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Labour Market Expectations and Occupational Choice: Evidence from Teaching

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Non-technical Summary

Existing data shows that a teacher's decision to leave teaching is motivated by a variety of factors ranging from low salaries and unmanageable workloads to (lack of) autonomy and poor school leadership. It is challenging to identify the effect that each of these individual factors have – yet the policy implications of these factors are distinct. For instance, factors related to long working hours, an unmanageable workload, or large classes can be mitigated by employing additional support staff and streamlining time-intensive activities. The effect of salaries can be mitigated through a bonus scheme targeting the most effective teachers.

In this paper we use new data on teachers' intentions to leave the teaching profession; teachers' expectations about labour market outcomes outside of teaching; and teachers' beliefs about population earnings. This unique dataset allows us to a) provide descriptive evidence on teachers' intentions to leave the profession, b) assess the accuracy of beliefs, and c) investigate the role of beliefs about labour market outcomes on leaving intentions. Using an economic experiment this paper also investigates the role that different factors have on teachers' intentions to leave the profession. Finally, we investigate whether teachers' intentions, measured on a 0-100 probability scale can be used to predict actual behaviour.

We have three main sets of findings:

First, higher wages reduce teachers' intentions to leave the profession. But the effect is small so only a large increase in wages is likely to have a meaningful effect on teacher attrition, but this is unlikely to be cost-effective. Focusing on reducing working hours and improving school leadership would be a more cost-effective approaches to reducing teacher attrition.

Second, teachers' intentions to leave the profession increase more when things get worse than they decrease when things get better. This suggests that preventing cuts is more important than rolling out more generous benefits and that school's benefit from implementing sustainable policies.

Third, teachers expect to earn more (£1,500 more each year) and work less (10.5hrs per week) if they quit teaching, but they are systematically misinformed about the earnings profile of alternative careers – the median teacher underestimates population earnings by £6,000. Correcting teachers' labour market beliefs might be counterproductive as teachers who are more informed about alternative employment opportunities are more likely to leave.

Our project also sheds light on two other challenging aspects of the teaching profession. First, teachers spend around £95 per year on their pupils. One in ten spend over £200 per year (common items include female sanitary products and food). This is particularly relevant in the context of the cost-of-living crisis where pupils are likely to need more support while teachers' salaries are becoming more stretched. Second, full time teacher report working around 52hrs per week during term time. One quarter report working more than 60hrs per week.

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Abstract

Using new data on teachers' intentions to leave the profession, subjective expectations about labour market outcomes and a modified discrete-choice experiment we find that i) teachers are systematically misinformed about population earnings, and misinformation is correlated with attrition intentions; ii) non-pecuniary factors are the most cost-effective method of reducing teacher attrition; and iii) attrition intentions are more affected by reductions in workplace amenities than symmetric improvements, suggesting preventing cuts is more important that rolling out more generous benefits. Linking our survey data to teachers' administrative records we provide the first evidence that teachers attrition intentions are strong predictors of actual behaviour.

Keywords: teacher labour markets, subjective expectations

JEL: I20, J30, J45,C90

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1. Introduction

The challenge of recruiting and retaining teachers continues to be an important policy issue in many countries around the world. In England, each year, thousands more teachers are leaving the profession than there are enrolling into teacher training programmes. Consequently, pupil-to-teacher ratios in England have increased to among the highest in the OECD (Fullard, J. (2022), OECD (2023)). Recognising this crisis, the Department for Education made teacher recruitment and retention its number one priority in 2019 (Department for Education 2019).

There are several, potentially non-exclusive, reasons why teachers leave the profession. Traditional models have emphasised the role of teachers pay and pensions (e.g., Biasi, B. (2021), Gilpin, G. A. (2011), Manski, C. F. (1987), Zabalza, A. (1979)). However, it is not clear why teachers who leave the profession generally sort into similarly, or lower, paying occupations if they are motivated by money (Scafidi, B., et al. (2006)). In England even teachers who have a degree in a STEM subject (i.e., Science, Technology, Engineering and Mathematics) - who usually have strong employment opportunities - generally sort into lower-paying jobs (Fullard, J. (2021)). Other reasons why teachers leave the profession may correlate with earnings: Many studies emphasise the role of marriage and fertility (e.g. Grissom, J. A. and M. Reininger (2012), Stinebrickner, T. R. (1998)) as well as working conditions like job satisfaction, working hours, and (lack of) autonomy (e.g. Feng, L. (2005), Loeb, S., et al. (2005), Moore Johnson, S., et al. (2012), Roch, C. H. and N. Sai (2018)).

It is challenging to separate these explanations using traditional datasets because any combination of factors can conceivably be consistent with observed choices (e.g. Manski, C. F. (2004)) yet the policy implications of these factors are distinct. Constraints related to long working hours, an unmanageable workload, or large classes can be mitigated by employing additional support staff and streamlining time-intensive activities like marking. The effect of salaries can be mitigated through a bonus scheme targeting the most effective teachers. Constraints related to fertility choices can be alleviated by encouraging schools to offer more flexible working (e.g., more part-time opportunities) or though the provision of on-site childcare. The effect of poor senior leadership might be mitigated by training and development aimed at boosting the management skills of senior leaders or thought the hiring of support staff to reduce school leaders' workloads and boost effectives.[1]

In this paper we use new data elicited from teachers using the Mobile EssexLab on: i) teachers' intentions to leave the teaching profession across different time horizons ("attrition intentions"); ii) subjective expectations about labour market outcomes outside of teaching; and iii) beliefs about population earnings. This unique dataset allows us to a) provide descriptive evidence on teachers' intentions to leave the profession, b) assess the accuracy of beliefs, and c) investigate the role of beliefs about labour market outcomes on attrition intentions. Using an economic experiment this paper investigates the role that pecuniary and non-pecuniary factors have on teachers' intentions to leave the profession. Finally, we investigate whether teachers' intentions can be used to predict actual behaviour.

[1] While there are several policy options for policymakers to improve school leadership these are unlikely to be transformative. In our context improving leadership quality is mostly reallocative among schools (that is, you improve one school at the expense of another) unless senior leaders are recruited from other professions, but it is not clear this would boost quality. This will be discussed further in section 8.

Our main results are as follows. First, we find that higher wages are associated with lower attrition intentions, but this might not be causal as teachers who are more committed to the profession are more likely to take on additional responsibilities and therefore are likely to earn more money.

Second, teachers are systematically misinformed about the earnings profile of alternative careers. The median teacher underestimates population earnings by £6,000, and we show that that labour market beliefs are associated with attrition intentions. Teachers planning to leave have higher beliefs about population earnings, which could be consistent either with leavers researching their alternatives, or that knowing their outside option makes a teacher more likely to depart. With that in mind, correcting teachers' misinformation about labour market beliefs might be counterproductive as teachers with more accurate beliefs have higher attrition intentions. Finally, we find significant heterogeneity by gender and degree subject which may explain why we do not observe significantly higher attrition rates among male teachers and those with a degree in a STEM subject.

Third, looking at the factors that influence teacher attrition we find that the effect of pecuniary factors is generally small. While they do display increasing marginal returns, the high cost associated with a large increase in salaries suggests that this is unlikely to be cost-effective. Back of the envelope calculations suggest that focusing on non-pecuniary factors, such as working hours and leadership quality, would be more cost-effective.

Fourth, attrition intentions vary in a non-symmetric way. They increase more when things get worse (i.e., an increase in working hours) and decrease less when things get better (i.e., a decrease in workings hours). For example, a decrease in leadership quality increases one-year attrition intentions by 5pp while an improvement only increases it by a 1.5pp. This suggests that school's benefit from implementing sustainable policies.

Finally, we provide the first evidence that subjective expectations can be used to predict actual behaviour in the context of occupational choice. We find a positive relationship between teachers' attrition intentions, measured on a 0-100% scale, and their actual behaviour. A 1pp increase in one-year attrition intentions is associated to a 0.6pp increase in the likelihood that they will leave the profession after one year. As we would expect one-year attrition intentions are stronger predictors of one-year attrition behaviour than the two-year or five-year intentions.

Our paper contributes to a line of work investigating the determinants of teacher attrition (e.g., Manski, C. F. (1987), Stinebrickner, T. R. (1998), Zabalza, A. (1979)). Recognising the limitations of traditional datasets many researchers investigating the determinants of teacher attrition have used survey data (Hughes, G. D. (2012), Stockard, J. and M. B. Lehman (2004)). While these surveys of teachers are useful for identifying factors that can affect attrition, they have a limited application in identifying the relative magnitude of various factors (e.g., how much should policymakers increase salaries to compensate for an increase in class sizes to maintain existing rates of attrition). We contribute to a growing literature that uses experimental methods to identify teachers' preferences (Burge, P., et al. (2021), Fuchsman, D., et al. (2023), Johnston, A. C. (2020), Lovison, V. S. and C. H. Mo (2022)).

Our setting is quite unique in that we provide the first evidence on across, rather than within, profession preferences. The existing experimental work uses discrete choice experiments to investigate teachers' preferences over contract types within the profession. They do not investigate

how different factors influence the decision to leave the profession.[2] In addition, we elicit teachers' intentions using a 0-100% scale instead of a binary measure. Using a 0-100% scale is likely to be important due to the likely uncertainty around changing profession that would not be captured by a binary measure.

The prior literature has largely focused on the role of pecuniary factors (e.g., Dolton, P. and O. D. Marcenaro-Gutierrez (2011), Ferguson, R. F. (1991), Hess, F. M. (2004), Manski, C. F. (1987)) but many of these papers have relied on various assumptions about teachers' beliefs about labour market outcomes (Fullard, J. and J. Zuccollo (2021)). For example, papers that exploit the regional variation in teacher's relative wages are required to assume that the error in beliefs is consistent across regions.[3] However, existing research has found that individuals tend to be misinformed about population earnings in England so this might not hold (Delavande, A., et al. (2019)). We contribute to this literature by providing the first evidence on the accuracy of teachers' labour market beliefs and the role they have on teachers intentions to leave the profession.

Our paper also contributes to a growing literature that shows that individuals subjective expectations can be used to predict a wide variety of outcomes ranging from voting behaviour (Delavande, A. and C. F. Manski (2010)) and university enrolment (Delavande, A. and B. Zafar (2019), Lergetporer, P., et al. (2018)) to college major choice (Wiswall, M. and B. Zafar (2015)) and investment behaviour (Hill, R. V. and A. Viceisza (2012)). The extremely higher turnover rate, and availability of data, of teachers in England gives us an opportunity to add to this literature in the context of occupational choice. We investigate if teachers' attrition intentions, measured on a 0-100% scale, can be used to predict actual behaviour. These results also speak to a wider literature on how researchers should measure teachers' attrition intentions. The literature generally measures teachers' attrition intentions using a binary choice (e.g., do you plan on leaving teaching in the next 12 months) however there are concerns that these measures of intentions are not predictive of actual behaviour. For example, using data from the NFER Teacher Voice Survey Lynch, S. (2016) reports attrition intentions of around 25 percent and Worth, J., et al. (2015), using data from the 2015 YouGov Teacher Survey, reports attrition intentions of over 50 percent – significantly higher than the actual attrition rates of 10 percent. In this paper we provide the first evidence of the potential benefits of measuring teachers' attrition intentions using a 0-100% scale.[4]

This paper is organised as follows. Section 2 discusses the setting and provides sample characteristics, Section 3 discusses teachers labour market expectations and attrition intentions, Section 4 examines the accuracy of beliefs and the relationship between labour market expectations and attrition intentions. In Section 5 we present the results from our economic experiment on the determinants of teacher attrition. Section 6 investigates the relationship between teachers' attrition

[2] Burge, P., et al. (2021), Fuchsman, D., et al. (2023), Johnston, A. C. (2020) and Lovison, V. S. and C. H. Mo (2022) present teachers with two teaching contracts where they randomly vary factors in the contract and ask them to select the contract they prefer. These experiments do not give teachers the option of choosing neither of the options (e.g., if faced with these two teaching contracts they would rather leave the profession).

[3] For instance, if teachers in London underestimate their outside option and teachers in the North East of England overestimate their outside option this difference in expectations could explain observed differences in teacher retention.

[4] The only other paper that measures attrition intentions using a 0-100% scale is Fullard, J. (2021) who, using a survey of 2,000 classroom teachers in England, finds attrition intentions of 12 percent (vs actual attrition rate of 10 percent).

intentions and their actual behaviour. In Section 7 we present our robustness checks and Section 8 concludes.

2. Sample

The data we use comes from a survey of teachers in Essex. Teachers from participating schools were invited to reply to an online survey administrated by the Mobile EssexLab, based at the University of Essex. The survey was fielded in early July 2020.

The online survey took about 15 minutes to complete. Participation in the survey was incentivized using monetary rewards – a £5 Amazon voucher. The online survey was designed to collect information on the teachers' personal characteristics (e.g. sex, age, and marital status), academic background (e.g. degree class, subject and awarding institution), household characteristics (e.g. marital status, number of dependent children, partner's income), teaching characteristics (e.g. self-reported ability, year(s)/subject(s) taught, class size), teaching contract (salary, contracted hours and actual hours) their beliefs about labour market opportunities outside of teaching (earnings and working hours) and their intentions to leave the profession across different time horizons (by the summer of 2021, 2022 and 2025) using a percent chance format on a scale from 0 to 100%.

In addition, respondents took part in an experiment where they were asked to report the likelihood that they will leave the profession under different randomly assigned scenarios. These scenarios include changes in wages (+/- 5/10%), class sizes (+/- 2/6), leadership quality and actual working hours (+/- 5).

Finally, the survey data was linked to administrative records on their schools' characteristics. Specifically, we use information on the schools Ofsted rating[5], the percentage of pupils eligible for a free school meal (FSM) and levels of attainment.[6] We also obtained access to individual teacher records so that we can derive a measure of teachers' actual attrition behaviour.

Teachers were recruited by contacting schools in one city in Essex asking them to circulate the project details among their teaching staff, inviting them to participate.[7] 450 teachers responded that they would be interested in taking part in the study. Of those 416 met the eligibility criteria and were invited to participate.[8] A total of 340 classroom teachers took part in the survey

[5] An Ofsted rating is an indicator of the quality of an institution following an inspection. The four Ofsted ratings that a school can obtain are: Outstanding, Good, Requires Improvement and Inadequate. Inadequate is also dived into two subcategories – serious weakness or requiring special measures.

[6] Levels of attainment are measured by Progress Scores in Reading, Writing and Math for primary schools and Progress 9 Score in secondary schools.

[7] We intended to be collected the data using the Mobile EssexLab, where the research team would go into local schools before/after school and teachers would participate using tablets. During the planning stage the mode was moved online due to the COVID-19 pandemic. Schools were selected based on their proximity to the University of Essex – all based in, and around, the same city as the University. 80 schools were contacted. 66 schools agreed to circulate the study information to their teaching staff. 2 schools did not. 12 Schools did not respond.

[8] 29 were excluded because they were not classroom teachers (i.e., they were support staff (e.g., teaching assistants), senior leaders (e.g., principles) or administrative staff (i.e., business manager)). 5 were excluded because they had already handed in their notice.

(approximately 21% of the eligible teachers in participating schools).[9] We drop 23 respondents who did not respond to the questions on attrition intentions, our main variable of interest, giving us a total sample of 317.

Sample characteristics are shown in Table 1 (column 1). Along with a breakdown of the sample by sector (state funded in column 2 and independent in column 3) and a comparison to the population of teachers in the state funded sector in Essex.[10] Our respondents are a similar age to the population (21.5% vs 20% are under the age of 30 and 21% vs 19% are 50 or over) but are more likely to be white (95% vs 89%) and male (30% vs 24%). Our sample is also under representative of primary school teachers (21% vs 52%) but are similar in terms of working hours (27% vs 27% work part time) and pay (£37,500 vs £37,000 of full-time teachers).

We next provide descriptive statistics for our sample.

Respondents are asked a series of questions about their current earnings and working hours as well as their expected earning and working hours outside of teaching. In addition, they were asked their attrition-related expectations, across three separate time horizons (by the summer of 2021, 2022 and 2025). The detailed wording of this question is presented in Appendix A1.

An overview of respondents' expectations is presented in Table 2. Item-response rates are high, even among the current earnings (99%) and expected non-teaching earnings (98%) questions. Our respondents have a mean annual salary of £35,000, are contracted to working 33hrs per week but report that they actually work 48hrs per week – an additional 15 hours.

While headteachers do have autonomy in determining teachers' pay in England, in practice teachers' pay is largely centrally determined by the School Teachers' Review Body's recommendations and teaching unions recommended pay points. There is no differentiation based on subject, phase taught or the affluence of the school the teacher is in. This explains why teacher supply issues are more severe among STEM teachers (i.e., Science, Technology, Engineering and Mathematics) and in more challenging schools. However, there is some variation in pay based around 'bonuses' for teachers who take on additional roles or responsibilities. [11]

We observe no difference in pay by degree subject (STEM vs non-STEM) or school affluence (measured by FSM). However, we do observe statistically significant differences by Sex (male teachers earn £8,000 more) and school phase (secondary school teachers earn £4,000 more). While the difference in earnings by school phase disappears in multivariate analysis, the gender difference remains and is quite large (£5,400 column 1 table 3). This is unlikely to be driven by differences in the propensity for male teachers to take on additional roles and responsibilities as there are no differences in hours worked (column 4 table 3). However, it could be driven by male teachers being more willing to volunteer for additional roles and responsibilities that offer pecuniary benefits while

[9] There are approximately 1,800 teachers employed across the 66 schools. We have assumed that 90% of these teachers are eligible giving us 1,620 eligible teachers. Therefore, we calculate a response rate of 21%.
[10] While our respondents come from a much smaller geographical regions the lowest level of publicly available data on teacher characteristics, that we can compare our teachers to, is at the regional level.
[11] Additional responsibilities such as subject leads and assessment leads which can increase salaries by between £500 and £13,000. https://www.schoolplanner.co.uk/blog/additional-pay-with-tlrs/

female teachers are more likely to volunteer for those that are unpaid.[12] This is consistent with experimental evidence that women are more likely to volunteer for non-promotable tasks than men (Babcock, L., et al. (2017)).

Looking at the difference in teachers' pay in multivariable analysis we observe significant differences by experience (working hours), which is what we'd expect, with novice (part time) teachers' earnings less than their more experienced (full time) colleagues.

We also observe a large difference by school sector – teachers in independent schools earn almost £7,000 more than teachers in the public sector. However, teachers in independent schools also work around 7.5 more hours per week, despite been contracted to the same hours, as their state funded colleagues. This suggests that teachers in the independent sector earn more to compensated for their higher workload during term time. It is worth noting that independent schools also tend to have longer holidays and back-of-the-envelope calculations suggest that the difference in working hours is around 25hrs over an academic year.

We observe lower earnings for those who: i) have one or more dependants ii) are their households' secondary earner. This is likely to reflect that many people sort into teaching due to its compatibility with caring responsibilities and that these individuals are less likely to take on additional responsibilities – which is reflected by the fact that they tend to work less hours.

Neither of our educational attainment proxies for teacher ability (Russell Group dummy or Degree Classification) are related to teachers pay or actual hours worked. However, we do find that self-rated good teachers tend to earn around £4,000 more which suggests that headteachers are rewarding/promoting the most capable teachers. Interestingly we observe that teachers who work in a school with a good senior leadership team (self-rated) tend to work longer hours (2hrs) which suggest that the best school leaders don't necessarily minimise staff working hours.

3.1 Teacher's labour market expectations

Moving to teachers' expectations and beliefs about their non-teaching labour market opportunities we observe that teachers expect to earn more (£36,500 vs £35,000) and work less (37.5hrs vs 48hrs) outside of teaching (column 1 table 2).

Looking at the difference in teachers' non-teaching related expectations in multivariable analysis in Table 3, four main things stand out. First, consistent with the gender gap, male teachers expect to earn around £3,000 more annually and work almost 3hrs more per week outside of teaching, than female teachers. Second, there are no statistically significant differences by degree subject – even though graduates with degrees in a STEM subject tend to have more favourable labour market opportunities. Third, teachers from independent schools expect to earn £10,000 more outside of teaching than those in the state sector. While part of this is likely due to differences in private information – selection into the independent sector is non-random – this is also driven by large differences in their labour market beliefs. Teachers in the independent sector believe that population earnings are almost £8,500 higher than those who teach in the state sector. Fourth, while there are no statistically significant differences in non-teaching labour market expectations by

[12] We do not have data on if our respondents have additional teaching and learning responsibilities. For future projects we will collect data on this and include it as a covariate.

degree class or institution, we do observe that good teachers, using our self-rated measure, expect to earn almost £4,000 more outside of teaching. Interestingly, good teachers' beliefs about population earnings are statistically indistinguishable from their colleagues. While this might be driven by overconfidence it could also be true that the difference is driven by private information - teachers expect the labour market to reward the skills/qualities that are associated with being a good teacher.

A correlation table of teachers' expectations about labour market outcomes is presented in the Appendix (Table A1). As we would expect, teacher labour market expectations are positively related to each other. There is a positive between teachers' pay and expected earning outside of teaching (correlation of about 0.44) and current working hours and expected working hours outside of teaching (correlation of about 0.61).

3.2 Attrition Intentions

Turning our attention to teachers' attrition intentions, revisiting table 2, teachers report a 14 percent likelihood that they will leave the profession by the end of the next academic year (summer 2021), 21 percent by the end of the following academic year (summer 2022) and 37 percent by the summer of 2025. A relatively large standard deviation indicates considerable heterogeneity in intentions – this is particularly striking for attrition intention by the summer of 2025: the 10th percentile is 0 percent while the 90th percentile is 97 percent.

Our attrition intentions are slightly higher than actual attrition rates observed in the 2021/22 School Workforce Census nationally (8 percent vs 14 percent). We suspect that these slightly elevated expectations are due to the pressures and uncertainty caused by COVID-19, as this survey was fielded roughly four weeks after the phased re-opening of schools during the first lockdown.[13]

We observe that attrition intentions are largely similar by observable characteristics but are marginally higher for men (Table 2 column 4 and 5), teachers in more deprives schools (column 6 and 7) and for teachers in primary schools (column 8 and 9). None of these differences hold in multivariate analysis. For example, male teachers' attrition intentions are 2.5pp, 4.3pp and 6pp higher than their female counterparts for the summer of 2021, 2022 and 2025 respectively, but are not statistically significant (Table 3 columns 6-8).

Table 3 (columns 6 – 8) presents the relationship between our covariates and attrition intention in a multivariate regression. First looking at the differences in teacher characteristics we observe significant differences in intentions by age and ethnicity. A change from the 10th percentile (age 26) to the 50th percentile (age 38) in teachers' age is associated to an 8.5pp increase in one-year attrition intentions and non-white teachers are 21pp more likely to leave by 2025 than their white counterparts. Second, looking at teachers' educational qualifications, while we observe no differences by degree subject, we do observe lower intentions among teachers from the most

[13] On the 23rd of March 2020 the Prime Minister announced the first lockdown. While schools officially closed, and moved to remote learning, they remained open for vulnerable children and the children of 'key workers'. Consequently, 71% of schools in England remained open, in some capacity, throughout the first lockdown - between the 23rd of March and 1st of June. From the 1st of June Schools began a phased re-opening with all students and teachers eventually returning to the classroom.

prestigious universities (Russell Group) and the highest intentions for teachers with the lowest levels of achievements (3rd class degree/pass). Combining this with the fact that good teachers, using our self-rated measure, have lower attrition intentions suggests that a decrease in teacher attrition may not, necessarily, be welfare improving for students. Third, looking at differences by school and senior leadership quality we observe higher intentions among those in good schools - perhaps reflecting the pressures associated with working in a good school – and significantly lower intentions for teachers who are in schools with a good senior leadership team – 11pp less likely to leave – potentially reflecting the important role that school leaders have on teacher attrition. Finally, turning our attention to household characteristics, teachers who expect to have more children are less likely to leave the profession, 9.5pp lower one-year and 11pp lower two-year intentions, perhaps reflecting the compatibility of teaching with caring responsibilities. Interestingly, teachers who are the secondary earner in their household are almost 8pp more likely to leave by five-years, statistically significant at the 1% level, perhaps reflecting the role financial constraints have on the decision to leave teaching.

3.3 Expected returns to teaching

Table 4 shows how teachers' beliefs about their expected returns to teaching differs by covariates in multivariate analysis. Column 1 reports the difference in teachers' current earnings and how much they expect to earn outside of teaching $((teacher\ wage) - (non - teacher\ wage))$. This means that a positive (negative) sign indicates that they believe that they earn more (less) in teaching.

Looking across the covariates four main things stand out. First, we observe that male teachers believe that they are around £3,000 better off in teaching, then their female counterparts. This might explain why attrition rates are similar by sex even though we'd expect male teachers to earn more in an alternative profession. Second, we observe large differences by degree subject. Teachers with a degree in a STEM subject believe they could earn around £5,500 more outside of teaching, compared to their non-STEM counterparts. This might explain why teacher shortages are most severe in maths and science subjects. Third, primary school teachers expect to be around £4,000 better off in teaching than if they left the profession. Lastly, inexperienced teachers believe they could earn around £13,000 more outside of teaching, compared to the most experienced teachers. This might explain why attrition rates are significantly higher among inexperienced teachers because they believe they could be relatively better off in a different profession.

3.4 Accuracy of beliefs

It is challenging to assess the accuracy of teachers' beliefs about the labour market using their own expected earnings due to private information. However, we also ask teachers about their beliefs about population earnings. By comparing teachers' beliefs about population earnings to actual population earnings from the Annual Survey of Households in England (ASHE) we can assess the accuracy of teachers' labour market beliefs. We find that teachers are systematically misinformed about population earnings, the median teacher underestimates by £6,000.

Column 4 in table 4 reports the accuracy $(belief - truth)$ in teachers' beliefs about population earnings (for a given age and sex) by our covariates in multivariate analysis. This means that a positive (negative) sign indicates that teacher's overestimate (underestimate) population earnings.

Revisiting our covariates, we observe that male (Primary School) teachers' underestimate population earnings by almost £4,500 (£5,000), compared to their female (Secondary School) colleagues. This suggests that the belief that male (Primary) teachers are relatively better off in teaching, compared to their female (Secondary) counterparts, is, at least partially, driven by misinformation about population earnings.

Interestingly, the least experienced teachers' beliefs are no more inaccurate than their more experienced counterparts. Therefore, the large difference in expected earnings outside of teaching is likely to reflect private information, or overconfidence, and not less accurate labour market beliefs.

Recall that teachers from independent schools expect to earn £10,000 more outside of teaching than their state sector counterparts (Table 3 column 2). While some of this difference could be down to differences in private information, it could also be due to inaccuracies in labour market beliefs as teachers in the independent sector overestimate population earnings by around £8,500 compared to those in the state sector (Table 4 column 4).

4. Pay, labour market expectations and attrition intentions

Before investigating the relationship between teachers' earnings, labour market expectations and attrition intentions we are first going to present a simple model of teacher utility to understand why we would expect teachers' beliefs and expectations to influence attrition intentions. We assume that teacher i is a utility maximiser who must choose between remaining in teaching (T) or switching into some other profession (NT).

Teacher i's utility from teaching $U_{i,T}(P_T, NP_T)$ is some combination of teaching specific pecuniary (P_T) and non-pecuniary factors (NP_T). Examples of pecuniary factors includes their salary and pension; examples of non-pecuniary factors include their working hours and support from senior leaders. The specific factors we consider is limited by our data and will be discussed in section 5.

The utility of teacher i's alternative profession $U_{i,NT}(P_{NT}, NP_{NT})$ is some combination of pecuniary (P_{NT}) and non-pecuniary (NP_{NT}) job related factors. Both pecuniary and non-pecuniary factors outside of teaching are subject to uncertainty. This is to reflect the teachers potential lack of knowledge about alternative labour market opportunities. Although each potential job outside of teaching, j, entails an objective probability for the realisation of $U_{ij,NT}(P_{NT}, NP_{NT})$ each teacher i has beliefs $PR_{ij,NT}(P_{NT}, NP_{NT})$ about the occurrence of factors associated with each non-teaching job j. Specifically, teacher i's outside options will be the job $\overline{J_i}$ in their choice set J_i that has the highest expected utility denoted by $E[U_{i\bar{j}}\,(P_{NT}, NP_{NT})]$. Formally, this is the job that solves the following:

(1) $$\max_{j \in J_i} \int U_{i,NT}(P_{NT}, NP_{NT}) dPR_{ij,NT}(P_{NT}, NP_{NT})$$

We will assume that if the expected utility from teacher i's outside option, $\overline{J_i}$, is higher than their utility from teaching $U_{i,T}(P_T, NP_T)$ they will leave teaching. Formally:

(2) $$E\left[U_{i\bar{j}}\,(P_{NT}, NP_{NT})\right] - U_{i,T}(P_T, NP_T) > 0$$

Empirically, we can use the results from our economic experiment in section 5 to investigate the role that pecuniary (P_T) and non-pecuniary factors (NP_T) have on teachers' propensity to leave the profession, measured by their attrition intentions. In addition, we can also investigate the role of teachers' beliefs about labour market outcomes.

Pecuniary factors are thought to be an important driver in the decision to leave the profession. We investigate this directly by looking at the relationship between the teachers' pay and their attrition intentions. Using an OLS specification, we find that attrition intentions are negatively associated to their own wages and the effect is very large (Table 5). A 1pp higher salary is associated to a 13pp lower probability of leaving the profession in one year (Table 5 column 1). While this does suggest that wages influence teacher attrition this might not be causal as teachers who are more committed to the profession are more likely to take on additional responsibilities and are therefore likely to earn more money.

Teachers who believe they are relatively better off in teaching, compared to their own outside option, report lower attrition intentions and the magnitude is large. A 1pp higher relative wage $(\ln(teachers\ pay) - \ln(non - teachers\ pay))$ is associated to a 5pp lower probability of leaving the profession within one year and 7pp within five years (Table 6 column 1 and 6).

Similarly, teachers who believe they are relatively better off in teaching, compared to other people their age and sex, hold significantly lower attrition intentions. A 1pp higher relative wages $(\ln(teachers\ pay) - \ln(population\ pay))$ is associated to a 8pp lower one year and a 10pp lower five year attrition intentions (Table 6 column 2 and 7).

Recall that teachers hold inaccurate beliefs about population earnings. We investigate the role the error has on attrition intentions directly. First, we look at the relationship between attrition intentions and the error in beliefs $(\ln(expectations) - \ln(truth))$ where we find that teachers who overestimate population earnings have higher attrition intentions – 1 pp higher beliefs about population earnings are associated to 2.4pp (6pp) higher one-year (five-year) intentions (Table 6 column 4 and column 9). We further assess how the accuracy varies by characteristics in a multivariate analysis using the absolute value of the error (Column 1 in Table 7). The error in beliefs is negatively associated to attrition intentions - a 1pp decrease in the error, in absolute terms, is associated to a 2pp increase in one-year and 3pp increase in five-year attrition intentions (column 2 and column 4). This suggests that correcting teacher's misinformation about labour market outcomes might be counterproductive.

5. Determinants of teacher attrition intentions

In the final part of our survey respondents took part in an experiment designed to isolate the effect that different pecuniary and non-pecuniary factors have on attrition intentions. The factors that we consider are salaries, class sizes, senior leadership quality and actual hours worked. Each of these factors can take on several values.[14]

[14] These values are as follows. Salaries can stay the same, increase by 5% or increase by 10%. Class sizes can stay the same, increase (decrease) by 2 or 6. Senior leadership quality can stay the same, increase or decrease. Weekly hours worked can stay the same, increase by 5hrs or decrease by 5hrs.

Each of our respondents are given 15 individual scenarios where they are asked to report their attrition intentions across three different time horizons (the summer of 2021, 2022 and 2025 which are one year, two years, and five years after the experiment respectively) using a 0 to 100 probability scale. In the first 6 scenarios only one individual factor changes.[15] In the following 9 scenarios the difference factors are randomly assigned. In the first 6 scenarios the factors that are randomly assigned are salaries, class sizes and leadership quality. In the final 3 scenarios the factors that are randomly assigned are salaries, hours worked and leadership quality.[16] Examples of these scenarios are presented in appendix A2.

In total each of our 317 respondents are asked to report their attrition intentions 48 times (3 times for each of the 15 scenarios and the baseline) giving us a total of 14,249 observations (response rate of 94%).[17]

We investigate the effect that these factors (f) have on the attrition intentions (Y_{istf}) of teacher i, from school s by time t using the following OLS specification:

$$Y_{istf} = B_0 + B_1\partial_f + B_2X_{is} + \sigma_i + \varepsilon_i \quad (3)$$

B_1 is our coefficient of interest which denotes the percentage point effect of our factor fixed effects (∂_f) on teacher attrition intentions. We also include teacher fixed effects (σ_i) and control for teacher and school characteristics (X_{is}). We regress the one-year, two-year and five-year attrition intentions on the factor fixed effects separately – we discuss this further in section 7. Our standard errors are clustered at the individual teacher level.

The main results from the experiment are presented in figure 1 and table 8. Looking at these results four main things stand out. First, the effect of pecuniary factors is small but displays increasing marginal returns. A 10% increase in salaries has more than twice the effect of a 5% increase (e.g., 1pp vs 2.5pp and 3pp vs 7pp on one-year and five-year attrition intentions respectively). This suggests that only a large increase in salaries is likely to have a meaningful impact on attrition intentions – the effect of a 5% increase is the joint smallest of all the factors we consider.

Second, working hours and leadership quality seem to be the most cost-effective approaches to reducing attrition intentions. An improvement in senior leadership quality has a greater impact that a 5% pay rise (1.5pp vs 1pp) and a decrease in working hours is comparable to a 10% pay rise (2.2pp vs 2.6pp) despite been significantly cheaper to implement. The policy implications will be discussed in section 8.

Third, while reducing class sizes is a popular policy mechanism, we find that a small (2 pupil) and large (6 pupil) reduction in class sizes have a very modest effect on attrition intentions. [18] Interestingly, the magnitude of the effect of a large reduction in class sizes suggests diminishing

[15] The follow six factors are considered in these scenarios. A wage increase of 5%, a wage increase of 10%, a class size decrease of 2, a class size decrease of 6, leadership quality improves and weekly hours worked falls by 5. The order of these scenarios is randomized.
[16] We do not include both hours worked and class sizes in any individual scenario.
[17] Response rates are lowest for the 2021 intentions (92%) and higher for the 2022 (94%) and 2025 (95%) intentions.
[18] For example, in the 2019 general election the Labour party pledged to cap class sizes to 30 pupils in England.

returns. The effect of a 6-pupil reduction in class sizes is only 2pp, twice as strong as a 2-pupil reduction, despite the reduction in class sizes been three times larger in magnitude (column 1 rows 7 and 8 in table 8).

Fourth, attrition intentions vary in a non-symmetric way. They increase more when things get worse (i.e., an increase in working hours) and decrease less when things get better (i.e., a decrease in workings hours). For example, a decrease in leadership quality increases one-year attrition intentions by 5pp while an improvement only increases it by a 1.5pp. This suggests that policymakers should focus on preventative measures.

Heterogeneity in our results by teacher ability, using our self-reported measure, is presented in figures 2 - 4 and columns 4 – 9 in table 8. Three main things stand out. First, it is more challenging to reduce the attrition intentions of the most able teachers. A reduction in working hours reduces good teachers' five-year intentions by 5pp compared to 7pp for less able teachers. Second, good teachers' attrition intentions increase by more when things get worse. For example, a 2 pupil increase in class sizes increases good teachers' five-year intentions by 6pp compared to 4pp for less able teachers – although the difference is not statistically significant. Third, the effect of a decrease in leadership quality is twice as large for good teachers compared to less able teachers – a decrease in good teachers one-year and five-year attrition intentions by 6pp and 11pp respectively (vs 2pp and 6pp for less able teachers).

Heterogeneity in our results by teacher sex is presented in figures 5 - 7 and table 9. Two main things stand out. First, male teachers are more responsive to pecuniary factors than female teachers. A 5% wage increase reduces male teachers' attrition intentions by almost twice as much as female teachers (1.6pp vs 1pp for one-year intentions and 4pp vs 2.5pp for five-year intentions). Second, male teachers' attrition intentions move less when things get worse in the short (one-year) and medium (two-year) term but are similar to female teachers in the long run (five-year). For example, a 5hr increase in working hours increases male teachers one-year attrition intentions by 5pp (vs 7pp for female teachers) and their five-year intentions by 10pp (vs 11pp).

6. Attrition intentions and attrition behaviour

At the start of the 2021/22 and the 2022/23 academic years (October/November) the research team combined the survey data with publicly available school records to identify teachers' actual behaviour one year and two years after the survey way fielded (June 2020). Specifically, we are able identify if each respondent was in the same school they were in when the survey was fielded (June 2020) and, if they were not in the same school, if they were i) teaching in a different school ii) no longer teaching.[19]

Looking at the one-year behaviour of our 317 subjects, 245 (77 percent) were teaching in the same school, 44 of our subjects (14 percent) were teaching in a different school and 28 (9 percent) of our

[19] At the start of the survey teachers consented to link their survey data with publicly available data from online sources including information available on school websites (such as teacher details and Ofsted ratings) and government sources (such as school level attainment data and the proportion of pupils on free school meals). Teachers were informed that they were free to withdraw their consent at any time (via email) and their data would be removed. Teachers were explicitly informed that their data would not be linked to any data that is not publicly available (such as the teacher level School Workforce Census Data).

subjects were no longer teaching. The proportion of teachers who left the profession in our sample is like the attrition rates observed in the 2021/22 School Workforce Census nationally (8 percent). Turning our attention to our subject's two-year behaviour 185 (58 percent) were teaching in the same school two years later, 64 of our subjects (20 percent) were teaching in a different school two years later and 68 (21 percent) were no longer in teaching. We are unable to compare the attrition rates in our sample to the rates observed nationally because the data has not been released.

Table 10 shows the descriptive statistics of our sample by actual attrition behaviour. Four main points stand out. First, teachers who leave the profession are more likely to be male (column 3 and column 6). Given that men are less likely to go into the profession this helps explain why teaching is becoming less gender diverse year on year Fullard, J. (2022). Second, teachers who leave the profession are marginally older than those who remain in the same school (45 years old vs 40 years old). Third, teachers who move schools are generally younger (31 vs 45), tend to earn less (£33,000 vs £36,000) and have lower attrition intentions (7 percent vs 10 percent) suggesting that teachers might be switching schools for career advancement opportunities. Fourth, teachers who left the profession have higher attrition indentions than those who remain, and the difference is large (60 percent vs 10 percent for one-year intentions).

Looking at the relationship between attrition intentions and actual behaviour in multivariable analysis, controlling for our usual teacher and school covariates, we observe that attrition intentions are a strong predictor of actual behaviour (Table 11). A 1pp increase in one-year attrition intentions is associated to a 0.6pp increase in the likelihood that a teacher will leave the profession in one-year (column 1). To put the effect size into context this means that a one standard deviation increase in attrition intentions is associated to a 15.5pp increase in the likelihood that a teacher will leave the profession after one year. We also observe that the one-year attrition intentions are stronger predictors of actual one year attrition behaviour than the two- and five-year attrition intentions, which is what we'd expect (column 1 vs column 2 and 3).

Turing our attention to two-year behaviour, we observe a stronger relationship between both teachers one-year and two-year attrition intentions and leaving the profession within two years – a 1pp increase in intentions is associated to a 0.9pp increase in the likelihood that a teacher will leave in two-years (column 7). This suggests that teachers know that they want to leave the profession but there is a bit of uncertainly around when – possibly due to the Covid-19 pandemic.

Lastly, table 10 also reveals some interesting differences by the teachers self-rated ability, the senior leadership team, and the quality of the school they teach at. A lower proportion of teachers who leave the profession after one-year are good (68 percent, in column 3) compared to those who remain in the same school (77 percent in column 1). While this difference is not statistically significant policymakers need to be aware that reducing teacher attrition might not necessarily be welfare improving for pupils. Finally, looking at our measures of school quality and senior leadership quality, we observe that teachers who leave the profession are less likely to be in a school with a good senior leader and more likely to be in a good school. This continues to emphasise the role that school leaders and the pressures of teaching in a good school can have on teacher attrition.

7. Robustness Checks

This section tests the robustness of our results.

In our main results we do not control for teacher' pre-scenario attrition intentions. If we include a control for pre-scenario intentions, it has no impact on our results (figure 8). For our main results we use one regression for each period (e.g., we run regressions for one-year, two-year and five-year attrition intentions separately). An alternative approach is to pool all our attrition intentions together including time specific fixed effects. These results are presented in figure 9.

Recall that in section 4 (Table 3) we found a strong correlation between teachers' attrition intentions and their self-reported senior leadership quality. Teachers who are in a school with a good senior leadership team have 11pp lower attrition intentions. However, there might be a concern that the self-reported measure is a poor proxy for actual senior leadership quality. As a robustness check we instead use the school level average self-reported senior leadership quality (excluding teachers own evaluations). Results in table 12 (column 4 – 6) show that, while the magnitude falls, it remains negative and statistically significant. This is consistent with our results from section 5 that school leadership plays an important role in teacher attrition.

Our self-reported measure of teacher ability might also be a poor proxy for actual ability. Recall that we asked teachers questions about both their own ability and the ability of the average classroom teacher in their school. Using the latter, we can construct a school level average teacher ability (excluding teachers own evaluations). Using the school level average as a proxy for teacher ability we find that good teachers have lower attrition intentions suggesting that that reducing teacher attrition might not, necessarily, be welfare improving for students (table 12 column 7 – 8).

8. Discussion and concluding remarks

In this paper we use new data elicited from teachers using the Mobile EssexLab to a) provide descriptive evidence on attrition intentions b) assess the accuracy of labour market beliefs, c) investigate the role of beliefs about labour market outcomes outside of teaching has on attrition intentions. Using an economic experiment this paper investigates the role that peculiarity and non-pecuniary factors have on attrition intentions and finally we investigate whether teachers' attrition intentions can be used to predict actual behaviour.

Our four main results are as follows. First, teachers are systematically misinformed about the earnings profile of alternative careers – the median teacher underestimates population earnings by £6,000, and that labour market beliefs are associated to attrition intentions. Teachers planning to leave have higher (and more accurate) beliefs about population earnings, which could be consistent either with leavers researching their alternatives, or that knowing your outside option makes a teacher more likely to depart. Correcting teachers' labour market beliefs might be counterproductive as a decrease in the errors is associated to an increase in attrition intentions. A project investigating how teachers revise their beliefs in response to accurate information about population earnings, and the impact on attrition intentions, seems like a promising area of future research.

In a wider context our results indicate that the similarity in attrition rates among male and female (and STEM and non-STEM) teachers is, at least partially, due to inaccurate beliefs about labour market earnings. Male (STEM) teachers hold significantly less accurate beliefs than their female (non-STEM) counterparts. If male (STEM) teachers held more accurate beliefs, we would expect to observe significantly higher attrition intentions. As recruitment challenges are more acute among

male (STEM) teachers', policymakers are fortunate that they are misinformed about the earnings profile of alternative careers.

Second, looking at the factors that influence teacher attrition we find that the effect of pecuniary factors is small but displays increasing marginal returns. A 10% increase in salaries has more than twice the effect of a 5%. Our results suggest that only a large increase in salaries is likely to have a meaningful impact on attrition intentions. However, this will be extremely expensive and focusing on non-pecuniary factors might be more cost effective. Back of the envelope calculations suggest that a 10% increase in salaries for classroom teachers is likely to cost an additional £1.7bn per year.[20] To put this into perspective this is £700m more than the entire Covid-19 catch up funding allocated to help pupils recover from lost learning.[21] Reducing working hours and improving leadership quality seem to be more cost-effective approaches to reducing attrition intentions. A decrease in working hours is comparable to a 10% pay rise (2.2pp vs 2.6pp) despite been significantly cheaper to implement. Even an extremely expensive policy, such as using supply teachers to decrease each classroom teachers working hours by half a day per week would cost £0.6bn less, per year, than a 10% pay rise.[22] An improvement in senior leadership quality has a greater impact that a 5% pay rise (1.5pp vs 1pp) but it is challenging to quantify the financial cost of improving leadership quality. Providing school leaders with additional training, while inexpensive, is unlikely to boost leadership quality. It is also unclear that other policies, such as hiring additional staff to support school leaders, will improve quality. In this context improving leadership quality is mostly reallocative among schools (that is, you improve one school at the expense of another) unless senior leaders are recruited from other professions, but it is not clear this would boost quality.

Interestingly, we do find that male teachers attrition intentions are more responsive to pecuniary factors than their female counterparts. This explains why the number of male teachers has fallen since the 2008 public sector pay freeze (Fullard, J. (2022)).

Third, attrition intentions vary in a non-symmetric way. They increase more when things get worse (i.e., an increase in working hours) and decrease less when things get better (i.e., a decrease in workings hours). For example, a decrease in leadership quality increases one-year attrition intentions by 5pp while am improvement only increases it by a 1.5pp. These results suggest that the benefits a school gets from a great school leader is lower than the costs of losing a great school leader. In a broader sense this suggests that preventing cuts is more important than rolling out more generous benefits.

Fourth, we find a positive relationship between teachers' attrition intentions and their actual behaviour. Measuring teacher's attrition intentions on a 0 to 100% scale is predictive of teachers' actual behaviour. This result provides the first evidence that subjective expectations can be used to predict actual behaviour in the context of occupational choice. As most surveys of teachers measure teacher's attrition intentions in a binary way (i.e., "do you plan on leaving teaching in the next 12

[20] 441,548 classroom teachers in the state funded sector in England with a mean pay of £38,436. A 10% increase in pay for all these classroom teachers will cost an additional £1.7bn per year.
[21] https://www.gov.uk/government/publications/catch-up-premium-coronavirus-covid-19
[22] Each teacher is covered for 0.5 days per week at a rate of £130/day for 39 weeks could cost £1.1bn/year.

months") comparing the predictive power of these two measures in this setting seems like a promising topic of future research.

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Table 1 Sample Descriptive Statistics

	(1)	(2)	(3)	(4)
		Sample		Population (Essex)
	Whole	State Funded	Independent	
Age				
Years	39.5	40	35.6	NA
Under 25	3.5	2.5	10	5
25-29	18	18	17	15
30-39	33	32	44	33
40-49	25	25	20	28
50-59	16	18	5	16
60 or over	5	5	5	3
White	95	96	90	89
Male	30	30	30	24
Primary school	21	18	40	52
Part Time	27	27	27	27
Mean Salaries* (£'s)	37,700	37,500	39,000	37,000
Independent Schools	13	0	100	0
n	317	276	41	12,757

Column 1 reports the characteristics of our whole sample. Column 2 and 3 reports the characteristics of the teachers in our sample who work in the state funded and independent sector respectively. Column 4 reports the characteristics of all the teachers who work in the state funded sector in Essex. Therefore columns 2 (state funded in our sample) and columns 4 (state funded in Essex) are the most directly comparable.

Rows 2-7 report the percent of teachers across the 4 samples that are in each age category.

*Only using full times teachers

Table 2 Descriptive Statistics of key covariates by Degree Subject (columns 2 - 3), Sex (columns 4 - 5), Free School Meal (FSM) eligibility (columns 6 – 7) and school phase (columns 8 – 9).

	(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Mean	Response Rate (%)	Degree Subject		Sex		FSM		Stage	
Variables			STEM*	Not STEM	Male	Female	Above National Average	Below National Average	Primary	Secondary
Teacher Pay (£1,000's)	35.64	99	35.48	35.67	41.08	33.35***	34.77	35.74	32.74	36.42**
	(12.40)		(9.727)	(12.79)	(15.06)	(10.29)	(17.00)	(10.63)	(17.30)	(10.62)
Teacher Contracted Hours (hrs)	33.01	99	31.34	33.28	34.28	32.48	31.94	33.25	31.71	33.36
	(9.982)		(13.79)	(9.229)	(10.45)	(9.750)	(8.873)	(9.658)	(8.888)	(10.24)
Teacher Actual Hours (hrs)	48.34	100	50.06	48.07	49.65	47.79	47.14	48.54	45.07	49.22**
	(12.04)		(12.13)	(12.03)	(10.44)	(12.64)	(11.26)	(12.34)	(12.49)	(11.79)
Average Teacher Actual Hours (hrs)	48.09	100	49.74	47.83	49.63	47.45*	48.05	47.39	46.93	48.40
	(10.80)		(10.72)	(10.80)	(8.498)	(11.59)	(9.600)	(11.32)	(10.62)	(10.84)
Teacher spend on class (£'s)	95.59	100	108.75	93.47	86.62	99.37	103.63	95.33	100.45	94.29
	(113.0)		(171.1)	(100.9)	(115.5)	(112.0)	(100.5)	(122.8)	(89.57)	(118.7)
Labour Market Expectations										
Non-teacher Pay (£1,000's)	36.45	98	41.70	35.60**	40.02	34.94***	35.05	36.44	30.66	38.00***
	(15.57)		(12.44)	(15.87)	(15.63)	(15.33)	(20.04)	(14.18)	(8.406)	(16.66)
Population Earnings (£1,000's)	36.04	98	39.88	35.42*	38.96	34.81**	35.86	35.44	30.91	37.42***
	(14.38)		(11.35)	(14.74)	(13.42)	(14.63)	(19.84)	(12.44)	(10.05)	(15.06)
Non-teacher Hours (hrs)	37.50	99	40.63	36.99***	40.65	36.17***	36.40	37.63	34.23	38.37***
	(8.403)		(8.604)	(8.275)	(7.381)	(8.467)	(7.455)	(8.390)	(8.963)	(8.042)
Self-Rated Ability										
Good teacher	0.75	100	0.80	0.74	0.74	0.75	0.64	0.77**	0.69	0.77
	(0.433)		(0.408)	(0.437)	(0.438)	(0.432)	(0.482)	(0.421)	(0.467)	(0.423)
Good Senior Leadership	0.57	100	0.66	0.56	0.57	0.57	0.32	0.64***	0.45	0.61**
	(0.495)		(0.479)	(0.497)	(0.497)	(0.496)	(0.468)	(0.481)	(0.501)	(0.489)
Good School	0.70	100	0.61	0.71	0.69	0.70	0.51	0.75***	0.66	0.71
	(0.460)		(0.493)	(0.454)	(0.464)	(0.459)	(0.503)	(0.436)	(0.478)	(0.456)
Good Former Teachers	0.27	100	0.25	0.28	0.23	0.29	0.33	0.28	0.33	0.26
	(0.447)		(0.438)	(0.449)	(0.426)	(0.455)	(0.473)	(0.449)	(0.473)	(0.440)
Attrition intentions (%)										
1-year	14.32	100	14.14	14.35	16.69	13.32	16.74	13.00	16.49	13.74
	(25.80)		(24.28)	(26.08)	(29.85)	(23.89)	(26.33)	(25.09)	(25.92)	(25.79)
2-year	21.46	100	21.48	21.46	24.69	20.10	25.16	19.62	24.61	20.62
	(29.10)		(28.24)	(29.29)	(33.31)	(27.10)	(28.40)	(28.40)	(29.63)	(28.96)
5-year	37.30	100	38.61	37.08	39.44	36.39	44.41	34.18**	43.55	35.62*
	(34.09)		(36.40)	(33.77)	(37.28)	(32.71)	(32.42)	(33.69)	(33.28)	(34.18)
Max N	317		44	273	94	223	73	201	67	250

*STEM is defined as a degree is Science, Technology, Engineering and Math.
Non-teachers' pay is how much the teacher expects to earn outside of teaching. Non-teaching hours is how many hours the teacher expects to be working, per week, outside of teaching. Population earnings is how much money the average person, their age and sex, earns.
Stars indicate statistical significance between columns 2 and 3, 4 and 5, 6 and 7 and 8 and 9 respectively. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3 OLS regression of teachers' earnings, working hours, labour market related expectations and attrition intentions on teacher and school related characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Teacher Pay	Non-teacher Pay	Population Earnings	Hours Worked Per Week		Attrition intentions (%)		
				Teacher	Non-teacher	1-year	2-year	5-year
Male	5441.0**	2940.5	2198.9	-1.019	2.679**	2.542	4.356	6.069
	(2211.9)	(2438.4)	(2291.5)	(1.425)	(1.138)	(4.353)	(4.248)	(4.221)
Age	168.8	223.8	-113.6	-0.418	0.603	-3.717**	-4.545***	-4.681***
	(759.0)	(971.8)	(850.4)	(0.689)	(0.394)	(1.475)	(1.665)	(1.678)
White	3880.9	-4613.3	-3519.1	0.168	0.657	-9.277	-14.54**	-21.18***
	(2368.8)	(5578.3)	(5005.3)	(2.584)	(1.570)	(6.347)	(5.665)	(7.190)
Teaching experience								
0-3 years	-11035.5***	2580.0	-977.0	-0.341	3.524***	-6.261	-3.131	2.245
	(1968.3)	(2901.4)	(2932.4)	(2.042)	(1.260)	(6.073)	(6.563)	(7.274)
4-10 years	-977.6	4433.5	1331.7	0.716	2.404**	-2.095	2.184	10.88**
	(2213.0)	(3063.2)	(2959.0)	(1.227)	(0.999)	(3.583)	(4.077)	(4.712)
11 year or more [Omitted Category]								
Part Time	-6337.7***	-6044.0***	-4574.5**	-14.63***	-7.197***	3.228	4.707	5.744
	(2231.3)	(2059.5)	(1859.7)	(1.292)	(1.268)	(3.003)	(3.350)	(3.829)
Primary School	-1744.3	-5089.2***	-4760.4***	-2.127	-2.794***	1.953	2.966	6.120
	(1783.4)	(1589.7)	(1560.6)	(1.471)	(0.912)	(4.015)	(4.142)	(4.640)
Secondary School [Omitted Category]								
Independent School	6816.4***	10100.1***	8448.5***	7.539***	4.687***	4.339	6.123	9.928
	(1983.3)	(3153.3)	(3030.2)	(2.332)	(1.400)	(5.035)	(5.410)	(8.315)
State School [Omitted Category]								
Ofsted Rating Good	459.3	-426.8	-1611.6	-0.0234	1.137	3.364	2.799	-1.067
	(1193.5)	(1999.9)	(1375.0)	(1.184)	(0.875)	(3.037)	(3.207)	(5.758)
Class Size	276.0**	334.4*	165.2	0.314**	0.130	-0.171	0.0172	0.326
	(136.9)	(179.5)	(194.4)	(0.133)	(0.0902)	(0.317)	(0.369)	(0.398)

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Dependents in HH	-2712.2*	498.0	948.9	-0.622	-2.004	-2.680	-3.832	1.047
	(1508.5)	(2488.6)	(2528.6)	(1.593)	(1.367)	(3.558)	(3.982)	(4.630)
Expect more Children	-1629.8	1490.8	921.2	-1.161	-0.579	-9.494***	-11.40**	-7.578
	(2236.8)	(2050.8)	(2099.4)	(1.230)	(0.847)	(3.359)	(4.702)	(5.121)
Partner Earns More	-4083.7***	-3291.3*	-2173.9	-4.495***	-2.368***	3.006	2.644	7.613**
	(1083.0)	(1674.6)	(1674.2)	(1.637)	(0.815)	(3.420)	(3.613)	(3.773)
STEM degree	-3422.2***	1977.8	776.0	0.555	1.384	1.141	0.947	4.059
	(1110.3)	(2859.3)	(2999.0)	(1.828)	(1.489)	(3.860)	(4.210)	(6.252)
Russell Group	-1480.7	368.0	-1651.3	-1.616	0.413	-3.162	-2.934	-3.881
	(1322.0)	(2063.0)	(1856.1)	(1.562)	(0.942)	(3.893)	(3.740)	(3.818)
Degree Class								
1st Class	-3061.4	125.5	-394.0	-1.164	-1.929*	3.535	6.232	6.335
	(2118.1)	(2196.0)	(1572.0)	(1.614)	(1.037)	(5.162)	(5.566)	(5.742)
2:1 Class	-2564.1	2422.4	1240.4	0.440	-0.0273	2.178	5.338	5.429
	(2444.4)	(1982.8)	(1968.4)	(1.315)	(0.784)	(4.107)	(4.025)	(4.488)
2:2 Class								
[Omitted Category]								
3rd Class	-2556.2	4033.8	7302.8	-0.495	-0.578	6.112	11.48	10.79
	(2350.8)	(5712.6)	(6000.5)	(2.496)	(1.543)	(6.799)	(7.066)	(8.005)
Self-Reported Ability								
Good Teacher	3783.0**	3776.8*	1952.0	0.482	-0.0216	-3.657	-5.702	-8.486*
	(1867.9)	(1995.9)	(1698.3)	(1.546)	(0.876)	(4.219)	(4.437)	(4.372)
Good School	-918.4	-550.6	-538.4	-1.050	-1.277	6.762**	8.110*	12.05***
	(1010.0)	(1517.6)	(1479.4)	(1.170)	(0.793)	(3.385)	(4.247)	(4.016)
Good Senior Leadership	475.4	1575.0	2356.2*	1.950*	0.803	-10.93***	-13.70***	-13.65***
	(1162.5)	(1642.0)	(1409.5)	(1.133)	(0.928)	(3.938)	(3.912)	(4.480)
R(2)	0.255	0.157	0.139	0.395	0.371	0.126	0.158	0.223
DV mean	35,640	36,450	36,040	48.34	37.50	14.32	21.46	37.30
(SD)	(12,400)	(15,570)	(14,380)	(12.04)	(8.403)	(25.80)	(29.10)	(34.09)
N	313	308	307	317	317	317	317	317

Non-teachers' pay (column 2) is how much the teacher expects to earn outside of teaching, population earnings (column 3) is how much the teachers expects a person with the same characteristics as them (age and sex) to earn on average. FSM eligibility, Age Squared, single and number of schools taught in are included in the regression but not reported. Standard deviation in parentheses, stars indicate statistical significance to the usual levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4 The difference in teachers labour market related expectations and covariates.

	(1)	(2)	(3)	(4)	(5)
	Returns to Teaching (Teacher Earnings – Non-Teacher Earnings)			Accuracy (Belief – Truth)	
	Earnings (Self)	Earnings (Population)	Working hrs (Self)	Earnings (Population)	Working hrs (Self)
Male	2812.1	3550.2	-4.058***	-4370.0*	4.768***
	(2958.5)	(2857.3)	(1.520)	(2334.8)	(1.169)
Age	-13.56	333.9	-1.202*	-55.91	0.634*
	(1102.6)	(1057.6)	(0.615)	(861.7)	(0.339)
White	8631.3*	6454.6	-0.662	-3404.8	0.596
	(5086.9)	(4675.3)	(2.972)	(4834.7)	(1.636)
Teaching experience					
0-3 years	-13384.3***	-9831.3***	-4.293*	-958.9	3.424***
	(3403.1)	(2630.2)	(2.266)	(2929.5)	(1.282)
4-10 years	-5501.9	-2524.7	-1.728	1420.7	2.487**
	(3532.2)	(3333.8)	(1.182)	(2960.8)	(0.938)
11 year or more [Omitted Category]					
Part Time	-196.1	-1580.8	-7.468***	15720.6***	-25.22***
	(2464.5)	(2339.8)	(1.441)	(1797.4)	(1.172)
Primary School	3728.3*	3376.8	0.393	-4875.6***	-2.562***
	(2066.2)	(2236.5)	(1.217)	(1612.1)	(0.856)
Secondary School [Omitted Category]					
Independent School	-3252.0	-1511.5	3.030	8275.6***	4.711***
	(3961.6)	(3990.6)	(2.306)	(2958.0)	(1.299)
State School [Omitted Category]					
Ofsted Rating Good	871.6	2068.5**	-1.178	-2187.3	1.254
	(1548.0)	(882.9)	(0.929)	(1385.9)	(0.825)
STEM degree	-5594.4*	-4443.1	-0.770	500.5	1.516
	(2868.5)	(3017.2)	(1.568)	(2931.5)	(1.443)
Russell Group	-1733.9	562.6	-1.823	-1200.1	-0.217
	(2380.9)	(2219.4)	(1.334)	(1779.8)	(0.832)
Degree Class					
1st Class	-2509.6	-1921.4	0.752	-69.05	-1.664*
	(2337.3)	(1860.1)	(1.351)	(1465.9)	(0.974)
2:1 Class	-4881.2*	-3575.7	0.358	1157.3	0.391
	(2551.1)	(2614.6)	(1.194)	(1910.6)	(0.750)
2:2 Class [Omitted Category]					

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3rd Class	-6691.6	-10237.3	0.0364	7016.4	-0.366
	(6104.3)	(6328.9)	(1.793)	(5926.4)	(1.541)
Self-Reported Ability					
Good Teacher	206.3	2031.9	0.389	2055.7	-0.375
	(2262.0)	(2213.7)	(1.118)	(1684.6)	(0.954)
Good School	-345.5	-296.6	0.179	-596.3	-1.417
	(1921.2)	(1840.8)	(1.069)	(1436.5)	(0.867)
Good Leadership	-812.3	-1566.7	1.065	2790.4*	0.474
	(1465.4)	(1223.5)	(1.310)	(1490.4)	(0.942)
R(2)	0.153	0.155	0.187	0.323	0.801
DV mean	-810	-293	10.79	-1,539	14.4
(SD)	(17,025)	(16,609)	(9.6)	(16,193)	(14.4)
N	306	305	313	313	313

Column 1 reports the difference between current earnings and non-teacher expectations (teacher wage – non-teacher wage). Column 2 reports the difference between current earnings and population earnings (teacher wage – population wage). Column 3 reports the difference between current working hours and non-teacher expected working hours (teacher hours – non-teacher hours). Column 4 and 5 reports the accuracy of population beliefs (belief – truth) for wages and working hours respectively.

Note that Age squared, number of schools taught in, FSM eligibility, class size, dependent children, single and partner earns more are included in the regressions but not reported. Standard errors are clustered at the school level. Stars indicate statistical significance to the usual levels. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 5 Teachers labour market expectations on their 1-year (column 1 – 5) and 5-year (column 6 – 10) attrition intentions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1-year attrition intentions					5-year attrition intentions				
Log (Teachers Pay)	-13.73**					-11.21				
	(5.287)					(6.719)				
Log (Non-teacher Pay)		-2.941					0.605			
		(3.975)					(4.055)			
Log (Population Earnings)			1.579					5.118		
			(4.426)					(4.547)		
Teachers Hrs				-0.162					-0.189	
				(0.184)					(0.191)	
Non-teachers Hrs					-0.0505					0.0983
					(0.263)					(0.398)
R(2)	0.182	0.174	0.174	0.167	0.164	0.278	0.288	0.292	0.274	0.271
DV mean	14.18	14.41	14.32	14.23	14.23	37.30	37.80	37.66	37.29	37.29
(SD)	(25.47)	(25.62)	(25.61)	(25.80)	(25.80)	(34.01)	(33.99)	(33.97)	(34.04)	(34.04)
N	313	308	307	317	317	313	308	307	317	317

OLS regression. Attrition intentions are measured on a 0-100 probability scale.
Non-teachers' pay is how much teachers expect to earn outside of teaching. Population earnings is how much teachers expect the average person their age and sex earn.
Variables included but not reported: Male, Age, age squared, white. Teacher experience, schools taught in, Part Time, Primary school, independent school, ofsted rating, FSM eligibility, Class size, dependent children in HH, expect more children, single, STEM degree, Russell Group, Degree Class, Self-rated ability. Standard errors clustered at the school level. Stars indicate statistical significance to the usual levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
When we include all of teachers' labour market expectations on their 1-year intentions Log (Teachers Pay) falls slightly (-13.60) but remains statistically significant at the 10 percent level.

Table 6 Teachers labour market expectations on their 1-year (column 1 – 5) and 5-year (column 6 – 10) attrition intentions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1-year attrition intentions					5-year attrition intentions				
Returns to teaching (Self)	-4.812					-7.039*				
	(4.109)					(4.083)				
Returns to teaching (pop)		-8.252*					-9.840**			
		(4.814)					(4.374)			
Returns to teachings (Hrs)			-0.157					-0.275		
			(0.186)					(0.234)		
Log Accuracy in Earnings				2.359					6.116	
				(4.544)					(4.379)	
Accuracy in Hrs worked					-0.0941					0.0797
					(0.274)					(0.404)
R(2)	0.176	0.187	0.167	0.165	0.164	0.295	0.302	0.276	0.275	0.272
DV	14.50	14.41	14.32	14.32	14.32	37.92	37.78	37.29	37.29	37.29
(SD)	(25.67)	(25.67)	(25.8)	(25.8)	(25.8)	(34.04)	(34.00(	(34.09)	(34.09)	(34.09)
N	306	305	317	317	317	306	305	317	317	317

Attrition intentions are measured on a 0-100 probability scale.
In row 1 the returns to teaching (self) is ln(teacher pay) – ln(exp earnings outside of teaching). Row 2 the returns to teaching (pop) is ln(teacher pay) – ln(population earnings). Row 3, returns to teaching (Hrs) is ((actual hrs worked teacher) – (exp hrs worked outside of teaching). Row 4 Log Accuracy in Earnings is ln(population beliefs)-ln(actual earnings). Row 5 Accuracy is Hrs worked is ((exp population hrs worked) – (actual mean hrs worked)).
Variables included but not reported: Sex, age, age squared, ethnicity, teaching experience, number of schools taught in, part time, school phase, independent school, ofsted rating, FSM eligibility, class size, dependent children, expect more children, single, secondary earner in HH, STEM degree, Degree class, teaching ability, school ability and senior leadership ability. Standard errors clustered at the school level. Stars indicate statistical significance to the usual levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7 The accuracy of teachers' labour market beliefs and attrition intentions.

	(1)	(2)	(3)	(4)
	Accuracy (abs(belief – truth))	Attrition intentions 1-year	2-year	3-year
Ln (Accuracy)		-2.028	-2.811	-2.750*
		(2.184)	(1.917)	(1.586)
Male	3172.7***	3.200	5.268	6.961*
	(1070.2)	(4.351)	(4.217)	(4.122)
Age	-537.3	-3.619**	-4.409**	-4.549***
	(914.8)	(1.500)	(1.715)	(1.714)
White	228.4	-9.431	-14.76**	-21.39***
	(3009.3)	(6.340)	(5.796)	(7.333)
Teaching Experience				
0 – 3 years	2673.7	-5.987	-2.751	2.617
	(2388.5)	(6.131)	(6.654)	(7.406)
4 – 10 years	3753.2	-1.601	2.869	11.55**
	(2996.8)	(3.759)	(4.273)	(4.885)
[10 + year omitted]				
Primary school	-563.4	1.941	2.950	6.104
	(1245.5)	(4.010)	(4.127)	(4.690)
Independent school	4953.4	5.394	7.585	11.36
	(3207.9)	(4.749)	(5.306)	(8.521)
STEM Degree	-1276.3	1.034	0.799	3.913
	(1561.7)	(3.822)	(4.260)	(6.500)
Russell Group	-1243.7	-3.390	-3.250	-4.190
	(1216.6)	(3.798)	(3.608)	(3.735)
Ability Good	865.5	-3.435	-5.394	-8.184*
	(1782.8)	(4.224)	(4.391)	(4.422)
R(2)	0.127	0.169	0.222	0.279
DV(mean)	12,223	14.32	21.46	37.30
(SD)	(10,579)	(25.80)	(29.10)	(34.10)
N	317	317	317	317

Column 1 the DV is the absolute value in the error in teachers' beliefs about population earnings. Column 2 – 4 the DV is teachers attrition intentions by 1-year, 2-year and 5 years. Row 1 reports the coefficient for the natural log of the absolute value of teacher's error.

Values included in the regression but not reported: age squared, schools taught in, Part time, Ofsted rating, FSM eligibility, dependent children in HH, expect more children, relationship single, Degree class, school ability and senior leadership ability. Standard errors clustered at the school level. Stars indicate statistical significance to the usual levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8 shows the coefficients for our factor fixed effects on teachers 1-year, 2-year and 5-year attrition intentions measured on a 0-100% scale. Columns 1-3 uses the whole sample, columns 4-6 restricts the sample to good teachers using our self-rated measure and columns 7-9 uses the other teachers.

Sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Whole Sample			Good Teachers			Other Teachers		
	1-year	2-year	5-year	1-year	2-year	5-year	1-year	2-year	5-year
5% Wage Increase	-1.154***	-1.776***	-2.936***	-1.108**	-1.528***	-2.894***	-1.359**	-2.642***	-3.172***
	(0.359)	(0.401)	(0.458)	(0.428)	(0.474)	(0.573)	(0.630)	(0.739)	(0.661)
10% Wage Increase	-2.572***	-4.327***	-6.747***	-2.318***	-4.149***	-6.653***	-3.312***	-4.851***	-6.997***
	(0.390)	(0.487)	(0.626)	(0.441)	(0.597)	(0.779)	(0.820)	(0.754)	(0.889)
Work 5hrs Less	-2.234***	-3.503***	-5.708***	-2.041***	-3.225***	-5.221***	-2.785**	-4.322***	-7.189***
	(0.442)	(0.531)	(0.623)	(0.445)	(0.548)	(0.691)	(1.170)	(1.371)	(1.378)
Work 5hrs More	6.483***	9.336***	10.90***	6.641***	10.17***	12.21***	6.177***	7.120***	7.360***
	(0.937)	(1.074)	(1.187)	(1.057)	(1.255)	(1.418)	(2.000)	(2.068)	(2.065)
Improve Leadership	-1.450***	-2.721***	-3.628***	-1.264***	-2.578***	-3.385***	-2.172**	-3.251***	-4.469***
	(0.372)	(0.464)	(0.576)	(0.383)	(0.516)	(0.676)	(0.936)	(1.013)	(1.094)
Worsen Leadership	5.205***	7.191***	9.420***	6.117***	8.085***	10.66***	2.344**	4.414***	5.631***
	(0.646)	(0.687)	(0.827)	(0.790)	(0.820)	(1.025)	(0.912)	(1.166)	(1.057)
Smaller Class (2 pupils)	-0.905**	-1.734***	-2.528***	-0.833*	-1.601***	-2.221***	-1.057	-2.048	-3.382**
	(0.432)	(0.511)	(0.598)	(0.451)	(0.541)	(0.664)	(1.118)	(1.258)	(1.338)
Smaller Class (6 pupils)	-2.001***	-3.263***	-5.185***	-2.044***	-3.418***	-5.020***	-1.815	-2.844**	-5.715***
	(0.448)	(0.497)	(0.710)	(0.447)	(0.536)	(0.851)	(1.170)	(1.156)	(1.271)
Larger Class (2 pupils)	2.670***	4.897***	5.219***	2.348***	5.137***	5.655***	3.665***	4.251***	3.994***
	(0.639)	(0.778)	(0.894)	(0.752)	(0.946)	(1.133)	(1.227)	(1.297)	(1.220)
Larger Class (6 pupils)	6.187***	9.008***	10.94***	6.072***	9.230***	11.44***	6.542***	8.284***	9.348***
	(0.853)	(1.025)	(1.047)	(0.930)	(1.208)	(1.228)	(1.984)	(1.835)	(1.918)
R(2)	0.865	0.844	0.851	0.868	0.846	0.846	0.859	0.841	0.868
DV mean	14.46	20.81	34.68	13.98	20.19	33.68	15.95	22.72	37.67
(SD)	(24.78)	(27.77)	(33.28)	(24.57)	(27.69)	(33.68)	(25.38)	(27.92)	(31.89)
N (scenarios)	4664	4759	4826	3517	3579	3621	1147	1180	1205
N (teachers)	317	317	317	238	238	238	79	79	79

OLS regression includes Teacher Fixed Effects and controls for teacher and school characteristics. These are: Sex, Age, Age squared, Ethnicity, Teaching experience (0-3 years dummy and 4-10 years dummy), Schools taught in (1 school dummy and 2-3 schools dummy), Part Time, Primary teacher, Independent school, Ofsted rating, FSM eligibility, Class size, Dependent children at home, expecting more children, relationship status, secondary earner, STEM degree, Russell Group graduate, Degree Class, Self-rated ability, Self-rated school quality and self-rated senior leadership quality. Standard errors are clustered at the induvial teacher level. Stars indicate statistical significance to the usual levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9 shows the coefficients for out factor fixed effects on teachers 1-year, 2-year and 5-year attrition intentions. Columns 1-3 restricts the sample to our male teachers. Columns 4 – 6 restricts our sample to our female teachers.

	(1)	(2)	(3)	(4)	(5)	(6)
	Male Teachers			Female Teachers		
	1-year	2-year	5-year	1-year	2-year	5-year
5% Wage Increase	-1.602**	-2.786***	-4.072***	-0.976**	-1.370***	-2.467***
	(0.698)	(0.808)	(0.945)	(0.422)	(0.460)	(0.522)
10% Wage Increase	-3.231***	-5.742***	-7.848***	-2.314***	-3.771***	-6.307***
	(0.689)	(1.009)	(1.316)	(0.470)	(0.542)	(0.700)
Work 5hrs Less	-1.671***	-2.969***	-3.917***	-2.443***	-3.676***	-6.374***
	(0.628)	(0.746)	(0.880)	(0.564)	(0.680)	(0.793)
Work 5hrs More	5.073***	6.822***	10.14***	7.127***	10.44***	11.26***
	(1.036)	(1.488)	(2.039)	(1.267)	(1.396)	(1.466)
Improve Leadership	-1.222**	-2.013**	-1.943*	-1.540***	-3.021***	-4.327***
	(0.590)	(0.772)	(1.025)	(0.465)	(0.577)	(0.698)
Worsen Leadership	3.395***	4.680***	7.685***	5.990***	8.274***	10.17***
	(1.142)	(1.229)	(1.616)	(0.772)	(0.811)	(0.953)
Smaller Class (2 pupils)	-0.957*	-2.573***	-2.856***	-0.857	-1.351**	-2.332***
	(0.506)	(0.778)	(0.916)	(0.567)	(0.635)	(0.745)
Smaller Class (6 pupils)	-1.794***	-3.185***	-4.135**	-2.060***	-3.254***	-5.548***
	(0.587)	(0.918)	(1.594)	(0.579)	(0.591)	(0.770)
Larger Class (2 pupils)	1.801*	3.337***	4.545***	3.135***	5.692***	5.634***
	(0.941)	(1.264)	(1.614)	(0.810)	(0.954)	(1.061)
Larger Class (6 pupils)	5.923***	8.217***	10.75***	6.290***	9.319***	11.04***
	(1.767)	(1.919)	(1.936)	(0.942)	(1.198)	(1.234)
R(2)	0.918	0.892	0.877	0.835	0.817	0.838
DV mean	15.87	22.93	36.90	13.88	19.95	33.76
(SD)	(28.01)	(31.48)	(36.20)	(23.29)	(26.04)	(31.96)
N (scenarios)	1372	1386	1414	3292	3373	3412
N (teachers)	94	94	94	223	223	223

OLS regression includes Techer Fixed Effects and controls for teacher and school characteristics. These are: Sex, Age, Age squared, Ethnicity, Teaching experience (0-3 years dummy and 4-10 years dummy), Schools taught in (1 school dummy and 2-3 schools dummy), Part Time, Primary teacher, Independent school, Ofsted rating, FSM eligibility, Class size, Dependent children at home, expecting more children, relationship status, secondary earner, STEM degree, Russell Group graduate, Degree Class, Self-rated ability, Self-rated school quality and self-rated senior leadership quality. Standard errors are clustered at the induvial teacher level. Standard errors in parentheses* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10. Descriptive statistics of teachers who are observed teaching in the same schools (column 1 and 4), teaching in a different school (column 2 and 5) and not in teaching (column 3 and 6) one year (columns 1-3) and two years (columns 4-6) later.

	(1)	(2)	(3)	(4)	(5)	(6)
		1-year			2-year	
	In Teaching		Not in teaching	In Teaching		Not in teaching
	Same School	Different School		Same School	Different School	
Male Teacher	0.289	0.273	0.393	0.292	0.188	0.412*
	(0.455)	(0.451)	(0.497)	(0.455)	(0.393)	(0.496)
Age (in years)	39.78	34.41***	44.71**	39.72	35.59***	42.44*
	(10.06)	(9.90)	(13.67)	(9.92)	(9.52)	(12.52)
Early Years/Primary Teacher	0.216	0.205	0.179	0.232	0.203	0.162
	(0.413)	(0.408)	(0.390)	(0.423)	(0.405)	(0.371)
Independent School	0.135	0.136	0.071	0.124	0.109	0.162
	(0.342)	(0.347)	(0.262)	(0.331)	(0.314)	(0.371)
Class Size	25.6	26.5	24.1	25.99	26.36	24.04**
	(5.67)	(6.38)	(6.90)	(5.63)	(5.64)	(6.62)
Teacher Pay	36,346	32,799**	33,936	36,420	33,849*	35,215
	(10,647)	(8,953)	(25,013)	(10,484)	(10,295)	(17,841)
Non-teacher Pay	36,646	36,610	34,461	35,612	35,632	39,490*
	(15,549)	(14,304)	(17,926)	(12,879)	(13,998)	(22,167)
Hours Worked	48.55	49.56	44.62	48.76	50.32	45.33**
	(12.04)	(10.92)	(13.38)	(12.30)	(10.50)	(12.29)
Ability (self-reported)						
Good teacher	0.767	0.704	0.679	0.768	0.687	0.764
	(0.423)	(0.462)	(0.476)	(0.423)	(0.467)	(0.427)
Good School	0.694	0.659	0.786	0.697	0.656	0.735
	(0.462)	(0.479)	(0.418)	(0.461)	(0.479)	(0.444)
Good Senior leadership	0.580	0.591	0.500	0.595	0.563	0.529
	(0.49)	(0.497)	(0.509)	(0.492)	(0.50)	(0.502)
Attrition Indentions						
1-year	10.39	7.20	59.92***	7.97	3.57*	41.71***
	(21.02)	(14.10)	(33.17)	(18.29)	(8.49)	(35.20)
2-year	17.64	13.25	67.78***	14.51	8.16**	52.92***
	(26.02)	(21.49)	(24.30)	(24.01)	(14.17)	(30.26)
5-year	33.37	32.27	79.5***	29.51	24.48	70.53***
	(32.88)	(28.43)	(22.66)	(30.91)	(23.98)	(29.56)
N	245	44	28	185	64	68

Stars in column 2 and 3 indicate statistical significance from column 1. Starts in column 5 and 6 indicate statistical significance from column 4. Standard deviation in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11. Teacher attrition intentions on actual behaviour. DV is a 1/0 dummy to indicate if the teacher is not observed in teaching one year (columns 1 – 3) or two years (columns 4 – 9) after the survey. Columns 4 – 6 excludes the teachers who left teaching in the first year.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Leave After 1 year			Leave After 2 years (Excluding 1-year leavers)			Leave After 2 years (Including 1-year leavers)		
Attrition Intentions									
1-year	0.594***			0.677***			0.861***		
	(0.00112)			(0.00135)			(0.00101)		
2-year		0.473***			0.574***			0.801***	
		(0.000883)			(0.00105)			(0.000763)	
5-year			0.302***			0.472***			0.647***
			(0.000594)			(0.000885)			(0.000678)
R(2)	0.384	0.325	0.233	0.251	0.265	0.263	0.396	0.407	0.362
DV Mean	0.088	0.088	0.088	0.138	0.138	0.138	0.215	0.215	0.215
(SD)	(0.283)	(0.283)	(0.283)	(0.346)	(0.346)	(0.346)	(0.411)	(0.411)	(0.411)
N	317	317	317	289	289	289	317	317	317

For ease of interpretation the results are presented as the effect of a 1pp increase in teacher attrition intentions.
Covariates included in the regression but not reported are: sex, age, ethnicity, experience, schools taught in, part time, school phase, school sector, ofsted grade, FSM eligibility, class size, dependent children in HH, expect children, single, partner earns more, STEM degree, degree class, Russell group, own ability, school ability and senior leadership ability, pay, hours worked, expected earning outside of teaching, expected hours worked outside of teaching.
Standard errors are clustered at the school level and are reported in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12. Regression investigating the relationship between teachers' attrition indentions (DV), self-reported ability (row 1 – 3) and the school level average ability, excluding teachers own beliefs (row 4 – 9).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Teachers' attrition intentions								
	1-year	2-year	5-year	1-year	2-year	5-year	1-year	2-year	5-year
Self-Reported Ability									
Good teacher	-1.081	-3.230	-6.642	-0.971	-3.099	-6.522			
	(4.215)	(4.417)	(4.402)	(4.379)	(4.670)	(4.672)			
Good school	5.210	6.001	9.459**	1.613	1.478	4.926	4.885	5.232	8.022*
	(3.892)	(4.895)	(4.494)	(3.443)	(4.345)	(4.376)	(3.757)	(4.463)	(4.145)
Good Leadership	-11.33**	-13.68***	-12.68**				-10.74**	-13.01***	-12.08**
	(4.234)	(4.155)	(4.745)				(4.130)	(4.095)	(4.719)
Average Ability									
Good Leadership				-7.334**	-7.520**	-4.473			
				(3.491)	(3.230)	(4.484)			
Good teacher							-9.772*	-10.83**	-9.147
							(5.051)	(5.218)	(5.707)
R(2)	0.185	0.225	0.284	0.164	0.198	0.264	0.197	0.235	0.285
DV mean	14.04	21.10	21.10	14.04	21.10	21.10	14.04	21.10	21.10
(SD)	(25.99)	(29.20)	(29.20)	(25.99)	(29.20)	(29.20)	(25.99)	(29.20)	(29.20)
N	286	286	286	286	286	286	286	286	286

OLS regression. Average ability is the school level average senior leadership rating (Good Leadership) and teacher rating (Good Teacher) excluding teachers own ratings. Variables included but not reported: teacher sex, age, age squared, ethnicity, teaching experience, number of schools taught in, part time dummy, primary school dummy, independent school dummy, Ofsted rating, FSM eligibility, class size, dependent children in household, expect more children, single, partner earns more, STEM degree, Russell Group dummy and Degree Class. Standard errors in parentheses and clustered at the school level. Starts indicate statistical significance to the usual levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figures

Figure 1 shows the coefficients for out factor fixed effects on teachers 1-year, 2-year and 5-year attrition intentions.

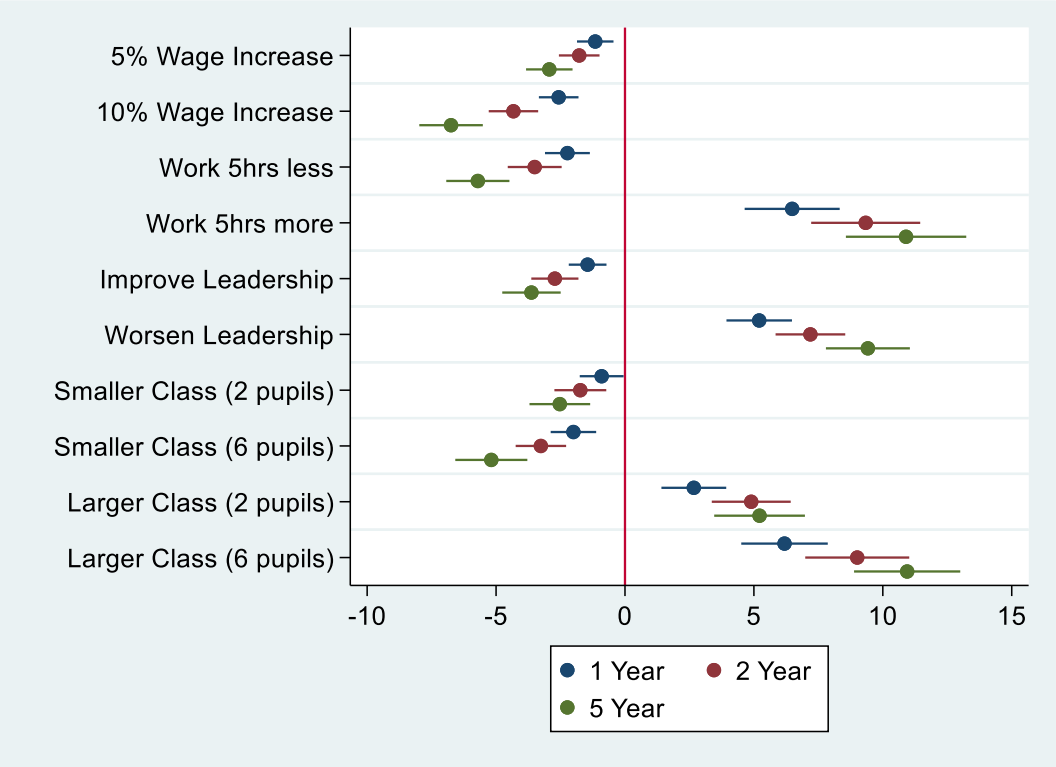


Figure 2 shows the coefficients for out factor fixed effects on teachers 1-year attrition intentions by good teacher (blue) and other teachers (red).

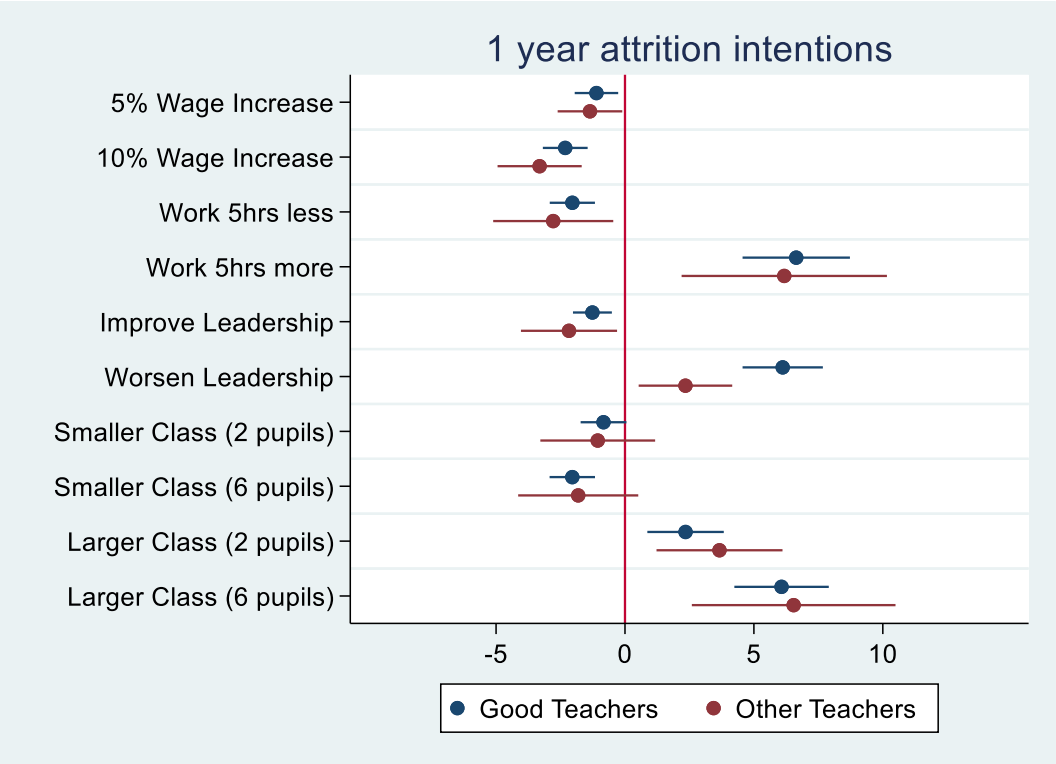


Figure 3 shows the coefficients for out factor fixed effects on teachers 2-year attrition intentions by good teacher (blue) and other teachers (red).

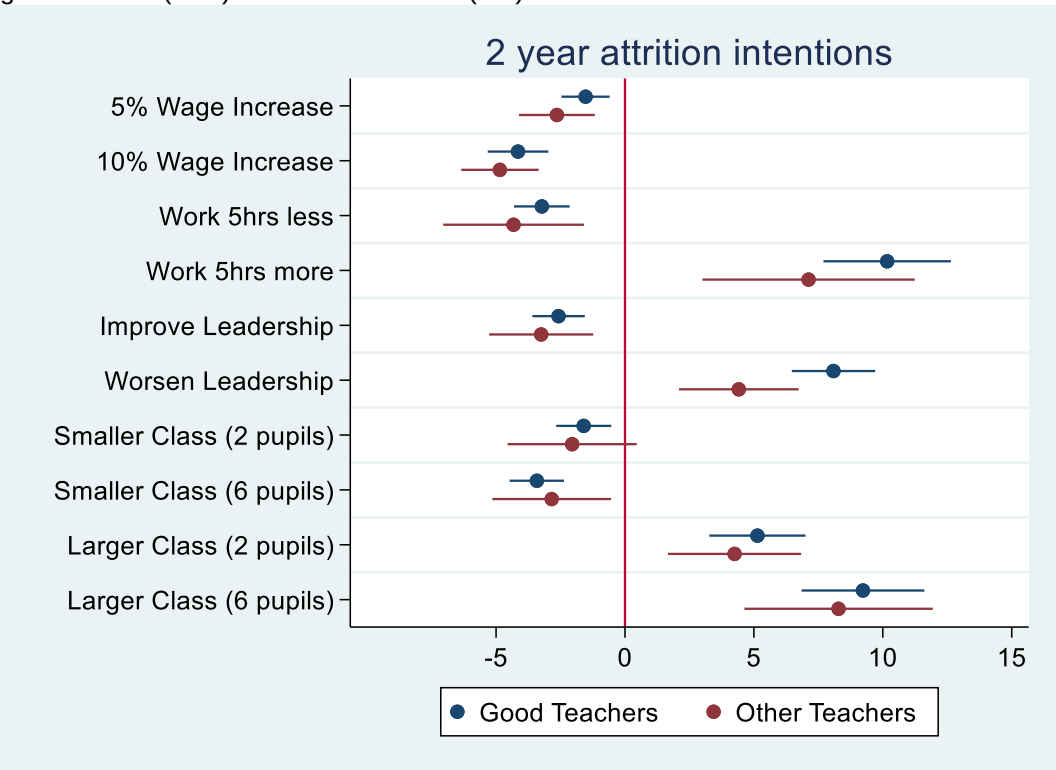


Figure 4 shows the coefficients for out factor fixed effects on teachers 5-year attrition intentions by good teacher (blue) and other teachers (red).

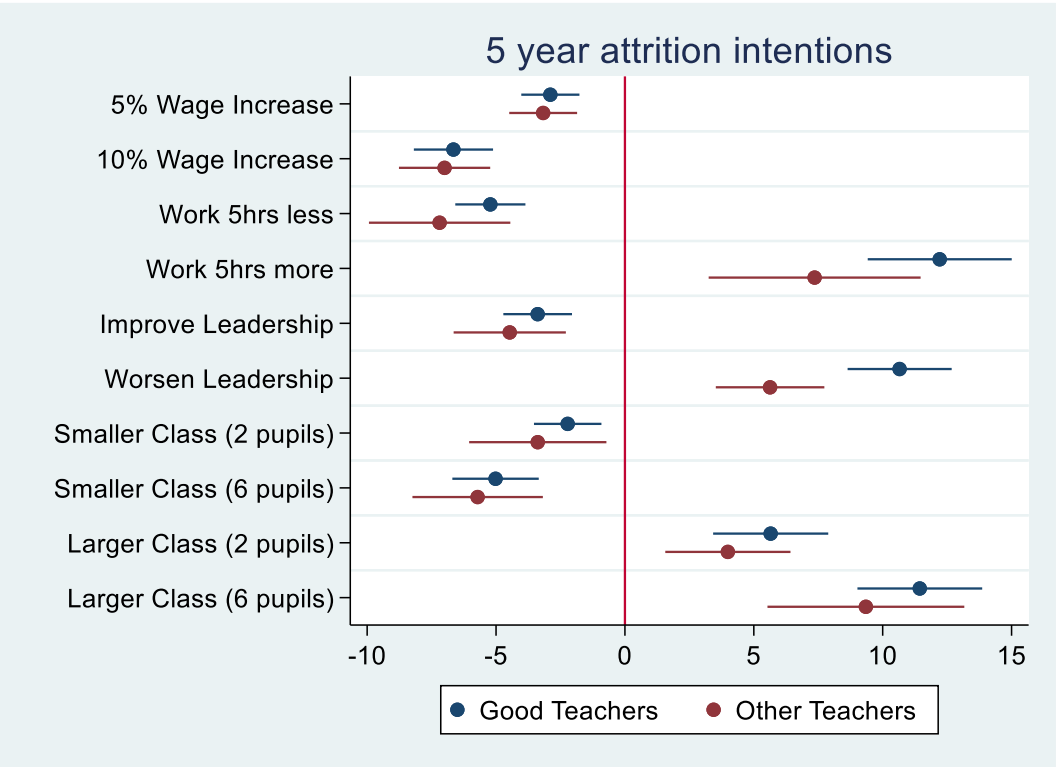


Figure 5 shows the coefficients for out factor fixed effects on teachers 1-year attrition intentions by male (blue) and female (red) teachers.

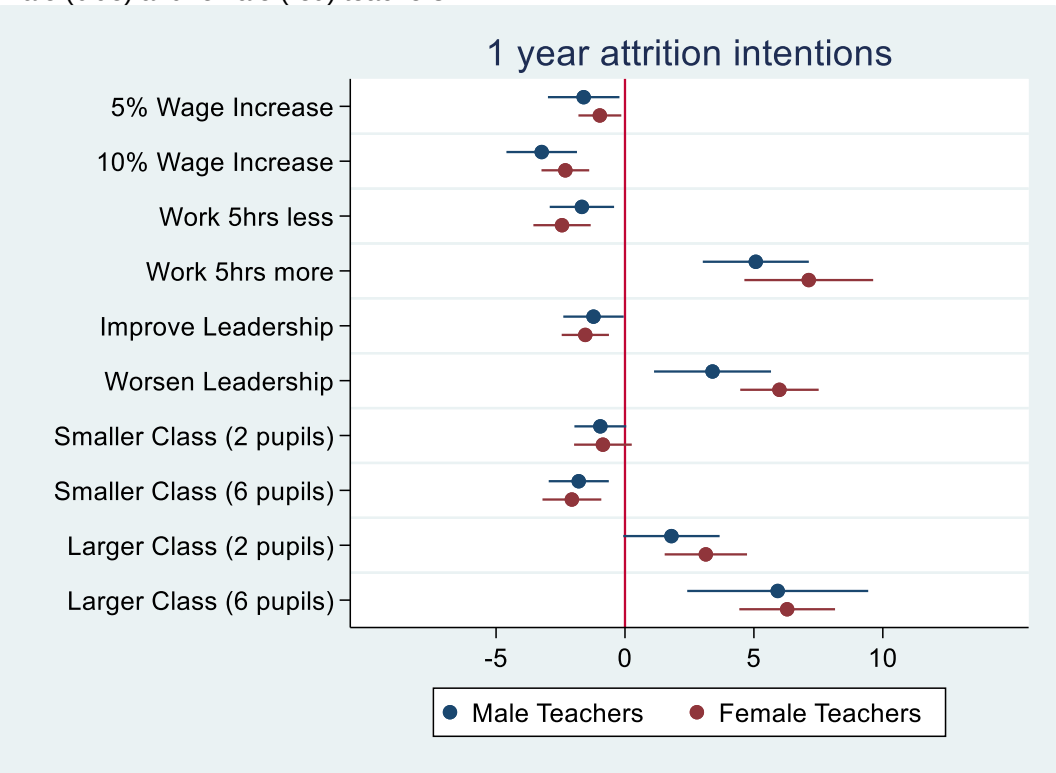


Figure 6 shows the coefficients for out factor fixed effects on teachers 2-year attrition intentions by male (blue) and female (red) teachers.

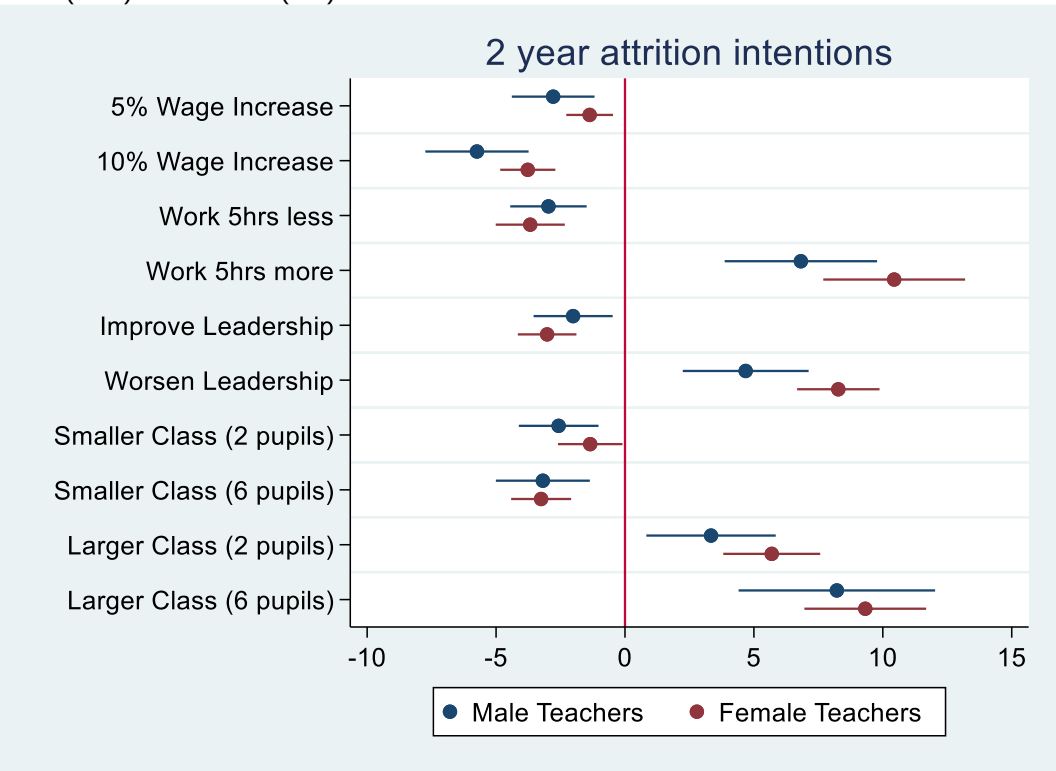


Figure 7 shows the coefficients for out factor fixed effects on teachers 5-year attrition intentions by male (blue) and female (red) teachers.

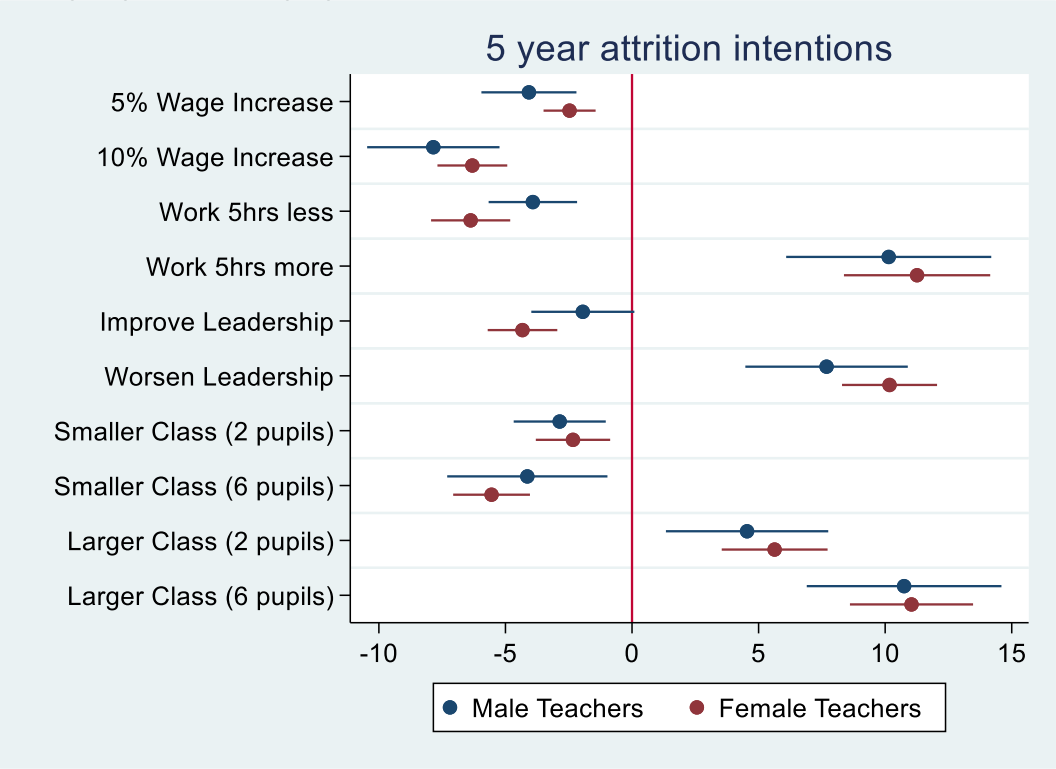


Figure 8 shows the coefficients for out factor fixed effects on teachers 1-year attrition intentions controlling for teachers baseline expectations (blue) or not (red).

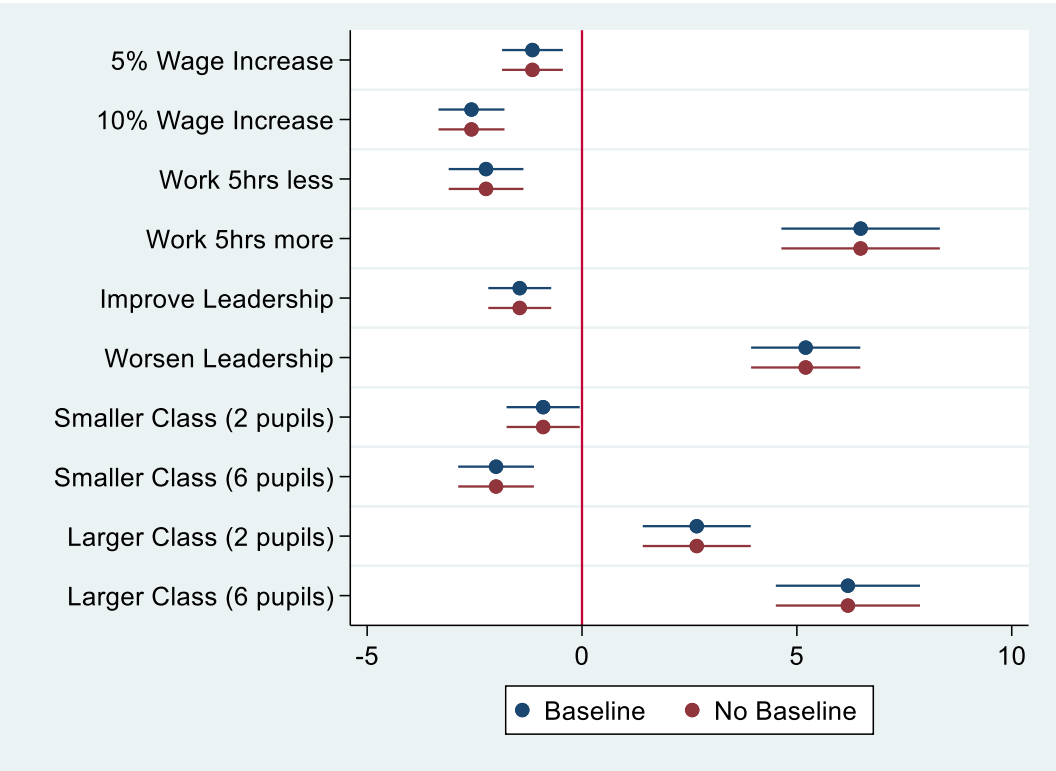
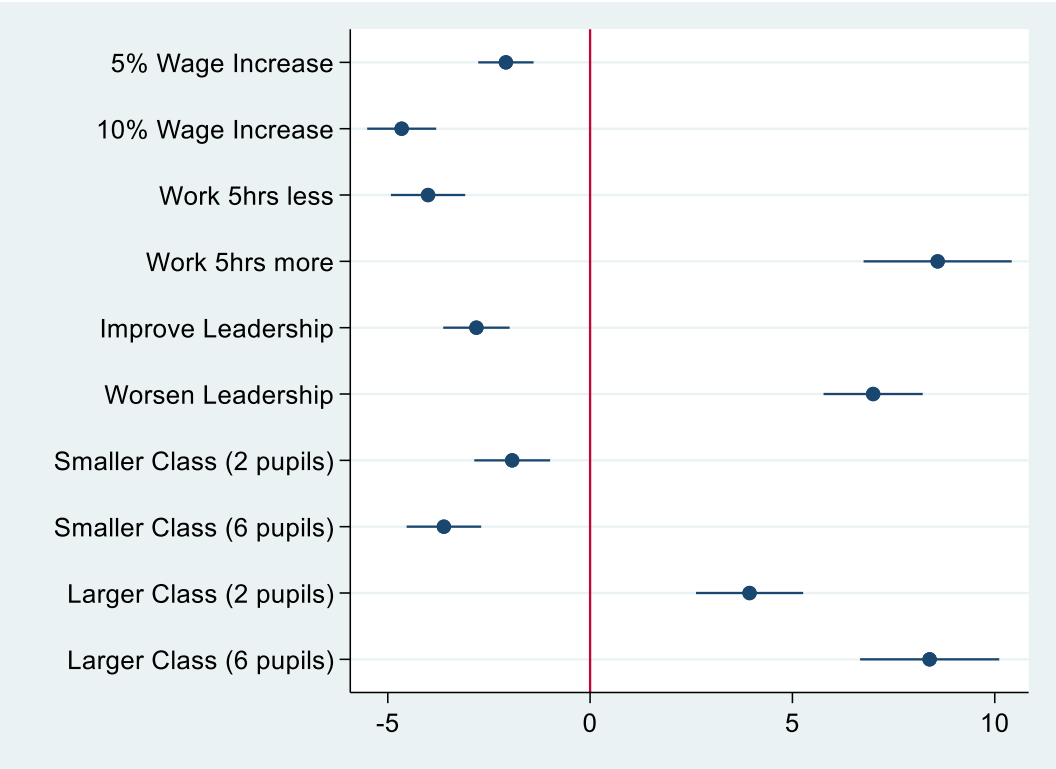


Figure 9 shows the coefficients for out factor fixed effects on teachers' attrition intentions if we pool all our attrition intentions together including time specific fixed effects



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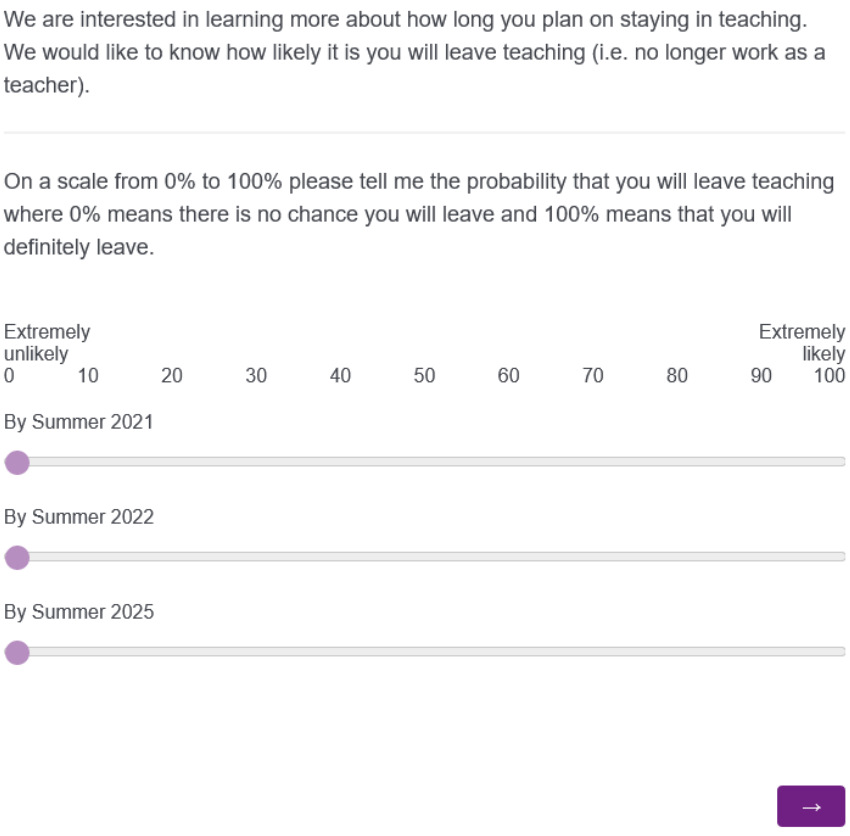
Appendix

Table A1. The pairwise correlation between teachers' current earnings (teachers' pay) and working hours (teachers Hrs) and their labour market beliefs (population earnings) and expectations (non-teachers' pay and non-teachers' hrs).

	Teachers Pay	Non-teachers' Pay	Population Earnings	Teachers Hrs	Non-teachers Hrs
Teachers Pay	1.000				
Non-teachers' Pay	0.436	1.000			
Population Earnings	0.355	0.867	1.000		
Teachers Hrs	0.464	0.352	0.227	1.000	
Non-teachers Hrs	0.354	0.423	0.323	0.611	1.000

Non-teachers' pay is how much teachers expect to earn outside of teaching. Population earnings is how much teachers expect the average person their age and sex earn. Non-teachers Hrs is how many hours teachers expect to work each week outside of teaching.

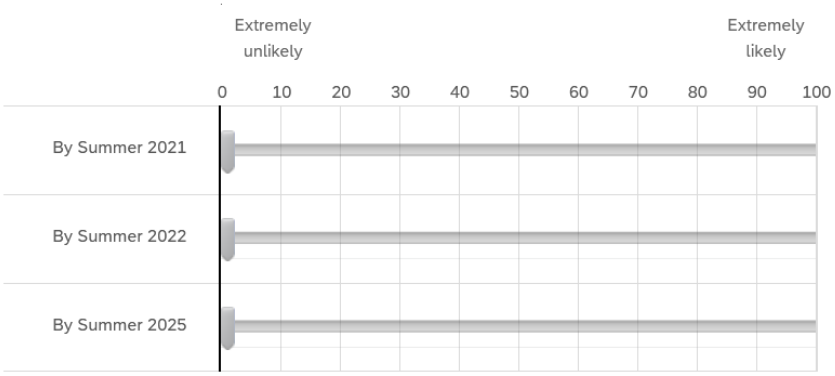
A1. Shows how we elicit teachers' attrition intentions.



A2. Two example scenarios that we use for our experiment discussed in section 5.

Please consider a scenario where your **wages increase by 5%, actual weekly working hours fall by 5 and senior leadership quality improves**. Assuming that one pound today is worth the same as one pound in the future. On a scale from 0% to 100% where 0% means 'No chance of leaving' and 100% means 'would definitely leave', please tell me how likely it is that you would leave teaching in this scenario.

For reference in the original question you reported that this is a ${q://QID1/ChoiceNumericEntryValue/1}% chance that you will leave teaching by the Summer 2021 ${q://QID1/ChoiceNumericEntryValue/2}% by summer 2022 and ${q://QID1/ChoiceNumericEntryValue/3}% by summer 2025.



Please consider a scenario where your **wages increase by 10%, class sizes fall by 6 and senior leadership quality improves**. Assuming that one pound today is worth the same as one pound in the future. On a scale from 0% to 100% where 0% means 'No chance of leaving' and 100% means 'would definitely leave', please tell me how likely it is that you would leave teaching in this scenario.

For reference in the original question you reported that this is a ${q://QID1/ChoiceNumericEntryValue/1}% chance that you will leave teaching by the Summer 2021 ${q://QID1/ChoiceNumericEntryValue/2}% by summer 2022 and ${q://QID1/ChoiceNumericEntryValue/3}% by summer 2025.