

# Blueprint for halving obesity: rapid review

Alcohol Minimum Unit Pricing (MUP)  
as an intervention for reducing obesity



Author: Katherine Parkin

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## Summary table

<b>Title</b>	<a href="#">Increasing the Price of Alcohol as an Obesity Prevention Measure: The Potential Cost-Effectiveness of Introducing a Uniform Volumetric Tax and a Minimum Floor Price on Alcohol in Australia</a>	<a href="#">Evaluating the impact of minimum unit pricing (MUP) on off-trade alcohol sales in Scotland: an interrupted time-series study</a>
<b>Author and year</b>	Ella Robinson et al. (2020)	Mark Robinson et al. (2021)
<b>Type of study</b>	Modelling study of two policy options in Australia	Controlled interrupted time-series
<b>Outcome variable</b>	Body mass index (BMI), BMI-related disease outcomes, healthcare costs, Health Adjusted Life Years (HALYs), costs to government and industry	% reduction in off-trade alcohol sales per adult (1 year post-implementation of legislation)
<b>Treatment</b>	1) Minimum unit pricing (MUP); and 2) Uniform Volumetric Tax	Minimum unit pricing (MUP) legislation in place in Scotland; MUP set at 50 pence per unit of pure alcohol
<b>Control</b>	No intervention (where the BMI distribution for the population remains unchanged)	England and Wales (no MUP in place)

<p><b>Magnitude of effect (Adults)</b></p>	<p><b><u>MUP:</u></b></p> <ul style="list-style-type: none"> <li>• Reduction in mean alcoholic drinks consumption: -9.2% [95% CI: -8.9% to -9.6%]</li> <li>• Reduction in BMI: -0.19 kg/m<sup>2</sup> [95% CI: -0.17 to -0.20]</li> <li>• Weighted average change in body weight: -0.45 kg [95% CI: -0.42 to -0.48]</li> </ul> <p><b><u>Uniform volumetric tax:</u></b></p> <ul style="list-style-type: none"> <li>• Reduction in mean alcoholic drinks consumption: -20.7% [95% CI: -20.2% to -21.1%]</li> <li>• Reduction in BMI: -0.34 kg/m<sup>2</sup> [95% CI: -0.32 to -0.36]</li> <li>• Weighted average change in body weight: -0.90 kg [95% CI: -0.84 to -0.96]</li> </ul>	<p><b><u>Outcomes 1 year after MUP implementation:</u></b></p> <p><b>In adjusted analysis (adjusted for the best available geographical control, disposable income and substitution):</b> -3.5% [95% CI: -2.2 to -4.9%] in off-trade alcohol sales per adult in Scotland</p> <p><b>In unadjusted, controlled analysis:</b> -3.3% [95% CI: -2.1 to -4.4%] in off-trade alcohol sales per adult in Scotland</p> <p><b>In unadjusted, uncontrolled analysis:</b> -2.0% [95% CI: -0.4 to -3.6%] in off-trade alcohol sales per adult in Scotland vs +2.4% [95% CI: 0.8–4.0%] during the same period in England and Wales (control group)</p>
<p><b>Magnitude of effect (Children)</b></p>	<p>n/a</p>	<p>n/a</p>
<p><b>Notes</b></p>	<p>For modelling the impact of this policy, the review highlighted in the green column was used, specifically the adjusted analysis. The alcohol sales reduction was then converted into calorie changes for the purposes of modelling population BMI changes.</p>	

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# Rapid umbrella review

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## Background

Obesity is a public health crisis and rates have nearly doubled in recent decades; it is estimated that nearly [2 billion people are living with obesity worldwide](#). Excess weight is a significant risk factor for premature [death from non-communicable diseases](#). Despite these figures, policies exist that could prevent a further rise in obesity prevalence.

## Objective

To summarise the best available evidence on the impact of alcohol minimum unit pricing (MUP) on energy intake or body weight.

## Methods

We aimed to identify reviews that included quantitative research synthesis (ie, meta-analysis) of the effectiveness of alcohol minimum unit pricing on outcomes relevant to calorie consumption, energy intake, weight loss or obesity. If more than one review was identified that answered our research question, we aimed to identify the review that was reflective of the best evidence, based on (a) the year published and (b) the best fit to the research question.

### Eligibility criteria

*Types of review.* Due to the nature of this intervention, in that it is difficult to evaluate using traditional scientific methodology, we expected the number of eligible reviews or primary studies to be low. In the absence of studies that evaluate MUP using quasi-experimental methodology, we included studies that used simulation modelling to estimate the effects of the intervention on our outcomes of interest.

*Intervention.* Reviews were required to synthesise interventions involving any action taken by central government (in any developed country) that applied a minimum price to alcohol purchases.

*Comparator.* The counterfactual to taking action (ie, no action, business as usual).

*Outcomes.* To be eligible for inclusion, reviews needed to include either clinical outcomes (eg, weight, BMI, % fat change) or food intake outcomes (eg, energy intake, number of items consumed, food purchasing data) in the affected populations. Reviews that only included measures of intentions/plans for future behaviour were excluded due to evidence about the gap between intended and actual eating behaviour.

## Information sources and article selection

We followed search methods proposed in [Godin et al. \(2015\)](#), a peer-reviewed publication that describes methods for conducting rigorous and systematic grey literature searches. We engaged in the following steps: (1) grey literature databases (see [appendix](#)), (2) Google and Google Scholar search (see [appendix](#)), (3) targeted websites (see [appendix](#)), and (4) consultation with members of the project's Expert Advisory Group (EAG). The searches were run in January 2025.

## Screening

Due to the rapid nature of the reviews, a single reviewer screened titles and abstracts and discussed any uncertainty with a second reviewer. For relevant titles/abstracts, the full text was retrieved for full-text review. One reviewer reviewed the full texts and discussed uncertainties with a second reviewer.

## Assessment of methodological quality

We did not expect that the search would result in multiple high-quality studies that would require comparison. As per our protocol, we were led first by the suitability of the study to our research question. If there were multiple relevant studies/reviews identified, we selected the best available evidence according to our expert consultation with members of the EAG.

## Data extraction

The following information was extracted:

- Review/study characteristics: author/year, objectives, participants (characteristics, total number), setting/context, interventions of interest.
- Results: findings of the review and comments.

## Results

We identified an interrupted time-series study by [Mark Robinson et al. \(2021\)](#), which evaluated the impact of MUP on off-trade alcohol sales in Scotland. Another paper by [Ella Robinson et al. \(2020\)](#) was found, which modelled the potential impact of an MUP in Australia, but this paper was not used for our modelling work because Scotland was deemed more representative of the UK in its alcohol use and context than Australia.

### What were the article's methods?

In our protocol, we aimed to identify systematic reviews or meta-analyses on this topic where possible. However, none were found and the selected paper – [Robinson et al. \(2021\)](#) – utilised an interrupted time-series method. They explored the impact of an MUP, applying a strength-based floor price (of 50 pence per unit of pure alcohol) to all alcoholic beverages in Scotland.

Controlled interrupted time-series regression was used to assess the impact of MUP on alcohol sales among off-trade<sup>1</sup> retailers in Scotland in the year after the policy was introduced. England and Wales were used as the control group, as these countries did not have an MUP in place. The authors conducted adjusted analyses, in which they included household disposable income, on-trade alcohol sales and substitution between beverage categories as covariates. They measured weekly data on the volume of pure alcohol sold by off-trade retailers (expressed as litres of pure alcohol per adult) in Scotland compared to England and Wales between January 2013 and May 2019. The primary outcome measure focused on off-trade sales. This was because MUP legislation was not expected to affect on-trade sales as the price of alcohol was already higher for on-trade sales (for on-trade sales, the

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<sup>1</sup> 'Off-trade' refers to alcohol sold for off-premise consumption, eg, supermarkets, off-licences, shops. 'On-trade' would be those who sell alcohol for on-premise consumption, eg, bars, nightclubs, restaurants, hotels.

average price per alcohol unit sold was £1.80 in 2017, compared to £0.54 in off-trade sales).

## What did the review find?

In adjusted, controlled analysis, the authors found that the introduction of the Scottish MUP was associated with a 3.5% [95% confidence interval (CI): 2.2–4.9%] reduction in off-trade alcohol sales per adult after adjusting for the best available geographical control, disposable income and substitution. In unadjusted, controlled analysis they found a 3.3% reduction [95% CI: 2.1–4.4%].

In addition, in unadjusted, uncontrolled analysis where the authors employed separate models for Scotland versus England and Wales, they found that the introduction of MUP was associated with a 2.0% [95% CI: 0.4–3.6%] reduction in off-trade alcohol sales per adult in Scotland, while in England and Wales, they found a 2.4% [95% CI: 0.8–4.0%] increase during the same period. The reduction in off-trade alcohol sales in Scotland was driven by reduced sales of spirits, cider and perry beverage categories.

The authors concluded that after its first year, the implementation of an MUP in Scotland seemed to be associated with a reduction in off-trade alcohol sales.

## Appendix

### Appendix 1: Search strategy

Grey literature database	Search term	Notes
<a href="#">King's Fund Library</a>	'alcohol' AND 'price OR pricing OR minimum unit pricing OR MUP' AND 'weight OR obesity'	Sort by 'Relevance' and screen the first 10 pages
<a href="#">World Cancer Research Fund International (NOURISHING database)</a>	All policies in database	n/a
<a href="#">Gov.UK website</a>	'alcohol' AND 'price OR pricing OR minimum unit pricing OR MUP' AND 'weight OR obesity'	Sort by 'Relevance' and screen the first 10 pages
Google and Google Scholar	Alcohol minimum unit pricing (MUP) and obesity	Sort by 'Relevance' and screen the first 3 pages (for both)

#### Targeted website(s)

National Food Strategy website (and report)  
Obesity Health Alliance (Turning the Tide on Obesity) report