NIHR | Public Health Policy Research Unit

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

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CHE Centre For Health Economics

ECONOMIC EVALUATIONS OF HEALTH INEQUALITIES

WHY DO WE NEED TO DO ECONOMIC EVALUATIONS?

In an economic evaluation, we compare the costs and consequences of potential health interventions – measures designed to prevent illnesses, improve their diagnosis or treat them more effectively – to decide which action to take.

Example: Reducing air pollution in West Yorkshire

Potential courses of action

Upgrade:


Lorries


Buses


Cars

Paid for by: *private owners* | *local authority* | *general population*

Air pollution causes a number of different diseases and reduces life expectancy


Heart diseases

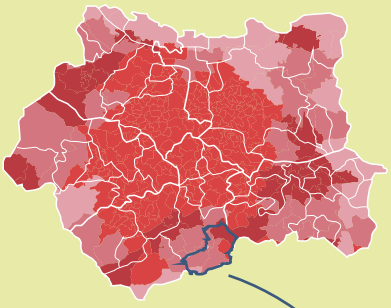

Stress to lungs

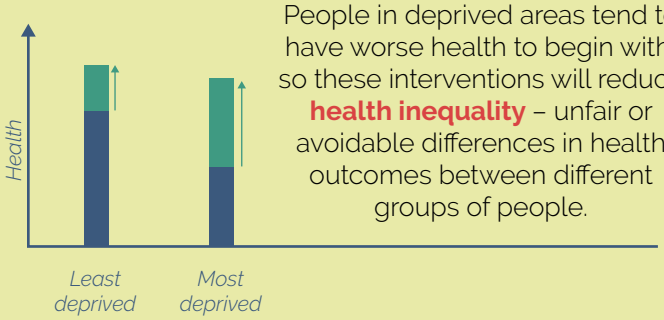

Asthma

Each will have different **costs** to different people
They will also **benefit** people differently

Inner-city areas are **more polluted**, so likely to benefit more.

The same areas also tend to be **more deprived**, so more deprived people will benefit more.





People in deprived areas tend to have worse health to begin with, so these interventions will reduce **health inequality** – unfair or avoidable differences in health outcomes between different groups of people.

Data are example figures only

STEP 1: CALCULATING DIRECT BENEFITS

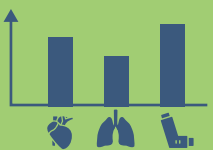
West Yorkshire is divided up into areas each having about 1,500 residents.

Each area has a score of relative deprivation, called the ***Index of Multiple Deprivation (IMD)***. IMD is calculated to reflect factors including income, employment, health and crime.

Example:

The fifth of areas with the lowest **IMD** ranks are in the 20% most deprived areas in the country

Pollution-related disease:



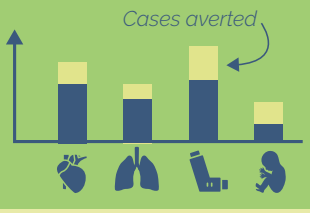
An intervention is considered.

Upgrading buses would reduce air pollution by 15%.

The deaths prevented by the intervention are calculated.

From this we can estimate ***Quality of Life Adjusted Years (QALYs)*** gained from the intervention – a measure that combines life expectancy with quality of life.

Prevented cases are calculated using a '***dose response function***', which uses existing data to estimate the impact a drop in air pollution would have on health and life expectancy, taking into account the age distribution of the local population.



1 year of life in perfect health = 1 QALY
1 year of life in 80% health = 0.8 QALYs

STEP 2: CALCULATING HEALTH OPPORTUNITY COSTS

Upgrading buses improves health and saves the NHS money.

We can assume this money will be redistributed to other health services and **benefit** every NHS user.

+0.3 QALYs

However, upgrading buses incurs costs to the Local Authority. Assuming this will reduce money spent in its public health and social care budgets, we can estimate the resulting **decline** in population health.

-0.1 QALYs

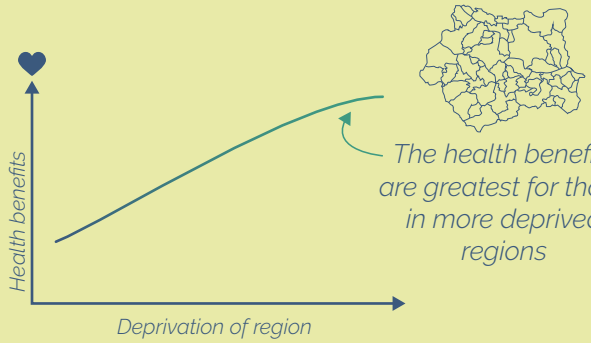
7 QALYs + 0.3 QALYs - 0.1 QALYs = 7.2 QALYs ***gained by upgrading buses in this area***

STEP 3: COMPARING INTERVENTIONS AND INEQUALITIES

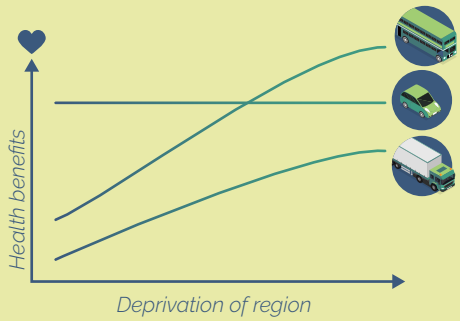
The **direct benefits** (*Step 1*) will vary with the deprivation score of each area because it is linked with both pollution levels and the health of the local population.

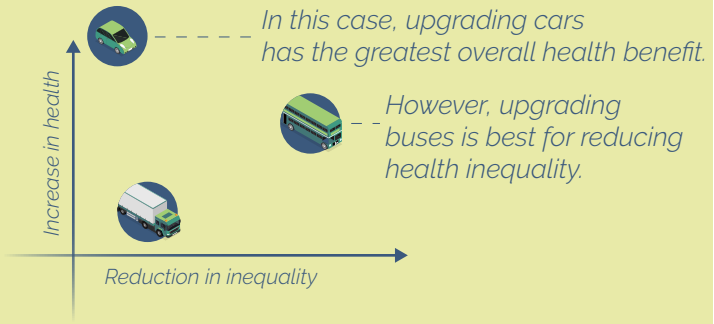
Health opportunity costs (*Step 2*) also vary – more deprived people tend to use the NHS more and so will benefit more from the cost savings.

We can compare our final QALY calculations across different areas – in this case, most deprived areas are likely to benefit more.



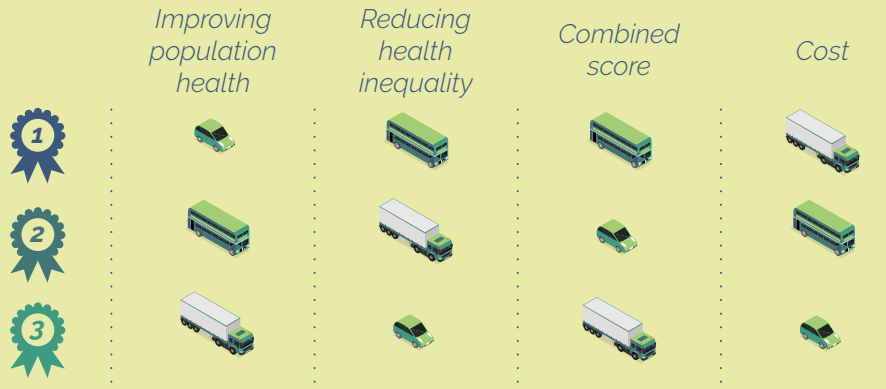
We can also compare ***between interventions:***





Information about how much inequality is deemed acceptable can be used to give a score combining improvement in overall population health and reduction in health inequality to each intervention.

Each strategy can then be ranked according to different outputs from the model:



In this example, the optimal health policy intervention depends on the relative importance placed on improving population health, reducing health inequality and cost. When conducting all health economic evaluations, it's vital that we strive to include data on inequalities and carefully consider our policy objectives.