



Public Health  
England



UCL Institute of Health Equity

Local action on health inequalities:  
**Understanding the economics  
of investments in the  
social determinants of health**



### About Public Health England

Public Health England's mission is to protect and improve the nation's health and to address inequalities through working with national and local government, the NHS, industry and the voluntary and community sector. PHE is an operationally autonomous executive agency of the Department of Health.

### About the UCL Institute of Health Equity

The Institute is led by Professor Sir Michael Marmot and seeks to increase health equity through action on the social determinants of health, specifically in four areas: influencing global, national and local policies; advising on and learning from practice; building the evidence base; and capacity building. The Institute builds on previous work to tackle inequalities in health led by Professor Sir Michael Marmot and his team, including the 'Commission on Social Determinants of Health', 'Fair Society Healthy Lives' (The Marmot Review) and the 'Review of Social Determinants of Health and the Health Divide for the WHO European Region'.

[www.instituteofhealthequity.org](http://www.instituteofhealthequity.org)

### About this evidence review

This evidence review was commissioned by PHE and researched, analysed and written by the Institute of Health Equity (IHE). There are related evidence reviews available in this series. There is a companion summary briefing note available on this and other related topics from the same series. This review is intended primarily for directors of public health, public health teams and local authorities. This review and the accompanying briefing are part of a series commissioned by PHE to describe and demonstrate effective, practical local action on a range of social determinants of health.

This evidence review was written for IHE by David Buck, senior fellow in public health and health inequalities, The King's Fund.

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## Key messages

1. Economic impact tools can help support local authorities' decisions on whether and how to invest on the social determinants of health.
2. Economic impact tools (such as cost-benefit analysis) are ways of assessing whether a particular action or intervention is likely to result in an overall benefit, and what the associated costs will be. They focus on the overall efficiency or value-for-money of taking one course of action versus another. They are designed to support investment decisions but cannot give answers alone about what action to take.
3. Most economic techniques, on their own, do not take distributional or equity effects into account - this is an important limitation. In many cases, there is a trade-off between equity and efficiency. It is therefore critical that evidence on inequalities, or the effect of an intervention for different social groups, is considered alongside economic measures when taking investment decisions for action on the social determinants of health.
4. The Social Return of Investment (SROI) approach is a helpful way of thinking about the wide range of social impacts that could arise from an intervention. The SROI approach may also be helpful for considering the effects of a programme of work for different groups
5. While there are relatively few examples of economic impact analysis on the social determinants of health, approaches to support investment decisions in this area are developing rapidly and are available. This paper summarises much of what is currently available. More need to be developed.
6. Service commissioners can play a vital role in developing best practice in this area, with support from Public Health England (PHE) by: ensuring high-quality data is collected on interventions; economic and equity evaluations conducted; and the findings shared with the public service community.

# Introduction

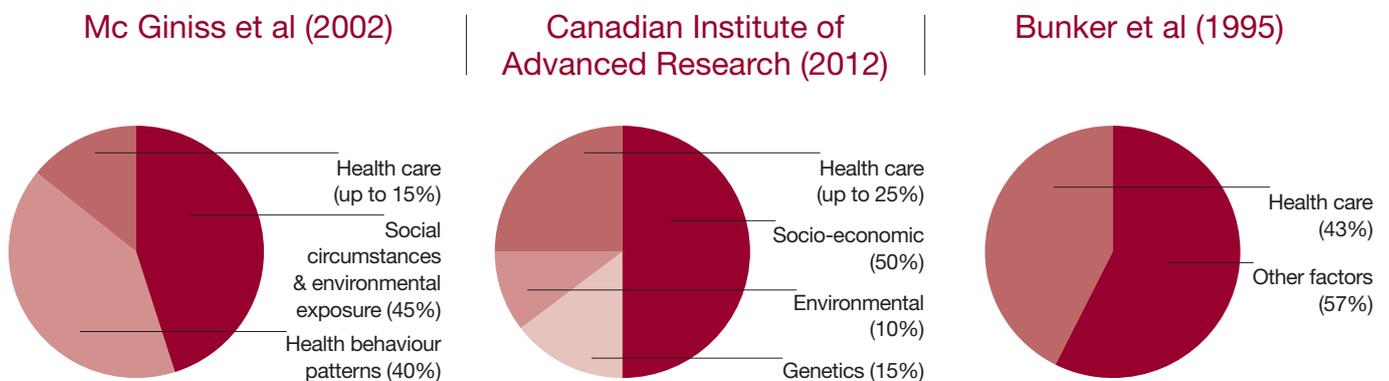
This paper provides information to support decision-making on actions to address the social determinants of health and the development of business cases for investment. It supplements the evidence reviews in this series, which include information on the economic impacts of actions on health inequalities, and should help the reader to be an intelligent customer and commissioner of economic analyses and to understand their limitations.

## This paper covers:

- the rationale for understanding, measuring and taking into account the economic impact of decisions and interventions that impact on the social determinants of health
- the benefits and limitations of various ‘economic measures of impact’ – commonly used terms which can be confusing, sometimes leading to misinterpretation of which measure of economic impact is appropriate for what purpose
- what is currently known about the economic impact of intervening in the social determinants of health
- good practice and further resources which will support better decisions
- this paper complements a collection of evidence reviews on health equity commissioned by PHE and written by the UCL Institute of Health Equity

# 1. The importance of understanding the economic impact of the social determinants of health

Local authorities have a critical role in improving the health of their populations and reducing health inequalities. We know that the social determinants of health – people’s housing, education, income and physical and social environment – are what drive health more than any other factors (figure 1).



**Figure 1: Estimates of the contribution of the main drivers of health status**

Source: [www.kingsfund.org.uk/time-to-think-differently/trends/broader-determinants-health](http://www.kingsfund.org.uk/time-to-think-differently/trends/broader-determinants-health)

Many of these social determinants correspond with local authorities’ core responsibilities. But given limited budgets the question is how best to spend limited resources on these determinants with an explicit aim of improving health outcomes and reducing inequalities. In particular, how much should be spent on these determinants and how should this spending be distributed between early years, school-age education, housing, services for the elderly, green spaces, improved travel, environmentally friendly policies and all the other ways in which local authorities can improve health and reduce inequalities by exercising their core functions?

The answer to this question is driven by many factors including the political mandate of the council, the views and interests of officers and councilors and the local population, views on social justice and many other considerations. Appropriately used, economic measures of impact can help provide greater transparency about the impacts of alternative spending, what the costs are, who those benefits and costs will affect, and over what time period. In essence, they can help clarify the consequences of choosing one action over another.

Further, in a time of austerity, decisions are not just about where to spend, but how to minimise the social impact of spending less. Increasingly, therefore, we also need to be clearer about what the likely long-term health consequences of disinvestment in the social determinants of health are, and how to value these against other impacts. Typically, cutting spending will have impacts on health, leading to the question, where cuts have to be made, what is the least damaging way to do so in terms of overall population health and health equity?

In its broadest sense the 'economic impact' is therefore about including an assessment of all these competing factors in supporting better choices. Economic impact measures are rarely just about costs, or financial impacts – that is financial accounting. Only, at its most basic level is the economic impact either the financial burden of a problem, or the competing financial costs of choosing to do one thing or another. Cost or budget information, or cost savings on their own, are never enough to guide better decisions.

With councils facing reductions in funding they need to make savings. Economic measures can – and arguably should – be used to help prioritise those areas where savings can be made, but with the least harm and with a focus on ensuring equity. What separates economic measures of impact from accountancy is the measurement and valuation of the relative benefits and harms from spending and cutting choices, not just the budgetary impacts. Given councils' public health objectives, these economic measures are doubly useful since they can be used to measure and value the health benefits of decisions taken in other council function areas, as well as in direct public health functions.

## 2. Why economic impact tools need to be used with care

Rarely, if ever, can measures of economic impact tell a local authority what decision to make about action on the social determinants of health. There are so many factors that cannot be quantified, translated into, or presented from an economic perspective.

Measures of economic impact therefore should not determine a course of action. However, economic measures used well can be good servants to decision-makers. They can help make assumptions explicit and transparent – and therefore challengeable and accountable – and can help decision-makers make better decisions to support investment in the social determinants of health.

### Benefits of economic measures

- economic measures seek to set out clearly the costs and benefits of taking alternative courses of action, to help decision-makers be more aware of the implications of their decisions
- they indicate the scale of resources required for action to achieve desired levels of health and health equity outcomes
- the process and discipline of developing economic measures is a discipline that helps expose and test decision-makers' assumptions and value judgments
- used appropriately, economic measures can help ensure the efficiency of public health spending, maximising the population health and health equity outcomes gained for the budget available

### Limitations of economic measures

- there are currently far fewer examples of good studies and economic measures in the social determinants of health than for behaviour change. Some of the existing evidence is summarised below
- not everything can be taken into account in an economic measure. Many effects are by necessity left out, either because they are by nature intangible or because we have not yet developed adequate ways to measure them; for instance, the long-term effects of many public health interventions
- measures of economic impact should not be over-interpreted, particularly for complex social interventions which will have multiple effects over the long term in many indirect, as well as direct, ways. They are only a guide to what the impacts can be
- economic measures usually ignore equity, or rather make the implicit assumption that a given benefit or cost of an action has the same impact for everyone affected by it. This means that issues of social justice and inequalities need to be discussed alongside economic measures and a better understanding of distributional impact developed

**Therefore, use economic measures with care...**

- economic measures are not a substitute for decision-making; they are at best only a support to it. No decision should be made on the basis of an economic measure alone. Similarly, just because an intervention does not have accompanying measures or evidence of economic impact, that does not mean it should not be pursued
- where interventions or actions are particularly complex, good studies of economic measures of impact should include sensitivity analysis to give a sense of the range of costs and benefits that could result, rather than a single view
- economic measures that do not take into account equity can inform about the efficiency with which alternative interventions can deliver health benefits and (where applicable) save costs, but not about the equity and distributional impacts. This means that where reducing inequalities in health is a core objective, there is a need to supplement the use of these economic measures with evidence on who gains and loses from different interventions and the equity implications
- more contextual, often qualitative, information is therefore needed alongside economic measures to make sense of them, particularly the nuances of 'what works for whom and in what circumstances'. Sometimes economic measures can be broken down, or adapted, to help answer these questions, but this is rare

The rest of this paper sets out some of these issues in more detail by clarifying terms, discussing in more detail what economic measures can and cannot tell you, and describing which measures are most useful in different situations. We then present a summary of current information on the economics of investing in the social determinants of health and signpost where to go for more in-depth resources.

## 3. Different definitions and ways of measuring economic impact

The first principle of understanding, interpreting and using estimates of ‘economic impact’ is buyer beware. This is not so much because of the deliberate use of misleading approaches, measures or figures but because there are many different ways to express economic impact, measures can overlap, and many different decisions need to be taken on what to include and what to leave out. Being as clear and transparent as possible about this is critical if economic impact measures are to have credibility.

### 3.1: The economic valuation of health

Before we review the most common of these measures of economic impact, it is important to introduce the economic valuation of health. Many of the terms and definitions in what follows rely on a translation of health measures into economic values. In the UK (and wider European) context this is often done through the use of quality-adjusted life years (QALYs) and their economic valuation.

QALYs are an attempt to take into account both length of life and the quality of life. Although we will not dwell on them in detail here,<sup>1</sup> QALYs are increasingly used in debates on the economic impacts of health for two reasons. First, they are a way of comparing the outcomes of many different types of illness, treatments for illness and attempts to prevent it – including the social determinants of health – and are therefore a good metric to help decision-makers choose between options. They are therefore commonly used in ‘cost per QALY’ studies of cost-effectiveness analysis. Second, there are existing estimates of how much the population is actually willing to pay (or fund through taxation) for the health improvements that a QALY confers.<sup>2</sup> It is therefore possible to translate QALY gains into monetary equivalents. This valuation of a QALY provides a useful indicator for determining the cost threshold for public health interventions on the social determinants of health. In the vast majority of studies, the value of a QALY is the same, no matter who benefits from it, this has implications for the analysis of inequalities, see section 4.1 for a discussion of this.

The National Institute for Health and Care Excellence (NICE) has been instrumental in researching how much the public values health improvement in economic or monetary terms, and has then used this information to judge whether new NHS clinical treatments and drugs are cost-effective for the NHS. At the present time, this threshold is around £20,000 to £30,000 per QALY, and NICE considers NHS treatments above this range generally not cost-effective and does not recommend them.<sup>3</sup>

Finally, some studies focus on mortality reduction alone. In these cases a simpler measure is sometimes used, the ‘value of a statistical life’ (VSL). Estimates by the Department of Transport, suggest that the value of preventing a road accident fatality was around £1.25m in the mid 2000s<sup>4</sup> and these ‘transport’ derived measures are often used as a simple metric for the value of a life saved in other areas. However, in general VSLs are a less precise measure than QALYs: the latter attempt to explicitly take into account the length and qualities of life saved<sup>5</sup>, not simply ascribing a single value to all lives saved. Where there is a choice, QALYs are therefore generally preferred.

### 3.2: The cost of illness

The starting point for most joint strategic needs assessments (JSNAs) is population health needs. Measures of need can be included in two ways: to give an estimate of the overall scale of need, often referred to as the ‘burden of illness’ of a disease or health condition; or to give an assessment of the resources that are used to treat that need, often known as the ‘cost-of-illness’.

The burden of illness can be presented by clinical estimates, such as numbers of lives, life-years or QALYs. The cost of illness usually refers to the cost to the health system of treating disease or illness; in the UK this is usually restricted to the NHS. Sometimes cost of illness can be used to refer to the financial costs to the individual themselves of treatment, or wider costs such as lost income through work, or the valuation of the health losses incurred as a result of the disease or illness.

One good example of this approach to directly estimating the opportunity cost to society of health inequalities is provided in the Marmot Review, ‘Fair society, healthy lives’:

“It is estimated that inequality in illness accounts for productivity losses of £31–33 billion per year, lost taxes and higher welfare payments in the range of £20–32 billion per year, and additional NHS healthcare costs associated with inequality are well in excess of £5.5 billion per year. If no action is taken, the cost of treating the various illnesses that result from inequalities in the level of obesity alone will rise from £2 billion per year to nearly £5 billion per year in 2025.”<sup>6</sup>

### 3.3: Cost of intervention

Once a decision has been taken to intervene or act – which may have been guided by information on the burden of disease or the cost of illness – the most basic economic impact measure is the cost of intervention. For a local authority, this will be the direct call on its budget for the intervention assessed – this is where the financial cost and the economic impact are synonymous terms. This allows local authorities to understand the relative scale of resources required from its overall budget.

### 3.4: Cost-benefit analysis and social return on investment

Increasingly, there is a realisation that what matters is not simply the provision of services and awareness of the costs of doing so, but a greater focus on how service use translates into outcomes and benefits that users and citizens value.

Cost-benefit analysis (CBA) is the standard economic technique for deciding whether those benefits are worth the cost of producing them. The Green Book<sup>7</sup>, the Treasury’s guide to using economic measures in government project appraisals, sets out the rationale and use of cost-benefit analysis and many of the other techniques set out here.

CBA seeks to provide economic values (expressed in pounds sterling) for as many of the costs and benefits as possible to allow decision-makers to assemble an overall assessment of whether or not it is worth investing in a specific area. This is why the translation of QALYs and other measures are useful, since the health benefits of intervention can be included in the cost-benefit ratio – alongside monetary valuations of other valued benefits. CBA therefore seeks to play in all the factors and effects into a single ratio, to come to a highly summarised view of all the upsides and downsides of taking a course of action. As such, cost-benefit analyses are used primarily to make and test the case for high level action – is something broadly worth doing or not? Essentially, the benefit to cost ratio needs

to be above one (where benefits are more than costs) in order for it to be worth going forward; the higher the ratio, the greater the benefits in relation to costs.

One of the most important things in cost-benefit analysis is to be very clear on what is included in the benefits. This is particularly true of the social determinants of health where the benefits can include cost reduction, productivity gains, long-term health gains (measured in terms of their monetary value), equity gains (where assessed) and impacts in other sectors to name just a few. Different cost-benefit analyses make different choices on what to measure, particularly in terms of benefits. This is important when reporting and interpreting cost-benefit ratios.

The term social return on investment (SROI) – increasingly popular in the public sector – is in fact closely related to cost-benefit analysis. SROIs<sup>8</sup> have been promoted by the Cabinet Office and others to help third sector and community organisations be more explicit about the impact and value they create among often disadvantaged groups and communities, using cost-benefit analysis methods. As such, they can also be a tool for incorporating equity, and a way to be more explicit about inequalities impacts. The actual process of thinking through the components and process of an evaluation, particularly an SROI, helps develop a greater reflection and understanding of how interventions are actually expected to work, from inputs through to final outcomes, on whom they are expected to impact, and to what extent. SROIs can also concomitantly support local authorities and other public service commissioners to meet their duties under the Social Value Act (see below).

### 3.5: Cost-effectiveness analysis

CBA or SROI help make the case to act, but there are many ways in which to do so. Cost-effectiveness analysis can be used to decide *in which way* to act; which among competing intensities or types of intervention is likely to deliver the most outcomes, for a given budget?

Increasingly, cost-effectiveness analysis is being used to inform public health decisions. NICE undertakes cost-effectiveness analysis when developing its public health guidance<sup>9</sup> and there are European<sup>10</sup> and American studies<sup>11</sup> that have summarised cost-effectiveness across a wide variety of public health interventions, although these tend to be health care and behavioural interventions.

Cost-effectiveness analysis can be expressed in different ways, such as cost per accident averted (in the case of road safety interventions), cost per case of asthma averted (in the case of environmental interventions) or cost per quitter (in the case of tobacco control interventions). But more and more, cost-effectiveness analyses are using broader measures of impact that mean more interventions can be compared against each other, often using cost per life year saved, or cost per QALY saved.

### 3.6: Other commonly used terms and blurring of terms

In practice, there are other terms used when discussing economic impact measures. Two of the most common are ‘return on investment’ and ‘cost consequence analysis’. The former has a very distinct meaning in finance but NICE has used it<sup>12</sup> broadly to refer to the wide array of measures – the most common of which are set out above – that help support decision-makers when taking into account the costs and benefits of decisions. Similarly, it also uses the term cost consequence analysis to refer to a ‘setting down’ or ‘listing’ of the consequences of actions that flow from taking decisions, but that are not directly incorporated into the measures above. This can be useful for social determinants analysis, since in most cases impacts cannot currently be measured directly (see section 4.1), but nonetheless should be presented to decision-makers to take account of in their decisions.

More broadly, different studies, authors and institutions can use the terms above in subtly different ways. The key thing is ensuring a transparent understanding of how the measure was arrived at and how it is relevant to a local authorities-specific context and situation. The following section sets out our view on how these measures, as defined above, can be used in combination to support three key questions that local authorities will want to ask of any intervention on the social determinants of health.

## 4. Key questions to ask of economic impact measures

With economic measures it is important to understand what exactly is being measured and counted. This is particularly true of cost-benefit analysis as discussed above. Beyond this, two further questions to be asked of any economic impact measure are: a) how are equity issues considered and b) are costs and benefits that occur at different times taken into account?

### 4.1: How should equity and inequality considerations be incorporated?

The 'standard' versions of the techniques above do not routinely incorporate equity considerations – how the costs and benefits of interventions and actions are distributed among members of society. For example, an intervention may deliver greater health and other benefits than it costs, but at the extreme, if all the costs fall on the poor and all the health and other benefits accrue to the rich, should it go ahead? Most economic techniques – on their own – do not take these distributional or social justice effects into account. This is a significant weakness of most economic impact measures.

There are two ways in which this can be addressed. The most common approach is to assess the equity effects 'off-model', that is to report separately alongside an analysis of economic impacts a statement or separate analysis – often, but not always qualitative – on the likely equity consequences of different actions. Structured approaches to this include the health equity assessment tool<sup>13</sup> and health equity audits;<sup>14</sup> equity issues are often identified in health impact assessments and deliberative methods can also be used.<sup>15</sup> These approaches can therefore be used in tandem with economic impact measures to provide a rounded set of information for decision-makers to consider.

Although equity is usually ignored in measures of economic impact, there are some ways to incorporate equity concerns *directly* into models of economic impact. The Treasury's guide to assessing economic impact, the Green Book, discusses ways to incorporate equity impacts directly in CBAs, based on the marginal utility of income.<sup>16</sup> There are also more specific ways to do so, based on the health impacts specifically, such as weighting QALYs – making explicit assumptions that the health of some groups is valued more highly than others.<sup>17</sup> These value judgments, about the comparative value of a given improvement in someone's health versus someone else's improvement takes us further into judgments about inequality – or fairness. Methods are currently being developed to include the impact on health inequalities in health cost-effectiveness analysis.<sup>18</sup>

At the moment NICE does not include equity weightings in its economic analyses<sup>19</sup> and there are different views on how and whether equity and health inequalities should be incorporated directly into economic measures.<sup>20</sup>

In practice, the large majority of existing studies using economic measures do not directly include equity considerations. It therefore remains important to include considerations of equity in any use of economic measures in decision-making.

## 4.2: How do the measures value the future versus the present?

Although some interventions impact quickly, most will take several years or more to come to fruition. So, how should this affect decisions? Should all benefits – or costs – no matter when they occur be valued equally, or should we value those that occur now, or to future generations, more highly?

Economic approaches often include the discount rate as a way of helping decision-makers take account of when and how costs and benefits are incurred. The Treasury's Green Book discusses the use and value of the discount rate,<sup>21</sup> in order to take into account society's 'social time preference' for benefits now rather than later, and to delay costs in the future rather than pay them now. The use of the discount rate allows the calculation of the 'net present value' of an intervention, so that interventions that produce benefits and costs over different time periods can be compared with one another.

The discount rate that the Treasury uses is currently set at 3.5% 'real' (that is over and above inflation) per year. This means that, after accounting for inflation, for every year that a benefit incurs in the future it should be valued at 3.5% less than if it occurs right now. The Treasury use this – based on extensive research – to reflect society's clear preference for receiving benefits now, rather than having to wait for them.

The cumulative impact of applying this 3.5% discount rate over very long periods can lead to a very large reduction in the value of those benefits. For instance an intervention could deliver 1,000 QALYs in the current year, but if it took longer to deliver say at the end of next year, that would be valued at only 966 QALYs 'now', and those same QALYs would be worth only 356 QALYs now, if accruing in 30 years' time. This implies that an intervention – say a road improvement that reduced cycling casualties – that could be completed this year and saved 500 QALYs immediately would be preferred to another scheme that may take much longer to develop, and deliver 1,000 QALYs in 30 years' time.

By and large, we want health improvements, like other things, sooner rather than later. The discount rate is one way of quantifying this. However, a clear problem with relying on discounting at Treasury rates is that this can disadvantage public health interventions that often take a long time to 'pay back' in terms of health and economic impact. For instance, by definition, those focussed on setting children on the right track. For this, and other reasons, NICE recommends a lower but not zero real discount rate of 1.5%<sup>22</sup> for the costs and benefits of public health interventions that accrue in years beyond the initial decision.

## 5. Using economic measures to support business cases and support choice among options

From an economic perspective, two core questions lie at the heart of decision-making for local authorities when deciding on whether to implement a single intervention or a wider programme of work. First, is there a business case? And second, given there is a business case, which option is the best one?

In order to answer these questions well, two further questions need answering: how are costs and benefits over time valued? What are the inequalities implications? The measures presented above can be helpful in answering these questions.

### Question 1: Is there a business case?

Three measures are particularly helpful here: the burden of illness, the cost-of-illness and cost-benefit analysis.

The burden of illness and cost-of-illness help to make the case that there is a problem of sufficient health and economic impact to mean there is an *a priori* case for intervening to step in and attempt to alleviate or solve it. The estimates of the costs of health inequalities provided in 'Fair society, healthy lives', quoted above, fall within this bracket.

Unfortunately, though, some problems – no matter their scale – are either not amenable to alleviation, or if they are, putting them right may be so costly as to not make doing so worthwhile. It may still be judged worthwhile for social justice, moral, political or ethical reasons<sup>23</sup> to take action and incur expenditure, but such decisions can be supported and challenged by a business case that would include estimates of the burden and cost-of-illness *and* further supported by a cost-benefit analysis, and separate consideration of the inequality impacts.

Critically, a good CBA of an intervention on the social determinants with the objective of improving health will also incorporate an assessment of the wider benefits of acting across local authorities' other portfolios to provide win-wins across sectors. And, conversely, local authorities need to take into account the health equity impacts in their assessment of the economic impacts of decisions on the social determinants of health when the prime objective is *not* health improvement since, as the King's Fund states:

"...the vast majority of expenditure and costs are already committed in order to deliver non-health core objectives. From this perspective, improvements in health outcomes achieved through proven interventions will come at very little, if any additional cost."<sup>24</sup>

In this instance, any assessment of costs of addressing the social determinants of health should only include the marginal additional costs of adapting these mainstream programmes to improve their effectiveness in reducing health inequalities.

### **Question 2: Which option to choose?**

Given a decision to proceed (hopefully informed by a business case), there are often multiple ways of intervening to address a problem. Cost-effectiveness analysis is the most common tool for supporting decisions among competing options, although some CBAs can also be used for this.

Ideally – given time, resources and expertise – local authorities would undertake their own cost-effectiveness analyses. In practice, this is relatively rare at present and they will need to rely on other sources.

Fortunately, while not perfect, there is a growing body of evidence on cost-effectiveness, some of which we signpost below. Over time, PHE, in its role supporting local authorities' public health role, will collate, disseminate and actively encourage local authorities to undertake cost-effectiveness studies of interventions in the social determinants of health. Local authorities have a collective responsibility to contribute to this process, and to make their own analyses widely available, to improve collective decision-making.

### **Question 3: How to value costs and benefits over time?**

As discussed above, when the proposed intervention includes significant costs and benefits over long periods of time, a critical issue is what discount rate is used, if at all, since this can make a large difference to the results.

While there is no 'correct' discount rate, local authorities will want to be aware of how sensitive decisions are to different choices, ideally through a sensitivity analysis – particularly the implications of choosing the Treasury's real rate of 3.5% (or 3% for benefits and costs over 30 years) or NICE's recommendations of 1.5%, or of using no discount rate at all.

### **Question 4: What are the inequalities implications?**

As is made clear above, most economic impact measures do not assess the distributional effects of an intervention and are therefore poor at reflecting implications for inequalities. In theory, a perfect cost-benefit analysis would do this, but few CBAs are perfect and while there are some examples of studies and techniques that have included equity, this approach is still developing.

As indicated in section 3.4, by focusing on wider social impacts, SROIs are often more explicit about how different groups in the population are affected by costs and benefits, and indeed whether the design of some interventions or programmes excludes some groups from accessing or benefitting from them at all. Undertaking an SROI is therefore a good way to track some of the likely inequalities and social justice implications and for tracking how targeted or universal proposed actions are. As stated above, it is always advisable to undertake analysis and investigation into the likely inequalities implications alongside estimates of economic impact.

## 6. Examples of economic impact of public health in the social determinants of health

The King's Fund<sup>25</sup> recently summarised and collated resources for local authorities to improve the public's health. Since its report was primarily based on supporting the business case for investment in the social determinants of public health, most of the evidence it collated relates to the burden of illness, the cost-of-illness and cost-benefit analysis. Each study includes measurement and valuation of the health effects of intervention.

A summary of the King's Fund's findings is set out in table 1. This is structured around the core chapters of its study, which focused on the role of local authorities in improving health through supporting: the best start in life; healthy schools and pupils; helping people to find good jobs and stay in work; active and safe travel; warmer and safer homes; access to green spaces and leisure services; strong communities, wellness and resilience; public protection and regulatory services; and health and spatial planning. More details, sources, and further estimates, can be found in the publication and on the King's Fund's website.

Table 2 summarises evidence from the series of evidence reviews on local action on health inequalities by IHE, which were commissioned by PHE. These cover the following topics:

- good quality parenting programmes and the home to school transition
- building children and young people's resilience in schools
- reducing the number of young people not in employment, education or training (NEET)
- adult learning services
- increasing employment opportunities and improving workplace health
- health inequalities and the living wage
- fuel poverty and cold home-related health problems
- improving access to green spaces

There is some cross-over between tables 1 and 2, showing that the King's Fund's work and the series of IHE evidence reviews identified some of the same studies on the economic impact of action on the social determinants of health. But table 2 has a slightly different focus. Firstly, it categorises studies slightly differently, according to PHE interests. Secondly, not all the studies include valuation of the health impacts, though most of them do. But in each case, it is clear that there is payback to public services as a result of intervening in these areas.

Taken together, the information in the two tables demonstrates that there is strengthening evidence for investing in the social determinants of health, because this action will improve health and payback to public services and society in other ways.

Table 1: Economic impact estimates to support the business case for investment in the social determinants of health – evidence gathered by the King’s Fund

Measure of economic impact			
	Cost of illness	Cost-benefit analysis	Social return on investment
<b>The best start in life</b>	<ul style="list-style-type: none"> <li>each annual cohort of pre-term and low birth weight babies costs an additional £3bn from birth to the age of 18</li> </ul>	<ul style="list-style-type: none"> <li>parenting programmes to prevent conduct disorder pay back £8 over six years for every £1 invested, with savings to the NHS, education and criminal justice systems</li> </ul>	
<b>Healthy schools and pupils</b>		<ul style="list-style-type: none"> <li>every additional four years of education return £7.20 in the value of health and other outcomes for every £1 spent</li> <li>anti-bullying programmes can return £15 for every £1 spent in the long-run in terms of higher earnings, productivity and public sector revenue</li> <li>smoking prevention programmes in schools can recoup as much as £15 for every £1 spent</li> <li>every £1 spent on contraception to prevent teen pregnancy saves £11 in lower terminations, antenatal and maternity care</li> </ul>	
<b>Helping people to find good jobs and stay in work</b>	<ul style="list-style-type: none"> <li>workplace injuries cost an estimated £13.8bn in 2010-11 and sickness absence contributes to an overall cost of worklessness of £100bn per year</li> </ul>	<ul style="list-style-type: none"> <li>business in the Community estimates its programmes getting disadvantaged groups back into work returns £3 for every £1 spent</li> <li>employee wellness programmes return between £2 and £10 for every £1 spent</li> </ul>	

<b>Measure of economic impact</b>			
	<b>Cost of illness</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<b>Active and safe travel</b>	<ul style="list-style-type: none"> <li>the overall cost to society of transport-related poor air quality, ill-health and accidents is at least £40bn, with accidents accounting for £9bn</li> </ul>	<ul style="list-style-type: none"> <li>for every £1 spent on cycling provision the NHS saves £4 in health costs</li> <li>getting one more person to walk to school could pay back £768; and to cycle to work rather than by car between £539 and £641 in terms of NHS savings, productivity improvements and reductions in air pollution and congestion</li> </ul>	
<b>Warmer and safer homes</b>	<ul style="list-style-type: none"> <li>poor housing costs the NHS at least £2.5bn per year due to illnesses related to damp, cold and dangerous homes</li> <li>treating young people injured by accidents in the home costs almost £150m in A&amp;E treatment</li> <li>falls and fractures in the over-65s cost £2bn per year</li> </ul>	<ul style="list-style-type: none"> <li>safety assessments and installation of safety equipment in homes would cost £42,000 for the average local authority and return £80,000 in reduced NHS costs, if 10% of injuries were prevented as a consequence</li> <li>Birmingham City Council's housing programmes (Decent Homes; Supporting People) returned £24m per year for a total outlay of £12m. Quickest paybacks were for reducing cold and reducing falls in elderly people</li> </ul>	
<b>Access to green and open spaces, and to leisure services</b>	<ul style="list-style-type: none"> <li>increasing access to parks and open spaces could reduce NHS treatment costs by £2bn</li> </ul>	<ul style="list-style-type: none"> <li>Birmingham's 'Be Active' programme returned up to £23 in benefits for every £1 spent in terms of quality of life, reduced NHS use, productivity and other gains to the local authority</li> </ul>	
<b>Strong communities, well-being and resilience</b>		<ul style="list-style-type: none"> <li>every £1 spent on health volunteering returns between £4 and £10 shared between service users, volunteers and the wider community</li> </ul>	<ul style="list-style-type: none"> <li>an assessment of 15 community health champion projects delivered an SROI of between £1 and £112 for every £1 invested</li> </ul>

<b>Measure of economic impact</b>			
	<b>Cost of illness</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<b>Public protection and regulatory services</b>	<ul style="list-style-type: none"> <li>in 2002 the average local authority incurred around £18–20m in NHS costs and a further £26–£30m in lost productivity and earnings due to obesity</li> </ul>	<ul style="list-style-type: none"> <li>investing in a range of practical air quality improvements is likely to return on average a benefit of £620 for every £100 spent</li> </ul>	
<b>Health and spatial planning</b>		<ul style="list-style-type: none"> <li>‘high standard’ spatial planning is likely to return £50, £168 and £50 for planning interventions that promote walking, cycling and insulating homes respectively for every £1 spend on the planning process</li> </ul>	

Source: See relevant chapters of [www.kingsfund.org.uk/publications/improving-publics-health](http://www.kingsfund.org.uk/publications/improving-publics-health)

Table 2: Economic impact estimates to support the business case for investment in the social determinants of health – evidence from series of Institute of Healthy Equity evidence reviews on local action on health inequalities

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	<b>Cost of illness and wider costs to society</b>	<b>Cost-effectiveness analysis</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<p><b>Building children and young people's resilience in schools</b></p> <p><b>(see Evidence Review 2)</b></p>	<p>Cost of illness and wider costs to society</p>	<ul style="list-style-type: none"> <li>NICE has modeled whole school approaches to preventing bullying and its health consequences. The cost per QALY is £9,600, well below existing cost-effectiveness thresholds</li> </ul>	<ul style="list-style-type: none"> <li>Place2Be: for every £1 spent on their counselling support services, there is a cost saving of £6. This includes reduced costs associated with social services, welfare benefits and the criminal justice system</li> <li>school-based community obesity prevention has a benefit to cost ratio of 7:1</li> <li>effective smoking prevention in schools has been estimated to have a cost benefit ratio of over 15:1 over a lifetime, yielding net savings of £391 and £1,961 per pupil per year</li> <li>full service extended schools: cost-benefit analysis found that the programme was a 'good investment' due to higher benefits than costs (even though costs were high, at between £391-£1,961 per pupil per year)</li> <li>reducing truancy can produce a saving of £1,318 per year per child, and reducing exclusion can save £9,748 in public value benefits, 89% of which goes to local authorities</li> </ul>	<p>Social return on investment</p> <ul style="list-style-type: none"> <li>Communities That Care (CTC): American evaluation shows that for every dollar invested in CTC, there is a return of \$5.30, in the form of savings within the criminal justice system, lower health care costs, increased earnings and higher tax revenues</li> </ul>

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	Cost of illness and wider costs to society	Cost-effectiveness analysis	Cost-benefit analysis	Social return on investment
<p><b>Adult learning services</b> (see <b>Evidence Review 4</b>)</p>			<ul style="list-style-type: none"> <li>increasing the education of females from no to basic qualifications would reduce the cost of depression by '£230m per year</li> <li>increasing skills through adult learning is potentially sensible financially. Fiscal benefits due to increased taxation revenue as a result of an increase in skills are estimated to be between £83 and £787 per annum as a result of an increase from below level 2 to level 2 and between £513 and £1,391 as a result of an increase from level 2 to 3. Public value benefits range from £443 to £1,208 as a result of an increase from below level 2 to level 2, and between £921 to £1925 for an increase in skills from level 2 to 3. Learning below Level 2 has been estimated to make a total return of approximately £638m to public budgets over four years. When lifetime benefits both to individuals and to the economy are analysed, estimates show that return on investment is £21.60 for every £1 invested at Level 1 courses for those aged 19-24</li> </ul>	

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	<b>Cost of illness and wider costs to society</b>	<b>Cost-effectiveness analysis</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<p><b>Adult learning services</b> (see Evidence Review 4) Cont...</p>			<p>These returns diminish at older ages – the return is only £5.90 for those aged 25 and over. However, there are other benefits to earning at older ages.</p> <ul style="list-style-type: none"> <li>• Train to Gain: The unit cost per learner was approximately £970 and the unit cost of an employer engagement with a broker around £810. The official evaluation did not find it good value for money</li> </ul>	
<p><b>Reducing the number of young people not in employment, education or training (NEET)</b> (See Evidence Review 3)</p>	<ul style="list-style-type: none"> <li>• each 16-18 year old NEET will have an estimated cost to society of £56,000 over their lifetime based on welfare costs, lost tax and national insurance contributions, and small costs in the health and criminal justice systems. Including losses to the economy and to individuals and their families resulting from NEET status (and later under and unemployment) raises this figure to £104,000</li> <li>• the aggregate lifetime public finance costs of 16-18 year olds who are NEET at the end of 2008 have been estimated to range from £12bn to £32bn</li> </ul>	<ul style="list-style-type: none"> <li>• activity agreement pilots, a national programme to reduce long-term NEET levels, cost £2,122 per participant, and 49% of people who took part were in education or employment three months after the programme. However, evaluation found that 72% of these 'successful' participants would have moved into education or training without the programme</li> </ul>	<ul style="list-style-type: none"> <li>• reducing levels of NEETs in Swansea and Wrexham: Compared to the Welsh average trajectory, public finance costs £1.1m lower in Wrexham and £8.6m lower in Swansea</li> <li>• a programme for children at risk of becoming NEET in a school in Salford was evaluated by the Audit Commission, who found that the scheme would become cost neutral if it only helped eight out of the 31 young people involved into education, training or employment. If all of them didn't become NEET, Salford would save at least £250,000</li> </ul>	<ul style="list-style-type: none"> <li>• BITC Ready for Work programme for disadvantaged young people estimates SROI of £3.12 for every £1 invested and overall social impact of £3.2m for each year</li> </ul>

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	<b>Cost of illness and wider costs to society</b>	<b>Cost-effectiveness analysis</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<p><b>Reducing the number of young people not in employment, education or training (NEET)</b></p> <p><b>(See Evidence Review 3)</b></p> <p><b>Cont...</b></p>	<ul style="list-style-type: none"> <li>in a 2010 report, the level of 20-24 year olds who were NEET was estimated to cost £22m per week in Jobseekers Allowance, and £26-133m per week in lost productivity</li> <li>CHOICE Wakefield: The total approximate costs for one 30 week programme delivery and planning roll out from April 2012 were £28,900</li> </ul>		<ul style="list-style-type: none"> <li>in Surrey, NEET levels have more than halved from 2009 to 2014. The reduction in NEET levels from 2011-12 to 2012-13 alone resulted in saving of £7 million to the public purse</li> <li>£4,000 support to a teenage mother which enable her to move into work will be repaid 20 times over through increased tax contributions over the life-course and reduce public service costs by £200,000</li> <li>Tower Hamlets NEET programme reduced NEETs from 10.9% in 2006 to 6.7% in 2008 costing £2.4m and returning £2.1m in cost savings</li> </ul>	

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	<b>Cost of illness and wider costs to society</b>	<b>Cost-effectiveness analysis</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<p><b>Increasing employment opportunities and improving workplace health (See Evidence Review 5)</b></p>	<ul style="list-style-type: none"> <li>an independent review of health and work in 2008 estimated that the total economic costs of sickness absence and worklessness associated with working-age ill health, to industries, employers, NHS, government and the economy as a whole, to be over £100bn a year</li> <li>a national review of sickness absence calculated that employers pay £9bn a year sick pay and associated costs, while the state spends £13bn a year on health-related benefits</li> </ul>	<ul style="list-style-type: none"> <li>County Durham Worklessness and Health Model: Overall, the intervention cost £2,530 per participant – meeting NICE cost guidance for case management interventions. Tentative estimates of cost-utility suggest an intervention cost £16,700-£23,500 per QALY</li> </ul>	<ul style="list-style-type: none"> <li>a range of behaviour change programmes in workplaces have been found to return £2-£10 for every £1 spent</li> </ul>	<ul style="list-style-type: none"> <li>NHS Tower Hamlets ‘work it out’ scheme - This policy was found to generate £17.07 of social return for every £1 spent in employment support, with the main returns coming from increased work volunteering, reduced demand on health services and increased taxation</li> </ul>

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	<b>Cost of illness and wider costs to society</b>	<b>Cost-effectiveness analysis</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<p><b>Increasing employment opportunities and improving workplace health</b></p> <p><b>(See Evidence Review 5)</b></p> <p><b>Cont...</b></p>	<ul style="list-style-type: none"> <li>the estimated cost of mental health problems to the economy is £30-£40bn, arising from lost production from people with mental health problems, the costs of informal care, and NHS costs</li> </ul>	<ul style="list-style-type: none"> <li><b>Better Health at Work Award (BHWA):</b> The cost of the regional coordination was £80,000 per annum and the overall cost to the NHS was estimated at £615,000 per annum. The estimated cost of the BHWA to the NHS (PCTs and Public health) who funded the programme, was £3 per sickness-absence day saved. Employers saw a reduction of 0.007-1.1 days of sickness-absence for every pound they invested, depending on the level of the award</li> <li>individual placement and support programmes – The total cost of the service is about £50,000 per IPS worker and evidence suggest that each IPS worker would support at least 14 people into employment per year and maintain them in work, giving a cost per job outcome of £3,600</li> <li>Individual Placement and Support (IPS) programme at South West London &amp; St George's NHS Mental Health Trust – The costs of getting someone into open employment in the IPS services were 6.7 times lower than in the pre-vocational service</li> </ul>	<ul style="list-style-type: none"> <li>Kent supported employment programme: using the whole client group and the total budget of the programme, a cost-benefit analysis was carried out. The cost of the programme was estimated to be £9,910 per person, 88% of the cost of a day service place or a potential saving of £1,290 to the local authority. From the taxpayer perspective, the programme has a net saving of £3,564 per person per year compared to a day service alternative</li> </ul>	

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	<b>Cost of illness and wider costs to society</b>	<b>Cost-effectiveness analysis</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<p><b>Improving access to green spaces (see Evidence Review 8)</b></p>	<ul style="list-style-type: none"> <li>in 2007, physical inactivity was estimated to cost the NHS somewhere within the region of £1bn and £1.8bn</li> </ul>	<ul style="list-style-type: none"> <li>Walking for Health: evaluation of the project was carried out in 2009 to identify the economic benefits of the scheme and wider green space access. A cost-effectiveness analysis of the programme estimated that it would deliver 2,817 Quality Adjusted Life Years (QALYs) at a cost of £4,009 per QALY</li> </ul>	<ul style="list-style-type: none"> <li>Walking for Health: based on the value of health gained, it was estimated that this would make a saving to the health service of around £81m</li> <li>a cost-benefit analysis of the effectiveness of the Green Gym project between 2005 to 2009 estimates that the scheme generated savings to health services of £1,359,453 (based on cost averted savings) and indicates that for every £1 invested in Green Gyms, £2.55 will be saved in treating physical inactivity related illness</li> </ul>	<ul style="list-style-type: none"> <li>Glasgow Health Walks: . During the year 2011-12 a total of £48,705 was invested. An SROI analysis of the value of the outcomes is estimated at £384,630. Thus, every £1 invested in the scheme is estimated to generate £8 in social returns</li> </ul>

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	<b>Cost of illness and wider costs to society</b>	<b>Cost-effectiveness analysis</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<p><b>Fuel poverty and cold home-related health problems' (see Evidence Review 7)</b></p>	<ul style="list-style-type: none"> <li>poor housing conditions cost the NHS an estimated £2.5bn pa. This includes costs accrued by primary care services, treatment costs, hospital stays and outpatient visits</li> <li>living in cold housing is associated with poor health outcomes and an increased risk of morbidity and mortality for all age groups. Age UK (2012) estimate an annual cost to the NHS in England of £1.36bn (excluding associated social care costs)</li> </ul>	<ul style="list-style-type: none"> <li>Warm Front Programme: evaluation of the scheme found that household temperatures increased after the intervention, and identified a number of health improvements:                             <ul style="list-style-type: none"> <li>Prevalence of Common Mental Disorders fell from 300 to about 150 per 1,000 occupants.</li> <li>The increase in household temperature, as a result of the scheme, was estimated to add an extra 0.56 months to the lives of a 65-year old couple living together; 0.33 months for a man and 0.22 months for a woman. This may be cost-beneficial, but further analysis is required</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Affordable Warmth Access Referral Mechanism: A cost-benefit analysis was conducted on 52 household interventions and analysed the impact of warmer housing on the quality of life. The cost of the 52 interventions was estimated to be £88,800</li> <li>the evaluation identified a number of benefits, including an estimated benefit of over £600,000 (in terms of the monetary value of QALYs gained); a benefit-cost ratio of 6.8:1</li> </ul>	
<p><b>Good quality parenting programmes and the home to school transition (See Evidence Review 1)</b></p>	<ul style="list-style-type: none"> <li>the costs of neglected children is high: the cost of youth crime alone was estimated at £8.5bn-£11bn by the National Audit office in 2009, the costs of mental health services at £105.2bn, and the costs of children in care at £2.9bn, of which half is spent on children abused</li> </ul>	<ul style="list-style-type: none"> <li>Incredible Years: there are large lifetime costs associated with conduct disorder, ranging from £75,000 to £225,000 per child. Analysis of the Incredible Years programme suggests costs of intervening are £1,211 per child at risk, with an overall benefit of £1,654; a benefit-cost ratio of 1.37</li> </ul>	<ul style="list-style-type: none"> <li>a report for UNICEF UK found that moderate increases in breastfeeding would translate into cost savings for the NHS of £40m and tens of thousands of fewer hospital admissions and GP consultations. This is likely to be cost-beneficial, although specific analysis is required to confirm</li> </ul>	<ul style="list-style-type: none"> <li>Family Nurse Partnership: In the US, benefit-cost ratios fall in the range of 3:1 to 5:1, depending on the study. Within the UK context, a social benefit-cost ratio of 1.94 has been calculated: the estimated value of total benefits to society as a whole, per £1 spent</li> </ul>

<b>Measure of economic impact</b>				
<b>Evidence Review</b>	<b>Cost of illness and wider costs to society</b>	<b>Cost-effectiveness analysis</b>	<b>Cost-benefit analysis</b>	<b>Social return on investment</b>
<p><b>Good quality parenting programmes and the home to school transition (See Evidence Review 1)</b></p> <p><b>Cont...</b></p>	<ul style="list-style-type: none"> <li>low literacy levels cost the national economy £81bn a year in lost earnings and high welfare spending</li> <li>the costs of caring for preterm and low birth weight babies, from birth to the age of 18, are estimated to be around £3bn for England and Wales, for each annual cohort of new births</li> </ul>		<ul style="list-style-type: none"> <li>a joint venture by PCTs and 12 children's centres in Blackpool led to an increase in breastfeeding rates of 16%, with an estimated return of £1.56 per £1 invested, and estimated savings to the Department of Health of £57,700 over a two year period</li> <li>Seattle Social Development Project – targets youths to increase bonding to school and family as a protective measure against school failure, delinquency, drug abuse, teen pregnancy, and violence. The overall benefit to cost-ratio is \$1.92 for every \$1 spent</li> <li>Jane Barlow et al. conducted a meta-analysis of parenting programmes that improve maternal mental health. Tackling maternal mental health is particularly cost-effective. If health visitors identify and treat post-natal depression that improves productivity and leads to cost savings in the medium to short term</li> </ul>	<ul style="list-style-type: none"> <li>Functional Family Therapy: social benefit-cost ratio of 12.32, which is particularly high, and will be driven by the reduction of costs to the criminal justice system</li> <li>social benefit to cost ratio of a range of programmes (from Early Intervention Foundation): Parent-Child Interaction Therapy: 2.37 Incredible Years Parent Training: 1.37 Good Behaviour Game: 26.9 Project Towards no drug abuse: 8.61 Guiding Good choices: 2.92 Life Skills Training: 10.67 Multidimensional Treatment Foster Care: 2.64 Multisystemic Therapy for Juvenile Offenders: 2.04 Triple P: 5.05 Individual CBT: 2.18 Highscope Perry Preschool: 1.61 Targeted Reading Intervention: 7.98 Behavioural Monitoring and Reinforcement Prog: 1.56</li> </ul>

Source: See relevant evidence reviews in the series

## 7. Where to go for more help

There is help available on each of these issues. Local public health teams are best placed to identify local priorities and can search relevant databases and academic sources – some of which are set out below – to find the most relevant evidence on these topics. Fortunately, the list of examples and contributions continues to grow, and there is a critical role for PHE and its partners to catalogue, translate and make easily accessible the learning for decision-makers in local authorities.

There are now many health economics centres in local academic institutions which can help local authorities assess economic impact. The Health Economists Study Group website links to the main active health economics institutions in the UK<sup>26</sup>

Public health departments in local academic institutions can also be of help and there are also specialist centres whose role is to translate academic public health work into practice. These include Fuse,<sup>27</sup> the Centre for Translational Research in Public Health, in the North East; and DECIPHER,<sup>28</sup> the Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement, in Wales and the South West. Fuse, for example, is involved with a project called Shifting the Gravity of Spending,<sup>29</sup> exploring which decision support tools are most useful for local authorities in prioritising investment and disinvestment

Key resources with a focus on public health and social determinants that will help support practical decision-making and prioritising include:

‘Improving the public’s health: a resource for local authorities’<sup>30</sup> from the King’s Fund, which includes evidence on the business case for investing in the social determinants of health in nine key areas and a ready reckoner to help prioritise where there are competing actions

NICE’s resources on public health for local government,<sup>31 32</sup> which include interventions in relevant settings such as the workplace and schools and transport interventions. Most NICE public health guidance includes measures of economic impact

The Local Government Association’s ‘Money well spent’<sup>33</sup> document, which links to further resources and case studies, primarily in behaviour change

PHE’s ‘Health and Care Integration: Making the case from a public health perspective’, which contains some case studies that include the economic impacts of housing interventions<sup>34</sup>

PHE’s Spend and Outcome Tool (SPOT).<sup>35</sup> SPOT gives local authorities in England an overview of spend and outcomes across key areas of business and for public health and its sub-programmes. PDF factsheets can be downloaded from the tool and an interactive spread sheet allows local authorities to make comparisons using a range of benchmarks

The Department of Health’s Policy Appraisal and Health,<sup>36</sup> a guide to economic measures of health impacts, was published in 2004; although dated and with a focus on the NHS, much of its evidence and guidance remains relevant

Resources which will help the development of evidence locally, in conjunction with public health teams, includes:

NICE's 'Methods for the development of NICE public health guidance', which includes a well written section on using health economics methods as an aid to decisions – section 6.3.1 recognises the implications of public health's move into local government and the greater demands for use of cost-benefit analysis<sup>37</sup>

NICE's review<sup>38</sup> of methods to assess the economic impact of public health intervention cost impact – a thorough and comprehensive review and recommendations for NICE's approach in future

The Cabinet Office's guide to social return on investment,<sup>39</sup> a useful practical guide to undertaking a SROI

The Treasury's recently published guide to using cost-benefit analysis for local partnerships,<sup>40</sup> which includes an Excel-based model with over 600 unit costs across public services, and examples across the range of local authority functions and how they impact on health

A background summary paper<sup>41</sup> on the economics of public health setting out how public health professionals and health economists could work more closely together

The Public Health Cost-Effectiveness Interventions Database (PHICERD),<sup>42</sup> a searchable catalogue of cost-effectiveness studies of public health. Note that this is currently limited to behaviour change interventions in tobacco control, obesity, physical activity and alcohol

A database of studies including the NHA Economic Evaluation Database (NHSEED), maintained by the University of York's Centre for Reviews and Dissemination<sup>43</sup>, searchable based on keywords and includes studies on the cost-effectiveness of interventions in the social determinants of health

There are some freely available spreadsheet-based tools that have been developed to model economic impacts of public health interventions. However, currently these are focused on downstream behaviour change – and NHS interventions – rather than the impact of upstream interventions on the social determinants of health. Some of them can be adapted to do the latter, but with the caveats described in this paper. They include:

NICE's return on investment tools. These are spreadsheet based tools, with tobacco control<sup>44</sup> as the first example and physical activity and alcohol expected. The tobacco control tool is focused on different delivery methods of smoking cessation advice. The tool allows users to model their own interventions, and estimates the economic impact as benefits flow over time

Health England's prioritisation tool, HELP,<sup>45</sup> which supports users to test the health impact and cost-effectiveness of public health interventions given their local context. The tool is unusual in including an assessment of the equity impact of interventions. Interventions are primarily around lifestyle, but do include interventions in places such as schools and workplaces

The Health Inequalities Intervention Toolkit,<sup>46</sup> developed by London Health Observatory. This includes a benchmarking tool on the major drives of life expectancy and a commissioning and intervention tool, allowing local areas to model the impact of interventions – all of which are based on cost-effective actions as judged by NICE

There are an increasing number of tools available internationally, although these too are often focused on behaviours or lifestyles. For example the WHO Regional Office for Europe has tools for obesity reduction<sup>47</sup> and active travel<sup>48</sup>

PHE, the National Institute of Health Research and service commissioners themselves have an important part to play in strengthening the evidence base. Several local authorities are increasingly evaluating the impact of their work on their population's health: for example, Blackburn with Darwen is instituting health impact assessments as part of its social determinants of health fund. Local authorities can also work with their local public health and health economics centres and departments to undertake economic evaluation and develop robust business cases

While individual local authorities can share information and data, PHE – as the national supporting body for the new public health system – also has a role and duty to offer specialist advice, support commissioning, standardise approaches and act as a dissemination hub for information

## References

1. For a more thorough discussion on QALYs see [www.ispor.org/meetings/invitational/QALY/Paper2revised.PDF](http://www.ispor.org/meetings/invitational/QALY/Paper2revised.PDF) and [www.medicine.ox.ac.uk/bandolier/painres/download/whatis/QALY.pdf](http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/QALY.pdf)
2. See <http://onlinelibrary.wiley.com/doi/10.1002/hec.1481/abstract;jsessionid=54BA9B1D17C66A1D4F92B17BFD64207A.f02t01> for an international survey of the public's stated willingness to pay. For the UK the value was £23,000 per QALY based on a sample of 1,002 members of the public.
3. [www.nice.org.uk/newsroom/features/measuringeffectivenessandcosteffectivenessstheqaly.jsp](http://www.nice.org.uk/newsroom/features/measuringeffectivenessandcosteffectivenessstheqaly.jsp). This threshold is based on the analysis of many NICE decisions across a wide range of possible interventions for different illnesses and conditions. There are exceptions – for instance if a drug was life-saving and there was no other treatment, values can be higher – but the majority of decisions imply a value in this range.
4. See chapter 3, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/191503/policy\\_appraisal\\_and\\_health.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191503/policy_appraisal_and_health.pdf)
5. See [www.ispor.org/meetings/invitational/QALY/Paper2revised.PDF](http://www.ispor.org/meetings/invitational/QALY/Paper2revised.PDF) and [www.medicine.ox.ac.uk/bandolier/painres/download/whatis/QALY.pdf](http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/QALY.pdf) for more.
6. The Marmot Review Team. Fair Society, Healthy Lives: Strategic review of health inequalities in England post-2010. London: Marmot Review Team, 2010
7. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/220541/green\\_book\\_complete.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf)
8. [www.bond.org.uk/data/files/Cabinet\\_office\\_A\\_guide\\_to\\_Social\\_Return\\_on\\_Investment.pdf](http://www.bond.org.uk/data/files/Cabinet_office_A_guide_to_Social_Return_on_Investment.pdf)
9. See <http://publications.nice.org.uk/judging-whether-public-health-interventions-offer-value-for-money-lgb10/judging-the-cost-effectiveness-of-public-health-activities>
10. <http://eurpub.oxfordjournals.org/content/21/2/260>
11. [www.econ.ucsb.edu/~tedb/Courses/UCSBpf/readings/interventions.pdf](http://www.econ.ucsb.edu/~tedb/Courses/UCSBpf/readings/interventions.pdf)
12. [www.nice.org.uk/media/664/AC/cost\\_impact\\_proof\\_of\\_concept.pdf](http://www.nice.org.uk/media/664/AC/cost_impact_proof_of_concept.pdf)
13. [www.apho.org.uk/resource/item.aspx?RID=110259](http://www.apho.org.uk/resource/item.aspx?RID=110259)
14. [www.nice.org.uk/nicemedia/docs/Making%20the%20case-13-03.pdf](http://www.nice.org.uk/nicemedia/docs/Making%20the%20case-13-03.pdf)
15. [www.york.ac.uk/che/research/equity/deliberative/](http://www.york.ac.uk/che/research/equity/deliberative/)
16. See Annex 5, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/220541/green\\_book\\_complete.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf)
17. <http://help.matrixknowledge.com/>
18. See [www.york.ac.uk/che/research/equity/d-c-e-a/phrc/](http://www.york.ac.uk/che/research/equity/d-c-e-a/phrc/) and [www.york.ac.uk/media/che/documents/Incorporating%20Health%20Inequality%20Impacts%20into%20Cost-Effectiveness%20Analysis%20-%20Encyclopaedia%20Entry.pdf](http://www.york.ac.uk/media/che/documents/Incorporating%20Health%20Inequality%20Impacts%20into%20Cost-Effectiveness%20Analysis%20-%20Encyclopaedia%20Entry.pdf)
19. See the discussion here of NICE's approach to equity [www.york.ac.uk/media/che/documents/papers/researchpapers/CHERP70\\_Nice%27s\\_social\\_value\\_judgements\\_about\\_equity\\_in\\_health.pdf](http://www.york.ac.uk/media/che/documents/papers/researchpapers/CHERP70_Nice%27s_social_value_judgements_about_equity_in_health.pdf)
20. For an introduction to the debate see, <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=5295600> and the debate that followed <http://journals.cambridge.org/action/displayFulltext?type=1&fid=5295632&jid=HEP&volumeld=4&issueld=02&aid=5295624> and <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=5295612&fulltextType=RA&fileId=S1744133109004915>
21. See the Treasury's Green Book for details including Annex 6, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/220541/green\\_book\\_complete.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf)
22. See section 6.3.4 in <http://publications.nice.org.uk/methods-for-the-development-of-nice-public-health-guidance-third-edition-pmg4/incorporating-health-economics>
23. For example, for life-saving interventions where there is no alternative treatment, the case is often made that we should invest no matter what the cost, because it is not ethical to not provide effective treatment.
24. [www.kingsfund.org.uk/sites/files/kf/field/field\\_publication\\_file/improving-the-publics-health-kingsfund-dec13.pdf](http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/improving-the-publics-health-kingsfund-dec13.pdf) pg 57.
25. [www.kingsfund.org.uk/publications/improving-publics-health](http://www.kingsfund.org.uk/publications/improving-publics-health)
26. [www.hesg.org.uk/links.php](http://www.hesg.org.uk/links.php)

27. <https://www.fuse.ac.uk/about>
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31. [www.nice.org.uk/media/163/5A/HowputNICEguidancepracticelocal.pdf](http://www.nice.org.uk/media/163/5A/HowputNICEguidancepracticelocal.pdf)
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35. <http://www.yhpho.org.uk/spot>
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37. <http://publications.nice.org.uk/methods-for-the-development-of-nice-public-health-guidance-third-edition-pmg4/incorporating-health-economics>
38. [www.nice.org.uk/media/664/AC/cost\\_impact\\_proof\\_of\\_concept.pdf](http://www.nice.org.uk/media/664/AC/cost_impact_proof_of_concept.pdf)
39. [www.bond.org.uk/data/files/Cabinet\\_office\\_A\\_guide\\_to\\_Social\\_Return\\_on\\_Investment.pdf](http://www.bond.org.uk/data/files/Cabinet_office_A_guide_to_Social_Return_on_Investment.pdf)
40. <https://www.gov.uk/government/publications/supporting-public-service-transformation-cost-benefit-analysis-guidance-for-local-partnerships>
41. [www.nccph.ca/docs/Curtis\\_HE\\_PH\\_En.pdf](http://www.nccph.ca/docs/Curtis_HE_PH_En.pdf)
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