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VALUE FOR MONEY

How to improve wellbeing
and reduce misery

A report from the LSE Centre for Economic Performance

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Executive summary

The government spends billions on our behalf. How do we want this money to be spent?

We believe it should be spent to improve people's wellbeing and to reduce the prevalence of misery. This means that every policy should be judged by the wellbeing benefits it provides per pound spent.

In theory this already happens. Legions of economists estimate benefit/cost ratios, at least for new proposals. But two things need changing.

First, these calculations need to be given much more weight when decisions are made. And second, the calculations need to include all the non-economic factors that affect people's wellbeing – factors like having a job, or better health, or crime-free streets. The Treasury Green Book on policy appraisal now says this but it happens far too rarely.

That could be about to change. Keir Starmer has said "With every pound spent on your behalf we would expect the Treasury to weigh not just its effect on national income but also its effect on well-being".

That promise could lead to major improvements in how policy is made. What is now called the "economic case" for a policy should now be called "the wellbeing case" – or simply "the case". For what else matters ultimately except greater wellbeing and less misery?

So in this report we review a range of policies and ask the fundamental question which should be asked of every policy: Does it deliver value for money? In other words, what benefits does it deliver to people **relative** to its net cost to the government. This benefit/cost ratio is the key single number the government should be looking at when it makes its spending decisions.

In each case the benefits are measured in terms of the monetary equivalent of the impact of the policy in improving wellbeing. And the costs include an allowance for savings in subsequent years.

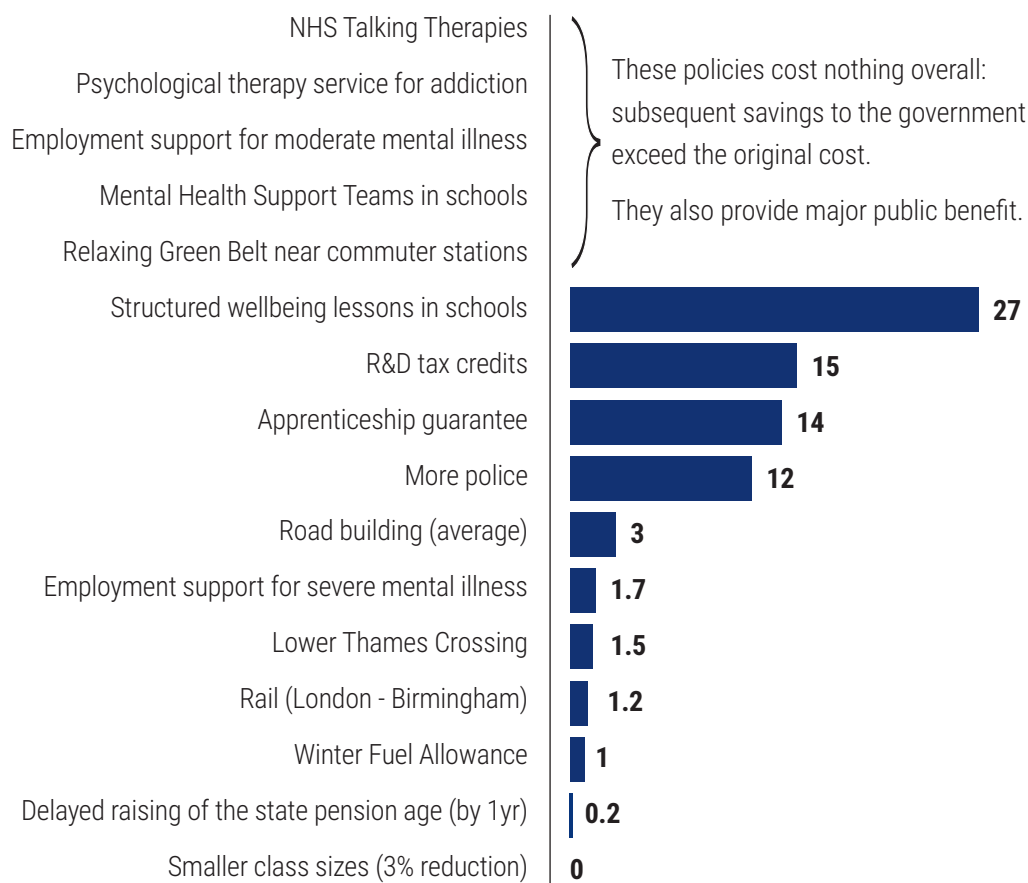
We do not look at all possible policies, but we do find huge differences in cost-effectiveness between major fields of policy. These must imply big misallocations of money. For there is clearly a major loss of national wellbeing when money is spent on low rather than high value policies.

The figure below shows our results. Top come policies which provide major benefits but involve no net cost because they generate savings greater than the original cost. For example, NHS Talking Therapies for people with anxiety or depression help so many people back to work that they pay for themselves -through the extra taxes people pay and the reduced amount of income support.

However most policies do cost the government money. For them the test is how large are the benefits they provide to the public for every pound they cost the government (the benefit/cost ratio)? Some policies yield very high benefits per pound. For example, apprenticeships yield benefits worth 14 times more than what they cost the government. This suggests that qualified applicants should be guaranteed a place. Similarly, more police would produce benefits through reduced crime that are worth over ten times their cost in terms of their impact on people’s wellbeing.

By contrast, the average road scheme only produces benefits worth three times the cost and the proposed Lower Thames Crossing has benefits of only 1.5 times the cost. These, and many other findings, imply the need for major reallocations of money in the Spending Review, both between departments and within them.

Figure 0.1. The ratio of benefits to net costs



These numbers are subject to wide margins of uncertainty. But the differences are large enough to suggest the need for a major rethink of priorities in the next Spending Review.

Many initiatives on mental health, employment support and house building have no net cost – they save the government more than it spends in the first place. These are no-brainers. There are also other policies which have considerable value and could be considered for expansion – wellbeing in schools, R&D tax credits, an apprenticeship guarantee, and more police. But

since money is tight, there will have to be savings elsewhere. Obvious areas include road building, Winter Fuel Allowance (with protection for those on benefit), and a more rapid rise in the State Pension Age.

It is in politicians' interest to take such calculations very seriously, since the evidence is clear: whether a government gets re-elected depends more on the wellbeing of the people than on the state of the economy. Let us hope that the benefit/cost ratio approach described in this paper can become a central feature of the coming Spending Review.

Acknowledgements

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Chapter 1

Rationality in government

The government spends billions on our behalf. How do we want this money to be allocated between all the possible policies that could be pursued?¹

It should obviously depend on how much 'difference' each policy makes to people per pound that is spent. But the 'difference' in what? What is the outcome which is the overarching good for society? The obvious candidate is people's wellbeing – how people feel about their lives. In principle that is what traditional benefit/cost analysis is measuring – it measures benefits by the amount of money which would produce the same change in wellbeing.

But traditional benefit/cost analysis fails to take into account a whole range of non-income channels affecting people's wellbeing – including the psychological impacts of employment, health and crime.

Partly for this reason, benefit/cost analysis currently plays a limited role in how our money is spent in Britain.² The results have been major losses to our nation. However, wellbeing science now makes possible a quite new approach to the measurement of benefits.

Measurement of wellbeing

The typical measure of wellbeing is the first question asked in the regular wellbeing surveys conducted by the UK Office of National Statistics (and also recommended by the OECD). This is "Overall, how satisfied are you with your life nowadays?" (0-10, 0 = not at all, 10 = completely). Respondents answer this question very quickly. But do their answers provide serious information which can be compared across people and over time? One test of that is whether they predict observable behaviours. They do. They predict whether a person will be alive in ten years' time about as well as a medical diagnosis does.³ They also predict productivity and quitting.⁴

¹ We are taking tax policy as given. The issue is thus how to allocate a total amount of money which is predetermined (except for the effects of the policy on tax receipts and benefits). See Layard and De Neve (2023), Chapter 18.

² See for example, National Audit Office (2018, 2021).

³ Steptoe and Wardle (2012).

⁴ De Neve et al (2013), Bellet et al (2023).

Most importantly, they predict how well the government will do in a general election.⁵ In fact they predict this better than the state of the economy does. So it's not "the economy stupid"; it's more like "wellbeing, stupid". This is important because it gives policy-makers every reason to promote wellbeing – even if only in the interests of remaining in power.

As a measure of wellbeing, life-satisfaction has the huge merit of being very democratic. It is left to individuals to evaluate their own wellbeing. There is no expert deciding which are the most important indicators on a dashboard. We simply ask 'Overall, how satisfied are you with your life nowadays?' (0-10).⁶

WELLBYs and cost-effectiveness

So let us imagine a person records the answer 7.5 for a whole year. We now say that this person has experienced 7.5 Wellbeing-Years or 7.5 WELLBYs.⁷ And when we evaluate a policy, we want to know how that number would be changed. For example, we might say the policy would raise the person's wellbeing by 0.5 WELLBYs.

Clearly, most government activities affect people's life-satisfaction over a sequence of future years, and we need to take this into account. So any policy should be judged by its impact on wellbeing in all future years (e.g. +0.5 in Year 0, +1.015 in Year 1). To get the total benefit of the policy we need to add up all the changes in WELLBYs, after applying the Treasury discount rate of 1.5% per year to all future WELLBYs.⁸ So in the case of our example the total change in that person's discounted WELLBYs is $0.5 + 1.0 = 1.5$ WELLBYs.

The next step is to add up these changes across all the different individuals affected by the policy. This gives the total change in discounted WELLBYs. The aim of government policy is to produce the greatest possible change in total discounted WELLBYs, subject to satisfying the government's expenditure constraint.

⁵ For example, Ward (2020).

⁶ i) Life-satisfaction measures satisfy the usual criteria of reliability and validity. Reliability relates to a reasonable degree of stability in answers (see Diener et al, 1995). Validity relates to correlation with other plausible correlates. These include the predicted variables mentioned earlier and physiological measures such as striatal activity (Davidson and Schuyler, 2015).

ii) The measures are cardinal in the sense that the number of just-noticeable differences between 3 and 4 is the same as between 8 and 9. Evidence for this comes from the fact that test-retest differences are similar at all points on the scale (Krueger and Schkade, 2008).

iii) There is of course measurement error. But, in estimating how the causes of wellbeing affect wellbeing, measurement error in the outcome does not bias the estimates of the effects.

⁷ For WELLBYs, see Layard and Ward (2020).

⁸ This is the rate used to discount utility (not money). It is generally considered reasonable to discount central estimates of future utility due to their uncertainty, which increases as we go forwards.

To do this, the government should select only the most cost-effective policies: those with the highest values of

$$\frac{\textit{Sum of discounted change in WELLBYs}}{\textit{Sum of discounted Net Cost}} \quad (1)$$

The most cost-effective policies should be accepted, down to where the available funds have been exhausted.⁹

It is almost as important to measure the costs correctly as it is to measure the benefits. Clearly the net cost can be different from the gross initial cost because of the policies' impact on subsequent costs.¹⁰ For example, a programme on child wellbeing may save future public money on criminal justice and health, and increase public expenditure on higher education. So our cost measure must be a measure of total Net Cost, with future net costs being discounted.¹¹

Lest our criterion (1) seems very contrived, we should remind ourselves that it has been the standard procedure for evaluating healthcare options in Britain for over 20 years. The work has been done by NICE¹² and has received wide public acceptance. Their phraseology is slightly different from ours. Benefits are measured in Quality-Adjusted Life Years (QALYs) (0-1). And the only benefits included are health-related changes experienced by the patient.¹³ But the broad approach is very similar. It has been shown to be both feasible and acceptable.

Of course many government policies affect the **length of life**, as well the wellbeing of those who would be alive anyway. In this case the approach is simple: we just add in the (discounted) wellbeing in the extra years lived. This is what the NHS does and so should we. But we should not include extra (or fewer) years lived because more (or fewer) people are born. (Nor does the NHS do this). In this sense, what we are really trying to maximise is the WELLBYs per person born.

⁹ This is a slightly loose formulation. The government's problem is to maximise the discounted sum of WELLBYs subject to an intertemporal budget constraint of the form

$$\sum_i \sum_t (G_{it} - S_{it}) (1-i)^t - R_t (1-i)^t = 0$$

where G_{it} is the gross cost of policy i in each year t , S_{it} are the net subsequent savings and R_t is the expected revenue without the policy. The cut-off value (λ) discussed later is the Lagrange multiplier on that constraint. It is the (shadow) value of the impact of more funds upon wellbeing.

¹⁰ Notice that we do not use the concept of ROI (return on investment). This term refers to the **ratio** of public sector savings to original public sector costs. In any sensible maximisation framework the proper approach to savings is to deduct them from cost, not to make them the measure of benefit (which should relate to benefit to the public).

¹¹ As proposed by the HM Treasury's Green Book in the UK, we use a discount rate of 3.5% per annum. A more logical rate might be the long-term interest rate on government borrowing – assuming that the objective is to maximise discounted wellbeing subject to the government's intertemporal budget constraint.

¹² National Institute for Health and Care Excellence.

¹³ Patients complete the EQ5D questionnaires on 5 health dimensions, and the weights given to each dimension in order to produce QALYs are taken from hypothetical choices made by the general public.

Relation to traditional methods of benefit/cost analysis

To summarise so far, we are advocating the following measure of cost-effectiveness:

$$\frac{\textit{Sum of discounted net benefits (in WELLBYs)}}{\textit{Sum of discounted net cost (in £s)}} \quad (1)$$

By contrast, traditional benefit/cost analysis measures benefits in £s and looks at

$$\frac{\textit{Sum of discounted net benefits (in £s)}}{\textit{Sum of discounted net cost (in £s)}} \quad (2)$$

So are we proposing a complete replacement of traditional benefit/cost analysis? This would be absurd. For there are many instances where the effects of a policy are most naturally measured in money terms. In some cases this is because the actual change is in money income, but in other cases a non-monetary benefit (like time-saving) is valued in terms of the Equivalent Variation in money – i.e. people’s estimated Willingness to Pay (WTP) for it.

So, for some effects of a policy, a measure in terms of £s is the most useful measure. However, this method of valuation can only be applied where evidence is provided by people’s choices or their stated preferences.¹⁴ But people do not choose to be sick, to be robbed or to experience noise or air pollution.¹⁵ Thus many of the effects of public policy can best be trapped through direct measures of wellbeing.

So we have a situation where **some** of the benefits are naturally measured in units of Wellbeing-Years and **others** in money. How to combine the two?

The way forward

Clearly we can either convert money into WELLBYs, or WELLBYs into money. Which is best? Ultimately, we believe, the whole analysis should be in terms of wellbeing. In that way we can allow for the fact that extra money has a very different impact on wellbeing, depending on how rich a person is.¹⁶

However, at this stage, policy-makers are so used to money as the measuring rod, that we focus on the monetary approach – and convert wellbeing measures back into money. This is the method used in HM Treasury’s Green Book, with one WELLBY being valued at £15,258.¹⁷ We believe that the resulting benefit/cost ratios (BCRs) should be central to the Spending Review.

¹⁴ The alternative of hypothetical stated preferences suffers from well known problems

¹⁵ Some evidence on the value of local amenities can be obtained from house prices. However this evidence often differs from the evidence based on measured wellbeing (see Layard and De Neve, 2023, p. 238-245), partly because valuation via house prices relies on perfectly functioning real estate markets, which is often not the case.

¹⁶ An extra pound is worth 10 times more to a poor person than to someone who is ten times richer (Layard et al, 2008).

¹⁷ HM Treasury (2020, 2021) – updated for inflation to 2023. For reasons for this number see Annex 1. In this method, outcomes measured in money are never translated into WELLBYs. As Annex 2 explains, £15,258 underestimates the true monetary equivalent of a WELLBY. In Annex 3 we therefore present benefit/cost estimates where a WELLBY is valued at £80,371, as well as estimates in units of wellbeing.

The cut-off point

Proceeding in these ways, we will estimate the cost-effectiveness of a whole range of policies. But how will we know whether their cost-effectiveness is high enough to recommend implementing them? This requires us to compare their cost-effectiveness with some cut-off point. And the right cut-off point is the one that lets through just enough policies to exhaust the budget constraint. Since in this study we are not evaluating all possible policies, we cannot evaluate that cut-off point. Thus this study is about the comparative strength of different proposals – not about whether they pass the test.¹⁸

When it comes to taxes and regulations, the cut-off problem does not arise. Suppose for example that we wanted to compare two sets of tax policies, both of which produced the same total revenue. We should just evaluate which produces the highest total wellbeing. Similarly with regulation, we simply compute whether the net benefits are positive. However, taxes and regulations are not the main subject of this study. But they are as suited to the wellbeing approach as public expenditure is.

Climate change

Finally, two discrete issues. The first is climate change – which is the greatest challenge facing society. One could argue that this should enter the analysis just like any other issue, since it simply relates to the wellbeing of future generations. However, broad policy on climate change has already been decided, with carbon budgets laid down up to 2050. The issue is how to achieve those at least cost to wellbeing. This is a highly technical issue outside our level of competence. We will not therefore attempt to evaluate policies that are mainly targeted at climate change. But where this issue arises as a side-effect of those policies we do evaluate, we shall assume a carbon price of £240 per tonne.

¹⁸ Notice that we do not recommend estimating a single number for the net present value (NPV) of a policy where this equals the benefits minus the net costs weighted by the shadow price of public funds (λ). This is because we do not know the appropriate cut-off. Clearly, if we knew the appropriate cut-off (λ), we could use either of the following criteria, since they are equivalent:

Criterion 1. $\frac{\text{Benefits}}{\text{Cost}} > \lambda$

Criterion 2. $\text{Benefit} - \lambda \text{ Cost} > 0$

But we can learn a huge amount by simply comparing the Benefit/Cost Ratios for different policies.

Misery

Finally, the hugely important issue of misery. The key issue is this: Do we care more about raising the wellbeing of people who are miserable than we do about raising the wellbeing of people who are already happy? Many politicians do care more about misery. So how does this affect our analysis? We do not suggest altering the criteria already set out. But we should attempt to provide information on the initial wellbeing levels of the various groups affected. We should also encourage ministers to search for new policies most assiduously in areas that improve low wellbeing.¹⁹

Conclusion

The government can do much to improve the wellbeing of the people (and its distribution). Indeed, in the words of Thomas Jefferson, “The life and happiness of the people is the first and only object of good government.” Because of the new science of wellbeing, we are now much better placed to implement this approach. We can (with error) measure wellbeing and we can estimate how different policies will affect wellbeing and how much they cost. So a government can now scrutinise all its possible policies and have evidence (however rough) on how cost-effective its different activities are. And the measure of cost-effectiveness is the ratio of benefit to cost.²⁰

In what follows we discuss one policy area after another, with further detail in supporting documents.²¹ We begin with mental health and discuss it at some length. This is simply because we have spent some time studying it. But this report is not intended as a plea for more spending on mental health - it is a plea for systematic evaluation across the board.

¹⁹ A more sophisticated approach is to adopt a different measure of effectiveness where the benefits to each person are weighted according to that person's initial level of wellbeing. That may become possible later, but let's learn to walk before we try running.

²⁰ We measure all costs and benefits in 2023/4 prices.

²¹ See Annex 5.

Chapter 2

Mental health and employment²²

Among people of working age, a half of all illness is mental illness.²³ It accounts for one half of all people on disability benefits and one half of absenteeism. It is a major source of suffering – in one analysis it accounts for more of the misery in our society than any other single cause.²⁴ And it imposes huge economic costs, because so many of those who are mentally ill are also unable to work. Thus helping them has to be a central element in any policy for growth.

But, while most people with a physical illness get treated, most people with a mental illness do not. Yet effective psychological therapies exist – with average recovery rates of 50%. So NICE recommends that all mentally ill people should receive evidence-based psychological therapy. But under 13% actually do. This is an obvious injustice. But how could it be remedied and would such policies be justified in terms of costs and benefits?

In this chapter, we shall investigate four major initiatives.

- NHS Talking Therapies for anxiety and depression (a well-developed prototype).
- Psychological therapy for addiction and severe mental illness (a new proposal).
- Mental Health Support Teams in schools (a newish initiative).
- Employment support for those with mental illness.

NHS Talking Therapies

NHS Talking Therapies is a service for people with depression and/or anxiety disorders (including PTSD, Obsessive-Compulsive Disorder, panic attacks, phobias and generalised anxiety). It treats all but the most severe conditions. Started in 2008, it now treats 800,000 patients a year at a cost of £1,000 per patient treated. After receiving an average of 8 sessions, the recovery rate is 50% or, after deducting natural recovery, 43%.²⁵

²² We are extremely grateful to Steve Pilling, Ifigeneia Mavranouzouli and David Clark for major advice and collaboration on this chapter.

²³ Layard and De Neve (2023). Chapter 10.

²⁴ Clark et al (2018). Table 16.1.

²⁵ For 50% see NHS Digital. For 43% see Krekel et al (2023).

This is clearly beneficial, but what of the costs to the Exchequer? Against the cost of £1,000 per patient must be set the subsequent savings on disability benefits and increases in tax payments. This depends on the effect of treatment on the likelihood that the patient will work. If 4% of those treated worked for two extra years, this would be enough to cover the cost.²⁶ And there is convincing evidence for a figure of at least 4%, both in England and in other countries which have introduced a comparable service.²⁷

There are also major savings on physical healthcare when a person with co-morbid problems (mental and physical) is treated for their mental health problem. In one matched English study the savings in the first 12 months covered the full cost of psychological therapy for patients with COPD or cardiovascular disease.²⁸ In another controlled study, a quarter of the cost was covered within 3 months.²⁹ It is also worth quoting a US study which found that in all but 2 of 28 studies, savings on physical healthcare outweighed the cost of the psychological therapy.³⁰

Taking together the effects on taxes and disability benefits with the (less cashable) savings on physical healthcare, there can be no doubt that **NHS Talking Therapies pays for itself within two years in terms of the government budget**. And it needs to continue to grow, since there is no evidence that as it grows the severity of illness declines among those coming forward for treatment. Its growth to 2028 was assured in the recent Budget.

But there are also significant groups of mentally ill people whose main problem is not depression or anxiety disorder. They are not covered by NHS Talking Therapies. We now turn to them.

²⁶ It is estimated that, if a person works rather than being on disability, that person receives on average £750 less on disability benefit and pays £280 more in income tax, NI and VAT. This comes to £1,030 a month. And the number of months of extra work per person treated is 0.04x24 i.e. one month per person treated.

²⁷ In England the IAPT (Improving Access to Psychological Therapies) pilot found 10pp more in employment after 9 months (Clark et al, 2009), and a recent controlled study found 8pp more in employment after 3 months (Toffolutti et al 2021). In a trial study of IAPT patients, those who recovered were found years later to have 10pp higher employment than those who did not (Pilling, unpublished calculations).

In a Norwegian RCT, those treated in an IAPT-like service had the following differential change in employment: Year 1, zero; Year 2, +5pp; Year 3, +6pp. In addition over Years 1-3 the additional earnings equalled 4 times the cost of treatment, so that extra taxes and benefit savings more than covered the cost (Smith et al, 2023). In a similar Spanish RCT the proportion earning over €24,000 rose by 22pp over the next 12 months (Cano-Vindel et al, 2022).

²⁸ Lordan et al (2019). For diabetes 65% of cost was covered.

²⁹ Toffolutti et al (2021). A Spanish study found smaller physical healthcare savings of €400 over 12 months when comparing treated patients who recovered with those who did not (Barrio Martinez et al 2023). Strikingly a British study showed that successful treatment by NHS Talking Therapies significantly reduced the risk of heart-attack and stroke (El Baou et al, 2023).

³⁰ Chiles (1999).

Psychological therapy for addiction and severe mental illness³¹

Table 2.1 shows the best available estimate of the fraction of adults suffering from these conditions. (There is of course some overlap). One group of mentally ill people receiving little psychological therapy at present are those suffering from addiction - whether to alcohol, drugs or gambling. A second group not adequately served are those suffering from personality disorders. These people cannot form stable relationships. For some the problem is externalised – they blame others, including domestic partners who are often subject to domestic violence. Such people have the ‘anti-social’ version of personality disorder. For others the problem is internalised – they blame themselves and often self-harm. These latter have the ‘borderline’ version of the disorder. Again, there is some overlap with the substance disorders.

Finally, many of the most severely ill people receive no psychological therapy. These are those with psychosis and bipolar disorder. Most of these are known to mental health services and many receive help. But they typically do not receive therapy.

NICE recommends psychological therapy for all of these groups, yet few receive it (see Table 2.2). All these people are suffering, and their suffering usually affects others – both family, colleagues and the community at large. There is a clear economic cost, as shown in the right hand column of Table 2.1.

³¹ Based on Parkes, I. (2024a). These estimates have been prepared in collaboration with NICE experts on mental health, Steve Pilling and Ifigeneia Mavranouzouli, and agreed with them.

Table 2.1. Conditions covered by the proposed psychological therapy service

	% of adults with the condition	Difference in employment rates from people without the condition
Alcohol dependence	1.2	-19pp
Hard drugs dependence	0.9	-35pp
Gambling	0.7	
Personality disorder ³²		
Anti-social	1.0	-12pp
Borderline	1.6	-33pp
Psychosis	0.7	-61pp
Bipolar disorder	2.0	-19pp
(Anxiety / Depression)	(17.0)	(-20pp)

Source: Most data from McManus et al (2016). Exceptions are the rates of personality disorder which are based on the more clinically based US Co-Morbidity Survey (Lenzenweger et al., 2007), and the rate of gambling addiction from House of Lords (2020).

Table 2.2 Percentage receiving talking therapy/counselling

Alcohol	6%
Hard drugs	10%
Gambling	Negligible
Personality disorder	
Anti-social	2%
Borderline	5%
Psychosis	2%
Bipolar disorder	16%

Source: All data from McManus et al (2016).

³² Prevalence rates of personality disorder are taken from the US Co-Morbidity Survey (Lenzenweger et al., 2007), whilst the difference in employment rates is taken from McManus et al. (2016). This is because the measurements of personality disorder prevalence used in McManus et al. (SAPAS and SCID-II) are screening tools, rather than clinical diagnoses, meaning these prevalence rates do not reflect the population who would be treated. Where employment rates from McManus et al. are used, this leads us to underestimate the employment effect of personality disorders, as SAPAS and SCID-II represent (on average) a less severely ill population. Our estimates of the benefit of treatment through increased employment (in Table 2.3) are hence conservative lower bounds.

A proposal has therefore been made for a new service (structured like NHS Talking Therapies) for people suffering from these conditions. It would be a standalone service like NHS Talking Therapies, with a workforce trained to deliver the relevant therapies. It would be led by a psychological therapist, and it would provide supervision and career progression in the same way as NHS Talking Therapies. But it would be separate from NHS Talking Therapies because the therapies for these conditions are in many cases different to those for depression and anxiety disorder. The problems are typically more severe and require more sessions of treatment.³³ Equally the social damage due to these conditions is often greater than that resulting from depression or anxiety.

For policy, the big question is, Are the resulting benefits sufficient to justify the costs? We shall focus on the benefits and costs per person treated. To illustrate our approach, we can look at drug and alcohol addiction. The main benefits of being treated for addiction are:

- a better life for the patient (if recovered) including better income.
- less risk of suicide.
- a better life for the family.

And against the costs of treatment should be set the savings to the government if (in consequence of recovery) the patient:

- pays higher taxes and receives lower benefits.
- incurs smaller medical costs.
- is involved in fewer crimes or accidents.

In doing these calculations we make evidence-based assumptions, based on the literature and conversations with experts.³⁴ These include the following.

- i. 35% of patients who begin treatment recover.
- ii. Of those who recover, 65% relapse over the following year.
- iii. A quarter of people with an addiction recover without formal treatment per year
- iv. A patient gains 1.22 WELLBYs if recovered for a year and their family gain 0.026 QALYs (which is how the evidence comes).
- v. A WELLBY is worth £15,258 and a QALY is worth £80,371, as the government assume.
- vi. A recovered addict has an increased probability of working of 20.8%, and would earn £17,743 a year and receive £9,056 less in benefits.
- vii. The annual suicide rate for a person with addiction is 0.06% and the value of a statistical life is £2.44 million.
- viii. The average cost of treatment is £1,122.

³³ The therapies to be provided are listed in Annex 4 together with the recommended mean number of sessions.

³⁴ For detailed working on all conditions see Parkes (2024a). The main data sources include McManus et al (2016) and Understanding Society.

ix. A recovered addict costs the NHS £2,024 a year less

x. A recovered addict costs the government £946 a year less in criminal justice.

As a result of these assumptions, the expected average benefits and costs of therapy for a person treated for addiction are as shown in Table 2.3 below. Thus the benefits are substantial and the net cost is negative.

The table also shows the results of applying evidence-based assumptions for each of the other conditions. For **each condition the net cost to the government in the first two years is negative**. We would want to carry out these policies on cost grounds only, even if there were no benefit to individuals and their family. But in fact there is also a huge reduction in suffering.

Table 2.3. Benefits and costs of treating one person (first two years) (£)

	Addiction	Personality Disorder	Schizophrenia	Bipolar Disorder
Benefits				
Reduced suffering	8,420	7,721	2,984	2,612
Reduced mortality	549	2,457	760	1,224
Reduced suffering spillovers	1,339	-	1,752	-
Total Benefit	10,308	10,177	5,496	3,835
Costs - cost savings				
Average treatment cost	1,122	3,439	2,893	1,421
- Reduced NHS use	-868	-1,355	-3,599	-3,164
- NI, income tax, and VAT raised	-320	-322	-192	-93
- Reduced welfare benefits	-849	-852	-509	-247
- Reduced criminal justice costs	-426	-1,969	-	-
Net cost	-1,341	-1,058	-1,407	-2,083

Mental Health Support Teams in Schools (MHSTS)³⁵

So far we have discussed only adult mental health. But up to half of those who experience mental illness as adults have already experienced it as children.³⁶ Would it not be best to tackle it early? This depends as usual on benefits and costs.

The main forms of child mental disorder aged 5-16 are roughly³⁷

Anxiety disorders	9%
Depression	2%
Behaviour disorders	5%
Other (e.g. ADHD, ASD)	4%
Total	20%

Of these children in difficulty only just over one in five are treated by Child and Adolescent Mental Health Services, or CAMHS. The threshold for being treated in CAMHS is very high.³⁸ To address this problem, the government decided in 2017 to launch a new service called Mental Health Support Teams in Schools (MHSTs). The concept here was essentially the same as NHS Talking Therapies – a stand-alone service led by psychological therapists with its own system of supervision, career progression and outcome measurement, but with one difference: the service is delivered in schools. The service has its own system of training and now covers (as planned) one third of the country.

Rigorous outcomes data are now available for over 12,500 cases treated by MHSTs.³⁹ These results are similar to or better than those obtained in RCTs of the conditions treated in the service. Because they give more detail, we use the trial data. And on the cost side we assume that 60% of therapist time is spent on therapy, the rest being spent on the whole school approach to mental health. We only evaluate the time spent on therapy.

³⁵ Based on Maclennan, S. (2024a). We are extremely grateful to Professor Peter Fonagy (National Clinical Advisor on Children's Mental Health, NHS(E)) who has agreed the findings of this report.

³⁶ Kim-Cohen et al (2003) and Kessler (2005).

³⁷ The starting point for these figures is the 2017 data from NHS Digital (2017). <https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2017/2017>. Adding up the proportions with each condition produces a total of 17.6% which exceeds the proportion of 12.8% with any disorder (due to co-morbidity). So first we multiply all figures by 12.8/17.6. Then we scale up by 20/12.5 to reflect the growth in mental disorder between 2017 and 2023 (Newlove-Delgado et al, 2023).

³⁸ See the report by Children's Commissioner (2024). https://assets.childrenscommissioner.gov.uk/wpuploads/2024/03/Childrens-mental-health-services-22-23_CCo-final-report.pdf.

³⁹ Parker et al (2024).

We make the following other evidence-based assumptions:

- Anxiety. On the basis of a meta-analysis of Cognitive Behavioural Therapy (CBT) for young people⁴⁰ and clinical outcomes from MHSTs⁴¹, we assume that 49% of those treated recover, of whom 17% per year would have recovered without treatment,⁴² and that the annual relapse rate is 10.5%.⁴³ We assume that, as for adults, recovery from anxiety disorders raises wellbeing (0-10) by 0.7 points.
- Conduct disorder. We use evidence on Parent Management Training⁴⁴ – the most studied of all treatments for child mental disorders. This is a programme of group training for the parents of children with moderate conduct disorder. A review of studies found 48% of children with conduct disorders and Oppositional Defiant Disorder (ODD) recovered⁴⁵ and we assume a control remission rate of 13%.⁴⁶ Studies show large long-term effects.⁴⁷ We assume that conduct disorder reduces wellbeing (0-10) by 0.7 points.
- Depression. On the basis of a meta analysis for young people and broadly in line with clinical outcomes from MHSTs, we assume 58% of those treated recover post treatment, of whom 36% would have recovered without treatment.⁴⁸ Between 6-12 months, we assume that 11 percentage points of recovery can be attributed to the treatment with no further effect beyond 2 years⁴⁹. We assume that, as for adults, recovery from depressive disorders raises wellbeing (0-10) by 0.7 points.

On the cost side, we use the NICE guidance as the framework for the number of sessions, and the resulting total number of therapist hours, per patient.⁵⁰ This results in a central cost estimate per treated individual of £750 for anxiety and £1,000 for depression. For conduct disorders and ODD, we use evidence from a review of cost studies for group Parent Management Training.⁵¹ Based on this, the costs are estimated at just over £400 per pupil. Averaged across all conditions the cost per child is £676.

⁴⁰ James et al (2020)

⁴¹ (N=12,500) Clinical outcomes data has shown 59% recovery for those with an anxiety disorder. Parker et al (2024).

⁴² Meaning that 32% recovery can be attributed to the treatment. We assume an ongoing annual 'natural' rate of recovery of 9%, from Baker et al (2021)

⁴³ Levy et al (2022)

⁴⁴ Otherwise known as the Incredible Years Program, developed by Caroline Webster-Stratton.

⁴⁵ Riise et al, (2021)

⁴⁶ Personal communication with Peter Fonagy

⁴⁷ e.g. Scott et al (2014).

⁴⁸ Meaning that 22% can be attributed to treatment. Cuijpers et al (2021)

⁴⁹ Recovery between 6-12 months based on response rate – the proportion with greater than 50% reduction in symptoms. Assume a linear reduction between 0.11 at 12 months and 0 at 24 months.

⁵⁰ To be conservative, we assume a band 7 therapist, 60% of time doing therapy and include annuitized training costs (implying £122 per hour of therapy). See MacLennan, S. (2024a).

⁵¹ Costs of running one 12-week parenting course to a group of eight families including non-recurrent (training) and recurrent (room rental, crèche facilities) costs was estimated in Charles et al, (2010) as £1,934, which is £3,241 inflated to 2023. Split between 7 families represents a cost of £400 per pupil

Against this must be set the cost savings when children recover from mental disorders. Here are some key facts.

- At age 12-15, children with emotional health disorders cost the public some £1,700 more per year, especially in terms of frontline and special education.⁵² The associated figure for conduct disorders is around £2,200.
- At age 18-24, people who had mental health problems at age 12-15 are 11 percentage points more likely to be NEET (not in employment, education or training). NEETs cost the state £5,815 per year.⁵³
- Between the ages of 10 and 28, those with conduct disorders and conduct problems cost the public £1,900 more per year in terms of the costs of crime and £360 in residential and foster care costs.⁵⁴

Using these figures **for an average young person treated by MHSTs, the cumulative cost-savings outweigh the costs within two years**. And, even if we exclude all cost savings, the benefit/cost ratio is 22.

This underlines the urgency of developing the service across the whole country. It also underscores the importance of ensuring that

- conduct disorder is treated as much as other disorders, using Parental Management Training, which is the best established and researched form of treatment for childhood mental health problems, and
- ensuring that the MHST workforce is upgraded to include as many skilled “high-intensity” therapists as “low-intensity” – as assumed in the trials whose results we rely on.

Employment support for mentally ill people⁵⁵

Employment is a key element in wellbeing, as well as being crucial to the public finances. As the following table shows, there is a huge difference in wellbeing between the long-term sick and the rest of the population.

Table 2.4. Average life satisfaction (1-7 scale)

Employed	5.2
Unemployed	4.5
Long-term sick	3.5
Retired	5.5

Source: ONS Understanding Society.

⁵² Knapp et al (2016).

⁵³ Knapp et al (2016). Excludes crime.

⁵⁴ Scott et al (2001). See MacLennan (2024a) for calculations based on this paper.

⁵⁵ Based on Frayman, D (2024a).

Targeted employment support is increasingly used as a way of helping mentally ill people back to work. Employment support (co-located with therapy) is now generally available for patients in NHS Talking Therapies.⁵⁶ But employment support is now being made more widely available. The government has recently funded an expansion of individual placement and support (IPS), primarily for those with mental health conditions. IPS follows a place and train approach, which prioritises getting people into jobs and then helping them remain in work through wraparound in-work support from a personal adviser. This expansion will both increase the number of those with severe mental illness in secondary care receiving support by 20,000 a year⁵⁷ and extend access to those with moderate (but still clinically significant) mental and physical health conditions receiving treatment via primary care. For the latter, the aim is to provide support to 100,000 individuals a year. However, given the scale of health-related inactivity in the UK, support may need to be expanded further.

How cost-effective is employment support? We assume that the employment rate of a group increases by seven percentage points if they receive employment support.⁵⁸ Those individuals who become employed have an increase in their annual net income of around £7,500 for moderate cases and £4,500 for severe cases. In addition, there are well established psychological benefits from employment for those who want to work (around 0.5 points on a 0-10 scale of life satisfaction). We measure the flow of monetised and discounted benefits over 5 years and find a total benefit per individual receiving support (of whom 7% more gain employment) of £4,565 for moderate cases and £3,777 for severe cases.

Turning to costs over these 5 years, we have the following position.

Table 2.5. Costs per mentally ill person provided with employment support. (£, PV over 5 years)

	Cost (£)
Moderate case	
Average treatment cost	3,162
- Increased tax receipts	-988
- Benefit savings	-2,460
Total	-285
Severe case	
Average treatment cost	6,438
- Increased tax receipts	-935
- Benefit savings	-3,248
Total	2,255

⁵⁶ For an evaluation see DWP Employment Advisers in IAPT (2022). Report by S. Purdon et al (2022).

⁵⁷ On average. The target is to provide support to an additional 100,000 over 5 years.

⁵⁸ See Frayman, D. (2024a).

Whilst the benefits are similar for moderate and severe patients, there is substantial difference in net costs. Supporting employment for those with severe conditions is much more expensive to the Exchequer (around double the gross cost for moderate cases). This stems from the fact that their support is not time-limited: those with severe conditions will generally require some form of continuous support to maintain them in employment. For those with moderate conditions, costs are constrained by the fact that support is limited to 12 months – enough time to establish them in a job and set up suitable support arrangements with the employer.

Consequently, the benefit/cost calculation looks very different across the two groups.

Whilst support for moderate cases pays for itself within 5 years (it has a negative net cost), **benefits for the severe group are only around 70% greater than costs** (a benefit/cost ratio of 1.7). Whilst the policy is still estimated to have a clear net benefit, this is a relatively low ratio when compared to other policy choices.

However, there is a good argument that special consideration should be given to benefits experienced by those with severe conditions. These are some of the most vulnerable and miserable people in the UK. If policymakers wish to attach special weight to reducing misery, then policies that benefit this group should be subject to a lower benefit/cost ratio threshold than policies that benefit the general population. In this light, the benefit/cost ratio of providing support for severe cases would look more favourable.

Inactivity is a major issue at all ages. We revert to inactivity among youth in the next chapter and among older adults in Chapter 7.

Chapter 3

Schooling and apprenticeship

Your life before 21 has a lasting impact on your subsequent wellbeing. And two aspects of it are especially important.

1. Have you acquired the basic character skills of being happy?
2. Have you acquired the skills to do a job which is satisfying and rewarding?

Qualifications are important for the second objective. But if you take a young person and wish to predict whether they will have a satisfying subsequent life, their emotional health is a better predictor than their qualifications are.⁵⁹

So both qualifications and wellbeing are important. And they are not in conflict: happy children learn better, as all the evidence shows.⁶⁰ But in Britain today, schools are becoming increasingly focused on exams, with less and less time and effort devoted to developing children's characters.

So the first question is

- Are there cost-effective ways of developing child wellbeing?

And the second question is

- Are there ways of ensuring that everyone has a skill that employers want?

We begin with the first of these.

Wellbeing in schools⁶¹

Teaching life skills is as difficult (or more so) than teaching an academic subject. Yet at present it is mainly left to teachers untrained in that field and doing their own thing. Some gifted teachers do it well, but for most children, Relationships, Sex and Health Education (RSHE) probably makes little impact. Even enlightened but unstructured courses like the former Labour government's SEAL programme have been found to have no effect at all.⁶² There are however evidence-based ways of teaching RSHE which could ensure a much better experience for most children.

⁵⁹ Clark et al (2018). Figure 1.2

⁶⁰ Durlak et al. (2011), Hanh and Weare (2017), Adler (2016), see also Fredrickson and Branigan (2005).

⁶¹ Based on Maclennan, S (2024b).

⁶² Humphrey et al (2010).

One example of this is Healthy Minds in secondary schools.⁶³ This provides detailed materials for a weekly lesson from age 11 to age 15. The topics covered include (as usual) social and emotional learning, sex and relationships and healthy living, but also social media management, mental illness, parenting, and the weekly practise of mindfulness. Those teaching the course receive about 5 days training before teaching each of the four years' materials.

The results of a randomised trial were good.⁶⁴ By the end of the second year, life satisfaction was up by 0.18 standard deviations and remained so at the end of the fourth year.⁶⁵ This means 0.36 points of life satisfaction (out of 10) each year – a substantial change, roughly half the effect for an adult of finding a job or a partner. Altogether the number of extra Wellbeing Years (WELLBYs) are 0.7 in just 2 years – and more for those who started with low wellbeing.

Moreover, the cost was small, since the teachers would mainly have been teaching RSHE anyway. So the additional cost was the cost of materials and teacher training (including the wages of a substitute teacher during the teacher training). This in total amounted to £111 per pupil over the whole programme.

However, in considering costs, we could alternatively postulate a counterfactual situation where there was no RSHE lesson at all. The cost then includes the teacher's wage cost for a weekly lesson over 4 years to groups of 15 children. This implies a cost of £732 per pupil for the course. We take the average of the two cost estimates and ignore flowbacks. On this basis **the benefit/cost ratio is 27.**

This is a high ratio. Moreover we have not included any cost savings. For example the programme improved behaviour by 0.15 standard deviations and this predicts a reduction in the number of criminal convictions by the age of 30 of 0.02.⁶⁶

So this analysis presents a powerful argument for promoting this kind of teaching in secondary schools. And the argument is even stronger if we look at Britain's position in the international league of life-satisfaction among 15-year olds: Britain comes lowest in Europe.⁶⁷

⁶³ <https://bounceforward.com/our-courses/healthy-minds/>

⁶⁴ Lordan and Macguire (2024).

⁶⁵ On year 4, see Layard et al (2018). On year 2 results, correspondence with Alistair McGuire (LSE).

⁶⁶ See Clark et al (2018). Table 7.2.

⁶⁷ Marquez et al (2024). Table 3.1. PISA results. HBSC results are similar.

The apprenticeship guarantee⁶⁸

By contrast at the same age, our pupils do well in academic subjects – better than in France and Germany.⁶⁹ However by age 25 our young people do so much worse. We have a longer tail of unqualified and unskilled youth and, in an admittedly old survey of adult literacy and numeracy, our young adults did very poorly.⁷⁰ Why is there such a long tail of poor performers after leaving school?

The reason is that, while we do well for those leaving school who go to university, we do badly for the rest. There is a severe rationing of opportunities in further education and on apprenticeships. In the government’s matching scheme Find An Apprenticeship, three times more young people apply than the number of apprenticeship places available.⁷¹ Over a third of those aged 18 in England are not undertaking any education or training.⁷²

To remedy this situation, Parliament passed an Apprenticeship Act in 2009 which obliged the government to ensure that the number of apprenticeship places available was as large as the number of qualified applicants. To deliver the guarantee was to take the life of a parliament. But this provision was repealed by the Coalition Government. In this report, we evaluate the proposal to implement this guarantee by the end of the next parliament. To do this, we quantify the costs and benefits of providing additional apprenticeship starts.

Apprenticeships are provided at different levels which correspond to the level of skills being acquired through on- and off-the-job training. Level 2, also known as intermediate apprenticeships, generally teach the basic skills for roles such as hair stylist or machine operative. Level 3, also known as advanced apprenticeships, provide more specialised skills for roles such as advanced senior hair stylist or engineering technician. These levels are the levels of apprenticeship which need to expand if we are to end low skill and improve youth employment prospects (apprenticeships at Level 4 and above are a form of higher education). We therefore focus on Level 2 and 3 apprenticeships for those aged under 25.

There are two main benefits of taking and completing an apprenticeship⁷³:

- First, it increases the likelihood of being employed. Completing a Level 2 apprenticeship raises the probability of being employed by 4 percentage points. For Level 3, it is 3 percentage points.
-

⁶⁸ Based on Frayman, D (2024b). Since education is a devolved policy area, this analysis relates to England. However, it can be assumed that the same costs and benefits of expanding apprenticeships apply in the other nations of the United Kingdom. Valuable advice was received from Gu Ventura (LSE).

⁶⁹ Layard et al (2023). Figure 3.

⁷⁰ OECD Survey of Adult Skills (PIACC). See also <https://www.gov.uk/government/publications/international-survey-of-adult-skills-2012>.

⁷¹ Department for Education (2021a).

⁷² Department for Education data: Participation in education, training and employment age 16 to 18 estimates for England, 2022. <https://explore-education-statistics.service.gov.uk/find-statistics/participation-in-education-and-training-and-employment>.

⁷³ Department for Education (2021b).

- Second, if you are employed, it increases your wage. If you complete a Level 2 apprenticeship, your earnings increase by 12%. If you complete Level 3, your earnings increase by an additional 13%.

These benefits improve an individual's wellbeing in two ways. Most obviously, being in work and earning a higher wage increases net income. Additionally, there are large psychological benefits from being in a job rather than unemployed. A large body of empirical work has shown that being employed improves life satisfaction by at least 0.5 points on a 0-10 scale, in addition to the effect of increased income.⁷⁴

On the cost side, the government pays the cost of off-the-job training for apprentices, which averages £6,900 for a completed apprenticeship at Level 2 and £8,400 at Level 3. There are also the costs of hiring staff to encourage the creation of new places, and of providing incentives for those firms not covered by the apprenticeship levy to take on new starts. Against these costs are the long run savings to the government from increased employment and earnings. Taking the first ten years of costs and benefits, we find the **benefit/cost ratio for expanding apprenticeships** (in line with the current split of Levels 2 and 3) **is 14**.⁷⁵

This constitutes a strong case for a major expansion of apprenticeship training. But this is unlikely to happen without a major change in approach. In higher education, the objective since the 1960s has been to ensure a place for every qualified applicant. That could also be the objective for apprenticeships – a guarantee that for people under 25 there should be enough places at levels 2 and 3 for every qualified applicant⁷⁶. What would be the total cost of implementing such a guarantee?

At present in England, only around 8% of young people start Level 2 and 13% Level 3, by the age of 25⁷⁷. These figures are remarkably low, especially when we consider that many of those with Level 3 will have also taken Level 2 (they are being double counted). On top of this, just over half of those who start an apprenticeship actually complete it. If an apprenticeship guarantee is to be in place by 2029, it is likely to require at least a doubling of the proportion of young people who will start apprenticeships. Assuming this preserves the current ratio of Level 2 to Level 3 starts and accounting for an increase in the size of the 16-24 age cohort of around 6%, this will require an additional 160,000 starts (taking total Level 2 and 3 starts amongst under 25s from 140,000 to 300,000).

⁷⁴ See Frayman, D (2024b).

⁷⁵ The DfE's estimate of the social cost/benefit ratio is 8. It gives no value to being employed (as such). DfE (2021b).

⁷⁶ To reduce the prevalence of low skill, the government should also promote pre-apprenticeship courses in further education, which would then increase the demand for apprenticeships. However, this will generate its own benefits as well as costs, and we do not include either of these in our calculations.

⁷⁷ Approximate estimates based on DfE Apprenticeships and Traineeships data. This assumes that individuals do not commonly start the same level twice.

In firms that pay the apprenticeship levy, an extra 60,000 starts could be funded by ringfencing a third of levy funds for Level 2 and 3 apprenticeships for under 25s.⁷⁸ This would leave an additional 100,000 to be created in smaller employers who do not pay the levy. An expansion on this scale will need central government to put an obligation upon the local governments to find places, in return for which the central government would provide new funding. This would have two elements beyond paying for the off-the-job training. It would require reducing administrative/information barriers to setting up places as well as providing financial incentives for firms to take on additional starts. We make a rough estimate that the first of these would require 1,500 staff to liaise with SMEs in creating and filling places – a cost of around £76 million year. Second, given that the current incentive of £1,000 to encourage apprenticeships starts amongst under 18s has not proved effective in stopping their decline, we suggest an average incentive of £3,000 payable to firms in labour markets with higher than average youth unemployment. The gross annual cost of implementing an apprenticeship guarantee would then come to £778 million⁷⁹.

Class size

One thing that makes a huge difference to the cost of education is the size of classes. At present (2022/3) the average class size in England is

26.7 in primary schools

22.4 in secondary schools

How would reducing class sizes by one pupil affect the current wellbeing of children and their attainment (which also affects their future wellbeing)? On wellbeing the most careful study covered Swedish adolescents in 159 classes in 2008 (a cross-sectional study with careful controls). They concluded that class size has no effect on mental health or wellbeing.⁸⁰ In Britain, Clark et al (2018) used ALSPAC data to examine the effect of class size on outcomes in primary schools. This was a careful study in which outcomes were measured at ages 8 and 11 holding constant the outcome of each pupil in earlier years. There was no evidence of a negative effect of class size on wellbeing or achievement.

⁷⁸ Under 25s tend to take Levels 2 and 3, for which training costs are much lower than Levels 4+. Ringfencing can therefore increase the number of apprenticeship starts without increasing the levy by reallocating funds to these levels. We envisage around 60,000 extra starts in levy-paying firms, making the number of under 25s doing Levels 2 and 3 in those firms around 130,000. This would mean total training costs for that group of just over £1 billion, less than a third of the £3.6 billion raised by the levy.

⁷⁹ The net cost over the first 10 years is £115 million (after deducting flowbacks).

⁸⁰ Jakobsson et al (2013).

On attainment a famous study was the STAR experiment in Tennessee. It concluded that a reduction in class size by 10 pupils would raise attainment by 0.215 standard deviations, implying that a one child reduction might raise attainment by 0.02 standard deviations – not a lot.⁸¹ More recent work in Israel⁸² and in the US⁸³ has found no effect.

As regards effects on subsequent income, some effects have been found in Sweden.⁸⁴ But none have been found in the US⁸⁵ nor in Norway.⁸⁶

Thus **the evidence does not favour significant effects of small changes in class sizes** on children's outcomes, though some effects are possible.⁸⁷ There may also be a negative influence on the wellbeing of the teachers. But a reduction in overall class sizes by 1 pupil would cost around **£2 billion** and make little difference to teachers' stress.

⁸¹ Nye et al (2000).

⁸² Angrist et al (2019).

⁸³ Hoxby (2000).

⁸⁴ Frederiksson et al (2013, 2016).

⁸⁵ Chetty et al (2011).

⁸⁶ Leuven and Lekken (2020).

⁸⁷ A survey by the EEF (2021) concluded that large changes (e.g. of at least 1/3 of the size of the class) that altered teaching methods could have effects on attainment but would not be cost-effective compared with other educational uses of the money. <https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit/reducing-class-size>. For a different view on large changes in class size, see Krueger (2003). But this pre-dates most of the studies reported here.

Chapter 4

Police⁸⁸

Police numbers

The biggest expenditure by the state to maintain law and order is on the police. In 2019 they cost 1% of national income, compared with 0.4% for the courts and 0.2% for prisons. So the number of police is a major policy issue.

To evaluate the effect of increasing police numbers upon people's wellbeing we have to ask two questions

- By how much do extra police numbers reduce crime?
- By how much does lower crime improve people's wellbeing?

The effect of police on crime

The most comprehensive study of the effect of police numbers on crime in England and Wales is by Vollaard and Hamed (2012). This covers the years 2001-08 and examines the effect of the unexplained variation in local police density upon the local crime rate. The conclusion is that a 1% increase in police numbers decreases crime by 1%-2%. This is much higher than was found in the majority of studies in the US and elsewhere (see their Table 1) - where most estimates of the effect were under 1%. It is also higher than the estimated short-run effect of the increased police numbers in London after the 2005 bombings, where Draca et al (2011) find a figure of 0.3%. Conservatively, we shall assume a figure of 0.5%.

The effect of crime upon wellbeing

As for the effect of crime on wellbeing, the most relevant study is by Dustmann and Fasani (2016). They mainly used individual data from the longitudinal British Household Panel Study for 2002 and 2008, linking it to quarterly data on crime rates in 375 local authorities and 43 Police Force Areas. They were thus able to trace the way individual wellbeing varied over time as crime rates varied (using a local fixed effect). They concluded that a 1% increase in the crime rate raised the average score on the General Health Questionnaire (GHQ) by 0.0119 points. From our own research we know that a 1 point increase in GHQ produces a 0.21 point fall in life-satisfaction.⁸⁹ Thus a 1% increase in crime produces a 0.0025 fall in life-

⁸⁸ We are grateful to Tom Kirchmaier and Rui Costa (CEP, LSE) for advice.

⁸⁹ See Parkes (2024b).

satisfaction.⁹⁰ (They obtained largely similar estimates from a quite separate study of over 50s, using the English Longitudinal Study of Ageing).

Since there are 65 million people in the UK, a 1% increase in the police over a year produces an extra 81,000 WELLBYs.⁹¹ And since there are 170,000 police officers (FTE), a 1% increase in police requires 17,000 police officers. There is thus an increase in WELLBYs per additional police officer of 48. If a police officer costs £60,000 a year and a WELLBY is worth £15,258, the ratio of benefit to cost is

$$\frac{48 \times 15,258}{60,000} = 12.2$$

The ratio of benefit to cost is thus 12.2, a case of high value for money.⁹²

⁹⁰ In other words, a doubling of crime lowers wellbeing by 0.17 points. (This is similar to the effect of moving from the lower quartile of crime to the upper quartile).

The effect is based on crime data at the Police Force Area level, which is more precisely estimated (and 75% higher) than at the Local Authority level. In the ELSA analysis a 1% increase in crime would raise the depression PSH score by 3 times more (relative to its mean) than the GHQ rises in the BHPS. But in ELSA the CASP index rises by a third less (relative to its mean) than the corresponding BHPS figures.

Notice that we do not include separate estimates of the effect of being a victim upon wellbeing. Victims are included in the BHPS survey, and, in any case, it is generally thought that the total effect of crime is much greater on non-victims than on victims (Cornaglia et al, 2014).

⁹¹ $0.5 \times 0.0025 \times 65 \times 10^6$.

⁹² For other evidence of the value of extra police see the evidence that police response times matter see Blanes i Vidal, J., & Kirchmaier, T. (2018).

Chapter 5

Private R&D⁹³

In a market economy inefficiency results when one firm's actions have direct external effects upon other firms' performance. A classic case of this is research and development (R&D).

When one firm makes a discovery, it is generally impossible for it to trap all the returns. Despite the existence of patents, the evidence is clear: R&D by one firm raises the value of other firms in the same line of business.⁹⁴ This means that, left to its own, a firm will underinvest in R&D. Another reason is that firms cannot easily borrow to fund R&D, since there is no tangible collateral.

There is therefore a strong case for state action to encourage more private R&D than would otherwise occur. The obvious method is a subsidy. In Britain firms are in any case allowed to deduct the cost of investment from their profits before these profits are subjected to the 25% corporation tax. But in addition, large firms get an investment tax credit which further reduces the cost of £1 of investment from £(1-0.25) to £(1-0.25-0.15).⁹⁵ Is this further outlay justified?

Evidence

This depends on two parameters:

- the effect of the credit on the level of R&D
- the social rate of return on the extra R&D

On the first of these, Bloom et al (2019) summarise a range of evidence and conclude that a 1% reduction in the tax-adjusted user-cost of capital produces at least a 1% increase in R&D. On the second issue, the private and social returns to private R&D have been the subject of many studies. In a meta-analysis for the British government, Frontier Economics estimate that the social rate of return averages at least 25%.⁹⁶ Some studies give much higher numbers. For example in a classic study of US firms, Lucking et al (2019) find a figure of 58%.⁹⁷ We shall assume that the social rate of return is 40%.

⁹³ We are grateful to John Van Reenen and Anna Sivropoulos-Valero for advice.

⁹⁴ In other words the positive knowledge spillovers exceed the negative spillovers which occur as other existing firms lose business to the firm which innovates, or experience more rapid obsolescence of their capital.

⁹⁵ The RDEC (Research and Development Expenditure Credit) is set at 20% of the investment outlay but is then taxed at 25%, making it worth 15% of the outlay.

⁹⁶ Frontier Economics (2023). The private return averages at least 14%.

⁹⁷ Again the private return averages 14%.

The benefit/cost ratio of the tax credit

We can now calculate the benefit/cost ratio for the tax credit. Suppose that without the credit the firm would have spent £1 on R&D. With the credit, the tax-adjusted cost of £1 of R&D is now reduced from £(1-0.25) to £(1-0.25-0.15). Thus, the price falls by a multiple of 0.60/0.75. R&D expenditure therefore increases by a multiple of 0.75/0.60 i.e. by an additional £0.25.

If the rate of return is 40% (treated as a perpetuity), output rises by £0.10 per year. This has to be discounted at 3.5% per annum. At the same time the immediate cost to the Exchequer increases by 0.15 x the total outlay of £1.25. Thus the overall ratio of benefit to cost is

$$\frac{0.10}{0.035} \frac{1}{0.1875} = 15.3$$

A **benefit/cost ratio of 15 is good value for money**.⁹⁸

⁹⁸ If we also allowed for the present value of the tax proceeds on the higher future output, it would pay for itself.

Chapter 6

Roads and rail

Transport is crucial to the life of the nation – vital for our economy and for our leisure. The key purpose of transport is to reduce the time getting from A to B. But other dimensions also matter. These include the impact on the health of the traveller and the impact on the environment (noise pollution, air pollution and the effect on social life).

Road building and improvement is one of the main forms of expenditure on transport. Currently this costs around £11 billion a year. Expenditure on rail is currently less than that, but likely to grow. So it is important to know what value is obtained from these investments.

Roads

We can begin with the government's own estimate of benefit/cost ratios for road construction. In these estimates time savings (during work and during leisure) are valued using stated preferences, backed up by revealed preference (i.e. how much people are prepared to pay to save time).

The latest published data on road projects approved for construction relate to 2019. These show that the **average benefit/cost ratio was 2.8**, with 20% of projects producing benefits/costs below 2.⁹⁹

To apply our own method of appraisal, we selected a major development under consideration.¹⁰⁰ This is the **Lower Thames Crossing** (LTC) – a major link by tunnel between North Kent and Essex, some miles east of the Dartford Crossing. The main impact of the new crossing would be to reduce journey times – both for those who travelled by the LTC and by those on the M25, which would be less congested. The Department's **estimate of the benefit/cost ratio is 1.5**.¹⁰¹ Our own estimate using wellbeing data is very similar.

⁹⁹ Department of Transport (2020). VfM Indicators 2019. Table 3. <https://www.gov.uk/government/publications/percentage-of-dft-s-appraised-project-spending-that-is-assessed-as-good-or-very-good-value-for-money/value-for-money-indicator-2019>.

¹⁰⁰ Based on Maclennan, S. (2024c). We are grateful to Iven Stead (DfT) for advice.

¹⁰¹ Department for Transport (2022). Lower Thames Crossing: Accounting officer assessment. <https://www.gov.uk/government/publications/government-major-projects-portfolio-accounting-officer-assessments/lower-thames-crossing-accounting-officer-assessment-december-2022>.

Rail

We have not studied rail projects. But it is worth noting that the government's existing estimate for the HS2 leg from **London to Birmingham has a benefit/cost ratio of 1.2**.¹⁰²

¹⁰² Institute for Government Explainer (October 2023). HS2: Costs and controversies. <https://www.instituteforgovernment.org.uk/explainer/hs2-costs>.

Chapter 7

Raising the state pension age¹⁰³

An ageing population is one of the greatest economic challenges of our time. The number of people aged over 65 is growing rapidly relative to those aged 15-64. The size of the older group is now 30% of the younger group; by 2070 they are expected to be 50%.¹⁰⁴ Pension benefits already cost 5% of GDP, and growing numbers of people over 65 cannot be sustained at a reasonable standard of living unless more of them work.

A key factor here is the State Pension Age – the age at which nearly all citizens begin to get the basic pension (whether or not they are working). This is now 66. And by 2028 it will rise to 67. But it will only rise further to 68 in 2044-46. This delay will create heavy pressures on the budget. The last government were considering making the change in 2037-9, but is that soon enough?

That depends, as usual, on costs and benefits. The savings to the Exchequer from a one-year rise in the pension age (to 68) could be a huge £6.1 billion. But some people would experience serious hardship:

- Everybody aged 67 would lose their state pension for that year.
- Some of those who would otherwise have retired by 67 will feel that they have to work. For some of them, work at that age will be a real burden, even if their earnings might exceed the pension they have lost.

Fortunately, we already have direct evidence on the effect of raising the pension age upon the wellbeing of all those affected. The evidence comes from what happened when the pension age was raised to 66 in 2018-20. By comparing those who got no pension at 66 with previous cohorts who got the pension, we can find the loss of wellbeing caused by the loss of the pension. The answer is an average loss of 0.12 points of wellbeing (out of 10) for a year.¹⁰⁵ The loss of wellbeing is of course connected not only with the loss of income, but with the

¹⁰³ Based on Frayman, D (2024c).

¹⁰⁴ UN projections quoted by Office for Budget Responsibility (2022). https://obr.uk/cross_cutting/ageing-population/.

¹⁰⁵ This analysis was kindly done for us by Jonathan Cribb and Laurence O'Brien of the IFS. We are extremely grateful to them. They took data for each cohort from the Annual Population Survey for the years 2013-2019 and explained wellbeing by age, year, and whether of pensionable age.

fact that some people now work who would not have otherwise done so. The Institute of Fiscal Studies estimate that 8% more of the cohort worked due to the rise in the pension age to 66.¹⁰⁶ And these were mainly poorer members of the cohort. This effect is included in our estimate of wellbeing loss.¹⁰⁷

If we convert this 0.12 points of wellbeing into money at the Green Book value of £15,258 per WELLBY, it gives a loss of wellbeing equivalent to £1,830 per person aged 67. At the same time the government saves £7,625 per person.

So we can ask: What is the benefit/cost ratio from **not** raising the pension age to 68. The benefit/cost ratio is 0.24. This is a small number. It constitutes a strong argument for raising the pension age to 68 as soon as is possible.¹⁰⁸

Other transfer payments

There are of course many transfer payments besides pensions. While pensions can be partly viewed as a state-managed savings scheme, most transfers are justified on distributional grounds. This cannot however be said about the Winter Fuel Allowance which is paid to all elderly households, irrespective of income. Since pensioners have on average incomes at least as high as the rest of the community, the WFA must be assigned a low benefit/cost ratio of 1 – suggesting it should be dropped, except for those on benefits.¹⁰⁹

¹⁰⁶ Cribb, Emmerson and O'Brien (2022).

¹⁰⁷ But, if their original wellbeing was below average, this may be something that policy-makers would wish to take into account (we do not have data on that).

¹⁰⁸ As we explain in Annex 2, it would be more appropriate to convert WELLBYs into money at a value of £80,371. This would give a benefit/cost ratio of delaying the rise of 1.3. This makes more sense since in traditional CBA the loss of the money would give a ratio of 1. The reason for the excess over 1 is that the groups most affected are the poorer groups, whose marginal utility of income is above average. WELLBYs are calculated taking this into account, and they are then converted back into money using the marginal utility of income of the average household.

¹⁰⁹ It could be argued that the WFA reduces anxiety about not being able to keep warm, but there is no way to include this benefit, which may be small for most people.

Chapter 8

House building and planning¹¹⁰

Wellbeing cost-benefit analysis can also be applied to regulation. A key area where regulation is not working well at present is the planning system.

Since 1970 the real price of houses in the UK has risen by a multiple of over 5 – the highest increase in Europe.¹¹¹ This is mainly due to increases in the price of land. And this in turn is due to the small amount of new land that has been built on - Britain is the only European country where the built-up area has risen slower than the population.¹¹² In fact, the number of houses built in the last 30 years is below half the number built in the previous 30 years.¹¹³

This failure has had a huge impact on the wellbeing of the population, especially the young. The median house price is now 8 times median income,¹¹⁴ and people in their mid-30s are now half as likely to own their own home, compared with 40 years ago (34% v 70%). The problem can only be dealt with by making more land available for building.¹¹⁵

So where can the additional land be found? The obvious answer is on the edges of existing communities - rather than starting new towns, which involve much heavier use of cars and generate less productive jobs. The new built-up area will of course require many of its own services, but it can rely heavily on existing transport facilities. Many of the most productive jobs are near city centres, which benefit from the economies of agglomeration. So a natural proposal is to relax the controls on house building near commuter stations.

¹¹⁰ We are extremely grateful to Paul Cheshire (LSE) for help with this chapter.

¹¹¹ For a review see Cheshire and Buyuklieva (2019).

¹¹² Bell, T., Clark, T., Fry, E., Kelly, G., & Thwaites, G. (2023).

¹¹³ Cheshire and Buyuklieva (2019).

¹¹⁴ In London it is almost 13 compared to about 5 in NE. Housing is now the largest component of household spending – up from 11 per cent of an average household's spending in 2001-2003 to 17.5 per cent in the most recent two year-period. Proportionately to their incomes, the poorest 30 per cent of households spend twice as much on housing as the richest 10 per cent. So poor Londoners are the worst off. ONS data (2023). <https://www.ons.gov.uk/peoplepopulationandcommunity/housing/bulletins/housingpurchaseaffordabilitygreatbritain/2022>.

¹¹⁵ We can of course build higher, but that is many times more expensive, and wellbeing surveys show that living in high rise flats reduces life-satisfaction by 0.3 points on average (out of 10 points). Department of Housing, Communities and Local Government (2014).

But this can only lead to rapid and appropriate house building if:

- i. there is a plan for each area, which lays down the broad requirements for any building.
- ii. a building is automatically approved if it satisfies those broad requirements.
- iii. there is no negotiation about charges for infrastructure, because a public authority will have pocketed most of the uplift in the price of land when planning permission is given and it can spend this money on the infrastructure.

The simplest way to organise this is to create a public body which:

- i. is given the sole right to develop the land and also makes the plan.
- ii. provides the planning permission in a standard automatic fashion, and
- iii. is the sole permitted first buyer of land in the planned area. Thus it can buy the land (without planning permission) at a low price and sell it at the going price for land with planning permission. It uses this uplift to provide the infrastructure (roads, schools, clinics) needed not just for the new houses and residents but to maintain service levels for existing people in the area. Some of the money can also be used to reduce the subsidy to commuter travel.

This body could be a Green Development Corporation, one per city region. (The analogy is the Docklands Development Corporation). It would be appointed by the central government in consultation with the local authorities concerned.

A further elaboration would give the Green Development Corporation further certainty about its minimum level of income. This would involve it receiving a Land Development Charge of 20% of the market value of the final private development. Such a charge would of course reduce the price the developer was willing to pay for the land, but might add a greater element of certainty for the Corporation.¹¹⁶

A detailed proposal of this kind has been developed by the Centre for Cities.¹¹⁷ It covers 5 city regions: London, Manchester, Birmingham, Bristol and Newcastle.

1. It identifies **commuter stations** as those offering journeys of less than 45 minutes to the city centre. And for each station it proposes a special planning status for the **land within 800 metres of each station**, except for land with special amenity value.¹¹⁸
2. This could be administered in the way described above. There would be a public authority which was the **sole potential buyer** (see 4 below). The current owner of the land would not be forced to sell but the company would in effect be able to buy the land if it offered a price close to (but higher than) the price for the land in its existing use.

¹¹⁶ A further elaboration would assign the rights of first buyer to the rail company owning the stations (e.g. TfL, National Rail). They could use their profit (net of the 20% charge going to the Green Development Corporation) in a regulated way to improve rail services or reduce the subsidies paid to train operators. See Cheshire and Buyuklieva (2019).

¹¹⁷ Cheshire and Buyuklieva (2019).

¹¹⁸ Defined as land in existing parks, National Trust land, National Parks, Areas of Outstanding Natural Beauty (since re-named), Nature Reserves, Sites of Special Scientific Interest, and cemeteries.

3. The public body would sell the land to developers at the current price for building land, with a 'risk-free' right to develop with no 'planning obligations' provided their proposals were consistent with the strategic plan (as outlined in point 4 below). And the **developers** would eventually sell the houses, shops and offices they built. But the developers would pay a **Land Development Charge** of 20% of the market value of the final development. This would go to the **Green Development Corporation (see below)** who would co-operate with the local councils, either itself to provide or commission or to enable the local councils to pay for the infrastructure needed on the site and in the wider local community (roads, schools, clinics etc.). The remaining profit should be regulated and could also be used to improve rail services or reduce rail subsidies.
4. There would be a **Green Development Corporation** for each city region – modelled on the London Docklands Development Corporation. This body, in close collaboration with the rail bodies and the local councils within whose boundaries the land to be built on was located, would hold all planning powers for all the land identified for development and draw up a strategic plan for all the land, which would include working to ensure the pace and location of development was co-ordinated with the capacity of the rail system. The developers who had bought the land would buy it together with a risk-free right to develop without planning obligations, so long as their proposals complied with the strategic plan. This would ensure there would be a 'rules-based' planning system in operation covering all the land identified by the Green Development Corporation's plan. The new Green Development Corporation would oversee the whole process and, so far as possible, ensure that the new houses and inhabitants maximised their use of rail transport.

Evaluation

If all the land were built on, it could provide some 2 million more houses – the same as the total number of houses built in the last 15 years.¹¹⁹ It would consume under 2% of all Green Belt land in those regions.

The benefits from the extra houses are measured by what people are willing to pay for them.¹²⁰ Against this we have to set the building cost of the houses, the value of the land in its existing use, and the change in amenity to nearby houses (measured for example by their change in price).¹²¹

The price of new houses around these 5 rather prosperous city regions is likely to be at least £400,000 (compared with the national average of £335k for newbuild homes). Building costs are around £150k. The value of agricultural land is about £20k per hectare, and evidence suggests that the value of nearby houses is little affected when development happens in close

¹¹⁹ This assumes 40 houses per hectare. Cheshire and Buyuklieva (2019).

¹²⁰ This assumes they will live in the houses i.e. it ignores any speculative element in the price.

¹²¹ The marginal buyers of the house are of course indifferent about the purchase and gain nothing from it. Those who gain are those to whom their payment goes. This payment goes first to the developer, who pays part to the builder and part to the Green Development Corporation, who then pay for extra services. As for existing nearby residents, their opposition might imply a loss of wellbeing but this is difficult to quantify and may involve a mis-forecasting of the effect on house prices.

proximity (because the improved local amenities offset the loss of nearby green space).

For the average house built, the balance is thus

	£
Price of house	400,000
Cost of building	-150,000
Loss of existing use of land	-20
Change in amenities	?
Total (approx.)	250,000

Thus if 2 million homes were built, the undiscounted value of the reform is about £500 billion. But the houses will be built over say 15 years, **making the value discounted at 3.5% a year a bit less than £400 billion.**¹²² And, on cost, there will of course be substantial public revenues from the increase in rateable values.

¹²² From this should be subtracted the net value of houses that would have been built in the absence of the reform and are not now built. This would be say 25% of the £400 billion.

Chapter 9

Concluding comment

This report does little more than put a toe into the water. But we hope it helps to stimulate a major rush of similar analysis as the basis for the coming 3-year Spending Review.

So how does this approach relate to the objective of “growth”? Obviously an objective of wellbeing is not the same as an objective of growth. But they have much in common.

1. Higher household income enhances wellbeing.
2. Higher taxes paid on higher income provide money to pay for public services.
3. But there is one caveat. If income increases due to higher private sector productivity (as opposed to higher employment), the rise in private sector wages will have to be matched in the public sector.¹²³ Unless there is a simultaneous rise in public sector productivity, 2/3 of the increased spending on public services will be soaked up into higher wages, and will not therefore lead to better services.

In this report we scrupulously avoid the issue of taxation. But we do show many policies which have benefit/cost ratios above 1. This raises the obvious question of whether the budget constraint is not too tight. We leave that to the reader to decide. But like all decisions, this will be improved if we know the benefit/cost ratios from public spending. Improving this knowledge is now urgent.

¹²³Baumol (1967)

Annexes

Annex 1

Green Book estimates of the monetary equivalent of a Wellbeing Year.

Two approaches are used in deriving the figure of £15,258 (at 2023/4 prices)

1. Stated preferences. A representative sample of people are asked two questions: How much money they would be willing to pay to avoid a specified injury and, How much shortening of life would they accept to avoid the same injury? Combining the two answers gives a monetary value of life-years. In 2019 prices this was £70,000. This translates into £10,000 per WELLBY (taking the WELLBY value of a healthy life-year as 7).¹²⁴
2. Stated preferences. This method relies mainly on stated preferences across alternative life situations.¹²⁵ Imaginary people are described by their income, health, employment and social relations. Respondents are then repeatedly shown two lives and have to choose which they would prefer. Some 2,800 choices were offered across 282 respondents. Probit analysis generated an equation for the latent variable (V) of the (simplified) form

$$V = \alpha_1 \log \text{INC} + \alpha_2 \text{EMP} + \alpha_3 \text{HEALTH} + \alpha_4 \text{SOC}$$

But V is not life-satisfaction. However we know from a standard life satisfaction regression that employment has an effect of b_2 on life satisfaction (0-10). It follows that the effect of log income on life satisfaction is $b_2 \alpha_1 / \alpha_2$. In 2019 prices this values one unit of life satisfaction at £16,000.

The Green Book's chosen coefficient is the average of these two - £13,000 in 2019 prices.

¹²⁴ Carthy et al (1999)

¹²⁵ Fujiwara (2021).

Annex 2

Alternative estimates of the monetary equivalent of a Wellbeing Year

We start with the standard estimated equation for individual i 's life satisfaction (0-10):

$$W_i = \alpha \log Y_i - \alpha \log E_i + \text{etc}$$

where Y_i is his household income and E_i is his equivalent household size. As shown in Layard and De Neve, Table 13.3, a typical value of α is 0.4.¹²⁶ Thus, for small changes in income,

$$\Delta W_i = \frac{0.4}{Y_i} \Delta Y_i \quad (1)$$

Now we ask the policy question: "A policy has produced a total change in population wellbeing (ΔW). What total sum of money (T) would have produced the same change in wellbeing?"

We can only answer if we know how the money will be distributed. Suppose we assume it is proportional to income. Thus

$$\Delta Y_i = Y_i \frac{T}{\sum Y_i} \quad (2)$$

We can now find T from (1) and (2). We know the total change in Wellbeing (ΔW_{Actual}). And T has to be such that the induced ΔW (i.e. $\sum \Delta W_i$) equals it. This requires

$$\begin{aligned} \Delta W_{Actual} &= \sum \Delta W_i = \sum \frac{0.4}{Y_i} Y_i \frac{T}{\sum Y_i} \\ &= N \cdot 0.4 \frac{T}{\sum Y_i} = \frac{0.4}{\bar{Y}} T \end{aligned}$$

where N is population and \bar{Y} is income per head. Hence $T = (\bar{Y} / 0.4) \Delta W_{Actual}$, and one WELLBY is equivalent to $\bar{Y} / 0.4$ pounds. In Britain net household income divided by population is roughly £32,000 (ONS data). So one WELLBY is equivalent to about £80,000 (2023 prices).

¹²⁶ A similar value is found in the most convincingly causal estimate based on lottery winnings (Lindqvist et al, 2020).

Annex 3

Alternative benefit/cost ratios

In this Annex we evaluate the impact of a different approach to the relation between income and wellbeing. In the main report we used the Green Book assumption that one WELLBY was equivalent to £15,258. In this Annex we rely on the empirical relationship $W = 0.4 \log Y$ etc. This values one WELLBY at £80,371. (See Annex 2).

This new approach produces a higher benefit/cost for all the policies where benefits were originally measured in WELLBYs (either wholly or in part). In particular it raises the relative valuation of wellbeing lessons in schools, the apprenticeship guarantee, more police, job placement of people with severe mental illness and delaying the rise in the state pension age.

These results are shown in the attached table. Column (1) reproduces Figure 0.1 in the report. Column (2) estimates the number of WELLBYs per £10,000 of net cost (valuing money at 1 WELLBY per £80,371). Column (3) is Column (2) times 8.0371.

Benefit/Cost ratios

Policy	As in Figure 0.1 (1)	WELLBYs per £10,000 (2)	Money Value of WELLBYs per £ (3)
Wellbeing in schools	27	17.69	142
R&D Tax Credits	15	1.87	15
Apprentice Guarantee	14	2.91	23
More police	12	7.86	64
Road building*	3	0.37	3
Placement	1.7	0.76	6
LTC*	1.5	0.19	1.5
Rail*	1.2	0.15	1.2
Winter Fuel Allowance	1	0.12	1
State Pension Age	0.2	0.13	1.1

*Department of Transport analysis

Annex 4

NICE recommended psychological treatments for various mental disorders

(mean number of sessions recommended by NICE)

Addiction

CBT (Cognitive Behavioural Therapy)	(12)
BCT (Behavioural Couples Therapy)	(12)

Personality disorder

DBT (Dialectical Behaviour Therapy)	(36)
MBT (Mentalization-Based Treatment)	(36)
Schema-Focused Therapy	(26)

Psychosis and bipolar

CBT (Cognitive Behavioural Therapy)	(16)
Family interventions	(10)

Annex 5

List of supporting papers

Parkes, I (2024a). Evaluating a proposed psychological therapy service for addiction and severe mental health problems.

MacLennan, S. (2024a). Mental Health Support Teams (MHSTs) in schools – overview of assumptions.

Frayman, D. (2024a). The High Price of Doing Nothing: employment support for those inactive with mental health problems

MacLennan, S. (2024b). Structured Wellbeing Curriculum in Schools – overview of assumptions.

Frayman, D. (2024b). The Apprenticeship Guarantee.

MacLennan, S. (2024c). The Lower Thames Crossing.

Frayman, D. (2024c). Raising the State Pension Age.

Parkes, I. (2024b). Mapping functions for wellbeing measures to generate WELLBYs for use in economic evaluation.

References

- Adler, A. (2016). Teaching well-being increases academic performance: Evidence from Bhutan, Mexico, and Peru. Publicly Accessible Penn Dissertations, University of Pennsylvania.
- Angrist, J. D., Lavy, V., Leder-Luis, J., & Shany, A. (2019). Maimonides rule redux. *American Economic Review: Insights*, 1(3), 309-324.
- Baker, H. J., Lawrence, P. J., Karalus, J., Creswell, C., & Waite, P. (2021). The effectiveness of psychological therapies for anxiety disorders in adolescents: a meta-analysis. *Clinical Child and Family Psychology Review*, 24(4), 765-782.
- Barrio-Martínez, S., P. Ruiz-Rodríguez, L. Adrián Medrano, A. Priede, R. Muñoz-Navarro, J. Antonio Moriana, M. Carpallo-González, M. Prieto-Vila, A. Cano-Vindel, C. González-Blanch (2023). Effect of reliable recovery on health care costs and productivity losses in emotional disorders. *Behavior Therapy*. 55(3). Elsevier.
- Baumol, W. J. (1967). Macroeconomics of unbalanced growth: the anatomy of urban crisis. *The American economic review*, 57(3), 415-426.
- Bell, T., Clark, T., Fry, E., Kelly, G., & Thwaites, G. (2023). Ending Stagnation: A New Economic Strategy for Britain. Resolution Foundation. <https://economy2030.resolutionfoundation.org/wp-content/uploads/2023/12/Ending-stagnation-final-report.pdf>
- Bellet, C. S., De Neve, J. E., & Ward, G. (2023). Does employee happiness have an impact on productivity?. *Management Science*. pp. 1–24.
- Blanes i Vidal, J., & Kirchmaier, T. (2018). The effect of police response time on crime clearance rates. *The Review of Economic Studies*, 85(2), 855-891.
- Bloom, N., Van Reenen, J., & Williams, H. (2019). A toolkit of policies to promote innovation. *Journal of economic perspectives*, 33(3), 163-184.
- Bowden-Jones, H., Hook, R. W., Grant, J. E., Ioannidis, K., Corazza, O., Fineberg, N. A., ... & Chamberlain, S. R. (2022). Gambling disorder in the UK: key research priorities and the urgent need for independent research funding. *The Lancet Psychiatry*, 9(4), 321-329.
- Cano-Vindel, A., Muñoz-Navarro, R., Moriana, J. A., Ruiz-Rodríguez, P., Medrano, L. A., & González-Blanch, C. (2022). Transdiagnostic group cognitive behavioural therapy for emotional disorders in primary care: the results of the PsicAP randomized controlled trial. *Psychological Medicine*, 52(15), 3336-3348.
- Carneiro, P., Crawford, C. and Goodman, A., (2011). The Impact of Early Cognitive and Non-Cognitive Skills on Later Outcomes. Institute for Fiscal Studies ,University College London.
- Carthy, T., Chilton, S., Covey, J., Hopkins, L., Jones-Lee, M., Loomes, G., ... & Spencer, A. (1998). On the contingent valuation of safety and the safety of contingent valuation: Part 2-The CV/SG" chained" approach. *Journal of risk and uncertainty*, 17, 187-214.

- Charles, J. M., Bywater, T., & Edwards, R. T. (2011). Parenting interventions: a systematic review of the economic evidence. *Child: care, health and development*, 37(4), 462-474.
- Cheshire and Buyuklieva (2019). Homes on the right tracks: Greening the Green Belt to solve the housing crisis. Centre for Cities.
- Chetty, R., Friedman, J. N., Hilger, N., Saez, E., Schanzenbach, D. W., & Yagan, D. (2011). How does your kindergarten classroom affect your earnings? Evidence from Project STAR. *The Quarterly journal of economics*, 126(4), 1593-1660.
- Children's Commissioner (2024). Children's mental health services 2022-23.
- Chiles, J. A., Lambert, M. J., & Hatch, A. L. (1999). The impact of psychological interventions on medical cost offset: A meta-analytic review. *Clinical Psychology: Science and Practice*, 6(2), 204.
- Clark, A. E., Flèche, S., Layard, R., Powdthavee, N., and Ward, G. (2018), *The Origins of Happiness*. Princeton: Princeton University Press.
- Clark, D. M., Layard, R., Smithies, R., Richards, D. A., Suckling, R., & Wright, B. (2009). Improving access to psychological therapy: Initial evaluation of two UK demonstration sites. *Behaviour research and therapy*, 47(11), 910-920.
- Cornaglia, F., Feldman, N. E., & Leigh, A. (2014). Crime and mental well-being. *Journal of human resources*, 49(1), 110-140.
- Cribb, J., Emmerson, C., & O'Brien, L. (2022). The effect of increasing the state pension age to 66 on labour market activity (No. W22/07). IFS Working paper.
- Cuijpers, P., Karyotaki, E., Ciharova, M., Miguel, C., Noma, H., Stikkelbroek, Y., ... & Furukawa, T. A. (2023). The effects of psychological treatments of depression in children and adolescents on response, reliable change, and deterioration: a systematic review and meta-analysis. *European child & adolescent psychiatry*, 32(1), 177-192.
- Davidson, R.J. and Schuyler, B.S. (2015) Neuroscience of Happiness. In: Helliwell, J.F., Layard, R. and Sachs, J., Eds., *World Happiness Report 2015*, Sustainable Development Solutions Network, New York, 82-105.
- De Neve, J. E., Diener, E., Tay, L., & Xuereb, C. (2013). The objective benefits of subjective well-being. In Helliwell, Layard & Sachs (Eds). (2013). *World Happiness Report 2013*. SDSN Network, New York.
- De Neve, J.E., Helliwell, J. F., Layard, R., & Sachs, J. (Eds.). *World Happiness Report 2024*. University of Oxford: Wellbeing Research Centre.
- Delamain, H., Buckman, J. E. J., O'Driscoll, C., Suh, J. W., Stott, J., Singh, S., ... & Saunders, R. (2024). Predicting post-treatment symptom severity for adults receiving psychological therapy in routine care for generalised anxiety disorder: a machine learning approach. *Psychiatry Research*, 115910.

- Department for Education (2021a). Apprenticeship vacancies: demand and supply data, July 2021. OGL Press.
- Department for Education (2021b). Measuring the Net Present Value of Further Education in England 2018/19. OGL press.
- Department of Housing, Communities and Local Government (2014). Housing and well-being report. English Housing Survey 2014. Office for National Statistics.
- Diener, E., Diener, M., & Diener, C. (1995). Factors predicting the subjective well-being of nations. *Journal of personality and social psychology*, 69(5), 851.
- Draca, M., Machin, S., & Witt, R. (2011). Panic on the streets of London: Police, crime, and the July 2005 terror attacks. *American Economic Review*, 101(5), 2157-2181.
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta analysis of school based universal interventions. *Child development*, 82(1), 405-432.
- Dustmann, C., & Fasani, F. (2016). The effect of local area crime on mental health. *The Economic Journal*, 126(593), 978-1017.
- El Baou, C., Desai, R., Cooper, C., Marchant, N. L., Pilling, S., Richards, M., ... & Stott, J. (2023). Psychological therapies for depression and cardiovascular risk: evidence from national healthcare records in England. *European Heart Journal*, 44(18), 1650-1662.
- Frayman, D (2024a). The High Price of Doing Nothing: : employment support for those inactive with mental health problems. VfM Supporting Paper series. Centre for Economic Performance, London School of Economics.
- Frayman, D (2024b). The Apprenticeship Guarantee. VfM Supporting Paper series. Centre for Economic Performance, London School of Economics.
- Frayman, D (2024c). Raising the State Pension Age. VfM Supporting Paper series. Centre for Economic Performance, London School of Economics.
- Fredrickson, B. L. and C. Branigan (2005). "Positive emotions broaden the scope of attention and thought action repertoires." *Cognition & emotion* 19(3): 313-332.
- Fredriksson, P., Öckert, B., & Oosterbeek, H. (2013). Long-term effects of class size. *The Quarterly journal of economics*, 128(1), 249-285.
- Fredriksson, P., Öckert, B., & Oosterbeek, H. (2016). Parental responses to public investments in children: Evidence from a maximum class size rule. *Journal of Human Resources*, 51(4), 832-868.
- Frontier Economics (2023). Rate of return to Investment in R&D. A report for the Department for Science, Innovation and Technology. <https://www.frontier-economics.com/media/015adtpq/rate-of-return.pdf>.
- Fujiwara, D. (2021). Incorporating Life Satisfaction in to Discrete Choice Experiments to Estimate Wellbeing Values for Non-Market Goods. *Simetrica-Jacobs Research Paper* July 2021.

- Gardner, F., Leijten, P., Mann, J., Landau, S., Harris, V., Beecham, J., ... & Scott, S. (2017). Could scale-up of parenting programmes improve child disruptive behaviour and reduce social inequalities? Using individual participant data meta-analysis to establish for whom programmes are effective and cost-effective. *Public Health Research*, 5(10).
- Hanh, T. N. and K. Weare (2017). *Happy Teachers Change the World: A Guide for Cultivating Mindfulness in Education*, Parallax Press.
- Heller, A. S., van Reekum, C. M., Schaefer, S. M., Lapate, R. C., Radler, B. T., Ryff, C. D., & Davidson, R. J. (2013). Sustained striatal activity predicts eudaimonic well-being and cortisol output. *Psychological science*, 24(11), 2191-2200.
- HM Treasury (2020). *The Green Book: Central Government Guidance on Appraisal and Evaluation*. London UK: OGL Press.
- HM Treasury. (2021). *Wellbeing Guidance for Appraisal: Supplementary Green Book Guidance*. London, UK: OGL Press
- House of Lords (2020). *Gambling Harm—Time for Action*. Report by the Select Committee on the Social and Economic Impact of the Gambling Industry. HL Paper 79. Published by the Authority of the House of Lords.
- Hoxby, C. M. (2000). The Effects of Class Size on Student Achievement: New Evidence from Population Variation. *Quarterly Journal of Economics* (V115:4) pp1239–1285.
- Humphrey, N., Lendrum, A., & Wigelsworth, M. (2010). *Social and emotional aspects of learning (SEAL) programme in secondary schools: National evaluation*. Department for Education, 2.
- Jakobsson, N., Persson, M., & Svensson, M. (2013). Class-size effects on adolescents' mental health and well-being in Swedish schools. *Education Economics*, 21(3), 248-263.
- James, A. C., Reardon, T., Soler, A., James, G., & Creswell, C. (2020). Cognitive behavioural therapy for anxiety disorders in children and adolescents. *Cochrane database of systematic reviews*, (11).
- Kendler, K. S. (2005). "A gene for...": the nature of gene action in psychiatric disorders. *American Journal of Psychiatry*, 162(7), 1243-1252.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of general psychiatry*, 62, 593-602.
- Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder: developmental follow-back of a prospective-longitudinal cohort. *Archives of general psychiatry*, 60(7), 709-717.
- Knapp M, Ardino V, Brimblecombe N, Evans-Lacko S, Lemmi V, King D, et al. (2016) *Youth mental health: new economic evidence*. London: PSSRU, LSE; 2016. Youth Mental Health: New Economic Evidence (pssru.ac.uk).

- Krekel, C., Swanke, S., De Neve, J. E., & Fancourt, D. (2023). Happiness predicts compliance with preventive health behaviours during Covid-19 lockdowns. *Scientific Reports*, 13(1), 7989.
- Krueger, A. B. (2003). Economic considerations and class size. *The economic journal*, 113(485), F34-F63.
- Krueger, A. B., & Schkade, D. A. (2008). The reliability of subjective well-being measures. *Journal of public economics*, 92(8-9), 1833-1845.
- Layard, R., Bailey, L., Coleman, J., and Judge, E. (2018). *Healthy Minds: A four-year course in secondary schools*, report. Centre for Economic Performance, LSE. https://www.richardlayard.com/_files/ugd/e19520_40f5ae47333d4722a282be581618d965.pdf.
- Layard, R., and De Neve, J. E. (2023). *Wellbeing: Science and Policy*. Cambridge University Press.
- Layard, R., Mayraz, G., & Nickell, S. (2008). The marginal utility of income. *Journal of Public Economics*, 92(8-9), 1846-1857.
- Layard, R., McNally, S., Ventura, G., (2023). *Applying the Robbins Principle to further education and apprenticeship*. CEP Economy 2030 Report for the Resolution Foundation.
- Layard, R., & Ward, G. (2020). *Can we be happier?: Evidence and ethics*. Penguin UK.
- Lenzenweger, M. F., Lane, M. C., Loranger, A. W., & Kessler, R. C. (2007). DSM-IV personality disorders in the National Comorbidity Survey Replication. *Biological psychiatry*, 62(6), 553-564.
- Leuven, E. and Løkken, S. A. (2020). Long-term impacts of class size in compulsory school. *Journal of Human Resources*, 55(1):309–34
- Levy, H. C., Stevens, K. T., & Tolin, D. F. (2022). Research Review: A meta analysis of relapse rates in cognitive behavioral therapy for anxiety and related disorders in youth. *Journal of Child Psychology and Psychiatry*, 63(3), 252-260.
- Lindqvist, E., Östling, R., & Cesarini, D. (2020). Long-run effects of lottery wealth on psychological well-being. *The Review of Economic Studies*, 87(6), 2703-2726.
- Lordan, G., and McGuire, A.J., (2024). *The Impact on Adolescent Health and Wellbeing from Adding Evidence-Based Soft Skill Lessons to the High School Curriculum*. (reworked from 2019 IZA DP12439).
- Lordan, G., Propper, C., & Saunders, R. (2019). *Quantifying the hospital healthcare utilisation and costs of the IAPT and integrated IAPT programmes for patients with long-term chronic conditions*. Mimeo.
- Lucking, B., Bloom, N., & Van Reenen, J. (2019). Have R&D spillovers declined in the 21st century?. *Fiscal Studies*, 40(4), 561-590.
- MacLennan, S. (2024a). *Mental Health Support Teams (MHSTs) in schools*. VfM Supporting Paper series. Centre for Economic Performance, London School of Economics.

- MacLennan, S. (2024b). Structured Wellbeing Curriculum in Schools – overview of assumptions. VfM Supporting Paper series. Centre for Economic Performance, London School of Economics.
- MacLennan, S. (2024c). Lower Thames Crossing. VfM Supporting Paper series. Centre for Economic Performance, London School of Economics.
- Marquez, J., Taylor, L., Boyle, L., Zhou, W., & De Neve, J. E. (2024). Child and adolescent well-being: Global trends, challenges and opportunities. In Helliwell, J. F., Layard, R., Sachs, J. D., De Neve, J.-E., Aknin, L. B., & Wang, S. (Eds.). (2024). World Happiness Report 2024. University of Oxford: Wellbeing Research Centre.
- McDaid, D., Bonin, E., Evans-Lacko, S., and Knapp, M. (2017). Public sector savings from treating child and adolescent mental illness. CEP Mimeo.
- McManus S, Bebbington P, Jenkins R, Brugha T. (eds.) (2016) Mental health and wellbeing in England: Adult Psychiatric Morbidity Survey 2014. Leeds: NHS Digital.
- National Audit Office (2018). Improving government's planning and spending framework. Report by the Comptroller and Auditor General for the House of Commons. UK. <https://www.nao.org.uk/wp-content/uploads/2022/08/Improving-governments-planning-and-spending-framework.pdf>.
- National Audit Office (2021). Evaluating government spending. Report by the Comptroller and Auditor General for the House of Commons. UK. <https://www.nao.org.uk/wp-content/uploads/2021/12/Evaluating-government-spending.pdf>.
- Newlove-Delgado, T., Marcheselli, F., Williams, T., Mandalia, D., Davis, J., McManus, S., Savic, M., Treloar, W. & Ford, T. (2023). Mental Health of Children and Young People in England, 2022 - wave 3 follow up to the 2017 survey. NHS Digital.
- NHS Digital (2021). Annual Report on IAPT services for 2020/21. UK. <https://digital.nhs.uk/data-and-information/publications/statistical/psychological-therapies-annual-reports-on-the-use-of-iapt-services/annual-report-2020-21>.
- NICE (2019). Depression in children and young people, 2019 evidence review Parkes, I (2024). Modelling psychological therapy for addiction, personality disorder and severe mental illness. Psychological interventions for the treatment of depression. NICE guideline NG134. National Institute for Health and Care Excellence.
- Nye, B., Hedges, L. V., & Konstantopoulos, S. (2000). The effects of small classes on academic achievement: The results of the Tennessee class size experiment. *American Educational Research Journal*, 37(1), 123-151.
- Nystrand, C., Hultkrantz, L., Vimefall, E. et al. Economic Return on Investment of Parent Training Programmes for the Prevention of Child Externalising Behaviour Problems. *Adm Policy Ment Health* 47, 300–315 (2020). <https://doi.org/10.1007/s10488-019-00984-5>

- Parker, J., Payne, S., Wood, M. Turnbull, M., Mavji, D., Gay, H., . . . Gallop, C.. (2024). Clinical Outcomes Report for Children’s Wellbeing Practitioners (CWP) and Education Mental Health Practitioners (EMHP): Summary prepared for the National Adviser on Child Mental Health on the Outcomes of Interventions Delivered by Mental Health Support Teams. London: Workforce, Education and Training HEI Implementation Group
- Parkes, I. (2024a). Evaluating a proposed psychological therapy service for addiction and severe mental health problems. VfM Supporting Paper series. Centre for Economic Performance, London School of Economics.
- Parkes, I. (2024b). Mapping functions for wellbeing measures to generate WELLBYs for use in economic evaluation. VfM Supporting Paper series. Centre for Economic Performance, London School of Economics.
- Prieto Vila, M., Estupiñá Puig, F. J., & Cano Vindel, A. (2021). Risk factors associated with relapse in major depressive disorder in primary care patients: a systematic review. *Psicothema*.
- Purdon, S., Bryson, C., and Downing, C. (2022). Employment Advisers in Improving Access to Psychological Therapies. DWP research report no. 1014. Department for Work and Pensions. ISBN 978-1-78659-403-7
- Reme, S. E., Fyhn, T., & Øverland, S., (2021). Predictors of employment in people with moderate to severe mental illness participating in a randomized controlled trial of Individual Placement and Support (IPS). *International Journal of Social Psychiatry*, 67(2), 150-157.
- Riise, E. N., Wergeland, G. J. H., Njardvik, U., & Öst, L. G. (2021). Cognitive behavior therapy for externalizing disorders in children and adolescents in routine clinical care: A systematic review and meta-analysis. *Clinical Psychology Review*, 83, 101954.
- Scott, S., Briskman, J., & O’Connor, T. G. (2014). Early prevention of antisocial personality: long-term follow-up of two randomized controlled trials comparing indicated and selective approaches. *American Journal of Psychiatry*, 171(6), 649-657.
- Scott, S., Knapp, M., Henderson, J., & Maughan, B. (2001). Financial cost of social exclusion: follow up study of antisocial children into adulthood. *BMJ*323(7306), 191.
- Smith, O.R.F., Clark, D.M., Hensing, G., Knapstad, M. (2024). Cost-benefit of IAPT Norway and effects on work-related outcomes and healthcare utilization: results from a randomised controlled trail using registry-based data. Mimeo.
- Steptoe, A., & Wardle, J. (2012). Enjoying life and living longer. *Archives of Internal Medicine*, 172(3), 273-275.
- Toffolutti, V., Stuckler, D., McKee, M., Wolsey, I., Chapman, J., J Pimm, T., ... & M Clark, D. (2021). The employment and mental health impact of integrated Improving Access to Psychological Therapies: Evidence on secondary health care utilization from a pragmatic trial in three English counties. *Journal of health services research & policy*, 26(4), 224-233.

Vollaard, B., & Hamed, J. (2012). Why the police have an effect on violent crime after all: evidence from the British Crime Survey. *The Journal of Law and Economics*, 55(4), 901-924.

Ward, G. (2020). Happiness and voting: Evidence from four decades of elections in Europe. *American Journal of Political Science*, 64(3), 504-518.



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