

The Royal Society Computing Project

KS5 NPD data on gender, pupil premium, BAME, EAL and course choices in computing

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1 Notes on methodology

The data analysed here is from the following sources:

- Student demographic information from the DfE National Pupil Database: all students that are linked to one or more results.
- Student results information from the DfE National Pupil Database: all results with a matching student record, exams taken in 2016.
- School characteristic information from Edubase.

Depending on the grouping variable used, tables may show different totals. This is because the grouping variable information is not complete for all students and schools, and where data is missing those students or schools have been excluded from the summaries. Tables showing % of students taking A-level and GCSE are showing the number of students taking A-level or GCSE Computing out of all students who take any A-level or GCSE. The health of the fields used in this report are as follows:

- Gender, 0.3% missing.
- Pupil premium, 10.4% missing.
- Ethnicity, 10.3% missing.
- EAL, 11.7% missing.

KS5 demographic data is very incomplete and where possible data has been brought across from matching KS4 student datasets for 2012-16. Whilst possible for student circumstances to change, namely gender and pupil premium, it is assumed that these descriptors will match their KS4 profile. ICT AS entry numbers differ from JCQ data, the JCQ methodology is unclear: they might combine multiple year's data to produce their tables, or combine multiple subjects into one category. Overall total trends match the JCQ. Computer science data is very close to JCQ numbers.

Several tables contain data that would allow for the recognition of 5 or fewer students. Following the DfE guidance on this, certain values have been anonymised and rounding has been applied throughout the report to prevent cross tabular student number calculations. All student level data has been rounded to the nearest 5, except in the case where the number would be rounded *down* to 5, in this case the number has been rounded to 6 to distinguish it from the *X* figure explained below:

- *X* denotes a value that means 5 or fewer students could be recognised for a school, local authority or Region. Or a percentage that represents 5 or fewer instances. In the case that several schools have been collected together, e.g. in the case of local authorities, *X* is given when the *number of students < number of schools + 5*; this anonymises all schools in that particular collection.
- *Y* denotes a value that is 5 or fewer smaller than the largest value possible, or a percentage that represents 5 or fewer instances. For example in the case that a school has 100 students and 97 of them are categorised as BAME, the BAME value would be replaced by *Y* to anonymise the 3 students who are White British.
- *NA* denotes a field that has no data stored against it for the school or collection. For example, an area with only one school offering computer science, where the school is an independent school. As independent schools don't return data on pupil premium, this area would be put down as *NA*.

The school tables below have been filtered so that only larger cohort sizes are shown and these numbers have been rounded to the nearest 5. This serves two purposes, firstly it avoids situations where the statistics of very small institutions, which are much more susceptible to the influence of small demographic changes, dominate the top of the tables. Secondly, combining anonymised school level data with anonymised local authority or regional data might allow for recognition of 5 or fewer students. As a result, beyond the provided tables, school level data has been redacted from this report and where shown, all numbers have been rounded as described above.

Where individual schools have been analysed, there are several schools that have no name or descriptive data stored about them in edubase. These schools can be identified by a URN of value 900000+ and do not appear on Edubase. Provision in these schools makes up less than 0.1% of all computing provision and they have been included in this report for completeness. We await the DfE's confirmation about their status.

2 KS2 results and computer science

Table 1: KS2 Maths profiles of 2016 A-Level subject cohorts. 45 largest subjects

Subject	Mean	SD
Maths (Further)	4.96	0.20
Physics	4.89	0.32
Maths	4.88	0.33
Chemistry	4.81	0.42
Computing	4.78	0.44
Economics	4.76	0.45
German	4.75	0.47
Biology	4.73	0.47
Accounting/Finance	4.73	0.46
French	4.72	0.50
General Studies	4.71	0.49
Music	4.68	0.51
Geology	4.66	0.51
Physical Ed	4.65	0.50
Spanish	4.65	0.54
Use of Maths	4.64	0.52
Geography	4.64	0.51
Logic/ Philosophy	4.58	0.56
Bus Studies	4.58	0.54
Music Technology	4.57	0.57
History	4.57	0.56
Classical Civilisation	4.56	0.57
Gov & Politics	4.55	0.57
Chinese	4.55	0.70
ALL	4.54	0.58
Psychology	4.53	0.56
D&T Prod Des	4.51	0.58
Law	4.50	0.56
English Lit	4.48	0.58
ICT	4.48	0.58
English Lang	4.41	0.59
Relig Studies	4.40	0.60
Dance	4.39	0.59
Drama	4.37	0.62
Graphics	4.37	0.63
Fine Art	4.36	0.64
English Lang Lit	4.36	0.60
Art & Design	4.36	0.65
Creative Writing	4.34	0.61
Sociology	4.33	0.60
Film Studies	4.29	0.63
Media/Film/Tv	4.27	0.62
Art & Design (Textiles)	4.27	0.65
Photography	4.20	0.64
Communication Studies	4.16	0.62

3 Gender

3.1 Schools

Table 2: 2016 A-Level computer science provision by school gender characteristic

Gender	Total Schools	Total Students	Subject Providers	Providers %	Subject Students	Students %	Average Cohort Size
Mixed	2462	226520	706	28.7	4591	2	6.5
Girls	301	23620	45	15.0	142	0.6	3.2
Boys	171	17529	84	49.1	612	3.5	7.3
Totals	2934	267669	835	28.5	5345	2	6.4

Table 3: 2016 A-Level computer science mixed gender provision

Gender	Type	Total Computing Providers	Female computing students	Male computing students	Providers with no females	Percentage of providers
Mixed	Independent	85	36	240	57	67.1
Mixed	State Non Selective	595	336	3790	396	66.6
Mixed	State Selective	26	20	169	15	57.7
	Totals	706	392	4199	468	66.3

Table 4: 2016 A-Level computer science all schools, top 30 providers
(subject cohort size ≥ 20)

URN	Name	Gender Characteristic	Total students	Total subject students	% of total students
139793	Tech City College	Mixed	75	20	26.7
139896	Sir Isaac Newton Sixth Form Free School	Mixed	95	20	21.1
136334	Beths Grammar School	Boys	235	40	17
136850	Poole Grammar School	Boys	145	20	13.8
136458	Altrincham Grammar School for Boys	Boys	195	20	10.3
136586	Langley Park School for Boys	Boys	295	30	10.2
102860	Trinity Catholic High School	Mixed	220	20	9.1
100861	Dulwich College	Mixed	230	20	8.7
130476	Halesowen College	Mixed	280	20	7.1
130817	City of Stoke-on-Trent Sixth Form College	Mixed	395	25	6.3
130691	Alton College	Mixed	500	30	6
130702	Havant College	Mixed	460	25	5.4
130812	Newcastle and Stafford Colleges Group	Mixed	375	20	5.3
130833	Strode's College	Mixed	385	20	5.2
130701	Barton Peveril Sixth Form College	Mixed	1180	60	5.1
130847	The College of Richard Collyer In Horsham	Mixed	690	35	5.1
130457	Leyton Sixth Form College	Mixed	395	20	5.1
130670	Bexhill College	Mixed	390	20	5.1
130718	Hereford Sixth Form College	Mixed	705	35	5
130700	Queen Mary's College	Mixed	595	30	5
130690	Brockenhurst College	Mixed	545	25	4.6
130745	Cardinal Newman College	Mixed	1100	50	4.5
130669	Brighton Hove and Sussex Sixth Form College	Mixed	1040	45	4.3
130662	Queen Elizabeth Sixth Form College	Mixed	805	35	4.3
130586	Franklin College	Mixed	470	20	4.3
130615	Hills Road Sixth Form College	Mixed	1065	45	4.2
142283	Suffolk One	Mixed	480	20	4.2
130695	The South Downs College	Mixed	490	20	4.1
130787	Bilborough College	Mixed	755	30	4
130626	Sir John Deane's College	Mixed	745	30	4
TOTAL			267775	5386	2

[1] “Of the 45 Girls’ only providers with female students, only 8 had six or more females. As a result we have redacted provider information from this report.”

3.2 Local Authority

Table 5: 2016 A-Level computer science local authority top female provision

Name	Total providers	Total Comp providers	Comp Sch with females	Total students	Female students	% of total students	Total subject students	Female subject students	% of subject students
Bournemouth	11	2	1	665	390	58.6	15	6	40
Bexley	12	4	3	1245	655	52.6	55	20	36.4
Slough	12	4	2	1020	565	55.4	35	10	28.6
Bromley	27	7	4	2360	1315	55.7	60	15	25
Bury	6	4	2	1395	785	56.3	45	10	22.2
Lincolnshire	48	13	5	3420	1875	54.8	70	15	21.4
Stoke-on-Trent	5	4	1	685	405	59.1	30	6	20
Reading	11	5	2	660	380	57.6	35	6	17.1
Brighton and Hove	12	6	4	2210	1250	56.6	65	10	15.4
Kent	111	26	10	7565	4165	55.1	165	25	15.2
Birmingham	70	17	8	4870	2865	58.8	105	15	14.3
Lancashire	44	15	8	4895	2670	54.5	150	15	10
Hampshire	32	17	10	8675	4830	55.7	325	30	9.2
Hertfordshire	104	44	9	8485	4550	53.6	195	15	7.7
Kirklees	11	3	0	2240	1300	58	45	0	0
North Yorkshire	38	9	0	3405	1890	55.5	45	0	0
Cheshire	19	8	0	1855	1050	56.6	40	0	0
East Derby	12	6	0	980	575	58.7	30	0	0
Wokingham	11	5	0	1025	515	50.2	30	0	0
Durham	21	2	0	1540	895	58.1	20	0	0
Central Bedfordshire	13	5	0	1110	625	56.3	20	0	0
Bedford	12	5	0	1235	660	53.4	20	0	0
Sunderland	7	3	0	655	400	61.1	15	0	0
Hartlepool	3	3	0	425	255	60	15	0	0
Wakefield	15	3	0	1505	905	60.1	15	0	0
Oldham	8	2	0	1150	650	56.5	15	0	0
Isle of Wight	9	4	0	485	270	55.7	15	0	0
Enfield	19	3	0	1495	745	49.8	15	0	0
Blackburn with Darwen	9	3	0	680	445	65.4	10	0	0
Middlesbrough	5	2	0	390	250	64.1	10	0	0
TOTAL	2935	835	283	267730	148705	55.5	5371	521	9.7

[1] “In total 137 of the 152 Local authorities have female numbers at zero or so low as to need anonymising. As a result we cannot provide heat maps of this data.”

3.3 Region

Table 6: 2016 A-Level computer science Regional female provision

Name	Total providers	Total Comp providers	Comp Sch with females	Total students	Female students	% of total students	Total subject students	Female subject students	% of subject students
London	521	144	55	45025	24835	55.2	820	105	12.8
West Midlands	340	84	32	26325	14785	56.2	520	60	11.5
North East	109	29	10	9770	5595	57.3	190	20	10.5
South West	298	103	37	26685	14830	55.6	545	55	10.1
South East	521	155	53	52100	28295	54.3	1180	115	9.7
East Midlands	248	77	22	20365	11265	55.3	435	40	9.2
North West	309	87	32	32605	18470	56.6	690	60	8.7
East of England	343	112	29	31520	17275	54.8	660	45	6.8
Yorkshire and The Humber	246	44	13	22830	13075	57.3	295	20	6.8
TOTAL	2935	835	283	267225	148425	55.5	5335	520	9.7

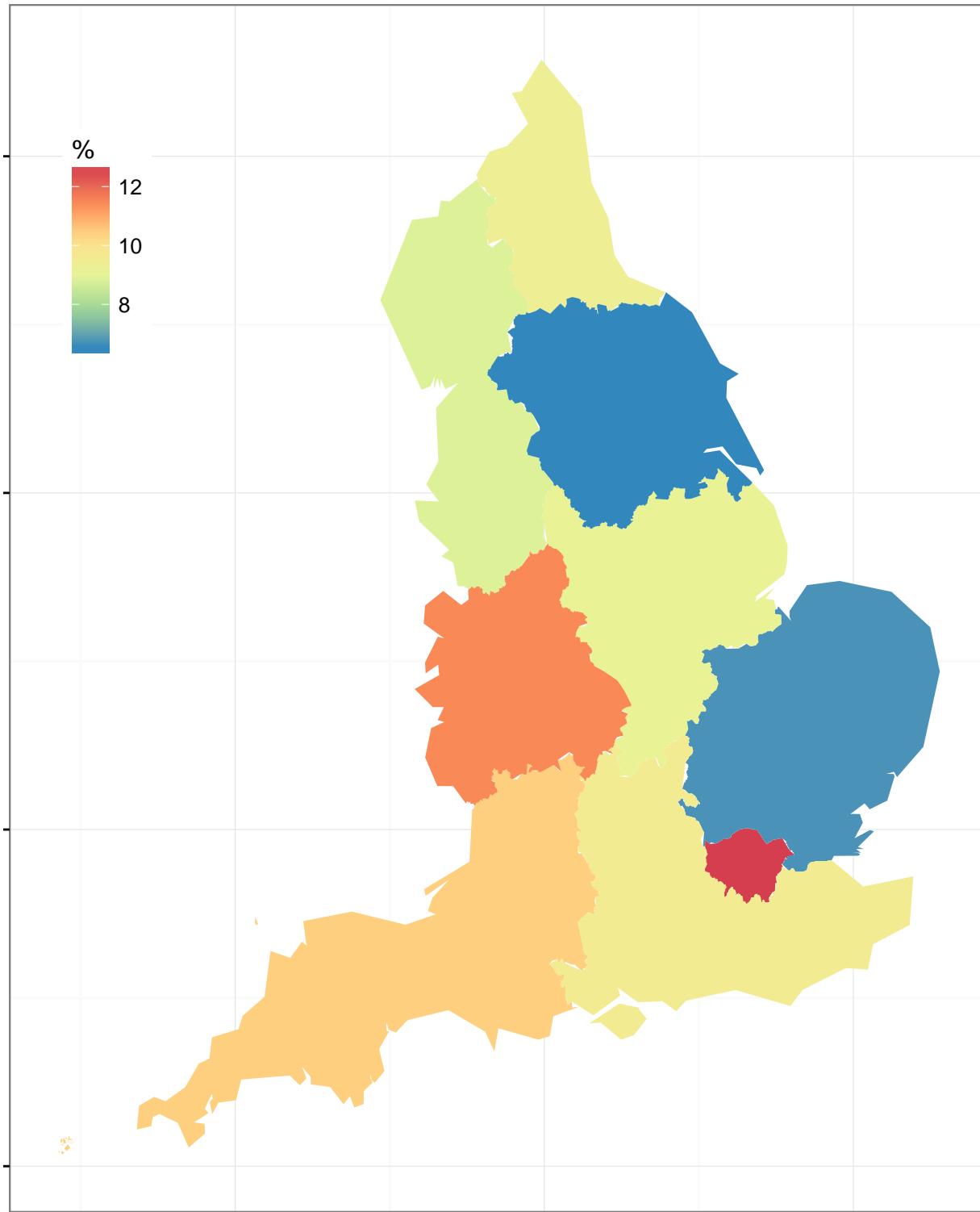


Figure 1: 2016 A-Level computer science regional gender representation

4 Pupil premium

4.1 Local authorities

Table 7: 2016 A-Level computer science local authority top pupil premium provision

Name	Total providers	Total Comp providers	Comp Sch with PP	Total students	PP students	% of total students	Total subject students	PP subject students	% of subject students
Waltham Forest	9	8	3	1205	390	32.4	35	15	42.9
Manchester	16	4	3	2650	640	24.2	55	15	27.3
Islington	10	3	3	915	385	42.1	40	10	25
Wigan	7	4	3	1485	135	9.1	45	10	22.2
Birmingham	70	17	7	4525	895	19.8	100	20	20
St. Helens	8	2	1	970	120	12.4	30	6	20
Dudley	7	4	2	1625	180	11.1	60	10	16.7
Bury	6	4	2	1215	205	16.9	40	6	15
Essex	63	15	4	5665	295	5.2	95	10	10.5
Cambridgeshire	33	11	2	2705	115	4.3	95	10	10.5
Lancashire	44	15	4	4460	300	6.7	135	10	7.4
Hampshire	32	17	7	7280	455	6.2	290	15	5.2
Dorset	25	6	0	1990	70	3.5	45	0	0
Slough	12	4	0	1005	70	7	35	0	0
Milton Keynes	14	4	0	1155	40	3.5	35	0	0
Reading	11	5	0	485	20	4.1	30	0	0
Trafford	14	3	0	1270	55	4.3	30	0	0
West Berkshire	16	8	0	940	25	2.7	25	0	0
Wokingham	11	5	0	860	15	1.7	25	0	0
Lewisham	11	6	0	1225	295	24.1	20	0	0
Torbay	11	3	0	620	25	4	20	0	0
Bolton	11	5	0	880	125	14.2	15	0	0
Kingston upon Thames	13	3	0	990	65	6.6	15	0	0
Isle of Wight	9	4	0	440	25	5.7	15	0	0
Bournemouth	11	2	0	570	20	3.5	15	0	0
Bath and North East Somerset	20	4	0	925	20	2.2	15	0	0
Middlesbrough	5	2	0	390	70	17.9	10	0	0
Solihull	13	2	0	1445	185	12.8	10	0	0
Blackburn with Darwen	9	3	0	625	75	12	10	0	0
Barnsley	3	1	0	365	35	9.6	10	0	0
TOTAL	2935	835	191	227980	19582	8.6	4931	382	7.7

4.2 Region

Table 8: 2016 A-Level computer science regional pupil premium provision

Name	Total providers	Total Comp providers	Comp Sch with PP	Total students	Total PP students	% of PP students for region	Total subject students	Total PP subject students	% of PP students for subject
London	521	144	46	37960	6010	15.8	730	80	11
North West	309	87	29	29640	3195	10.8	645	70	10.9
North East	109	29	11	8965	745	8.3	190	20	10.5
West Midlands	340	84	22	22985	2305	10	500	50	10
Yorkshire and The Humber	246	44	11	20350	1655	8.1	260	20	7.7
East of England	343	112	18	26760	1425	5.3	605	40	6.6
South East	521	155	28	41195	2035	4.9	1065	50	4.7
South West	298	103	13	21870	1050	4.8	500	20	4
East Midlands	248	77	13	17935	1155	6.4	405	X	X
TOTAL	2935	835	191	227660	19575	8.6	4900	365	7.4

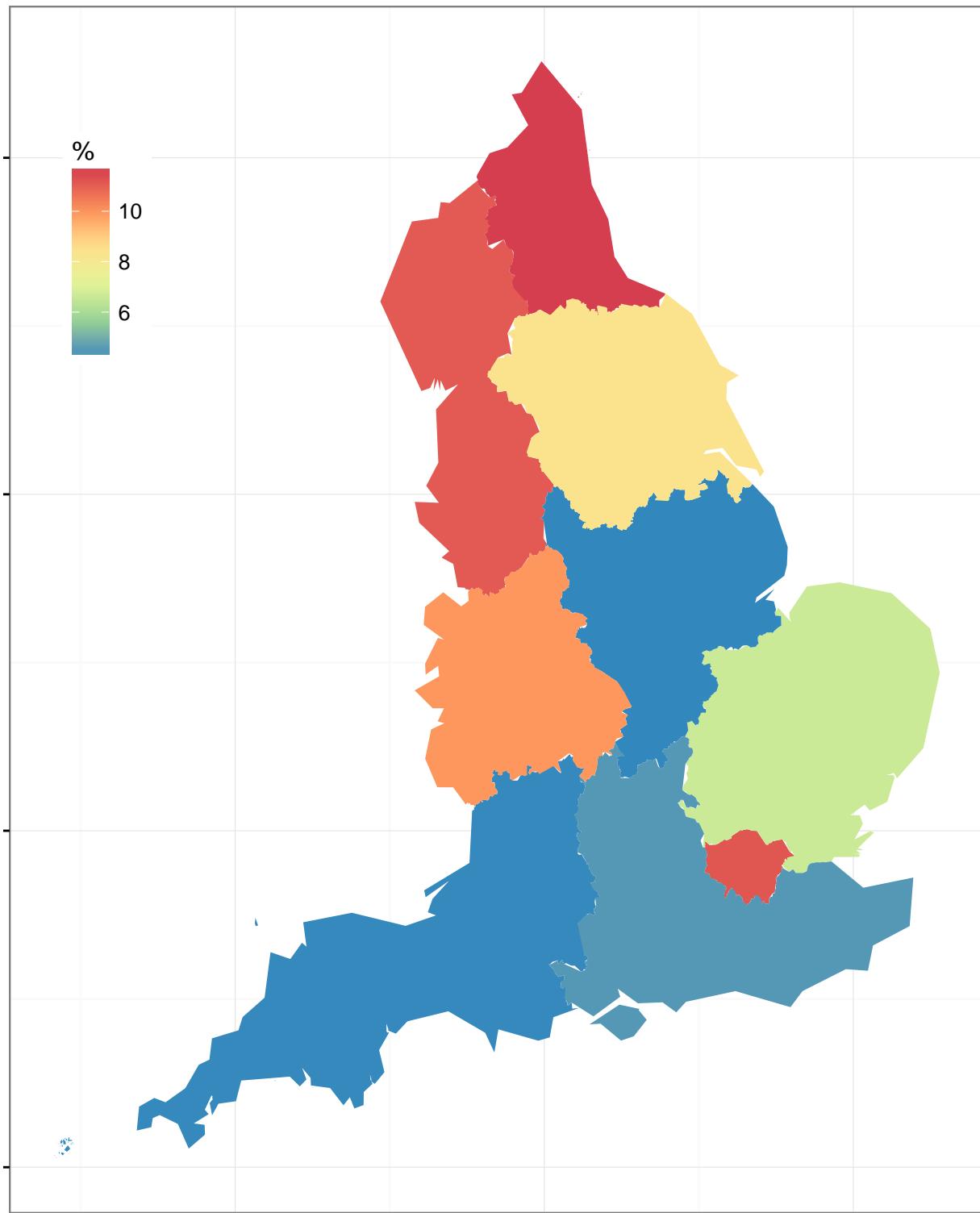


Figure 2: 2016 A-Level computer science regional pupil premium representation

5 BAME students

5.1 Local authorities

Note: figures for Redcar and Cleveland, Halton, and Isles Of Scilly have been removed due to small, identifiable numbers.

Table 9: 2016 A-Level computer science local authority top BAME provision

Name	Total providers	Total Comp providers	Comp Sch with BAME	Total students	BAME students	% of total students	Total subject students	BAME subject students	% of subject students
Camden	17	4	3	1025	770	75.1	10	10	100
Barnet	32	4	3	2680	2000	74.6	20	15	75
Leicester	11	3	3	1630	1235	75.8	35	25	71.4
Redbridge	20	7	7	2310	1880	81.4	55	35	63.6
Birmingham	70	17	13	4525	2855	63.1	100	55	55
Manchester	16	4	4	2650	1305	49.2	55	30	54.5
Luton	6	3	3	955	675	70.7	30	15	50
Hillingdon	24	4	4	1460	910	62.3	30	15	50
Richmond upon Thames	18	4	3	710	405	57	20	10	50
Bexley	12	4	3	1245	520	41.8	55	25	45.5
Milton Keynes	14	4	4	1155	490	42.4	35	15	42.9
Bromley	27	7	7	2185	810	37.1	60	25	41.7
Croydon	27	6	2	1280	865	67.6	25	10	40
Havering	8	3	3	1375	620	45.1	40	15	37.5
Liverpool	33	7	6	1880	375	19.9	40	15	37.5
Southend-on-Sea	11	4	4	1205	265	22	45	15	33.3
Northamptonshire	49	9	7	2835	620	21.9	30	10	33.3
Coventry	24	9	7	1180	535	45.3	30	10	33.3
Derby	12	6	6	920	320	34.8	30	10	33.3
Trafford	14	3	3	1270	380	29.9	30	10	33.3
Stoke-on-Trent	5	4	2	670	150	22.4	30	10	33.3
Hertfordshire	104	44	25	6855	1750	25.5	170	55	32.4
Leeds	36	7	3	2820	780	27.7	35	10	28.6
Warwickshire	33	10	4	2745	485	17.7	35	10	28.6
Nottingham	11	5	2	1325	495	37.4	35	10	28.6
Dudley	7	4	4	1625	395	24.3	60	15	25
Oxfordshire	56	19	8	2995	620	20.7	60	15	25
Bury	6	4	3	1215	300	24.7	40	10	25
Nottinghamshire	48	13	7	2665	350	13.1	65	15	23.1
Surrey	74	18	9	5985	1335	22.3	110	25	22.7
TOTAL	2935	835	463	228020	66900	29.3	4936	1351	27.4

5.2 Region

Table 10: 2016 A-Level computer science regional BAME provision

Name	Total providers	Total Comp providers	Comp Sch with BAME	Total students	Total BAME students	% of BAME students for region	Total subject students	Total BAME subject students	% of BAME students for subject
London	521	144	119	37975	27240	71.7	730	495	67.8
West Midlands	340	84	47	22985	7210	31.4	500	140	28
East of England	343	112	62	26765	5755	21.5	605	150	24.8
East Midlands	248	77	35	17940	4110	22.9	405	90	22.2
South East	521	155	80	41205	9160	22.2	1065	220	20.7
North West	309	87	46	29645	5795	19.5	645	120	18.6
Yorkshire and The Humber	246	44	24	20360	4020	19.7	260	45	17.3
South West	298	103	41	21875	2595	11.9	500	65	13
North East	109	29	9	8965	880	9.8	190	X	X
TOTAL	2935	835	463	227715	66765	29.3	4900	1340	27.3

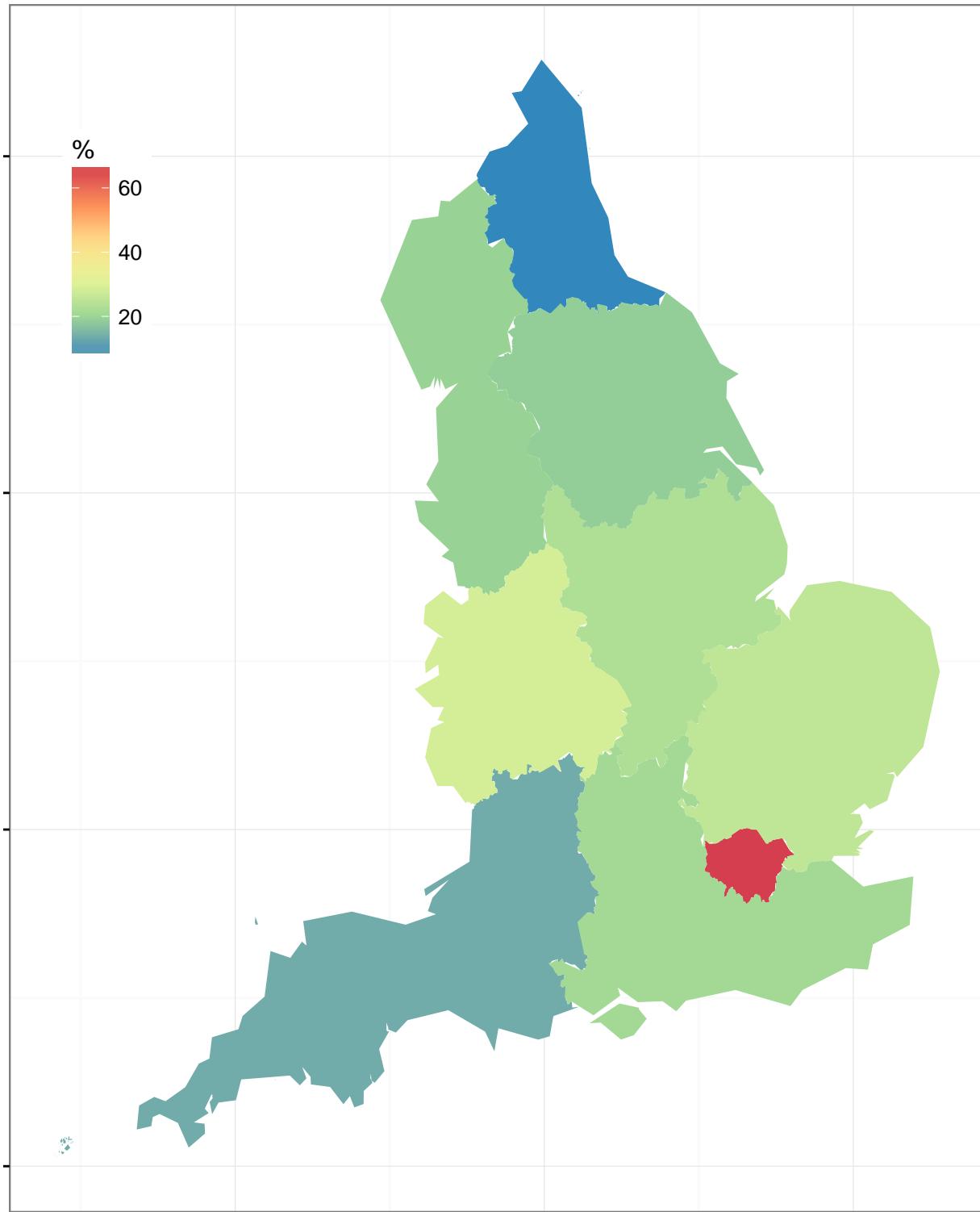


Figure 3: 2016 A-Level computer science regional BAME representation

6 EAL students

6.1 Local authorities

Note: have been removed due to small, identifiable numbers.

Table 11: 2016 A-Level computer science local authority top EAL provision

Name	Total providers	Total Comp providers	Comp Sch with EAL	Total students	EAL students	% of total students	Total subject students	EAL subject students	% of subject students
Sandwell	15	3	3	840	365	43.5	15	10	66.7
Islington	10	3	3	890	515	57.9	40	25	62.5
Ealing	20	10	7	1405	740	52.7	35	20	57.1
Waltham Forest	9	8	4	1195	610	51	35	20	57.1
Brent	15	4	4	1100	585	53.2	30	15	50
Leicester	11	3	3	1620	815	50.3	30	15	50
Lambeth	17	8	5	640	295	46.1	30	15	50
Barnet	32	4	3	2580	1070	41.5	20	10	50
Richmond upon Thames	18	4	3	680	220	32.4	20	10	50
Manchester	16	4	4	2590	750	29	55	25	45.5
Southwark	15	9	6	625	265	42.4	35	15	42.9
Redbridge	20	7	7	2200	1340	60.9	50	20	40
Luton	6	3	2	950	465	48.9	30	10	33.3
Hillingdon	24	4	4	1415	600	42.4	30	10	33.3
Slough	12	4	3	980	455	46.4	30	10	33.3
Birmingham	70	17	11	4365	1665	38.1	100	30	30
Leeds	36	7	3	2795	375	13.4	35	10	28.6
Havering	8	3	1	1370	295	21.5	40	10	25
Bury	6	4	2	1215	205	16.9	40	10	25
Stoke-on-Trent	5	4	2	665	105	15.8	30	6	20
Cambridgeshire	33	11	6	2665	200	7.5	95	15	15.8
Hertfordshire	104	44	16	6600	780	11.8	165	25	15.2
Leicestershire	30	16	3	2910	300	10.3	95	10	10.5
Hampshire	32	17	8	7220	590	8.2	290	30	10.3
Surrey	74	18	6	5840	585	10	110	10	9.1
Cheshire	23	7	0	1805	55	3	50	0	0
West and Chester									
North Yorkshire	38	9	0	2730	75	2.7	45	0	0
Dorset	25	6	0	1890	40	2.1	45	0	0
Cheshire East	19	8	0	1630	65	4	40	0	0
West Berkshire	16	8	0	905	40	4.4	25	0	0
TOTAL	2935	835	320	222150	35897	16.2	4844	739	15.3

6.2 Region

Table 12: 2016 A-Level computer science regional EAL provision

Name	Total providers	Total Comp providers	Comp Sch with EAL	Total students	Total EAL students	% of EAL students for region	Total subject students	Total EAL subject students	% of EAL students for subject
London	521	144	99	36545	15860	43.4	700	290	41.4
West Midlands	340	84	35	22450	3915	17.4	495	80	16.2
East Midlands	248	77	26	17605	2195	12.5	400	55	13.8
East of England	343	112	45	26015	2705	10.4	590	75	12.7
North West	309	87	31	29060	3200	11	635	70	11
South East	521	155	46	40100	4350	10.8	1050	100	9.5
Yorkshire and The Humber	246	44	13	20005	2085	10.4	250	20	8
South West	298	103	19	21235	980	4.6	490	30	6.1
North East	109	29	6	8845	475	5.4	190	X	X
TOTAL	2935	835	320	221860	35765	16.1	4800	726	15.1

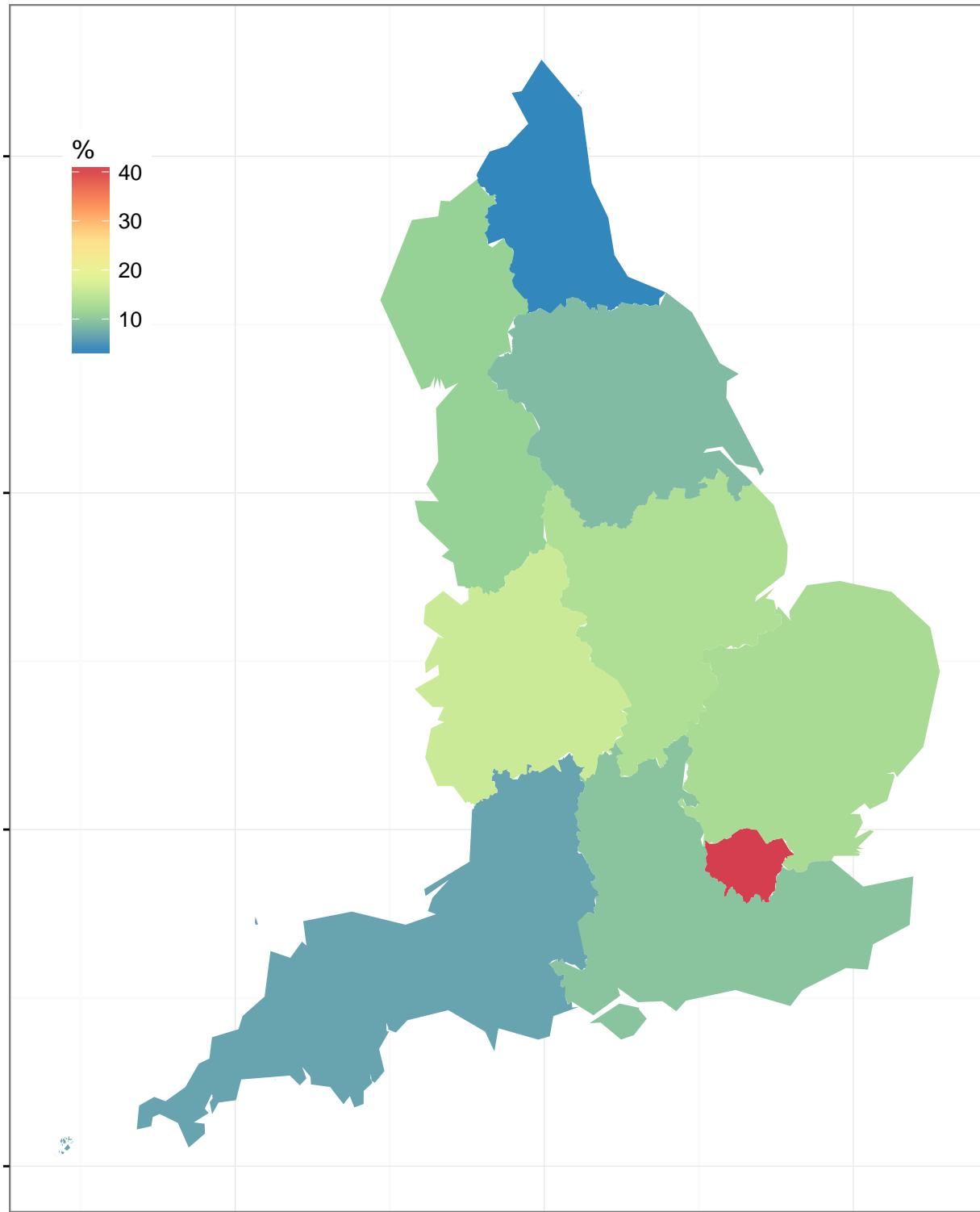


Figure 4: 2016 A-Level computer science regional EAL representation

7 Computing cohort size - longitudinal study

For the following tables and graphs 'Computing'¹ is defined by any subject under the names: Applications, Applied ICT, Computer Appreciation / Introduction, Computer Architecture / Systems, Computer Games, Computer help, Computing, D&T Sys & Control, desk Operations, Electronic / Electrical Engineering, Handling & Interpreting Data, ICT, Keyboarding, Music Technology (Electronic), Office Technology, Systems / Network Management, WebSite Development

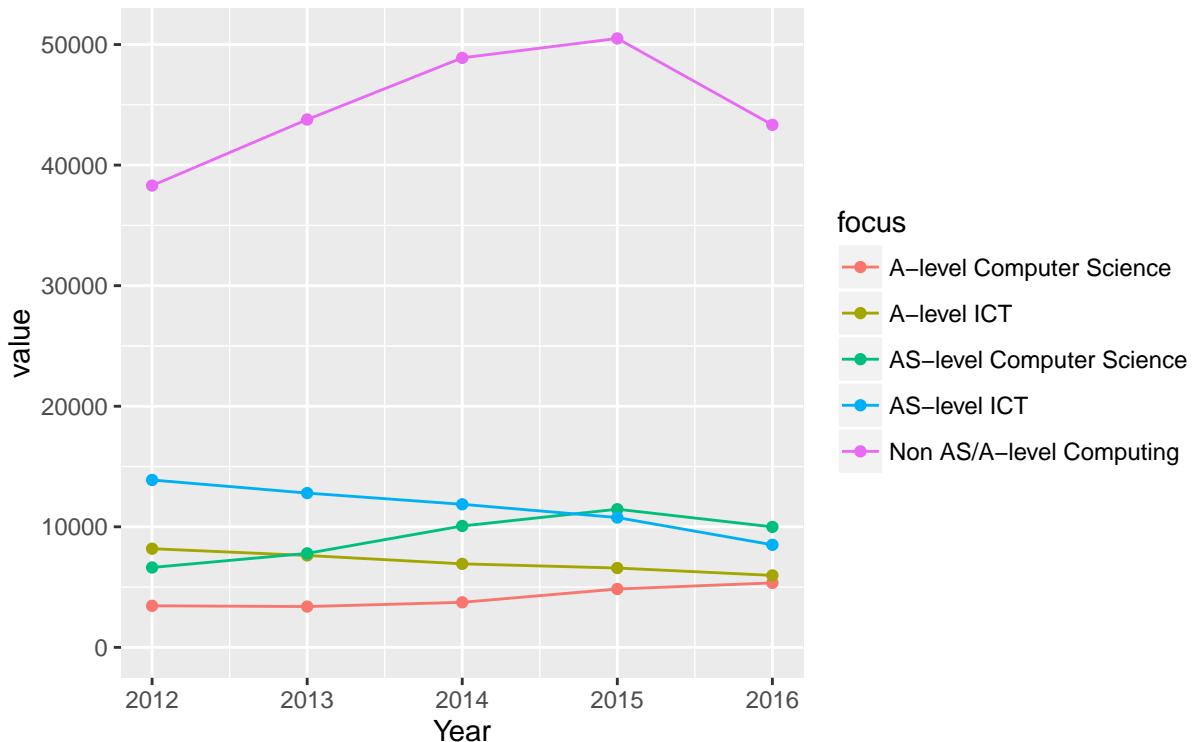


Figure 5: 2012-2016 KS5 computing qualification trends - total participants

¹Note: government guidance documents still list A-Level computer science as computing

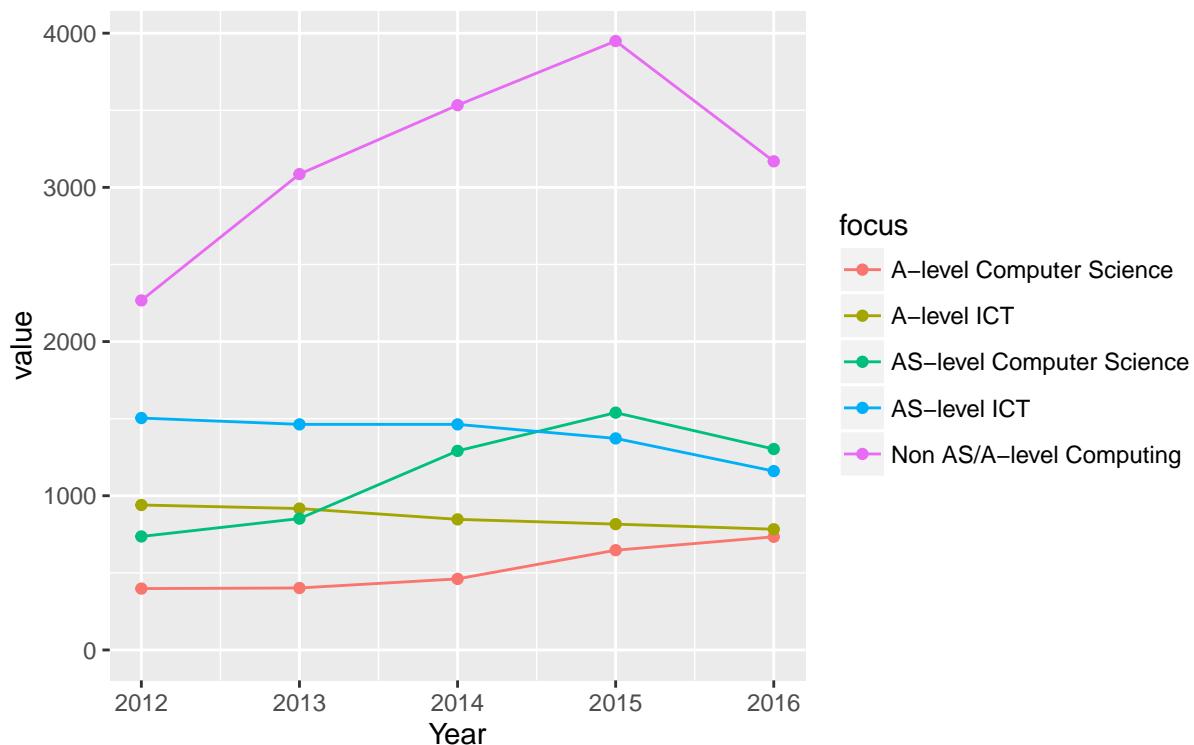


Figure 6: PyeTait schools, 2012-2016 KS5 computing qualification trends - total participants

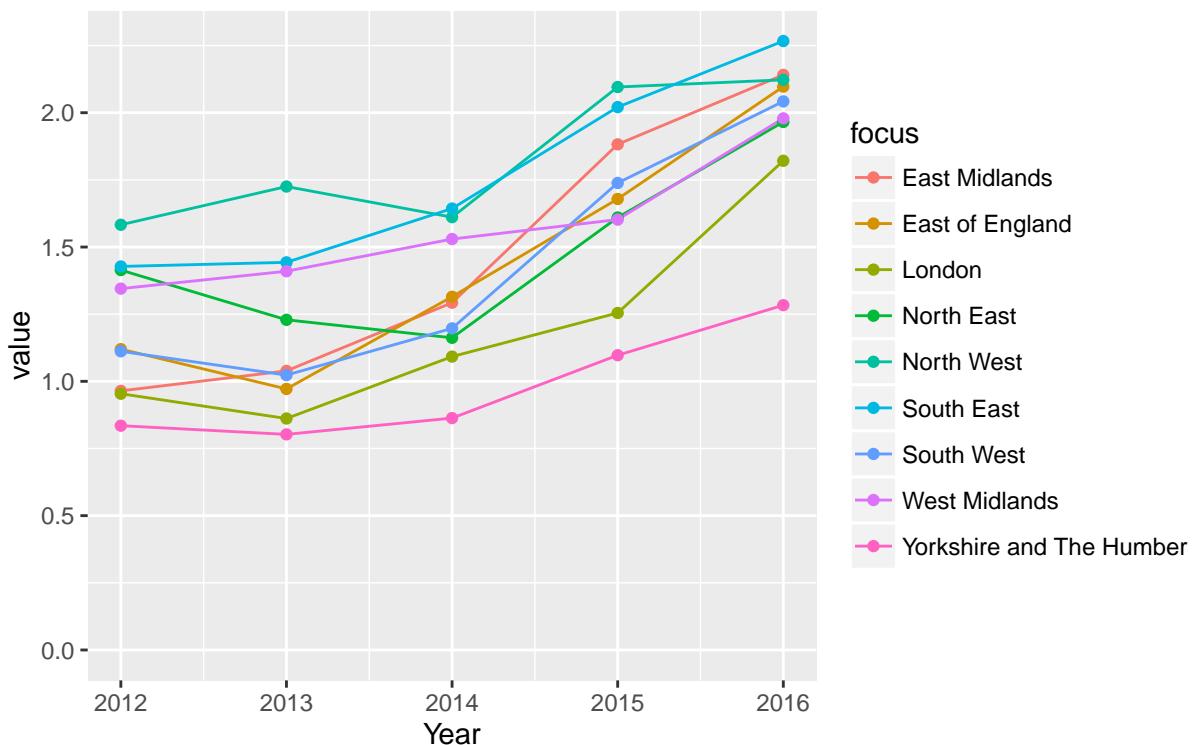


Figure 7: 2012-2016 KS5 A-Level computer science qualification trend - participant % by Region

```
## NULL
```

Due to small figures, a .csv and graph have not been provided for longitudinal regional computer science KS5 uptake.

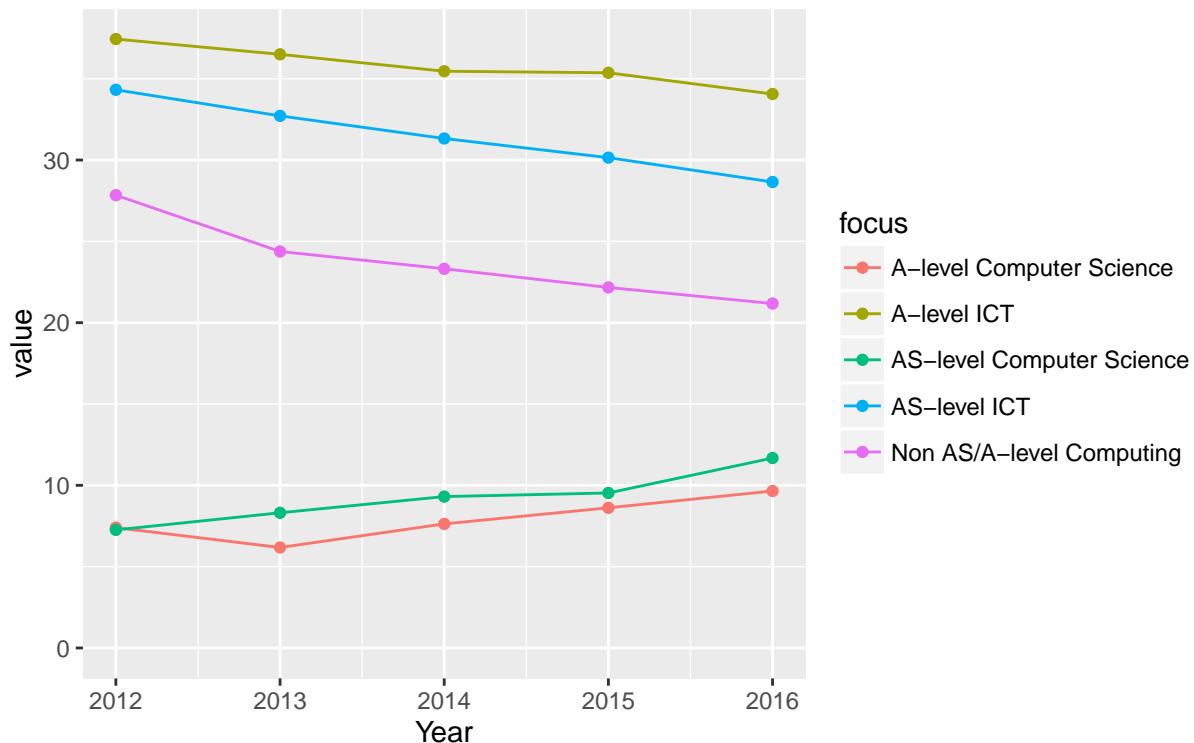


Figure 8: 2012-2016 KS5 computing qualification trends - Female %

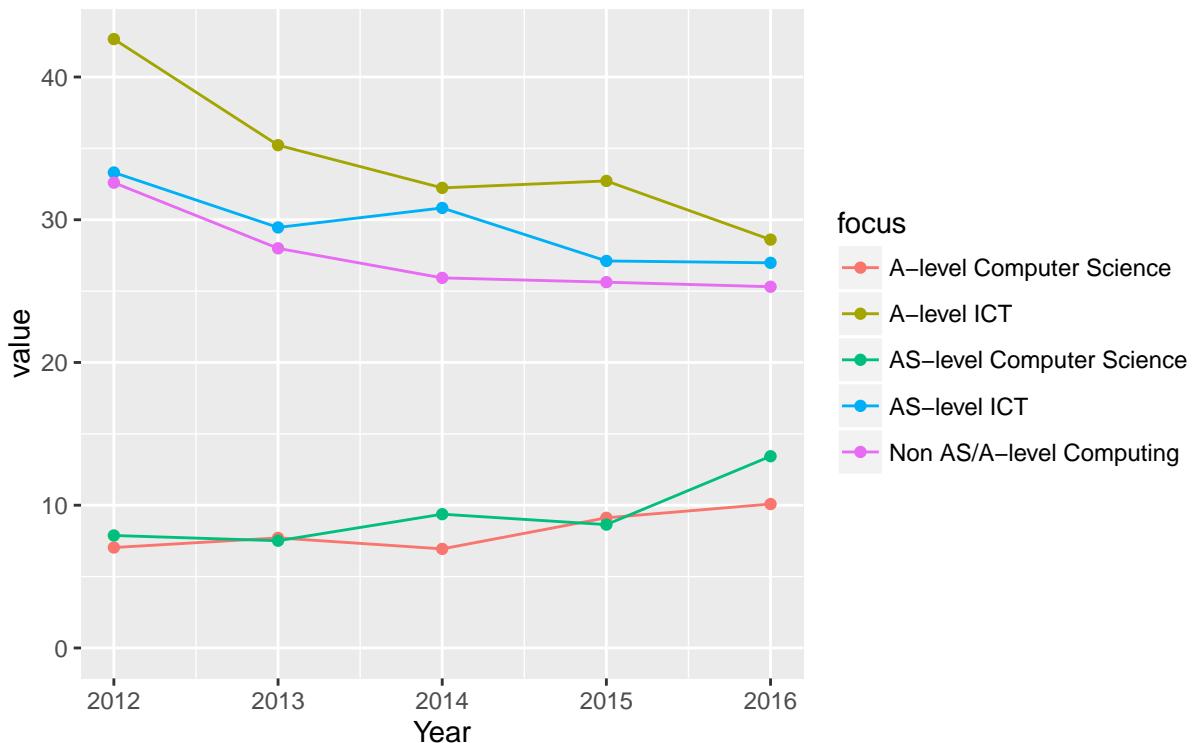


Figure 9: PyeTait schools, 2012-2016 KS5 computing qualification trends - Female %

Due to largely incomplete pupil premium, BAME and EAL data for KS5 students in years 2012 - 2014 time series graphs have been omitted.

```
## NULL  
## NULL  
## NULL  
## NULL
```