

**Measuring the burden of disease:
Wellbeing and fairness.**

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CONCLUSION

The burden that disease imposes on people is a diminution of their wellbeing.

It is not merely a diminution of their health.

Therefore, a measure of the burden of disease should measure how much disease harms people, in every way.

It should not just measure the damage disease does to people's health.

A note

Even if wanted to measure specifically health, we would want an *evaluative* measure of health.

That is, we would want to measure how *good* is a person's health.

Not just how healthy she is (if we can make any sense of that, apart from how good her health is).

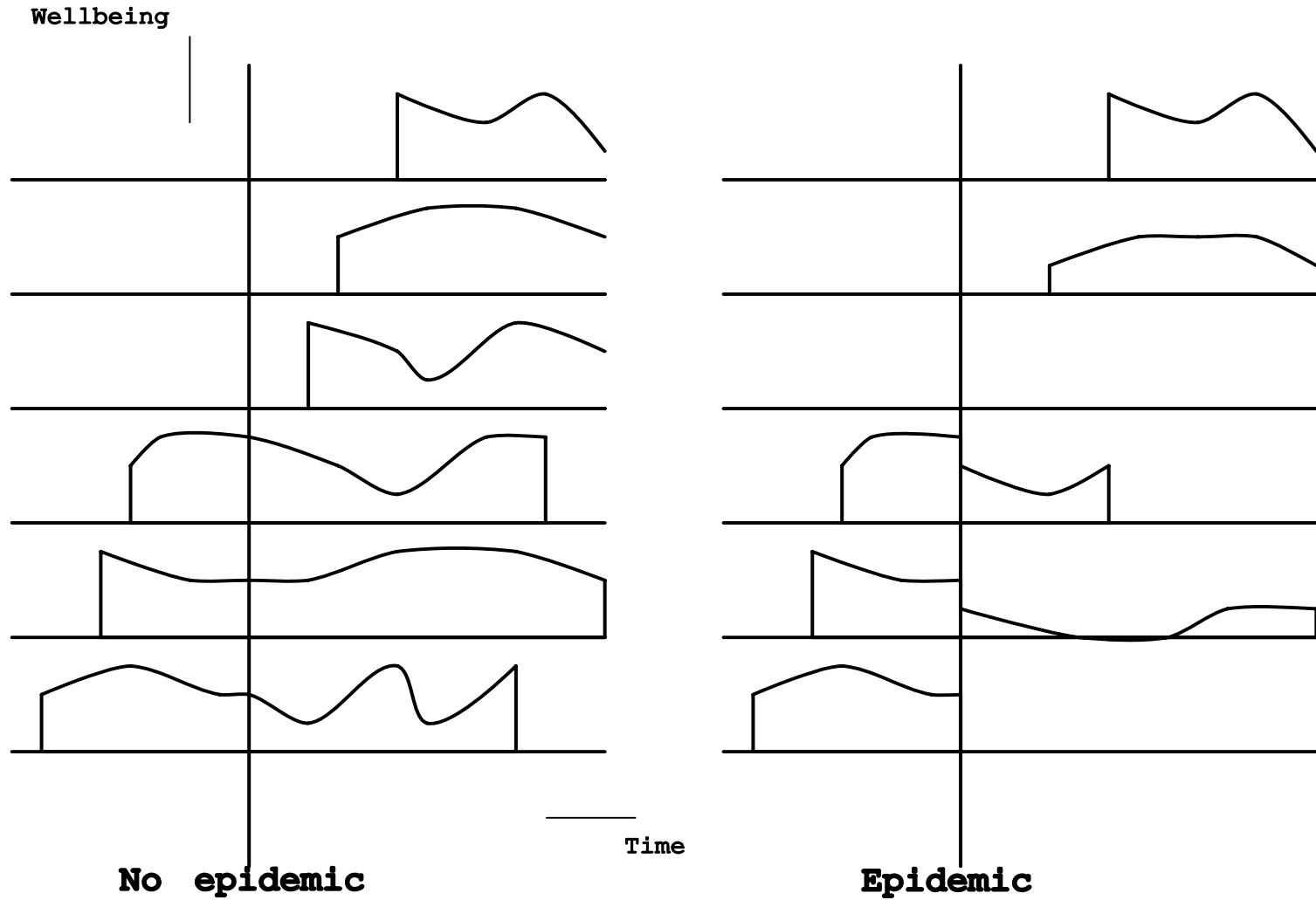
The measurement we need to do is fundamentally a matter of comparison. For instance:

In making a decision, we compare one option with another.

We compare one year with another to look for improvement.

We may want to compare actual conditions with ideal conditions.

A comparison



Effects of the epidemic:

One person is killed at the time of the epidemic.

One person is disabled by the epidemic, but her life is not shortened.

One person's life is shortened by the epidemic, but she does not die till some time later.

As a result of the epidemic, one person who would have been born is not born.

One person born later, who would have been healthy but for the epidemic, is born disabled.

Formula for temporal wellbeing:

$$w = w(h_1, h_2, \dots, h_m, d_1, d_2, \dots, d_n).$$

w is the person's temporal wellbeing at some particular time.

$h_1, h_2 \dots$ are all the individual factors that constitute her health.

$d_1, d_2 \dots$ are all the other factors that help to determine her level of wellbeing.

Suppose we could write the function in the special form:

$$w = v(h(h_1, h_2, \dots, h_m), d_1, d_2, \dots, d_n).$$

Then all the health factors could be evaluated together in a separate function $h(\cdot)$ of their own, showing how they contribute to overall wellbeing.

This would be an evaluative measure of health.

But the health factors are in practice not separable in this way. For instance, they are not separable in this function:

$$w = sb + tc.$$

w is wellbeing

s is quality of sight

t is quality of hearing

b is number of books

c is number of CDs

In theory, we could construct a health index.

Actual wellbeing is

$$w = w(h_1, h_2, \dots, h_m, d_1, d_2, \dots, d_n).$$

If the person were in good health but otherwise the same, wellbeing would be

$$w_H = w(H_1, H_2, \dots, H_m, d_1, d_2, \dots, d_n).$$

H_1, H_2, \dots are the values of the health factors that represent good health.

A health index is the fraction:

$$\delta = w/w_H.$$

In practice, we cannot construct this index.

We would need to judge how well off the person would be if she were in good health, while all her non-health factors were held constant.

We cannot in practice do that.

Instead we construct a 'conventional measure of health' (e.g qaly or daly).

Actual wellbeing is

$$w = w(h_1, h_2, \dots, h_m, d_1, d_2, \dots, d_n).$$

If the person were in good health, her wellbeing would be:

$$W = w(H_1, H_2, \dots, H_m, D_1, D_2, \dots, D_n).$$

D_1, D_2, \dots are the values that her non-health factors would have if she were in good health.

The conventional measure is

$$q = w/W$$

A conventional measure of health is not a measure of health but a measure of temporal wellbeing.

Conclusion: we cannot measure specifically health

Note. A conventional measure is scaled in such a way that the value of the measure for a healthy person is always 1.

Even if we could, we should not want to measure specifically health.

The burden of disease includes many harms that are not matters of health.

For instance, disease leaves many children orphaned. Even if they are in good health, it harms them.

Different arms of government manage different things: the health service manages health care; the education service manages education.

But they should not have different objectives.

They should promote wellbeing.

Also, they should be fair.

When a conventional measure is aggregated across time and across people, every period of life lived in good health is given the same value as every other, whoever lives it and whenever it is lived.

(There are sometimes adjustments such as age-weights; I ignore these for simplicity.)

But actually not every period lived in good health is as good as every other.

So the aggregated conventional measure is not a measure of wellbeing.

We know already it is not a measure of health.

It is a measure of nothing important.

Argument from fairness

To distribute health resources fairly, every period of healthy life must be valued equally with every other.

First example

Two patients, each with a mortal disease;
enough serum to save the life of just one.

One is better off than the other because
richer.

If you maximized wellbeing, you would save
the richer person.

But saving the richer person because she is
richer would be unfair to the other.

You can avoid this unfairness by treating a
period of healthy life as equally valuable
for each person.

The example shows we must concern ourselves with fairness as well as wellbeing.

But treating a conventional measure of health as an objective is not in general a way of achieving fairness.

The next example shows why not.

Second example

Two patients with a mortal disease; enough serum to save the life of just one.

One is better off than the other because the other is disabled.

If you maximized wellbeing, you would save the person who is not disabled.

But saving that person because she is not disabled would be unfair to the other.

You cannot avoid this unfairness by treating a period of healthy life as equally valuable for each person.

In general, we cannot incorporate the requirements of fairness into our measure of goodness by weighting or scaling the wellbeing of individuals.

Third example

Two patients, each with a mortal disease.

Enough serum to give one patient nine years of life, and the other none,

Or, divided, to give both patients four years.

Fairness requires dividing the serum.

But maximizing years of life, however weighted, could not achieve this result.

Conclusion

Fairness does not provide a good reason for valuing years of healthy life equally.

We must recognize two separate aims: wellbeing and fairness.

The burden of disease is the damage done by disease to wellbeing.

That is what a measure of the burden of disease should measure.