



Centre For Health Economics

## Policy & Research Briefing

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- We showcase the health equity impact plane with two worked examples.
- The health equity impact plane shows health impact and equity impact (reduction in health inequalities) for one or more policies.
- This can help clarify potential trade-offs between improving health and reducing health inequality.



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# How Do We Include Health Inequality Impacts in Economic Analysis of Policy Options?

### Summary

This briefing introduces the health equity impact plane – a simple visual tool for clarifying the relationship between cost-effectiveness (total health impact) and equity impact (health inequality reduction). The equity impact plane can be used to compare policy options based on these two key policy objectives. It can also be used to clarify thinking about policy trade-offs and compromises, and to re-design policies to reduce health inequality in cost-effective ways that do not sacrifice large potential health gains.

### Introduction

Decision makers want to choose programmes that are good value for money. That is why organisations like the UK National Institute for Health and Care Excellence (NICE) consider costs as well as health benefits. If an intervention costs a lot but only increases population health a little, then the resources may be better spent elsewhere to gain more health for the same expenditure. But the objective of health spending is not only to improve health. Policy makers also want to reduce unfair health inequalities. In England, for example, there was a gap in healthy life expectancy between the most and least deprived neighbourhoods of 19 years in 2014-16 according to Public Health England.<sup>1</sup> Reducing health inequalities of this kind is enshrined in the NHS Constitution and in NICE's equality objectives. This policy brief focuses on health inequalities associated with socioeconomic position (i.e. between rich and poor), but the health equity impact plane can also be used to analyse health inequality itself or health inequalities by geographical

location, gender, race, ethnicity, and other equity-relevant variables. The Marmot Review (2010)<sup>2</sup> endorsed the idea of 'proportionate universalism' – providing universal services in proportion to what is needed for a long and healthy life. The equity impact plane can help put that idea into practice, by analysing how much additional resource is worth investing in proportion to needs.

### Is our programme a win-win?

When compared to current practice, the introduction of many cost-effective health interventions will reduce health inequalities as well as increasing total health; they are 'win-win' programmes. However, some cost-effective interventions like bowel cancer screening increase total health but increase health inequalities, because socially disadvantaged people do not participate as much; they are a 'win-lose'. Conversely, some interventions may be cost-ineffective but reduce health inequalities; they are a 'lose-win'. For example, treatment for mesothelioma costs upwards of £50,000 per healthy year gained. This is more than the typical NICE benchmark of value for money. Provision of mesothelioma treatment would divert money from treatments that can deliver larger health gains for the same expenditure – the health opportunity cost exceeds the health benefits. However, treating mesothelioma reduces health inequality through improving the health of disadvantaged people who worked in traditional industries with asbestos. Finally, some cost-ineffective interventions not only harm total health – because they divert expenditure from more beneficial uses – but also increase health inequalities; a 'lose-lose'.

If we have a portfolio of health interventions to consider for a health system, it might make sense to mainly include 'win-win' interventions, but also some 'win-lose' and 'lose-win' interventions, depending on the priority given to reducing health inequalities compared with increasing total health. So, for example, a local public health team may face a choice between spending more money on breastfeeding peer support – a 'win-lose' intervention which may be used more by affluent mothers and therefore increase inequalities – versus targeted screening for

abdominal aortic aneurysm – a 'lose-win' intervention which may cost more per case detected than universal screening but reduce health inequalities by increasing uptake in deprived areas. Interventions may be re-designed in response to inequalities so, for example, targeting might change cardiovascular screening from being a 'win-lose' to a 'win-win'.

We can display the cost effectiveness or total health benefit of an intervention together with its impact on equity on a **health equity impact plane (Figure 1)**. We focus on

'net' health benefits, allowing for health opportunity costs – the health forgone by diverting money from other uses – as well as health benefits. Equity impact is a summary measure of health inequality reduction, such as change in a slope index of inequality (SII), allowing for differences in health opportunity cost by social group. Where interventions lie in the 'win-lose' or 'lose-win' quadrants, then compromises are needed between total health benefit and inequality reduction.

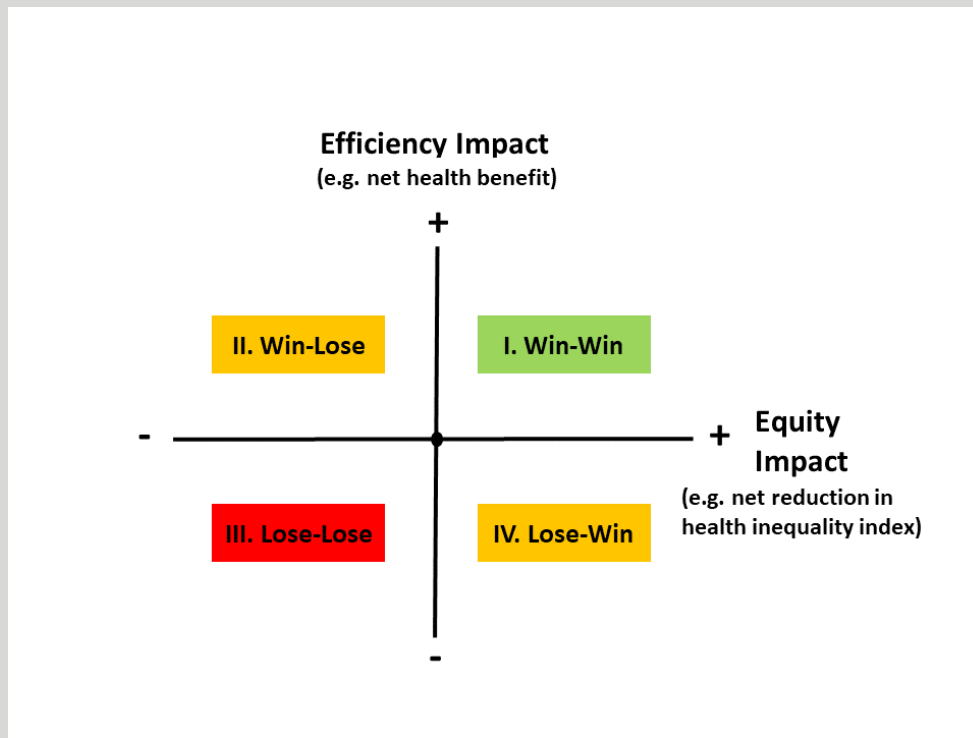


Figure 1. Health Equity Impact Plane

### Ethical issues

Some people may think it is unethical to talk about equity 'trade-offs', as reducing health inequality may seem too important to trade against other policy objectives. However, other policy objectives may also be ethically compelling. For example, breast cancer affects rich, elderly people more than

poor, young people.<sup>3</sup> So reducing health inequality militates against investing in costly new breast cancer services that divert money from services for poorer, younger people. Yet no-one would advocate withdrawing money completely from breast cancer services. Rather than talking about 'trade-offs', the language of 'compromise' may seem more

appropriate. The same applies to ethical arguments about cost-effectiveness analysis in general. Some people think that you can never put a price on life and health. However, resources are scarce and priority-setting decisions inevitable; it is better that compromises between competing priorities are made in a transparent, accountable way.

### Worked Example 1

In this example we look at two hypothetical options for public funding of NRT (nicotine replacement therapy) to help people quit smoking, compared with no public funding ('no NRT'). The 'universal' scenario is offering NRT to the whole population, while the 'proportionate universal' is having NRT targeted more to deprived areas with higher smoking rates. **Figure 2** shows net health benefit on the vertical (y) axis. This allows for the health opportunity cost of spending money on NRT, in terms of reduced spending on other public health services that would have delivered health benefits. Each £8,000 spent on other public health services is estimated to produce the

equivalent of one year of full health (a quality adjusted life year or QALY), based on the estimated median marginal production cost of health for all public health interventions modelled for NICE in England from 2011-2016.<sup>4</sup> The equity impact is shown on the horizontal (x) axis, measured in terms of a slope index of inequality (SII) showing the modelled health gap between most and least deprived neighbourhoods, allowing for the gradient in between. In this example, both the 'universal' and the 'proportionate universal' scenarios are 'win-win' when compared a baseline scenario of no NRT – they increase health and reduce health inequality. But the 'proportionate universal' scenario has a bigger impact on reducing inequalities, at the

expense of a smaller total health impact. So the decision maker has to consider the importance of improving total health versus reducing health inequalities. For the 'proportionate universal' intervention, the equity impact is a reduction in the population SII of about 0.6 ten thousandths and the loss in total health is about 1,000 QALYs, compared with the 'universal' scenario. (**Figure 2**). Methods are available to help policy makers assess the size and importance of different reductions in health inequality, by systematically equity-weighting health benefits using an equity parameter that represents the degree of priority given to people with worse health, but that takes us beyond the scope of this short policy briefing.<sup>5</sup>

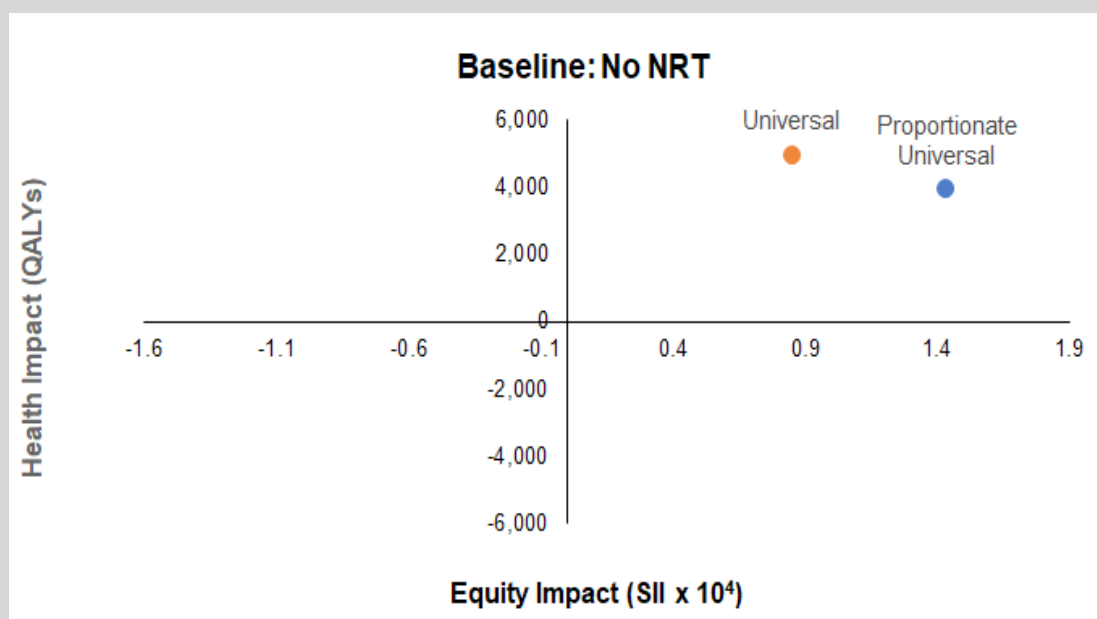


Figure 2. Health equity impact plane: Net health benefits (QALYs gained) and SII for two smoking cessation scenarios ('Universal', and 'Proportionate Universal').

Note: based on £8,000 per QALY health production costs.

### Worked Example 2

In this example we look at three hypothetical scenarios for cardiovascular screening – known as 'NHS Health Checks' – that were compared to a scenario of no screening. The 'current' scenario modelled current Health Checks performance in Liverpool, while for 'increased' we assumed that uptake increased from 32% to 66%, and for 'targeted' we assumed that uptake increased

to 66% in the most deprived IMD fifth only. Because this is a healthcare service with costs falling on other healthcare treatments, rather than a public health service, we estimate health opportunity costs using a value of £13,000 per QALY produced, based on the estimated marginal production cost of health in the English NHS.<sup>6</sup> We again used a reduction in the slope index of inequality as the equity impact

measure. This study found that only the 'targeted' scenario was in the 'win-win' quadrant of the health equity impact plane. The 'increased' scenario was very close to zero in terms of both net health benefit and equity benefit, while the 'current' scenario had a negative net health benefit as well as a negative equity benefit, so it was a 'lose-lose' (**Figure 3**, overleaf).

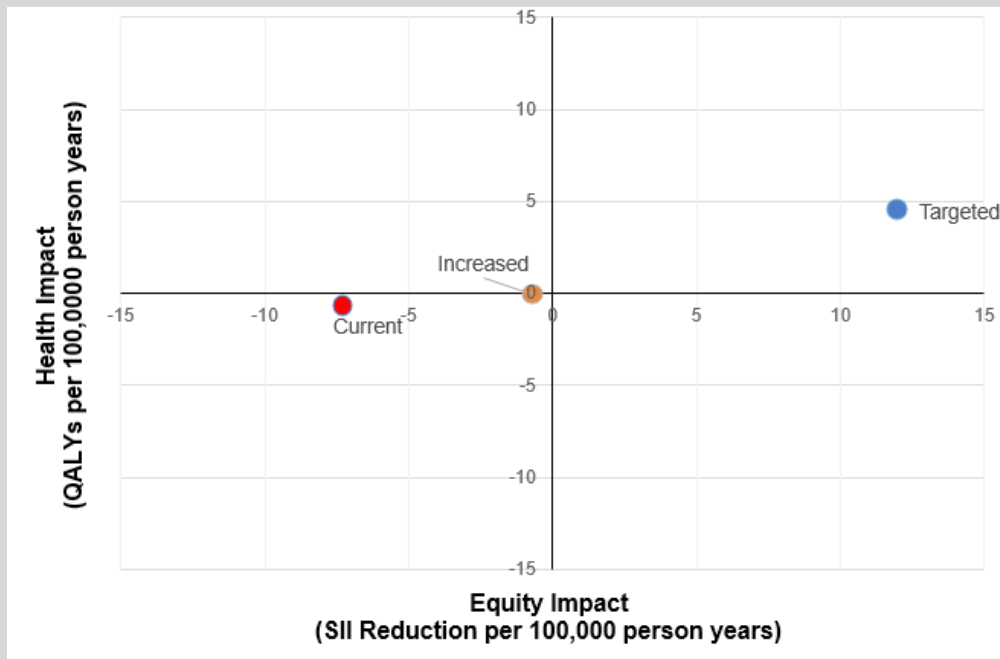


Figure 3. Health equity impact plane: Net health benefits (QALYs gained per 100,000 person years) and change in SII in incremental net health benefits per 100,000 person years for three Health Check scenarios (current, increased, targeted) compared with “No Health Checks”. Modelled data for Liverpool, 2011-2040.

Note: based on £13,000 per QALY health production costs.

### References

<sup>1</sup>Public Health England (2018) Health Profile for England; Chapter 5: Inequalities in Health. <https://www.gov.uk/government/publications/health-profile-for-england-2018/chapter-5-inequalities-in-health>

<sup>2</sup>Marmot, M. (2011). *Fair society, healthy lives*. UCL Institute of Health Equity. <http://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review>

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<sup>4</sup>Owen, L., Pennington, B., Fischer, A. and Jeong, K., 2017. The cost-effectiveness of public health interventions examined by NICE from 2011 to 2016. *Journal of Public Health*, pp.1-10.

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<sup>6</sup>Claxton, K., Martin, S., Soares, M., Rice, N., Spackman, E., Hinde, S., Devlin, N., Smith, P.C. and Sculpher, M., 2015. Methods for the estimation of the National Institute for Health and Care Excellence cost-effectiveness threshold. *Health technology assessment* 19(14), p.1.

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**Further information about the equity impact plane can be found here:**

<https://www.york.ac.uk/healthsciences/research/health-policy/research/health-policy-projects/equipol/>

<https://www.york.ac.uk/che/research/equity/>



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