Market Intelligence

Graduate Management Admission Council®

The GMAT® Exam Is Not Getting Easier:

The Fallacy of Score Increases and the Impact of Score Preview

Contents

Executive Summary

The Graduate Management Admission Test® (GMAT®) exam was developed to assess skills most relevant to student success in graduate business programs, and to help business schools select qualified applicants. First used by 54 business schools as a criterion for admission, the test is now used by more than 6,500 programs worldwide and taken each year by more than 200,000 candidates exclusively for application to graduate business programs.

In recent years, the average GMAT exam score of the admitted class at leading graduate business programs has risen, raising questions about the integrity of GMAT exam scores and whether the GMAT exam is getting easier. This report explores whether and how GMAT exam scores have changed over time.

GMAT exam scores for citizens of eight countries[1] — those which have consistently accounted for about 80 percent of exams taken each year since testing year (TY) 2011[2] — were analyzed and it can be demonstrated that average GMAT exam scores have remained stable. The exam is not getting any easier. What has changed, however, is the profile of test takers. Changing demographics are related to the broadening of the applicant pool for graduate business education, and hence what defines the "average" examinee. Shifts in underlying candidate demographics have had a small, but predictable, impact on calculated average scores.

Given the GMAT exam is not getting any easier, what factors might contribute to rising average scores among admitted classes? Analysis indicates that the recently introduced score preview feature, which enables GMAT test takers to select which of their test scores a school can see, is having an impact. Lower test scores are removed from the pool through student cancellation and a greater number of higher scores are reported to schools, a phenomenon common across all program groups analyzed in this study.

Although higher average GMAT exam scores among the admitted candidate pool are associated with an increase in candidate quality, there can be an adverse impact. As the number of higher-scoring candidates fills the applicant pool, programs can choose from among a larger number of these candidates, thus resulting in a rise in reported program averages. Candidates not meeting the program's typical score profile may therefore decide to target different programs, retake the exam, or opt out of the application process altogether.

Average GMAT exam scores cannot rise indefinitely and hence the cycle will break. The challenge for graduate business schools and the industry is how to effectively communicate the role that standardized assessments like the GMAT exam play in admissions, and to give candidates greater insight into the full range of scores among the applicant pool and what that means for them.

[1]The eight countries are the United States, Canada, United Kingdom, France, Germany, China, India and South Korea.

[2]The GMAT exam volumes are reported in testing years that mirror the academic calendar. For example, testing year 2011 ran from July 1, 2010 to June 30, 2011.

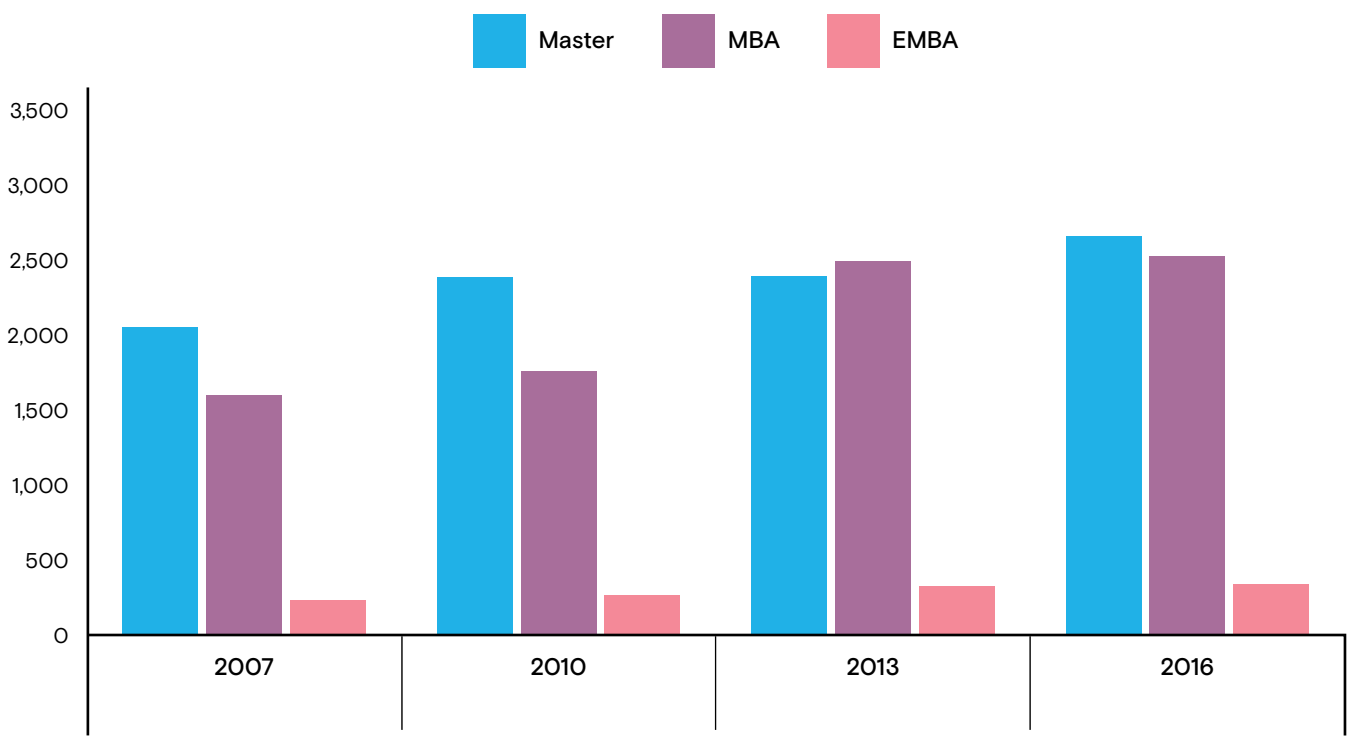
Demographic Analysis of GMAT Testing Population

As the number and types of graduate business programs have expanded and diversified (Figure 1), so too have the types of students applying to them. The candidate pool for graduate business education has become more heterogeneous and more globalized.

Increased candidate diversity is good for graduate business education. One less considered impact of greater diversity, however, is how it affects reported average GMAT exam scores across populations given that different demographic groups perform differently. For example, women typically have a lower average total score than men (542 vs. 560 in TY2016). If more women take the GMAT exam, averages across the test-taker pool will decrease and scores will appear to decline. Younger candidates, on the other hand, typically tend to score higher, so if a greater proportion of younger people take the exam, average GMAT scores would appear to increase. Citizenship, undergraduate major, country of residency, and a myriad of other factors impact average scores.

To empirically evaluate whether and how GMAT exam scores have changed, the demography of the testing population was analyzed using GMAT exam scores for citizens of the eight countries that have consistently accounted for about 80 percent of exams taken each year since TY 2011. These include the United States, Canada, France, Germany, United Kingdom, China, India, and South Korea. A new TY2016 score average was then calculated using the same demographic distribution but with historical average scores. If the projected and actual GMAT score averages are approximately equal, the test has not gotten any easier. Larger average score differences would indicate that an underlying score shift has occurred. (See Appendix A for further details on the methodology.)

Figure 1: MBA, executive MBA, and master's programs receiving one or more GMAT exam scores



Findings

Test-Taker Demographics

Between TY2012 and TY2016, among citizens of the eight countries being studied, there has been growth in both the number of female examinees (+2.8 percent) and younger test takers (+2.5 percent). Over this period, the share of exams taken by women aged 24 or younger and by women ages 25 to 30 rose by 2.6 percent and 0.7 percent, respectively. Exams taken by men in the same age categories changed by 0.2 percent and -1.3 percent, respectively (Figure 2).

Figure 2: Changes in examinee demographics, TY2012 to TY2016

Among demographic segments representing more than 250 exams in TY2016, those with the greatest growth rates in test taking are found in China and India among pre- or early-career candidates with a business undergraduate degree (Figure 3). In contrast, the greatest declines in test taking are typically among older U.S. examinees over the age of 40 (Figure 4).

Figure 3: Demographic GMAT segments with greatest percentage growth in test taking between TY2012 and TY2016

Rank	Citizenship	Residence	Gender	Undergraduate Major	Age	Change
1	China	Domestic	F	Humanities	25–27	+124%
2	China	Nonresident	F	Business	25–27	+99%
3	India	Domestic	F	Business	25–27	+96%
4	China	Domestic	F	Business	25–27	+91%
5	China	Nonresident	M	Business	25–27	+89%
6	India	Domestic	M	Business	Under 22	+86%
7	India	Domestic	F	Business	Under 22	+84%
8	China	Nonresident	M	Business	Under 22	+84%
9	China	Nonresident	F	Business	Under 22	+81%
10	India	Domestic	M	Engineering	35–39	+80%

Figure 4: Demographic GMAT segments with greatest percentage decline in test taking between TY2012 and TY2016

Rank	Citizenship	Residence	Gender	Undergraduate Major	Age	Change
1	U.S.	Domestic	M	Engineering	40+	-52%
2	U.S.	Domestic	F	Business	40+	-52%
3	China	Domestic	M	Other	Under 22	-51%
4	U.S.	Domestic	M	Business	40+	-48%
5	India	Domestic	M	Other	25–27	-48%
6	U.S.	Domestic	M	Humanities	22–24	-46%
7	China	Domestic	M	Other	22–24	-44%
8	U.S.	Domestic	M	Other	22–24	-44%
9	U.S.	Domestic	F	Business	35–39	-43%
10	U.S.	Domestic	M	Social Science	22–24	-41%

Projecting TY2016 Scores Using Historical Data

Clearly, there have been changes in candidate demographics in recent years. If, however, these are held constant, do GMAT exam scores remain the same?[3]

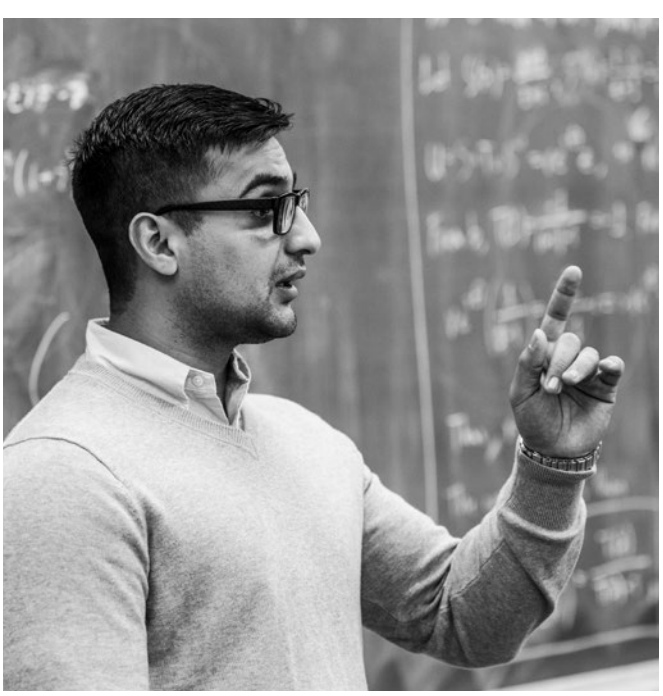
Five years of GMAT data from TY2011 to TY2015 were used to recalculate TY2016 score averages (see Appendix B, Figure B.2), and across all testing years only minor variances were noted: The average difference between actual and projected GMAT scores for the eight countries examined was 2.43. Analysis reveals that U.S. examinees appear to be performing at a slightly higher level than expected as, across all years, the average difference between projected and actual is -9.5.

In Figure 5, actual TY2016 average scores by citizenship (x-axis) are mapped against the projected average scores calculated using historic data (y-axis). The diagonal line represents equivalence (i.e., when actual and projected scores are the same) and the distance from this line illustrates the difference between actual and projected performance.

When using TY2012 data to project a TY2016 average, Chinese and Indian candidates would be expected to score higher than they did: In TY2016, Chinese candidates scored, on average, 581 yet using TY2012 data resulted in a projected average score of 589. For Indian candidates, the two values were 577 and 582, respectively. In contrast, French citizens performed slightly better than expected: Average TY2016 scores for the population analyzed were 566 yet projections based on TY2012 data estimated an average score of 556 (Figure B.2, Appendix B).

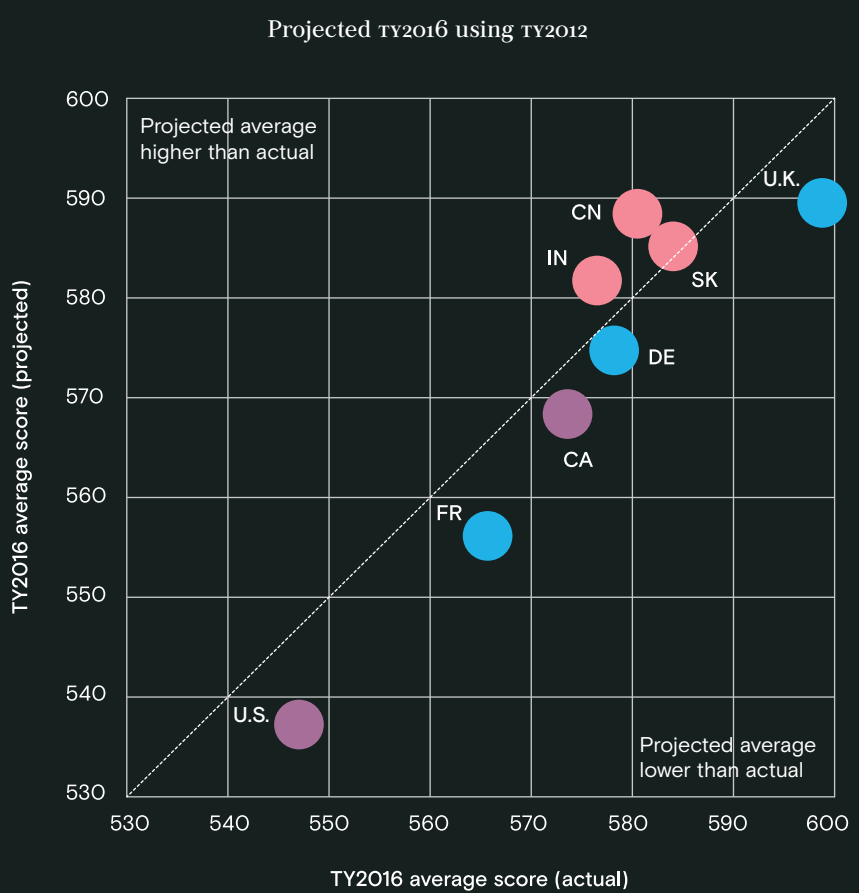
Though a difference of 10 points may seem large, it is important to note that the GMAT exam is scored in 10-point increments. Ten points are therefore one increment and equivalent to a ±1.7 percent change in score when considered across the score range. Within this context, it is a relatively small difference, possibly attributable to factors such as greater familiarity with the exam format, increased preparedness, and the impact of changing examinee demographics.

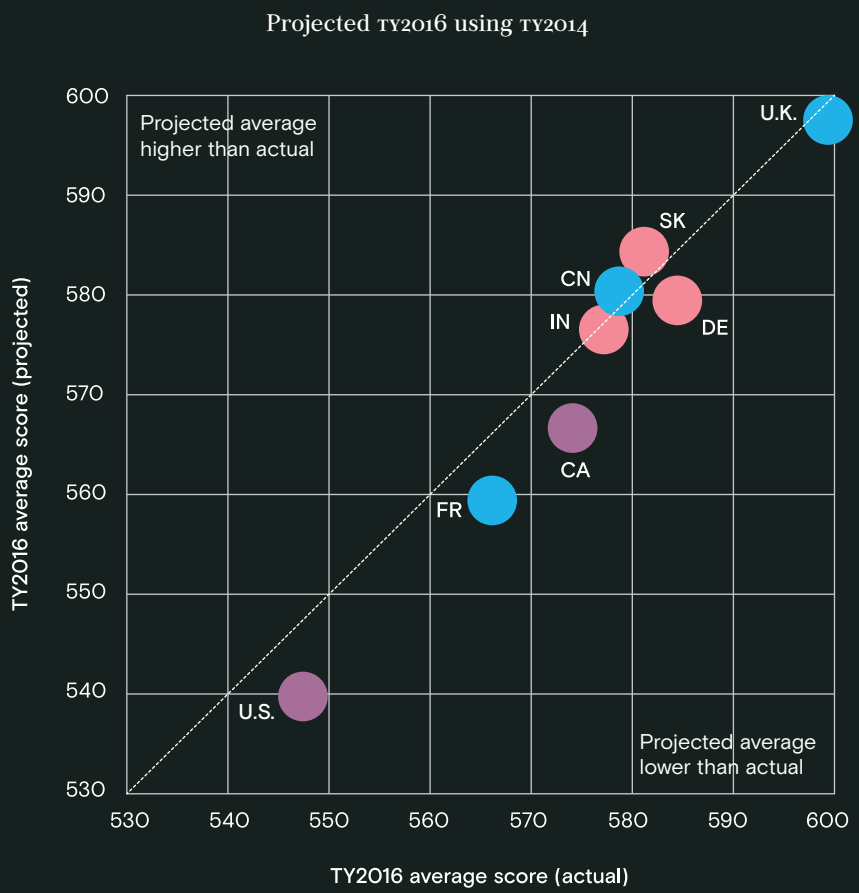
GMAT score performance has therefore not changed, but what has changed are the profiles of GMAT examinees. Changes in the underlying candidate demographics have therefore had a small and predictable impact on calculated average scores.



[3]When using historical data to recalculate the average GMAT score in TY2016, defining a minimum segment size helps to mitigate the effect of small numbers of examinees. For the projected TY2016 average scores discussed in the following sections, the minimum segment size was set at 10.

Figure 5: Mapping actual (TY2016) against projected GMAT scores (historical data)





Score Preview

If the GMAT exam is not getting any easier, then what factors might contribute to rising average scores at top-tier business schools?

As demonstrated in the previous analysis, the changing demographic profile of GMAT examinees is having an impact on average GMAT scores. Another factor, however, that might impact average GMAT scores is the new (2014) score preview feature: Candidates can preview their score and decide whether to keep or cancel it. Are top-tier programs simply seeing more high scores—and are therefore able to cherry pick the best—or are they seeing fewer lower scores as candidates take themselves out of the application pipeline by deciding not to send a score to a school? Comparing two years of GMAT score-sending data—TY2014 (prior to the introduction of score preview) and TY2016 (when score preview was available)—provides some insight.

The Dataset

To simplify analysis, three groups of programs were created:

- Group A–global programs, ranked highly around the world
- Group B–leading regional programs, may be internationally ranked
- Group C–leading domestic programs

Each group included 10 full-time MBA programs (or local equivalent) offered by a mix of schools from around the world (five U.S., one Canadian, two European, and two Asian).

The test-taking and score-sending behavior of candidates who sent GMAT scores to one or more of these programs during TY2014 and TY2016, and who were citizens of one of the eight countries being evaluated (United States, Canada, France, Germany, United Kingdom, China, India, South Korea), was analyzed.

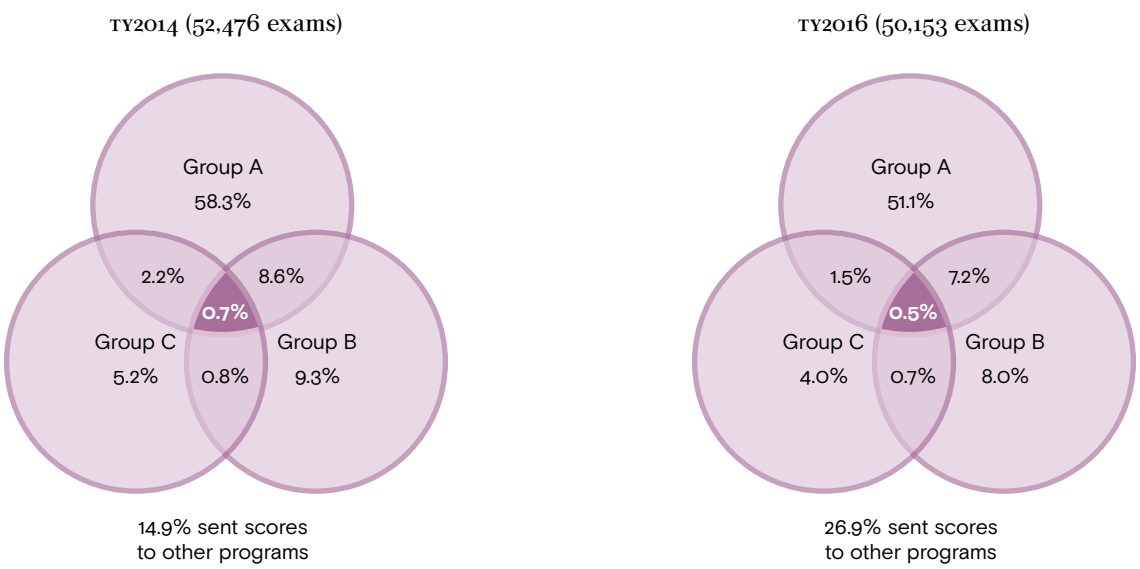
Figure 6 shows the overlap in the percentage of scores sent to programs in Groups A, B, and C. The relatively low level of overlap indicates that, at least among the forced grouping applied, there are distinct groups of candidates.

TY2014 and TY2016 Summary Data

In TY2014, the dataset consisted of 52,476 exams, taken by 39,483 unique candidates who were citizens of the United States, Canada, France, Germany, United Kingdom, China, India, and South Korea. Their average GMAT score was 613. Among those sending scores to Group A, the average score rose slightly to 629 (vs. 598 for Group B, and 558 for Group C).

In TY2016, 34,101 unique candidates from the same countries who had sent one or more scores to the three program groups created sat for a total of 50,153 exams. The average

Figure 6: Overlap in GMAT score sending (TY2014 and TY2016), Groups A, B, and C



score across all exams was 628: 636 for reported scores, 593 for canceled ones (Figure 7). Among candidates sending scores to Group A, the average was 651 (651 for reported; 603 for canceled) and approximately 1 in 20 scores (19%) were canceled.

Figure 7: Summary TY2014 and TY2016 GMAT exam and score data

		TY2014	TY2016
Unique GMAT examinees	The dataset	39,483	34,101
	Reportable scores		32,593
	Canceled scores		7,087
GMAT exams taken	The dataset	52,476	50,153
	Reportable scores		40,791
	Canceled scores		9,362
Average GMAT score	The dataset	613	628
	Reportable scores		636
	Canceled scores		593

Findings

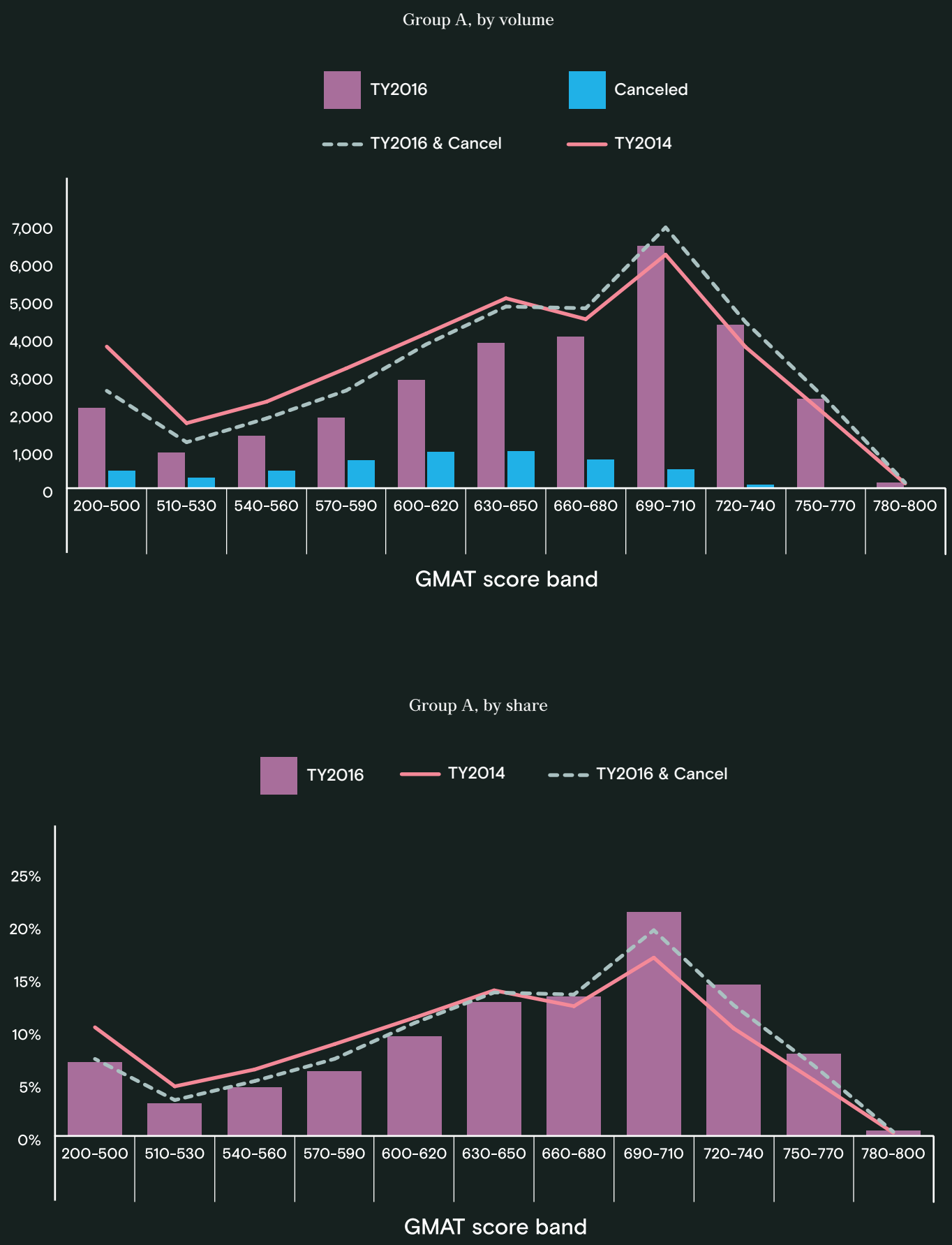
Score Preview Impact on Group A Programs

In TY2014, Group A programs received 69.8 percent of exam scores from the citizens of the eight countries being examined; this figure dropped to 60.4 percent in TY2016. Fewer test takers therefore opted to send scores to these programs.

Figure 8 illustrates the distribution of scores to one or more programs in Group A. In TY2014, a larger share of candidates scoring at or below 650 sent their scores to Group A programs when compared with TY2016. This therefore led to an increase in the share of scores coming from higher-scoring candidates: In TY2016, candidates scoring 660 or higher accounted for 57 percent of scores received by Group A schools (vs. 45 percent in TY2014). If we assume previewed scores were sent (rather than canceled), this share would drop slightly to 52.5 percent, a higher proportion than in TY2014.

In terms of the volume, rather than share, of scores, the story is the same: Global ranked programs are attracting more scores from test takers scoring 690 or higher—13,262 in TY2016 versus 12,022 in TY2014—despite there being fewer exams with this score in the dataset.

Figure 8: Distribution of GMAT scores, by band, sent to global ranked programs by citizens of 8 countries



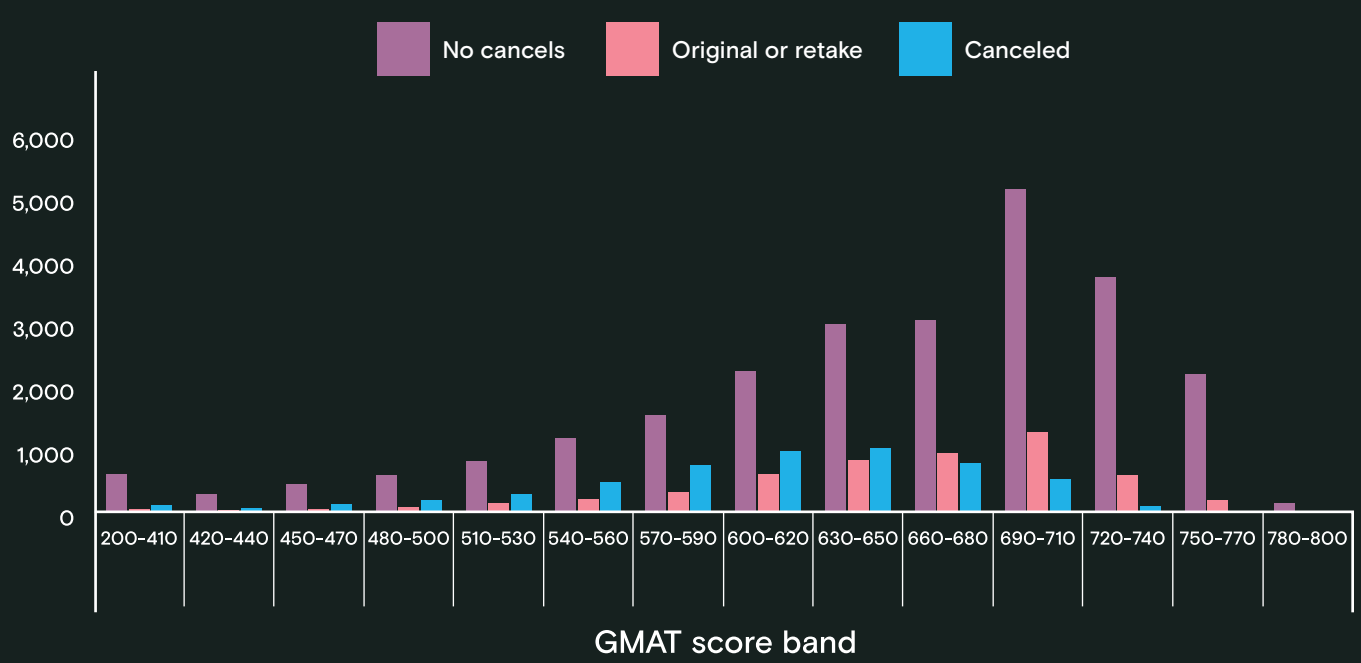
Among the 26,269 unique test takers who sent scores to one or more Group A programs in TY2016, 1 in 6 had previewed and canceled scores during the testing year. Using the test taker's actual score sending behavior during the same testing year to predict where the canceled scores might have been sent illustrates the impact of score preview on applicant pool statistics (Figure 9).

It is apparent that the score preview feature available to GMAT test takers resulted in the removal of some test scores from the TY2016 pool (average score 606) and substitution of higher scores (average score 654). The distribution of scores from these retaken exams is similar to the scores of examinees who did not preview and cancel their score (average 651).

The analysis indicates that roughly 1 in 6 candidates in the dataset who targeted one or more of the selected Group A programs, chose to cancel a score after previewing it. Those scoring 600 to 610 were most likely to preview and cancel, and gain an average of 48 points in their score on subsequent exams. The consequences of score preview are that as the number of higher-scoring candidates sending scores to Group A programs increases, these programs have more high-scoring candidates to choose from and so reported program averages rise, which, in turn, may drive lower scoring candidates away (or encourage them to retake). Unless schools intervene, the cycle will continue until it breaks. The challenge for these programs is determining how to address the issue of candidate self-selection and opt out.

It must be noted that "lower scoring" in this context is relative. Based on percentile rankings, a candidate achieving 650 on the GMAT exam has still scored higher than 76 percent of examinees.

Figure 9: Distribution of GMAT scores intended for global ranked programs, by score band and exam status, TY2016



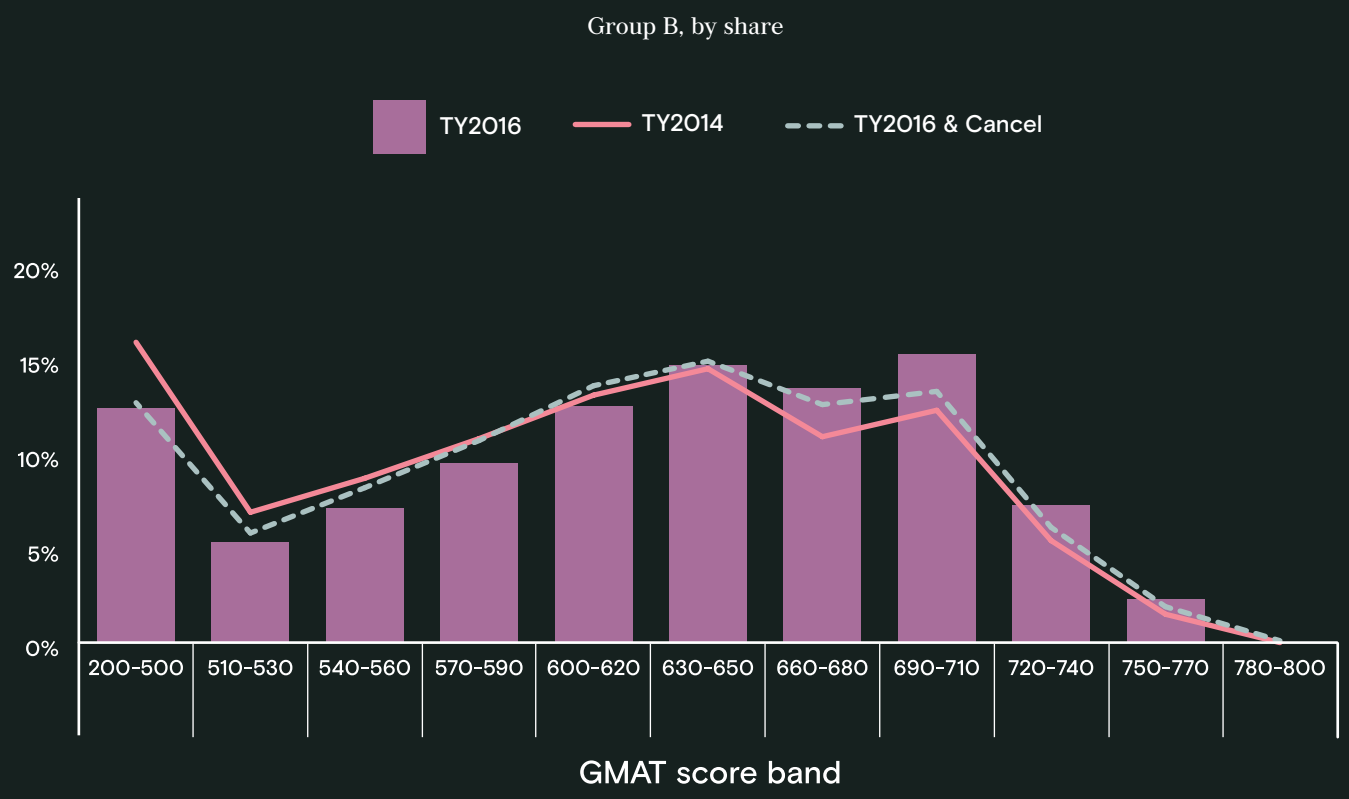
Group B and C Programs

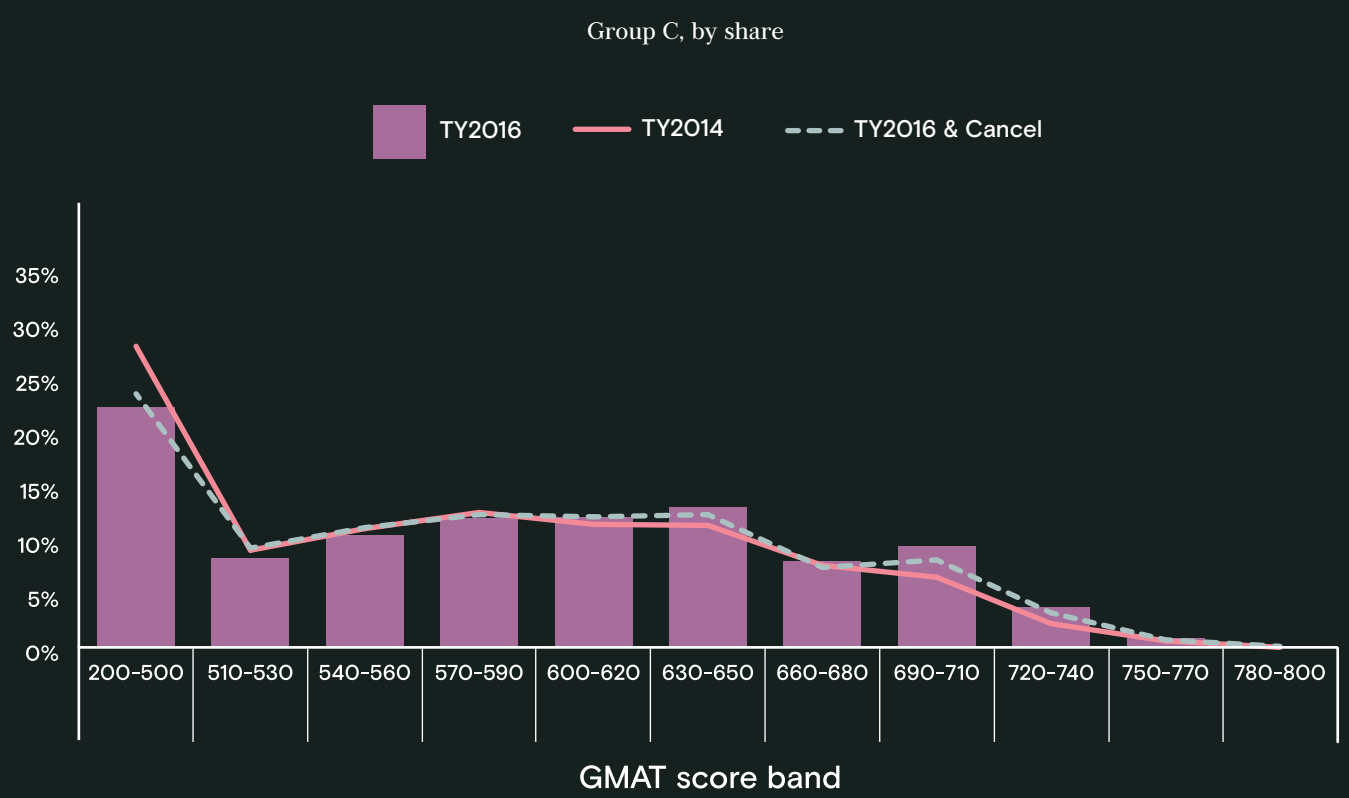
A similar shift can be seen among candidates who target Group B (leading regional) and Group C (leading domestic) programs.

In TY2014, Group B programs received 19.5 percent of reportable exam scores by the citizens of the eight countries being examined; this figure dropped to 16.4 percent in TY2016, the year score preview was introduced. For Group C programs the numbers are 8.9 percent and 6.7 percent, respectively.

In contrast with TY2014, TY2016 examinees who scored 630 and above were more likely to send their scores to leading Group B regional programs (53.2 percent in TY2016; 44.6 percent in TY2014). This may be the result of candidates, who previously set their sights on globally ranked (Group A) programs, revising their outlook, scoring higher than expected, or hedging their bets. Among score senders to leading (Group C) domestic programs, the shift in behavior typically at a lower score as those scoring 600 or above become more likely to send a score (39.6 percent in TY2014; 47.1 percent in TY2016) (Figure 10).

Figure 10: Distribution of GMAT scores intended for Group B and Group C programs, by citizens of 8 countries



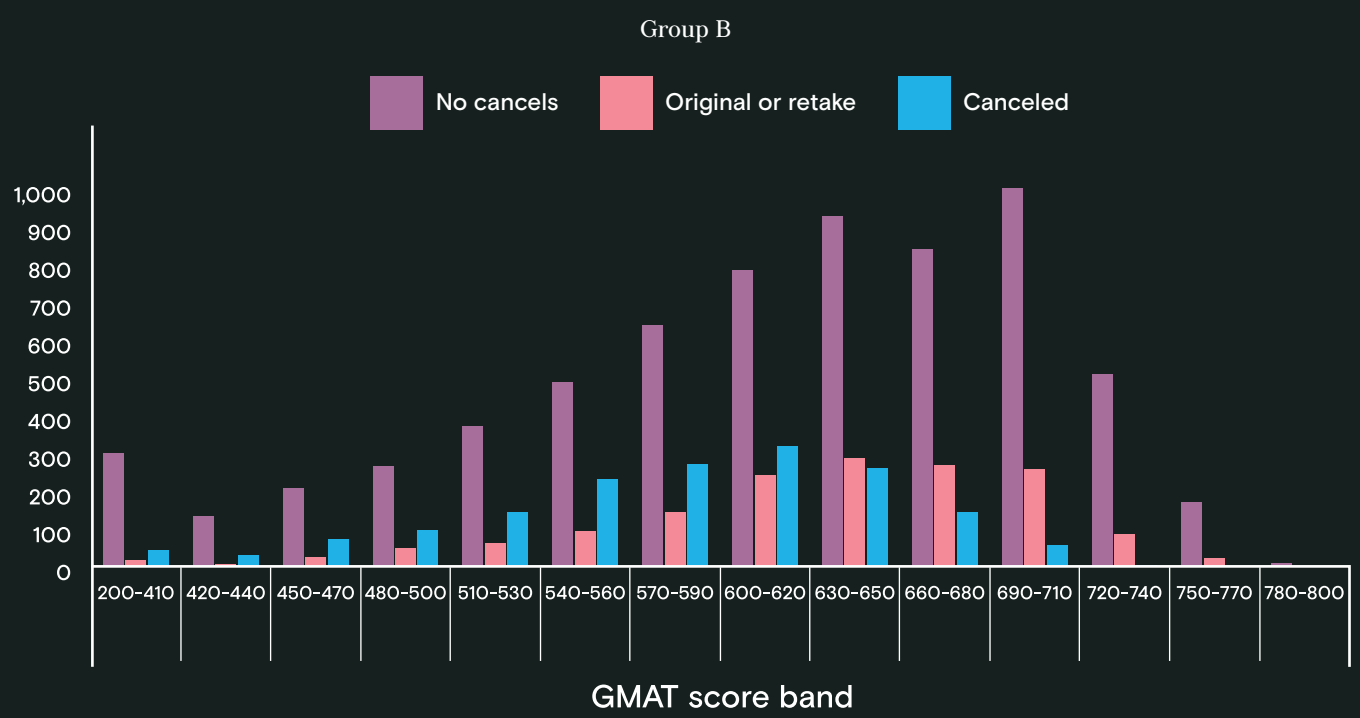


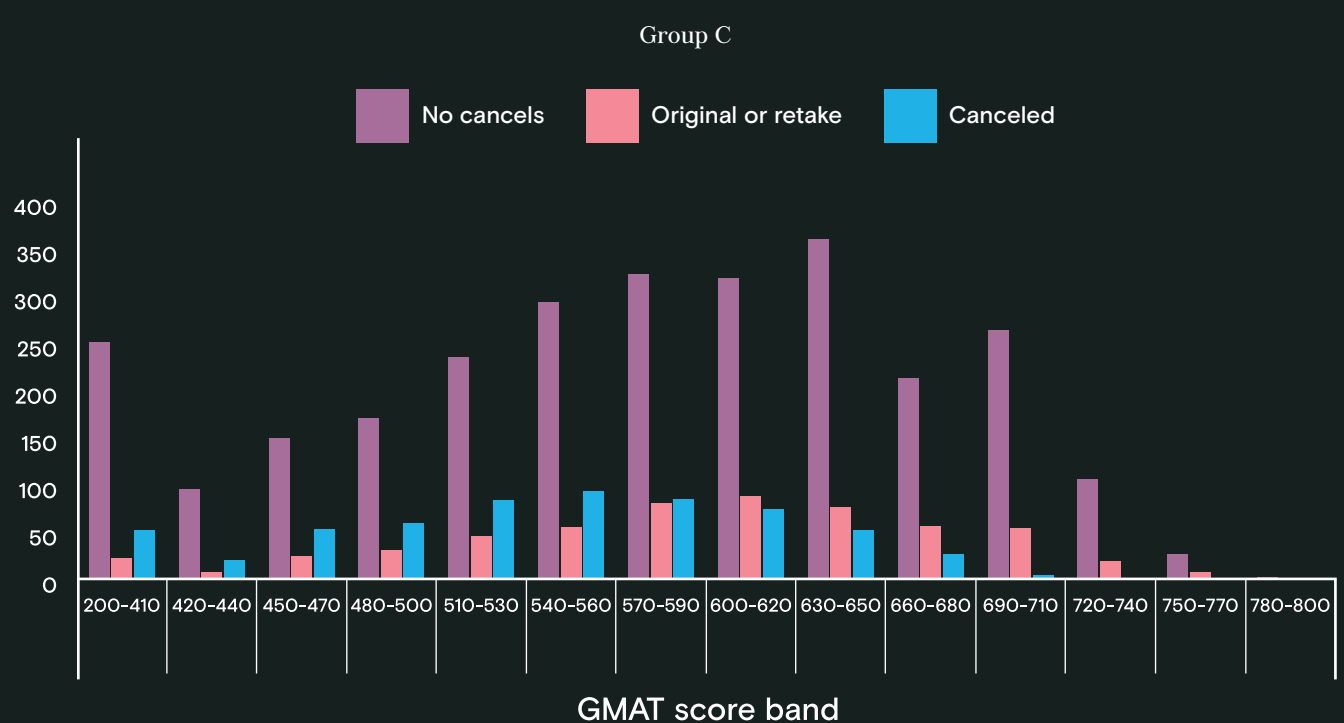
Score preview and cancellation is not unique to Group A program aspirants—17.5 percent of Group B candidates and 14.6 percent of Group C canceled one or more scores in TY2016. As previously seen, a candidate's actual score-sending behavior in the same testing year has been used to predict where the canceled scores might have been sent so that the impact on pool statistics can be evaluated (Figure 11).

Among Group B and C programs, score preview is having a small impact on the applicant pool quality, as retaking candidates score slightly higher, on average, than those who never canceled a score (for Group A programs it was about the same):

- Group B: If a candidate has previewed and canceled one or more scores, their reportable score average is 631 compared with 612 among those with no cancellations. Canceled scores average 579.
- Group C: If a candidate has previewed and canceled one or more scores, their reportable score average is 593 compared with 571 among those with no cancellations. Canceled scores average 539.

Figure 11: Distribution of GMAT scores intended for Group B and C programs, by score band and exam status





Conclusion

As the average GMAT exam scores of the admitted classes of leading graduate business programs around the world rise, schools have understandably questioned whether the exam has gotten easier. The analysis presented in this report explores whether and how GMAT exam scores have changed over time. The method employed involved exploring the underlying demographics of the testing population and using them to calculate a new TY2016 average using previous years' performance data. The minimal variation between projected and actual average scores for the citizens of eight countries in the study sample clearly shows that the GMAT exam maintains a consistent set of cognitive standards.

What has changed, however, is the profile of test takers. Changing demographics are related to the broadening of graduate business education, and hence what defines the "average" examinee. Shifts in underlying candidate demographics have had a small, but predictable, impact on calculated average scores.

If the GMAT exam is not getting any easier, what other factors might contribute to rising average scores at top-tier schools? Are these programs simply seeing more high scores—and are therefore able to cherry pick the best—or are they seeing fewer lower scores as candidates either target different programs or opt not to send a score, therefore leaving the application pipeline? Two years of score sending data—TY2014 (before the GMAT score preview was introduced) and TY2016 (when score preview was available)—were compared.

Analysis indicates that the score preview feature of the GMAT exam, which enables candidates to select the exam scores they want a school to see and cancel scores they don't want to share with schools, is contributing to perceptions of score increases. Lower scores are removed from the pool through cancellation and an increased number of higher scores are reported to schools, a phenomenon common across all three groups of programs analyzed.

On one side, higher average GMAT exam scores among the admitted candidate pool are associated with an increase in quality, however, there can be an adverse impact on candidates. As the number of higher-scoring candidates fills the applicant pool, programs have a larger number of higher-scoring candidates to choose from and reported program averages rise. Candidates not meeting the typical GMAT score profile may therefore decide to target different programs, retake the GMAT exam, or opt out of the application process altogether. Further analysis is required to determine whether and how specific demographic groups behave differently.

Average scores cannot rise indefinitely and, at some point, the cycle will break. The challenge for graduate business schools and the industry is how to effectively communicate the role that standardized assessments like the GMAT exam play in admissions, and give candidates greater insight into the full range of scores among the applicant pool and what that means for them.

Appendix A: Methodology for Demographic Analysis

To evaluate whether and how GMAT exam scores have changed, a demographically driven comparison was carried out using annual GMAT testing data from TY2011 to TY2015 to recalculate the TY2016 average exam score.

First, the examinee base was segmented along five dimensions (citizenship, residency status in the country of citizenship, gender, undergraduate study major, and age), using five-year testing data from citizens of eight countries that account for about 80 percent of global testing volumes. These include the United States, Canada, France, Germany, United Kingdom, China, India, and South Korea.

Once these segments were created, GMAT performance data—average scores for the Quantitative and Verbal exam sections and Total score—were calculated for each segment and testing year. Using the distribution of candidates in TY2016 across the different demographic subgroups, a new average score was then calculated using each year's data (TY2011 to TY2015).

It is possible that segments present in one year are not present in the comparison year. These are therefore excluded from the recalculation as there must be one or more candidates in each group across both years. The overlap measure indicates how much of the TY2016 examinee base is represented in earlier years.

Appendix B: Findings From Using TY2011 and TY2015 Data to Project a 'New' TY2016 Average Score

When using historical data to recalculate the average GMAT score in TY2016 it is important to define how many examinees must be present in each segment for it to be used in the calculation. Setting a baseline segment size greater than one ensures that the effect of a small number of examinees can be mitigated. The tables present findings when minimum segment sizes of 1 and 10 are used.

Figure B.1: Projections for recalculated average TY2016 GMAT scores[4] resulting from a minimum segment size of one

	TY2016 Actual			TY2016 Using TY2011 Data				TY2016 Using TY2012 Data			
Country	Total	Q	V	Overlap	Total	Q	V	Overlap	Total	Q	V
Canada	574	38	31	99.9%	565	37	31	99.5%	569	37	31
U.S.	547	34	31	100.0%	534	33	30	100.0%	537	33	31
China	581	47	23	100.0%	593	47	24	100.0%	589	47	23
India	577	42	27	99.9%	580	42	27	100.0%	582	43	27
S. Korea	584	46	24	99.5%	577	45	24	99.5%	585	46	24
Germany	579	39	30	98.6%	570	38	30	99.4%	575	39	30
France	566	39	29	98.9%	561	39	28	99.3%	556	38	28
U.K.	599	38	34	98.2%	592	38	34	98.6%	590	37	34

Figure B.2: Projections for recalculated average TY2016 GMAT scores[5] resulting from a minimum segment size of 10

	TY2016 Actual			TY2016 Using TY2011 Data				TY2016 Using TY2012 Data			
Country	Total	Q	V	Overlap	Total	Q	V	Overlap	Total	Q	V
Canada	574	38	31	94.7%	565	37	31	94.7%	569	37	31
U.S.	547	34	31	99.8%	534	33	30	99.8%	537	33	31
China	581	47	23	99.8%	593	47	24	99.8%	589	47	23
India	577	42	27	99.3%	581	42	27	99.3%	582	43	27
S. Korea	584	46	24	91.0%	579	46	24	91.0%	588	46	24
Germany	579	39	30	92.6%	571	39	30	92.6%	577	39	30
France	566	39	29	89.0%	561	39	28	89.0%	556	38	28
U.K.	599	38	34	70.5%	596	38	34	70.5%	592	38	33

[4]Total = GMAT Total score; Q = Quantitative reasoning score; V = Verbal reasoning score.
[5]Total = GMAT Total score; Q = Quantitative reasoning score; V = Verbal reasoning score.

TY2016 Using TY2013 Data				TY2016 Using TY2014 Data				TY2016 Using TY2015 Data			
Overlap	Total	Q	V	Overlap	Total	Q	V	Overlap	Total	Q	V
99.6%	568	37	31	99.7%	566	37	31	99.8%	572	37	31
100.0%	535	33	30	100.0%	539	33	31	100.0%	543	34	31
100.0%	585	47	23	100.0%	584	47	23	100.0%	583	47	23
99.9%	577	42	27	100.0%	576	42	27	100.0%	578	42	27
99.0%	580	46	23	99.3%	577	46	23	99.4%	582	46	24
98.8%	575	39	30	99.3%	579	39	30	98.9%	580	39	30
99.1%	561	38	29	98.9%	558	38	28	99.1%	565	39	29
97.0%	594	38	34	98.1%	594	38	33	98.1%	592	38	33

TY2016 Using TY2013 Data				TY2016 Using TY2014 Data				TY2016 Using TY2015 Data			
Overlap	Total	Q	V	Overlap	Total	Q	V	Overlap	Total	Q	V
94.7%	567	36.8	31	94.7%	566	36.7	31	94.7%	572	37.3	31
99.8%	535	32.9	30	99.8%	539	33.2	31	99.8%	543	33.6	31
99.8%	585	47	23	99.8%	584	47	23	99.8%	583	46.9	23
99.3%	577	42	27	99.3%	576	42	27	99.3%	579	42	27
91.0%	582	46	23	91.0%	579	46	23	91.0%	582	46	24
92.8%	577	39	30	92.6%	580	39	30	92.8%	580	39	30
89.0%	561	39	28	89.0%	559	39	28	89.0%	565	39	29
70.0%	601	38	34	70.5%	597	38	34	70.5%	596	38	33

Contact Information

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