Department for Education

Working lives of teachers and leaders

Teachers and leaders leaving state education, waves 1 to 3

Research report

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Definitions

Teachers – where the report refers to a teacher, this includes all who specified in the survey that they were one of the following: leading practitioner; middle leader; classroom teacher (non-early career teacher); classroom teacher (early career teacher), or; unqualified teacher.

Leaders – where the report refers to a leader, this includes all who specified in the survey that they were one of the following: executive headteacher; headteacher; deputy headteacher, or; assistant headteacher.

Early career teachers (ECTs) – where the report refers to Early Career Teachers (ECTs), this includes all teachers who are in the first two years of their teaching career after qualifying and are participating in Early Career Framework (ECF) based training. In wave 1, we included those in their second year of teaching under the old newly qualified teachers (NQT) process to facilitate comparisons in the experiences of those early on in their career.

Phase – the phase of the school at which the teacher or leader works are defined as one of the following:

- **Primary** – if the teacher or leader indicated through the survey that the school they work at is primary only.
- **Secondary –** if the teacher or leader indicated through the survey that the school they work at is either secondary only or primary and secondary (i.e. an all through school).
- **Special / PRU / AP** – if the school the teacher or leader works at is defined as a special school, pupil referral unit (PRU) or other alternative provision (AP).

Free school meals (FSM) % – the proportion of pupils in a school in receipt of free school meals (FSM). This serves as a proxy indicator for the level of disadvantage within a school.

School size – the number of pupils on roll at the school.

LA-maintained – local authority-maintained schools.

Abbreviations

WLTL – Working Lives of Teachers and Leaders survey

- **2022** WLTL Wave 1 survey
- **2023** WLTL Wave 2 survey
- **2024** WLTL Wave 3 survey

SWC – School Workforce Census

SLT – senior leadership team

GIAS – the Get Information About Schools government database

CPD – continuing professional development, i.e. any structures and/or pre-planned learning activities which professionals engage in to develop and enhance their abilities, including activities such as training workshops, studying for a qualification, conferences and events, e-learning programs, coaching, mentoring, lesson observation, etc.

PPA – planning, preparation and assessment, i.e. protected non-contact time for teachers

N – number of observations

Y/N – response options are Yes or No

Derived variables

Professional wellbeing – we use this term to refer to the following variables:

- **P3_1.** Level of agreement with whether: I experience stress in my work (scale 1-5, 1 = strongly agree)
- **P3_3.** Level of agreement with whether: My job negatively affects my mental health (scale 1-5, 1 = strongly agree)

Supportive leadership – the average (mean) of the following variables:

- **E2_1** Level of agreement with whether respondent thinks their manager: trusts them to work independently (scale 1-5, 1 = strongly agree)
- **E2_2** Level of agreement with whether respondent thinks their manager: is considerate of their work-life balance (scale 1-5, 1 = strongly agree)
- **E2_3** Level of agreement with whether respondent thinks their manager: supports their wellbeing (scale 1-5, 1 = strongly agree)

Confidence to request flexible arrangements – the respondent's level of agreement with the following statement depending on their current flexible working practices:

- **K2_3** [If K1 = 10, 11, 12 or 13] Level of agreement with whether: I would feel confident requesting either formalised or ad-hoc flexible working arrangements if I needed to (scale 1-5, 1 = strongly agree)

- **K2_4** [If K1 = 1-9] Level of agreement with whether: I would feel confident requesting additional flexible working arrangements (beyond the occasional day off or late start/early finish) if I needed to (scale 1-5, 1 = strongly agree)

Role – variable B1 is re-coded in the following way:

- **Teacher** B1 = 5: Leading practitioner

  B1 = 6: Middle leader

  B1 = 7: Classroom teacher – Qualified teacher (QTS/QTLS)

  B1 = 8: Classroom teacher – Early Career Teacher (ECT)

  B1 = 9: Unqualified teacher

- **Leader** B1 = 1: Executive headteacher

  B1 = 2: Headteacher

  B1 = 3: Deputy headteacher

  B1 = 4: Assistant headteacher

1. Introduction

Background to the survey

This research was conducted as an extension of the wave 2 and wave 3 analyses of the working lives of teachers and leaders (WLTL) survey.[1] In part, the WLTL survey uses a longitudinal design, as all respondents that completed the previous survey wave are invited to take part in the current year. Alongside this, additional teachers and leaders are invited to take part for the first time each wave to top up the sample. Each wave of the survey is completed between the end of January and the beginning of May. The first wave of the WLTL survey was completed in 2022, the second in 2023 and the third in 2024.

This research report is concerned with identifying measurable predictors associated with an increased likelihood of teachers and leaders leaving state education. We explored differences in survey responses in the 2022 survey for teachers and leaders who go on to leave (and not leave) state education by 2023, and in the 2023 survey for teachers and leaders who go on to leave (and not leave) state education by 2024. Comparisons are made both within and between the 2022 and 2023 survey responses with regards to the size and the consistency of predictors which are associated with leaving teaching in the state sector.

Leaver definition

For this research report, a leaver was defined as a teacher or leader who left a permanent position in state education for reasons other than retirement. Teachers and leaders who were on paternity or maternity leave, nor those who changed phase within state education (now teaching in state Sixth Form or Further Education College) were not included.[2] Teachers and leaders who moved to supply teaching and who had moved to non-teaching roles in state education were included.[3]

Table 1.1 shows the frequencies and proportions of non-leavers and leavers in the 2022 and 2023 surveys. We included individuals in the 2023 analyses if they had remained in

[1] The summary report of the wave 3 WLTL survey analysis can be accessed here: https://assets.publishing.service.gov.uk/media/67852c953a9388161c5d2335/Wave_3_Summary_Report.pdf

[2] Note this definition is different to the definition of leavers used in the wave 2 core report, which included retirees, parental leave and changes of phase.

[3] In the WLTL dataset, the leaver variable was defined as those teachers or leavers with: LEAVER_TYPE = 1; and L9 is not 4 (Sixth Form or Further Education College), is not 17 (paternity/maternity) and is not 18 (retired).

teaching since 2022 or if they were newly recruited to the survey in 2023.[4] In addition, data from the School Workforce Census (SWC) was used to identify and fill gaps in the leaver status of non-respondents. In the SWC data, the same definition of leavers was employed as above, whereby this label was only applied to individuals who were no longer in the teaching workforce but had not retired. Overall, the leaver definition gave a total of 643 leavers and 10,534 non-leavers in the 2022 survey and 778 leavers and 9,771 non-leavers in the 2023 survey.[5]

Table 1.1 Identification of non-leavers and leavers by source, 2022 and 2023

Source	2022: Non-leavers	2022: Leavers	2023: Non-leavers	2023: Leavers
WLTL	6,715 (64%)	304 (47%)	6,537 (67%)	396 (51%)
SWC	3,819 (36%)	339 (53%)	3,234 (33%)	382 (49%)
Total	10,534 (94%)	643 (6%)	9,771 (93%)	778 (7%)

Source: Working lives of teachers and leaders (WLTL) survey with data on leaver status supplemented by the School Workforce Census (SWC). Unweighted counts. Figures in parentheses in the first two rows are column proportions.

It is important to note that the proportions of leavers identified through the combined WLTL and SWC data are lower than the national figures in both years: 5.8% of the 2022 survey respondents left state education by 2023, compared with 8.8% reported nationally; 7.4% of the 2023 survey respondents left state education by 2023, compared with 8.2% nationally.[6] These discrepancies may mean that our sample is biased by non-response and leavers being lost to follow-up, and may not give a fully accurate picture of the wider teaching workforce. In the analyses that follow, cross-sectional weights were applied to correct for non-response and make the samples more representative of the teaching workforce as a whole. However, these weights may not fully correct for any such bias.

[4] Appendix C shows that there were no significant differences in the personal or school-level characteristics of leavers in 2022 and leavers in 2023, among respondents who were in the survey from 2022.
[5] 106 retirees were not counted at leavers in 2022 (54 indicated in WLTL 2023 survey and 51 identified in the SWC) and 99 retirees were not counted as leavers in 2023 (56 identified in WLTL 2024 survey and 43 identified in SWC). Five individuals who moved to Sixth Form or Further Education Colleges were not counted as leavers in 2022 and there were no individuals in the survey who moved to state further education settings in 2023. Note that this data was not available for individuals whose leaver status was identified only through SWC.
[6] Source: School workforce in England, Reporting year 2024 - Explore education statistics - GOV.UK. The weighted leaving rate in 2023 (corresponding to the 2022 survey) was 5.6% while in 2024 (corresponding to the 2023 survey) it was 7.2%. The discrepancy in the direction of the trend in the national figures compared to the survey may reflect under-identification of leavers in the 2022 survey or differences in the sample composition across years.

Methodological overview

The research consisted of three phases: a literature review and mapping exercise, followed by two rounds of statistical analysis (Table 1.2).

Table 1.2 Methods employed in the report

Phase	Method	Details	Outputs
1a	**Literature review**	Close reading of 3 recent evidence reviews (Appendix A).	1. List of predictors of leaving state education that have strong evidential support (Appendix B) 2. Conceptual model of leaving state education at a high level (Figure 1)
1b	**Identification of measurable predictors**	Predictors identified in the literature review were mapped to the WLTL dataset.	3. List of predictor variables that have strong evidential support and can be measured in WLTL (Appendix B)
2	**Univariable testing**	Univariable linear regression.	4. Measurement of relationships between predictors and leaving state education (Tables 6 and 7) 5. Identification of predictors with no relationship with leaving state education (Tables 6 and 7)
3	**Multivariable model building**	Multivariable regression with variables identified in phase 2 as promising for further analysis.	6. Greater understanding of the interplay between predicators of leaving state education (Tables 8-14)

This research took a theory-led approach. We first identified predictors of leaving state education that have the strongest evidential support from research literature. The review of the literature also generated a high-level conceptual model to guide the statistical modelling (Figure 3.1).

Once predicator variables with evidential support were identified, a systematic process was used to determine which predictors could be best measured using the WLTL survey data. A first round of univariable tests then assessed the relationships between individual variables and leaving state education. In a second round of statistical modelling, we then explored the relationships between multiple variables using multivariable model building. We decided not to use Structural Equation Modelling (SEM) based on our high-level conceptual model due to not all predictors having corresponding measures in the survey, as well as the relatively limited sample size.

In the analyses below standardised predictors were used to aid comparisons between the different non-binary predictors that were hypothesised to be associated with leaving teaching. Logistic regression models were used to estimate the association between a one standard deviation change in the predictor with going on to leave state education. In Section 4, variation inflation predictors (VIFs) and Akaike information criteria (AIC) were used to compare and interpret models.

Interpreting the findings in this report

It is important to note a number of features of this research when interpreting the findings of this report. First, when interpreting the differences between leaver and non-leaver ratings for a given survey item, please refer to the tables for the direction of the results (e.g., was 1 high or low) and the scale used (e.g., 1-5 or 1-10). We do not report the range of responses because, even if the data were skewed (e.g. the majority of teachers and leaders reported high levels of stress), responses used the full range of values for all discrete item measures included.

Second, column 'Std. AME', where used, refers to a standardised Average Marginal Effect. This can be interpreted as the estimated percentage point increase in the likelihood of leaving teaching in the state sector associated with a one standard deviation change in the predictor.[7] The confidence intervals (in brackets) show the range of values that, over repeated samples, we would expect to contain the true estimate 95% of the time. We refer to an association as conventionally 'significant' when this interval does not include zero.

Third, p-values are presented in full, and associations are described as consistent when they have a p-value below a significance threshold of 5% (.05) in both the 2022 and the 2023 analyses. Family-wise Bonferroni alpha-level adjustment thresholds are also included in the table notes. These are more stringent significance thresholds which compensate for the increased likelihood of incorrectly rejecting a null hypothesis when many tests are carried out.

Fourth, some questions were asked of all WLTL respondents (core items) and some asked only of a subset of respondents (module items). Core and module items were differently weighted in the analyses. However, caution should still be taken when making comparisons about the relative importance of core items and module items based on p-values, as there was greater statistical power to detect significant associations between items asked of all respondents and leaver status (core items). Unweighted counts (base sizes) for each predictor explored are provided in the notes below each figure and table.

[7] Weighted standardisation was used so that the standard deviations were more reflective of the teaching workforce as a whole. Binary predictors were not standardised.

Finally, throughout this report we refer to teachers and leaders as a combined group. This is because, though we recognise that the experiences of teachers and leaders likely differ in many ways, the relationships between the various predictors explored below and leaving state education are very similar for the full sample as for a sub-sample excluding leaders. Where the interpretation of the results excluding leaders does differ from that of the full sample, this is mentioned in the corresponding table notes.[8]

Limitations

There are three substantial limitations to the findings presented in this report. First, not all predictors of teacher and leader retention identified in the research literature could be tested because there were not always suitable measures available in the WLTL dataset. Examples include teacher and leader resilience, availability of support staff and the intensity of workload. The conceptual model drawn up from the research literature (Figure 1) could not, therefore, be fully tested.

Second, the weights used are intended to make the sample more representative of the teaching workforce as whole. However, there likely remain unequal probabilities of selection or differential non-response which are not fully corrected by the weighting and correlated with leaving teaching. For example, the characteristics of WLTL leavers, shown in Section 2, are not directly comparable to those found in the SWC and therefore the wider workforce. This means that care should be taken when using the findings presented below to inform policy decisions, because the estimated relationships may not fully reflect those in the underlying population of teachers.

Third, the findings of this report should be understood as descriptive rather than causal. This is because the analyses are cross-sectional and do not control for all observable or unobservable differences between leavers and non-leavers.[9] The associations presented in this report are therefore only possible indicators of important predictors for teacher retention; though we do then relate these findings to a high-level conceptual model (see Section 3), robust causal conclusions would require experimental or quasi-experimental research designs which are beyond the scope of the data available.

[8] We do not complete separate analyses for leaders due to their considerably lower sample size; leaders constitute 17% (in 2022) and 16% (in 2023) of the full sample.
[9] For example, rather than part-time work *causing* teachers and leaders to leave state education, teachers and leaders engaging in part-time work are likely to differ in observable and unobservable ways from teachers who do not, in ways that matter for teacher retention.

Recommendations for further analysis of leavers and non-leavers

Our recommendations for further analyses of leavers and non-leavers in the WLTL survey are that:

- Analysis of the causes of leaving state education would be strengthened by collecting data on teacher/leader resilience, the availability of support staff and the intensity of workload.
- Future analysis of leaving state education would benefit from more questions being asked of *all* participants about wellbeing, mental health and work-related stress, as currently these are only asked in modules and answered by a subset of respondents.
- A higher level of granularity regarding intention to leave would be beneficial, for example differentiating those who are wanting to leave in the near future or who have already taken steps to leave from those who are intending to leave in the longer term.
- Questions with limited variability and ceiling effects, especially those regarding professional wellbeing and professional status, could be supplemented with further questions to differentiate the responses.

2. Characteristics of leavers

Table 2.1 and Table 2.2 show the demographic and school-level characteristics of leavers compared to non-leavers in 2022 and 2023. Comparisons between non-leavers and leavers were made using independent two-sample t-tests for variables measured on a ratio or continuous scale and chi-square tests of independence for categorical variables. Overall, among WLTL respondents, career stage (being an ECT) and role (being a teacher rather than a leader) are more reliable predictors of leaving state education than other personal or school-level characteristics. It should be noted, however, that other characteristics may have been significant if larger sample sizes were used, such as population data from the SWC.

Table 2.1 shows that a significantly higher proportion of leavers than non-leavers among WLTL respondents were early career teachers (ECTs) in 2022 and 2023. Leaver to non-leaver comparisons in 2022 and 2023 yielded consistent findings regarding ethnicity and highest qualification, with leavers and non-leavers showing no significant differences in these characteristics in either year. These findings provide consistent evidence that, among WLTL respondents, leavers and non-leavers do differ in terms of career stage but do not differ in terms of ethnicity or highest qualification achieved.[10]

Leavers in the 2023 survey were, on average, younger than non-leavers, however there was no significant age difference between leavers and non-leavers in the 2022 survey. Meanwhile significant differences in the distributions of gender between leavers and non-leavers were only apparent in 2022, with leavers more likely to be female. Given the inconsistency of these findings, age and gender should not be interpreted as showing consistent differences between leavers and non-leavers among WLTL respondents.

School-level and role-level characteristics are compared in Table 2.2. Leaver to non-leaver comparisons yielded similar findings regarding school size, phase, recent pay rises with no significant differences observed between groups in either year. In the 2023 survey, leavers were more likely than non-leavers to come from academies (as opposed to local authority-maintained schools), however this difference was not apparent in 2022 and so it should not be interpreted as a consistent difference between leavers and non-leavers. A significantly higher proportion of leavers than non-leavers were teachers, as opposed to leaders, in both 2022 and 2023.

[10] Note that existing data on the full population of teachers from the SWC consistently finds that leaver rates *do* differ in term of ethnicity, such that leaving rates are slightly lower for the white group compared other ethnic groups (see https://explore-education-statistics.service.gov.uk/). Based on this comparison to national statistics, we conclude that Asian and Black teachers and leaders who leave teaching are under-represented in WLTL in 2023.

Proportion of pupils eligible for free school meals (FSM)

Table 2.1 also shows that leavers worked in schools with higher percentages of FSM-eligible pupils in both 2022 and 2023. In 2022, non-leavers worked in schools with 21.3% of pupils eligible for FSM, compared to 21.8% for leavers. In 2023, these figures were 23.1% and 24.0% respectively. However, Table 2.1 shows no evidence of a significant relationship between the percentage of pupils eligible for free school meals and teacher retention in the WLTL dataset, despite evidence from administrative data suggesting a relationship between pupil premium (which should mirror FSM closely) and lower teacher retention.[11]

We explored the robustness of this finding in two ways. First, we considered the coverage of the FSM data, which was imported from GIAS. We found that 0% of the data was missing in 2022 and 4% of the data was missing in 2023. In addition, the overall mean FSM proportion data matched FSM national profiles. Second, we checked whether the skewed nature of the continuous FSM proportion measure caused any bias by using a version of the FSM measure where schools were grouped in quintiles [FSM_BANDED] but found identical patterns of results.

It is therefore likely that, among WLTL respondents, though leavers did teach in schools with the higher proportions of pupils eligible for FSM compared to non-leavers in both years, this difference was too small to reach statistical significance. This means that we have insufficient evidence to conclude this in the population of teachers when analysing WLTL responses.

[11] See the School Teachers' Review Body 2025 data annex, table D7.

Table 2.1 Personal characteristics of leavers and non-leavers, 2022 and 2023

Characteristic	2022: Non-leavers	2022: Leavers	2022: P-value	2023: Non-leavers	2023: Leavers	2023: P-value
Age	39.0	39.2	.660	40.2	38.0	<.001
Gender	-	-	.046	-	-	.248
Female	7438 (75%)	448 (80%)	-	7277 (75%)	578 (77%)	-
Male	2433 (25%)	115 (20%)	-	2368 (25%)	168 (23%)	-
Ethnicity	-	-	.117	-	-	.139
White	9336 (90%)	528 (88%)	-	5977 (90%)	365 (92%)	-
Mixed	253 (2%)	19 (3%)	-	158 (2%)	12 (3%)	-
Asian	507 (5%)	32 (5%)	-	314 (5%)	12 (3%)	-
Black	226 (2%)	16 (3%)	-	151 (2%)	6 (2%)	-
Other Ethnicity	48 (0%)	7 (1%)	-	30 (0%)	3 (1%)	-
Highest qualification	-	-	.176	-	-	.415
PhD	76 (1%)	8 (1%)	-	67 (1%)	10 (2%)	-
Masters' or equivalent	879 (9%)	48 (8%)	-	825 (10%)	60 (10%)	-
Initial teacher training	6175 (63%)	349 (60%)	-	5257 (62%)	366 (60%)	-
Undergraduate degree	2550 (26%)	170 (29%)	-	2273 (27%)	168 (27%)	-
Other	96 (1%)	10 (2%)	-	85 (1%)	10 (2%)	-

Source: Working Lives of Teachers and Leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses P-value column reports the P-value on the test of the difference in the levels of the characteristic between non-leavers and leavers in that survey year. Bonferroni alpha-level: p<.013. 2022 base sizes (unweighted): Age [AGE_SAMPLE_2020] n=11,138; Gender [GENDER_SWC] n=10,706 ; Ethnicity [O6SUM] n=11,011; ECT status [ECTSTATUS] n=11,177; Highest qualification [HIGHESTQUAL_SWC] n=10,709. 2023 base sizes (unweighted): Age [AGE_2022_SWC] n=10,023; Gender [GENDER_SWC2022] n=10,243 ; Ethnicity [O6SUM] n=6,844; ECT status [ECTSTATUS_W2] n=10,411; Highest qualification [HIGHESTQUAL_2022_SWC] n=8,016.

Table 2.2 School/role characteristics of leavers and non-leavers, 2022 and 2023

Characteristic	2022: Non-leavers	2022: Leavers	2022: P-value	2023: Non-leavers	2023: Leavers	2023: P-value
Number of pupils	746	699	.065	738	716	.332
FSM %	21.3	21.8	.472	23.1	24.0	.172
Phase taught	-	-	.277	-	-	.399
Primary	5157 (49%)	318 (51%)	-	4698 (49%)	387 (52%)	-
Secondary	4808 (46%)	262 (42%)	-	4398 (46%)	320 (43%)	-
Special/PRU/AP	564 (5%)	40 (6%)	-	555 (6%)	40 (5%)	-
LA-maintained school	-	-	.972	-	-	.032
Yes	4573 (46%)	269 (47%)	-	4065 (44%)	263 (40%)	-
No	5264 (54%)	308 (53%)	-	5110 (56%)	401 (60%)	-
Role	-	-	.037	-	-	<.001
Teacher	8920 (86%)	538 (89%)	-	8187 (86%)	666 (91%)	-
Leader	1476 (14%)	67 (11%)	-	1384 (14%)	67 (9%)	-
ECT status	-	-	.033	-	-	<.001
Y1	469 (4%)	24 (4%)	-	439 (5%)	53 (7%)	-
Y2	462 (4%)	46 (7%)	-	456 (5%)	55 (7%)	-
Passed	9598 (92%)	550 (89%)	-	8755 (91%)	638 (86%)	-

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. P-value column reports the P-value on the test of the difference in the levels of the characteristic between non-leavers and leavers in that survey year. Bonferroni alpha-level: p<.008. 2022 base sizes (unweighted): Number of pupils [NUMBEROFPUPILS_GIAS] n=11,141; FSM % [PERCENTAGE_FSM_GIAS] n=11,153; Phase taught [PHASE] n=11,177; LA-maintained school [ACADEMY_LAMAINTAINED_2020] n=10,722; Role n=11,039; Recently received pay rise [J2] n=10,621. 2023 base sizes (unweighted): Number of pupils [NUMBEROFPUPILS_GIAS_W2] n=10,161; FSM % [PERCENTAGE_FSM_GIAS_W2] n=10,167; Phase taught [PHASE_W2] n=10,411; LA-maintained school [ACADEMY_LAMAINTAINED_W2] n=9,703; Role n=10,330; Recently received pay rise [J2_W2] n=9,966.

3. Single predictors of leaving state education

Predictors with good evidential support

The literature review identified 44 predictors of leaving state education that have strong evidential support from research into teacher and leader retention. Where available, variables were identified in the WLTL 2022 and 2023 datasets that could be used to measure these predictors. A full list of predictors together with a mapping to the WLTL datasets is given in Appendix B.

The predictors were classified into 8 categories (Table 3.1). Predictors in the same category shared similarities in their most closely linked WLTL variables. The categorisation ensured that predictors with similar underlying data were not compared in the same statistical model.[12] It also enabled the study to be as comprehensive as possible within its scope.

Table 3.1 Categorisation of predictors of leaving state education

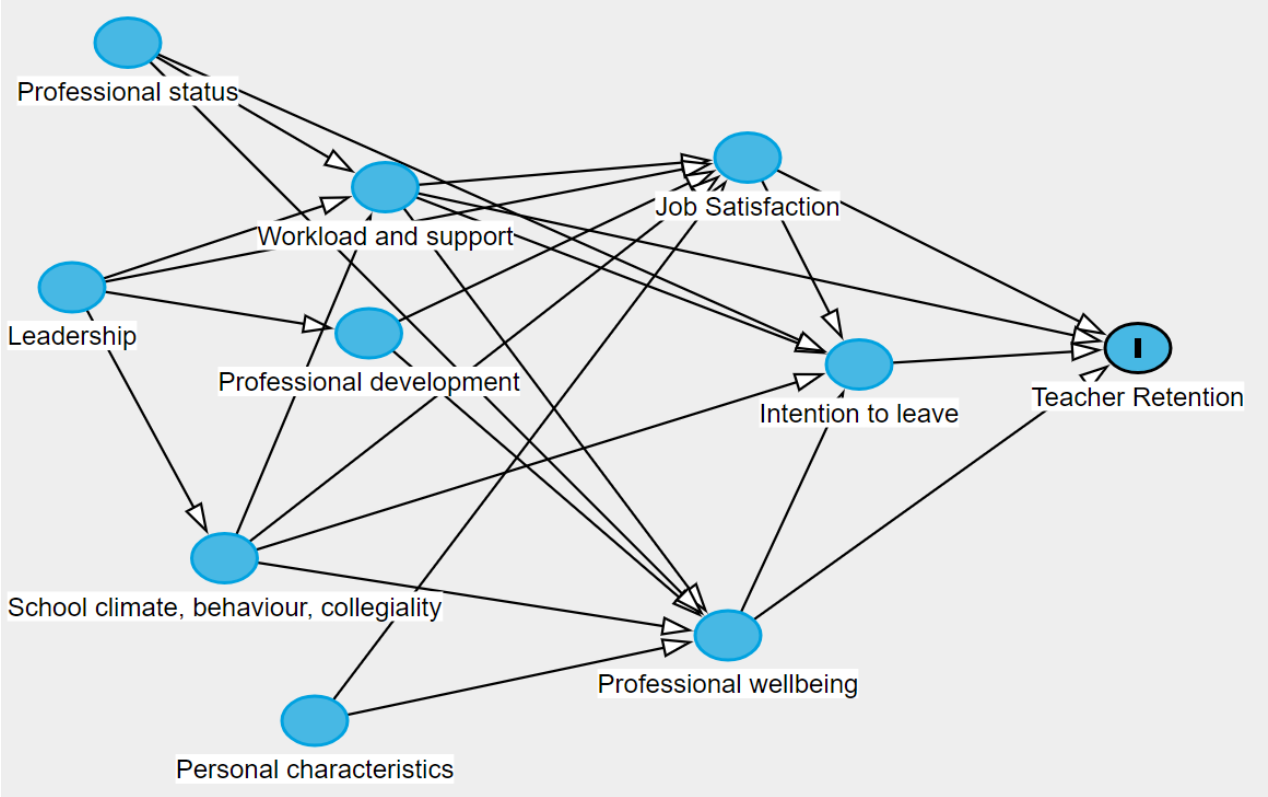
No.	Category of predictor	Level at which predictors are operating
1	Professional development	School
2	Leadership	School
3	Workload and resources	School
4	Status, professionalism, pay and contractual	School, community & national
5	School climate (including pupil behaviour, staff collegiality & collaboration)	School
6	School-level characteristics	School
7	Personal traits and characteristics	Teacher
8	Direct predictors: professional wellbeing, job satisfaction and intention to leave	School & teacher

A conceptual model was created to show the relationships evidenced in the literature between these high-level categories (Figure 3.1). Three predictors emerged in the literature research as being used as proxy measures for teacher and leader retention. These are therefore conceptualised as the most direct causal influences in the model: job satisfaction, intention to leave and professional wellbeing. As shown in Table 3.2, though an overarching professional wellbeing question was not asked in the WLTL surveys, we proxy this predictor using two questions: workplace stress and the negative mental health effects of work.

[12] Unless the purpose of the analysis was to isolate unique associations between a given predictor and leaving teaching by controlling for related variables.

The first round of analysis included variables from each of the categories that had resulted from the literature review. Note that it was not possible to investigate the full conceptual model due to a lack of data for all the aspects of the model. In addition, the conceptual model was created to facilitate subsequent analyses rather than represent distinct categories in the predictors, as many categories and predictors are likely not independent of each other.

Figure 3.1 High-level conceptual model from the literature review



Source: see Appendix B. Arrows indicate a conceptualised causal relationship based on existing literature.

Findings from univariable statistical testing

An initial round of statistical modelling explored the direct relationships between single predictor variables and leaving state education. The three predictors hypothesised to be the most direct predictors of leaving state education were tested first to explore whether relationships in the WLTL data broadly aligned with those found in the literature. Further predictors were then tested, covering other categories identified in the conceptual model.

Direct predictors of leaving state education

The three measures frequently used in educational studies as proxy measures of retention (job satisfaction, intent to leave state education and professional wellbeing) all showed significant differences between leavers and non-leavers (Table 3.2).

In particular, a one standard deviation change in reported job satisfaction was associated with a 3.2 (in 2022) and 4.2 (in 2023) percentage point increase in the likelihood of the respondent leaving state education by the following year. This is likely the most notable finding in Table 3.2. It is unsurprising that intention to leave had a significant positive association with the behaviour of actually leaving, at an 8.2 (in 2022) and 11.1 (in 2023) percentage point increase. In addition, at the individual level, much of the variation in the professional wellbeing measures is likely correlated with self-reported job satisfaction, meaning that the finding on job satisfaction may already account for individual differences in professional wellbeing and their weaker associations with retention as described below.

In the case of professional wellbeing, two predictor variables were tested: workplace stress and the negative mental health effects of work. These two professional wellbeing questions were both asked in modules within the WLTL survey and therefore only asked to approximately one third of survey respondents. Nonetheless, the mental health variable consistently showed significant differences despite the reduction in sample size. A one standard deviation change in the extent to which a respondent agreed that their job negatively affected their mental health was associated with a 2 percentage point increase in the likelihood of leaving state education. The stress variable did not show significant differences in either year though this may be at least partly due to ceiling effects, as all teachers and leaders reported high levels of stress.

Table 3.2 Differences in levels of direct predictors for non-leavers and leavers, 2022 and 2023

Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
Job satisfaction	M1_1. Extent of job satisfaction (scale 1-5, 1 = highest)	2.47 (.874)	3.15 (1.12)	.032 (.027, .036)	<.001	2.70 (.905)	3.39 (1.06)	.042 (.037, .047)	<.001
Intent to leave state education	M2_4. Future considerations: Leaving the state school sector (excluding retirement) (Y/N)	25.8%	63.3%	.082 (.071, .094)	<.001	36.1% (48.0%)	75.3% (43.2%)	.111 (.097, .125)	<.001
Professional wellbeing: workplace stress	P3_1. Level of agreement with whether: I experience stress in my work (scale 1-5, 1 = strongly agree)	1.79 (.876)	1.72 (.972)	-.004 (-.018, -.009)	.531	1.71 (.850)	1.67 (1.01)	-.003 (-.019, .013)	.704
Professional wellbeing: job affects mental health	P3_3. Level of agreement with whether: My job negatively affects my mental health (scale 1-5, 1 = strongly agree)	2.55 (1.12)	2.15 (1.16)	-.020 (-.033, -.007)	.002	2.37 (1.11)	2.03 (1.09)	-.021 (-.034, -.007)	.002

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. M2_4 not standardised. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.013. 2022 base sizes (unweighted): M1_1 n=11,163; M2_4 n=10,048; P3_1 n=3,493; P3_3 n=3,484. 2023 base sizes (unweighted): M1_1 n=10,402; M2_4 n=9,489; P3_1 n=2,456; P3_3 n=2,448.

Further univariable predictors of leaving state education

Next, univariable logistic regression models of leaver status were fitted using predictor variables from each of the remaining categories identified during the literature review. Variables were selected from each category that had the most suitable data in the WLTL dataset to measure them. Where there were several WLTL survey items relevant to the predictor variable, they were averaged or summed.[13] The results are shown in Table 3.3.

In the category of professional development, consistently significant differences were found between leavers and non-leavers in CPD effectiveness but not CPD hours: both leavers and non-leavers reported receiving similar amounts of CPD but leavers rated their CPD less effective compared to non-leavers. The size of the association for CPD effectiveness was also relatively consistent, with a one standard deviation change in reported CPD effectiveness associated with a 1.2 (in 2022) and 1.8 (in 2023) percentage point increase in the likelihood of leaving state education.

In the category of leadership, leavers consistently felt that their manager was less supportive than non-leavers, as proxied by perceived trust of the manager in the respondent and the manager's consideration of the respondent's work-life balance and wellbeing. A one standard deviation change in reported supportive leadership was associated with a 1.9 (in 2022) and 2.3 (in 2023) percentage point increase in the likelihood of leaving state education. No consistent significant association was found in the respondent currently working flexibly.

In the category of workload, interestingly no consistently significant differences were found in the reported hours worked by leavers compared to non-leavers, and leavers actually reported slightly fewer weekly hours of work. This is discussed further below. Consistently significant differences were found for perceived workload acceptability, with leavers finding their workload less acceptable on average. A one standard deviation change in perceived workload acceptability was associated with a 1.3 (in 2022) and 1.4 (in 2023) percentage point increase in the likelihood of leaving state education.

In the category of professional status, no consistent significant differences were found between non-leavers and leavers for any of the variables relating to professional status, namely acceptability of pay, perceived value of teachers' views by policymakers, and perceived value of the teaching profession by society. The only sizeable and significant effect was feeling valued by society which, in 2023 only, was associated with a 2.7 percentage point increase in the likelihood of leaving teaching. However, this question

[13] Please note that items are grouped based on similarity in constructs, rather than based on psychometric evidence supporting a shared underlying factor. For more details please see the 'Derived variables' section above.

was asked to a small subset of respondents and caution should be taken in interpreting this result in particular.

In the category of school climate, leavers consistently rated pupils' behaviour as worse compared to non-leavers. A one standard deviation change in behaviour rating was associated with a 1.1 (in 2022) and 1.7 (in 2023) percentage point change in the likelihood of leaving state education. Though the effectiveness of staff collaboration on teaching and learning was only asked in the 2022 survey, leavers rated this as significantly lower compared to non-leavers, with a 1.5 percentage point estimated association with leaving teaching.

Finally, in the category of personal characteristics, significant differences were found in enjoyment of classroom teaching in both years, with leavers reporting lower rates of enjoyment. In particular, a one standard deviation increase in reported enjoyment of classroom teaching was associated with a 1.9 (in 2022) and 2.3 (in 2023) percentage point increase in the likelihood of leaving state education.

Overall, these results suggest that reported conditions – such as CPD hours, working hours and flexible working – were not consistently different between leavers and non-leavers in the WLTL surveys, nor were measures of perceived professional status. Instead, perceived effectiveness of the CPD, supportiveness of leadership, acceptability of workload, rating of pupil behaviour, effectiveness of staff collaboration and enjoyment of teaching were all consistently different. Of these, supportiveness of leadership and enjoyment of teaching had marginally larger association point estimates than the other predictors.

In the remainder of this section we further probe the results relating to CPD and workload. In Section 4, further analysis is then conducted for flexible working, CPD effectiveness, workload acceptability and pupil behaviour, particularly regarding the relationships between these measures and supportive leadership.

Table 3.3 Differences in levels of additional predictors for non-leavers and leavers, 2022 and 2023

Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers Mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
Professional development: CPD hours	Q2: Approximation of time (in hours) spent on Continuing Professional Development in the last 12 months. (1=zero; 2 = 1-10; 3=11-20; … 9=71-80; 10=81+)	4.00 (2.23)	3.70 (2.25)	-.008 (-.019, .003)	.132	4.01 (2.17)	4.07 (2.25)	.002 (-.010, .014)	.757
Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	6.14 (2.23)	5.62 (2.36)	-.012 (-.016, -.007)	<.001	6.09 (2.21)	5.43 (2.26)	-.018 (-.024, .013)	<.001
Leadership: Currently working flexibly	Positive response to one or more flexible working arrangements (K1_A or K1_B or … K1_K) (Y/N)	39.8%	45.1%	.012 (.002, .022)	.020	45.7%	45.6%	-.000 (-.011, .011)	.972
Leadership: Supportive leadership	Average of E2_1, E2_2 and E2_3. Level of agreement with whether manager: trusts them to	2.12 (.995)	2.53 (1.13)	.019 (.014, .023)	<.001	2.13 (1.00)	2.54 (1.13)	.023 (.019, .029)	<.001

Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers Mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
	work independently, is considerate of their work-life balance, and supports their wellbeing (scale 1-5, 1 = strongly agree)								
Workload: Workload amount	D1. Hours worked in most recent full working week.	49.8 (12.1)	48.8 (13.3)	-.004 (-.009, .001)	.108	50.5 (12.2)	49.1 (14.0)	-.007 (-.013, -.001)	.016
Workload: Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	3.87 (1.12)	4.11 (1.16)	.013 (.006, .019)	<.001	3.91 (1.15)	4.13 (1.12)	.014 (.007, .020)	<.001
Professional status: Pay acceptability	J1_1. Level of agreement with: I am satisfied with the salary I receive for the work I do (scale 1-5, 1 = strongly agree)	3.57 (1.19)	3.63 (1.21)	.002 (-.003, .008)	.396	3.60 (1.17)	3.67 (1.19)	.004 (-.003, .011)	.254
Professional status: Views	E4_3. Level of agreement with: Teachers' views are	4.43 (.929)	4.44 (.914)	.001	.839	4.58 (.804)	4.60 (.798)	.002	.436

Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers Mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
valued by policymakers	valued by policymakers, e.g. the government (scale 1-5, 1 = strongly agree)			(-.005, .006)				(-.003, .008)	
Professional status: Profession valued by society	Q1_7. Level of agreement with: I think the teaching profession is valued by society (scale 1-5, 1 = strongly agree)	3.81 (1.13)	3.89 (1.17)	.004 (-.006, .014)	.410	4.02 (1.08)	4.37 (.878)	.027 (.878)	<.001
School climate: Pupil behaviour	F1. Rating of pupil behaviour in respondent's school (scale 1-5, 1 = very good)	2.36 (1.05)	2.60 (1.14)	.011 (.007, .016)	<.001	2.54 (1.13)	2.85 (1.21)	.017 (.011, .022)	<.001
School climate: Staff collaboration	P5_4. Level of agreement with: Teaching staff collaborate effectively on teaching and learning (scale 1-5, 1 = strongly agree)	2.35 (.998)	2.70 (1.10)	.015 (.008, .023)	<.001	-	-	-	-

Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers Mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
Personal characteristics: Job enjoyment	M1_2. Extent of classroom teaching enjoyment (scale 1-5, 1 = all the time)	1.93 (.698)	2.23 (.928)	.019 (.014, .023)	<.001	2.04 (.739)	2.34 (.963)	.023 (.018, .029)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Flexible working not standardised. Bonferroni alpha-level: p<.004. 2022 base sizes (unweighted): Q2 n=3,243; H3 n=10,845; Flexible working n=11,177; Supportive leadership n=11,111; D1 n=10,936; D4_2 n=11,154; J1_1 n=11,159; E4_3 n=11,070; Q1_7 n=3,840; F1 n=11,157; P5_4 n=3,476; M1_2 n=10,235. 2023 base sizes (unweighted): Q2 n=2,272; n=10,411; H3 n=10,213; Flexible working n=10,411; Supportive leadership n=10,335; D1 n=10,253; D4_2 n=10,392; J1_1 n=6,569; E4_3 n=10,306; Q1_7 n=2,447; F1 n=10,393; P5_4 n=0 (variable does not exist in 2023); M1_2 n=9,609. For the sample excluding leaders, the differences in D1 in 2023 was insignificant. n=11,177.

Continued Professional Development (CPD)

Table 3.3 showed no difference in CPD hours between leavers and non-leavers in 2022 and 2023, but consistent differences in perceived CPD effectiveness. However, teachers and leaders in particular roles are likely to undertake different types of CPD, for example ECTs will likely receive ECF training and leaders may be more likely to complete NPQs. In further analysis (Appendix D, Table D1), we therefore completed separate analyses for sub-samples comprising only teachers (not leaders), and only teachers who are also not ECTs. We found no change in the results. In Appendix D, Table D2, we modelled CPD effectiveness controlling for CPD hours and also found that the results were unchanged. This means that, even when comparing teachers and leaders who report similar hours of CPD, lower perceived effectiveness of that CPD is associated with a higher likelihood of leaving.

Workload

Table 3.3 showed that, perhaps contrary to expectations, on average non-leavers reported working around one hour more per week than leavers in the year before they left teaching in both 2022 and 2023. This difference was only significant in 2023. However, as we show below, when part-time and job-sharing teachers and leaders were removed from the sample (Panel 2), there was no evidence of a significant relationship between workload amount and leaving teaching across either wave.

Further analyses were then conducted to rule out the possibility that the lack of consistent significance in the workload amount variable is a result of the high variability in the workload of teachers and leaders. As shown in Figure 2, the workload amount variable contained some extreme outliers, even after part-time and job-sharers were removed. We therefore additionally restricted our samples to exclude outliers (calculated as the lower and upper quartiles minus or plus 1.5 multiplied by the inter-quartile range), which meant further dropping only 3-4% of observations. Again, the results (in Panel 3 of Table 9) remained unchanged.

It is noteworthy that, while workload amount did not predict leaving teaching, perceived acceptability of workload did. To explore this further we compared, in supplementary analysis (Appendix D, Table D3), teachers who reported similar amounts of workload to see if differences in perceived acceptability still predicted leaving teaching and found that it did. This means that leavers consistently believed their workload to be less acceptable compared to non-leavers, even when comparing non-leavers and leavers who report the same working hours.

Table 3.4 Differences in workload amount and acceptability for non-leavers and leavers across subsamples, 2022 and 2023

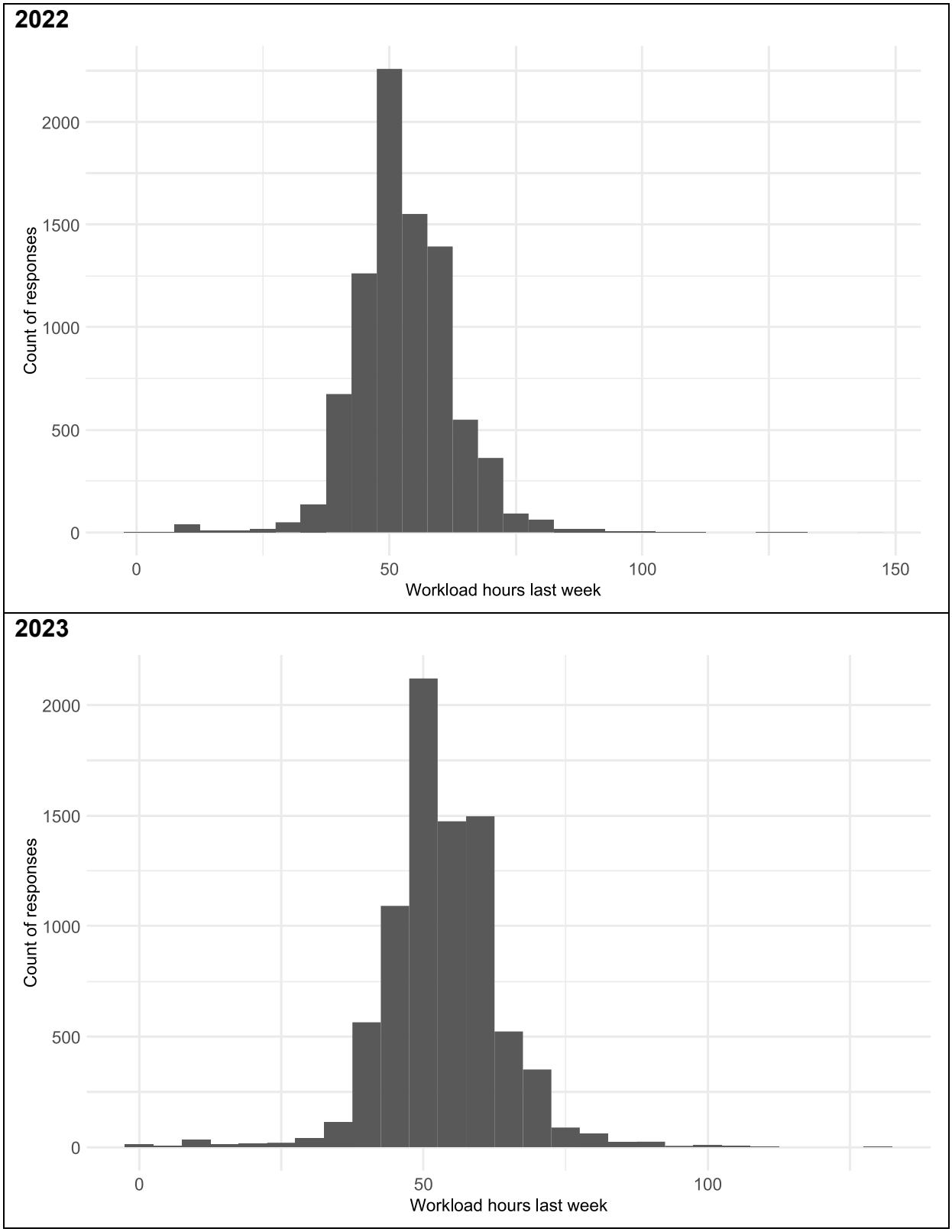
Panel	Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers Mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: full sample	Workload amount	D1. Hours worked in most recent full working week.	49.8 (12.1)	48.8 (13.3)	-.004 (-.009, .001)	.108	50.5 (12.2)	49.1 (14.0)	-.007 (-.013, -.001)	.016
Panel 1: full sample	Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	3.87 (1.12)	4.11 (1.16)	.013 (.006, .019)	<.001	3.91 (1.15)	4.13 (1.12)	.014 (.007, .020)	<.001
Panel 2: excluding part-time and job-share teachers and leaders	Workload amount	D1. Hours worked in most recent full working week.	52.9 (9.93)	53.1(9.49)	.001 (-.005, .007)	.698	53.4 (10.2)	53.1 (11.5)	-.001 (-.010, .007)	.736
Panel 2: excluding part-time and job-share teachers and leaders	Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-	3.90 (1.10)	4.15 (1.15)	.012 (.005, .019)	.001	3.95 (1.12)	4.18 (1.10)	.014 (.007, .022)	<.001

Panel	Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers Mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
		5, 1 = strongly agree)								
Panel 3: excluding part-time and job-share teachers and leaders, outliers removed	Workload amount	D1. Hours worked in most recent full working week.	52.8 (8.33)	53.2 (8.33)	.004 (-.004, .011)	.347	53.4 (8.27)	53.2 (8.32)	-.002 (-.011, .008))	.761
Panel 3: excluding part-time and job-share teachers and leaders, outliers removed	Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	3.90 (1.10)	4.15 (1.14)	.012 (.005, .020)	.001	3.95 (1.12)	4.18 (1.09)	.014 (.006, .022)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.006. Panel 1 2022 base sizes (unweighted): D1 n=10,936; D4_2 n=11,154. Panel 1 2023 base sizes (unweighted): D1 n=10,253; D4_2 n=10,392. Panel 2 2022 base sizes (unweighted): D1 n=8,657; D4_2 n=8,657. Panel 2 2023 base sizes (unweighted): D1 n=8,353; D4_2 n=8,444. Panel 3

2022 base sizes (unweighted): D1 n=8,458; D4_2 n=8,458. Panel 3 2023 base sizes (unweighted): D1 n=8,129; D4_2 n=8,118. For the sample excluding leaders, the difference in D1 in Panel 1 in 2023 was insignificant.

Figure 3.2: Histograms of workload for full time (non-part-time or job share) teachers and leaders



Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Histogram derived using weighted counts. 2022 base size (unweighted): n=8,657. 2023 base size (unweighted): n=8,353.

4. Explaining the predictors of leaving state education

In this section we present further analysis about flexible working, CPD effectiveness, workload acceptability and pupil behaviour. These predictors were selected because our initial findings showed that they were significant predictors of leaving or because of their importance for current policy making. The further analyses considered the interplay between these and other variables, particularly regarding the relationships between these measures and supportive leadership, to draw out a deeper understanding of how these predictors relate to teachers and leaders leaving state education.

Flexible working

We compared leavers' and non-leavers' flexible working practices and attitudes regarding flexible working. Two strong predictors of leaving state education were then considered in more detail: confidence to request flexible working and perceived leadership support for flexible working. In particular, we considered their interaction with a more general measure of supportive leadership.

We took an exploratory approach, testing a high number of variables for their association with leaving teaching. As such, care should be taken when interpreting the results, as when testing a number of closely related variables it is to be expected that some significant associations will emerge by chance. As mentioned above, family-wise Bonferroni alpha-level adjustment thresholds are included in the table notes. These are more stringent significance thresholds which compensate for the increased likelihood of incorrectly rejecting a null hypothesis when many tests are carried out. Associations are described as consistent when they have a significance value below this threshold in both the 2022 and the 2023 analyses.

Comparison of flexible working practices between leavers and non-leavers

When analysing the relationship between flexible working practices and leaving state education, it is not appropriate to consider all flexible working practices together under one heading. It is not clearly meaningful, for example, to analyse the impact of whether a teacher or leader participates in any kind of flexible working. This is because different flexible working practices have opposite relationships with leaving state education: some are associated with higher rates of leaving, some with lower rates, and some are not associated with leaving at all.

In Table 4.1, only one flexible working practice – part-time working – was consistently more likely to be practiced by teachers and leaders who leave state education. This does

not necessarily mean that enabling part-time working encourages teachers and leaders to leave. It is plausible that the circumstances that lead teachers and leaders to leave are also more likely to cause teachers and leaders to turn to part-time work. Job shares and phased retirement were also practices that were more common among leavers than non-leavers, although not consistently significantly predictive of leaving.

The remaining flexible working practices were more common, on average, among non-leavers compared to leavers. However, many were practised by a very small minority of teachers and leaders, and no reliably significant difference could be discerned between leavers and non-leavers. This was true for annualised hours, compressed hours, time of in lieu, and staggered hours (Table 4.1).

Having remote work formally agreed, offsite PPA, ad hoc days off and ad hoc late starts and early finishes were all examples of flexible working practices which were also more common among non-leavers compared to leavers, though these variables were not consistently significant at either conventional or Bonferroni-corrected thresholds. Of these, offsite PPA was the most common, at between 11% and 16% of teachers and leaders in among WLTL respondents using offsite PPA. The percentage point change in likelihood of leaving teaching associated with each was relatively comparable, although the point estimate was largest for remote work having been formally agreed.

Notably, overall flexible working practices were more common in 2023 than in 2022, suggesting a trend toward increasing flexibility in the teaching profession. Offsite PPA, ad hoc days off and ad hoc late starts or early finishes were practiced by a notably greater proportion of teachers and leaders (especially amongst non-leavers) in 2023, which may explain why these only predicted retention in the 2023 analyses.

Table 4.1 Differences in flexible working practices for leavers and non-leavers, 2022 and 2023

Predictor	WLTL dataset variable	2022: Non-leavers mean	2022: Leavers mean	2022: AME (CI)	2022: AME p-value	2023: Non-leavers mean	2023: Leavers mean	2023: AME (CI)	2023: AME p-value
Currently working flexibly	Positive response to K1_A or K1_B or … K1_K.	39.8%	45.1%	.012 (.002, .022)	.020	45.7%	45.6%	-.000 (-.011, .011)	.972
Flexible working participation: part-time	K1_A. Ways in which the respondent works flexibly: Part-time (Y/N)	20.6%	27.8%	.021 (.010, .032)	<.001	19.5%	27.9%	.031 (.019, .043)	<.001
Flexible working participation: job share	K1_B. Ways in which the respondent works flexibly: Job share (Y/N)	5.93%	6.91%	.009 (-.009, .026)	.340	6.30%	7.66%	.014 (-.007, .036)	.200
Flexible working participation: annualised hours	K1_C. Ways in which the respondent works flexibly: Annualised hours (Y/N)	3.04%	2.89%	-.003 (-.030, .024)	.840	3.86%	3.77%	-.002 (-.030, .027)	.908
Flexible working participation: compressed hours	K1_D. Ways in which the respondent works flexibly: Compressed hours (Y/N)	0.23%	0.05%	-.084 (-.191, .023)	.123	0.40%	0.00%	-.870 (-.941, -.799)	<.001

Predictor	WLTL dataset variable	2022: Non-leavers mean	2022: Leavers mean	2022: AME (CI)	2022: AME p-value	2023: Non-leavers mean	2023: Leavers mean	2023: AME (CI)	2023: AME p-value
Flexible working participation: Time off in lieu	K1_E. Ways in which the respondent works flexibly: Time off in lieu (Y/N)	2.01%	1.23%	-.024 (-.059, .010)	.171	4.35%	3.46%	-.016 (-.045, .013)	.285
Flexible working participation: staggered hours	K1_F. Ways in which the respondent works flexibly: Staggered hours (Y/N)	0.36%	0.34%	-.003 (-.092, .086)	.948	0.79%	0.96%	.013 (-.039, .066)	.621
Flexible working participation: phased retirement	K1_G. Ways in which the respondent works flexibly: Phased retirement (Y/N)	0.37%	1.44%	.072 (.024, .119)	.003	0.76%	0.88%	.010 (-.052, .071)	.760
Flexible working participation: Home/remote working formally agreed	K1_H. Ways in which the respondent works flexibly: Home/remote working formally agreed (Y/N)	2.93%	1.36%	-.041 (-.077, -.005)	.024	4.80%	3.33%	-.026 (-.054, .003)	.076
Flexible working participation: Offsite PPA	K1_I. Ways in which the respondent works flexibly: Offsite PPA (Y/N)	11.7%	10.9%	-.004 (-.018, .010)	.572	15.5%	11.8%	-.021 (-.038, -.005)	.013

Predictor	WLTL dataset variable	2022: Non-leavers mean	2022: Leavers mean	2022: AME (CI)	2022: AME p-value	2023: Non-leavers mean	2023: Leavers mean	2023: AME (CI)	2023: AME p-value
Flexible working participation: Ad hoc days off	K1_J: Do you work in any of the following ways: Ad hoc days off (Y/N)	5.99%	4.24%	-.019 (-.041, .003)	.083	12.6%	10.0%	-.017 (-.035, .001)	.060
Flexible working participation: Ad hoc late start/early finish	K1_K: Do you work in any of the following ways: Ad hoc late start/early finish (Y/N)	6.92%	5.41%	-.014 (-.034, .006)	.173	13.9%	10.2%	-.023 (-.041, -.006)	.009

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. Logistic regression used with outcome leaver status: AME = Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.004. 2022 base sizes (unweighted, all K1 variables): n=11,177. 2023 base sizes (unweighted, all K1 variables): n=10,411. For the sample excluding leaders, the differences in K1_D in 2022 was significant and the differences in K1_H in 2022 and K1_K in 2023 were insignificant.

Comparison of teachers' and leaders' attitudes to flexible working between leavers and non-leavers

In Table 4.2, two attitudes associated with flexible working are shown to be significantly associated with leaving state education. Teachers and leaders who felt confident to request flexible working arrangements were 0.7 (in 2022) and 1.4 (in 2023) percentage points less likely to leave state education. This was also true of teachers and leaders who reported their senior leadership team to be supportive of flexible working arrangements, at 1.2 (in 2022) and 1.7 (in 2023) percentage points. Interestingly, no significant differences were found in respondents' beliefs about whether flexible working would affect career progression or is compatible with a career in teaching. This suggests that leavers do not perceive flexible working in itself differently to non-leavers but do feel less supported by leadership in their school.

The importance of supportive leadership for flexible working

The two flexible working variables that were strong predictors of remaining in state education – confidence to request flexible working and support in flexible working – were investigated further to consider how these predictors interacted with having supportive leadership (Table 4.3). As above, supportive leadership was proxied by a combination of perceived trust of the manager in the respondent and the manager's consideration of the respondent's work-life balance and wellbeing.

The analysis in Table 4.3 shows that, after accounting for differences in perceived supportiveness of leadership (Table 4.3, Panel 2), neither confidence to request flexible working nor support in flexible working remained consistently or substantively associated with whether the teacher or leader remained in teaching. This means that perceived supportiveness of leadership almost entirely explained the association between confidence to request flexible working or support in flexible working and remaining in teaching.

One plausible interpretation of this is that supportive leaders and managers are more likely to create a working relationship and/or a supportive environment that makes teachers feel comfortable to make flexible working requests, and that they will also ensure flexible working arrangements are in place and available to staff if needed. From a teacher's perspective for example, feeling supported by leadership may encompass leadership being perceived as approachable and willing to consider individual requests for flexible working arrangements.

Table 4.2 Differences in attitudes towards flexible working practices for leavers and non-leavers, 2022 and 2023

Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers Mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
Confidence to request flexible arrangements	Either K2_3 or K2_4. Level of agreement with: I would feel confident requesting flexible working arrangements if I needed to (scale 1-5, 1 = strongly agree)	3.58 (1.26)	3.75 (1.26)	.007 (.002, .012)	.007	3.60 (1.29)	3.86 (1.27)	.014 (.008, .020)	<.001
Leadership support for flexible working	E1_4. My school's SLT supports flexible working (scale 1-5, 1=strongly agree)	2.87 (1.26)	3.16 (1.32)	.012 (.007, .017)	<.001	2.97 (1.32)	3.30 (1.31)	.017 (.011, .023)	<.001
Belief that flexible arrangements affect progress	K2_2. Choosing to work flexibly would not affect my opportunities for career progression (scale 1-5, 1=strongly agree)	3.63 (1.18)	3.70 (1.25)	.003 (-.002, .008)	.278	3.73 (1.19)	3.77 (1.24)	.002 (-.004, .008)	.443
Compatibility with career in teaching	K2_1. Flexible working is compatible with a career in teaching (scale 1-5, 1=strongly agree)	3.30 (1.32)	3.27 (1.37)	-.001 (-.006, .004)	.624	3.46 (1.34)	3.48 (1.35)	.001 (-.004, .007)	.663

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: AME = Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.013. 2022 base sizes (unweighted): Confidence to request n=10,832; E1_4 n=10,536; K2_2 n=10,362; K2_1 n=10,909. 2023 base sizes (unweighted): Confidence to request n=10,070; E1_4 n=9,730. K2_2 n=9,664; K2_1 n=10,159. For the sample excluding leaders, the difference in confidence to request in 2022 was insignificant.

Table 4.3 Differences in attitudes towards flexible working practices for leavers and non-leavers when controlling for supportive leadership, 2022 and 2023

Panel	Predictor	WLTL dataset variable	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: univariable regression	Confidence to request flexible arrangements	Either K2_3 or K2_4. Level of agreement with: I would feel confident requesting flexible working arrangements if I needed to (scale 1-5, 1 = strongly agree)	.007 (.002, .012)	.008	.014 (.008, .020)	<.001
Panel 1: univariable regression	Leadership support for flexible working	E1_4. My school's SLT supports flexible working (scale 1-5, 1=strongly agree)	.012 (.007, .017)	<.001	.017 (.011, .023)	<.001
Panel 2: controlling for supportive leadership	Confidence to request flexible arrangements	Either K2_3 or K2_4. Level of agreement with: I would feel confident requesting flexible working arrangements if I needed to (scale 1-5, 1 = strongly agree)	-.000 (-.005, .005)	.962	.005 (-.002, .012)	.134
Panel 2: controlling for supportive leadership	Leadership support for flexible working	E1_4. My school's SLT supports flexible working (scale 1-5, 1=strongly agree)	.002 (-.004, .008)	.539	.006 (-.001, .012)	.096

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.013. Each regression is run on the same sample. 2022 base

sizes (unweighted): Confidence to request n=10,774; Leadership support n=10,494. 2023 base sizes (unweighted): Confidence to request n=10,005; Leadership support n=9,683. For the sample excluding leaders, the difference in confidence to request in 2022 (Model 1) was insignificant.

CPD Effectiveness

In Table 3.3 we found no difference in CPD hours between leavers and non-leavers in 2022 and 2023, but consistent differences in perceived CPD effectiveness. In Table D2 we also found that, even after accounting for differences in reported hours of CPD, lower perceived effectiveness of that CPD was still associated with a higher likelihood of leaving. This means that perceived effectiveness of CPD is the stronger predictor of leaving state education.

Further analysis therefore focussed on the perceived effectiveness of CPD. In Appendix Table D4, we explored whether the association between a respondent's perceived effectiveness of CPD changed when controlling for respondents' personal school-level characteristics, including proportion of pupils eligible for free school meals, phase, and type of school. We found that the results from the univariate regression using just CPD effectiveness were almost identical when controlling for these additional variables, suggesting that the association between perceived effectiveness of CPD and the likelihood of teachers and leaders leaving state education remained the same even after accounting for differences in the schools' levels of disadvantage, phase, or type.

In Table 4.4, we then explore whether the association between a respondent's perceived effectiveness of CPD changed when controlling for perceived supportiveness of leadership. After accounting for differences in perceived supportiveness of leadership (Table 4.4, Panel 2), we found that perceived effectiveness of CPD remains consistently and substantively associated with whether the teacher or leader will stay in teaching, albeit with a point estimate around half the size. This suggests that, among WLTL respondents, perceived effectiveness of CPD and perceived supportiveness of leadership are correlated. However, a one standard deviation change in perceived effectiveness of CPD is associated with a 0.5 (in 2022) and 1.1 (in 2023) percentage point change in likeliness to stay in teaching even after accounting for differences in perceived supportiveness of leadership.

Table 4.4 Differences in CPD effectiveness for leavers and non-leavers when controlling for supportive leadership, 2022 and 2023

Panel	Predictor	WLTL dataset variable	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: univariable regression	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	-.011 (-.016, -.007)	<.001	-.018 (-.023, -.013)	<.001
Panel 2: controlling for supportive leadership	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	-.005 (-.010, -.001)	.030	-.011 (-.017, -.006)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.025. Each regression is run on the same sample. 2022 base sizes (unweighted): n=10,784. 2023 base sizes (unweighted): n=10,140.

Workload acceptability

As shown in Table 3.3 above, a teacher or leader's report of the acceptability of their workload is a stronger predictor of whether they will stay in education than the number of hours they reported working in their most recent full working week. In Appendix Table D3, we also showed that this relationship remained even after accounting for differences in teachers' and leaders' reported working hours. This suggests that perceived workload acceptability is the stronger predictor of leaving state education.

In Table 4.5 below, we examined the extent to which the association between workload acceptability and leaving state education is affected by the inclusion of other variables that may conceivably impact aspects of workload and perceptions of its acceptability (see Figure 3.1): perceived pay acceptability, CPD effectiveness, leadership support for flexible working in particular, and overall supportive leadership.

We found that accounting for levels of perceived pay acceptability did not change the size or significance of the association between workload acceptability and leaving teaching. This is likely at least in part due to pay acceptability itself having relatively lower predictive power of leaving teaching (see Table 3.3), however it may also indicate a relatively low correlation between perceived pay acceptability and perceived workload acceptability.

The inclusion of the remaining control variables (CPD effectiveness, leadership support for flexible working, and overall supportive leadership) all resulted in some reduction of the estimated association between workload acceptability and leaving state education, meaning that some of the same variation in the leaving state education indicator is shared by perceived workload acceptability and these variables. Similarly to the analyses above, the inclusion of the overall supportive leadership variable resulted in the workload acceptability variable no longer having a consistently significant association with leaving teaching. Perceived supportiveness of leadership is a much stronger predictor of leaving teaching that perceived workload acceptability.

Table 4.5 Differences in CPD effectiveness for leavers and non-leavers when controlling for related factors, 2022 and 2023

Panel	Predictor	WLTL dataset variable	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: Univariable regression	Workload: Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	.014 (.008, .021)	<.001	.016 (.008, .024)	<.001
Panel 2: Controlling for pay acceptability	Workload: Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	.015 (.008, .022)	<.001	.016 (.007, .025)	<.001
Panel 3: Controlling for perceived CPD effectiveness	Workload: Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	.012 (.006, .018)	<.001	.013 (.005, .021)	.002
Panel 4: Controlling for leadership support for flexible working	Workload: Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	.011 (.005, .017)	<.001	.013 (.005, .022)	.002
Panel 5: Controlling for supportive leadership	Workload: Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	.006 (-.000, .012)	.060	.008 (-.001, .016)	.075

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic

regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.010. Each regression is run on the same sample. Only one control variable in panels 2-5. 2022 base sizes (unweighted): n=10,163. 2023 base sizes (unweighted): n=6,088.

Pupil behaviour

There are five variables associated with pupil behaviour in the WLTL dataset which can be used to predict whether teachers and leaders will leave the profession. In each case, leavers gave more negative reports than non-leavers (Table 4.6). Leavers are more likely to report poor pupil behaviour, more time spent on following up behavioural incidents, poor expectations and unclear rules from leadership teams, poor support for persistently disruptive behaviour, and a lack of confidence in applying behavioural rules. The differences are small – around a one to two percentage point increase in likelihood to leave teaching – but are consistently significant in all cases.

In Table 4.7 below, we next examined the relationships between combinations of these variables and likelihood to leave state education. Specifically, we took respondents' perception of pupils' behaviour and then additionally controlled for each of the other behaviour measures, mentioned above, in turn. In this way, we examined the extent to which the association between perceived pupil behaviour and leaving state education was affected by the inclusion of other variables that indicate aspects of school culture related to pupil behaviour.

The inclusion of just two of these four variables resulted in some reduction of the estimated association between perceived pupil behaviour and leaving state education: SLT behavioural expectations and processes, and support with challenging behaviour. This means that teachers and leaders' perceptions of pupil behaviour and of SLT behaviour expectations and support are correlated. Similarly to some of the analyses above, the inclusion of the support variable resulted in the pupil behaviour variable no longer having a consistently significant association with leaving teaching, as well as a reduction in the size of the estimate. This finding echoes previous findings regarding workload, flexible working and, to a lesser extent, CPD: It is not the perception of pupil behaviour that matters so much as the extent to which teachers and leaders feel supported in managing that behaviour.

Table 4.6 Differences in pupil behaviour attributes for leavers and non-leavers, 2022 and 2023

Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
Pupil behaviour	F1. Rating of pupil behaviour in respondent's school (scale 1-5, 1 = very good)	2.36 (1.05)	2.60 (1.14)	.011 (.007, .016)	<.001	2.54 (1.32)	2.85 (1.21)	.017 (.011, .022)	<.001
Time spent on behaviour incidents	D3_6. Views on the amount of time spent on: Following up on behaviour incidents (scale 1-5, 1 = far too little)	3.64 (.877)	3.74 (.909)	.006 (.001, .012)	.033	3.73 (.915)	3.85 (.944)	.009 (.002, .016)	.011
SLT behavioural expectations and processes	E1_3. Level of agreement with: school's leadership team sets high expectations for pupil behaviour supported by clear rules and processes (scale 1-5, 1 = strongly agree)	2.26 (.993)	2.53 (1.09)	.011 (.006, .015)	<.001	2.36 (.995)	2.69 (1.03)	.016 (.011, .021)	<.001
Support with persistently disruptive behaviour	F2. Frequency with which those who teach feel supported to effectively deal with persistently disruptive behaviour (scale 1-5, 1 = always)	2.37 (.994)	2.69 (1.06)	.015 (.010, .020)	<.001	2.51 (.991)	2.82 (1.07)	.018 (.012, .024)	<.001
Confidence applying behavioural rules	I1_3. Confidence among those who teach with: Implementing behaviour rewards and sanctions with all pupils and classes (scale 1-5, 5 = very confident)	4.39 (.994)	4.31 (1.08)	-.005 (-.009, -.000)	.048	4.42 (.982)	4.23 (1.18)	-.016 (-.021, -.010)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.010. 2022 base sizes (unweighted): F1 n=11,157; D3_6 n=8,804; E1_3 n=11,166; F2 n=10,192; I1_3 n=10,189. 2023 base sizes (unweighted): F1 n=10,393; D3_6 n=8,352; E1_3 n=10,399; F2 n=9,566; I1_3 n=9,605. For the sample excluding leaders, the difference in I1_3 in 2022 was insignificant.

Table 4.7 Differences in pupil behaviour rating for leavers and non-leavers when controlling for related factors, 2022 and 2023

Panel	Predictor	WLTL dataset variable	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: Univariate regression	Pupil behaviour	F1. Rating of pupil behaviour in respondent's school (scale 1-5, 1 = very good)	.010 (.005, .016)	<.001	.017 (.010, .023)	<.001
Panel 2: Controlling for time on behavioural incidents	Pupil behaviour	F1. Rating of pupil behaviour in respondent's school (scale 1-5, 1 = very good)	.010 (.004, .015)	<.001	.016 (.009, .023)	<.001
Panel 3: Controlling for SLT behavioural expectations and processes	Pupil behaviour	F1. Rating of pupil behaviour in respondent's school (scale 1-5, 1 = very good)	.007 (.001, .014)	.034	.011 (.003, .019)	.008
Panel 4: Controlling for support with persistently disruptive behaviour	Pupil behaviour	F1. Rating of pupil behaviour in respondent's school (scale 1-5, 1 = very good)	.003 (-.003, .010)	.300	.009 (.001, .018)	.025
Panel 5: Controlling for confidence applying behavioural rules	Pupil behaviour	F1. Rating of pupil behaviour in respondent's school (scale 1-5, 1 = very good)	.010 (.004, .016)	<.001	.014 (.007, .021)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Each regression is run on the same sample. Only one control variable in panels 2-5. Bonferroni alpha-level: p<.010. 2022 base sizes (unweighted): n=8,549. 2023 base sizes (unweighted): n=8,157.

The priority of job satisfaction and intention to leave

Together, the variables in both the 2022 and 2023 WLTL surveys could explain around 11% of the variance in teachers and leaders leaving state education the following year. Whilst not all potential predictors of teachers and leaders leaving are captured in WLTL, this finding should not be interpreted as suggesting that 89% of the driving forces of teacher loss are predictors other than those measured by the WLTL dataset. Several variables captured little variation between respondents, e.g., measures of professional wellbeing and intention to leave. A dataset with more sensitive measures may explain more of the variance in leaving state education.

Unsurprisingly, as more and more variables were added to a regression model to predict leaving state education, job satisfaction and intention to leave stood out as the two variables that remained very highly significant.[14] Other variables appeared to drive teacher loss mainly through these pathways and were reduced in significance when job satisfaction and intention to leave were accounted for. It is important to note that we did not include professional wellbeing variables (such as workplace stress and the negative mental health effects of work) in these multivariable models as these questions were only asked to around one third of respondents and, in the case of workplace stress, were likely impacted by ceiling effects.

Other variables did, however, slightly increase the variance explained by the model from 10% (with intention to leave and job satisfaction alone) up to 11% (with up to eight other variables). This indicates that job satisfaction and intention to leave alone could not explain all of the individual differences we observe in teacher loss, meaning there are likely wider, external factors driving leaver rates. However, it does highlight how powerful intention to leave and job satisfaction are as predictors of leaving teaching relative to other variables in the data. The fact that so little additional variation in leaving teaching was explained by the eight other variables may be because they are not sufficiently nuanced and their effect is partly mediated through intention to leave and job satisfaction (a pattern similar to the link between job satisfaction and professional wellbeing measures as described previously). It may also be because there are pathways other than through these predictors driving teachers and leaders to leave state education.

In future analyses, including more nuanced professional wellbeing questions asked of all participants may help to identify one such pathway for further research. It may also be valuable to explore the predictors of job satisfaction itself in greater depth.

[14] Variables are only added to a model if AIC decreases with their inclusion.

5. Conclusion

This report summarises findings from a regression analysis of the WLTL survey (waves 2 and 3) and linked SWC data to examine how teacher and leader demographics and school-level characteristics, as well as perceived workplace conditions and wellbeing factors, relate to leaving state education in the following year.

The largest consistently significant associations with leaving state education were prior intention to leave (an increase of 8.2 percentage points in 2022 and 11.1 percentage points in 2023), lower job satisfaction (3.2 percentage points in 2022; 4.2 percentage points in 2023), and, to a lesser extent, reporting that work negatively affected the respondent's mental health, lower perceived leadership support, and lower enjoyment of classroom teaching (all around 2 percentage points in both years). Other factors identified in the literature, including perceptions of workload and pupil behaviour, were statistically significant in some models but were less consistent once other related factors were accounted for. Across the analyses, the findings point to the central role of school leadership and perceived leadership support - which largely explained associations between leaving and other factors such as access to flexible working, workload acceptability, pupil behaviour and, to a slightly lesser extent, perceived effectiveness of professional development.

Overall, the predictors identified explained a relatively small proportion of the likelihood of leaving, around 10-11%. This underscores that leaving state education is a difficult event to predict and likely reflects the interplay of multiple characteristics and factors over time. Finally, these findings are correlational and do not demonstrate causal relationships, nor do they capture the complex pathways through which workplace experiences may ultimately contribute to decisions to leave the teaching profession.

Future analysis would benefit from more nuanced measures of leaving intentions, job satisfaction and wellbeing, particularly items currently showing ceiling effects, which limits their ability to capture individual variance despite their importance. Extending coverage to emerging topics such as teacher/leader resilience, support staff, and workload intensity would further strengthen insights. Where feasible, expanding sampling coverage for key survey modules would also improve analytical power and robustness.

Appendix A: Evidence reviews of teacher retention

Three recent evidence reviews were used to identify predicator variables (of leaving state education) that have good evidential support from research literature:

[1] Nguyen, D.; See, B.H; Brown, C., Kokotsaki, D. (2023). Reviewing the evidence base on school leadership, culture, climate and structure for teacher retention: Rapid Evidence Assessment. Education Endowment Foundation. London, UK.

[2] Taylor, R.; Hardman, M.; Riordan, S.; Pillinger, C.; Moss, G. (2023). Teacher quality, recruitment, and retention: Rapid Evidence Assessment. Education Endowment Foundation. London, UK.

[3] See, B. H., Morris, R., Gorard, S., & El Soufi, N. (2020). What works in attracting and retaining teachers in challenging schools and areas? *Oxford Review of Education*, *46*(6), 678–697.

Appendix B: Mapping predictors of leaving state education

Table B1 Mapping predictors of leaving state education

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
1. Professional development	Teaching professional development	Opportunities for effective professional development as a classroom teacher, availability of constructive instructional support (e.g. classroom observation and constructive feedback) [1]	[1] and [2]. Barbieri et al., 2019; Kraft et al., 2016; Ni, 2017; Federičová, 2021; Feng & Sass, 2017; Nguyen & Kremer, 2022	Outcomes: teacher wellbeing and job satisfaction.	Y	H2, H3, Q1.1, Q2, Q5, P5.2
1. Professional development	Leadership professional development & leadership opportunities	Opportunities for authentic participation in decision-making processes and development of leadership potential [1]. Extent to which schools encourage and facilitate career progression.	[1] and [2]. Gouëdard et al., 2023; García Torres, 2018; Boyd et al., 2011	Outcomes: job satisfaction and intention to leave. Correlated with teacher autonomy/agency.	Y	E1.2, M4.
1. Professional development	Teacher coaching/ mentoring	Opportunities for high-quality coaching or mentoring by more experienced staff [2].	[2], [3]. Painter et al., 2007 Lindqvist & Nordänger, 2016; Tran & Smith, 2020. Note some mixed evidence.	-	limited	H2.2

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
2. Leadership	Teacher-leader trust and compassionate leadership	Mutual trust between teachers and leaders, requiring leaders to demonstrate individualised consideration for teachers, to treat teachers with respect, and to consider teacher voice [1]. Characterised by caring, encouraging and listening (Ni, 2017)	[1]. Li et al., 2019; Van Maele and Van Houtte, 2012; Tiplic et al., 2015	Outcomes: teacher job satisfaction, teacher wellbeing, turnover intentions. Correlated with teacher autonomy	Y	E1.1, E2.1, E2.2, E2.3
2. Leadership	Democratic leadership	Leadership that is collegial, supportive, and consultative [1].	[1]. Dworkin et al. 2003	Outcome: teacher burnout. Correlated with collegiality	Y	E1.2, E2.2, E2.3
2. Leadership	Effective leadership	Effective leaders are aware of staff needs, supportive, visible, listen to staff, and allocate work appropriately [2].	[2]. Grissom, 2011; Kim, 2019; (Grissom & Bartanen, 2019; Certo & Fox, 2002	-	Y	E2.2, E2.3
3. Workload and resources	Demands-resources incompatibility	The professional demands on teachers outstrip the professional resources available to them. Both demands and resources are interpreted broadly.	[1]. European Union, 2013; Geiger and Pivovarova, 2018; Shen et al., 2012	General predictor that includes (and correlated with) many others e.g., workload,	limited	D4.2, D3.1-D3.12, P1.1-P1.4

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
3. Workload and resources	Support staff and school resources	Broadly understood as professional resources available to staff, including teaching assistant support, material resources [2]	[2]	General predictor	limited	D4.1, P2.1, P2.2, P5.3
3. Workload and resources	Workload	Average hours of work per week	[1] & [2]. Casely-Hayford et al., 2023; Heffernan et al., 2022; Toropova et al., 2021; Clotfelter et al., 2008	Outcome: teacher wellbeing, teacher retention. Moderated by gender.	Y	D1, D2, D4.2, P2.1-P2.5
3. Workload and resources	Workload intensity	The complexity of the demands related to a workload task, dealing with competing and contradictory demands at the same time.	[1]. Creagh et al. (2023)	Outcome: teacher wellbeing	N	D4.2
3. Workload and resources	Non-teaching workload	Work expected of teachers outside of classroom teaching, including lesson planning and marking,	[1]. Jerrim and Sims, 2021	Outcome: intention to leave	Y	D1, D2, D3, D3.1-D3.12, P1.1-P1.8
4. Status, professionalism, pay & contractual	Financial incentives	Additional bonuses paid to teachers e.g. at start or end of training, or at recruitment [2].	[2] and [3]. N.B. evidence for short-term impact only	-	N	

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
4. Status, professionalism, pay & contractual	Working contractual conditions	Includes length of contracted day, leave entitlement and allocation of duties, as well as opportunities for flexible working [2].	[2]. Painter et al., 2007; Qin, 2019. Limited evidence for particular policies e.g. flexible working [3]	-	Y	E1.4, K1.1-K1.12, K2.1, K2.3/K2.3
4. Status, professionalism, pay & contractual	Teacher satisfaction with pay	Assumed understood.	[2]. Clotfelter et al., 2008	-	Y	J1.1, J7, J2, R9
4. Status, professionalism, pay & contractual	Performance policy	A school's management of teachers according to performance e.g. loss of job, rewards or support dependent.	[2]. Winters & Cowen (2013)	-	Y	Q1.4, J5.4, R4.1m, J6.3
4. Status, professionalism, pay & contractual	Local labour markets	Number of more attractive jobs available in local area	[2]	-	limited	J1.3.
4. Status, professionalism, pay & contractual	Job security	Permanent position with low risk of involuntary unemployment	[1]. Amitai and Van Houtte, 2022	-	N	-

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
4. Status, professionalism, pay & contractual	Professional status of teachers	Regard to which teachers are held in wider society by public, politicians and parents/carers and associated	[2]	-	limited	E4.3 Q1.7
4. Status, professionalism, pay & contractual	Teachers' professional autonomy/ agency	Teacher's sense of autonomy in the classroom and a sense of control over their working lives	[1] and [2]. Pan et al., 2023; Van Droogenbroek et al., 2014; Tran & Smith, 2010; Berry, 2004; Nguyen & Kremer, 2022	Correlated with job satisfaction and wellbeing. Moderator of effect of workload on wellbeing.	limited	D4.1, E2.1
4. Status, professionalism, pay & contractual	System-level accountability	Requirements placed on schools to meet national requirements e.g. through Ofsted inspections	[2]	-	Y	E4.2, E4.3, D3.4
5. School climate	School climate	The quality of character of school life, the social atmosphere, relationships	[2]	Very general collection of predictors	limited	E1.1
5. School climate	Focus on learning	The extent to which the school climate, policies and culture encourage and focus an environment of learning.	[2]. Borgerding, 2015; Newton et al., 2010	-	N	-

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
5. School climate	Intellectual stimulation	Characterised by innovativeness, collaborative learning, and professional engagement. Fosters experimentation, critical thinking and self-fulfilment [1]	[1]. Liu et al., 2023; You et al., 2023; Ashiedu & Scott-Ladd, 2012; Gilbert, 2011; Wynn & Brown, 2008	Outcomes: teacher burnout, job satisfaction, teacher retention	N	-
5. School climate	Teacher relationships (parents/carers & students)	Includes knowledge of students and their contexts, valuing students' individuality.	[2]. Hughes, 2012; Williams et al., 2021; Berry, 2004; Wronowski, 2018; Borgerding, 2015	-	limited	P1.1
5. School climate	Support for pupil behaviour	-	[1] Ladd, 2011; Player et al., 2017; Kim, 2019; Kraft et al., 2016	Outcomes: teacher motivation as well as teacher retention	Y	F2, I1.3, D3.6
5. School climate	Pupil behaviour and positive discipline climate	Extent to which disciplinary rules of the school are consistently respected and complied [1]	[1] and [2]. Casely-Hayford et al., 2023; Kraft et al., 2016; Toropova et al., 2021; Kukla-Acevedo, 2009	Outcome: job satisfaction and turnover intentions	Y	E1.3, F1, P5.2
5. School climate	Culture of collegiality in school	Trusting relationships, respect, mutual support, and compassionate leadership. Collegiality includes	[1]. Collie et al., 2020; Dworkin et al., 2003; Roch and Sai,	Outcomes: teacher wellbeing, teacher retention intentions.	Y	E1.2, P5.4

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
		inclusive participation in decision-making, shared power and responsibility, reciprocal support, mutual trust, and cooperation.	2017; Grant & Brantlinger, 2022; Redding & Nguyen, 2020; Campoli & Conrad-Popova, 2017	Correlated with teacher-leader trust, leadership professional development		
5. School climate	Teacher collaboration	Involvement in meaningful learning communities (Danielson, 2002); learning teams, with teachers at different career stages (Fowler, 2009); and social networks [2].	[2]. Grant & Brantlinger, 2022; Nguyen & Kremer, 2022; Haun & Martin, 2004; Newton et al., 2010	-	Y	P5.4, P1.5, P2.2.
5. School climate	Equitable support and recognition system	Equal access to professional development opportunities, fair access to resources, fair recognition of contributions, inclusive and transparent decision-making [1]	[1]. Hulpia et al., 2009; García Torres, 2018	Directly linked with teacher retention	limited	Q1.3
5. School climate	Staff communication structure	Systems to enable staff to communicate effectively, promote teachers' sense of autonomy and control of information [1]	[1] [2]. Player et al., 2017 ; Kraft et al., 2016 ; Torres, 2016	Outcome: teacher autonomy and job satisfaction, workload	limited	D3.4, P2.4

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
6. School-level characteristics	Challenging school	Operationalised by proportion of pupils from low-income families and/or ethnic minorities [1]	[1]. Redding & Nguyen, 2020; Sass et al., 2012; Kim, 2019.	Outcome: teacher turnover. Moderated by length of teaching experience (bigger impact on ECTs)	Y	% FSM
6. School-level characteristics	Desegregation of schools	Operationalised in similar ways to challenging schools: proportion of pupils from low-income families and/or ethnic minorities [1]	[2]	-	Y	% FSM
7. Personal traits and characteristics	Demographic match with principal	Congruence between the gender/race of the principal/headteacher and teacher	[1]. Bartanen et al., 2019; Lindsay and Egalite, 2020; Nguyen, 2021.	Outcome: teacher turnover	N	-
7. Personal traits & characteristics	Teacher intrinsic motivation	Choice and desire to become a teacher, personal satisfaction from teaching	[2]	-	Y	M1.1, M1.2
7. Personal traits & characteristics	Teacher efficacy	Operationalised in the literature by exam results.	[2]	-	Y	I1.1, I1.2, I1.3, I1.4, I2/I3

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
7. Personal traits and characteristics	Teacher resilience	Assumed understood, several standard operationalisations of resilience used in research.	[1] and [2]	-	N	-
7. Personal traits and characteristics	Vocational or moral purpose	Assumed understood.	[2]	-	N	-
7. Personal traits and characteristics	Teacher cultural awareness and local connections	Sharing understanding of background of pupils and their communities	[2]	-	N	-
7. Personal traits and characteristics	Teacher 'fit' with role or school	Assumed understood	[2]	-	N	-
8a. Professional wellbeing	Teacher perceptions of workload stress	Assumed understood	[1]. Casely-Hayford et al. (2023)	Outcome: job satisfaction Large-scale evidence that this is the largest identified predictor in job satisfaction	Y	P31-P3.5

Categories	Predictor with good evidence	Definition from literature	Source of evidence	Notes for conceptual model	Measurable?	Possible dataset variables
8a. Professional wellbeing	Emotional workload	Effort, planning and control needed to express organizationally desired emotions during interpersonal transactions, including suppressing natural emotions and displaying appropriate professional ones	[2]. Kariou et al (2021)	Outcome: job burnout	N	-
8a. Professional wellbeing	Teacher stress & anxiety	Assumed understood, use of many different measures.	[2]	-	Y	M1.1, M1.2, P3.1-3.5, N1, N2
8b. Job satisfaction	Job satisfaction	Assumed understood.	From above (conceptual model notes).	-	Y	M1.1
8c. Intention to leave	Intention to leave	Assumed understood.	From above (conceptual model notes).	-	Y	M2.4

Appendix C: Comparing Wave 2 and Wave 3 Leavers

To test whether there were differences in leaver characteristics between waves, we compared wave 1 demographic and school-level characteristics of wave 2 (2022) leavers (n=643) with wave 3 (2023) leavers present from wave 1 (n=460). There were no significant differences in the characteristics of individuals who left the teaching profession by the 2023 survey and individuals who left in the following year (see Tables C1-C2).

Table C1 Differences in leavers' personal characteristics, 2022 and 2023

Characteristic	2022	2023	P-value
Age	39.23	38.04	.119
Gender	-	-	-
Female	448 (80%)	323 (79%)	.811
Male	115 (20%)	87 (21%)	-
Ethnicity	-	-	.879
White	528 (88%)	406 (89%)	-
Mixed	19 (3%)	13 (3%)	-
Asian	32 (5%)	24 (5%)	-
Black	16 (3%)	10 (2%)	-
Other Ethnicity	7 (1%)	2 (0%)	-
Highest qualification	-	-	.607
PhD	8 (1%)	6 (1%)	-
Masters' or equivalent	48 (8%)	42 (10%)	-
Initial teacher training	349 (60%)	264 (63%)	-
Undergraduate degree	170 (29%)	101 (24%)	-
Other	10 (2%)	7 (2%)	-

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Panel, weighted analyses. P-value indicates significance of difference in the levels of the characteristic between years. Bonferroni alpha-level: p<.013. Base sizes (unweighted): Age [AGE_SAMPLE_2020] n=1,101; Gender [GENDER_SWC] n=1,203; Ethnicity [O6SUM] n=1,086; Highest qualification [HIGHESTQUAL_SWC] n=1,056.

Table C2 Differences in leavers' school-level characteristics, 2022 and 2023

Characteristic	2022	2023	P-value
Number of pupils	699	740	.331
FSM %	21.8	21.9	.931
Phase taught	-	-	.667
Primary	318 (51%)	233 (51%)	-
Secondary	262 (42%)	202 (44%)	-
Special/PRU/AP	40 (6%)	23 (5%)	-
LA-maintained school	-	-	.241
Yes	269 (47%)	180 (43%)	-
No	308 (53%)	243 (57%)	-
Role	-	-	.861
Teacher	538 (89%)	400 (89%)	-
Leader	67 (11%)	48 (11%)	-
ECT status	-	-	.572
Y1	24 (4%)	24 (5%)	-
Y2	46 (7%)	30 (7%)	-
Passed	550 (89%)	405 (88%)	-

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Panel, weighted analyses. P-value indicates significance of difference in the levels of the characteristic between years. Bonferroni alpha-level: p<.010. Base sizes (unweighted): Number of pupils [NUMBEROFPUPILS_GIAS] n=1,099; FSM % [PERCENTAGE_FSM_GIAS] n=1,102; Phase taught [PHASE] n=1,103; LA-maintained school [ACADEMY_LAMAINTAINED_2020] n=1,054; Role n=1,079; ECT status [ECTSTATUS] n=1,103.

Appendix D: Results from multivariable regression models

Table D1 Differences in CPD breadth and effectiveness for non-leavers and leavers across subsamples, 2022 and 2023

Panel	Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: Full sample	Professional development: CPD hours	Q2: Approximation of time (in hours) spent on Continuing Professional Development in the last 12 months. (1=zero; 2 = 1-10; 3=11-20; … 9=71-80; 10=81+)	4.00 (2.23)	3.70 (2.25)	-.008 (-.019, .003)	.132	4.01 (2.17)	4.07 (2.25)	.002 (-.010, .014)	.757
Panel 1: Full sample	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	6.14 (2.23)	5.62 (2.36)	-.012 (-.016, -.007)	<.001	6.09 (2.21)	5.43 (2.26)	-.018 (-.024, .013)	<.001
Panel 2: Teachers (excluding leaders)	Professional developm	Q2: Approximation of time (in hours) spent on Continuing Professional Development in the last 12 months. (1=zero; 2 =	3.81 (2.11)	3.51 (2.17)	-.009 (-.022, .003)	.143	3.87 (2.08)	3.86 (2.09)	-.000 (-.014, .014)	.987

Panel	Predictor	WLTL dataset variable	2022: Non-leavers mean (SD)	2022: Leavers mean (SD)	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Non-leavers mean (SD)	2023: Leavers mean (SD)	2023: Std. AME (CI)	2023: Std. AME p-value
	ent: CPD hours	1-10; 3=11-20; … 9=71-80; 10=81+)								
Panel 2: Teachers (excluding leaders)	CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	5.97 (2.25)	5.48 (2.38)	-.011 (-.016, -.006)	<.001	5.90 (2.23)	5.27 (2.26)	-.018 (-.024, -.012)	<.001
Panel 3: Teachers excluding ECTs	Professional development: CPD hours	Q2: Approximation of time (in hours) spent on Continuing Professional Development in the last 12 months. (1=zero; 2 = 1-10; 3=11-20; … 9=71-80; 10=81+)	3.75 (2.11)	3.45 (2.16)	-.010 (-.024, .004)	.159	3.82 (2.06)	3.83 (2.13)	.000 (-.015, .016)	.959
Panel 3: Teachers excluding ECTs	CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	5.90 (2.27)	5.39 (2.40)	-.011 (-.016, -.006)	<.001	5.82 (2.25)	5.11 (2.20)	-0.020 (-.026, -.013)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.008. Panel 1 2022 base sizes (unweighted): Q2 n=3,243; H3 n=10,845. Panel 1 2023 base sizes (unweighted): Q2 n=2,272 H3

n=10,213. Panel 2 2022 base sizes (unweighted): Q2=2,746; H3 n=8,876. Panel 2 2023 base sizes (unweighted): Q2=2,010; H3 n=8,507. Panel 3 2022 base sizes (unweighted): Q2=2,325; H3 n=7,486. Panel 3 2023 base sizes (unweighted): Q2=1,406; H3 n=6,298.

Table D2 Differences in CPD effectiveness controlling for CPD hours, 2022 and 2023

Panel	Predictor	WLTL dataset variable	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: Univariable regression	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	-.012 (-.021, -.003)	.006	-.018 (-.029, -.008)	.001
Panel 2: Controlling for CPD hours	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	-.011 (-.020, -.001)	.026	-.022 (-.033, -.011)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.025. Each regression is run on the same sample. 2022 base sizes (unweighted): n=3167. 2023 base sizes (unweighted): n=2216.

Table D3 Differences in workload acceptability controlling for amount, 2022 and 2023

Panel	Predictor	WLTL dataset variable	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: Univariable regression	Workload: Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	.014 (.008, .020)	<.001	.014 (.007, .020)	<.001
Panel 2: Controlling for workload amount	Workload: Workload acceptability	D4_2. Level of agreement with: I have an acceptable workload (scale 1-5, 1 = strongly agree)	.016 (.010, .023)	<.001	.017 (.010, .024)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.025. Each regression is run on the same sample. 2022 base sizes (unweighted): n=10,916. 2023 base sizes (unweighted): n=10,238.

Table D4 Differences in CPD effectiveness for leavers and non-leavers when controlling for supportive leadership, 2022 and 2023

Panel	Predictor	WLTL dataset variable	2022: Std. AME (CI)	2022: Std. AME p-value	2023: Std. AME (CI)	2023: Std. AME p-value
Panel 1: Univariable regression	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	-.012 (-.016, -.007)	<.001	-.019 (-.024, -.014)	<.001
Panel 2: Controlling for % FSM	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	-.012 (-.016, -.007)	<.001	-.019 (-.024, -.014)	<.001
Panel 3: Controlling for phase	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	-.013 (-.018, -.009)	<.001	-.020 (-.025, -.015)	<.001
Panel 4: Controlling for LA maintained	Professional development: CPD effectiveness	H3. Rating of the impact of the CPD activities undertaken on their ability to perform job role (scale 1-10, 10 = highest)	-.012 (-.016, -.007)	<.001	-.018 (-.023, -.013)	<.001

Source: Working lives of teachers and leaders survey with data on leaver status supplemented by the School Workforce Census. Cross-sectional, weighted analyses. SD = standard deviation. Logistic

regression used with outcome leaver status: Std. AME = standardised Average Marginal Effect; CI = 95% confidence interval. Bonferroni alpha-level: p<.013. Each regression is run on the same sample. Only one control variable in panels 2-4. 2022 base sizes: n=10,329. 2023 base sizes: n=9,269.

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