

Health Inequalities in Scotland

Trends in the socio-economic determinants of health in Scotland

Chapter 7: Neighbourhoods, community and place

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7. Neighbourhoods, community and place

The characteristics of the places where people live can influence health. Environmental quality, the physical attributes of neighbourhoods, the accessibility of public services – these are all examples of socioeconomic determinants of health that vary spatially. This chapter considers trends in the spatial pattern of public funding, residents views of the neighbourhoods that they live in, and air quality.

Key points

- There is huge variation in self-reported health across Scottish local authority areas, even after accounting for variation in demographic and economic characteristics of the people who live in those areas. This provides further support, if any were needed, that place matters for health.
- There is also vast spatial variation in the socioeconomic determinants of health, including in earnings, and in rates of child-poverty.
- There has been large spatial variation in public funding changes since 2010. But unlike in England, these changes have not obviously disadvantaged the relatively more deprived parts of the country. Furthermore there is no evidence of an association between the spatial pattern of public funding changes and the spatial pattern of changes in health outcomes.
- For much of the past 20 years, perceptions of neighbourhood quality have improved, particularly amongst those living in the most deprived neighbourhoods. But this trend reversed slightly in 2018 and 2019. This coincides with a statistically significant decline in a broader measure of social capital in this period. Social capital measures aspects of community cohesion, community empowerment, social networks and social participation that are grounded in place.
- Emissions of several key health-harming pollutants, including particular matter and nitrous oxide, have been falling in Scotland, and there is some evidence of improving air quality since 1999. However, pollutant levels continue to exceed legal limits and recommended guidelines on a fairly regular basis in some places, so policy-makers should not be too complacent on this issue.

Place and health

Stark geographical variations in health outcomes across Scotland have been well documented. Geographical variation in health outcomes can be observed at a variety of different spatial scales. There is geographical variation in health outcomes across broad regions, sometimes expressed in relation to an East-West split, and sometimes framed as a contrast between Greater Glasgow and other parts of the country. There are also substantial variations in health inequalities within regions and indeed within individual towns and cities. The gradient in life expectancy across wards in Glasgow has been well documented.

But what are the impacts of place itself on health? This is a tricky question to answer. Some of the observed variation in health in different places clearly reflects the fact that the socioeconomic characteristics of people living in those places differs. On the other hand, some of the variation in health is likely to reflect genuinely place-related characteristics, such as climate, pollution, or accessibility to health care services.

Separating the observed variation in health across places into these different elements is challenging, particularly when we take into account factors such as peer effects – the idea that peoples’ behaviours can be influenced by the behaviours of others living in their neighbourhood – and confounding factors, such as the possibility that higher economic activity and employment in one area might be associated with higher levels of pollution at the same time. It is also the case – and indeed likely – that over time, socioeconomic differences between places can be accentuated by migration or what economists call ‘sorting’. Economically strong-performing places can attract high-skilled workers, which motivates more high-wage firms to locate in those locations, potentially leading to virtuous cycles of in-migration of higher-waged, higher skilled workers; whilst the reverse can happen in weaker areas.

Despite these challenges, a range of recent research indicates that where you live does influence your health (for example, Deryugina and Molitor, 2021). The mechanisms here can include:

- Characteristics of the physical environment – including the extent to which the attributes of an area encourage or disincentivise exercise, the quality of the natural environment.
- Characteristics of the economic and social environment – The characteristics of the local retail market can influence health. Recent research in Glasgow for example has shown that ‘environmental bads’ – such as alcohol, fast food, tobacco, and gambling outlets cluster in more deprived parts relative to less deprived parts of Glasgow (Macdonald et al. 2018). Currie et al. (2010) find that the presence of a fast-food restaurant near a school raises the probability of obesity among the students.
- Peer effects – the influence of peers in influencing one’s own health behaviours
- The availability of and access to healthcare services – potentially encompassing everything from waiting times to see your GP through to the availability of advice at a local pharmacy – and other public services.
- Environmental quality – ranging from the effect of climate through to ambient air quality.
- Crime and anti-social behaviour – areas suffering from high rates of crime or anti-social behaviour can affect mental and physical health through the general impact of stress, a sense of helplessness or of being ignored,

This chapter considers evidence of how place-based determinants of health have evolved in Scotland since 1999.

There is significant variation in health across places in Scotland, even after accounting for differences in the socioeconomic characteristics of residents

To provide context, and build on the points made above, Chart 7.1 shows how one measure of self-reported health varies across 14 areas of Scotland. The variation in self-reported health is substantial. In 2009-11, twice as many people in Glasgow (12%) were likely to rate their health as fairly bad or very bad, compared to Edinburgh (6%).

Between 2009-11 and 2017-19, the proportion of people rating their health as bad or very bad increased significantly in almost all areas of Scotland. During this period, most parts of Scotland became more like Glasgow, with a higher proportion of people likely to say their health was poor. The increase in prevalence of poor self-reported health in some areas is quite striking. In contrast, Edinburgh experienced a small decline in the proportion of the population self-reporting ill-health, and in Lothian the increase was very small.

It is important to bear in mind when doing this sort of analysis that variation in health at neighbourhood level within each of these areas is even more significant than the variation between the areas themselves. This is illustrated in Chart 7.2. The bars show the proportion of the population of the area rating their health as bad or very bad in 2017-19. The top of each error bar shows the proportion of the population living in the fifth most deprived neighbourhoods in each area who report their health as bad or very bad; the bottom of each error bar shows the proportion of the population living in the least deprived fifth of neighbourhoods in each area who report their health as bad or very bad.

Chart 7.2 shows for example that, in the most deprived neighbourhoods in Edinburgh, 12% of people rate their health as bad or very bad. Conversely, in the least deprived parts of Glasgow, 3% of people rate their health as bad or very bad. This variation at small area level needs to be borne in mind when making generalisations at regional level.

In the context of the discussion at the start of this chapter, it might be asked how much of the variation in self-reported health between areas is because the characteristics of people living in those areas is different. To examine this question, we used a simple statistical method to explore how much of the variation in self-reported health between areas in 2017-19 could be explained by differences in population characteristics. The characteristics we controlled for were age, sex, employment status, educational qualifications, and household income.

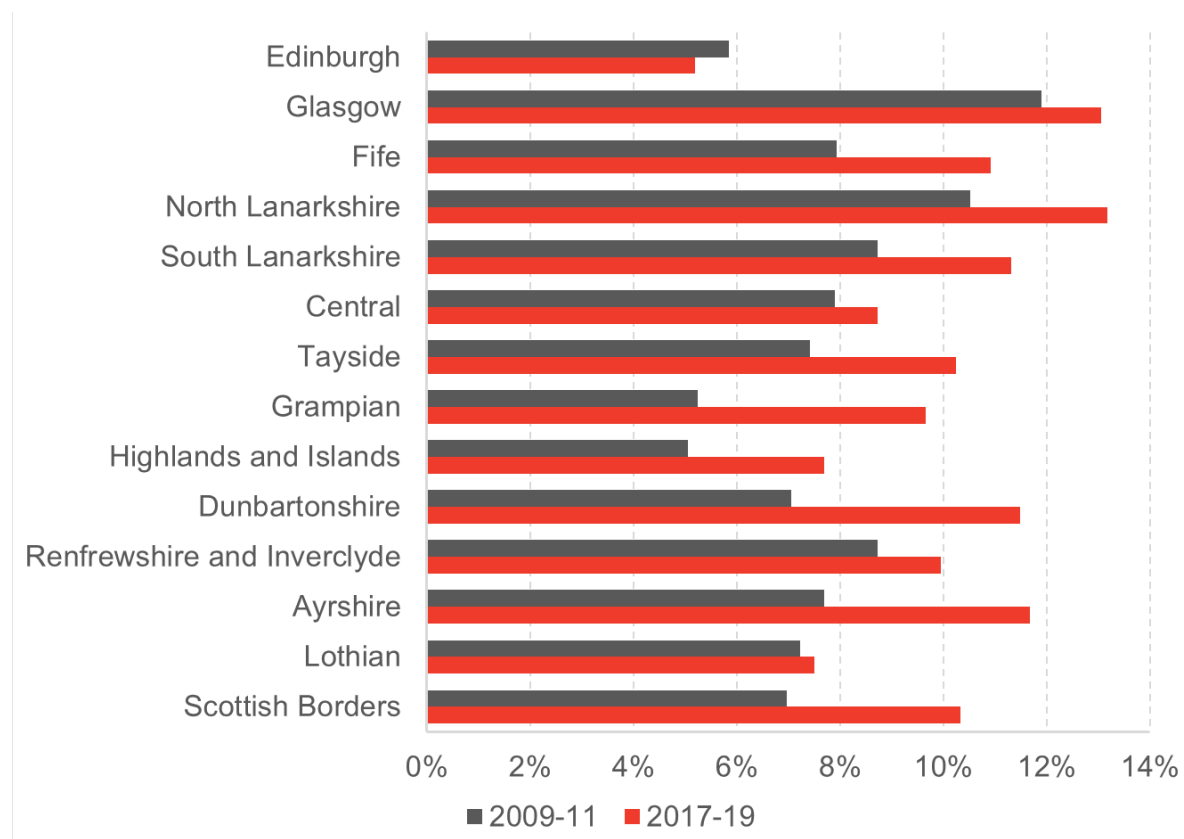
After controlling for individual characteristics, the variation in self-reported health across areas was smaller, but only marginally so. Without controls, the coefficient of variation in the proportion of the population reporting their health as bad or very bad was 0.21; after controlling for the demographic and socioeconomic circumstances of the population, the coefficient of variation fell to 0.19.

The result that controls only reduced the geographical variation in health marginally is slightly surprising. It may simply indicate that our controls were insufficient to capture individual factors influencing health. But the simplistic and somewhat naïve statistical approach - whilst it cannot in any way be taken as evidence that where you live has a causal effect on health - suggests that significant variation in health remains even when controlling for some of the most important socioeconomic determinants of health. It confirms that place matters when thinking about population health.

The reasons why health tends to be poorer in Glasgow and the west of Scotland than the rest of the country – even after controlling for socioeconomic deprivation – has been studied extensively. One of the explanations as to why health is relatively worse in Glasgow than cities with similar levels of socioeconomic deprivation is because of a higher democratic deficit in Glasgow – which manifests as feelings of despondency, disempowerment, and lack of sense of control, which are recognised psychosocial risk factors with links to health outcomes (Walsh et al. 2016).

Chart 7.1: There is substantial variation in self-reported health in different areas of Scotland

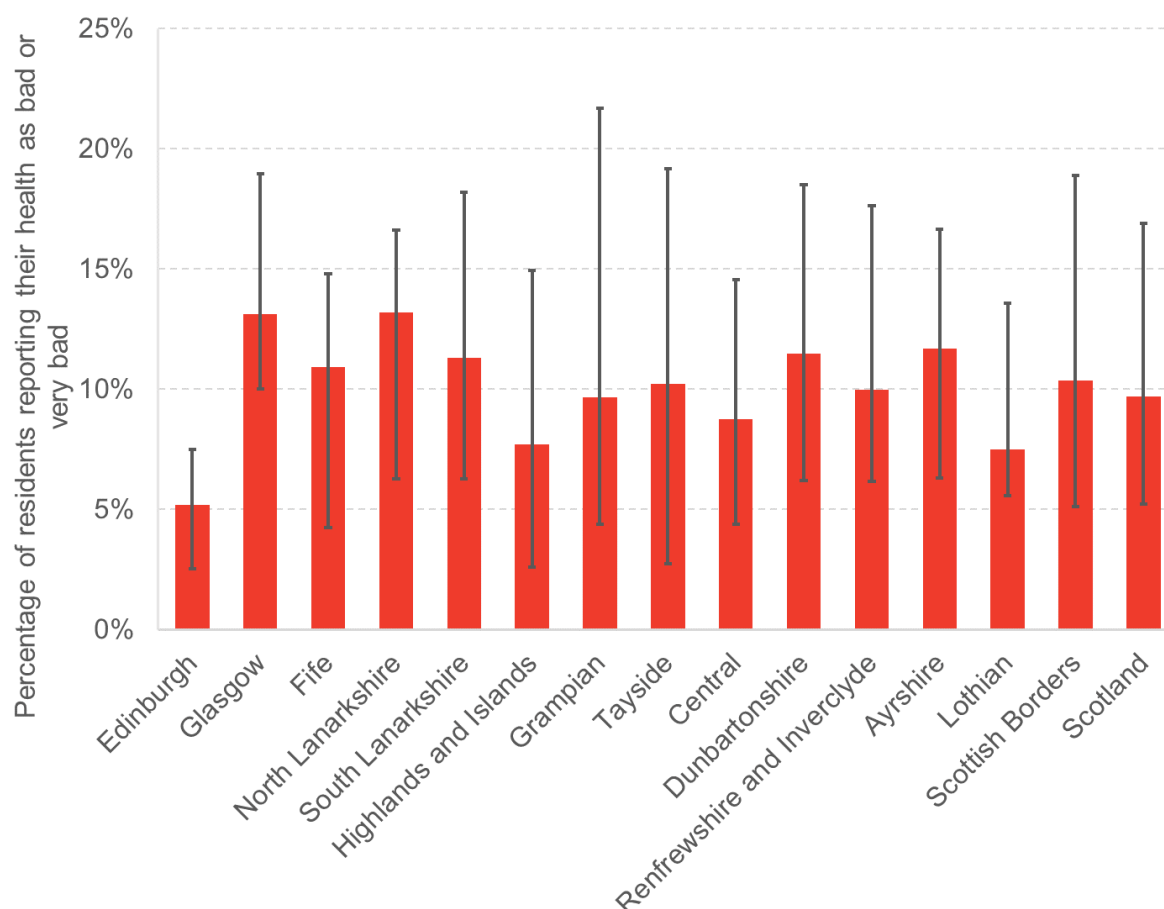
Proportion of respondents rating their health as fairly bad or very bad, by area



Source: FAI analysis of Scottish Household Survey (Unweighted N = 67,060)

Chart 7.2: There is substantial variation in self-reported health between *and within* different areas of Scotland

Proportion of respondents rating their health as fairly bad or very bad, by area, and in the most and least deprived neighbourhoods in each area



Source: FAI analysis of Scottish Household Survey (Unweighted N = 31,669). Note: the top and bottom of the error bars show the proportion of the population living in the most and least deprived neighbourhoods respectively reporting their health as bad or very bad.

There is significant variation in the socioeconomic determinants of health

There is significant variation in the socioeconomic determinants of health. For example, in 2019, the median weekly earnings of residents of Inverclyde was £390; it was £450 for residents of Glasgow; and £560 for residents of East Dunbartonshire; and £670 for residents of East Renfrewshire. Previous research on Scottish earnings differentials argues that the majority of such variation is attributable to differences in the characteristics and attributes of the people living in those areas, with only a small amount being attributable to 'place' effects (Melo, 2015).

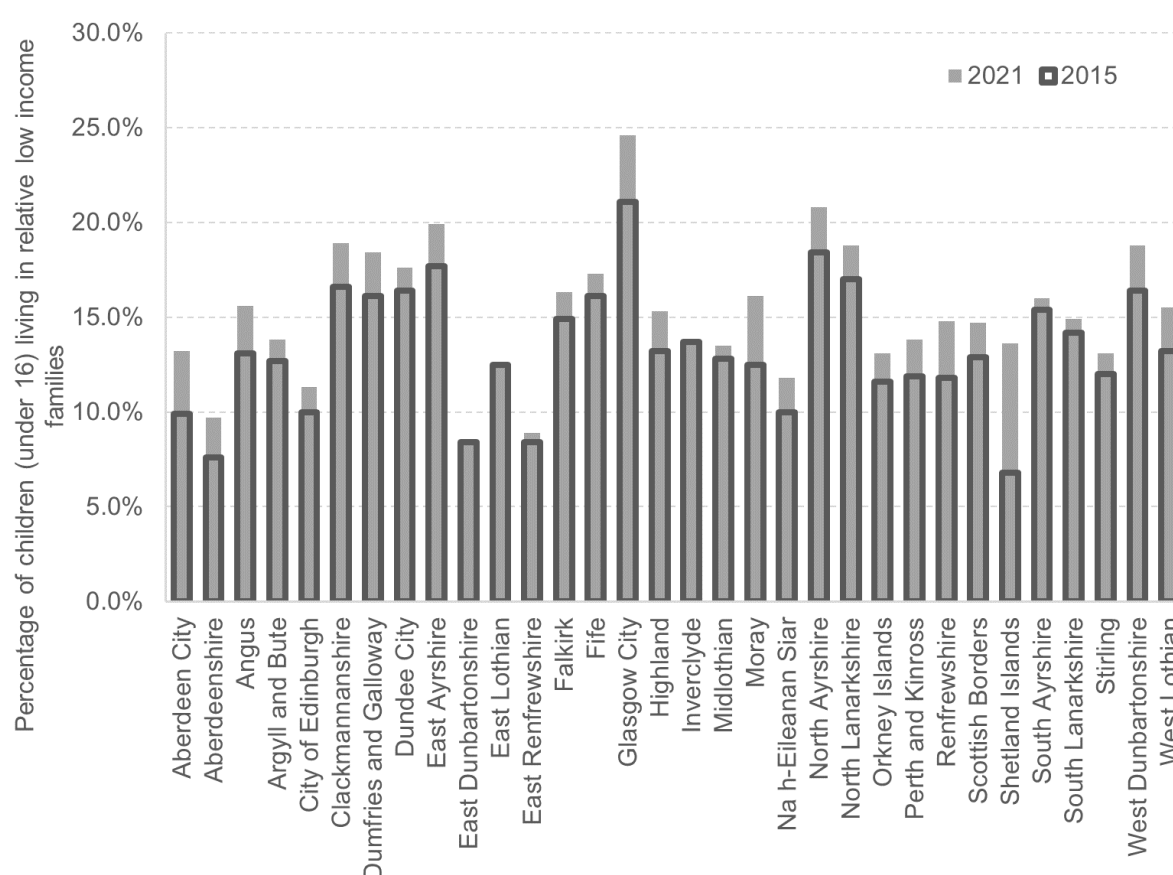
But even if spatial variation is attributable largely to 'people' rather than 'places', the resulting spatial variation in socioeconomic factors is important, in part because it can further accentuate other forms of inequality, such as education or employment, because of the way it concentrates advantage or disadvantage in particular places.

Chart 7.3 shows that there is huge variation in rates of child poverty across Scottish local authority areas, from 10% in Shetland and East Dunbartonshire to 30% in Glasgow. In this context it is not surprising that health also varies so markedly across local authority areas.

There is also of course wide variation within each local authority area. Chart 7.4 allocates each of Scotland's 354 wards to ten deciles ranked by their child poverty rates. The highest concentrations of child poverty are generally seen in the major cities, but the cities and their hinterlands also contain many of the areas of lowest child poverty rates. It is also apparent that many pockets of high child poverty exist in more peripheral rural parts of Scotland, both in the north and south.

Chart 7.3: There is substantial variation in child poverty across Scotland's local authority areas

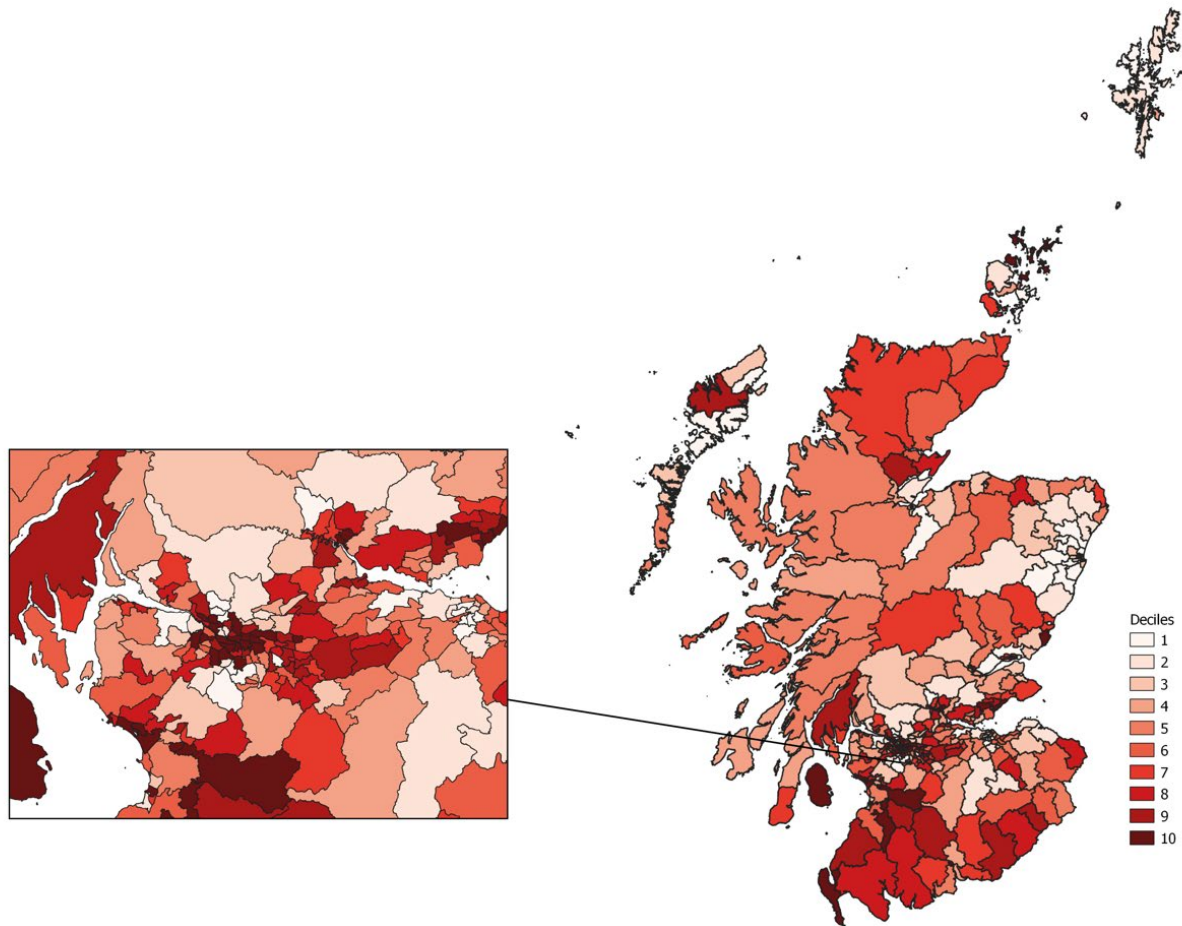
Proportion of children living in relative income poverty, before housing costs, 2015 and 2020



Source: FAI analysis of DWP 'Children in low-income families: local area statistics'.

Chart 7.4: There is substantial variation in child poverty across Scotland

Proportion of children living in relative income poverty by ward, before housing costs, 2015 and 2020



Source: FAI analysis of DWP 'Children in low-income families: local area statistics'. Notes: Map contains data for 354 wards which are divided into decile according to their child poverty rate. Decile 1 contains wards with the lowest poverty rates; decile 10 contains wards with the highest poverty rates.

Scotland's index of social capital has declined

Having discussed how self-reported health and socioeconomic determinants of health vary across broad areas of Scotland, we now consider the evolution of some of the socioeconomic determinants of health at neighbourhood level.

As part of its 'national outcome' framework, the Scottish Government has developed a measure of social capital. It defines social capital as 'the resource of social networks, community cohesion, social participation, trust and empowerment, that collectively provide an important part of personal and social wellbeing now and in the future'.

The government's measure of social capital is derived from questions asked in the Scottish Household Survey. The social capital index consists of 18 variables covering four themes, which are:

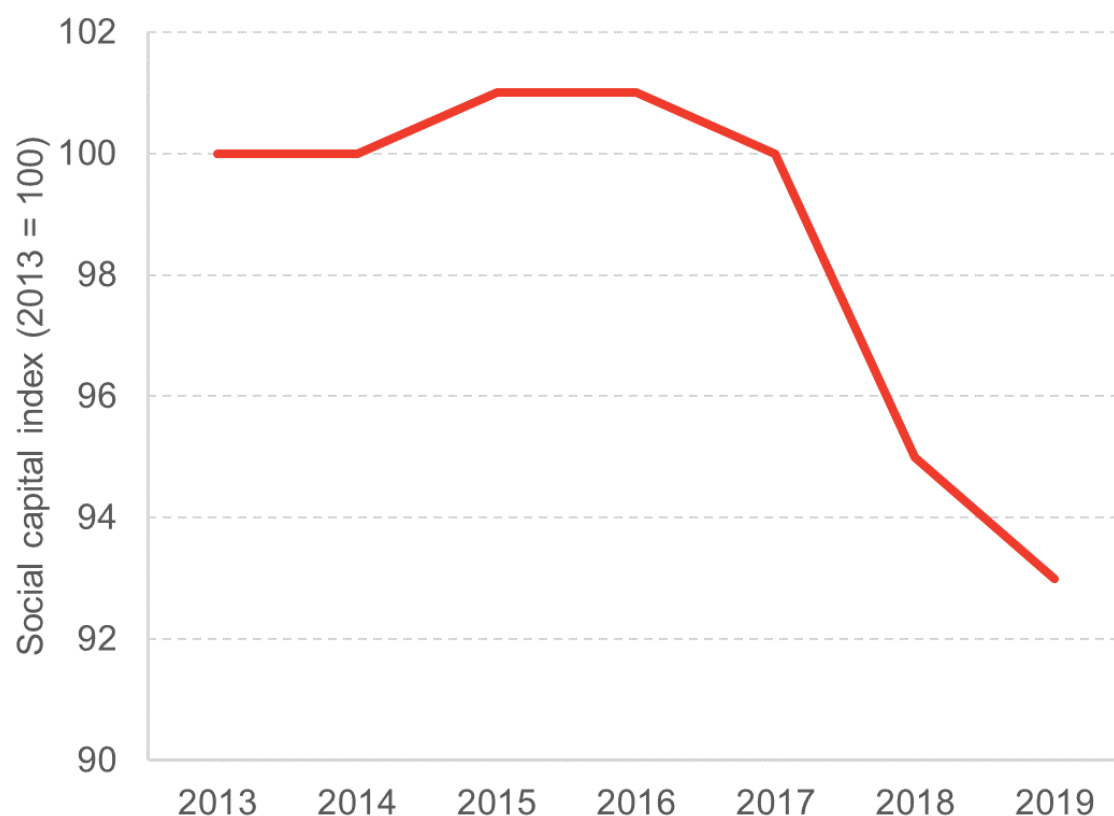
- Social networks – including extent to which people trust and could rely on neighbours, the frequency of social contact, and loneliness;
- Community cohesion – including perceptions of neighbourhood, feelings of safety, ratings of neighbourhood trust and kindness;
- Community empowerment – including perceived ability to influence decisions; and
- Social participation – in community groups and clubs.

Unfortunately, due to data constraints, the index is only available from 2013 to 2019. The evolution of the index in this period is shown in Chart 7.5. Having remained fairly constant from 2013 to 2017, it declined in 2018 and 2019. By 2019, the index was 7% lower than it had been in 2013, and this difference is statistically significant.

According to the Scottish government, this decline was due to decreases in 'empowerment' (feeling able to influence decisions), 'networks' (neighbourhood help and support), and 'participation' (volunteering).

Chart 7.5: The social capital index for Scotland has declined

Social capital index, Scotland



Source: Scottish Government, National Indicator Performance

<https://nationalperformance.gov.scot/measuring-progress/national-indicator-performance>

Perceptions of local areas has improved, particularly amongst those from the most deprived neighbourhoods

Given that the social capital index – and several of the indicators that are part of it – are not available over a long period, in this section we focus on indicators of perceived neighbourhood quality that are available since 1999.

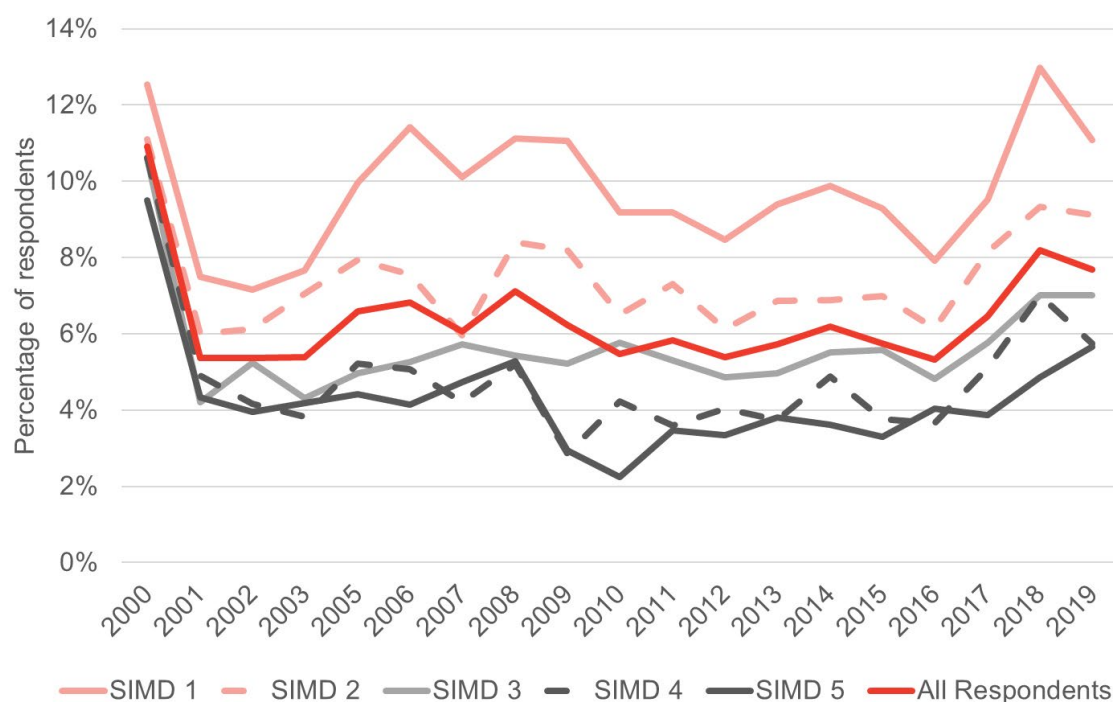
People who live in more deprived neighbourhoods are more likely to rate their area as ‘fairly poor’ or ‘very poor’ compared to those who live in less deprived areas (Chart 7.6). The good news is that the period since 2006 has seen a marked decline in the proportion of those from the most deprived quintile of neighbourhoods who rate their area as poor or very poor. Over one fifth of those in the most deprived 20% of neighbourhoods rated their area as fairly poor or very poor in 2006, and this had fallen to 14% by 2019.

Whilst the improvement is welcome, it is not obvious what may have driven this trend. It is to an extent difficult to reconcile with what we might have expected to observe, given the the likely impacts of austerity policies on the most deprived places, and indeed given evidence in the housing chapter that the proportion of people who have experienced antisocial behaviour where they live has increased in the most deprived neighbourhoods.

Despite this improvement there remains a large gap between the most and least deprived neighbourhoods. Fewer than 2% of people living in the least deprived fifth of neighbourhoods think that their area is fairly poor or very poor.

Chart 7.6: Respondents in more deprived areas are more likely to rate their neighbourhood as poor... but the gap has fallen substantially

Percentage of respondents rating area as a fairly poor or very poor place to live



Source: FAI analysis of Scottish Household Survey (Unweighted N = 115,654)

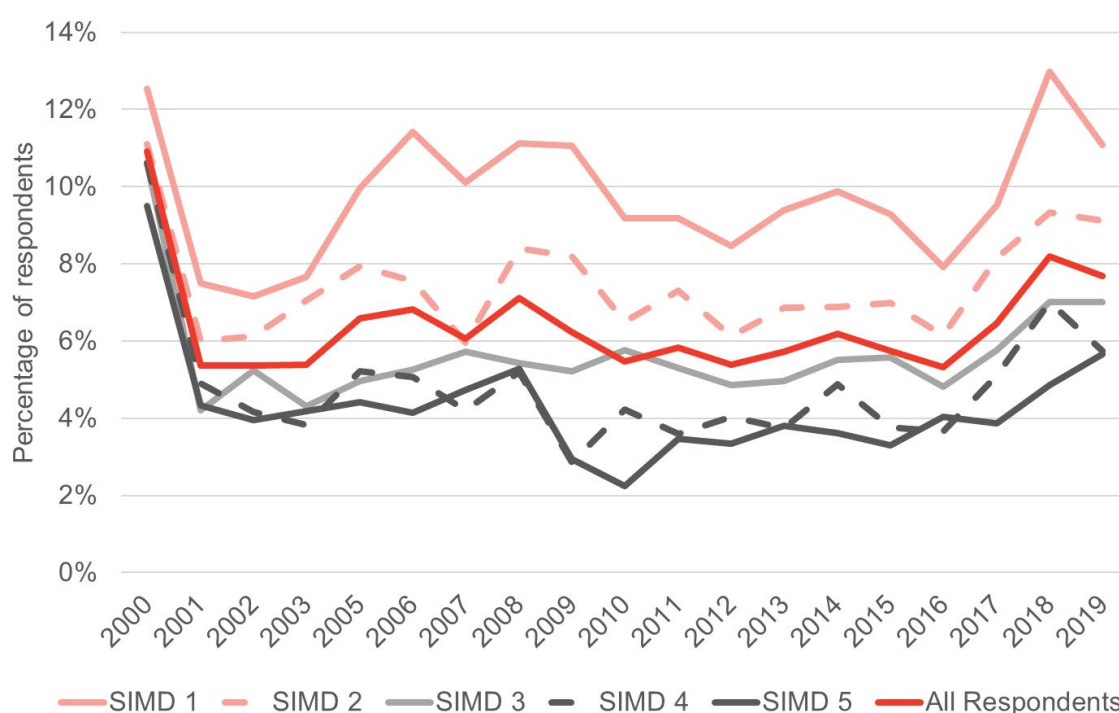
Residents of the most deprived neighbourhoods are less likely to feel able to turn to others for help or advice

Residents of the most deprived neighbourhoods are less likely to feel able to turn to others in their local area for help (Chart 7.7) or advice (Chart 7.8).

It is difficult to detect any obvious trend in terms of the proportion of residents who feel able to turn to others for help. However, when it comes to advice/support, there is some evidence that the proportion of residents who do not feel able to turn to friends or relatives for support increased in the late 2010s, reaching its highest level ever in 2018.

Chart 7.7: Respondents in more deprived areas are less likely to feel able to rely on others in their neighbourhood for help

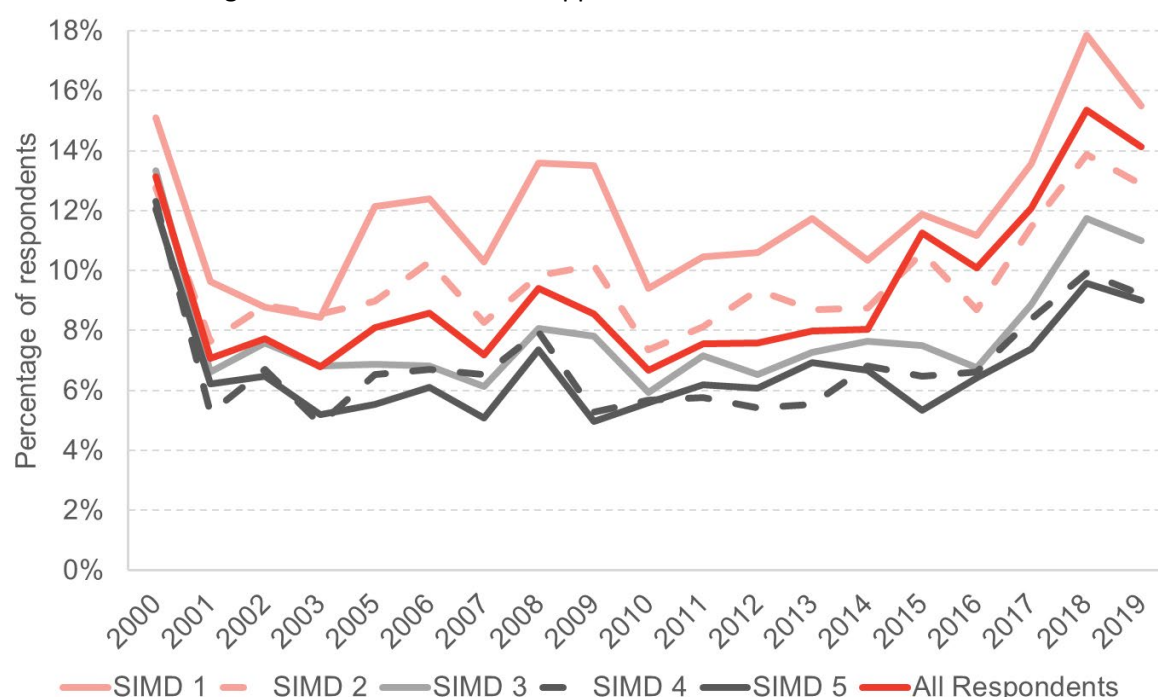
Percentage of respondents who disagree or strongly disagree that they could rely on friends or relatives in neighbourhood if they need help



Source: FAI analysis of Scottish Household Survey (Unweighted N = 115,654)

Chart 7.8: Respondents in more deprived areas are less likely to feel able to rely on others in their neighbourhood for advice or support

Percentage of respondents who disagree or strongly disagree that they could turn to friends or relatives in their neighbourhood for advice or support



Source: FAI analysis of Scottish Household Survey (Unweighted N = 115,654)

There has been large spatial variation in public funding changes since 2010, but unlike in England these changes have not obviously disadvantaged the relatively more deprived parts of the country

One factor that might influence changes in population health across areas over time is through the way that public funding is allocated to those areas, via local authorities and health boards. Previous IFS research (Harris et al. 2019) found that, in England, cuts to local spending since 2010 had disproportionately affected the relatively more deprived areas of England. Such patterns could underpin a widening in health inequalities.

In Scotland (as in England), the allocation of funding to local authorities and health boards is determined by complex formulae that aim to assess areas' relative spending needs. The health allocation formula for example take into account the demographic structure of the population; area-based measures of deprivation, mortality and morbidity; and measures of geographic 'sparsity' that can affect the costs of delivering health services (Ball et al. 2015). The local government allocation formulae take into account an even broader range of indicators, reflecting the determinants of spending needs across different public services that local authorities are responsible for.

But whilst the funding formulae are based on quantitative needs formulae, the assessment of need is ultimately quite subjective depending on which indicators are used and how they are weighted. Moreover, the formulae are not necessarily updated each year, so they can be slow to respond to changes in circumstances. Furthermore, the funding formulae used for calculating 'core grant' can be circumvented by the establishment of discrete policy programmes associated with their own

discretionary funding formula. What all of this implies is that politicians have a great deal of discretion in determining the way that funding is targeted spatially.

In England, it has been well-documented that funding cuts to the most deprived local authorities have been proportionately greater than those in the least deprived areas (Harris et al. 2019). It has been speculated that the regressive nature of the cuts is likely to have contributed to a widening of health inequalities in England (Marmot et al. 2020). Indeed, there is evidence that in England, there is an association between the areas that saw the largest reductions in local government funding, and the areas that saw that largest slowdown in mortality improvement (e.g. Alexiou et al. 2021; Lewer and Bibby, 2021). It is difficult to prove that the spatial variation in local government funding cuts caused the spatial variation in health outcome (the funding cuts were greater in the more deprived areas, but these areas may have been more at risk of worsening health outcomes for reasons other than local government funding).

In Scotland, the pattern of local government funding cuts has been less obviously correlated with the deprivation status of local authorities than in England, although it has certainly not been progressive. Chart 7.9 replicates the analysis of Eiser et al. (2019) for the period 2009/10 – 2019/20. Note that this excludes education funding, but the pattern or results were similar when education funding was included.

Analysis for a more recent period (2013/14 – 2020/21) shows slightly more evidence of a regressive pattern of local government per capita funding cuts (although the scale of the cuts was smaller than in the earlier period) – Chart 7.10. Looking under the surface of this, the pattern of cuts across individual local authorities is highly variable by deprivation status. Glasgow saw the second largest percentage terms cut (11.3%) followed by Edinburgh (10.2%). At the other end of the spectrum, North Ayrshire (relatively deprived) saw a slight increase in its funding per capita, as did Aberdeenshire (relatively less deprived).

In other words, there was no clear pattern between the deprivation status of local authorities, and the level of funding cuts experienced by authorities - funding cuts were observed in both more and less deprived local authorities, whilst funding increases were also seen in both more and less deprived local authorities. It is not entirely clear what has driven this vastly differing patterns of funding changes, although the Scottish Government has indicated to us that population change is likely to play a big part in the explanation. If this is true it implies that funding formulae are not being regularly updated to account for population change – a decision that will clearly result in funding inequities if it is allowed to persist.

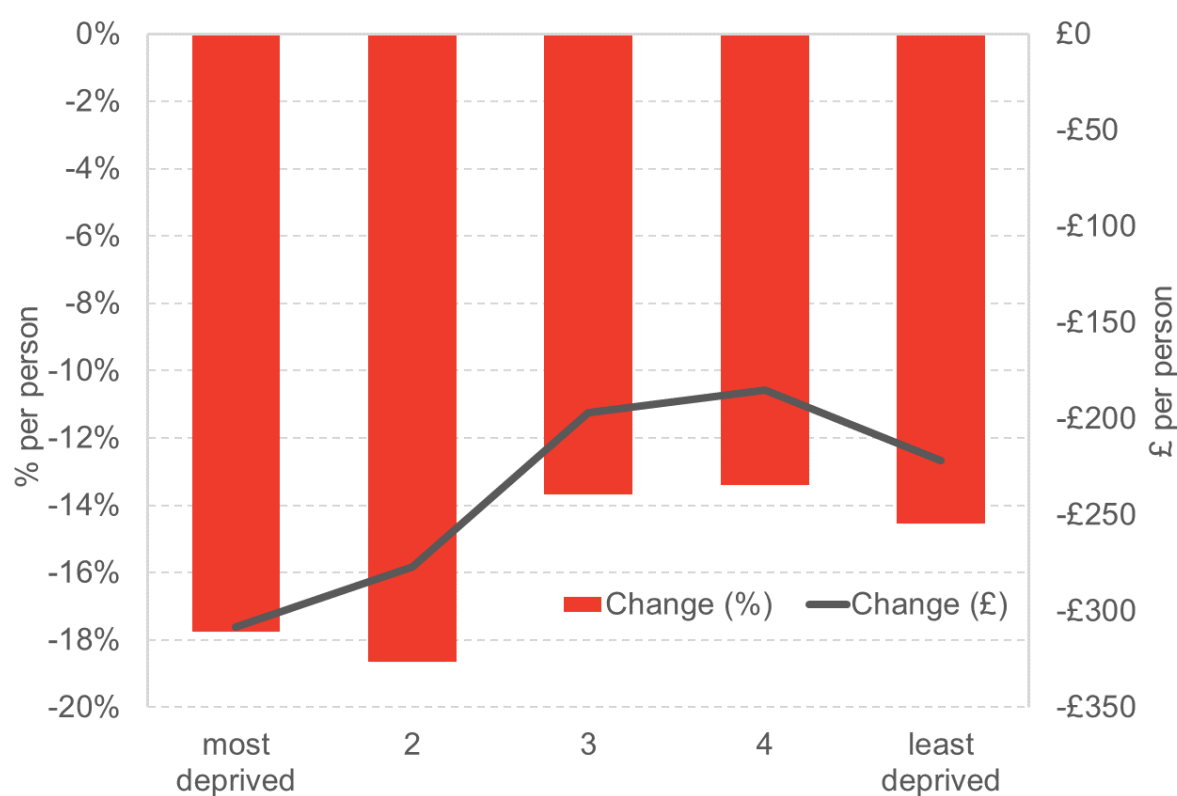
Chart 7.11 shows changes in real per capita funding allocations to Health Boards in Scotland between 2010/11 and 2018/19. There is substantial variation in the change in funding across Health Boards, with clear evidence of funding prioritisation towards the major population centres, and a relative deprioritisation of remoter rural areas. This may reflect the trend towards greater specialisation in healthcare delivery, and possibly a decline in relative costs of delivering healthcare in sparsely populated areas. There is no obvious evidence that funding in broad terms has been increased relatively less in more deprived areas.

So, unlike in England, there is no clear evidence that spatial funding changes in Scotland have been consistently regressive with respect to socioeconomic deprivation. But it is still legitimate to ask whether the spatial pattern of funding changes is associated in any way with the spatial pattern of health changes over the past decade.

Wraw et al. (2022) examine the association between the percentage change in Age-Standardised Mortality Rates (ASMRs) across local areas in Scotland between 2012 and 2018, and the percentage change in health and social care spending across local areas in the years prior to this. They find ‘little association between variation in changes in health or social care spending and variation in changes in ASMR across Scotland’. In some ways the lack of any obvious association is not surprising – the relatively few local authorities and health boards in Scotland, the aggregated nature of the spending data, the diverse nature of the local authority areas, and the fact that some spending decisions are likely to reflect patterns in the health outcome variable of interest – all mitigate against the likelihood of identifying a statistical relationship. However, this clearly does not mean that public services spending is not an important determinant of population health.

Chart 7.9: Local authority spending cuts have been fairly evenly distributed by deprivation

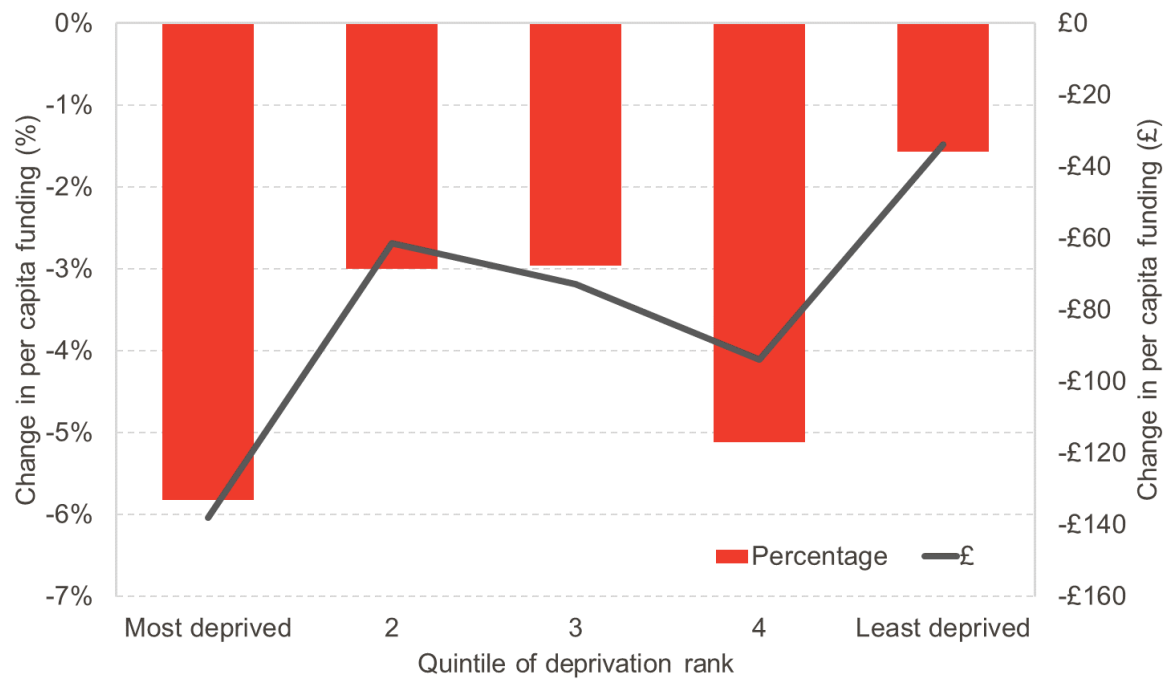
Change in fiscal revenues (excluding education spending) for Scottish councils between 2009–10 and 2019–20, by quintile of deprivation



Source: Eiser et al. (2019)

Chart 7.10: There is little association between local authorities spending cuts and deprivation

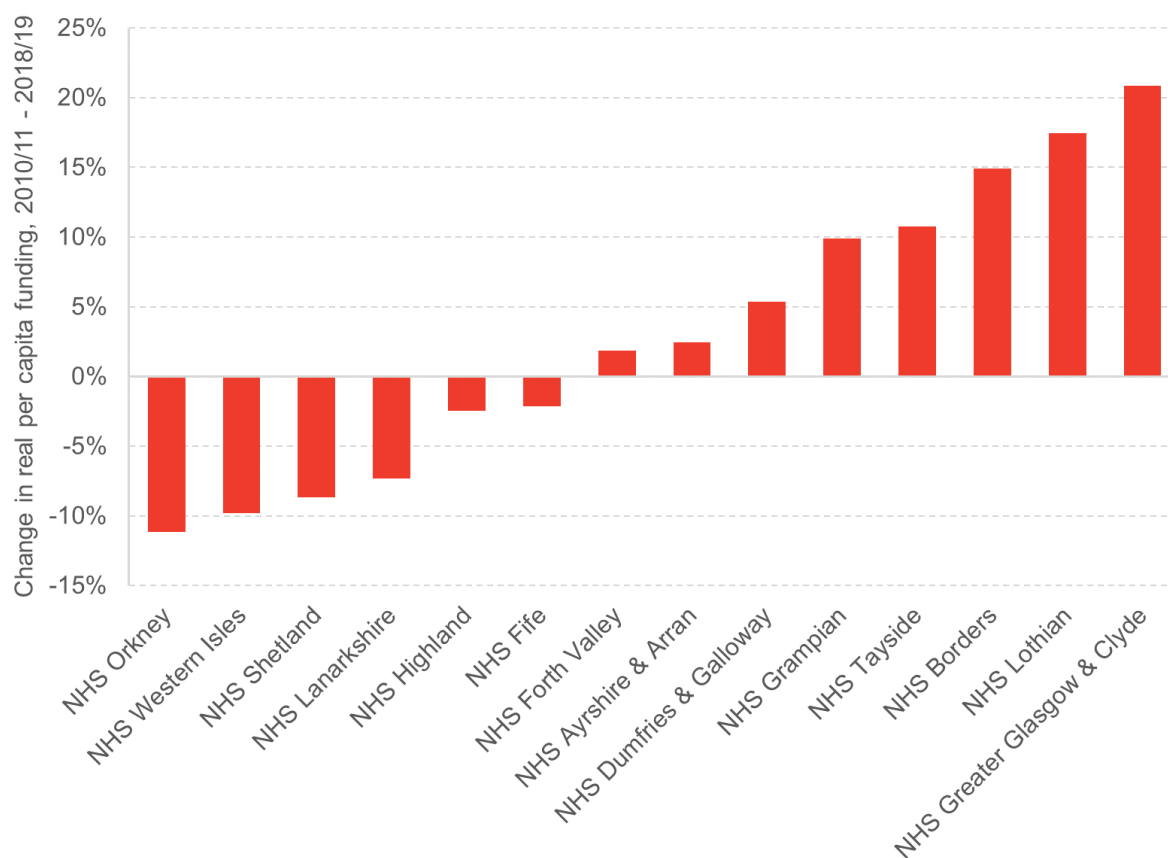
Change in local government revenue funding per capita, 2013/14 – 2021/22



Source: Analysis of data contained in Liddell (2021)

Chart 7.11: Health board per capita funding allocations have varied significantly

Change in Health Board total funding per capita, 2010/11 – 2018/19



Source: Analysis of ISD Scotland Costbook, various years

In the remainder of this chapter we consider trends in socioeconomic determinants that are embedded in place.

Air quality affects health

Poor air quality can cause both short and long-term adverse health outcomes, in particular cardio and respiratory problems. It can be difficult to isolate the health impact of air pollution because it occurs alongside other health determinants. However, it has been shown that long term exposure to air pollution increases the risk of earlier death in adults. In 2010, the Committee on the Medical Effects of Air Pollutants (COMEAP) estimated that long-term exposure to PM_{2.5} (particulate matter 2.5 microns or less in diameter) accounted for the equivalent of roughly 1,500 deaths per year. This was roughly 2.8% of the annual mortality in Scotland, implying that poor air quality accounted for more deaths in Scotland than Road Traffic Accidents (Cowie et al., 2015). While air pollution affects everyone's health, the impact is more severe on vulnerable groups, including the elderly and those with pre-existing health conditions (Health Protection Scotland, 2014).

Air pollutant sources differ between urban and rural areas. In urban areas the key sources are road transport and residential and commercial combustion processes for heat and power generation. However, a key rural pollution source is ammonia emissions from agriculture (Cowie et al., 2015). Air

quality is not necessarily better or worse in urban areas compared to rural areas – what is ultimately important is the proximity to major sources of pollution.

Of many pollutants that have implications for human health, particulate matter (PM), nitrogen oxides and ammonia are among the most harmful pollutants (Scottish Government, 2020). We therefore focus on these in this report.

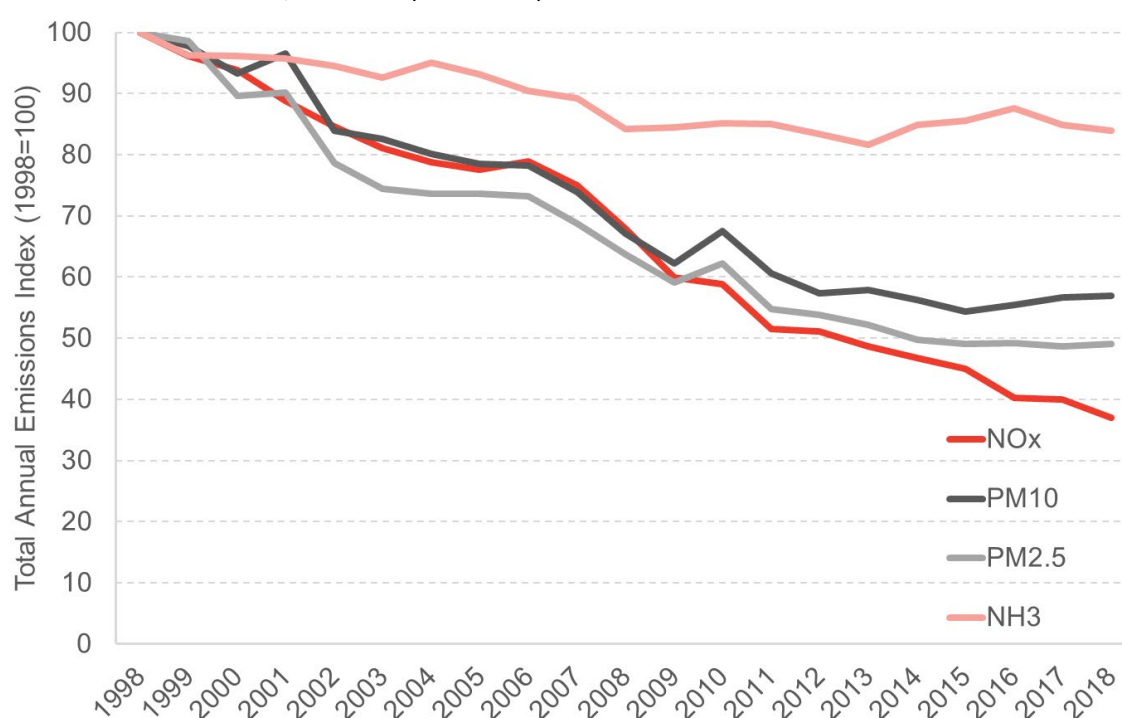
Emissions of key pollutants in Scotland have been falling

Tracking general trends in air quality for Scotland as a whole is difficult – air quality varies geographically, and so trends over time at an aggregated level are influenced by the number and location of monitoring sites.

We therefore start by looking at trends in air pollution emissions data for Scotland. These trends, presented in 7.12, indicate a reduction in emissions across PM2.5, PM10 (particulate matter 10 microns or less in diameter), nitrogen oxides (NOx) and ammonia (NH3). This downward trend is most noticeable for nitrogen oxides, falling by 146.10 kilotonnes (63%) between 1998-2018.

Chart 7.12: Emissions of health-harming pollutants have generally been falling

Index of annual emissions, Scotland (1998=100)



Notes: Chart shows the declining trends in annual emissions of NOx, PM10, PM2.5 and NH3. These are expressed as an index of the 1998 emissions values, where the 1998 value = 100. In 1998 these values were 232 kilotonnes (NOx), 27 kilotonnes (PM10), 17 kilotonnes (PM2.5) and 37 kilotonnes (NH3). Source: National Atmospheric Emissions Inventory (2020)

Air quality has in broad terms improved, but legal limits are sometimes still exceeded

When it comes to air quality itself, whilst it is not possible to consider trends at an aggregate level for Scotland, data from specific monitoring sites can be used to describe trends observed across three broad types of area: rural monitoring sites, urban monitoring sites, and sites situated alongside major roads. This site-specific data shows¹:

- Concentrations of NO₂ have generally fallen across all three types of monitoring site since 1999. While levels have not fallen year on year across all individual monitoring sites, all sites tend to be recording lower concentrations in the latest data compared to when they started monitoring. Despite this, the legal air quality limit of 40 micrograms per cubic metre, set by the EU and legalised in the Air Quality Standards (Scotland) Regulations 2010, was breached reasonably frequently in several urban traffic locations between 2010-2021. These levels are also significantly higher than the WHO recommended level of 10 micrograms per cubic metre (WHO, 2021).
- Concentrations of PM_{2.5} have tended to fall across most monitoring sites since 2008, although this has not unambiguously been the case. The legal limit of 25 micrograms per cubic metre (Air Quality Standards (Scotland) Regulations 2010) was not exceeded by any monitoring sites. However, the WHO recommended level of 5 micrograms per cubic metre has been exceeded by all sites in the last five years (WHO, 2021), although generally only by a small amount.
- In general, both urban and urban traffic sites (i.e. sites in urban areas not next to major traffic arteries and sites in urban areas next to major traffic arteries respectively) have shown an overall decrease in PM₁₀ concentrations since the early 2000s. The legal limit of 40 micrograms per cubic metre (Air Quality Standards (Scotland) Regulations 2010) was not exceeded by any monitoring sites, and excluding a few sites, generally, the WHO recommended level of 15 micrograms per cubic metre has not been exceeded in the last five years (WHO, 2021).

Air quality is one socioeconomic determinant of health where there appears to have been some improvement in the past 20 years. This is clearly good news, although pollutant levels continue to exceed legal limits and recommended guidelines on a fairly regular basis.

Conclusions

There is significant variation in the socioeconomic determinants of health in Scotland, for example in relation to both gross earnings from employment, and child poverty rates. It is not surprising that this wide variation in socioeconomic determinants is associated with wide variation in health.

It is likely that some of this spatial variation in socioeconomic factors and health reflects the 'sorting' of people with particular characteristics into particular places, rather than the places themselves having a causative impact on socioeconomics and health. But place itself also matters for health, in a variety of ways.

What we try to do in this chapter is consider trends in factors that firmly grounded in place. These include the perceived quality of neighbourhoods, measures of neighbourhood trust and cohesion, spatial targeting of public funds, and air quality.

¹ The source for this data is the Air Quality in Scotland database
<https://www.scottishairquality.scot/data/data-selector>

For much of the past 20 years, perceptions of neighbourhood quality have improved, particularly amongst those living in the most deprived neighbourhoods. But this trend reversed slightly in 2018 and 2019 – and this coincides with a decline in a broader measure of social capital in this period. Other measures of neighbourhood, presented earlier in this report, also point to an increase in antisocial behaviour over the past ten years.

We find that in Scotland, unlike in England, there is no evidence that changes in public funding have prioritised less deprived areas differentially from more deprived areas. Other research has found no clear association between spatial funding changes and spatial changes in mortality outcomes.

One important determinant of health that does vary spatially is air quality. There is some good news here, with evidence of improving air quality over the past 20 years for pollutants including particular matter and nitrous oxide. However, pollutant levels continue to exceed legal limits and recommended guidelines on a fairly regular basis in some places, so policy-makers should not be too complacent on this issue.

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