Department for Education

Evaluation of the national roll-out of the early career framework induction programme

Statistical annex

May 2025

Contents

List of figures

Summary

This report provides an analysis of trends in early career teacher retention as part of the evaluation of the national roll-out of the Early Career Framework (ECF) induction. A summary of these findings is included in the Evaluation Summary Report; this document provides more detail on the methods and findings. The analysis covers:

- Descriptive retention figures using data from the School Workforce Census (SWC).
- Changes in retention for the 2021 and 2022 ECF cohorts derived from regression analyses, which adjust for past retention trends, school characteristics and teacher characteristics.
- Differences in retention between provider-led and school-led ECF participants.

Due to data limitations and the absence of a suitable control group, it is not possible to isolate the impact of ECF on retention from the effects of other related policy initiatives. While results should not be treated as a full impact evaluation, they do show:

- Early signs of improvement in year-one teacher retention for ECF cohorts.
- Small improvements in year-two teacher retention – a finding we do not have full confidence in and that warrants further analysis of future cohorts.
- School-led participants had slightly lower one-year retention rates than expected when accounting for school and teacher characteristics.

The relationships between retention and the characteristics of schools and teachers are correlational and do not imply causation.

Analysis of retention

DfE's published statistics[1] are based on administrative data collected annually via the SWC[2], which allow for comparing retention rates between cohorts who have taken part in ECF-based induction programmes and those that preceded the national roll-out of the ECF. Data from DfE's 'manage training for early career teachers' digital service are matched to the SWC and contribute to the annual ECF statistics publication[3], which reports on the retention of ECF participants with demographic and programme type (provider-led and school-led) breakdowns. The following provides a summary of the analysis of early-career retention based on these data sources.

Retention trends: School Workforce Census

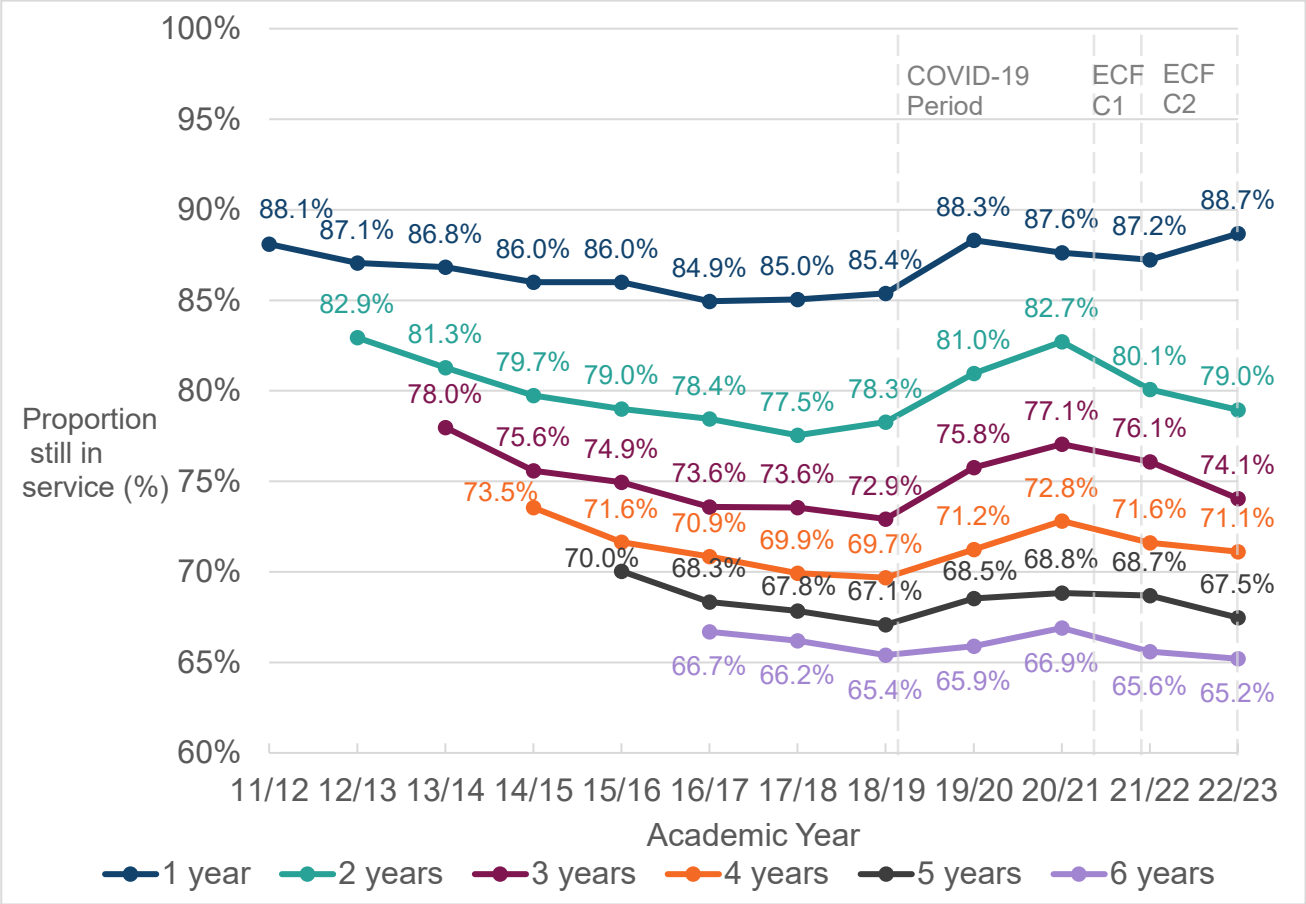
The SWC release publishes descriptive data showing retention for cohorts of ECTs over a 10-year period (see Figure 1 below).

In 2021/22, the first year capturing retention for the 2021 ECF cohort, the SWC data showed that the retention rate for teachers after their first year fell by 0.4 percentage points (ppts) compared to 2020/21 from 87.6% to 87.2%. There were more pronounced falls in teacher retention after years 2-4, ranging from -2.6 ppts to -1 ppts, with retention after year 5 roughly flat (-0.1ppt). Retention for all teachers was higher than the trend in the previous two years, potentially due to labour market conditions during the COVID-19 pandemic. Retention fell from 66.9% to 65.6% (-1.3 ppts) after year 6.

In 2022/23, year 1 retention rate rose by 1.5 ppts from 87.2% to 88.7%, which is the highest rate since the onset of the series in 2011. The cumulative retention rate after year 2 (for the cohort who started teaching in 2021) was lower than the previous cohort at 79% (down 1.1 ppts from 80.1%), and there were falls of 2 ppts, 0.5 ppts, 1.2 ppts and 0.4 ppts respectively after years 3, 4, 5 and 6. However, the cumulative retention rates at years 2-5 for previous cohorts would likely have been influenced by the higher retention rates observed during the pandemic.

[1] See Teacher and Leader development: ECF and NPQs, Academic year 2023/24, published in July 2024. https://explore-education-statistics.service.gov.uk/find-statistics/teacher-and-leader-development-ecf-and-npqs and School workforce in England, Reporting year 2023 - Explore education statistics - GOV.UK
[2] SWC statistics include a time series showing the overall rates of retention for newly qualified teachers. The SWC release publishes data showing cumulative retention for cohorts of ECTs over a 10-year period.
[3] The Teacher and Leader Development: ECF & NPQ statistical release includes retention rates for those starting ECF-based induction training in the 2021 to 2022 and 2022 to 2023 academic years.

Figure 1: Cumulative retention rates by year(s) since receiving teaching qualification from academic years 2011/12 to 2022/23



Analysis of SWC retention data by single year of teaching experience provides a clearer picture of the annual changes, complementing the cumulative retention figures across years. These single-year figures help gauge the effects on retention associated with the pandemic years. Figure 2 below shows single year retention rates by years of teaching experience and school census year (with 2022/23 referring to those retained between SWC 2022 and 2023)[4].

[4] The single-year retention figures are based on teachers who initially entered teaching as newly qualified teachers.

Figure 2: Single-year retention rates by year(s) since receiving teaching qualification from academic years 2017/18 to 2022/23[5]

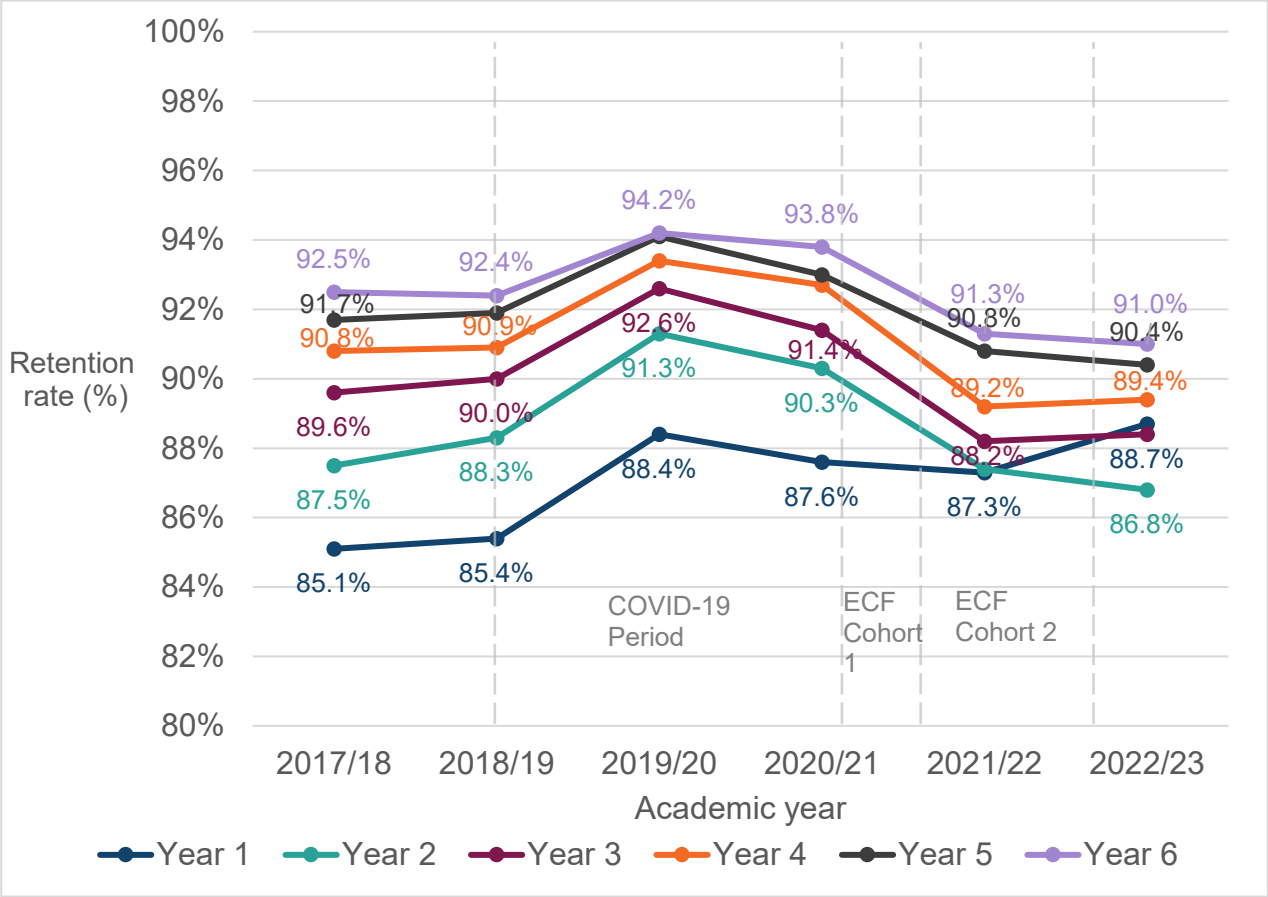


Table 1: Single year retention rates by year(s) since receiving teaching qualification from academic years 2017/18 to 2022/23

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
2017/18	85.1%	87.5%	89.6%	90.8%	91.7%	92.5%
2018/19	85.4%	88.3%	90.0%	90.9%	91.9%	92.4%
2019/20	88.4%	91.3%	92.6%	93.4%	94.1%	94.2%
2020/21	87.6%	90.3%	91.4%	92.7%	93.0%	93.8%
2021/22	87.3%	87.4%	88.2%	89.2%	90.8%	91.3%

[5] Note that the single-year retention figures cannot be directly compared to the regression estimates for the ECF cohort dummy variables that follow. The single-year chart is a direct visualisation of the descriptive figures summarised from the raw retention data, whilst the regression estimates are relative to the respective reference groups while adjusting for past temporal changes in retention rates and teacher and school characteristics.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
2022/23	88.7%	86.8%	88.4%	89.4%	90.4%	91.0%

This view of the data again shows that, for teachers at year 1, the retention rate rose to 88.7% in the latest year, the highest on record. For those with 2 years' experience, the retention rate fell slightly (a fall of -0.6 ppts to 86.8%) in the latest year. For those with 3- or 4-years' experience, retention remained relatively flat at 88.4% and 89.4% respectively. For those with 5- and 6-years' experience, retention fell by 0.4 ppts to 90.4% and by 0.3% to 91.0% respectively.

The data suggest that the year 1 retention rate has improved relative to the retention rates of other teachers in the years since the ECF was rolled out nationally (2021/22 and 2022/23). At year 2, we only have a single data point relating to those who have undertaken an ECF based induction (the 2022/23 outturn, relating to those who commenced ECF in 2021/22). Here, we do not observe obvious differences between the cumulative and single year retention rates compared to previous cohorts.

ECF statistics on retention

Findings published in the 'Teacher and Leader Development: ECF and NPQ statistics July 2024' release show that, of the 21,008 ECTs[6] who started their ECF induction programmes in the 2021/22 school year (cohort 1), 87.7% were retained in state schools the following year (see Table 1). After two years, 79.3% of teachers were retained in the 2023/24 school year (by which time most would have completed their induction programmes). Retention rates were slightly higher for provider-led programmes than for school-led programmes.[7] The statistics also indicate higher retention rates for cohort 2 after 1 year compared to cohort 1, from 87.7% to 88.8% - mirroring the increase seen in the overall SWC statistics reported above.

[6] These were ECTs who participated in an ECF-based induction programme and also appeared in the SWC in 2021. Note that the actual total number participating in ECF can be higher as some other teachers, such as returners, those new to state sector, and individuals in non-mainstream school settings, can enrol in the ECF, and teachers may enrol after the SWC cut-off date.
[7] 87.7% after one year, and 79.5% after two years for provider-led programmes; and 87.1% after one year and 76.1% after two years for school-led programmes.

Table 2: Percentage of provider-led ECF participants retained in state sector by programme type

	2021/22	2021/22	2021/22	2022/23	2022/23
	Number of ECTs in SWC who started ECF-based induction	Percentage of ECTs in SWC who were retained in the SWC after one year	Percentage of ECTs in SWC who were retained in the SWC after two years	Number of ECTs in SWC who started ECF-based induction	Percentage of ECTs in SWC who were retained in the SWC after one year
Provider-led	19,952	87.7%	79.5%	19,841	88.9%
School-led	1,056	87.1%	76.1%	1,047	86.3%
Overall	21,008	87.7%	79.3%	20,888	88.8%

Modelling changes in retention by ECF cohort and ECF programme type

This section describes the key analytical approaches used to test changes in retention by ECF cohort and by ECF programme type and summarises findings from these regression analyses as an extension of the high-level summary included in the Evaluation Summary Report.

These analyses provide a statistical test on the descriptive figures presented above by taking into account past temporal changes in retention rates that were not linked to or specific to the ECF cohorts. Informed by the evaluation of the early roll-out of the ECF and the education literature, we also statistically adjusted for teacher-level and school-level characteristics known to be associated with differences in retention, such as gender and ethnicity (teacher-level) and school phase and region (school-level).

To address the analytical aims, five logistic regression analyses are presented here:

(i) **Model 1** evaluates changes in retention rates for teachers in each of their first six years of teaching using the SWC dataset. This model uses three variables that test the differences in retention rates between the ECF cohorts (whether in year 1 in 2021; year 1 in 2022; or year 2 in 2022) and other teachers with 1-6 years' experience in the SWC teacher workforce between 2017 and 2022. The

model also includes a control variable for SWC census year (with 2017 as the reference year) to account for wider changes in retention over the years[8].

(ii) **Models 2-5** further test if there are statistically significant differences in retention between participants on provider-led programmes (as the reference group) versus those on school-led programmes. Retention rates were analysed separately to help inform any temporal changes over the course of the ECF programme and any cohort differences:

- Model 2: One-year retention across both the 2021 and 2022 ECF cohorts
- Model 3: One-year retention for the 2021 ECF cohort
- Model 4: One-year retention for the 2022 ECF cohort
- Model 5: Two-year retention[9] for the 2021 ECF cohort

The following teacher-level and school-level characteristics are included:

- Teaching experience (Model 1 only)
- Age group (Models 2-5)
- Gender
- Ethnicity
- Employment type
- School phase
- School type
- School-level deprivation (Model 1: percentage of pupils eligible for pupil premium; Models 2-5: percentage of students eligible for free school meals)
- Region

To ease interpretation, percentage point differences are reported. For the ECF cohort variables in Model 1, these refer to the percentage point difference in the predicted probability of retention between the ECF cohort and the counterfactual scenario where these teachers (with the same individual and school characteristics) did not take part in the ECF cohort. Likewise for Models 2-5, the percentage point difference refers to the retention difference between provider-led ECF participants and the counterfactual scenario where these same ECF participants took part in a school-led induction programme instead. For the 95% upper and lower limits and all other variables in all models, percentage point differences represent the difference in retention for a given

[8] Nonetheless, we acknowledge the limitation that the model implies uniformity in retention trends between teaching experience groups as visualised in the previous charts, which may not fully account for other potential variability across these yearly changes in retention. The magnitude of the current retention estimates warrants further comparisons with longitudinal data from future ECF cohorts.

[9] The two-year retention rates in Model 5 refer to cumulative retention rates over two years. This differs from the year 2 single-year retention rates in Model 1 which just looks at the retention rate between year 2 and year 3.

group of interest (e.g., ECF participants based in the South East) relative to the reference groups (e.g., ECF participants based in London) for a categorical variable (region in this example). For continuous variable, the percentage point difference corresponds to one unit change of the variable, such as having one additional year of teaching experience[10].

Findings

Model 1

Table 2 summarises the log-odds, statistical significance and percentage point difference in retention for the ECF cohorts. See Appendix 4 for the full statistical output. Further technical details of these regression analyses and variables are summarised in Appendix 5.

Table 3: Summary of retention estimates associated with the ECF cohorts

Predictor	Log-odds[11]	P-value[11]	Significance code	Percentage point difference (%)	95% lower limit[11]	95% upper limit[11]
ECF Cohort 1 Year 1 (2021/22)	0.31	<0.001	***	3.8	3.4	4.5
ECF Cohort 1 Year 2 (2022/23)	0.06	0.022	*	0.7	0.1	1.5
ECF Cohort 2 Year 1 (2022/23)	0.47	<0.001	***	5.6	5.2	6.3

In 2021 and 2022, the overall school workforce had slightly lower retention rates compared to 2017. Notably, having accounted for those temporal changes in retention and other teacher-level and school-level characteristics, the positive estimates for the ECF cohorts suggest higher retention rates than predicted based on the logistic regression model.

Since these estimates were primarily derived from comparisons with just two cohorts of ECF participant data, we conducted additional sensitivity analyses to evaluate the robustness of these results. Overall, the retention estimates associated with the ECF cohorts remained largely unchanged, except for retention for the 2021 cohort in year 2.

[10] For pupil premium (Model 1) and free school meal (Models 2-5) percentages, one unit change corresponds to one percentage point change in the regression outputs.
[11] The p-values correspond to the log-odds estimated by the logistic regression models. Likewise, the 95% lower and upper limits refer to the confidence intervals derived from the estimates from model 1 outlined in appendix 4. The percentage point difference is based on additional analysis, which estimates the overall predicted change in retention for each ECF cohort compared to the predicted counterfactual scenario where these teachers did not take part in the ECF.

This associated effect on retention in year 2 was no longer significant when further adjusting for relative differences in school phase between this 2021 cohort and the remaining analytical sample. We suggest that the retention difference in year 2 may be modest and should be interpreted with caution at this point. The higher retention estimates in year 1 were robust for cohorts 2021 and 2022.

Models 2-5

Table 3 summarises the comparisons in retention between provider-led and school-led ECF programmes. The retention estimates below refer to the percentage point difference in retention for participants in the provider-led programmes and the counterfactual scenario where these same participants were in the school-led programmes instead. The full statistical output of these models is presented in Appendix 4.

Table 4: Summary of comparisons between provider-led and school-led ECF programmes

	Model 2: One-year retention across 2021 and 2022 cohorts	Model 3: One-year retention for the 2021 cohort	Model 4: One-year retention for the 2022 cohort	Model 5: Two-year retention for the 2021 cohort
Provider-led estimated percentage point difference in retention versus school-led (%)	1.6	0.6	2.8	1.5
95% lower limits[12]	0.1	-1.0	0.5	-1.0
95% upper limits[12]	2.3	2.1	3.4	4.5
P-value[12]	0.026	0.585	0.006	0.226
Significance code	*	Not significant	**	Not significant

[12] The p-values correspond to the log-odds estimated by the logistic regression models. Likewise, the 95% lower and upper limits refer to the confidence intervals derived from the estimates of the respective model. Note that, compared to the models outlined in appendix 4, the confidence intervals here are reversed to show provider-led (reference) vs school-led. The percentage point difference is based on additional analysis, which estimates the overall predicted change in retention for the provider-led participants compared to the counterfactual scenario where they participated in a school-led ECF induction.

One-year retention. The percentage point difference presented in Table 3 indicates that in the 2022 cohort (Model 4), provider-led participants had higher one-year retention relative to the counterfactual scenario where they took part in the school-led programmes instead. The same pattern is also shown in Model 2 when combining both cohorts in the analysis. When analysing the 2021 cohort alone (Model 3), one-year retention appeared to be lower for school-led participants, but this estimate was not statistically significant.

We conducted similar sensitivity analyses to test the robustness of the programme differences in retention found in Model 2 (one-year retention across cohorts 2021 and 2022) and Model 4 (one-year retention in the 2022 cohort alone). For Model 2, it appeared that some of the observed differences in one-year retention rates could be associated with the fact that there was a higher relative proportion of provider-led participants than school-led participants in primary schools, yet a higher relative proportion of school-led participants than provider-led participants in secondary schools. For Model 4, some of the observed differences in one-year retention rates in the 2022 cohort could be related to the fact that there was a higher relative proportion of school-led participants than provider-led participants based in London. Taken together, these additional findings indicate that these programme differences in retention may be marginal when considering further differences in teacher-level and school-level characteristics

Apart from considering the type of ECF induction programmes ECTs participated in, there were teacher-level and school-level characteristics that were commonly associated with differences in retention rates over the first year (Models 3 and 4)[13]:

- One-year retention rates were lower for males compared to females in both the 2021 cohort (-1.5 ppts) and 2022 cohort (-0.7 ppts).
- Part-time teachers showed significantly lower retention rates than full-time teachers in both the 2021 cohort (-5.6 ppts) and 2022 cohort (-5.4 ppts).
- There was a significant negative association between participants who were based in schools with higher levels of students eligible for free school meals and lower retention rates in both cohorts.
- In terms of regional differences, participants in the North West had significantly lower retention rates than London-based participants (-3.1 ppts in the 2021 cohort and -3 ppts in the 2022 cohort) – the most noticeable difference among all non-London regions.

Two-year retention (2021 cohort). Likewise, when analysing the 2021 cohort alone (Model 5), two-year retention appeared to be higher for provider-led participants relative

[13] The percentage point differences quoted here should be interpreted in the context of all other reference categories specified in the model. These estimates hence do not generalise to all individual combinations of teacher characteristics and school settings.

to them taking part in the school-led programmes in the counterfactual scenario. This estimate, however, was not statistically significant.

In terms of teacher-level and school-level characteristics:

- Two-year retention rates were lower for males relative to females (-3.4 ppts), and for part-time participants relative to full-time participants (-4.7 ppts) – both of which are consistent with the above findings on one-year retention.
- Participants of non-White and mixed/unknown ethnic backgrounds in general had lower two-year retention rates than the majority of participants of White ethnic background (e.g., Black or Black British: -4.2 ppts; Asian or Asian British: -3.5 ppts).
- In terms of regional differences, participants who were based outside London had significantly higher two-year retention rates than those who were based in London (range from +2.6 ppts to +6.4 ppts)[14] – an opposite effect as observed for one-year retention.
- There was a small negative association between higher levels of free school meal pupils and lower two-year retention rates.

[14] Although note that the comparison between participants based in the North East and London was less pronounced and marginally significant.

Overall conclusions

The overall analysis of retention rates (Model 1) indicates that the national roll-out of the ECF induction programmes was associated with higher retention rates than would otherwise be expected. However, it is worth noting that these estimates were primarily based on data from the first two ECF cohorts and should be interpreted with caution at this early stage.

Creating a comparison group of teachers who were not exposed to any policy initiatives targeting retention (including the ECF itself) was not possible. This is because there were no direct measures of their retention effects, nor could a valid proxy measure be identified in existing data. The nature of the ECF roll-out being national also means that there is no control group, and hence the comparisons in retention rates (Model 1) were based between the ECF cohorts and other previous cohorts entering teaching. There may also be differences in other teacher-level and school-level characteristics between the ECF cohorts that were not captured in the data. It is difficult to isolate the impact of the ECF programme from other initiatives, for example, the £30k starting salaries and Early Career Payments for Teachers (formerly the 'Levelling up Premium'), which would likely have contributed to changes in retention as well.

Early Career Payments for Teachers and Targeted Retention Incentive Payments have been available in recent years[15]. However, their direct impact on our retention estimates may be different from the pattern associated with the ECF programme as presented in this report, as the payments were only available to a particular subset of teachers and dispersed relatively uniformly across teachers with 1-5 years' experience. The increase of starting salaries to £30k was brought in over two years between September 2022 and September 2023 and resulted in a 16.7% rise in starting salaries for teachers (band M1), compared to 2021. This is likely to have had a positive impact on year 1 retention. However, the changes also meant increases, on a sliding scale, for teachers at M2-M5 (broadly years 2-5), with the M5 band pay rising by 12% over the two years. Therefore, whilst higher pay awards for teachers in the first few years of their careers is likely to be part of the explanation for improved retention, it does not account for the pattern we observe, in particular, the large increase at year 1. The results are hence indicative of there having been an increase in retention associated with ECF, but we cannot conclude that with certainty given constraints of the data and analytical approach.

For the analyses on comparing retention rates between provider-led and school-led participants (Models 2-5), the relatively small proportion of school-led participants may render some of the retention estimates less certain. This is reflected by the additional analyses pointing out that these differences in retention rates between the two types of programmes are likely modest and partly related to other teacher and school-level

[15] See Additional payments for teaching: eligibility and payment details - GOV.UK

differences, including those that are not observed/measured in the data. Data limitations notwithstanding, future analyses accounting for these group differences would be useful to help validate any programme differences in retention.

Overall, as future cohorts pass through the programmes with more retention data available, we expect that there will be greater certainty in the ECF effects on retention.

Appendix 1: Sample characteristics of ECF participants

Cohort 2021

Table 5: Cohort 2021 gender

	FIP	School-led	Total	Retained 1 - year	Retained 2 - years
Female	74.5%	73.3%	74.5%	88.4%	80.3%
Male	25.3%	26.6%	25.3%	85.8%	76.3%
Unknown	0.2%	0.1%	0.2%	84.8%	73.9%
Total	19,983	1,066	21,049	87.7%	79.3%

Table 6: Cohort 2021 age

	FIP	School-led	Total	Retained 1 - year	Retained 2 - years
Under 25	44.2%	44.3%	44.2%	88.9%	80.0%
25 to 29	30.0%	31.7%	30.1%	87.2%	77.8%
30 to 39	16.3%	14.3%	16.2%	86.2%	79.4%
40 to 49	7.4%	7.3%	7.4%	87.1%	82.0%
50 to 59	2.1%	2.4%	2.1%	83.9%	75.9%
60 and over	0.1%	0.0%	0.1%	66.7%	41.7%
Unknown	0.0%	0.0%	0.0%	100.0%	100.0%
Total	19,983	1,066	21,049	87.7%	79.3%

Table 7: Cohort 2021 ethnicity

	FIP	School-led	Total	Retained 1 - year	Retained 2 - years
Any other ethnic group	0.8%	0.6%	0.8%	83.7%	78.3%
Any other mixed background	2.1%	3.4%	2.1%	86.5%	74.3%
Asian or Asian British	6.3%	10.6%	6.5%	86.3%	75.7%
Black or Black British	2.9%	4.4%	3.0%	85.2%	73.8%
Unknown	13.0%	12.0%	12.9%	85.2%	78.8%
White	74.9%	69.0%	74.6%	88.4%	80.1%
Total	19,983	1,066	21,049	87.7%	79.3%

Table 8: Cohort 2021 employment type

	FIP	School-led	Total	Retained 1 - year	Retained 2 - years
Full-time	95.4%	97.0%	95.4%	88.0%	79.4%
Part-time	4.6%	3.0%	4.6%	81.0%	76.3%
Total	19,983	1,066	21,049	87.7%	79.3%

Table 9: Cohort 2021 phase

	FIP	School-led	Total	Retained 1 - year	Retained 2 - years
Primary	43.7%	29.0%	42.9%	89.0%	81.2%
Secondary	52.7%	68.9%	53.6%	86.4%	77.5%
16-plus further education	0.0%	0.0%	0.0%	0.0%	0.0%
Other	3.6%	2.1%	3.5%	91.5%	83.3%
Total	19,983	1,066	21,049	87.7%	79.3%

Table 10: Cohort 2021 school type

	FIP	School-led	Total	Retained 1 - year	Retained 2 - years
Academies	61.3%	59.2%	61.2%	86.9%	78.4%
Colleges	0.0%	0.0%	0.0%	75.0%	50.0%
Free schools	5.4%	4.4%	5.3%	86.6%	77.0%
Independent schools	0.0%	0.0%	0.0%	50.0%	25.0%
Local authority-maintained schools	31.4%	34.8%	31.6%	89.0%	81.1%
Special schools	1.9%	1.6%	1.8%	93.6%	84.5%
Total	19,983	1,066	21,049	87.7%	79.3%

Table 11: Cohort 2021 region

	FIP	School-led	Total	Retained 1 - year	Retained 2 - years
East Midlands	8.0%	3.9%	7.8%	89.2%	81.7%
East of England	11.7%	8.3%	11.5%	90.6%	82.4%
London	19.1%	40.2%	20.2%	87.5%	75.1%
North East	3.5%	2.5%	3.5%	85.8%	78.6%
North West	11.3%	9.0%	11.2%	84.2%	78.9%
South East	17.3%	15.0%	17.2%	89.9%	81.7%
South West	8.5%	7.8%	8.5%	86.7%	78.0%
West Midlands	10.8%	8.0%	10.6%	85.8%	79.5%
Yorkshire and the Humber	9.9%	5.2%	9.6%	87.2%	79.9%
Total	19,983	1,066	21,049	87.7%	79.3%

Table 12: Cohort 2021 free school meal percentage

	Mean	SD	Median
Cohort 2021	25.14	14.19	22.9

Cohort 2022

Table 13: Cohort 2022 gender

	FIP	School-led	Total	Retained 1 - year
Female	75.0%	73.2%	74.9%	88.4%
Male	24.9%	26.5%	25.0%	85.8%
Unknown	0.1%	0.3%	0.1%	84.8%
Total	19,861	1,052	20,913	88.8%

Table 14: Cohort 2022 age

	FIP	School-led	Total	Retained 1-year
Under 25	43.5%	43.7%	43.5%	89.8%
25 to 29	30.0%	31.9%	30.1%	88.1%
30 to 39	16.4%	16.2%	16.4%	88.0%
40 to 49	7.7%	6.0%	7.6%	89.1%
50 to 59	2.3%	2.2%	2.2%	84.7%
60 and over	0.1%	0.0%	0.1%	68.2%
Unknown	0.0%	0.0%	0.0%	0.0%
Total	19,861	1,052	20,913	88.8%

Table 15: Cohort 2022 ethnicity

	FIP	School-led	Total	Retained 1-year
Any other ethnic group	1.1%	1.9%	1.1%	85.2%
Any other mixed background	2.3%	2.3%	2.3%	85.3%
Asian or Asian British	6.9%	11.6%	7.1%	86.0%
Black or Black British	2.7%	5.6%	2.8%	88.3%
Unknown	14.7%	12.9%	14.6%	87.9%
White	72.3%	65.7%	71.9%	89.5%
Total	19,861	1,052	20,913	88.8%

Table 16: Cohort 2022 employment type

	FIP	School-led	Total	Retained 1-year
Full-time	95.3%	96.4%	95.4%	89%
Part-time	4.7%	3.6%	4.6%	81%
Total	19,861	1,052	20,913	88.8%

Table 17: Cohort 2022 school phase

	FIP	School-led	Total	Retained 1-year
Primary	47.4%	32.3%	46.7%	89.3%
Secondary	48.7%	64.5%	49.5%	88.1%
16-plus further education	0.0%	0.0%	0.0%	0.0%
Other	3.9%	3.1%	3.9%	91.4%
Total	19,861	1,052	20,913	88.8%

Table 18: Cohort 2022 school type

	FIP	School-led	Total	Retained 1-year
Academies	60.5%	56.6%	60.3%	88.3%
Colleges	0.0%	0.0%	0.0%	100.0%
Free schools	5.2%	5.7%	5.3%	90.0%
Independent schools	0.0%	0.0%	0.0%	100.0%
Local authority-maintained schools	32.2%	35.7%	32.4%	89.4%
Special schools	2.0%	4.9%	2.0%	91.1%
Total	19,861	1,052	20,913	88.8%

Table 19: Cohort 2022 region

	FIP	School-led	Total	Retained 1- year
East Midlands	8.7%	4.1%	8.4%	89.4%
East of England	11.7%	7.1%	11.5%	90.9%
London	18.5%	40.3%	19.6%	89.7%
North East	3.8%	1.8%	3.7%	87.1%
North West	11.4%	10.6%	11.4%	86.7%
South East	17.1%	15.2%	17.1%	89.7%
South West	8.8%	7.7%	8.7%	88.7%
West Midlands	10.4%	8.7%	10.3%	87.8%
Yorkshire and the Humber	9.5%	4.5%	9.2%	86.8%
Total	19,861	1,052	20,913	88.8%

Table 20: Cohort 2022 free school meal percentage

	Mean	SD	Median
Cohort 2022	25.14	14.24	22.9

Sample characteristics of teachers with one-year experience by census year

Year 2021 and 2022 refer to ECF participants in their first year in cohorts 1 and 2, respectively. Note that certain demographic groups have very low counts and may hence appear zero for percentage after rounding to one decimal place. Total counts are summarised below due to the need to suppress subgroups with low counts.

Table 21: Teachers with one-year experience by census year - gender

	2017	2018	2019	2020	2021	2022
Female	74.2%	74.2%	75.1%	75.4%	74.4%	74.9%
Male	25.8%	25.7%	24.8%	24.6%	25.4%	25%
Not Known	0%	0.1%	0%	0%	0.2%	0.1%
Total	23,575	23,597	23,151	20,379	22,409	21,943

Table 22: Teachers with one-year experience by census year - age

	2017	2018	2019	2020	2021	2022
Under 25	46.3%	44%	43.2%	43.3%	42.9%	42.4%
25 to 30	33.3%	34.3%	33.7%	32.7%	33.1%	32.7%
31 to 35	8%	8.4%	8.7%	8.8%	9.2%	9.6%
36 to 40	4.9%	4.8%	5.6%	5.4%	5.6%	5.9%
41 to 45	4.5%	4.8%	4.8%	5.3%	4.9%	5.1%
46 to 50	1.9%	2.2%	2.3%	2.6%	2.3%	2.3%
51 to 55	0.9%	1.2%	1.3%	1.4%	1.5%	1.5%
56 to 60	0.2%	0.3%	0.4%	0.5%	0.4%	0.4%
Over 60	0.1%	0.1%	0.1%	0%	0.1%	0.1%
Unknown	0%	0%	0%	0%	0%	0%
Total	23,575	23,597	23,151	20,379	22,409	21,943

Table 23: Teachers with one-year experience by census year - ethnicity

	2017	2018	2019	2020	2021	2022
White	79.6%	77.9%	74.9%	75.2%	74.6%	72%
Any other ethnic group	0.7%	0.9%	0.9%	0.8%	0.8%	1.2%
Any other mixed background	1.8%	1.9%	2.2%	2.2%	2.2%	2.4%
Asian or Asian British	6.2%	6.3%	6.5%	7.1%	6.3%	7%
Black or Black British	2.4%	2.5%	3.1%	3.1%	3.1%	2.8%
Information not yet obtained	8.5%	9.6%	11.4%	10.6%	12%	13.4%
Refused	0.7%	0.9%	1%	1%	1%	1.2%
Total	23,575	23,597	23,151	20,379	22,409	21,943

Table 24: Teachers with one-year experience by census year – employment type

	2017	2018	2019	2020	2021	2022
Full-time	96.7%	96.4%	96.2%	95.8%	95.1%	95.5%
Part-time	3.3%	3.6%	3.8%	4.2%	4.9%	4.5%
Total	23,575	23,597	23,151	20,379	22,409	21,943

Table 25: Teachers with one-year experience by census year – school phase

	2017	2018	2019	2020	2021	2022
Primary	50.8%	51%	47.6%	43.2%	42.3%	46.1%
Other	2.4%	2.6%	3%	3.1%	3.5%	3.7%
Secondary	46.8%	46.4%	49.5%	53.8%	54.2%	50.2%
Total	23,575	23,597	23,151	20,379	22,409	21,943

Table 26: Teachers with one-year experience by census year – school type

	2017	2018	2019	2020	2021	2022
Academies	49.9%	53%	56.6%	58.7%	59.5%	59.3%
Free schools	2.6%	3.2%	3.7%	4.7%	5.3%	5.2%
Local authority-maintained schools	46%	42.3%	37.9%	34.8%	33.4%	33.5%
Other types	0%	0%	0%	0%	0%	0%
Special schools	1.5%	1.5%	1.7%	1.7%	1.8%	2%
Total	23,547	23,559	23,125	20,357	22,389	21,919

Table 27: Teachers with one-year experience by census year - region

	2017	2018	2019	2020	2021	2022
London	21.4%	21.3%	21.3%	21.4%	20.4%	20.6%
East Midlands	7.9%	7.6%	7.8%	7.5%	8.3%	8.4%
East of England	10.9%	10.5%	11%	12%	11.7%	11.8%
North East	3.9%	3.5%	3.4%	3.4%	3.4%	3.5%
North West	11.3%	11.5%	11.3%	10.1%	10.5%	10.7%
South East	17.1%	17.3%	17.1%	17.3%	17.6%	17.6%
South West	7.4%	7.6%	7.6%	7.6%	8.3%	8.5%
West Midlands	10.3%	10.7%	10.8%	11%	10.6%	10.2%
Yorkshire and the Humber	9.9%	10%	9.7%	9.6%	9.2%	8.7%
Total	23,575	23,597	23,151	20,379	22,409	21,943

Table 28: Teachers with one-year experience by census year - pupil premium percentage

	Mean	SD	Median
2017	28.61	16.47	25.87
2018	27.83	16.14	25.21
2019	27.55	15.65	25.22
2020	26.97	15.24	24.73
2021	27.57	15.46	25.41
2022	27.88	15.46	25.85

Appendix 2: Count of ECTs and schools by cohort[16]

Table 29: Count of ECTs and schools by cohort

ECF cohort 1	ECF cohort 1	ECF cohort 2	ECF cohort 2
Count of ECTs	Count of Schools	Count of ECTs	Count of Schools
1	4570	1	4998
2	2077	2	2264
3	951	3	992
4	574	4	564
5	361	5	336
6	240	6	201
7	164	7	131
8	91	8	85
9	67	9	61
10	51	10	33
11	27	11	21
12	13	12	15
13	9	13	14
14	8	14	4
15	4	15	3
16	1	16	3
17	2	23	1

[16] Due to the vast majority of schools having a small number of ECTs, a multi-level modelling approach accounting for school clustering would not converge computationally and may increase estimation errors.

ECF cohort 1	ECF cohort 1	ECF cohort 2	ECF cohort 2
18	3		
20	1		
21	1		

Appendix 3: Glossary for statistical outputs

FIP	Provider-led induction programmes.
Log-odds	Estimates calculated in a logistic regression, which represent the natural logarithm of the odds of an event occurring (being retained or not in the teaching workforce in this case).
Standard error (SE)	Measures the variability or uncertainty in the estimates. It shows how close the estimate based on sample data might be to the value that would have been taken from the whole population of interest. The closer the standard error is to zero, the more precise the estimate.
P-value	Informs statistical significance, which helps determine what observed changes or relationships worth paying attention to, and what changes may have appeared only because of randomness in the sampling.
Significance code (for p-value)	Predictors with *** are highly significant ($p < 0.001$). Those with ** ($p < 0.01$) or * ($p < 0.05$) are significant but to a lesser degree. Predictors without asterisks are not statistically significant.
Percentage point (ppt) change	Represents the percentage point difference in retention for a given group of interest (e.g., ECF participants based in the South East) relative to the reference group (e.g., ECF participants based in London) for a categorical variable (region in this example). For continuous variable, the percentage point difference corresponds to one unit change of the variable, such as having one additional year of teaching experience.
95% Confidence interval	Informs the degree of uncertainty of an estimate. Here, a 95% confidence level is used for the estimated percentage point difference, which means that if we drew 20 random samples and calculated a 95% confidence interval (with lower and upper limits) for each sample using the data in that sample, it is expected that, on average, 19 out of 20 (95%) resulting confidence intervals would contain the true population value and 1 in 20 (5%) would not.

Appendix 4: Model outputs

This appendix provides the full statistical output of the five logistic regression analyses presented in this report.

Each model uses the most prevalent subgroup as the reference level and compares all other subgroups against it to obtain any differences in retention rates. The intercept represents the baseline log-odds of retention when all predictors are at their reference levels. For ease of interpretation, we translate the statistical estimates into percentage point difference figures to show the associated difference in retention for a given group (e.g., participants based in the South East against those based in London) or a unit change for continuous variables (e.g., having one additional year of teaching experience). For percentage point differences calculated using the counterfactual comparison approach for the ECF cohorts and provider-led participants, please refer to tables in the main report.

Reference groups for Model 1:

- Census Year = 2017
- Gender = Female
- Contract Type = Full time
- School phase = Primary
- School type = Academy
- Region = London
- Ethnicity = White

Reference groups for Models 2-5:

- Induction programme = Provider-led
- Age group = Under 25
- Gender = Female
- School phase = Secondary
- School type = Academy
- Region = London
- Ethnicity = White

For ease of interpretation, statistically significant findings ($p < .05$) are highlighted with their associated retention estimates (expressed in percentage points) described in writing. Bar charts are used to visualise the model estimates in descending order (ranked vertically from predictors with the largest to the smallest percentage point differences and their 95% confidence intervals). The statistical significance codes (asterisks) are marked next to the predictors.

Table 30: Model 1 – Changes in retention rates associated with ECF cohorts

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
(Intercept)	1.56	0.03	<0.001	-	-	-
Census Year 2018	0.03	0.01	0.020	0.5	0.1	0.8
Census Year 2019	0.35	0.01	<0.001	4.5	4.1	4.8
Census Year 2020	0.23	0.01	<0.001	3.1	2.8	3.5
Census Year 2021	-0.10	0.01	<0.001	-1.5	-1.9	-1.1
Census Year 2022	-0.13	0.02	<0.001	-2.0	-2.5	-1.5
ECF Year1 Cohort 1	0.31	0.03	<0.001	4.0	3.4	4.5
ECF Year2 Cohort 1	0.06	0.03	0.020	0.8	0.1	1.5
ECF Year1 Cohort 2	0.47	0.03	<0.001	5.8	5.2	6.3
Experience (linear term)	0.27	0.01	<0.001	3.6	3.3	3.9
Experience (squared term)	-0.02	0.00	<0.001	-0.3	-0.3	-0.2
Gender: Male	-0.15	0.01	<0.001	-2.2	-2.5	-1.9
Gender: Not known	-0.42	0.14	<0.001	-6.8	-12.2	-2.2
Ethnicity: Any other ethnic group	-0.31	0.04	<0.001	-4.8	-6.3	-3.4
Ethnicity: Any other mixed background	-0.17	0.03	<0.001	-2.5	-3.4	-1.7
Ethnicity: Asian or Asian British	-0.14	0.02	<0.001	-2.1	-2.6	-1.6
Ethnicity: Black or Black British	-0.12	0.02	<0.001	-1.8	-2.6	-1.1
Ethnicity: Information not yet obtained	-0.18	0.01	<0.001	-2.8	-3.2	-2.4
Ethnicity: Refused	-0.24	0.04	<0.001	-3.8	-5.1	-2.5
Employment: Part-time	-0.67	0.01	<0.001	-11.7	-12.3	-11.1
Region: East Midlands	0.32	0.02	<0.001	4.2	3.8	4.6
Region: East of England	0.28	0.02	<0.001	3.6	3.3	4.0
Region: North East	0.31	0.02	<0.001	4.0	3.4	4.5
Region: North West	0.13	0.02	<0.001	1.8	1.5	2.2
Region: South East	0.13	0.01	<0.001	1.8	1.4	2.2
Region: South West	0.15	0.02	<0.001	2.0	1.6	2.5
Region: West Midlands	0.23	0.02	<0.001	3.1	2.7	3.5
Region: Yorkshire and the Humber	0.22	0.02	<0.001	2.9	2.5	3.3
Phase: Other	0.20	0.04	<0.001	2.7	1.8	3.6
Phase: Secondary	-0.01	0.01	0.430	-0.1	-0.4	0.2
Type: Free schools	-0.08	0.02	<0.001	-1.2	-1.8	-0.6
Type: Local authority-maintained schools	0.08	0.01	<0.001	1.1	0.8	1.3

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
Type: Other types	-0.14	0.22	0.520	-2.1	-9.9	3.9
Type: Special schools	0.20	0.05	<0.001	2.7	1.4	3.8
Pupil premium percentage	-0.01	<0.001	<0.001	-0.1	-0.1	-0.1

Key findings:

ECF cohort 1 year 1: Participants in the ECF cohort 1 year 1 had higher retention rates (+4.00 ppts) than teachers who were not in this cohort.

ECF cohort 1 year 2: Participants in the ECF cohort 1 year 2 had slightly higher retention rates (+0.8 ppts) than teachers who were not in this cohort.

ECF cohort 2 year 1: Participants in the ECF cohort 2 year 1 had higher retention rates (+5.8 ppts) than teachers who were not in this cohort.

Census year: Compared to 2017 (reference), school census years 2018 to 2020 showed higher retention rates (from +0.5 to +4.5 ppts). Retention rates, however, were lower in years 2021 (-1.5 ppts) and 2022 (-2 ppts) as compared to 2017.

Teaching experience: The linear term for teaching experience indicates a general positive relationship between more teaching experience and higher retention rates (+3.6 ppts). Additionally, the squared term for teaching experience indicates a non-linear relationship, which together suggest that the initial positive relationship with retention rates tapers off and can eventually decrease at very high levels of teaching experience.

Gender: Male teachers had lower retention rates (-2.2 ppts) than female teachers.

Ethnicity: Teachers of non-White ethnic backgrounds in general had lower retention rates than the vast majority of teachers of White ethnic background. For example, teachers of Asian or Asian British ethnic background (-2.1 ppts) and those Black or Black British ethnic background (-1.8 ppts) had lower retention rates than teachers of White ethnic background.

Employment: Part-time teachers have lower retention rates (-11.7 ppts) than full-time teachers.

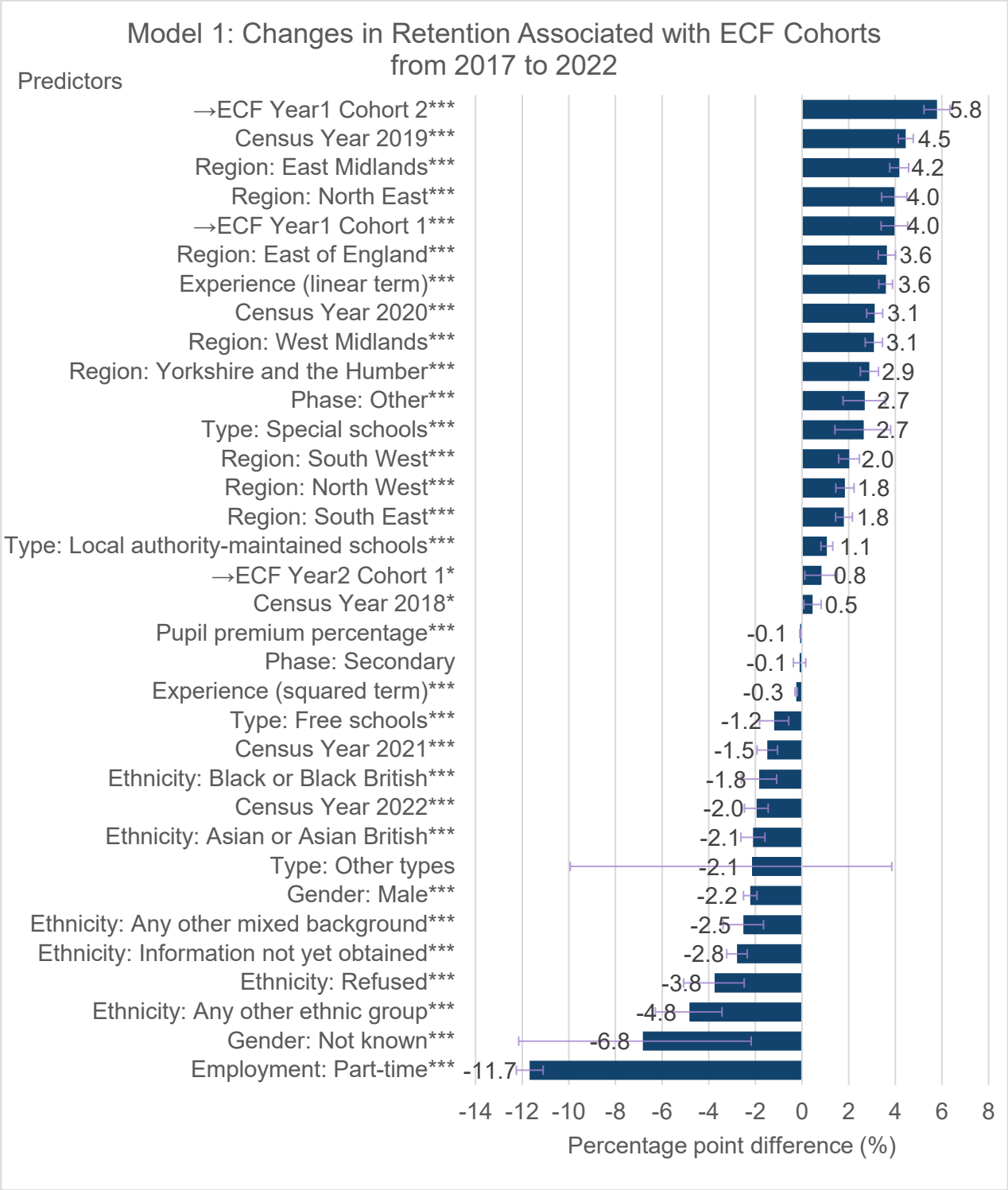
Region: Teachers based outside London had higher retention rates (range from +1.8 ppts in the North West to +4.2 ppts in East Midlands) than teachers based in London overall.

School phase: Teachers based in other school phases had higher retention rates (+2.7 ppts) than those based in primary schools.

School type: Teachers in special schools (+2.7 ppts) and local authority-maintained schools (+1.1 ppts) had higher retention rates than teachers in academies. Teachers in free schools, however, had lower retention rates (-1.2 ppts) than teachers in academies.

Pupil premium percentage: Teachers based in schools with higher proportions of pupils eligible for pupil premium had lower retention rates in general.

Figure 3: Model 1 - Changes in retention associated with ECF cohorts from 2017 to 2022



Reference groups:

- Census year: 2017
- ECF cohort: Teachers who were not in the cohort
- Teacher's age group: Under 25 years old

- Gender: Female
- School phase: Primary
- School type: Academy
- Employment type: Full-time
- Ethnicity: White
- Region: London

Table 31: Model 2 – One-year retention rate comparison between provider-led and school-led participants across cohorts 2021 and 2022

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
(Intercept)	2.46	0.06	< 0.001			
Programme: School-led	-0.15	0.07	0.025	-1.2	-2.3	-0.1
Age 25 to 30	-0.17	0.04	< 0.001	-1.3	-1.9	-0.8
Age 31 to 35	-0.12	0.06	0.032	-0.9	-1.8	-0.1
Age 36 to 40	-0.24	0.07	< 0.001	-1.9	-3.1	-0.8
Age 41 to 45	-0.11	0.07	0.145	-0.8	-2.0	0.3
Age 46 to 50	-0.22	0.10	0.032	-1.8	-3.6	-0.1
Age 51 to 55	-0.49	0.12	< 0.001	-4.4	-7.0	-2.1
Age 56 to 60	-0.70	0.20	0.001	-6.8	-12.2	-2.4
Age 60 and over	-1.15	0.45	0.011	-13.3	-30.5	-1.5
Gender: Male	-0.14	0.04	< 0.001	-1.1	-1.7	-0.5
Phase: Other	0.53	0.13	< 0.001	3.1	1.8	4.2
Phase: Primary	0.10	0.03	0.004	0.7	0.2	1.1
Type: Free schools	0.09	0.07	0.194	0.6	-0.3	1.5
Type: Local authority-maintained schools	0.11	0.04	0.002	0.8	0.3	1.2
Type: Special schools	0.22	0.19	0.231	1.5	-1.1	3.3
Employment: Part-time	-0.59	0.06	< 0.001	-5.5	-6.9	-4.1
Region: East Midlands	0.01	0.07	0.914	0.1	-1.0	1.0
Region: East of England	0.13	0.06	0.028	0.9	0.1	1.7
Region: North East	-0.25	0.09	0.004	-2.0	-3.6	-0.6
Region: North West	-0.36	0.06	< 0.001	-3.0	-4.1	-2.0
Region: South East	0.01	0.05	0.908	0.1	-0.8	0.8
Region: South West	-0.16	0.06	0.011	-1.3	-2.4	-0.3
Region: West Midlands	-0.18	0.06	0.001	-1.4	-2.4	-0.5
Region: Yorkshire and the Humber	-0.19	0.06	0.001	-1.5	-2.6	-0.6
Ethnicity: Any other ethnic group	-0.37	0.14	0.010	-3.1	-6.0	-0.6
Ethnicity: Any other mixed background	-0.28	0.10	0.003	-2.3	-4.1	-0.7
Ethnicity: Asian or Asian British	-0.25	0.06	< 0.001	-2.1	-3.1	-1.1
Ethnicity: Black or Black British	-0.23	0.09	0.010	-1.8	-3.4	-0.4
Ethnicity: Unknown	-0.21	0.04	< 0.001	-1.7	-2.5	-1.0
Free school meal percentage	-0.01	0.001	< 0.001	-0.1	-0.1	-0.04

Key findings:

Programme type: This variable compares school-led participants to provider-led participants (the reference group). School-led participants had lower retention rates (-1.2 ppts) relative to provider-led participants, but note that this difference may be largely driven by the 2022 cohort and related to other school-level differences (see additional analyses described in main text).

Age group: The general trend is that older age groups had lower retention rates as compared to those under the age of 25. For example, participants aged 25 to 30 have a retention rate of 1.3 percentage points lower than the reference group, whilst the lower retention rates were more pronounced among the 56 to 60 age group (-6.8 ppts) and the over 60 age group (-13.3 ppts).

Gender: Male participants had lower retention rates (-1.1 ppts) than female participants.

School phase: Participants in other school phases (+3.1 ppts) and those in primary schools (+0.7 ppts) had higher retention rates than secondary school participants.

School type: Participants in local authority-maintained schools had higher retention rates (+0.8 ppts) than those in academies. Retention differences with participants in free schools (+0.6 ppts) and special schools (+1.5 ppts) were not statistically significant.

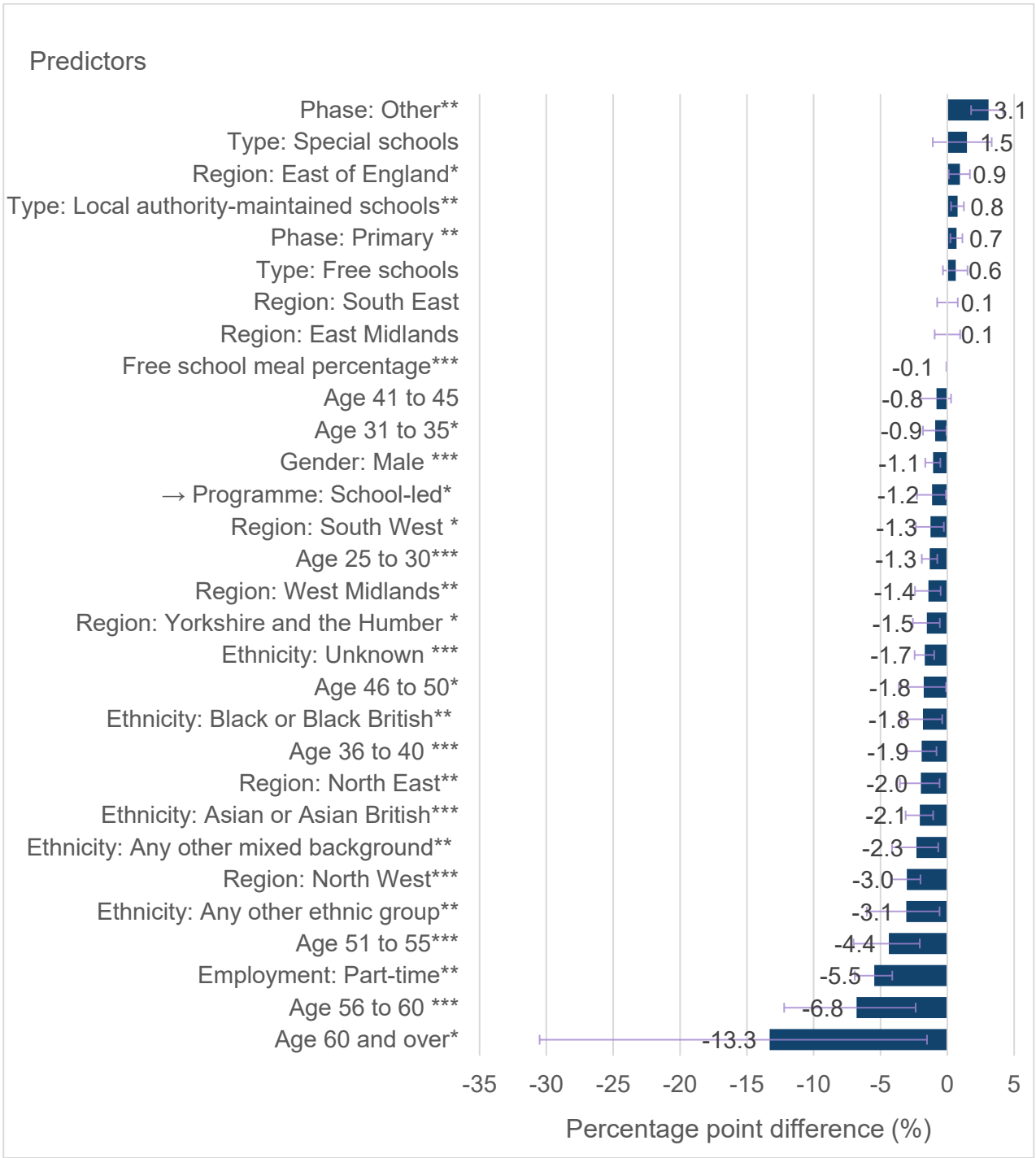
Employment: Part-time participants had a retention rate of 5.5 percentage points lower than full-time participants.

Region: Participants based in the North West had lower retention rates (-3 ppts) than participants based in London – a difference that was highly statistically significant. Participants based in the East of England had higher retention rates (+0.9 ppts) than those based in London. Other regions with significantly lower retention rates include the North East (- 2 ppts), South West (-1.3 ppts), West Midlands (-1.4 ppts) and Yorkshire and the Humber (-1.5 ppts).

Ethnicity: Participants of non-White ethnic backgrounds in general had lower retention rates as compared to participants of White ethnic background. The most pronounced difference observed (with ethnicity specified) was among participants of Asian or Asian British ethnic background (-2.1 ppts).

Free school meal percentage: Participants based in schools with higher proportions of students eligible for free school meals had lower retention rates in general (-0.1 ppts).

Figure 4: Model 2 – One-year retention between provider-led and school-led programmes (cohorts 2021 and 2022 combined)



Reference groups:

- Induction programme: Provider-led
- Teacher's age group: Under 25 years old
- Gender: Female
- School phase: Secondary
- School type: Academy

• Employment type: Full-time
• Ethnicity: White
• Region: London

Table 32: Model 3 – One-year retention rate comparison between provider-led and school-led participants in cohort 2021[17]

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
(Intercept)	2.34	0.08	< 0.001			
Age 25 to 30	-0.15	0.05	0.003	-1.2	-2.2	-0.4
Age 31 to 35	-0.13	0.08	0.094	-1.1	-2.5	0.2
Age 36 to 40	-0.31	0.09	0.001	-2.9	-4.8	-1.1
Age 41 to 45	-0.18	0.10	0.084	-1.5	-3.5	0.2
Age 46 to 50	-0.32	0.14	0.021	-2.9	-5.9	-0.3
Age 51 to 55	-0.35	0.18	0.050	-3.2	-7.2	0.1
Age 56 to 60	-0.81	0.27	0.003	-8.9	-17.7	-2.1
Age 60 and over	-1.14	0.72	0.112	-14.3	-45.0	2.9
Gender: Male	-0.17	0.05	<0.001	-1.5	-2.4	-0.7
Phase: Other	0.53	0.19	0.004	3.4	1.4	5.0
Phase: Primary	0.15	0.05	0.002	1.1	0.4	1.8
Type: Free schools	0.00	0.09	0.972	0.0	-1.5	1.4

[17] Findings from the null model (i.e., model containing teacher-level and school-level characteristics only) are presented here due to the fact that the difference in retention rates between provider-led and school-led participants was non-significant, and there is no statistical support for including this programme type comparison variable in the regression. See main text for the non-significant estimate for the comparison of programme type.

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
Type: Local authority-maintained schools	0.14	0.05	0.009	1.0	0.3	1.7
Type: Special schools	0.51	0.27	0.062	3.3	-0.2	5.5
Employment: Part-time	-0.55	0.09	<0.001	-5.6	-7.8	-3.5
Region: East Midlands	0.13	0.10	0.159	1.0	-0.4	2.3
Region: East of England	0.25	0.09	0.004	1.8	0.6	2.8
Region: North East	-0.15	0.12	0.220	-1.3	-3.5	0.7
Region: North West	-0.33	0.08	<0.001	-3.1	-4.7	-1.6
Region: South East	0.14	0.08	0.059	1.1	0.0	2.1
Region: South West	-0.11	0.09	0.197	-1.0	-2.6	0.5
Region: West Midlands	-0.14	0.08	0.074	-1.2	-2.7	0.1
Region: Yorkshire and the Humber	-0.05	0.08	0.590	-0.4	-1.8	0.9
Ethnicity: Any other ethnic group	-0.32	0.22	0.147	-2.9	-7.8	1.0

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
Ethnicity: Any other mixed background	-0.16	0.14	0.274	-1.3	-4.0	1.0
Ethnicity: Asian or Asian British	-0.16	0.09	0.061	-1.4	-3.0	0.1
Ethnicity: Black or Black British	-0.26	0.12	0.028	-2.3	-4.8	-0.2
Ethnicity: Unknown	-0.27	0.06	<0.001	-2.4	-3.7	-1.3
Free school meal percentage	-0.01	0.00	<0.001	-0.1	-0.1	-0.1

Key findings:

Age group: Participants in older age groups in general had lower retention rates than those under the age of 25. For example, participants aged 56 to 60 had a retention rate of 8.9 percentage points, and those aged over 60 had a retention rate 14.3 percentage points lower than the reference age group.

Gender: Male participants had lower retention rates (-1.5 ppts) than female participants.

School phase: Primary school participants had higher retention rates (+1.1 ppts) than secondary school participants. Participants in other phases had even higher retention rates (+3.4 ppts).

School type: Participants in special schools (+3.3 ppts) and local authority-maintained schools (+1 ppt) had higher retention rates than those in academies. Free schools showed no significant difference.

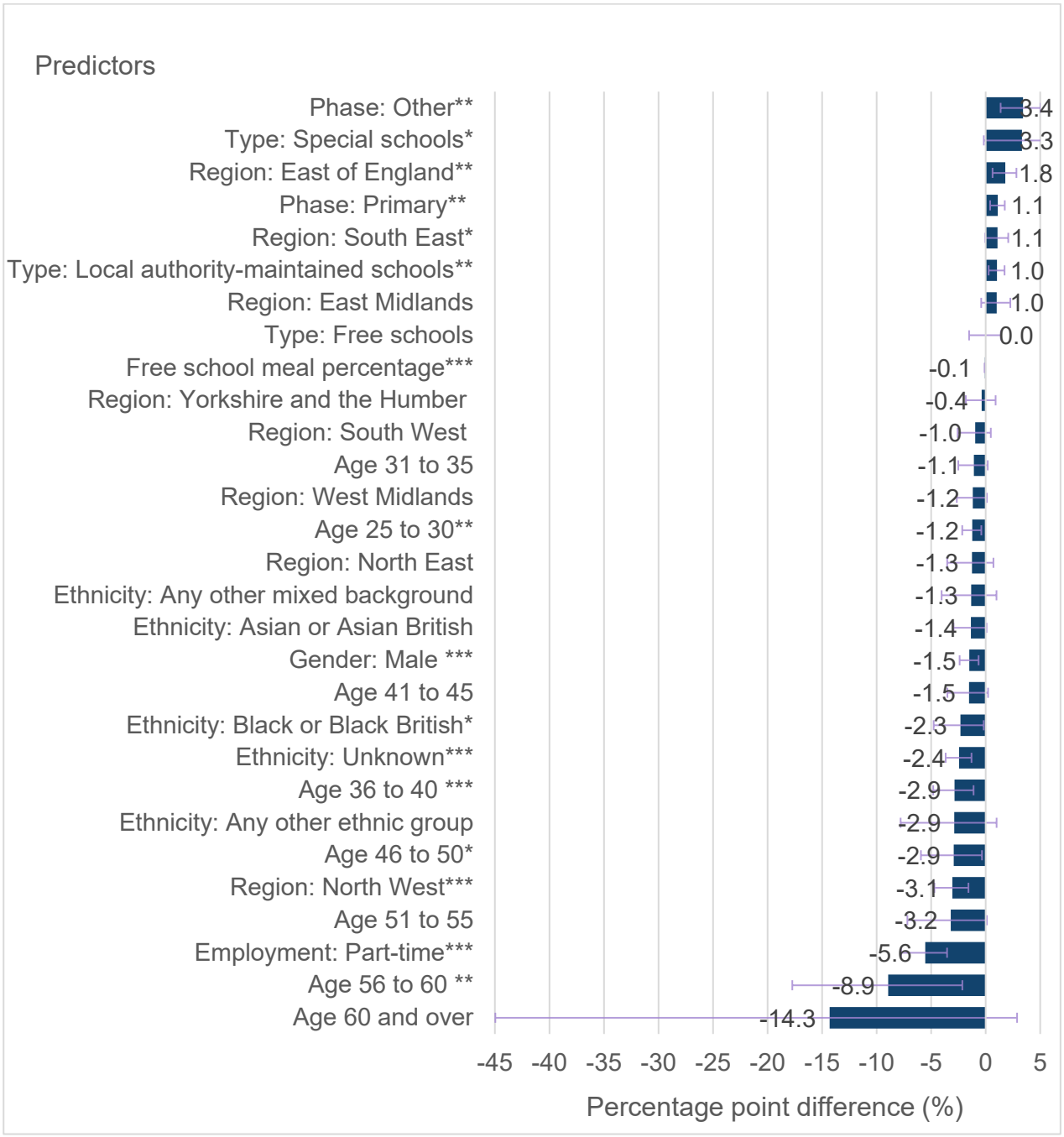
Employment: Part-time participants had lower retention rates (-5.6 ppts) than full-time participants.

Region: Participants based in the North West had lower retention rates than those based in London (-3.1 ppts), whilst participants based in the East of England had higher retention rates than those based in London (+1.8 ppts).

Ethnicity: Participants of Black or Black British ethnic background (-2.3 ppts) and participants of Asian or Asian British background (-1.4 ppts) had lower retention rates than those of White ethnic background.

Free school meal percentage: Participants based in schools with higher proportions of students eligible for free school meals had lower retention rates in general (-0.1 ppts).

Figure 5: Model 3 – One-year retention between provider-led and school-led programmes (cohort 2021)



Reference groups:

- Induction programme: Provider-led
- Teacher's age group: Under 25 years old
- Gender: Female
- School phase: Secondary
- School type: Academy
- Employment type: Full-time

- Ethnicity: White
- Region: London

Table 33: Model 4 – One-year retention rate comparison between provider-led and school-led participants in cohort 2022

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
(Intercept)	2.60	0.09	< 0.001	-	-	-
Programme: School-led	-0.26	0.09	0.006	-1.9	-3.4	-0.5
Age 25 to 30	-0.19	0.05	<0.001	-1.3	-2.1	-0.6
Age 31 to 35	-0.11	0.08	0.189	-0.7	-1.9	0.3
Age 36 to 40	-0.16	0.10	0.105	-1.1	-2.6	0.2
Age 41 to 45	-0.04	0.11	0.717	-0.3	-1.8	1.1
Age 46 to 50	-0.11	0.16	0.482	-0.7	-3.1	1.2
Age 51 to 55	-0.63	0.16	<0.001	-5.3	-8.9	-2.2
Age 56 to 60	-0.57	0.30	0.056	-4.7	-11.7	0.3
Age 60 and over	-1.20	0.58	0.039	-12.9	-34.7	0.5
Gender: Male	-0.10	0.05	0.046	-0.7	-1.4	-0.01
Phase: Other	0.52	0.19	0.008	2.7	0.9	4.0
Phase: Primary	0.04	0.05	0.376	0.3	-0.4	0.9
Type: Free schools	0.20	0.11	0.053	1.2	0.01	2.2
Type: Local authority-maintained schools	0.09	0.05	0.098	0.5	-0.1	1.1

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
Type: Special schools	-0.03	0.25	0.910	-0.2	-4.3	2.5
Employment: Part-time	-0.63	0.09	<0.001	-5.4	-7.3	-3.6
Region: East Midlands	-0.13	0.10	0.174	-0.9	-2.4	0.4
Region: East of England	0.02	0.09	0.856	0.1	-1.1	1.2
Region: North East	-0.36	0.12	0.003	-2.7	-5.0	-0.8
Region: North West	-0.39	0.08	<0.001	-3.0	-4.6	-1.7
Region: South East	-0.14	0.08	0.066	-1.0	-2.2	0.1
Region: South West	-0.22	0.09	0.018	-1.6	-3.1	-0.2
Region: West Midlands	-0.22	0.09	0.009	-1.6	-3.0	-0.4
Region: Yorkshire and the Humber	-0.36	0.09	<0.001	-2.7	-4.3	-1.3
Ethnicity: Any other ethnic group	-0.43	0.19	0.023	-3.3	-7.1	-0.3

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
Ethnicity: Any other mixed background	-0.40	0.13	0.002	-3.1	-5.6	-0.9
Ethnicity: Asian or Asian British	-0.36	0.08	<0.001	-2.7	-4.2	-1.4
Ethnicity: Black or Black British	-0.18	0.13	0.178	-1.3	-3.4	0.6
Ethnicity: Unknown	-0.16	0.06	0.009	-1.1	-2.1	-0.3
Free school meal percentage	-0.01	0.00	<0.001	-0.04	-0.1	-0.02

Key findings:

Programme type: School-led participants had lower retention rates (-1.9 ppts) than provider-led participants, but this difference may be marginal and related to other group differences in school-level characteristics (as noted in the sensitivity analyses described in the main text).

Age group: Older age groups in general had lower retention rates than those under the age of 25. For example, participants aged 51 to 55 had a retention rate of 5.3 percentage points lower than the reference age group.

Gender: Male participants had lower retention rates (-0.7 ppts) than female participants.

School phase: Participants based in other school phases had higher retention rates (+2.7 ppts) than those based in secondary schools.

School type: Participants based in free schools (+1.2 ppts) and local authority-maintained schools (+0.5 ppts) had marginally higher retention rates than those based in academies.

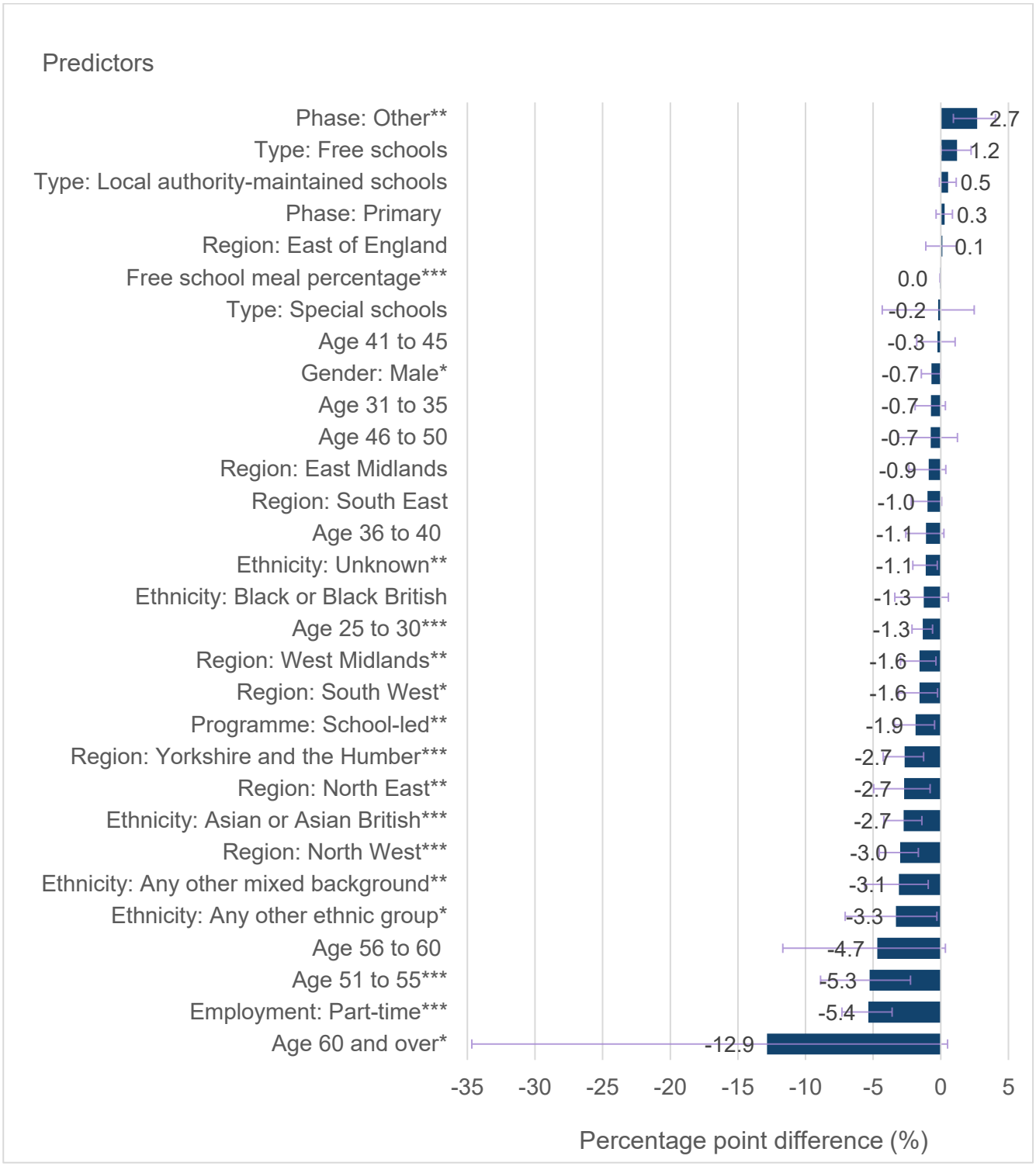
Employment: Part-time participants had lower retention rates (-5.4 ppts) than full-time participants.

Region: Participants based in non-London regions (except for the East of England) had lower retention rates than those based in London. In particular, participants based in the North West (-3 ppts) and in Yorkshire and the Humber (-2.7 ppts) had lower retention rates than London-based participants.

Ethnicity: Participants of non-White ethnic backgrounds in general had lower retention rates than participants of White ethnic background. For instance, participants of Asian or Asian British (-2.7 ppts) and those of any other mixed ethnic background (-3.1 ppts) had lower retention rates than the reference group.

Free school meal percentage: Participants based in schools with higher proportions of students eligible for free school meals had lower retention rates in general (-0.04 ppts).

Figure 6: Model 4 – One-year retention between provider-led and school-led programmes (cohort 2022)



Reference groups:

- Induction programme: Provider-led
- Teacher's age group: Under 25 years old
- Gender: Female
- School phase: Secondary
- School type: Academy
- Employment type: Full-time
- Ethnicity: White
- Region: London

Table 34: Model 5 – two-year retention rate comparison between provider-led and school-led participants in cohort 2021[18]

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
(Intercept)	1.21	0.06	< 0.001	-	-	-
Age 25 to 30	-0.10	0.04	0.011	-1.8	-3.3	-0.4
Age 31 to 35	0.01	0.06	0.850	0.2	-2.0	2.3
Age 36 to 40	0.10	0.08	0.220	1.7	-1.0	4.3
Age 41 to 45	0.22	0.09	0.018	3.6	0.7	6.2
Age 46 to 50	-0.13	0.12	0.274	-2.3	-6.8	1.8
Age 51 to 55	-0.03	0.15	0.858	-0.5	-6.1	4.6
Age 56 to 60	-0.63	0.24	0.009	-12.8	-24.0	-2.6
Age 60 and over	-1.48	0.68	0.030	-33.6	-61.3	-2.4

[18] Findings from the null model (i.e., model containing teacher-level and school-level characteristics only) are presented here due to the fact that the difference in retention rates between provider-led and school-led participants was non-significant, and there is no statistical support for including this programme type comparison variable in the regression. See main text for the non-significant estimate for the comparison of programme type.

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
Gender: Male	-0.19	0.04	<0.001	-3.4	-5.0	-2.0
Phase: Other	0.37	0.15	0.014	5.8	1.4	9.7
Phase: Primary	0.12	0.04	0.003	2.0	0.7	3.2
Type: Free schools	0.004	0.08	0.953	-0.1	-2.8	2.5
Type: Local authority-maintained schools	0.15	0.04	<0.001	2.5	1.1	3.8
Type: Special schools	0.14	0.20	0.483	2.4	-4.8	8.2
Employment: Part-time	-0.25	0.08	0.002	-4.7	-7.9	-1.7
Region: East Midlands	0.38	0.08	<0.001	6.0	3.8	8.0
Region: East of England	0.41	0.07	<0.001	6.4	4.5	8.1
Region: North East	0.20	0.10	0.050	3.3	0.04	6.2
Region: North West	0.17	0.06	0.008	2.9	0.8	4.8

Predictor	Log-Odds	SE	P-value	Percentage Point Difference (%)	95% Lower Limit	95% Upper Limit
Region: South East	0.33	0.06	<0.001	5.4	3.7	7.0
Region: South West	0.15	0.07	0.034	2.6	0.2	4.7
Region: West Midlands	0.25	0.07	<0.001	4.1	2.1	6.0
Region: Yorkshire and the Humber	0.27	0.07	<0.001	4.4	2.3	6.3
Ethnicity: Any other ethnic group	0.02	0.19	0.913	0.4	-6.7	6.5
Ethnicity: Any other mixed background	-0.24	0.11	0.028	-4.6	-9.1	-0.4
Ethnicity: Asian or Asian British	-0.19	0.07	0.006	-3.5	-6.2	-1.0
Ethnicity: Black or Black British	-0.22	0.10	0.019	-4.2	-8.0	-0.6
Ethnicity: Unknown	-0.05	0.05	0.360	-0.9	-2.7	1.0
Free school meal percentage	-0.003	0.001	0.023	-0.1	-0.1	-0.01

Key findings:

Age group: Retention rates were generally lower among older age groups than those under the age of 25. For example, participants aged 56 to 60 had lower retention rates (-12.8 ppts) than the reference age group.

Gender: Male participants had lower retention rates (-3.4 ppts) than female participants.

School phase: Participants in other school phases (+5.8 ppts) and those in primary schools (+2 ppts) had higher retention rates than secondary school participants.

School type: Participants in local authority-maintained schools had higher retention rates (+2.5 ppts) than those in academies.

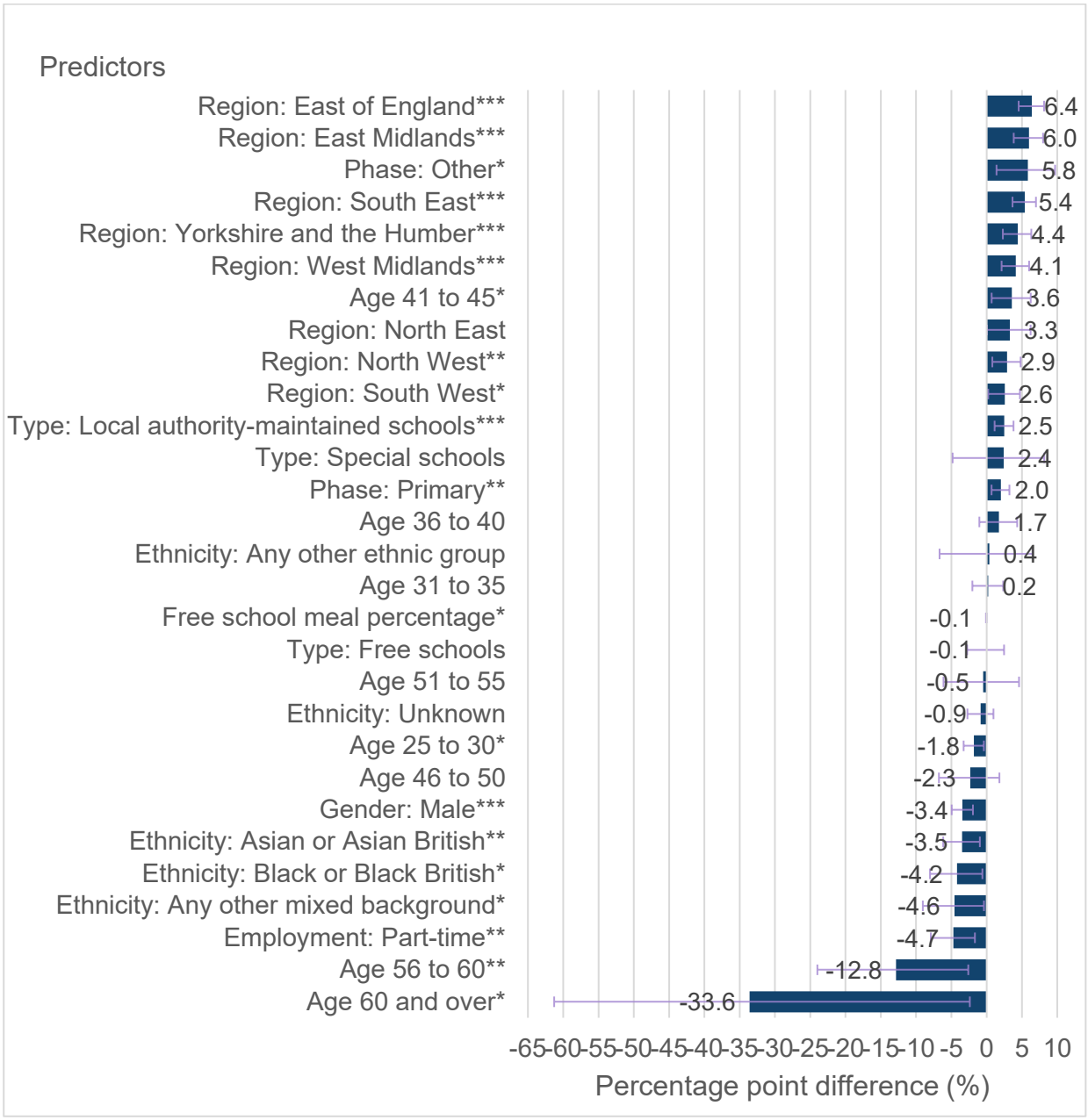
Employment: Part-time participants had lower retention rates (-4.7 ppts) than full-time participants.

Region: Participants based in non-London regions (to a marginal extent for those based in the North East) had higher retention rates than participants based in London. For example, participants based in East Midlands had 6 percentage points higher retention rates than those based in London.

Ethnicity: Participants of non-White ethnic backgrounds had lower retention rates in general than those of White ethnic background. For example, participants of Asian or Asian British ethnic background had 3.5 percentage points lower retention rates.

Free school meal percentage: Participants based in schools with higher proportions of students eligible for free school meals had lower retention rates in general (-0.1 ppts).

Figure 7: Model 5 – Two-year retention between provider-led and school-led programmes (cohort 2021)



Reference groups:

- Induction programme: Provider-led
- Teacher's age group: Under 25 years old
- Gender: Female
- School phase: Secondary
- School type: Academy
- Employment type: Full-time
- Ethnicity: White
- Region: London

Appendix 5: Methodological Note on Regression Analyses

Method

Two sets of logistic regression analyses were conducted (see Table S1 for model structures). First, using the SWC data, the first logistic regression (Model 1) sought to test for any changes in teachers' retention rates associated with the national roll-out of the ECF induction programmes. Since there were no established (proxy) measures that quantified the impact of past policies and/or interventions on retention, it was not feasible to synthesise a comparison group of teachers prior to the national roll-out of the ECF and compare their retention rates with the current sample of ECF participants. To address this limitation, the ECF cohorts were entered as three dummy variables of interest (i.e., whether in Year 1 in 2021, Year 1 in 2022, and Year 2 in 2022), whilst SWC census year (2018-2022) was entered as a factor with 2017 as the reference year in the regression. The estimated change in retention would hence be a proxy metric that was specific to the ECF cohorts, while taking into account other temporal changes in retention rates prior to and/or not uniquely linked to the ECF cohorts.

Next, leveraging data from the population of ECF participants, the second set of logistic regressions (Models 2-5) sought to test if retention rates would differ between ECF participants who attended the provider-led versus school-led induction programmes. Specifically, the interim group differences on one-year retention rates were evaluated across both the 2021 and 2022 ECF cohorts (Model 2), and within each of the two cohorts respectively (Models 3 and 4), using separate regression models. An additional regression was used to evaluate such a group difference in two-year retention rates upon participants' completion of the ECF induction programme in the 2021 cohort.

To further ensure that any statistically significant differences in retention rates ascertained would be attributable to the explanatory variables of interest (i.e., the ECF cohorts in Model 1 and the type of ECF induction programmes attended in Models 2-5), other teacher-level and school-level characteristics were included in all regressions as control variables[19]. The selection of these control variables was informed by the evaluation of the early roll-out of the ECF[20] and peer-reviewed literature on retention (see Table S1 for the full list of control variables).

[19] For Model 1, there were modest proportions of missing data on pupil premium (0.35%) and school type (0.16%), which were associated with census years 2020 to 2022 amid the COVID-19 pandemic. A binary-coded control variable (before versus amid/after the pandemic) was entered to the regression model to adjust for this missing data pattern. Results remained unchanged (likelihood ratio test: $\chi^2(4) = 1333.8$, $p < .001$). These missing cases were therefore excluded in the main analyses presented in the report.

[20] Walker, M., Worth, J., Liht, J., Classick, R., Tang, S., Rutt, S., & Straw, S. (October 2024). Evaluation of the early roll-out of the Early Career Framework – Evaluation report. Education Endowment Foundation. Evaluation of the early roll-out of the Early Career Framework - NFER

Finally, using likelihood ratio test, models were compared with their respective null models containing only the control variables and minus the group variable of interest (e.g., provider-led versus school-led for Models 2-5). A significant model comparison indicates that the type of ECF induction programmes attended is a statistically meaningful predictor of retention above and beyond other teacher-level and school-level control variables. All tests were deemed statistically significant at alpha = 0.05 (two-tailed).

To ease interpretation of the magnitude of the estimated effects, percentage point difference in retention was reported as the key effect size of interest. In the main report, percentage point difference was calculated by comparing the ECF cohort with the same teachers if they were not part of the ECF cohort (Model 1). The probability of retention for this counterfactual scenario was estimated via the predict function using Model 1's regression formula, with the ECF cohort dummy variable recoded from 'TRUE' to 'FALSE' for those same teachers. This approach considers the teachers' original individual and school characteristics when calculating the percentage point difference in retention. A similar approach was applied to Models 2-5, where the programme group variable was recoded as 'school-led' for participants who in fact attended the provider-led programmes, with the corresponding model formula specified in the predict function.

For other variables in all models, percentage point difference was calculated by subtracting the baseline probability from the probability converted from the adjusted odds ratio corresponding to a given level of a categorical variable (e.g., White versus other ethnic backgrounds, given the reference categories of other variables) or a unit change of a continuous variable (e.g., one additional year of teaching experience in Model 1[21]). To inform the certainty of estimates, the 95% confidence intervals of the percentage point differences were also reported, which were converted from the 95% confidence intervals of the adjusted odds ratios[22].

[21] An alternative model with teaching experience factorised as separate dummy variables yielded the same pattern of results.
[22] Having considered the large sample size for the analysis in Model 1 and computational resources available, confidence intervals were calculated using the Wald method. For all other analyses, confidence intervals were calculated using the profile likelihood method.

Sensitivity Analyses

Model 1: Clarifying ECF Cohort Effects on Retention

To further evaluate the robustness of the statistically significant main effects of the ECF cohorts on retention, the descriptive statistics of the teacher-level and school-level characteristics were carefully inspected to identify any potential group differences between the dummy-coded ECF cohorts and the remaining analytical samples[23]. Notably, the inspection indicated that there were lower relative proportions of participants of White ethnic background in the ECF cohorts (cohort 1 year 1: 74.6%; cohort 1 year 2: 75.4%; cohort 2 year 1: 72.0%) than the remaining analytical samples (79.6-79.7%). There were also lower relative proportions of primary school participants (cohort 1 year 1: 42.3%; cohort 1 year 2: 43.0%; cohort 2 year 1: 46.1%) yet higher relative proportions of secondary school participants in the ECF cohorts (cohort 1 year 1: 54.2%; cohort 1 year 2: 53.4%; cohort 2 year 1: 50.2%) than the remaining analytical samples (primary: 51.8-52.0%; secondary: 44.7-44.8%). These cohort differences were then further adjusted for as their respective interaction terms with ethnicity (recoded as White versus non-White) and school phase in Model 1.

Accordingly, in terms of school phase, the overall results remained largely unchanged, except for the model further adjusting for school phase differences between ECF cohort 1 in year 2 and the remaining analytical sample (the original main effect of which on retention became non-significant). However, the addition of this interaction term for such adjustments over the original model was not statistically significant ($\chi^2(-2) = -1.89$, $p = .389$), meaning that this interaction effect was modest. The other main effects for ECF cohorts on retention remained statistically significant throughout.

In terms of ethnicity, the ECF cohort main effects on retention remained statistically significant. The model comparison tests against the original model were not statistically significant ($\chi^2 = -0.05$ to -0.09, $ps = .758$ to $.830$).

Models 2 and 4: Clarifying Group Main Effects on Retention

Procedures such as propensity score matching and entropy-based weighting are commonly used to ensure comparability in group comparison scenarios. However, since the provider-led and school-led groups were highly unbalanced in size (cohort 2021: 19,929 and 1,065; cohort 2022: 19,836 and 1,049), opting for propensity score matching would risk losing many unmatched participants (thereby harming statistical power), whilst opting for entropy-based weighting would likely result in overweighting certain participants in the school-led group. Accordingly, a similar approach as described above

[23] Bootstrapped tests were attempted but not feasible due to the large sample size, which placed significant demand on computational resources and time. These differences were descriptively noticeable and pronounced.

for Model 1 was taken by first (i) testing for significant group differences in teacher-level and school-level characteristics (bootstrap samples = 1,000), and then (ii) further adjusting for those group differences as interaction terms in Models 2 and 5 where the group main effect (provider-led versus school-led) appeared statistically significant.

Model 2 (one-year retention rate across cohorts 2021 and 2022). Chi-squared tests and inspection of the cross-tabulated proportions revealed that there was a significantly higher relative proportion of school-led participants (66.7%) than provider-led participants (50.7%) in secondary schools, yet a higher relative proportion of provider-led participants (45.6%) than school-led participants (30.7%) in primary schools. An adjusted model including a group by school phase interaction term showed that the main effect of group on retention was no longer significant (Log-odds = -0.13, SE = 0.08, p = 0.12). Re-running the regression within each school phase indeed revealed a group main effect on retention among primary school participants only (Log-odds = -0.26, SE = 0.12, p = 0.029). However, the addition of this school phase interaction term was not statistically significant relative to the original model ($\chi^2(2) = 0.51$, p = .776). Taken together, we caution that the initial main effect of group on retention may be marginal, and that some of such variance might be related to group differences in school phase instead.

Model 4 (one-year retention rate in cohort 2022). Bootstrapped comparisons revealed a similar group difference in the relative proportions of school phase (provider-led: 47.4% primary and 48.7% secondary; school-led: 32.4% primary and 64.4% secondary). The group main effect on retention survived further adjustments for such group differences in school phase, and the addition of this interaction term with school phase was not statistically significant versus the original model ($\chi^2(2) = 0.16$, p = .922).

Further, a group difference was found in region (recoded as London versus non-London for the comparison) that there was a higher relative proportion of school-led participants (40.2%) than provider-led participants (18.5%) who were based in London. The group main effect on retention did not survive further adjustments for the group difference in region (Log-odds = 0.03, SE = 0.17, p = 0.88). The additional of this region interaction term was also statistically significant over the original model ($\chi^2(1) = 4.50$, p = .034). Pairwise comparisons with Tukey corrections revealed that provider-led participants had significantly higher retention rates than school-led participants outside London (Log-odds = 0.40, SE = 0.11, p = .002), but not in London (Log-odds = -0.03, SE = 0.17, p = .999). Overall, we caution that the initial main effect of group on retention may be attributable to external factors associated with London versus non-London participants. In future analyses, considerations of the interactions between group and school phase/region are warranted to validate the potential effect of induction programme types on retention.

Table 35: Model structures

Model	Cohort	Sample Size	Outcome Variable	Predictors	Vs Null
1	2021-22	Total = 683,387 Cohort 1 year 1 = 22,409 Cohort 1 year 2 = 19,504 Cohort 2 year 1 = 21,943	Single-year retention in year 1 and year 2	• Census year (Reference = 2017) • ECF cohort 1 year 1 (Reference = non-ECF cohort) • ECF cohort 1 year 2 (Reference = non-ECF cohort) • ECF cohort 2 year 1 (Reference = non-ECF cohort) • Teaching experience (linear and squared terms) • Gender (Reference = Female) • School phase (Reference = Primary) • School type (Reference = Academy) • Employment type (Reference = Full-time) • Ethnicity (Reference = White) • Region (Reference = London) • Pupil premium percentage	Better
2	2021-22	Total = 41,879 Provider-led = 39,765 School-led = 2,114	One-year retention	• Induction programme (Reference = Provider-led) • Teacher's age group (Reference = Under 25 years old) • Gender (Reference = Female) • School phase (Reference = Secondary) • School type (Reference = Academy) • Employment type (Reference = Full-time) • Ethnicity (Reference = White) • Region (Reference = London) • Free school meal percentage	Better
3	2021	Total = 20,994 Provider-led = 19,929 School-led = 1,065	One-year retention		Comparable
4	2022	Total = 20,885 Provider-led = 19,836 School-led = 1,049	One-year retention		Better
5	2021	Total = 20,994 Provider-led = 19,929 School-led = 1,065	Two-year retention		Comparable

Notes. A statistically significant likelihood ratio test indicates that in addition to the covariates alone (the null model), the type of induction programme is a statistically meaningful factor worth-considering alongside when evaluating teacher retention rate. To the contrary, a non-

significant result means that there is no statistical evidence in favour of further considering the effect of induction programme type on teacher retention rate beyond the covariates. The null model in this case is more parsimonious than its alternative model. For Model 1, the model was compared to the null models minus the three dummy variables for the ECF cohorts, respectively. Note the differences in analytical sample size between Model 1 and Models 2-5 were due to missing data in the different predictors used. Two-year retention rates analysed in Model 5 refer to cumulative retention rates over two years, which are different from the year 2 single-year retention rates in Model 1.

Department for Education

Reference: RR1523

For any enquiries regarding this publication, contact www.gov.uk/contact-dfe.

This document is available for download at www.gov.uk/government/publications.