Monitoring and Evaluating Scotland’s Alcohol Strategy
Second Annual Report
December 2012
This report is the product of a collaboration between NHS Health Scotland and Information Services Division, part of NHS National Services Scotland, as part of Monitoring and Evaluating Scotland’s Alcohol Strategy (MESAS).

It should be cited as:

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Executive Summary

Background

The Scottish Government has put in place a Framework for Action to rebalance Scotland’s relationship with alcohol. The Framework for Action builds on the Licensing (Scotland) Act 2005 and is supplemented by the Alcohol etc. (Scotland) Act 2010 which together comprise Scotland’s alcohol strategy. A fourth strand, the Alcohol (Minimum Pricing) (Scotland) Act 2012 has yet to be implemented. NHS Health Scotland has been tasked by the Scottish Government to lead the evaluation of the alcohol strategy through the Monitoring and Evaluating Scotland’s Alcohol Strategy (MESAS) work programme. There is a commitment to providing annual reports from MESAS and in March 2011 the first annual report (the baseline report) was published.

The current report is the second annual report and provides an update of Scotland’s alcohol strategy, the evaluation plan and the analyses of price, consumption, affordability and alcohol-related harms detailed in the baseline report. Additionally, this report presents findings from the evaluation of the implementation of Alcohol Brief Interventions (ABIs) in selected settings.

Scotland’s alcohol strategy consists of a mix of legislation and policy actions aiming to reduce the harm caused by alcohol in Scotland. However, there are a wide range of influences on alcohol-related harms and consumption which are independent of the strategy, including the dynamic socioeconomic context.

Evaluation

The evaluation adopts a theory based approach that assesses implementation, compares observed changes with those expected and to trends elsewhere, and considers alternative explanations to judge the extent to which the alcohol strategy is plausibly contributing to changes in alcohol consumption and alcohol-related harm. The current report describes progress from the portfolio of studies detailed in the original evaluation plan. In addition, this report outlines existing studies that will enable the evaluation of Minimum Unit Pricing (MUP). The Alcohol (Minimum Pricing) (Scotland) Act 2012 requires that there is a review of the operation of MUP and its effect on a range of outcomes, including the impact MUP has had on the five licensing objectives (i.e. preventing crime and disorder, securing public safety, preventing public nuisance, protecting and improving public health, and protecting children from harm). At present the implementation of MUP is uncertain until the judicial proceedings are concluded. However, work is already underway (by MESAS and other collaborators) to ensure a robust and comprehensive evaluation plan is in place if and when MUP goes ahead.

Alcohol Brief Interventions (ABIs)

The national ABI programme in Scotland is unique in scale and in its national coverage. Although NHS annual performance targets for ABI delivery were met consistently, the overall reach of the programme to hazardous and harmful drinkers is likely to be limited. Due to a lack of outcome monitoring data, the impacts of the ABI programme were unable to be assessed, resulting in a need for modelling to measure the impact of ABIs on alcohol consumption and alcohol-related harm. Findings from exploratory modelling analysis suggest that potential benefits could exist, particularly in relation to recent reductions in alcohol-related harm. These potential benefits from ABIs are modest, however, when compared to the total burden of alcohol-related harm in Scotland.
Alcohol Consumption

The volume of pure alcohol sold per adult in Scotland increased between 1994 and 2005, followed by a broadly stable trend to 2009. Analysis of the most recent data shows that per adult sales decreased by 5% between 2009 and 2011. Although a similar decline was observed in England & Wales, the decline between 2010 and 2011 was greater in Scotland. Nonetheless, per adult sales of pure alcohol in Scotland remain a fifth higher than in England & Wales. This difference is largely attributable to higher sales of lower priced spirits (particularly vodka) through the off-trade in Scotland.

Alcohol Price and Affordability

The affordability of alcohol has increased by 45% since 1980. The main driver of increasing affordability has been rising disposable incomes. Since 2007, the alcohol affordability index has fallen due to declining incomes and an increase in alcohol prices relative to retail prices. This has coincided with the fall in alcohol sales in Scotland whereas the fall in sales in England & Wales predates the decline in affordability. Over the period as a whole, increases in affordability have been most marked in off-trade sales, particularly off-trade beer, due to slower rates of price increases for off-trade sales. The analysis of price distribution data demonstrates that 66% of off-trade alcohol sold in Scotland in 2011 was sold below 50 pence per unit (ppu). This compares with 81% in 2008. As the proportion of off-trade alcohol sold below the 50ppu threshold has diminished over time, it is important to continue to review the level of MUP, should MUP be implemented.

Alcohol-Related Harm

Mortality rates in Scotland are over two and a half times higher than they were in the early 1980s and remain nearly twice as high as those in England & Wales. In recent years a number of key indicators in alcohol-related morbidity and mortality have begun to show falls. However, these falls need to be interpreted with some caution as they are not necessarily consistent across all age groups, nor by gender or diagnosis. In addition, alcohol-related harm in Scotland is disproportionately experienced by those from more deprived areas (for both morbidity and mortality), although this inequality has also started to decline. Alcohol-related harm extends beyond health. In 2011, 50% of prisoners report being drunk at the time of their offence, while alcohol was a known factor in 73% of homicides (where the alcohol/drug status of the offender was known). Although there have been sustained improvements in many high level indicators of alcohol-related harm in Scotland in recent years (such as morbidity and mortality), for some indicators, alcohol-related harm is not improving as rapidly as for others or is worsening.

Conclusions

Although we are beginning to see improvements, Scotland still has a high level of alcohol-related harm compared to the rest of the UK and Western and Central Europe. Until further work is completed on the wide range of possible explanations, it is not appropriate to draw conclusions as to what factors, or combination of factors, are responsible for the recent improvements identified in alcohol consumption and alcohol-related harms in Scotland. Untangling the impact of the alcohol strategy’s package of measures and other influential factors will be complicated. The current report highlights the role for MESAS to continue to contribute to the understanding of the complex relationship between alcohol consumption and alcohol-related harm, and to assist interpretation in the evaluation of Scotland’s alcohol strategy.
1. Introduction

Background

In 2009, NHS Health Scotland was tasked by the Scottish Government to lead on the evaluation of Scotland’s alcohol strategy through the Monitoring and Evaluating Scotland’s Alcohol Strategy (MESAS) work programme. This is delivered in collaboration with NHS National Services Scotland Information Services Division. The objectives of MESAS are:

- To track the implementation, progress and reach of key actions in order to inform any necessary adjustments
- To assess the extent to which intended outcomes are achieved and are attributable to the actions being implemented by the Scottish Government
- To identify any unintended outcomes or displacement effects, including differential effects or outcomes which may impact on health inequalities

The current report

There is a commitment to providing annual reports from MESAS and in March 2011 the first of these (the baseline report) was published. Since then, a number of study specific outputs have been published, detailed in Chapter 2. The current report is the second annual MESAS report and it draws together and expands on these outputs. It provides an update of Scotland’s alcohol strategy, the evaluation plan and the analyses of price, consumption and alcohol-related harms detailed in the baseline report and the subsequent alcohol sales updates. In addition, this second report considers findings from the evaluation of the implementation of Alcohol Brief Interventions (ABIs) in selected settings.

The current report does not repeat the background and full descriptions of the alcohol strategy or the evaluation plan contained in the baseline report.

To ensure a comprehensive evaluation of Scotland’s alcohol strategy, the current report draws on findings from a range of available data sources and analytical techniques. All have their own strengths and limitations and consideration to these should be made when interpreting the findings presented in the current report. Routine data sources for public health surveillance (e.g. alcohol-related deaths and hospital admissions) are considered robust. An analysis of the validity and reliability of the alcohol sales data concluded that these provide good estimates of population consumption despite some potential sources of over- and under-estimation. The limitations of self-reported survey data (e.g. self-reported alcohol consumption) are well documented and as such should be treated with caution. This report also uses static arithmetic modelling to offer insights into the potential impact of ABIs. Modelling uses the best evidence available but is unavoidably limited by the assumptions made and this should be borne in mind when interpreting the findings. Each chapter provides a detailed description of the data sources used in the methods section. Where less robust data or analytical techniques have been incorporated, these limitations have been described and the implications on the certainty with which the interpretations are made have been considered.

Scotland’s alcohol strategy in 2012

Scotland’s alcohol strategy consists of a mix of legislation and policy actions aiming to reduce the harm caused by alcohol in Scotland. The first report detailed the main components of the three complementary strands that composed Scotland’s alcohol strategy
at the time: the Licensing (Scotland) Act 2005 (hereafter ‘Licensing Act’), the Framework for Action,\textsuperscript{4,5} and the Alcohol etc. (Scotland) Act 2010 (hereafter ‘Alcohol Act 2010’). Since the baseline report was published in March 2011 there have been three developments of note. First, the Alcohol Act 2010 has been implemented. Second, the ABI national health improvement performance target has been developed into a ‘standard’ that seeks to sustain delivery in the priority settings and extend delivery to other settings. Finally, legislation to implement minimum unit pricing (MUP) for alcohol sold through licensed premises in Scotland has been passed creating the Alcohol (Minimum Pricing) (Scotland) Act 2012 (hereafter ‘Minimum Pricing Act’). Box 1.1 summarises the key legislation, regulation and strategic initiatives that comprise Scotland’s alcohol strategy in 2012.

Box 1.1: The key features of Scotland’s alcohol strategy in 2012

<table>
<thead>
<tr>
<th>Licensing (Scotland) Act 2005 - Implemented September 2009</th>
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<tbody>
<tr>
<td>• Test purchasing</td>
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<tr>
<td>• Refusal of new licenses in areas deemed overprovided</td>
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<td>• Mandatory training for Licensing Board members, licence holders and staff</td>
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<tr>
<td>• Ban on irresponsible promotions in the on-trade</td>
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<td>• Restriction on place of display in off-trade</td>
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<td>• Public health objective for licensing</td>
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<td>• Licensing Standard Officers</td>
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<td>• Local Licensing Forums</td>
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<td>• Public right to object</td>
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<tr>
<th>Framework for Action (plus related actions) 2009 onwards</th>
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<tbody>
<tr>
<td>• Advice for parents and carers</td>
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<tr>
<td>• Diversionary activities for young people</td>
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<tr>
<td>• Initiatives to tackle alcohol-related violence</td>
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<tr>
<td>• Improve identification of those affected by parental substance misuse</td>
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<tr>
<td>• Education and awareness</td>
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<tr>
<td>• Routine screening and Alcohol Brief Interventions (ABIs) in the NHS, with funding, resources, training and a target for delivery</td>
</tr>
<tr>
<td>• Limited extension of ABIs to more settings</td>
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<tr>
<td>• Additional investment for treatment and care services</td>
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<tr>
<td>• Essential services review of specialist services</td>
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<tr>
<td>• A target for specialist alcohol treatment waiting times</td>
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<tr>
<td>• Establishment of Alcohol and Drug Partnerships</td>
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<tr>
<td>• Improved identification and treatment of offenders with alcohol problems</td>
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<table>
<thead>
<tr>
<th>Alcohol etc. (Scotland) Act 2010 - Implemented October 2011</th>
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<tbody>
<tr>
<td>• Ban on quantity discounts in off-sales</td>
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<tr>
<td>• Restrictions on alcohol display and promotions in off-sales</td>
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<tr>
<td>• Mandatory Challenge 25 age verification policy</td>
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<tr>
<td>• Powers to introduce a social responsibility levy on licence holders</td>
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<tr>
<td>• Health Boards to be notified of premises licence applications</td>
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<td>• Annual Chief Constable reports to be provided</td>
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<tr>
<th>Alcohol (Minimum Pricing) (Scotland) Act 2012. To be implemented</th>
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<tbody>
<tr>
<td>• A minimum unit price for all alcohol sold through licensed premises in Scotland</td>
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<tr>
<td>• Expiry of minimum unit pricing (MUP) after 6 years of implementation unless the Scottish Ministers make provision for it to continue after the end of 5 years implementation (the sunset clause)</td>
</tr>
<tr>
<td>• A report for Scottish Parliament on the operation and effect of MUP after 5 years of implementation (the review clause)</td>
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The Alcohol etc. (Scotland) Act 2010
The Alcohol Act 2010 came into force on the 1st October 2011. The most notable change brought about by the Act has been the ban on quantity based discounts in off-sales. This restricts multi-buy discounts such as 3 for the price of 2, or 3 for £10. It does not apply to multi-packs of alcohol if an individual unit of the product is not for sale in the same store.

There are also restrictions on the display and promotion of alcohol in off-sales. A preliminary descriptive analysis of the impact of the ban on quantity discounts was published in June 2012. It concluded that across a 33 week post-ban period (October 2011 to May 2012) there was a decline in the volume of pure alcohol sold off-trade in Scotland from the corresponding period the year before. However, there was also a decline during this period in England & Wales where the legislation did not apply. Data over a longer period post-implementation are required to assess the independent effect of the ban in Scotland. A report which analyses weekly sales data from October 2009 until October 2012 will be published in spring 2013.

Alcohol Brief Interventions health improvement standard
The baseline report described the NHS national health improvement performance target for the delivery of ABIs over the period 2008/09-2010/11. The target was extended for a further year 2011/12 before the delivery of ABIs became a performance standard for 2012/2013. A standard is considered to be of equal status to a target and a natural transition following the conclusion of a performance target. While a target should be considered as having yet to be delivered, a standard places emphasis on a national programme becoming standard practice and maintaining the level of implementation that has been achieved to date. NHS Boards are encouraged to maintain delivery in the three main priority settings (primary care, antenatal and accident & emergency (A&E)) and to develop delivery in wider settings in a structured and sustainable way, contributing to the evidence base through a programme of work evaluating ABIs in these wider settings. The long term aim of this work is to embed ABIs into routine practice as a cornerstone of efforts to reduce alcohol-related harm in Scotland.

Alcohol (Minimum Pricing) (Scotland) Act 2012
The Alcohol (Minimum Pricing) (Scotland) Act 2012 was passed by the Scottish Parliament in May 2012. It legislates for MUP to be applied to all alcohol sold through licensed premises in Scotland. The Scottish Government has proposed that the initial level of MUP will be 50 pence per unit (ppu), to be reviewed every two years. The Minimum Pricing Act includes a ‘sunset clause’ requiring that the legislation ceases after 6 years of implementation unless the provision is extended. There is also a ‘review clause’ which requires that the Minister presents to Parliament a report reviewing the impact of MUP after five years of implementation and before six years. NHS Health Scotland has been tasked with leading the evaluation of MUP through MESAS. Chapter 2 provides an overview of the developing MESAS evaluation plans to contribute to this review.

The date for implementation of MUP is uncertain. The Scotch Whisky Association, supported by other alcohol producers, have been granted a judicial review of MUP, currently planned for January 2013. The Scottish Government have indicated that MUP will not be implemented until any judicial proceedings are concluded.

The changing context
The success or otherwise of Scotland’s alcohol strategy will not be achieved in isolation, but will be influenced by external factors such as policies and activities in other related fields, regulation and legislation beyond Scottish Government control, and the wider macro-economic climate. The following developments have occurred since the publication of the baseline report.
Regulation beyond Scottish Government control
The regulatory framework for alcohol is shared between the Scottish Government, the UK Government and the European Parliament.

The UK Government is responsible for setting the level of alcohol excise duty. The amount of duty payable varies by drink type. Since 2008 the duty on all products has been increasing automatically each year at 2% above the rate of inflation.

Since the publication of the baseline report, the UK Government has revised their previously proposed plan for a ban in England & Wales on the sale of alcohol below the cost of VAT plus duty. Instead, in November 2012 the Home Office launched a consultation to seek views on new proposals for England & Wales including a minimum unit price of 45ppu, a ban on multi-buy discounts and a new health-related objective for licensing. The introduction of MUP in England & Wales at a specific level would potentially have two implications for the implementation and evaluation of Scotland's alcohol strategy:

- If the level of MUP in England & Wales was similar or higher to that in Scotland, the incentive for legal or illegal cross border purchase from England to Scotland would be reduced. Alcohol sold through unlicensed outlets, which may be counterfeit, stolen or smuggled, may increase given the bigger potential market.

- The evaluation planned for MUP in Scotland is a natural experiment that takes advantage of a difference in policy over time and between Scotland and England & Wales to provide a 'control' population not exposed to the policy change. If the implementation of MUP in England & Wales occurs around the same time and at a similar level as in Scotland then the potential for England & Wales to act as the control arm is lost. However, if it occurs considerably earlier or later than in Scotland there is opportunity to employ elements of a 'stepped wedge' design, whereby the intervention is rolled out sequentially with each area acting as a control for the other if the impacts occur relatively quickly and there is sufficient time delay between implementation in each jurisdiction. A large difference in the level of MUP would provide an opportunity to assess the relative impact. However, the scope to utilise this approach is limited by the fact that there are only two areas and implementation will not be random.

Wider Macro Socioeconomic Environment
In terms of consumption and alcohol-related harms, the wider macro-economic environment, and changes to the economy in particular, may have an independent effect. The economic contraction that started in 2008/09 is proving to be deep and sustained. Reduced disposable income is likely to make alcohol less affordable and may reduce population consumption, although this may hide differential impacts within certain groups. As the evaluation progresses, analyses of the socioeconomic context in Scotland and England & Wales to assess how this may be affecting alcohol consumption will be included.
2. The Evaluation Plan

The key evaluation questions for Monitoring and Evaluating Scotland’s Alcohol Strategy (MESAS) are:

1. How and to what extent has implementing the package of measures (taken together and/or individually) contained in the Scottish alcohol strategy contributed to reducing alcohol-related harms?
2. Are some (people and businesses) affected (positively and negatively) more than others?
3. How might the strategy be implemented differently to improve effectiveness?

The evaluation methodology is set out in the first annual report. It adopts a theory based approach to evaluation which entails setting out an expected ‘theory of change’ and then comparing it with the observed changes. The theory of change for the alcohol strategy was detailed in the first annual report and is summarised in Figure 2.1 below.

Figure 2.1: Evaluation theory of change for Scotland’s alcohol strategy

The current portfolio of studies

The original portfolio of studies for gathering the evidence required to support or refute this theory of change was also detailed in the first annual report. Since then, legislation to introduce minimum unit pricing (MUP) for alcohol sold through licensed premises in Scotland has been passed. The legislation includes a requirement for review of the impact of MUP on the five licensing objectives, on licence holders and producers of alcohol and may include the assessment of any differential effect by key characteristics such as age, sex, and socioeconomic deprivation. This chapter describes progress on the original evaluation plan and provides an overview of developing plans for the evaluation of MUP.
Study 1: This study was commissioned to assess whether the Licensing Act has been implemented as intended (compliance levels) in a way likely to achieve the licensing objectives and provide learning to inform improvement. It was extended to cover elements in the new Alcohol Act 2010. The final report will present a national overview of implementation with case studies providing detail in a sample of local Licensing Board areas. To date, two interim briefing papers have been published with the final report due in June 2013. Key themes emerging from this report will be included in the third annual MESAS report to be published in November 2013.

Study 2: This commissioned study, which assessed how Alcohol Brief Interventions (ABIs) have been delivered in the HEAT: H4 settings across Scotland, is now complete and the final report was published in September 2011. The study presented a national overview of implementation with case studies in a sample of Health Board areas providing additional detail. It aimed to determine to what extent the key elements are being delivered in a way that has been shown to work (in line with guidance) and with sufficient reach to influence outcomes at a population level, and to generate learning to improve implementation. Chapter 3 explains HEAT and the H4 target and provides an overview of the findings and learning so far before discussing implications for policy, practice and evaluation.

Study 3: This study will assess the extent to which the additional investment in specialist alcohol services has impacted on access to these services. It will be commissioned and commence in early 2013. Using a mixed methods approach, the study will assess the impact of these additional resources on the availability and usage of alcohol treatment and care services in Scotland. The study includes quantitative assessment of both alcohol and drugs services in recognition of the dual remit of the majority of service providers. The qualitative fieldwork will be focussed on alcohol and the impact of the specific additional investment over the last few years.

Study 4: This study will assess whether there have been any changes in self-reported knowledge about and attitudes to alcohol and how these might influence other outcomes. It will consist of secondary analysis of trends in existing survey data using, where possible, equivalent surveys in England & Wales for comparison.

Study 5: This study will assess whether there have been any changes in alcohol consumption, as well as the relationship between alcohol consumption and affordability. It will describe trends in price, affordability, sales (including low-cost sales) and alcohol consumption in Scotland and assess the impact that changes in the price of alcohol arising from policies such as MUP have on alcohol consumption. Data on the volume, type, strength and price of alcohol being sold through the on- and off-trade, and existing national survey data on purchasing and consumption, will be used, alongside data from England & Wales for comparison where possible. Chapters 4 and 5 update previous MESAS publications. A complementary study to assess the validity and reliability of the sales data as a measure of population consumption was published in March 2012. As mentioned previously, a preliminary descriptive analysis of the impact of the ban on quantity discounts was published in June 2012 with the full report due in 2013.

Study 6: This study was intended to assess the economic impact of the alcohol strategy on the alcohol industry in Scotland. In order to determine the feasibility of a robust and affordable study, a scoping study was undertaken and published in February 2011. This concluded that the complexity of the alcohol industry; the lack of timely, routine data; the cost and difficulty of obtaining bespoke data; and the likely small impact on the industry of the strategy then in place meant that the potential value of the possible study designs identified would not justify the estimated costs. A decision was made not to undertake a full study at the time. However, the legislation to introduce MUP in Scotland established the need to understand the impact on licence holders and producers of alcohol and this is being
considered through the process of the developing evaluation plans for MUP described below.

**Study 7:** This study assesses how changes in the level of alcohol consumption and drinking patterns are influencing alcohol-related harms. It will analyse trends in key indicators from routine data to examine the relationship between observed changes in alcohol consumption and changes in alcohol-related health, crime, community safety and educational outcomes. Differential impacts will be examined to assess the effect on health inequalities. Data from England & Wales will be used for comparison where appropriate. An update on trends since the baseline report published in March 2011 is contained in Chapter 6.

In addition to the studies undertaken in the MESAS portfolio, evidence on the implementation or impacts of the alcohol strategy will be gathered from other relevant and robust studies. Some of these additional studies will involve members of the MESAS project team working in collaboration with other researchers. There are likely to be other studies with no MESAS involvement. All will be critically reviewed and included as appropriate.

**Evaluation of minimum unit pricing for alcohol in Scotland**

The Alcohol (Minimum Pricing) (Scotland) Act 2012 described in Chapter 1 requires that there is a review of the operation of MUP and its effect on a range of outcomes. An evaluation plan is to be developed prior to implementation, with the review report presented after at least five years of implementation. This report must contain information on the impact MUP has had on the five licensing objectives: preventing crime and disorder; securing public safety; preventing public nuisance; protecting and improving public health; and protecting children from harm. The impact on alcohol licence holders and producers must also be considered, and assessment of any differential effect by key characteristics age, sex, socioeconomic deprivation and alcohol consumption is desirable. Scottish Government has tasked NHS Health Scotland to lead the development of the evaluation and report under the MESAS work programme.

As already described, the implementation of MUP is uncertain until any judicial proceedings are concluded. However, given the requirement for evaluation, work is already underway to ensure robust and comprehensive evaluation plans are in place if and when MUP goes ahead. The evaluation of MUP will be composed of existing MESAS studies, other existing studies and new studies developed as part of the MESAS programme or in collaboration with others.

**Existing studies to evaluate MUP**

**MESAS**

As described above, the MESAS programme already uses routinely collected data to monitor price, consumption and alcohol-related harms at a population level. These data will be used to provide the foundation for an evaluation to assess the impact of MUP. For example:

- Trends in the average price of alcohol sold in the on- and off-trade and the price distribution of alcohol (total and by drink type) sold in the off-trade, including comparisons with England & Wales, will be analysed. This will enable an assessment of whether there are changes in average prices and the availability of the cheapest alcohol following the introduction of MUP.
- Trends in the volume of alcohol (total and by drink type) sold in the on- and off-trade, including comparisons with England & Wales, will be analysed to assess the change in alcohol retail sales following the introduction of MUP. Sales data will be analysed alongside self-report survey data to determine if there are changes in drinking
patterns or consumption and whether such changes differ by age, sex and socioeconomic deprivation.

- Trends in alcohol-related harms (for all and by sub-groups e.g. age, sex and deprivation) will be assessed using routine data, including comparisons with England & Wales. The current focus in MESAS is on morbidity and mortality but, where national routine data are available, trends in other outcomes will be assessed.

However, a comprehensive evaluation of MUP will require additional studies. There is a need for more detailed studies that assess any differential impact of MUP on sub-groups of interest (age, sex, deprivation and alcohol consumption), on crime and public safety/nuisance, and on protecting children from harm. Information on the impact on alcohol licence holders and producers is also required. The MESAS project lead has formed collaborations with academics leading other existing studies that will contribute to the assessment of the impact of MUP. There are currently three known studies that will provide important evidence.

**Effects of Scottish Government changes in alcohol policy on consumption and purchasing of alcohol beverages by patients with alcohol-related harms**

A study led by researchers from Queen Margaret University has been underway since December 2011. It seeks to determine the impact of MUP on heavy drinkers in contact with the NHS through specialist services or general hospitals. It is using a longitudinal design to determine if MUP results in changes in consumption, type of beverage, price paid or substitution to industrial/illicitly produced alcohol or drugs in these drinkers, and whether any changes are differentially patterned (e.g. by deprivation).

**Evaluating possible intended and unintended consequences of the implementation of minimum unit pricing of alcohol in Scotland**

This study led by the Medical Research Council Social and Public Health Sciences Unit, in collaboration with researchers from other academic organisations, started in October 2012. The study aims to build on the existing MESAS programme to look at potential disproportionate attitudinal, behavioural and health effects by comparing the impact across different socioeconomic groups through three linked components:

1. A repeat cross-sectional audit of alcohol-related attendances and prevalence of hazardous drinking in emergency departments in Scotland and the North of England
2. A repeat cross-sectional survey of drinking behaviour in sexual health clinics in Scotland and the North of England (including possible displacement/substitution effects related to source of alcohol (legal and illegal) and/or use of other drugs)
3. Repeat cross-sectional public focus groups and key informant interviews on experiences of, and attitudes to, MUP

**Alcohol Policy Interventions in Scotland and England (APISE)**

This collaborative study is being led by the University of Stirling with researchers from the University of Sheffield, Open University and University of Wollongong. This study was not established to evaluate MUP but may be useful. It will use a longitudinal survey of drinkers together with analysis of the policy context and exploratory qualitative research to determine change over time and between countries. Funding has been secured from the National Prevention Research Initiative (NPRI) for a baseline in autumn 2012 with a follow-up 12 months later. If additional funding is secured, further waves will be conducted after the implementation of MUP to contribute to the evaluation of MUP.

**Potential new studies to evaluate MUP**

A comprehensive evaluation of the extent to which MUP contributes to a reduction in alcohol-related harm across the full scope of the licensing objectives will require studies additional to the current MESAS programme and those outlined above. MESAS will seek to address these matters, and aims to bring in additional expertise and resources by
collaborating with others. Details of an evaluation plan and the governance arrangements will be published before the implementation of MUP.

**Publication plan for 2013**

The MESAS programme will publish the following in 2013:

- April 2013: Impact of the ban on quantity discounts
- June 2013: Final report of the evaluation of the implementation of the Licensing (Scotland) Act 2005
- November 2013: 3rd MESAS annual report

Other outputs may be published during the year as appropriate. There is also a commitment to publish a plan for the evaluation of MUP before the new legislation is implemented.
3. Alcohol Brief Interventions

Introduction

One of the core intermediate outcomes in the theory of change that underpins Scotland’s alcohol strategy is improved support for people with alcohol problems or at risk of alcohol-related harm. There are three complementary strands for action to achieve this intermediate outcome: the delivery of evidence-based screening and alcohol brief interventions (ABIs); the delivery of specialist treatment services; and an integrated care pathway for offenders, the latter being a group with recognised high levels of alcohol misuse and among the least likely to access appropriate services. Figure 3.1 shows the nested theory of action that proposes how these actions are linked to the intermediate outcome of improved support.

Figure 3.1: Support for individuals in need nested logic model

The aim of this chapter is to focus on the first strand, that is, delivery of screening and ABIs in evidence-based settings. Its objectives are to describe the background to the ABI programme in Scotland, analyse the Monitoring and Evaluating Scotland’s Alcohol Strategy (MESAS) commissioned evaluation of ABI delivery to assess the success or otherwise of achieving the outcomes identified in the theory of action above, and assess the likely impact of the programme so far on the population outcomes of reduced consumption and reduced alcohol-related harms. The other actions in the logic model, detailed in Figure 3.1, have either been addressed elsewhere or will be considered in future MESAS annual reports.
Background

One of the most effective evidence-based interventions for those drinking at hazardous or harmful levels\(^a\) is an ABI.\(^17\) There is no formalised definition of an ABI and they have been applied over time in ways which vary in length, content and structure. In Scotland, an ABI has been defined as a short, evidence-based, structured, and non-confrontational conversation about alcohol consumption.\(^18\) An ABI seeks to motivate and support an individual to think about and plan changes in their drinking behaviour in order to reduce their consumption and their risk of harm. ABIs provide more than just advice and typically use particular techniques to initiate behaviour change. In general, effective delivery of an ABI involves motivational interviewing and FRAMES (Feedback, Responsibility, Advice, Menu, Empathic, Self-efficacy) principles.\(^17,18\) An ABI can take as little as 5-10 minutes to deliver and there is currently no firm evidence to suggest any additional effectiveness from longer or even follow-up sessions in reducing alcohol consumption when compared with single sessions for hazardous or harmful drinkers.\(^19\)

There is a strong body of evidence for the effectiveness and cost-effectiveness of ABIs in reducing alcohol consumption among hazardous and harmful drinkers for up to 12 months.\(^18,19,20,21\) Much of the ABI evidence to date lies within studies conducted in the primary care setting and, to a lesser extent, accident and emergency (A&E) and antenatal care settings. There is no substantial evidence for the effectiveness of ABIs in reducing alcohol consumption among those who are alcohol dependent\(^17,18\) and these individuals continue to be best served by treatment from specialist alcohol services. Moreover, there is currently a lack of evidence for their effectiveness among females, young people, older adults and some black and minority ethnic groups.\(^22\)

To address the significant burden of alcohol misuse in Scotland, a national clinical guideline, SIGN 74, was published in 2003. It recommended the delivery of screening and ABIs for harmful and hazardous drinkers in primary care, targeting those presenting with alcohol-related clinical presentations.\(^18\) It also highlighted the potential for ABI delivery in A&E departments and antenatal settings. However, limited implementation of SIGN 74\(^23\) and increases in alcohol-related harm in Scotland\(^24\) led the Scottish Government to set a national ABI ‘HEAT’ (Health Improvement, Efficiency, Access and Treatment) target based on the SIGN 74 guideline, supported by funding to reimburse for delivery.

To support this, health boards were also provided with access to a free national workforce development programme and written materials and resources to provide leadership, co-ordination and additional training if desired. Thus, the HEAT: H4 target and funding was intended to provide the incentive for delivery, while the training and materials were intended to increase quality. The programme as a whole, therefore, is designed to increase the reach of quality ABIs delivered in NHS settings to hazardous and harmful drinkers, to provide support to those who could benefit, and increase detection and referral of dependent drinkers. There was also a considerable increase in funding for services providing specialist alcohol treatment and support.

As part of the evaluation of Scotland’s alcohol strategy, MESAS commissioned an evaluation of the ABI HEAT: H4 programme\(^12\) (hereafter ‘the national ABI evaluation’).

\(^a\) The term ‘hazardous drinking’ is used to describe a pattern of alcohol consumption that increases someone’s risk of harm, while harmful drinking is defined as a pattern of alcohol consumption that is causing mental or physical damage.\(^22\)
Methods

The analyses in this chapter are based on data from a range of sources: Scottish Government HEAT: H4 target background information;\(^{25}\) national statistics of ABI delivery in Scotland published annually by the Information Services Division (ISD) of National Services Scotland;\(^{26}\) the main findings from the national ABI evaluation; and the results of exploratory modelling conducted using the Health Inequalities Intervention Tool for Scotland (HITS).\(^{27}\)

The HEAT: H4 target number was based on [General] Practice Team Information (PTI) data which estimated the number of primary care patients requiring to be screened, based on different clinical presentations by patients where the role of alcohol should be considered (SIGN 74 - Annex 2). These data show that 190 presentations annually per 1,000 population (19% of the population aged over 16 years) would meet the screening criteria (n=797,063), 25%\(^b\) of whom would be likely to screen positive and would therefore require an ABI (n=199,266). A cumulative target of 75% of those requiring a brief intervention (149,449 in primary care, A&E and antenatal) receiving one between 2008/09 and 2010/11 was set.

The national ABI evaluation involved the collection of both quantitative and qualitative information, including strategic and operational level data, and incorporated the views of national key informants, board level strategic and operational/training leads, practitioners involved in delivering screening and delivery of ABIs, and patients who had been offered an ABI. The national ABI evaluation was designed to focus on implementation in primary care (where most activity was taking place) but, where possible, to include data and analysis relevant to A&E and antenatal settings. Three case study health boards were identified to provide more detailed insight into the delivery of ABIs and were selected to represent both urban and rural contexts and different models/approaches to delivery. The lack of electronic quantitative data relating to delivery of ABIs in A&E and antenatal settings in the case study areas meant that only qualitative data could be collected in relation to these settings.

The HITS is a new method that offers insights into the potential impact of health improvement interventions on overall population health and health inequalities. It takes the form of a static arithmetic model which uses the best available data on population demographics, prevalence of health behaviours, effectiveness of interventions and health impacts, to calculate the potential outcomes of a specified level of intervention, in this case ABIs.

The HITS model is based on multiple data sources and makes a number of assumptions. The following assumptions are particularly salient to this chapter:\(^c\):

- In terms of eligibility for ABIs, all calculations are based on the assumption that the target age group for the interventions will be all adults aged >16 years. Eligibility for ABIs is defined within the HITS model as being all harmful/hazardous drinkers within these age limits.

- In relation to effectiveness, the tool assumes the average change in alcohol consumption resulting from ABIs is a decrease of 38g (approx. 4.75 units) in average weekly consumption. This figure is taken from a meta-analysis presented in the Cochrane Review by Kaner et al.\(^{19}\)

- The rate of compliance is based on an approximation of loss-to-follow up data reported in the same Cochrane Review. The meta-analysis from the review reported an overall loss to follow up of 27%; however, the three studies within this

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\(^b\) 25% estimate based on 2003 Scottish Health Survey estimates of hazardous and harmful drinkers adjusted for under-reporting.

\(^c\) A full and detailed account of the methods and assumptions used within the ABI HITS is available at: http://www.scotpho.org.uk/comparative-health/health-inequalities-tool/intervention-tools
meta-analysis which score more than 10/12 for being an 'effectiveness' as opposed to an 'efficacy' study and which relate to UK populations all report loss to follow up greater than this (34%, 46% and 29% respectively), and so a more conservative approximation of 35% "loss to follow up" is assumed for the HITS model. The resulting 'success rate' of 65% is used within HITS, and it is assumed that the above estimate of a 38g per week decrease in alcohol consumption applies only to this group. Since loss-to-follow-up is used as a proxy for non-compliance, it is assumed that the 'unsuccessful intervention' group (35% of subjects) receive no benefit from the intervention.

- The model crudely assumes that a successful intervention will confer a decrease in mortality rate of between 5% (approximated from age and risk factor adjusted data reported in the Midspan collaborative cohort study) and 10% (approximated from age-adjusted data reported in the same report). The lower (5%) figure is the more plausible of these two. The Midspan report is based on men aged 21–64 years at screening in 1970–1973 with median follow-up of 29 years. The HITS model further assumes that this same mortality reduction will be seen across all age, sex and Scottish Index of Multiple Deprivation (SIMD) groups.

- The model assumes that the full beneficial health impact from ABIs will be seen in the first year (for example, that the 5% - 10% reduction in mortality is instantaneous for the individuals who reduced their consumption by 38g per week). However these mortality reduction figures are derived from average impacts estimated over much longer follow up periods in cohort studies. This reflects the time lag that occurs for most conditions between reducing consumption and achieving health benefits. The figures for annual deaths avoided should therefore be treated as the likely annual number of deaths avoided in the long term. This obviously also assumes that reductions in consumption are maintained over this longer period.

- The HITS model estimates reductions in the annual death rates in the long term. In this analysis, all ABI interventions over a 4 year period are included. The resulting estimates of deaths and hospitalisations avoided reflect annual estimates for this whole cohort in the long term.

Results

The original HEAT: H4 target of delivering 149,449 ABIs delivered in primary care, A&E and antenatal by March 2011 was achieved (Figure 3.2) and extended for a further year to help local health boards embed screening and ABIs into routine practice, and to support their development in other settings. This extension year target of 61,081 was also achieved and subsequently the target was replaced by a HEAT standard. A standard is considered to be of equal stature to a target and a natural transition option following the conclusion of a HEAT target. While a target should be considered as having yet to be delivered, a standard places emphasis on a programme of work becoming routine practice and maintaining the level of work that has been achieved to date. NHS health boards are held to account on both HEAT targets and standards, notably through their Annual Reviews.
Figure 3.2: HEAT: H4 Target, Cumulative Annual ABI Delivery Totals, 2008-2012

The national ABI evaluation found considerable degrees of variation across Scotland in organisational structures and models of delivery. However, a number of common features were also identified. Those which appeared to support implementation generally included:

- Availability of funding
- Nationally co-ordinated and locally supported training opportunities
- National, health board and setting level ‘leaders’ able to support and encourage implementation

Perceived barriers included:

- Lack of ‘lead in’ time to set up organisational structures
- Competing priorities
- Lack of adequately trained staff
- Maintaining trained staff levels
- Mechanisms for recording delivery

In addition, the within-setting and across-board differences and difficulties in recording ABI delivery made it difficult to determine accurately or compare which practitioners were delivering and who the programme was reaching.

**Increased incentive to deliver ABIs in NHS settings**

Prior to the setting of the HEAT: H4 target, delivery of ABIs in Scotland was limited to a small number of health boards. Since the HEAT: H4 target was set, every health board in Scotland has now developed an ABI programme. Therefore, the key motivator for ABIs to be delivered in NHS settings was undoubtedly the HEAT: H4 target itself.
Financial incentives were also used by health boards to leverage involvement of General Practitioners (GPs) to support delivery in primary care. These payments were agreed through Local Enhanced Service (LES) contracts which included fees, targets and bonuses to engage, retain and incentivise involvement and performance. LES contracts varied across the country and encouraged different elements of delivery. Some were structured to ensure identification took place (by attaching payments to screening), others paid for the delivery of the ABIs and a few attached fees to follow-up to ensure there was a method of recording outcomes and impact of the intervention. Unsurprisingly, data from the three case-study areas highlighted how the payment trigger affected the service that was delivered. For example, where a payment was attached to follow-ups, telephone call-backs and invitation letters were used to encourage patients to return to the practice. Where payment was exclusively focused on the delivery of ABIs, emphasis was placed on promoting opportunities for screening and ensuring those that screened positive received an ABI. Furthermore, where payment was linked to the ability of practices to screen a specific percentage of their practice population, those practices made extensive use of patient clinics to generate the screening numbers required to meet the target for payment. This 'screening by clinic' method helped achieve targets for screening numbers, but ultimately resulted in above average rates of negative screens experienced, potentially de-motivating staff involved in delivery.

The variety of payment structures was considerable and the national ABI evaluation found mixed views among participants as to whether this diversity was useful and appropriate. Furthermore, some health board ABI leads reported resentment amongst other partners who were delivering screening and ABIs but who did not receive additional payment, such as staff working in A&E or antenatal settings.

**Increased quality of ABIs delivered in NHS settings**

To support the increase in the quality of ABIs delivered in NHS settings, a number of resources were developed to help health boards implement their programmes locally, such as a national minimum dataset, training package and professional materials. Collectively, these resources aimed to ensure ABI delivery was robust, consistent and evidence informed. As part of this package of support, NHS Health Scotland was commissioned by the Scottish Government to develop a national ABI training programme for professionals. A 'train the trainer' model was developed where professionals were trained to cascade ABI delivery training to practitioners within their local areas. Some health boards also commissioned additional training support from external consultancies.

This cascade model was chosen on the basis that it is a cost-effective approach that has the potential to train a greater number of practitioners and thus support ABI delivery to large numbers of patients in a relatively short timeframe. It is widely used across other healthcare disciplines, with mixed results. Limitations of the approach were highlighted by all levels of participants in the national ABI evaluation, for example that roll out of training did not always happen and, where it did, knowledge transfer could be limited to practical instruction on accessing screening tools and recording requirements rather than skills development.

National training data figures show a total of 8,267 HEAT practitioners were trained across the duration of the HEAT: H4 target (2008-2011). It is difficult to determine the effectiveness of the cascading model in reaching those practitioners best placed to deliver ABIs in Scotland, but it is estimated that 35% of primary care/‘Keep Well’ doctors and 31% of primary care/‘Keep Well’ nurses were trained. The training sessions themselves varied across health boards and settings in response to issues associated with recruitment. In primary care, a range of courses were delivered, from half-day events up to two day

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*d‘Keep Well’ is an NHS-led health improvement programme aimed at tackling inequalities in cardiovascular morbidity and mortality and implemented through primary care.
*Data provided from Training Delivery Report submitted to NHS Health Scotland, March 2011 reporting on training delivery in HEAT and non-HEAT settings from 1st April 2008 to 1st March 2011.*
courses, while in A&E shorter one hour awareness raising sessions were used to adapt training around staff availability. The national ABI evaluation found that practitioner buy-in to delivering the training in practice was easier if they had accessed the longer, more intensive training sessions and those who had not accessed more intensive training were more likely to question their competency in carrying out ABI related work. This may explain some of the difficulties associated with implementation in A&E, where training sessions were shortest.

The implementation models for delivery also differed across the country. Encouragingly, the national ABI evaluation concluded that ABIs in primary care had been delivered opportunistically and, on the whole, in line with the SIGN 74 guideline and national ABI guidance as part of a front-line, clinical consultation by GPs and practice nurses using validated screening tools. However, the national ABI evaluation also found examples where staff had gone beyond the recommended guidance. Some practices/areas struggled with the SIGN 74 based targeted approach and used blanket screening instead. Others reported deliberately targeting young people as they felt this was a ‘priority group’ that would benefit from the intervention, even though there is no evidence, to date, of effectiveness for the delivery of ABIs to young people.

Some health board leads also reported that existing models of practice that pre-dated the HEAT: H4 target, which tended to focus on dependent drinkers, were difficult to change and as a result practitioners found it difficult to differentiate between hazardous, harmful and dependent drinkers. As highlighted earlier, there is no substantial evidence for the effectiveness of ABI in reducing alcohol consumption among those who are alcohol dependent. However, recent evidence has emerged challenging this position and the use of ABIs in those drinking at levels associated with dependency is a priority area for further research.

Evidence from the case study areas also revealed an interesting variation in relation to an individual receiving multiple ABIs. The data indicate that sizable proportions (up to 25%) of people were seen more than once for an ABI related reason within 12 months, suggesting that the national ABI delivery figures are unlikely to represent only ‘unique’ individual cases. While the SIGN 74 Guideline does not indicate that there are possible contra-indications associated with the receipt of multiple ABIs, the long-term effectiveness of repeated interventions is unknown and any repeated delivery reduces the potential for the target to affect population outcomes.

Increased detection and referral of dependent drinkers
The theory of change hypothesised that increased use of validated screening tools through the ABI programme would increase detection and referral of dependent drinkers. Quantitative data to assess this was not available, but the national ABI evaluation revealed that perceptions of the impact of ABIs on referrals to specialist alcohol treatment and care services varied widely across the country. Some health board leads noted increases in the number of patients referred to specialist services, suggesting that this seemed directly associated with implementation of the HEAT: H4 target and associated workforce development and training, while others indicated that, contrary to their expectations, they had not experienced a noticeable change in referrals to specialist services since the introduction of the HEAT: H4 target.

Where referrals were thought to have increased, views on how quickly and when referrals had actually increased varied. Some health boards reported rapidly increasing rates that seemingly corresponded directly to the HEAT: H4 target implementation, while others described slow and steady increases taking place over a number of years. The increase in referrals was not viewed as problematic as health boards had prepared for them through building capacity in specialist services using the additional alcohol monies or by improving

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1 Where it was recorded that the patient was either asked about their alcohol consumption, screened, given an ABI or followed-up.
care pathways between GPs and specialist services. In contrast, while evidence from the primary care practitioner interviews in the national ABI evaluation case study health boards revealed that the ABI programme had encouraged greater dialogue between patients and practitioners regarding alcohol consumption, few practitioners felt that it had resulted in them making more referrals to specialist alcohol addiction services or community services. Interviews with antenatal respondents in the three case study areas suggest that the ABI programme did not boost numbers of referrals from antenatal settings to specialist alcohol services either. There were, similarly, no reports in the three case board areas of the ABI programme in A&E settings increasing demand for such services.

Some participants felt that referral data alone are inadequate to determine what impact, if any, screening and ABIs had made and that in order to identify the long-term impact, follow-up on the person’s pathway and outcome was necessary. Indeed, many board participants were hesitant in assuming a causal relationship between the ABI implementation and an increase in specialist referrals, despite reporting referral numbers rising in their board area, especially in ‘lower-tier’ services.38

**A&E and Antenatal**
The vast majority of activity which has taken place over the life-cycle of the ABI programme has taken place in primary care and hence this chapter has concentrated on the delivery in this setting. However, the HEAT: H4 target also aimed to increase delivery in A&E and antenatal and it is important to briefly consider these settings.

Both settings faced a number of issues from the outset. Indeed the national ABI evaluation reveals that both national and local participants felt that implementing in three priority settings concurrently potentially ‘diluted’ implementation efforts and sometimes impacted negatively on the programme overall, particularly in areas that experienced implementation challenges. These challenges were often related to implementation in A&E, where particular difficulties were encountered.

Views from participants in the national ABI evaluation were mixed as to the appropriateness of A&E as a setting for ABI delivery. Some felt that A&E provided an appropriate setting for the opportunistic screening, but not the ABI component due to reasons such as limited time to deliver the intervention, patient competency to engage with the intervention, and competing priorities. These views reflect the evidence base which does provide some support for the effectiveness of screening/ABIs in A&E and linked services, and their incorporation into routine clinical practice17,39,40 but provides limited evidence for the effectiveness of delivering ABIs in A&E during the initial contact. Some studies show positive outcomes when screening takes place in A&E with the ABI delivered at follow-on appointment with an alcohol health worker.28,41 Therefore the HEAT: H4 guidance adopted a flexible approach that allowed for screening and ABI delivery together within A&E or a screening and referral model where patients would be identified within A&E and referred on to a linked service (e.g. fracture clinic, minor injury units, alcohol liaison nurse) for delivery of the ABI during follow-on care. The national ABI evaluation suggested that the screening/referral model was the most feasible and therefore the most commonly adopted by health board areas, but had mixed success. Some board leads reported <50% of people attending their return A&E appointments for the ABI with the approach particularly vulnerable to attrition, while others reported up to 60% take-up of follow-on appointments.

Implementation has been slowest in antenatal settings for a number of reasons, most notably because there was such limited current practice or prior experience to draw on. This meant many of the delivery models had to be piloted locally before more widespread roll-out. Determining accurate levels of current drinking from pregnant women also proved difficult, probably due to the social stigma associated with drinking whilst pregnant which leads most women to report abstinence when asked about current consumption.42
Despite these challenges, the national ABI evaluation reported ‘considerable enthusiasm’ for ABIs in antenatal settings with some board leads highlighting their work in this area as ‘particularly successful’. Methods of implementation varied, including use of pilots in some areas, or other areas ensuring everyone was trained before any roll-out of the programme commenced. Despite this variation in implementation, the actual delivery models for ABIs in antenatal settings were relatively consistent across the country with the most feasible model involving screening women at their initial appointment, usually within seven weeks of gestation. This approach benefited from the ‘Keeping Childbirth Natural and Dynamic (KCND)’ policy, introduced at the same time as the HEAT: H4 target, which recommended that women should see a health professional within the first seven weeks of pregnancy and that this first contact should be with a midwife, if feasible. This allowed the screening and intervention to be delivered opportunistically by the same person on the same day, in line with best practice outlined in SIGN 74. KCND also recommended that, in situations where alcohol was not explored at the first appointment or an ABI is indicated but not delivered, this should be carried out at the next available appointment, ideally before 10 weeks, to gain maximum impact.

In response to the challenge of determining accurate levels of alcohol consumption from pregnant women, some midwives reported assessing pre-pregnancy drinking as well as current habits to establish dialogue on the subject of alcohol, with a view to using advice on future drinking as an influence on current drinking. The merits or unintended consequences of this alternative approach have yet to be fully investigated, but certainly warrant further study given the limitations associated with screening pregnant women on current drinking. In particular, it would be interesting to look at the short and long term outcomes of this approach, both on the mother and the child, during and after pregnancy.

Wider settings
An unexpected consequence of the ABI programme in Scotland has been the extension of screening and brief intervention practice into a number of other settings beyond those within the scope of the original HEAT: H4 target. These ‘wider’ settings include other health services such as general hospitals, sexual health/genitourinary medicine (GUM) clinics, community pharmacy, mental health and dentistry, as well as other areas where hazardous and harmful drinkers are considered to be prevalent including criminal justice, social work and educational settings. This spread was often justified as a way to address the ‘gaps’ stakeholders associated with the targeted approach in primary care i.e. low representation of key target groups such as young people. In response, the Scottish Government announced that wider setting ABI delivery would be supported, with the HEAT standard making allowance for the remainder of ABIs (above the expected 90% in the priority settings) to be delivered in wider settings in accordance with national guidance.

The priority settings for HEAT: H4 were chosen on the basis that they had the strongest evidence of effectiveness and/or plausibility. Implementation of ABIs in wider settings, ideally, should follow similar principles i.e. in the absence of evidence of effectiveness, other evidence (e.g. epidemiological), plausible theory and ethical principles should be consulted and present a strong case such that practice is ‘evidence informed’.44

Once the case has been established, the delivery model should be piloted and only rolled out more widely if the delivery model is deemed to be feasible and using learning from the pilot phase. The national ABI evaluation itself noted the use of pilots as a facilitator for implementation, enabling staff to try out approaches before mainstreaming. National Institute for Health and Clinical Excellence (NICE) Public Health Guidance on preventing the development of hazardous and harmful drinking advocates the delivery of ‘brief advice’ in wider settings where professionals have contact with those aged over 16 years and recommends formal evaluation within the commissioning framework so that alcohol interventions and treatment are routinely evaluated and followed up.22
Safer drinking patterns and a reduction in individual and population level consumption

Due to a lack of follow-up data collected by local health boards, the national ABI evaluation was unable to provide any indication of the ABI programme's impact on both individual and population outcomes. However, using data from additional sources and the HITS, it is possible to estimate the reach of the national ABI programme and to explore its potential impact on the population outcomes of reduced consumption and reduced alcohol-related harms via a modelling approach (Table 3.1).

The data included within the model is based on a total of 272,040 ABIs having been delivered between 2008 and 2012. Data collected from the case study areas in the national ABI evaluation suggests it is plausible to assume that ~25% of the total number of ABIs delivered were actually repeat interventions to the same individuals. It is recognised that any repeated delivery reduces the potential for the target number to affect population outcomes. Using this as a guide, it could be assumed that only 204,030 'unique' individuals (75% of total ABIs delivered) received an ABI over the four year period between 2008 and 2012. In addition, anecdotal evidence from key stakeholders within the national ABI programme suggests that 75% of overall ABI delivery was achieved in primary care. With this in mind, it is assumed that only 153,023 individuals (75% of the estimated number of 'unique' individuals) received an ABI in primary care over the four year period between 2008 and 2012. It is for these unique individuals, receiving one-off opportunistic ABIs within primary care, that the evidence is strongest.

Using an estimate of 153,023 ABIs delivered, around three-quarters (77%) of the population requiring screening and who would be likely to screen positive in primary care, as estimated by the Scottish Government (n=199,266), are likely to have been reached. In contrast, using the estimates of the number of hazardous and harmful drinkers from the Scottish Alcohol Needs Assessment (n=1,172,200), or the estimates of the numbers eligible for intervention used in the HITS tool (n=967,237), only around 1 in 7 (13-16%) have been reached in the past 4 years.

The suggested 65% success rate from the Cochrane review is likely to be optimistic in the Scottish context. This is due to the substantial uncertainty about the impact of ABIs in practice in Scotland. As detailed in the methods section in this chapter, the Cochrane review shows that the trials which were most embedded within routine practice, rather than as part of a specific trial (and therefore which are more akin to evidence of 'effectiveness' rather than 'efficacy'), had loss to follow up of about 35%. In Scotland, the implementation of ABIs has been different to that in the original trials, taking place in other settings and for other population groups. We have therefore provided a much wider, and lower, range of sensitivity analyses to reflect the uncertainty of this estimate. Table 3.1 presents the modelled population impacts for success rates ranging from 15% to 65%.

With the most conservative estimate of a 15% success rate, there is little impact on average (mean) weekly population alcohol consumption or on life expectancy. However, there is a notable impact on prevention of deaths and alcohol-related hospital admissions, with between 14 (based on a 5% mortality reduction) and 29 (based on a 10% mortality reduction) deaths and around 90 alcohol-related hospital admissions prevented per year in the long term. Impacts vary between genders with almost twice as many deaths and three and half times as many alcohol-related hospital admissions prevented in males, per year, compared to females. Adjusting the success rate to 25% effectively increases the number of deaths prevented by between 9 and 17 and alcohol-related hospital admissions by 60, as well as further small reductions on average (mean) weekly population alcohol consumption. These increases in positive outcomes hold relatively consistent for each 10% upward adjustment to rates of success.
Although encouraging, the modelled estimates in Table 3.1, including those at the more modest levels of success, should be interpreted with caution for a number of key reasons. First, the HITS applies the same success rate and effect size to both males and females despite the Cochrane review data on which it is derived from concluding that ABIs have beneficial effects for men, but not for women. This would tend to lead to an over-estimate of the impact of ABIs. Indeed, the tool takes no account of any individual professional or patient characteristics which may influence the effectiveness of the intervention. Second, the tool assumes that health benefits will arise within the first year, including a reduction in mortality. It is unable to model robustly any impact beyond the first 12 months due to lack of evidence, particularly evidence to suggest any sustained benefit from ABIs beyond 12 months post intervention. Third, the tool assumes a successful intervention will confer a decrease in mortality rates of 5-10%. This is an approximate estimate based on a series of inferences applied to published data from the 'Midspan' collaboration cohorts, which present relative mortality rates by alcohol consumption category for men from work-places in west & central Scotland. Further, it is unlikely that these benefits will be fully achieved unless reduced consumption is maintained over the long term. Fourth, the tool assumes that the relative risk of alcohol-related hospital admissions in individuals who are eligible for ABIs is 2.0. This is a very approximate estimate derived through a series of inferences applied to published data that report the association between alcohol-related hospital admissions and alcohol consumption levels using data from the Scottish Health Survey. For the 38 g/week change in alcohol consumption expected as a result of an ABI, the HITS assumes the relative risk of an alcohol-related hospital admission decreases from 2.0 to 1.5. This is an approximate estimate based on the assumption that although the risk of an alcohol-related hospital admission will decrease compared with no change, it will still be greater than the population average for non-hazardous/non-harmful drinkers. Fifth, the tool uses four-years’ worth of data to model the impact of ABI delivery in the long term. Producing separate models for each of the four years of ABI delivery cumulatively produces the same long term result as the combined four year analysis. Sixth, and finally, this analysis has assumed that there was no ABI practice in Scotland prior to the launch of the HEAT: H4 target, but it is known that at least some health boards had initiated ABI work through the Scottish Enhanced Services Programme which pre-dated the HEAT: H4 target. In addition, it has been a normal part of clinical practice to talk to patients about raised Gamma-glytamyl transeptidase (GGT), smelling of alcohol, unexplained injuries etc. and advise on alcohol intake, for quite some time. However, this would not necessarily have been recorded, and is unlikely to have been identified as an ABI. This limitation would also tend to lead an overestimate of the impact of ABIs.

The lack of a comprehensive and robust evidence base to support estimates of the impact of ABIs on consumption and harms mean that assumptions must be made based on the best available evidence. It is important to recognise that these assumptions introduce a degree of uncertainty into the HITS model and that the resulting figures should be treated as broadly indicative rather than as precise estimates. Despite these caveats, the model provides the best available means to estimate the discrete contribution ABIs make to changes in population alcohol consumption and alcohol-related harms. The assumptions in the model are explicit, based on the best available evidence and can be tailored to the local context by amending the underlying assumptions (as noted above). The largest uncertainty in the model relates to the lack of a clear effect size for ABIs in the Scottish context – an uncertainty which is unlikely to be diminished in the near future. Thus, despite these uncertainties the estimates provided by the HITS model are likely to remain the best available in the near future.
Table 3.1: Modelled impacts of ABIs in Scotland 2008-2012, sensitivity analysis

<table>
<thead>
<tr>
<th>Number of ABIs delivered</th>
<th>153,023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Success Rate</strong></td>
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</tr>
<tr>
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<tr>
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<td>45%</td>
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<td>55%</td>
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<tr>
<td>65%</td>
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<tr>
<td><strong>Number Successful</strong></td>
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<td>99,465</td>
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<td><strong>Impact</strong></td>
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<tr>
<td>New modelled mean weekly alcohol units (HITS)</td>
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<tr>
<td>New modelled life expectancy (years) for the whole population</td>
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<tr>
<td>Modelled gain in life expectancy (years) for the whole population</td>
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<td>In the long term, deaths prevented per year (based on 10% mortality reduction assumption)</td>
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<tr>
<td>In the long term, deaths prevented per year (based on 5% mortality reduction assumption)</td>
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<tr>
<td>In the long term, alcohol-related hospital admissions prevented per year</td>
<td>70</td>
</tr>
</tbody>
</table>

**Scottish context**

| Crude number of alcohol-related deaths in Scotland (2011)* | 1,247 |
| Crude number of general acute inpatient and day case alcohol-related hospital admissions (2010/11)** | 38,825 |

* Deaths where an alcohol-related condition is coded as the underlying cause of death.

** Includes any mention of an alcohol-related cause in the coding of the discharge.
Discussion

In Scotland, the national ABI programme, facilitated initially by the HEAT: H4 target and subsequently the HEAT standard, represents a major health improvement intervention programme involving numerous stakeholders and substantial resource. Evaluating the impact of such a large scale programme is complex and challenging, but crucial in demonstrating its contribution to the theory of change.

While it is clear that the number of ABIs has been increased, it is difficult to judge whether increased quality was achieved. The efficiencies in cascading training to large volumes of staff are commendable, but the quality and consistency of the ABIs delivered following training is largely unknown and remains a critical knowledge gap in both the Scottish ABI programme and the ABI literature more widely. Methods to overcome this gap have been proposed (and were considered when developing the evaluation), such as audio recording or filming ABI delivery, but these are inevitably limited by ethical issues and the added dynamic that being watched or listened to has upon both practitioner and patient. Other more radical and ethically challenging methods to assess the quality of alcohol treatment services have also recently been proposed, including the use of ‘mystery shoppers’, but face similar issues. The use of exit polls, where patients are interviewed / surveyed immediately after GP consultations, may offer a valid and less intrusive alternative and have been conducted elsewhere. However, this method is inherently limited by an inability to determine who initiated the conversation, the patient or the practitioner, and the extent to which ABI principles (e.g. motivational interviewing / FRAMES) were used.

The extent of variation in terms of how ABIs were implemented across Scotland further complicates the ability to measure quality effectively. Most stakeholders felt this localisation of their ABI programmes was necessary to achieve buy-in to ensure practitioners were willing to participate and performance targets were met. However, it is important to note that the more removed the model becomes from the original training and guidance, the less ABI-specific (and evidence based) the intervention may become. A long-term solution proposed by the UK Royal Medical Colleges to address quality issues is to include the necessary core competencies in the postgraduate curriculum, in the same way they have been incorporated into the undergraduate system. Practitioners participating in the national ABI evaluation also called for training to be incorporated as part of undergraduate or pre-qualification training. Plans to introduce alcohol training as part of the core undergraduate curriculum have also been suggested in both dentistry and community pharmacy. Placing alcohol with other health issues under a generic health behaviour change (HBC) training package has also been proposed, and health board respondents noted that more generic interventions could more easily be delivered with limited resources than the current policy of delivering a range of topic specific interventions (e.g. smoking cessation, ABI, weight management). However, the effectiveness of such a generic approach, and subsequent impact on health inequalities, would require to be properly evaluated if it were to be considered as a replacement for the current system which addresses each topic individually.

The creation and implementation of LES contracts across the country does appear to have incentivised GPs to participate in the programme and helped achieve the short-term outcome of increasing delivery of ABIs in the NHS setting, although it is clear that the correct trigger for payment is required to ensure appropriate delivery. Whether GPs will still engage with the programme without funding is a matter for debate given that financial incentives alone may not be sufficient to change professional practice and current evidence on their effectiveness is modest and inconsistent. The Quality and Outcomes Framework (QOF) could provide a vehicle for funding the programme in the long term, embedding ABIs as part of core business, but a recent application by NICE to include ABIs in the QOF for the UK was rejected. The Scottish Government is currently reviewing the range of public health initiatives already included in the current GP Contract, including ABIs, with a view to developing an overall public health domain within the GP Contract in Scotland to better fit with NHS Scotland's Strategic Public Health priorities.
However, not all GPs have been incentivised to deliver ABIs. Participants in the national ABI evaluation reported varying sign-up rates to LES contracts, and contrasting trends over time. A variety of explanations were offered as reasons for this, including the ‘administrative burden’ of LES contracts / HEAT targets and the impact of other public health priorities on GP practices (e.g. H1N1 virus in 2009). In addition, those practices who had signed up to the LES did not necessarily meet their delivery targets. In essence, this resulted in some health board areas relying on a small proportion of GPs delivering regular screening and ABIs to meet their target numbers. Unfortunately, the limited data collected via the national ABI programme are unable to shed any further light on the scale of this issue, but even at modest levels it would likely have a negative impact on the reach of the programme. Moreover, the national data provide no reliable indication on the age, gender or deprivation profiles of those being screened and offered/receiving ABIs, making it impossible to ascertain any impact of the programme on health inequalities. The data from the case-study areas in this area vary considerably and offer no real insight into demographic patterns of delivery.

Sustaining involvement of other professionals who are not paid a fee to deliver ABIs (e.g. nurses) requires a different approach, with ongoing support through provision of training (including refresher and booster sessions) and resources playing an important role. Using follow-up data to provide feedback to staff may increase motivation to deliver but would require a more systematic approach to collection of follow-up data and other short-term outcomes (e.g. demand for specialist services) and enable better determination of the impact of the programme at local levels. This would give practitioners a better indication of their own contribution to the national ABI programme and incentivise them to contribute to future delivery.

That there were no monitoring data available from the case study health boards’ records on referral post-screening or post-ABI may not be surprising given it was not a mandatory reporting requirement of the national ABI programme. Therefore, accurately assessing or quantifying the impact of the programme on specialist services is unlikely to be possible. However, it is plausible to assume that the ABI programme has had some impact on referrals, in terms of both increasing numbers (even slightly) and increasing the appropriateness of those referred, mainly from those originating from primary care. Determining whether these referrals were timely is equally challenging, however the most recent figures from the national alcohol and drug specialist treatment waiting times database in April 2012 show that 90% of the 7,126 individuals who began alcohol treatment in April-June 2011 did so within three weeks of referral, with the overall trend increasing consistently over the past year. The Scottish Government has set a target that, by March 2013, 90% of people who need help with their drug or alcohol problem will wait no longer than three weeks for treatment.

In A&E, the HEAT: H4 programme has achieved the short term outcome of increasing the number of ABIs delivered there, or through follow-on care. Despite this, substantial challenges remain if the programme is to be established as part of routine care. In addition to professional barriers such as time and competing priorities such as the four hour waiting time target for A&E, an increasingly mixed evidence base has done little to support the theory that ABIs delivered in A&E or via follow-on care have an important role to play in the national programme. More work requires to be done to determine the optimum delivery model(s); specifically, the components of the intervention which are most effective, the therapeutic processes that lead to improved outcomes, the characteristics of patients who respond positively, and the contextual factors which may influence effectiveness of the intervention.55

The HEAT: H4 programme also achieved the short term outcome of increasing the number of ABIs delivered in antenatal settings. Although not financially incentivised, midwives have been motivated to participate from the outset and this has undoubtedly benefited implementation over time. The consistency of the implementation models across the country and the move toward a midwife led system for initial appointments also boosts the potential quality of these interventions, although the ability to measure quality effectively is compromised for the same reasons as it is in primary care and A&E.
Progression from HEAT target to HEAT standard has helped maintain momentum with the ABI programme in Scotland. There are obvious advantages to rolling out ABI practice to wider settings, notably the potential to increase access to the intervention among sub-groups who may be less likely to visit their GP; the potential to increase access in areas where GP engagement with the national programme is limited; and the potential to impact on other outcomes beyond alcohol consumption (e.g., unintended pregnancy, facial trauma, workplace absenteeism, recidivism). However, these must be balanced against the potential disadvantages of such practice including opportunity costs, threats to staff/client relationships or role legitimacy, the appropriateness of ABIs for the setting population, and the need for a care pathway for referral. A support package for monitoring and evaluation of ABIs in wider settings has recently been developed jointly by NHS Health Scotland and the Scottish Collaboration for Public Health Research.

At population level, though, the extent of reach and impact of the national ABI programme from routine or evaluation data is unclear and has been identified as an issue of contention for participants in the national ABI evaluation. Although there was no mandatory requirement to collect data over and above the total number of ABIs delivered, a national minimum dataset was developed in consultation with local health boards. Whilst acknowledging its completion was not mandatory, its lack of use in practice, and subsequent lack of data collection, is likely to be also attributable to timing and planning issues. Indeed, the HEAT: H4 target was launched before much of its support infrastructure was in place, including the minimum dataset. As a result, many local health boards and their practitioners had developed ABI protocols that did not include collection of these data. Therefore, when the minimum dataset was launched, staff found barriers to implementation within an established protocol which hadn’t accounted for it, or had no systems in place to accommodate it.

To address these evaluation gaps, it is possible to extrapolate from the wider ABI literature to explore the potential impact of the national ABI programme, whilst acknowledging the limitations of this approach. Much of the debate around alcohol screening and intervention centres on the relative pros and cons of universal versus targeted approaches and this debate will be further informed by the results of Screening and Intervention Programme for Sensible Drinking (SIPS)\(^9\) when published. In primary care in Scotland, GPs and practice nurses are advised to target screening to those presenting with potentially alcohol-related conditions, as outlined in the SIGN 74 clinical guidelines.\(^{18}\) However, some stakeholders in the national ABI evaluation felt that limiting screening to those presenting with alcohol-related conditions as defined by SIGN 74 created gaps, especially in rural and remote areas and in relation to age and gender. As well as creating gaps, some general practices reported finding the targeted screening approach difficult to apply and instead introduced ‘blanket’ targeted screening approaches. This effectively means targeting everyone in a specific group such as new registrations, or everyone with a specific condition such as all those attending chronic disease management or flu vaccination clinics.

Policy in England currently favours targeted over universal screening in general practice and other medical settings, with GPs directed to offer alcohol screening to all new patient registrations via a Direct Enhance Service (DES) commissioned through the primary care contract.\(^{56}\) In addition, there is the option of offering a screen to all men aged 35-54 years. Public health guidance issued by the National Institute of Health and Clinical Excellence recommends universal screening by NHS staff, but if this is not possible then targeted screening in settings where heavy drinkers are prevalent.\(^{22}\)

The UK National Screening Committee (NSC) rejected a proposal for population-level alcohol screening in December 2011. The key reasons cited as the basis for rejection were that there is no gold standard test that can be used across the whole population to identify people with increased risk and that there is insufficient evidence that the reductions in alcohol intake as a result from screening and brief intervention have an impact on morbidity and mortality rates and

\(^9\) [http://www.sips.iop.kcl.ac.uk/](http://www.sips.iop.kcl.ac.uk/)
social harm.\(^{57}\) Both of these are essential criteria which have to be met when recommending a formal screening programme. The NSC also highlighted the limited evidence for the effectiveness of alcohol screening in population sub-groups such as young people, older adults, women and some ethnic minorities as reasons for the rejection.

An earlier study of expert opinion on implementing routine screening and ABIs in primary health care recommended a targeted service model.\(^{58}\) The preference for targeted screening is related to the more manageable impact it has on workload, especially in comparison to more time intensive universal approaches. This is particularly important as time is consistently identified as a key barrier to implementation for a wide range of health professionals. Furthermore, there is evidence to suggest that universal screening is not beneficial to enough individuals to justify the extra workload incurred.\(^{59}\)

More recently, it has been estimated that appreciable benefits at population level (i.e. in relation to reductions in morbidity, mortality and social harm) through screening and ABI can only be achieved if they are disseminated widely enough throughout the population, ensuring that almost all are screened and, in turn, the majority of hazardous and harmful drinkers receive an ABI.\(^{60}\) However, it has also been argued that such a universal approach has yet to be achieved in any country, and may be unlikely to be achieved due to political, professional and public barriers.\(^{61}\) Advocates of this approach suggest that implementation of ABI programmes alongside effective alcohol control measures (price, availability and marketing), though, could play an important complementary role in reducing alcohol-related harm by impacting positively not only on those in receipt of an ABI, but also on their wider networks of friends, family and colleagues, as well as the professionals delivering it, creating a potential ‘snowball’ effect and thus helping to ‘denormalise’ excessive drinking and increasing public acceptability of alcohol control measures.\(^{61}\)

In addition to theorising as to the benefits of ABIs at population level, this chapter has presented some exploratory modelling analysis of the potential impact of the national ABI programme on population alcohol consumption and related harm. The modelling suggests that the reach of the national ABI programme to date, in terms of accessing hazardous and harmful drinkers in Scotland, has been limited despite exceeding national targets set at the outset of the programme. This is mainly due to the HEAT: H4 target numbers being based on general practice presentation data as opposed to hazardous and harmful drinker prevalence.

Despite limited reach, and even accounting for over- or underestimation of ABI success rates, the modelling suggests that, within the first year, ABIs could plausibly be responsible for a decline in mean population alcohol consumption of between 0.3-1.0% at the same time as the observed decline of 5% witnessed from the sales data (see Chapter 4). Similarly, ABIs could plausibly have been responsible for a decline of between 14 and 118 deaths annually and between 89 and 386 alcohol-related hospital admissions during the period in which actual declines in mortality and admissions have been observed (see Chapter 6). There is no impact of note on whole population life expectancy. Although the impact on population alcohol consumption is small, the effect size for those receiving an ABI is estimated to be large and this affects alcohol-related harms (i.e. deaths, admissions). Alcohol consumption is more likely to be affected at population level by interventions which target price, rather than those which are aimed at individual behaviour change.\(^{62}\)

The HITS model, importantly, provides the first insight into how the national ABI programme may have impacted on population level outcomes. Although based on a series of assumptions, it provides the best available means to ascertain the likely contribution of ABIs on reducing alcohol-related harm in Scotland. The estimated impact is uncertain, particularly because of the uncertainty surrounding the impact of ABIs in practice, but it does suggest that even with optimistic assumptions about their effectiveness, ABIs can only explain part of the reduction in alcohol-related harms seen recently in Scotland. Using more realistic estimates than those from the trials used in the baseline HITS model, the proportion of the decline explained by ABIs is likely to be modest.
Conclusions

The national ABI programme in Scotland is unique in scale and in its national coverage. Centrally coordinated and funded by the Scottish Government, it represents one of the first real attempts to implement ABIs at a national level anywhere in the world.

Despite widespread variation across the programme in implementation and delivery, short term outcomes associated with the programme have been achieved and have helped ABIs develop into new and innovative areas within and beyond healthcare. Key to this success was the use of a national government performance indicator to monitor progress, with each local health board set an agreed target number of ABIs to deliver.

Although annual performance targets were met consistently, the overall reach of the programme to hazardous and harmful drinkers is likely to be limited. This analysis estimates that approximately 1 in 7 of the target group have been delivered an ABI to date, therefore attempts to broaden access to the programme are welcome.

As expected, implementation was most widespread within primary care, with less activity in A&E and antenatal settings. It is possible that rolling out the national programme in three settings simultaneously, rather than a staggered approach, may have negatively impacted implementation overall, particularly in A&E and antenatal. However, a number of additional barriers particular to these settings were also identified, suggesting that implementation problems are complex, and not solely attributable to the implementation model itself.

Although large numbers of practitioners were trained, limitations of the cascade model were apparent. A long-term solution to the issues identified could be found in further embedding alcohol screening and brief intervention training within the undergraduate and postgraduate curriculum for health and other relevant professionals. The benefits of more generic approaches to health behaviour change training, incorporating a range of topics, also requires further investigation.

The quality and consistency of ABIs following training is largely unknown, with considerable ethical challenges in place to measuring practice effectively. However, the need to audit such practice is of paramount importance, in particular to determine if it is in line with clinical guidance, and on this basis more radical methods to measure quality can be ethically justified and should be considered in future.

Broader programme impacts, such as which practitioners were delivering the intervention and who it was reaching, were unable to be assessed as a result of a lack of monitoring data. In addition, lack of follow-up data hindered any ability to measure the impact of the programme at individual or population levels. Given the innovative and pioneering nature of this attempt to implement ABIs at a national level, and the substantial investment in the programme overall, this lack of data is disappointing and also limits the learning for other national administrations considering a similar approach. Future national health improvement programmes of a similar scale should prioritise nationally consistent data collection, including mandatory requirements where appropriate, to allow appropriate and robust evaluations, with resources and support to collect such data in place from the outset.

Where data were available, such as in the case study areas, lessons were learned as to best practice moving forward. For example, attaching payments to ABI/follow-up interventions encouraged professionals to deliver the intervention and engage with patients at a later date and provide a measure of its impact. Attaching payments to screening as opposed to interventions, on the other hand, appeared to have unintended negative consequences and should be discouraged. The benefits/drawbacks of incentivising health professionals to carry out prevention work, more generally, merits further attention.
Although the impact of ABIs at population level remains uncertain, exploratory analysis suggests that potential benefits could exist, particularly in relation to recent reductions in alcohol-related harm. These are modest, however, when compared to the total burden of alcohol-related harm in Scotland, with the most optimistic improvements only representing 5% of alcohol-related deaths and <1% of alcohol-related hospital discharges. Further work on understanding the population impact of such a large and wide ranging public health programme is warranted to inform national and international policy and practice.
4. Alcohol consumption

Introduction

Reducing population levels of alcohol consumption is a key outcome of Scotland’s alcohol strategy. In the Monitoring and Evaluating Scotland’s Alcohol Strategy (MESAS) baseline report, alcohol retail sales data were used to show trends in per adult consumption in Scotland and England & Wales. The validity and reliability of these data for this specific purpose have since been confirmed, although the estimates are still likely to underestimate true levels of alcohol consumption.

Understanding and monitoring patterns of alcohol consumption, such as adherence to drinking guidelines, as well as differences between population subgroups, is also important. This relies on data obtained from self-report surveys. The limitations of these methods are well known and include biases pertaining to sampling, response rate and recall ability. Nonetheless, surveys provide valuable information not available from aggregated sales data.

The aim of this chapter is to describe levels and patterns of alcohol consumption in Scotland using the most appropriate and up-to-date data available comparing, where possible, with other countries across the UK. The World Health Organization (WHO) recommends the triangulation of multiple data sources to ensure the most comprehensive understanding of alcohol consumption levels and patterns within a country. Thus, although analyses of the most recent retail sales data were published in August 2012 they are reproduced in this report alongside analyses based on survey data.

Methods

A brief description of the data sources used and indicators presented is provided below. More detailed information is available from previous MESAS reports and the original data sources, which are cited throughout this section.

Alcohol duty clearances

Her Majesty’s Revenue and Customs (HMRC) collect data on UK alcohol duty clearances. These figures reflect the volume of product released for sale by manufacturers and wholesalers based upon excise duty declarations and are converted to pure alcohol volumes (litres) using estimated average strengths (percentage Alcohol by Volume; ABV) of spirits, beer, cider and wine. Alcohol clearances for 1994-2011 were analysed and provided by the British Beer and Pub Association. Per adult (aged ≥16 years) clearances were calculated using mid-year population estimates for the UK available from the Office for National Statistics.

Retail sales

Annual data on alcohol retail sales in Scotland and England & Wales were obtained from The Nielsen Company (Nielsen) and CGA Strategy (CGA) partnership (hereafter ‘Nielsen/CGA’) for 1994, 1995 and 2000-2011. The volume of pure alcohol sold was provided across eight drink categories: spirits, wine, beer, cider, ready-to-drink beverages (RTDs), perry, fortified wine and ‘other’. Throughout this chapter, RTDs, perry, fortified wine (including Buckfast) and ‘other’ are categorised into a single ‘other’ category because they each represent a very small proportion of the total volume of pure alcohol sold in Scotland and England & Wales (<2% in 2011). Per adult alcohol sales were calculated by dividing pure alcohol volumes (litres of pure alcohol) by the total population aged ≥16 years. Mid-year population estimates for Scotland were obtained from National Records of Scotland and for England & Wales from the ONS. A detailed description
of the methods used by Nielsen/CGA to produce alcohol retail sales estimates is provided in an earlier MESAS report.\textsuperscript{13}

From September 2011, Nielsen was no longer able to estimate off-trade sales by discount retailers Aldi and Lidl. As such, all off-trade sales data provided since September 2011 (including estimates for the full 2011 calendar year and available retrospective data) have been defined as “Off-trade excluding discount retailers”. The phrase ‘discount retailers’ is used to refer to Aldi and Lidl throughout this report. To enable continuation of the time series presented in the baseline report, an adjustment factor was applied to the 2011 off-trade sales estimates. A full description of this analysis and a comparison of recent sales estimates both with and without discount retailers were provided in the MESAS update report published in August 2012.\textsuperscript{3}

Retail sales estimates may differ slightly to those previously published as they continue to be improved retrospectively after being supplied. Consequently, the most recent data provided by Nielsen/CGA are considered the best available because it provides the most robust review of the alcohol trade.

**Self-report surveys**

Table 4.1 provides a summary of the surveys used to estimate indicators of self-reported alcohol consumption. For adults in Scotland, England and England & Wales, data were drawn from the Scottish Health Survey (SHeS),\textsuperscript{67} Health Survey for England (HSfE)\textsuperscript{68} and General Lifestyle Survey (GLF)\textsuperscript{69}, respectively. Children’s alcohol consumption in Scotland and England was estimated using the Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS)\textsuperscript{70} and the Smoking, Drinking and Drug Use Among Young People (SDDUYP) Survey,\textsuperscript{71} respectively. A justification of the surveys used for different indicators of alcohol consumption was provided in the MESAS baseline report.\textsuperscript{1} The results presented are based on the most recent data available at the time of analysis.

The survey data presented in this chapter provide a snapshot of key indicators of self-reported alcohol consumption in Scotland and England & Wales. Further information, including additional patterns of consumption and sociodemographic breakdowns, can be found in the original survey reports, as well as in the Alcohol Statistics Scotland\textsuperscript{72} and Statistics on Alcohol: England compendia.\textsuperscript{73}
Table 4.1: Sources of survey data used to estimate self-reported alcohol consumption

<table>
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<th>England &amp; Wales</th>
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<tr>
<td>Alcohol consumption in the past week</td>
<td>SALSUS</td>
<td>-</td>
<td>SDDUYP</td>
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<tr>
<td>Mean weekly alcohol consumption</td>
<td>SALSUS</td>
<td>-</td>
<td>SDDUYP</td>
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Notes: SHeS=Scottish Health Survey; GLF=General Lifestyle Survey; HSfE=Health Survey for England; SALSUS=Scottish Schools Adolescent Lifestyle and Substance Use Survey; SDDUYP=Smoking, Drinking and Drug Use among Young People in England.

**Presentation of results**
All data were analysed descriptively; where statistically significant differences are denoted these findings have been taken directly from published sources. All survey estimates have been weighted unless otherwise stated. Due to rounding, differences expressed as percentages may not exactly equal those calculated using the figures presented in this report. Data used to create the figures presented in this chapter are provided in the supporting excel spreadsheets on the MESAS web pages.74
Results

Alcohol duty clearances
The volume of pure alcohol cleared for sale per adult in the UK increased from 9.7L in 1994 to a peak of 11.8L in 2004. There has since been a downward trend, falling by 14% to 10.1L in 2011 (Figure 4.1).

Figure 4.1: Litres of pure alcohol cleared for sale per adult (aged ≥16 years) in the UK, 1994-2011

Sources: British Beer and Pub Association; Her Majesty’s Revenue and Customs; Office for National Statistics.
Retail sales data
Per adult alcohol sales, 1994-2011
In the 2011 MESAS update report, it was shown that the volume of pure alcohol sold in Scotland increased between 1994 and 2005, before remaining broadly stable to 2010. Analysis of the most recent data suggests that per adult sales of pure alcohol in Scotland fell by 4% between 2010 and 2011, from 11.7L to 11.2L. Per adult sales in Scotland have therefore declined by a total of 5% over the last 2 years. In England & Wales, the downward trend in per adult alcohol sales observed since 2005 continued in 2011. There was a similar 5% decline over the last 2 years, as noted in Scotland, falling to 9.3L in 2011. Thus, in 2011, 20% more alcohol was sold per adult in Scotland than in England & Wales, a slight narrowing of the gap compared with 2010 (22%; Figure 4.2).

Figure 4.2: Litres of pure alcohol sold per adult (aged ≥16 years) in Scotland and England & Wales, 1994-2011

Source: Nielsen/CGA sales dataset (off-trade sales in 2011 adjusted to account for the loss of discount retailers).
Per adult alcohol sales by market sector, 1994-2011
The volume of pure alcohol sold per adult through the off-trade in Scotland increased from 5.2L in 1994 to 7.7L in 2011, an overall increase of 48%. In contrast, on-trade sales per adult decreased by 30% over the same time period, from 5.0L in 1994 to 3.5L per adult. Thus, of the total volume of pure alcohol sold in Scotland in 2011, 69% was sold through the off-trade, compared with 51% in 1994 (Figure 4.3).

The increase in overall alcohol sales per adult in Scotland between 1994 and 2005 was a result of off-trade sales increasing at a faster rate than the fall in on-trade sales. Between 2005 and 2009, the rate of increase of off-trade sales was similar to the rate of decrease in on-trade sales, resulting in overall stability. From 2010, however, both on- and off-trade sales have decreased, reflected by a decrease in total alcohol sales (Figure 4.2 & Figure 4.3).

In England & Wales, 5.2L of pure alcohol per adult were sold through the on-trade in 1994 compared with off-trade sales of 3.8L per adult. By 2011, on-trade sales decreased by 39% to 3.2L per adult, while off-trade sales increased by 60% to 6.2L per adult. The off-trade market now accounts for 66% of the total volume of alcohol sold in England & Wales, compared with 42% in 1994 (Figure 4.3).

Between 1994 and 2011, there has been a consistent pattern of higher off-trade sales in Scotland. In 2011, 26% more pure alcohol was sold per adult through the off-trade in Scotland compared with the rest of Great Britain, accounting for 83% of the total difference in on- and off-trade sales combined. On-trade sales per adult were broadly similar in Scotland and England & Wales between 1994 and 2006. Between 2006 and 2010, the decline in on-trade sales in Scotland was slower than in England & Wales. However, in 2011 on-trade sales in Scotland experienced a sharper decline than in England & Wales, but remained 10% higher (Figure 4.3).

Figure 4.3: Litres of pure alcohol sold per adult (aged ≥16 years) in Scotland and England & Wales, by market sector, 1994-2011

Source: Nielsen/CGA sales dataset (off-trade sales in 2011 adjusted to account for the loss of discount retailers).
Per adult alcohol sales by drink type, 1994-2011

Figure 4.4 shows trends in per adult sales of pure alcohol sold as different drink categories in Scotland and England & Wales. In Scotland, the volume of pure alcohol sold as beer per adult decreased steadily from 4.6L in 1994 to 3.7L in 2011, a decline of 20%. The 0.3L decline in per adult beer sales between 2010 and 2011 (from 4.0L to 3.7L) accounted for 66% of the decrease in total alcohol sales. The volume of wine sold per adult more than doubled over the 18-year time series, from 1.4L in 1994 to 3.2L in 2011. However, wine sales did decrease slightly between 2010 and 2011; future data points will help to establish if this represents the beginning of a downward trend. Despite some fluctuation, per adult sales of spirits remained broadly stable in Scotland between 1994 (3.6L) and 2009 (3.5L), before declining slightly to 3.2L in 2011, the lowest volume observed over the time period analysed. Although the volume of cider sold per adult is relatively low compared with other drink categories, the volume sold in 2011 (0.8L per adult) was double that sold in 1994 (0.4L per adult) and was the only drink category not to decline in 2011. There has been little change in the volume of pure alcohol sold as ‘other’ drink categories (not shown in graph). In terms of market share, in 1994 beer accounted for 44% of the total volume of pure alcohol sold in Scotland, spirits for 35%, wine for 13% and cider for 4%. In 2011, beer accounted for 33%, spirits for 29%, wine for 28% and cider for 7% (Figure 4.4).

In England & Wales, sales of beer fell at a faster rate than in Scotland, decreasing by 30% between 1994 and 2011, from 5.3L to 3.7L per adult. Wine sales doubled between 1994 (1.5L per adult) and 2009 (3.0L per adult), before declining slightly to 2.8L per adult in 2011. There was an increase in the volume of pure alcohol sold per adult as both spirits (1994=1.5L; 2011=1.8L) and cider (1994=0.4L; 2011=0.7L) over the time period analysed, while sales of other drink categories remained broadly stable. In 1994, beer accounted for 58% of the total alcohol market share in England & Wales, wine for 17%, spirits for 16% and cider for 5%. By 2011, beer accounted for 39%, wine for 30%, spirits for 19% and cider for 8% (Figure 4.4).

The most notable difference between Scotland and England & Wales in relation to the volume of specific drink categories sold per adult is the much higher sales of spirits in Scotland. In 2011, per adult sales of spirits were 79% higher in Scotland, which equates to 75% of the total difference between Scotland and England & Wales. Wine sales were also higher in Scotland in 2011, while sales of beer, cider and other drink categories were similar between countries (Figure 4.4).
Figure 4.4: Litres of pure alcohol sold per adult (aged ≥16 years) in Scotland and England & Wales, by drink category, 1994-2011

Source: Nielsen/CGA sales dataset (off-trade sales in 2011 adjusted to account for the loss of discount retailers).
Notes: An error was identified in previously published 1994 and 1995 cider estimates derived from Nielsen/CGA data. The estimates used in this report have been derived using corrected data.
Alcohol retail sales in Scotland, 2011
A total of 48.7 million litres of pure alcohol were sold in Scotland in 2011: 69% (33.6 million litres) was sold through the off-trade and 31% (15.2 million litres) through the on-trade. Of the total volume of pure alcohol sold through the off-trade in Scotland in 2011, 53% was sold as beer, 21% as spirits, 18% as wine, 6% as cider and 1% as ‘other’. By comparison, 24% of the total volume of pure alcohol sold through the off-trade was sold as beer, 33% as spirits, 33% as wine, 7% as cider and 4% as ‘other’ (Figure 4.5). The price band dataset provided by Nielsen for the off-trade can be further broken down into drink subtypes, as shown in Figure 4.6.

Figure 4.5: Proportion of alcohol sales (litres of pure alcohol) through the on- and off-trade, by drink category (Scotland, 2011)

![Bar chart showing the proportion of alcohol sales through the on- and off-trade.

Figure 4.6: Proportion of off-trade alcohol sales (litres of pure alcohol), by drink category and type (Scotland, 2011)

![Bar chart showing the proportion of off-trade alcohol sales.

Sources: On-trade = Nielsen/CGA sales; Off-trade = Nielsen off-trade price band dataset (excluding discount retailers).
Self-reported alcohol consumption from national surveys

Adults

Usual weekly alcohol consumption (Scotland and England & Wales)

Estimates from the SHeS suggest that mean weekly alcohol consumption among adults in Scotland declined significantly from 14.1 units in 2003 to 11.6 units in 2010. Among men, average weekly alcohol consumption fell from 19.8 to 16.0 units per week and for women from 9.0 to 7.6 units per week (Figure 4.7). The proportion of adults who report exceeding the recommended weekly drinking guideline has also decreased, from 28% in 2003 to 22% in 2010. Among men, the proportion exceeding the weekly drinking guideline fell from 33% in 2003 to 27% in 2010, while among women there was a decline from 23% in 2003 to 18% in 2010 (Figure 4.8).

In England & Wales, figures from the GLF indicate that between 2006 and 2010 average weekly alcohol consumption decreased from 13.7 to 11.6 units per adult per week. A downward trend was reported for both sexes over the same time period (from 18.9 to 16.0 units per week among men and from 9.1 units to 7.6 units per week among women) (Figure 4.7). The proportion of adults exceeding the recommended weekly drinking guideline in England & Wales also fell between 2005 and 2010, from 31% to 26% among men and from 20% to 17% among women (Figure 4.8). In 2010, self-reported weekly alcohol consumption was similar in both Scotland and England & Wales. This pattern has remained broadly consistent over time (Figure 4.7 & Figure 4.8).

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Figure 4.7: Estimated mean weekly alcohol consumption (units per week) of adults (aged ≥ 16 years) in Scotland (2003-2010) and England & Wales (2006-2010).

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Notes:

h The recommended weekly drinking guideline is no more than 21 units for men and no more than 14 units for women.
Figure 4.8: Proportion of adults (aged ≥16 years) exceeding the recommended weekly drinking guidelines* in Scotland (2003-2010) and England & Wales (2006-2010), by sex.

Sources: Scottish Health Survey; General Lifestyle Survey. *Men >21 units per week, Women >14 units per week.
Usual weekly alcohol consumption, by age group (Scotland and England & Wales)

In 2010, a similar proportion of adults aged between 25 and 64 years exceeded recommended weekly drinking guidelines in Scotland (25-44 years=24%; 45-64 years=23%) and England & Wales (25-44 years=23%; 45-64 years=25%). Adults aged over 65 years were the least likely to exceed the weekly drinking guideline (Scotland=16%; England & Wales=14%). The largest difference observed between areas was in the youngest age group: 26% of adults aged 16-24 exceeded the weekly guidelines in Scotland compared with 19% in England & Wales (Figure 4.9). A similar pattern by age and between countries is evident when considering mean weekly unit consumption (data not shown).

Figure 4.9: Proportion of adults (aged ≥16 years) exceeding the recommended weekly drinking guidelines* in Scotland and England & Wales, by age group, 2010.

Sources: Scottish Health Survey; General Lifestyle Survey. *Men >21 units per week, Women >14 units per week.

Abstinence (Scotland and England & Wales)

Trends in the proportion of adults reporting that they are non-drinkers are similar across Great Britain. In Scotland, the SHeS shows that the proportion of adults reporting that they are alcohol abstainers increased from 10% in 1998 (16-74 years only) to 15% in 2010. In England & Wales, the GLF suggests an increase from 10% in 2000 to 15% in 2010.

Alcohol consumption on the heaviest drinking day in the previous week (Scotland and England)

The SHeS suggests that there has been a small decline in the mean number of units consumed by adults in Scotland on their heaviest drinking day in the previous week, from 4.9 in 2003 to 4.5 in 2010. Although the mean daily unit consumption of men fell slightly from 6.5 in 2003 to 6.0 in 2010, this decrease was not statistically significant and there was no change between 2009 and 2010. Among women, there was a small statistically significant decline from 3.6 units in 2003 to 3.1 units in 2010; most of this decrease occurred between 2003 and 2009.

The proportion of men in Scotland exceeding the recommended daily drinking guideline (>4 units) on their heaviest drinking day in the past week remained broadly stable between 2003 (45%) and 2010 (43%). However, despite no change between 2009 and 2010, there has been a small significant decline in the prevalence of men drinking more than twice the recommended daily units
(>8 units), from 29% in 2003 to 26% in 2010. Figures for women indicate that the proportion exceeding both the daily drinking guideline (>3 units: 37% in 2003, 33% in 2010) and twice the daily drinking guideline (>6 units: 19% in 2003, 16% in 2010) have continued to decrease (Figure 4.10 & Figure 4.11).

In England, the HSfE shows that the proportion of all adults who exceeded the recommended daily drinking guidelines on their heaviest drinking day during the previous week fell slightly from 37% in 2006 to 34% in 2010 (Figure 4.10). This trend can mostly be attributed to the observed decline among women (33% in 2006, 28% in 2010), as the trend among males has been fairly stable (41% in 2006, 41% in 2010). Similarly, despite some fluctuations, the proportion of men who consumed more than twice the recommended daily guideline (>8 units) was similar between 2006 (24%) and 2010 (23%), while there was a slight decrease among women (16% in 2006, 14% in 2010)(Figure 4.11).

Although not compared using statistical analyses, these self-reported data suggest that in 2010 there was little difference between Scotland and England in the amount of alcohol consumed by men on their heaviest drinking day in the week before the survey; however, a higher proportion of women in Scotland are likely to exceed the daily drinking guidelines.

**Figure 4.10:** Proportion of adults (aged ≥16 years) exceeding the recommended daily drinking guidelines* in Scotland (2003-2010) and England (2006-2010), by sex

Sources: Scottish Health Survey; Health Survey for England. *Men >4 units on heaviest drinking day in the past week; Women >3 units on heaviest drinking day in the past week.
Figure 4.11: Proportion of adults (aged ≥16 years) exceeding twice the daily recommended drinking guidelines* in Scotland (2003-2010) and England (2006-2010), by sex

Sources: Scottish Health Survey; Health Survey for England. *Men >8 units on heaviest drinking day in the past week; Women >6 units on heaviest drinking day in the past week.
Alcohol consumption on the heaviest drinking day in the previous week, by age group (Scotland and England)

In 2010, the proportion of adults in Scotland exceeding the recommended daily drinking guideline on their heaviest drinking day in the past week fluctuated between 42% and 46% for those aged between 16-54 years (Figure 4.12). There were then sharp declines in each successive age group: 55-64 years=35%, 65-74 years=23%, 75+ years=9%. Although a broadly similar pattern by age was evident in England, the proportion of adults exceeding the daily guideline in each age group below 55 years was notably lower than in Scotland, ranging from 38-40%.

Figure 4.12: Proportion of adults (aged ≥16 years) exceeding the recommended daily drinking guidelines* in Scotland and England, by age group, 2010

Sources: Scottish Health Survey; Health Survey for England. *Men >4 units on heaviest drinking day in the past week; Women >3 units on heaviest drinking day in the past week.
These between-country differences were also apparent when considering the proportion of adults who consumed more than twice the recommended daily guidelines on their heaviest drinking day in the past week (Figure 4.13). For example, 31% of adults aged 16-24 years consumed at least twice the daily guideline in Scotland in 2010, compared with 24% in England. However, for adults aged 55-64 years (Scotland=15%, England=15%), 65-74 years (Scotland=7%, England=6%) and 75+ years (Scotland=2%, England=3%) the proportions were very similar between countries.

**Figure 4.13:** Proportion of adults (aged ≥16 years) exceeding twice the daily recommended drinking guidelines* in Scotland and England, by age group, 2010

Sources: Scottish Health Survey; Health Survey for England. *Men >8 units on heaviest drinking day in the past week; Women >6 units on heaviest drinking day in the past week.
Adherence to daily and weekly drinking guidelines (Scotland)
In 2010, 43% of all adults exceeded either the daily or weekly (or both) drinking guidelines: 49% of men and 38% of women (Figure 4.14). These are similar to those reported in 2008/09.¹

Figure 4.14: Proportion of adults (aged ≥16 years) in Scotland exceeding recommended guidelines on alcohol drinking, by sex, 2010

Source: Scottish Health Survey.
Alcohol consumption by area deprivation (Scotland)

Results from the 2010 SHeS showed no clear pattern of mean weekly alcohol consumption by Scottish Index of Multiple deprivation (SIMD) quintile (a measure of area deprivation) among adults in Scotland. However, men in the most deprived quintile (18.1 units) and women in the least deprived quintile (9.1 units) consumed more alcohol in an average week than those in other areas. For both men and women, the proportion exceeding recommended weekly drinking guidelines was highest among those living in the least deprived quintile. For example, 30% of men living in the least deprived quintile consumed more than 21 units in an average week compared with 26% in the most deprived quintile and 24-28% in the intermediate quintiles. A broadly linear pattern exists among women, with 24% of those in the least deprived quintile drinking more than 14 units, steadily declining to 15% in the most deprived areas (Figure 4.15).

Figure 4.15: Proportion of adults (aged ≥16 years) in Scotland exceeding recommended weekly guidelines*, and mean weekly alcohol consumption (age-standardised), by sex and SIMD quintile, 2010

Source: Scottish Health Survey. *Men >21 units per week; Women >14 units per week.
For both men and women in Scotland, the mean number of units consumed on the heaviest drinking day in the week prior to the survey was highest among adults living in the least deprived quintile of areas (men=3.5 units, women=2.3 units), while it was lowest among those in the most deprived areas (men=2.9 units, women=1.9 units). Furthermore, adults living in the least deprived areas were more likely to exceed the recommended daily drinking guideline, although there were no clear differences among the other SIMD quintiles. There was no clear variation in the proportion of adults consuming more than double the recommended drinking guidelines on their heaviest drinking day in the past week (i.e. exceeded both daily drinking guidelines) by area deprivation. Men living in SIMD quintile 2 (29%) were most likely to exceed the guideline, while those in quintiles 3 (24%) and 4 (25%) were the least likely. Among women, those living in the most deprived quintile of areas were most likely to exceed both guidelines (18%), with little difference between the other quintiles (Figure 4.16).

**Figure 4.16:** Proportion of adults (aged ≥16 years) in Scotland exceeding recommended daily and ‘twice daily’ guidelines* on their heaviest drinking day in the past week (age-standardised), by sex and SIMD quintile, 2010

Source: Scottish Health Survey. *Men: daily >4 units and twice daily >8 units on heaviest drinking day in the past week. Women: daily >3 units and twice daily >6 units on heaviest drinking day in the past week.
In terms of adherence to recommended daily and weekly drinking guidelines, Figure 4.17 shows that for men, the proportion of those drinking outside the guidelines was highest among those living in the least deprived areas and lowest in the most deprived areas (least deprived = 54%, most deprived = 45%). Among women, 44% of those in the least deprived quintile exceeded the drinking guidelines compared with 34% in the two most deprived quintiles.

**Figure 4.17:** Proportion of adults (aged ≥ 16 years) in Scotland exceeding recommended guidelines on alcohol drinking*, by sex and SIMD quintile (age-standardised), 2010

[Bar chart showing proportions for men, women, and all adults across SIMD quintiles]

Source: Scottish Health Survey. *Exceeding the daily and/or weekly drinking guideline.

**Alcohol consumption by equivalised annual household income (Scotland)**

The variations in self-reported alcohol consumption by area deprivation in Scotland in 2010, described above using SIMD quintiles, are broadly similar to variations by equivalised annual household income, a measure of individual deprivation. Adults in the least deprived quintile, whether based on income or area deprivation, are likely to consume more alcohol in an average week and on their heaviest drinking day, and are more likely to exceed the recommended drinking guidelines.

However, there are some notable differences between deprivation measures. For example, adults in the two highest income quintiles tend to report higher daily and weekly alcohol consumption (mean unit consumption and adherence to recommended drinking guidelines) than those in the two least deprived SIMD quintiles. In contrast, those in the three lowest income quintiles, but particularly those in the lowest income quintile, report lower levels of alcohol consumption than those in the more deprived areas. The main effect of these differences is that the magnitude of the absolute difference between the highest and lowest income quintiles tends to be larger than that observed between the least and most deprived SIMD quintiles. In addition, while most variations by area deprivation are not strictly linear (despite the least and most deprived areas often having the highest and among the lowest consumption levels, respectively; see Figures 4.15 to 4.17), variations by income quintiles are linear for almost all indicators (data not shown). This is well illustrated in Figure 4.18, which shows the proportion of adults who drank outside the recommended daily drinking guidelines on their heaviest drinking day in the past week in 2010, by SIMD and equivalised household income quintile.
Figure 4.18: Proportion of adults (aged ≥16 years) in Scotland exceeding recommended daily guidelines on alcohol drinking*, by SIMD quintile and equivalised annual household income quintile (both age-standardised), 2010

<table>
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<th>2nd</th>
<th>3rd</th>
<th>4th</th>
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Source: Scottish Health Survey. *Men >4 units on heaviest drinking day in the past week; Women >3 units on heaviest drinking day in the past week.

**Problem drinking in Scotland**

The SHeS asks current drinkers to indicate whether the following statements have applied to them in the previous three months:

- I have felt that I ought to cut down on my drinking
- I have felt ashamed or guilty about my drinking
- People have annoyed me by criticising my drinking
- I have found that my hands were shaking in the morning after drinking the previous night
- I have had a drink first thing in the morning to steady my nerves or get rid of a hangover
- There have been occasions when I felt that I was unable to stop drinking

The proportion of men aged 16-74 years who reported that they consumed alcohol and who agreed with two or more indicators of problem drinking increased from 12% in 1998 to 16% in 2008, before falling slightly to 14% in both 2009 and 2010. The prevalence of problem drinking among women aged 16-74 years also increased between 1998 and 2008, from 5% to 10%, remaining stable at 10% thereafter.

**Young people**

As reported in the MESAS baseline report, there was a steady decline in the proportion of pupils in Scotland (aged 13-15 years) who reported that they had drunk alcohol in the past week between 2002 (35%) and 2008 (22%). In 2010, an increase was observed, with 24% of pupils reporting drinking in the previous week (14% of 13-year-olds and 34% of 15-year-olds). In England, however, the downward trend previously reported continued, falling from 33% in 2000 to 19% in 2010 (Figure 4.19). There was a large drop of 7 percentage points in England between 2009 and 2010, which coincided with a change in the survey’s methodology. Following detailed
analysis, it was reported that such a greater than expected change was not due to the change in methodology. Nonetheless, it is advisable to treat these latest figures with caution, particularly in the context of change over time.

In 2010, the mean alcohol consumption by pupils who had drunk in the last week in Scotland was 18.5 units and the median was 10.0 units. Comparative figures among school pupils in England are considerably lower for mean alcohol consumption (13.5 units), but similar for median alcohol consumption (8.9 units). It is difficult to interpret trends in average alcohol consumption because of the large disparities in mean and median estimates within countries.

Figure 4.19: Proportion of pupils (aged 13-15 years) who drank alcohol in the past week in Scotland (2000-2010) and England & Wales (2000-2010)

Sources: Scottish Schools Adolescent Lifestyle and Substance Use Survey; Smoking, Drinking and Drug Use Among Young People in England. Notes: SDDUYP estimates for 2000-2009 are unweighted. Due to a change in survey design, estimates for 2010 are weighted. Estimates for Scotland include a small number of 12- and 16-year olds in 2008 (10% and 1% respectively) and 2010 (5% and 2% respectively).

Comparison between alcohol clearances, alcohol retail sales and self-reported alcohol consumption

Figure 4.20 shows mean weekly adult alcohol consumption estimates based on HMRC taxation data for the UK, and based on retail sales and self-reported survey data for GB. As expected, HMRC estimates are consistently higher than Nielsen/CGA estimates due to the inclusion of data pertaining to alcohol sales in Northern Ireland and alcohol sold through certain sales outlets not captured by Nielsen/CGA (e.g. certain internet sites, music festivals, military establishments). Nonetheless, the trend over time between sources is similar, with Nielsen/CGA estimates accounting for, on average, 93% of HMRC estimates. Estimates derived from the GLF are much lower, accounting for 61% of those based on retail sales, a decrease from 67% in 2006. Both data sources support a recent decline in adult alcohol consumption.

Figure 4.21 compares per adult weekly alcohol consumption estimates in Scotland derived from either retail sales or SHeS data. The retail sales estimates suggest that the volume of pure alcohol sold per adult in Scotland remained stable between 2005 and 2009 before declining. In contrast, the SHeS estimates suggest a decline in consumption from 2003. Consequently, the gap between retail sales and self-report survey estimates of alcohol consumption in Scotland has widened: the SHeS accounted for 51% in 2010 compared with 64% in 2003.
Figure 4.20: Mean weekly alcohol consumption estimates based on either alcohol clearance data (UK), alcohol retail sales data or self-reported survey data (both GB)

Sources: British Beer and Pub Association; Her Majesty’s Revenue and Customs (HMRC); Nielsen/CGA sales dataset (off-trade sales in 2011 adjusted to account for loss of discount retailers); General Lifestyle Survey (GLF).

Figure 4.21: Mean weekly alcohol consumption estimates in Scotland based on either alcohol retail sales data or self-reported survey data

Sources: Nielsen/CGA sales dataset (off-trade sales in 2011 adjusted to account for loss of discount retailers); Scottish Health Survey (SHeS).
Discussion

The volume of pure alcohol sold per adult in Scotland increased between 1994 and 2005, followed by a broadly stable trend to 2009. Analysis of the most recent data shows that per adult sales decreased over the last two years (2010 and 2011). In England & Wales, the downward trend in per adult sales observed since 2005 continued. Although the decline between 2010 and 2011 was sharper in Scotland, per adult sales remained 20% higher than in England & Wales. This is attributable to much higher spirits sales in Scotland (particularly vodka, see Chapter 5), as well as higher wine sales, both of which are predominantly sold through the off-trade.

Across Great Britain, alcohol purchasing patterns have changed considerably over the past 15-20 years. The increase in alcohol sales in the decade from the mid-1990s to the mid-2000s was driven by an increase in wine sales and an increase in off-trade sales. In contrast, on-trade sales have steadily declined, coinciding with reductions in the volume of beer sales. Consequently, the market share of wine approximately doubled between 1994 and 2011 in both Scotland and England & Wales and the off-trade now accounts for about two-thirds of all alcohol sold in both areas.

The use of retail sales data is advocated as the most robust means for monitoring population levels of alcohol consumption. Understanding the strengths and weaknesses of using such data and their potential impact on consumption estimates is crucial to ensuring that any changes over time, or between countries, are not related to limitations in the method of measurement. A recent MESAS study concluded that the alcohol retail sales data used to describe trends in this report offer a robust source of data for monitoring per adult alcohol consumption in Scotland and for comparing with England & Wales. Nonetheless, by quantifying various sources of bias, it was also shown that per adult consumption estimates derived from these data are likely to be an underestimate. It is unknown to what extent alcohol policies that impact on price and availability will affect the biases identified. Therefore, this will continue to be a focus of the MESAS workstream to ensure interpretations of future trends in per adult alcohol consumption are as informed as possible.

A source of underestimation affecting alcohol sales estimates for the first time in 2011 was the loss of estimates of off-trade sales by discount retailers (Aldi & Lidl). To account for this loss, an adjustment factor was applied to 2011 data based on the alcohol market share of these retailers in 2010 (5%). However, the market share of discount retailers increased slightly between 2009 and 2010, suggesting that if this trend continued the adjustment may have underestimated the actual contribution of alcohol sold by these retailers. A sensitivity analysis was therefore performed to assess the impact of assuming a market share of 6% and 7%. Although this increases off-trade sales per adult in 2011 (and, in turn, total per adult sales), the increases are small (maximum of 0.2L per adult) and do not alter the interpretations described. The use of alternative data sources to estimate the market share of discount retailers is a priority for future MESAS reporting. The decision to adjust future alcohol sales estimates will depend on the robustness and reliability of available data.

As highlighted in the baseline report, underestimation of alcohol consumption levels is a particular problem when using self-report survey data. In 2010, per adult alcohol consumption estimates from the Scottish Health Survey accounted for only 51% of those based on retail sales data. The reasons for such underestimation have been studied extensively and include sampling bias, recall bias, measurement bias and poor representativeness. In a recent study, for example, Gray et al reported lower alcohol-related and all-cause mortality rates among respondents to the 2003 Scottish Health Survey compared with the general population. This suggests that SHeS respondents are likely to report lower alcohol consumption levels than would be expected if a truly representative sample had been obtained, thereby contributing to an underestimation of population consumption levels.
However, despite these caveats, surveys still represent an important data source. This is because, unlike aggregated sales data, surveys provide information on alcohol consumption patterns and how these vary across different population subgroups. This chapter has updated the MESAS baseline report by using more recent data on consumption patterns and trends across different sociodemographic groups in Scotland comparing, where possible, with other countries in Great Britain. Since 2003, the trend in usual weekly alcohol consumption (mean unit consumption and proportion exceeding the recommended weekly guideline) among all adults across Great Britain has been downward, with men consistently consuming more alcohol in an average week than women. In 2010, there was no evidence of a difference in weekly alcohol consumption overall among all adults in Scotland and England & Wales, despite younger adults (aged 16-24 years) in Scotland being more likely to exceed recommended weekly drinking guidelines.

This pattern of higher weekly alcohol consumption levels among younger adults in Scotland was also apparent when comparing daily consumption levels with adults in England, but extended into adults of middle age. At all age groups below 55 years, adults in Scotland were more likely to consume enough alcohol on at least one day in the previous week to exceed daily drinking guidelines, as well as to exceed twice the daily guidelines. These differences were reflected in an overall higher proportion of adults (for both men and women) exceeding daily drinking guidelines in Scotland. As with the trends observed in weekly alcohol consumption, there has been a small decrease in the proportion of adults exceeding daily drinking guidelines in both Scotland and England.

As highlighted by Sharp, although the declining trends in daily and weekly alcohol consumption patterns might be encouraging, 49% of men and 38% of women in Scotland exceeded the recommended drinking guidelines in 2010. These are very high levels, particularly given the fact that they are likely to be an underestimation. Furthermore, trends in reported problem drinking have actually increased.

Survey underestimation can also impact on interpretations of between country differences. It is possible for the extent of this impact on weekly consumption estimates to be assessed. For example, the estimates of mean weekly unit consumption reported in this chapter are similar in both Scotland and England & Wales, yet retail sales data suggest that weekly consumption is 20% higher in Scotland. This reinforces the importance of objective, aggregated data for population consumption estimates. However, the impact of survey underestimation on between country differences in daily drinking, as well as on patterns of consumption by subgroups of the population, is more difficult to quantify. As noted earlier, consumption levels on the heaviest drinking day in the past week appear to be higher in Scotland than in England. It is reassuring that, despite their limitations, the observation of higher consumption in Scotland is supported by other self-report data sources.

Rates of alcohol-related harms in Scotland are higher in more disadvantaged areas (see Chapter 6). As such, using survey data to monitor patterns of consumption by people living in areas of different deprivation status is an important part of MESAS. Consistent with the baseline report, updated analyses have shown no clear patterning of weekly consumption by area deprivation in Scotland. In terms of daily drinking, adults in the least deprived areas were most likely to exceed daily guidelines in 2010, while those in more deprived areas were generally least likely. This pattern did not remain for the proportion consuming twice the daily recommendations, suggesting that the variation within the most deprived quintiles may be greater than in the least deprived quintiles i.e. more heavy drinkers and light/abstainers, but fewer drinking moderate amounts. Overall, the prevalence of drinking beyond the recommended drinking guidelines was highest among those living in the least deprived areas and lowest in the most deprived areas.

The reasons for the disparity in the social patterning of alcohol consumption and alcohol-related harms are unclear. Sampling bias may occur because some groups are more likely to be missed
than others. For example, military establishments, hostels, hospitals and prisons are not sampled, where disproportionately high numbers of heavy drinkers may be found,\textsuperscript{78} and there is likely to be a healthy respondent bias.\textsuperscript{79} Also, it has been suggested that the social patterning of harm may be explained by a relatively small number of very heavy drinkers, most likely to be living in more deprived areas.\textsuperscript{82} Thus, a disconnect between the social patterning of harm and consumption may be expected since the consumption levels of the very heavy drinkers in the most deprived areas will be masked within the average, especially given there are more ex- and non-drinkers in these areas. Finally, reverse causation has also been posited as an explanation, suggesting that people with an alcohol problem may suffer a loss of income and a consequent ‘social slide’. While this is a plausible explanation,\textsuperscript{83} longitudinal studies suggest that social status before ill-health is the key driver of adult health behaviours.\textsuperscript{84,85}

Not all deprived people live in deprived areas. Therefore, additional analyses were presented in this report (that were not presented in the baseline report) to compare alcohol consumption by area-based measures of deprivation (SIMD) with consumption by individual-based measures of deprivation (household income). In general, whether using an individual or area-based measure of deprivation, alcohol consumption is highest when deprivation is lowest and vice versa. However, the absolute range in values of indicators of alcohol consumption between the most and least deprived quintiles is higher for household income than for SIMD. Furthermore, unlike variations by SIMD, variations by household income are consistently linear, thereby supporting Ludbrook’s analysis of the Expenditure and Food Survey, which revealed that the amount of off-trade alcohol purchased in Scotland increases as household income increases.\textsuperscript{86} These differences highlight the importance of considering both individual and spatial variations in alcohol consumption in Scotland.
5. Price and affordability

Introduction

In May 2012, the Alcohol (Minimum Pricing) Scotland Act was passed by the Scottish Parliament. By introducing a minimum unit price for alcohol, the Bill recognised the strong international evidence that shows a link between alcohol price and consumption, and between consumption and harm. The aim of the Bill was to reduce consumption and harm by removing the lowest priced alcohol from the market in Scotland.

The link between the prices at which alcohol is sold (hereafter referred to as ‘prices charged’) and consumption is affected by income. That is, the effect on consumption of any change in prices charged is influenced by how much income changes. The relationship between prices charged and income is termed affordability.

This chapter presents trends in a UK-level index of affordability. This index uses retail price index (RPI) data that are not available separately for individual countries within the UK. Therefore, the chapter also presents ‘average sales prices’ derived from Nielsen/CGA alcohol retail sales data, alongside the latest available disposable income data for Scotland and England & Wales, to identify whether there are likely to be divergent trends in affordability in Scotland and England & Wales.

Divergent trends in on- and off-trade alcohol sales are shown in Chapter 4. The majority of alcohol now sold in Scotland is sold through the off-trade, which is most likely to be affected by minimum unit pricing (MUP). Being able to monitor the price of alcohol sold through the off-trade is therefore essential to the overall evaluation. However, average sales prices disguise the extent of sales of cheap alcohol. It is possible to address both these issues through the use of alcohol price distribution data, which reveal the volume of off-trade alcohol sold at individual price bands. Therefore, this chapter also presents updated analyses of the price distribution data for alcohol sold off-trade in Scotland and in England & Wales.

Methods

UK estimates of affordability

Trends in affordability at a UK level are measured using the Alcohol Affordability Index (AAI) series. The most recent year for which data are available is 2011. Further details of how the AAI is calculated and the data sources used were published in the Monitoring and Evaluating Scotland’s Alcohol Strategy (MESAS) baseline report.1

Trends in current disposable household incomes

Disposable household income data are derived from the Office for National Statistics (ONS) Regional Gross Disposable Income Series which covers Scotland, Wales and Northern Ireland as well as a number of English regions. Disposable household income is an index of spending power derived by subtracting from households’ total income payments such as income tax, other taxes and social insurance contributions. Current disposable household income (i.e. unadjusted for inflation) is used because country-specific inflation data are not available with which to calculate real disposable income for specific countries. The most recent data available are for 2010. Disposable household income per adult aged 18 and over is used to take account of changes in population size over the period; mid-year population estimates were obtained from the ONS.3
Alcohol retail sales data: average sales prices
Average (mean) sales prices per litre in ‘natural volumes’ (actual volume of beverage sold) and prices per unit (ppu) of alcohol were calculated from data on retail sales of alcohol in Scotland and England & Wales supplied by Nielsen/CGA. Aggregate (GB) data for Scotland and England & Wales combined were also provided. Average sales price data are available for the period 2000 to 2011, expressed in terms of average price per litre in natural volumes and average price per unit of alcohol. Full details on the data sources, sampling procedures and methods for converting the natural volumes into litres and units of pure alcohol are provided in a previous MESAS report.13

Trends in current household disposable incomes per capita are compared with trends in average sales prices to assess whether there are likely to be divergent trends in affordability in Scotland and England & Wales. Average sales prices (i.e. without adjustment for trends in actual retail prices) are used because of the absence of country-specific RPI data with which to make price adjustments. It is important to note that trends in the average sales price of alcohol do not directly reflect trends in alcohol prices charged. This is because changes in average sales prices are the product of changes in both prices charged and changes in patterns of consumption.

Trends are presented as index numbers with base year 2000 to indicate the proportionate increase in average sales prices and incomes since the start of the period for which data are available.

Alcohol retail sales data: price distribution
Annualised estimates of the volume of pure alcohol sold off trade in different price bands were provided by Nielsen for 2008–2011. The natural volume of each drink sold was converted into units of alcohol using its percentage ABV, enabling the net ppu of alcohol to be calculated. The item was then coded into one of seventeen price bands. Estimates were provided for all alcohol and by drink type.

Most of the price distribution analyses presented in this chapter were included in a report published in August 2012.3 They have been reproduced to ensure the annual report includes all relevant and up-to-date information on alcohol consumption, price, affordability and harms.

Alcohol retail sales data: loss of discount retailers
As explained in Chapter 4, from September 2011 Nielsen was no longer able to estimate off-trade sales by discount retailers Aldi and Lidl. As such, all off-trade sales data provided since September 2011 (including retrospective data predating this date) have been defined as “Off-trade excluding discount retailers”. To enable comparability across the time series, an adjustment factor was applied to the 2011 off-trade sales estimates presented in Chapter 4. The adjustment factor has also been applied to 2011 data on average alcohol sales prices presented in this chapter.

In contrast, off-trade price distribution data have not been adjusted to account for the loss of the ability to estimate Aldi and Lidl sales because the exclusion of discount retailers has only a marginal impact on the price distribution of off-trade alcohol sold in Scotland and England & Wales. A full description of these analyses is provided in an earlier MESAS report.3 The absolute volumes of off-trade alcohol sales reported for the price distribution in this chapter (based on the price band dataset) are therefore not directly comparable with those reported for per adult alcohol sales presented in Chapter 4 (based on the sales dataset). Where differences are expressed as a proportion of total alcohol sales, this calculation has been done using the unadjusted sales dataset.

Data used to create the figures presented in this chapter are provided in the supporting excel spreadsheets on the MESAS web pages.74
**Results**

**Trends in the UK Affordability of Alcohol Index (AAI)**

Figure 5.1 charts trends in the AAI and the variables on which it is based from 1980 to 2011. By this measure, the affordability of alcohol has increased by 45% since 1980. The main driver of increasing affordability has been rising disposable incomes. Alcohol prices as measured by the alcohol-specific RPI have actually risen more than prices in general, although the difference is small, such that real alcohol prices (‘Alcohol price index relative to the retail price index (all items)’ in Figure 5.1) have only increased by around 20% over the period as a whole. In contrast, real household incomes have increased by nearly 80% over the time period.

Figure 5.1: Indices of price and affordability (UK), 1980-2011


Since 2007, falling incomes and an increase in the alcohol price index (alcohol prices relative to retail prices) have caused the alcohol affordability index to fall from a peak of nearly 154 to 145 in 2011.

Figure 5.2 presents the affordability trend alongside trends in sales. The chart shows that trends in affordability and sales have been broadly similar, although sales peaked earlier in England & Wales and before affordability reached its highest point in 2007.
Figure 5.2: Trends in affordability (UK) and per adult alcohol retail sales (Scotland and England & Wales), 1994-2011

Sources: Statistics on Alcohol, England 2011; Nielsen/CGA sales dataset (off-trade sales in 2011 adjusted to account for loss of discount retailers).
Figure 5.3 shows affordability trends by drink type and trade sector between 2000 and 2011. The prices charged for off-trade alcohol have increased more slowly than on-trade prices charged, particularly for off-trade beer. This relative price shift in favour of the off-trade is consistent with increases in off-trade sales of wine and beer,\(^92\) and the overall change in sales patterns towards off-trade sales, described in Chapter 4.

**Figure 5.3:** Affordability by drink type and sales type (UK), 2000-2011

Trend in average alcohol sales prices
In 2011, average on-trade sales prices were slightly higher in Scotland (146ppu) than in England & Wales (141ppu). Across the time period analysed (2000-2011), however, the pattern and rate of changes in average alcohol sales prices were very similar in Scotland and England & Wales (Figure 5.4).

In Scotland, the average price per unit of alcohol sold in the on- and off-trade combined increased by 27% between 2000 and 2011, from 62ppu to 78ppu. Most of this increase is attributable to a 52ppu rise in average on-trade prices, from 94ppu in 2000 to 146ppu in 2011, with a notably sharp increase of 12ppu between 2010 and 2011. In contrast, average off-trade prices have increased more slowly, from 39ppu to 48ppu over the same time period. The difference between average on- and off-trade prices has therefore widened, from 55ppu in 2000 to 98ppu in 2011.

Figure 5.4: Average price per unit of alcohol sold in Scotland and England & Wales, by market sector, 2000-2011

Source: Nielsen/CGA sales dataset (off-trade sales in 2011 adjusted to account for the loss of discount retailers).
**Trends in current household disposable income and average alcohol retail sales prices in Scotland and England & Wales**

Between 2000 and 2010, the average sales price of alcohol in price per litre of natural volumes has increased slightly more quickly in England & Wales than in Scotland, although the difference is small. There is little difference between Scotland and England & Wales in the rate of increase in average sales prices per unit of alcohol (Figure 5.5). Disposable household incomes per capita have increased more quickly in Scotland since 2000 (48% in Scotland compared with 40% in England & Wales), although income levels per capita remained higher in England than in either Scotland or Wales in 2010.

**Figure 5.5:** Trends in average alcohol prices and household disposable income per capita, 2000-2010

Sources: Disposable Household Income (GDHI) 2010; Nielsen/CGA sales dataset (off-trade sales in 2011 adjusted to account for the loss of discount retailers).
Price distribution of alcohol sold through the off-trade in Scotland, 2011
Of the total volume of pure alcohol sold through the off-trade (excluding discount retailers) in Scotland in 2011, 35% was sold below 40ppu, 66% below 50ppu, 84% below 60ppu and 91% below 70ppu. Figure 5.6 shows that the largest single proportions were sold at 35-39.9ppu and 40-44.9ppu (both 19%).

Figure 5.6: Price distribution (%) of pure alcohol sold off-trade in Scotland, 2011

Source: Nielsen off-trade price band dataset (excluding discount retailers).

The percentage price distributions of each of the main drink categories (spirits, wine, beer and cider), as well as other drink types within categories (vodka, whisky, premium and standard beer) are presented in the MESAS update report published in August 2012.³
Figure 5.7 presents the volume of pure alcohol sold through the off-trade per adult in Scotland, within each drink category across the price distribution. Beer and cider accounted for the highest proportions of alcohol sold off-trade at below 30ppu (both 40%), although the total volume of pure alcohol sold at below 30ppu was small (0.4L per adult). Most off-trade alcohol was sold at between 30-50ppu (4.5L per adult; 60% of total), of which spirits accounted for 41%, wine for 28%, beer for 24%, cider for 5% and other drink categories for the remaining 2%. Of the 2.5L of off-trade alcohol sold per adult at 50ppu and above, 46% was wine, 24% was spirits, 20% was beer, 4% was cider and 6% was other.

**Figure 5.7:** Litres of pure alcohol sold per adult (aged ≥16 years) in Scotland, by price band, 2011

Source: Nielsen off-trade price band dataset (excluding discount retailers).
Trend in price distribution (%) of off-trade alcohol sales in Scotland, 2008-2011

An increase in the average price of alcohol between 2000 and 2011 was noted earlier (Figure 5.4). Although the upward trend was more marked in the on-trade, average off-trade sales prices also increased by 24%. This is reflected in recent off-trade price distribution data for 2008-2011. (These data are not available for on-trade alcohol sales.)

Figure 5.8 shows the changes in proportions of all off-trade alcohol sold within each price band over this 4-year period. Compared with the previous year, higher proportions of off-trade alcohol were sold at each price band above 40ppu in 2009, 2010 and 2011 (although the differences were small at the higher price bands). In contrast, lower proportions were sold within each price band below 35ppu except 15-19.9ppu, with the proportion sold at 35-39.9ppu remaining broadly similar.

Figure 5.8: Price distribution (%) of pure alcohol sold off-trade in Scotland, 2008-2011

Table 5.1 illustrates the impact of increasing average sales prices on the proportion of alcohol sold below various price thresholds. In 2008, 81% of all off-trade alcohol was sold at less than 50ppu, falling to 66% in 2011. At the upper end of the price distribution, 95% of all off-trade alcohol was sold at less than 70ppu in 2008, falling to 91% in 2011. Table 5.1 also emphasises the wide variation between drink categories in the proportion of alcohol sold below different price thresholds. Nonetheless, the proportion of alcohol sold below each price per unit diminished over time across all drink categories. Furthermore, the percentage point decline between 2008 and 2011 was smaller at higher prices. For instance, there was a 22% point decrease between 2008 and 2011 in the proportion of alcohol sold at less than 40ppu, compared with only a 4% point drop in the proportion sold at below 70ppu. Although a full description is not provided in this report, similar changes were observed in England & Wales.
Table 5.1: Proportion of each drinks category sold in the off-trade below different prices per unit, 2008-2011

<table>
<thead>
<tr>
<th></th>
<th>All alcohol</th>
<th>Spirits</th>
<th>Wine</th>
<th>Beer</th>
<th>Cider</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30ppu</td>
<td>2008</td>
<td>22</td>
<td>27</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>14</td>
<td>13</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>&lt;40ppu</td>
<td>2008</td>
<td>57</td>
<td>71</td>
<td>38</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>50</td>
<td>63</td>
<td>34</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>43</td>
<td>53</td>
<td>25</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>35</td>
<td>37</td>
<td>20</td>
<td>43</td>
</tr>
<tr>
<td>&lt;50ppu</td>
<td>2008</td>
<td>81</td>
<td>88</td>
<td>72</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>77</td>
<td>84</td>
<td>68</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>72</td>
<td>79</td>
<td>62</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>66</td>
<td>76</td>
<td>52</td>
<td>72</td>
</tr>
<tr>
<td>&lt;60ppu</td>
<td>2008</td>
<td>91</td>
<td>94</td>
<td>87</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>89</td>
<td>92</td>
<td>84</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>87</td>
<td>89</td>
<td>82</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>84</td>
<td>87</td>
<td>79</td>
<td>88</td>
</tr>
<tr>
<td>&lt;70ppu</td>
<td>2008</td>
<td>95</td>
<td>97</td>
<td>93</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>95</td>
<td>95</td>
<td>93</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>93</td>
<td>94</td>
<td>91</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>91</td>
<td>92</td>
<td>89</td>
<td>96</td>
</tr>
</tbody>
</table>

Source: Nielsen off-trade price band dataset (2008 data include discount retailers; 2009-2011 data excludes discount retailers). This disparity has a minimal impact on the proportion of alcohol sold below different price thresholds.3
Price distribution of alcohol sold through the off-trade in Scotland and England & Wales, 2011

The price distributions for Scotland and England & Wales in 2011, when expressed as a percentage of the total volume of pure alcohol sold off-trade, were broadly similar (Figure 5.9). Of the total volume of pure alcohol sold off-trade in Scotland in 2011, 35% was sold below 40ppu, 66% below 50ppu, 84% below 60ppu and 91% below 60ppu. In England & Wales, 34% was sold below 40ppu, 65% below 50ppu, 83% below 60ppu and 91% below 70ppu. The largest difference between Scotland and England & Wales in the proportion of alcohol sold within an individual price band was only 1.6%, observed at 35-39.9ppu and 40-44.9ppu.

Figure 5.9: Price distribution (%) of pure alcohol sold off-trade in Scotland and England & Wales, 2011

Source: Nielsen off-trade price band dataset (excluding discount retailers).
Although the price distribution is similar between Scotland and England & Wales in percentage terms, there are marked differences between countries in the volume of alcohol sold per adult at different price bands. The volume of pure alcohol sold off-trade per adult in Scotland was 26% higher than in England & Wales. Figure 5.10 expresses the price distribution of off-trade sales as the volume of pure alcohol sold per adult and shows that the additional volume of alcohol sold in Scotland was not spread evenly across the price distribution. Although more off-trade alcohol was sold per adult in Scotland in every price band with the exception of between 20–29.9ppu, over half (51%) of the total disparity was due to alcohol sold between 35–44.9ppu.

Figure 5.10: Price distribution (L per adult) of pure alcohol sold off-trade in Scotland and England & Wales, 2011

Source: Nielsen off-trade price band dataset (excluding discount retailers).
Of the additional volume of alcohol sold off-trade in Scotland, the majority (69%) was attributable to higher spirits sales. This represents 58% of the total difference in on- and off-trade sales combined. The most notable difference was in off-trade sales of vodka, which were 2.3 times higher in Scotland than England & Wales (1.0L versus 0.4L per adult), while whisky sales were 1.7 times higher than those in England & Wales (0.7L versus 0.4L per adult). Per adult sales of all other drink types sold through the off-trade were also higher in Scotland, although the differences were less marked (Table 5.2).

Table 5.2: Differences between Scotland and England & Wales in the volume of pure alcohol sold off-trade per adult (aged ≥16 years), by drink type, 2011

<table>
<thead>
<tr>
<th>Drink Type</th>
<th>Scotland off-trade sales (L per adult)</th>
<th>England &amp; Wales off-trade sales (L per adult)</th>
<th>Difference in volume (L per adult)</th>
<th>% of the total difference in off-trade sales (1.5L per adult)</th>
<th>% of the total difference in on- and off-trade sales combined (1.8L per adult)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirits</td>
<td>2.4</td>
<td>1.4</td>
<td>1.0</td>
<td>69</td>
<td>58</td>
</tr>
<tr>
<td>Vodka</td>
<td>1.0</td>
<td>0.4</td>
<td>0.6</td>
<td>38</td>
<td>32</td>
</tr>
<tr>
<td>Whisky</td>
<td>0.7</td>
<td>0.4</td>
<td>0.3</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>Gin</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Rum</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Other spirits</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Wine</td>
<td>2.4</td>
<td>2.2</td>
<td>0.2</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Beer</td>
<td>1.7</td>
<td>1.6</td>
<td>0.2</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Cider</td>
<td>0.5</td>
<td>0.4</td>
<td>0.1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>0.3</td>
<td>0.2</td>
<td>0.0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>7.4</td>
<td>5.9</td>
<td>1.5</td>
<td>100</td>
<td>84</td>
</tr>
</tbody>
</table>

Source: Nielsen off-trade price band dataset (excluding discount retailers); Nielsen/CGA sales dataset (excluding discount retailers).
Analysis of the price distribution of spirits reveals that most of the additional volume sold per adult in Scotland was sold at between 35 and 44.9 pppu (Figure 5.11). Indeed, this accounted for 55% of the total disparity in spirits and 37% of the total difference in off-trade sales. This pattern was largely driven by vodka with 2.4 times more vodka being sold off-trade at between 35-44.9 pppu in Scotland than in England & Wales (Figure 5.12). This equates to 22% of the total difference in off-trade sales and 19% of the total difference in on- and off-trade sales combined.

The additional whisky sold per adult in Scotland compared with England & Wales is also explained by higher sales at the cheaper end of the price distribution. For example, 60% more whisky was sold per adult in Scotland at below 50 pppu, equivalent to less than £14 for a 70cl bottle (figure not shown).

Figure 5.11: Price distribution (L per adult) of pure alcohol sold off-trade as spirits in Scotland and England & Wales, 2011

Source: Nielsen off-trade price band dataset (excluding discount retailers).


**Figure 5.12:** Price distribution (L per adult) of pure alcohol sold off-trade as vodka in Scotland and England & Wales, 2011

![Price distribution chart](chart.png)

Source: Nielsen off-trade price band dataset (excluding discount retailers).

**Discussion**

The affordability of alcohol has increased substantially since the 1980s, driven by rising disposable incomes. Since 2007, however, affordability has fallen due to falling real incomes and an increase in the alcohol price index i.e. the increase in prices of alcohol relative to prices in general. Affordability has increased most in the off-trade and, in particular, for off-trade beer. Nonetheless, in recent years, affordability has fallen for all drinks types. The relative price and affordability shift in favour of the off-trade continues to be reflected in much higher off-trade sales.

Country-specific affordability indices cannot be calculated using the method used to calculate the UK Alcohol Affordability Index due to the absence of country-specific price indices. There has been a slightly faster growth in current disposable income in Scotland than England & Wales and a slightly slower growth in average sales prices. Although speculative, this suggests that affordability may have increased slightly more quickly and may have been sustained for longer in Scotland, which may, in part, explain why sales continued to increase for longer in Scotland than in England & Wales.

Analysis of off-trade price distribution data shows that 66% of off-trade alcohol sold in Scotland in 2011 was sold at below 50ppu, the initial level proposed by the Scottish Government if the Minimum Pricing Act is implemented. This compares with 81% in 2008. This is partly due to alcohol price inflation, in particular for wine and spirits. ONS retail price data show that off sale wine and spirit prices increased by nearly 27% between 2000 and 2011. This highlights the importance of the Scottish Government’s proposed two-year review process of the level at which the minimum price for alcohol is set.
Consistent with findings published in a previous MESAS report, the proportions of off-trade alcohol sold at different price bands in 2011 were similar in Scotland and England & Wales. However, this chapter has again highlighted the stark differences in the volume of alcohol sold per adult at different price bands. Higher off-trade sales were common across the entire price distribution in Scotland (and across most drink types), but were particularly marked in the 30-49.9ppu range, accounting for 69% of the total difference in per adult off-trade sales. This was largely driven by higher spirits sales in Scotland within this price range, particularly vodka. The alcohol sold within these cheaper price bands - consumed in much higher volumes in Scotland compared with the rest of Great Britain - would be most affected by MUP.
6. Alcohol-related harm

Introduction

The average consumption of alcohol in a population is directly linked to the amount of alcohol-related health harm, although the strength of the relationship can vary by country.93 The more a population drinks the more harm it will experience, with harm related both to levels and patterns of consumption.94 Harm can either be to an individual’s health, such as liver disease or brain damage, or can arise through the wider adverse social consequences of alcohol use (e.g. offending, unemployment or absenteeism from school). These harms are not only experienced by the person consuming alcohol but can result in harm to others, such as victims of alcohol-related violence. Chapter 4 describes alcohol consumption in Scotland in recent years.

This chapter provides a descriptive analysis of trends in key indicators of alcohol-related health and social harms in Scotland, and harms in specific sub-groups of the population, updating the indicators reported in the baseline report.1 Where data permit, comparisons are made with England & Wales to determine whether these trends are Scotland specific or part of wider UK trends, both in nature and scale.

Methods

Alcohol-Related Hospital Discharges

Information Services Division (ISD) part of National Services Scotland, routinely collates information on hospital discharges from the submission of Scottish Morbidity Records (SMR01) by Health Boards.95 These data are available from 1981 to 2011. Each SMR collects information on a patient’s diagnosis (or diagnoses) using International Classification of Disease Codes (ICD codes). Alcohol-related (acute) hospital discharges have been defined as per ISD routine reporting.96 This indicator has been selected as it is robust, has long term trend data available and includes causes which are completely attributable to alcohol. Substantial change to service delivery for alcohol problems (such as a shift to more delivery of care in the community setting) would have the potential to affect this indicator for future reporting (as is the case for psychiatric hospital discharges).

Each SMR01 record has space to record up to six different diagnoses. Analysis was carried out to determine if any of the six spaces had an alcohol-related code but with each discharge (a continuous inpatient episode) only being counted once. In 1996, ISD moved from using the 9th revision to the 10th revision of ICD codes. The change introduced a number of new alcohol-related ICD codes. However, mapping of codes from ICD9 to ICD10 is not exact and so caution must be used when interpreting trends over longer timeframes.

Trends in alcohol-related hospital discharge rates from 1982/83 to 2010/11 have been analysed and broken down by age, gender and selected diagnoses of Alcoholic Liver Disease and Alcohol Psychosis. These two diagnoses were chosen as being robust (including over time) and are indicative of long term damage from alcohol consumption. The more acute (short term) diagnoses such as acute intoxication are less robust over time due to changes from ICD9 to ICD10 coding. Alcohol-related hospital discharge rates were also explored by deprivation category, with deprivation defined by the Scottish Index of Multiple Deprivation (SIMD).97 Due to alternative measures of deprivation prior to 2000, which are not directly compatible, longer-term trends cannot be described. In this report, trends for deprivation are presented for the past 5 years. Figures may differ slightly from previously published routine statistics due to more complete data being available.
Comparable hospital discharge data were not available for England & Wales.

**Alcohol-Related Mortality**

The National Records of Scotland (NRS) routinely reports national statistics on all deaths for Scotland. As with acute hospital discharges, ICD codes are used to categorise cause(s) of death. Using the UK definition of an alcohol-related death, analysis has been undertaken on the underlying causes of death only. Trends in alcohol-related mortality rates from 1982-2011 are described, broken down by age, gender, deprivation (SIMD) and the diagnosis of Alcoholic Liver Disease. Trends by deprivation are presented for the past 5 years.

Comparable available data are presented for alcohol-related deaths for England & Wales, published by the Office of National Statistics (ONS). At the time of publication, alcohol-related mortality data for 2011 for England & Wales had not been published.

**Adverse Consequences for Children**

A selection of indicators of adverse consequences for children following their own alcohol consumption was selected from the Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS). For health harm, these indicators are for children who, as a result of their alcohol consumption, have vomited, had an injury that needed to be seen by a doctor or were admitted to hospital overnight. For social harm, these indicators are for children who, as a result of their alcohol consumption, have got into an argument, had been in trouble with the police, had got into a fight or had stayed off school. The survey publishes information on smoking, drinking and drug use among 13-15 year olds in Scotland every two years, with data available from 2002.

**Crime**

Although alcohol is a likely contributory factor in many crimes, few crimes committed are entirely due to alcohol consumption. Two crime indicators which are 100% attributable to alcohol are the offences of drunkenness and drink driving. It should be noted that changes in police practice, as well as broader social norms, may affect these indicators over time (for example, a change in legislation to enable random breath testing or change in the public acceptability of drink driving). Time trends for these two offences are reported from 2000/01-2011/12, taken from the Recorded Crime in Scotland statistical bulletin.

Alcohol is reported as a known factor in homicides. Annual figures from 2000/01 onwards are given, taken from Homicides in Scotland.

The Scottish Crime and Justice Survey and the Prisoners Survey both regularly collect self reported information on aspects of alcohol and crime. The Scottish Crime and Justice Survey reports information on victims whose criminal incident involved a perpetrator who was under the influence of alcohol. It should be noted that this indicator is based on the perception of the victim rather than any objective measurement. The Scottish Prisoner Survey provides self-reported data on proportions of prisoners who were drunk at the time of their offence (data from 2005).

The key indicator of the number of probation orders with alcohol treatment/education as a requirement has been discontinued as this statistic is no longer reported following legislative change.

Data used to create the figures presented in this chapter are provided in the supporting excel spreadsheets on the MESAS web pages.
Results

**Alcohol-Related Acute Hospital Discharges**

In Scotland in 2010/11, the alcohol-related acute hospital discharge rate (European Age Standardised Rate or EASR) was 696/100,000 population, a slight fall from the previous year (710/100,000 population). Overall rates have fallen by 12% over the last 3 years from a peak in 2007/08, indicative of a downward trend. This follows an upward trend since the early 1980s when rates more than quadrupled (Figure 6.1).

In 2010/11, rates for men were more than double those for women (1,021/100,000 population and 395/100,000 population respectively), consistent with the pattern in 2009/10. Similarly, discharge rates were again highest in the 45-54 age group (1,231/100,000 population). Rates fell slightly from the previous year across all age groups and for both genders. Rates have generally fallen across all age groups and both genders from a peak in 2007/08 (Figure 6.1).

![Figure 6.1: General acute inpatient discharge rates (EASR) with an alcohol-related diagnosis in any position, overall and by gender, 1982/83 - 2010/11](source: ISD Scotland (SMR01)).
**Alcohol-Related Acute Hospital Discharges, by area deprivation**

In 2010/11, alcohol-related acute hospital discharge rates in the most deprived quintile (as measured by the Scottish Index of Multiple Deprivation (SIMD)) were 7.6 times greater than in the least deprived quintile (1,608/100,000 population compared with 212/100,000 population). This compares to a difference of 6.9 times greater in 2006/07 (1,624/100,000 population compared to 233/100,000 population) and shows that in relative terms the gap between the most and least deprived populations has increased over this period. Rates in all quintiles have fallen from a peak in 2007/08 with rates in the least deprived quintile having fallen by 20% whereas rates in the most deprived quintile fell by 9%. However, in absolute terms, there was a larger fall in the most deprived quintile (from 1,759/100,000 population to 1,608/100,000 population) compared to the least deprived quintile (from 265/100,000 population to 212/100,000 population). Rates in the most deprived quintile are now at a similar level to those in 2006/07 (1,624/100,000 population in 2006/07 and 1,608/100,000 population in 2010/11) whereas rates in the least deprived quintile have fallen (from 233/100,000 population to 212/100,000 population) (Figure 6.2).

![Graph](image)

**Figure 6.2:** General acute inpatient discharges rates (EASR) with an alcohol-related diagnosis in any position by deprivation, 2006/07 – 2010/11

Source: ISD Scotland (SMR01) p Provisional.

**Alcohol-Related Acute Hospital Discharges, Alcoholic Liver Disease**

In 2010/11, acute hospital discharge rates for Alcoholic Liver Disease were 117/100,000 population, little changed from the previous year (118/100,000 population). Overall rates have fallen by 4% over the last three years, indicative of an early downward trend. This follows an upward trend from 1982/83 when overall rates had risen more than five fold (from 22/100,000 population to 122/100,000 population in 2007/08). In 2010/11, rates for men were more than double (2.3) those for women (167/100,000 population compared with 72/100,000 population), a similar pattern to the previous year. Rates for men were higher than the previous year (167/100,000 population compared to 162/100,000 population) whereas rates for women were lower than the previous year (72/100,000 population compared with 78/100,000 population). This is in contrast to recent trends by gender, where rates for women had been rising and rates for men had been falling. Rates were highest in the 55-64 age group category (295/100,000 population), a similar pattern to the previous year. Rates rose in the 35-44, 45-54 and 65+ age groups.
groups from those in 2009/10. By contrast, rates in the 15-24, 25-34 and 55-64 age groups fell. Patterns over time across age groups are variable with some showing falls from peaks of different years whereas for others, rates have fluctuated (Figure 6.3).

Alcohol-Related Acute Hospital Discharges, Alcohol Psychoses
In 2010/11, acute hospital discharge rates for Alcohol Psychosis were 94/100,000 population, the same rate as the previous year. Rates peaked in 2008/09 (at 96/100,000 population) and fell by 2% in 2009/10 but there is not yet firm evidence of an established downward trend. From 1982/83, overall rates for Alcohol Psychosis had risen ten fold (from 9/100,000 population). In 2010/11, rates for men were 148/100,000 population, a fall from the previous year (152/100,000 population) whereas rates for women were higher than the previous year (43/100,000 population compared with 39/100,000 population). Rates for men were therefore 3.4 times greater than for women in 2010/11, a slight narrowing from the previous year when rates for men were 3.9 times greater. Rates for men have fallen from a peak of 157/100,000 population in 2008/09 but rates for women continue to show an upward trend. Rates were highest in the 45-54 year category (199/100,000 population), a similar pattern to the previous year. For both sexes combined, rates in the younger age groups 25-34 and 35-44 years as well as the 65+ age groups have shown slight rises in the last year whereas rates in 15-24, 45-54 and 55-64 year age groups fell. Patterns over time across age groups are variable with some showing falls from peaks of different years whereas for others, rates have fluctuated (Figure 6.3).

Figure 6.3: General acute inpatient discharges with a diagnosis of Alcohol Psychosis or Alcoholic Liver Disease in any position, EASR, by gender, 1982/3 – 2010/11

Source: ISD Scotland (SMR01).
Adverse Alcohol-Related Health Consequences for Children

In 2010, the Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS) survey reported that among 13- and 15-year-old Scottish school children, 60% reported having ever drunk alcohol. Of these, as a result of their alcohol consumption in the past year, 31% had vomited, 2% had an injury that needed to be seen by a doctor, and 3% had been admitted to hospital overnight. Trends over time (from 2002) show a fall in the percentage of those reporting vomiting (from 41%); a smaller proportion for those with an injury needing seen by a doctor (from 5%) and little change in those having been admitted to hospital (from 2%) (data not shown).

Alcohol-Related Deaths

In Scotland in 2011, the alcohol-related mortality rate (underlying cause only) was 21/100,000 population, similar to the rate of the previous year (22/100,000 population). Overall rates have fallen by 25% from a peak in 2003 (28/100,000 population) with a fluctuating downward trend. This follows an upward trend from 1982 when overall rates had more than tripled (from 8/100,000 population). In 2011, rates for men were 28/100,000 population, a fall from the previous year (32/100,000 population). Rates for women were 14/100,000 population similar to the previous year’s rate of 13/100,000 population. The relative difference between men and women narrowed to 2.0 from 2.4 the previous year. Rates for men fell by 30% from a peak in 2003 (40/100,000 population) whereas rates for women have fallen by 18% from a peak in 2006 (17/100,000 population). Rates were highest in the 55-64 age group (60/100,000 population), as they had been the previous year. Rates fell across all age groups except those aged 35-44 years and 65+ years. Rates across age groups have generally fallen across time but from varying peak years and with some fluctuation (Figure 6.4).

Figure 6.4: Alcohol-related deaths (underlying cause), EASR, overall and by gender, 1982 - 2011

Source: ISD Scotland (NRS).
Alcohol-Related deaths by area deprivation

In 2007, alcohol-related mortality rates in the most deprived SIMD category were over seven (7.1) times higher than in the least deprived category (59/100,000 population compared to 8/100,000 population). By 2011, the relative difference had reduced to 5.4 (45/100,000 population compared to 8/100,000 population). Trends in rates across quintiles have varied. For example, there has been a marked downward trend in the most deprived quintile, decreasing from 59/100,000 population in 2007 to 45/100,000 population in 2011 (a 24% fall). In contrast, rates in the least deprived quintile remained static (at 8/100,000 population) (Figure 6.5).

Figure 6.5: Alcohol-related deaths (underlying cause), by deprivation category, 2007 - 2011

Source: ISD Scotland (NRS).
Alcohol-Related deaths, Alcoholic Liver Disease

In 2011, mortality rates for Alcoholic Liver Disease were 13/100,000 population, similar to rates in the previous year. Overall rates have fallen by 28% from a peak in 2006 (18/100,000 population) with a fluctuating downward trend. This follows an upward trend from 1982 when overall rates had risen by six-fold (from 3/100,000 population). In 2011, rates for men were 17/100,000 population, a fall from the previous year (20/100,000 population). Rates for women were 9/100,000 population, a slight rise from the previous year (8/100,000 population). Rates for men were nearly double those for women, a similar pattern to the year before. Rates were highest in the 55-64 age group (38/100,000 population), as with the previous year. Rates in the 35-44 and 65+ age groups rose slightly from the previous year in contrast to stabilised or falling rates in the remaining age groups. Rates for men and women have both fallen since 2006 by 30% and 25% respectively and falls in rates can be seen across all age groups (Figure 6.6).

Figure 6.6: Deaths by Alcoholic Liver Disease (underlying cause), by age, 1982 - 2011

Source: ISD Scotland (NRS).
Alcohol-Related deaths, Scotland, England & Wales

In 2010, alcohol-related mortality rates for men in Scotland were double those for men in England & Wales (32/100,000 population compared to 16/100,000 population). A similar pattern was seen for women, with alcohol-related mortality rates for women in Scotland almost double those for women in England & Wales (13/100,000 population compared to 8/100,000 population). The gap between Scotland and England & Wales has declined since a peak in the early 2000s, but is still larger than the gap in the early 1990s.

In Scotland, alcohol-related mortality rates for men fell by 30% from a peak in 2003 (40/100,000 population) and alcohol-related mortality rates for women fell by 18% from a peak in 2006 (of 17/100,000 population). By contrast, in England & Wales, alcohol-related mortality rates in men peaked in 2008 (at 17/100,000 population) then fell by 6% the following year to 16/100,000 population where they have stabilised and alcohol-related mortality rates for women have remained at a plateau of 8/100,000 population for the past 5 years (Figure 6.7).

Figure 6.7: Alcohol-related deaths, Scotland, England & Wales, EASR, by gender, 1991 - 2010

Source: NRS and ONS.
Alcohol-Related Social Harm
In 2011/12, the rate for drink driving was 13/10,000 population and the rate for drunkenness was 10/10,000 population. Over the past decade, rates of drink driving and drunkenness offences have followed a similar pattern, with rates declining by 40% and 27% respectively from 2001/02 to 2011/12 (Figure 6.8).

Figure 6.8: Drink driving and drunkenness offences rates (per 10,000 pop), Scotland 2000/01 - 2011/12

Source: Recorded Crime in Scotland, Scottish Government.
In 2010/11, there were 138 homicides in Scotland, a 14% rise from the previous year (121). Alcohol was a known factor in 73% (70/97) of these cases where the drink/drug status of the offender was known, a slight increase on the previous year of 69% (54/78). Although there has been a 14% fall (from 160 to 138) in the numbers of homicides since 2001/02, numbers have fluctuated with a peak in 2004/05 of 188. The number of homicides where alcohol was a known factor have similarly fluctuated over time from 69 in 2001/02 to a peak in 2005/06 (78) with a rise over the past two consecutive years (Figure 6.9).

Figure 6.9:  Homicides in Scotland by alcohol status (where known) 2001/02 to 2010/11

In 2011, the Scottish Prisoner Survey reported that 50% of prisoners claimed they were drunk at the time of their offence, a similar proportion to 2009. This has risen steadily from 40% in 2005 when reporting began (data not shown).
The 2010/11 Scottish Crime and Justice Survey reported that in nearly two thirds (63%) of incidents of violent crime, victims reported that they believed their attacker was under the influence of alcohol, a similar proportion to the previous year (62%). This was more likely for incidents involving male than female victims (67% compared with 57%), again a similar pattern to the previous year (69% and 48% respectively). The proportion of offenders perceived to be under the influence of alcohol varied little by age in 2010/11, a contrast to previous years where such offenders were more likely to be younger (Figure 6.10).

Figure 6.10: Proportion of violent crime where the victim perceived the offender to be under the influence of alcohol, by age group of offender, 2009/10 and 2010/11

In 2010, the SALSUS survey reported that, of children who had ever drunk alcohol, in the past year as a result of their alcohol consumption 29% had had an argument; 16% had been in trouble with the police; 14% had been in a fight and 8% had stayed off school, a slight fall in proportions from 2008 figures (data not shown).

Discussion

Scotland has a very high-level of alcohol-related harm. Although a number of key indicators of alcohol-related morbidity and mortality have begun to show falls in recent years, alcohol-related mortality rates in Scotland are over two and a half times higher than they were in the early 1980s and remain nearly twice as high as those in England & Wales.

Over the past 8 years alcohol-related mortality rates have fallen a quarter resulting in a narrowing of the gap between Scotland and England & Wales. Mortality rates for Alcoholic Liver Disease have also fallen, by 28% since 2006. Alcohol-related hospital discharge rates have fallen by 12% in the past 3 years across all age groups and both genders. Certain self-reported indicators of health and social harm in children have shown continuous improvement. The rates of some crimes linked to alcohol have also shown considerable falls, albeit set within the context of falling numbers of recorded crime in Scotland.\(^{105}\)

However, these falls in mortality and morbidity need to be interpreted with some caution as they are not necessarily consistent across all age groups, nor by gender or diagnosis. The fall of 4% in
hospital discharge rates for Alcoholic Liver Disease over the past 3 years is more modest than the fall in overall rates and there is little change in discharge rates for Alcohol Psychosis, with rates for women continuing to rise.

Consistently over the past thirty years, rates of alcohol-related harm have been greater among men than women, with male morbidity and mortality rates being generally twice as high. Rates of alcohol-related harm (as measured) are generally higher in older age groups.

Alcohol-related harm is disproportionately experienced by those from more deprived areas for both morbidity and mortality, differences which are not wholly reflected in self-reported consumption patterns (see Chapter 4). Over the past 5 years, the gap in alcohol-related hospital discharge rates between the most and least deprived groups widened from a factor of 6.9 to 7.6 with rates falling relatively more in the least deprived group. Absolute rates in the most deprived quintile are at similar levels to those 5 years ago and remain higher than in 2001/02. By contrast, the gap in alcohol-related death rates between the most and least deprived groups narrowed from a factor of 7.1 to 5.4 with a greater relative fall in the most deprived group (of 22% compared to 6%). Absolute rates in the most deprived quintile have fallen whereas rates in the least deprived quintiles have remained static. There would therefore seem to be a mixed picture with regard to inequalities in alcohol-related harm in recent years.

Other alcohol-related social harm indicators have not shown such improvements. The proportion of prisoners drunk at the time of their offence has worsened over time. This is also to be set in the context of rising numbers of prisoners in Scotland over the past decade. Also, the number of homicides where alcohol was a known factor has fluctuated with a rise in the previous 2 years.

In summary, Scotland has a high level of alcohol-related harm compared to the rest of the UK and Western and Central Europe. Although there have been sustained improvements in many high level indicators of alcohol-related harm in Scotland in recent years, for some indicators, alcohol-related harm is not improving as rapidly as for others or is worsening.
7. Discussion

Recent trends in alcohol sales and alcohol-related harms

After almost two decades of rising rates of alcohol-related harm in Scotland to very high levels in comparison to the rest of the UK and Western and Central Europe, there are now some signs of improvements. The overall alcohol-related death rate has been falling since 2007 and there has been a narrowing of the inequalities in mortality over that same period. Sales of pure alcohol per adult in Scotland have fallen over the last two years, although they remain higher than the early 1990s and a fifth higher than in England & Wales. While these improvements are welcome news much remains to be done. The overall alcohol-related death rate in 2011 in Scotland was more than twice the rate in 1982 and double the current rate in England & Wales. Alcohol-related mortality is still disproportionately concentrated in those who live in more deprived areas, with deaths in 2011 over five times higher for those in the most deprived areas compared to the least deprived.

Can the alcohol strategy explain the trends?

Scotland’s alcohol strategy was developed to address the country’s high levels of alcohol-related harm. It is underpinned by an evidence-informed theory of change shown in Figure 7.1. According to this, the strategy will contribute to a reduction in alcohol-related harms if the key elements of the strategy are implemented as intended and with sufficient reach to change the intermediate outcomes and lead to a reduction in individual and population alcohol consumption. Evaluating the strategy requires not only an assessment of the extent to which implementation occurs as intended and the expected changes are observed, but also an assessment of possible alternative explanations.

Figure 7.1: Theory of change for Scotland’s alcohol strategy
Implementation of Scotland’s alcohol strategy, currently consisting of the Licensing Act, the Alcohol Act 2010 and the Framework for Action, is well underway. A national programme to deliver Alcohol Brief Interventions in select NHS settings has been in place since 2008, with delivery increasing year on year since then. Increased investment for alcohol specialist treatment services has also been in place since 2008. Changes associated with the Licensing Act were fully implemented in September 2009. The Alcohol Act 2010 came into force on 1st October 2011 and included a ban on quantity discounts and restrictions on the placement of promotional displays. In 2012, legislation to introduce minimum unit pricing (MUP) for alcohol was passed but implementation remains uncertain while a judicial review is underway.

The improvements in alcohol-related mortality and the more recent decline in alcohol sales in Scotland could be attributed to the measures already introduced as part of Scotland’s alcohol strategy. However, on balance, it is unlikely that the start of these trends is largely or wholly attributable to the strategy because the reduction in harms pre-date the most substantive parts of the strategy’s implementation. For example, restrictions on promotional displays and a ban on quantity discounts in the off-trade introduced as a result of the Alcohol Act 2010 were only in place for the final three months of 2011, the most recent data point for sales and alcohol-related deaths available. Preliminary analysis of weekly sales data does not suggest there was a dramatic reduction in sales after implementation and so is unlikely to explain the decline in alcohol sales per adult over that year. Moreover, most of the decline occurred in the on-trade which was not affected by the Act. The preliminary analysis was too early to draw any definitive conclusions and a full statistical analysis of the impact of the Alcohol Act 2010 on off-trade alcohol sales will be published in 2013.

At this point it is not possible to judge what contribution changes associated with the Licensing Act may have made to the recent improvements observed in alcohol-related harms and sales. The evaluation is not yet complete and there are limited routine data to draw upon. The potential contribution of the new licensing legislation will be explored in the 2013 MESAS annual report. Similarly, the evaluation of the impact of the increased investment in alcohol specialist treatment services will not report until 2013, for incorporation in the 2014 MESAS annual report.

The national programme for the delivery of Alcohol Brief Interventions (ABIs) has been in place since 2008 and over 270,000 interventions have been delivered to date. The absence of robust monitoring and follow-up data on ABIs with which to assess reach and individual outcomes means the assessment of the extent to which this has contributed to the reductions in population alcohol sales and alcohol-related morbidity and mortality has to be based on a number of assumptions and should be treated with caution. The sensitivity analysis undertaken in this report suggests that ABIs, if they have been implemented effectively and primarily to different individuals at high risk of alcohol-related harm, could plausibly account for a small proportion of the declines in alcohol consumption, alcohol-related deaths and hospital discharges. No data are available on which sub-populations received the ABIs, but if those at the greatest risk of harm were successfully targeted and if the interventions were effective, or resulted in referral of the heaviest drinkers to effective alcohol specialist services, ABIs could have been responsible for a proportion of the observed decline in alcohol-related harms, and that would remain consistent with the small decline in overall alcohol sales.

It is too early to draw definitive conclusions, and the limitations of modelling the impact of ABIs should be borne in mind, but it is possible that the combined effect of the alcohol strategy’s package of interventions explain a proportion of the recent improvements. However, it is not likely that these are the strongest contributory factor since the start of the decline in alcohol-related death rates precedes the implementation of the strategy. For this reason, and in keeping with a theory-based evaluation approach, alternative explanations need to be considered.
Alternative explanations of the recent trends in alcohol sales and harms

The economic contraction that started in 2008 is proving to be deep and sustained. While not conclusive, the evidence regarding the relationship between alcohol consumption and economic activity suggests that, on balance, population alcohol consumption tends to increase during periods of economic growth and decrease during periods of economic contraction. MESAS only has access to continuous alcohol sales data for Scotland and England & Wales separately from 2000 onwards. However, there appears to be an association between UK HMRC alcohol sales and UK GDP over the last 40 years which suggests that this relationship largely holds true for the UK during this time period, even though recessions vary in their origins, depths, effects and length (Figure 7.2). Preliminary time-series analysis of the data shows that the early 1970s recession was associated with an increase in sales of 0.11 litres (p-value = 0.5), while the 1980s, 1990s, and recent recessions were associated with decreases in sales of 0.21 (p-value = 0.2), 0.29 (p-value = 0.001) and 0.31 litres (p-value = 0.03), respectively.

Figure 7.2: Per capita sales of pure alcohol, per capita Gross Domestic Product and periods of economic recession*, UK 1970-2011

Source: British Beer and Pub Association; ONS; Muriel A, Sibieta L. * Recession is generally defined as two or more successive quarters of falls in GDP. The HMRC data used in this analysis are only available annually. Therefore an annual classification of recession is needed. This analysis uses the annual classification of recession as determined by Muriel and Sibieta, while acknowledging that some years contain both periods of recession and periods of economic expansion.

This analysis supports the well established relationship between affordability and consumption. An implication of this could be that the recent falls in alcohol consumption and related harms are the result of recession rather than representing permanent changes in consumption patterns. If so, future economic growth and increased affordability may lead to a resumed increase in...
consumption and harms. Unlike economic growth trends, changes to alcohol duty or MUP are more sustainable and targeted influences on alcohol affordability.

Alcohol affordability has declined during the current recession due to a combination of falling real incomes in recent years and alcohol prices rising more quickly than other goods and services. Country-specific affordability indices cannot be calculated using the method used to calculate the UK Alcohol Affordability Index due to the absence of country-specific price indices. However, up to 2010 there had been slightly faster growth in current (i.e. not adjusted for inflation) disposable income in Scotland than in England & Wales and there are small differences in the trends in average sales prices per litre in natural volumes between countries. If these differences reflect a difference in affordability, it could explain why alcohol sales continued to increase for longer in Scotland than in England & Wales. However, it is not possible to conclude this definitively from the data available.

Further work will be undertaken as the evaluation of Scotland’s alcohol strategy continues to understand the impact of recession on alcohol sales and alcohol-related harms in the population as a whole and on particular groups.

There are several other possible explanations for the reductions in population consumption. For example, population survey data suggest that alcohol consumption tends to decrease with age so an ageing population such as in Scotland and England & Wales may result in a fall in population consumption. The potential effect of demographic changes due to immigration also needs to be considered. The impact of these factors may be clarified when the 2011 Census data are made available.

Demographic shifts that change the proportion of non-drinkers may impact on population consumption, as may a shift towards sources of alcohol not captured in the Nielsen/CGA sales data. Media coverage and public discourse surrounding the new strategy may have raised population awareness and contributed to the shift in alcohol consumption and/or harms. Analysis will be undertaken to explore these where possible.

The start of improvements in alcohol-related mortality trends observed in Scotland in recent years predate both the recession and the recent decrease in alcohol sales per adult. This may be because the recession and the 2007 financial crash and associated ‘credit crunch’ which preceded it may have affected different sub-groups sooner than others. For example, the disposable incomes of those in the most deprived groups, who experience the most alcohol-related harms, may have started to fall earlier than the rest of the population. Alcohol affordability, consumption and harms may have therefore reduced earlier for those living in deprived areas which may not be seen in the mean population sales data (because the impact would be diluted by a lack of change in the less deprived deciles) but may explain why alcohol-related deaths overall fell before the recession started, because harms are greater in that group, and why harms fell most in that group.

There are a number of possible interactions between demographic and epidemiological trends, consumption habits and harms which may explain both growth and subsequent declines in consumption and harm which will be explored further.

**Conclusion**

It is possible that the combined effect of the alcohol strategy’s package of measures in its early years explain a modest proportion of the recent improvements observed in alcohol consumption and harms but the current downward trends are most likely to be due to other influences. Untangling the different possible causes will be complicated. Until further work is completed on
the wide range of possible explanations, it is not appropriate to draw conclusions as to what factors or combination of factors offer the most plausible explanation(s) for the current trends in alcohol consumption and alcohol-related harms. Further analysis is a priority for MESAS, both to contribute to the understanding of the complex relationship between alcohol consumption and related harm, and to assist interpretation in the evaluation of Scotland’s alcohol strategy.
Abbreviations

A&E  Accident & Emergency
AAI  Alcohol Affordability Index
ABIs  Alcohol Brief Interventions
ABV  Alcohol by Volume
Alcohol Act 2010  The Alcohol etc. (Scotland) Act 2010
APISE  Alcohol Policy Interventions in Scotland and England
CGA  CGA Strategy
CVM  Chained Volume Measures
DES  Direct Enhance Service
EASR  European Age Standardised Rate
FRAMES  Feedback, Responsibility, Advice, Menu, Empathic, Self-efficacy
GGT  Gamma-glytamy transitpeptidase
GLF  General Lifestyle Survey
GP  General Practitioner
GUM  Genitourinary Medicine
HBC  Health Behaviour Change
HEAT  Health Improvement, Efficiency, Access and Treatment
HITS  Health Inequalities Intervention Tool For Scotland
HMRC  Her Majesty’s Revenue and Customs
HSfE  Health Survey for England
ICD  International Classification of Disease
ISD  Information Services Division (part of NHS National Services Scotland)
KCND  Keeping Childbirth Natural and Dynamic
L  Litres
Licensing Act  Licensing (Scotland) Act 2005
LES  Local Enhanced Service
MESAS  Monitoring and Evaluating Scotland’s Alcohol Strategy
Minimum Pricing Act  The Alcohol (Minimum Pricing) Scotland Act 2012
MUP  Minimum unit pricing
NICE  National Institute for Health and Clinical Excellence
Nielsen  The Nielsen Company
NPRI  National Prevention Research Initiative
NRS  National Records of Scotland
NSC  National Screening Committee
ONS  Office for National Statistics
ppu  pence per unit
PTI  Practice Team Information
QOF  Quality Outcomes Framework
RPI  Retail Price Index
RTD  Ready to drink (alcoholic beverages)
SALSUS  Scottish Schools’ Adolescent Lifestyle and Substance Use Survey
<table>
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<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>SDDUYP</td>
<td>Smoking, Drinking and Drug Use Amongst Young People</td>
</tr>
<tr>
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<td>Scottish Health Survey</td>
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<tr>
<td>SIGN</td>
<td>Scottish Intercollegiate Guidelines Network</td>
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<td>SIMD</td>
<td>Scottish Index of Multiple Deprivation</td>
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<td>SIPS</td>
<td>Screening and Intervention Programme for Sensible Drinking</td>
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<td>SMR</td>
<td>Scottish Morbidity Records</td>
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<td>VAT</td>
<td>Value Added Tax</td>
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<td>WHO</td>
<td>World Health Organization</td>
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Glossary

**Affordability of Alcohol Index (AAI):** Affordability is a term used to describe the relationship between price and disposable income. Changes in the affordability of alcohol can stem from changes in disposable income and/or changes in the price of alcohol. Trends in affordability at a UK level are measured by the Affordability of Alcohol Index (AAI).

**Alcohol Brief Intervention (ABI):** A short, evidence based, structured conversation about alcohol consumption with a patient/service user that seeks in a non-confrontational way to motivate and support the individual to think about and/or plan a change in their drinking behaviour in order to reduce their consumption and/or risk of harm.

**Alcohol by Volume (ABV):** A measure of the amount of pure alcohol (i.e. ethanol) included in an alcoholic beverage (expressed as a percentage of total volume).

**Alcohol clearances:** These are collected by Her Majesty’s Revenue and Customs (HMRC) and represent the volume of pure alcohol released for sale by manufacturers and wholesalers for consumption in the UK, based on excise duty declarations.

**Alcohol misuse:** Often based on value judgements, but objectively it can refer to heavy alcohol consumption of alcohol on an individual occasion or the persistent use of alcohol above sensible drinking guidelines.

**Alcohol Price Index:** The Relative Alcohol Price Index shows how the average price of alcohol has changed in comparison to the prices of other goods and services, as measured by the retail price index.

**Alcohol-related harm:** A generic term to describe the adverse consequences to health, crime, education or wider society as a result of alcohol consumption.

**Alcohol-related morbidity:** Ill health (due to disease or injury) directly attributable to alcohol consumption. This does not include other diseases where alcohol is causally implicated in a proportion but not all cases of the condition.

**Alcohol-related mortality:** Death (due to disease or injury) directly attributable to alcohol consumption. This does not include deaths where alcohol has been shown to be causally implicated in a proportion of, but not all, cases.

**Alcohol sales data:** These are data supplied by market research specialists, The Nielsen Company and CGA Strategy, who provide estimates of the amount of alcohol sold by on- and off-trade outlets in Great Britain.

**Binge drinking:** The terms ‘binge drinking’ or ‘binge’ have no standard definition, although they are generally understood to mean drinking too much alcohol over a short period of time. The Scottish Health Survey defines a ‘binge’ as drinking over twice the recommended guidelines for daily drinking. This equates to drinking over 6 units on a day for women or over 8 units on a day for men.

**CGA Strategy (‘CGA’):** Specialist on-trade consultants who provide on-trade alcohol sales data.

**HEAT:** Health Improvement, Efficiency, Access to Services and Treatment. It is an internal NHS performance management system that includes targets that support National Outcomes. NHS Boards are accountable to the Scottish Government for achieving HEAT targets.
HEAT: H4: tasked NHS Boards to achieve an agreed number of screenings using a setting-appropriate screening tool and appropriate alcohol brief intervention, in line with SIGN 74 guidelines by 2010/11. This target was subsequently extended to 2011/12.

HITS: The Health Inequalities Tool for Scotland (HITS) takes the form of a static arithmetic model which uses the best available data on population demographics, prevalence of health behaviours, effectiveness of interventions and health impacts, to calculate the potential outcomes of a specified level of intervention.

Logic model: A logic model is a visual representation of how an intervention (such as a project, a program, or a policy) is understood or intended to produce particular results or changes in outcomes.

National Records Scotland: (to explain taken over from GROS)

Natural volume: The actual volume of an alcoholic drink as it is sold or consumed. For example, an ordinary strength (12% ABV) bottle of wine contains 750ml natural volume or 90ml pure alcohol.

The Nielsen Company (‘Nielsen’): Market research specialists who provide off-trade alcohol sales and price band data.

Off-trade: This term is used to describe alcohol retail outlets licensed to sell alcohol for consumption off the premises. It includes supermarkets, independent shops (e.g. grocers, newsagents), petrol stations and co-operatives. Also called ‘off-sales’.

On-trade: This term is used to describe alcohol retail outlets which sell alcohol for consumption on the premises. It covers licensed pubs, clubs, restaurants, hotels and cafes. Also called ‘on-sales’.

Price band data: These data are supplied by The Nielsen Company for the off-trade only. Items scanned at Electronic Point of Sale have a known volume (natural volume) and a net retail price (which takes into account discounts and special offers). Natural volumes are converted into units of pure alcohol using a category-specific percentage ABV to derive the net retail price in pence per unit (ppu). Items are then coded into one of 17 price bands.

Pure Alcohol Volume: An alcoholic beverage contains ethanol, also known as pure alcohol. Pure alcohol volume is the volume of ethanol in an alcoholic beverage rather than the total (i.e. natural) volume. In line with international convention, this report describes alcohol sales in terms of the volume of pure alcohol sold, unless otherwise specified.

Real Disposable Household Income: Real Households’ Disposable Income is the total households’ income, minus payments of income tax and other taxes, social contributions and other current transfers, converted to real terms (i.e. after dividing by a general price index to remove the effect of inflation).

Retail Price Index (RPI): The Retail Price Index is an indicator of inflation in the United Kingdom (UK). It measures the average change from month to month in the prices of goods and services purchased in the UK.

SIMD quintiles: The Scottish Index of Multiple Deprivation (SIMD) is an area based measure of relative deprivation. SIMD uses 37 indicators in 7 domains (current income; employment; health; education, skills and training; housing; geographic access and crime) to rank Scotland’s 6505 datazones (small geographical area each containing about 750 people) from 1 (most deprived) to 6505 (least deprived). SIMD quintiles divide the ranked datazones into 5, Quintile 1 containing the
20% most deprived datazone and Quintile 5 containing the 20% least deprived datazones in Scotland.

**Theory of change:** A theory of change (ToC) is a theory of how and why an intervention or programme works. It identifies the outcomes that the intervention or programme is designed to achieve and the preconditions, pathways and interventions necessary to achieve the desired outcomes.

**Unit of alcohol:** Alcoholic drinks can be described in terms of units. In the UK, a unit corresponds to 8 grams or 10 millilitres (ml) of ethanol (pure alcohol). The number of units in a given quantity of alcoholic drink can be calculated by strength of alcohol (% ABV) x volume (millilitres) divided by 1000.
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All references containing weblinks were verified as correct on 22/11/12


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