

Progression from GCSE to A Level, 2018 – 2020

Statistics Report Series No. 129

Matthew Carroll

Tim Gill

16th January 2023



Author contact details:

Matthew Carroll & Tim Gill
Assessment Research and Development,
Research Division
Shaftesbury Road
Cambridge
CB2 8EA
UK

matthew.carroll@cambridge.org
tim.gill@ cambridge.org
<https://www.cambridge.org/>

As a department of the university, Cambridge University Press & Assessment is respected and trusted worldwide, managing three world-class examination boards, and maintaining the highest standards in educational assessment and learning. We are a not-for-profit organisation.

Cambridge University Press & Assessment is committed to making our documents accessible in accordance with the WCAG 2.1 Standard. We're always looking to improve the accessibility of our documents. If you find any problems or you think we're not meeting accessibility requirements, contact our team: [Research Division](#)

If you need this document in a different format [contact us](#) telling us your name, email address and requirements and we will respond within 15 working days.

How to cite this publication:

Carroll, M. & Gill, T. 2023. *Progression from GCSE to A Level, 2018 – 2020*. Statistics Report Series No. 129. Cambridge University Press & Assessment.

Acknowledgements

This work was produced using statistical data from the Office for National Statistics (ONS). The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets that may not exactly reproduce National Statistics aggregates.

Introduction

In this report we investigate the progression of students from GCSE to A level *in the same (or related) subject*. That is, for a range of subjects, we calculate the proportion of GCSE students who continue to study the subject at A level. To understand possible sources of variation, we also break down progression rates by GCSE grade and student gender. Finally, we consider relationships between GCSE and A level grades for those students who do progress. To evaluate whether there have been any changes in progression behaviour over time, we refer to a previous version of this analysis, carried out using data from students who took GCSEs in 2015 and A levels in 2017 (Gill, 2019).

A student's decision to study a subject beyond GCSE may be influenced by various factors (see Vidal Rodeiro, 2007), including enjoyment of the subject, attainment, and usefulness for career plans. Alongside these more personal factors, there may also be constraints imposed by the school or college, such as whether the subject is offered, and whether the school restricts entry onto A level courses based on GCSE attainment. Accordingly, we do not attempt to explain the reasons for any differences observed in subject progression here; instead we focus on simple reporting of progression rates.

Data and Methods

The data for these analyses was taken from the National Pupil Database (NPD), maintained by the Department for Education. Access to the data was provided via the Office for National Statistics Secure Research Service, and all analyses were carried out in the secure environment.

We extracted GCSE results for all students who were in Year 11 in the 2017/18 school year from the 2018 Key Stage 4 (KS4) database. Note that this sample included *all* GCSEs awarded to these students, i.e., both those taken in 2018 and any taken early. GCSEs graded X¹ were excluded from the dataset. We then used unique pupil identifier numbers to match the students to any A level results recorded in the 2020 Key Stage 5 (KS5) database. Note that as A levels are studied over two years, this should have included all A levels taken by this cohort, but if any students delayed taking A levels (e.g., through repeating a year or delaying the start of their course) these results would *not* be included. A student was deemed to have progressed if they had both a GCSE and an A level result for the same subject. Note that A levels graded X were included in analyses of overall progression rates, but were necessarily excluded from analysis of grade-to-grade progression; numbers of candidates to whom this applied were very low though, so this should have little to no effect on estimated progression rates.

Some common subjects at GCSE are not offered in the same form at A level, so specific matching was used. The most prominent example is Science: at GCSE, most students in 2018 took a Combined Science qualification (worth two GCSEs) rather than separate sciences (Gawedzka & Gill, 2022), while only separate sciences are offered at A level. We therefore investigated progression from GCSE Combined Science (referred to throughout as "Double Science") to each of A level Biology, Chemistry and Physics. We also investigated progression from GCSE Maths to

¹ Grade X indicates that no grade could be awarded. Reasons for a grade X being recorded include not all components being completed, an internal assessment sample not being provided on request, or a script being unavailable for marking.

A level Further Maths. We restricted analysis to the most popular GCSE subjects, with entries of over 10,000 students.

We calculated overall progression rates first (i.e., the proportion of all GCSE students for a given subject progressing to an A level in that subject). Alongside this, we estimated separate rates for those students that obtained a relatively high GCSE grade (A* – C in unreformed subjects, or 9 – 4 in reformed subjects). Both these analyses were broken down by gender. We then calculated progression rates from each GCSE grade (i.e., what percentage of GCSE students gaining a particular grade went on to study an A level in that subject?). To understand the relationship between attainment at GCSE and A level, we then estimated Pearson correlations between achieved grades, and calculated cumulative percentages of students obtaining each A level grade from each GCSE grade. To estimate correlations, GCSE grades were converted to numerical scales: for reformed subjects, grades were converted directly to the equivalent number (i.e., grade 9 = 9, grade 8 = 8, ..., grade U = 0), whilst for non-reformed subjects, grades were numbered sequentially (i.e., A* = 8, A = 7, ..., G = 1, U = 0). Similarly, A level grades were converted to numbers so that A* = 6, A = 5, ..., E = 1, and U = 0.

To ensure outputs met standards for statistical disclosure control (i.e., ensuring no cell counts <10), we aggregated categories where necessary. This primarily affected evaluation of progression from lower GCSE grades: A levels are typically taken by high-attaining students, so lower GCSE grades were aggregated. Likewise, when considering progression from particular GCSE grades to particular A level grades, aggregation was used at higher and lower attainment levels, as it was relatively uncommon for the lowest GCSE grades to be associated with the highest A level grades and *vice versa*. Specific instances of aggregation applied are noted alongside each results table.

Grades awarded in 2020 differed from those awarded in previous years due to the impact of the Covid-19 pandemic. Public examinations were cancelled and, ultimately, grades were awarded as whichever was the higher of a grade awarded by the student's school (centre-assessed grades, or "CAGs") and a statistically-adjusted grade (based on CAGs, but adjusted to reflect the school's previous grade distribution). As such, 2020 A level grades included in the present analyses were awarded via this method, but any A levels awarded prior to 2020, and all GCSE grades considered here, would be unaffected. This will not impact overall progression estimates, but will influence interpretation of grade-to-grade progression and relationships between GCSE and A level attainment.

Results

Table 1 shows the number of Year 11 students in 2018 who took each GCSE subject, and the percentage of these students (overall and broken down by gender) who went on to take an A level in the same subject. It also shows the numbers of students achieving GCSE grades 9 – 4 or A* – C and the progression rate amongst these students (overall and broken down by gender).

The highest overall progression rates were in Psychology (30%), Biology (23%), Chemistry (22%), and Sociology (21%). Three of these (Psychology, Biology and Sociology) were the same as those showing the highest progression rates in 2017 A level students (Gill, 2019). These were also the subjects with highest progression rates among female students (Psychology, 34%; Biology, 30%; Chemistry, 24%; Sociology, 25%). For male students, the highest progression rates were for Physics (23%), Chemistry (20%), Psychology (19%) and Biology (17%). Once again, these were also the subjects that showed the highest progression rates in an earlier analysis (Gill, 2019). The subjects with the largest differences in progression between male and female students were Physics (16 percentage points higher progression for male students), Psychology (15 percentage points higher for female students), Biology (13 percentage points higher for female students) and Sociology (12 percentage points higher for female students).

Among students who obtained high GCSE grades (9 – 4 or A* – C), the highest progression rates were seen for Psychology (44%), Sociology (31%), Business Studies (25%), History (22%) and Computing (20%). Note, however, that Chemistry and Biology, which showed high overall progression rates, were excluded, as nearly all progressing students had a high grade so presenting such figures would result in disclosive figures for students with lower (below 4/C grades), thus their absence from this list does *not* indicate lower progression rates among high attainers.

Table 1. Overall progression rates from GCSE to A level by subject.

Progression	N GCSE students	N at A*-C/9-4	Percentage of students progressing					
			All	A*-C/9-4	All female	Female A*-C/9-4	All male	Male A*-C/9-4
<i>a) Reformed subjects²</i>								
Art & Design	58,613	43,039	6	8	7	8	3	6
Art & Design (Fine Art)	63,476	48,978	12	16	15	17	8	12
Art & Design (Photography)	26,059	19,863	10	13	12	15	6	10
Biology [#]	159,612	144,300	23	–	30	–	17	–
Chemistry [#]	156,315	140,846	22	–	24	–	20	–
Computing	71,007	43,774	13	20	9	13	14	22
Double Sci. – Biology [#]	368,479	202,474	3	–	4	–	2	–
Double Sci. – Chemistry [#]	368,479	202,474	2	–	2	–	2	–
Double Sci. – Physics [#]	368,479	202,474	1	–	1	–	2	–
Drama	58,302	43,283	12	16	14	17	9	14
English Lang.	537,107	379,713	3	4	4	5	1	2
English Lit.	523,178	382,940	6	9	10	12	3	4
French	119,817	82,783	5	7	6	8	3	5
Geography	241,705	156,574	10	16	11	16	10	15
German	43,206	31,969	5	6	6	7	4	5
History	243,652	155,876	14	22	15	22	12	20
Mathematics	535,162	379,992	13	18	10	14	15	22
Maths - Further Maths [#]	535,162	379,992	2	–	1	–	3	–
Music	35,582	26,632	9	12	9	12	9	13
PE	86,370	60,821	10	14	12	16	8	13
Physics [#]	154,787	140,862	15	–	7	–	23	–
Religious Studies	230,218	163,678	5	7	7	9	3	4
Spanish	89,944	62,308	7	10	9	11	5	7
<i>b) Non-reformed subjects</i>								
Business Studies	72,615	44,604	17	25	16	23	17	26
D&T Product Design	36,174	20,094	8	12	9	11	7	12
D&T Textiles [#]	15,198	9,480	3	–	–	–	–	–
Media/Film/TV Studies	38,031	23,796	11	16	13	16	9	15
Psychology	13,882	8,388	30	44	34	48	19	32
Sociology	20,501	12,693	21	31	25	34	13	23

[#] Subjects marked with a hash symbol have had % progressing from high GCSE grades suppressed to avoid disclosive figures in underlying counts. For D&T Textiles, the gender breakdown has also been suppressed for this reason. Suppressed values are indicated with dashes.

² Reformed subjects refer to those that were, by 2018, awarded on the 9-1 grade scale. However, as the KS4 dataset included GCSEs that had been taken early, a small percentage of students and grades included here were from the pre-reform version of the qualification, thus awarded on the A*-G scale.

Figure 1 (reformed GCSEs), Figure 2 (Double Science) and Figure 3 (non-reformed GCSEs) show progression from GCSE to A level, by GCSE grade and gender. In reformed subjects (other than Maths/Further Maths) GCSE grades at or below 5 were aggregated due to low cell counts (or 5-5 for Double Science), while for non-reformed subjects, aggregation occurred for all grades at or below B. Note that for the Maths to Further Maths progression, aggregation occurred at grades 6 and below, while for D&T Textiles no gender breakdowns are presented.

For many subjects, the differences in progression rates between male and female students were small, although for many subjects, the differences increased as GCSE grades increased (i.e., the largest gender differences were among the highest attainers). This was particularly evident in Science and Maths progressions.

Male students were more likely to progress across all GCSE grades in Computing, Maths and Physics (including Double Science to Physics). Further Maths also showed higher progression rates for males, but with differences only emerging at GCSE grades 8 and 9. These subjects are the same as those found by Gill (2019) to show higher progression rates for male students.

More subjects showed higher progression rates for female than for male students. Those with the largest differences included Biology (including Double Science to Biology), English Literature, Psychology and Sociology. Again, these were the same subjects found by Gill (2019) to show higher progression rates for female students. A further notable pattern here was that Modern Foreign Languages (French, German and Spanish) showed higher progression rates for female students across most grades considered.

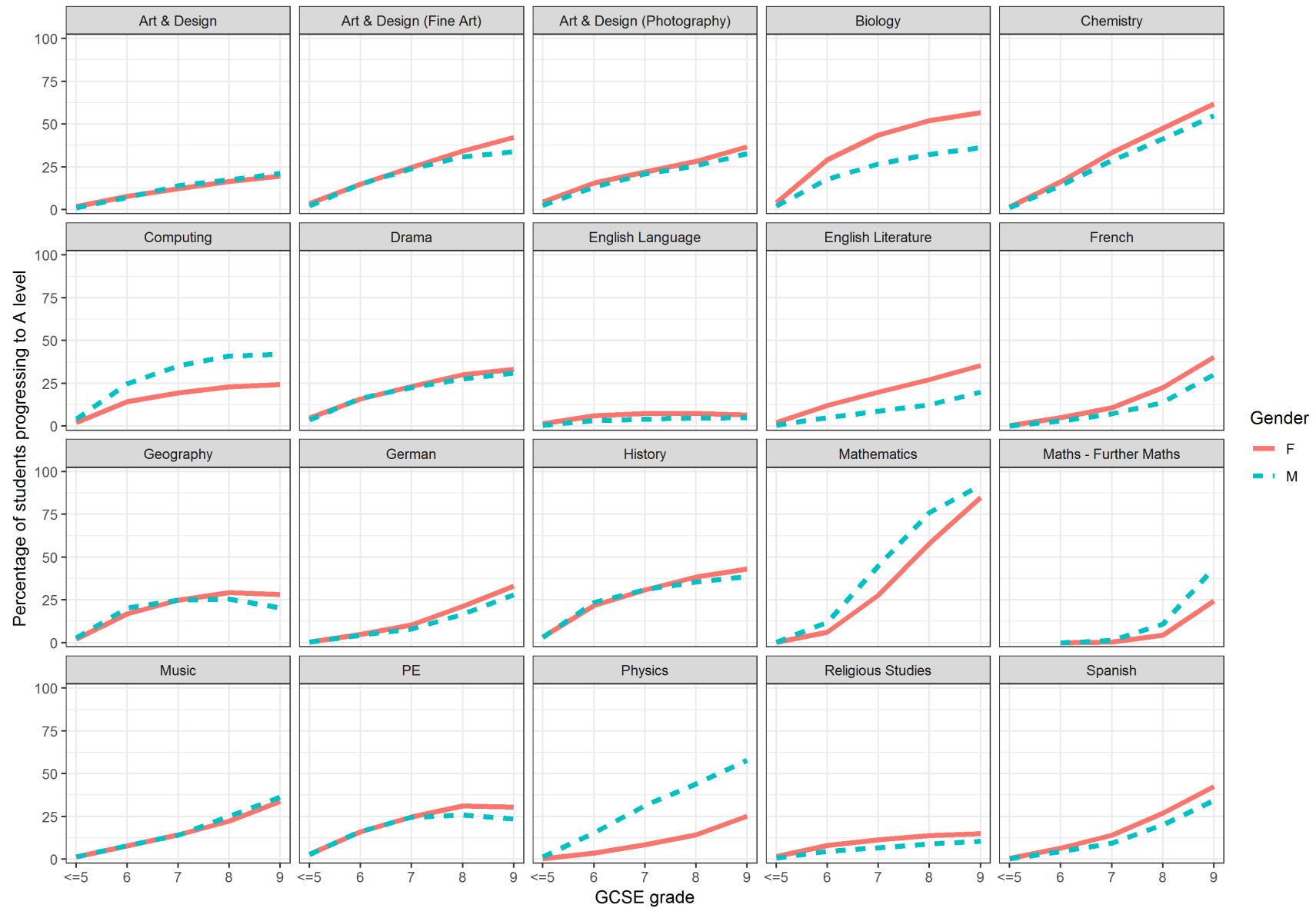


Figure 1. Percentages of students progressing to A level from each GCSE grade for reformed GCSE subjects, broken down by gender. For Maths to Further Maths, GCSE grades at 6 or below are aggregated (rather than 5 or below used for other subjects) due to low cell counts.

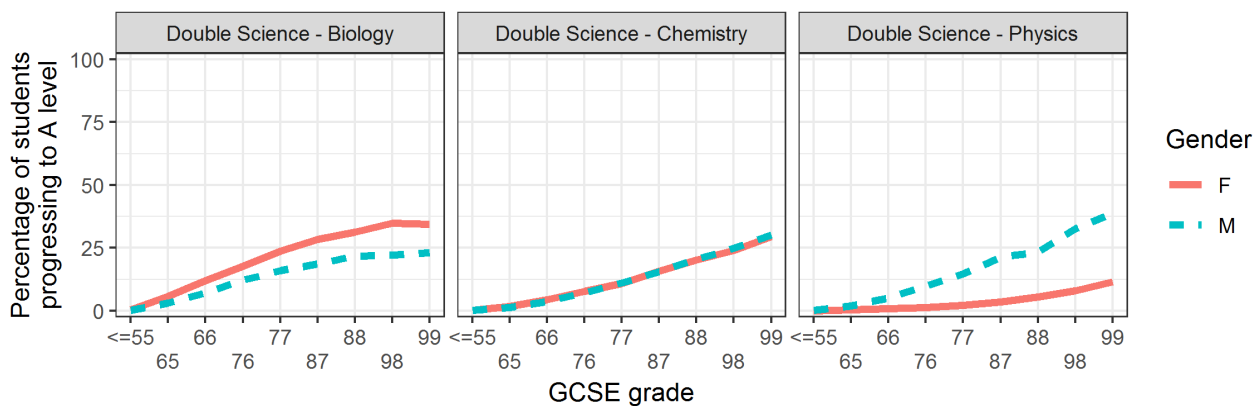


Figure 2. Percentages of students progressing to A level from each GCSE grade for Double Science GCSE, broken down by gender.

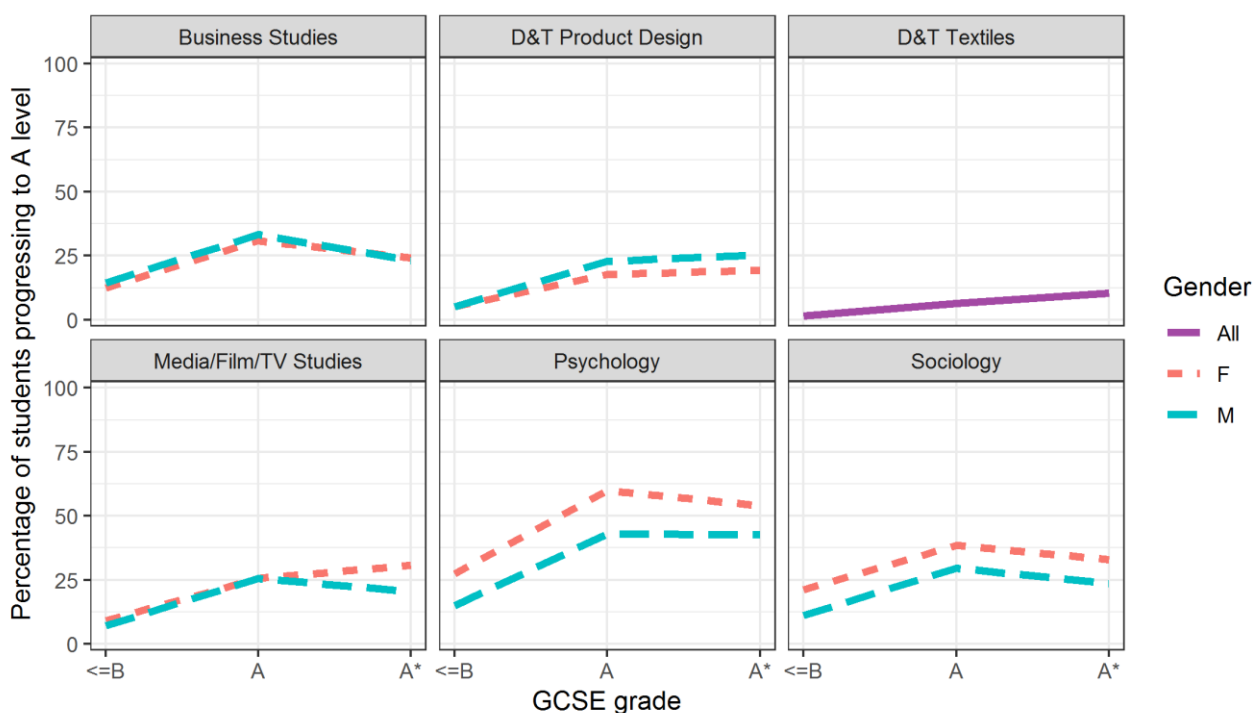


Figure 3. Percentages of students progressing to A level from each GCSE grade for non-reformed GCSE subjects, broken down by gender. For D&T Textiles, no gender breakdowns are presented due to low cell counts.

Table 2 presents cumulative percentages of candidates who achieved particular A level grades, given their GCSE grade. To prevent low cell counts but maintain comparability across subjects, aggregation was applied more widely here, with GCSE grades 8 and 9 combined (A* and A in non-reformed subjects), and those at grade 5 or below (B or below in non-reformed subjects) also combined. Similarly, A level grades A* and A were combined, as were grades D, E and U. Even with this, some subjects had further aggregation applied: these are marked in Table 2. As an example, to aid interpretation, the table shows that for Biology, of those progressing students who obtained GCSE grade 8 or 9, 70% went on to achieve at least grade A at A level, 91% at least grade B, 98% at least grade C, etc.

As may be expected, higher GCSE grades were associated with higher A level grades. For example, in Art & Design, 76% of those students progressing from a GCSE grade 8 or 9 obtained an A or A* at A level, compared to 47% of those who progressed from GCSE grade 7 and only 26% of those who progressed from GCSE grade 6. The highest rates of obtaining A*/A were seen in Art & Design, Fine Art, Biology, Computing, Drama, Geography, German, Further Maths, and Spanish, all of which showed >70% of those who progressed from GCSE grade 8 or 9 to gain A*/A. Conversely, the lowest rates were seen in progression from Double Science to Biology, Chemistry and Physics, all of which showed <50% of students progressing from GCSE grade 9-9, 9-8 or 8-8 to gain the top grades at A level.

Table 2. Cumulative percentages of candidates progressing from a given GCSE grade to a given A level grade.

Progression	GCSE grade	Cumulative % obtaining A level grade			
		A*/A	B	C	D/E/U
<i>a) Reformed GCSE subjects³</i>					
Art & Design [#]	8 or above	76	94	100	
	7	47	83	100	
	6	26	68	100	
	5 or below	9	44	100	
Art & Design (Fine Art)	8 or above	79	94	99	100
	7	46	84	97	100
	6	27	67	94	100
	5 or below	12	44	83	100
Art & Design (Photography)	8 or above	65	92	99	100
	7	38	78	97	100
	6	23	66	94	100
	5 or below	11	42	83	100
Biology	8 or above	70	91	98	100
	7	24	61	89	100
	6	8	34	71	100
	5 or below	2	17	52	100
Chemistry	8 or above	65	88	97	100
	7	17	51	83	100
	6	6	28	64	100
	5 or below	3	15	43	100
Computing	8 or above	76	93	98	100
	7	38	75	94	100
	6	17	51	84	100
	5 or below	5	24	64	100
Double Science - Biology [†]	8-8 or above	49	80	95	100
	8-7	17	52	85	100
	7-7	7	36	73	100
	7-6	3	21	60	100
	6-6 or below	1	10	41	100

(continued on next page)

³ Reformed subjects refer to those that were, by 2018, awarded on the 9-1 grade scale. To avoid combining grade scales here, anything awarded from a pre-reform version, on the A*-G scale, was removed.

Table 2. (*continued*). Cumulative percentages of candidates progressing from a given GCSE grade to a given A level grade

Progression	GCSE grade	Cumulative % obtaining A level grade			
		A*/A	B	C	D/E/U
Double Science - Chemistry [†]	8-8 or above	44	74	93	100
	8-7	12	45	80	100
	7-7	6	30	69	100
	7-6	3	19	57	100
	6-6 or below	3	12	40	100
Double Science – Physics [†]	8-8 or above	46	76	93	100
	8-7	11	41	76	100
	7-7	6	26	58	100
	7-6	3	17	52	100
	6-6 or below	2	8	32	100
Drama [#]	8 or above	74	96	100	
	7	44	85	100	
	6	23	70	100	
	5 or below	7	40	100	
English Language	8 or above	55	88	98	100
	7	26	68	95	100
	6	12	47	87	100
	5 or below	4	25	74	100
English Literature	8 or above	64	89	98	100
	7	31	69	94	100
	6	13	48	85	100
	5 or below	5	27	72	100
French [†]	8 or above	69	91	99	100
	7	19	60	89	100
	≤6	3	28	71	100
Geography	8 or above	74	94	99	100
	7	32	74	95	100
	6	11	45	85	100
	5 or below	3	19	62	100
German [†]	8 or above	77	95	99	100
	7	27	72	95	100
	≤6	7	37	76	100
History	8 or above	68	93	99	100
	7	27	70	95	100
	6	10	45	85	100
	5 or below	3	21	66	100
Mathematics	8 or above	68	86	96	100
	7	18	45	75	100
	6	6	22	52	100
	5 or below	5	16	37	100

(*continued on next page*)

Table 2. (*continued*). Cumulative percentages of candidates progressing from a given GCSE grade to a given A level grade.

Progression	GCSE grade	Cumulative % obtaining A level grade			
		A*/A	B	C	D/E/U
Maths - Further Maths†	8 or above	72	89	97	100
	7 or below	25	50	75	100
Music	8 or above	69	92	99	100
	7	24	71	94	100
	6	11	50	85	100
	5 or below	5	30	69	100
PE	8 or above	66	89	98	100
	7	33	71	94	100
	6	15	47	82	100
	5 or below	6	24	63	100
Physics	8 or above	63	86	96	100
	7	13	45	78	100
	6	4	21	54	100
	5 or below	2	12	38	100
Religious Studies	8 or above	64	90	98	100
	7	28	67	92	100
	6	12	45	84	100
	5 or below	5	25	66	100
Spanish	8 or above	70	92	99	100
	7	19	63	93	100
	6	7	38	79	100
	5 or below	5	20	58	100
<i>b) Non-reformed GCSE subjects</i>					
Business Studies	A/A*	57	88	98	100
	B or below	15	48	85	100
D&T Product Design	A/A*	62	88	98	100
	B or below	14	46	80	100
D&T Textiles#	A/A*	65	92	100	
	B or below	11	48	100	
Media/Film/TV Studies	A/A*	52	86	98	100
	B or below	13	50	88	100
Psychology	A/A*	62	88	98	100
	B or below	17	48	81	100
Sociology	A/A*	67	92	99	100
	B or below	24	59	88	100

Subjects marked with the hash symbol indicate that aggregation has occurred for A level grades of C, D, E & U (rather than D, E & U as elsewhere) due to low cell counts.

† Subjects marked with the dagger symbol indicate that aggregation of GCSE grades has occurred at 6/6-6 or below (or for Maths – Further Maths, 7 or below) due to low cell counts.

Table 3 presents the Pearson correlation coefficients between the grades achieved at GCSE and A level in the same (or closely related) subject. The means and standard deviations of GCSE and A level grades (again derived from numerical grade 'scores') amongst progressing candidates are also provided. The highest correlations were for Modern Foreign Languages (German, 0.704; French, 0.670), Geography (0.680), and individual sciences (Physics, 0.677, Biology, 0.670, Chemistry, 0.659). The lowest correlations were between Maths and Further Maths (0.470) and Photography (0.490), which were the only subjects to show correlations weaker than 0.5.

Table 3. Pearson correlations between grade achieved at GCSE and grade achieved at A level (in the same or related subject).

Progression	Number of progressing students	Pearson correlation	SD of GCSE grade	SD of A level grade	Mean GCSE grade	Mean A level grade
<i>a) Reformed subjects⁴</i>						
Art & Design	3,216	0.582	1.43	1.17	6.87	4.36
Art & Design (Fine Art)	7,809	0.580	1.42	1.19	7.08	4.48
Art & Design (Photog.)	2,585	0.490	1.44	1.14	6.64	4.13
Biology	37,260	0.670	1.21	1.30	7.46	4.13
Chemistry	34,634	0.659	1.11	1.30	7.80	4.17
Computing	8,854	0.647	1.42	1.31	6.76	4.03
Double Sci. - Biology	12,140	0.635	1.10	1.30	6.97	3.18
Double Sci. - Chemistry	6,990	0.602	1.09	1.33	7.33	3.31
Double Sci. - Physics	5,033	0.640	1.13	1.41	7.34	3.25
Drama	6,806	0.623	1.49	1.09	6.76	4.26
English Language	13,525	0.529	1.25	1.08	6.41	3.68
English Literature	32,619	0.570	1.30	1.21	7.08	4.07
French	5,587	0.670	1.11	1.19	7.84	4.35
Geography	24,743	0.680	1.30	1.22	6.87	4.00
German	1,970	0.704	1.18	1.15	7.70	4.45
History	33,377	0.653	1.35	1.19	7.00	4.01
Mathematics	67,529	0.651	0.95	1.46	7.79	4.20
Maths - Further Maths	10,480	0.470	0.59	1.16	8.63	4.92
Music	3,158	0.647	1.33	1.14	7.57	4.33
PE	8,373	0.586	1.30	1.26	6.73	3.89
Physics	23,306	0.677	1.10	1.38	7.86	4.12
Religious Studies	10,909	0.601	1.36	1.21	7.15	4.05
Spanish	5,928	0.645	1.11	1.17	7.84	4.41
<i>b) Non-reformed subjects</i>						
Business Studies	12,080	0.541	0.92	1.15	6.08	3.84
D&T Product Design	2,734	0.601	0.98	1.26	6.34	3.96
D&T Textiles	498	0.656	0.93	1.11	6.93	4.38
Media/Film/TV Studies	4,180	0.539	0.95	1.07	6.20	3.89
Psychology	4,093	0.567	0.96	1.24	6.12	3.92
Sociology	4,362	0.531	0.94	1.19	6.03	4.08

⁴ Reformed subjects refer to those that were, by 2018, awarded on the 9-1 grade scale. To avoid combining grade scales within the same correlation, mean and standard deviation calculations, anything awarded from a pre-reform version on the A*-G scale was removed here.

References

Gawedzka, G. & Gill, T. (2022). *Uptake of GCSE Subjects 2018*. Statistics Report Series No. 125. Cambridge University Press & Assessment, Cambridge, UK.

Gill, T. (2019). *Progression from GCSE to A Level, 2017*. Statistics Report Series No. 124. Cambridge Assessment, Cambridge, UK.

Vidal Rodeiro, C.L. (2007). *A Level subject choice in England: patterns of uptake and factors affecting subject preferences*. Cambridge Assessment, Cambridge, UK.

Appendix

An appendix containing tables with the counts underlying values in the main report is available alongside this report from www.cambridgeassessment.org.uk/our-research/all-published-resources/statistical-reports/.

The following tables are included:

Table A1. Numbers of candidates contributing to overall progression rates from GCSE to A Level by subject. Supplementary to Table 1.

Table A2. Numbers of students progressing to A Level from each GCSE grade, for reformed GCSE subjects. Supplementary to Figure 1.

Table A3. Numbers of students progressing to A Level from each GCSE grade, for Double Science GCSE. Supplementary to Figure 2.

Table A4. Numbers of students progressing to A Level from each GCSE grade, for non-reformed GCSE subjects. Supplementary to Figure 3.

Table A5. Numbers of candidates progressing from a given GCSE grade to a given A Level grade. Supplementary to Table 2.