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About the Centre for Progressive Policy

The Centre for Progressive Policy is a new think tank committed to making inclusive economic growth a reality. By working with national and local partners, our aim is to devise effective, pragmatic policy solutions to drive productivity and shared prosperity in the UK.

Inclusive growth is one of the most urgent questions facing advanced economies where stagnant real wages are squeezing living standards and wealth is increasingly concentrated. The Centre believes that a new approach to growth is needed, harnessing the best of central and local government to shape the national economic environment and build on the assets and opportunities of place.

Centre for Progressive Policy
27 Great Peter Street
London SW1P 3LN
+44 (0)20 7070 3360
www.progressive-policy.net
Executive Summary

The importance of health for inclusive growth

The relationship between health and economic prosperity is long established. The 'Preston Curve' shows that individuals born in richer countries, on average, can expect to live longer than those born in poorer countries. Critically the relationship is two-way – health gains boost prosperity while increased prosperity can result in health improvements.

There are many reasons why health is important for prosperity. Healthier workers will stay in the labour force for longer, while increased life-spans increase the incentives to invest in education, raising productivity. Health improvements may also impact productivity via increased investment since people respond to longer lives by saving a greater proportion of their income. It has also been shown that healthier children are more likely to attend and thrive at school, increasing their knowledge and cognitive ability. Health is therefore crucial not only for the physical and mental wellbeing of individuals but also their economic potential. It is the fundamental human asset enabling meaningful economic activity. For these reasons, delivering good health must be a key pillar of any inclusive growth strategy.

About this report


Beyond sticking plasters: A whole systems approach to health and social care

common definition of what this means needs to be created.

The system needs to change; increased funding cannot be used for marginal efficiency gains or merely to help health and care delivery stand still.

Here we set out new research using publicly available data, with key findings including:

1 The nation’s health, as measured by life expectancy, is stagnating. Life expectancy among older women in areas situated in the bottom four deciles of deprivation saw flattening or falling life expectancy. It is likely that rising place-based inequality is driving the overall slowdown in UK health improvements.

2 The use of different definitions and boundaries across economic and social policy institutions and public services agencies creates challenges in delivering the place-based coordination and accountability necessary to improve health outcomes. CPP’s new Fragmentation Index shows that people who live in areas where the different bodies responsible for healthcare are geographically misaligned are more likely to end up in hospital and find it harder to be discharged if they do. Specifically, we find:
   – For each point a local authority moves down our Fragmentation Index, there will be around 5% more unplanned admissions to hospital.
   – If the local authority you live in does not geographically align with the Clinical Commissioning Group (CCG), Delayed Transfers of Care are, on average, 32% higher.
   – In a local authority where the different bodies responsible for healthcare do not geographically match-up, there will be around 15% more unplanned admissions to hospital and 30% more people will be delayed in being discharged from hospital.

3 The challenge posed by misaligned institutions and structures may be exacerbated by recent NHS policy developments. The emergence of regional teams and regional geographies covering both NHS England and NHS Improvement functions are intended to promote integration, but they may add yet another layer of complexity to already complicated and fragmented local health systems.

4 The NHS cannot solve health inequalities in isolation. Employment, education, skills and training and access to better quality housing and other public services are integral to health and the relationship between health, wealth and income inequalities.

5 Addressing health inequalities requires cross-departmental action and resourcing as well as improved coordination at a local level. If better

3 In the classic Solow growth model, increased savings results in greater investment boosting steady-state output.
health is the goal, then place-based investment and coordination in education, skills and training, increasing access to quality housing and active labour market policies to reduce unemployment and low pay may be just as relevant as more funding for local hospitals and GP surgeries. Cross-departmental strategies in central government do not do enough to make collaborating easier or more effective while funding and accountability incentives are not sufficiently aligned to allow for integrated ‘whole place’ approaches to supporting health at a local level.

6 The long-term failure to think holistically about health is having a particularly detrimental impact on adult social care. Adult social care is failing with declining standards, insufficient funding and significant inequality in access and provision. CPP analysis of Care Quality Commission (CQC) data shows that in some local authorities only around half of care homes are rated as good or outstanding when it comes to safety whereas amongst the top ten local authorities this rises to over 90%. There are even greater variations in terms of the availability of residential care.

7 Local differences in care provision help underpin the health inequalities outlined in this report. Our analysis finds that a lower proportion of good or outstanding care homes and a higher number of older people per care home are both strongly related to areas having a higher avoidable mortality rate.

How do we respond to the challenge?

Our central thesis is that we must consider alternative models of health delivery that focus on addressing place-based social determinants of poor health, underpinned by the development of complementary governance arrangements, financial and accountability mechanisms. This does not necessitate top-down structural change, but more effective coordination between multiple agencies and stakeholders will be critical. There are already innovative examples of such approaches in operation today. Our first key challenge is to evaluate the success of these new models and understand how to build on them at scale and at pace.

In this context, the inquiry’s final report to be published in the spring of 2019, will set out a compelling alternative, sustainable, whole systems model for health and social care in England. It will explore in detail what national, regional and local policy changes are required to deliver better health and explore their possible economic costs and benefits.
1

The nation’s stagnating health

Throughout the 20th century, barring two world wars and a flu pandemic, the UK and many other countries experienced steady improvements in health, evidenced by declining mortality rates and rising life expectancy. But such improvements have stalled over the last decade and the UK appears to be a particularly severe case. To understand this better, this chapter focuses on patterns and trends of life expectancy inequalities in England. While we acknowledge this is not the only important measure of health, life expectancy remains a leading and well-cited indicator and there is good data at a local level. We refer to prior work on other health indicators to reinforce our argument.

Fig. 1: Average year on year change in female life expectancy at birth - 2001-09 v. 2010-2015

The nation’s health is falling behind our peers

Between 2001 and 2009, female life expectancy at birth in the UK rose by 0.25% every year, with similar numbers in the prior three decades. Since then growth has fallen to 0.1%. Such a slowdown in female life expectancy is particularly acute when compared with other developed countries (see Fig. 1). The slowdown in male life expectancy is also highly pronounced with UK men experiencing some of the slowest increases in life expectancy since 2010 when compared to other advanced economies.

Improvements in life expectancy have stalled over the last decade and the UK appears to be a particularly severe case

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5 For data reasons we focus on the UK when making international comparisons, but then concentrate our analysis on the evolution of life expectancy across local authorities in England.


7 This is not simply due to reversion to the mean. If this was the case, we would expect those countries with relatively lower life expectancy in 2010 to experience faster increases in life expectancy than those at the frontier. While it is true that countries with lower life expectancy in 2010, on average, experienced faster rates of growth in life expectancy in subsequent years, the statistical relationship is relatively weak (R^2=20% for women and 23% for men). Moreover, for both men and women, the UK sits below the regression line. In other words, the UK performed worse than expected given its life expectancy in 2010.
Female health inequalities may have driven the slowdown, and have got worse since 2010

The recent stalling of life expectancy masks substantial differences across local areas. The English Indices of Deprivation measure relative levels of deprivation across 30,000 small areas in England. Using this data, it is possible to track life expectancy by level of deprivation over time and for specific age groups. CPP analysis shows that for women living in areas with the highest level of deprivation, life expectancy at birth fell between 2010 and 2016, whereas in areas with the lowest levels of deprivation it continued to rise (see Fig. 2 and Fig. 3). The difference in fortunes between women living in high and low deprivation areas is even starker when exploring life expectancy at 65 years—women living in areas situated in the bottom four deciles of deprivation saw stagnating or falling life expectancy, while those living in areas situated in the top four deciles all experienced increases. The story for men is a little different—those living in the most deprived areas have continued to experience increases in life expectancy, albeit at a pace which is slightly slower than those living in less deprived areas.

Fig. 2: Percentage change in female life expectancy at birth by decile of deprivation – 2010-12 to 2014-16

% change in life expectancy 2010-12 to 2014-16

The nation’s deteriorating mental health may also explain some of the rise in health inequalities over this time. Evidence suggests that many mental illnesses reduce life expectancy more than smoking. Since 2009, the gap in the premature mortality rate for people with serious mental illness has widened from 3.3 to 3.7 times that of the general population.

Women living in areas situated in the bottom four deciles of deprivation saw stagnating or falling life expectancy, while those living in areas situated in the top four deciles all experienced increases.
Fig. 3: Cumulative percentage change in inequality of female life expectancy at birth across deciles of deprivation

Cumulative % change

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<td>20%</td>
</tr>
<tr>
<td>2015-16</td>
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Poor health areas are not catching up

Place and comparative levels of deprivation make a huge difference in shaping health outcomes, and health inequalities between places are stark. The Department of Health and Social Care’s 2016-17 Annual Report noted large and growing place-based inequalities based on 15 indicators of public health including: healthy life expectancy, under-75 mortality rate for cardiovascular disease and infant mortality. But despite a plethora of evidence showing sizeable local area differences, there are few signs that poor health areas are catching up with many indicators pointing in the opposite direction. To close the health inequalities gap, those areas in poorer health need to make greater improvements, but this is just not happening. Indeed, our analysis of life expectancy data shows that there are several areas, such as Blackburn, Middlesbrough and Hull that had among the lowest life expectancy in 2010 and continued to see falls. The health of certain local areas is therefore falling further and further behind.

The UK is suffering from one of the most pronounced slowdowns in health improvement across the developed world evidenced by stalling life expectancy. This is most likely to be a function of rising health inequalities with evidence of stark increases in place-based inequality. It must therefore be a critical goal of health policy to tackle place-based health inequality if we are to improve the country’s health as a whole, and with it help support productivity growth and shared prosperity. The evidence presented in this report and in Diagnosis Critical suggests that this will not happen if we continue to pursue the policies that do not fully reflect how the physical and mental health of a population is determined by the economic and social health of a place. Systemic change is needed.

“Differences in life expectancy are stark and inequalities seem to be widening notably between women and men. CPP’s agenda, linking health and inclusive growth, will give new thinking to local place-based approaches to narrow this worrying trend.”

Maureen Dalziel, former Chair, Barking, Havering and Redbridge University Hospitals NHS Trust

13 Source data: ONS (2018b). Op cit. Graph shows evolution in standard deviation (SD) and range in life expectancy for women at birth by decile of deprivation over time. For instance, since 2006-8, the SD and range in female life expectancy by decile has risen by nearly 10%.


15 Bivariate regression analysis shows that there is no relationship between female life expectancy at 65 years in 2010 and the rate of improvement in life expectancy since. Based on CPP analysis of ONS Life expectancy (LE) at birth and age 65 by sex, UK, 2001 to 2003 to 2014 to 2016.
The importance of a whole systems, place-based approach to health

What happens when local coordination fails?

The importance of place in delivering health and social care is being increasingly recognised. However, the use of different definitions and boundaries across institutions creates challenges in delivering the place-based coordination and accountability necessary to improve health outcomes. For instance, different geographical boundaries can apply to each of the following domains, all of which are relevant to the delivery and/or accountability of health and care:

- Clinical Commissioning Groups (CCGs)
- NHS England Regions, 14 local offices
- Health and Wellbeing Boards which are, by design, coterminous with local authorities
- Sustainability and Transformation Partnerships (STPs)
- (Mayoral) combined authorities
- Parliamentary constituency

If there is a high degree of geographic disparity across these domains, this will make the process of coordination more complex and the lines of accountability and responsibility for the health of people that sit across boundaries fuzzier. Unless effective coping mechanisms are put in place, such a situation could have serious implications for health. In the first instance, this might mean difficulties in moving people from one part of the system to another or individuals failing to access the right support services for their level of need. Both may ultimately result in worse health outcomes for individuals as well as increased costs for the NHS if people get stuck in the system.

In this context, CPP has conducted new analysis to explore the hypothesis that geographic misalignment in the above domains negatively affects health outcomes by increasing the risk of coordination failures. While it might appear self-evident that there are health costs for failing to coordinate at a local level, we are, to our knowledge, the first to explore this empirically.

Measuring misalignment: Introducing the CPP Fragmentation Index

In order to measure the extent to which different institutions are (mis)aligned across local authorities, CPP has created a health and social care Fragmentation Index. The index produces an alignment score for each local authority based on the sum of five domains (e.g., the (mis)alignment of a local authority (LA) with CCGs, NHS England Regions, Health and Wellbeing Boards etc.). All local authorities are then given an index score ranging from 0 (most aligned) to 10 (most misaligned). Please see the appendix for the full methodology. As shown in Fig. 5, there is significant variation in (mis)alignment by local authority across the country.

The use of different definitions and boundaries across institutions creates challenges in delivering the place-based coordination and accountability necessary to improve health outcomes.
Fig. 4: Boundaries of different health and social care institutions in England
Definition of unplanned hospitalisation:

This indicator measures how many people with specific long-term conditions, which should not normally require hospitalisation, are admitted to hospital in an emergency. These conditions include, for example, diabetes, epilepsy and high blood pressure. This outcome is concerned with how successfully the NHS manages to reduce emergency admissions for all long-term conditions where optimum management can be achieved in the community.

Data is directly age and sex standardised admission rate for unplanned hospitalisation for chronic ambulatory care sensitive conditions per 100,000 registered patients.

To measure the consequences of misalignment, we first explore the relationship between the Fragmentation Index and unplanned hospital admissions for long-term conditions where hospitalisation should not be needed.

Fig. 5: CPP’s Fragmentation Index across the local authorities of England
The cost of misalignment: too easy to get into hospital, too hard to get out

To measure the consequences of misalignment, we first explore the relationship between the Fragmentation Index and unplanned hospital admissions for long-term conditions where hospitalisation should not be needed. This implies that these individuals are not being successfully cared for in the community or by primary care and so they unnecessarily end up in hospital. Our analysis shows that local authorities with greater system misalignment face higher rates of unplanned hospitalisation which is presumably because they find it harder to coordinate support for these individuals in the community.

Overall, geographic misalignment across institutional boundaries results in unnecessary hospital admissions and once in hospital, such misalignment makes it harder to go home. This can have serious consequences for the health and wellbeing of individuals. For instance, Green et al (2017) find that increased prevalence of patients being delayed in discharge from hospital in 2015 was associated with increases in mortality, accounting for up to a fifth of mortality increases. It also has consequences for NHS resources, Carter (2016) estimates that on any given day as many as 8,500 beds in acute trusts are blocked with patients who are medically fit to be transferred. The approximate costs of these delays to NHS providers could be around £900m per year.

But misalignment is not an insurmountable problem. Not all local authorities with high degrees of misalignment experience poor health outcomes against these measures. Surrey, for instance, is an example of a relatively large local authority with a high degree of institutional misalignment but experiences low rates of unplanned admissions and DTOC. Similarly, there are well-aligned local authorities that experience poor health outcomes. Blackpool is one example of a local authority with relatively well-aligned boundaries, but experiences high rates of unplanned admissions and DTOC. Both of these areas have been selected by NHS England as two of 14 new integrated care systems though it is yet to be seen whether this approach will make a positive difference.

For each point a local authority moves down our fragmentation index, there will be around 5% more unplanned admissions to hospital.

Second, we explore the relationship between the Fragmentation Index and Delayed Transfers of Care (DTOC). Delayed transfers can either mean delays from hospital to a care home or ‘step down’ facility or delays from hospital to home. Both may require significant coordination between hospitals, adult social care providers and the local authority (amongst other potential stakeholders). For instance, in order to get someone home, the patient may first need to secure sufficient support from community care providers as well as from the local council particularly if home adaptations are required. Our analysis shows that local authorities with a higher degree of misalignment also face higher DTOC rates.

If the local authority you live in doesn’t geographically align with the CCG, Delayed Transfers of Care are, on average, 32% higher.

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20 With thanks to Professor Mike Richards and Professor Mike Bewick for their critique and insight in developing our methodology.

21 Definition of unplanned hospitalisation: This indicator measures how many people with specific long-term conditions, which should not normally require hospitalisation, are admitted to hospital in an emergency. These conditions include, for example, diabetes, epilepsy and high blood pressure. This outcome is concerned with how successfully the NHS manages to reduce emergency admissions for all long-term conditions where optimum management can be achieved in the community. Data is directly age and sex standardised admission rate for unplanned hospitalisation for chronic ambulatory care sensitive conditions per 100,000 registered patients.

22 Multiple regression model includes explanatory variables for care quality and availability plus income per capita, rurality, population and degree of geographic fragmentation across local authorities. Overall model fit adjusted $R^2=38\%$. Fragmentation is statistically significant at the 5% level. See the appendix for full results.

23 Multiple regression model includes explanatory variables for care quality and availability plus income per capita, rurality, population and degree of geographic fragmentation across local authorities. Overall model fit is quite low - adjusted $R^2=15\%$. Fragmentation is statistically significant at the 5% level. See the appendix for full results.

24 Green, M. et al (2017) Could the rise in mortality rates since 2015 be explained by changes in the number of delayed discharges of NHS patients? J Epidemiol Community Health. Available at: https://jech.bmj.com/content/early/2017/09/01/jech-2017-209403


Opportunities and challenges of recent policy developments

The challenge posed by misaligned institutions and structures may be exacerbated by recent policy developments. The emergence of regional teams and regional geographies covering both NHS England and NHS Improvement functions are intended to promote, encourage and support local systems to achieve more integrated and sustainable models of care. But these new structures may add yet another layer of complexity to already complicated and fragmented local health systems. The areas covered by the regional teams do not align with other place-based institutional developments, such as combined authorities, which are themselves establishing ways of integrating economic and social policy, investment and accountability at a strategic level. There are also examples where CCGs have redefined their boundaries or merged to align more closely with the local government landscape or where local government CEOs also chair CCGs and Health and Wellbeing Boards in order to support better coordination. The risk is that the degree of fragmentation – which we have shown leads to poor health outcomes – will only increase with the emergence of these new boundaries and structures which will undermine ongoing efforts to improve joined-up action on the ground.

Fragmentation of local health institutions is likely to intensify the problems facing those individuals who are admitted to health settings in areas outside of where they live. Despite the Health Secretary committing to end the practice by 2020, out of area admissions are still commonplace and are at least in part a function of the resourcing pressures facing health and care providers. In 2017, the issue received attention from the National Institute for Health and Care Excellence (NICE) – who produced a Quality Statement for mental health patients admitted to out of area settings. NICE argued that mental health patients “are particularly vulnerable to delayed discharges because case management and assessment of readiness for discharge is more difficult to deliver”. In response, NICE noted the importance of collaboration between “named practitioners from the person’s home area and the inpatient ward to ensure the placement is reviewed regularly, so that it does not last longer than necessary”. But clearly such collaboration between out of area settings and a person’s home area will be harder if the relevant health institutions and practitioners all have different definitions of place. In this case, getting someone home is likely to be even more complex and challenging.

Combined authorities are uniquely placed in addressing fragmentation. They already face a significant coordination challenge since they cover large and complex areas and health systems. Our analysis shows that a number of these authorities experience higher than average unplanned hospitalisations and DTOC. However, as combined authorities seek to mobilise the various agencies and institutions necessary to tackle a range of social and economic policy priorities, they present an opportunity (as Greater Manchester is trialling) to develop new health-related structures and policy developments that work with the emergence of other place-based governance and accountability mechanisms on the ground, rather than complicating the landscape further still.

In the context of the above discussion, it is important to learn lessons from local authorities who are developing new ways to coordinate care and to study how these are impacting on outcomes, and so whether these innovative, inclusive models can be scaled up and ultimately disseminated nationally.

28 For instance, in 2017, new boundaries were approved by NHS England to change the organisational make-up of NHS Lancashire North CCG and NHS Cumbria CCG leading to a new Morecambe Bay CCG and a newly configured NHS North Cumbria CCG. According to the National Health Executive, “both the changed CCGs announced they supported the boundaries being rearranged as it will lead to services being commissioned more efficiently and in a simpler way, and also will allow for health and social care to be integrated more easily in Morecambe Bay and North Cumbria”. See: http://www.nationalhealthexecutive.com/Health-Care-News/nhs-england-approves-boundary-changes-to-create-new-ccg
30 9 out of 10 combined authorities experience a higher than average rate of unplanned hospitalisations while 4 out of 10 experience a higher than average rate of DTOC.
Case study: West Midlands Combined Authority Mental Health Commission

The cost of mental health to the West Midlands is believed to be £12.6 billion per year, while the region also performs poorly on education, skills and employment. In this context, the work of the West Midlands Mental Health Commission (WMMHC) focuses on evidence-based practice and research into mental health and its impact on the public sector. The objective of the Commission, led by Director Sean Russell, is to develop an inclusive social and economic strategy to address the causes of mental health and improve wellbeing.

An Action Plan, developed in collaboration with local residents, was agreed between (amongst others) the West Midlands Combined Authority (WMCA), the Police and Crime Commissioner, NHS Trusts, Public Health England, CCGs, housing associations and universities. The strategy focuses on embedding the health of the population in a wider social and economic policy framework including:

1 Employment and skills: integration in the labour market driven by an Individual Placement and Support (IPS) provision for people with mental health issues who are being treated in primary care settings. Initially, IPS are designed as a three-year trial programme in nine target communities. Longer term, the plan seeks to incentivise businesses to demonstrate their commitment to mental health and this includes a tax incentive that rewards those who are improving mental health conditions in the work place.

2 Safe and stable housing: Housing First services in cooperation with Liverpool City Region and Greater Manchester are closely working with individuals (including rough sleepers and those in temporary housing) to get them secure, safe, high-quality and long-term tenancy. There is a duty to collaborate between WMCA, housing associations, private landlords, health and social care providers, and others to provide a ‘no eviction’ model.

3 Justice: encourage offenders with mental health problems to make use of the Mental Health and Community Sentence Treatment Requirement, which offers a treatment plan to address causes of breaking the law. The aim is to more effectively reintegrate offenders with mental health issues, helping with recovery and reducing the costs to the community, WMCA is one of five national testbeds which went live in late 2017 and early 2018.

4 Care: establish a primary mental health model, which effectively supports people with mental health needs. WMCA is implementing a comprehensive approach which would ensure that GP practices are digitally connected and are able to offer wrap-around health services. It also aims at introducing preventive measures (e.g. youth workers in the Accident and Emergency Department of University of Birmingham Hospital) and meeting national access and waiting time standards for people with psychosis. WMCA has also created a Mental Health Alliance across six STPs extending beyond its footprint.

5 Community capacity building: raising awareness of mental health issues and wellbeing in the community requires creating capacity and building resilience in a new way. This will include training Mental Health First Aid to 500,000 people in the West Midlands and a keep fit campaign in the run up to the Commonwealth Games.

CPP’s analysis demonstrates the need to develop improved coping mechanisms for those local authorities where critical health-related agencies span multiple geographical boundaries making coordination particularly complex. But coordination runs deeper than just better integration across the health and social care divide – important though this is. A holistic place-based approach is required which integrates health and care provision with employment, skills and training, housing and much more so that we are able to take a whole systems approach to improving the health of a local area.

In this context, the WMCA case study is instructive. While it is difficult to gauge the impact of the initiative at such an early stage, their innovative approach to tackling mental health is grounded in engagement with local people and businesses, evidence based and targeted at the social determinants of poor mental health. With a strong and compelling strategy and action plan under the leadership of the Mental Health Commission Director, there are clear lines of accountability and responsibility for its delivery. It provides an interesting blueprint for going beyond the narrow healthcare delivery model of the past.

The NHS cannot solve the health inequalities alone

The provision of healthcare is an important determinant of health, but it is by no means the only factor. Past research suggests that it accounts for between 10% and 43% of health with the rest determined by other circumstances including the socioeconomic environment and health behaviours. It follows that to understand variations in local health outcomes, it is important to understand the substantial role played by these social determinants.

To explore this issue further, CPP investigated the relationship between several socioeconomic indicators of local area deprivation and local area life expectancy in 2014-16. This analysis expands on the findings reported in Diagnosis Critical by digging deeper into the indicators that are most important in determining health inequalities. The indicators of deprivation include:

- **Income**: Measures the proportion of the population in an area experiencing deprivation relating to low income. The definition of low income used includes both those people that are out-of-work, and those that are in work but who have low earnings (and who satisfy the respective means tests).
- **Employment**: Measures the proportion of the working-age population in an area involuntarily excluded from the labour market. This includes people who would like to work but are unable to do so due to unemployment, sickness or disability, or caring responsibilities.
- **Education, skills and training**: Measures the lack of attainment and skills in the local population. The indicators fall into two sub-domains: one relating to children and young people and one relating to adult skills.
- **Crime**: Measures the risk of personal and material victimisation at a local level.
- **Housing (Indoors Living Environment)**: Measures the quality of housing in terms of those without central heating and housing that is in poor condition.

Some indicators appear more important than others in explaining local health inequalities. Notably a combination of: 1) employment, 2) education, skills and training and 3) housing deprivation are the most important – explaining broadly the same amount of local area variation in life expectancy as all five indices put together.37

But there is an issue about whether better health results in better socioeconomic outcomes or vice versa. In other words, are these indicators strongly related to health simply because health determines socioeconomic performance? Further CPP analysis found that socioeconomic indicators remain important in explaining health inequalities even after accounting for an area’s previous level of health.38

This provides additional support for the notion that socioeconomic factors are important in underpinning health outcomes. While it is impossible to completely isolate the effects of each socioeconomic indicator as they are all highly interrelated, this work does build on the findings from Diagnosis Critical which found that employment deprivation can explain up to 49% of potential life lost.39

![Image](https://www.progressive-policy.net/publications/diagnosis-critical)

“People forget that Bevan was minister of state for housing and health. CPP’s analysis has shown that housing is one of the most important factors in variation in life expectancy. We need to consider radical new ways to narrow this inequality - maybe, even, the right to housing becoming a universal entitlement.”

Andy Burnham, Mayor of Greater Manchester

These findings demonstrate the importance of tackling big social challenges if we are to make any headway in addressing place-based health inequalities. These challenges are far too big for the NHS or any single government department to solve alone. For instance, addressing employment deprivation will require collaboration between the Department for Work and Pensions, HM Treasury, and the Ministry for Housing, Communities and Local Government. Reducing skills and educational deprivation will require coordinated action between the Department for Education, HM Treasury, the Ministry for Housing, Communities and Local Government and potentially the Department for Business, Energy and Industrial Strategy. Addressing housing deprivation

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37 We use multiple regression analysis of 324 local authorities. We use IMD rank scores for the analysis across the indicators. We adopt a stepwise regression approach whereby we first drop any insignificant variables from the model and then those exhibiting weak or spurious correlations to estimate a parsimonious model. This is a crude approach to dealing with multicollinearity but still acts to demonstrate the importance of the final three key variables in determining local variation in life expectancy. We ran models for male and female life expectancy at birth and at the age of 65. Across three of the four life expectancy models, we found the three indicators of: employment, education and housing deprivation to hold the greatest explanatory power. The exception was male life expectancy at birth where employment is the dominant factor explaining 75% of local authority variation.

38 We reran the regression models but this time included female life expectancy at birth in 2001-2003 as an explanatory variable for life expectancy in 2014-16. Coefficients for all three social determinants remain strong and statistically significant for older women, while deprivation in employment and education, skills and training remain particularly powerful for younger men and women.

39 Buck and Maguire (2015) also find unemployment to be a particularly important determinant of life expectancy differences between areas while noting that unemployment, housing deprivation and binge drinking increase the risks of areas having persistently low life expectancy over time.

Beyond sticking plasters: A whole systems approach to health and social care
will require joint-working between the Ministry for Housing, Communities and Local Government, HM Treasury, Department for Transport and potentially the Ministry of Justice. It will also require coordinated action between national, regional and local institutions if we are to solve the place-based inequalities identified in this report.

**Case Study: Amsterdam Healthy Weight Programme**

In 2012, the Epidemiology, Health Promotion and Care Innovation Department of the Public Health Service of Amsterdam found that 21% - around 27,000 – of under-18s in the city were overweight or obese (as a comparison, some 15% of under-18s nationally were overweight or obese) with children from ethnic minority backgrounds and those of very low economic status particularly impacted. In response, the Deputy Mayor of Amsterdam, Eric van der Burg, decided to prioritise the issue and Amsterdam City Council introduced its Healthy Weight Programme (AHWP) in 2013.40

The initiative is an urban-level policy, which aims to reduce childhood obesity by promoting healthy behaviours. The long-term aim is to achieve a healthy weight for all under-18s in Amsterdam by 2033.41 The programme has a targeted approach, focusing on the communities most impacted by obesity. Priority neighbourhoods were allocated community managers to lead implementation and over 200 community health ambassadors were appointed to lead local engagement. Supporting sub-programmes include a ban on bringing juice to schools, a ban on fast food sponsorship of sporting events, healthy cooking classes in the community and intensive counselling for expectant mothers and over the first 1000 days of a child’s life.42 The AHWP has also worked with local businesses encouraging them to sell smaller and healthier food portions.43

Initially, the programme had no additional budget, relying on coordinated action of various departments. Since 2015, it has been assigned annual funding of €2.5million, with an additional €2.7million committed by the national government. The programme was inspired by the ‘Rainbow Model’ by Dahlgren and Whitehead which recognised that not only health, but multiple other departments have a role to play in influencing behaviours that lead to obesity.44 The Public Health Service of Amsterdam reported that between 2012 and 2015 obesity prevalence in Amsterdam fell from around 8% to 6% among the most deprived under-18s and that the combined overweight and obesity rate for all under-18s fell from 21% to 18.5% in that period. However, the Obesity Policy Research Unit highlight that ‘there are no peer-reviewed outcome data published from the AAGG, nor has there been an evaluation by an organisation independent or semi-independent from the Public Health Service’.45

Overall, the programme offers an interesting model of coordinated, place-based action around prevention of poor health. One feature of the programme has been the broad political support it has enjoyed, alongside a clear leadership and funding structure led by the Deputy Mayor. The European Commission, assessing the programme, emphasised that ‘high-level political impetus has been the most important ingredient.46

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The case of adult social care

Failures in the provision of adult social care underscore the importance of thinking holistically about health. With the care sector facing a severe funding environment, there is evidence of fewer people accessing care, rising unmet care needs and wide inequalities in the quality and availability of care at a local level. This is driving up health inequalities as well as raising costs to the NHS.

The funding environment

While healthcare is free at the point of use, state support for adult social care is subject to a means test. State funding for adult social care comes from local government budgets which are struggling to balance higher demands for care and other cost pressures against significant central government funding cuts of nearly 50% since 2010/11. Continued demand for care from an ageing population, combined with the severe funding environment has meant local authorities are spending an increasing share of their resources on social care – from 45% in 2010/11 to 54% in 2016/17. Despite local authorities protecting social care spending, overall funding for care has still fallen over the period (see Fig. 6). In this environment, many care providers are struggling. In the six months to May 2018, 66% of councils surveyed, reported that they had experienced providers either closing or ceasing trading, or had had contracts handed back. The number of councils and people affected by the failure of residential and nursing care providers increased between 2017 and 2018 from 1,793 (across 54 councils) to 2,095 people (across 58 councils). With the care system facing a significant funding constraint and providers closing, the numbers of people accessing care has fallen from 1.2 million in 2005/06 to around 850,000, while the numbers of people with unmet care needs has risen from 800,000 in 2010 to 1.2 million.

Large local differences in the quality and availability of care

CPP analysis of Care Quality Commission (CQC) data shows that in some local authorities only around half of care homes are rated as good or outstanding when it comes to safety whereas amongst the top 10 local authorities this rises to over 90%. There are even greater variations in terms of the availability of residential care which we define as the number of older people (aged 75+) in a local area divided by the number of care homes. On this measure, Wigan has over 517 older people per care home whereas Somerset only has around 150 older people per care home. While this might be a crude measure of availability, it gives a sense of the scale in variation of provision for a given level of demand across the country.

The quality and availability of care matters

CPP analysis across 150 local authorities finds that a higher proportion of good or outstanding care homes and a smaller number of older people per care home are both strongly related to a lower avoidable mortality rate. While these results are not strictly causal, they do suggest that quality and availability make a difference to health outcomes and that the link with avoidable mortality is certainly worthy of further investigation and something that (to the best of our knowledge) has not been explored elsewhere. Variability of care provision may therefore help underpin some of the health inequalities described earlier in this report.

50 Refers to care of older (65+) people only. People with unmet care needs are defined as those who do not receive the help they need with essential activities. See AgeUK (2017) Briefing: Health and Care of Older People in England 2017. Available at: https://www.ageuk.org.uk/documents/en-GB/For-professionals/Research/The-Health-and-Care-of-Older-People-in-England-2017.pdf?dtrk=true
51 The CQC define ‘safe’ as “you are protected from abuse and avoidable harm”. Care Quality Commission (2018). The five key questions we ask [webpage]. Available at: https://www.cqc.org.uk/what-we-do/how-we-do-our-job/five-key-questions-we-ask
52 Avoidable mortality is defined as deaths from causes that are considered avoidable in the presence of timely and effective healthcare or public health interventions. For more see: ONS (2018) Avoidable mortality in the UK: 2016. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/avoidablemortalityinenglandandwales/2016
53 Multiple regression model which includes explanatory variables for care quality and availability plus income per capita and rurality. Overall model fit adjusted R2=48. Care quality is statistically significant at the 1% level and availability at the 5% level. For full results see the appendix.
Failures in the adult social care sector not only pose immediate challenges for the health of individuals needing care but also for the health service as a whole. For instance, we find that the higher the proportion of good or outstanding care homes in a local area, the lower the rate of unplanned hospital admissions.\footnote{Unplanned hospital admissions are defined as Multiple regression model which includes explanatory variables for care quality and availability plus income per capita, rurality, population and degree of geographic fragmentation across local authorities (see chapter 3 for more details on the latter variable). Overall model fit adjusted $R^2=38\%$. Care quality is statistically significant at the 5\% level. For full results see the appendix.}

Finally, there are knock-on effects for economic activity and employment since a lack of formal social care provision means relatives taking on caring responsibilities. Pickard et al (2017) estimate that the cost to government of unpaid carers leaving employment exceed £2.9 billion a year. This is made up of £1.7 billion in welfare benefits paid to people who have left their jobs because of the responsibility of unpaid caring, plus another £1.2 billion in lost tax revenue from this group’s lost earnings.\footnote{Source data: Care Quality Commission (2018). Op cit.} Getting care right can therefore provide economic and fiscal benefits above and beyond simply alleviating pressures on the health service.

### Table 1: Best and worst local authorities for quality of care\footnote{Pickard, L., et al. (2017) ‘Public expenditure costs of carers leaving employment in England, 2015/2016’ Health and Social Care in the Community, 26 (1),132-142}

<table>
<thead>
<tr>
<th>Bottom 10</th>
<th>% of care homes rated as outstanding or good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kensington and Chelsea</td>
<td>54.5</td>
</tr>
<tr>
<td>Manchester</td>
<td>54.5</td>
</tr>
<tr>
<td>Coventry</td>
<td>55.6</td>
</tr>
<tr>
<td>Calderdale</td>
<td>57.4</td>
</tr>
<tr>
<td>Bradford</td>
<td>58.3</td>
</tr>
<tr>
<td>Wakefield</td>
<td>58.4</td>
</tr>
<tr>
<td>Isle of Wight</td>
<td>59.0</td>
</tr>
<tr>
<td>Kirklees</td>
<td>59.2</td>
</tr>
<tr>
<td>Tameside</td>
<td>59.5</td>
</tr>
<tr>
<td>Wirral</td>
<td>60.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Top 10</th>
<th>% of care homes rated as outstanding or good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bournemouth</td>
<td>90.2</td>
</tr>
<tr>
<td>Darlington</td>
<td>90.6</td>
</tr>
<tr>
<td>Waltham Forest</td>
<td>90.7</td>
</tr>
<tr>
<td>Wokingham</td>
<td>90.7</td>
</tr>
<tr>
<td>Redbridge</td>
<td>91.4</td>
</tr>
<tr>
<td>Kingston upon Thames</td>
<td>92.7</td>
</tr>
<tr>
<td>Reading</td>
<td>94.1</td>
</tr>
<tr>
<td>Richmond upon Thames</td>
<td>94.6</td>
</tr>
<tr>
<td>West Berkshire</td>
<td>97.5</td>
</tr>
<tr>
<td>Bracknell Forest</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Conclusion

This report has argued that health is the fundamental human asset enabling meaningful economic activity. Health and economic prosperity reinforce one another with good health supporting greater economic activity and vice versa. This two-way relationship is at the heart of why good health must be a key pillar in any inclusive growth strategy.

The UK is experiencing a significant slowdown in health improvement driven by place-based health inequalities. These inequalities are largely determined by social factors with CPP analysis suggesting employment, skills and training, and housing are especially important. At a national level, this means more focus must be placed on addressing the wider social determinants of health which require collective cross-departmental action and resourcing. If better health is the goal, investment in education, skills and training, increasing access to quality housing, and active labour market policies may be just as relevant as more funding for local hospitals and GP surgeries. This point is particularly relevant as health spending (narrowly defined) accounts for an ever-increasing share of total government spending.

Failures in the provision of social care underscore the importance of thinking holistically about health. By comparison to the NHS, social care accounts for a very small share of overall expenditure. With the care sector facing a severe funding environment, there is evidence of fewer people accessing care, rising unmet care needs and wide inequalities in the quality and availability of care at a local level. Our analysis finds that a lower proportion of good or outstanding care homes and a higher number of older people per care home are both strongly related to a higher avoidable mortality rate. This is helping to drive up health inequalities as well as raising costs to the NHS.

Against this backdrop, it is crucial that local authorities can deliver a coordinated suit of complementary activities to tackle the wide-ranging determinants of ill health while continuing to cure and rehabilitate those who are unwell. This is not an easy task – made harder by geographic disparities in the boundary lines for health and care related institutions across local areas.

One of the major contributions of this report is to estimate the implications of such a coordination challenge. In this respect, our analysis indicates that the greater the geographic fragmentation of health and care institutions in a local area, the higher the rate of unplanned hospital admissions and DTOC. In turn, both act to drain the NHS's resources while increased DTOC may also cost lives. The challenge posed by misaligned institutions and structures may be exacerbated by recent policy developments. The emergence of regional teams and regional geographies covering both NHS England and NHS Improvement functions are intended to promote integration, but we argue they may add yet another layer of complexity to already complicated and fragmented local health systems. Finally, we noted that the practice of out of area admissions will intensify many of these problems – with local and out of area practitioners and institutions all having different definitions of place, this will make it even harder to successfully discharge patients.

The way forward is to consider alternative models of health delivery that focus on addressing the place-based social determinants of poor health aided by the development of mechanisms to ensure effective coordination between multiple agencies and stakeholders. There are already innovative examples of such approaches in operation today. Evaluating the success of these new models and understanding how to build on them at scale and at pace is the next key challenge. Ultimately, shifting away from the current narrow model of healthcare towards a broader social model of health will require policy change at a national, regional and local level. In the inquiry's final report to be published in 2019, we will explore in detail what changes are required and what the possible costs and benefits of such a transformation could be.

**High level principles for an inclusive, whole systems approach to health and social care**

- **The nation’s declining health** requires increased emphasis on tackling the place-based causes of health inequalities.
- **Health is about more than the NHS.** It requires a shift towards a social model of health whereby the socioeconomic determinants of poor health are better understood and addressed.
- **Delivering good quality care** requires greater integration of health and care services and more funding for social care. Better quality care will reduce some of the funding pressures on the NHS and improve health outcomes.
- **Supporting better coordination** between local agencies requires a whole systems approach including clearer lines of accountability about who is responsible for the health of an area.
Beyond sticking plasters: A whole systems approach to health and social care

CPP’s programme of health research and engagement

Given the importance of health for inclusive growth, CPP is undertaking a major 12-month inquiry into health and social care in England. This report marks the mid-point of that inquiry, setting out the interim findings in advance of delivering its final recommendations in the spring of 2019. Guided by an authoritative group of clinical and non-clinical advisors, the inquiry is considering all options needed to create a truly sustainable, high quality system of health and social care for the future.

The inquiry’s first report published in early 2018, set out four critical questions for further exploration:

1. Is financial strain affecting constitutional standards of care?
2. What kind of system is needed to meet the needs of a changing population?
3. What is the role for place in enabling healthy lives?
4. How do we rethink health and social care funding models?

This interim report brings together research from the inquiry’s first six months and sets the direction for our final report due in May 2019. Other key steps of the programme include:

- **First report (Published May 2018):** Our report *Diagnosis Critical* launched our inquiry, identifying stark inequalities in health outcomes and finances across places.
- **Deliberative public engagement events (Findings published October 2018):** CPP held public engagement to develop and understand attitudes towards innovative solutions.
- **Deep sector engagement (Ongoing):** With clinicians and policymakers (including via sector events, such as NHS Expo, PHE Annual Conference, as well as CPP’s inaugural summit).
- **Political engagement and influencing (Ongoing, September 2018–May 2019):** Including 1:1 meetings and party conference fringe events.
- **Edited collection of essays (May 2019):** Written by leading international thinkers and health professionals setting out more radical policy proposals.
- **Final report (May 2019):** Including primary recommended policy option, costed with outline transition plan and accompanied by video footage/vox pops of engagement activity.

Throughout the inquiry we are studying the following issues which, as well as feeding into the main reports and radical essays, will be the subject of shorter papers, blogs and events:

- Economic shocks and population health outcomes
- Workforce and technology in the NHS

CPP seeks to engage with other initiatives to ensure we add value and feed into emerging political debate. To achieve this, we are guided by an advisory group of authoritative clinical and nonclinical professionals:

- **Siva Anandaciva,** Chief Analyst, The King’s Fund
- **Professor Mike Bewick,** former Deputy Medical Director, NHS England and Independent Chair Mid and South Essex STP Joint Committee
- **Jo Bibby,** Director of Health, The Health Foundation
- **Sir Cyril Chantler,** Honorary Fellow and Emeritus Chairman UCL Partners Academic Health Science Partnership
- **Maureen Dalziel,** former Chair, Barking, Havering and Redbridge University Hospitals NHS Trust
- **Pam Garside,** Fellow, Judge Business School, Cambridge University
- **Sir Ian Gilmore,** Professor, University of Liverpool and former President, Royal College of Physicians
- **Paul Jakimciw,** Digital Health Expert
- **Alex Kafetz,** Managing Director, ZPB Associates and Independent Member of the National Information Board
- **Tim Kelsey,** CEO, Australian Digital Health Agency
- **Stephen K. Klasko,** M.D., M.B.A., President and CEO, Thomas Jefferson University and Jefferson Health
- **Professor Peter Kopelman,** Vice-Chancellor and Emeritus Professor of Medicine, University of London and former Principal, St George’s
- **Dame Julie Moore,** Professor of Health System at Warwick University
- **Professor Sir Mike Richards,** former Chief Inspector of Hospitals, Care Quality Commission
- **Professor Sir Terence Stephenson,** outgoing Chair, General Medical Council and Nuffield Professor of Child Health, Institute of Child Health, UCL
- **Geraldine Strathdee,** former Clinical Lead for Mental Health, NHS England
- **Margaret Willcox,** Past President, Association of Directors of Adult Social Services
- **Charlotte Aldritt,** Director, Centre for Progressive Policy
Appendix: The Fragmentation Index

The Fragmentation Index aims to capture how well relevant healthcare institutions are geographically aligned. Our method, which is one of many possible approaches, was chosen to balance ease of calculation and replicability with fully capturing the relevant issues.

The index is calculated for local authorities (at the county, not district level). The index covers England.

The index measures the coterminosity of local authorities (LAs) against the following layers:

- CCGs
- NHS England Regions, local office (i.e. layer with 14)
- Health and Wellbeing Boards
- STPs
- Parliamentary constituencies

### Table 2: sub-index definition

<table>
<thead>
<tr>
<th>Code (LA : CCG)</th>
<th>Coterminosity situation:</th>
<th>Sub-index score:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td>LA is coterminous with one CCG</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>1:Many</td>
<td>LA is coterminous with a set of CCGs (i.e. multiple CCGs within LA, but none of these also partly in another LA.)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Many:1</td>
<td>LA is entirely within a CCG (but not coterminous)</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Many:Many</td>
<td>LA boundary crosses a CCG boundary. This is equivalent to LA being partly in multiple CCGs and one of those CCGs also being partly in another LA.</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

The index for each LA is formed of the sum of five sub-indices that would each represent the coterminosity of the LA with one of the other five layers used (e.g. the coterminosity of an LA with CCGs).

These sub-indices are determined as follows (The table uses CCGs as an example layer):

---

57 This level is chosen as it is responsible for social care. It is referred to as 'County and unitary authorities' or 'CTYUA' by the ONS, whose names & codes are used in the accompanying dataset.

58 The index does not address how providers interact with the system. This is because they are not directly responsible for the health of geographically fixed populations. Interaction with providers is a significant issue but the subject for another study.
Matching is based on tabular lookups provided by ONS, with the exception of Health and Wellbeing boards which are based on King’s Fund data, and CPP checks.\textsuperscript{59}

The index does not discriminate on how fragmented a LA is with respect to each other type of institution. However, testing of alternative methods that did this, such as using a Herfindahl-Hirschman Index, did not qualitatively change the results.

**Distribution of scores**

The table below describes the distribution of the sub-scores.\textsuperscript{60}

**Table 3: Frequency of coterminosity relationships for each sub-index**

<table>
<thead>
<tr>
<th>(% of LAs)</th>
<th>CCG</th>
<th>STP</th>
<th>NHS England Regions</th>
<th>NHS England Regions</th>
<th>Constituency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td>53%</td>
<td>2%</td>
<td>0%</td>
<td>97%</td>
<td>1%</td>
</tr>
<tr>
<td>1:Many</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td>38%</td>
</tr>
<tr>
<td>Many:1</td>
<td>26%</td>
<td>89%</td>
<td>94%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Many:Many</td>
<td>13%</td>
<td>9%</td>
<td>6%</td>
<td>0%</td>
<td>59%</td>
</tr>
<tr>
<td>#LA : # xxx</td>
<td>152 : 195</td>
<td>152 : 42</td>
<td>152 : 14</td>
<td>152 : 159</td>
<td>152 : 533</td>
</tr>
</tbody>
</table>

See Table 2 for description of each coterminosity relationship.
The Fragmentation Index is colinear with many other significant attributes of LAs. Notably, LAs with a high index tend to have larger populations, richer populations and be more rural. This must be considered when using the Index.

**Table 4: Data used: definitions and sources**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidable mortality rate</td>
<td>An avoidable death is one that is either amenable or preventable. A death is amenable (treatable) if, in the light of medical knowledge and technology available at the time of death, all or most deaths from that cause (subject to age limits if appropriate) could be avoided through good quality healthcare. A death is preventable if, in the light of understanding of the determinants of health at the time of death, all or most deaths from that cause (subject to age limits if appropriate) could be avoided by public health interventions in the broadest sense. The mortality rate is age-standardised and presented per 100,000 population. Data for 2014–16, both sexes.</td>
<td>CPP analysis of: ONS (April 2018) Avoidable mortality by local authority in England and Wales Available at: <a href="https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/">https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/</a></td>
</tr>
<tr>
<td>Delayed Transfer of Care (DTOC) rate:</td>
<td>Delayed Transfer of Care (DTOC) rate: a delayed transfer of care from acute or non-acute care occurs when a patient is ready to depart from such care and is still occupying a bed. The rate is the average daily rate per 100,000 population 18+. The DTOC rate used includes all delays. (i.e. acute or non-acute and attributable to NHS, social care or both.) Data for 2017–18.</td>
<td>NHS England (June 2018) Local Authority ASCOF Performance Indicators 2017/18 Data for 2017/18 used. Available at: <a href="https://www.england.nhs.uk/statistics/statistical-work-areas/delayed-transfers-of-care/">https://www.england.nhs.uk/statistics/statistical-work-areas/delayed-transfers-of-care/</a></td>
</tr>
<tr>
<td>Unplanned hospitalisation for chronic ambulatory care sensitive conditions (Unplanned hospitalisations)</td>
<td>This indicator measures how many people with specific long-term conditions, which should not normally require hospitalisation, are admitted to hospital in an emergency. These conditions include, for example, diabetes, epilepsy and high blood pressure. This outcome is concerned with how successfully the NHS manages to reduce emergency admissions for all long-term conditions where optimum management can be achieved in the community. Data is directly age and sex standardised admission rate for unplanned hospitalisation for chronic ambulatory care sensitive conditions per 100,000 registered patients. Data for 2016/17.</td>
<td>NHS Digital, (Feb 2018) Unplanned hospitalisation for chronic ambulatory care sensitive conditions Available at: <a href="https://digital.nhs.uk/data-and-information/publications/clinical-indicators/nhs-outcomes-framework/current/domain-2-enhancing-quality-of-life-for-people-with-long-term-conditions-nof/2-3-1-unplanned-hospitalisation-for-chronic-ambulatory-care-sensitive-conditions">https://digital.nhs.uk/data-and-information/publications/clinical-indicators/nhs-outcomes-framework/current/domain-2-enhancing-quality-of-life-for-people-with-long-term-conditions-nof/2-3-1-unplanned-hospitalisation-for-chronic-ambulatory-care-sensitive-conditions</a></td>
</tr>
<tr>
<td>% of care homes rated good (safe)</td>
<td>This is the proportion of care home locations in a local authority that are rated as ‘Good’ or ‘Outstanding’ for the question ‘Safe’, which is defined as ‘you are protected from abuse and avoidable harm’.</td>
<td>CPP analysis of: Care Quality Commission (Oct 2018) 01_October_2018_Latest_ratings.xlsx. Available at: <a href="https://www.cqc.org.uk/about-us/transparency/using-cqc-data">https://www.cqc.org.uk/about-us/transparency/using-cqc-data</a></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>People per care home</td>
<td>The total number of people over the age of 75 in a local authority divided by the number of residential care homes.</td>
<td>CPP analysis of: Care Quality Commission (Oct 2018) and ONS (June 18) Population estimates: Persons by single year of age and sex for local authorities in the UK, mid-2015. Available at: <a href="https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/">https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/</a></td>
</tr>
<tr>
<td>Income per capita</td>
<td>Gross Disposable Household Income per head of population. Both based on 2015 figures.</td>
<td>ONS (May 2018) Regional gross disposable household income by local authority Available at: <a href="https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/">https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/</a></td>
</tr>
<tr>
<td>Rurality</td>
<td>This is based on the ONS’s Broad Rural Urban Classification. To make this data numeric we scored 0 for ‘Predominantly Urban’, 1 for ‘Urban with Significant Rural’ and 2 for ‘Predominantly Rural’</td>
<td>CPP analysis of: ONS (Sep 2018) Rural Urban Classification (2011) of Local Authority Districts in England and Rural Urban Classification (2011) of Counties in England. Both available at: <a href="http://geoportal.statistics.gov.uk/">http://geoportal.statistics.gov.uk/</a></td>
</tr>
<tr>
<td>Population</td>
<td>Resident population of local authority. Data for mid-2015.</td>
<td>ONS (June 2018)</td>
</tr>
</tbody>
</table>

**Key results**

We report below the results of the three main regressions referred to in the report which include reference to the Fragmentation Index, as well as notes on selected alternative specifications we tried which demonstrate their robustness or sensitivity.

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60 We did not use the sub-divisions of the DTOC rate because of belief that these are being recorded significantly differently across the country. This can be seen most easily in the spread of DTOCs attributed to ‘both NHS and Social Care’, which has a very large range and has little relationship to the number attributed to ‘NHS’ or ‘Social Care’ individually.
The impact of fragmentation and the quality of care homes on unplanned hospitalisations for chronic ambulatory care sensitive conditions

Regression 1: The impact of fragmentation and the quality of care homes on unplanned hospitalisations for chronic ambulatory care sensitive conditions

Dependent variable: Unplanned hospitalisations (per 100,000 registered patients)

<table>
<thead>
<tr>
<th>Regression Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
</tr>
<tr>
<td>R Square</td>
</tr>
<tr>
<td>Adjusted R Square</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Observations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1513.60</td>
<td>162.25</td>
<td>9.33</td>
<td>0.00</td>
<td>1192.89</td>
</tr>
<tr>
<td>% of care homes rated good (safe)</td>
<td>-461.40</td>
<td>191.72</td>
<td>-2.41</td>
<td>0.02</td>
<td>-840.38</td>
</tr>
<tr>
<td>Fragmentation score</td>
<td>45.32</td>
<td>17.54</td>
<td>2.58</td>
<td>0.01</td>
<td>10.65</td>
</tr>
<tr>
<td>People per care home</td>
<td>-0.04</td>
<td>0.14</td>
<td>-0.30</td>
<td>0.77</td>
<td>-0.33</td>
</tr>
<tr>
<td>Income (£000s per capita)</td>
<td>-18.25</td>
<td>2.98</td>
<td>-6.11</td>
<td>0.00</td>
<td>-24.15</td>
</tr>
<tr>
<td>Rurality</td>
<td>-112.70</td>
<td>25.56</td>
<td>-4.41</td>
<td>0.00</td>
<td>-161.22</td>
</tr>
<tr>
<td>Population (000s)</td>
<td>-0.20</td>
<td>0.08</td>
<td>-2.57</td>
<td>0.01</td>
<td>-0.35</td>
</tr>
</tbody>
</table>

Alternative specification notes:
- Other relevant CQC care home quality indicators ‘overall’ and ‘efficient’ (instead of ‘safe’) generated similar results.
- Using an equivalent specification, similar CQC indicators for community care, GP practices and NHS non-acute hospitals did not show a significant negative relationship with unplanned hospitalisations.
The impact of fragmentation on delayed transfer of care rate

Regression 2: The impact of fragmentation on delayed transfer of care rate

Dependent variable: DTOC rate (per 100,000 population)

<table>
<thead>
<tr>
<th>Regression Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
</tr>
<tr>
<td>R Square</td>
</tr>
<tr>
<td>Adjusted R Square</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Observations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>6.56</td>
<td>1.99</td>
<td>3.30</td>
<td>0.00</td>
<td>2.63</td>
</tr>
<tr>
<td>Fragmentation score</td>
<td>1.21</td>
<td>0.44</td>
<td>2.76</td>
<td>0.01</td>
<td>0.34</td>
</tr>
<tr>
<td>Income (£000s per capita)</td>
<td>-0.11</td>
<td>0.06</td>
<td>-1.75</td>
<td>0.08</td>
<td>-0.23</td>
</tr>
<tr>
<td>Rurality</td>
<td>1.09</td>
<td>0.64</td>
<td>1.70</td>
<td>0.09</td>
<td>-0.18</td>
</tr>
<tr>
<td>Population (000s)</td>
<td>0.003</td>
<td>0.002</td>
<td>1.38</td>
<td>0.17</td>
<td>-0.001</td>
</tr>
</tbody>
</table>

Alternative specification notes:

- The results reported are robust to the inclusion of care quality and accessibility variables, which are not significant when included.
- The coterminosity of CCG and LA is the most significant sub-component of the Fragmentation Index in terms of driving the relationship with the DTOC rate. If we used this coterminosity instead of the total fragmentation score as an independent variable, the model suggests that local authorities which are not coterminous have a 32% higher DTOC rate than those which are not.
The impact of care quality and availability on the avoidable mortality rate

Regression 3: The impact of care quality and availability on the avoidable mortality rate

Dependent variable: Avoidable mortality rate (per 100,000 age standardised population)

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>378.82</td>
<td>25.65</td>
<td>14.77</td>
<td>0.00</td>
<td>328.13</td>
</tr>
<tr>
<td>% of care homes rated good (safe)</td>
<td>-98.30</td>
<td>31.37</td>
<td>-3.13</td>
<td>0.00</td>
<td>-160.30</td>
</tr>
<tr>
<td>People per care home</td>
<td>0.06</td>
<td>0.02</td>
<td>2.64</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Income (£000s per capita)</td>
<td>-4.10</td>
<td>0.50</td>
<td>-8.28</td>
<td>0.00</td>
<td>-5.08</td>
</tr>
<tr>
<td>Rurality</td>
<td>-25.58</td>
<td>3.98</td>
<td>-6.42</td>
<td>0.00</td>
<td>-33.46</td>
</tr>
</tbody>
</table>

Alternative specification notes:

- Using other relevant CQC care home quality indicators, including ‘overall’ (instead of ‘safe’) generated similar results.
- If the Fragmentation Index is included as an additional independent variable, the coefficient for the Index variable is not significant whilst the other regression statistics remain broadly unchanged.