Teacher workforce planning 2020 Exercise – October 2019 Statistical Model

The teacher workforce planning model estimates future student intake numbers by rolling forward recent patterns in the school pupil and staff censuses and other data including national population projections. The most recent data used in this model are the 2018 school pupil and staff censuses and the 2018 based national population projections. It is based on a set of assumptions - other assumptions would result in different estimates.

1. Model Results – Student Intake Projections

Due to the projected primary school pupil roll continuing to fall – the model projects a substantially lower requirement for new student teachers. Even accounting for the pre-school and primary vacancies, the model projects that the 2020 intake target should be cut.

Looking further - the primary student roll is projected to continue to fall over the next 10 years. Due to this, the model projects that if the undergraduate target of 780 is maintained then then there will be basically no requirement for PGDE primary students from 2021 to 2027.

At secondary, pupil rolls are projected to continue to increase until 2023. This is countered by a number of factors including a decrease in the number of secondary vacancies. Hence the model suggests the intake target should remain at a similar level in 2020, with substantial reductions in PGDE targets from 2023 onwards.

Primary and Secondary Student Intake Projections, 2020-2032
Primary vacancies accounted for in 2020 intake only
Secondary vacancies accounted for across 2020-2022 intake.
The model outputs for the PGDE courses have been rounded to the nearest fifty. Targets for undergraduate courses have been fixed at 2019 target levels.

Entry Year	Primary U/G (including combined)	Primary PGDE	Secondary BEd	Secondary PGDE	Secondary Combined
2019 Target Intake	779	1230	165	1800	146
2019 actual Intake (provisional)	807	1326	148	1444	146
2020	780	350	165	1750	170
2021	780	0	165	1600	170
2022	780	0	165	1500	170
2023	780	0	165	1150	170
2024	780	0	165	950	170
2025	780	50	165	800	170
2026	780	0	165	800	170
2027	780	50	165	450	170
2028	780	150	165	650	170
2029	780	250	165	400	170
2030	780	250	165	450	170

2. Model Inputs

2.1. Pupil projections

Pupil Projections, 2018-2030
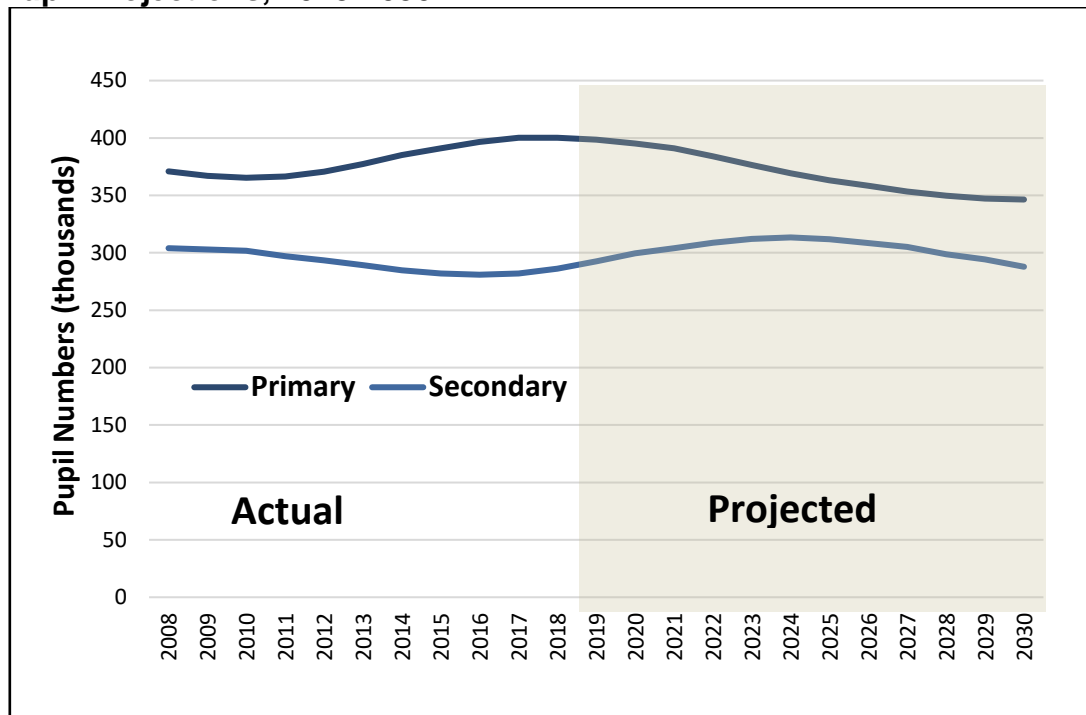
The primary school roll has been rising in recent years but the 2018 based projections show the number of primary pupils has peaked and are projected to drop to the end of the projection period.

At secondary, however, the pupil roll increased in 2017 for the first time in 14 years and is projected to continue increasing until 2023. This is due to an increase in the secondary school age population. Staying on rates into S5 and S6 have been stable for the last 5 years.

The projections are based on the recently published 2018 population projections which, following a fall in recent births, are assuming a lower birth rate than previous projections. Pupil projections based on cohorts which had not been born in 2018 (from 2023 for Primary and 2029 for Secondary) are less reliable than projections for earlier years.

**Staying-on rates of secondary pupils, 2014– 2018**

|	All pupils	
	S3-S5	S3-S6
2014	87.2	61.7
2015	87.7	62.7
2016	87.3	62.6
2017	87.4	62.0
2018	87.7	62.1

2.2.   Age profiles of teachers

The 2018 Teacher Census data shows that the age profile of teachers has changed much over the past 15 years. The prominent peak of teachers in their fifties, as seen in 2008, no longer exists. The largest group of teachers are now in the 25 to 35 age range.

Due to the reduced projected primary ITE student intakes, the model projects a significant drop in younger primary teachers by 2030.

Age profile of school based teachers
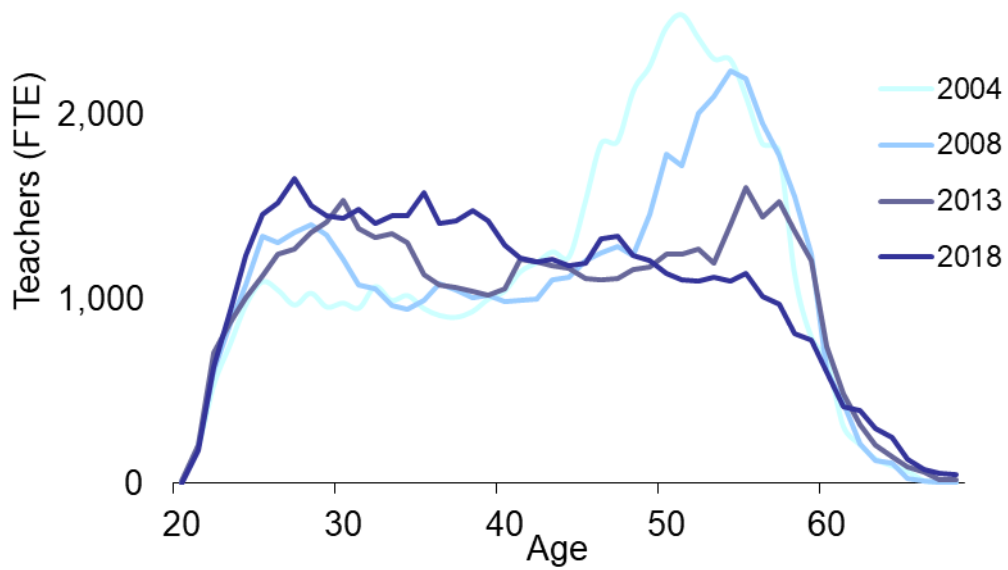
Projected age profile of primary school teachers
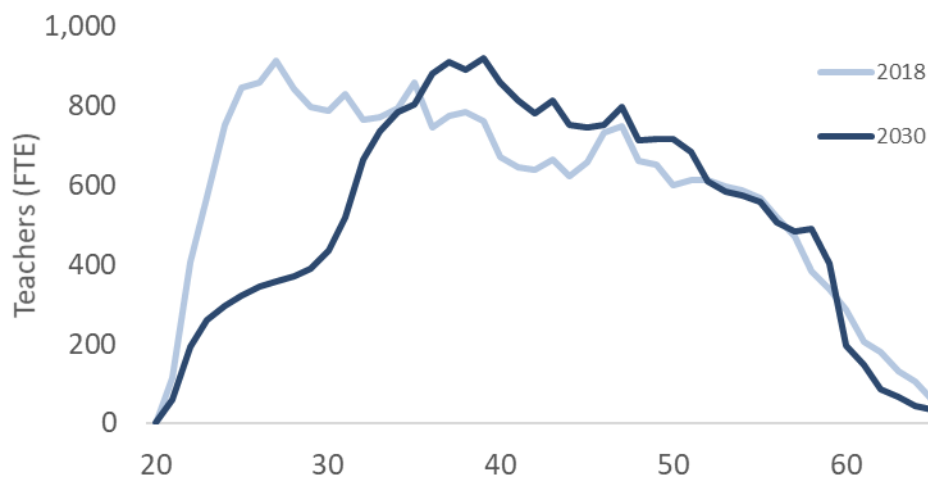
2.3. Leaver rates

Leaver rates are based on teachers in permanent employment only, as these are more stable and a more reliable measure of churn. Leavers include career breaks, retirements, teachers on maternity leave and any other long term or permanent move away from teaching. The percentage of permanent teachers "leaving" decreased from 5.5% in 2017 to 5.2% in 2018. Leaver rates for female teachers between the ages of 30-40 are broadly similar to previous years.

Permanent Leaver rates By Age, Sex and Sector

Age	Primary Route		Secondary Route	
	Female	Male	Female	Male
20-29	4%	5%	4%	3%
30-39	3%	3%	3%	2%
40-49	2%	4%	2%	3%
50-59	9%	7%	9%	9%
60+	31%	19%	22%	23%

2.4. Returners

Returners are also based on teachers in permanent employment. The average of the last three years' figures have been used for Primary (461) and secondary (352).

2.5. Pupil Census

The 2018 Pupil Census showed an decrease of 36 primary pupils and an increase of around 4,150 secondary pupils, compared to 2017.

2.6. Teacher Census

The 2018 Teacher Census reported an increase in primary teachers of 422 FTE and an increase in secondary teachers of 167 FTE. There was also a small increase in the number of special school teachers (47) and a decrease in centrally employed (-90). There was also a decrease in early learning and childcare teachers (-99).

The teacher FTE count includes teachers currently funded through the Attainment Scotland Fund (ASF) and therefore they are accounted for in this year's teacher workforce planning model.

2.7. PTRs

The model is based on the assumption of maintaining pupil teacher ratios (PTRs), therefore it projects future teacher requirements in line with pupil projections on the basis of current PTRs.

The 2018 pupil and teacher census results show that the primary sector PTR has improved from 16.4 in 2017 to 16.1 in 2018, and the secondary PTR increased from 12.2 to 12.3.

2.8.   Supply pool

Supply pool teachers are not accounted for in the staff census which counts either the normal complement member of staff or their replacement. The model accounts for the need of a pool of supply teachers and increases the student intake figure by 12% for this purpose. This is in line with the figure used last year.

2.9.   Retention rates

Retention rates (ITE students who go on to the Teacher Induction Scheme) vary between routes. Retention rates for Primary undergraduate and PGDE courses are around 75% and 90% respectively. Rates for Secondary courses are around 60% (Undergraduate including combined degrees) and 80% (PGDE).

2.10. Vacancy data

The local authority vacancy collection in September showed that there were 88 pre-school/primary and 294 secondary full-time and part-time permanent vacancies as at September 2019 (excluding head teachers and deputy head teachers).

The target student intake figures have been increased in line with these figures (accounting for drop out etc) on a one year basis for primary and a phased, more manageable, three year basis for secondary.

Increasing target student intakes is not a guarantee that vacancies will be filled.

3. Further Results of Teacher Census – not currently used in model

3.1. Working patterns

The percentage of teachers working part-time has been fluctuating slightly over the last nine years and increased by 0.6 percentage points from 23.4% in 2017 to 24.0% in 2018, the highest rate over this period.

Number of teachers (headcount) by mode of working, all sectors, 2008 - 2018

	Full-time	Part-time	Total headcount[1]	Percentage part-time
2008	46,202	9,716	55,918	17.4
2009	44,757	10,361	55,118	18.8
2010	43,660	10,767	54,427	19.8
2011	42,572	10,701	53,273	20.1
2012	42,497	10,568	53,065	19.9
2013	42,472	10,427	52,899	19.7
2014	41,934	10,866	52,800	20.6
2015	41,884	11,256	53,140	21.2
2016	41,701	12,003	53,704	22.4
2017	41,952	12,782	54,734	23.4
2018				
Primary	20,233	8,102	28,335	28.6
Secondary	20,472	4,679	25,151	18.6
Special	1,535	598	2,133	28.0
Total	42,253	13,330	55,583	24.0

(1) Teachers are counted as full-time if their total FTE across all schools where they teach is equal to one.

3.2. Post-probationer employment rates

The 2018 Teacher Census indicates that there has been an increase in the proportion of post-probationers in employment (permanent or temporary, full time or part-time). The figure has risen from 66% in 2011 to 87% in 2018, with the largest increase in the proportion of post-probationers with full-time permanent contracts (up from 13% in 2010 to 55% in 2018).

4. Detailed Model results – Teacher Projections

4.1 Teacher projections by Sector

		Pre School	Primary	Secondary	Special	Centrally Employed	Primary Sector =Pre-school +Primary +41% special +53% centrally employed	Secondary Sector =Secondary +59% special + 47% centrally employed
Actual	2008	1,638	23,621	26,067	2,083	933	26,599	27,743
	2009	1,636	23,243	25,371	1,985	745	26,080	26,899
	2010	1,504	23,095	24,776	1,913	722	25,759	26,251
	2011	1,425	22,813	24,241	1,973	906	25,519	25,838
	2012	1,347	22,685	23,980	2,026	1,176	25,477	25,737
	2013	1,256	22,905	23,695	2,020	1,202	25,618	25,461
	2014	1,178	22,960	23,401	1,974	1,182	25,565	25,130
	2015	1,032	23,425	23,059	1,911	1,275	25,908	24,795
	2016	975	23,920	22,957	1,869	1,245	26,312	24,653
	2017	915	24,477	23,150	1,836	1,129	26,734	24,772
	2018	814	24,899	23,317	1,883	1,039	27,028	24,924
Projected	2019	767	24,825	23,739	1,884	1,046	26,911	25,351
	2020	747	24,658	24,197	1,896	1,052	26,732	25,819
	2021	726	24,456	24,500	1,905	1,052	26,513	26,126
	2022	711	24,114	24,807	1,910	1,049	26,156	26,435
	2023	709	23,739	25,027	1,910	1,043	25,776	26,652
	2024	709	23,372	25,119	1,906	1,034	25,402	26,738
	2025	707	23,067	25,010	1,898	1,022	25,086	26,618
	2026	705	22,823	24,787	1,887	1,010	24,829	26,382
	2027	705	22,573	24,571	1,873	997	24,566	26,153
	2028	704	22,385	24,151	1,858	982	24,364	25,716
	2029	702	22,270	23,856	1,841	972	24,234	25,406
	2030	700	22,223	23,427	1,825	960	24,173	24,963

4.2 Teacher projection calculations

Primary Teacher Projections, 2018-2030

Primary	Projected pupils (pre-school, primary and half of special)	Demand for teachers at start of academic year	Change in demand from previous year	Leavers during previous year	Vacancies arising during previous year	Teachers returning to profession in previous year	Projected Deficit at start of year
2018	493,996	27,028					
2019	486,965	26,911	-117	1,459	1,342	461	881
2020	481,391	26,732	-179	2,363**	1,284	461	823
2021	475,013	26,513	-219	2,342**	1,199	461	826*
2022	466,503	26,156	-357	1,437	992	461	531
2023	458,716	25,776	-380	1,318	938	461	477
2024	451,471	25,402	-373	1,294	921	461	460
2025	445,231	25,086	-317	1,279	962	461	501
2026	440,313	24,829	-256	1,263	1,007	461	546
2027	435,404	24,566	-263	1,252	989	461	528
2028	431,797	24,364	-203	1,243	1,040	461	579
2029	429,532	24,234	-129	1,244	1,115	461	654
2030	428,574	24,173	-61	1,244	1,183	461	722

*Includes 88 vacancies
**Increased to account for projected surplus of teachers

Secondary Teacher Projections, 2018-2030

Secondary	Projected pupils (secondary and half of special)	Demand for teachers at start of academic year	Change in demand from previous year	Leavers during previous year	Vacancies arising during previous year	Teachers returning to profession in previous year	Projected Deficit at start of year
2018	289,563	24,924					
2019	295,920	25,351	426	1,338	1,764	352	1,412
2020	302,884	25,819	468	1,254**	1,781	352	1,429
2021	307,508	26,126	308	1,247**	1,623	352	1,369*
2022	312,200	26,435	308	1,315	1,525	352	1,271*
2023	315,569	26,652	217	1,320	1,439	352	1,185*
2024	317,021	26,738	86	1,297	1,284	352	932
2025	315,437	26,618	-119	1,290	1,170	352	818
2026	312,112	26,382	-236	1,266	1,030	352	678
2027	308,928	26,153	-229	1,259	1,030	352	678
2028	302,680	25,716	-437	1,248	811	352	459
2029	298,321	25,406	-310	1,232	922	352	570
2030	291,944	24,963	-443	1,219	776	352	424

*Includes 98 vacancies
**Decreased to account for projected shortage of teachers

Teacher workforce planning timeline

Year 1				Year 2												Year 3												Year 4							
S	O	N	D	J	F	M	A	M	J	J	A	S	O		N	D	J		F	M	A	M	J	J	A	S		O	N	D	J	F	M	A	M	J	J		A

| Census Day | | Census publication. | | | | | | | | | | | TWPAG | | | | PGDE apps | | | | | | | | PGDE intake | | | | | | | | | | Graduate | | Start teaching |

Teacher workforce planning model