



HM Treasury

Impact on households: distributional analysis to accompany Autumn Budget and Spending Review 2021

October 2021

Impact on households: distributional analysis to accompany Autumn Budget and Spending Review 2021



© Crown copyright 2021

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit nationalarchives.gov.uk/doc/open-government-licence/version/3.

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available at: www.gov.uk/official-documents.

Any enquiries regarding this publication should be sent to us at public.enquiries@hmtreasury.gov.uk

ISBN: 978-1-911686-28-6

PU: 3159

Contents

Executive summary		2
Chapter 1	Trends in living standards	3
Chapter 2	Distributional analysis of tax, welfare and public service spending decisions since Spending Round 2019	13
Chapter 3	Data sources and methodology	18

Executive summary

This document sets out the impact on household finances of the government's decisions since Spending Round 2019 (SR19) and recent trends in living standards.

Households' living standards are affected both by the general performance of the economy and by the direct impact of government decisions. A strong economy means there are more job opportunities and wages are higher. The government's stewardship of the economy, such as through fiscal policy and the regulatory environment for businesses, influences these factors. In addition, policy decisions, for example about whether to raise or cut particular taxes, or to invest in public services, have a direct impact on household living standards.

This document is split into three sections: Chapter 1 describes recent trends in living standards and the labour market as well as illustrating the degree to which different households have been supported by COVID-19 support schemes; Chapter 2 estimates the direct impact of policy decisions on households' future living standards; and Chapter 3 details the data sources and methodology used for this analysis. The analysis in Chapter 2 reflects the impact of measures announced since SR19, where there is a direct and quantifiable impact on households. This includes Spending Review 2021 spending settlements and the Autumn Budget 2021 measures listed in Table 5.1 of the Autumn Budget and Spending Review 2021 document.

The analysis in this document shows:

- in the decade prior to the COVID-19 pandemic, household income growth was greater for those on lower and middle incomes than those on the highest incomes
- between 2009-10 and 2019-20, the poorest 20% of households experienced the largest increase in employment rate
- following the onset of the pandemic, the support provided by the Coronavirus Job Retention Scheme (CJRS), Self-Employment Income Support Scheme (SEISS) and temporary increases to Universal Credit and Working Tax Credit, was relatively more generous to lower income working-age households, as a share of their income
- As a proportion of income, the cumulative effect of government decisions since SR19 will benefit the lowest-income households the most.

Chapter 1

Trends in living standards

1.1 This chapter describes recent trends in living standards and the labour market up to and including the pandemic. The analysis presented in this chapter shows¹:

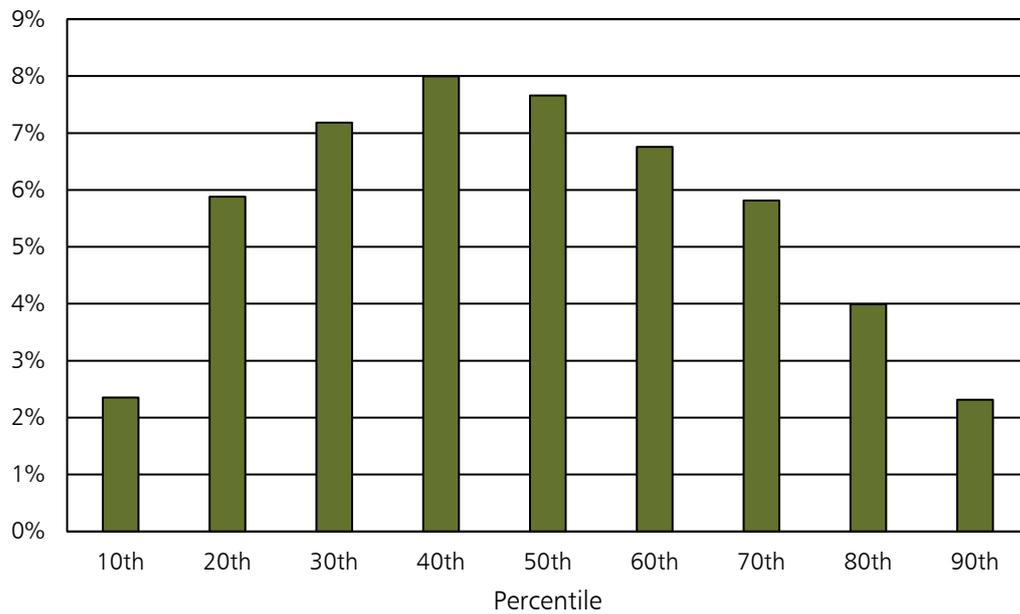
- in the decade prior to the COVID-19 pandemic, household income growth was greater for those on lower and middle incomes than those on the highest incomes
- between 2009-10 and 2019-20, the poorest 20% of households experienced the largest increase in employment rate
- following the onset of the pandemic, the support provided by the Coronavirus Job Retention Scheme (CJRS), Self-Employment Income Support Scheme (SEISS) and temporary increases to Universal Credit and Working Tax Credit, was relatively more generous to lower income working-age households, as a share of their income
- among those aged 18 years and above, those aged 18 to 24 years old initially experienced the greatest fall in the number of paid employees since the start of the pandemic, but as the labour market has begun to recover this age group has seen the largest increase in the number of paid employees

The living standards context prior to the COVID-19 pandemic

1.2 As shown in Chart 1.A, households across the income distribution saw real growth in their disposable incomes between 2009-10 and 2019-20. This growth was greater for those on lower and middle incomes than those on the highest incomes. In addition, from 2018-19 to 2019-20, the year prior to the pandemic, household incomes grew across the distribution, and median income experienced its highest annual growth since 2001-02.

¹ All sources for analysis and statistics in this chapter are found in tables 3.A and 3.B in Chapter 3 of this document.

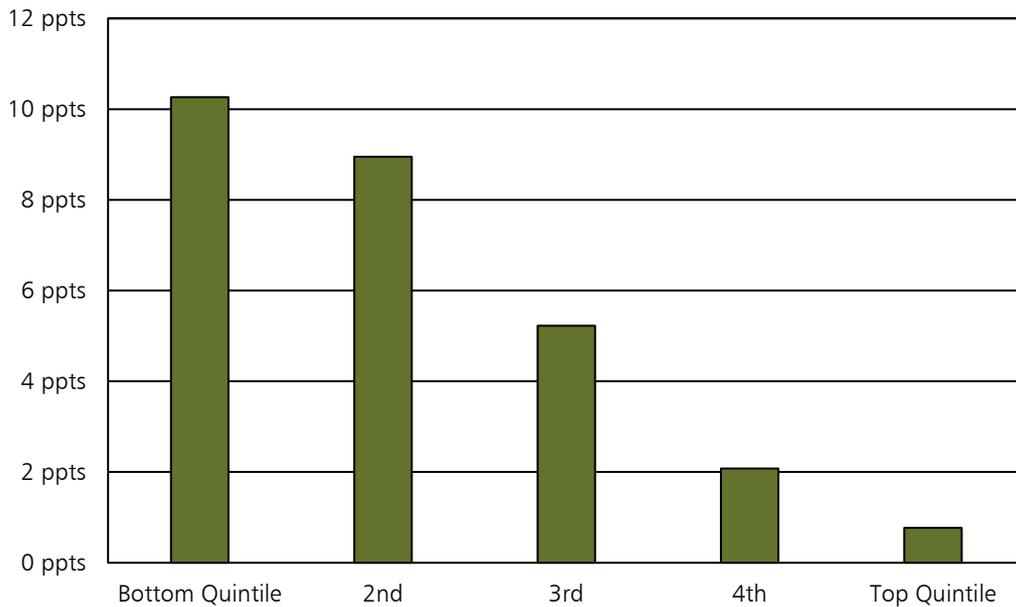
Chart 1.A: Percentage change in equivalised real disposable household income, before housing costs, at various percentile points of the income distribution, 2009-10 to 2019-20



Source: *Households Below Average Income, DWP*

- 1.3 One of the main determinants of living standards is the performance of the labour market. Before the COVID-19 pandemic, the UK labour market was performing strongly. In the three months to February 2020, the employment rate reached a record high of 76.6%.
- 1.4 The increase in the employment rate was highest amongst the lowest income households, as shown in Chart 1.B. For the lowest 20% of households, the employment rate increased by 10.3 percentage points from 2009-10 to 2019-20.

Chart 1.B: Change in employment rates (percentage points) by equivalised net household income quintile, before housing costs, 2009-10 to 2019-20²



Source: *Households Below Average Income, DWP calculations*

The impact of the COVID-19 pandemic on living standards

- 1.5 The COVID-19 pandemic has brought with it significant disruption to the UK economy and countries around the world. The government took necessary action to slow the spread of the virus, placing considerable restrictions on people and businesses. Alongside this, the government provided exceptional support to jobs and incomes.
- 1.6 The Department for Work and Pensions' (DWP) Households Below Average Income (HBAI) publication is one of the main sources of household income data, but the latest data only covers up to and including 2019-20. However, the rest of this chapter aims to use alternative sources of data and analysis to highlight some of the trends in the labour market and living standards during the pandemic.
- 1.7 In the first and second quarters of 2020, the UK experienced the deepest recession on record. Despite such a deep recession, the labour market held up well relative to previous recessions.³ In July 2020, the Office for Budget Responsibility (OBR) projected unemployment to reach 12%, however, this has not materialised, with unemployment peaking at 5.2% in the three

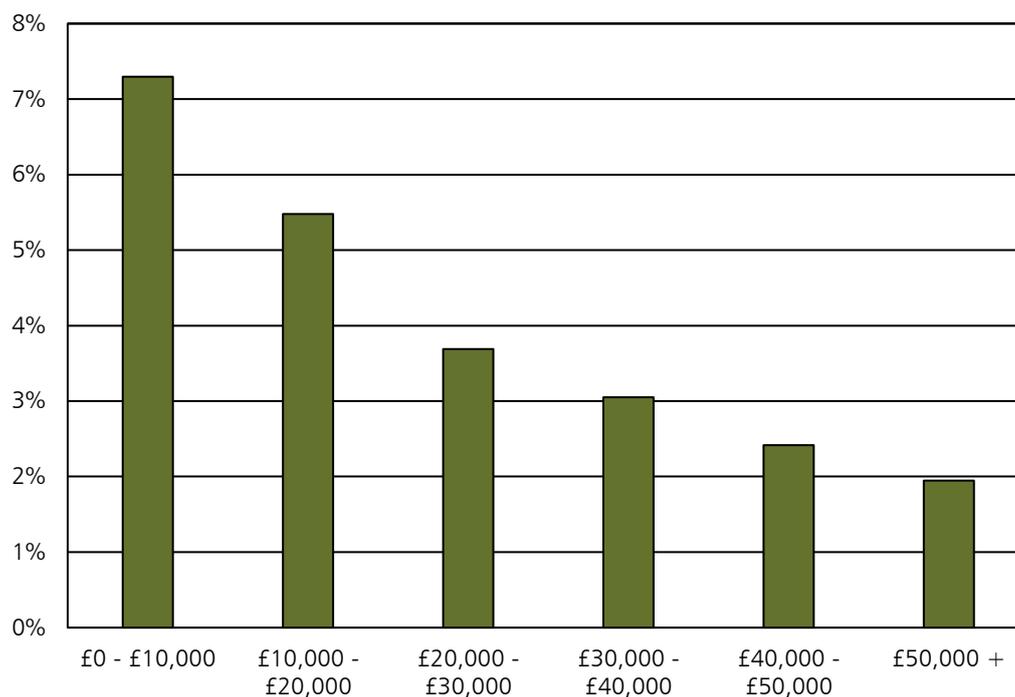
² The analysis is based on 16 to 64 year old employment rates. Households are ranked based on income quintiles for the whole population.

³ See Chart 1.E from the 'Impact on households: distributional analysis to accompany Budget 2021', March 2021 publication.

months to December 2020 and decreasing to 4.5% in the three months to August 2021. In its latest forecast, the OBR has revised down its unemployment rate forecast further, with unemployment now expected to peak at 5.2% in Q4 2021, rather than 6.5%, which the OBR forecasted at the last Budget.

- 1.8 The labour market has held up relatively well largely due to the unprecedented action the UK government has taken to protect jobs, incomes and living standards.
- 1.9 The government introduced the CJRS in March 2020, which provided employers with grants to help pay the wages of furloughed employees, as well as the SEISS, which provided support to eligible self-employed individuals in the form of grants. To support those on low incomes, the government also introduced a temporary £20 per week increase to the Universal Credit (UC) standard allowance and Working Tax Credit (WTC) basic element for 2020-21, a temporary suspension of the Universal Credit Minimum Income Floor for self-employed claimants, and an increase in the Local Housing Allowance rates for Universal Credit and Housing Benefit claimants.
- 1.10 As of 14 September 2021, 11.7 million jobs have been supported by the CJRS since the start of the scheme, totalling £69.3 billion of claims. As of 15 September 2021, the SEISS has provided support to 2.9 million self-employed individuals, with claims totalling over £27.7 billion across the five grants.
- 1.11 The latest data shows that those in jobs with lower pay are more likely to have been supported by the CJRS. As shown in Chart 1.C, as at 31 August 2021, the percentage of eligible employments furloughed for those jobs earning less than £10,000 a year was 7.3%, compared to 1.9% for those employments earning £50,000 a year or above. In addition, provisional figures suggest half of employments on furlough at 31 August 2021 had estimated annual pay of less than £15,000. For comparison, of all employments eligible for furlough, only 32% had estimated annual pay of less than £15,000.

Chart 1.C: Percentage of all eligible employments on furlough, by estimated annualised pay⁴, as at 31 August 2021 (provisional figures)



Source: HMRC Official Coronavirus Job Retention Scheme Statistics, October 2021 release

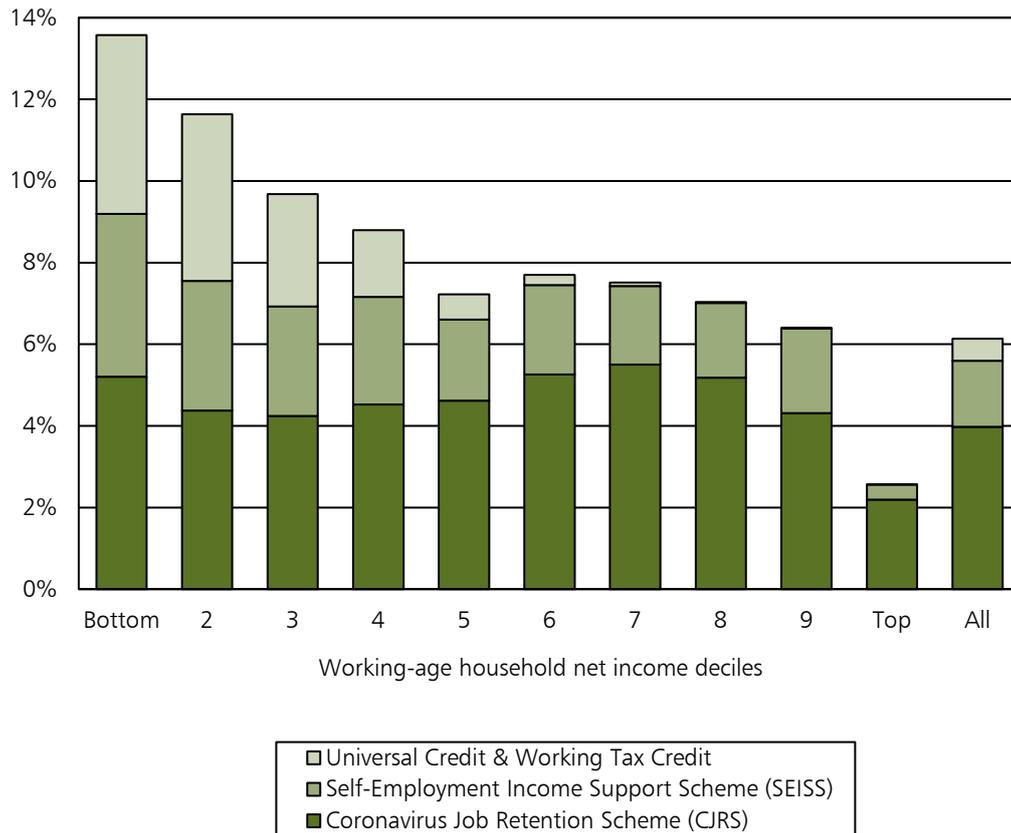
1.12 Analysis on the outcomes of those leaving the CJRS is very positive. The ONS found 92% of people who have ever been furloughed were still employed in the three months to June 2021. For comparison, of those who have never been furloughed, 93% were still in employment for the same time period. In other words, in the three months to June 2021, more than 90% of people ever furloughed have been able to keep their job or find a new one.

1.13 Charts 1.D and 1.E illustrate our estimates for the gross support that working-age households of different income levels received on average from the main government COVID-19 support schemes. They show that the poorest households were supported most relative to their overall income levels. Cash support is somewhat higher in higher-income deciles because both CJRS and SEISS grants were allocated as a proportion of earnings (or gross profits for the self-employed), and higher-income households are more likely to have at least one higher earner, who would consequently receive a larger grant.

⁴ The estimated annual pay is based on the gross pay over the period April 2019 to March 2020. The gross pay figure is estimated as pay before any tax, National Insurance or pension contributions are deducted from employee's pay. If a job does not span the full 12 months the pay from the other months is annualised. Or if annual pay is not available for that period then data from April 2020 to March 2021 is used.

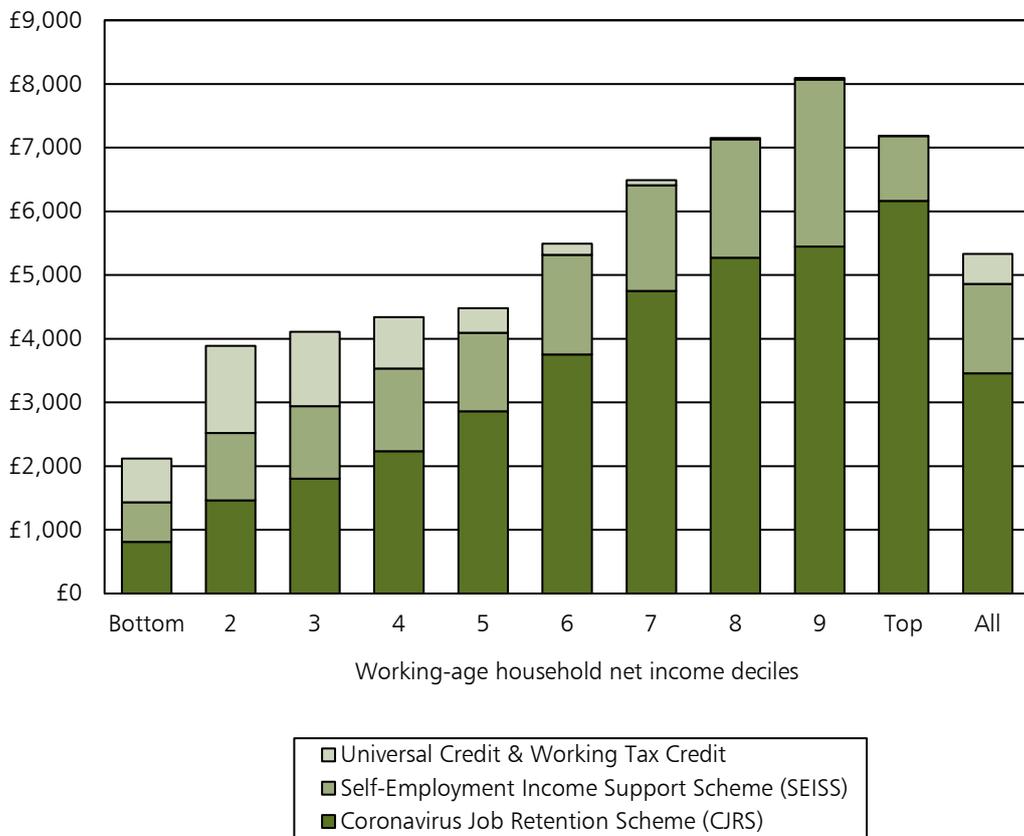
1.14 The government also provided further financial support targeted at those on low incomes through the pandemic, such as the COVID Local Support Grant (CLSG) and COVID Winter Grant Scheme, however these are not included in this analysis.

Chart 1.D: Estimated spending on COVID support schemes and temporary welfare uplift across the income distribution of working-age households, as percentage of pre-pandemic gross income: UK, March 2020 to September 2021



Source: HM Treasury distributional analysis model, and analysis of HMRC administrative data

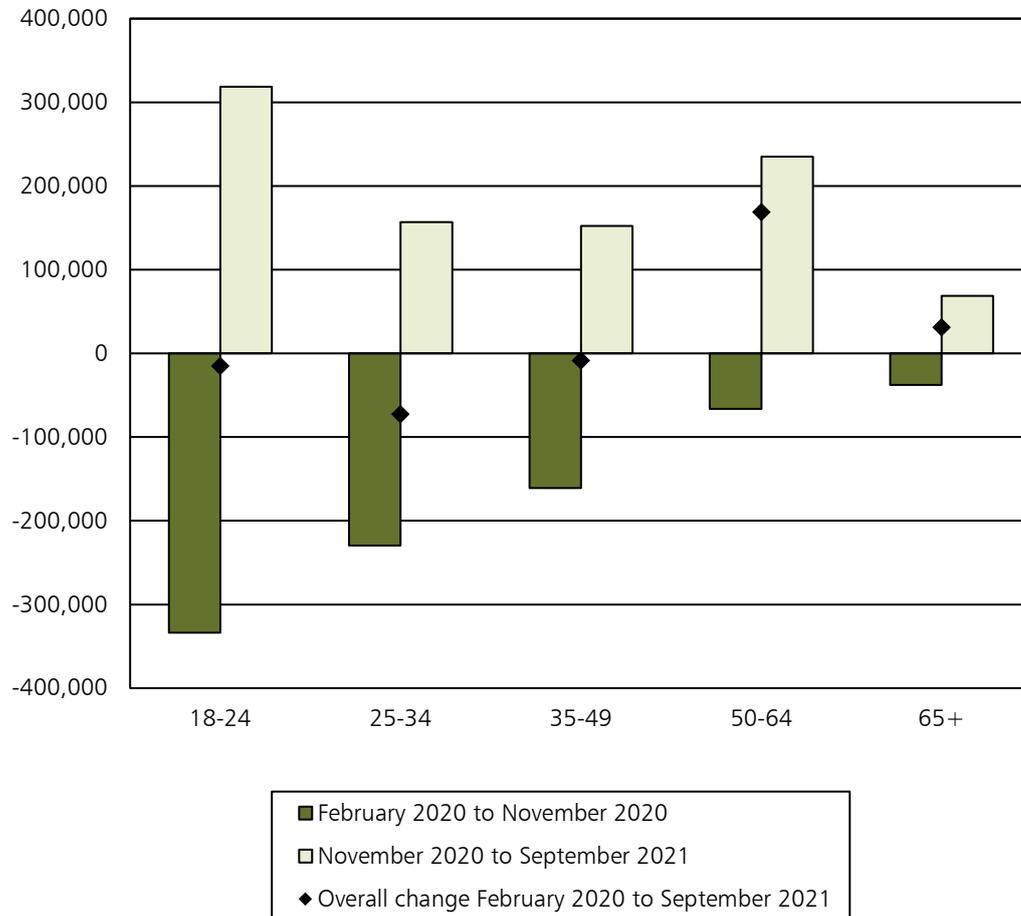
Chart 1.E: Estimated spending on COVID support schemes and temporary welfare uplift across the income distribution of working-age households, per household: UK, March 2020 to September 2021



Source: HM Treasury distributional analysis model, and analysis of HMRC administrative data

- 1.15 The government’s vaccination programme has now allowed almost all COVID-related restrictions to be lifted and the economy to reopen. As restrictions have eased, the labour market has continued to recover. The number of paid employees in the UK has reached 29.2 million in September 2021, which is above pre-pandemic (February 2020) levels and is an increase of 1.1 million from November 2020.
- 1.16 The labour market impact of the pandemic has differed across age groups. As shown in Chart 1.F, among those aged 18 years and above, those aged 18 to 24 years old experienced the largest decrease in the number of paid employees from February 2020 to November 2020. Recognising the impact of the pandemic on young people, the Government announced the Kickstart scheme and a new Youth Offer in July 2020, to help young people across Great Britain move into work. Since November 2020, the 18 to 24 year-old age group has seen the largest increase in the number of paid employees among those aged 18 years and above, as shown in Chart 1.F.

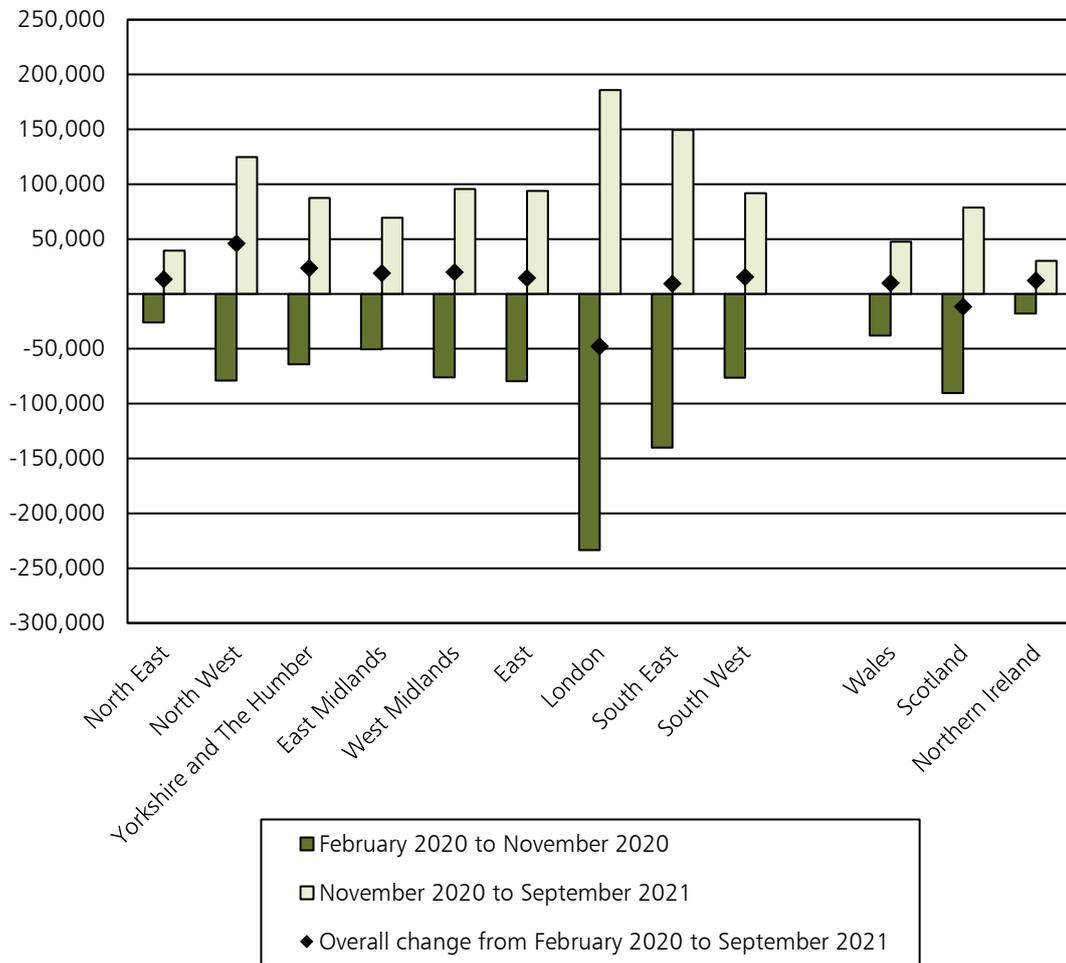
Chart 1.F: Change in the number of paid employees, by age group (aged 18 years and over), February 2020 to November 2020 and November 2020 to September 2021, UK (seasonally adjusted)



Source: PAYE Real Time Information, HMRC

1.17 The labour market impact of the pandemic has been felt across the UK. As shown in Chart 1.G, all regions and nations of the UK saw a fall in the number of paid employees from February 2020 through to November 2020. However, most regions and nations of the UK have now seen a return to pre-pandemic levels.

Chart 1.G: Change in the number of paid employees, across the UK, February 2020 to November 2020 and November 2020 to September 2021 (seasonally adjusted)



Source: PAYE Real Time Information, HMRC

- 1.18 As the global economy recovers from the effects of the pandemic, many economies are experiencing high inflation, in part due to pressures from rising energy prices and disruptions to global supply chains. These global pressures are the main driver of recent higher inflation in the UK. The OBR expect inflation to reach 4.4% in Q2 2022 before falling back to target by the end of 2024. Inflation can have an impact on living standards if it outpaces growth in incomes.
- 1.19 However, the recent rapid recovery in the labour market has been accompanied by rising wages, helping to support household living standards. The headline figures for wages have been affected by some temporary distortions. These include a compositional effect, due to fewer lower paid workers in employment, and a base effect from comparing wages to last year when many workers were on furlough. In the three months to August the ONS estimates that underlying wage growth was between 4.1 and 5.6%. Cumulatively, despite inflation rising, real wages have grown by 3.4% since the three months to February 2020.

1.20 The government is also continuing to take action to support people with cost of living pressures. The government remains committed to raising the National Living Wage so that it reaches two thirds of median earnings, helping the lowest paid in society. From 1st April 2022 the National Living Wage will rise to £9.50 per hour. Alongside this the government is making changes to Universal Credit to help those in work take home more of what they earn. The government is also focused on investing in jobs and skills particularly in new green industries, spreading better prospects and wages across the country. Further details of action taken at the Autumn Budget and SR21 to raise living standards and provide people with help towards the cost of living are set out in section 2.3 ('Supporting people and businesses') of the Autumn Budget and Spending Review 2021 document. Lastly, to help drive economic growth and level up the country, creating a high wage, high productivity economy, the government is continuing to invest in the three pillars of growth as set out in the Plan for Growth at Spring Budget: infrastructure, skills and innovation.

Chapter 2

Distributional analysis of tax, welfare and public service spending decisions since Spending Round 2019

- 2.1 This chapter sets out the estimated impact of tax, welfare and public service spending changes announced since Spending Round 2019 that carry a direct, quantifiable impact on households. It also presents estimates of the overall level of tax paid and public spending received by households in 2024-25.
- 2.2 Because the analysis here focuses on the impact of government policy in 2024-25, it does not include those temporary measures that were designed to support households in response to the economic effects of the COVID-19 pandemic. This includes the Coronavirus Job Retention Scheme (CJRS), Self-Employment Income Support Scheme (SEISS), and temporary increases in Universal Credit. As shown in Charts 1.D and 1.E, the combination of the CJRS, SEISS and temporary increases to welfare have, to date, supported the poorest working-age households the most as a proportion of income.
- 2.3 The modelling in this chapter is on a static basis and shows the effect of tax and spending policy in isolation, and before households' behavioural responses are taken into account. For this reason, it only illustrates some of the factors which will drive households' living standards in 2024-25, and importantly does not take into account changes in the labour market or the wider economic impacts of government policy. The analysis also presents average effects on households within each income decile, but there will be variation around this average.

Box 2.A: Measuring household incomes

The analysis in this document uses household income as the measure of a household's standard of living. While this is the standard measure, some households experience periods of low income temporarily, or finance their standard of living through utilising wealth rather than through income. Therefore, income may not always best represent their general standard of living. Such individuals are often students, the temporarily unemployed, or the self-employed. The most recent analysis by the Department for Work and

Pensions has shown that, of those surveyed in 2018-19, 56% of those in the bottom quintile in 2010-11 were in a higher income quintile in 2018-19.

Alternative approaches have used household expenditure to approximate a household's standard of living. Approximately 20% of those in the bottom income decile are in the top half of the distribution when households are ranked by their total expenditure. Due to limitations in the data, an expenditure-based approach is not used here, but the impacts of government decisions on low-income households should be considered in the context of these methodological choices.

Many of the charts included in this document are presented by household equivalised net income decile. This means that a household's net income (income after taxes and benefits) is adjusted to take account of the size and composition of the household. Households are then ranked from lowest to highest equivalised net income and divided into 10 equally sized groups.

To help understand where different households sit in the income distribution, Chapter 3 includes the median gross income for each decile, as well as a more detailed explanation of the data sources, methodology, and the equivalisation process.

2.4 Charts 2.A to 2.C include the impact of measures and spending settlements announced since Spending Round 2019. In addition, the charts include the impact of Spending Review 2021 spending settlements, as well as the following Autumn Budget 2021 tax and welfare measures:

- Health and Social Care Levy introduced from April 2022 (employee and self-employed elements only)
- Increase rates of dividend tax by 1.25% from April 2022
- Universal Credit: reduce taper rate from 63p to 55p and £500 p.a. increase in work allowances from 1 December 2021
- Fuel Duty: one year freeze in 2022-23
- Alcohol Duty: one year freeze from February 2022
- Alcohol Duty: reform to alcohol duties
- Air Passenger Duty: introduction of a new reduced domestic band and ultra-long haul distance band
- Tobacco Duty: increase hand rolling tobacco duty by an additional 4% and minimum excise duty by an additional 1% in 2022-23
- State Pension and Pension Credit: uprate with Double Lock in 2022-23
- Extension of eligibility for bereavement benefits to cohabittees with children
- Updated eligibility to Special Rules for Terminal Illness (SRTI)

- Spending Review assumptions on council tax referendum thresholds

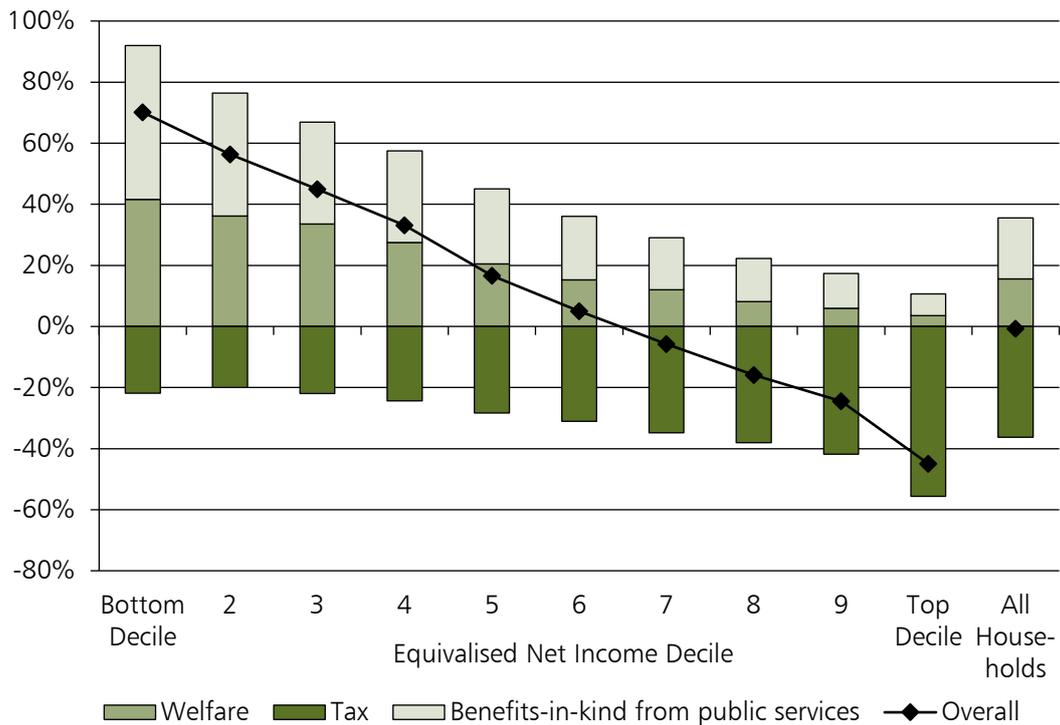
2.5 The analysis is all presented in the fiscal year 2024-25, the last year of the Spending Review period.

Overall level of tax, welfare and public service spending

2.6 Government policy continues to be highly redistributive. Chart 2.A shows the estimated overall level of public spending received, and tax paid, by households across the income distribution (the black diamonds indicate the net position). It shows that in 2024-25:

- on average, households in the lowest income decile will receive over £4 in public spending for every £1 they pay in tax
- the poorest 60% of households will receive more in public spending than they contribute in tax

Chart 2.A: Overall level of public spending received, and tax paid, as a percentage of net income (including households' benefits-in-kind from public services), by income decile, in 2024-25

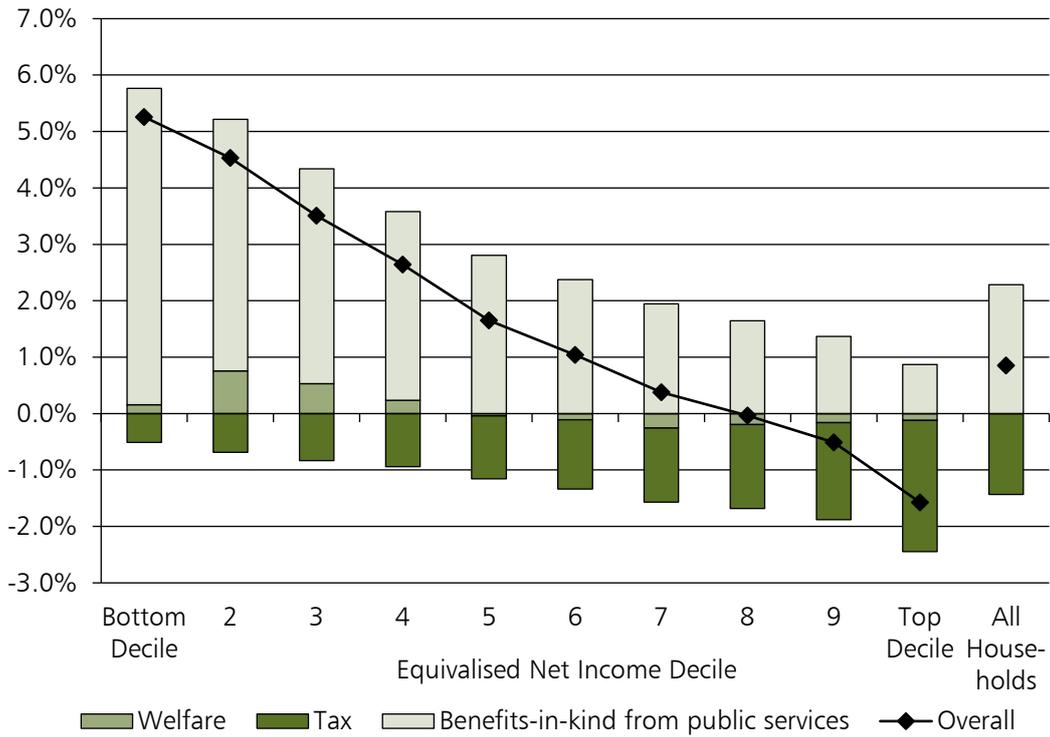


Source: HM Treasury distributional analysis model

Analysis of decisions announced since Spending Round 2019

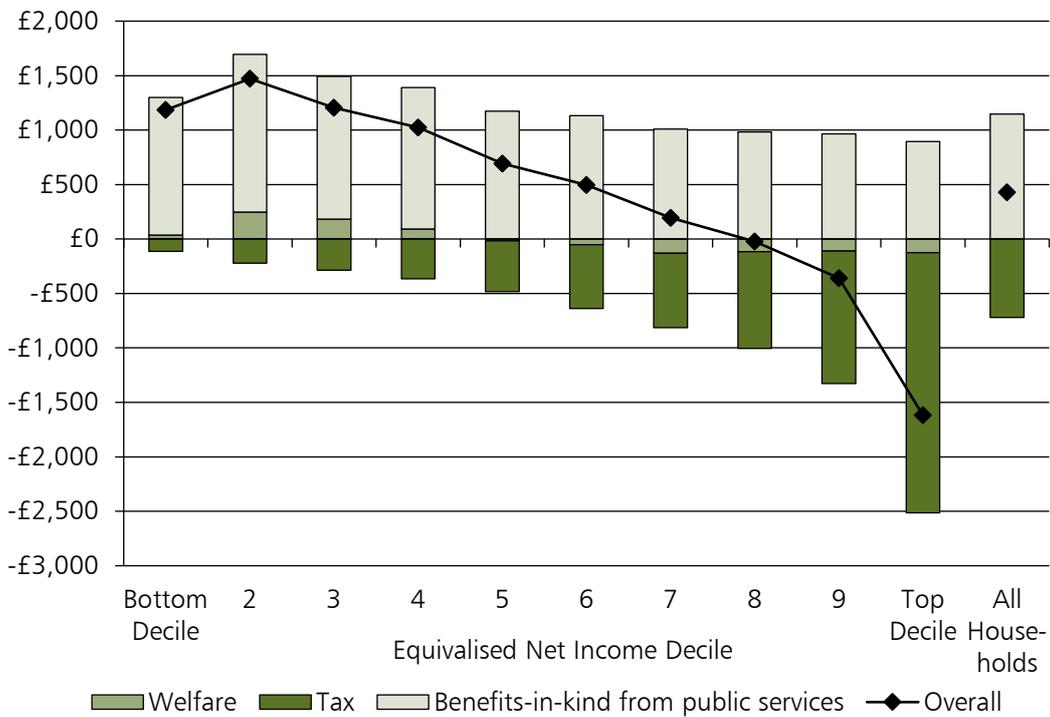
- 2.7 Charts 2.B and 2.C set out the estimated impact of decisions announced since SR19 across the income distribution. Only those measures set out in paragraph 2.4 are included in the analysis presented here. Chart 2.B shows these impacts as a percentage of net household income (including benefits-in-kind from public services), while Chart 2.C is expressed in annual cash terms. The charts show the impacts on households in 2024-25 compared to a hypothetical world in which modelled government policies announced since SR19 were not introduced. This analysis shows that, on average, households in the poorest income deciles are gaining the most as a percentage of net income.
- 2.8 As set out in more detail in Chapter 3, Charts 2.B and 2.C only show measures with a direct impact in 2024-25 on benefit income, taxes paid, or the benefits-in-kind received through public services by UK residents. The charts exclude the impact of business taxes, changes to regulation including the National Living Wage (NLW), the impact of government borrowing, and the impact of measures in years other than 2024-25.

Chart 2.B: Impact of decisions announced since Spending Round 2019 on households in 2024-25, as a percentage of net income, by income decile



Source: HM Treasury distributional analysis model

Chart 2.C: Impact of decisions announced since Spending Round 2019 on households in 2024-25, in cash terms (£ per year), by income decile



Source: HM Treasury distributional analysis model

Chapter 3

Data sources and methodology

Table 3.A: Data sources for charts

Chart	Source
1.A	DWP, Household Below Average Incomes, 2019-20
1.B	DWP, Household Below Average Incomes, 2019-20, DWP calculations
1.C	HMRC, Official CJRS Statistics, October 2021 release
1.D-1.E	Internal HM Treasury modelling. See 3.1 to 3.5
1.F	HMRC, Pay As You Earn Real Time Information, October 2021 release
1.G	HMRC, Pay As You Earn Real Time Information, October 2021 release
2.A-2.C	Internal HM Treasury modelling. See 3.6 to 3.32

Table 3.B: Data sources for statistics

Paragraph	Statistic	Source
1.2	Household income	DWP, Households Below Average Income (HBAI), 2019-20, March 2021 release
1.3	Employment rate	ONS, Labour market overview, UK, October 2021 release
1.7	Quarterly GDP	ONS, GDP quarterly national accounts, UK: April to June 2021, September 2021 release
1.7	OBR Unemployment projection	OBR, Fiscal Sustainability Report, July 2020
1.7	Unemployment Rate	ONS, Labour market overview, UK, October 2021 release
1.7	OBR Unemployment Forecast	OBR, Economic and Fiscal Outlook, October 2021
1.7	OBR Unemployment Forecast	OBR, Economic and Fiscal Outlook, March 2021
1.10	CJRS Statistics	HMRC Official CJRS Statistics, October 2021 release
1.10	SEISS Statistics	HMRC Official SEISS Statistics, October 2021 release
1.11	CJRS Statistics (by annual pay)	HMRC Official CJRS Statistics, October 2021 release
1.12	CJRS Outcomes Statistic	ONS, An overview of workers who were furloughed in the UK: October 2021

1.15	Number of paid employees	ONS, Earnings and employment from Pay As You Earn Real Time Information, seasonally adjusted, October 2021 release
1.18	OBR Inflation forecast	OBR, Economic and Fiscal Outlook, October 2021
1.19	Underlying wage growth	ONS, Average weekly earnings in Great Britain: October 2021 release
1.19	Real wage growth	ONS, Average weekly earnings in Great Britain: October 2021 release, Consumer price inflation, UK: September 2021: October 2021 release
Box 2.A	Income movements	DWP, Income Dynamics: Movements between quintiles: 2010-2019, March 2021
Box 2.A	Expenditure distribution	Internal HM Treasury modelling

Constructing Charts 1.D and 1.E

- 3.1 Charts 1.D and 1.E illustrate estimates of the gross support households of different income levels received on average from the main government COVID-19 support schemes (specifically the Coronavirus Job Retention Scheme (CJRS), the Self-Employment Income Support Scheme (SEISS) and the uplifts to Universal Credit and Working Tax Credit). The analysis covers the period of March 2020 to September 2021.
- 3.2 To model the outlay of CJRS support across the household income distribution, HMRC administrative data was used showing the rate of CJRS participation, for both flexible and full furlough, across jobs of different earnings levels. These participation rates were applied to the Department for Work and Pensions' (DWP) Family Resources Survey (FRS) to obtain a likelihood of CJRS participation for each job recorded in the survey. These likelihoods were then weighted according to the gross amount the jobholder stood to receive from the scheme (subject to entitlement rules at each point in time). Total CJRS outlay was allocated across households in the survey according to their total relative weighted likelihood across all the jobs held in each household. The result gives us an illustration of the degree to which households of different income levels are likely to have been supported by the CJRS.
- 3.3 A similar approach was taken for the Self-Employment Income Support Scheme (SEISS), except that we have assumed uniform take-up across profit bands for simplicity (HMRC administrative data suggests that, unlike for the CJRS, take-up rates have not varied significantly enough across profit bands for these to have a material impact on the charts). This means the distribution is determined by the income levels of the households which had self-employed earners eligible for SEISS and the amount to which they were entitled. Similarly, welfare uplifts were modelled by distributing the

additional spend across surveyed households in receipt of Universal Credit and relevant legacy benefits.

- 3.4 In order to illustrate the likely distribution of COVID-19 support across the household income distribution it has been necessary to make several broad simplifications:
- The charts show gross, rather than net (after tax), outlay from the schemes. This is a necessary simplification, because to calculate tax liabilities it is necessary to know the economic outcomes of those benefitting from the support schemes in each month of the period covered. Because the spending is shown in gross terms, we show impacts as a proportion of gross income in Chart 1.D.
 - Distributions are based on a pre-pandemic (surveyed) population of working-age households, since robust household survey data covering 2020-21 is not yet available. Total support distributed is based on administrative outturn data, however, and is therefore independent of the underlying survey data.
 - We distribute the support according to households' likely position in the income distribution at the point they received the support (since we do not have data telling us how households' relative position in the income distribution changed throughout the pandemic).
- 3.5 We believe the broad distributional picture presented in Charts 1.D and 1.E is robust to these methodological choices. When household survey data covering this period becomes available, this will enable a more sophisticated analysis of how government support during this time supported household incomes.

Constructing Charts 2.A to 2.C

- 3.6 Chart 2.A shows estimates of the overall level of public spending received, and tax paid, by households in 2024-25 across the household income distribution. Charts 2.B and 2.C compare the estimated impact of changes in tax, welfare and public service spending policy against a counterfactual of no tax and welfare policy changes, and no change to real public service spending per capita, since Spending Round 2019 (SR19). Measures are only included if they have a clear first order impact on the benefit incomes, taxes paid, or the benefits-in-kind received through public services by UK residents.
- 3.7 The following policy impacts are out of the scope for this analysis:
- those temporary measures, such as the CJRS and SEISS, aimed at supporting households in response to the COVID-19 pandemic. The impact of these measures to date is instead shown in Charts 1.D and 1.E
 - the impact of changes to regulation, for example the National Living Wage (NLW), which are not direct changes to the distribution of tax or public spending
 - Exchequer impacts resulting from reduced fraud, error or debt in the welfare system, as full compliance with the rules of the welfare system is assumed throughout the modelling

- Exchequer impacts resulting from reduced tax evasion, as full compliance with the rules of the tax system is assumed throughout the modelling. Anti-avoidance measures are captured where they result in a change in tax liabilities in the year being analysed
 - impacts of decisions made by devolved administrations
 - impacts of taxes where the incidence of the tax does not fall directly on households, for example Employer NICs. We exclude such taxes from this analysis as we are unable to determine the distributional consequences of how these taxes are passed through to households
 - the impact of measures without a direct impact in 2024-25
- 3.8 A number of smaller tax and welfare measures are also excluded from this analysis because there is insufficient data to robustly model the distributional impacts.
- 3.9 Charts 2.A to 2.C show the impact of measures in 2024-25, as this is the final year of the Spending Review period.

Defining income and ranking households

- 3.10 This distributional analysis uses equivalised net household income, before housing costs, as the main indicator by which to rank households from lowest income to highest income. This indicator is comprised of several components:
- **Equivalised:** equivalisation is a process that adjusts a household's net income to take into account the fact that larger households will require a higher net income to achieve the same standard of living as a household with fewer members. The equivalisation factors used in the analysis are the modified OECD factors (as used in DWP's Households Below Average Income publication).
 - **Net:** household incomes are ranked after deductions from direct taxes, and after additions from welfare benefits. Deductions from indirect taxes, or additions through benefits-in-kind from public services, are not used to rank households.
 - **Household:** incomes are assessed in aggregate at the household, not individual level. Comparing household, rather than individual, incomes reduces the subjectivity of this analysis, ensuring that no assumptions are made about how incomes or expenditure are shared between separate individuals within the household.
 - **Before housing costs:** housing costs such as rent or the cost of servicing a mortgage are not deducted from household incomes.
- 3.11 The household income distribution is created by ranking households from the lowest equivalised net income to the highest equivalised net income, and then dividing this ranking into ten equally sized groups called deciles, across which the analysis is produced.
- 3.12 Table 3.C below shows estimated median gross incomes (pre-tax private income including earnings, private pensions, savings and investments, plus

benefit income) within each decile. This gives a less precise estimate of a household's position in the income distribution than net income, but is easier to understand because many people think about their incomes or salaries in gross rather than net terms.

- 3.13 Table 3.C should therefore be used to approximate where a household will be found in the income distribution. For example, if a household consisting of two adults earns £23,600 per year between them, there is a high likelihood that this household will be found in the third income decile. However, this is not guaranteed, as different gross household incomes can result in different net household incomes, depending on how many earners there are in the household, the size of the household, and for which benefits the household qualifies.

Table 3.C: Median gross income for each decile (£ per year, 2021-22) for different household compositions¹

Median gross income of households in decile	1 adult	1 adult and 1 child	2 adults	2 adults and 1 child	2 adults and 2 children
Top decile	69,100	-	102,700	140,100	171,600
Ninth decile	45,900	-	68,000	88,700	110,600
Eighth decile	37,200	-	54,200	72,000	88,900
Seventh decile	31,000	42,600	45,400	58,900	73,500
Sixth decile	26,300	35,900	38,800	51,600	61,100
Fifth decile	22,000	29,300	32,600	43,700	51,500
Fourth decile	18,400	23,500	27,900	36,400	44,100
Third decile	15,600	21,000	23,600	31,200	35,900
Second decile	12,600	17,100	19,600	24,900	29,300
Bottom decile	9,500	12,600	14,500	17,400	20,600

Source: HM Treasury distributional analysis model

Analysis of tax and welfare measures

- 3.14 Where possible, tax and welfare policy changes are analysed using HM Treasury's Intra-Governmental Tax and Benefit Microsimulation model (IGOTM), which is underpinned by data from the ONS's Living Costs and Food (LCF) survey. The sample size of the LCF means that in order to produce robust analysis three years of data have been pooled together, specifically 2015-16 to 2017-18. This data is then projected forward to reflect the financial year being modelled, using historical Annual Survey of Hours and Earnings data on earnings growth at different points across the income

¹ Categories with insufficient underlying sample sizes have been left blank.

distribution as well as the latest OBR average earnings and inflation forecasts. The model makes no changes to the underlying demographics, employment levels or expenditure patterns in the base data.

- 3.15 For Charts 2.B and 2.C, the counterfactual for tax and welfare decisions is a hypothetical scenario in which policy changes announced at or after SR19 were not implemented.
- 3.16 Not all households take up all the benefits to which they are entitled. HM Treasury's microsimulation modelling takes this into account when calculating the effects of policy changes by using information on the take-up of benefits in the underlying survey data. A policy which will lead to an increase in take-up will therefore be modelled as an increase in household income. This methodology provides a more accurate estimate of the impact on households.
- 3.17 Modelling of tax and welfare measures in IGOTM takes into account the devolution of decisions in some areas from the UK government to devolved administrations. UK government decisions are modelled as applying only to households directly affected by the measure, while decisions taken by the devolved administrations are not included as policy impacts.
- 3.18 Within the tax system, the main taxes microsimulated in this analysis are: Income Tax, employee and self-employed National Insurance contributions, the Health and Social Care Levy (employee and self-employed elements only), Council Tax, VAT, Insurance Premium Tax, Fuel Duty, Alcohol Duty, Tobacco Duty, Stamp Duty Land Tax, and Air Passenger Duty.
- 3.19 Within the welfare system, the most significant welfare benefits microsimulated in this analysis are: the State Pension, Pension Credit, Winter Fuel Payments, Attendance Allowance, Jobseeker's Allowance, Employment and Support Allowance, Housing Benefit, Universal Credit, Child Benefit, Disability Living Allowance, Personal Independence Payment and Tax-Free Childcare.
- 3.20 Unlike Charts 1.D and 1.E, all charts in Chapter 2 assume for simplicity that Universal Credit has been fully rolled out and claimants are no longer claiming benefits under the older legacy system.
- 3.21 Not all measures can be reliably modelled using IGOTM due to data and/or modelling constraints. Tax and welfare changes that cannot be modelled using microsimulation modelling are, where possible, apportioned to household equivalised income deciles. This is done according to the Exchequer impacts or savings from the measures, based on assumptions about where the impacts are likely to fall.

Analysis of public service spending

- 3.22 The analysis of public service spending only includes spending on frontline public services with a direct benefit to households. This covers services provided by the Department of Health and Social Care, the Department for Education, the Department for Work and Pensions, the Department for

Transport, the Ministry of Justice, the Department for Digital, Culture, Media and Sport, and some services delivered by local government in England.

3.23 The analysis excludes:

- administrative spending
- capital spending, and the depreciation of capital assets
- spending funded through the Reserve
- spending on public goods where it is not possible to identify the direct benefits from these areas of spending for specific households – in 2024-25 this means we also exclude spending on non-NHS Covid response and preparedness.

3.24 To align with the definition of income used in DWP's Households Below Average Income publication, the analysis of spending on public services also includes financial transactions through student loans. To account for this source of income, estimates of student loan outlay in a given financial year are counted as household income from public spending. Likewise, estimates of student loan repayments in that same financial year are reflected as a loss to households, again through the public spending bars.

3.25 For Charts 2.B and 2.C, the analysis of RDEL spending compares forecast spending in 2024-25 to a baseline of actual spending in 2019-20, projected to 2024-25 in line with both the GDP deflator and population growth (to account for both price and population pressures on real per capita spend received). Therefore, the RDEL impacts presented in Charts 2.B and 2.C reflect the impact on households of all RDEL measures since Spending Round 2019.

3.26 Charts are on a UK basis, though any RDEL spending that is the responsibility of the devolved administrations in Scotland, Wales, and Northern Ireland is not reflected in this analysis. This has two effects. First, any changes to devolved spending – whether positive or negative – have no impacts in this analysis. Second, where change is expressed as a proportion of household income, the income denominators which underpin this calculation do not include any income from spending devolved to Scotland, Wales, and Northern Ireland.

3.27 The analysis of the benefits-in-kind provided by public service spending is, like with taxes and welfare measures, derived from HM Treasury's IGOTM model. However, the modelling approach taken for public services is slightly different. Where the use of a public service is reported in the LCF, no additional data is required and the approach is similar to that used for most tax and welfare modelling. The spending on a particular public service is allocated between all those households who are expected to use this public service, in proportion to each household's expected use of the service.

3.28 Where the LCF does not contain information about the use of a service, additional data sources are required. This additional data is used to identify characteristics associated with the use of the service and then used to derive probabilities of service use conditional on these characteristics. The cash value spent on public services is converted into an identical cash gain to

households and distributed to households based on the probability that any given household uses the service.

- 3.29 As an example, the likelihood of an individual using a service, such as the NHS, will be influenced by factors such as the individual's age, sex, and so on. Through analysis of NHS allocations models, it is possible to estimate the relative use of the NHS by individuals of different characteristics over a given timeframe. This analysis shows, for example, that the older an adult is, the more likely he or she is to use the NHS. This analysis is then applied to the LCF data that underpins the rest of HM Treasury's distributional analysis modelling. The adjusted LCF data, therefore, then contains estimates of each individual's likelihood of using this particular public service.
- 3.30 Spending (both actual and for the baseline) is then allocated according to each household's relative likelihood of using the service, where the relative likelihood of use acts as a weight to allocate total spending to each household. Therefore, the spending will be skewed to those individuals and households who are most likely to use a public service over a given time period. In the example of using the NHS, above, the total public spending on this service will be skewed (but not allocated entirely) to those individuals who are estimated to be most likely to use this service over a given timeframe. The cash value spent on public services is converted into an identical cash gain to households. Impacts of changes in RDEL spending are calculated alongside tax and welfare and presented across the income distribution.

Continuous improvements to modelling and analysis

- 3.31 The modelling underpinning our analysis of tax, welfare and public service spending is under continuous improvement, to enable us to provide the best estimate (subject to time, resource, and data constraints) of how households are impacted by the cumulative tax, welfare and public service spending decisions made by the government. We also aim to capture the most comprehensive and up-to-date record of where government spending is directed to inform these analyses, noting these will continue to evolve as departments decide on final budget allocations. As such, the charts in Chapter 2 represent our best estimates of cumulative impacts at the time of publishing. However, whilst we expect these updates to refine our estimates slightly, we do not expect the distributional narrative to be substantively different.
- 3.32 Finally, the analysis shown in our charts is based on the latest available Office for Budget Responsibility (OBR) forecast which is updated at every fiscal event. For these reasons, as well as those set out above, charts published at consecutive fiscal events are not directly comparable.

HM Treasury contacts

This document can be downloaded from www.gov.uk

If you require this information in an alternative format or have general enquiries about HM Treasury and its work, contact:

Correspondence Team
HM Treasury
1 Horse Guards Road
London
SW1A 2HQ

Tel: 020 7270 5000

Email: public.enquiries@hmtreasury.gov.uk