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Nature: Green and blue space in urban areas and engagement with nature

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Abstract
The natural environment has been shown to improve wellbeing, mental and physical health and a range of wider positive outcomes. But what can the government do? And are investments in "nature" value for money? There are a wide range of policy interventions which effectively protect and improve the natural environment and enhance the benefits which flow from it. Many important interventions protect the natural environment in oceans, rivers, mountains and forests, safeguarding wellbeing for current and future generations. In this paper, we explore the value for money of 3 selected potential options for government investment:

- converting small areas of vacant, unused land to new green space and parkland
- maintaining blue spaces to be accessible for public visits
- example schemes to encourage access to green space and engagement with nature.

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Underpinning assumptions

Background and context

The natural environment has been shown to improve wellbeing, mental and physical health and a range of wider positive outcomes.[1]

But what can the government do? And are investments in "nature" value for money?

There are a wide range of policy interventions which effectively protect and improve the natural environment and enhance the benefits which flow from it.[2] Many important interventions protect the natural environment in oceans, rivers, mountains and forests, safeguarding wellbeing for current and future generations.

In this paper, we do not examine this full range, but rather explore the value for money of a selected few options for government investment, mainly with a focus in more urban areas:

- converting small areas of vacant, unused land to new green space and parkland;
- maintaining blue spaces to be accessible for public visits;
- example schemes to encourage access to green space and engagement with nature.

These shall be examined in turn.

Green space in urban areas

Green space in residential areas has been directly linked to higher wellbeing. Depending on the type of green space and its location, this may be due to:

- **Direct impacts on health and wellbeing.** For example, nature has a positive affect on calming the mind: increasing the ability to concentrate and reducing aggression (Kuo and Sullivan, 2001b), to reduce stress (Agyemang et al., 2007; Nielsen and Hansen, 2007; van den Berg et al., 2010), and facilitate better self-regulation and executive function (Hartig et al., 2003; Bourrier et al., 2018).
- Experimental evidence shows that even short term exposure to green and blue natural environments can **improve mood** (Ulrich, 1984; Ulrich et al., 1991; Cackowski and Nasar, 2003)
- Positive emotions linked to higher levels of biodiversity (Cameron et al, 2020)
- Higher wellbeing may also be due to an improved **ambient environment** such as lower noise (e.g. Wolch et al, 2014, Gidlöf-Gunnarsson and Öhrström, 2007), improved air quality (Dadvand et al, 2015) or further ecosystem services and public goods such as scenic amenity (Seresinhe et al., 2019).

[1] See following text for full list of references
[2] See e.g. Dasgupta (2021)

- Green and blue spaces can also have indirect impacts through **an increase in behaviours or outcomes which are conducive to wellbeing,** such as an increase in physical activity (Maas et al., 2008, Richardson et al., 2013)
- **Speed of recovery from illness** (Montgomery, 2013) and lower feelings of fatigue and pain (Park and Mattison, 2009)
- **Reduced health inequalities** for older people (Maas et al., 2006) and low-income households (Mitchell & Popham, 2008)
- More **social interactions** (Kuo et al., 1998, Leslie and Cerin, 2008)
- **Higher generosity** (Weinstein et al., 2009)[3] which is likely to benefit the generous individual and those on the receiving end

In addition, 'nature' is associated with **lower crime**. For example, Kuo and Sullivan (2001a) studied a housing development in Chicago with 98 similar apartment blocks. Some blocks were surrounded by trees, others by asphalt. Police crime records for each building over 2 year period were also recorded. Although residents were randomly assigned to different levels of nearby vegetation, the greener a building's surroundings were, the fewer crimes reported. The researchers hypothesised that this stems from nature's ability to calm our mind. Or, the inverse: the additional 'mental fatigue' which comes with a *lack* of natural environment, which in turn is related to criminal aggression.

Wellbeing goes up with each additional hectare of green space. A German study using individual fixed-effects of those moving city found an effect size of 0.0066 WELLBYs per additional hectare of green space for those living within 1km. [4] Similar analysis in the UK found an effect size of 0.003 WELLBYs per additional 1% of green space.[5] Although this effect size is small at an individual level, the high population density in urban areas means that a large number of people receive this positive benefit. With a density of 3,500 per km2[6], an additional hectare could have a value to the surrounding residents of £1.1m per year - £1.7m per year, using figures from Krekel et al (2016) and White et al (2013) respectively[7]. In London, where the population density is higher, [8] the range of values using these two studies would be from £1.9m - £3m per hectare of green space. These findings have been estimated as permanent.[9]

Parkland could have an even higher wellbeing value. A study from Australia[10] estimates that an additional hectare of parkland within 1.6km of the home is associated with 0.009 WELLBYs. Again, we cannot assume causality from this association, but if all the higher wellbeing *were* due to the

[3] Weinstein et al 2009's lab experiment showed that students exposed to nature were significantly more generous with the $5 given to them in a game. This held for both forms of 'nature exposure': i. being in a room with plants rather than not, ii. Being shown slides with natural images rather than urban images (for around 8 mins)

[4] Krekel, Kolbe and Wüstemann (2016)

[5] White et al (2013) Calculation: 0.002 LS on 1-7 scale *11/7 (assuming linear, not adjusting based on cumulative distribution) *30.04ha (average green space in average 1km2 from ONS natural capital accounts)/100 *1

[6] Calculation: 3500 population density per km2 x 3.14 km2 (area with 1km radius) x 0.0066 WELLBYs x £15,258 (value of a WELLBY). Upper range: same calculation with 0.003WELLBYs

[7] The upper end is likely to be a high estimate, given that the estimate for the wellbeing benefit may come from more rural settings and it has in this case been applied to urban population densities

[8] 5,596 people per km2

[9] White et al (2013)

[10] Wood et al (2017), using data from 492 people building houses and relocating to 73 new housing developments across Perth, Western Australia.

parkland alone, this would amount to over **£5 million per year** for an additional hectare of parkland assuming an average urban density.[11]

Converting vacant land into pocket parks

Large areas of green space and parkland comes at a cost, especially in urban /residential areas – it takes up land which could have otherwise been used for building houses or other developments. This leads to the importance of "pocket parks" in urban areas – between around 0.2ha to 0.4ha and typically developed on small, solitary, irregularly shaped or physically damaged lots which are currently lying vacant and may not be conducive to commercial development.

This proposal involves converting currently vacant land (0.2% of land in England)[12] into green space. The additional green space in urban areas has a positive wellbeing impact, as does the reduction of vacant land, which has been found to have negative wellbeing impacts due to the associated scenic disamenity and fear of crime[13].

Benefits

- As described above, an additional hectare of green space in urban areas within 1km of a household is estimated to have wellbeing benefits of 0.0066 per person[14] – an increase in life satisfaction per year on a 0-10 scale, with permanent effects. Even though this wellbeing benefit has been measured for adults, evidence has also shown beneficial impacts for children living in areas with higher levels of green space, when measured through internalising scales.[15] This means that the benefit is applied for the entire population, including adults and children.
- An additional hectare of vacant land within 1km of the household has been shown to have a wellbeing **dis**benefit of -0.0395 per person.[16] We assume that converting this land from vacant into green leads to an additional benefit of this amount, a 0.04 increase in life satisfaction per year on a 0-10 scale, whereby we assume again permanent effects.
- A programme in the US which converted vacant areas of land into managed green spaces[17] found lower crime rates, reduced feelings of fear, improved feelings of safety and increased

[11] Calculation: 3,500 population density per km2 x 8.6km2 (see appendix 1, distances expanded to be 1.6km around the 1 hectare) x 0.07 change in WEMWBS x 0.16 conversion to LS (from Parkes, 2025), equivalent to 0.011 WELLBYs per person x £15,258 (Value of a WELLBY in 2023 prices)

[12] DLUHC (2021) Land use statistics: England 2021

[13] As well as crime itself. Crime prevention through environmental design and situational crime-prevention theories explain why vacant and abandoned spaces invite crime e.g. Jeffrey (1971)

[14] Krekel, Kolbe and Wüstemann (2016)

[15] For example, Towe-Goodman et al (2024) shows that a 0.1 unit higher Normalised Difference Vegetation Index (NDVI) at 270m was associated with a 1.28 lower internalising score. Assuming the same standardised difference in scores between the measure of child internalising symptoms and life satisfaction would represent a change of 0.009 in LS.

[16] Krekel, Kolbe and Wüstemann (2016)

[17] Philadelphia LandCare (PLC). In this programme, trash and debris are removed from a vacant lot. The land is then graded, and grass and a few trees are planted. A low wooden post-and-rail fence is installed with openings to permit residents access to the newly greened spaces. The fence prevents illegal dumping of garbage and construction debris; it is also a visual sign that someone is maintaining the property. The result is a small "pocket park." The rehabilitation of such lots takes less than a week to clean and green. The lots are

use of outdoor space for relaxing and socialising compared to control areas. [18] These changes can help explain the underlying factors which lead to the improvement in wellbeing measured above.[19]

Costs

- The costs of creating green spaces or converting land from disused, vacant land into green space can be estimated as around £180k per hectare, using UK local authority figures[20] of creating a simple landscaped garden. The abovementioned programme in the US estimated a much lower £12,569 per hectare equivalent[21] to clean and green a typical disused lot but we use the UK figure.
- The figures above do not include land purchase price. We include average urban land prices, a mean of £2.1m in residential areas[22], even though these land values are likely to be higher than those for the type of land where pocket parks could be created, which would be on areas which would otherwise be unsuitable for commercial or residential use.
- We include the costs of maintaining the green space, based on average European maintenance costs for Large Urban Parks and Community Gardens.[23] This gives an estimate of around £50k per hectare per year. This broadly aligns with illustrative maintenance costs from e.g. Scarborough Borough Council.[24] Higher maintenance costs are found for gardens and green spaces in London, up to £97k per hectare for Islington Council.[25] The figures above assume that the benefits continue year on year. This is of course only possible when the green spaces are maintained and do not become vacant, unused plots of land, since additional hectares of vacant land are associated with a wellbeing **dis**benefit.

Although pocket parks are assumed to be 0.3ha on average, for simplicity we apply the costs and benefits per hectare of converted land.

maintained through twice-monthly cleaning, weeding, and mowing during the growing season (April through October). See MacDonald and Branas (2019) for more information.

[18] See Branas et al (2018). Participants living in the 0.4km area near treated vacant lots reported significantly reduced perceptions of crime (-36.8%, $P < 0.05$), vandalism (-39.3%, $P < 0.05$), and safety concerns when going outside their homes (-57.8%, $P < 0.05$), as well as significantly increased use of outside spaces for relaxing and socializing (75.7%, $P < 0.01$).

[19] And the change which they lead to is incorporated in the overall estimate of wellbeing. They are not estimated in addition since this would be double counting.

[20] Scarborough Borough Council (2014)

[21] Assumed in 2019 prices: The cost to clean and green a typical lot is roughly $1,000–$1,300, typical lot size of 0.08 hectares (from totals of 2,000 vacant lots and 18,000,0000 sq feet, converted to 167 hectares). Cost per lot of £1,051 in 2023 prices, £12,569 per hectare in 2023 prices. In comparison, the costs from the Environment Agency for the costs of habitat creation per hectare for grassland (£1,278) and broad-leaved and mixed woodland (£3,834) both in 2023 prices seemed too small. To be conservative, the costs from Philadelphia's vacant lot scheme were used.

[22] MHCLG (2019) Land value estimates for policy appraisal 2019 - GOV.UK (www.gov.uk)

[23] Di Pirro et al (2023) 'urban garden' (4 Euros / m2 / year) and 'large urban park' (5.6 EUR / m2/ year)

[24] Scarborough Borough Council (2014)

[25] Gross expenditure per hectare = £7.037m ÷ 72.6 ha ≈ £96,900/ha/year. Case study from MHCLG (2025)

Calculation:

Benefits per hectare of additional green space:

= 11,000 individuals living within 1km around green space[26] x 0.0066 WELLBYs x £15,528 (value of a WELLBY in 2023 prices)

= 73 WELLBYs per year x £15,528

= £1.1m per year

PV benefits of £10.4m over 10 years (and £73m when benefits continue indefinitely)[27]

Benefits per hectare of converted vacant land:

= benefits of each additional hectare less vacant land

= 11,000 individuals living within 1km around green space x 0.0395 WELLBYs x £15,528 (value of a WELLBY in 2023 prices)

= 434 WELLBYs per year x £15,528

= £6.6m per year

PV benefits of £62m over 10 years. It is more challenging to assume these benefits could continue indefinitely: benefits are compared to the counterfactual of what would have otherwise happened. Within 10 years, conditions are likely to change enough to mean that an otherwise vacant lot could become developed.

Costs:

Initial construction of park / amenity green space of around £180k per hectare

Initial land purchase cost of £2.1m per hectare

Ongoing maintenance costs of £0.05m per hectare per year

Benefit cost ratio <u>over 10 years</u> of converting vacant land to green space:

PV benefits over 10 years: £72.4m

PV costs over 10 years: £2.6m

BCR of 27 over 10 years[28]

Lower confidence: potential cost savings

[26] When using urban density of 3,500 per km2
[27] Requires maintenance costs, as calculated
[28] Note that the forthcoming book estimates the BCR of green space alone, estimating the benefits indefinitely and a higher land purchase price

Cost savings to government or local areas could come from potential reductions in crime and lower likelihoods of common mental health disorders (see Annex 1). There are many assumptions and uncertainties in these estimates and we do not apply them to the BCR figures. However, it highlights that the net costs to government are likely to be lower than the estimated costs above.

Green space in times of crisis?

Lastly, urban green spaces are likely to have an even higher benefit at particular moments of time, including their role acting as buffers against stressful life events[29]. A quasi experimental study in Germany over the time period of the Covid-19 pandemic found that having a nearby green space during the Covid-19 period had a significant positive effect on overall life satisfaction, a causal return to overall life satisfaction of is about 0.15 WELLBYs (Krekel et al, 2025) – over 20 times the benefit estimated in 'normal' times. Living close to a green space with a minimum size of 15 hectares, which yields the strongest effects, increased life satisfaction by about 0.22 points. In terms of the possible pathways, this study found that residents living close to a green space had significantly better mental health, and in particular, had reduced symptoms of anxiety (feelings of nervousness and worry) as well as symptoms of depression (feelings of de pression) in the two weeks prior to respondents' interviews. They also found suggestive evidence for reduced loneliness. The covid restrictions were an exceptional case, but the additional benefit of green space should not be discounted, given that the annual probability of a pandemic with similar impact as Covid-19 could be about 2% (Marani et al., 2021).

Maintaining blue space

It is not only through 'green' spaces where people may receive the benefits mentioned above of engagement with nature. There are many quantitative studies that highlight the positive association between blue space exposure and wellbeing. For example, a systematic review (Gascon et al., 2017) has suggested a positive association between greater exposure to outdoor blue spaces and both benefits to mental health and well-being and levels of physical activity. It is hypothesised that the potential benefits from exposure to outdoor blue space may follow pathways similar to those identified for green space including stress reduction, increased physical activity, promotion of positive social contacts, increased place attachment and the reduction of extreme temperatures (Grellier et al., 2017). A study using a smartphone-based momentary assessment tool found that, that visiting canals and rivers is associated with a 6% enhancement in mental wellbeing and this is statistically more important than just visiting greenspaces (Bergou et al. 2022; Canal and River Trust 2024).

Rather than only focusing on creating new blue space, much of the relevant work is likely to focus on maintaining our existing blue spaces, particularly in areas facing high green-blue space deficit, such as urban areas. Some of the work may involve engaging relevant parts of the population so they are aware that they exist and the waterways can be used.

[29] Example correlational literature includes those cited above: Leslie and Cerin, 2008; Maas et al., 2008; Richardson et al., 2013.

A further study carried out for Canal and River Trust[30] using data from the Waterway Engagement Monitor, found that frequent visitors to a canal or waterway reported 0.058 higher life satisfaction than 'rare' users[31]. Although we cannot be certain that the difference is causal, it aligns with the findings from momentary assessments and wider reviews, giving further confidence. It can be used to estimate an association between each visit to a waterway and wellbeing. In 2022-23, there were estimated to be 888 million visits to waterways. Using the current value of the WELLBY gives an estimated a total value of £6.3bn associated with visits to waterways and towpaths in England and Wales.[32]

Crudely, this can be compared with the costs to the Canal and River Trust for maintaining the waterways and towpaths, to ensure they are accessible, for engaging nearby residents in using the waterways and all the associated organisational and analytical work required to support this. In total, the Canal and River Trust spends around £200m per year on it's charitable work, of which around £50m-£80m comes either directly or indirectly from the government.[33]

These potential costs are much lower than the potential benefits estimated by the study. Even though we cannot have full confidence, these estimates suggest that maintaining canals and rivers are well worth their investment in wellbeing value for money terms. The wellbeing benefits may even be an underestimate, given the evidence on the negative wellbeing impacts of derelict spaces cited above[34]: without maintenance, these waterways would be likely to fall into disrepair, with potential negative wellbeing impacts through fear of crime.

Engagement with nature: nature social prescribing

The above analysis does not separate out the benefits which are due to spending time in these areas, being active in these areas, socialising with friends in these areas, or simply the more pleasant ambient environment which they provide. These benefits are all included in the total wellbeing benefits and we only need these totals to estimate the value for money of the investment.

However, it is also useful to understand more about specific activities in nature and targeting participation for certain groups. At an individual level, the benefits may be higher for specific engagement in the natural environment and even higher when these activities are focused on individuals with lower starting levels of wellbeing.[35] A recent systematic review of nature-based

[30] Simetrica (2018) for Canal and River Trust
[31] Where rare users have an average of 2 annual visits, frequent visitors 138 annual visits. This difference is used to estimate the wellbeing value per visit.
[32] Estimation: WELLBY value of difference between frequent and rare use of 0.058 x Value of a WELLBY to get the difference per year, divided by difference in number of trips to create a broad estimate of the additional value per trip. This is multiplied by the number of trips (888million visits) to come up with a total estimate. It should be clear that Life Satisfaction is not the recommended measure for a marginal change such as **one** additional visit to a canal. The difference in life satisfaction is assessed for the difference in having 12 average annual trips compared to twice a week, which is considered a more substantial change. The split to number of trips is only used as an approximation.
[33] Canal & River Trust (2024)
[34] Krekel, Kolbe and Wüstemann (2016), evidence found for vacant areas of land, not specifically for derelict waterways
[35] Krekel et al's 2016 analysis also shows greater positive wellbeing associated with additional green space for e.g. low income individuals (0.0099) and older individuals (0.0184) – on a 1-7 scale.

interventions (NBIs) such as gardening, green exercise and nature-based therapy (Coventry et al, 2021) found they were effective for improving depressive mood (SMD of −0.64 , with 95% CI: 1.05 to −0.23), reducing anxiety (SMD of −0.94, with 95% CI: 0.94 to −0.01), improving positive affect 0.95 (95% CI: 0.59 to 1.31), and reducing negative affect −0.52 (95% CI: 0.77 to −0.26). [36] The most effective interventions were offered for between 8 and 12 weeks, and the optimal dose ranged from 20 to 90 min.[37]

Building on this, the government has funded a range of 'green social prescribing'[38] projects, where just over 8,000 individuals were referred to take part in activities in nature, ranging from gardening to wild swimming.

Benefits

- The starting average life satisfaction of these individuals was 4.7, compared to around 7.5 for the UK on average. i.e. these interventions were targeting a population with well below-average wellbeing
- Non-matched evidence from these projects suggested an improvement in life satisfaction of 1.7, with a range of 0.7 to 2.6 (Haywood et al, 2024). Without a matched comparison group, we cannot have confidence that all the change in life satisfaction is due to participation in nature-based activities, though the typically short duration of programmes makes time trends rather unlikely.
- We can have greater confidence in this change, given that we now have the results of a randomised wait-list intervention called Dose of Nature, which is an eight-week programme of exposure to nature for people with low life satisfaction who are referred by general practitioner doctors. [39] After this, participants experienced an average increase in life satisfaction (0–10) of 1.6 points by the end of the course. [40]
- We can take a conservative assumption that the change in wellbeing lasted for only 8 weeks, which was the average length of time between pre and post measurement for Dose of Nature. [41]

Costs

For these pilots, the average cost per participant engaged in nature-based activities was just over £500 but costs ranged from £97 to £1,481. This range reflects the range of types of activities, as well

[36] Sixteen studies were randomised controlled trials (RCTs); 18 were controlled studies; and 16 were uncontrolled before and after studies.

[37] Improvements in mood in people with dementia have been observed following exposure to nature gardens for only 20 min' duration and the greatest benefits are associated with an outdoor exposure to nature of 80–90 min' duration (White et al, 2018)

[38] From Haywood et al, 2024: Green social prescribing (GSP) can be defined as the practice of supporting people to engage in nature-based interventions and activities to improve their mental health. Social prescribing Link Workers (and other trusted professionals in allied roles) connect people to community groups and agencies for practical and emotional support, based on a 'what matters to you' conversation. There are four 'pillars' of social prescribing that Link Workers connect to: physical activities, arts/cultural activities, debt and other practical advice, and nature-based activities. There are many different types of nature-based activities and therapies that people may reach through a social prescription and include: conservation and other hands-on practical environmental activities; horticulture and gardening; care farming; walking and other exercise groups in nature; and more formal talking therapies based in the outdoors.

[39] More information: https://www.doseofnature.org.uk/the-science

[40] **Krekel, C.**, & K. Laffan (2025). A Dose of Nature? Nature Prescribing, Mental Health, and Wellbeing. *Mimeo*. Note that patients referred generally have a low starting life satisfaction, of around 4.

[41] For the green social prescribing pilots, this was an average of 9 weeksl

as and the different proportions of the group with a starting mental health condition of different severity and associated personnel and support required.

Calculation

Benefits per individual:

1.6 WELLBYs x 8/52weeks x £15,528 (value of a WELLBY in 2023 prices)

= £3,746 per individual

Costs per individual:

Average of £500[42]

BCR of 7

This is likely an underestimate. This does not include any potential government cost savings from, for example, reduced costs associated with mental health or changes in employment and resulting benefits payments – this information is not currently available. As nature-based activities are relatively low cost, an average of around £500 per individual, it would only need a very few episodes of acute care to be prevented[43] per provider for them to save more resources than they cost to deliver[44], i.e. to be cost-saving.

Conclusions

Creating and maintaining green and blue space in urban areas has high value for money.

For the proposal of converting disused plots to green space and maintaining waterways, the benefits are small per person. However, the large number of people who can benefit means that the BCR is high when compared to the potential costs proposed here.

In comparison, initial evidence suggests the benefits **per person** of active engagement in green space are much higher, potentially reflecting the additional pathways of social contact, physical activity and meaningful activities. Although the active nature of **engaging** people with nature also means there are likely to be higher costs per person,[45] green / nature-based social prescribing but can focus the support on those with the greatest need, especially those with existing mental health conditions and lower wellbeing.

[42] Also separately estimated as the costs per individual participating in Dose of Nature

[43] The cost of community psychiatric services and inpatient care amounts to £13,332 per patient per year before further targeted support is introduced (for example, multi-disciplinary collaborative care for these patients can add an extra £4,043 per patient for the first year alone).

[44]Haywood et al (2024) report that if 15-20% of those with severe mental health needs were prevented from needing acute care, there would be more resources saved than it costs to deliver. For example, one provider (creative arts in nature) supported 76 people in total, 19 of whom had severe mental health needs and cost only £30,000 to deliver. Another (community food growing) worked with 144, of whom 30 had severe mental health needs and cost £81,000 to deliver.

[45] especially when one accounts for the infrastructure required for effective referrals

Appendix: Illustrative assumptions for cost savings associated with creating additional green space from vacant lots

These figures have not been included in the totals, but have been worked up as illustrative examples of the types of cost savings which could be possible through an increase in green space in urban areas and a reduction in vacant lots.

Reduction in costs of crime from a reduction in vacant areas of land

We can take the evidence from the Philidelphia Land Care Programme from the US. Studies estimated the reduction in crime in areas surrounding converted lots, compared to control areas. Specifically, all crime was found to fall by 9.2%.[46] This study also investigated and found no displacement to nearby places.[47]

We apply this to England and Wales: 1.1million violent crimes per total population of 58million, 0.2million burglaries and 1million reported cases of antisocial behaviour. [48]

This gives an estimate of around 70 crimes being committed per year per urban area of 0.5km^2. A reduction of 5.8% assaults, 13.7% burglaries and 28% fewer nuisance crimes such as public drinking and illegal dumping would mean a total public cost saving of £13,238 per year when multiplied by the average cost of crime[49]

Estimation (low confidence):

> Reduction in violent crimes of 1.9 + reduction in burglaries of 1.0 + reduction in nuisance crimes of 8.0 x £1,213 = £13,238 per year

Reduction in costs of crime from additional green space

Alternatively, we can use evidence from Kuo and Sullivan (2001a) and focus only on the much smaller, direct area around a green space. This study is based on a housing development in Chicago with 98 similar apartment blocks. Some blocks were surrounded by trees, others by asphalt. Police crime records for each building over 2 year period were also recorded. Although residents were randomly assigned to different levels of nearby vegetation, the greener a building's surroundings were, the fewer crimes reported.
This inverse relationship between green space and crime is supported in systematic reviews.[50]

[46] Branas et al (2018)
[47] This was not surprising for the report authors (Branas et al 2018), as a review of studies of place-based interventions finds that they are about as likely to find a diffusion of crime *reductions* to nearby places, as they are to find displacement. Out of 272 place-based crime-prevention programs studied, 23% find evidence of displacement and 37% find a diffusion of benefits.
[48]ONS (2025) Crime in England and Wales: year ending September 2024
[49] GMCA Unit Cost Database. Accessed May 2022 £1,213 when uplifted to 2023 values
[50] Shepley et al (2019)

Example assumptions, based on the evidence available:

- That only those in the **20m** surrounding the hectare of green space benefit (total area of 0.008km2)
- Average urban density of 3,500 individuals per km2
- Total of 29 people living in the area
- The average crime rate for the UK, of 5.4million offences[51] / 57 million people = 9%
- That the additional green space is associated with a reduction in crime of 42% for these residents, based on evidence of the reduction in crime associated with living in a housing block with medium amounts of nature in the surrounding area, compared to low amounts of nature (Kuo and Sullivan, 2001)
- Average cost per crime of £1,213 (fiscal costs)[52]

Estimation:

0.008 x 3,500 x 9% x 42% = 1.1 less crimes per year

=1.1 x £1,213 = £1,300

Reduction in costs associated with common mental health conditions in adults stemming from additional green space

Drawing on evidence from Geary et al (2023) and building in additional assumptions, we assume:

- That those in the 0.1km2 surrounding the 0.01km2 of additional green space benefit
- Average urban density of 3,500 individuals per km2 = total of 350 people living in the area
- The average prevalence of mental health disorders of 17%[53]
- That the additional green space (which represents an additional ten percentile points in this area) is associated with 0.93 lower odds ratio of Common Mental Health Disorders (Geary et al, 2023)
- Average fiscal cost of service provision for adults suffering from depression and/or anxiety disorders, per person per year of £1,205[54]

Estimation:

0.1 x 3,500 x 17% x 0.07 = 4.2 less people with mental health disorders

= 4.2 x £1,205 = £5,020

[51]Home Office (2025)
[52]GMCA Unit Cost Database. Accessed May 2022
[53] NHS Digital (2017)
[54]GMCA Unit Cost Database. Accessed May 2022

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