

Analysis of Tripos Results

Abstract

This is a study of results from the Maths tripos since 2002, using them to predict exam results in 3rd and 4th year based on those from previous years. We also compare the performances of students from the different colleges.

Introduction

The data is obtained from the class lists in the Cambridge University Reporter, published by CUP and available in the University Librarian. It covers all exams up to 2010 sat by students matriculating from 2001 onwards, so 27 sets of 1st-3rd year exams.

Predictions

1st Year	2nd Year	3rd Year					Total
		1	2.1	2.2	3	all.	
1	1	305	79	3			387
	2.1	38	86	18	2	1	145
	2.2	2	1	6		1	10
2.1	1	79	59	1			139
	2.1	74	243	85	3	1	406
	2.2	6	56	61	14	3	140
	3			6	3	1	10
2.2	1	1	2				3
	2.1	10	68	24	3	1	106
	2.2	1	49	68	13	5	136
	3		3	18	13	8	42
3	2.1		7	4			11
	2.2		10	18	8	4	40
	3			15	7	4	26
Total		516	663	327	66	29	1601

Table 1: Prediction of 3rd year results from first two years

Note: 'all.' = granted an allowance towards an ordinary degree.

1st Year	2nd Year	3rd Year	4th Year			Total
			Distinction	Merit	Pass	
1	1	1	155	30	16	201
		2.1	14	10	16	40
		2.2			2	2
	2.1	1	8	10	9	27
		2.1	10	12	15	37
		2.2	1		1	2
2.1	1	1	27	11	5	43
		2.1	9	8	10	27
		2.2			1	1
	2.1	1	13	12	8	33
		2.1	9	21	36	66
		2.2	1	1	5	7
	2.2	1			2	2
2.1		2	2	7	11	
2.2	1	2.1	1			1
	2.1	1	1	1	2	4
		2.1	5	1	4	10
	2.2				3	3
	2.2	2.1		1	5	6
3	2.1		1		1	
3	2.1	2.1			2	2
		2.2			2	2
	2.2				2	2
Total			257	123	152	532

Table 2: Prediction of 4th year results from first three years

Colleges

We now compare the number of each degree class obtained by each college; in first, second and third year exams. To facilitate comparison we assign points to each class as follows: 5 for a 1st, 3 for a 2.1, 2 for a 2.2, and 1 for a 3rd or allowance. Other results (“satisfied the examiners”, “declared to have deserved honours”) are ignored; they are in any case rare. Colleges with very small numbers of maths students (Homerton, Hughes Hall, Lucy Cavendish, St Edmund’s & Wolfson) have been omitted.

College	Numbers					Annual Intake	Percentages				Score
	1st	2.1	2.2	3/a*	Total		1st	2.1	2.2	3/a*	
Trinity	514	395	143	41	1093	46	47	36	13	4	3.73
Caius	93	79	41	13	226	9	41	35	18	6	3.53
St John's	125	174	63	17	379	16	33	46	17	4	3.40
Pembroke	68	89	34	14	205	9	33	43	17	7	3.36
Christ's	100	98	55	18	271	11	37	36	20	7	3.40
Queens'	137	154	86	24	401	17	34	38	21	6	3.35
Trinity Hall	54	98	33	8	193	8	28	51	17	4	3.31
St Catherine's	52	59	34	15	160	7	33	37	21	9	3.25
Peterhouse	43	64	25	14	146	6	29	44	17	10	3.23
Clare	75	106	49	11	241	10	31	44	20	5	3.33
Selwyn	42	50	23	13	128	5	33	39	18	10	3.27
Magdalene	40	58	28	9	135	6	30	43	21	7	3.25
Emmanuel	74	99	50	25	248	10	30	40	20	10	3.19
Jesus	67	134	64	16	281	12	24	48	23	6	3.14
King's	44	88	39	16	187	8	24	47	21	9	3.09
Corpus Christi	30	60	34	9	133	6	23	45	26	7	3.06
Robinson	28	62	32	10	132	6	21	47	24	8	3.03
Fitzwilliam	43	72	45	20	180	8	24	40	25	11	3.01
Churchill	95	167	90	36	388	16	24	43	23	9	3.07
Girton	57	106	58	30	251	10	23	42	23	12	2.98
Sidney Sussex	24	64	36	15	139	6	17	46	26	11	2.87
Downing	21	39	30	20	110	5	19	35	27	18	2.75
Newnham	24	52	51	13	140	6	17	37	36	9	2.79
New Hall	6	50	35	14	105	4	6	48	33	13	2.51
TOTAL	1856	2417	1178	421	5872	245	32	41	20	7	3.29

Table 3: Results by college; all cohorts, all years

* 3/a = 3rd or allowance

Note: Each student usually sits three sets of exams, so the number of students included per college is a third of the figure in the 'Totals' column.



Figure 1: Tripos score against year of foundation; colour density shows size of maths intake

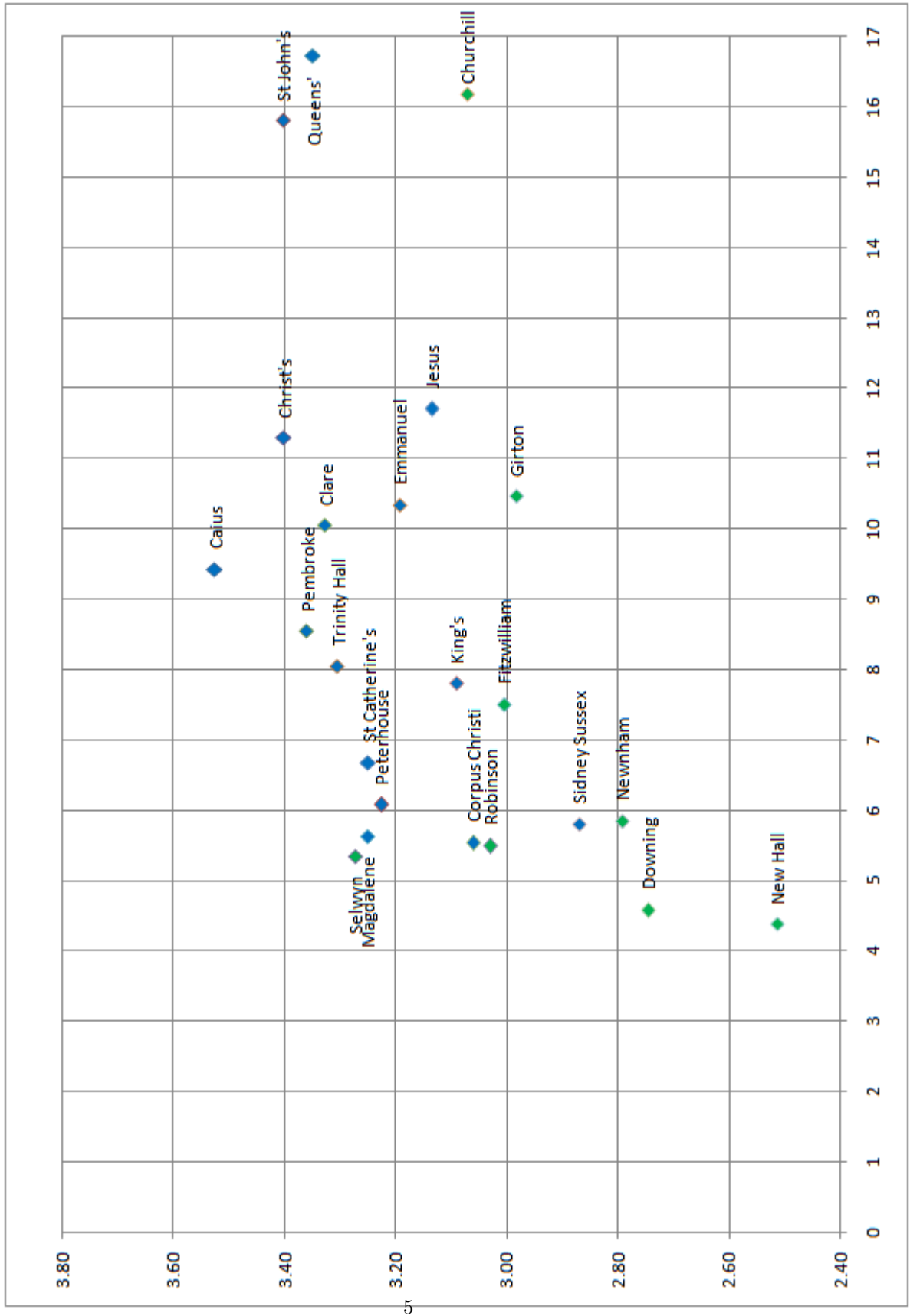


Figure 2: Tripos score against typical annual intake; old colleges in blue, new ones in green; Trinity omitted

However, the above results should be treated with some caution since the variation between one cohort and the next generally outweighs that between the average results for colleges, as the following table and concluding graph illustrate. We continue to use the scoring system described earlier.

College	Matriculation Year										Total
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Caius	4.03	3.75	3.09	3.00	3.55	3.18	4.00	3.62	4.00	3.70	3.53
Christ's	3.16	3.09	2.31	3.69	3.36	3.93	3.81	3.73	3.15	3.60	3.40
Churchill	3.29	3.40	3.17	2.77	2.71	2.85	3.20	2.71	3.52	3.83	3.07
Clare	3.29	3.09	3.05	3.38	3.82	3.16	2.65	3.84	3.65	3.50	3.33
Corpus Christi	2.93	3.13	3.20	3.80	3.20	2.36	2.75	3.17	2.58	3.50	3.06
Downing	2.83	2.50	2.75	2.75	2.94	3.42	1.92	3.17	2.63	1.75	2.75
Emmanuel	3.24	2.44	3.48	3.54	3.17	2.82	3.18	3.57	3.26	3.44	3.19
Fitzwilliam	3.19	3.00	3.45	2.44	3.33	2.81	3.15	2.90	2.64	3.00	3.01
Girton	2.71	3.31	3.25	3.33	2.59	3.05	2.93	2.85	2.80	2.70	2.98
Jesus	3.37	2.66	2.72	3.00	4.28	3.22	3.25	2.97	2.93	3.71	3.14
King's	2.64	3.46	2.78	3.47	3.14	3.06	3.47	3.50	3.13	2.63	3.09
Magdalene	3.56	2.42	2.43	3.09	3.24	3.11	3.73	4.23	3.71	2.75	3.25
New Hall	2.53	2.71	2.44	2.56	2.27	2.90	2.80	2.00	1.88	2.83	2.51
Newnham	3.60	2.90	1.80	2.78	3.10	2.25	2.33	2.25	3.21	3.80	2.79
Pembroke	3.55	3.70	3.40	3.30	2.82	2.87	3.83	3.79	3.56	2.25	3.36
Peterhouse	3.00	3.50	3.50	3.94	2.81	2.86	3.60	3.00	2.89	2.86	3.23
Queens'	3.74	3.46	3.58	2.89	3.36	3.48	3.63	2.59	3.32	3.65	3.35
Robinson	3.13	4.29	3.28	2.88	2.93	2.95	3.22	2.94	2.13	2.00	3.03
Selwyn	3.67	2.79	3.38	2.27	3.78	3.71	3.00	3.57	3.25	3.00	3.27
Sidney Sussex	1.71	3.24	2.69	3.19	2.93	3.67	2.50	2.83	2.00	3.17	2.87
St Catherine's	2.58	3.85	4.48	3.40	3.10	3.28	2.28	3.67	2.92	2.20	3.25
St John's	3.83	2.95	3.69	3.92	3.12	2.93	3.15	3.20	3.96	3.29	3.40
Trinity	3.27	3.50	3.82	3.70	4.08	3.91	3.70	3.86	3.81	4.00	3.73
Trinity Hall	3.04	3.63	3.60	2.85	3.43	3.67	3.46	3.00	3.30	2.60	3.31
Total	3.29	3.24	3.29	3.27	3.32	3.27	3.32	3.32	3.29	3.29	3.29

Table 4: Results by college and cohort; all years

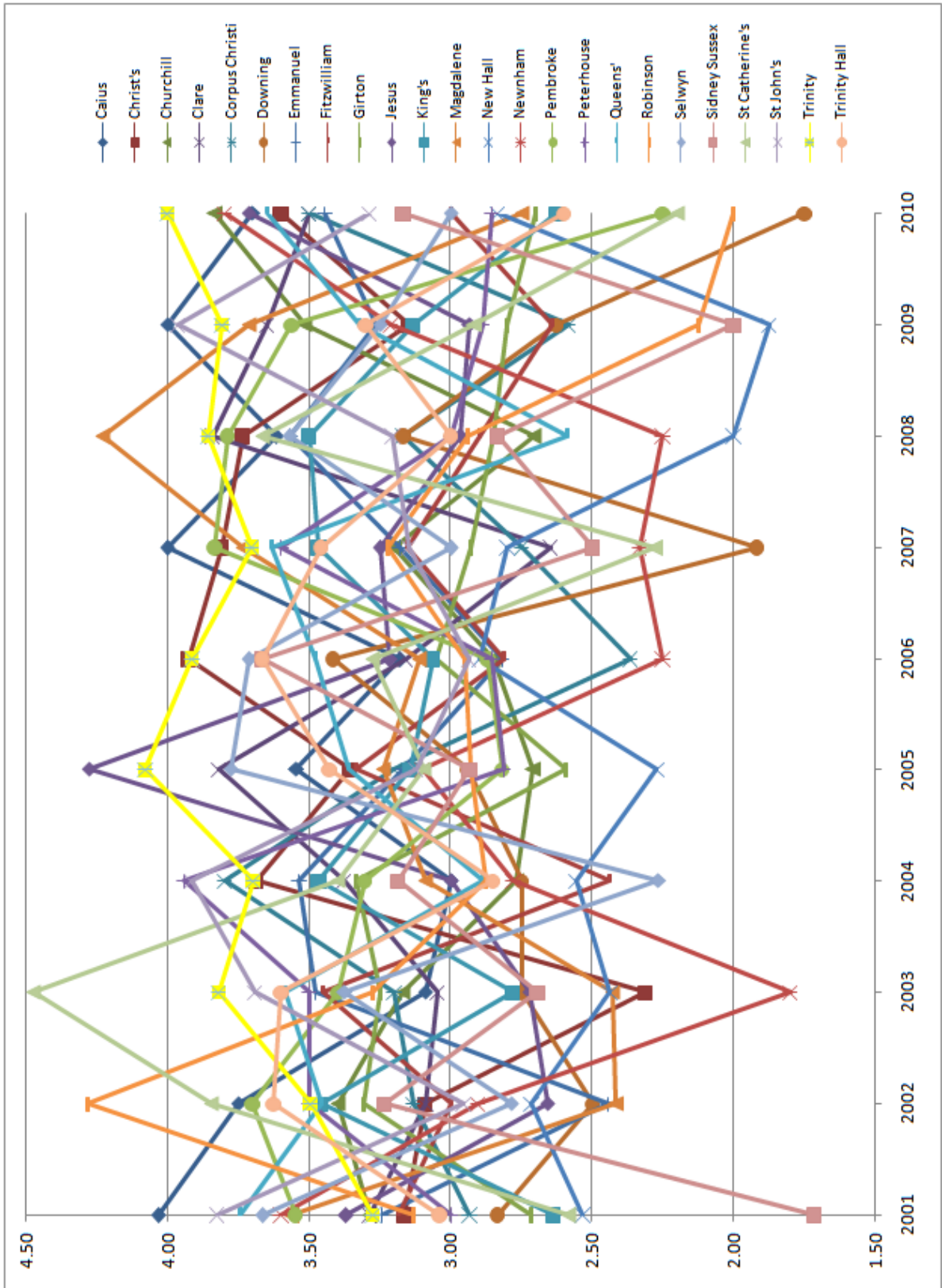


Figure 3: Tripos score against cohort for each college

If we modify the scoring system to give only 4 points for a 1st (still 3 for a 2.1, 2 for a 2.2 and 1 for a 3rd or allowance) we obtain the following results across the university:

Matric Year	1st Year	2nd Year	3rd Year	Total
2001	2.93	2.93	3.02	2.96
2002	2.89	2.94	2.98	2.93
2003	2.97	2.93	2.99	2.96
2004	2.93	2.95	3.00	2.96
2005	3.04	3.00	2.97	3.00
2006	2.92	3.00	2.97	2.96
2007	2.92	2.96	3.02	2.97
2008	2.88	2.97	3.02	2.95
2009	2.94	2.96		2.95
2010	2.96			2.96
Grand Total	2.94	2.96	3.00	2.96

Table 5: Results by exam and cohort; all colleges

These figures are consistently very close to 3, especially for 3rd year exams, which suggests that they may be deliberately scaled in this way.