

Compendium

# Inclusive growth: measures and trends

Overview of recent economic growth trends in the UK, inequalities arising during the different phases of economic growth, income and inequalities trends in the constituent countries and regions, and feasibility analysis on social mobility, focused on earnings progression of the youngest generation.

Contact:  
Gueorguie Vassilev  
economic.wellbeing@ons.gov.uk  
+44 (0)1633 456265

Release date:  
26 July 2018

Next release:  
11 October 2018

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# 1 . Authors and acknowledgements

Vasileios Antonopoulos and Gueorguie Vassilev.

We thank Jonathan Bonville-Ginn, Cecilia Campos, Rob Fry, Edward Giles, Henry Lau, Bonang Lewis, Melanie Lewis, Andrew Martindale, Fiona Massey, Thomas Odell, Chris Payne, Richard Prothero, Rebecca Schoenwerth, Paola Serafino, Dawn Snape, Nathan Thomas, Dominic Webber and Claudia Wells for their contributions, suggestions and help in creating and editing this article.

## 2 . Main points

- Regional disparities from UK median income have been broadly sustained comparing the periods 2006 to 2008 and 2015 to 2017.
- Most regions that have median income below the UK average also have median wealth below the national average, when looking at the latest time periods.
- Regionally, there is a consistent growth difference before and after the economic downturn, in both gross household disposable income (GHDI) per head and average employment growth.
- Income inequality, as measured by the Palma ratio, has slowly decreased since the financial downturn, while the Gini coefficient of total wealth inequality has remained stable, rising from 0.61 to 0.62 between 2006 and 2016.
- Net financial wealth inequality is the largest of all types of wealth inequality, with the Gini coefficient rising from 0.81 to 0.91 between 2006 and 2016.
- For 25- to 29-year-olds who were in the bottom 20% of the earnings distribution in 2011, 54% of those who had degree-level, higher, or equivalent qualifications experienced wage progression by 2015, compared with 37% of those who held a maximum of five A\* to C GCSE-level education qualifications or equivalent in 2011.
- Young people who were the lowest earners that live in the south of England, London and the Midlands were more likely to experience wage progression, compared with young people living in the north of England, Wales and the East of England.
- 70% of the lowest-earning young people who moved regions experienced wage progression between 2011 and 2015 and were twice as likely to experience it as those who did not move.

## 3 . Introduction

The UK Office for National Statistics (ONS) launched its Measuring National Well-being programme in 2010, with the aim to “develop and publish an accepted and trusted set of National Statistics, which help people understand and monitor well-being”. Since then, ONS has monitored UK progress against a wide set of indicators, including economic and personal well-being, social and human capital, and the environment, which complement national accounts. They provide statistics that are more informative about the progress of UK citizens and households than gross domestic product (GDP) alone.

More emphasis is being placed on developing statistics that inform on inclusive growth, that go beyond average per head measures, placing more focus on the equity of overall progress. Whilst the ONS indicators have been successful at regularly reporting on the progress of households and citizens in general, they do less to inform on the relative allocation of growth. The Organisation for Economic Co-operation and Development (OECD)'s Inclusive Growth Framework (OECD, 2018) recommends translating measures of growth into improvements across the range of outcomes that matter most for people's lives. ONS is expanding its development more in this area through its newly-created Centre of Expertise on Inequalities, looking to measure and supplement analysis on all forms of inequalities in the UK.

More recently, the Inclusive Growth Commission (Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA), 2016) promoted a strategy that is national in scale, but local in delivery. It emphasised poor productivity – due to skills shortages of workers, but also the proliferation of low-skilled jobs – as the main barrier to improving low-pay and highlighted the need for more sophisticated statistics that inform on these issues. Additionally, the Scottish Government (Scotland's Economic Strategy, 2015) supports economic growth through “a fair and inclusive jobs market and regional cohesion”.

This article adapts the well-established Measuring National Well-being Framework, developing indicators to provide insight into inclusive growth. The article will provide an overview of economic growth trends in the UK. It then discusses the trends on inequalities measures during different phases of economic growth to consider how well this growth has been distributed to different parts of the population. In addition, the article provides further analysis on income and inequalities trends in the different regions of the UK. Finally, the article presents ONS feasibility analysis on social mobility, which is focused on the earnings progression of the youngest generation.

## **4 . Economic growth in the UK**

This section discusses the trends of economic growth, measured by gross domestic product (GDP) and gross national disposable income (GNDI) per head, in three different time periods: before the downturn (Quarter 1 (Jan to Mar) 1998 to Quarter 1 2008), during the downturn (Quarter 2 (Apr to June) 2008 to Quarter 2 2009) and during the economic recovery (Quarter 3 (July to Sept) 2009 to Quarter 4 (Oct to Dec) 2017). The aim of this section is to describe what drove economic growth in the UK during the different phases.

### **Real GDP per head**

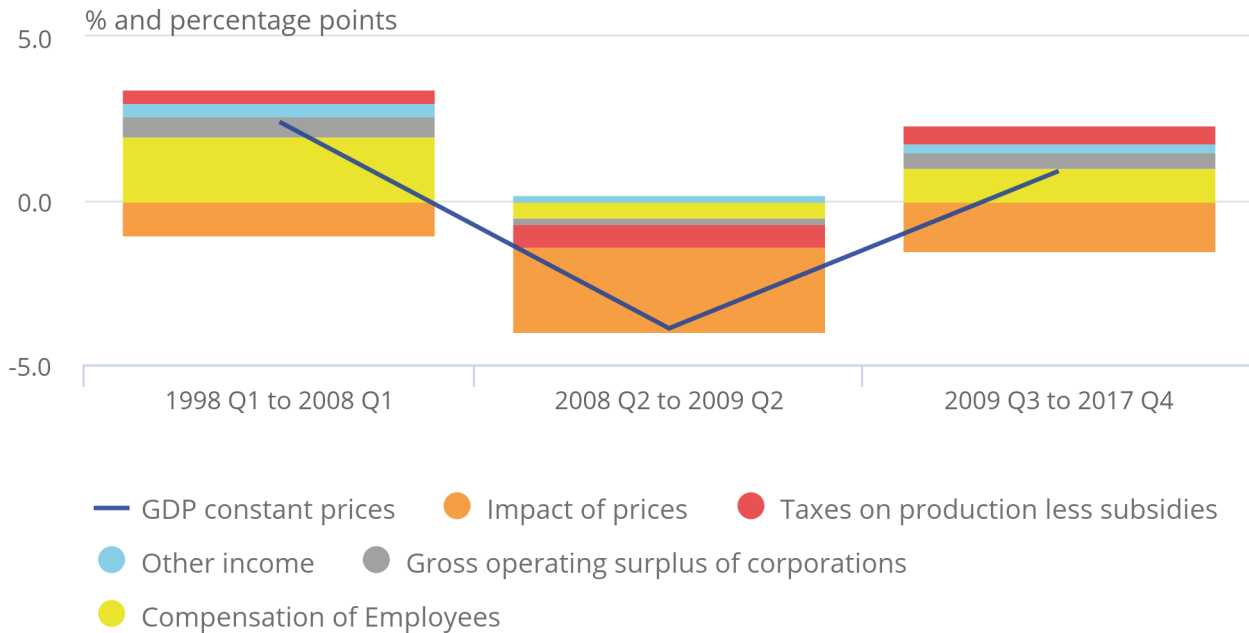
We focus on real GDP per head because the value of goods and services produced within the UK economy is divided by the number of people to help to remove the effects of a growing population. Additionally, it removes the effect of rising prices and is a typical measure of economic growth.

**Figure 1: Contributions to annual growth in gross domestic product per head since Quarter 1 1998, by income component**

UK, Quarter 1 (Jan to Mar) 1998 to Quarter 4 (Oct to Dec) 2017

Figure 1: Contributions to annual growth in gross domestic product per head since Quarter 1 1998, by income component

UK, Quarter 1 (Jan to Mar) 1998 to Quarter 4 (Oct to Dec) 2017



Source: Office for National Statistics

Notes:

1. Average growth rates for the time periods, growth rates are calculated as quarters compared with the same quarter a year ago.
2. GDP per head is in constant prices. Components are in current prices, with the impact on prices identified separately.
3. Other income refers to mixed income, as well as gross operating surplus of government and non-profit institutions serving households (NPISH).
4. Q1 refers January to March, Q2 refers April to June, Q3 refers July to September, Q4 refers to October to December.
5. Components may not sum due to rounding.

Figure 1 examines the role of different contributions to GDP per head growth for the UK, between Quarter 1 1998 and Quarter 4 2017. It shows that growth in compensation of employees per head provided a strong contribution to GDP growth per head before the economic downturn. Compensation of employees includes the wages and salaries payable in cash or in kind to an employee in return for work done and the social insurance contributions payable by employers.

During the years of economic downturn, GDP per head in the UK decreased by an average of 3.9% per quarter compared with the quarter a year ago. The decrease was supported by a decrease in most of the components of GDP, particularly the negative growth of compensation of employees and negative operating surplus growth. Furthermore, the changes in prices offset GDP growth by an average of 2.6 percentage points per quarter, 1.6 percentage points higher on average than before the downturn.

After Quarter 3 2009, the UK's recovering economy supported a return to positive contributions from compensation of employees. However, GDP per head growth during the recovery period was an average of 1.5 percentage points lower than the period before the economic downturn.

## **Gross national disposable income**

Gross national disposable income (GNDI) measures the income available to the nation for final consumption and gross saving. It equals gross national income (at market prices) minus all current transfers (current taxes, social contributions, social benefits other than social transfers in kind and other current transfers) payable to non-resident units, plus all transfers receivable by UK resident units from the rest of the world. In other words, national disposable income is derived from national income by adding all current transfers receivable by UK residents, government and corporations from abroad and subtracting all current transfers payable overseas by the UK.

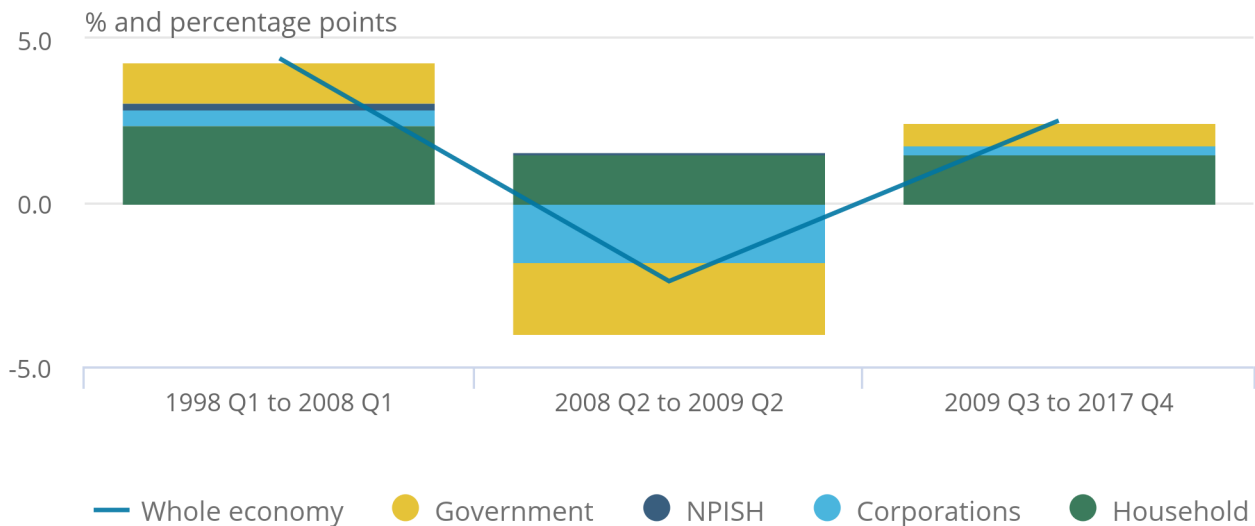
Figure 2 examines the contributions to growth of GNDI per head by sector between Quarter 1 1998 and Quarter 4 2017. When looking at gross disposable income by sector, all current transfers listed previously are also accounted for between sectors, such as taxes paid out by sectors captured as an income to the government, while benefits paid out by government will increase household disposable income. Office for National Statistics (ONS) reports these estimates quarterly, on a current price basis.

**Figure 2: Contributions to annual growth in gross national disposable income per head since Quarter 1 1998, by sector**

UK, Quarter 1 (Jan to Mar) 1998 to Quarter 4 (Oct to Dec) 2017

Figure 2: Contributions to annual growth in gross national disposable income per head since Quarter 1 1998, by sector

UK, Quarter 1 (Jan to Mar) 1998 to Quarter 4 (Oct to Dec) 2017



Source: Office for National Statistics

Notes:

1. Average growth rates for the time periods, growth rates are calculated on quarters compared with the same quarter a year ago basis.
2. GNDI and components are in current prices.
3. Q1 refers Jan to Mar, Q2 refers Apr to June, Q3 refers July to Sept, Q4 refers to Oct to Dec
4. Components may not sum due to rounding.
5. NPISH means Non-profit institutions serving households.

Figure 2 shows that growth in disposable income of households per head provided a strong contribution to GNDI per head growth before the economic downturn.

Between Quarter 2 2008 and Quarter 2 2009, GNDI per head in the UK decreased by an average of 2.4% per quarter compared with the same quarter a year ago. The disposable income from corporations and government contributed to the decrease of GNDI by an average of 1.8 and 2.2 percentage points per quarter compared with the same quarter a year ago respectively. However, GNDI growth was supported from the positive contribution of household disposable income, which contributed by a positive average of 1.5 percentage points per quarter compared with the same quarter a year ago.

After Quarter 3 2009, the UK's recovering economy supported a return to positive contributions from general government. However, the GNDI per head growth during the recovery period was on average 1.9 percentage points per quarter compared with the same quarter a year ago lower than the period before the economic downturn and household disposable income growth was on average 0.9 percentage points per quarter compared with the same quarter a year ago lower than the period before the economic downturn.

In conclusion, economic growth in the UK measured through GDP per head and GNDI per head has recovered to its pre-economic downturn levels. However, in both measures the average growth rates are lower than the years before the economic downturn and this is mainly because of lower growth from compensation of employees and household income respectively. This shows that from a macroeconomic picture, the returns to growth across components and sectors of the UK have varied before and after the downturn most starkly for households.

## 5 . Inequalities within the UK

The analysis presented so far has been entirely based on aggregate measures of production and income, albeit on a per person basis. However, when measuring inclusive growth, distributions need to be considered alongside average measures. As noted in Stiglitz and others (2009) and Organisation for Economic Co-operation and Development (OECD) (2011), increases over the last couple of decades in average household income have also coincided with widening inequalities in many countries, meaning that the benefits have not been felt fully by all.

Inclusive growth strategies consider a wide range of inequalities, such as inequality of income and wealth. Also, they move beyond monetary inequalities, considering inequalities of health. For this article, we will discuss the trends of income and wealth inequalities over time. Analysis on health inequalities can be found at the [Health state life expectancies by national deprivation deciles, England and Wales: 2014 to 2016](#).

### Income inequality

Income inequality has become an issue of considerable public debate in recent years, particularly since the economic downturn. Additionally, recent evidence has suggested that rising income inequality may be associated with lower economic growth (OECD, 2015), making it an important issue for consideration by policy-makers.

For this analysis, we present a relatively recently-developed inequality measure, the Palma ratio, which takes the ratio of the income share of the richest 10% of households to that of the poorest 40% of households. There is evidence that the middle 50% of households are likely to have a relatively stable share of income over time and hence isolating them should not lead to a substantial loss of information (Cobham and Sumner, 2013). This measure provides evidence on how incomes are shared across households and how this is changing over time. It is broadly consistent with trends outlined by other measures such as the Gini coefficient of disposable income, but accentuates differences at the top and bottom of the distribution.

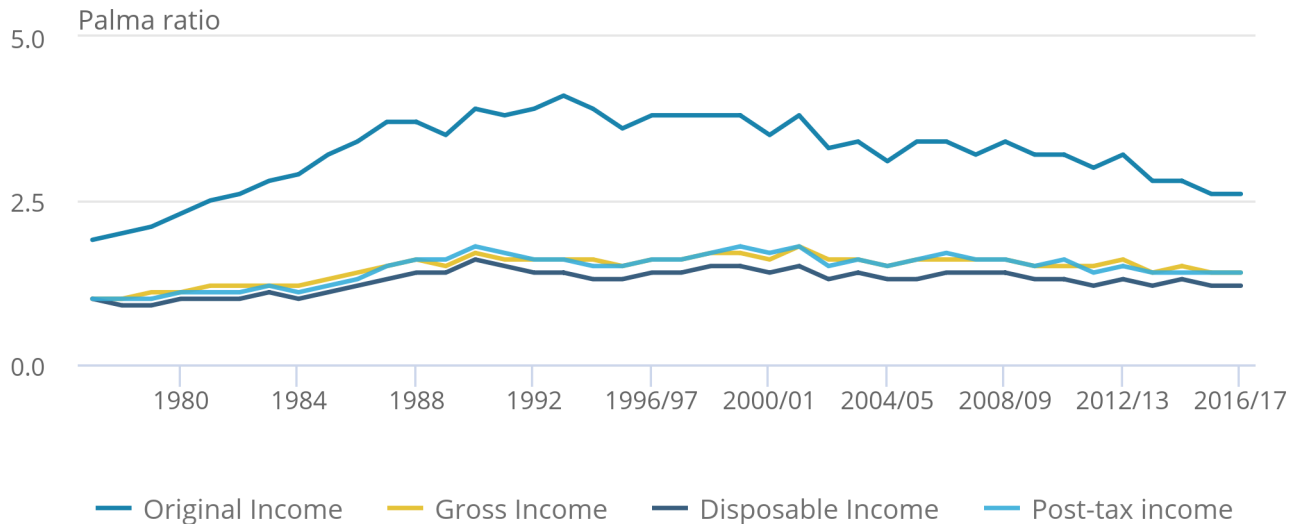
The Palma ratios for original income (income before any taxes and benefits), gross income (after cash benefits are added), disposable income (after cash benefits are added and direct taxes subtracted) and post-tax income (after cash benefits are added and both direct and indirect taxes are subtracted) for all households are represented in Figure 3. Because significant changes in inequality happen over longer time spans, Figure 3 includes data from 1977. It also presents the equivalised income: equivalisation is a standard methodology that adjusts household income to account for the different financial resource requirements of different household types. More details can be found in [Effects of taxes and benefits: financial year ending 2017](#).

**Figure 3: Palma ratio for equivalised household disposable income, gross income, post tax and original income**

UK, 1977 to financial year ending 2017

### Figure 3: Palma ratio for equivalised household disposable income, gross income, post tax and original income

UK, 1977 to financial year ending 2017



Source: Office for National Statistics

Notes:

1. Data from 1977 to 1993 are in calendar year. From 1994 to 2017 data are in financial year.
2. The Palma ratio increases if the growth rate of the average income of the richest 10% of households is greater than the growth rate of the income of the poorest 40% of households, and decreases in the reverse scenario.
3. NPISH means Non-profit institutions serving households.

Figure 3 presents that throughout the 1980s, the Palma ratio for equivalised original income grew. It continued increasing in the beginning of the 1990s, though at a slower rate than in the 1980s. For the remainder of the decade, the Palma ratio declined slowly, indicating that the level of income inequality was relatively unchanged and returning to the levels reached at the end of the 1980s. Then, between the financial year ending (FYE) 2002 and FYE 2008, income inequality fell slightly, due to faster growth in income from earnings and self-employment income at the bottom end of the income distribution and this decrease has continued until FYE 2017.



In contrast, the other measures of income have sometimes had differing trends. In the 1980s, they were relatively stable during the first part, while in the latter half of the decade they then saw a sharp increase in the Palma ratios. This was due to a change in the impact of taxes and benefits midway through the decade. While gross income inequality continued to increase in the 1990s, inequality of disposable income reduced slowly from 1990 until the mid-1990s, although it did not fully reverse the rise seen in the previous decade. Finally, between FYE 2010 up to the most recent period, the Palma ratios for gross, disposable and post-tax income have stayed flat, indicating no change in inequality.

The extent to which cash benefits, direct taxes and indirect taxes work together to affect income inequality can be seen by comparing the different income Palma ratios. Cash benefits tend to reduce income inequality the most, by an average of 1.4 between FYE 2010 up to the most recent period. Direct taxes further reduce inequality, by an average of 0.2. In contrast, indirect taxes increase income inequality – the Palma ratio of post-tax income was 0.2 higher than that of gross income. Consequently, taxes have had a negligible effect on income inequality.

## **Wealth inequality**

Considering wealth inequality can give perspectives on longer-term inequalities, as returns on wealth assets can provide a further source of income without labour input. Additionally, as wealth is passed down through generations, it can present whether there is intergenerational mobility.

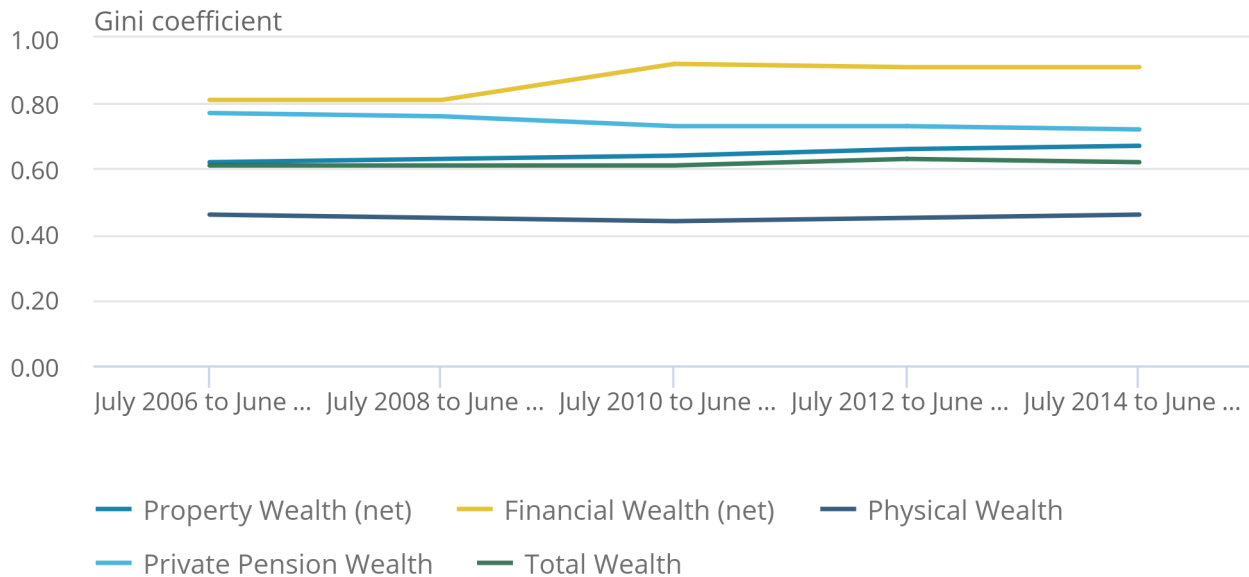
The inequality in total wealth and its components across the whole wealth distribution can be compared using several methods. Here we present Gini coefficients to demonstrate wealth inequality, which is perhaps the most widely used measure internationally. The Wealth and Assets Survey is used in this analysis, which defines four categories of wealth net of any liabilities associated with these assets, to create a total net wealth.

## Figure 4: Gini coefficients for aggregate total wealth, by components

Great Britain, July 2006 to June 2016

### Figure 4: Gini coefficients for aggregate total wealth, by components

Great Britain, July 2006 to June 2016



Source: Wealth and Assets Survey, Office for National Statistics

#### Notes:

1. The Gini coefficient is a measure of inequality, where 0 expresses no inequality (for example where everyone has the same wealth) and 1 expresses maximal inequality (for example one person has all the wealth and all others have none).
2. July 2006 to June 2008 estimates for physical and total wealth are based on half sample.
3. Descriptions of the types of wealth can be found in the [Wealth in Great Britain latest release](#).

Figure 4 presents that, of the four wealth components, inequality for physical wealth was the lowest since 2006, with a Gini coefficient of 0.46 in the periods July 2006 to June 2008 and July 2014 to June 2016. Its inequality has differed by a gini coefficient of no more than 0.02 over all five survey periods.

The wealth component with the highest inequality over all five survey periods was net financial wealth. Financial wealth has always had the highest Gini coefficient since July 2006 to June 2008, but inequality increased substantially between July 2008 to June 2010 and July 2010 to June 2012 when the Gini coefficient increased from 0.81 to 0.92. This reflected the difference in recovery of financial assets following the economic downturn by those with higher levels of financial assets.

The rankings of level of inequality of the four wealth components has remained the same over the five survey periods. However, there is widening inequality in net property wealth between July 2006 to June 2016. Figure 4 presents that inequality increased in net property wealth from 0.62 to 0.67 during that time. Over the same period, net pension wealth inequality has decreased from a coefficient of 0.77 to 0.72. This may be due to higher enrolment into private pensions.

From an inclusive growth perspective, it is important to understand how household wealth has been distributed into households with different characteristics or in different generations. [Wealth in Great Britain Wave 5: 2014 to 2016](#) provides results of the distribution of wealth by household characteristics and the [Economic well-being, UK: October to December 2017](#) analysis revealed a widening generation gap on property wealth.

To sum up, wealth in the UK is more unevenly distributed than income. The reason for this phenomenon is the consistently high coefficient of inequality of net financial wealth and subsequent increases of net financial wealth and property wealth inequalities since the financial downturn. On the other hand, income inequality seems to have slightly improved after the economic downturn as a result of increases in the income of the poorest 40% of households. These trends in income and wealth inequality are uncorrelated with the economic growth experienced over this period. Before the downturn, economic growth has tended to be associated with an increase in income inequality, while since the downturn there has tended to be a small decrease in income inequality while wealth inequality has stayed the same.

## 6 . Regional analysis

According to Organisation for Economic Co-operation and Development (OECD) (2017) many OECD countries see large regional divides. Galbraith (2012) pointed out the need to focus on within-country measures and within-country policies, such as a focus on different regions, to promote inclusive growth. To support regional policies, Office for National Statistics (ONS) provides a wide range of regional statistics such as gross value added (GVA), gross household disposable income (GHDI) and employment. This section is focused on analysis on regional well-being in the UK. Firstly, we discuss the growth rates of regional GHDI compared with the growth rate of regional employment. Also, we describe the regional differences of median income and wealth. This analysis looks at averages across regions and does not consider within-region inequalities.

### Regional income and employment

The nearest equivalent metric to gross domestic product (GDP) per head that is available at regional level is GVA per head. At the national level GDP per head is regarded as a useful indicator for inclusive growth framework and the health of the economy. However, at regional level, we advise that GVA per head should not be used as either an estimate or proxy for economic well-being. This is because the value of GVA per head at regional level is impacted by the level of commuting across regions. For places with high levels of in- or out- commuting, GVA per head ceases to be a useful economic well-being (or economic performance) proxy.

Instead, when assessing regional inclusive growth performance, the preferred regional accounts measure is gross household disposable income (GHDI) per head (OECD, 2017). This measures the total amount of money that households have for spending or saving, after they have paid direct and indirect taxes and received any direct benefits, divided by the population of each region. In the following analysis, this is overlaid against employment rate growth, a vital dimension of inclusive growth as it provides important information on the availability of jobs, which is the main source of income for most households.

### Figure 5: Relationship between regional gross household disposable income per head growth and regional employment growth

Figure 5 compares the average growth rate of regional GHDI per head and regional employment growth for three different time periods: before the economic downturn (1997 to 2007), during the economic downturn (2008 to 2009) and during the economic recovery (2010 to 2016). We should state that the time periods have been selected based on the economic trends in the national economy; specific regions may have faced different economic fluctuations.

Broadly, there is a consistent pattern across regions that higher average GHDI growth rate correlates with higher average employment growth, whether before or after the downturn. Hence, a region is more likely to be doing well in labour market outcomes as well as household income, though the period after the downturn shows a marked decrease of GHDI growth, around a percentage point less than the period 1997 to 2007. This is despite slightly higher average employment growth when compared with the earlier time. It is also interesting to note that GHDI growth rates are much more divergent across regions during the downturn, highlighting the fact that people across the UK had differing experiences to their incomes during that time.

For the time period from 1997 to 2007, London had the highest GHDI per head growth among all the UK regions, increasing by 4.9% per year. This was 1 percentage point higher than the UK's GHDI per head growth. Also, London had the highest employment growth for the same period. The employment growth was 1.7% per year, 0.6 percentage points higher than the UK. On the other hand, the West Midlands region had the lower annual growth rate for this period on both GHDI per head and employment, of 3.2% and 0.6% per year respectively.

Between 2008 and 2009, the employment rate decreased in all regions except Northern Ireland, which had a 0.5% growth. On the other hand, the South West had the highest decrease, with a decline of 2.8% per year, followed by London with a decline of 2.4% per year in employment.

In contrast with the employment growth rates during the downturn, GHDI per head growth rates were positive for all regions except London, which had a decrease of 0.6% per year. The North East had a 4.6% increase in its GHDI per head – the highest among the regions followed by the North West with an increase of 3.6% per year. The main reason for the high growth rates in the North East and North West was the high increase in social contributions and social benefits received – which increased by 8.4% and 9.1% respectively.

During the years of economic recovery (2010 to 2016), London had the highest employment growth of 2.7% growth per year, which was 1.3 percentage points higher than the UK annual growth per year. London also had the highest GHDI per head growth, with an average increase of 3.8% per year.

## **Regional median equivalised household income**

GHDI per head is not a direct estimate of the income of a typical individual or household. Regional measures of median income are instead sourced from the Households below average income data from Department for Work and Pensions (DWP) and are based on the Family Resources Survey. Due to limitations in sample size, median income by regions is calculated as a three-year average. Hence the analysis that follows only considers the periods before and after the downturn.

This section therefore compares regional median income, allowing some assessment of the equality of overall economic gains. The median income is measured as total weekly household income from all sources after tax (including child income), National Insurance and other deductions. Household “equivalisation” is used to make income comparable across households of different size and composition. The median is the value at the very middle of the distribution.

This analysis reports median income after accounting for housing costs (AHC), therefore accounting for the regional variations in rents and other housing costs, which are known to vary significantly across regions. Housing costs include rent (gross of housing benefit), water rates, community water charges and council water charges, mortgage interest payments, structural insurance premiums, ground rent and service charges.

**Figure 6: Percentage difference between median income in each region/nation and UK median income**

for financial year ending 2008 and financial year ending 2017, accounting for housing costs

**Figure 6: Percentage difference between median income in each region/nation and UK median income**

for financial year ending 2008 and financial year ending 2017, accounting for housing costs



Source: Wealth and Assets Survey, Office for National Statistics

Figure 6 presents the percentage of difference between the median income in each region from the overall median of the UK, for the three-financial year average ending 2008 and the three-financial year average ending 2017. At a country level, compared with the UK median, Wales and Northern Ireland experienced consistently lower median incomes, while Scottish median incomes were higher, before and after the downturn. While English median incomes were marginally higher than the UK before and after the downturn, at 0.3% and 0.2% respectively, regional differences varied largely.

Broadly, those regions who had below UK median income before the crisis still had below UK average income for the latest three-year period. Similarly, with the notable exception of London, those above the UK median income before the crisis continued to be above median. This implies that median incomes after housing costs are continuing to diverge across regions. The divergence for England is also broadly along the north-south divide.

Looking in more detail, for both periods Wales, Northern Ireland, the North East, North West, Yorkshire and The Humber, West Midlands and East Midlands had median income below the UK average. Of those, the East Midlands, West Midlands, Yorkshire and The Humber, and North East at least decreased their gap to the UK average by 2.3, 2.0, 1.7 and 0.6 percentage points respectively. On the other hand, Wales and Northern Ireland increased their gap to the UK average further by 1.4 and 0.5 percentage points respectively.

Interestingly in London, median income after housing costs was 4.8% above the UK average during the three years ending 2008. This difference decreased by 5.5 percentage points for the three years ending 2017 and London now has 0.7% below UK median income after housing costs for the latest period. This clearly demonstrates the impact of high rents and other associated costs relating to dwellings, on economic well-being, as the weekly median income before housing costs was £697 compared with £414 after housing costs.

## **Regional wealth inequalities**

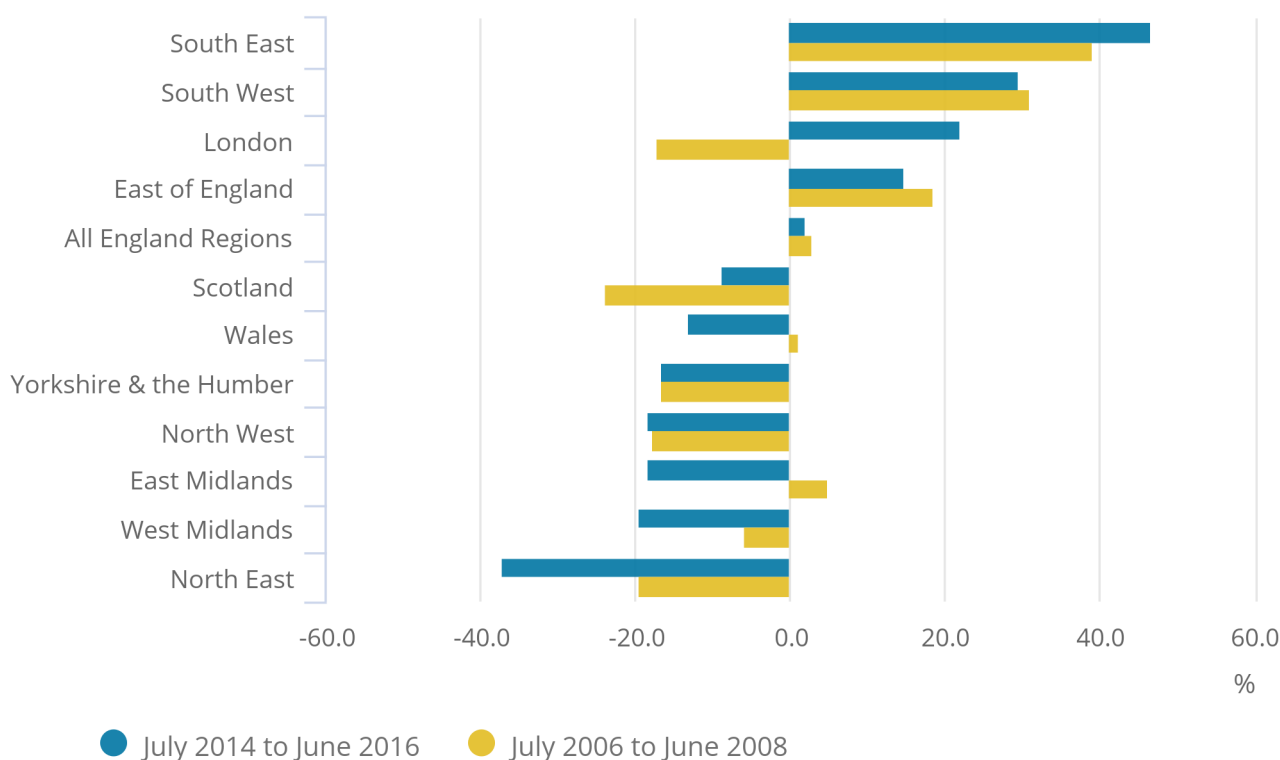
Income gives us only a partial picture of the economic resources available to support consumption. It is therefore important to also consider wealth. As is mentioned previously, considering wealth inequality can give perspectives on longer-term inequalities. According to Institute of Fiscal Studies (Bozio et al. , 2013) there is a positive relationship of wealth accumulation and lifetime household income. The median net wealth, as defined in the previous section, using the Wealth and Assets Survey is used again to explore this regionally.

**Figure 7: Percentage difference between median wealth in each region/nation and Great Britain median wealth**

for 2006 to June 2008 and for July 2014 to June 2016

**Figure 7: Percentage difference between median wealth in each region/nation and Great Britain median wealth**

for 2006 to June 2008 and for July 2014 to June 2016



Source: Wealth and Assets Survey, Office for National Statistics

Notes:

1. July 2006 to June 2008 estimates are based on half sample.

Figure 7 presents the percentages of difference between the median wealth in each region from the overall median, for July 2006 to June 2008 and for July 2014 to June 2016. There are more changes in wealth by region across the two time periods than the median income presented in the previous section and the differences to the median are much larger, such as the South East median wealth being over 40% higher than the Great Britain average for the latest period. There is still a strong correlation between higher than median wealth level before and after the downturn per region, though this is less pronounced than the median income level shown previously.

The highest change in wealth inequality was in London. London's median wealth was 17.2% lower than Great Britain's median wealth in July 2006 to June 2008, while the gap changed by 39 percentage points in July 2014 to June 2016 – at 22.1% higher than Great Britain's median wealth. This reflects the striking increase in the value of net property wealth for households in London compared with all other regions.

The majority of regions that had below-national median income in the financial year ending 2017 also had below-national median wealth for the latest time period, ending in 2016. Wales, Yorkshire and The Humber, the North West, East Midlands, West Midlands and North East differed from the UK total wealth of 13%, 16.6%, 18.2%, 18.3% 19.4% and 37.2% respectively. Only London's median wealth increased to be above the national median, while having been below national median income in 2017. Scotland, on the other hand, had below-national median wealth, while enjoying above-national median income and Northern Ireland is not captured on the source of wealth data. Apart from these exceptions, recurring below-national median income and wealth values may imply a continuation of divergence between regions.

## **7 . Earnings mobility**

### **Disclaimer**

These Research Outputs are NOT official statistics on earnings mobility. Instead, they are published as outputs from Office for National Statistics (ONS) feasibility research to improve its measurement of social mobility.

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According to Organisation for Economic Co-operation and Development (OECD) (2017), labour market outcomes and equal opportunities are important for inclusive growth. Wage progression of the lowest earners is a good indicator of earnings mobility as it can reflect the opportunity of adults to move upwards on the earnings distribution. For this analysis, newly-available administrative data from the Pay As You Earn (PAYE) system and benefits data from Department for Work and Pensions are linked to 2011 Census data. More details of this dataset are provided in Annex 1.

This section focuses on the earnings mobility of the lowest earners between 2011 and 2015. We measure earnings mobility as the proportion of the lowest earners (defined as those in the bottom 20% during 2011) who have experienced wage progression over the course of five years. Wage progression is defined as an increase of 20 percentiles or higher in the new earnings distribution in 2015 relative to 2011. Note, this is not the same as a 20% increase in wages, because it also takes into account the distribution of earnings and relative increase of the rest of the population.

### **Earnings mobility feasibility analysis**

Comparing earnings for the lowest 20% of the earnings distribution from 2011 to 2015 gives us several categorisations. An individual can be identified as:



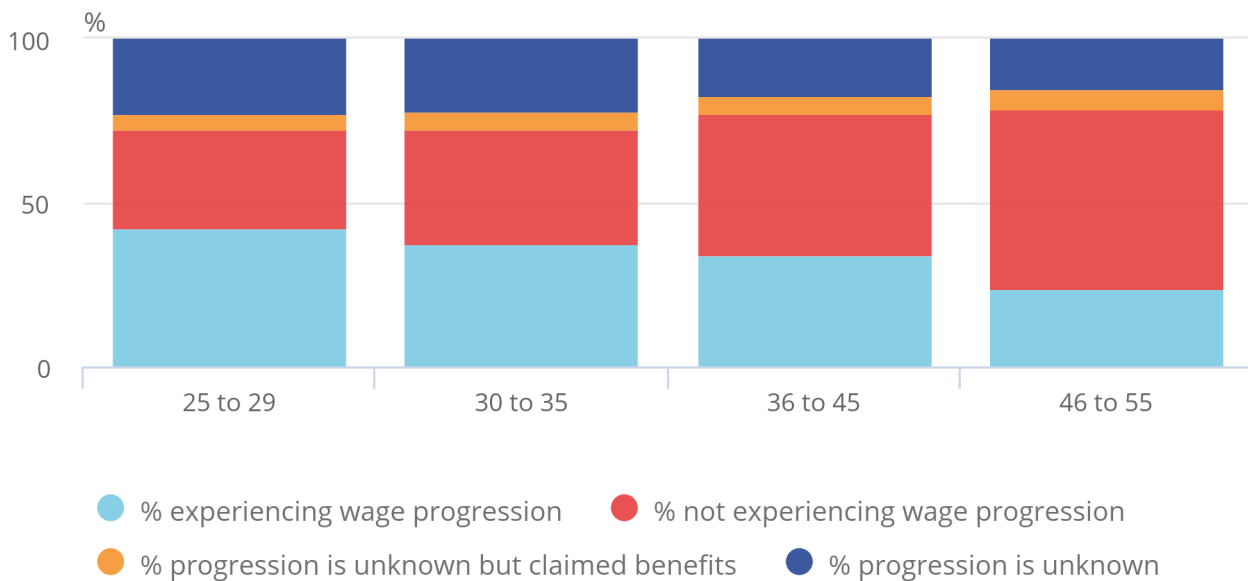
- experiencing wage progression (defined by at least a 20-percentile increase in the 2015 earnings distribution relative to 2011)
- not experiencing wage progression (defined by a less than 20-percentile increase, or even a decrease in the 2015 earnings distribution relative to 2011)
- unknown earnings progression, when those who start off in the bottom quintile have no earnings recorded in 2015 on the PAYE system; this could be for many reasons, including a switch to self-employment, unemployment, inactivity, migration, or death
- unknown progression but claiming benefits; this is a subset of the unknown progression, where some of these individuals have instead received benefits such as Jobseeker's Allowance, Universal Credit and long-term disability benefits

**Figure 8: Earnings progression of the lowest earners by age band**

UK, from 2011 to 2015

Figure 8: Earnings progression of the lowest earners by age band

UK, from 2011 to 2015



Source: Office for National Statistics and Department for Work and Pensions

Notes:

1. Percentages represent the number in a group's wage categorisation divided by the total number of individuals in the age groups.
2. Ages and earning distribution have been calculated from the 2011 data.
3. Progression has been calculated from the 2015 earnings data distributed by percentiles.
4. Lowest earners defined as those in the bottom 20% of the earnings distribution during 2011.

Figure 8 presents the earnings progression of the lowest earners by age group. The 25- to 29-years-old age group had the highest proportion of individuals experiencing earnings progression between 2011 and 2015, compared with the other age groups, as 42.6% of individuals in the sample experienced wage progression of 20 percentiles or above. Also, this age group had the lowest percentage of people not experiencing wage progression, accounting for 29.9% of the age group.

Figure 8 also presents the declining proportion of people who experience wage progression as the age of individuals increases. Specifically, the proportion of people who experience earnings progression in the age group of 30 to 35 years, 36 to 45 years and 46 to 55 years was 5.1, 8.5 and 18.9 percentage points lower than the 25- to 29-years-old age group, respectively. At this stage, we cannot infer if this decline is due to different characteristics of jobs or hours worked for younger age groups allowing higher wage progression, or if it is a general effect of differing wage progression throughout a person's lifetime. If it is the former, it may be that higher wage progression is expected to continue as the younger age groups age, while if it is the latter, then it would be more expected for the younger age groups to start experiencing decreasing levels of progression as they age.

We should mention that the percentage of people with unknown progression for the 25- to 29-years-old age group is 27.4%, which is the number of people who had earnings for 2011 but did not have earnings recorded for 2015, of which 4.9 percentage points can be explained from the benefits data that our dataset includes. The unexplained proportion (22.5%) is lower than the one produced [from previous analysis](#) on the indicator by using the Annual Survey on Hours and Earnings. This may be because of the difference in coverage, sample size, and the time period of the analysis.

The rest of the analysis will subsequently focus on the 25- to 29-years-old age group, exploring their characteristics and potential reasons for progression.

Firstly, as Social Mobility Commission (2017) mentions, it is important to consider earnings mobility by the geographical divide of opportunities. It also allows analysis of whether people experiencing earnings mobility stay in the same region or move to improve their earnings. For this reason, Figure 9 presents the number of lowest earners per region during 2011 and their earnings progression by 2015. This is the same population as low earners nationally as presented in the previous graph, identified by region, rather than taking account of regional earnings distributions in identifying lower earners. It also includes information on if the lowest earners stayed or moved region between 2011 and 2015.

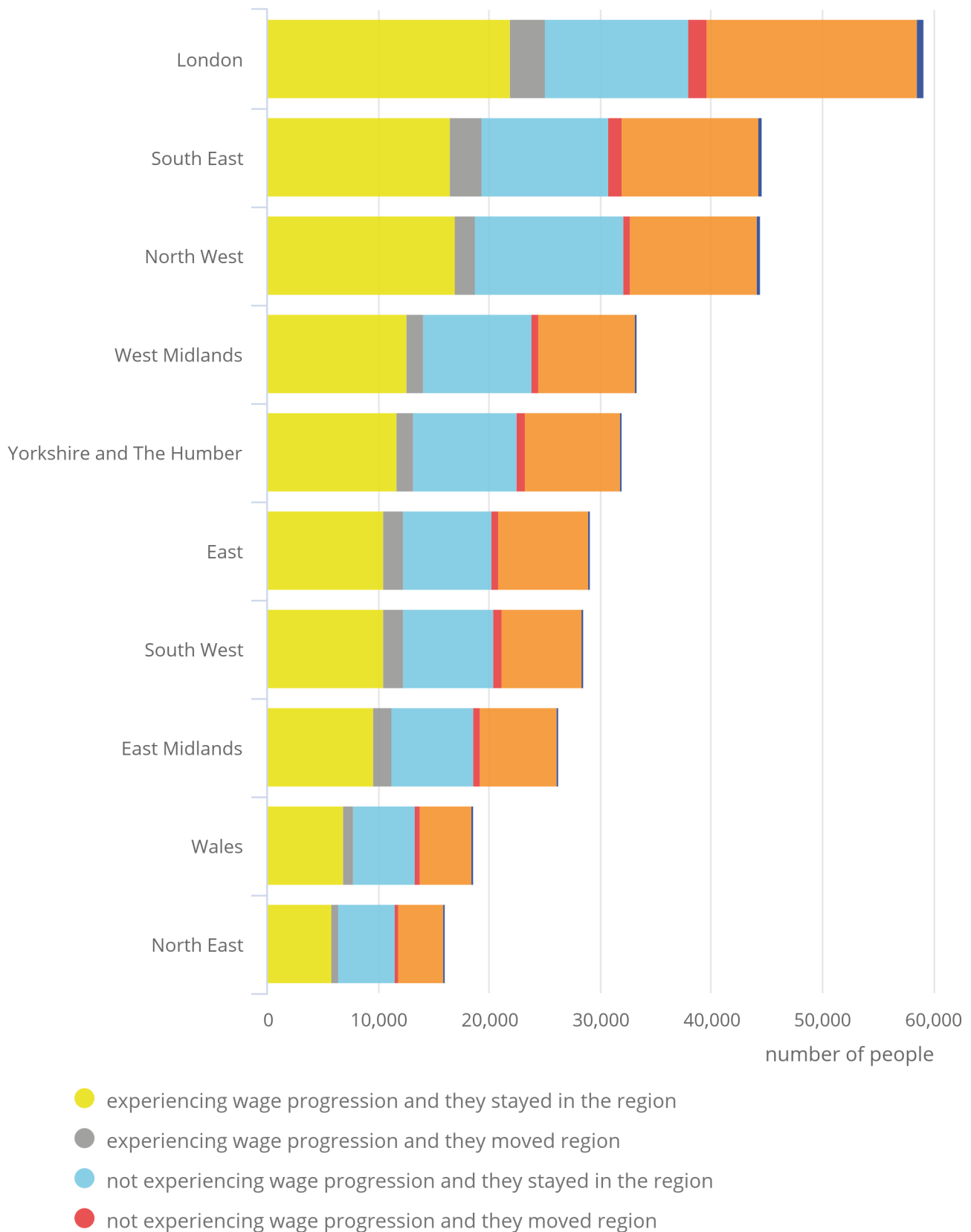


**Figure 9: Earnings progression of the lowest earners for 25- to 29-years-old group by resident region as captured in 2011**

England and Wales, from 2011 to 2015

Figure 9: Earnings progression of the lowest earners for 25- to 29-years-old group by resident region as captured in 2011

England and Wales, from 2011 to 2015



Notes:

1. Regions, distribution of earnings and age have been calculated on 2011 data.
2. Movers and progression have been calculated on 2015 data. Movers are the people that they live in different region between 2011 and 2015. The 2015 region is based on unique identifier created by DWP specifically for our purposes. The identifier allows for the linking of the income and benefits data to each other and to the DWP Customer Information System (CIS). The address and demographic characteristics of individuals included in the income and benefits datasets are obtained through linking to the CIS.
3. The CIS contains basic information (including name, address and date of birth) on all individuals who have ever had a national insurance number. For more information on the CIS see [DWP Customer Information System](#).
4. Percentages are calculated based on the number of individuals in the progression category divided by the number of lowest earners in its region.

Figure 9 reveals that the geographical divide, which was seen in the previous section exists on the earnings opportunities as well. People that live in north England and Wales, such as the North East, North West, Yorkshire and The Humber, and Wales had the highest probabilities of not progressing compared with people living in London and south England. This result is in line with Social Mobility Commission report (2017), which stated that areas in the north of England face poor working lives outcomes, while on the other hand London and South East have better working lives outcomes.

The percentage of people that improved their earnings while moving regions from 2011 to 2015 was 5.3% for the total sample in England and Wales. The areas that had the highest proportions were the South East and East of England. However, people that moved regions were almost 2.5 times more likely to experience wage progression rather than not; 70% of people who moved experience wage progression. The main destination of people who moved was to London, the South East and South West, which attracted more than half of the movers and these were the destinations for more than half of movers that experience wage progression. As described previously, London and the south of England have better working opportunities, which helped the movers to experience wage progression.

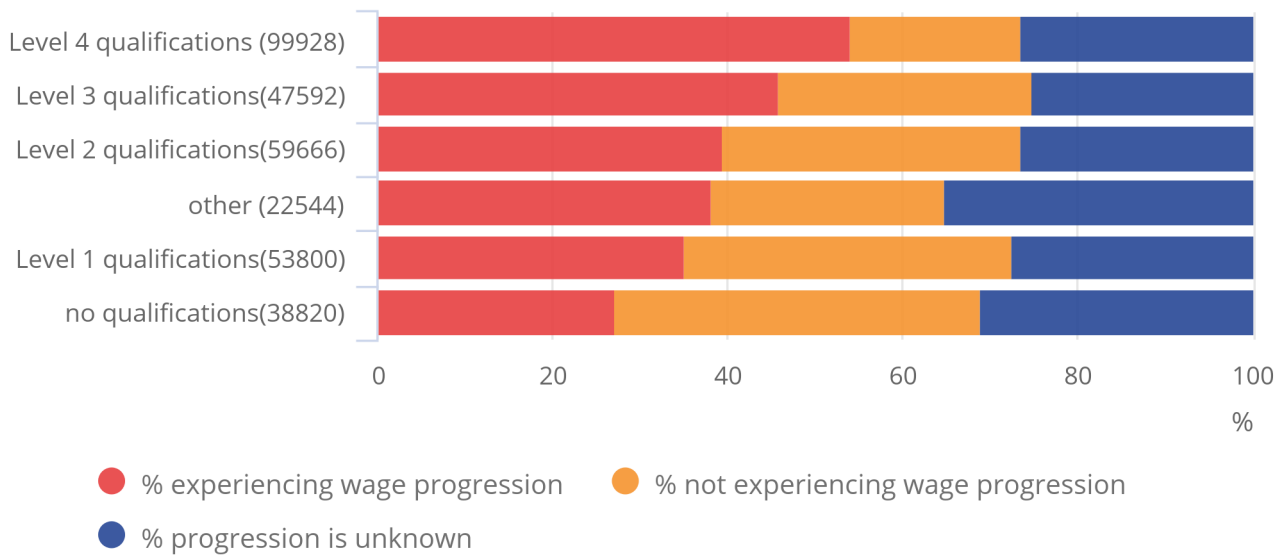
According to OECD (2017), another important factor for social and earnings mobility is the education level. Figure 10 presents the education level of lowest earners during 2011 and categorises them into the earnings progression groups between 2011 and 2015. It is worth bearing in mind that the education level of individuals has been based on highest qualifications obtained by 2011 as we do not have any evidence for their education progress for further years. This is less problematic for individuals whose highest qualification level is degree or higher, as we do not identify post-graduate degrees separately.

**Figure 10: Earnings progression of the lowest earners for 25- to 29-years-old group by education level**

England and Wales, from 2011 to 2015

Figure 10: Earnings progression of the lowest earners for 25- to 29-years-old group by education level

England and Wales, from 2011 to 2015



Source: Office for National Statistics and Department for Work and Pensions

Notes:

1. Distribution of earnings, age and education have been calculated based on 2011 data.
2. Those with missing values for the qualification variable are not captured in the graph.
3. Wage progressions have been calculated on 2015 data.
4. Percentages are calculated based on the number of individuals in a progression category divided by the total number of lowest earners with a qualification level which is the number in parentheses.
5. Level 1 qualifications = O levels/CSEs/GCSEs (any grades), Entry Level, Foundation Diploma, NVQ Level 1, Foundation GNVQ, Basic Skills / NVQ Level 1, Foundation GNVQ, Basic/Essential Skills

Level 2 qualifications = 5+ O levels (passes)/CSEs (grade 1)/GCSEs (grades A\* - C), School Certificate, 1 A level / 2 – 3 AS levels/VCEs, Higher Diploma, NVQ Level 2, Intermediate GNVQ, City and Guilds Craft, BTEC First /General Diploma, RSA Diploma

Level 3 qualifications = 2+ A levels/VCEs, 4+ AS Levels, Higher School Certificate, Progression/Advanced Diploma, NVQ Level 3, Advanced GNVQ, City and Guilds Advanced Craft, ONC, OND, BTEC National, RSA Advanced Diploma

Level 4 and above qualifications = Degree (for example BA, BSc), Higher degree (for example MA, PhD, PGCE), NVQ Level 4 -5, HNC, HND, RSA Higher Diploma, BTEC Higher Level, Professional qualifications (for example teaching, nursing, accountancy), Apprenticeship

Other qualifications = Other vocational/work-related qualifications, Foreign qualifications / Qualifications gained outside the UK

Figure 10 highlights that 28.4% of lowest earners in the 25- to 29-years-old age group during 2011 had level 4 qualifications, which includes tertiary education. More than half of them experienced wage progression between 2011 and 2015, which was the highest among the other education groups and accounts for 15.6% of overall wage progression for the whole group.

Our analysis presents the declining proportion of people who experience wage progression as the education level of individuals decreases. Specifically, the proportion of people who experience earnings progression with level 1 and level 2 qualifications was 19.2 and 14.8 percentage points lower than people with level 4 qualifications, respectively. In addition, the majority of lowest earners that had no qualifications, level 1 qualifications and level 2 qualifications did not experience wage progression. This result reveals that education is playing a significant role on earnings mobility – as according to our analysis the higher the level of education the higher the number of people experiencing earnings progression.

At this stage, we cannot infer if this increase is due to different characteristics of jobs for more-educated younger age groups allowing higher wage progression, or if it is a general effect of differing wage progression throughout a person's lifetime. Also, we are not able to measure any earnings mobility because of the change in qualifications after 2011.

## 8 . Conclusion

The inclusive growth agenda considers how growth has been allocated across different parts of the population. It also considers wider measures than traditional gross domestic product (GDP) growth. From the UK's perspective, overall economic growth has recovered to its pre-downturn levels. Household contributions to aggregate economy growths have dropped most starkly. In contrast, since 1998, overall UK disposable income inequality has stayed fairly constant, dropping slightly in the last 10 years.



Looking more long-term, between 1977 to 1990, economic growth per head has tended to rise with income inequality. However, income inequality since then has steadied while economic growth has picked up again. Economic growth has not been associated with a decrease in household wealth inequality, either. Between 2006 and 2016, overall inequality has stayed generally constant, between a gini coefficient of 0.61 and 0.62, and it has consistently been higher than income inequality. In fact, net financial wealth inequality has increased since the economic downturn, from a gini coefficient of 0.81 to 0.91 most recently, in 2016.

Although inequality has been steadily decreasing nationally, looking regionally, there are some persistent economic differences. Higher than average median incomes and wealth have tended to persist in the same regions before and after the downturn. Broadly, southern regions in the UK have consistently had above-average median incomes, as has Scotland. The sustained pattern does not hold as much when looking at gross household disposable income growths per person, so there may well be more pronounced changes in income inequality within regions than at national level. Employment rate growth differences have also been less sustained between regions, apart from London, which has had much larger than average employment rate growths both before and after the downturn. This may imply that employment is a less good predictor of household income for the typical household.

Considering life chances of younger people, wage progression for the lowest 20% of the distribution is more pronounced than older age groups between 2011 and 2015. However, highest qualification level is a big predictor of whether an individual experiences wage progression. Additionally, an individual is more than twice as likely to experience progression if they move region than not, with around half of those who did moving to the south of England.

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## 10 . Annex 1: Description of the dataset and analysis

These are the first Administrative Data Census Research Outputs on social mobility. They are the start of the research to assess if it is feasible to produce social mobility outputs from administrative data.

We have produced regional level earnings mobility indicators for England and Wales from personal level [income and benefits data](#). At this stage the Research Outputs are limited to income from the Pay As You Earn (PAYE) system and benefits (which include tax credits). Therefore, a number of components of income are missing, for example, income from self-employment and investments taxed via Self-Assessment.

The analysis has been based on more than 6.2 million individuals who had positive earnings for 2011 who were in the bottom 20% of the earnings distribution, whether they are full-time or part-time employees; of which 450,000 were in the 25- to 29-years-old cohort.

In total the dataset consists of between 36 and 41 million unique records per tax year with a single row per person per tax year. The total amount of PAYE pay is made up of the total amount earned per person during the tax year from employment or through pensions and it excludes any income from self-employment. Most records show a positive value for income, however, income can be negative if a person is due a tax rebate or zero if a person is receiving statutory sick pay or statutory maternity pay. The dataset will include people who are resident abroad, but get paid or receive their occupational pension from the UK, as well as people who may now be dead.

We focus on the 25- to 29-years-old cohort because looking at people aged 25 to 29 years gives a less distorted picture of whether someone has been able to progress relative to their peers than looking at those aged 18 to 24 years. For younger people just starting off in the labour market, wage progression can be very volatile, as they are more likely to be working in jobs that don't closely match their skills or education, as well as being more likely to leave the workforce to enter further and higher education.

A movement of 20 or more percentiles represents a substantial movement up the earnings distribution so individuals have experienced a notable improvement in their relative position.

A five-year period is the longest time series that the dataset can provide at the moment. We believe this gives sufficient time to assess the earnings progression of individuals. We are working to improve the time series in order for us to be able to provide more long-term results in the future.

Over time the earnings mobility research project can be expanded in coverage and geographical breakdown to produce multivariate outputs, such as mobility by ethnicity, by local authority and further characteristics.