Measuring Spatial Inequality in the UK:
What We Know and What We Should Know?

Professor Cecilia Wong, Tom Arnold, Professor Mark Baker, Dr. Caglar Koksal, Dr. Andreas Schulze Bäing & Dr. Helen Wei Zheng

The Spatial Policy & Analysis Laboratory at The Manchester Urban Institute
The University of Manchester
January 2019

The challenges of charting regional inequality:
There is no perfect measure, but context is everything
(Selby-Boothroyd, 2018)

While some common indicators such as GDP per head, unemployment rate and employment rate are widely accepted regional performance measures, the precise methodology used to analyse them is often subject to controversial debate. A recent debate was sparked by the publication of a GDP per person graph (Figure 1a) in *The Economist* which highlights the shocking regional inequalities in Britain compared to other OECD countries. One of the main criticisms of the method is its use of residential population as the denominator, as the functional labour market area of the richest west London region is much bigger than its domicile residents and thus distorts the real situation. After experimenting with different methods, different analyses are provided including one for GDP per employed person (Figure 1b). Regardless of what method is used, what matters is that Britain is still ranked the 1st-7th most regionally unequal among the 34 OECD countries and the situation is growing worse.
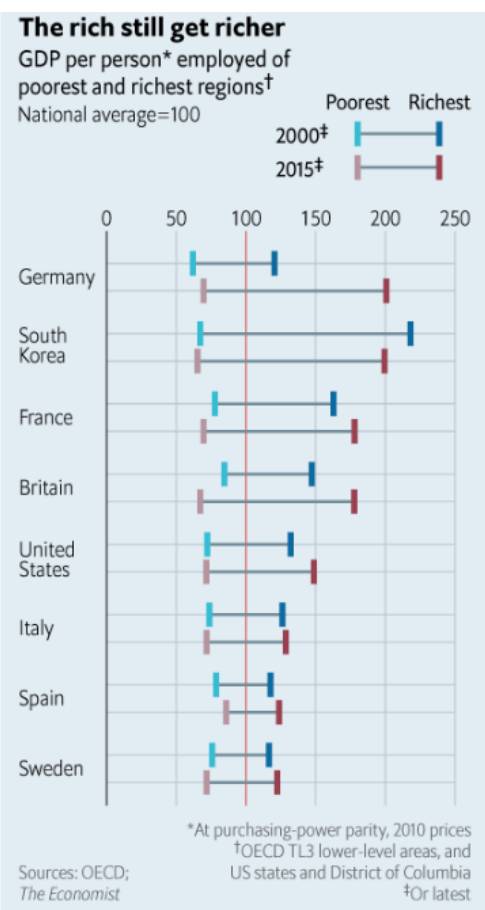

Figure 1a

Figure 1b

Common spatial inequality measures in the UK: unemployment rates and Assisted Areas

There has been a long standing practice since 1984 of using <u>unemployment measures to devise Assisted Areas maps</u> to define areas in Britain eligible for regional funds and regional selective assistance. Throughout most of the 20th century, there were significant interregional differences in unemployment and these differences were exacerbated by the economic cycle. In the depression of the early 1930s, for example, unemployment reached 30% in South Wales compared to 15% in London and the South East[1]. After recovering from the 2008 financial crisis, employment in the UK currently stands at a high level by historic standards and interregional differences in unemployment are small. As of August 2018, the UK unemployment rate stood at 4.0% (see Figure 2), with London (4.8%) and the West Midlands (4.7%) exhibiting the highest unemployment rates, with the lowest in the South West (2.7%), East (3.0%) and South East (3.8%).
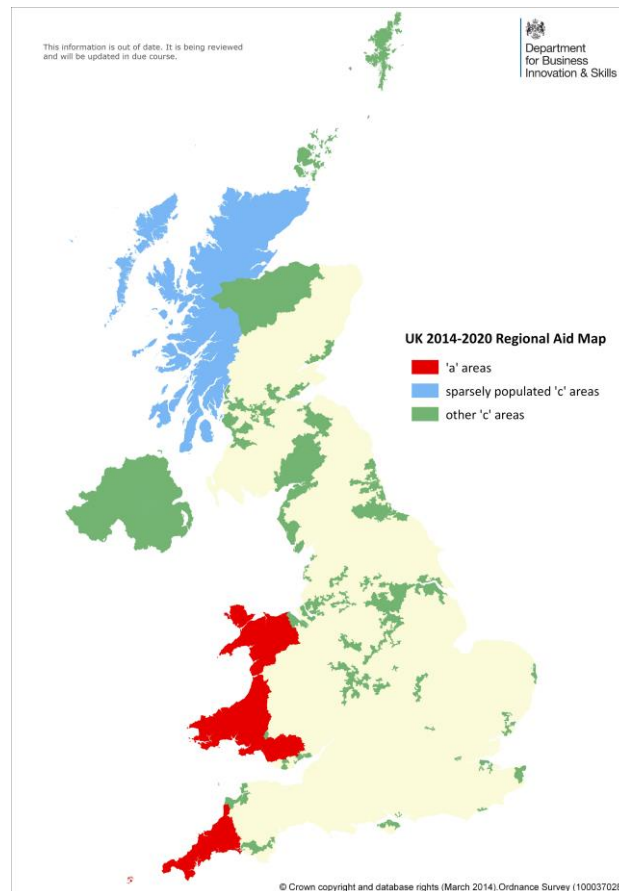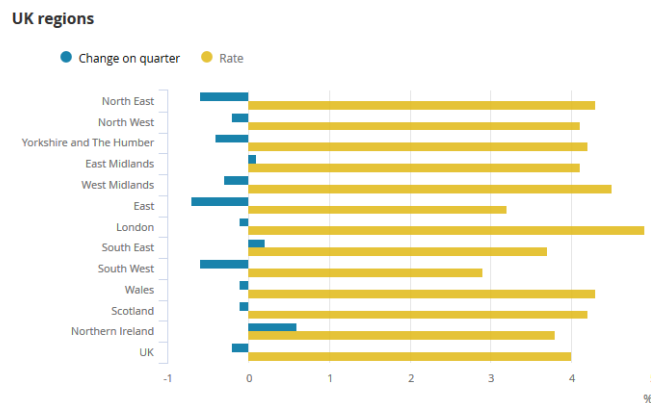

Figure 2 Unemployment rates by region (seasonally adjusted), June-August 2018, source: ONS

Figure 3 Assisted Areas Map, 2014-2020 source: DBIS

---

[1] Hansen, N., Higgins, B. and Savoie, D.J. (1990) Regional Policy in a Changing World. Plenum Press, New York.

Despite broad similarities in unemployment rates across the UK, there are clear differences in the economic performance of different parts of the UK by other measures. In a period where economic growth, rates of employment and wage levels have become increasingly detached, other criteria were taken account in the derivation of the 2014-2020 Assisted Areas Map (set with a maximum coverage of 27.05% of UK population by the European Commission, see Figure 3). Besides the low employment rate, the metrics of economic need includes low skills rate, high working age benefit claimant count rate, low population growth/net out-migration of working age population, and high rates of manufacturing. According to the What works centre for local economic growth, UK's Regional Selective Assistance is effective in supporting employment - with a 10% point increase in the maximum subsidy rate to an area resulting in a 3.2% decrease in unemployment.

Index of inequality: Gini coefficients

The sense that economic growth is increasingly detached from standards of living for many has prompted interest in creating new ways to measure development (Pike et al, 2017)[2]. The Gini coefficient has been widely used to measure income inequality at the individual scale which, in recent years, has been increasingly utilised to measure spatial inequalities. The UK's 73.2% on the wealth Gini coefficient is close to the OECD average of 72.8%. On income Gini, the UK exhibits a much higher level of inequality and is ranked 7th of 30 OECD nations (see Figure 4), just behind Eurozone nations strongly affected by the financial crises such as Greece and Spain, as well as the United States and Mexico[3].

The Luxembourg Income Study (Naguib, 2015)[4] by analysed the relationships between inequality (measured by Gini coefficient) and GDP growth. Based on three different estimation methods, a positive relationship between growth and equality was found; suggesting that higher inequality levels are related to higher levels of per capita GDP and its growth rate. Of course, there are caveats to the findings in relation to the limited sample and that the results were not consistently found to be statistically significant. Also, the relationship between GDP growth rates and the Gini coefficient is not necessary a linear one. Banerjee and Duflo (2003)[5] claim the existence of an inverted 'U'-shaped relationship between the two variables: when inequality level is high, a reduction in the Gini coefficient has a positive impact on GDP; but where the inequality level is modest, a further reduction of the Gini coefficient is associated with a reduction in the GDP growth rate.

This highlights the methodological challenges encountered in measurements. Recent work by Smith and Rey (2018)[6] proposes a spatial decomposition of the Gini coefficient to track changes in subnational inequality. Although this approach requires some development, it nevertheless offers a potential measure of regional inequality that would allow comparisons with other nations.

[2] Pike, A., Rodríguez-Pose, A. and Tomaney, J. (2017) 'Shifting horizons in local and regional development', Regional Studies. 51 (1). 46-57

[3] Equality Trust, 2016 based on data from the Luxembourg Income Study

[4] Naguib, C. (2015) The Relationship between Inequality and GDP Growth: an Empirical Approach, Luxembourg Income Study Working Paper Series No. 631.

[5] Banerjee, A. V. and E. Duflo. 2003. Inequality and Growth: What Can the Data Say? Journal of Economic Growth, 8, 267-299.

[6] Smith, R.J. and Rey, S.J. (2018) 'Spatial approaches to measure subnational inequality: implications for sustainable development goals', Development Policy Review. 1-19
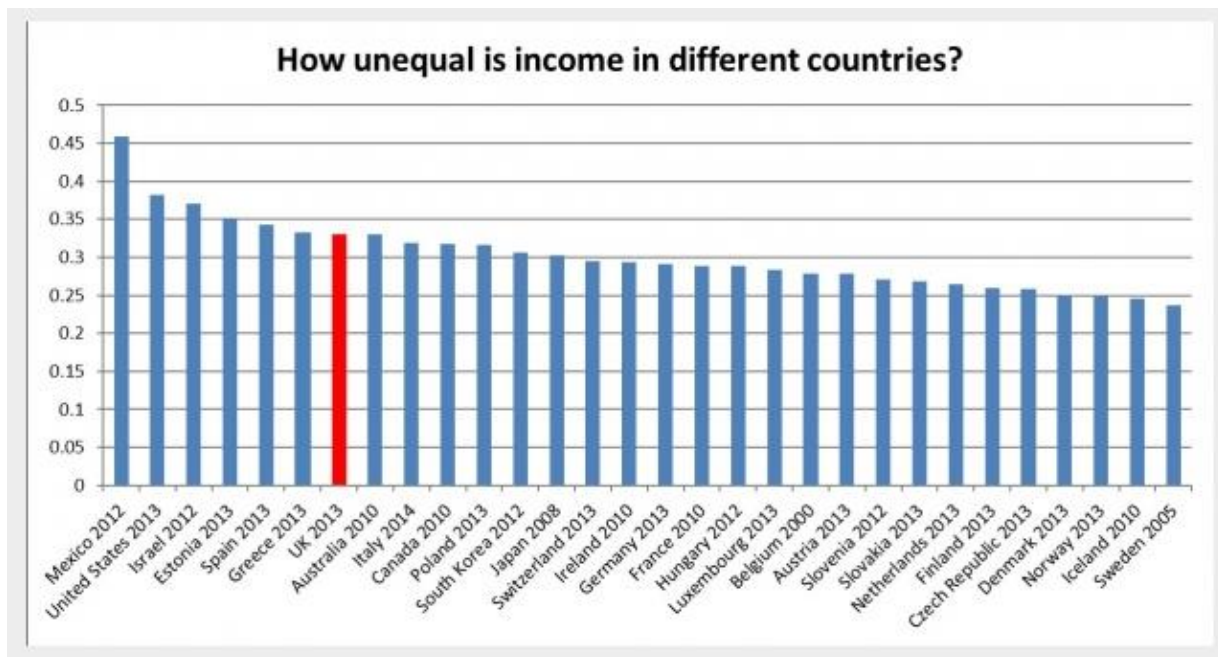
Towards a broader conception of human and societal well-being: Sustainable Development Goals

Recent years have seen the development of composite measures of development which aim to assess quality of life as well as income and wealth. The United Nations Human Development Index (HDI), for example, proposes three dimensions of development: citizens should have a long and healthy life; be knowledgeable; and have a decent standard of living. The underpinning rationale of the HDI is to shift the focus of development from national income accounting to more people centred policies by measuring life expectancy, adult literacy rate, GDP and purchasing power parity. Indicators include life expectancy and years spent in formal education, along with the Gini index (UNDP, 2016)[7].

The recent international agenda has focused on cities as drivers of economic growth and sustainable development. The City Prosperity Index, developed by UN Habitat, sets out a strong critique of the 'GDP fetishism' and argues for the need to move towards measuring a broader conception of human and societal well-being (Wong, 2015)[8]. UN-Habitat (2012)[9] advocates its own approach by defining a prosperous city as one that possesses the essential qualities of productivity; infrastructure; quality of life; equity and inclusion; environmental sustainability, and governance and legislation. These five dimensions of prosperity (see Figure 5) are conceived as the spokes of 'the wheel of prosperity', each of which is measured by a number of indicators or sub-indices and driven by the hub of planning and government institutions. As shown in Figure 6, economic growth and inequality often coexist within the same space. New York, Toronto, London, Stockholm and Auckland are examples which contrast sharply with more equitable and economically successful cities such as Vienna and Helsinki. More recently, the UN has adopted the CPI as a global monitoring framework for its Sustainable Development Goal 11 'Sustainable Cities and Communities' and the New Urban Agenda known as Habitat III.

---

[7] United Nations Development Programme (2016) Human Development Report 2016: Human Development for Everyone, United Nations, New York.
[8] Wong, C. (2015) A framework for 'City Prosperity Index': Linking indicators, analysis and policy, Habitat International, 45: 3-9.
[9] United Nations Human Settlements Programme (2012) State of the world's cities 2012/13: Prosperity of cities. Nairobi, Kenya: UN-HABITAT.

The Office for National Statistics (ONS) is responsible for compiling, analysing and contextualising indicators for the 17 Sustainable Development Goals and reporting back to the UN, as well as making the data available online. So far, a consultation exercise was carried out, and an annual progress report and some global SDGs for the UK as a whole were published. For example, the headline messages for Goal 10 'Reduced Inequality' include: 'The UK is currently meeting the Sustainable Development Goals' (SDGs) target 10.1 to sustain income growth of the poorest 40% of the population at a higher rate than the national average' though 'Expenditure growth rates of the poorest 40% of the population are much closer to the national average and in recent years have not sustained a higher rate of growth' and that 'those most at risk of poverty in 2016 were single parent households with children and those who are seeking employment'. The problem with such aggregate national analysis is the lack of information on the distribution of these 'at risk' groups to inform local policy development, especially in the light of the spatial decentralisation of planning and development functions. The only spatially disaggregated goal is SDG11 whereby indicators have to be collected at 'city and human settlement' level, but no data has been published yet.
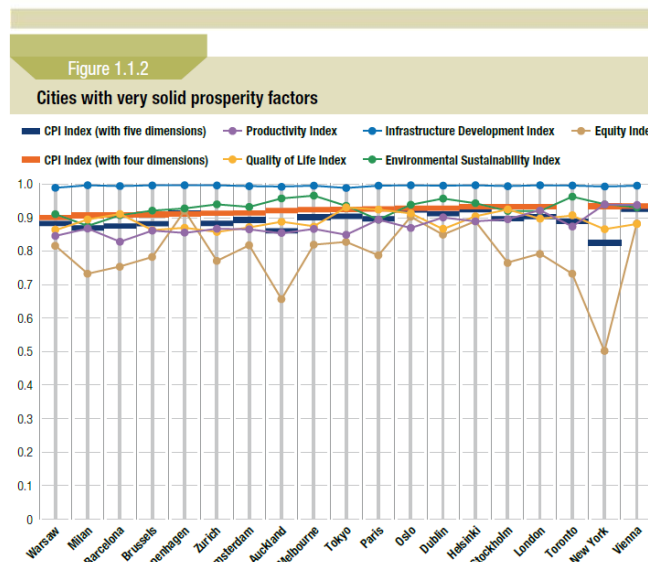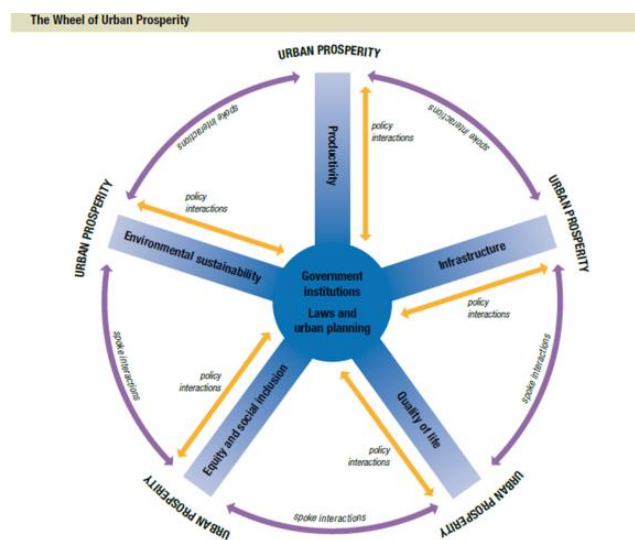

Figure 5 Five dimensions of the City Prosperity Index source: UN-Habitat (2012:15)

Figure 6 Best performing cities by the City Prosperity Index source: UN-Habitat (2012:19)

Another people-centred measurement approach is the <u>Inclusive Growth Monitor</u> of the Joseph Rowntree Foundation (JRF) and the University of Manchester's Inclusive Growth Analysis Unit. Although the concept of inclusive growth is somewhat ill-defined (Lee, 2018)[10], this offers a route for policymakers to consider the spatial distribution alongside the aggregate output of economic growth. The 2017 Monitor measures the relationship between economic inclusion and prosperity for Local Enterprise Partnership (LEP) areas. Each LEP area was given an 'economic inclusion' score, based on nine indicators covering income, living costs and labour markets, and a 'prosperity score', calculated through nine indicators based on output growth (e.g. GVA per capita), employment and human capital (Rafferty et al, 2017)[11]. 'High prosperity and high inclusion' LEP areas include Thames Valley Berkshire, Buckinghamshire Thames Valley and Oxfordshire, whilst the top 'low prosperity and low inclusion' areas are the Black Country, Liverpool City Region and Tees Valley. The 'economic inclusion' measure provided by the IG Monitor index illustrates the extent to which the South East benefits from regional imbalance in the UK, although it is notable that London itself performs poorly on the inclusion measure.

Decoupling inputs from outcomes: equality of opportunities

Development outcomes affecting a specific area, whether this is a nation, region or neighbourhood, is related to wider market conditions as well as policy interventions. Rather than simply measuring differential outcomes, it is also important to examine different policy inputs and the socio-economic opportunities available to population and businesses in different localities. As shown in a research study funded by the N8, there are major challenges to transforming the lagging northern region into a global powerhouse as the spatial divide largely persists, with London and the South East regions continuing to dominate the country's economic growth (Wong and Webb, 2014)[12]. For example, London has 1.6 times more direct inter-city rail links than Manchester and Birmingham. With fast speed rail links, the journey time between London and many northern cities is significantly compressed, but this mainly enhances trip gravity towards London. The five major London airports account for 61% of all UK airport capacity (in terms of passenger flows), with Heathrow alone having the lion's share of 28.5% (76 million passengers). The largest regional airport is Manchester, with just 9.6% of the share, and it still has spare capacity. These uneven capacities are further sharpened when focusing on international scheduled flights: Heathrow accounts for 37% of the UK share and all five London airports account for over 71% of the total, followed by Manchester's 9.2% (see Figure 7).

[10] Lee, N. (2018) 'Inclusive Growth in cities: a sympathetic critique', Regional Studies. Published online 6 June 2018.
[11] Rafferty, A., Hughes, C. and Lupton, R. (2017) Inclusive Growth Monitor 2017: Local Enterprise Partnerships. University of Manchester, Manchester
[12] Wong, C. and B. Webb (2014) Planning for infrastructure: challenges to northern England, Town Planning Review, 85, 683–708.
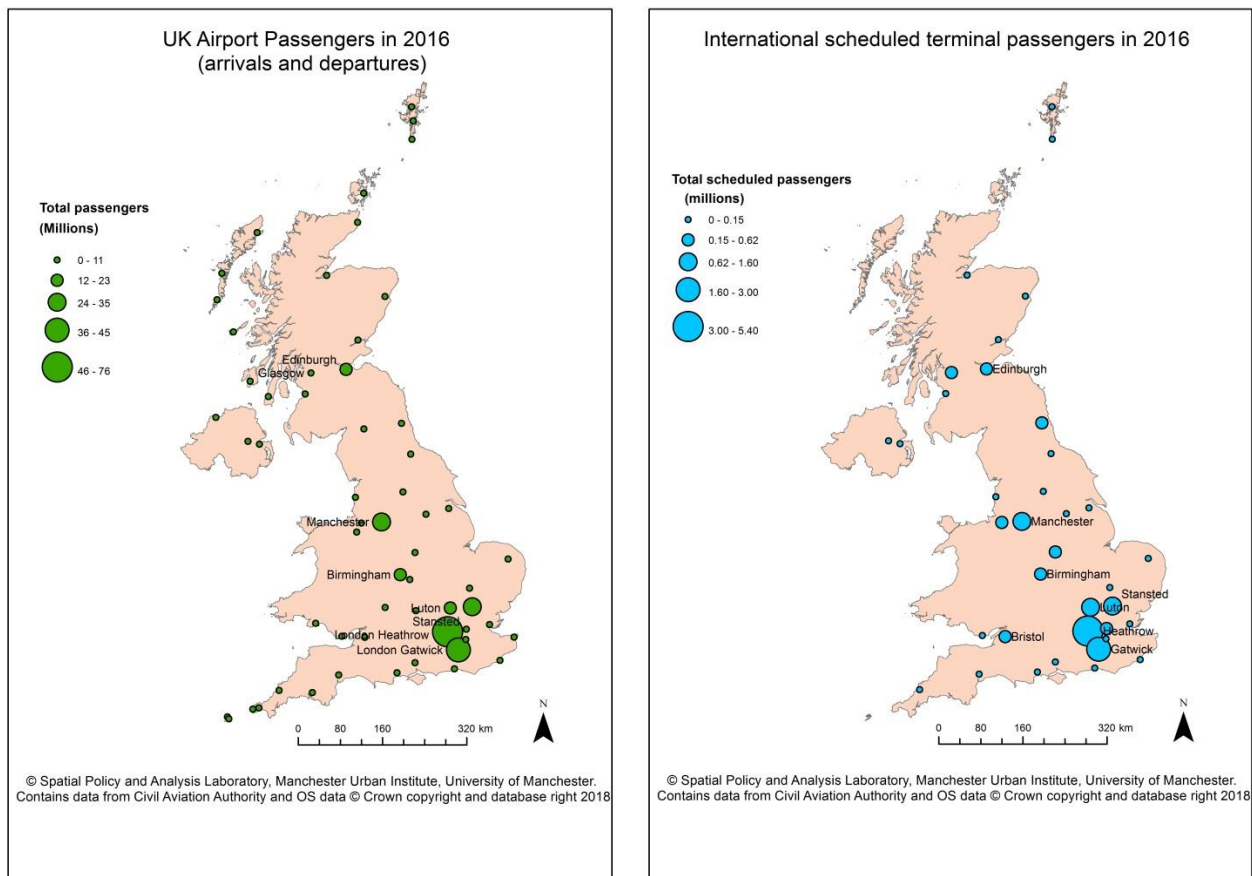
Figure 7 Passenger flows of UK airports, 2016: (a) total and (b) international scheduled flights
Source: Department for Transport's aviation statistics

Infrastructure investment in England tends to reinforce the differential spatial trajectories and favours London. According to the 2013 National Infrastructure Plan, £36 billion was targeted at London, representing 40% of England's total spend on regional projects and programmes. The East Midlands and the North East, with an investment of £2 billion and £2.2 billion respectively, receive the least amount of capital funding. On a per capita basis, the East Midlands continues to trail in investment with just £567 per person while the equivalent figure for London is £4,333 (see Figure 8).
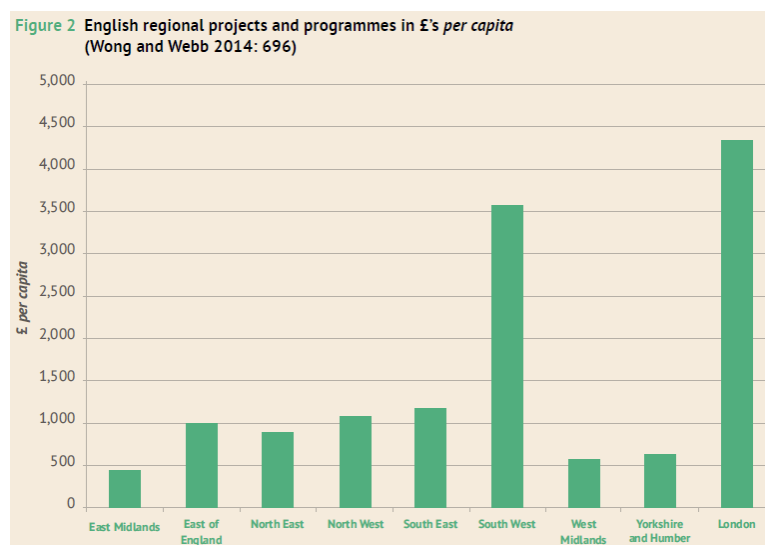

Figure 8 English regional projects and programmes, National Infrastructure Plan 2013

One potential way of approaching this problem is to determine a minimum standard of living or services required to reduce inequalities in opportunity. Building on the concept of Universal Basic Income, a Universal Basic Services metric was proposed by the Institute for Global Prosperity's Social Prosperity Network (IGP, 2017)[13]. The IGP report suggests social security and economic development should move from a primarily redistributive model to a service-orientated approach that identifies the needs of society as a whole rather than on an individual basis. Service provisions would include access to public transport and information, as well as traditional welfare concerns such as healthcare and education.

The Industrial Strategy Commission (2017)[14] also put forward proposals for a measure of Universal Basic Infrastructure, recommending the need to provide a minimum level of access to hard and soft infrastructure for all citizens. The commission identified shortcomings in the UK's rail, energy, water and communications infrastructure and suggested the lack of investment in these areas represented a significant risk to future economic prosperity. In terms of 'soft' infrastructure, the UK's performance in education, health and social care is also considered to fall short of international standards. It is recommended that the industrial strategy "should not seek to do everything everywhere but it should seek to do something for everywhere" (p. 50) by ensuring all places have access to a basic level of infrastructure, such as connectivity to the transport network and to high quality education.

Visualisation of spatial inequality: the dynamic commuting flow patterns

While economists and sociologists have widely adopted statistical indicators and composite indices to measure socio-economic inequalities, the presentation of the analysis is not always easily accessible. More importantly, these measures do not aim to ascertain unequal spatial relationships. With the advance of mapping techniques and dynamic flow data, more robust and user-friendly expression of differential spatial capacities and outcomes is possible. The Royal Town Planning Institute commissioned Manchester University[15] to develop A Map for England. This demonstrated the value of using mapping analysis to highlight the different policy outcomes in different parts of the country and the findings were used by politicians to make more informed judgments about individual policy proposals and the way they interact with, and affect, the development of the country.

Another example of visualisation is through examining the dynamic movements and flows of workers and populations. By analysing, mapping and visualising the 513,892 commuting flows of England and Wales from the 2011 Census (which captured 18.4 million of the 26.5 million workers), researchers at Manchester University do not only show the complex commuting patterns across different parts of the country, but also reveal the different socio-economic dynamics of these commuting flows. The flow density in Figure 9 highlights the labour market pull of different towns and cities which criss-cross local authority boundaries. The movement of the higher order socioeconomic groups, such as high flying professional and managerial workers and the techs and city types, are particularly pronounced. There is a notable concentration of Techs and the City Types in London at the residential-end of the commute, and the concentration of these flows significantly is higher when considering workplace patterns as shown in Figure 10 (Hincks et al. 2017)[16].

[13] Institute for Global Prosperity (2017) Social Prosperity for the Future: A proposal for Universal Basic Services. UCL, London.
[14] Industrial Strategy Commission (2017) The Final Report of the Industrial Strategy Commission. The University of Sheffield, Sheffield.
[15] Wong, C, Baker, M, Hincks, S, Schulze-Baing, A, Webb, B (2012) A Map for England: Spatial Expression of Government Policies and Programmes, London: Royal Town Planning Institute
[16] Hincks, S., Kingston, R., Webb, B. & Wong, C. (2018) A new geodemographic classification of commuting flows for England and Wales, International Journal of Geographical Information Science, 32:4, 663-684.
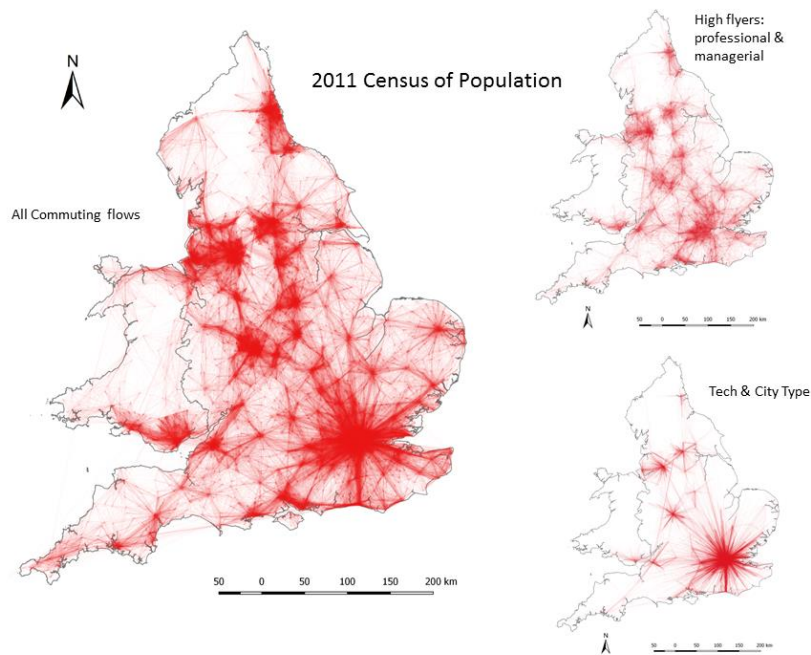
Figure 9 Commuting flows in England and Wales by types, 2011 Census
Source: These maps show classification of commuting flows >5 between MSOA of England and Wales, developed at the Spatial Policy & Analysis Lab of The University of Manchester. The maps contains National Statistics data © Crown copyright and database right 2018 and OS data © Crown copyright and database right 2018.
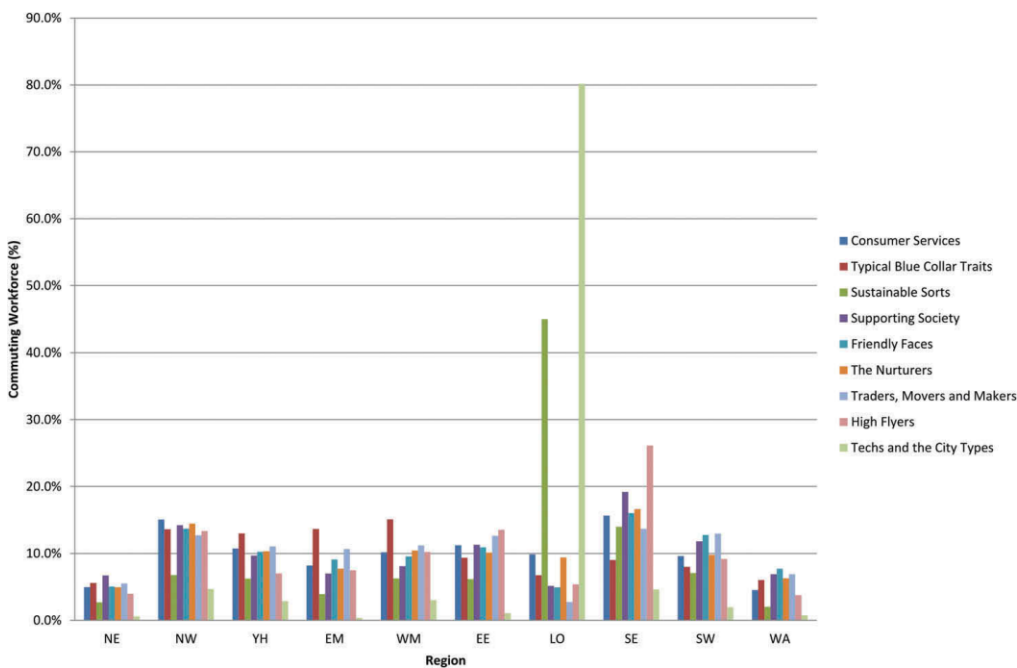

Figure 10 Commuting by Supergroup – workforce aggregated to Standard Regions and Wales by workplace-end of the commute. Total workers in each Supergroup as percentage of 18,401,833.
Source: Hincks et al. 2017

Developing progressive measures of spatial inequality: what we learnt?

- There is not a single perfect method or index to robustly measure spatial inequality.

- The aggregated indices and Gini coefficients tend to be used to measure national inequality and there is major challenge in developing sub-national measures to examine spatial patterns of unequal development.

- There has been an international shift towards a broader conception of human and societal well-being, especially the Sustainable Development Goals and the City Prosperity Index adopted by UN-Habitat.

- There is a need to measure both inputs and outcomes and to pay attention to accessibility to opportunities, for example, via the proposed measure of Universal Basic Infrastructure by the Industrial Strategy Commission.

- There is a need to adopt mapping analysis and visualisation to illustrate dynamic spatial relationships and the uneven distribution of capacities and resources.