
65p MPA + continuous CPIH uprating (vs. control)	-£14.9	-£1.5	-£1.7	-£3.4	-£2.6	-£5.7
Uprating scenarios (vs. 65p MPA)						
(1) No uprating	£7.9	£0.8	£1.0	£1.6	£1.7	£2.8
(2) Continuous RPI uprating	-£2.5	-£0.3	-£0.4	-£0.5	-£0.6	-£0.8
(3) Stepped RPI uprating	-£1.4	-£0.2	£0.0	-£0.6	-£0.3	-£0.4
(4) Continuous average earnings uprating	-£17.8	-£2.6	-£2.0	-£3.7	-£3.9	-£5.7
(5) Stepped average earnings uprating	-£11.9	-£1.7	-£1.1	-£3.0	-£2.5	-£3.7

The pattern of results for alcohol-specific deaths is the same as for all-cause mortality and is presented for the population in Table 45.

Table 45 Modelled cumulative impact on alcohol-specific deaths over 20 years

	Absolute change	Relative change
65p MPA + continuous CPIH uprating (vs. control)	-628	-4.43%
Uprating scenarios (vs. 65p MPA)		
(1) No uprating	324	2.39%
(2) Continuous RPI uprating	-99	-0.73%
(3) Stepped RPI uprating	-34	-0.25%
(4) Continuous average earnings uprating	-662	-4.89%
(5) Stepped average earnings uprating	-425	-3.14%

5.4. Discussion

This chapter demonstrates the potential impacts of alternative approaches to uprating the MPA threshold in Wales. The current MPA of 50p per unit has been in place since 2020. By 2026, adjusting for inflation, this 50p MPA is estimated to be equivalent to 39p in 2020 prices i.e. the current 50p per unit in place is equivalent to having set the MPA in 2020 at 39p, reducing its effectiveness to raise alcohol prices and reduce harms. If the MPA threshold were raised to 65p per unit in 2026, this would be equivalent in 2020 prices to 50p i.e. raising the MPA to 65p in 2026 would exactly offset the real-terms erosion of the MPA over 2020-2026 due to inflation.

The modelling in this chapter assumes an uprating to 65p in 2026 and then explores the impacts of different mechanisms to uprating this 65p in the future. The results of the modelling suggest that not adjusting the 65p MPA to account for inflation would lead to 501 additional deaths over 20 years, compared to if the MPA threshold was indexed to CPIH inflation throughout. Based on the latest available forecasts of future inflation, not uprating the MPA threshold is estimated to lead to increased levels of alcohol consumption, resulting in additional deaths over 20 years, compared to if the MPA threshold was indexed to inflation throughout.

Our results also show that there are only small differences in effect between policies that increase the MPA threshold in line with RPI inflation each year, and where this adjustment is made every 5 years instead, although the former leads to marginally lower levels of overall health harms. the results suggest that linking uprating to alternative measures such as earnings growth has the potential to lead to substantial improvements in health over and above indexing the MPA threshold to inflation. Linking uprating to earnings is estimated here to prevent an additional -996 deaths over 20 years, compared to linking uprating to CPIH. These findings, however, depend on how future changes in these indices compare to future levels of inflation, which may be sensitive to wider economic factors that are outside the scope of this project.

Overall, these results highlight that decisions on uprating the MPA in Wales are important for the public health impact of the policy. Several jurisdictions, such as the Republic of Ireland, Canada and several countries in Eastern Europe, have Minimum Price policies in place, but no formal uprating mechanism. To our knowledge, the only jurisdictions to increase their MPA since implementation are Scotland, which introduced a 50p minimum unit price in 2018 and then uprated this to 65p in 2024, and several Canadian provinces, that have increased their minimum prices periodically. In neither case is a formal uprating mechanism in place.

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