

The accuracy of forecast grades for OCR GCSEs in June 2014

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1. Introduction

As a system of high-stakes public examinations operates throughout England and Wales, *General Certificates of Secondary Education* (GCSEs) are often the first formal qualifications to be obtained.

GCSE forecast grades are estimated grades provided by schools to the exam board prior to each examination session. Forecast grades are used as one source of information available to awarders when deciding on grade boundaries. They may also have a role to play in helping determine a final grade for a candidate whose script goes missing, or be used in special considerations and appeals.

This report presents an analysis investigating the accuracy of forecast grades of all OCR GCSE subjects in June 2014 in relation to the final grade. The forecast grades in this report are those reported by teachers to OCR in May 2014. This report is an update of Statistics Report Series No.89 (Gill & Chang, 2015) which examined the accuracy of forecast grades in OCR GCSEs in June 2013.

2. Overall accuracy of forecast grades

We firstly considered the percentage of accurate forecast grades given by the teachers. Table 1 shows that overall, the forecast grade in the June 2014 Session was correct 43.56% of the time. It is apparent that in general, forecasts were more often optimistic than pessimistic.

Table 1: Overall accuracy of forecast grades

%Accurate	43.56
%Optimistic	42.42
%Pessimistic	14.02

Table 2 demonstrates that, in the vast majority of cases (87.29%), the forecast grade was correct or was within one grade. Only 12.71% of the forecast grades were more than 1 grade out.

Table 2: Extent of inaccuracy of forecast grades

	%	N
Within 1 grade	87.29	599328
More than 1 grade out	12.71	87268

Overall, forecasts were more accurate for students achieving higher grades than lower grades (Table 3). In particular grade A* displayed by far the highest level of accuracy. This pattern is the most likely reason for the better accuracy in Independent schools and Grammar schools, where students achieve higher grades on average (see Table 8). The percentage of optimistic forecasts was higher at lower grades. Table 3 also clearly demonstrates the importance of grade C to students

and schools, with more than 50% accuracy for grade C or above, compared with only around 20% accuracy if the grade is below C.

Table 3: Accuracy of forecast grades by final grade

Final Grade	%Accurate	%Optimistic	%Pessimistic	N
A*	65.52	-	34.48	54844
A	52.08	21.65	26.27	111857
B	49.42	32.25	18.34	150419
C	53.09	39.94	6.97	170059
D	24.28	71.06	4.67	103459
E	18.12	77.26	4.62	49637
F	13.80	81.75	4.46	25719
G	13.79	84.13	2.07	13022
U	11.08	88.92	-	7580
Total	43.56	42.42	14.02	686596

Results in Table 4 demonstrate the similar conclusion as Table 3. It shows that it's much easier for teachers to correctly forecast grade from A* to C (with 53.12% accuracy) than grades below C. Only 20.20% of the final grades below grade C were correctly predicted. It also shows that the percentage of optimistic forecasts was very high (75.51%) at grades below C, whereas only 28.87% of forecasts were optimistic at grades A* to C.

Table 4: Accuracy of forecast grades by final grade for A-C and Below C.*

Final Grade	%Accurate	%Optimistic	%Pessimistic	N
A*- C	53.12	28.87	18.01	487179
Below C	20.20	75.51	4.28	199417
Total	43.56	42.42	14.02	686596

3. Accuracy of forecast grades by subject groups

In this section, further analysis was undertaken by breaking down all the OCR GCSE subjects into 6 subject groups (refer to Appendix 1 for a list of the subjects in each group) and then carrying out analysis of prediction accuracy based on these groups.

Table 5: Accuracy of forecast grades by subject group.

Subject Group	%Accurate	%Optimistic	%Pessimistic	N
Arts	54.53	33.24	12.23	39020
Business, Leisure & Tourism	39.51	48.58	11.92	23839
ICT/Technology	41.95	45.31	12.74	51472
Languages	46.66	41.91	11.43	88845
Science/Maths	45.29	41.46	13.24	311160
Social Science	37.39	44.77	17.84	172260
Total	43.56	42.42	14.02	686596

Table 5 shows the summary of accuracy of the forecast grades by subject groups. The Arts subject group had the highest level of accuracy (54.53%). Social Science subjects were the least accurate with 37.39% accuracy. Business, Leisure & Tourism subjects were the most optimistic and Arts subjects were the least optimistic.

In the next stage we investigated the accuracy of forecast grades for all the subject groups by final grade. The results are presented in Table 6. This also demonstrates that grade C is thought to be a critical grade for all the subject groups. In general, for all the subject groups, it appears much easier for teachers to accurately forecast grades of C or higher than grades below C.

Table 6: Accuracy of forecast grades by subject groups and final grades.

Subject Group	A*	A	B	C	D	E	F	G	U
Arts	72.88	62.90	58.89	62.08	35.15	31.68	24.32	29.13	27.66
Business, Leisure & Tourism	65.46	52.96	48.73	48.29	22.92	14.39	9.23	8.54	14.21
ICT/Technology	60.37	56.67	51.85	52.43	27.91	19.93	15.34	18.28	21.18
Languages	74.13	53.66	49.27	47.77	24.10	19.51	14.04	11.01	10.56
Science/Maths	66.58	52.72	50.86	57.02	23.83	19.45	17.15	17.23	7.14
Social Science	58.18	47.07	44.13	43.96	21.64	12.89	7.72	7.66	9.82

Figure 1 presents a comparison of the prediction accuracies at each grade between the 6 subject groups. Arts was the subject group with the highest prediction accuracy at almost all grades. Social Science was the subject group with the lowest prediction accuracy at almost all grades. It also shows that Business, Leisure & Tourism had quite low prediction accuracy at most of the grades.

Figure 1: Comparison of the prediction accuracies between subject groups, by final grade.

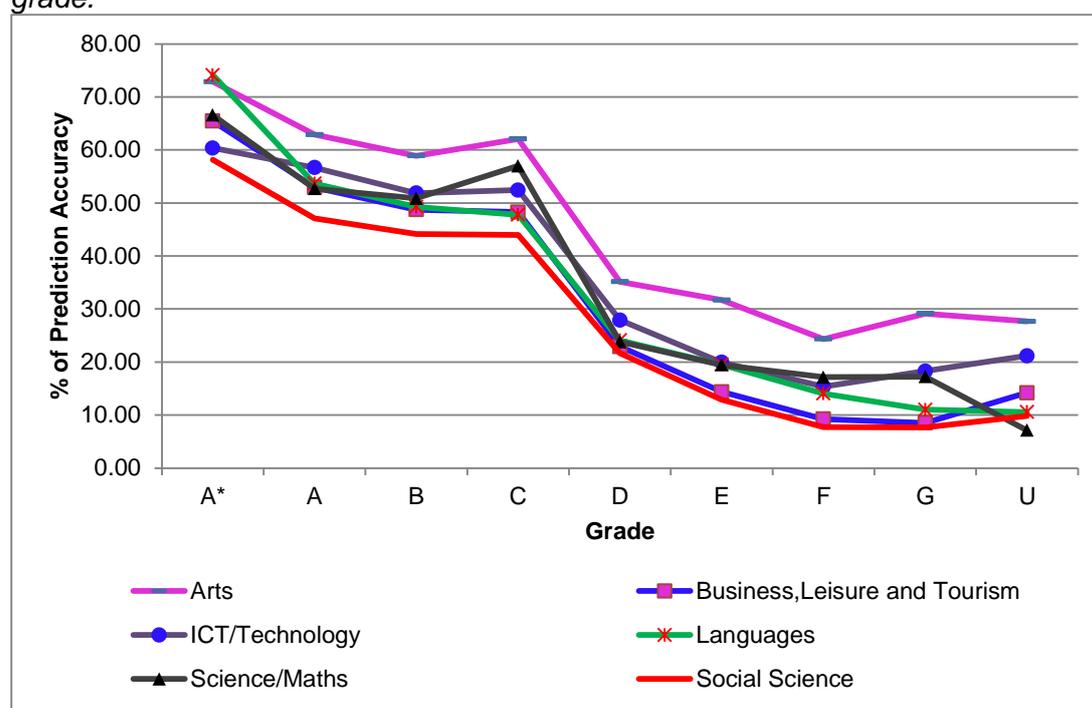


Table 7: The extent of inaccuracy by subject group.

Subject Group	%accuracy extent within 1 grade	%inaccuracy by more than 1 grade	N
Arts	93.23	6.77	39020
Business, Leisure & Tourism	84.25	15.75	23839
ICT/Technology	86.25	13.75	51472
Languages	90.78	9.22	88845
Science/Maths	89.29	10.71	311160
Social Science	81.26	18.74	172260
Total	87.29	12.71	686596

Table 7 represents the prediction accuracy by subject groups when we extend the prediction to within 1 grade. Arts had the highest prediction accuracy (93.23%), whereas only 81.26 % prediction accuracy was achieved for Social Science. The remaining subject groups' prediction accuracy was between 84 and 91 per cent when accuracy was extended to within 1 grade.

4. Accuracy of forecast grades by school type

In this section the accuracy of the forecast grades by school types is investigated. Table 8 shows the accuracy of the forecast grades by school type. In general, Independent and Grammar schools were the most accurate at forecasting GCSE grades. Other schools and Comprehensive schools were the least accurate, and also the most optimistic. Independent schools and Grammar schools were the least optimistic.

Table 8: Accuracy of forecast grades by school type

School Type	%Accurate	%Optimistic	%Pessimistic	N
City Academy	43.36	42.71	13.94	302541
Comprehensive	41.82	44.31	13.87	288291
Grammar	50.95	33.76	15.29	15440
Independent	52.94	32.03	15.03	56710
Secondary Modern	42.94	42.89	14.17	10698
Others	37.67	48.89	13.44	12916
Total	43.56	42.42	14.02	686596

We also investigated the accuracy of forecast grades for all school types by final grade. The results are presented in Table 9. This also demonstrates that grade C is thought to be a critical grade for all the school types. In general, for all the schools, it appears much easier for teachers to accurately forecast grades higher than grade C than grades below grade C.

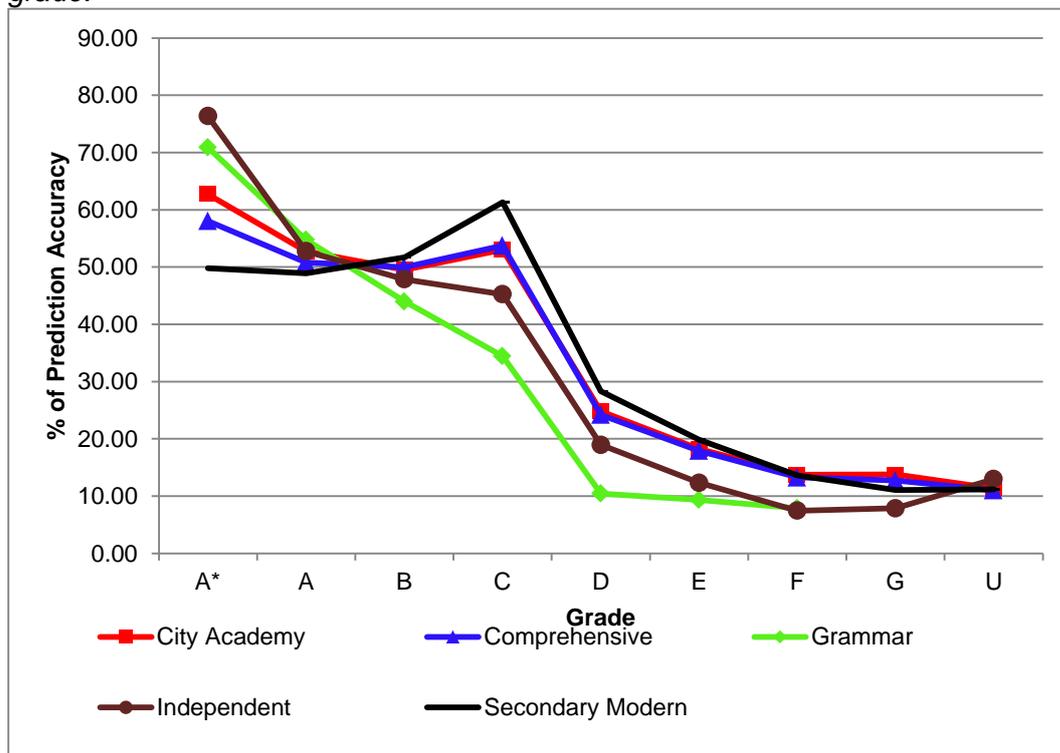
Table 9: Accuracy of forecast grades by school types and final grades.

School Type	A* (%)	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	U (%)
City Academy	62.71	52.75	49.52	53.05	24.77	18.25	13.71	13.78	11.33
Comprehensive	58.05	50.81	49.97	53.77	24.20	17.90	13.26	12.70	11.02
Grammar	70.90	54.75	44.00	34.44	10.46	9.35	7.89	*	*
Independent	76.35	52.75	47.87	45.23	18.93	12.31	7.45	7.85	12.96
Secondary Modern	49.81	48.90	51.71	61.29	28.29	19.85	13.62	11.07	11.18

* Suppressed as fewer than 20 candidates available.

Figure 2 presents the comparison of the prediction accuracies between 5 schools types. At grade A* , Independent schools and Grammar schools had the highest prediction accuracies in comparison with City Academy and Comprehensive schools which had lower accuracy , Secondary Modern schools had the lowest prediction accuracy at grade A*. It is interesting to see that at grades A and B, there were very similar prediction accuracies across all school types. However, at grade C and below Secondary Modern schools had the highest prediction accuracy, followed by Comprehensive schools and City Academies. Independent schools and Grammar schools had the lowest prediction accuracy at all grades below C, except at grade U.

Figure 2: Comparison of the prediction accuracies between school types, by final grade.



Finally, we investigated the prediction accuracies across all OCR centres (schools) with more than 30 entries (n=2,849). Figure 3 shows the distribution of prediction accuracy across these centres in the June 2014 Session. The average prediction accuracy was 43.09% and 819 centres achieved 50 percent of prediction accuracy or above.

Figure 3: Prediction accuracy for all OCR test centres (with more than 30 entries in each centre).

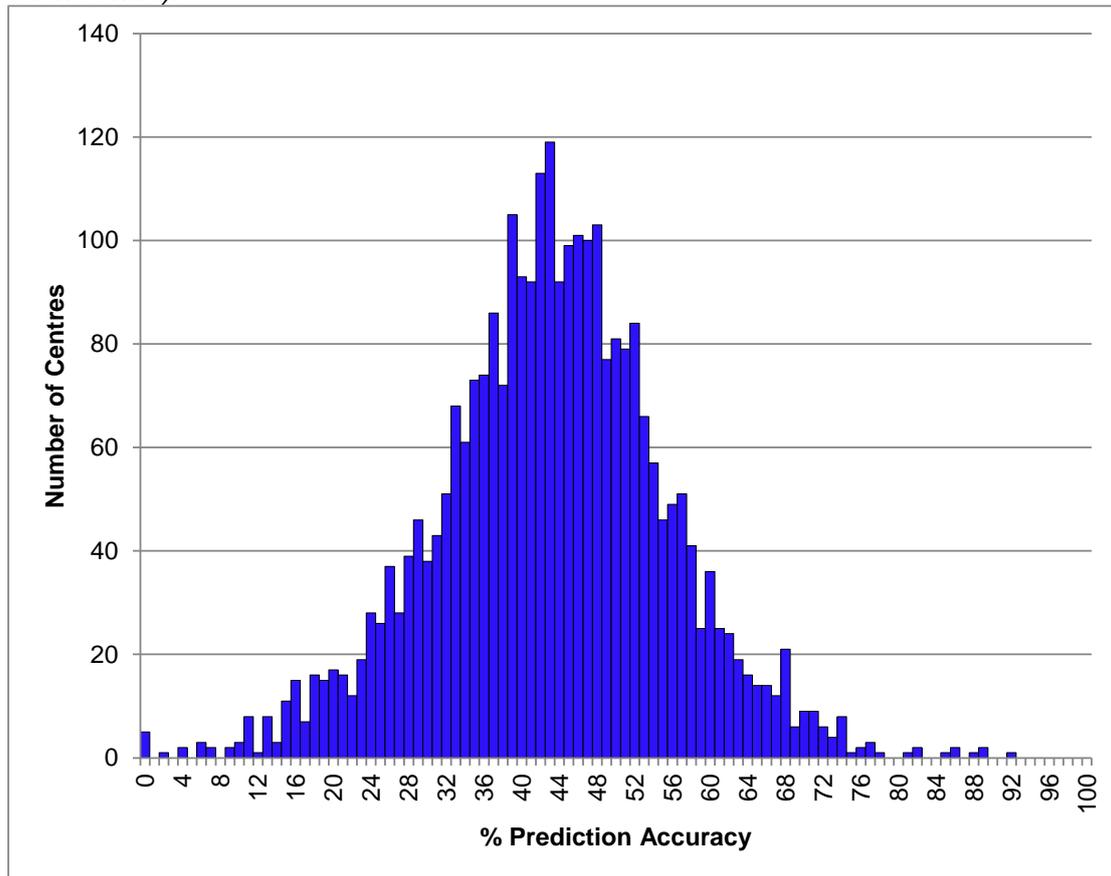
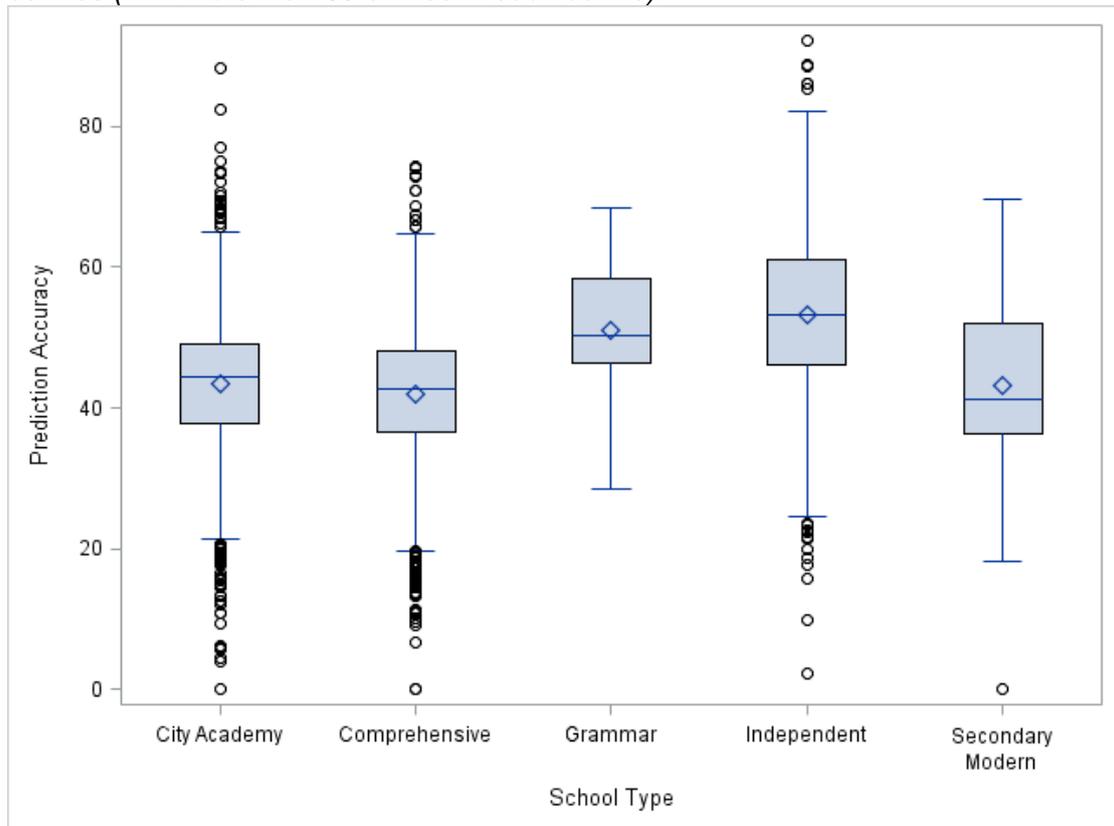


Figure 4 presents box plots of the distribution of prediction accuracies by different school types for all OCR centres (with more than 30 entries). Independent schools and Grammar schools had the highest medians of the prediction accuracy among the five groups. Comprehensive schools and Secondary modern schools had the lowest medians of prediction accuracy.

Figure 4: Distribution of prediction accuracies by school types for all OCR test centres (with more than 30 entries in each centre).



References

Gill T. and Chang Y. (2015). *The accuracy of forecast grades for OCR GCSEs in June 2013. Statistics Report Series No.89.* Cambridge Assessment.

Appendix 1- GCSE Subject Groups

Group	Subject
Arts	Expressive Arts Media Studies Music Art & Design Performing & Expressive Arts
Business, Leisure & Tourism	Applied Business Business Business Studies Law Leisure & Tourism Physical Education
ICT/Technology	Applied ICT Design and Technology Engineering ICT Manufacturing Health and Social Care Home Economics
Social Science	Ancient History Classical Civilisation Economics Geography History Humanities Psychology Religious Studies Sociology Citizenship Studies
Science/Maths	Additional Applied Science Additional Science Applied Science Biology Chemistry Mathematics Physics Science
Languages	Classical Greek Dutch English English Literature French German Gujarati Latin Persian Portuguese Spanish Turkish Biblical Hebrew