



Llywodraeth Cymru
Welsh Government

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Distributional analysis of devolved public spending in Wales

December 2021

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Distributional Analysis of Public Spending in Wales: update for December 2021 draft budget

Introduction

1. In line with commitments made in the Budget Improvement Plan in 2020-21¹, the Welsh Government published an exploratory analysis of the distributional impact of devolved resource spending in Wales alongside last year's draft budget². This found devolved resource spending to be generally progressive across the household income distribution, with some variation across the different areas of spending examined. The analysis covered programmes representing the majority of the overall budget.
2. This report provides an update to last year's analysis and discusses related developments across the UK since that analysis was produced. It also considers the potential uses of such an analysis, and records progress against the key areas identified for future development last year, which were to:
 - i) look to enhance the modelling and methods used to help improve the analysis where possible;
 - ii) make updates to the data and spending year used and explore other potential sources of data in order to refine existing estimates where possible; and
 - iii) explore the possibility of analysing the beneficiaries of public spending by metrics other than income, including protected characteristics.

Recent developments across the UK

3. Since the Welsh Government published its own initial analysis, the Scottish Government has also published similar work exploring the feasibility of producing a distributional impact analysis for the Scottish Government budget³.
4. Both the Welsh and Scottish Governments' analyses share a consistent finding, that devolved public spending is generally progressive with respect to household income.
5. The UK⁴, Scottish and Welsh Governments all now have models capable of estimating the impact of public spending by household income. However, it is

¹ Available from:

<https://webarchive.nationalarchives.gov.uk/ukgwa/20210406151920/https://gov.wales/draft-budget-2020-2021>

² Available from: <https://gov.wales/distributional-analysis-of-devolved-public-spending-in-wales>

³ Available from: <https://www.gov.scot/publications/feasibility-distributional-analysis-scottish-government-budget-2019-20/>

⁴ The latest release by the UK Government is available from;

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1028953/DA_Document_Autumn_Budget_2021_FINAL.pdf

difficult to make direct comparisons across these models given the different methods employed, and variations in scope and coverage involved.

6. The Scottish Government's analysis is more comparable to the Welsh Government's, because the overall coverage of expenditure programmes is similar. It also looks at total spending in a given year rather than changes over time, which is the focus of published UK Government analyses (usually alongside Budget events).
7. The Welsh Government will continue to follow developments elsewhere, and consider what might be possible in Wales in light of future data availability. The planned boost to the Family Resources Survey (FRS) in Wales, which provides the base data on incomes for this analysis, may provide additional opportunities.

Potential uses of distributional analysis

8. Distributional analysis of the form presented here provides a backdrop to strategic thinking about broad public spending priorities in Wales, and it allows some broad inferences to be drawn regarding the overall impact of devolved public spending on different households in Wales.
9. The updated analysis in this document does not show the impact of changes in spending between budgets or changes in individual policies or programmes. This is because the people and the types of households impacted by such changes may well differ from the average user of the public services involved (which is what is captured by the modelling work presented here). The distributional implications of large policy or programme spending changes would need to be analysed individually on a case by case basis.

Modelling Updates

10. This section discusses updates to the modelling and data sources used since last year. The model now covers health, education, transport, and the majority of adult social care spending. It accounts for around £15bn of devolved resource spending in Wales in 2022-23, which represents around 70 per cent of the total.

Data updates

11. The funding levels used in the original analysis published in December 2020 were for 2019-20. These have now been updated so that they relate to the latest spending plans for 2022-23, as shown in the draft Budget.
12. The public service usage information underpinning this analysis relates to 2019-20; the same as in last year's publication. There is relevant data available for 2020-21, but this is likely to be affected by the pandemic and may be less representative of future years' usage patterns than 2019-20. In addition, some

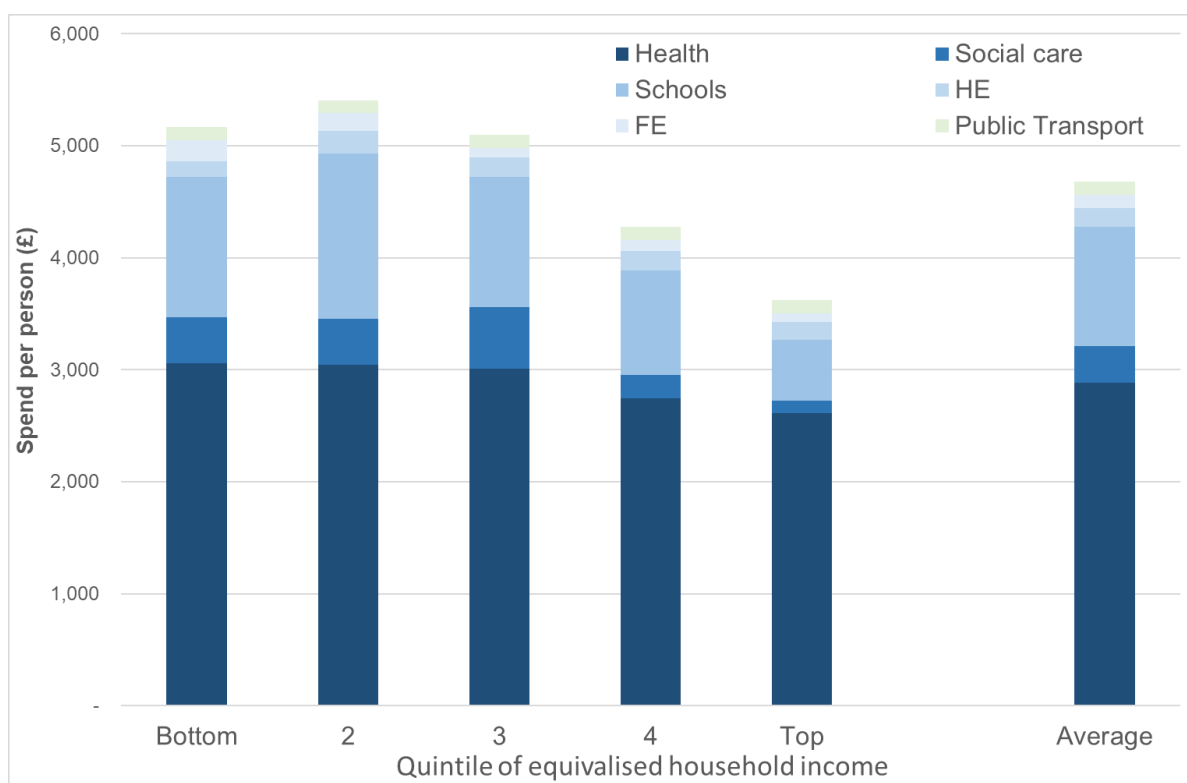
service usage information is pooled over three years because of data limitations. In those areas therefore, updating with new data would still make use of a lot of the same data upon which last year's analysis was based.

Extending the coverage

13. The analysis has been changed to use more detailed information on specific areas of education spending. It separately identifies and allocates funding for Free School Meals (FSM) and the Pupil Deprivation Grant (PDG). The households benefiting from these programmes are identified in the FRS. The planned expansion to FSM eligibility in primary schools in 2022-23 is also taken into account⁵.
14. The analysis has also been extended to include resource spending on transport services. In particular, it covers bus and rail support grants together with concessionary fares for buses. As with health, transport use is not observed in the main dataset underpinning the analysis - the FRS. Therefore an out-of-sample prediction method has been used. The 2019-20 National Survey for Wales includes questions on rail and bus usage and these variables have been employed to create a model of expected use for households with different characteristics. This model has then been applied to households in the FRS, assigning likely usage based on their characteristics.
15. Domiciliary social care for younger adults has also been included, as well as domiciliary care for older adults, as presented in last year's analysis. This is based on those younger adults observed to be in receipt of local authority services in the FRS. Extending the coverage of the analysis to younger adults (i.e. those aged 65 or under) in residential care has not been possible due to lack of suitable data.
16. The results of these extensions to the analysis are all presented in the annex to this document.
17. Figure 1 below presents the updated analysis in full, including the new elements added this year. The overall picture remains consistent with last year's analysis: overall, across the public service areas included, spending is progressive with respect to household income. However, it is not uniformly progressive by quintile of income, as was also found to be the case in last year's report.

⁵ See The Co-operation Agreement: 2021, available from: <https://gov.wales/co-operation-agreement-2021>

Figure 1: Devolved resource spending in Wales by main service area, 2022-23



Potential future extensions to the analysis

Modelling budget changes

18. The analysis included here looks at the overall impact of devolved public spending across the income distribution rather than the effect of individual budget changes. The latter would provide useful additional information to aid decision making and demonstrate the implications of those decisions. However, in most instances the data sources and methodology employed here are unlikely to adequately represent the impact of specific budgetary changes. As noted above, the modelling captures average service usage information across very broad categories of public spending. It is therefore not well suited to looking at specific budgetary changes unless they are uniformly to increase or reduce existing service provision.
19. Generally speaking, distributional analysis of budgetary changes should be undertaken on a case by case basis, where data allows. This approach would be consistent with giving due regard to the need to reduce inequalities of outcome as a result of socio-economic disadvantage, in line with the Socio-economic Duty⁶.

⁶ For more information see; <https://gov.wales/socio-economic-duty>

20. The Scottish Government analysis drew similar conclusions, and noted that its distributional analysis is, '*most useful in providing a baseline*' (see Feasibility of Distributional Analysis for the Scottish Government Budget 2021: p. 30⁷) and that it can be used as a guide to where further analysis at an individual policy level might be particularly useful or beneficial.

Social analysis

21. A potential addition to this work would be to look at the impact of public spending across protected characteristics. This is not part of standard distributional analysis, which focuses on income, and can be described as a form of social analysis. For example, it could involve looking at spend by gender, age, ethnicity or disability. Analysis by both protected characteristics and income has occasionally been done, such as in previous work by the Equalities and Human Rights Commission⁸ and the Scottish Government⁹.
22. This type of analysis presents serious data challenges. The groups in question are sometimes small minorities in society and the available sample survey data is unlikely to provide adequate coverage to represent them robustly. Even with a large survey sample, certain protected characteristics will be difficult to include due to their low prevalence.
23. A further complication arises from the need to look at individuals rather than households. This would mean a fundamental change away from the household-based analysis carried out to date.
24. It can also be difficult to interpret results when looking at public service usage by different protected characteristics, as there can be correlation between them. As reported in the Scottish Government analysis, age is likely to be a key driver of usage. Younger people are more likely to receive education spending and older people more likely to receive health spending. If age is also correlated with other characteristics, such as ethnicity, then this association may be incorrectly interpreted in the results of the analysis; a factor highlighted by the Scottish Government in its work¹⁰. Detailed analysis across multiple dimensions would be required to accurately separate the different factors.

⁷ See [Budget 2019 to 2020: feasibility of distributional analysis - study - gov.scot \(www.gov.scot\)](http://www.gov.scot/publications/feasibility-distributional-analysis-scottish-government-budget-2019-20/)

⁸ Available at <https://www.equalityhumanrights.com/sites/default/files/cumulative-impact-on-living-standards-of-public-spending-changes.pdf>

⁹ See <https://www.gov.scot/publications/feasibility-distributional-analysis-scottish-government-budget-2019-20/>

¹⁰ See <https://www.gov.scot/publications/feasibility-distributional-analysis-scottish-government-budget-2019-20/>

Conclusions and Next Steps

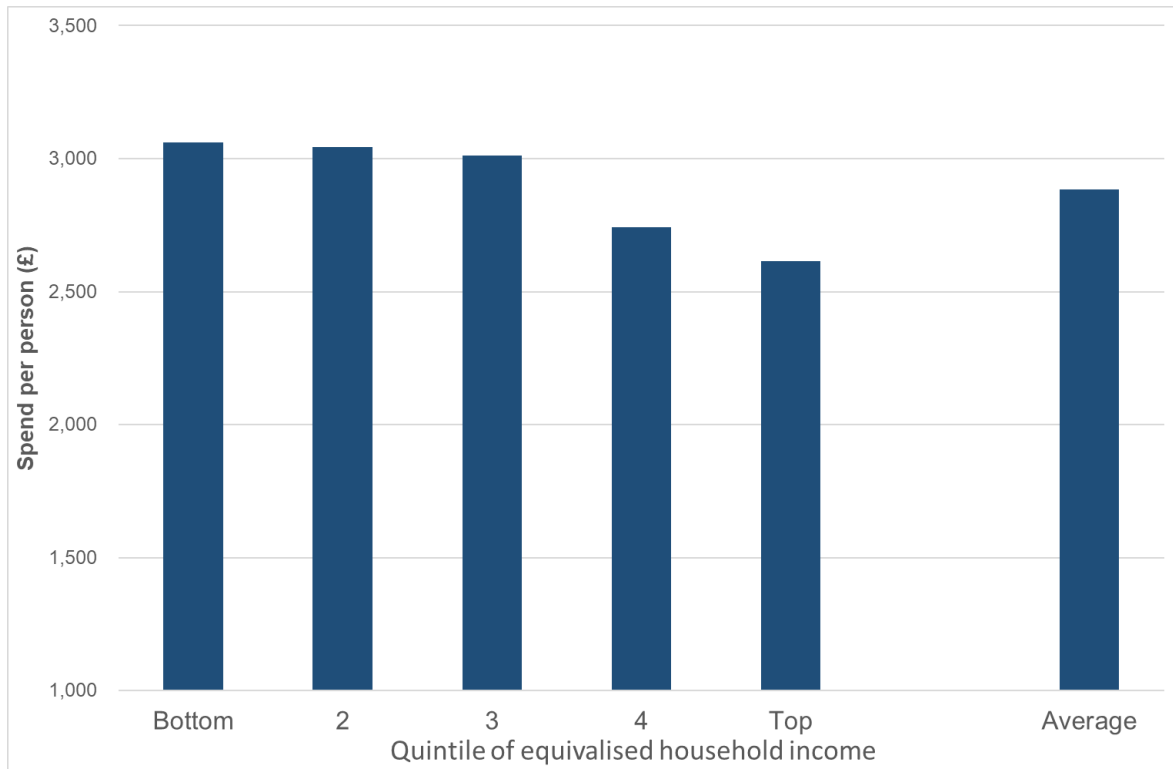
25. The work and analyses required to update this distributional analysis will be kept under review. Whilst work on the content may be updated, it may not be necessary to publish an update alongside every future Welsh Government budget. The underlying relationships captured by this analysis are unlikely to alter significantly from one budget to the next. The Scottish Government has arrived at a similar conclusion, suggesting that its own analysis '*could be updated every few years (perhaps at the start and end of a Parliamentary term)*'¹¹.
26. There would be a case for updating the analysis in light of new methodologies or new data developments. Some of the analysis makes use of data which is pooled over three years. An update once a wholly new three year period is available may be an appropriate point to produce an update.
27. There will also be data improvements over the next few years. The recent Wales sample boost to the FRS will provide more robust data for use in future analyses and potentially enable further developments. There are also additional questions on public service usage in the National Survey for Wales to help inform further updates, particularly in relation to health and higher education. More generally, there may be potential to explore new data linking methods as the capacity to link datasets improves across government.
28. This analysis and the methods used to produce it will therefore be kept under review. Decisions about future updates will be based on the availability of substantive data or methodological improvements.

¹¹ See *Feasibility of Distributional Analysis for the Scottish Government Budget 2021*: p. 30

Annex

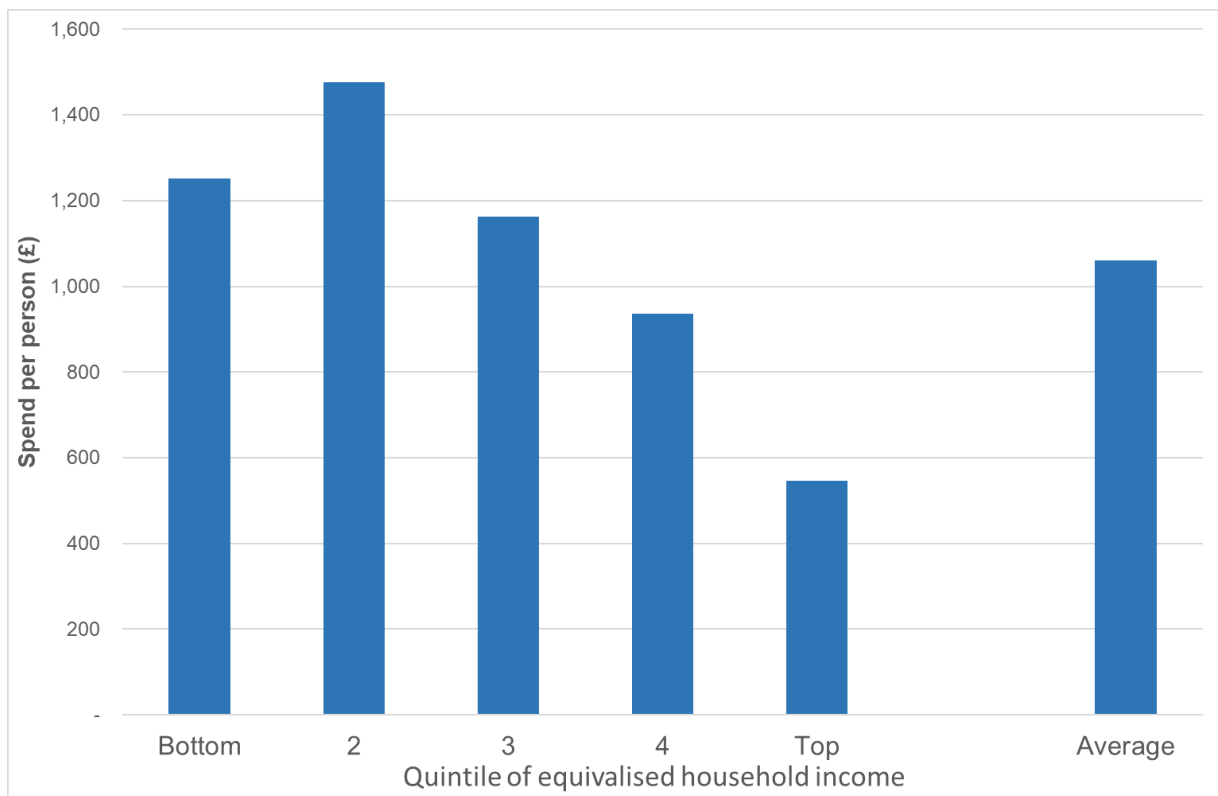
1. Resource spending on health is estimated to be progressive with respect to income (figure A1). More resource spending on health is attributed to people in the lowest income quintiles than average and higher income households. Spending in the lowest income quintile is around six per cent higher than average and spending in the highest quintile is around nine per cent lower than average.

Figure A1: Health resource spending in Wales by household income, 2022-23



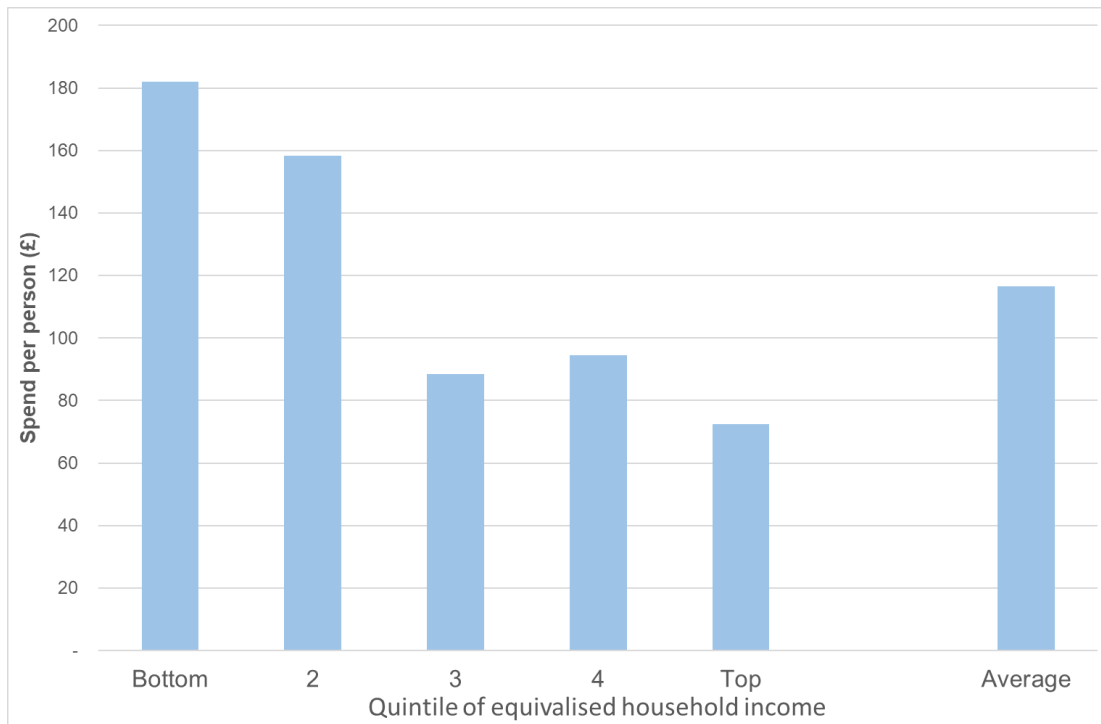
2. School resource spending, which now includes separately modelled spending on Free School Meals (FSM) and Pupil Development Grant (PDG), is also found to be progressive with respect to income (figure A2). Spending per person is 18 per cent higher than average in the lowest income quintile and 39 per cent higher than average in the second quintile. This is because, on average, more children of school age are in the second quintile. Spending per person in the top quintile is only 52 per cent of the average. This is because relatively few school age children are observed in high income households.

Figure A2: Schools resource spending in Wales by household income, 2022-23



- Resource spending on further education is found to be highly progressive with respect to income (figure A3). Spending in the lowest income quintile is 56 per cent higher than spending in the average household. Whereas spending in the highest income quintile is 62 per cent of the average.

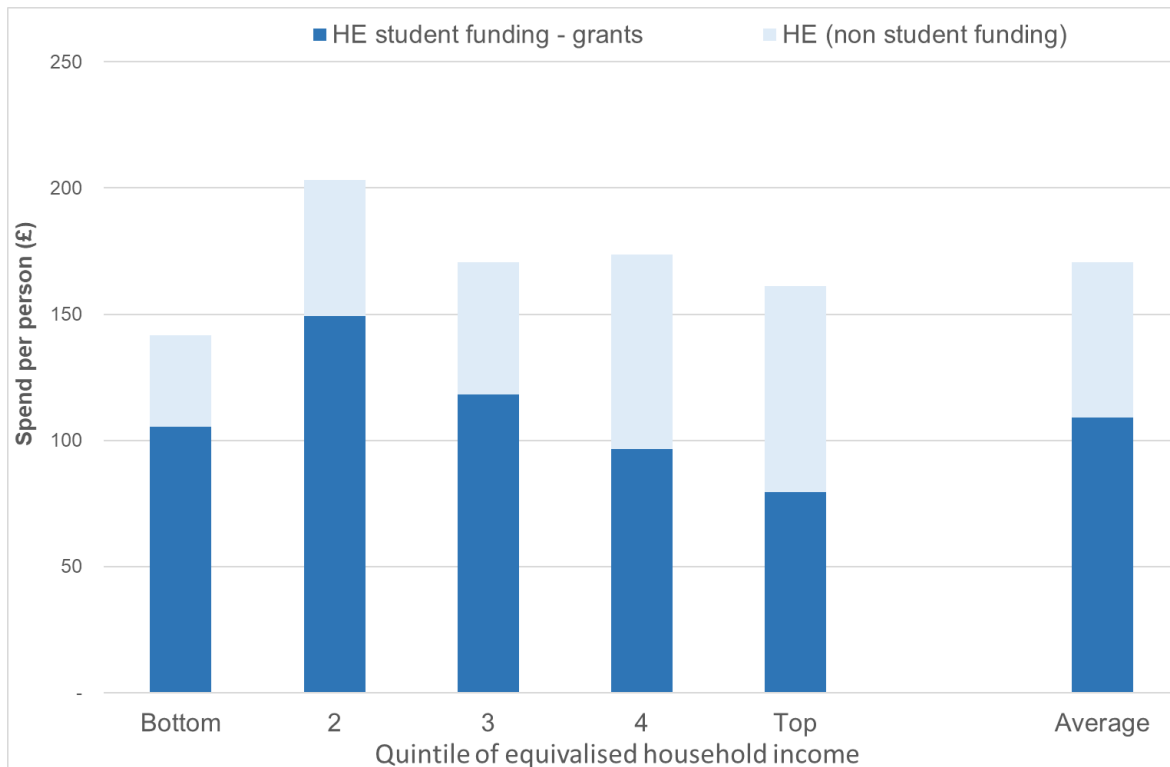
Figure A3: Further education resource spending in Wales by household income, 2022-23



- Spending on higher education is estimated to be broadly progressive with respect to income. The analysis includes funding for higher education institutions and student grant funding. Spending per head is below average in the lowest income households but is higher than average in the second quintile. Spending per head in the highest quintile is also slightly below average. This result reflects two factors: people who attend higher education tend to be from higher income households, but also the means-tested grant funding provides more to those who come from lower income households.

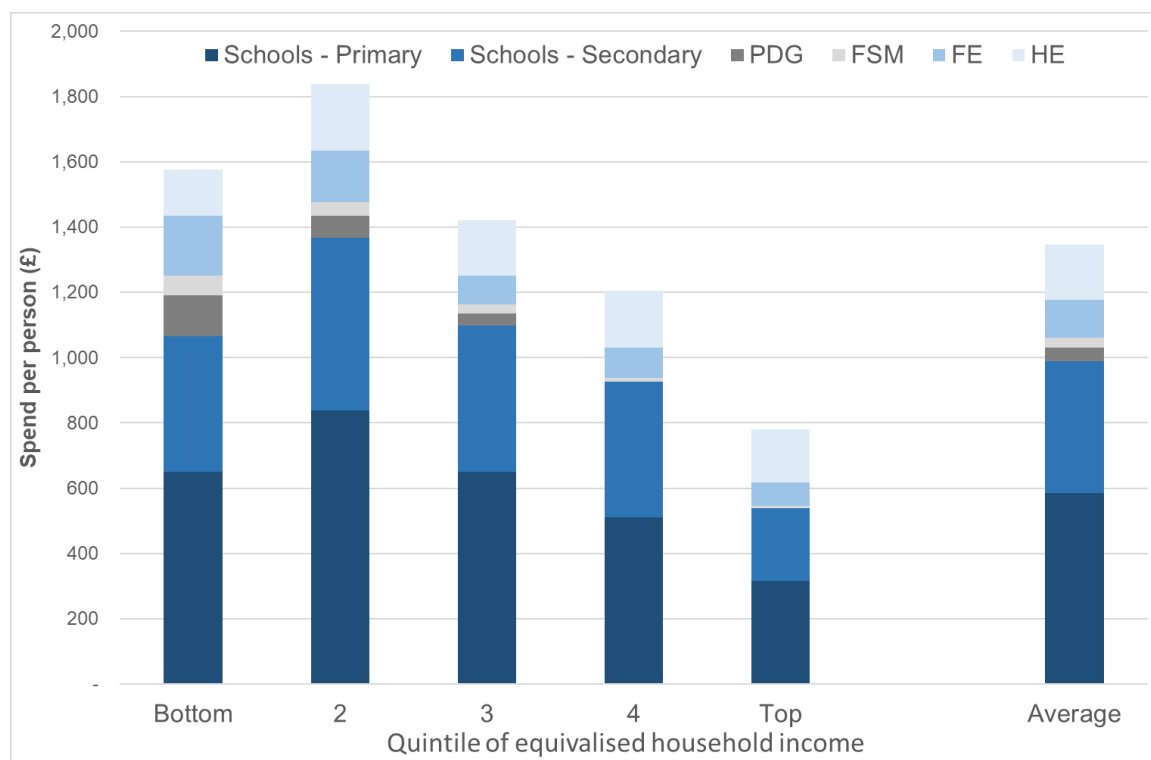
- These findings exclude all forms of student loans, part of which are classified as public expenditure. It is deemed unlikely that all student loans will be repaid in full, as the terms for repayment are income contingent and time-limited. The element that is not repaid is counted as public expenditure and estimated at the time the loans are made. The distributional impact of that public expenditure element is difficult to estimate and, for individual loans, will depend on the future incomes of today's students rather than the incomes of their current domicile.

Figure A4: Higher education resource spending in Wales by household income, 2022-23



- Figure A5 below shows devolved resource spending in Wales on education combined, including the additional analysis covering the new elements of FSM and the PDG. Here the updated analysis shows that both FSM and PDG are highly progressive with respect to household income. This is to be expected given that the way these elements of funding are provided are highly dependent upon a household's income or working circumstance, and whether or not they have children.

Figure A5: Devolved education resource spending in Wales by household income, 2022-23



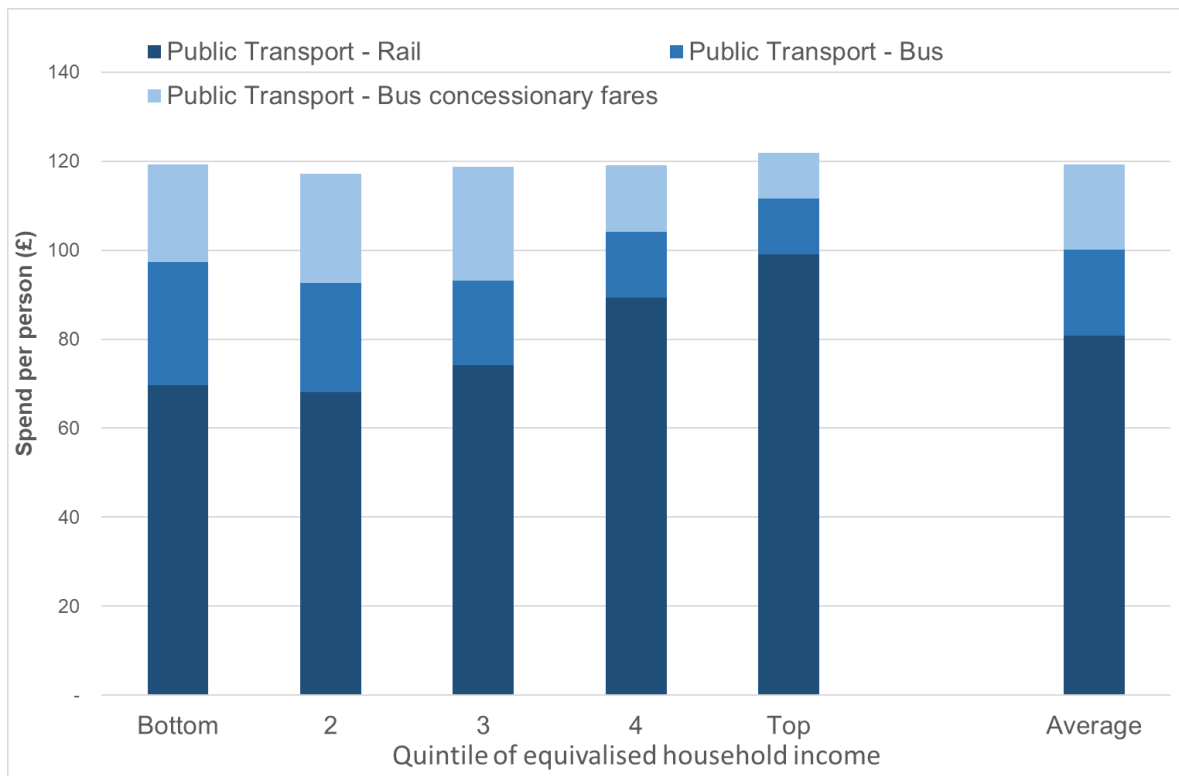
Please note: FE = Further Education, HE = Higher Education, FSM = Free School Meals, PDG = Pupil Development grant

7. The results for the new addition of public transport spending (Figure A6 below) suggest that resource spending overall is relatively flat with respect to household income. Spending on bus services is progressive, but rail subsidies are not. This is consistent with the findings by the ONS for UK public spending on bus and train fare subsidies¹².
8. This analysis only captures spending on those predicted to use the service, consistent with the other service areas. It does not capture any of the potential wider societal benefits that might be associated with any form of public spending. These elements are much harder to capture in this form of analysis and are not included here, consistent with all other versions of distributional analysis in the UK to date. It is also worth noting that the rail usage information employed in this analysis is not limited to those services which are devolved in Wales. It may be that the income profile of those using devolved services is different from those using non-devolved services.

¹² Available from:

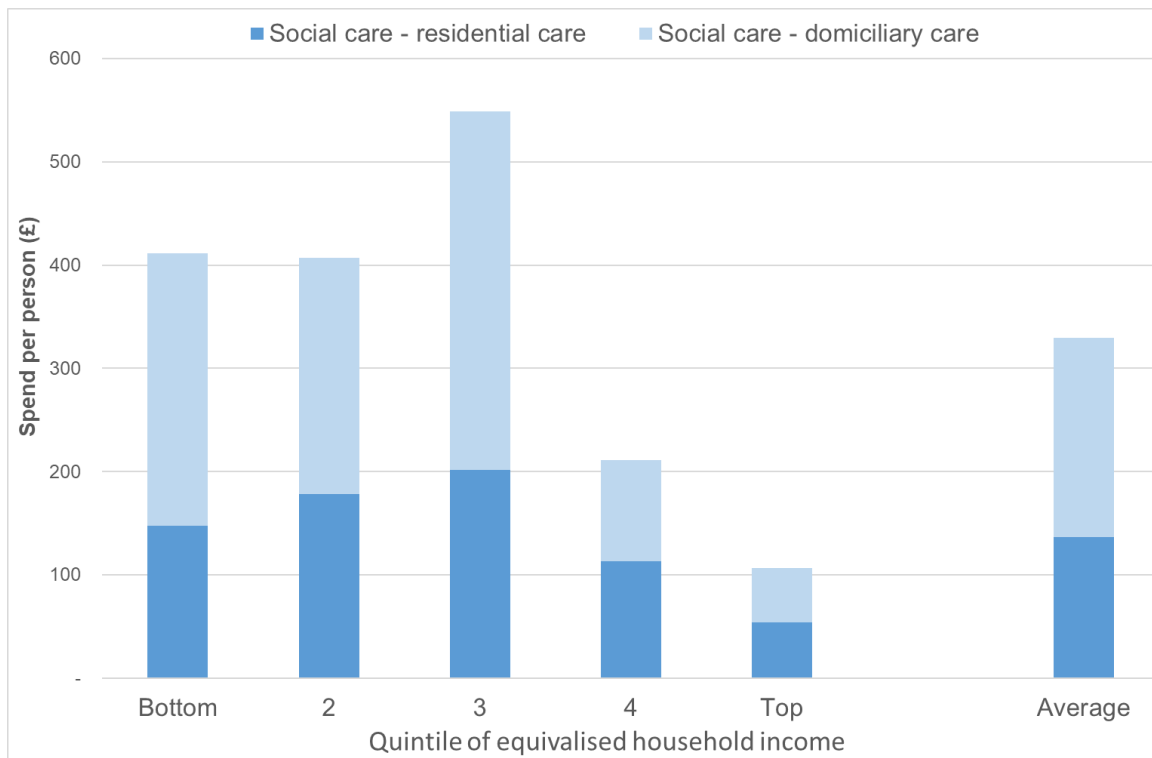
<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/theeffectsoftaxesandbenefitsonhouseholdincome/financialyearending2020>

Figure A6: Devolved transport resource spending in Wales by household income, 2022-23



9. Resource spending on social care for adults is generally found to be progressive with respect to income (see figure A5). Spending in the lowest income quintile is 25 per cent higher per head than average. Spending per head in the highest income quintile is only 32 per cent of the average. However, this relationship with income is not uniform, with the highest spend per head amongst those in the middle (or third) quintile. This pattern applies to resource spending on both domiciliary and residential care provision.
10. The means tests (income and capital) for social care have been applied, which makes this form of spending more progressive than otherwise. However, the dominant effect is that more people in the middle income band are identified as being in receipt or expected to be in receipt of social care for adults. This is primarily because there are more adults in this income band.

Figure A5: Social care for adults resource spending in Wales by household income, 2022-23



Please note residential care only modelled for older adults due to data limitations