Teacher Workforce Statistics in Northern Ireland

Information and procedures document

Teacher numbers and Pupil: Teacher Ratios

Each year since 1992/1993, the Department of Education (DE) Analytical Services Unit has carried out a statistical survey – the Pupil: Teacher Ratio data collection exercise – of the teachers working in all grant-aided schools in Northern Ireland. At present, this amounts to some 1,200 schools.

The method and coverage of data collection has changed several times since 1992/1993, the most recent significant change being in 2007/2008. Annex A sets out the changes to the data collection over time.

The data collected is an individual (teacher) level. Annex B sets out the data items currently collected for each teacher.

The finalised dataset contains one record per teacher, per school. Full-time equivalent (FTE) teacher numbers are derived from this dataset. The Pupil: Teacher Ratios (PTRs) are derived by dividing the FTE teacher numbers by the numbers of full-time equivalent pupils.

The numbers of full-time equivalent pupils are derived from the annual schools' Census data collection.

FTE teacher numbers and PTRs are calculated for a single reference week in the school year. This is usually the last full school week in November.

Pupil: Teacher Ratios, FTE teacher numbers and teacher headcount are currently designated as National Statistics. This means that they are produced to high professional standards set out in the Code of Practice for Official Statistics. They undergo regular assurance reviews to ensure that they meet customer needs, and are produced free from any political interference.

Teacher vacancies

Each year since 2006/07, the Department of Education (DE) Analytical Services Unit has carried out a statistical survey – the Teacher Vacancies Survey – of the existing and filled teacher vacancies in all grant-aided schools in Northern Ireland. At present this amounts to some 1,200 schools.

The data collected is at aggregate school level.

The reference date for the data collection is the first Monday in November.

Figures derived from the Teacher Vacancies Survey were published as Official Statistics for the first time in 2010.

Teacher Sickness Absence and Teacher Substitution Data

The teacher sickness absence data is collated for each financial year and was published as Official Statistics in the Teacher Workforce press release in 2012.

The data collected is an individual (teacher) level. Annex B sets out the data items currently collected for each teacher

The number of all permanent teachers used is an average number of teachers who have worked in schools from 1 April to 31 March.

Teacher substitution costs are calculated on the teachers' payroll system from service processed through the Northern Ireland Substitute Teachers' Register (NISTR)

Users and uses of the Teacher Workforce Statistics Release and underpinning data

Data on FTE teacher numbers are collected to enable the Department of Education (DE) and Education Authority (EA) to fulfil their statutory duties, including meeting their requirements specified in Section 75 of the Northern Ireland Act (1998).

Data on teacher numbers and teacher vacancies are used to inform DE policy and procedures, such as teacher education, school funding, and the planning of teacher demand.

The Pupil: Teacher Ratio, as published, is a key descriptive statistic in the accountability and auditing processes between schools and EA.

Administrative sources of data

Currently (2016-2017), the primary source of data for the Pupil: Teacher Ratio data, Teacher Sickness Absence Data and Teacher Substitution Data collection exercise is the computerised teachers' payroll system.

This data is provided to DE Analytical Services Unit by DE Teachers' Pay and Pensions Team on the last week of November for the Pupil: Teacher Ratio data and for the financial year 1 March to 31 April for the Teacher Sickness Absence and Teacher Substitution Data.

Data for voluntary grammar schools is derived from the previous year's PTR data collection exercise, as these schools are not required to use the computerised teachers' payroll system. All data on Teacher Sickness Absences and Teacher Substitution Data exclude voluntary grammar schools.

Data collection

Administrative data for the Pupil: Teacher Ratio exercise is processed by DE Analytical Services Unit, and sent to schools for verification in the January following the reference week.

The data must be verified by the school principal or head teacher.

The deadline for receipt of verified data is the end of February, but it has been necessary to extend this informally to as late as April while clerical staff contact schools who have not responded.

Data is keyed in only if it has been verified by the school by signed paper return, or by email from a recognised address. Data is keyed in by clerical staff. Each return is checked against the database by an Assistant Statistician.

The Teacher Vacancies Survey data collection is carried out on behalf of DE Analytical Services Unit by the Northern Ireland Statistics and Research Agency's Central Survey Unit.

Data validation and quality assurance

Upon receipt of administrative data, DE Analytical Services Unit applies a set of validation and data cleaning procedures before mailing the information to schools (Annex C).

Upon receipt of checked data from schools, DE Analytical Services Unit applies a further set of validation procedures (Annex D). No changes are made to the dataset as a result of this second validation exercise without consultation with the school(s) in question.

Checking, validation and quality assurance are resource-intensive processes, but they are essential to providing reliable statistics. Annex E sets out an example of how these processes contribute to the production of final statistics.

Legislation

Legislation is in place which requires schools to provide information relating to teacher numbers.

The Department is registered with the Information Commissioner as a data controller under the requirements of the Data Protection Act (1998).

Resources

The Pupil: Teacher Ratio data collection is managed by one Deputy Principal Statistician, along with one Assistant Statistician. Administrative support is provided by two clerical staff, who assist in the mail-out process and in the electronic capture of the data.

These are the minimum resources required to produce the dataset to its current standard and in its current timeframe.

The Teacher Vacancies Survey data collection is specified and managed by one Assistant Statistician (in Analytical Services Unit) and one Executive Officer (in Teacher Education Team), and carried out externally by a team within Northern Ireland Statistics and Research Agency's Central Survey Unit

Confidentiality

The Pupil: Teacher Ratio and Teacher Vacancies Survey data collection exercises adhere to the Confidentiality principle set out in the Code of Practice for Official Statistics.

No information on private individuals or organisations is released to the public.

Sensitive data items, such as bank details, religion and ethnicity, are not collected from the administrative source and are therefore not held by DE Analytical Services Unit.

Individual-level data from the PTR exercise is held solely by DE Analytical Services Unit. It is stored in folders which are inaccessible to third parties.

Publication

The Statistical Bulletin on Teacher Workforce Statistics is usually published in the June following the reference week of the data collection.

The Statistical Bulletin is pre-announced on the DE website in accordance with Protocol 2 of the Code of Practice for Official Statistics.

In 2016/2017, pre-release access was granted to the following individuals for operational purposes:
- Permanent Secretary, Department of Education
- Deputy Secretaries, Department of Education
- Chief Inspector, Education and Training Inspectorate
- Head of Analytical Services Unit, Department of Education
- Head of Education Workforce Development Directorate, Department of Education
- Head of Teacher Education Team, Department of Education
- Head of Teacher Negotiating & Pensions Policy Team, Department of Education
- Principal Information Officer, Department of Education

All correspondence to those in the pre-release access list regarding restricted statistics was prefaced with the following text:

> *Recipients are reminded that these are Official Statistics to which you have received pre-release access under the Pre-Release Access to Official Statistics (NI) Order 2009. Recipients of pre-release statistics are cautioned:*
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> *•to ensure that the statistics, or any information based on them, or any indication of the content is not made available to anyone who has not been granted privileged access in advance of release;*
> *•not to seek changes to release dates; and*
> *•to make the statistician responsible for the statistics aware of any accidental release of the information to others immediately.*
>
> *Wrongful release includes indications of the content, including descriptions such as "favourable" or "unfavourable". Recipients should note that a list of those who receive privileged early access is publicly available on the Departmental website.*

The pre-release access list is published on the DE Statistics & Research website at the same time as the Press Release.

Concurrent with the Statistical Press Release, data on Pupil: Teacher Ratios and teacher numbers are made available online in Microsoft Excel format.

Annex A
Changes to the PTR data collection since first publication

1992/1993 – First aggregation and publication of Pupil: Teacher Ratio statistics, using survey data (for grammar schools) and raw administrative (payroll) data (for all other schools). Statistics were reported at Education and Library Board (ELB) level, but not at school level.

1999/2000 – First reporting of Pupil: Teacher Ratio statistics at school level.

2002/2003 – First capture of individual (teacher-level) data from the administrative source, for nursery, primary, secondary and special schools.

2003/2004 – First checking exercise carried out. Data for nursery, primary, secondary and special schools were checked with schools prior to publication.

2005/2006 – First capture and checking of individual (teacher-level) data for controlled grammar schools.

2007/2008 – First capture and checking of individual (teacher-level) data for voluntary grammar schools.

2009/2010 – First verification of data on teacher gender and age.

2011/2012 – For the first time schools were asked to verify who is the principal/acting principal and vice principal/acting vice principals in their school.

Annex B
Data items currently collected for the PTR publication

Variable name	Variable label	Variable type	Level	Source	Validated by DE	Checked with schools	Publ- ished
schref	School reference number	Cat. numeric 0000000	Teacher	Payroll[1]	No	Yes	Yes
trno	Teacher number	Cat. numeric 000000	Teacher	Payroll[1]	Yes	Yes	No
name	Name	String	Teacher	Payroll[1]	Yes	Yes	No
dob	Date of birth	Date	Teacher	Payroll[1]	Yes	Yes[2]	Yes[3]
jobtitle	Job title	String	Teacher	Payroll	No	No	No
gender	Gender	Cat. string	Teacher	Payroll[1]	Yes	Yes[2]	Yes[3]
hrsperwk	Hours worked per week	Numeric 00.0	Teacher	Payroll[1]	Yes	Yes	Yes[4]
ftpt	Full-time or part-time	Cat. string	Teacher	Payroll[1]	Yes	Yes	Yes
permtemp	Permanent or temporary	Cat. string	Teacher	Payroll[1]	Yes	Yes	No
grade	Grade	Cat. string	Teacher	Payroll	No	No	No
board	Education and Library Board	Cat. string	School	DE Schools+ database	No	No	Yes
schtype	School type (phase of education)	Cat. string	School	DE Schools+ database	No	No	Yes
mgttype	School manage- ment type	Cat. string	School	DE Schools+ database	No	No	Yes
dept	Department (prep or secondary)	Cat. string	Teacher	Schools with prep depts	Yes	Yes	Yes
prephrs	Hours worked in prep dept	Numeric 00.0	Teacher	Schools with prep depts	Yes	Yes	Yes
sechrs	Hours worked in secondary dept	Numeric 00.0	Teacher	Schools with prep depts	Yes	Yes	Yes
P_VP_AP_ AVP	Principal / Vice Principal	Numeric 00.0	Teacher	Payroll[1]	Yes	Yes[5]	Yes[6]

[1] The source is the Teachers' Payroll system, but for voluntary grammar schools, the data is replaced by information provided by the school itself the previous year (which originally had been sourced from Payroll). This is because voluntary grammar schools are not required to use the Payroll system (although many do).
[2] This information has been verified by schools for the first time in 2009/2010.
[3] This information is published for the first time in 2009/2010.
[4] Teacher hours are not currently published statistics, but they are used to derive the full-time equivalent (FTE) teacher figures for the PTR.
[5] This information has been verified by schools for the first time in 2011/2012.
[6] This information is published for the first time in 2011/2012.

Annex C
DE validation/data cleaning procedures to PTR data prior to mailout

Item(s) checked	Check	Action
-	For teachers in voluntary grammar schools	Remove cases and replace them with data derived from previous year's exercise. (These schools are not required to use the Payroll system.)
schref, trno	For duplicate teachers within a school	Keep records where *hrsperwk* is maximum; delete others; for info to Payroll branch.
trno	For out-of-range numbers	For info to Payroll branch.
name	For incorrect formats	Change to correct format.
dob	For out-of-range dates	For info to Payroll branch.
name, gender	Identify cases where *name* and *gender* are inconsistent	Change where appropriate.
dob, gender	Identify cases where either item is missing	For info to Payroll branch; populate with previous year's figure where available.
hrsperwk, ftpt	Identify cases where *ftpt* is PT and *hrsperwk* is missing	For info to Payroll branch.
hrsperwk, ftpt	Identify cases where *ftpt* is PT and *hrsperwk*<2	For info to Payroll branch.
hrsperwk, ftpt	Identify cases where *ftpt* is PT and *hrsperwk*>32.4	Set *hrsperwk*=32.4; for info to Payroll branch.

Annex D
DE validation procedures to PTR data received from schools

Check	Action
For missing *dob* and *gender*	Phone school.
For duplicate *trno* within schools	Check hard copy; phone school.
For duplicate *trno* in dataset	Aggregate to *trno*; if sum(*hrsperwk*)>32.4, check hard copy; phone school(s).
For duplicate *trno* in dataset	Aggregate to *trno*; check that teacher details are the same for all unique *trno.*
For *ftpt*=FT and *hrsperwk*<32.4	Check hard copy; phone school.
For *ftpt*=PT and *hrsperwk*>=32.4	Check hard copy; phone school.
For consistency between *hrsperwk*, *prephrs* and *sechrs*	If *hrsperwk = prephrs + sechrs*, OK; otherwise check hard copy; phone school.
Crosstabulation of *hrsperwk* and *ftpt*	To check for any obvious inconsistencies. May require some recoding of *hrsperwk*.
For outlying age	Calculate age of each teacher, if outliers either end check hard copy; phone school.
For missing principal data	Compute table, if school missing a principal indicator check hard copy; phone school.
FTE time series plausibility check	Extract each case where the FTE difference from last year is significantly different from the average year-on-year change for this school.
PTR time series plausibility check	Extract each case where the PTR difference from last year is significantly different from the average year-on-year change for this school.
Soft validation	Eyeball examination of each school which fails FTE **or** PTR plausibility check. May require checking of enrolment figures. May also require phoning schools to check if temporary teachers have been correctly recorded, or if new teachers have been added, or if former teachers have been deleted.

Annex E
Example: effect of the checking and validation processes

Pupil: Teacher Ratios at different stages of the data collection exercise, 2008/09

Statistic	Using source data	Using cleaned data (prior to mailout)	Using checked data	Using checked and wholly validated data
PTR – Belfast ELB	15.28	15.42	15.81	15.83
PTR – Western ELB	15.81	16.10	16.67	16.72
PTR – North Eastern ELB	16.26	16.25	16.67	16.72
PTR – South Eastern ELB	16.36	16.39	16.94	16.93
PTR – Southern ELB	16.70	16.63	17.06	17.12
PTR – Northern Ireland	**16.11**	**16.18**	**16.65**	**16.68**