Investment in quality education in Scotland

An analysis of costs and benefits

A report for the Educational Institute for Scotland, prepared by IPPR Scotland

Dave Hawkey and Casey Smith, January 2026

Summary

A good quality education is the foundation for a prosperous future. But it is more than that. Children spend a major proportion of their lives at school, and teachers and other school staff dedicate time and energy to support them. A system that can deliver quality education has major wellbeing impacts across many dimensions. Such a system must be adequately resourced.

In this report we model changes to Scotland's education system proposed by the Educational Institute of Scotland (EIS). These are:

- Reducing class sizes to a maximum of 20 pupils, a policy which internationally has been associated with improved academic performance in class, as well as longer term outcomes relating to earnings in later life, social mobility and even healthy life expectancy.

- Reversing cuts to children's access to teachers in early learning settings, establishing a strong foundation for children, preparing them to enter school and helping to identify and mitigate early specific challenges children may experience.

- Reducing the time teachers are required to teach in class ("class contact time") from its current 22.5 hours per week to 20 hours, freeing up time for crucial activities such as lesson planning, marking and feedback, and improving the wellbeing of teachers by reducing stress and levels of burnout.

- Expanding eligibility for school meals support, making this universal during term time and expanding the holiday-support offer to more children from low-income families. Free school meals help improve children's health and learning, with documented benefits persisting through to later life.

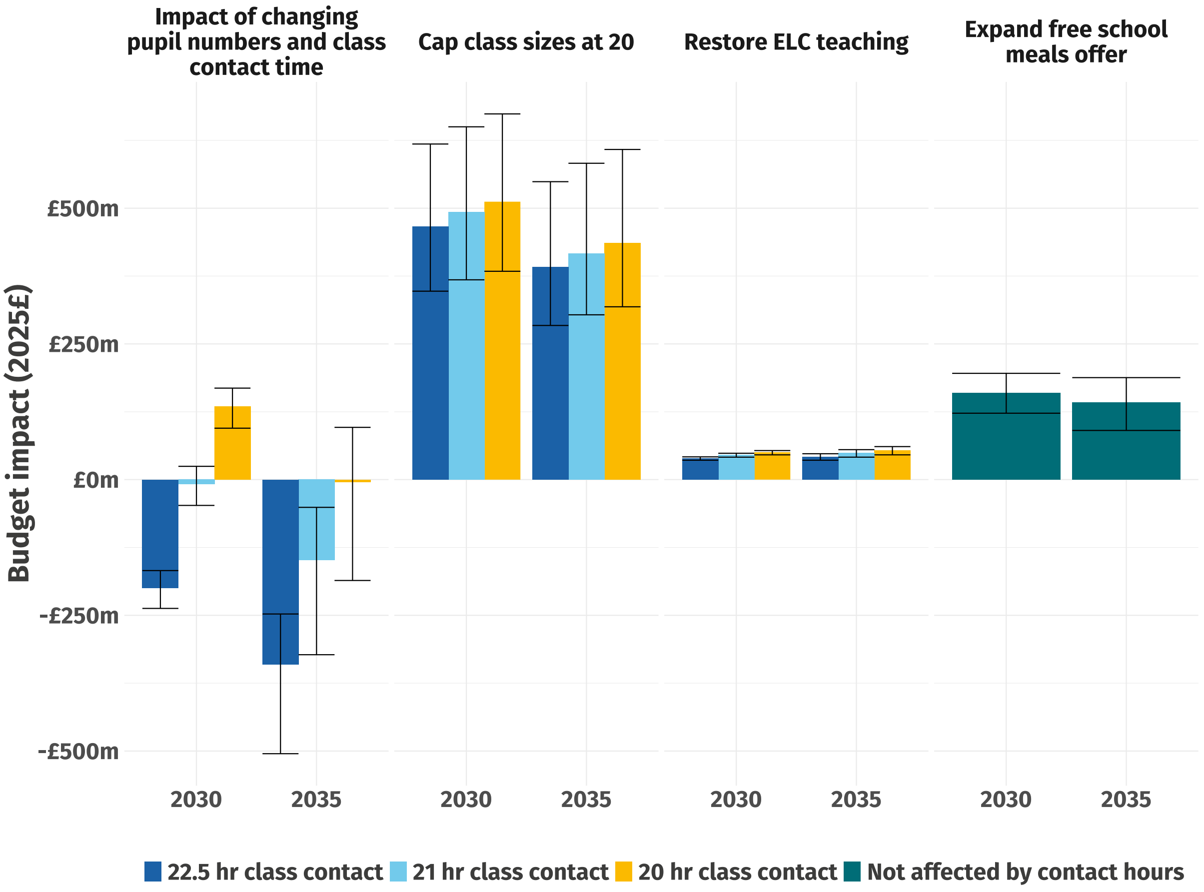
- Increasing teacher numbers and additional investment in the school estate to accommodate the additional teaching required to deliver these policies.

Figure S1 shows our central, high and low estimates of the costs of delivering these policies. Cost savings as pupil numbers fall would balance the additional costs of reducing contact hours. We estimate that by 2030, 21 hours could be resourced out of savings, and by 2035 20 hours. Achieving those reductions earlier would require additional investment from the Scottish government.

The highest cost policy change would be capping class sizes at 20, which we estimate would represent around £500 million per year if delivered by 2030. While there is a wide range on our estimate of the cost of this policy, this is mainly due to uncertainties in the number of children who would benefit.

Figure S1. Breakdown of costs of policies in 2030 and 2035

Cost impact of modelled policies. Impact of changing pupil numbers is relative to 2024 baseline, all other policies are relative to business-as-usual policy.



Source: IPPR Scotland school scenarios model. Errors represent high and low parameters.

Restoring ELC teaching according to the scenarios we have modelled would have a smaller cost impact, coming in on our central estimate around £50m. Expanding eligibility for meals would require investment in the region of £160 million per year (£120 million to £200 million) in 2030, with universal eligibility at secondary school being the main cost driver.

Table 1. Total costs of modelled policy package relative to 2024

Policy delivery year	Full policy package relative to 2024 baseline (2025 prices)
2030	£860m (£650m to £1,090m)
2035	£630m (£270m to £950m)

Source: IPPR Scotland school scenarios model

Cost benefit analysis

Throughout the paper we review the multiple benefits to pupils and teachers that this policy package would be expected to deliver. International evidence paints a rich picture of better learning, healthier children, improved wellbeing among staff and pupils, and a boost to lifetime earnings. Importantly, much of the literature highlights that these benefits are most accentuated among lower achieving pupils and those from disadvantaged areas. The policy package would, therefore, also contribute to closing the poverty-related attainment gap.

Would the use of resources we have estimated in figure S1 be outweighed by the benefits generated? The variety of benefits identified through the paper, and the fact that many resist being reduced to pounds and pence, means a full cost benefit accounting of the policy package is not feasible – too much would be left out.

However, we have considered one narrow aspect of the benefits of reducing class sizes: the impact on later life earnings. We estimate how much of a boost to earnings would be needed to outweigh the additional cost of the class size cap across pupil's years at school. Our central estimate finds this would need to be at least 0.7 per cent for each one-pupil class size reduction (with high and low estimates of 0.8 and 0.6 per cent). International evidence suggests this is a plausible impact, with a similar reduction in class sizes in Sweden having been found to yield a 0.7 per cent increase in earnings (Fredrikkson et al 2011).

While there are many factors that will impact Scottish students' lifetime earnings, including the detail of how the policies we have modelled are designed and implemented, this calculation shows it is highly plausible that such investment would improve wellbeing in Scotland even when measured in narrow economic terms.

Introduction

A good quality education is the foundation for a prosperous future. But it is more than that. Children spend a major proportion of their lives at school, and teachers and other school staff dedicate time and energy to support them. A system that can deliver quality education has major wellbeing impacts across many dimensions. Such a system must be adequately resourced.

In this report we model changes to Scotland's education system proposed by the Educational Institute of Scotland (EIS). These are:

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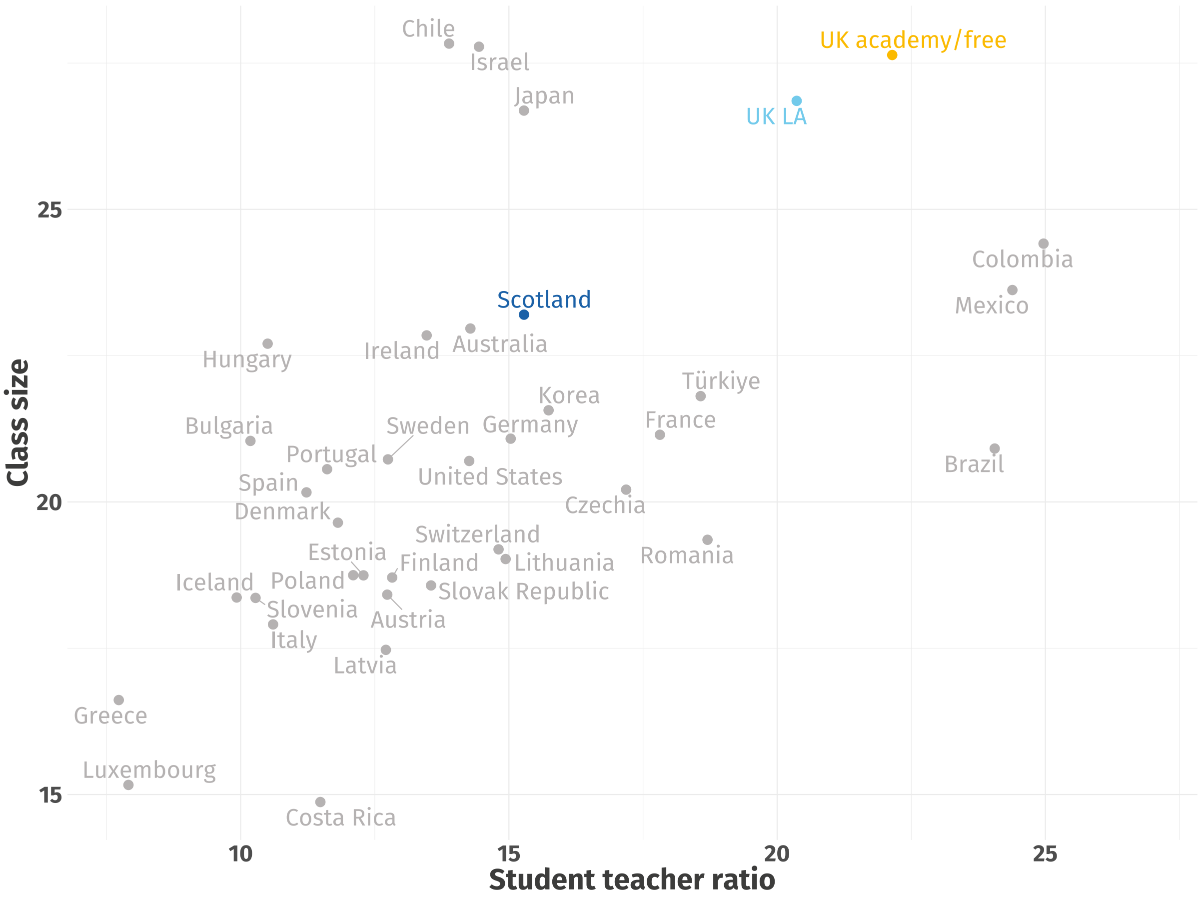
- Increasing teacher numbers and additional investment in the school estate to accommodate the additional teaching required to deliver these policies.

The benefits of these policies are likely to be significant and to be felt most by the most disadvantaged pupils. International evidence, reviewed throughout the paper, shows positive impacts are most substantial among students with lower educational attainment, and those from more socioeconomically disadvantaged areas are the main beneficiaries of these policies. In addition, by increasing the capacity of the education system with these policies, teachers and other school staff would have greater scope to provide the support needed for children with additional support needs (ASN), a key component of successful mainstreaming.

The Scottish education system is sometimes compared with its English neighbour where class sizes and pupil-teacher ratios tend to be higher. However, as figure 1 shows, the UK averages for these metrics are international outliers. Scotland is closer to the international mainstream but still lies on its edge. The policies we have explored here, far from being luxuries or extravagances, would contribute to bringing Scottish education more into line with other countries.

Figure 1. Scottish schools have lower student teacher ratios and class sizes than English schools, but relatively high values when compared with many other countries

Primary school class sizes and pupil teacher ratios, 2022



Data sources: OECD (2025a, 2025b), Scottish government for class size (2022a) and pupil teacher ratios (2022b).

Overview of our modelling

We model the impact and costs of these policies, focusing on the key resources needed to deliver: additional teachers, expansion of the school estate, and additional school meals (including financial support for meals during holidays). As pupil rolls are expected to change over the coming decade (falling in most areas), we model this change and its effect on policies over time.

The policies have overlapping impacts – for example, the number of teachers needed if class sizes are to be reduced will depend on class contact time. Our modelling approach starts by estimating the amount of classroom teaching that would be required under different scenarios, and from there to estimate the number of teachers required for different contact hours.

One issue which we have not been able to model, but which is important in Scottish education, is the prevalence of additional support needs and the resources needed to adequately support mainstreaming. As noted, the policies we have modelled would support the policy of mainstreaming, though further work would be needed to understand the additional resource that would be needed on top of the policies we have modelled.

Our modelling follows the following steps:

1. First, we model the number of pupils at each school in Scotland. We start with 2024 pupil rolls, changing these in proportion to the change in the school-age population in each school's local authority.

2. We then estimate how many hours of classroom teaching would need to be provided in each school in any given year. This is determined by three factors: the number of hours each pupil learns at school (which we assume does not change), the number of pupils and the size of classes in which teaching is delivered. Smaller class sizes require pupils to be divided into more groups, which in turn means more classroom teaching needs to be provided. This is how we estimate the impact of capping classes at 20.

3. We also model the number of teaching hours that would be provided if teaching in ELC settings were restored.

4. From our estimates of teaching hours at steps 2 and 3, we estimate the number of teachers needed to provide this teaching. This is determined by the number of contact hours each teacher delivers, allowing us to estimate the impact of reducing contact time.

5. From step 2 we also calculate the number of classrooms needed at each school. We compare this with estimates of available teaching space in each school to model whether additional capacity would be needed if classes were capped at 20.

6. We estimate the number of meals that would be provided under a policy of universal termtime free school meals and expanded eligibility for holiday meals support.

7. We bring all the above together to model the budgetary impacts using various cost assumptions as detailed throughout the text.

Our innovative modelling approach allows us to estimate the impact of capping class sizes, something which has not been possible previously. Our model also introduces some important constraints that previous modelling in Scotland has not accounted for. In particular, by modelling teaching need at the school level, our approach is sensitive to the distribution of pupils across schools in Scotland.[1] Other modelling approaches that consider only the aggregate relationship between pupil and teacher numbers miss some

[1] Consider an imaginary situation in which there were 20 schools each with 19 pupils (and each school consisted of just one year group). If an analyst tried to model a policy that caps class sizes at 20 but relied only on the aggregate pupil-teacher ratio, they would conclude that a teaching staff adequate for 19 classes was needed, implicitly assuming pupils from one school could be redistributed across the other 19. Our analysis, by contrast, would recognise the need for enough teachers for 20 classes.

of the constraints this sensitivity throws up. In consequence, some of our results differ from previous analyses.

For example, WPI Economics (2024) estimate that, with a steady workforce, falling pupil numbers would mean teacher contact time could be reduced to 21 hours by 2028. Our modelling suggests a steady workforce would have to wait until after 2030 before this could be achieved. Additional teacher recruitment is therefore necessary if the Scottish government's (2022c) commitment to 21 hours contact time is to be delivered in the 2020s.

Sensitivity tests

Our innovative approach to modelling education policy involves a degree of layering calculations on top of each other. To capture the sensitivity of our final costings to key assumptions across the model, we run all calculations three times using different parameters (explained through the text and summarised in annex C). These are designed to explore the impact of biasing our assumptions in ways that would tend to either raise or lower costs, and we refer to them as "high" and "low" parameters respectively. Our "central" parameters sit between these ranges.

Throughout this document we present results from all three parameterisations of the model. Bar charts show the central estimate with error bars indicating the high and low parameter results. Line charts, showing change over time, represent the central parameters as a line laid over a coloured area extending from results from our low parameters to those from our high parameters.

Changing pupil numbers

To estimate future pupil rolls in each school, we start from the most recent school-level data on pupil numbers, which is from the 2024 pupil census (Scottish Government 2025a, 2025b). We assume the change in pupil numbers follows the rate of growth/decline in the number of young people in that school's local authority area, using National Records of Scotland's (NRS 2025) projections, which are based on the 2022 census. An implicit assumption of our method is that the proportion of young people attending mainstream state schools remains constant (consistent with the Scottish government's approach to forecasting pupil numbers).

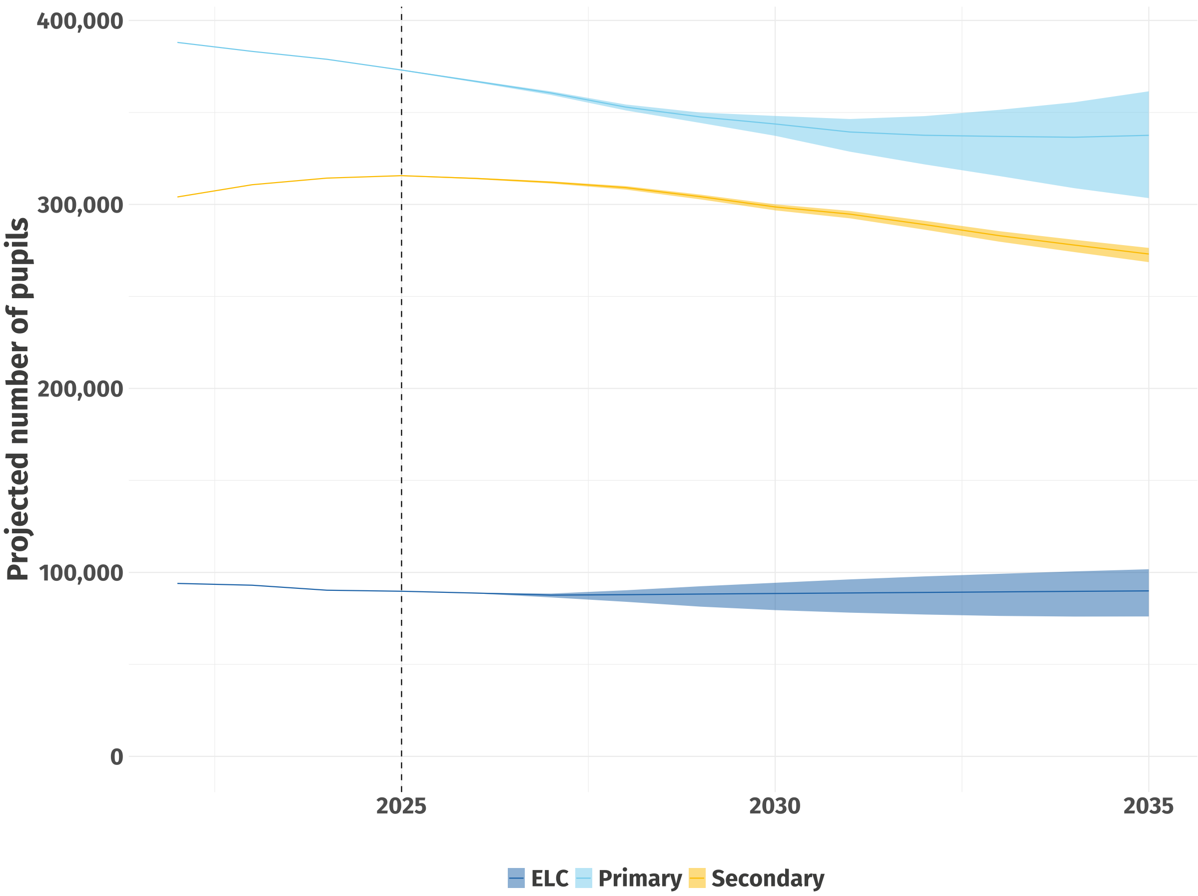
Our central parameters use the NRS principal projection. Our high and low parameters use NRS variant projection based on changing assumptions about fertility and migration. At different times and for different age groups, fertility and migration will have different impacts. For example, different fertility rates will have little impact on secondary school populations until the babies NRS estimates are born reach secondary school age. In the near-term, secondary school populations will be more affected by different migration outcomes. Conversely, the number of children expected at ELC level is more sensitive to fertility rates. To capture this, we combine migration and fertility variants in our high and low parameter sets. For each year and each age group our high parameter population projection is the higher of the NRS's high-fertility and high-migration projections. Likewise our low parameters use the lower of the low-fertility and low-migration projections.

Figure 2 shows our projected pupil numbers across ELC, primary and secondary school levels from 2022 (backcast) to 2043. A bulge in the population born around 2010 is working its way through the system, meaning: a recent fall in the number of three and four-year-olds is likely to steady; the number of children at primary is currently falling but will stabilise or even grow slightly shortly after 2030; and the secondary school population is currently peaking with a fall due to last to around the latter half of the 2030s.

As shown in figure 3, the relative change in projected pupil numbers varies across Scotland. While all but one council areas are expected to see a reduction in pupil numbers, change is not evenly distributed. Rural areas are expected to see the largest proportional fall in pupil numbers. Our model tracks this variation by grounding school-level calculations in local authority population projections, meaning we do not implicitly assume children in one area have sufficient provision because of capacity in another.

Figure 2. Pupil numbers are forecast to fall in schools over the coming decade

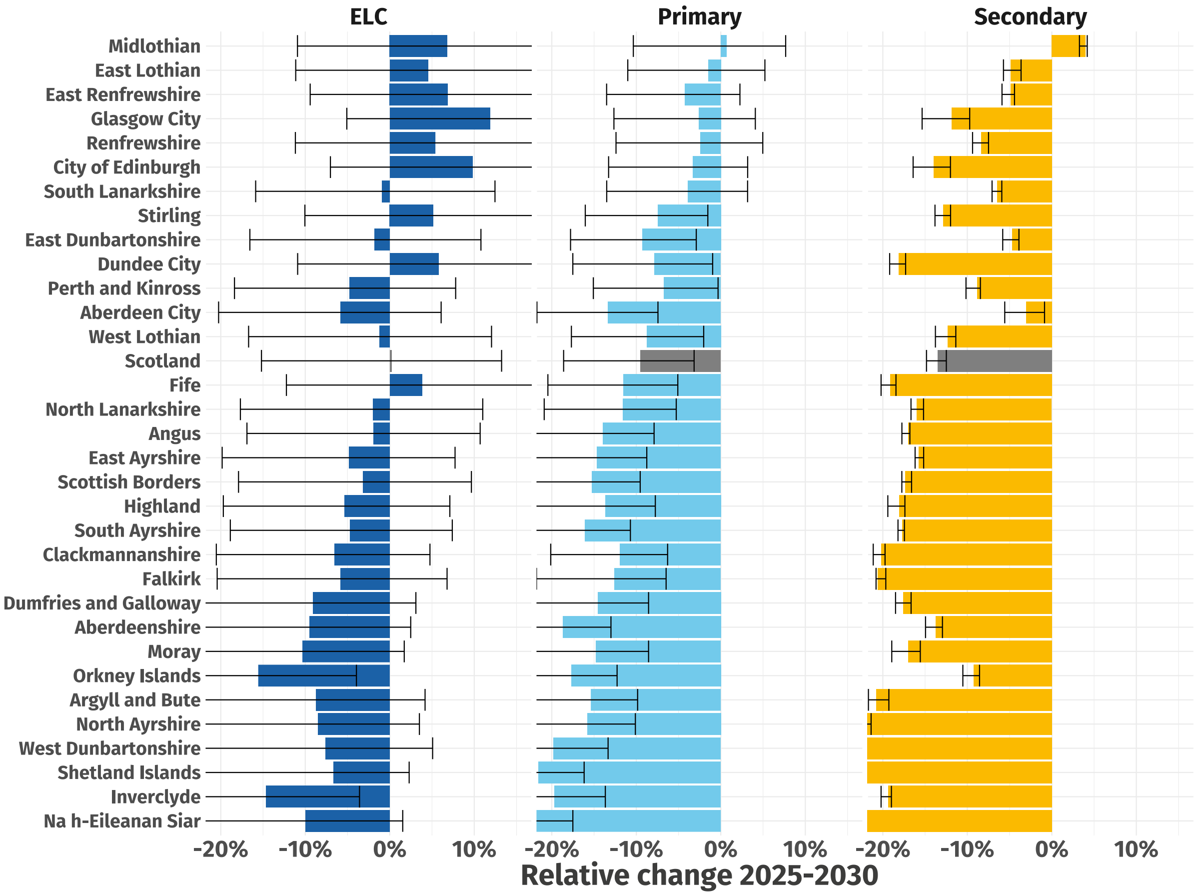
Change in population by ELC and school-level age groups



Source: IPPR Scotland analysis using data from Scottish Government (2025b) and National Records of Scotland (2025)

Figure 3. Central projections see pupil numbers falling to 2030 in nearly all council areas, with higher certainty among older age groups

Relative population change between 2025 and 2030 for each age group



Source: IPPR Scotland analysis using data from Scottish Government (2025b) *and National Records of Scotland (2025). Main bars show central population projections, error bars high and low projections based on the higher (lower) of high (low) migration and fertility variant population projections.*

Capping class sizes at 20

A reduction in class sizes to 20 pupils per class across all stages and subjects.

Background

Class sizes are one crucial element of children's learning environment. Smaller class sizes can support greater class supervision, taking and answering questions, and adopting more personalised, child-centred, structured teaching (Anderson 2000; NICHD 2004). This in turn can promote engagement among pupils, where larger classes can lead to more passive learning (Blatchford et al. 2005, 2011). Smaller class sizes have also been associated with fewer disruptions and discipline problems (Finn & Achilles 1999).

Several international studies have traced the pathway from smaller class sizes through to learning and later life outcomes. Smaller class sizes in these studies have been associated with substantial improvement in learning and cognitive abilities, years of education completed, participation in tertiary education, and better pupil health (Mosteller 1995; Fredrikkson et al 2011; Muennig & Woolf 2007; Krueger & Whitmore 2000; Chetty et al 2011).

Some of these studies have quantified benefits in financial terms, finding the cost of smaller class sizes can be outweighed by the resulting benefits (Dee & West 2011; Fredrikkson et al 2011). Of particular interest is Fredrikkson et al's (2011) research in Sweden which calculated that for every single pupil reduction in class sizes, there was a corresponding 0.7 per cent increase in wages.

When class size reductions do benefit students, various studies find the greatest benefit among those with the lowest attainment or those from disadvantaged areas (Blatchford et al. 2011; Bosworth 2010; Filges et al 2018). Smaller classes should therefore be part of policy packages aimed at closing the educational attainment gap.

Reducing class sizes would also contribute to the policy of teaching children with additional support needs (ASN) in mainstream settings (EIS 2024a). In studies that have looked specifically at the impact of reduced class size on pupils with ASN, the evidence shows positive impact, as teachers are better able to provide individualised and targeted instruction to each student (Bondebjerg et al 2023). Ensuring appropriate support for ASN pupils in mainstream settings is not only good for those pupils, but it also benefits their peers. Studies show positive impacts on academic outcomes among pupils without ASN learning alongside pupils with ASN (Education Endowment Foundation 2020). To be effective, reductions have to result in classes that are small enough to enable teachers and pupils to engage productively with each other. A number of studies which look at incremental class size reductions from a large class baseline (around 30 pupils) have found limited longterm impacts, if any (Falch et al 2017; Leuven & Lokken 2017; Argaw & Pahani 2018). Crucially, the studies cited above that do show longterm benefits concern class sizes of around 20. Scotland, with average primary class sizes at 23.3 (Scottish Government 2024a) and practical classes in secondary school already capped at 20, may therefore be in the "sweet spot" for a class size reduction policy to have high beneficial impacts on pupils' experience and later life outcomes.

Modelling

Current class sizes

To estimate the impact of capping class sizes, we need to estimate how many classes are likely to be above a given cap in future years without the policy. This is the strength of our school-based modelling approach, as it allows us to estimate the distribution of future class sizes, not just the average.

Our starting point for this analysis is the current distribution of class sizes, which we estimate from school-level data from 2024. At primary school, pupils generally stay in the same class group throughout the school week and across each school year. The Scottish government publishes data on the number of pupils in every primary school class.

Secondary schools are considerably more complex as pupils move between class groups from one period to the next, and different maxima currently apply to different subjects (practical subjects are already capped at 20). For this study we have inferred average class sizes (for non-practical subjects) for each secondary school. Annex D describes our method, but in a nutshell we have estimated how many hours of classroom teaching are delivered in each school and estimated the average class size this corresponds to.

This innovative modelling approach does rely on a number of assumptions about the spread of class sizes within each school and the time teachers with management duties spend delivering lessons. We vary these assumptions across our high, central and low scenarios (detailed in Annex D, summarised in Annex C).

Figure 4 shows the distribution of schools by average class size based on these data and our modelling. The majority of primary schools (68 per cent) have an average class size above 20. On our central parameters we estimate just over half of secondary schools (53 per cent) have average class sizes above 20. Of course, the larger a school's class sizes the more pupils it represents. When we ask how many pupils attend schools with average class sizes above 20 we find 88 per cent of primary pupils and estimate 62 per cent of secondary pupils.[2] Bringing class sizes down to a maximum of 20 pupils would enhance the learning experience of the majority of pupils.

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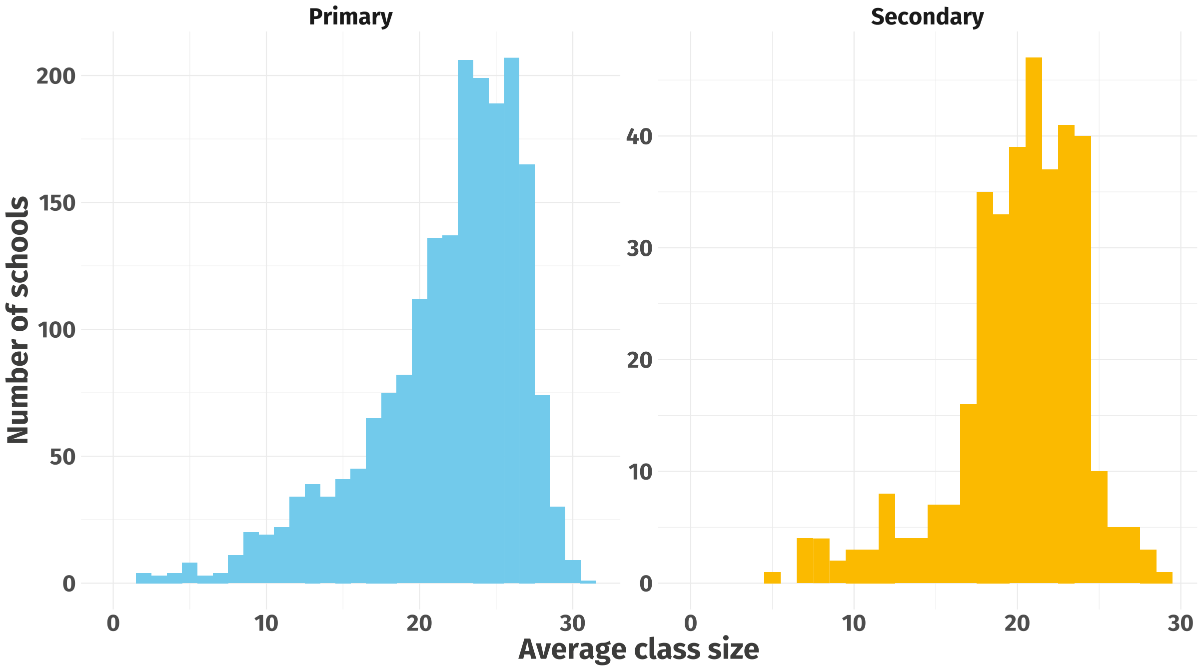
[2] Our high and low estimates of the proportion of secondary schools with average classes above 20 are 64 per cent and 40 per cent respectively. Our corresponding estimates for the number of secondary pupils in schools with classes above 20 are 74 per cent and 49 per cent.

Figure 4. Most schools in Scotland have average class sizes above 20.

Number of schools by average class size (actual for primary, modelled for secondary using our central parameters), 2024



Source: IPPR Scotland school scenario model and analysis of Scottish Government (2025a). NB average class sizes in secondary schools refer to non-practical classes.

Baseline scenario class sizes

Our model of future class sizes must make assumptions about how schools will respond to falling pupil rolls, and in particular what will happen to class sizes with *and without* the cap of 20 pupils per class. To model the impact of capping classes at 20 we need to understand which schools would be affected by the policy and which we would expect not to need to change to deliver the policy.

Consider a school that currently has an average class size of 15. Under a policy scenario that caps class sizes at 20, it would be unrealistic to assume this school would put its pupils into a smaller number of larger classes. This is something it could already do without the policy, so we take the fact that it hasn't already done this as evidence that there are good reasons for this school's current class size.

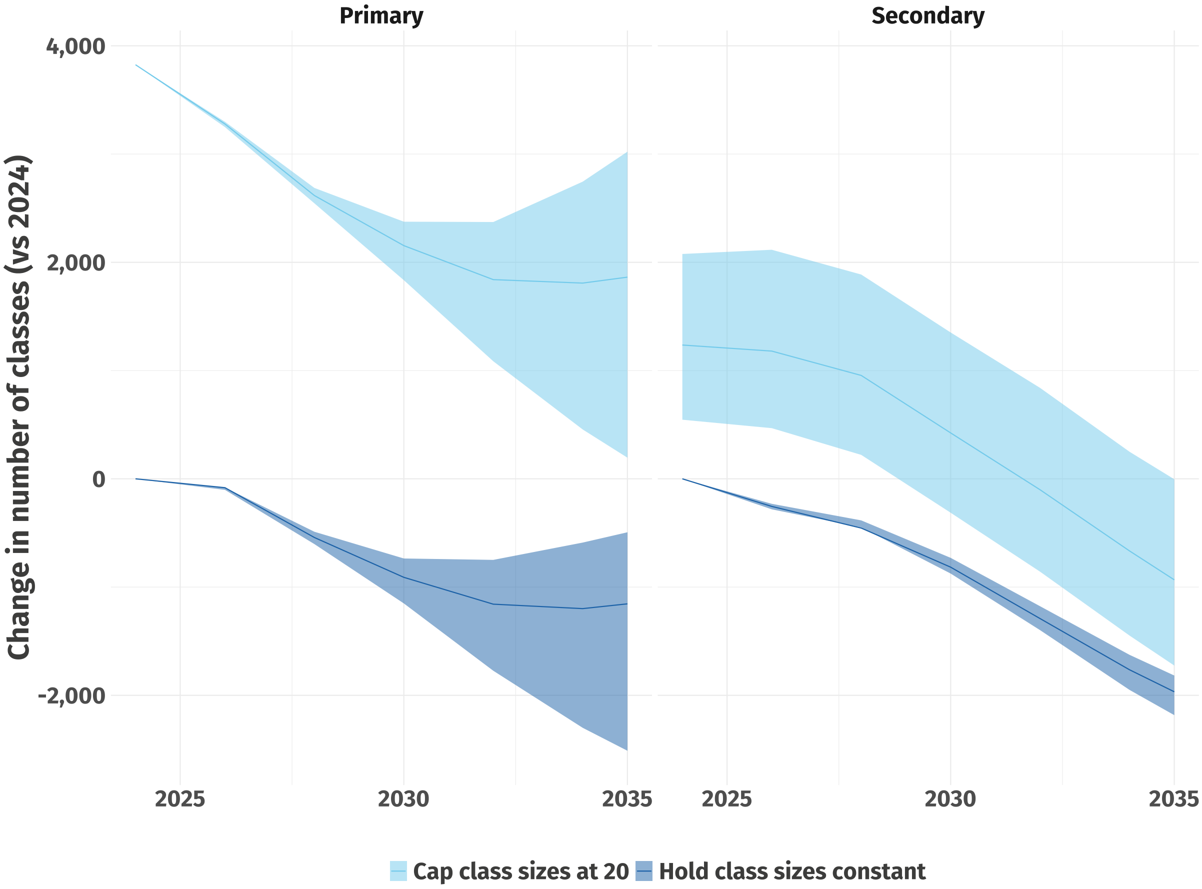
In our model, we assume that the number of classes in each school in 2024 reflects a balance between factors such as available resources, pupil rolls, the breadth of education offered etc., and that this balance carries forward into the future. That is, if a school has relatively small class sizes in 2024, we assume similar class sizes in future years. This means that, as pupil rolls fall, schools will reduce the number of classes they teach.

This approach means we do not model an unrealistic situation in which schools that currently have small classes would consolidate to a small number of larger classes. But it also carries forward some aspects of the organisation of schools that could change over time. Unpicking the factors that determine class sizes and projecting them in more detail than we have been able would be beyond both the scope of this research and data availability. For those schools affected by the cap of 20, the combined impact of falling pupil numbers and the class size cap is not affected by our assumed baseline class size, though the allocation of those impacts to baseline dynamics and policy choices is.

Modelling results

Figure 5. Capping class sizes to 20 would increase the amount of teaching, but this will reduce with falling pupil numbers

Change in teaching (full time class equivalents) relative to 2024



Source: IPPR Scotland school scenarios model. NB at primary level classes are stable groups through the year. At secondary level where students move between classes through the week, one additional class represents an additional class taught in every period during the week. Secondary class counts can therefore be fractional.

Figure 5 shows how the amount of teaching required across Scotland's schools would fall as pupil numbers decline, assuming class sizes remain at their 2024 level (dark blue). Uncertainties at primary level grow over time as pupil rolls are more sensitive to variant population projections, particularly fertility assumptions.

Capping classes at 20 has a larger impact on primary schools given our estimate that a higher proportion of primary schools have average class sizes above 20 (figure 4).

However, the scale of this impact falls almost a half by 2030. This could suggest a cost-effective way of delivering the policy would be to commit to hit the class cap by 2030.

The cap of 20 has a smaller impact on the amount of teaching at secondary level, though here the uncertainty represented by the ribbon in figure 5 is of a similar scale to our central estimate, reflecting the data limitations our modelling works within. Nonetheless, there is a clear and consistent downward trend.

While our central estimate of the amount of additional secondary *teaching* with the class cap falls below zero in the 2030s, this does not mean the policy is not associated with additional cost, as the distribution of this additional teaching varies across local authorities and across schools, meaning some additional estate capacity may be needed even if the amount of teaching is the same as in 2024 (see estates section later in this report).

Reversing cuts to early learning

Reversal of cuts to teacher numbers; minimum guaranteed access to a GTCS registered teacher for all three-to-five-year-olds

Background

Early intervention is one of the best ways to enhance the life chances and prospects for children. James Heckman's research, much of which conducted in Scotland, demonstrates how early investment in children yields significant returns in individual productivity, economic gains, and reduced social costs (Heckman 2008; Heckman & Masterov 2005; see also Partridge 2024).

Numerous studies, both international and UK, comparing academic and later life achievement find children who receive high quality support before schooling see significant benefits. These range from higher secondary school qualifications to fewer childhood hospital visits and higher lifetime earnings (Cattan et al 2014, 2025; Bartik et al. 2012; Chetty et al 2011). Recent analysis of the UK's Sure Start programme found its cost of £2.7 billion was outweighed by estimated benefits of £5.5 billion which included higher tax revenues and lower failure demand spending (Cattan et al 2025).

The quality of pre-school provision is important to delivering these outcomes. Qualified educators are needed to "create a high-quality pedagogic environment that makes the difference" in child outcomes (OECD 2019). There is a strong link between better learning outcomes (both cognitive and linguistic) and the qualification of pre-school educators (Litjens & Taguma 2010; Manning et al 2017).

Qualified teachers in early learning settings can also bring particular benefits to children with ASN. Access to teachers whose training enables them to meet a wider range of predictable needs ensures they do not escalate and enable them to maintain belonging and engagement as they transition from early learning and into mainstream schools (Harris et al. 2025).

The positive impacts of pre-school attendance are more marked for children from lower income backgrounds (Barnett & Belfield 2006; Bakken et al 2015; Raut 2003). Enabling lower income families to access early learning and childcare through free hours is therefore an important contribution to social mobility, but this is significantly enhanced by the presence of qualified teachers.

Modelling

Scottish government data shows the number of teachers in ELC setting has fallen much faster than the number of registered three-to-five-year-olds. In 2012 there were 67 children per FTE teacher, but by 2024 this had reached 122.[3]

In our analysis, we assume the purpose of reversing teacher cuts is to (at minimum) restore the amount of teaching children in ELC settings receive. Accordingly, we estimate

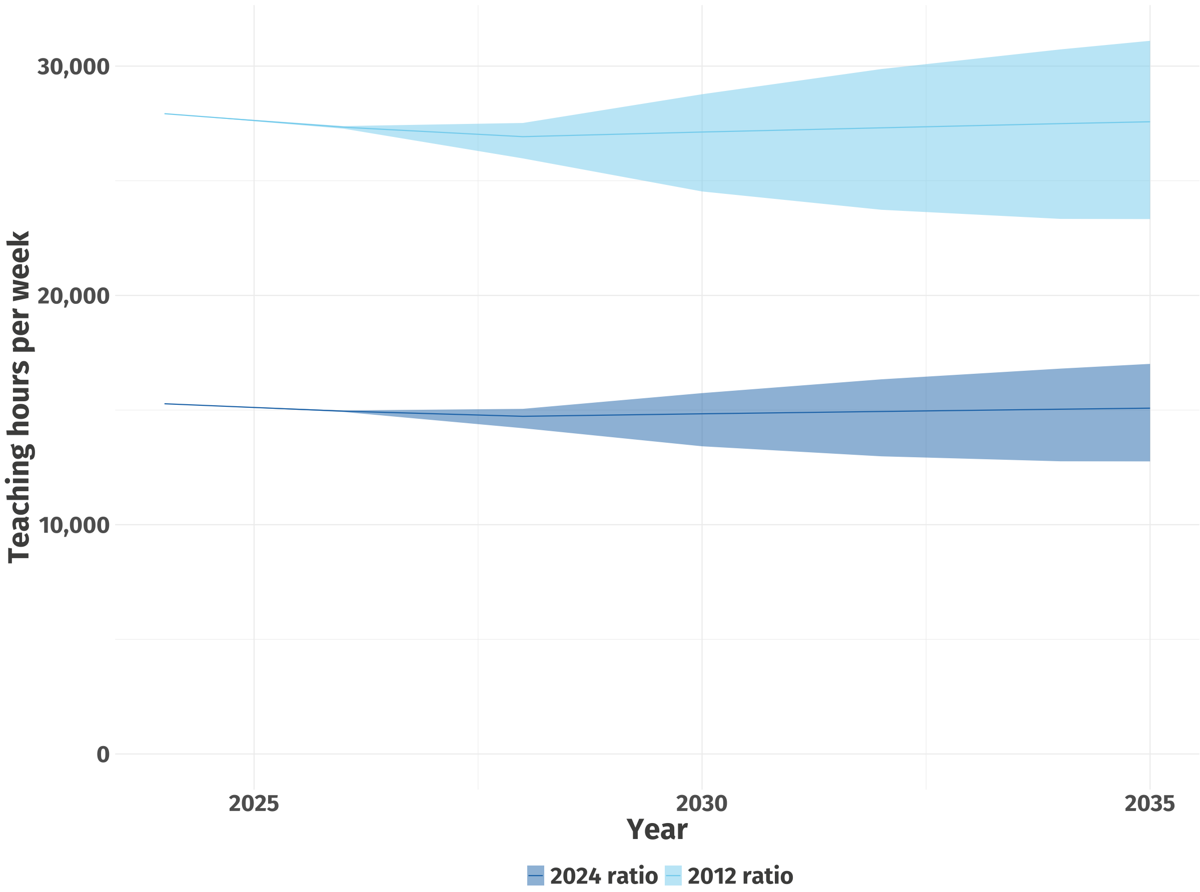
[3] Analysis of data from https://www.gov.scot/collections/early-learning-and-childcare-statistics/

the amount of teaching that children would have received before ELC teacher numbers fell. Based on each FTE teacher providing 22.5 hours of teaching and learning taking place in groups of eight (the maximum child/adult ratio set out by the Care inspectorate 2018), we estimate in 2012 children received an average of two hours and forty minutes learning per week (during term time).

To estimate the number of ELC teachers that would be needed to deliver the policy (with changing numbers of children and reduced teacher contact time) we assume every registered three-to-five-year-old would receive two hours and forty minutes of learning in groups of eight. This allows us to calculate the total amount of teaching time that must be delivered, and so the number of FTE teachers required, as shown in figure 6.

Figure 6. Restoring teacher ratios to 2012 levels would see around 80% more teaching in ELC settings.

Modelled number of total contact hours provided to ELC children 3+ if teacher ratio held at its 2024 level or restored to its level in 2012



Source: IPPR Scotland school scenario modelling

Our high- and low-estimates of the amount of teaching that would be delivered by restoring 2012 ratios are affected by the range of population projections we have used. Because different fertility assumptions naturally have earlier impacts on younger cohorts, we see the range of estimated teaching hours grow through the 2030s. Nonetheless, across our modelling we find that restoring learning hours to the level implied by 2012 pupil teacher ratios would increase the amount of ELC teaching provided by around 80 per cent.

Costing assumptions

To estimate the cost of increasing ELC teaching we estimate the additional cost of teacher salaries, national insurance and pension contributions, as described at the end of the next chapter.

Reducing class contact time and increasing teacher numbers

A reduction of class contact time to a maximum of 20 hours per week and a significant increase in the numbers of permanently employed teachers.

Background evidence

Direct teaching in classrooms is just one part of a teacher's job and sits alongside other critical activities such as lesson preparation, reviewing and providing feedback on pupils' work, collaborating with other teachers, and engaging the parents of children. Strikingly, international surveys show in most countries classroom teaching makes up less than half of teachers' working time, with the international average being 43 per cent (OECD 2024a). In this context, the 22.5 hours per week standard for Scottish teachers is relatively high (figure 7).

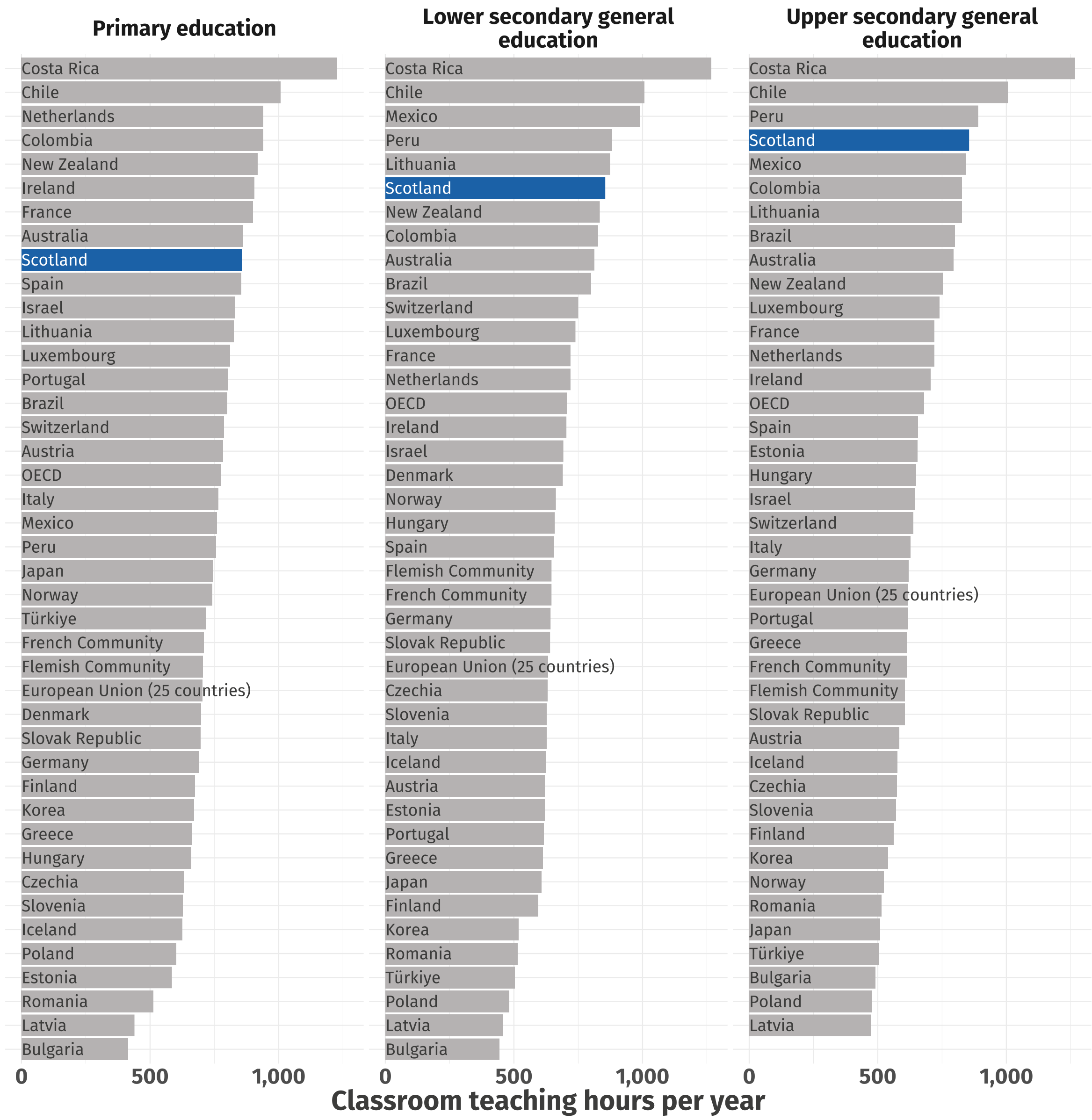
This matters for the quality of education teachers are able to deliver. Freeing up teacher time for lesson preparation has been associated with improvements in student attainment (Churches et al 2022). International evidence adds colour to this finding, showing teachers with inadequate time to prepare lessons may resort to less effective teaching methods, relying on assessments which reward memorisation to the detriment of metacognitive skills like critical thinking and independent thought (Joe & Mtsi 2023).

With growing prevalence of ASN, teachers' time becomes even more important. Effective teaching in a mainstream setting requires that teachers have capacity to understand and respond to the learning needs of pupils. This involves assessing needs, making a plan of action, carrying out that plan, and reviewing the action (Education Endowment Foundation 2025). The EIS has found that among teachers in Scotland 77 per cent rarely or only occasionally had adequate time to complete the paperwork and engage with colleagues on ASN policy within working hours. Instead, this work had to be completed outside of working hours (EIS 2023). OECD international survey data finds inadequate time to prepare lessons which include adaptions to support ASN pupils to be an important stressors which undermines pupil learning (OECD 2024a).

Not only does learning suffer when teachers do not have enough time, so too does teacher wellbeing. Teachers in Scotland spend around 11 hours in the week outside of contracted hours on work-related activity (Hulme et al 2024). This has been found to strongly predict how stressed teachers are, irrespective of sector or role, and those spending more time with face-to-face commitments report higher levels of stress (Hulme et al 2024). The same is true for teachers in England (Ozturk et al 2025) and internationally, where studies find teacher stress can worsen academic outcomes in reading, literacy, mathematics (Education International 2024).

Figure 7. Teachers in Scotland have among the highest teaching hours in the world

Statutory teaching time in 2023



Data source: OECD (2024b)

Modelling teacher numbers

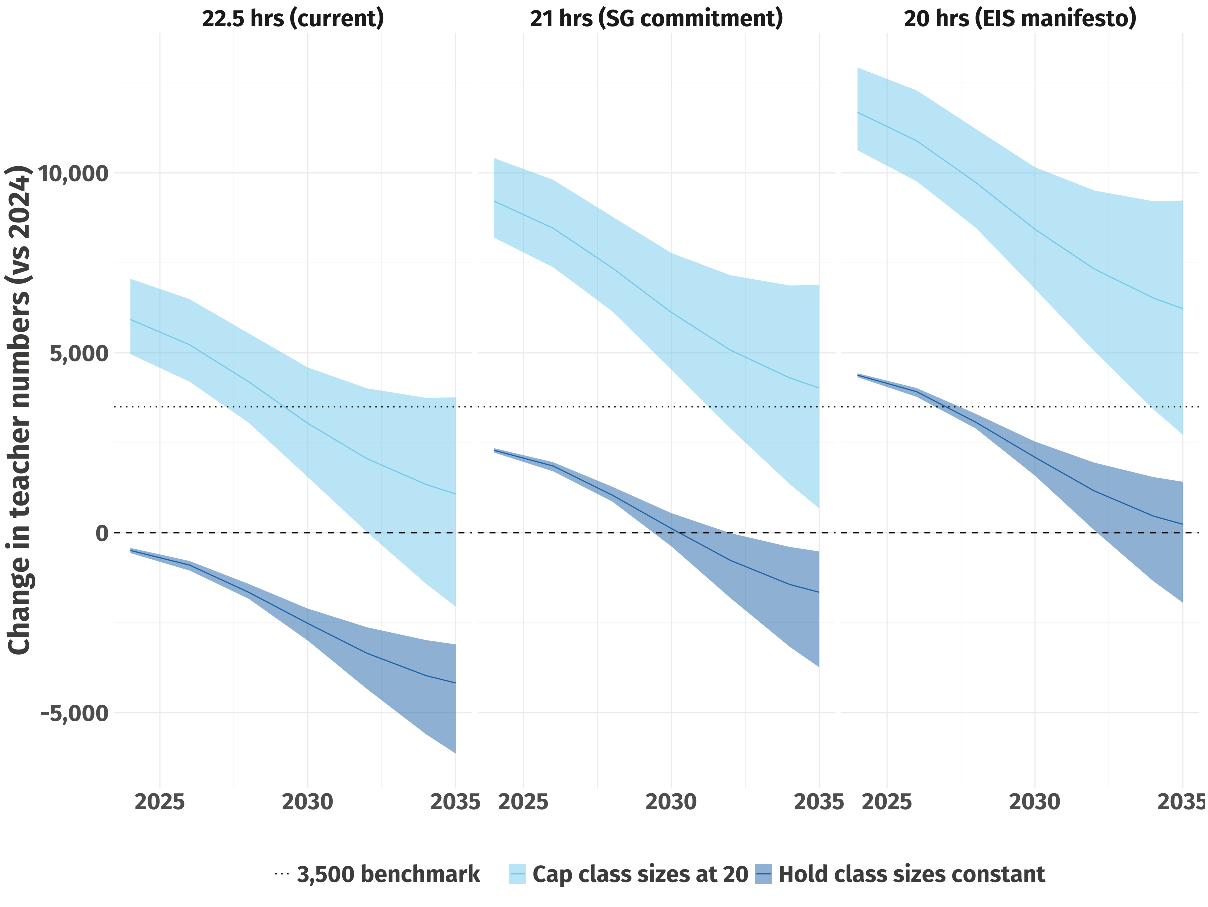
The impact of the policies we are analysing on the number of FTE teachers depends on (a) the total number of classroom hours that are taught in our modelling as described earlier, and (b) the number of contact hours per FTE teacher. We model three benchmarks for the latter: the current SNCT maximum of 22.5 hours; 21 hours, a standard to which the Scottish government has previously committed; and 20 hours, the EIS manifesto policy.

Figure 9 presents our estimate of the change in teacher numbers relative to the total number of teachers in 2024 (which was 53,412 according to the teacher census). We also show a benchmark increase of 3,500 teachers, the number the Scottish government committed to, as a dotted horizontal line (Scottish Government 2022c). Dark blue shows the change in teacher numbers due to falling pupil rolls (which reduces the number of FTE posts on the assumption that class sizes don't change) and reductions in class contact time (which increases the number of FTE posts). Light blue shows our estimate of teacher numbers under our model of a 20-pupil class size cap.

Our high and low parameters set a wide range for our estimate of teachers needed to cap class sizes at 20. The drivers of this are the variant population forecasts and the data limitations affecting our model of secondary class sizes (see also figure 5).

Figure 8. Reducing contact time, capping class sizes and restoring ELC teaching all increase the number of teachers in Scotland

FTE teaching posts



Source: IPPR Scotland school scenario modelling

If teacher numbers were held constant at 2024 levels, by the early 2030s this would allow for either class contact to be cut to 21 hours per week if class sizes in schools remain unchanged (dark blue area crosses the zero line in the middle panel of figure 9). Increasing teacher numbers by 3,500 could support a shift to 20 hours of class contact per week before 2030 (right hand panel).

Capping class sizes at 20 would require an increase in teacher numbers even if contact hours were to remain at their current 22.5 (left hand panel). Combining a classroom cap and reduced contact hours would require additional teachers beyond the 3,500 benchmark. Should the policy be delivered in 2030, our central estimate of this number is 8,500, and our sensitivity estimates range from 7,000 to 10,000.[4]

How we estimate the costs of changing teacher numbers

We base our estimate on a weighted average of pay and on costs (August 2025) for main grade teachers. This is £68,919 per FTE teacher and includes employer national insurance and pension contributions. We assume annual real terms pay inflation of 1 per cent per year.

[4] Figures rounded to the nearest 500 FTE teachers.

School estate

Investment in the school estate to facilitate smaller class sizes

Background evidence

Dilapidated and overcrowded schools have obvious negative impacts both on teachers' ability to teach and pupils' ability to learn. International studies find run-down schools correlate with lower educational performance (Duran-Narucki 2008; Eitland et al 2017; Filardo et al 2016; Cuesta et al 2016). Impacts arise from general dilapidation, poor ventilation, lighting and acoustics, and inadequate facilities such as libraries and laboratories.

Research with Scottish students adds weight to these findings, linking pupils' own perceptions of their school environment with educational outcomes and wellbeing. Those with more positive perceptions "are less likely to have difficulties interacting with the school environment [or] perform negative behaviours" and more likely to "[engage] with the school and have higher academic and global self-esteem" (Edgerton et al 2011).

The Scottish government has two measures of estate adequacy: school condition and school suitability.[5] On both counts, the story is one of improving school condition and suitability. In 2024 91.7 per cent of Scotland's schools were of 'good' or 'satisfactory' condition (upward trend) while 8.3 per cent designated 'poor' or 'bad' (ibid). While 88.7 per cent of schools were rated 'good' or 'satisfactory' in suitability 11.3 per cent of schools in Scotland were 'poor' or 'bad' (Scottish Government 2024b). The Scottish government's Learning Estate Investment Programme (LEIP) is how investment in further improving the school estate is made.

Capping class sizes at 20 would need more classrooms to accommodate the increase in teaching set out above. A key question in understanding the implications of this increase is the extent to which schools already have capacity within their estates to teach more classes, and to what extent additional construction would be needed. The Scottish government's school-level statistics indicate the proportion of their capacity used for teaching, but this metric does not show what use the rest of the school estate is currently put to.

This is important both because non-classroom spaces may provide a diverse and enriching environment, and because such spaces may also provide important capacity to enable mainstreaming. ASN support bases create space where ASN pupils can access and benefit from specialist support alongside the existing curriculum. They typically comprise one or two classrooms, therapy rooms as well as other facilities (Doherty 2025). A whole-school approach to accommodating pupils with ASN brings mutual benefits to those pupils and the wider pupil population in mainstream schools (McAllister & Hadjri 2013).

[5] School condition refers to the fabric of a school, including the state of repair, school design, and health and safety. School suitability concerns the fitness of a school to deliver curriculum, support quality learning, accommodate pre- and after-school services, and inclusion of disabled pupils and staff.

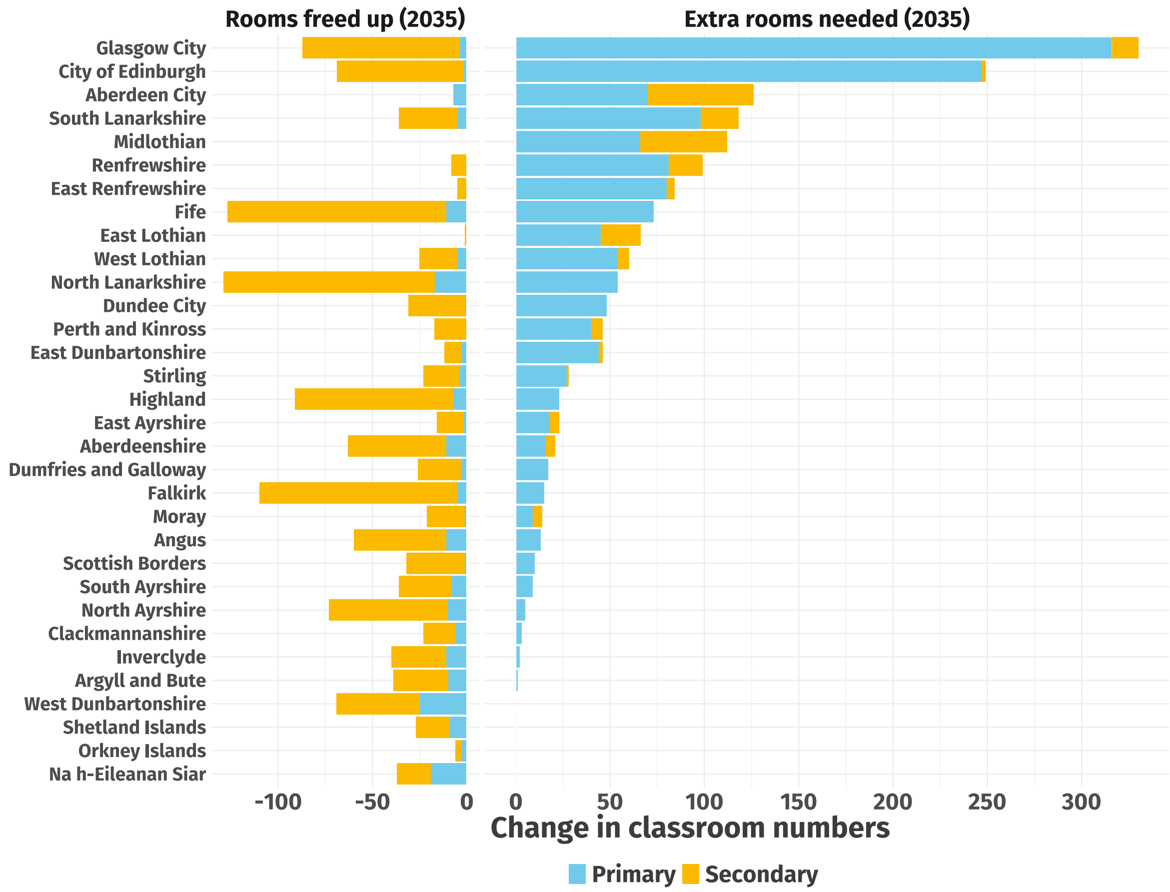
Modelling expansion to the school estate

In our model we estimate the number of additional classrooms that would be needed to accommodate additional teaching with a class size cap of 20. To do this, we estimate the amount of teaching space available within each school based on the school's current teaching provision and the capacity presented in the Scottish government's school-level statistics.

Given the uncertainties in how schools currently use their estate capacity and the importance of non-classroom space for ASN mainstreaming, we vary our estimates of existing school capacity across our high, low and central cost estimates. In our low cost estimate we assume the current spare capacity of schools is all available for additional teaching, and in our high cost estimate we assume none of it is. Our central estimate splits the difference and assumes half of the capacity not currently used is available for more classes.

Figure 9. A class size cap of 20 would require additional primary school classrooms particularly in central belt local authority areas

Modelled total number of classrooms freed up in schools and additional rooms needed in 2035 (central cost parameters)



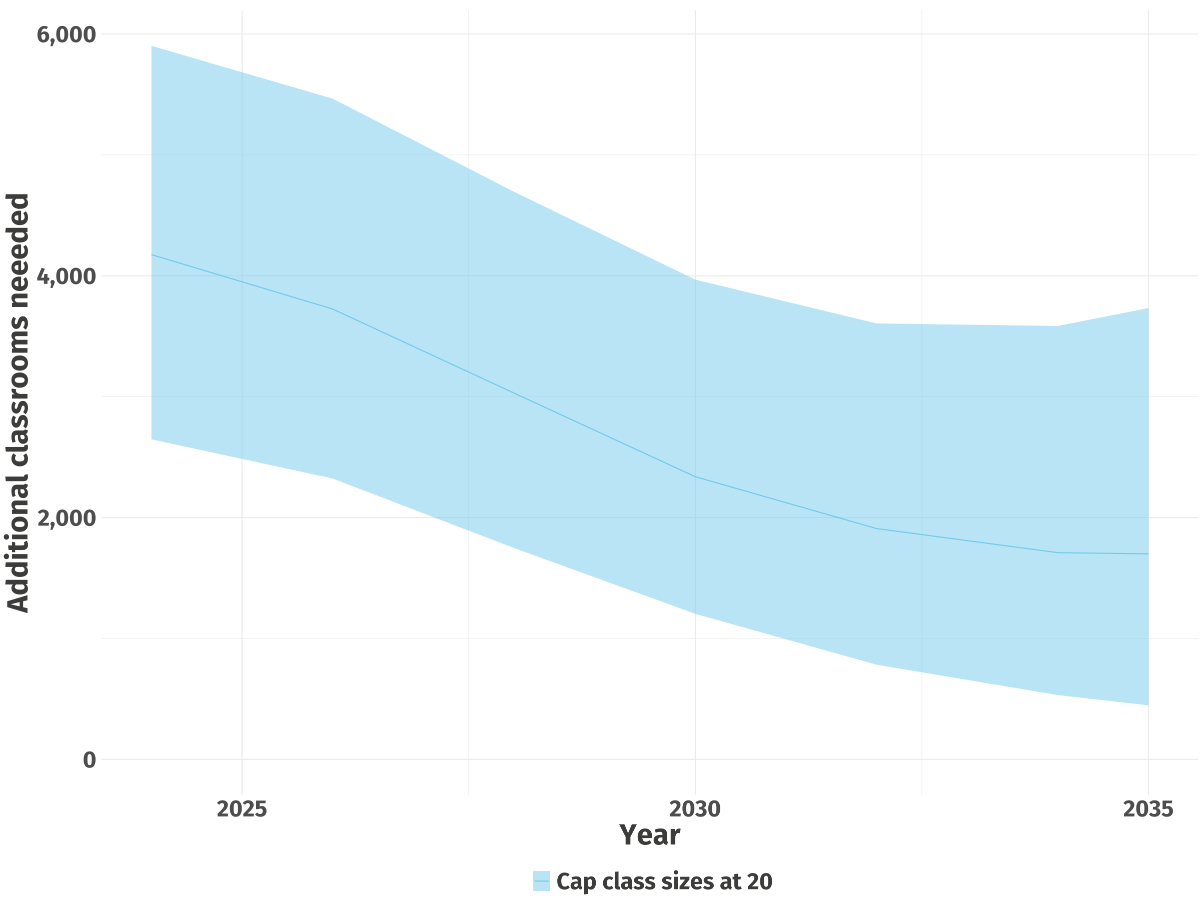
Source: IPPR Scotland school scenario model

The amount of additional space needed depends on when the cap is introduced: as pupil rolls fall over time a cap of 20 will put less pressure on additional estate. Indeed, if the number of pupils were to fall particularly far in a given school, it may be able to bring class sizes under 20 while also reducing the number of classes taught, which would free up space.

In theory, a policy that caps class sizes at 20 could also include measures to move pupils from space-constrained schools to those with more space. However, figure 9 suggests there would be limited scope for this kind of balancing. Most additional space is needed at primary level while the space that is freed up tends to be at secondary level. Further, much of the freed-up space is in council areas where additional classroom need is low. Given these limitations, we have not modelled reallocation of pupils between schools.

Figure 10. Total number of additional classrooms needed under a class cap of 20

Additional classrooms across Scotland at primary and secondary levels combined. Range given by high- and low-cost estimates, line shows central estimate.



Source: IPPR Scotland school scenario model

Figure 10 presents our estimate of the total additional classrooms that would be needed to accommodate a class size cap of 20. Because the total falls over the decade, a policy of capping class sizes at 20 would need to consider by when the cap is to be achieved. This would both give time over which to expand the learning estate appropriately and avoid over-building.

However, figure 10 also shows much uncertainty with a wide range between our high and low parameters. While our study provides insight into the broad scale of the estate expansion for a class cap of 20, clearly a government committed to this policy would need to examine the estate in more detail than has been possible with currently available data. The main drivers of uncertainty arise from limited information about current class sizes at secondary school and the use by schools of current spare capacity, both of which are issues on which the Scottish government could gather more data.

Costing additional classrooms

To estimate the cost of constructing additional classrooms, we draw on benchmark costs published by the Welsh government (2023). We assume classrooms are built with 1.7 square meters per pupil and with a capacity for 20 pupils. We use the Welsh government's costs for classrooms built in 2025 and hold this constant in real terms (i.e. we do not apply a construction-specific inflation factor).

The total number of additional classrooms needed to house classes capped at 20 reduces over time due to falling pupil numbers. Total capital costs will therefore depend on the year by which the policy is delivered. In estimating construction costs for a given year, we take that year as the first year in which the class size cap is achieved and assume that only such classrooms as are needed for that year are constructed. We spread these construction costs evenly over the years from 2026 to the year the policy is assumed delivered. This means annualised construction costs vary for different target years for achieving the cap *both* because different numbers of classrooms are required for different target years *and* because costs are spread over different time periods.

Free school meals

Universal provision of free school meals during termtime and expanded eligibility for support over holiday periods.

Background

It is a common refrain that 'you can't learn on an empty stomach'. Hungry children are distracted, tired, and find it difficult to learn (School Food Matters, 2025). In the longer term "spells of hunger" hamper a child's mental and physical development (Afridi et al 2019; Gallegos et al 2021). Universalising the provision of food not only expands access but serves to provide a baseline of nutritional value for children, removes stigma, and saves families money. In addition, universal free school meals have been found to help prepare children for learning and development (Bean et al. 2023).

Free school meals have been found to reduce obesity prevalence, promote healthy weight, reduce school absences and improve educational performance among primary school children in England (Holford & Rabe 2020). Some evidence from the USA suggests impacts on obesity among secondary school pupils are likely to be greater than among primary pupils, as older students are far more exposed to unhealthy foods which free school meals displace (Rothbart et al 2023).

As well as improving wellbeing while at school, international evidence suggests universal free school meals have long-term benefits. Sweden, for example, introduced free, nutritious school lunches in primary schools in the 1950s and 60s and found provision boosted life-time earnings by 3 per cent on average and 5.5 per cent for children from low-income families (Alex-Petersen et al 2017).

A team at Guy's and St Thomas' Foundation have brought together a range of evidence to estimate the combined value of the benefits that would be expected if free school meals were made available to all children. They estimate that for every £1 spent on expanding to universal provision £1.71 would be generated in core benefits from lifetime earnings to lower NHS costs (Impact on Urban Health 2022). While such estimates are an inexact science, they give a strong indication that providing universal free school meals is a cost-effective policy.

Our model of free school meal costs

Our model incorporates the fact that not every pupil registered for meals takes them on any given day. To do this, we combine school-level data on the number of pupils registered for free school meals and local authority data on the number of meals provided. Under the current system, uptake of free meals among eligible pupils varies across primary and secondary schools, as well as across local authorities.

At primary schools, a large proportion of available free school meals are taken – around 124 of around 190 per pupil per year. By contrast in secondary schools take-up is considerably lower at an average of 78 meals per eligible pupil per year.[6] , We have not been able to model the impact of providing meals to pre-schoolers because we do not have data from which to estimate take up of free meals in ELC settings.

Support for primary and secondary school pupils outside of term time is currently provided as a cash payment to families of children who qualify through benefit receipt. Pupils in P6-S6 who receive term time free school meals automatically receive holiday support. P1-P5 pupils must receive benefits and apply: receiving term time meals does not qualify them for holiday support.

Modelling an expanded free school meals offer

We model scenarios in which all primary and secondary school pupils are eligible for free school meals during term time, and in which holiday support is extended to a larger group of children.

To model term time meal provision under a universal offer, we combine two elements: pupil numbers and the average number of meals each pupil takes in a year. For primary schools (where eligibility is already universal for five of seven year groups), we assume take-up remains at its current level of 124 meals per eligible pupil per year.

Universal eligibility in secondary schools would be more of a departure from the current system. If stigma around school meals is removed and it becomes more common within friendship groups, a higher take-up of meals per eligible pupil may be expected. To account for this, our high-cost scenario assumes secondary pupils take the same number of meals as primary pupils currently do (124 per year). Our low-cost scenario assumes universal provision has no impact on secondary pupils' take-up rates (we maintain 78 meals per eligible pupil per year), and our central scenario splits the difference (101 meals per pupil per year).

For holiday support, we model an expanded offer based on altering eligibility rules, rather than extending eligibility to all pupils. Currently pupils in families receiving universal credit are eligible if their family monthly income is less than £850. We model expanded eligibility by removing this income maximum and providing holiday support to all pupils in families receiving universal credit. We use the DWP Family Resources Survey to estimate how many more pupils would be eligible if the cap were removed.

For our baseline estimate of meal support during the holidays, we can use data on free school meal registrations at secondary level. However, because pupils in P1-5 receive free term time meals irrespective of their income, we need to make an inference as to how many also receive support through the holidays. We do this by calculating how many holiday meals each local authority provides per registered secondary pupil per year, and assume local authorities provide the same support to primary pupils. With data on the total number of holiday meals provided by each local authority to primary pupils, we infer the number registered for holiday support.

[6] Calculations based on Scottish government data on pupils registered for free school meals and local authority data on free school meals provided.

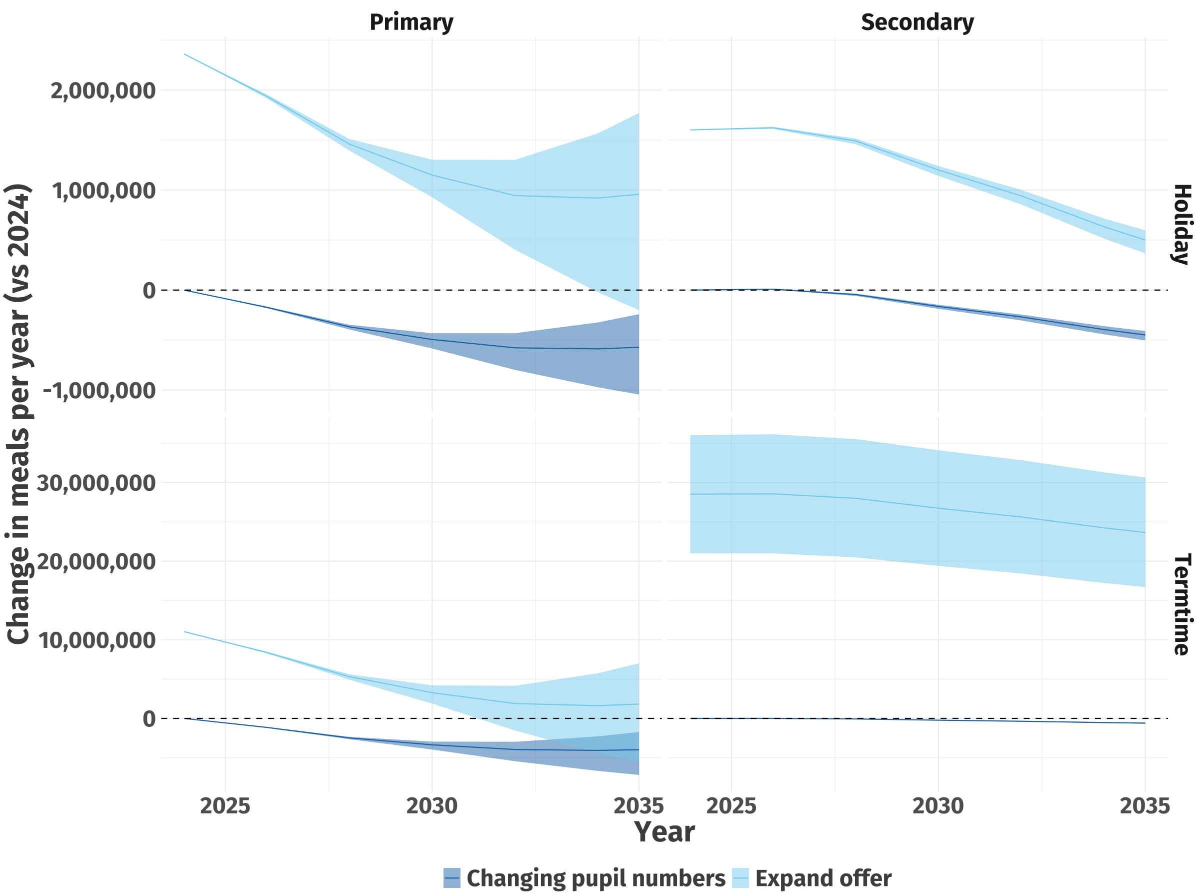
Results – how school meal provision would change under an expanded offer

To give a sense of the scale of meal provision in Scottish schools we take data from local authorities' Local Financial Returns for 2023. In that year, 42 million meals were served in primary schools, of which 36 million were free meals. In the same year 19 million meals were served in secondary schools of which 5 million were free meals. Support for 5 million holiday meals went to primary pupils, and 4 million to secondary pupils.

Under current eligibility, we anticipate term time free school meal provision will fall slightly over the period to 2035, tracking the reduction in the number of pupils. Expanding eligibility at primary schools in the near term would increase meals by about 10 million, though as pupil numbers fall the total number of free meals would return to comparable levels to the baseline.

Figure 11. Increased provision of termtime meals in secondary schools is the most significant impact of the expanded offer we have modelled

Change in number of free meals provided (or paid for in the case of holiday support)



Source: IPPR Scotland school scenario model

By contrast, the expansion of eligibility in secondary schools would have a much larger effect, increasing provision by 20 to 35 million free meals in the near term, with falling pupil number rolls bringing this figure down modestly over time. While this increase would displace paid-for meals it would represent a significant increase in total meal provision.

We estimate that removing the earnings cap on holiday meal support eligibility would increase the number of meals supported by around 2 million across primary pupils and 1.5 million across secondary pupils, with both figures reducing through to 2035.

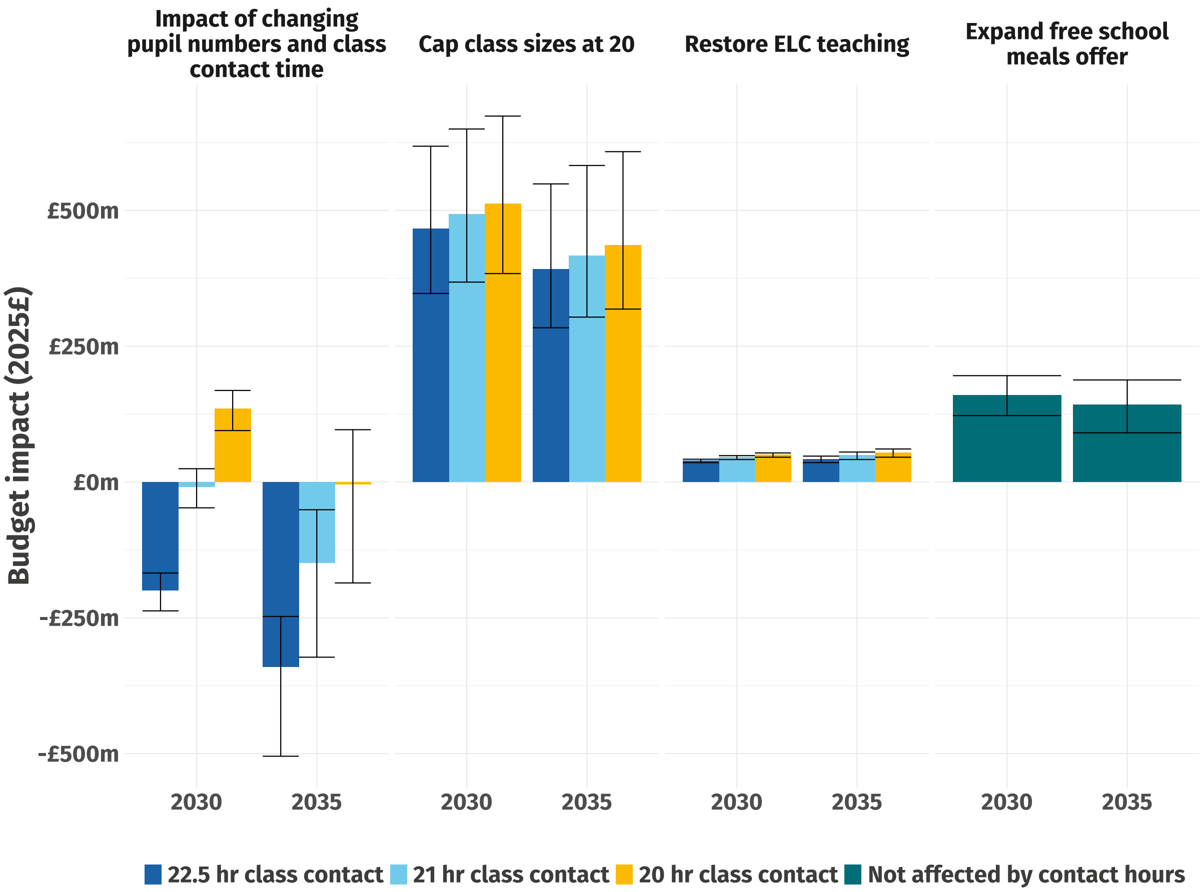
In our costing below, we assume meal costs track inflation (i.e. stay constant in real terms) and draw on local authority per-meal cost data from Local Financial Returns in 2023. The significant expansion of meals provided, particularly at secondary schools, may have implications for available kitchen and dining space which we have not been able to quantify in this study.

Costs and benefits

Using the cost assumptions detailed in the text above, our central estimate for delivering the full policy package is an annual cost of £860 million in 2030, with our high and low estimates being £1.1 billion and £650 million respectively. Figure 12 shows how these costs break down across the policies and table 1 presents total costs of all policies. Annexes A and B present detailed breakdowns of costs by policy and cost item.

Figure 12. Breakdown of costs of policies in 2030 and 2035

Cost impact of modelled policies. Impact of changing pupil numbers is relative to 2024 baseline, all other policies are relative to business-as-usual policy.



Source: IPPR Scotland school scenarios model. Error bars represent results from our high and low parameter models.

Figure 12 highlights several findings of this analysis. First, the cost savings from falling pupil numbers (principally teachers costs, but also falling free school meal provision on a business as usual policy) balance the additional costs of reducing contact hours. By 2030, on our central parameters, 21 hours could be resourced from those savings, and by 2035 20 hours. Achieving those reductions earlier would require additional investment from the Scottish government. For example, cutting contact hours to 20 by 2030 would represent an additional investment of around £130 million.

Second, the highest cost policy change would be capping class sizes at 20. While the costs of this policy are sensitive to class contact hours, this is not the main cost driver. We estimate bringing classes down to 20 would cost around £500 million per year if delivered by 2030. The range of estimates using our high and low parameters is relatively large, but this is mainly driven by different modelling assumptions concerning the numbers of pupils who would benefit from the policy (both due to variations in population projections and due to uncertainties in secondary class size estimates).

Third, restoring ELC teaching according to the scenarios we have modelled would have a smaller resource implication, coming in on our central estimate around £50 million.

Fourth, expanding eligibility for meals would require investment in the region of £160 million per year (£120 million to £200 million) in 2030, with universal eligibility at secondary school being the main cost driver. This cost would fall with further reductions in pupil rolls, but not by a huge amount. Delivering the benefits of free school meals to secondary schools would therefore require a determination to make this investment.

Table 1. Total costs of modelled policy package relative to 2024

Figures in constant 2025 prices.

Policy delivery year	Full policy package relative to 2024 baseline (2025 prices)
2030	£860m (£650m to £1,090m)
2035	£630m (£270m to £950m)

Source: IPPR Scotland school scenarios model

Cost-benefit analysis

Would the use of resources we have estimated be outweighed by the benefits generated? The variety of benefits identified through the paper, and the fact that many resist being reduced to pounds and pence means a full cost benefit accounting of the policy package is not feasible – too much would be left out.

However, we have considered one narrow aspect of the benefits of reducing class sizes: the impact on later life earnings. For those children in classes smaller than they would have been without the policy, we estimate how much of a boost to earnings would be needed to outweigh the additional cost of the class size cap across pupil's years at school.

To do this, we track the number of pupils in our model who attend schools with class sizes above 20, and the level of class size reduction each school would see under a class cap of 20. With this we have an estimate (a) of the total number of pupils affected by the policy and (b) the aggregate of class-size reductions experienced by those pupils.

To compare this pupil experience against costs, we account for the fact that each individual pupil spends multiple years at school. We scale up the costs of the class cap policy at primary and secondary schools by the number of years pupils spend at each. Dividing this figure by the aggregate class-size reduction gives a total cost per pupil's experience of a one-pupil class size reduction (experienced across the whole of the pupil's school career).

Our question then is what the impact on earnings would have to be in order to outweigh the policy cost. To do this, we estimate the total lifetime earnings of each pupil, based on median[7] 2025 gross earnings in Scotland (taken from the ONS Annual Survey of Hours and Earnings). We take the sum of earnings over the period from the age of 22 to 65, time-discounting with a discount rate of 3.5 per cent per year.

We divide the cost per experienced one-pupil class size reduction by our estimate of time-discounted lifetime earnings. This gives us the minimum earnings impact the policy would need to deliver for this benefit to outweigh policy costs.

Our central estimate finds this would need to be at least 0.7 per cent for each one-pupil class size reduction (with high and low estimates of 0.8 and 0.6 per cent). International evidence suggests this is a plausible impact, with a similar reduction in class sizes in Sweden having been found to yield a 0.7 per cent increase in earnings (Fredrikkson et al 2011).

While there are many factors that will impact Scottish students' lifetime earnings, including the detail of how the policies we have modelled are designed and implemented, this calculation shows it is highly plausible that such investment would improve wellbeing in Scotland even when measured in narrow economic terms.

[7] There is a case to use mean earnings rather than median, given our calculation is scaling to a population rather than asking about the distribution of earnings. However, as earnings are skewed, the mean is higher than the median. Our choice to use median earnings is a conservative choice. The mean would make the minimum benefit estimate *lower.*

Annex A. Cost breakdown 2030

All costs are presented as real terms costs (i.e. stripping out the effect of inflation) in 2025 prices. Central estimate costs are presented followed by low and high parameter estimates in parentheses.

Cost savings due to falling pupil rolls

These figures represent changing costs due only to falling pupil numbers. Class contact time, class sizes, ELC teaching and free school meals are all modelled under business-as-usual assumptions. Costs are relative to 2024 (the baseline year from which the data underpinning the model is taken).

Cost item	**2030 cost**
ELC teachers	-£1m (-£6m to £1m)
Primary teachers	-£70m (-£90m to -£60m)
Secondary teachers	-£110m (-£120m to -£100m)
Primary free school meals	-£14m (-£17m to -£13m)
Secondary free school meals	-£1m (-£1m to -£1m)
Primary holiday meals support	-£1m (-£2m to -£1m)
Secondary holiday meals support	-£0 (-£1m to -£0)
Total	**-£200m (-£240m to -£170m)**

Reducing class contact time

These figures show the additional cost of reducing class contact time, while assuming class sizes are not capped at 20. In figure 12 these costs are combined with the savings set out in the table above.

Cost item	2030 cost		
	22.5 hrs contact	21 hrs contact	20 hrs contact
ELC teachers	-	£3m (£3m to £4m)	£6m (£5m to £6m)
Primary teachers	-	£90m (£90m to £90m)	£150m (£150m to £160m)
Secondary teachers	-	£100m (£100m to £100m)	£170m (£170m to £170m)
Total	**-**	**£190m (£190m to £190m)**	**£330m (£330m to £340m)**

Restoring ELC teaching

These figures show the cost of employing additional teachers to restore teaching received by three-to-five -year olds in ELC settings to its level in 2012. These costs vary depending on assumed class contact time.

Cost item	2030 cost		
	22.5 hrs contact	21 hrs contact	20 hrs contact
ELC teachers	£40m (£40m to £40m)	£50m (£40m to £50m)	£50m (£50m to £50m)
Total	**£40m (£40m to £40m)**	**£50m (£40m to £50m)**	**£50m (£50m to £50m)**

Capping class sizes to 20

These figures show the cost of capping class sizes to 20. The number of teachers required depends on class contact time, but the number of classrooms that need to be built (over the period to 2030) is independent of contact hours. The wide range on our estimate of secondary school costs (teachers and building) reflect the limited data available and the need, therefore, to make assumptions which we vary across our high and low parameters.

Cost item	**2030 cost**		
	22.5 hrs contact	**21 hrs contact**	**20 hrs contact**
Primary teachers	£250m (£240m to £250m)	£260m (£260m to £270m)	£280m (£270m to £280m)
Secondary teachers	£120m (£50m to £200m)	£130m (£60m to £210m)	£130m (£60m to £220m)
Primary new build (annualised)	£70m (£40m to £110m)		
Secondary new build (annualised)	£30m (£11m to £60m)		
Total	**£470m (£350m to £620m)**	**£490m (£370m to £650m)**	**£510m (£380m to £670m)**

Expand free school meals eligibility

These figures show the additional cost of offering free school meals to all primary and secondary pupils, and of removing the income cap on holiday support eligibility.

Cost item	2030 costs
Primary free school meals	£30m (£30m to £30m)
Secondary free school meals	£120m (£90m to £160m)
Primary holiday meals support	£4m (£4m to £5m)
Secondary holiday meals support	£4m (£4m to £4m)
Total	**£160m (£120m to £200m)**

All policies

Costs of the full policy package against each modelled level of contact hours. These figures include the cost savings due to falling pupil rolls (relative to 2024) as well as the additional costs of policies.

Policy delivery year	22.5 hrs contact	21 hrs contact	20 hrs contact
2030	£470m (£270m to £690m)	£690m (£480m to £920m)	£860m (£650m to £1,090m)

Annex B. Cost breakdown 2035

All costs are presented as real terms costs (i.e. stripping out the effect of inflation) in 2025 prices. Central estimate costs are presented followed by low and high parameter estimates in parentheses.

Cost savings due to falling pupil rolls

These figures represent changing costs due only to falling pupil numbers. Class contact time, class sizes, ELC teaching and free school meals are all modelled under business as usual assumptions. Costs are relative to 2024 (the baseline year from which the data underpinning the model is taken).

Cost item	**2035 cost**
ELC teachers	-£1m (-£9m to £6m)
Primary teachers	-£100m (-£210m to -£40m)
Secondary teachers	-£220m (-£250m to -£200m)
Primary free school meals	-£17m (-£30m to -£7m)
Secondary free school meals	-£3m (-£3m to -£3m)
Primary holiday meals support	-£2m (-£3m to -£1m)
Secondary holiday meals support	-£1m (-£1m to -£1m)
Total	**-£340m (-£500m to -£250m)**

Reducing class contact time

These figures show the additional cost of reducing class contact time, while assuming class sizes are not capped at 20. In figure 12 these costs are combined with the savings set out in the table above.

Cost item	2035 cost		
	22.5 hrs contact	21 hrs contact	20 hrs contact
ELC teachers	-	£4m (£3m to £4m)	£6m (£5m to £7m)
Primary teachers	-	£90m (£80m to £100m)	£160m (£150m to £170m)
Secondary teachers	-	£100m (£100m to £100m)	£170m (£170m to £170m)
Total	**-**	**£190m (£180m to £200m)**	**£340m (£320m to £340m)**

Restoring ELC teaching

These figures show the cost of employing additional teachers to restore teaching received by three-to-five-year olds in ELC settings to its level in 2012. These costs vary depending on assumed class contact time.

Cost item	2035 cost		
	22.5 hrs contact	21 hrs contact	20 hrs contact
ELC teachers	£40m (£40m to £50m)	£50m (£40m to £60m)	£50m (£50m to £60m)
Total	**£40m (£40m to £50m)**	**£50m (£40m to £60m)**	**£50m (£50m to £60m)**

Capping class sizes to 20

These figures show the cost of capping class sizes to 20. The number of teachers required depends on class contact time, but the number of classrooms that need to be built (over the period to 2035) is independent of contact hours. The wide range on our estimate of secondary school costs (teachers and building) reflects the limited data available and the need, therefore, to make assumptions which we vary across our high and low parameters.

Cost item	**2035 cost**		
	22.5 hrs contact	**21 hrs contact**	**20 hrs contact**
Primary teachers	£260m (£230m to £300m)	£270m (£250m to £320m)	£290m (£260m to £330m)
Secondary teachers	£100m (£50m to £180m)	£110m (£50m to £190m)	£120m (£50m to £200m)
Primary new build (annualised)	£30m (£8m to £60m)		
Secondary new build (annualised)	£4m (£1m to £12m)		
Total	**£390m (£280m to £550m)**	**£420m (£300m to £580m)**	**£440m (£320m to £610m)**

Expand free school meals eligibility

These figures show the additional cost of offering free school meals to all primary and secondary pupils, and of removing the income cap on holiday support eligibility.

Cost item	2035 costs
Primary free school meals	£20m (£7m to £40m)
Secondary free school meals	£110m (£80m to £140m)
Primary holiday meals support	£4m (£2m to £5m)
Secondary holiday meals support	£3m (£2m to £3m)
Total	**£140m (£90m to £190m)**

All policies

Costs of the full policy package against each modelled level of contact hours. These figures include the cost savings due to falling pupil rolls (relative to 2024) as well as the additional costs of policies.

Policy delivery year	22.5 hrs contact	21 hrs contact	20 hrs contact
2035	£240m (-£90m to £540m)	£460m (£110m to £770m)	£630m (£270m to £950m)

Annex C. sensitivity test assumptions

Model element	Low parameters	Central parameters	High parameters
National Records of Scotland subnational population projection variant	In each year, the lower of the low migration variant and the low fertility variant	Principal projection	In each year, the higher of the high migration variant and the high fertility variant
Secondary class size variability	No range of class size. Class cap of 20 corresponds to all pupils being in classes of 20.	Range class sizes by three pupils per class. Class cap of 20 corresponds to pupils being in classes between 18 and 20.	Range class sizes by five pupils per class. Class cap of 20 corresponds to pupils being in classes between 16 and 20.
Secondary teaching hours	Mean classroom hours plus one standard error	Mean classroom hours	Mean classroom hours minus one standard error
School current capacity estimated not currently used for classroom teaching.	100% assumed to be available for teaching.	50% assumed to be available for teaching.	No existing estate assumed to be available for teaching.
Impact of universal FSM policy on take-up among eligible secondary pupils	No impact, take up rate among secondary pupils assumed to	Take up increases to mid-point between current primary and secondary take up rates	Take up increases to match take up rate among primary school pupils

Annex D. How we model classes and teaching hours

Estimating class sizes in 2024

The Scottish government publishes the size of every primary class in Scotland. This means we have a clear representation of characteristic class sizes in 2024.

Analysing secondary school class numbers is more challenging. This is both because Scottish government does not produce class size data at secondary level, and because secondary pupils move between different class groups from period to period. Current class sizes for practical subjects are already capped at 20.

We model class sizes in secondary school by matching two estimates of teaching provided at each school in 2024. Our first estimate is derived from the number of FTE teachers at each school and assumptions about the impact of management duties on teaching time. Our first estimate is based on modelling the teaching hours that would need to be provided for a range of class sizes. (We do this using the same techniques as we use to estimate how teaching requirements change in future as pupil rolls fall, described below). We bring these two estimates together, identifying the class size assumption that best matches our estimate of teaching delivered.

Estimating secondary classroom teaching provided in 2024

The Scottish government #lists the FTE teacher complement at each school but does not break this down into different roles. To estimate teaching hours in each school from FTE numbers, we need to account for the fact that teachers in different roles spend different amounts of time on activities other than leading classrooms, such as school management and learning support.

While data on the number of heads, deputy heads, and principal teachers at each school is not available, the teacher census does publish these figures at the local authority level. We use this to infer management roles for schools in size bands[8]. With numbers of schools of different sizes and the total FTE head teachers (etc.) at each local authority, we use linear regression to infer the number of such teachers for each school size band. We then re-scale these estimates to match local authority totals. These estimates naturally have a degree of noise embedded in them, but this approach allows us to account for the non-linear relation between school size and management roles, particularly for smaller schools.

We use the teacher census for learning support teacher numbers in each local authority (based on their primary subject). We distribute these teachers across schools in each local authority in proportion to the number of pupils registered with an additional

[8] The bands we use are schools with fewer than 250 pupils, schools between 251 and 500 pupils, between 500 and 1,000 pupils and schools with more than 1,000 pupils.

support need. We distribute probationers in proportion to the number of FTE teachers in each school.

We use survey data from EIS (2024b) teacher workload research for the number of classroom hours teachers in each role deliver (though we assume learning support teachers do not lead classes). For our central parameters we use the mean number of hours reported, and for our high and low parameters we subtract and add one standard error on the mean (estimated from reported sample sizes and standard deviations).

Estimating teaching based on pupil numbers and class sizes

To estimate the number of hours of teaching in a school for a given class size cap, we ask what the minimum number of classes would be into which all pupils could be split, such that all classes are below the cap. For example, with a class size of 20 a cohort of 100 pupils could be split into five classes, but a cohort of 101 would need six classes. We translate class numbers into weekly teaching hours assuming primary pupils receive 25 hours of teaching per week and secondary pupils 27.5 hours.

To estimate the number of classes at primary school, we consider the pupil roll as one rather than separate year groups. This reflects the common practice of compositing classes with children from adjacent year groups.

At the secondary level we predominantly treat each year group separately. The exception is for the smallest schools (with fewer than 250 pupils) where the model allows for year group mixing. This aspect of the model is not intended as an endorsement of this as a practice, but an attempt to accommodate the likelihood that some smaller schools may currently do this, and to reflect that in our teaching-time matching process described above.

Treating secondary year groups separately in schools above 250 pupils does not necessarily reflect actual teaching practice. While S1- S3 are usually taught in classes that do not mix year groups, from S4 onwards some year-group mixing occurs where students are studying the same course level (e.g. National 4, National 5, etc.). Modifying our model to try to account for this would likely have limited impact as it would replace one delineation of the school into cohorts (year groups) with another (course levels). Instead, we keep year groups separate in the model but treat older year groups as proxies for course levels.

When estimating the teaching delivered for a class size above 20, we incorporate the existing cap on practical classes sizes of 20. Our model estimates classroom hours assuming a proportion of learning takes place in practical classes capped at the practical class maximum, while the remaining learning is in classes capped at class size cap being modelled. So, for example, if the model is asked how much teaching is needed when the maximum number of pupils per class is 25, it estimates how much teaching is needed to deliver practical classes in groups no bigger than 20, and then additionally how much teaching is needed for teaching the remaining classes in groups of 25. Following the approach of WPI Economics (2024), we estimate how much learning is in practical classes in S1 and S2 from a sample of online timetables, and for S3 to S6 from entries to National 4, National 5 and Higher qualifications (which we estimate separately for each local authority using SQA data for 2024). In distributing pupils across practical and non-practical classes, we assume a standard week of 28 teaching periods.

Implicit to the model described so far is a uniformity in class sizes. At primary school this is reasonable, particularly given the practice of compositing year groups. However, at secondary school actual class sizes are likely to show more variability as students take different subjects; some classes may be less subscribed than others. Modelling this accurately would require data on actual class sizes across subjects that is not available. Instead, we introduce a class size diversity factor which we vary across our parameter sets, with a value of zero, one and two for our low, central and high parameters respectively.

Mathematically, what the diversity factor does is it reduces the actual class cap modelled. So if the model is asked how many classes are needed for a cap of 20 with a diversity factor of one, for example, it will estimate the number of classes of no more than 19 pupils, into which each cohort can be split. The intuition here is that if there is more diversity in actual class sizes, the average will be further from the maximum. In the case of a class cap of 20 and a diversity factor of one, this in effect models a situation in which students are distributed into classes varying across 18, 19 and 20 pupils. (If we know how many classes are needed for all classes to be 19 or smaller, the same number of classes can accommodate this spread assuming that for every class with one fewer pupil there must be a class with one more.) With a diversity factor of 2, the effect is to model class sizes varying across 16, 17, 18, 19 and 20.

As described in the main text, we use 2024 class sizes (actual for primary, modelled for secondary) as the basis for class sizes in future years. This means that we account for a certain "lumpiness" in the reality of school management: a small reduction in pupil numbers may not practically mean a reduction in class numbers is possible. Our model only allows class numbers to fall when doing so is possible without the result being larger average classes than in 2024.

When modelling scenarios in which class sizes are capped at 20, we replace the 2024-based characteristic class size with the 20-pupil cap.

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