

Estimating Return on Investment for interventions and strategies to prevent and reduce alcohol use

Technical Report

May 2014

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NICE Disclaimer

This tool is intended to help users to understand the return on investment of their chosen package of interventions. Where relevant, the comparative figures are based on two different 'packages' of interventions, one of which could be 'baseline' defined as a hypothetical situation where 'there are no interventions' at present. It is left to the users to select which interventions will make up a package and decide which packages of interventions they would like to compare.

Readers are asked to read the accompanying User Guide and Technical Report before they use this tool.

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If one or more custom interventions are included in a package of interventions NICE recommend this be made clear in any communications regarding the results

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1.0 Introduction

On behalf of the National Institute for Health and Care Excellence (NICE), Matrix Knowledge, in collaboration with LeLan Ltd, have produced this Return on Investment (ROI) tool to help facilitate decision making at local level in alcohol use policy. As part of this programme to support local decision making, two other tools – in the areas of Tobacco Control and Physical Activity – have been developed.

The tools have been developed with the aim of enabling users to assess the ROI of implementing a package of interventions. The tools allow users to estimate benefits that could be achieved through prevention and treatment programmes in their geographical area (e.g. region county or local authorities). This required estimating the costs of the interventions as well as their impact. The purpose was to develop a tool to support commissioners and policy makers in their investment decision by enabling them to explore the costs and impact of different interventions packages.

2.0 Features of the Alcohol Use ROI tool

The tool has a number of useful features for commissioners and planners of local alcohol services:

- There are 22 interventions in the tool covering both interventions to prevent and reduce alcohol use in the general population and interventions to treat patients who are dependent on alcohol. There are:
 - 3 screening and brief interventions for the adult population
 - 1 brief intervention for under 18s
 - 2 school based interventions
 - 6 pricing, licensing and advertising interventions
 - 1 advertising intervention targeted at under 18s
 - 9 interventions, including detoxification, psychological and pharmacological relapse prevention interventions to treat people with high levels of alcohol use.
- A full list and descriptions of these interventions is provided in [Appendix 4](#). The tool also includes a functionality to allow users to incorporate customised (new) interventions.
- Most of the interventions and model parameters were drawn from the collective NICE Guidance on alcohol use.¹ In addition, a literature search was undertaken to include additional interventions not included in NICE Guidance and to fill data gaps. A list of the key parameters used to populate the model is provided in [Appendix 6](#)
- Users can choose their own local authority or Clinical Commissioning Group (CCG) area, which has been pre-populated with local-level population data and current levels of alcohol use.²
- Each intervention has the following variables attached:

¹ NICE Guidance PH7, PH24, CG100 and CG115

² The calculations of the number of people in the model are estimates based on 2011 Census data and are split by region. Regions are defined as the former Government Office Regions, described at: <http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/administrative/england/government-office-regions/index.html>. The numbers presented in the downloadable word report are rounded to the nearest 1000.

- The **allocation** of the intervention is defined as the percentage of the population that receives or would receive the intervention. Depending on the intervention, the population allocated can be one of three options: the general adult population (over 18), the general child population (between the ages of 10 and 15), and the alcohol dependent population.³ By default, all interventions have a 0% allocation rate assigned. Therefore, allocation rates need to be defined by the user based on actual or desired level in their local authority or CCG area.
 - The **effect** of the intervention is defined as the percentage point change in the prevalence of 'Increasing and higher risk drinking', or the change in the number of people reducing their drinking to below the increasing or higher risk drinking threshold after receiving the intervention. All interventions have a pre-populated effectiveness rate attached ([Appendix 4](#)). However, these values can be modified by the user if they have appropriate evidence of effectiveness from local data or, newly published studies.⁴ If there is suitable data from local evaluations of interventions, this can be converted to the correct measure using the effect size calculator. For more details see Appendix 4 of the Alcohol Use Tool User Guide
 - The **cost** of the intervention, defined either as the cost of delivery per person or the total cost of the intervention. As with effect, the cost per person has been pre-populated for all interventions ([Appendix 4](#)), but they can be modified by the user to adjust, for example, for variances in regional or local prices.
- Custom interventions can be created for interventions that have not been included in the model by default if the three key variables mentioned previously (allocation, effect and cost) are available to the user from local level data or future publications. Custom interventions are automatically saved in the tool for future use.
 - The tool has the ability to group interventions into packages. Packages can include any combination of interventions and can be tailored for specific treatment pathways. This allows the tool to be used flexibly by users to design services with different intervention mixes as needed. As all allocation rates are set to 0% by default, the starting point (Baseline) represents a scenario of 'no service provision'.⁵ The tool then allows users to build two packages of interventions:
 - **Current package.** This will typically be used to represent the 'current scenario'. To that end, the user must change the allocation of the interventions (from 0%) to the current level of provision in their local population area.⁶ The ROI metrics of the Current package will then compare the current package against the Baseline – i.e. the 'value for money' of the 'current scenario' compared with 'no service provision'.
 - **Alternate package.** This will be defined by the user by changing the allocation of the interventions (from the percentages applied in the Current package) to reflect the desired levels of service provision.⁷ The ROI metrics of the Alternate package will then compare **Alternate package against the Baseline** – i.e. 'desired scenario' compared with 'no service provision'.

³ The alcohol dependent population is derived from the General Household Survey 2010 levels of people drinking above 50 units per week for men and 35 units per week for women, and adjusted for each local authority using the higher and increasing drinking population data.

⁴ We do not recommend making changes to effectiveness rates for interventions unless you have local data or newly published evidence that is presented - or can be converted to - the effectiveness measure used in the tool. If effectiveness rates are not expressed in the same measure, estimates produced by the tool will not be accurate and may be invalid.

⁵ The baseline can also be interpreted as the impact of disinvesting in the current provision. All the current package benefits and savings are then considered lost benefits and costs.

⁶ As mentioned previously, users can also change the effect and cost of the interventions.

⁷ Users can also change the cost and effect of the interventions at this stage. However, note that these changes will only apply to the alternate package (and the cost and effect for the current package will remain as previously defined).

- **Alternate package against Current package** – i.e. ‘desired scenario’ compared with ‘current scenario’.
- A number of cost savings and ROI metrics are included in the tool. These are: cost savings, Incremental Cost Effectiveness Ratio (ICER), net present value (NPV), and Benefit-cost ratio. A glossary of these terms is included in [Appendix 1: References](#)

Breaking Free Online (2012) available at: <http://www.breakingfreeonline.com/> last accessed: 13/05/14

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Foxcroft, D. R., Ireland, D., Lister-Sharp, D. J., Lowe, G., & Breen, R. (2002). Primary prevention for alcohol misuse in young people. *Cochrane Database Syst Rev*, 3.

General Household Survey 2010 Office for National Statistics. Social and Vital Statistics Division

Gruenewald, P. J., Ponicki, W. R., Holder, H. D. 1993. The relationship of outlet densities to alcohol consumption: a time series cross-sectional analysis. *Alcoholism: Clinical & Experimental Research*, vol. 17, no. 1, pp. 38-47.

NICE (2010) Alcohol-use disorders: physical complications. Clinical Guidance 100

NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115

NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24

NICE (2012) Methods for development of NICE public health guidance (third edition) Available at: <http://publications.nice.org.uk/methods-for-the-development-of-nice-public-health-guidance-third-edition-pmg4> Last accessed: 25/11/2013

NICE (2007) School-based interventions on alcohol. Public health guidance 7

Office for National Statistics, <http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/administrative/england/government-office-regions/index.html>, last accessed on 12/05/14

NICE (2009) School-based interventions on alcohol Methods for the development of NICE public health guidance (second edition) Available at: http://www.nice.org.uk/media/CE1/F7/CPHE_Methods_manual_LR.pdf Last accessed: 25/11/2013

NICE (2011) Supporting investment in public health: Review of methods for assessing cost effectiveness, cost impact and return on investment Proof of concept report, http://www.nice.org.uk/media/664/AC/cost_impact_proof_of_concept.pdf, accessed on 13/05/14

Norstrom, T., & Skog, O. J. 2003. Saturday opening of alcohol retail shops in Sweden: an impact analysis. *Journal of Studies on Alcohol*, vol. 64, no. 3, pp. 393-401

Parrott, S., Godfrey, C., Heather, N., Clark, J., & Ryan, T. (2006). Cost and outcome analysis of two alcohol detoxification services. *Alcohol and Alcoholism*, 41(1), 84-91.

Postel, M. G., de Haan, H. A., Ter Huurne, E. D., Becker, E. S., & de Jong, C. A. (2010). Effectiveness of a web-based intervention for problem drinkers and reasons for dropout: randomized controlled trial. *Journal of medical Internet research*, 12(4).

Saffer, H., & Dave, D. (2006). Alcohol advertising and alcohol consumption by adolescents. *Health Economics*, 15(6), 617-637.

Saffer, H., & Dave, D. (2002). Alcohol consumption and alcohol advertising bans. *Applied Economics*, 34(11), 1325-1334.

Slattery, J., Chick, J., Cochrane, M., Craig, J., Godfrey, C., Macpherson, K., & Parrott, S. (2002). Health technology assessment of prevention of relapse in alcohol dependence. Consultation assessment report. *Health Technology Board for Scotland*

The Green Book (2011) Appraisal and Evaluation in Central Government

- Appendix 2.
- The cost and ROI metrics are provided for different perspectives or, in other words, sets of benefits; for example: all cost savings and value of health gains included, all cost savings included (but no monetary value of health benefits), health care cost savings and value of health gains, only health care cost savings, only productivity gains, only crime cost savings, and only education benefits. Specific definitions of these metrics are included in [Appendix 3](#).
- For each package the tool calculates the health gains. Health gains are measured in terms of Quality Adjusted Life Years (QALY) gained.⁸
- The value of the health gains generated by the package is calculated as the QALYs generated by the package times the 'value' of a QALY. The 'value' of a QALY is set by default at £20,000/QALY⁹. However this can be modified by the user, to reflect what they are willing to pay for a QALY.¹⁰
- Flexible timescales of between one and fifty years (lifetime)¹¹ are included to allow policy makers ultimate flexibility in seeing the level of return on investment of the packages of interventions and how this changes over time.
- The tool only provides point estimates (i.e. the average value often called the 'base results'), no uncertainties around the point estimate are provided within the tool. This is because given the breadth of the model outputs (i.e. a large number of metrics that the tool produces), incorporating such 'sensitivity analysis'¹² in each run would significantly prolong the run time. However, it is critically important to establish the extent to which the model results would be sensitive to input parameters if they were to change. In order to address this important issue, sensitivity analysis has been carried out on the key parameters of the model. This can be found in Section 3.7

⁸ A QALY is a year lived in full health, i.e. a year lived without any limitation or disability.

⁹ NICE considers interventions that cost the NHS less than £20,000 per QALY good value for money

¹⁰ Please note that changing this value will delay the calculation running time.

¹¹ Based on a starting age of 35

¹² Sensitivity analysis is a form of analysis which assesses whether the interpretation of the results of an analysis will change if parameter inputs are varied.

3.0 Method

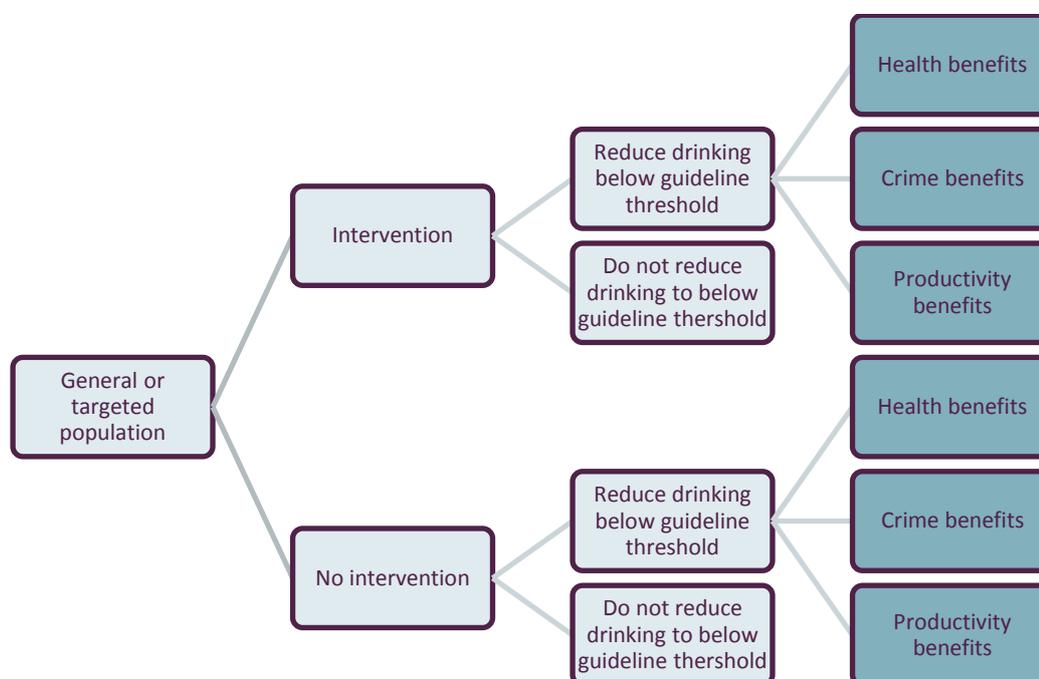
3.1 Economic model

The Alcohol Use ROI model is built in Microsoft Excel 2013 and the graphical user interface (GUI) programmed in Visual Basic 6 software. The tool can be used in all versions of Microsoft Excel from version 2003. An economic model was built to estimate the cost-effectiveness of each intervention and, subsequently, of the package of interventions.¹³

3.2 Alcohol Use model for adults

The alcohol model for adults is a static decision model that calculates and discounts the costs and benefits for a user-defined period of up to 50 years (lifetime). An outline of the structure of the decision model is presented in [Figure 1](#).

Figure 1. Structure of the decision model



¹³ The economic model is adapted from a previous model built for NICE by Matrix Knowledge, Supporting investment in public health: review of methods for assessing cost effectiveness, cost impact and return on investment, proof of concept report. (www.nice.org.uk/media/664/AC/cost_impact_proof_of_concept.pdf).

The model splits the population into three groups:¹⁴

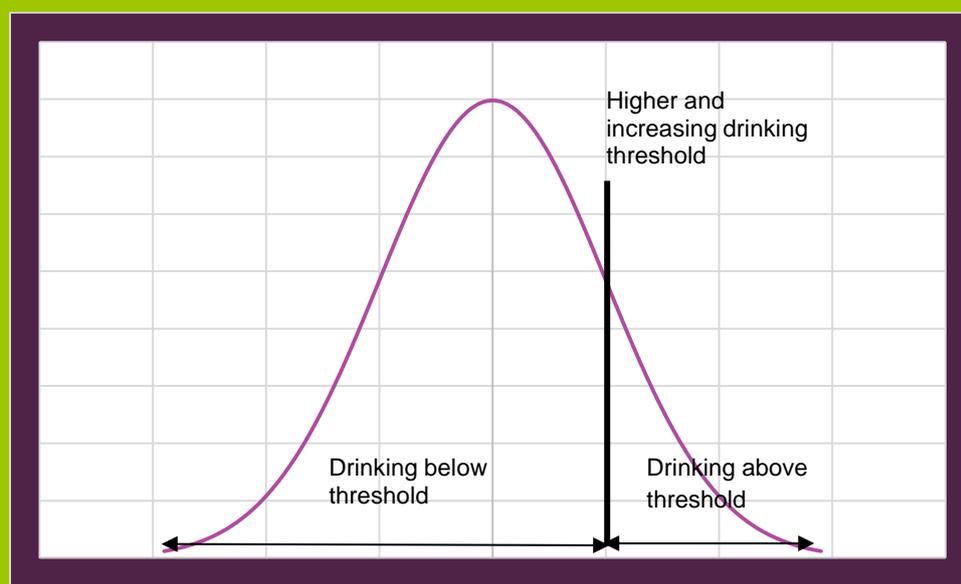
- People who either do not drink or drink within healthy parameters (low risk), that is below 22 units per week for men and 15 units per week for women.
- Higher and increasing risk drinkers:
 - Higher and increasing drinking is defined in adults as drinking over 22 units per week for men and 15 units per week for women
 - Dependent drinkers, that is those who drink over 50 units per week for men and 35 units per week for women.

The effect of the interventions is measured as the change (percentage points) in the prevalence of higher and increasing risk drinkers in the population of reference. The effect used has been transformed to be in the format of number of people reducing their intake below the threshold of 22 units per week for men and 15 units per week for women (see [Appendix 4](#) for more details of the effect size of each intervention).

The effect of interventions have been transformed as required from a relative reduction in alcohol (i.e. people who are given an intervention reduce their drinking by 10%) to a reduction in the number of people drinking (i.e. the number of people drinking above 22 units per week for men and 15 units per week for women has reduced by 10%). We assumed that alcohol consumption in the general population is normally distributed, which allowed us to transform a relative reduction in consumption to a reduction in number of people. The method used is in the following box:

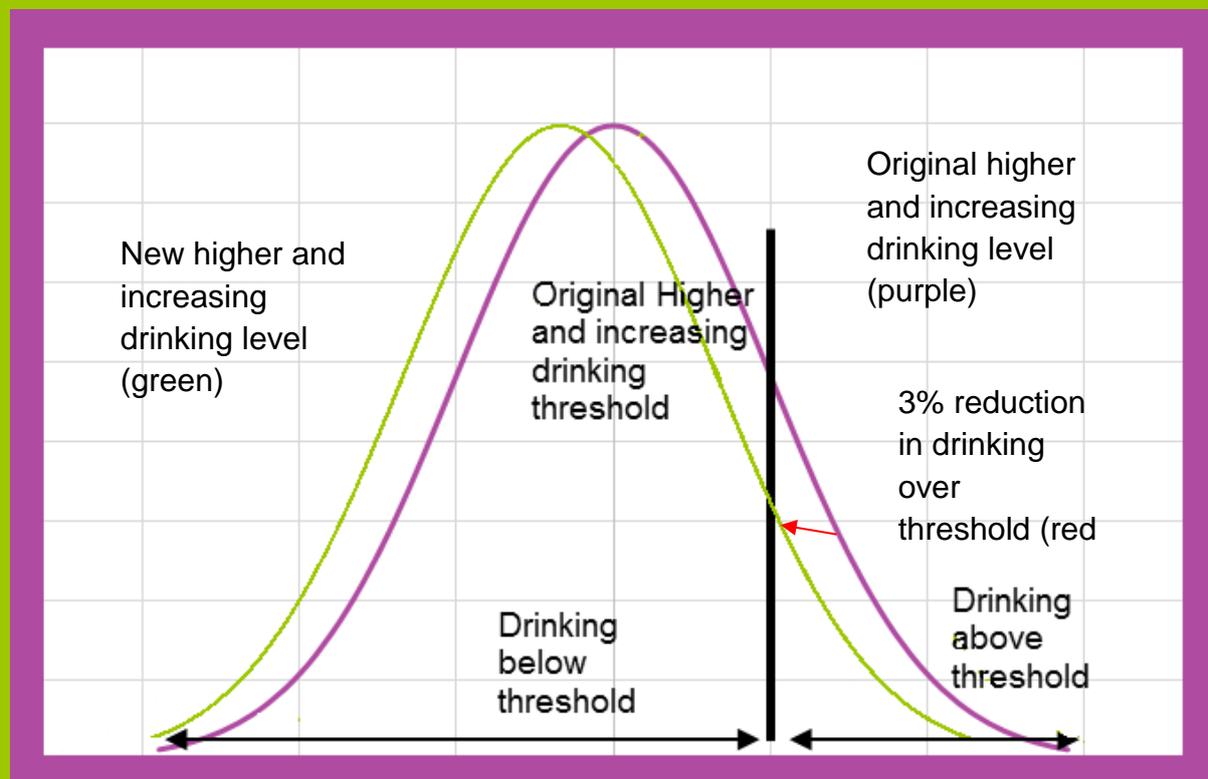
Transforming relative effect sizes to number of people reducing their drinking

Consider the scenario where following an intervention there was a reduction in the amount of alcohol consumed in the population of 20%. The rate of people in the population who drink at a higher and increasing risk level is 23%. How many of these people stop drinking?



¹⁴ The thresholds used in the model represent a simple average of thresholds applied to men and women. We acknowledge the limitations of this approach, which has been taken because of difficulty in getting all of the required data and parameters to populate the model split by sex.

We are assuming that in general the amount of alcohol consumed drops by 20%. We are therefore trying to estimate how many people move over the higher and increasing drinking threshold as a result of this.



The normal distribution calculation in Excel is used to calculate this shift, using the mean number of units consumed and the standard deviation of drinking. By including this data in the normal distribution calculation along with the threshold, the calculation finds that there is a 3% reduction in people drinking over the higher and increasing drinking threshold as a result of a 20% reduction in consumption of alcohol overall.

Baseline data at local level was drawn from the Health Profiles of England (2011) published by Public Health England (previously Association of Public Health Observatories). The data refers to self-reported levels of drinking collected through the General Lifestyle Survey 2008. The remaining model parameters were derived from the modelling reports for NICE Guidance and previous alcohol models built by Matrix.

Data on the cost and effect of the interventions was drawn from NICE Guidance and a wider review of the literature (see [Appendix 5](#) for details).

Health benefits

Alcohol use is associated with a number of diseases. The model estimates the number of cases of these diseases that could be prevented if the level of drinking was reduced due to a package of interventions. Based on the prevented number of disease cases, the model estimates the impact of the package of interventions in terms of health related quality of life (expressed in Quality Adjusted Life Years, QALYs¹⁵) and health care costs savings. The diseases have disease-specific utility values

¹⁵ A QALY is a year lived in full health, i.e. a year lived without any limitation or disability.

and duration. The model calculates both morbidity and mortality QALY values. The diseases included in the model are listed below.

Acute diseases (where the benefits are assumed to occur within years 1 and 10 after the intervention):

- Mental and behaviour disorders
- Degeneration of the nervous system due to alcohol
- Alcoholic polyneuropathy
- Alcoholic myopathy
- Alcoholic cardiomyopathy
- Alcoholic gastritis
- Alcoholic liver disease
- Alcohol-induced chronic pancreatitis
- Ethanol poisoning
- Methanol poisoning
- Unspecific toxic effect of alcohol
- Alcohol poisoning by exposure to alcohol

Long term diseases (where the benefits are assumed to be seen at different times, up to 36 years after individuals have received the intervention and changed their drinking behaviour)

- Malignant neoplasm of lip, oral cavity and pharynx
- Malignant neoplasm of oesophagus
- Malignant neoplasm of colon
- Malignant neoplasm of rectum
- Malignant neoplasm of liver and bile
- Malignant neoplasm of larynx
- Malignant neoplasm of breast
- Diabetes mellitus (Type II) ¹⁶
- Epilepsy and status epilepticus
- Hypertensive diseases
- Ischaemic heart disease
- Cardiac arrhythmias
- Haemorrhagic stroke
- Ischaemic stroke
- Oesophageal varices
- Unspecified liver disease
- Cholelithiasis ¹⁷
- Psoriasis

Accidents and Injuries

Accidents attributable to alcohol are a main driver of costs because of the high numbers of accidents that are deemed to have been caused by alcohol. Higher costs are especially associated with alcohol attributed road traffic accidents and pedestrian traffic accidents. If alcohol use decreases, we would expect the majority of the short-term savings to come from the reduction of costs associated with

¹⁶ The benefit considered in relation to this disease is net of the protective impact of alcohol consumption.

¹⁷ The benefit considered in relation to this disease is net of the protective impact of alcohol consumption.

traffic accidents. In the case of accidents and injuries, the benefits are assumed to occur within years 1 and 10 after the intervention:

- Road traffic accidents – non pedestrian
- Pedestrian traffic accidents
- Water transport accident
- Air/space transport accidents
- Fall injuries
- Work/machine injuries
- Firearm injuries
- Drowning
- Inhalation of gastric contents and ingestion
- Fire injuries
- Accidental excessive cold
- Intentional self-harm
- Assault

The probabilities of experiencing these diseases or events vary with levels of alcohol consumption and so diseases or events with higher probabilities and attributable fractions are more likely to be the significant drivers of cost savings as those drinking less generally have reduced probabilities of experiencing the diseases or events.¹⁸ Thus, reducing drinking reduces the probability of experiencing these diseases and produces corresponding improvements in health related quality of life and health care cost savings. Detailed data parameters are provided in Tables A5.2 to A5.11 in [Appendix 6](#).

Productivity benefits

Drinking is assumed to be associated with productivity losses caused by work absence and loss of employment. This varies according to each disease level of morbidity and number of life years lost. Detailed data parameters are provided in Table A5.5 in [Appendix 6](#).

Crime benefits

Drinking is assumed to be associated with higher rates of crime. The following types of crimes are included in the model:

- Causing death by dangerous driving
- More serious wounding
- Less serious wounding
- Assault on a constable
- Assault without injury
- Criminal damage
- Theft from the person
- Robbery
- Robbery (business)
- Burglary in a dwelling
- Burglary not in a dwelling
- Theft of a pedal cycle
- Theft from a vehicle

¹⁸ While we have highlighted the benefits of generally reducing alcohol consumption, the model only estimates the benefits of reducing alcohol to below the higher and increasing drinking threshold (dichotomous model).

- Aggravated vehicle taking
- Theft of vehicle
- Other theft
- Theft from shops
- Violent disorder
- Total sexual offense
- Homicide

The extent to which crimes are committed due to alcohol consumption is taken into consideration by using alcohol attributable fractions for each crime. A more detailed description of this process is included in the assumptions' section.

Attributable alcohol fractions, crime rates and the unit cost associated with each type of crime were applied to estimate crime cost savings. Detailed data parameters are provided in Tables A5.6 and A5.7 in [Appendix 6](#).

3.3 Alcohol use model for children

The model splits the population into two groups:¹⁹

- Children aged under 18 who either do not drink or drink below 4 units per week.
- Children aged under 18 who drink 4 or more units per week.

Due to limitations in the data to demonstrate the long-term benefits of reduced levels of alcohol consumption in childhood and youth into adulthood, the model takes a one year perspective.

Health benefits

In the children's model only acute injuries are included due to the short timeframe in the model.

- Dislocation/luxation of joint
- Contusion
- Fracture
- Gaping wound
- Concussion
- Examination after injury
- Other injury

The probabilities of these injuries increase with the level of alcohol consumed and so a reduction in the number of young people drinking leads to a reduction in the level of these injuries, and the costs associated with them. The probabilities and costs of these injuries can be found in Table A5.8 and A5.9 in [Appendix 6](#).

Education benefits

The children's model includes benefits for one measure of educational impact, the cost of truancy due to alcohol. Another measure of educational impact, performing poorly in school, was not included as it was not possible to obtain robust estimates of the associated economic benefits. The probability and cost parameters of alcohol related truancy are given in [Appendix 6](#). Table A5.10.

¹⁹ The thresholds used in the model represent a simple average of thresholds applied to men and women.

Crime benefits

The children's model includes cost savings associated with reduced offences that result in arrest.

The crimes included in the children's model are:

- Any violent offence
- Assault without injury
- Assault with injury
- Property offences
- Vehicle related thefts
- Other thefts
- Criminal damage

Data used to estimate these cost savings is provided in Table A5.11 in [Appendix 6](#).

3.4 Model outputs

The results of the model are present for two packages of interventions:

- **Current package.** This will typically be used to represent the 'current scenario'. To that end, the user must change the allocation of the interventions (from 0%) to the current level of provision in their local population area.²⁰ The ROI metrics of the Current package will then compare the Current package against the Baseline – i.e. the 'value for money' of the 'current scenario' compared with 'no service provision'.
- **Alternate package.** This will be defined by the user by changing the allocation of the interventions (from the percentages applied in the Current package) to reflect the desired levels of service provision.²¹ The ROI metrics of the Alternate package will then compare:
 - **Alternate package against the Baseline** – i.e. 'desired scenario' compared with 'no service provision'.
 - **Alternate package against Current package** – i.e. 'desired scenario' compared with 'current scenario'.

The baseline serves as the first line comparator for any intervention package. However, users can run the model for any two packages of interventions, and compare results between the two packages.

The results are organised as follows (see [Appendix 3](#) for the definition of the metrics below).

Interventions overview window

- Interventions are presented under two separate menus:
 - General interventions for adults
 - General interventions for under 18s
 - Interventions for the alcohol use subpopulation (also referred to as treatment interventions)
 Allocation, effectiveness and unit costs are displayed for each intervention within each group.
- Total cost of ALL interventions in the Current package and the Alternate package.

²⁰ As mentioned previously, users can also change the effect and cost of the interventions.

²¹ Users can also change the cost and effect of the interventions at this stage. However, note that these changes will only apply the alternate package (and the cost and effect for the current package will remain as previously defined).

- Number of people reducing their alcohol use as a result of ALL interventions in the Current package and the Alternate package.

Restrictions in the evidence base for alcohol use mean that the following types of interventions have not been included in this version of the model: screening and brief interventions outside of primary care or emergency settings, targeted brief intervention, screening and brief interventions in the criminal justice system, detoxification services in the community, dialectical behaviour therapy, pharmacological therapy using vitamin B or thiamine, regional alcohol offices, or changes in labelling. However, if local data is available, the interventions can be included by creating a custom intervention.

Top level results overview

Once run the model gives an overview of the results from a high level for the packages. The metrics shown are as follows:

- Breakdown of Costs
 - This gives the overview of the potential cost savings to be generated from the package in each cost domain, productivity, health and crime.
 - The comparisons given are Current package against Baseline, Alternate package against Baseline, and Current package vs. Alternate package.
- Total Costs
 - This gives the overview of the total cost savings against the total cost of the interventions.
 - The comparisons given are Current package against Baseline, Alternate package against Baseline, and Current package vs. Alternate package.

Return on investment metrics

The return on investment metrics give the key analysis of the tool. They are split into four categories, and each category is further split into the key perspectives of interest to commissioners:

- Benefit-Cost Ratio
 - All cost savings and value of health gains included
 - All cost savings included
 - Only health care costs and value of health gains included
 - Only health care cost savings included
 - Only crime cost savings included
 - Only productivity cost savings included
- Net Present Value
 - All cost savings and the value of health gains included
 - All cost savings included
 - Only health care costs and value of health gains included
 - Only health care cost savings included
 - Only crime cost savings included
 - Only productivity cost savings included

- Avoidable Burden of Disease (number of QALYs)
- ICER
 - All cost savings included
 - Only health care cost savings included

3.5 Key assumptions

The model relies on a number of assumptions to estimate the economic impact of interventions to prevent and reduce alcohol use. These assumptions are described below:

General modelling assumptions

Costs and benefits are both discounted at 3.5%, in line with NICE Methods for the development of public health guidance second edition (2009)²². Costs are presented in £2012/13 prices. Where necessary, these have been updated using the HM Treasury GDP Deflators (2013). Sensitivity analysis has been done on the NICE Methods for development of NICE public health guidance²³ rate of 1.5% for both costs and benefits.

Acute or treatment interventions

Acute interventions are presented as individual interventions, rather than as part of a sequential package of care. While we accept that sequential treatment happens in practice, we were unable to identify a consistent pathway of sequential packages given to dependent alcohol population, and so attempts to include this in the tool were unsuccessful. As a result this version of the tool is not designed to incorporate sequential practice, and so we do not include this option in this version of the tool. Users are encouraged to look either at each intervention individually or as a concurrent package.

All acute interventions are assumed to be targeted to the dependent drinking population.

Calculation of morbidity and mortality

Morbidity and mortality calculations take into account the impact of alcohol induced diseases on illness and death rates. Probabilities of developing diseases differ for heavy drinking and moderate to light drinking²⁴.

The model is designed to allow illnesses to run for a determined amount of time that differs for each disease. The long term diseases start showing impact ten years after the intervention, and then run for a prescribed number of years, resulting either in death from natural causes (at 34 years after intervention) or at an earlier point.

Acute diseases are assumed to have their effects be significant for 10 years²⁵, from year 1, the year the intervention is given, until the onset of chronic diseases in year 10.

²² National Institute of Health and Clinical Evidence (2009) Methods for the development of NICE public health guidance (second edition)

²³ NICE (2012) Methods for development of NICE public health guidance (third edition) Available at: <http://publications.nice.org.uk/methods-for-the-development-of-nice-public-health-guidance-third-edition-pmg4> Last accessed: 25/11/2013

²⁴ This age was chosen as it best fit the evidence available, and is the age used in NICE Public Health Guidance 24 based on age group 34-45.

Calculation of health care costs and health gains

The main assumption of the calculation of health care costs is that by reducing alcohol consumption, the risk of developing a range of diseases decreases, and the costs avoided are from not having to incur the costs of treatment.

The model looks at the costs of treating the diseases, rather than the cost of individual hospital admissions, the source of which is NHS Reference Costs data. Reference costs are the average unit cost to the NHS of providing secondary healthcare to NHS patients. They include all secondary care costs, apportioned to patients at hospital level on the basis of Healthcare Resource Group and then submitted to and validated by the Department of Health.

The number of QALYs saved by the disease is calculated in the same manner, using the utility value of the disease to estimate the total number of QALYs saved over the years the disease is present.

Calculation of productivity costs

Productivity costs are calculated using the alcohol attributable fraction (AAF) to calculate the number of absences from work that are attributable to alcohol. The value of these is generated from the value of days' absence attributed to alcohol, and the value of increased employment due to reduced alcohol consumption to give a combined value of both aspects of productivity. The data does not allow a granulated dissection of the precise number of work days or extra jobs gained from a reduction of alcohol as the source provides them aggregated.

Detail of calculation from PH24

The productivity costs are calculated using two measures of increased productivity, value of days of absence avoided and value of increased employment. These estimates come from national aggregated sources and therefore a top down costing approach has been adopted, as it was not possible to disaggregate the data into absolute numbers of days of absence avoided or jobs gained. For more details see NICE PH24 (2009).

The costs from NICE PH24 have been updated from 2009 prices to 2013 using the HM Treasury GDP Deflator

The combined productivity gain per alcohol user moving below the alcohol threshold is £1,533 per year.

Together these three components are what go in to calculate the productivity gain per person for someone reducing their alcohol consumption. This is then multiplied by the number of people reducing their alcohol consumption as a result of the intervention to give the productivity gain from an intervention.

Calculation of crime costs

The main assumption made about the crime data is that if someone stops drinking, they will no longer commit the crimes associated with alcohol consumption, thus generating crime cost savings.

The costs of crime are calculated based on the probability of committing one of X types of crimes, using the AAF for each crime. The AAF is then used to calculate the relative risk of crime if alcohol consumption is the driving force behind the crime being committed.

²⁵ This assumption was chosen as long term benefits begin to accrue 10 years after intervention. Therefore we have assumed that the effect of the short term benefits last until the long term benefits begin.

The AAF method comes from PH24 (NICE 2009). It is used to calculate the fraction of potential harms that are caused by alcohol. While originally it was designed for use for diseases, it can also be used for non-health harms, such as crime. More detail of how the AAF is calculated can be found in PH24.

In this model, the AAF is used to calculate the relative risk.

The relative risk is calculated using the slope of the linear function of a given crime, and is calculated assuming a threshold of dangerous drinking of 4 drinks and a high level of drinking of 8 drinks. The total rate of crimes per 1000 population, from ONS crime statistics, is factored into the calculation to give the final value as an inflated crime rate, given as a percentage.

For example, the calculation of the utility value of the crime of ‘causing death by dangerous driving’:

Effect size of intervention (20%) x (relative risk of crime (the Alcohol Attributable Fraction for dangerous driving is 0.0475579. This is multiplied by the threshold, assumed to be 4 units, and the high level threshold, assumed to be 8 units) + 1 to give the relative risk of 1.1902316) x inflated crime rate (calculated by the police recorded crime rates per 1000 population (0.010), multiplied by the crime specific multiplier for each crime (in the case of causing death by dangerous driving this is 1), taken from PH24, divided by 1000 to give the rate per person)

This is then multiplied by the unit costs of crimes or the utility value of the crime to give the calculation of crime cost savings and QALY gain from reducing alcohol intake. The values for death by dangerous driving are a utility value of 0.598 and a cost of £44,953.37

3.6 Key limitations

The economic model behind the tool has a number of limitations that the user should be aware of when making decisions based on its outputs. The key limitations are described below:

- Benefits are calculated on the number of people who reduce their alcohol consumption to levels below the threshold of higher and increasing drinking. Any marginal reduction in drinking, meaning any reduction in drinking that does not reduce below the threshold of 21 units for men and 14 units for women, or any protective factor from treatment e.g. any gain from treatment that reduces the likelihood of developing alcohol associated diseases or accidents without reducing their intake, has not been factored into the model. This may underestimate the benefits generated by the interventions.
- Individuals reducing their alcohol consumption below the threshold of higher and increasing drinking are assumed to receive full benefits from this, regardless of how long they have been drinking alcohol. This may overestimate the benefits to people who have been alcohol dependent for very long periods of time where the damage may not be reversible.
- Due to the scope of the tool, it is not possible in this version of the model to include differences in sex, age, ethnicity, socioeconomic factors and drinking cultures without severely restricting the functionality and measures included in the model, as this data is only available for a few measures
- Costs of interventions are unit costs of delivery and do not include training costs of staff or set up costs of infrastructure supporting the interventions.
- The list of injuries and diseases included in the model is not exhaustive and is limited by availability of data to populate the model.

3.7 Sensitivity analysis

The tool is intended as a simple decision aid for local decision makers who use their own local data to estimate the return on investment for their selected package of interventions. As such, only point estimates (i.e. the average value often called the “base results”²⁶) of the estimated impact can be obtained, i.e. no uncertainties around the point estimate are provided by the model. This is because given the breadth of the model outputs (i.e. a large number of metrics that the tool produces), incorporating such ‘sensitivity analysis’²⁷ in each run would undermine the simplicity of the tool by prolonging the run time significantly. The tool is intended to produce the results in real time.

However, it is critically important to establish the extent to which the model results would be sensitive to input parameters if they were to change (say, if users have improved estimates for inactivity levels or costs of interventions in their local area). In order to address this important issue, a sensitivity analysis was carried out by the model developers. The results are described below.

The intention of this analysis is to show that it is reasonable for users to use the estimates of the tool outputs, even though there may be uncertainty around key input parameters. The sensitivity of the model outputs are assessed relating to the following key parameters:

- Discount rate
- Intervention cost and effectiveness

The analysis is based on Reading Local Authority²⁸. Reading has the same value of higher and increasing drinking as the national average, 23.1%. 16 other areas in England share the same value as the national average. Reading had an adult population of 125,180 at the 2011 census and a 10-15 year old population of 9,561. It has an estimated alcohol dependent population of 4.66% which is close to the national average of 4.5%.

The sensitivity analysis focused on the incremental cost effectiveness ratio (ICER) for health care costs only²⁹ over different time horizons. If the user is interested in total costs, the required effect sizes of the interventions could be lower and still be cost effective due to the additional benefits included in the total ICER calculation. The default settings were:

Intervention	Allocation	Effect	Unit cost
Screening and brief intervention on next GP visit (added to make the Current package)	75% ³⁰	2%	£35
eCBT (Added to the intervention in the Current package to make the Alternate package)	10% ³¹	12%	£75

The base results (i.e. the estimated results using the expected value for each parameter within the model) are shown in **Table 1**. For a willingness to pay of £20,000 per QALY gained³² in Reading:

²⁶ Base results are the estimated results using the expected value for each parameter within the model.

²⁷ Sensitivity analysis is a form of analysis which assesses whether the interpretation of the results of an analysis will change if parameter inputs are varied.

²⁸ There are no areas of England that have significantly different levels of higher and increasing drinking from the England average

²⁹ This particular metric for the sensitivity analysis was chosen as this includes both resource use (incremental costs, i.e. differences in costs between the two intervention packages) and the resulting health outcomes (incremental QALYs, i.e. differences in QALYs between the two intervention packages). Therefore, if the results on this metric are not found sensitive to the changes in input parameters, it is unlikely that other metrics would be sensitive either.

³⁰ The 75% is an assumption for the sensitivity analysis. We are assuming that 25% of the population would not attend the GP in a year and so the allocation would be 75% of the population. We would expect this information, and other information to populate the allocation fields would come from data that is available at a local level.

³¹ This is an assumption.

- Current package vs. the baseline can be considered cost-effective at all time horizons and cost-saving at lifetime
- Alternate package vs. the baseline can be considered cost-effective at all time horizons and cost-saving at lifetime
- Alternate package vs. current package can be considered cost-effective at all time horizons and cost-saving at ten years and beyond time horizons and can be considered the dominant strategy.³³

Table 1: Base results for Reading – Incremental cost effectiveness ratio (£/QALY) for health care costs only using 3.5% discount rate

Intervention	Time horizon			
	2 years	5 years	10 years	Lifetime
Current package vs. Baseline	£448	£153	£47	Dominant
Alternate package vs. Baseline	£434	£147	£43	Dominant
Alternate package vs. Current package	£96	£4	Dominant	Dominant

Impact of discount rate

In economic evaluation, future costs and benefits are discounted to reflect time preference for benefits: i.e. the greater weighting placed on costs and benefits occurring in the present rather than the future. To allow for this time preference, future costs and benefits are discounted at a specific rate relative to the number of years in the future they occur. The rate used to discount is called the discount rate.

In the base analysis, a 3.5% rate was used for the benefits NICE Methods for the development of public health guidance second edition (2009)³⁴. NICE guidelines on economic evaluations of public health interventions require that the analysis needs to also include an interest rate of 1.5% for costs and QALYs to ascertain the level of uncertainty posed by discount rates.³⁵ Therefore, a one way sensitivity analysis was conducted adopting a 1.5% rate for future costs and benefits. The impact of this on the results is minimal. Where a package of interventions is not dominant (i.e. when the package is not less costly and does not produce more QALYs than the comparator), the incremental cost per QALY gained was reduced by a modest amount e.g. from £153 to £141 for Current package vs. Baseline on a 5-year time horizon, meaning the intervention was less expensive. More importantly, the interpretation of whether a package was cost-effective³⁶ did not alter in any comparison.

Table 2: Results for Reading – Incremental cost per QALY gained (health care costs only) using 1.5% discount rate

³² The decision maker's willingness to pay for a QALY gained is usually referred to the 'threshold'. Currently, the threshold for the NHS used by NICE for public health interventions is £20,000/QALY gained.

³³ If the package is both less costly and leads to more units of benefit than the comparator it is dominant and therefore cost saving. Please refer to Appendix 2 for further technical details.

³⁴ National Institute of Health and Clinical Evidence (2009) Methods for the development of NICE public health guidance (second edition)

³⁵ NICE (2012) Methods for development of NICE public health guidance (third edition) Available at: <http://publications.nice.org.uk/methods-for-the-development-of-nice-public-health-guidance-third-edition-pmg4> Last accessed: 25/11/2013

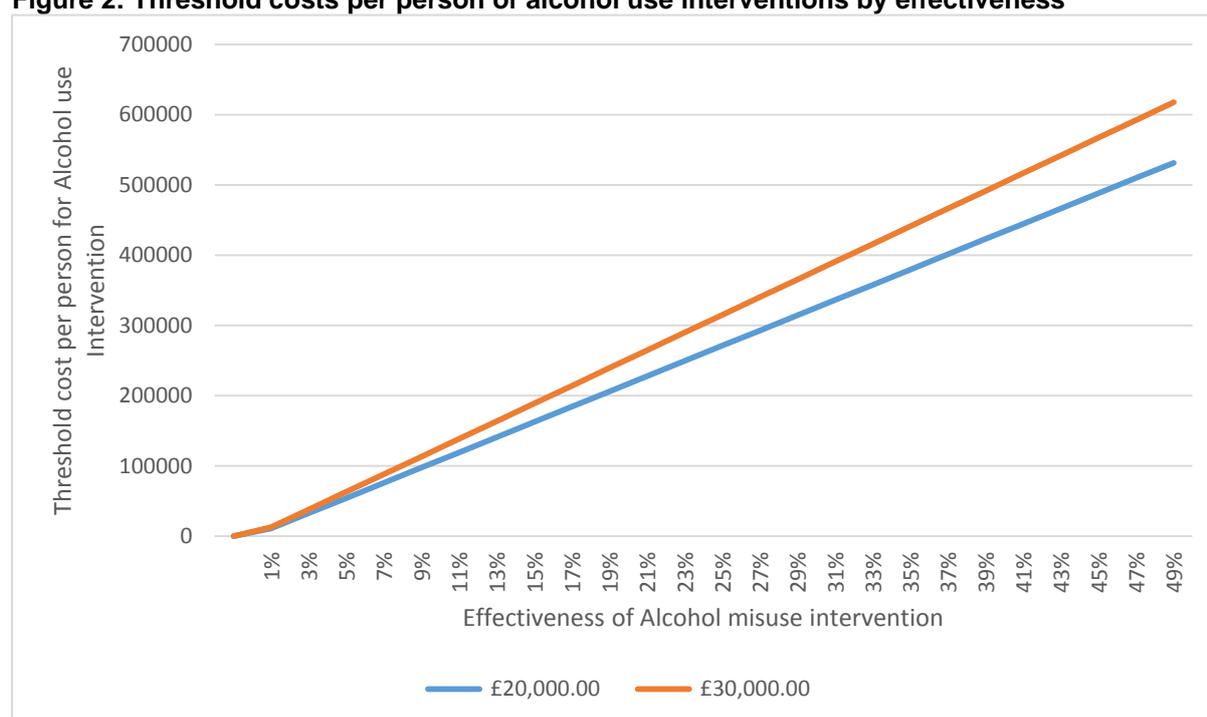
³⁶ According to NICE, a cost-effective intervention is the one for which incremental cost per QALY gained is less or equal to £20,000.

Intervention package	Time horizon			
	2 years	5 years	10 years	Lifetime
Current package vs. Baseline	£434	£141	£34	Dominant
Alternate package vs. Baseline	£420	£135	£32	Dominant
Alternate package vs. Current package	£91	£0	Dominant	Dominant

Impact of intervention costs and effectiveness

A two-way analysis explored the impact of intervention cost and effectiveness on cost-effectiveness of the current packages as a whole. Two threshold values for the ICER³⁷ (£20,000 and £30,000) and various rates of effectiveness ranging from 1% to 51% based on effectiveness data provided in Appendix Table A2 were used. For each threshold value and effectiveness rate, we estimated the maximum cost per person that can be paid for the intervention for it to remain cost effective at the given threshold. The results are presented in [Figure 2](#). For example, for an effectiveness of 13% (equivalent to eCBT), an intervention can cost up to £140,987.54 per person and be cost effective based on a threshold cost of a QALY of £20,000, and £163,823.85 for a threshold of £30,000.

Figure 2: Threshold costs per person of alcohol use interventions by effectiveness



Conclusion from the sensitivity analysis

The above sensitivity analysis suggests that the results with respect to the cost-effectiveness of an intervention package as a whole are fairly robust. The discount rate has minimal impact on the results

³⁷ Maximum costs an intervention could have for it to be cost-effective. NICE recommends £20-30 thousand per QALY gained for NHS interventions.

and it is unlikely that the conclusion of the analysis changes due to changes in the discount rate. Analysis around the cost and effect of an intervention indicate that even with a low effectiveness rate and a very high cost per person, an intervention can still fall within the ICER threshold for cost-effectiveness. Therefore any variations around these two parameters are unlikely to change the results of the analysis.

4.0 Appendices

4.1 Appendix 1: References

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4.2 Appendix 2: Glossary

Increased Risk Alcohol use – defined as increasing and higher risk levels of drinking (over 22 units per week for men and 15 units per week for women).

Dependent population – The alcohol dependent population is derived from the General Household Survey 2010 levels of people drinking above 50 units per week for men and 35 units per week for women, and adjusted for each local authority using the higher and increasing drinking population data.

Benefit-cost ratio – an indicator used in the formal discipline of cost-benefit analysis which attempts to summarise the overall value for money of a project.

Burden of Disease – the impact of a health problem in an area measured by financial cost, mortality, morbidity, or other indicators. It is often quantified in terms of QALYs, which combine the burden due to both death and morbidity into one index.

Discount Rate – The rate, per year, at which future values are diminished to make them comparable to values in the present

Health Inequalities – inequalities in respect of life expectancy or general state of health which are wholly or partly a result of differences in respect of general health determinants.

Incremental Cost-Effectiveness Ratio (ICER) – difference in the expected cost of two interventions, divided by the difference in the expected effect produced by the two interventions.

Net Present Value (NPV) – The present value of an investment's future net benefits minus the initial investment.

Productivity Gains – The impact of an intervention on the productivity / income of those receiving the intervention.

Quality Adjusted Life Year (QALY) – a measure of disease burden, including both the quality and the quantity of life lived. It is used in assessing the value for money of health interventions.

Return on Investment (ROI) – A general term encompassing the techniques for comparing the costs and benefits generated by an investment.

4.3 Appendix 3: Definitions of the ROI metrics in the tool³⁸

Metric	Description
Avoidable burden of disease (QALYs)	The product of the number of QALYs gained per person and the population benefited from the package. This provides an indication of the scale of the health problem that can be resolved by the package.
Benefit-cost ratio (including all cost savings and value of health gains)	The sum of all cost savings and value of health gains (monetary value of QALY multiplied by the number of QALYs gained) divided by the cost of the package. A value greater than 1 indicates that the benefits of the package exceed its costs.
Benefit-cost ratio (including all cost savings)	The sum of all cost savings divided by the cost of the package. A value greater than 1 indicates that the benefits of the package exceed its costs.
Benefit-cost ratio (including only health care cost savings and value of health gains)	The health care cost savings and value of health gains (monetary value of QALY multiplied by the number of QALYs gained) divided by the cost of the package. A value greater than 1 indicates that the benefits of the package exceed its costs.
Benefit-cost ratio (including only health care cost savings)	The health care cost savings divided by the cost of the package. A value greater than 1 indicates that the benefits of the package exceed its costs.
Benefit-cost ratio (including only crime cost savings)	The crime cost savings divided by the cost of the package. A value greater than 1 indicates that the benefits of the package exceed its costs.
Benefit-cost ratio (including only productivity cost savings)	The productivity cost savings divided by the cost of the package. A value greater than 1 indicates that the benefits of the package exceed its costs.
Benefit-cost ratio (including only education benefits)	The education benefits divided by the cost of the package. A value greater than 1 indicates that the benefits of the package exceed its costs.
ICER (including all cost savings)	The incremental cost of the package minus the sum of all cost savings divided by the number of QALYs gained. The ICER can be either: <ul style="list-style-type: none"> • A positive number. • Dominant: if incremental cost of the package minus the sum of all cost savings < 0 and QALYs gained > 0. • Dominated: if incremental cost of the package minus the sum of all cost savings > 0 and QALYs gained < 0. Dominated if incremental cost of the package minus the sum of all cost savings < 0, QALYs gained < 0, and value of QALYs < incremental cost of the package minus the sum of all cost saving.

³⁸ The benefits and costs are summed for the time horizon selected by the user and annual discounts of 3.5% are applied in keeping with NICE's methods and HM Treasury 'Green Book' guide (2011).

Metric	Description
ICER (including only health care cost savings)	<p>The incremental costs of the package minus the health care cost savings divided by the number of QALYs gained.</p> <p>The ICER can be either:</p> <ul style="list-style-type: none"> • A positive number. • Dominant: if incremental cost of the package minus health care cost savings < 0 and QALYs gained > 0. • Dominated: if incremental cost of the package minus health care cost savings > 0 and QALYs gained < 0. <p>Dominated if incremental cost of the package minus the health care cost savings < 0, QALYs gained < 0, and value of QALYs < incremental cost of the package minus the sum of all cost saving.</p>
NPV (including all cost savings and value of health gains)	The sum of all cost savings and value of health gains (monetary value of QALY multiplied by the number of QALYs gained) minus the cost of the package. A positive value indicates that the value of the benefits of the package exceed its costs. .
NPV (including all cost savings)	The sum of all cost savings minus the cost of the package. A positive value indicates that the value of the benefits of the package exceed its costs. .
NPV (including only health care cost savings and value of health gains)	The health care cost savings and value of health gains (monetary value of QALY multiplied by the number of QALYs gained) minus the cost of the package. A positive value indicates that the value of the benefits of the package exceed its costs. .
NPV (including only health care cost savings)	The health care cost savings minus the cost of the package. A positive value indicates that the value of the benefits of the package exceed its costs. .
NPV (including only crime cost savings)	The crime cost savings minus the cost of the package. A positive value indicates that the value of the benefits of the package exceed its costs. .
NPV (including only productivity cost savings)	The productivity cost savings minus the cost of the package. A positive value indicates that the value of the benefits of the package exceed its costs. .
NPV (including only education benefits)	The education benefits minus the cost of the package. A positive value indicates that the value of the benefits of the package exceed its costs. .

4.4 Appendix 4: Alcohol use interventions included in the tool

Intervention type	Intervention	Description	% decrease in number of people who use alcohol	Unit cost (£2013)	Population associated with intervention	Source
Advertising	Increase in health message advertising	An intervention to increase the number of positive message health adverts (i.e. advertising that encourages healthy behaviour or highlights the negative sides of drinking to 1/6 th of all advertising.	0.13%	£0.45	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24./ (High Impact assumption from analysis done for PH24)
Advertising	Ban of alcohol television advertising to under 18 year olds	An intervention banning alcohol advertising on television during the hours children may be watching	0.02%	£0.27	General Population 10-17yrs	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24./ Saffer and Dave 2002, Saffer and Dave 2006

Intervention type	Intervention	Description	% decrease in number of people who use alcohol	Unit cost (£2013)	Population associated with intervention	Source
Advertising	Total ban of advertising	An intervention proposing a complete ban of alcohol advertising	2.19%	£0.27	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24./ Saffer and Dave 2002, Saffer and Dave 2006
Alcohol Specific - Inpatient detoxification	Acute alcohol withdrawal – direct access/inpatient detoxification	A 10 day direct access detoxification service that can be accessed by people without a referral. Staffed by mental health nurses with GP support.	3%	£1,382.32	Needing treatment pop (Adult)	NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115 / Parrott et al (2005)
Alcohol Specific - Structured Day Programme	Acute alcohol withdrawal – hybrid inpatient/outpatient	3-day inpatient detoxification, if required, then an outpatient day programme for 30 days.	4%	£1,309.04	Needing treatment pop (Adult)	NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115 / Parrott et al (2005)

Intervention type	Intervention	Description	% decrease in number of people who use alcohol	Unit cost (£2013)	Population associated with intervention	Source
Availability	10% reduction in licenced hours	An intervention reducing the number of hours per day licenced premises (i.e. pubs, bars and restaurants) can sell alcohol legally	0.20%	£0.27	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24./ Norstrom, T., & Skog, O. J. 2003. Saturday opening of alcohol retail shops in Sweden: an impact analysis. Journal of Studies on Alcohol, vol. 64, no. 3, pp. 393-401.

Intervention type	Intervention	Description	% decrease in number of people who use alcohol	Unit cost (£2013)	Population associated with intervention	Source
Availability	10% reduction in outlet density	An intervention reducing the number of retail outlets that sell alcohol off-licence (i.e. not pubs, bars or restaurants) in an area by 10%.	0.21%	£0.32	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24./ Gruenewald, P. J., Ponicki, W. R., Holder, H. D. 1993. The relationship of outlet densities to alcohol consumption: a time series cross-sectional analysis. Alcoholism: Clinical & Experimental Research, vol. 17, no. 1, pp. 38-47.
Alcohol Specific - Community Prescribing	Acamprosate to support relapse-prevention	Acamprosate for relapse prevention.	8%	£667.21	Needing treatment pop (Adult)	NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115 / Slattery et al (2003)

Intervention type	Intervention	Description	% decrease in number of people who use alcohol	Unit cost (£2013)	Population associated with intervention	Source
Alcohol Specific - Community Prescribing	Naltrexone to support relapse-prevention	Naltrexone for relapse prevention	10%	£678.37	Needing treatment pop (Adult)	NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115 / Slattery et al (2003)
School based	Classroom based alcohol skills activities	Classroom based Skills based activities to reduce alcohol consumption in children aged 10-15.	0.34%	£35.00	General Population 10-15yrs	NICE (2007) School-based interventions on alcohol. Public health guidance 7.
School based	Alcohol Education School curriculum	School curriculum designed to educate children and reduce alcohol consumption in children aged 10-15.	0.23%	£170.50	General Population 10-15yrs	NICE (2007) School-based interventions on alcohol. Public health guidance 7.
Pricing	50p minimum price per unit of alcohol	An intervention enforcing a 50p minimum price per unit of alcohol in off-licence outlets selling alcohol.	0.4%	£0.00	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24. (analysis done for PH24, no other source)

Intervention type	Intervention	Description	% decrease in number of people who use alcohol	Unit cost (£2013)	Population associated with intervention	Source
Pricing	Ban promotions of more than >20% price discount	An intervention banning promotions that offer a discount of over 20% of the price per unit of alcohol in retail outlets (i.e. supermarkets, off-licences and corner shops).	0.05%	£0.00	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24. (analysis done for PH24, no other source)
Alcohol Specific - Structured Psychosocial	Behavioural Self Control Training	Behavioural Self Control Training to promote controlled drinking.	8%	£477.47	Needing treatment pop (Adult)	NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115 / Slattery et al (2003)
Alcohol Specific - Structured Psychosocial	Coping/social skills training	4-10 sessions over 4 weeks of coping/skills training to prevent relapse.	7%	£477.47	Needing treatment pop (Adult)	NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115 / Slattery et al (2003)
Alcohol Specific - Structured Psychosocial	eCBT	An e-therapy programme based on eCBT with active therapeutic involvement	12%	£75	Needing treatment pop (Adult)	Postel et al (2010)/ Breaking Free Online (2012)

Intervention type	Intervention	Description	% decrease in number of people who use alcohol	Unit cost (£2013)	Population associated with intervention	Source
Alcohol Specific - Structured Psychosocial	Marital/Family therapy	Psychosocial treatment of alcohol abuse where BCT treatment is given to the patient and their spouse or family member to prevent relapse.	8%	£477.47	Needing treatment pop (Adult)	NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115 / Slattery et al (2003)
Alcohol Specific - Structured Psychosocial	Motivational interviewing	3-10 sessions over 3 weeks of motivational interviewing to prevent relapse. Evidence found it was best used as an enhancement to a more intensive substance abuse treatment.	7%	£477.47	Needing treatment pop (Adult)	NICE (2011) Alcohol dependence and harmful alcohol use. Clinical Guidance 115 / Slattery et al (2003)
Screening and Brief interventions	Brief intervention with family support	Referral for targeted brief intervention with a school nurse and intervention with families to reduce alcohol consumption in children aged 10-15.	4.00%	£22.58	General Pop 18+	NICE (2007) School-based interventions on alcohol. Public health guidance 7.
Screening and Brief interventions	Screening and Brief intervention at next A&E attendance	5 minute brief advice with A&E staff.	1.44%	£15.95	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24 / Crawford et al (2004)

Intervention type	Intervention	Description	% decrease in number of people who use alcohol	Unit cost (£2013)	Population associated with intervention	Source
Screening and Brief interventions	Screening and Brief intervention at next GP appointment	5 minute brief advice with GP as part of a patient's next consultation.	2% ³⁹	£35.40	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24 / Foxcroft et al (2007)
Screening and Brief interventions	Screening and Brief intervention at next GP registration	5 minute brief advice with GP as part of the registration process when next moving.	2%	£15.13	General Pop 18+	NICE (2010) Alcohol-use disorders: preventing harmful drinking. Public health guidance 24 / Foxcroft et al (2007)

³⁹ The effect sizes for screening and brief interventions are given in NICE Guidance PH24 as 12.3% reduction in **number of units drunk**, rather the number of people reducing their drinking. This has been converted into the number of people moving below the higher and increasing drinking threshold.

4.5 Appendix 5: Literature search

The literature search was developed in consultation with NICE. It aimed to identify new evidence published after NICE guidance on alcohol use was developed.

Search strategy

The search criteria was applied to the following databases:

- Medline
- Embase
- HMIC
- Social Policy & Practice
- PsycInfo
- Scopus
- BL Direct
- BL Catalogue
- ASSIA
- Scirus
- Econlit
- NHS Economic Evaluation Database (NHS EED)
- Health Economic Evaluation Database (HEED)
- Cochrane Library
- Planex
- ArticleFirst

Various search strategies were developed for the different databases that were searched below is an example of one of the strategies that was used in Medline.

1. (alcoholi* or (alcohol* adj3 (abus* or addict* or misus* or dependen* or consum* or intoxicat* or detox* or rehabilitat* or withdraw* or harmful or excess* or binge or hazardous or heavy))).ti,ab.
2. (drinker*1 or (drink* adj2 use*1) or ((alcohol* or drink*) adj5 (abstinen* or abstain* or abus* or addict* or attenuat* or binge* or crav* or dependen* or detox* or disease* or disorder* or excessiv* or harm* or hazard* or heavy or high risk or intoxicat* or misus* or overdos* or (over adj dos*) or problem* or rehab* or reliance or reliant or relaps* or withdraw*))).ti,ab.
3. (control* adj2 drink*).tw. or sobriet*.ti,ab,hw.
4. exp Alcohol-Related Disorders/
5. exp Alcohol Drinking/
6. or/1-5
7. (aftercare or after care or behavior* or behaviour* or ((lifestyle or "life style" or brief) adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or advice or advise))).ti,ab.
8. exp psychotherapy/ or (psychotherap* or psychosocial).ti,ab.
9. exp Behavior/ or Social Control, Informal/ or exp social control policies/ or exp social control, informal/ or (social norm* or social control* or social behavior*).ti,ab.
10. Counseling/ or Aftercare/ or Rehabilitation/ or Recurrence/ or Motivation/ or Directive Counseling/ or Interview, Psychological/ or Health Knowledge, Attitudes, Practice/
11. exp self-help groups/ or alcoholics anonymous/

12. (rehab* or self-help or abstinence or abstain* or abstention or teetotal* or counsel* or motivat*).ti,ab.
13. or/7-12
14. (systematic review or meta analysis).pt.
15. ("rapid evidence" adj3 (assess* or apprais*).ti,ab.
16. ((Systematic* or synthes*) adj3 (Research or evaluation* or finding* or thematic* or report or descriptive or explanatory or narrative or meta* or review* or data or literature or studies or evidence or map or quantitative or study or studies or paper or impact or impacts or effect* or compar*).ti,ab,sh.
17. ("Meta regression" or "meta synth*" or "meta-synth*" or "meta analy*" or "metaanaly*" or "meta-analy*" or "metanaly*" or "Metaregression" or "Meta-regression" or "Methodologic* overview" or "pool* analys*" or "pool* data" or "Quantitative* overview" or "research integration").ti,ab,sh.
18. (review adj3 (effectiveness or effects or systemat* or synth* or integrat* or map* or methodologic* or quantitative or evidence or literature)).ti,ab,sh.
19. meta-analysis/
20. or/14-19
21. 6 and 13 and 20
22. Animals/ not (Humans/ and Animals/)
23. 21 not 22
24. limit 23 to yr="2006 -Current"

Manual searches were undertaken to identify grey literature not available through systematic database search.

Screening

From databases that were searched, 5814 abstracts were identified to be screened. Table A4.1 provides the exclusion and inclusion criteria that was used to screen studies identified in the search. To ensure consistency, Matrix reviewed the inclusion/exclusion criteria utilised in the previous NICE guidance reviews.

Table A4.1 Exclusion criteria for screening abstracts

	Criteria	Exclusion/ Inclusion code	Notes
C1	English language paper	If not 1_EX.LANG	Only studies published in English will be included.
C2	Date To be decided	If not 2_EX.DATE	
C3	Country OECD countries	If not 3_EX.COUNTRY	OECD countries: Australia; Austria; Belgium; Canada; Chile; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Israel; Italy; Japan; Korea; Luxembourg; Mexico; Netherlands, Norway; New Zealand; Poland; Portugal; Slovak Republic; Slovenia; Spain; Sweden; Switzerland; Turkey; United Kingdom, United States.

	Criteria	Exclusion/ Inclusion code	Notes
C4	Topic Papers relating to alcohol misuse/ alcohol abuse	If not 4_EX.TOPIC	For example brief interventions, counselling and rehabilitation.
C5	Population Papers relating to the general adult or child population	If not 5_EX.POP	For example interventions aimed at people with chronic diseases.
C6	Intervention Papers relating to interventions that prevent and/or reduce alcohol misuse/alcohol abuse	If not 6_EX.INTERVENTION	
C7	Setting Interventions that were carried out in: <ul style="list-style-type: none"> • Primary, secondary or tertiary NHS setting • Any local authority, private, community or voluntary social service • Leisure setting 	If not 7_EX.SETTING	Only studies in a relevant setting. For example, interventions targeting alcohol misuse within private companies or n prisons may not be relevant.
C8	Quantitative outcomes <ul style="list-style-type: none"> • Frequency of drinking • Number of self-reported weekly units consumed. • Percentage of participants who moved from harmful to hazardous drinking. 	If not 8_EX.QUANT OUTCOME	These are examples of outcomes and should not be considered as exclusive
C9	Effectiveness Whenever possible, only studies showing a statistically significant positive effect will be included. However if these are not available, studies showing non-statistically significant effects and included in meta-analyses in previous NICE guidance, may be considered. ⁴⁰	If not 9_EX. EFFECT	

⁴⁰ There is a risk of including meta-analysis as these are based on the combined effect of multiple interventions and therefore the cost of the intervention might not be accurately estimated for the ROI tool. If a meta-analysis is identified Matrix will discuss with NICE how best to use the data available.

	Criteria	Exclusion/ Inclusion code	Notes
C10	Study design <ul style="list-style-type: none"> effectiveness studies (RTC, non RTC, and pre-post studies) economic analyses (cost-benefit analyses; cost-effectiveness studies; and cost-utility analyses) systematic reviews 	Studies that look at effectiveness only: 10_IN.EFFECT Studies that are economic analyses: 11_IN.ECON Systematic reviews that include any of the study types: 12_IN.SYSTREV If relevant to the topic but does not contain data but is an opinion piece include as: 13_IN.BACKGROUND Studies that report useful cost and resource data include as: 14_IN.COST If unclear: Q_Query	Systematic reviews that include any of the study types listed above will be identified; these will be used as a source of further primary studies rather than included in the review in their own right. Studies that report useful cost and resource data: These costing studies will be excluded from the cost-effectiveness review but will be recorded separately and used to inform the development of the economic models.

Feasibility assessment

After abstract screening using the exclusion and inclusion criteria, 110 studies were identified for full text review and feasibility assessment. The following feasibility criteria were applied to short list studies:

- Is the setting relevant to the UK context?
- Is the intervention already covered by NICE guidance or does it update the guidance?
- Does the outcome metric measured in the study allow economic modelling?
- Does the paper provide sufficient data on costs or resources to allow costing?

As a result of the feasibility assessment, two studies were identified as feasible to include in the model in addition to interventions already identified in NICE guidance (Postel et al, 2010;

4.6 Appendix 6: Model parameters

Table A5.1 Population data

Data	Source
Population of local area	ONS - Local area specific data
Proportion of population who are high and increasing drinkers	Health Profiles of England (2011) – Individual data from General Lifestyle Survey 2008
Proportion of people admitted for alcohol related harm	Health Profiles of England (2011) – Individual data from Hospital Episode Statistics
Mortality and life tables	Office for National Statistics

Table A5.2 Incremental probability of developing long term diseases – adults

Parameter	Probability	Source
P(of having Malignant neoplasm of lip, oral cavity and pharynx given specific drinking levels)	0.022	NICE (2011)
P(of having Malignant neoplasm of oesophagus given specific drinking levels)	0.016	NICE (2011)
P(of having Malignant neoplasm of colon given specific drinking levels)	0.004	NICE (2011)
P(of having Malignant neoplasm of rectum given specific drinking levels)	0.006	NICE (2011)
P(of having Malignant neoplasm of liver and bile given specific drinking levels)	0.002	NICE (2011)
P(of having Malignant neoplasm of larynx given specific drinking levels)	0.007	NICE (2011)
P(of having Malignant neoplasm of breast given specific drinking levels)	0.019	NICE (2011)
P(of having Diabetes mellitus (Type II) given specific drinking levels)	-0.029	NICE (2011)
P(of having Epilepsy and status epilepticus given specific drinking levels)	0.121	NICE (2011)
P(of having Hypertensive diseases given specific drinking levels)	1.612	NICE (2011)
P(of having Ischaemic Heart Disease given specific drinking levels)	3.883	NICE (2011)
P(of having Cardiac arrhythmias given specific drinking levels)	2.755	NICE (2011)
P(of having Haemorrhagic stroke given specific drinking levels)	0.151	NICE (2011)
P(of having Ischaemic stroke given specific drinking levels)	0.084	NICE (2011)
P(of having Oesophageal varices given specific drinking levels)	0.026	NICE (2011)
P(of having Unspecified liver disease given specific drinking levels)	0.759	NICE (2011)
P(of having Cholelithiasis given specific drinking levels)	-0.071	NICE (2011)
P(of having Psoriasis given specific drinking levels)	1.014	NICE (2011)

Table A5.3 Utilities of long term diseases – adults

Disease	Utility	Source
Malignant neoplasm of lip, oral cavity and pharynx	0.629	NICE (2011)
Malignant neoplasm of oesophagus	0.688	NICE (2011)
Malignant neoplasm of colon	0.737	NICE (2011)
Malignant neoplasm of rectum	0.752	NICE (2011)
Malignant neoplasm of liver and bile	0.607	NICE (2011)
Malignant neoplasm of larynx	0.796	NICE (2011)
Malignant neoplasm of breast	0.736	NICE (2011)
Diabetes mellitus (Type II)	0.617	NICE (2011)
Epilepsy and status epilepticus	0.546	NICE (2011)
Hypertensive diseases	0.675	NICE (2011)
Ischaemic Heart Disease	0.643	NICE (2011)
Cardiac arrhythmias	0.699	NICE (2011)
Haemorrhagic stroke	0.657	NICE (2011)
Ischaemic stroke	0.564	NICE (2011)
Oesophageal varices	0.622	NICE (2011)
Unspecified liver disease	0.612	NICE (2011)
Cholelithiasis	0.740	NICE (2011)
Psoriasis	0.643	NICE (2011)
Spontaneous abortion	0.819	NICE (2011)

Table A5.4 Annual health care costs for long term diseases (updated to 2013) – adults

Disease	Annual cost	Source
Malignant neoplasm of lip, oral cavity and pharynx	£13,872	NICE (2011)
Malignant neoplasm of oesophagus	£13,872	NICE (2011)
Malignant neoplasm of colon	£13,872	NICE (2011)
Malignant neoplasm of rectum	£13,872	NICE (2011)
Malignant neoplasm of liver and bile	£13,872	NICE (2011)
Malignant neoplasm of larynx	£13,872	NICE (2011)
Malignant neoplasm of breast	£2,680	NICE (2011)
Diabetes mellitus (Type II)	£3,616	NICE (2011)
Epilepsy and status epilepticus	£3,714	NICE (2011)
Hypertensive diseases	£1,701	NICE (2011)
Ischaemic Heart Disease	£1,701	NICE (2011)
Cardiac arrhythmias	£1,701	NICE (2011)
Haemorrhagic stroke	£2,469	NICE (2011)
Ischaemic stroke	£2,469	NICE (2011)
Oesophageal varices	£3,661	NICE (2011)
Unspecified liver disease	£1,795	NICE (2011)
Cholelithiasis	£1,795	NICE (2011)
Psoriasis	£1,666	NICE (2011)

Table A5.5 Incremental probability of developing acute diseases – adults

Disease	Probability	Source
Mental and behaviour disorders	0.00000206	NICE (2011)
Degeneration of the nervous system due to alcohol	0.00000004	NICE (2011)
Alcoholic polyneuropathy	0.00000003	NICE (2011)
Alcoholic myopathy	0.00000004	NICE (2011)
Alcoholic cardiomyopathy	0.00000041	NICE (2011)
Alcoholic gastritis	0.00000002	NICE (2011)

Disease	Probability	Source
Alcoholic liver disease	0.00001309	NICE (2011)
Alcohol-induced chronic pancreatitis	0.00000018	NICE (2011)
Ethanol poisoning	0.00000006	NICE (2011)
Methanol poisoning	0.00000002	NICE (2011)
Unspecific toxic effect of alcohol	0.00000092	NICE (2011)
Alcohol poisoning by exposure to alcohol	0.00000087	NICE (2011)

Table A5.6 Utilities of acute diseases – adults

Disease	Utility	Source
Mental and behaviour disorders	0.5	NICE (2011)
Degeneration of the nervous system due to alcohol	0.534	NICE (2011)
Alcoholic polyneuropathy	0.534	NICE (2011)
Alcoholic myopathy	0.571	NICE (2011)
Alcoholic cardiomyopathy	0.571	NICE (2011)
Alcoholic gastritis	0.476	NICE (2011)
Alcoholic liver disease	0.494	NICE (2011)
Alcohol-induced chronic pancreatitis	0.447	NICE (2011)
Ethanol poisoning	0.381	NICE (2011)
Methanol poisoning	0.381	NICE (2011)
Unspecific toxic effect of alcohol	0.642	NICE (2011)
Alcohol poisoning by exposure to alcohol	0.562	NICE (2011)

Table A5.7 Annual health care costs of acute diseases (updated to 2013) – adults

Disease	Annual cost	Source
Mental and behaviour disorders	£5,942	NICE (2011)
Degeneration of the nervous system due to alcohol	£16,890	NICE (2011)
Alcoholic polyneuropathy	£10,526	NICE (2011)
Alcoholic myopathy	£12,991	NICE (2011)
Alcoholic cardiomyopathy	£8,592	NICE (2011)
Alcoholic gastritis	£12,459	NICE (2011)
Alcoholic liver disease	£4,626	NICE (2011)
Alcohol-induced chronic pancreatitis	£19,324	NICE (2011)
Ethanol poisoning	£4,627	NICE (2011)
Methanol poisoning	£4,474	NICE (2011)
Unspecific toxic effect of alcohol	£26,879	NICE (2011)
Alcohol poisoning by exposure to alcohol	£1,803	NICE (2011)

Table A5.8 Relative risks of accidents or injuries – adults

Accidents or injuries	Relative risk	Source
Road traffic accidents – non pedestrian hospitalisation	1.192524	NICE (2011)
Pedestrian traffic accidents - hospitalisations	1.781838	NICE (2011)
Water transport accident	1.449448	NICE (2011)
Air/space transport accidents	1.277374	NICE (2011)
Fall injuries	1.211468	NICE (2011)
Work/machine injuries	1.21337	NICE (2011)
Firearm injuries	1.083556	NICE (2011)
Drowning	1.369966	NICE (2011)
Inhalation of gastric contents and ingestion	1.782498	NICE (2011)

Accidents or injuries	Relative risk	Source
Fire injuries	1.369966	NICE (2011)
Accidental excessive cold	1.680388	NICE (2011)
Intentional self-harm	1.369966	NICE (2011)
Assault	1.55734	NICE (2011)

Table A5.9 Annual health care costs of accidents and injuries – adults (uprated to 2013)

Accidents or injuries	Annual cost	Source
Road traffic accidents – non pedestrian hospitalisation	£44,953.37	NICE (2011)
Pedestrian traffic accidents - hospitalisations	£123,384.39	NICE (2011)
Water transport accident	£7,460.97	NICE (2011)
Air/space transport accidents	£19,918.30	NICE (2011)
Fall injuries	£3,735.73	NICE (2011)
Work/machine injuries	£7,099.81	NICE (2011)
Firearm injuries	£5,591.39	NICE (2011)
Drowning	£3,392.10	NICE (2011)
Inhalation of gastric contents and ingestion	£3,469.67	NICE (2011)
Fire injuries	£2,647.72	NICE (2011)
Accidental excessive cold	£4,317.19	NICE (2011)
Intentional self-harm	£5,512.33	NICE (2011)
Assault	£5,618.28	NICE (2011)

Table A5.10 Utilities of accidents and injuries – adults - £2013

Accidents or injuries	Utility	Source
Road traffic accidents – non pedestrian hospitalisation	0.598	NICE (2011)
Pedestrian traffic accidents - hospitalisations	0.577	NICE (2011)
Water transport accident	0.577	NICE (2011)
Air/space transport accidents	0.598	NICE (2011)
Fall injuries	0.598	NICE (2011)
Work/machine injuries	0.623	NICE (2011)
Firearm injuries	0.781	NICE (2011)
Drowning	0.577	NICE (2011)
Inhalation of gastric contents and ingestion	0.577	NICE (2011)
Fire injuries	0.852	NICE (2011)
Accidental excessive cold	0.577	NICE (2011)
Intentional self-harm	0.577	NICE (2011)
Assault	0.407	NICE (2011)

Table A5.11 Productivity – adults (uprated to 2013)

Productivity	Value	Source
Value of days of absence avoided due to reduced alcohol consumption in Year 1	£47,206,165.70	NICE (2009)
Cumulative discounted value of days of absence avoided due to reduced alcohol consumption for Years 1-10	£392,849,496.90	NICE (2009)
Value of increased employment due to reduced alcohol consumption in Year 1	£314,279,597.52	NICE (2009)

Productivity	Value	Source
Cumulative discounted value of increased employment due to reduced alcohol consumption for year 1-10	£2,614,001,284.52	NICE (2009)
Estimated number of drinkers moving from heavy to moderate drinking (based on 2005 distribution of consumption)	£276,741.89	Calculation, Alcohol attributable fractions in England (2008)
Combined productivity gain per drinker moving from heavy to moderate consumption in Year 1	£1,306.22	Calculation
Combined productivity gain per drinker moving from heavy to moderate consumption per year	£1,532.64	Calculation

Table A5.12 Alcohol attributable fraction of crimes – adults

Crime type	Alcohol attributable fraction	Source
Causing death by dangerous driving	0.6195368	NICE PH24 (2009)
More serious wounding	0.5315624	NICE PH24 (2009)
Less serious wounding	0.5315624	NICE PH24 (2009)
Assault on a constable	0.6797492	NICE PH24 (2009)
Assault without injury	0.6797492	NICE PH24 (2009)
Criminal damage	0.1898564	NICE PH24 (2009)
Theft from the person	0.9824088	NICE PH24 (2009)
Robbery	0.9824088	NICE PH24 (2009)
Robbery (business)	0.9824088	NICE PH24 (2009)
Burglary in a dwelling	0.9824088	NICE PH24 (2009)
Burglary not in a dwelling	0.9824088	NICE PH24 (2009)
Theft of a pedal cycle	0.9824088	NICE PH24 (2009)
Other theft	0.9824088	NICE PH24 (2009)
Theft from shops	0.9824088	NICE PH24 (2009)
Violent disorder	0.6195368	NICE PH24 (2009)
Total sexual offense	0.6195368	NICE PH24 (2009)
Homicide	0.6195368	NICE PH24 (2009)

Costs of crimes come from the UK Home Office unit costs of crime data and is calculated based on the following dimensions:

- Defensive Expenditure
- Insurance Administration
- Physical and Emotional Impact on Direct Victims
- Value of Property Stolen
- Property Damaged/Destroyed
- Property Recovered
- Victim Services
- Lost Output
- Health Services
- Criminal Justice System

Table A5.13 Average cost of crime – adults (uprated to 2013)

Parameter	Cost	Source
Causing death by dangerous driving	£157,873.05	NICE PH24 (2009)
More serious wounding	£18,056.09	NICE PH24 (2009)
Less serious wounding	£3,747.59	NICE PH24 (2009)
Assault on a constable	£698.99	NICE PH24 (2009)
Assault without injury	£698.99	NICE PH24 (2009)
Criminal damage	£422.82	NICE PH24 (2009)
Theft from the person	£698.99	NICE PH24 (2009)
Robbery	£4,532.22	NICE PH24 (2009)
Robbery (business)	£4,677.80	NICE PH24 (2009)
Burglary in a dwelling	£2,805.61	NICE PH24 (2009)
Burglary not in a dwelling	£2,868.76	NICE PH24 (2009)
Theft of a pedal cycle	£553.41	NICE PH24 (2009)
Other theft	£553.41	NICE PH24 (2009)
Theft from shops	£107.04	NICE PH24 (2009)
Violent disorder	£5,281.52	NICE PH24 (2009)
Total sexual offense	£9,295.65	NICE PH24 (2009)
Homicide	£157,873.05	NICE PH24 (2009)

Table A5.14 Percentage of injuries attributable to alcohol – children

Parameter	Percentage	Source
Alcohol attributable injuries as % of total injuries	2%	
Of these:		
Luxation	26%	NICE PH7 (2008)
Contusion	24%	NICE PH7 (2008)
Fracture	24%	NICE PH7 (2008)
Gaping wound	22%	NICE PH7 (2008)
Concussion	1%	NICE PH7 (2008)
Examination after injury	2.5%	NICE PH7 (2008)
Other	4%	NICE PH7 (2008)

Table A5.15 Unit cost of injuries in children attributable to alcohol – children (uprated to 2013)

Parameter	Cost	Source
Luxation	£126.50	NICE PH7 (2008)
Contusion	£126.50	NICE PH7 (2008)
Fracture	£126.50	NICE PH7 (2008)
Gaping wound	£102.80	NICE PH7 (2008)
Concussion	£164.90	NICE PH7 (2008)
Examination after injury	£102.80	NICE PH7 (2008)
Other	£102.80	NICE PH7 (2008)

Table A5.16 Costs and probabilities of truancy calculation – children (uprated to 2013)

Parameter	Value	Source
Alcohol related cases of truancy (5 or more times)	57616	NICE PH7 (2008)
Alcohol related truancy rate	0.029	NICE PH7 (2008)

Parameter	Value	Source
Cost of truancy (discounted, over 7 years)	£6508	Matrix (2011). School Home Support: Short-term realisable cash savings as a result of School Home Support. p.15
Truancy cost per case avoided	£187	Calculation

Table A5.17 Average cost of crime (updated to 2013) – children

Crime type	Cost	Source
Percentage of 10-17 years old that commit an offence	0.28	NICE PH7 (2008)
Arrests per offence	0.03	NICE PH7 (2008)
Cost per arrest	£1,800	NICE PH7 (2008)
Any violent offence - attributable to drunkenness	0.05	NICE PH7 (2008)
All property offences - attributable to drunkenness	0.02	NICE PH7 (2008)
Crime costs per case of drunkenness avoided	£1.058	Calculation

4.7 Appendix 7: Additional information

Accessing the tool

The tool shall be freely available on the NICE website.

Version control

Note that some of the tool inputs are time limited (e.g. population statistics) and may be updated when new data becomes available. As such, it is the user's responsibility to ensure that they are using the latest version of the tool. All versions made available for download will be clearly marked with a version number.

Referencing the tool

Any analysis based on this tool needs to be acknowledge the use of this tool as follows: "This analysis is based on NICE Return on Investment Tool for Physical Activity, version 1" and include the citation as:

Mallender, J., Bertranou, E., Owen, L., Lester-George, A., Roberts, S. Jhita, T., (2013) Alcohol use Return on Investment Tool. London: National Institute of Health and Care Excellence

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Disclaimer information

NICE has provided this tool to aid decision-making. NICE cannot be held liable for any investment or other decisions that are made using information and results obtained from this tool. Implementation of NICE guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement NICE guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard for promoting equality of opportunity. Nothing in this tool should be interpreted in a way that would be inconsistent with compliance with those duties.

Acknowledgements

Matrix would like to thank all the individuals who contributed comments during the development of the tool

Request to users

This tool may be subject to continuous improvement. If any problem is encountered or inconsistency is found, please report it to NICE by emailing nice@nice.org.uk