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Student-Level Growth Estimates for the SAT® Suite of Assessments

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Executive Summary

The SAT® Suite of Assessments was designed such that the SAT and PSAT™-related tests measure a common domain of knowledge and skills that are directly aligned with college and career readiness and are at difficulty levels considered appropriate for specific high school grades, with reported scale scores that are vertically aligned across the suite (College Board, 2017).[1] The design of the SAT Suite is intended to support evaluations of student growth, as described on College Board websites, "The redesigned SAT Suite uses a common score scale, providing consistent feedback across assessments to help educators and students monitor growth across grades and to identify areas in need of improvement" (https://collegereadiness.collegeboard.org/about/scores/structure).

Basing the SAT Suite on a vertical scale also "….allows for appropriate inferences of student growth and progress toward being on track for college and career readiness from year to year prior to taking the SAT. One is then able to make statements about a student's level of preparedness for college and career based on SAT performance" (College Board, 2017).

The College Board Psychometrics team has evaluated what the most appropriate methodology is to report student-level growth across the SAT Suite. The purpose of this report is to describe the methodology used to estimate individual growth and to provide the results of the growth estimates for particular SAT Suite growth reporting groups. This methodology will also be used for the growth measures in the educator (i.e., school-level) growth reports.

1. Many of the basic ideas about the methodology used for scaling the SAT Suite are discussed in Kolen and Brennan (2014, Section 9.10). In particular, for the SAT Suite a domain definition of growth was employed with a scaling test design. Assuming learning occurs from grade to grade, this methodology ensures that learning does lead to increasing scores from grade to grade. This may seem obvious, but not all scaling methodologies have this characteristic.

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Method

Data

Growth will be reported on the Math and Evidence-Based Reading and Writing (ERW) section scores for each program in the SAT Suite. Growth measures are estimated based on groups of students who take two tests, a prior and a current test within the SAT Suite of Assessments (e.g., students who take both the PSAT/NMSQT® and the SAT) at particular times (e.g., fall, spring), in particular grades (i.e., grades 8 to 12). Table 1 shows the growth reporting groups for the SAT Suite considered in this study. Nine growth-reporting groups are examined based on specific grade levels and the timing of the first and second tests across which growth is measured. We chose the particular tests to compare across each time span based on the combinations for which the most data were available. Groups 1 to 4 are from the students who took two tests from the SAT Suite of Assessments in fall 2015 and fall 2016 (fall-to-fall group) while Groups 5 to 7 are from the students who took the SAT Suite tests in spring 2016 and spring 2017 (spring-to-spring group). Group 8 includes those who took the PSAT/NMSQT as 11th graders in fall 2016 and also took the SAT as 11th graders in spring 2017. Group 9 includes those who took the SAT as 11th graders in spring 2016 and also took the SAT as 12th graders in fall 2016. It should be noted that the nine groups examined in this report are necessarily subject to school and/or student self-selection factors and perhaps motivational issues that are outside of the College Board's control and that might change over time.

To minimize the impact of outliers on the growth estimates, only the students with reportable scores who responded to at least one item on all three tests—Math, Reading, and Writing and Language—for both prior and current assessments were included in the analysis. For those who had multiple SAT scores from the fall administration (i.e., October, November, or December administrations) or the spring administration (i.e., January, March, May, or June administrations) time periods, only their most recent score was used in the analysis.

Table 2 shows the summary statistics for the nine groups. Group 3 has the largest sample size followed by Group 8 and then by Group 4. The fall-to-fall groups had much larger sample sizes than those of the spring-to-spring groups. Overall growth is computed as the average score change from prior to current assessments.

Growth Measures: Conditional Means and Standard Deviations

The methodology for growth reporting in the SAT Suite provides students with a projected range of "typical" growth based on the conditional mean of the current test scores (e.g., SAT), plus or minus the conditional standard deviation at a prior test score (e.g., PSAT/NMSQT). This growth estimation methodology compares to other growth measures as follows:

- The emphasis on conditional growth makes this methodology more complex than the simpler overall growth currently reported in the College Board score-reporting portal, and the overall growth estimates shown in Table 2.
- However, score ranges for typical growth are simpler than student growth percentiles (Betebenner, 2008, 2009), which are based on conditional quantiles that reflect non-symmetry in the conditional score distributions of the current test.
- The ranges of Lower-Upper growth obtained as -/+ 1 conditional standard deviation from the conditional mean can be roughly interpreted as the range of growth exhibited by the middle 68% of students with a given prior score.[2]
- The Lower-Upper ranges contain smaller percentages of students than those currently used in the College Board score-reporting portal (i.e., the 90th–10th=middle 80%). The Lower-Upper ranges contain larger percentages of students than those used for the growth models by other state-testing programs (e.g., the 65th–35th=middle 30% used in the Colorado Growth Model, Betebenner, 2008, 2009).

To address irregularities in the score distributions due to sampling errors and also to produce score ranges for growth even when a prior test score is not observed in the data, two types of smoothing techniques were applied to the current and prior score distributions. These smoothing methods, loglinear smoothing and B-spline smoothing with quantile regression, were considered because they allowed for smoothed conditional means and standard deviations to be obtained from a single smoothing result. Other smoothing methods could have also been considered, but some of these options would require independent smoothings of the conditional means and the conditional standard deviations. The conditional means and conditional standard deviations of the current test score were estimated at each prior score using the outputs from each smoothing method.

Loglinear smoothing

The first smoothing method used loglinear models to smooth the bivariate frequency distribution of tests X and Y (Holland and Thayer, 2000), where Y is defined as the current test score and X is defined as the prior test score. This method was used to describe growth on the SAT and the PSAT/NMSQT prior to the implementation of the SAT Suite (Proctor and Kim, 2010). For loglinear smoothing, five polynomial loglinear models that fit the following moments of the bivariate XY distribution were examined in this analysis:

- 6 moments in the univariate X and Y distributions and 1 cross-product moment (X Y) in the bivariate XY distribution (LL661)

2. This interpretation is based on the assumption that the conditional distribution of the current scores at a given prior score is normal. Thus, the percentage is not precise if the conditional scores do not follow a normal distribution. Evaluations of this assumption are provided in the Results section.

- 6 moments in the univariate X and Y distributions and 2 cross-product moments (XY and XY2) in the bivariate XY distribution (LL662_X1Y2)
- 6 moments in the univariate X and Y distributions and 2 cross-product moments (X Y and X 2Y) in the bivariate XY distribution (LL662_X2Y1)
- 6 moments in the univariate X and Y distributions and 3 cross-product moments (X Y, XY2, and X 2Y) in the bivariate XY distribution (LL663)
- 6 moments in the univariate X and Y distributions and 4 cross-product moments (X Y, XY2, X 2Y, and X2Y2) in the bivariate XY distribution (LL664)

The five considered models differed in the number of cross-product moments, which allow for fitting simpler and more complex conditional distributions and growth patterns.

B-spline smoothing in quantile regression

The second smoothing method was our modification of the B-spline smoothing and the quantile regression methods used to estimate conditional quantiles in student growth percentiles (Betebenner, 2008, 2009). For this method, the prior test scores were converted into B-spline basis functions that are piecewise polynomial functions with three degrees that divide the scores into four equally spaced intervals or knots (SAS Institute, 2008). These B-spline basis functions allow for fitting curvilinearity and other complexities in the growth estimates. Then several equally spaced conditional quantiles of the current test scores were estimated in regressions of the B-spline basis functions of the prior test scores. Finally, because the equally spaced smoothed conditional quantiles imply that these estimates reflect a conditional uniform distribution, the smoothed conditional means and standard deviations were obtained as unweighted averages and standard deviations of the conditional quantile scores. Initial analyses considered 99 (q=0.01, 0.02, ,…., 0.99) and 999 (q=0.001, 0.002, ,…., 0.999) equally spaced quantiles, and B-spline basis functions with greater and less than three degrees and four knots. The findings of these analyses indicated that 999 conditional quantiles and B-spline basis functions with three degrees and four knots were needed to accurately model the conditional means and standard deviations.

Results

Evaluations for Selecting the Smoothing Model

The following criteria were considered to select the smoothing model:

- Data fit: The smoothing model that best fits the conditional means and standard deviations of the current test was preferred.
- Parsimony: All things being equal, a simpler model was preferred to avoid overfitting the conditional means and standard deviations of the current test scores (i.e., loglinear

smoothing models with fewer parameters and quantile regressions with fewer quantiles, degrees, and knots). In particular, the smoothing method that captures the overall pattern of the conditional means and standard deviations of the current test with as few parameters as possible was preferred.

Figures 1–18 show the results of growth estimates for the ERW section scores of the nine groups. The conditional means (Figures 1–9) and the conditional standard deviations (Figures 10–18) were estimated based on unsmoothed score distributions as well as smoothed score distributions using the five loglinear models and the B-spline smoothing model.

Figures 19–36 show the results of growth estimates for the Math section scores of the nine groups. The conditional means (Figures 19–27) and the conditional standard deviations (Figures 28–36) were estimated based on unsmoothed score distributions as well as smoothed score distributions using the five loglinear models and the B-spline smoothing model.

The conditional means of the current test scores increased curvilinearly as prior scores increased. On the other hand, the conditional standard deviations of the current test scores frequently decreased curvilinearly as prior scores increased. Generally, there were larger variabilities at the lower end of the score distributions. This implies that the projected score range of the current test narrows for students with higher scores on the prior test.

Overall, the conditional means and standard deviations based on the B-spline smoothing model were very close to the ones based on the unsmoothed score distributions. The loglinear model with higher polynomial degrees—LL664, LL663, and LL662_X1Y2—also fit the data fairly well. However, the loglinear models LL664 and LL663 tended to overfit the conditional means for the lowest scores of the prior test (e.g., Figure 4) whereas the loglinear model LL2_X1Y2 tended to underfit the conditional standard deviation for the lowest prior test scores (e.g., Figure 12). Therefore, given the criteria—model fit and parsimony—the B-spline smoothing model was selected as the preferred smoothing method.

Growth Estimates and Additional Evaluations with the Selected B-Spline Smoothing Model

Once the current and prior test score distributions were smoothed using B-spline smoothing, the conditional mean of the current scores plus or minus the conditional standard deviation at a prior score were computed, rounded to reporting score units of 10, and truncated to the minimum and maximum possible score ranges (200–800 for the SAT, 160–760 for the PSAT/NMSQT and PSAT™ 10, and 120–720 for PSAT™ 8/9). Tables 3–11 show the results of the conditional means (rounded to units of 10) and the conditional standard deviations (SD, rounded to integers), as well as the projected score ranges of the ERW and Math section scores for the nine groups (rounded to units of 10). Each table shows all possible prior scores, the number of students, the conditional mean and standard deviation,

the conditional mean minus one standard deviation (Lower Bound), and the conditional mean as well as the conditional mean plus one standard deviation (Upper Bound) at each prior ERW and Math score.

Although the B-spline smoothing model fitted the data better than other models, there were two exceptions—Groups 6 and 7—where the B-spline smoothing model overestimated conditional standard deviations at the lower end of the prior ERW section scores. In fact, since there were very few or no students at the lower end of the ERW scores, no smoothing method was a good fit for the data. To address this issue, the conditional standard deviations of the score distribution from the smoothing were replaced with the standard deviation of the overall growth for the two groups presented in Table 2 for the projected score ranges for the lowest 0.5% of the ERW score frequency distribution. The standard deviation of the overall growth (49.79) was used to produce the projected score ranges for the 9th-grade ERW scores between 120 and 220 for Group 6 (Table 8), while the standard deviation of the overall growth (49.46) was used to produce the projected score ranges for the 10th-grade ERW scores between 160 and 290 for Group 7 (Table 9).

Because the growth measures tend to be associated with assumptions and interpretations of normality, additional analyses were conducted to evaluate these. One set of evaluations focused on conditional skewness, in an effort to determine the extent to which the conditional distributions were symmetric/asymmetric, and also whether the B-spline smoothing model was a good fit for the symmetry/asymmetry of the conditional distributions. The conditional skewness of the unsmoothed score distributions and of the smoothed score distributions using the B-spline smoothing model for Group 3 are shown in Figure 37 (ERW section score) and Figure 38 (Math section score). Similar to the conditional standard deviation, the conditional skewness of the current test scores decreased curvilinearly as prior scores increased. Conditional skewness was close to zero across most prior test scores (exceptions are at the higher and lower ends). The skewness results suggest that the B-spline smoothing model was a good fit for the data, as both unsmoothed skewness and smoothed skewness were very close to each other. The results in Figures 37 and 38 indicate that the conditional distributions are more symmetric for the middle scores of the prior test, and more asymmetric for the highest and lowest scores of the prior test; these patterns of conditional skewness are closely fit by the B-spline smoothing model. Similar patterns of conditional skewness and smoothing fits were observed for the other eight groups.

The second evaluation of normality assumptions with the growth estimates focused on the interpretations of the actual growth ranges. Since the Lower-Upper ranges of growth were obtained from -/+ 1 conditional standard deviation from the conditional mean, it can be said that approximately 68% of students with a given prior score had growth within the Lower-Upper ranges if the current scores at a given prior score are normally distributed. In order to check whether the Lower-Upper ranges do contain the middle 68% of students with a given prior score, the 16th and 84th percentiles for the current score distribution given a prior score, which include approximately 68% of the distribution, were examined. Figures 39 and

40 show the ERW and Math section score conditional means of Group 3 along with the Lower-Upper ranges and the 16th and 84th percentiles. The lines based on the Lower-Upper ranges and the 16th and 84th percentiles were very close and were almost on top of each other across most scores, with exceptions at the highest and lowest prior scores. Similar patterns were observed for the other eight groups. These results indicate that most of the Lower-Upper growth ranges roughly reflect the middle 68% of students with a given prior score.

Discussion

The approach to growth reporting for the SAT Suite of Assessments is based on a range of expected growth on the ERW or Math section scores from a current test (e.g., the SAT) conditioned on the ERW or Math section scores from a prior test of the SAT Suite (e.g., the PSAT/NMSQT). The expected growth ranges are obtained as conditional and smoothed means -/+ one conditional standard deviation. Although the official groups for College Board growth reporting haven't been finalized, nine such groups were considered in this report based on the fall-to-fall, fall-to-spring, spring-to-spring, and spring-to-fall time periods. Across these groups, the growth ranges appeared to be the largest for students obtaining the lowest section scores on the prior test and were narrower for students obtaining higher section scores on the prior test.

In terms of the growth groups:

- Most of the considered groups exhibited average overall growth of approximately 25–30 points on the ERW and Math section scores (Table 2). The groups exhibiting larger growth were from PSAT/NMSQT or PSAT 10 to SAT over an entire year (fall to fall or spring to spring). The group exhibiting smaller growth was from SAT 11th graders in spring to SAT 12th graders in fall, which is reasonable given the shorter time period between testing.
- For all groups, the ranges of expected growth were largest for the lowest scores on the prior test (greater than 100 section score points), mainly because there were larger variabilities at the lowest scores. These ranges decreased to 30–70 section score points for the highest scores on the prior test.

There are two intended application of these results to report growth in the online score portal for College Board's SAT Suite of Assessments:

- Prediction: For students with a given score on a test within the SAT Suite (e.g., the PSAT/NMSQT), the range of expected growth for a future test (e.g., the SAT) will be provided as a prediction of typical growth.
- Description: For students with obtained scores on two tests in the SAT Suite (e.g., the SAT and the PSAT/NMSQT), the growth indicated by their scores will be described as

either within, lower than, or exceeding the range of expected growth for students with the same score on the prior test.

The results in this report should be treated as subject to refinement prior to the official implementation in the College Board's score reporting portal. The groups of interest for growth reporting may differ and cover more or fewer than the nine groups considered in this report. Over time, the expected growth tables will likely be updated on a routine basis using the most recent assessment data available. Finally, the growth methodology itself may undergo refinements either to the smoothing methodology and/or to the range of interest (greater or less than the -/+ 1 standard deviation).

Suggested Interpretations and Cautions

The growth estimates reported in Tables 3–11 apply to students at a particular grade who took an SAT Suite test in either the fall or the spring. The scores of those students on this "prior" test can be located in the leftmost columns of Tables 3–11. The means and score ranges corresponding to these prior scores indicate either (1) a prediction of growth on a future test at a future point in time, or (2) a description of the students' actual growth based on their scores on a "current" test. The conditional means in Tables 3–11 indicate typical, or expected, growth for students at a given prior score. The conditional ranges indicate typical growth as a range, meaning that current scores within the ranges reflect typical growth, whereas current scores outside of the ranges reflect higher or lower than typical growth.

Uses of the conditional growth estimates in Tables 3–11 for growth predictions and descriptions would be most accurate when based on the following caveats:

- The growth estimates from Tables 3–11 should be applied to students representing one of the nine groups in terms of the SAT Suite test(s) they take, their grade level, and whether they take the test in the fall or the spring. For example, uses of Table 3 would be most accurate for fall-to-fall growth for students who took the PSAT 8/9 as 8th graders, and would be less accurate if applied to predict or describe growth for 10th graders who took the PSAT 8/9. Tables 3–11 might be used to obtain growth estimates for students not covered in the nine groups reported here. However, these estimates won't be as accurate as growth estimates obtained directly for those students of interest.
- A necessary assumption is that these growth estimates are reasonably stable, so that estimates such as those in Table 3 can be applied not only to students who took the PSAT 8/9 as 8th graders in fall 2015, but also those who took the PSAT 8/9 as 8th graders in fall 2016 (and maybe 2017, 2018 …). As stated earlier, schedules for updating these growth estimates haven't been completely established, but should be informed by periodic evaluations of stability.
- Although growth predictions and descriptions can be produced in average or overall terms based on the results in Table 2, these would be less accurate than those based on

the conditional estimates from Tables 3–11. Growth estimates based on average results don't account for greater growth for students with lower prior scores and smaller growth for students with higher prior scores.

- One question that has been raised about the growth estimates in Tables 3–11 is whether these student-level estimates could also be used to evaluate school-level growth, such as by looking up growth estimates for an average prior score from students at a given high school. Evaluations of this question (not reported here) indicate that school-level conditional means are similar to those at the student level; but the school-level conditional standard deviations and ranges are narrower than those at the student level. Uses of Tables 3–11 for evaluating the average growth of a high school could result in a predicted range of typical growth that is too wide. Or the school may be misleadingly described as being within the typical range of student-level growth because the student-level ranges in Tables 3–11 are too wide to describe school-level growth. These misinterpretations may be avoided by evaluating high school growth with respect to school-level growth estimates. To address this, a version of this report with school-level growth estimates on the SAT Suite will be produced in the future.

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About the College Board

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Table 1: The SAT Suite Growth Measure Reporting Groups

Year/Semester	Group No.	Time 1: Prior Test Assessment/Grade level	Time 2: Current Test Assessment/Grade level
2015 Fall to 2016 Fall	1	PSAT 8/9 8th	PSAT 8/9 9th
	2	PSAT 8/9 9th	PSAT/NMSQT 10th
	3	PSAT/NMSQT 10th	PSAT/NMSQT 11th
	4	PSAT/NMSQT 11th	SAT 12th
2016 Spring to 2017 Spring	5	PSAT 8/9 8th	PSAT 8/9 9th
	6	PSAT 8/9 9th	PSAT 10 10th
	7	PSAT 10 10th	SAT 11th
2016 Fall to 2017 Spring	8	PSAT/NMSQT 11th	SAT 11th
2016 Spring to 2016 Fall	9	SAT 11th	SAT 12th

Table 2: Student-Level Means, Standard Deviations, Intercorrelations and Overall Growth for the ERW and Math Section Scores

2015 Fall to 2016 Fall	ERW				Math			
Group 1 : N = 93,070	PSAT 8/9 8th	PSAT 8/9 9th	Corr.	Overall Growth	PSAT 8/9 8th	PSAT 8/9 9th	Corr.	Overall Growth
Mean	417.28	445.15	0.83	27.88	407.66	438.29	0.73	30.63
SD	82.19	89.80		50.47	76.89	83.91		59.06
Group 2 : N =252,526	PSAT 8/9 9th	PSAT/NMSQT 10th	Corr.	Overall Growth	PSAT 8/9 9th	PSAT/NMSQT 10th	Corr.	Overall Growth
Mean	450.18	478.51	0.86	28.32	441.73	468.63	0.79	26.90
SD	89.23	98.78		51.14	85.50	88.50		56.38
Group 3 : N = 1,046,857	PSAT/NMSQT 10th	PSAT/NMSQT 11th	Corr.	Overall Growth	PSAT/NMSQT 10th	PSAT/NMSQT 11th	Corr.	Overall Growth
Mean	493.19	526.48	0.88	33.29	486.53	517.32	0.82	30.79
SD	98.26	105.36		50.95	94.23	102.78		59.37
Group 4 : N = 577,505	PSAT/NMSQT 11th	SAT 12th	Corr.	Overall Growth	PSAT/NMSQT 11th	SAT 12th	Corr.	Overall Growth
Mean	507.25	546.39	0.85	39.14	504.12	537.53	0.82	33.41
SD	93.39	94.16		51.51	94.25	100.79		58.46
2016 Spring to 2017 Spring								
Group 5 : N = 21,928	PSAT 8/9 8th	PSAT 8/9 9th	Corr.	Overall Growth	PSAT 8/9 8th	PSAT 8/9 9th	Corr.	Overall Growth
Mean	434.33	461.53	0.83	27.20	425.74	453.38	0.76	27.64
SD	77.72	86.52		48.27	75.23	82.70		54.98
Group 6 : N = 115,412	PSAT 8/9 9th	PSAT 10 10th	Corr.	Overall Growth	PSAT 8/9 9th	PSAT 10 10th	Corr.	Overall Growth
Mean	449.03	473.66	0.85	24.63	436.58	463.34	0.80	26.76
SD	84.73	94.01		49.79	81.82	87.52		54.24
Group 7 : N = 184,876	PSAT 10 10th	SAT 11th	Corr.	Overall Growth	PSAT 10 10th	SAT 11th	Corr.	Overall Growth
Mean	480.84	523.14	0.87	42.30	473.44	513.23	0.84	39.79
SD	93.51	100.55		49.46	89.81	106.66		57.17
2016 Fall to 2017 Spring								
Group 8: N = 983,241	PSAT/NMSQT 11th	SAT 11th	Corr.	Overall Growth	PSAT/NMSQT 11th	SAT 11th	Corr.	Overall Growth
Mean	531.25	554.76	0.89	23.51	523.45	549.36	0.88	25.91
SD	100.56	100.80		47.22	99.59	108.82		52.47
2016 Spring to 2016 Fall								
Group 9: N = 485,693	SAT 11th	SAT 12th	Corr.	Overall Growth	SAT 11th	SAT 12th	Corr.	Overall Growth
Mean	536.12	550.04	0.87	13.92	532.10	543.57	0.87	11.47
SD	89.69	90.40		45.91	96.74	99.21		49.50

Table 3: PSAT 8/9 8th Fall -to- PSAT 8/9 9th Fall Expected Score Range

PSAT 8/9 8th	ERW Section N	ERW Section PSAT 8/9 9th Mean	ERW Section PSAT 8/9 9th SD	ERW Section PSAT 8/9 9th Lower-Upper Bound	Math Section N	Math Section PSAT 8/9 9th Mean	Math Section PSAT 8/9 9th SD	Math Section PSAT 8/9 9th Lower-Upper Bound
120	-	230	61	170 - 290	24	330	65	270 - 400
130	1	250	58	190 - 310	-	340	62	280 - 400
140	2	260	57	210 - 320	-	340	61	280 - 400
150	3	280	57	220 - 330	78	340	59	280 - 400
160	7	290	56	230 - 340	-	340	59	290 - 400
170	13	300	56	240 - 350	-	350	58	290 - 400
180	17	300	56	250 - 360	182	350	58	290 - 410
190	17	310	56	250 - 360	-	350	57	290 - 410
200	53	310	55	260 - 370	374	350	57	290 - 410
210	62	320	54	260 - 370	-	350	57	300 - 410
220	84	320	53	270 - 370	-	350	56	300 - 410
230	108	320	52	270 - 370	742	350	56	300 - 410
240	165	320	51	270 - 370	-	360	56	300 - 410
250	256	330	50	280 - 380	1,403	360	56	300 - 410
260	362	330	48	280 - 380	-	360	56	300 - 410
270	474	330	47	280 - 380	-	360	55	300 - 420
280	692	330	47	290 - 380	2,424	360	55	310 - 420
290	1,102	340	46	290 - 380	-	360	55	310 - 420
300	1,681	340	46	300 - 390	3,739	370	56	310 - 420
310	2,362	350	46	300 - 390	-	370	56	310 - 420
320	3,058	350	46	310 - 400	5,075	370	56	320 - 430
330	3,688	360	47	310 - 410	-	380	56	320 - 430
340	4,023	370	48	320 - 420	6,240	380	56	320 - 440
350	4,468	380	49	330 - 430	-	380	57	330 - 440
360	4,685	390	49	340 - 440	7,136	390	57	330 - 450
370	4,459	400	50	350 - 450	-	400	57	340 - 450
380	4,842	410	51	360 - 460	7,427	400	57	350 - 460
390	4,848	420	51	370 - 470	7,267	410	57	350 - 470
400	4,684	430	52	380 - 480	6,924	420	56	360 - 470
410	4,320	440	52	390 - 490	-	430	56	370 - 480
420	4,019	450	52	400 - 500	6,185	440	55	380 - 490
430	3,681	460	52	410 - 510	5,498	450	54	390 - 500
440	3,424	470	52	420 - 520	4,805	460	53	400 - 510
450	3,497	480	51	430 - 530	4,258	470	52	420 - 520
460	2,863	490	51	440 - 540	3,761	480	51	430 - 530
470	2,958	500	50	450 - 550	3,177	490	50	440 - 540
480	2,618	510	50	460 - 560	2,771	500	49	460 - 550
490	2,443	520	49	470 - 570	2,352	520	49	470 - 560
500	2,405	520	49	480 - 570	2,045	530	49	480 - 580
510	1,795	530	48	480 - 580	1,741	540	49	490 - 590
520	1,959	540	47	490 - 590	1,463	550	49	500 - 600
530	1,681	550	46	500 - 600	1,248	560	49	510 - 610
540	1,514	560	45	510 - 600	995	570	50	520 - 620
550	1,392	570	45	520 - 610	835	580	50	530 - 630
560	1,195	570	44	530 - 620	693	590	50	540 - 640
570	1,129	580	43	540 - 630	534	590	50	540 - 640
580	867	590	42	550 - 630	430	600	50	550 - 650
590	752	600	41	560 - 640	-	610	50	560 - 660
600	572	610	41	570 - 650	329	620	49	570 - 670
610	453	620	40	580 - 660	251	630	48	580 - 680
620	375	620	39	590 - 660	-	640	48	590 - 690
630	309	630	38	590 - 670	201	650	47	600 - 690
640	212	640	37	600 - 670	-	650	46	610 - 700
650	157	640	35	610 - 680	172	660	44	620 - 700
660	97	650	34	620 - 680	-	670	43	620 - 710
670	78	660	32	620 - 690	116	670	41	630 - 710
680	52	660	31	630 - 690	92	680	39	640 - 720
690	21	660	29	630 - 690	-	680	37	650 - 720
700	13	670	28	640 - 690	55	690	34	660 - 720
710	3	670	27	640 - 700	-	690	31	660 - 720
720	-	670	26	640 - 700	28	700	28	670 - 720

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Table 4: PSAT 8/9 9th Fall -to- PSAT/NMSQT 10th Fall Expected Score Range

PSAT 8/9 9th	ERW Section N	ERW Section PSAT/NMSQT 10th Mean	ERW Section PSAT/NMSQT 10th SD	ERW Section PSAT/NMSQT 10th Lower-Upper Bound	Math Section N	Math Section PSAT/NMSQT 10th Mean	Math Section PSAT/NMSQT 10th SD	Math Section PSAT/NMSQT 10th Lower-Upper Bound
120	1	270	65	210 - 340	34	340	67	270 - 400
130	2	280	62	220 - 350	-	340	65	280 - 410
140	-	290	60	230 - 350	-	350	63	280 - 410
150	7	300	60	240 - 360	94	350	61	290 - 410
160	12	310	60	250 - 370	-	360	60	300 - 420
170	11	310	60	250 - 370	-	360	59	300 - 420
180	20	320	60	260 - 380	220	360	58	300 - 420
190	40	320	60	260 - 380	-	360	57	310 - 420
200	54	320	59	260 - 380	477	370	57	310 - 420
210	84	330	58	270 - 380	-	370	56	310 - 420
220	114	330	57	270 - 390	-	370	55	310 - 420
230	154	330	56	270 - 390	1,043	370	55	310 - 420
240	227	330	55	280 - 390	-	370	54	320 - 420
250	340	340	53	280 - 390	2,076	370	54	320 - 430
260	525	340	51	290 - 390	-	370	53	320 - 430
270	652	340	50	290 - 390	-	370	52	320 - 430
280	1,122	340	49	290 - 390	3,883	380	52	320 - 430
290	1,821	350	48	300 - 390	-	380	52	320 - 430
300	2,772	350	47	300 - 400	5,919	380	51	330 - 430
310	3,946	360	47	310 - 400	-	380	51	330 - 430
320	5,125	360	47	310 - 410	8,734	380	51	330 - 430
330	6,380	370	47	320 - 410	-	390	51	330 - 440
340	7,173	370	48	330 - 420	11,000	390	52	340 - 440
350	8,082	380	49	330 - 430	-	390	52	340 - 450
360	8,809	390	50	340 - 440	13,121	400	53	340 - 450
370	8,805	400	51	350 - 450	-	400	53	350 - 460
380	9,931	410	52	360 - 460	14,777	410	53	350 - 460
390	10,478	420	53	360 - 470	15,743	410	54	360 - 470
400	10,589	430	53	370 - 480	15,368	420	54	370 - 480
410	10,395	440	54	380 - 490	-	430	54	370 - 480
420	10,331	450	54	390 - 500	15,164	440	54	380 - 490
430	9,849	450	53	400 - 510	14,488	450	54	390 - 500
440	9,532	460	53	410 - 520	13,449	460	53	400 - 510
450	9,857	470	53	420 - 530	12,560	470	52	410 - 520
460	8,643	480	52	430 - 540	11,811	480	51	430 - 530
470	9,513	500	52	440 - 550	10,638	490	50	440 - 540
480	8,747	510	51	450 - 560	10,027	500	49	450 - 550
490	8,467	520	50	460 - 570	8,907	510	49	460 - 560
500	8,980	530	50	480 - 570	8,308	520	48	470 - 570
510	7,159	540	49	490 - 580	7,541	530	47	480 - 580
520	8,243	550	49	500 - 590	6,623	540	47	490 - 590
530	7,129	560	48	510 - 600	6,223	550	47	500 - 600
540	6,640	570	48	520 - 610	5,609	560	47	510 - 610
550	6,641	580	47	530 - 620	5,031	570	48	520 - 620
560	5,407	590	47	540 - 630	4,325	580	48	530 - 630
570	5,718	600	46	550 - 640	3,853	590	49	540 - 640
580	4,456	610	46	560 - 650	3,304	590	50	540 - 650
590	3,859	620	45	570 - 660	-	600	52	550 - 660
600	3,410	630	45	580 - 670	2,775	610	53	560 - 670
610	2,859	640	45	590 - 680	2,396	620	54	570 - 680
620	2,389	650	44	600 - 690	-	630	55	580 - 690
630	1,959	660	43	610 - 700	1,932	640	55	590 - 700
640	1,484	670	42	620 - 710	-	650	56	590 - 710
650	1,238	680	41	640 - 720	1,643	660	56	600 - 720
660	898	690	39	650 - 730	-	670	55	610 - 720
670	589	690	37	660 - 730	1,327	680	54	630 - 730
680	401	700	35	670 - 740	965	690	51	640 - 740
690	260	710	32	680 - 740	-	700	49	650 - 750
700	122	720	29	690 - 750	714	710	45	670 - 750
710	63	730	26	700 - 750	-	720	41	680 - 760
720	12	730	24	710 - 760	424	730	37	690 - 760

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Table 5: PSAT/NMSQT 10th Fall -to- PSAT/NMSQT 11th Fall Expected Score Range

PSAT/ NMSQT 10th	ERW Section N	ERW Section PSAT/ NMSQT 11th Mean	ERW Section PSAT/ NMSQT 11th SD	ERW Section PSAT/ NMSQT 11th Lower-Upper Bound	Math Section N	Math Section PSAT/ NMSQT 11th Mean	Math Section PSAT/ NMSQT 11th SD	Math Section PSAT/ NMSQT 11th Lower-Upper Bound
160	8	290	87	200 - 380	136	370	82	290 - 450
170	5	300	81	220 - 380	-	370	80	290 - 450
180	26	310	78	230 - 390	386	380	78	300 - 450
190	44	320	76	240 - 400	-	380	76	300 - 450
200	70	330	75	250 - 400	592	380	74	310 - 450
210	127	330	73	260 - 410	31	380	72	310 - 450
220	176	340	72	260 - 410	-	380	70	310 - 450
230	270	340	70	270 - 410	1,160	380	69	320 - 450
240	361	340	68	280 - 410	-	390	67	320 - 450
250	593	350	66	280 - 410	1,958	390	65	320 - 450
260	797	350	64	290 - 420	-	390	63	320 - 450
270	1,151	350	62	290 - 420	3,137	390	62	330 - 450
280	1,757	360	60	300 - 420	286	390	60	330 - 450
290	2,876	360	58	300 - 420	5,742	390	59	330 - 450
300	4,727	360	56	310 - 420	606	390	58	330 - 450
310	7,154	370	55	310 - 420	9,799	390	58	340 - 450
320	10,071	370	55	320 - 430	1,065	400	57	340 - 450
330	13,190	380	55	330 - 430	15,718	400	57	340 - 460
340	18,507	390	55	330 - 440	1,531	400	57	350 - 460
350	20,518	390	55	340 - 450	23,081	410	57	350 - 470
360	24,531	400	56	350 - 460	33,043	410	58	350 - 470
370	27,567	410	56	350 - 470	2,863	420	59	360 - 480
380	27,527	420	57	360 - 470	38,763	420	59	360 - 480
390	32,323	430	57	370 - 480	50,102	430	60	370 - 490
400	28,124	430	58	380 - 490	4,101	440	61	380 - 500
410	33,713	440	57	390 - 500	52,708	440	61	380 - 500
420	31,182	450	57	400 - 510	60,509	450	61	390 - 510
430	33,043	460	56	410 - 520	4,633	460	61	400 - 520
440	33,885	470	56	420 - 530	62,170	470	61	400 - 530
450	32,291	480	55	430 - 540	56,687	470	60	410 - 530
460	36,920	490	54	440 - 540	4,504	480	59	420 - 540
470	32,795	500	53	450 - 550	58,539	490	59	430 - 550
480	38,025	510	51	460 - 560	55,316	500	58	440 - 560
490	36,950	520	50	470 - 570	51,482	510	57	450 - 570
500	38,467	530	49	480 - 580	47,472	520	56	460 - 580
510	38,955	540	49	490 - 590	3,420	530	55	470 - 590
520	39,876	550	48	500 - 600	43,446	540	55	490 - 600
530	38,275	560	47	510 - 610	39,807	550	54	500 - 610
540	36,937	570	46	530 - 620	36,512	560	54	510 - 620
550	35,067	580	46	540 - 630	33,031	580	54	520 - 630
560	32,465	590	45	550 - 640	29,783	590	54	530 - 640
570	30,719	600	45	560 - 650	26,805	600	54	550 - 650
580	28,560	610	44	570 - 660	43,246	610	54	560 - 660
590	27,047	620	43	580 - 670	19,086	620	54	570 - 680
600	23,445	630	42	590 - 670	16,958	630	53	580 - 690
610	20,825	640	41	600 - 680	14,743	640	53	590 - 700
620	20,457	650	40	610 - 690	13,173	650	52	600 - 710
630	15,519	660	39	620 - 700	11,417	660	51	610 - 720
640	16,446	670	38	630 - 710	9,775	670	50	620 - 720
650	12,696	680	36	640 - 710	7,765	680	49	630 - 730
660	12,165	690	35	650 - 720	7,720	690	47	640 - 740
670	10,606	690	33	660 - 730	814	700	46	650 - 740
680	8,873	700	31	670 - 730	6,648	710	44	660 - 750
690	7,496	710	29	680 - 740	5,234	710	42	670 - 750
700	6,149	720	27	690 - 740	5,171	720	39	680 - 760
710	5,099	720	25	700 - 750	4,564	730	36	690 - 760
720	4,005	730	23	700 - 750	3,496	730	32	700 - 760
730	2,777	730	20	710 - 750	4,072	740	28	710 - 760
740	1,655	740	17	720 - 750	5,720	740	23	720 - 760
750	767	740	14	730 - 760	3,915	750	17	730 - 760
760	205	750	12	730 - 760	2,416	750	12	740 - 760

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Table 6: PSAT/NMSQT 11th Fall -to- SAT 12th Fall Expected Score Range

PSAT/NMSQT 11th	ERW Section N	ERW Section SAT 12th Mean	ERW Section SAT 12th SD	ERW Section SAT 12th Lower-Upper Bound	Math Section N	Math Section SAT 12th Mean	Math Section SAT 12th SD	Math Section SAT 12th Lower-Upper Bound
160	5	370	109	260 - 480	49	390	87	310 - 480
170	6	370	102	270 - 480	-	400	82	310 - 480
180	5	370	96	280 - 470	139	400	78	320 - 470
190	6	370	91	280 - 470	-	400	74	320 - 470
200	18	380	87	290 - 460	249	400	71	330 - 470
210	34	380	83	290 - 460	10	400	69	330 - 470
220	55	380	79	300 - 460	-	400	67	330 - 460
230	69	380	77	300 - 460	415	400	65	330 - 460
240	131	380	74	310 - 460	1	400	64	330 - 460
250	198	380	72	310 - 460	737	400	63	330 - 460
260	327	390	70	320 - 460	2	400	62	340 - 460
270	415	390	68	320 - 460	1,261	400	62	340 - 460
280	602	390	66	330 - 460	93	400	61	340 - 460
290	982	390	65	330 - 460	2,223	400	61	340 - 460
300	1,658	400	64	330 - 460	147	400	61	340 - 460
310	2,303	400	63	340 - 460	3,757	400	61	340 - 460
320	3,285	410	62	340 - 470	282	410	61	350 - 470
330	4,562	410	61	350 - 470	6,134	410	61	350 - 470
340	6,474	420	60	360 - 480	462	410	61	350 - 470
350	7,128	420	59	360 - 480	8,935	420	61	360 - 480
360	9,243	430	58	370 - 490	12,942	420	61	360 - 480
370	10,823	430	58	380 - 490	1,024	430	61	370 - 490
380	11,306	440	57	380 - 500	16,091	430	61	370 - 490
390	14,286	450	56	390 - 500	21,000	440	61	380 - 500
400	12,759	450	56	400 - 510	1,525	450	61	380 - 510
410	16,247	460	55	410 - 510	23,688	450	61	390 - 510
420	15,582	470	54	410 - 520	27,971	460	61	400 - 520
430	17,042	480	54	420 - 530	2,078	470	60	410 - 530
440	18,393	480	53	430 - 540	30,079	470	60	410 - 530
450	18,144	490	52	440 - 540	29,050	480	60	420 - 540
460	21,117	500	51	450 - 550	2,179	490	59	430 - 550
470	19,245	510	51	460 - 560	31,162	500	58	440 - 560
480	22,598	520	50	470 - 570	30,861	510	58	450 - 560
490	22,476	530	49	480 - 580	29,857	520	57	460 - 570
500	23,649	540	48	490 - 580	28,705	520	56	470 - 580
510	24,186	540	48	500 - 590	2,138	530	56	480 - 590
520	25,365	550	47	510 - 600	26,877	540	55	490 - 600
530	24,214	560	47	520 - 610	24,980	550	54	500 - 610
540	23,127	570	46	530 - 620	22,982	560	54	510 - 620
550	22,610	580	46	540 - 630	20,973	580	53	520 - 630
560	20,761	590	45	550 - 640	19,442	590	52	540 - 640
570	19,397	600	45	560 - 650	17,829	600	52	550 - 650
580	17,707	610	44	570 - 660	28,726	610	51	560 - 660
590	16,919	620	44	580 - 660	12,723	620	51	570 - 670
600	14,205	630	43	590 - 670	11,559	630	50	580 - 680
610	12,841	640	42	600 - 680	10,095	640	50	590 - 690
620	12,246	650	42	610 - 690	8,833	650	49	600 - 700
630	9,350	660	41	620 - 700	7,902	660	49	610 - 710
640	9,657	670	41	620 - 710	7,023	670	49	620 - 720
650	7,428	670	40	630 - 710	5,420	680	48	630 - 730
660	6,939	680	39	640 - 720	5,509	690	48	640 - 730
670	5,961	690	38	650 - 730	707	690	48	640 - 740
680	5,059	700	38	660 - 740	4,811	700	47	650 - 750
690	4,119	710	37	670 - 740	3,719	710	46	660 - 750
700	3,508	710	35	680 - 750	3,881	710	45	670 - 760
710	3,081	720	34	690 - 760	3,457	720	43	680 - 760
720	2,693	730	33	700 - 760	2,564	730	41	690 - 770
730	2,265	740	31	710 - 770	3,179	740	38	700 - 780
740	1,662	750	29	720 - 780	4,444	750	35	710 - 780
750	818	760	27	730 - 790	3,075	760	32	730 - 790
760	214	770	26	740 - 800	1,549	780	28	750 - 800

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Table 7: PSAT 8/9 8th Spring -to- PSAT 8/9 9th Spring Expected Score Range

PSAT 8/9 8th	ERW Section N	ERW Section PSAT 8/9 9th Mean	ERW Section PSAT8/9 9th SD	ERW Section PSAT 8/9 9th Lower-Upper Bound	Math Section N	Math Section PSAT 8/9 9th Mean	Math Section PSAT8/9 9th SD	Math Section PSAT 8/9 9th Lower-Upper Bound
120	-	310	82	230 - 400	6	360	80	280 - 440
130	-	320	72	240 - 390	-	360	73	290 - 440
140	1	320	64	250 - 380	-	360	68	290 - 430
150	2	320	58	260 - 380	4	360	63	300 - 420
160	1	320	54	270 - 370	-	360	60	300 - 420
170	1	320	50	270 - 370	-	360	57	300 - 420
180	2	320	48	270 - 370	9	360	55	300 - 410
190	1	320	47	280 - 370	-	360	54	300 - 410
200	5	320	46	280 - 370	-	360	53	300 - 410
210	4	320	45	280 - 370	51	360	52	300 - 410
220	9	320	45	280 - 370	-	360	52	300 - 410
230	5	330	44	280 - 370	-	360	52	300 - 410
240	9	330	44	280 - 370	96	360	52	300 - 410
250	17	330	44	290 - 370	-	360	52	300 - 410
260	30	330	43	290 - 370	-	360	53	300 - 410
270	39	330	43	290 - 380	202	360	53	310 - 410
280	61	340	43	290 - 380	-	360	54	310 - 410
290	115	340	43	300 - 380	395	360	54	310 - 420
300	220	340	43	300 - 390	-	360	55	310 - 420
310	280	350	43	310 - 390	592	370	55	310 - 420
320	486	360	44	310 - 400	-	370	56	320 - 430
330	606	360	44	320 - 410	836	380	56	320 - 430
340	739	370	45	330 - 410	1,076	380	56	330 - 440
350	855	380	46	330 - 420	-	390	56	330 - 440
360	971	390	46	340 - 430	1,278	390	55	340 - 450
370	983	400	47	350 - 440	1,425	400	55	350 - 460
380	1,002	410	48	360 - 460	1,511	410	54	350 - 460
390	1,139	420	48	370 - 470	-	420	53	360 - 470
400	1,093	430	49	380 - 480	1,525	420	53	370 - 480
410	1,084	440	49	390 - 490	1,490	430	52	380 - 480
420	1,018	450	50	400 - 500	1,382	440	51	390 - 490
430	995	460	50	410 - 510	-	450	50	400 - 500
440	933	470	50	420 - 520	1,321	460	50	410 - 510
450	905	480	50	430 - 530	1,155	470	49	420 - 520
460	921	490	50	440 - 540	1,097	480	49	430 - 530
470	787	500	49	450 - 550	975	490	49	440 - 540
480	899	510	49	460 - 550	911	500	49	450 - 550
490	736	520	49	470 - 560	825	510	49	460 - 560
500	772	530	48	480 - 570	679	520	50	470 - 570
510	656	530	48	490 - 580	591	530	50	480 - 580
520	575	540	47	500 - 590	494	540	51	490 - 590
530	524	550	46	510 - 600	443	550	52	500 - 600
540	424	560	45	520 - 610	377	560	53	510 - 620
550	419	570	44	530 - 620	-	570	54	520 - 630
560	345	580	43	540 - 620	306	580	55	530 - 640
570	262	590	42	550 - 630	208	590	55	530 - 640
580	261	600	41	560 - 640	168	600	56	540 - 650
590	167	600	40	560 - 640	140	610	56	550 - 660
600	137	610	39	570 - 650	-	610	56	560 - 670
610	108	620	38	580 - 660	115	620	55	570 - 680
620	86	630	37	590 - 660	74	630	55	570 - 680
630	76	630	35	600 - 670	-	640	53	580 - 690
640	48	640	34	600 - 670	55	640	52	590 - 700
650	34	640	33	610 - 680	-	650	50	600 - 700
660	32	650	32	620 - 680	42	660	47	610 - 710
670	25	660	31	630 - 690	-	670	43	620 - 710
680	15	660	31	630 - 700	26	670	39	640 - 710
690	5	670	31	640 - 700	22	680	34	650 - 720
700	3	680	32	640 - 710	-	690	29	660 - 720
710	-	680	35	650 - 720	22	700	22	680 - 720
720	-	690	38	650 - 720	4	710	16	690 - 720

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Table 8: PSAT 8/9 9th Spring -to- PSAT10 10th Spring Expected Score Range

PSAT 8/9 9th	ERW Section N	ERW Section PSAT10 10th Mean	ERW Section PSAT10 10th SD	ERW Section PSAT10 10th Lower-Upper Bound	Math Section N	Math Section PSAT10 10th Mean	Math Section PSAT10 10th SD	Math Section PSAT10 10th Lower-Upper Bound
120	1	280	50	230 - 330	9	360	65	300 - 430
130	1	290	50	240 - 340	-	360	61	300 - 430
140	1	300	50	250 - 350	-	370	58	310 - 420
150	-	310	50	260 - 360	28	370	56	310 - 420
160	-	320	50	270 - 370	-	370	54	320 - 420
170	3	330	50	280 - 380	-	370	53	320 - 420
180	5	330	50	290 - 380	80	370	52	320 - 420
190	6	340	50	290 - 390	-	370	51	320 - 420
200	15	340	50	290 - 390	-	370	50	320 - 420
210	9	340	50	300 - 390	211	370	50	320 - 420
220	18	350	50	300 - 400	-	370	49	320 - 420
230	26	350	48	300 - 400	-	370	48	320 - 420
240	52	350	46	300 - 390	551	370	48	330 - 420
250	58	350	44	310 - 390	-	370	47	330 - 420
260	101	350	42	310 - 390	-	370	47	330 - 420
270	208	350	41	310 - 390	1,119	370	47	330 - 420
280	283	350	40	310 - 390	-	380	46	330 - 420
290	537	350	40	310 - 390	1,918	380	46	330 - 420
300	959	350	40	310 - 400	-	380	46	330 - 420
310	1,411	360	41	320 - 400	2,946	380	46	330 - 430
320	2,252	360	41	320 - 400	-	380	46	340 - 430
330	2,915	370	42	320 - 410	4,099	380	46	340 - 430
340	3,598	370	43	330 - 420	5,072	390	46	340 - 430
350	3,972	380	45	330 - 420	-	390	47	340 - 440
360	4,308	390	46	340 - 430	5,884	400	47	350 - 440
370	4,542	400	47	350 - 440	6,474	400	48	350 - 450
380	4,815	400	49	360 - 450	6,744	410	49	360 - 450
390	4,844	410	50	360 - 460	-	410	49	360 - 460
400	4,777	420	51	370 - 470	7,068	420	50	370 - 470
410	4,910	430	52	380 - 480	6,827	430	50	380 - 480
420	4,652	440	52	390 - 490	6,810	430	51	380 - 490
430	4,597	450	52	400 - 500	-	440	51	390 - 490
440	4,734	460	52	410 - 510	6,639	450	52	400 - 500
450	4,496	470	52	420 - 520	6,068	460	52	410 - 510
460	4,767	480	51	430 - 530	6,027	470	52	420 - 520
470	3,988	490	51	440 - 540	5,479	480	52	430 - 540
480	4,649	500	50	450 - 550	5,141	500	52	440 - 550
490	3,917	510	50	460 - 560	4,708	510	51	460 - 560
500	4,225	520	49	470 - 570	4,120	520	51	470 - 570
510	3,870	530	49	480 - 580	3,588	530	51	480 - 580
520	3,626	540	49	490 - 590	3,061	540	51	490 - 590
530	3,638	550	49	500 - 600	2,596	550	51	500 - 600
540	2,812	560	48	510 - 610	2,345	570	51	510 - 620
550	2,927	570	48	520 - 620	-	580	51	530 - 630
560	2,432	580	48	530 - 630	1,920	590	51	540 - 640
570	2,047	590	48	540 - 640	1,658	600	51	550 - 650
580	1,958	600	48	550 - 650	1,376	610	51	560 - 660
590	1,494	610	47	570 - 660	1,167	620	52	570 - 670
600	1,298	620	47	580 - 670	-	630	52	580 - 680
610	1,078	630	46	590 - 680	926	640	52	580 - 690
620	900	640	46	600 - 690	707	650	52	590 - 700
630	732	650	45	610 - 700	-	650	51	600 - 710
640	587	660	43	620 - 710	612	660	51	610 - 710
650	423	670	42	630 - 710	-	670	50	620 - 720
660	332	680	40	640 - 720	464	680	49	630 - 730
670	249	690	38	650 - 730	-	690	47	640 - 740
680	183	700	35	660 - 730	386	700	44	650 - 740
690	109	710	33	670 - 740	264	710	41	660 - 750
700	45	710	29	680 - 740	-	710	37	680 - 750
710	17	720	26	700 - 750	212	720	33	690 - 760
720	3	730	23	710 - 750	108	730	28	700 - 760

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Table 9: PSAT 10 10th Spring -to- SAT 11th Spring Expected Score Range

PSAT 10 10th	ERW Section N	ERW Section SAT 11th Mean	ERW Section SAT 11th SD	ERW Section SAT 11th Lower-Upper Bound	Math Section N	Math Section SAT 11th Mean	Math Section SAT 11th SD	Math Section SAT 11th Lower-Upper Bound
160	-	300	49	250 - 350	10	310	122	200 - 440
170	1	320	49	270 - 360	-	330	109	220 - 440
180	1	330	49	280 - 380	-	340	98	250 - 440
190	1	340	49	290 - 390	34	360	88	270 - 440
200	1	350	49	300 - 400	-	360	80	280 - 450
210	5	350	49	310 - 400	63	370	74	300 - 450
220	9	360	49	310 - 410	-	380	69	310 - 450
230	13	370	49	320 - 420	-	380	64	320 - 450
240	32	370	49	320 - 420	152	390	61	330 - 450
250	37	370	49	320 - 420	-	390	59	330 - 450
260	54	380	49	330 - 430	347	390	57	330 - 450
270	66	380	49	330 - 430	-	390	56	340 - 450
280	123	380	49	330 - 430	-	390	55	340 - 450
290	254	380	49	330 - 430	823	390	55	340 - 450
300	568	380	50	330 - 430	-	390	55	340 - 450
310	1,026	390	49	340 - 440	1,556	390	56	340 - 450
320	1,843	390	49	340 - 440	2,640	390	56	340 - 450
330	2,769	390	49	340 - 440	-	390	57	340 - 450
340	3,683	400	49	350 - 450	4,189	400	58	340 - 450
350	4,757	400	50	350 - 450	5,799	400	59	340 - 460
360	5,146	410	50	360 - 460	-	400	60	340 - 460
370	6,112	420	50	370 - 470	7,185	410	61	350 - 470
380	5,879	430	51	370 - 480	8,344	410	61	350 - 480
390	6,710	430	51	380 - 490	-	420	61	360 - 480
400	6,286	440	52	390 - 490	9,271	430	61	370 - 490
410	6,340	450	52	400 - 500	9,898	440	61	380 - 500
420	6,822	460	52	410 - 510	9,772	450	61	390 - 510
430	6,036	470	52	420 - 520	9,848	460	60	400 - 520
440	6,683	480	52	430 - 530	9,148	470	59	410 - 530
450	7,096	490	52	440 - 540	8,605	480	58	420 - 540
460	6,565	500	51	450 - 550	8,087	490	57	440 - 550
470	6,771	510	51	460 - 560	7,625	500	56	450 - 560
480	7,349	520	50	470 - 570	7,007	520	54	460 - 570
490	6,948	530	49	480 - 580	6,646	530	53	470 - 580
500	6,493	540	49	490 - 590	6,148	540	51	490 - 590
510	6,435	550	48	500 - 600	5,667	550	50	500 - 600
520	6,748	560	48	510 - 610	5,210	560	50	510 - 610
530	6,021	570	47	520 - 620	4,926	570	49	520 - 620
540	5,718	580	46	530 - 630	8,667	580	49	530 - 630
550	5,671	590	46	540 - 630	3,849	600	49	550 - 640
560	5,071	600	45	550 - 640	3,609	610	50	560 - 660
570	4,965	610	45	560 - 650	6,391	620	50	570 - 670
580	4,292	620	44	570 - 660	2,855	630	51	580 - 680
590	3,826	630	44	580 - 670	2,567	640	51	590 - 690
600	3,761	640	43	600 - 680	2,406	650	51	600 - 700
610	2,947	650	43	610 - 690	2,245	660	51	610 - 710
620	2,860	660	42	620 - 700	1,995	670	51	620 - 720
630	2,612	670	42	630 - 710	1,819	680	51	630 - 730
640	2,147	680	41	640 - 720	1,583	690	50	640 - 740
650	2,036	690	40	650 - 730	1,489	700	49	650 - 750
660	1,561	700	39	660 - 730	-	710	48	660 - 760
670	1,443	700	38	670 - 740	1,298	720	47	670 - 760
680	1,209	710	37	680 - 750	1,147	720	45	680 - 770
690	936	720	35	690 - 760	-	730	43	690 - 770
700	709	730	34	700 - 760	977	740	41	700 - 780
710	529	740	32	710 - 770	831	750	39	710 - 790
720	364	750	30	720 - 780	-	750	36	720 - 790
730	288	750	28	730 - 780	674	760	33	730 - 800
740	163	760	25	740 - 790	1,050	770	30	740 - 800
750	65	770	23	740 - 790	303	780	27	750 - 800
760	20	770	21	750 - 790	121	790	24	760 - 800

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Table 10: PSAT/NMSQT 11th Fall -to- SAT 11th Spring Expected Score Range

PSAT/NMSQT 11th	ERW Section N	ERW Section SAT 11th Mean	ERW Section SAT 11th SD	ERW Section SAT 11th Lower-Upper Bound	Math Section N	Math Section SAT 11th Mean	Math Section SAT 11th SD	Math Section SAT 11th Lower-Upper Bound
160	2	300	112	200 - 420	41	340	96	240 - 430
170	5	310	104	210 - 420	1	350	89	260 - 440
180	16	320	97	230 - 420	105	360	83	280 - 450
190	24	330	91	240 - 420	7	370	79	290 - 450
200	30	340	86	250 - 420	229	380	75	300 - 450
210	48	340	81	260 - 420	7	380	72	310 - 450
220	94	350	77	270 - 430	2	390	69	320 - 450
230	120	350	73	280 - 430	435	390	66	320 - 450
240	179	360	70	290 - 430	4	390	64	320 - 450
250	272	360	67	300 - 430	788	390	63	330 - 450
260	389	370	65	300 - 430	54	390	61	330 - 450
270	556	370	63	310 - 430	1,497	390	60	330 - 450
280	771	370	61	310 - 440	124	390	59	330 - 440
290	1,416	380	59	320 - 440	2,813	380	59	330 - 440
300	1,970	380	58	320 - 440	263	380	58	330 - 440
310	3,592	390	56	330 - 440	5,004	380	58	330 - 440
320	5,018	390	55	330 - 450	374	380	58	330 - 440
330	5,983	390	55	340 - 450	7,994	390	58	330 - 440
340	9,312	400	54	350 - 450	524	390	58	330 - 450
350	11,128	410	53	350 - 460	11,437	390	58	340 - 450
360	11,737	410	53	360 - 460	15,994	400	58	340 - 460
370	14,960	420	53	360 - 470	1,022	410	58	350 - 460
380	16,877	420	52	370 - 480	20,315	410	58	350 - 470
390	16,411	430	52	380 - 480	22,779	420	58	360 - 480
400	18,642	440	52	390 - 490	26,756	430	58	370 - 490
410	20,853	440	52	390 - 500	29,440	440	58	380 - 500
420	21,823	450	51	400 - 500	30,096	450	57	390 - 500
430	21,503	460	51	410 - 510	3,006	460	57	400 - 510
440	25,480	470	50	420 - 520	33,349	460	56	410 - 520
450	26,882	480	50	430 - 530	34,764	470	55	420 - 530
460	24,821	480	49	440 - 530	35,793	480	54	430 - 540
470	29,246	490	48	440 - 540	36,785	490	53	440 - 540
480	31,222	500	48	450 - 550	37,839	500	52	450 - 550
490	30,455	510	47	460 - 560	38,295	510	51	460 - 560
500	32,954	520	46	470 - 570	38,090	520	50	470 - 570
510	34,790	530	46	480 - 580	38,241	530	49	480 - 580
520	36,628	540	45	490 - 580	37,627	540	48	490 - 590
530	37,990	550	44	510 - 590	36,961	550	48	500 - 600
540	38,451	560	44	520 - 600	35,766	560	48	520 - 610
550	38,304	570	43	530 - 610	36,318	570	48	530 - 620
560	38,329	580	43	540 - 620	59,648	590	48	540 - 630
570	36,509	590	43	550 - 630	29,980	600	48	550 - 650
580	35,019	600	42	560 - 640	28,117	610	49	560 - 660
590	32,828	610	42	570 - 650	26,891	620	49	570 - 670
600	30,392	620	41	580 - 660	25,366	630	49	580 - 680
610	28,072	630	41	590 - 670	23,907	640	50	590 - 690
620	25,676	640	40	600 - 680	21,967	650	50	600 - 700
630	24,609	650	40	610 - 690	20,646	660	50	610 - 710
640	20,930	660	39	620 - 700	991	670	50	620 - 720
650	21,614	660	39	630 - 700	19,014	680	50	630 - 730
660	18,122	670	38	640 - 710	16,701	690	49	640 - 740
670	17,394	680	38	640 - 720	787	690	49	650 - 740
680	16,274	690	37	650 - 730	15,281	700	48	650 - 750
690	13,007	700	36	660 - 740	14,487	710	47	660 - 760
700	13,262	710	35	670 - 740	20	720	45	670 - 760
710	11,819	720	34	680 - 750	13,237	730	43	680 - 770
720	9,322	730	33	690 - 760	2,071	740	41	690 - 780
730	8,830	740	31	700 - 770	11,959	740	39	710 - 780
740	5,348	750	30	720 - 780	10,455	750	36	720 - 790
750	3,927	760	28	730 - 780	15,596	760	34	730 - 800
760	1,004	770	27	740 - 790	5,181	780	31	740 - 800

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Table 11: SAT 11th Spring -to- SAT 12th Fall Expected Score Range

SAT 11th	ERW Section N	ERW Section SAT 12th Mean	ERW Section SAT 12th SD	ERW Section SAT 12th Lower-Upper Bound	Math Section N	Math Section SAT 12th Mean	Math Section SAT 12th SD	Math Section SAT 12th Lower-Upper Bound
200	12	310	78	230 - 380	20	350	103	250 - 460
210	24	320	75	240 - 390	20	360	91	260 - 450
220	19	320	72	250 - 400	1	360	82	280 - 440
230	35	330	70	260 - 400	51	360	74	290 - 430
240	48	340	68	270 - 410	5	360	68	290 - 430
250	70	350	66	280 - 410	92	370	64	300 - 430
260	120	350	65	290 - 420	183	370	60	310 - 430
270	150	360	63	300 - 420	12	370	58	310 - 430
280	214	360	61	300 - 420	380	370	56	320 - 430
290	297	370	60	310 - 430	663	380	55	320 - 430
300	428	370	58	320 - 430	28	380	55	330 - 430
310	651	380	57	320 - 440	1,182	380	55	330 - 440
320	833	380	55	330 - 440	1,878	390	55	330 - 440
330	1,411	390	54	340 - 440	2,644	390	55	340 - 450
340	1,913	390	53	340 - 450	2,907	400	56	340 - 450
350	2,650	400	52	350 - 450	2,673	400	57	340 - 460
360	3,568	410	51	350 - 460	5,735	410	57	350 - 460
370	4,397	410	51	360 - 460	3,072	410	57	350 - 470
380	5,628	420	50	370 - 470	7,821	420	57	360 - 470
390	6,276	430	50	380 - 480	9,104	420	57	370 - 480
400	7,851	430	50	380 - 480	10,260	430	56	370 - 480
410	9,042	440	50	390 - 490	5,335	440	55	380 - 490
420	10,067	450	49	400 - 500	12,320	440	55	390 - 500
430	11,419	460	49	410 - 500	13,068	450	54	400 - 500
440	12,641	460	49	410 - 510	14,131	460	53	400 - 510
450	13,677	470	48	420 - 520	15,144	460	52	410 - 520
460	15,012	480	48	430 - 530	15,667	470	51	420 - 520
470	16,512	490	48	440 - 540	14,571	480	50	430 - 530
480	17,698	500	47	450 - 540	14,906	490	49	440 - 540
490	18,658	510	46	460 - 550	17,335	500	48	450 - 550
500	18,980	510	46	470 - 560	17,483	510	47	460 - 560
510	19,852	520	45	480 - 570	19,417	520	47	470 - 560
520	19,462	530	44	490 - 580	27,247	530	46	480 - 570
530	20,403	540	44	500 - 590	24,115	540	45	490 - 580
540	20,291	550	43	510 - 590	21,882	550	45	500 - 590
550	19,626	560	43	520 - 600	16,380	560	45	510 - 600
560	19,672	570	42	530 - 610	16,558	570	44	520 - 610
570	19,565	580	42	540 - 620	14,482	580	44	530 - 620
580	18,654	590	41	550 - 630	13,926	590	44	540 - 630
590	18,344	600	41	560 - 640	20,038	600	44	550 - 640
600	16,508	610	40	570 - 650	15,660	610	44	560 - 650
610	15,962	620	40	580 - 660	12,000	620	44	570 - 660
620	14,400	630	39	590 - 670	12,957	630	44	580 - 670
630	13,512	640	39	600 - 670	9,346	640	44	590 - 680
640	11,791	640	39	610 - 680	8,508	640	44	600 - 690
650	10,281	650	38	620 - 690	8,887	650	43	610 - 700
660	9,149	660	38	630 - 700	8,874	660	43	620 - 710
670	7,864	670	37	640 - 710	7,331	670	42	630 - 720
680	6,634	680	37	640 - 720	7,405	680	42	640 - 730
690	5,655	690	36	650 - 730	5,791	690	41	650 - 740
700	4,369	700	35	660 - 730	5,409	700	40	660 - 740
710	3,905	710	35	670 - 740	3,870	710	39	670 - 750
720	2,852	710	34	680 - 750	3,372	720	38	680 - 760
730	2,232	720	33	690 - 760	3,087	730	37	690 - 770
740	1,582	730	32	700 - 760	1,428	740	36	700 - 770
750	1,138	740	31	700 - 770	2,250	750	34	710 - 780
760	759	740	30	710 - 770	2,347	750	33	720 - 790
770	474	750	29	720 - 780	870	760	31	730 - 790
780	271	750	28	720 - 780	1,438	770	29	740 - 800
790	131	760	27	730 - 780	1,414	770	28	740 - 800
800	54	760	27	730 - 790	713	780	26	750 - 800

Note: The conditional means and Lower-Upper Bounds were rounded to units of 10 and the conditional standard deviations (SD) were rounded to integers.

Figure 1: ERW Section Score Growth Results—Group 1 Conditional Mean

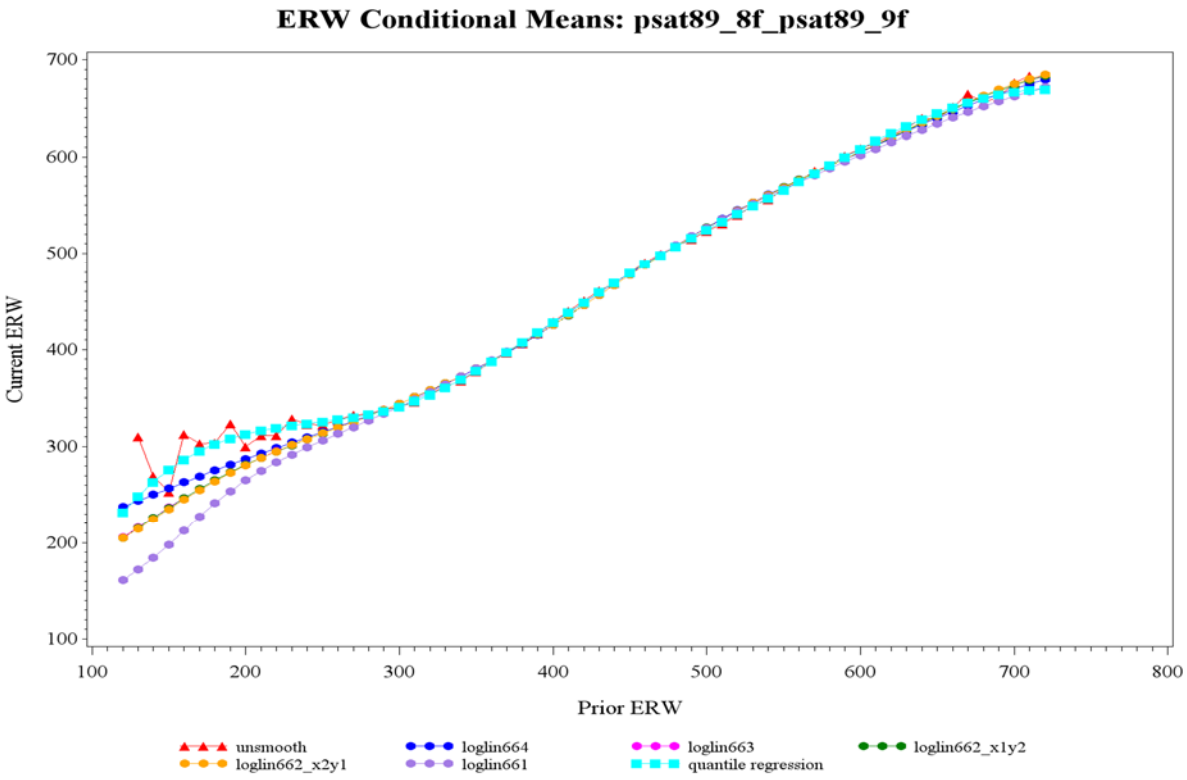

Figure 2: ERW Section Score Growth Results—Group 2 Conditional Mean

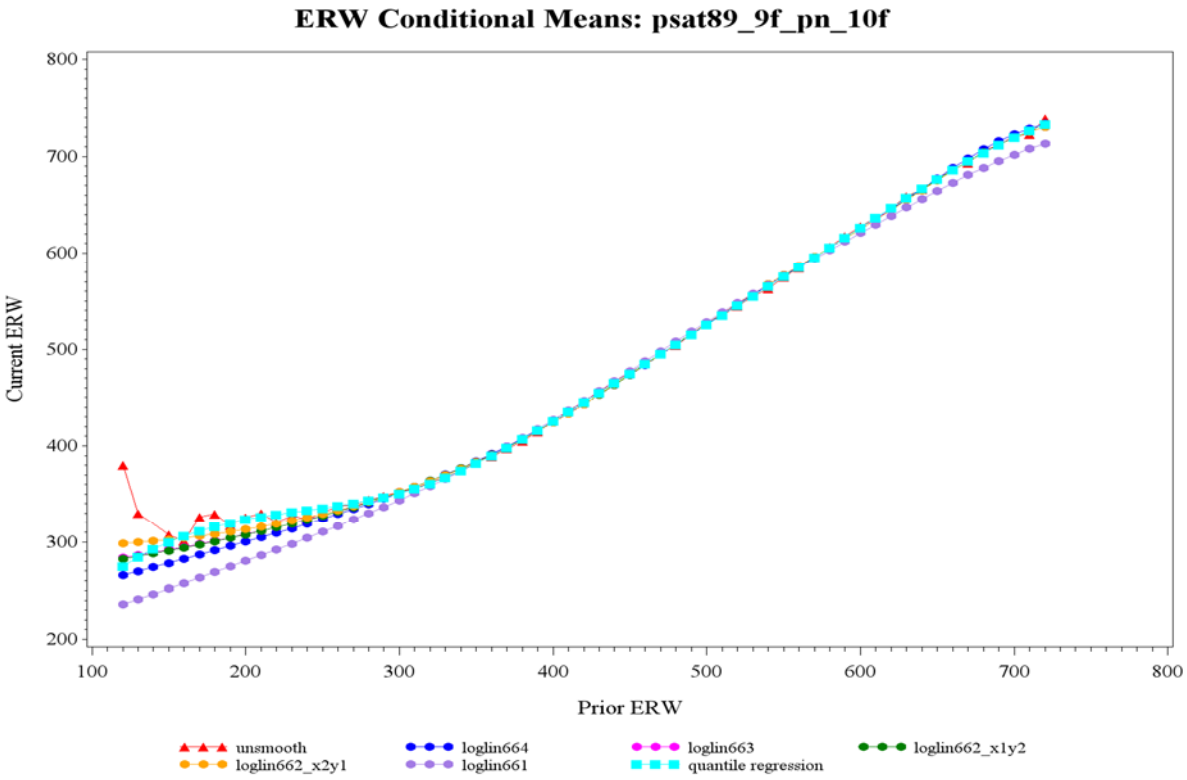

Figure 3: ERW Section Score Growth Results—Group 3 Conditional Mean

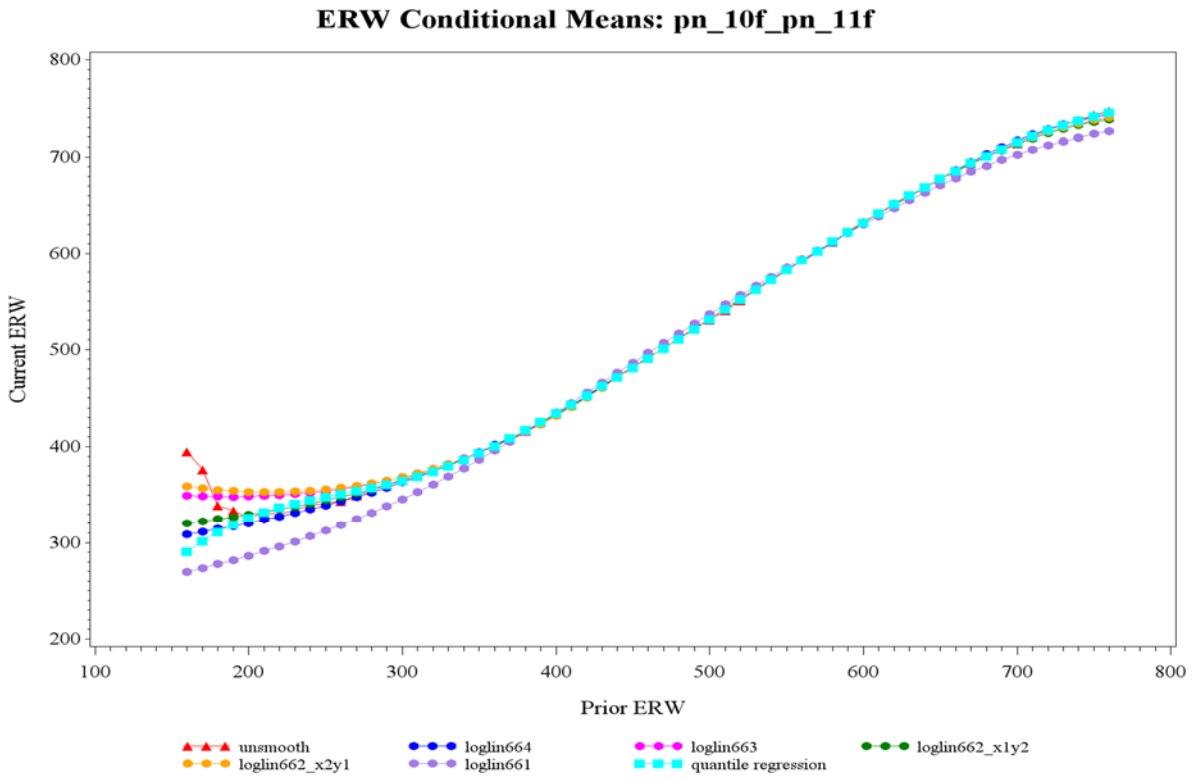

Figure 4: ERW Section Score Growth Results—Group 4 Conditional Mean

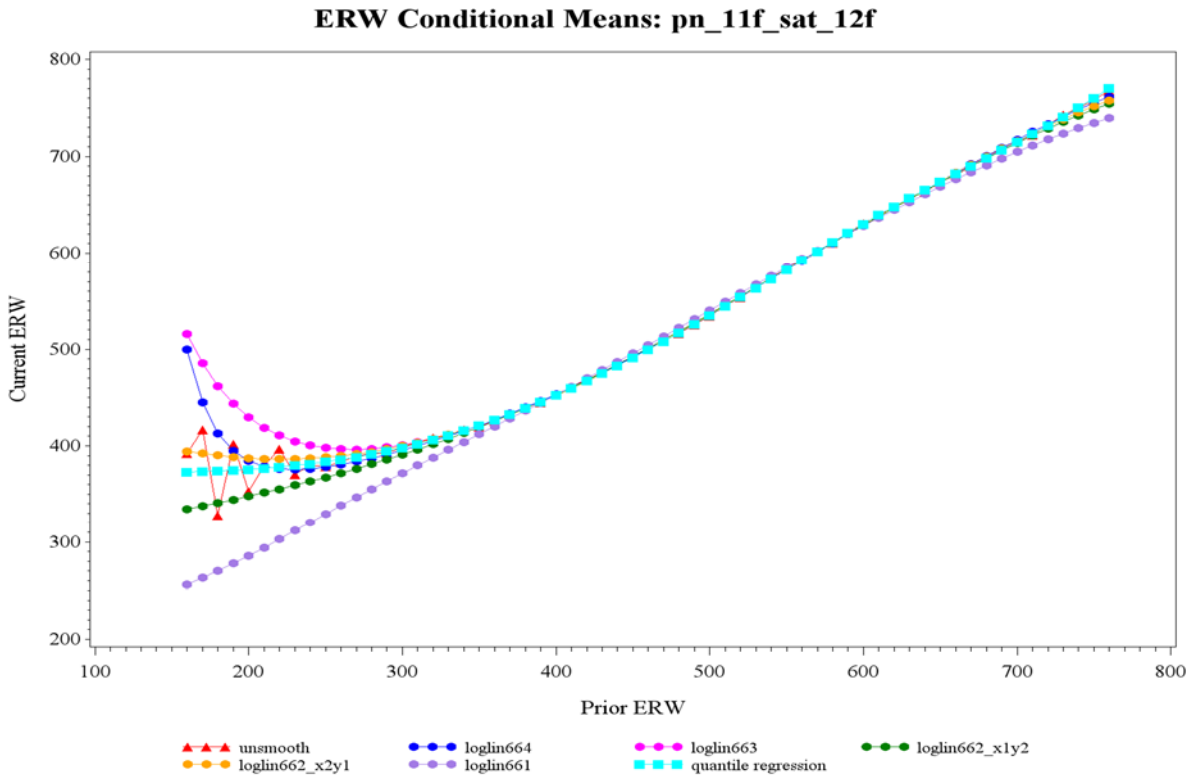

Figure 5: ERW Section Score Growth Results—Group 5 Conditional Mean

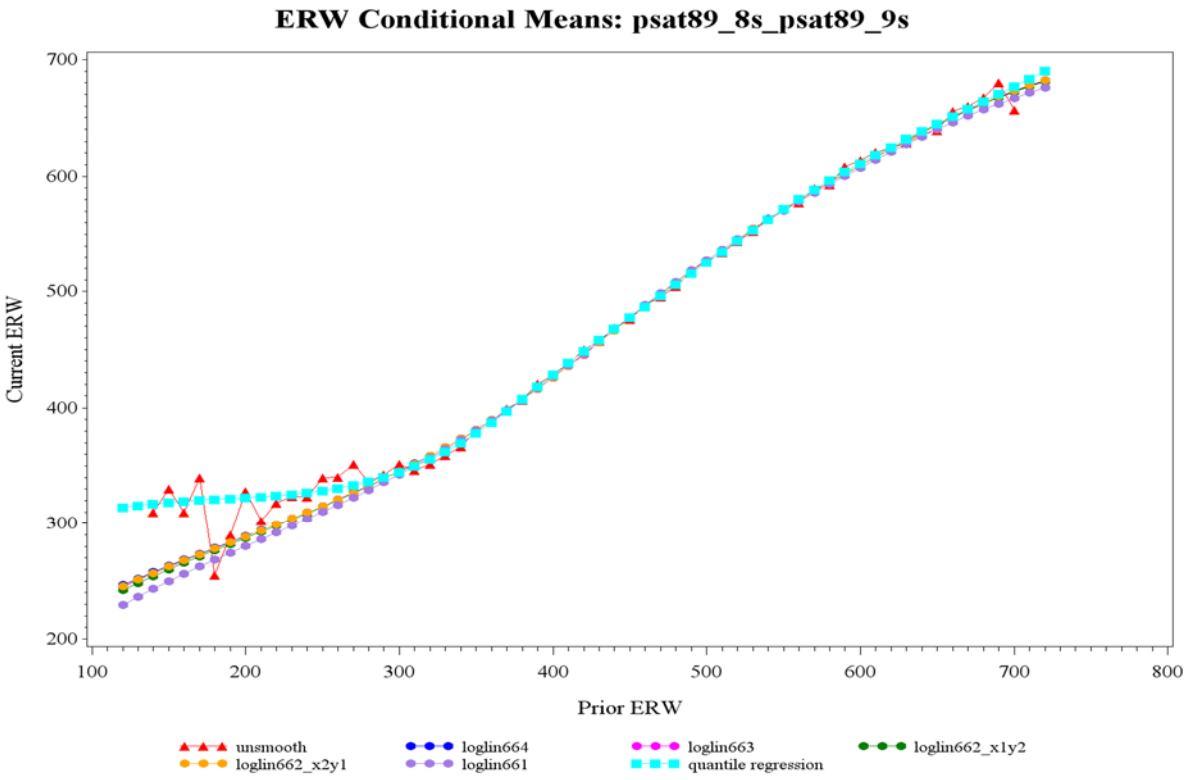

Figure 6: ERW Section Score Growth Results—Group 6 Conditional Mean

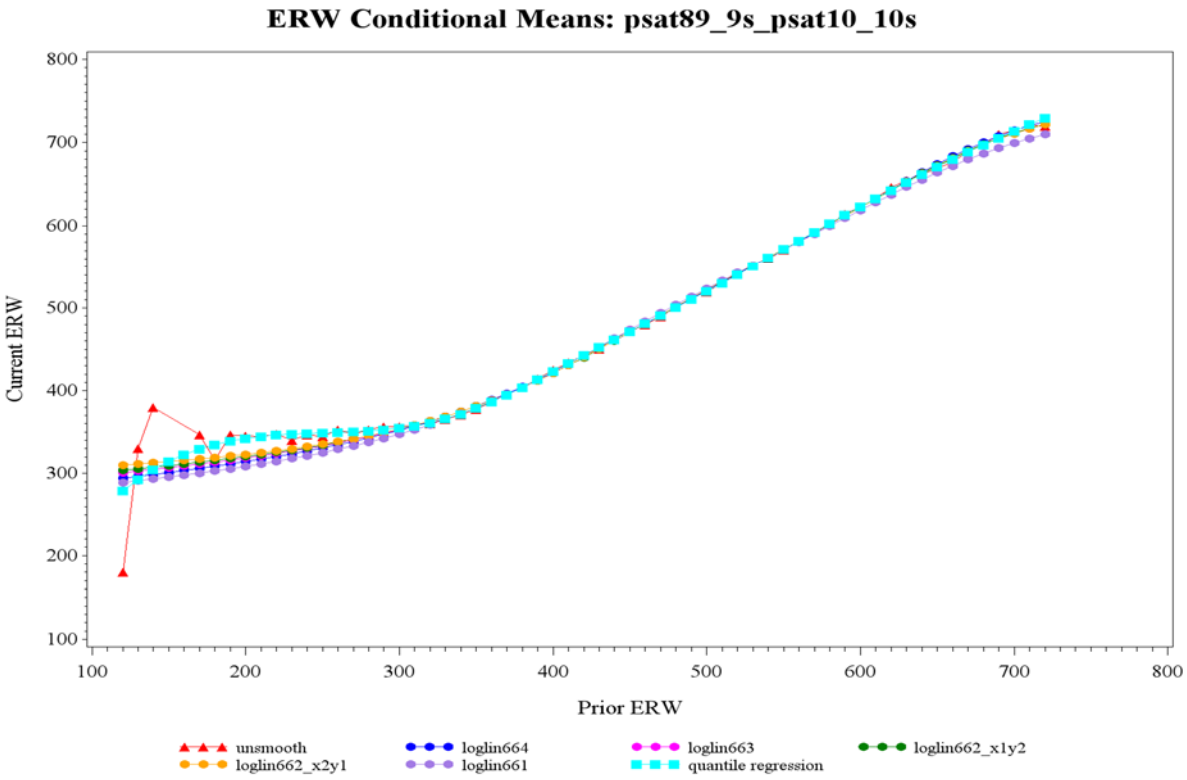

Figure 7: ERW Section Score Growth Results—Group 7 Conditional Mean

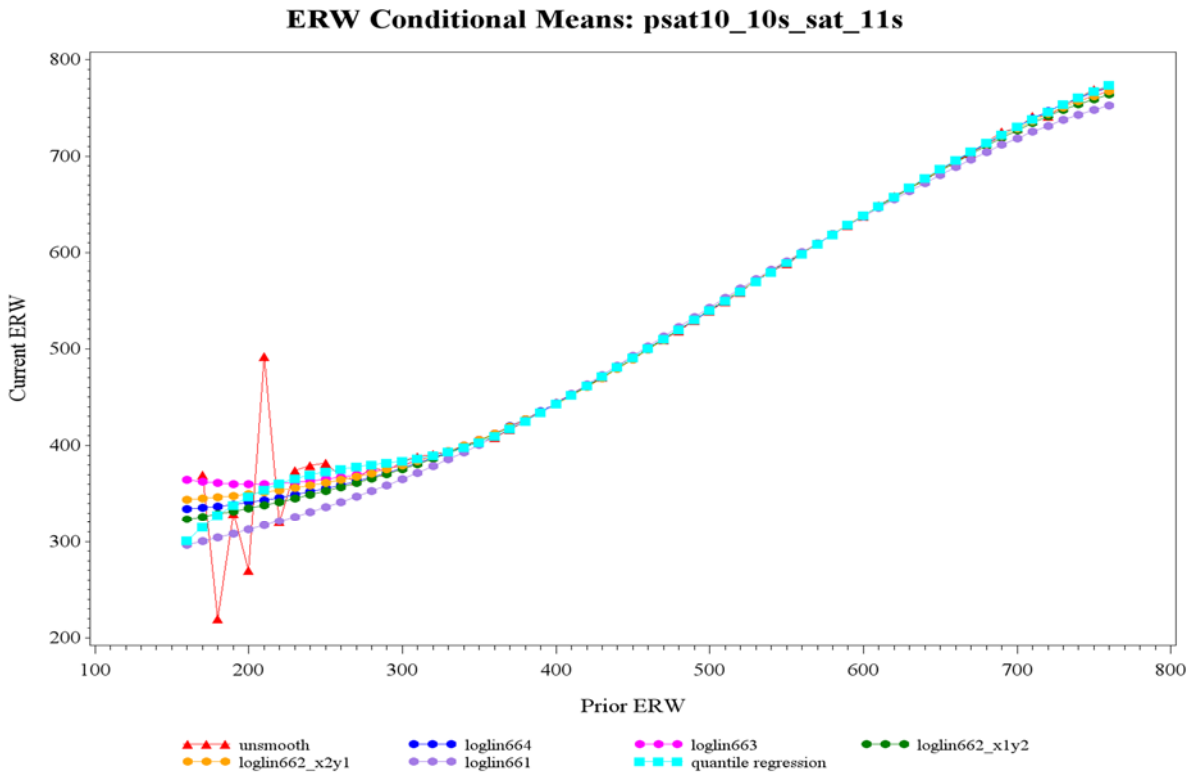

Figure 8: ERW Section Score Growth Results—Group 8 Conditional Mean

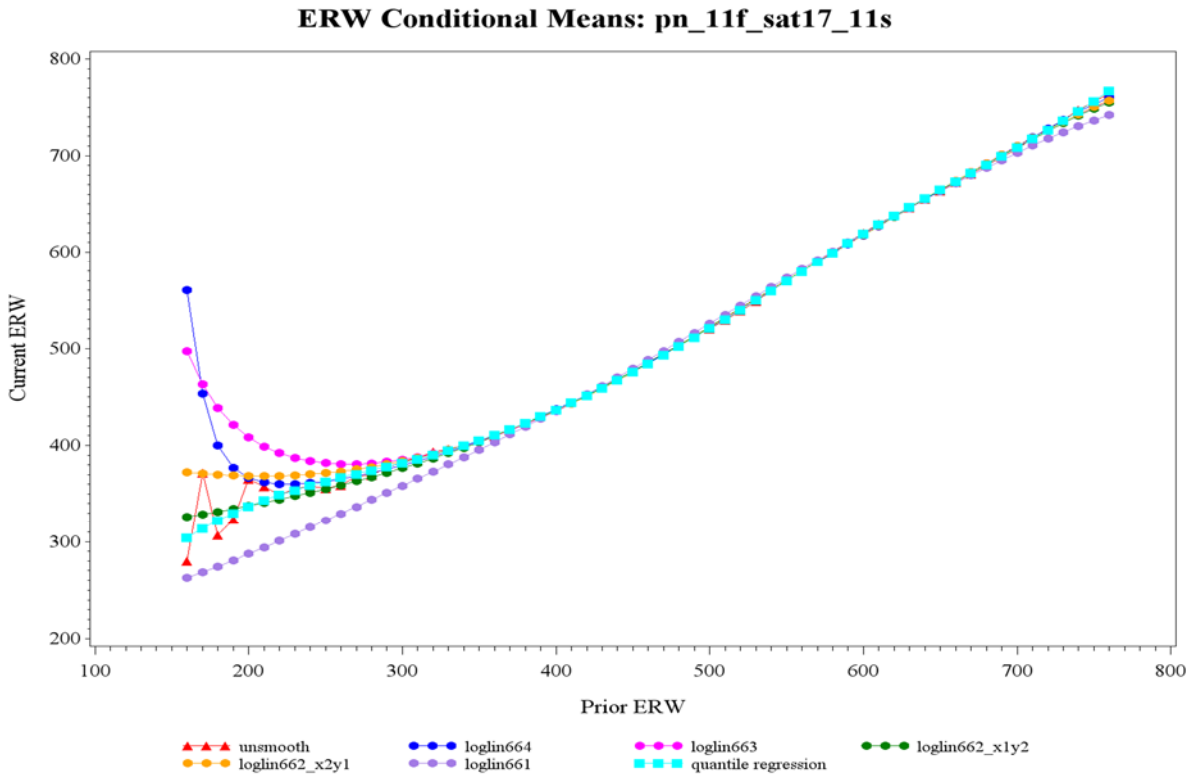

Figure 9: ERW Section Score Growth Results—Group 9 Conditional Mean

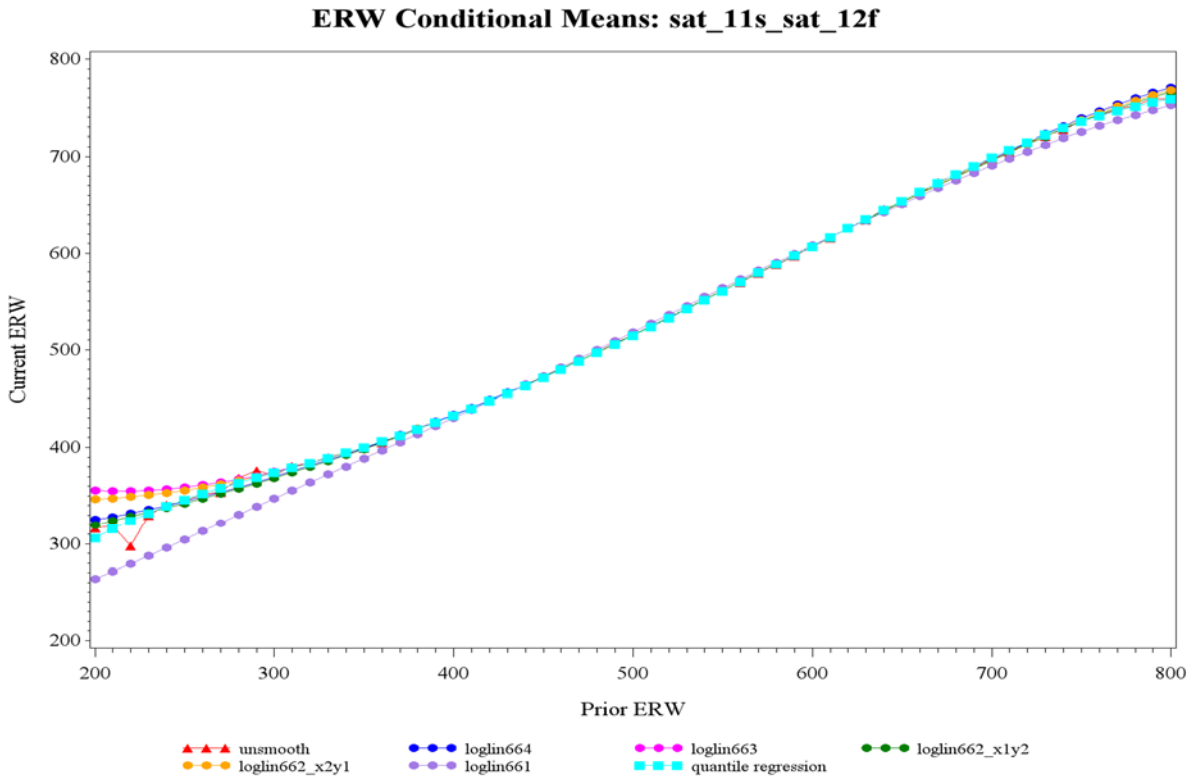

Figure 10: ERW Section Score Growth Results—Group 1 Conditional Standard Deviation

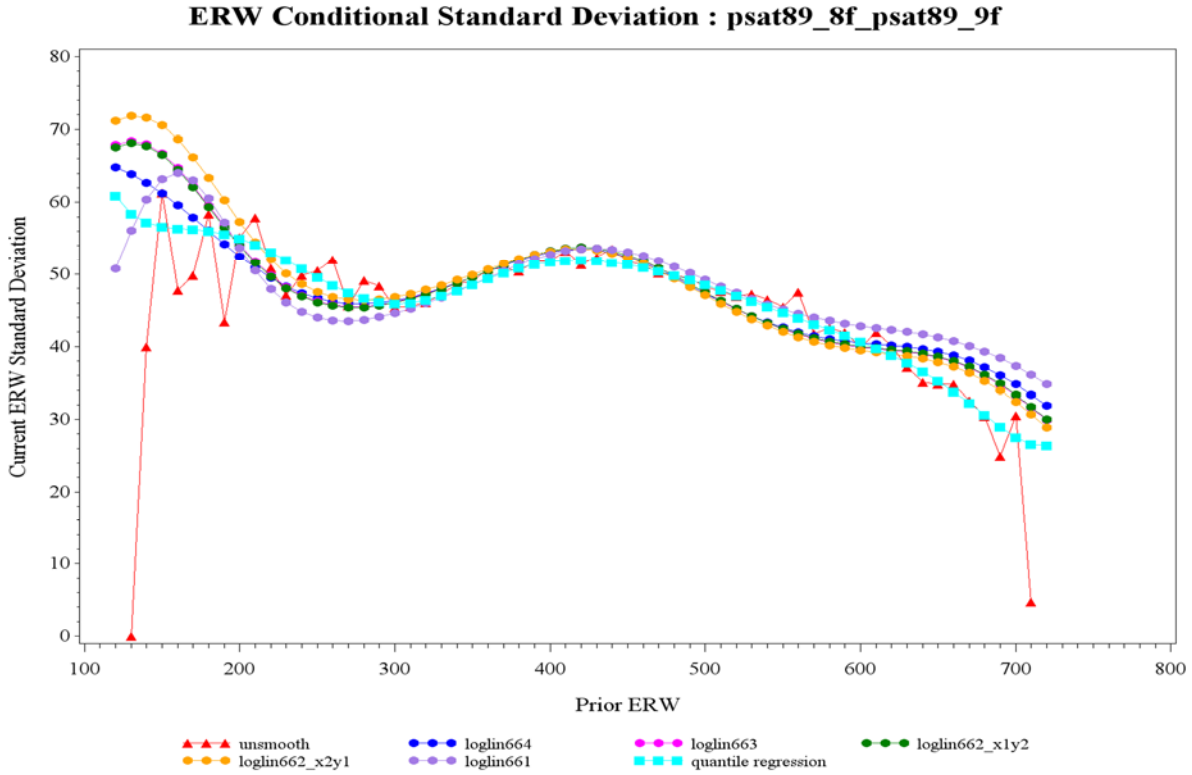

Figure 11: ERW Section Score Growth Results—Group 2 Conditional Standard Deviation

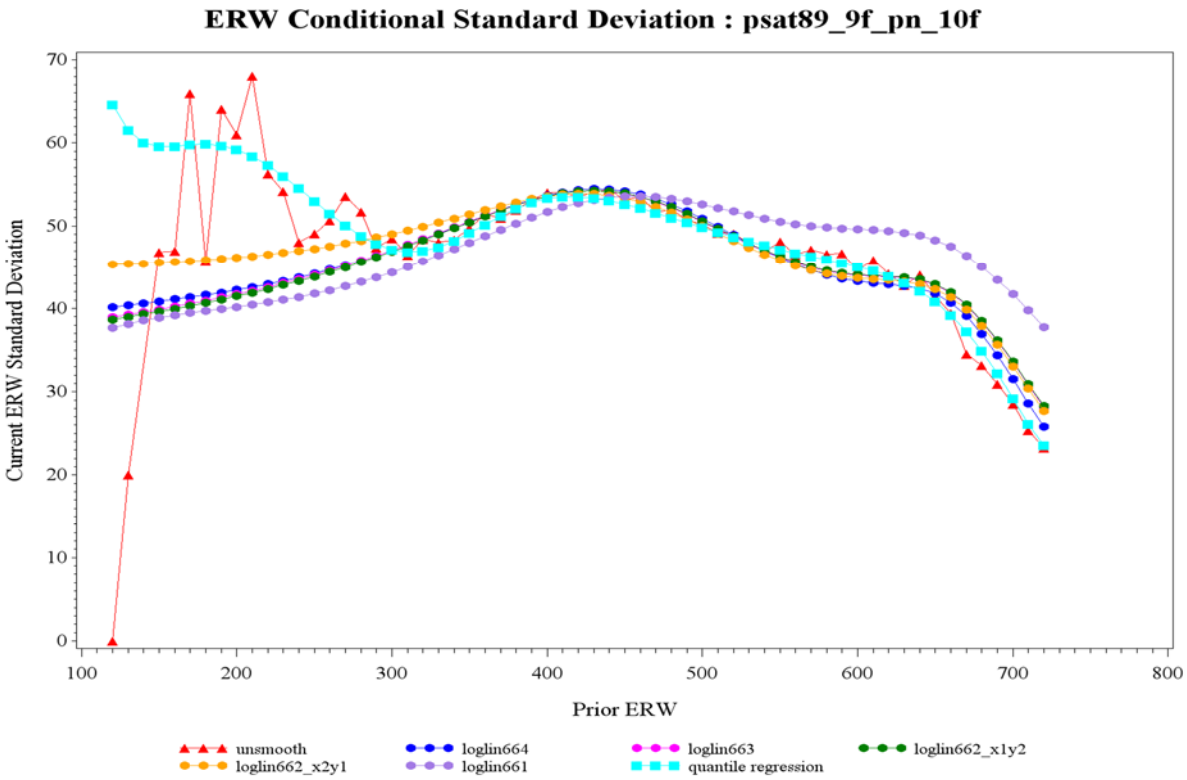

Figure 12: ERW Section Score Growth Results—Group 3 Conditional Standard Deviation

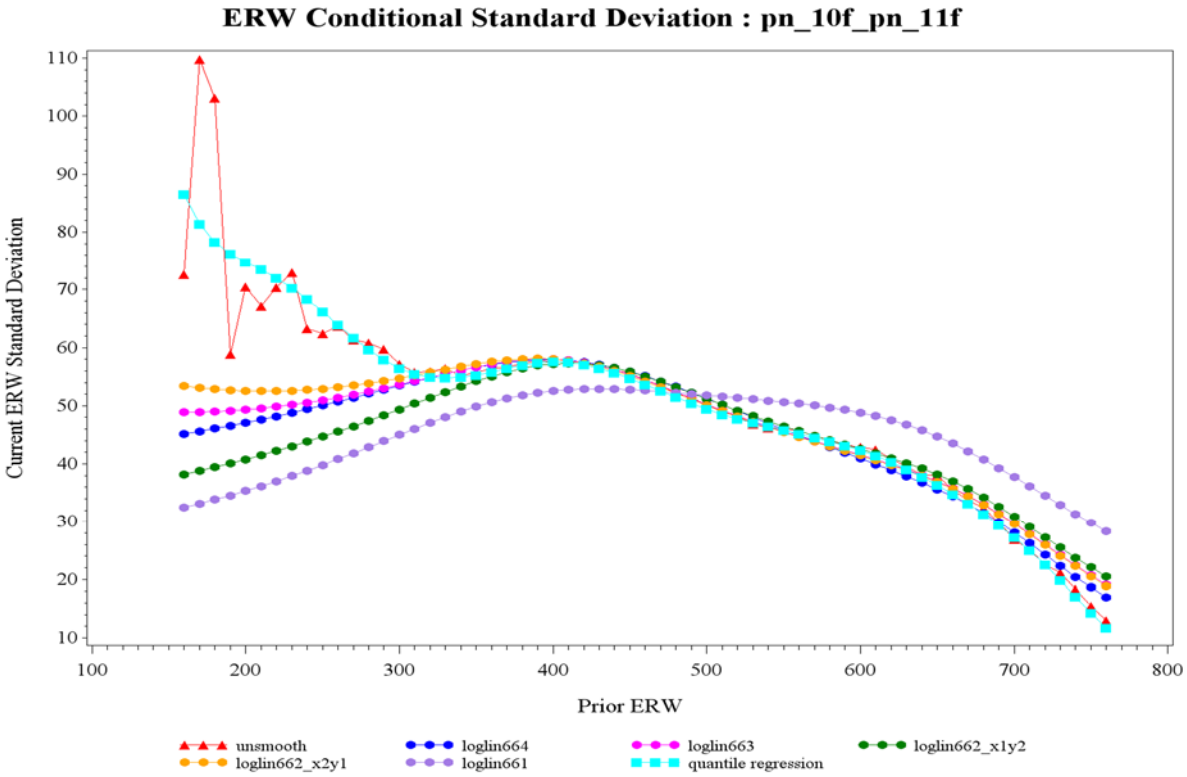

Figure 13: ERW Section Score Growth Results—Group 4 Conditional Standard Deviation

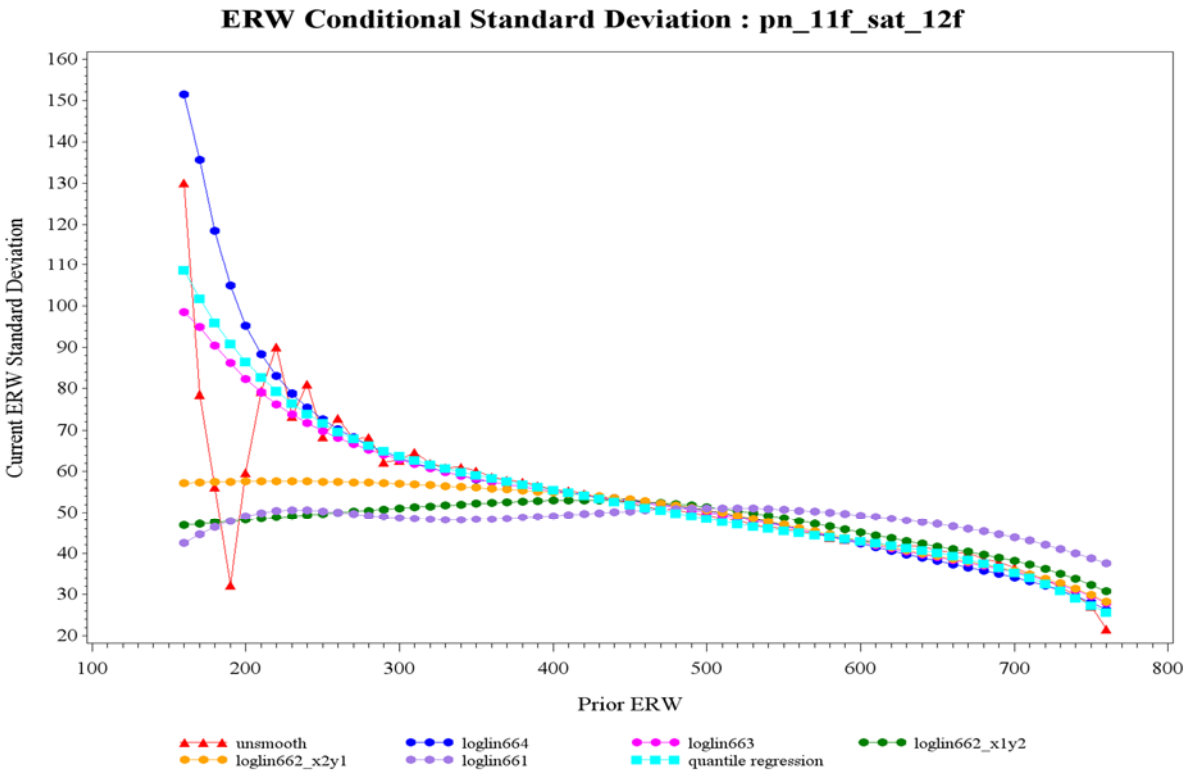

Figure 14: ERW Section Score Growth Results—Group 5 Conditional Standard Deviation

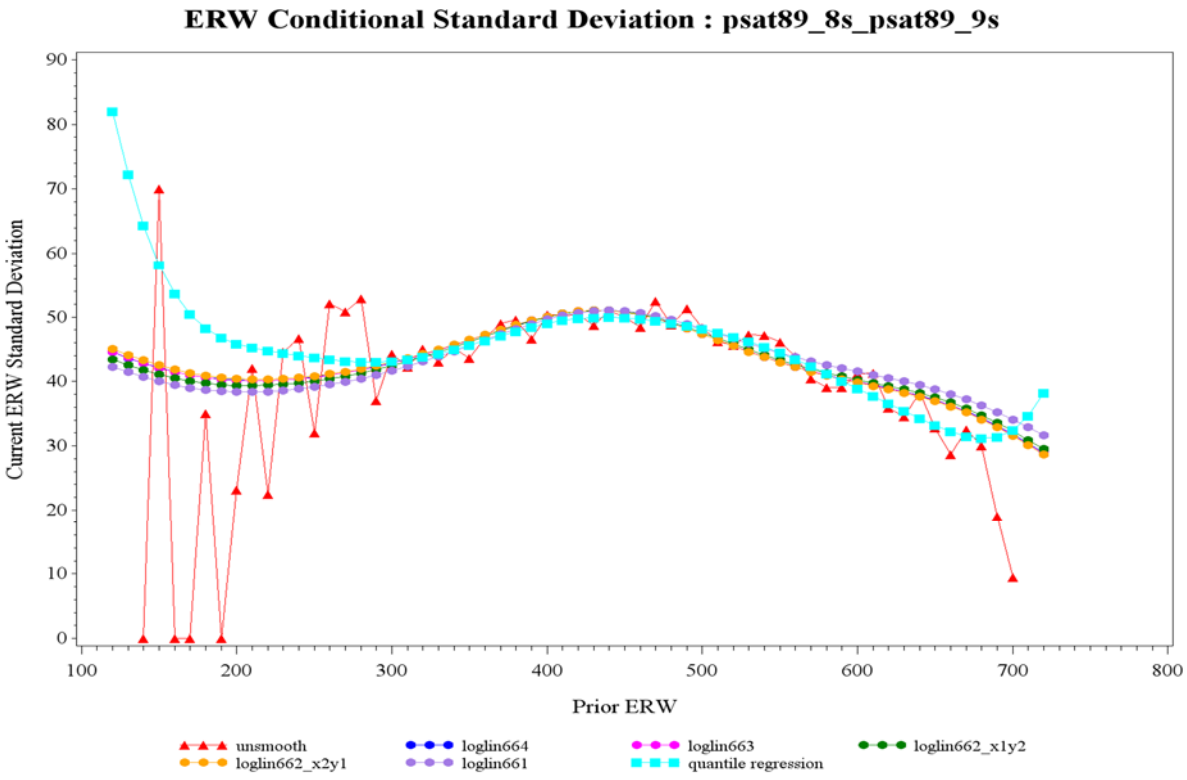

Figure 15: ERW Section Score Growth Results—Group 6 Conditional Standard Deviation

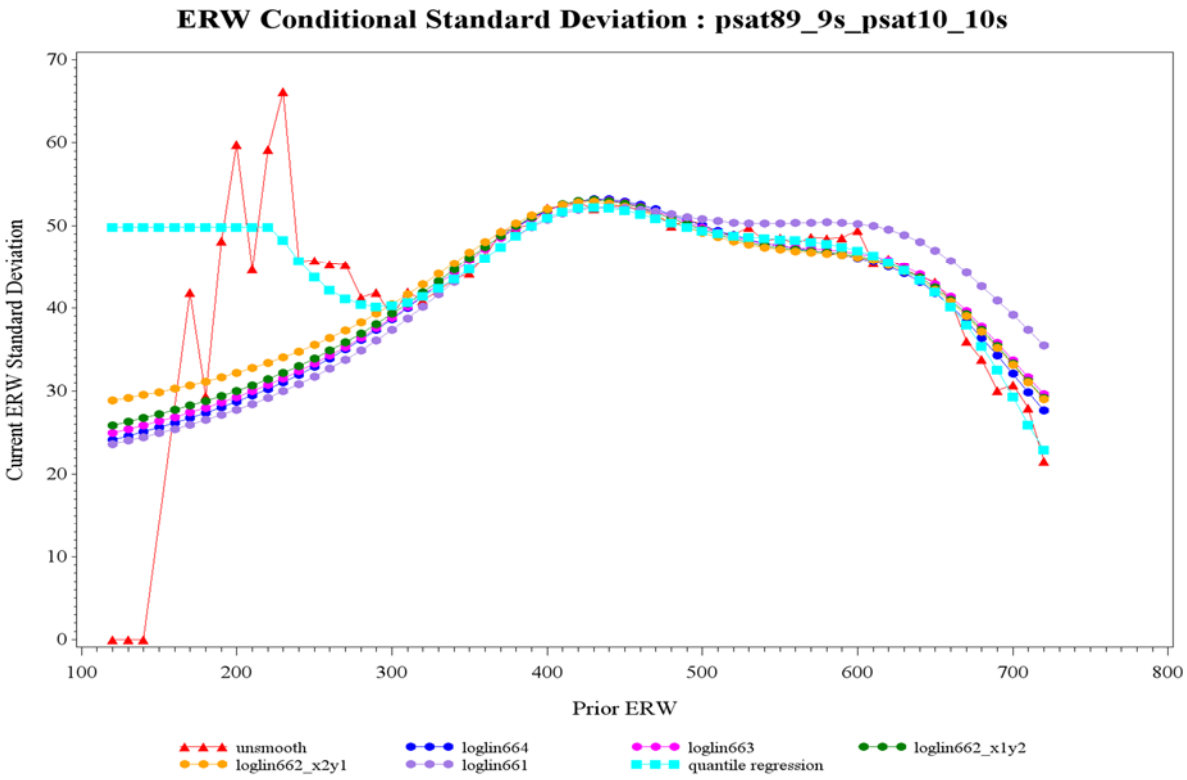

Figure 16: ERW Section Score Growth Results—Group 7 Conditional Standard Deviation

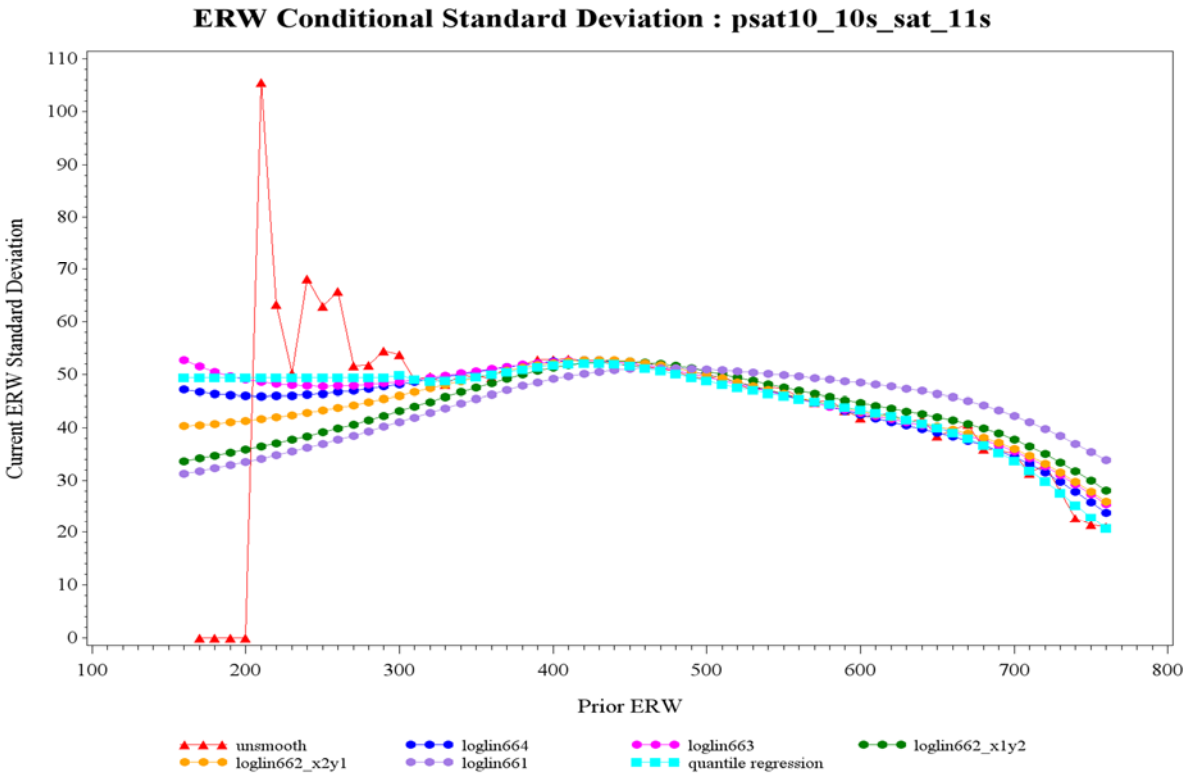

Figure 17: ERW Section Score Growth Results—Group 8 Conditional Standard Deviation

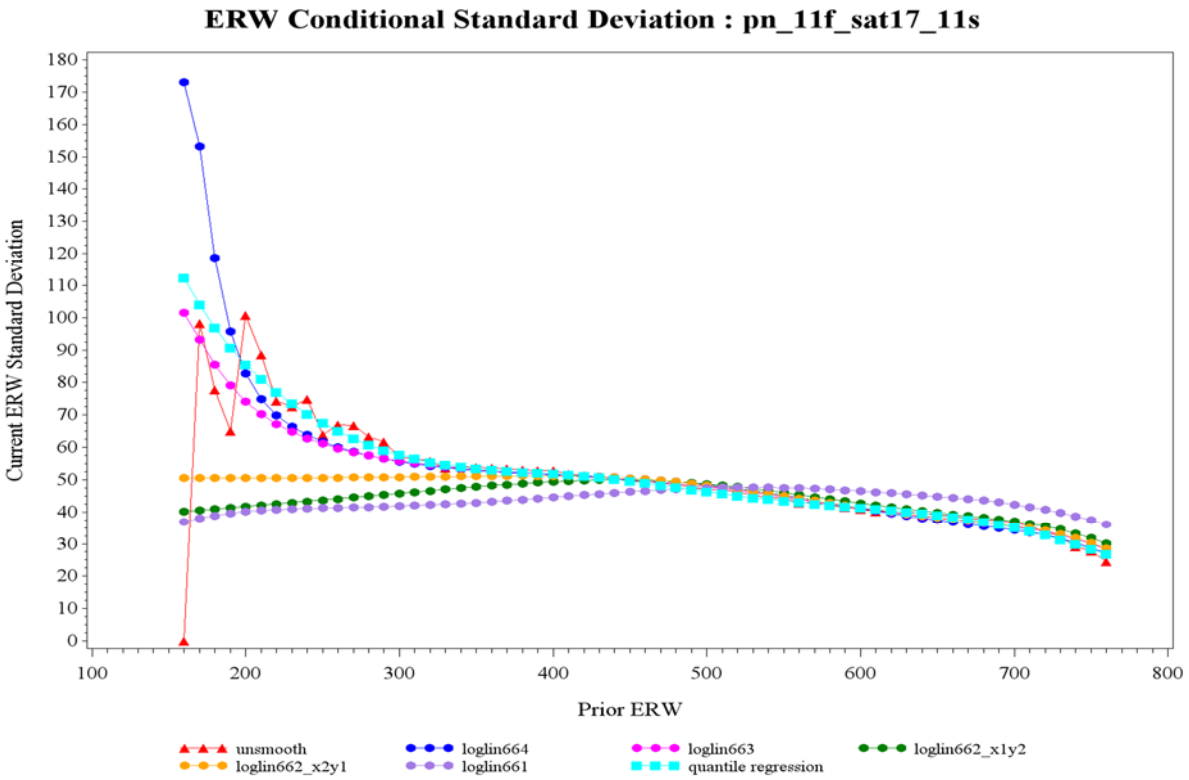

Figure 18: ERW Section Score Growth Results—Group 9 Conditional Standard Deviation

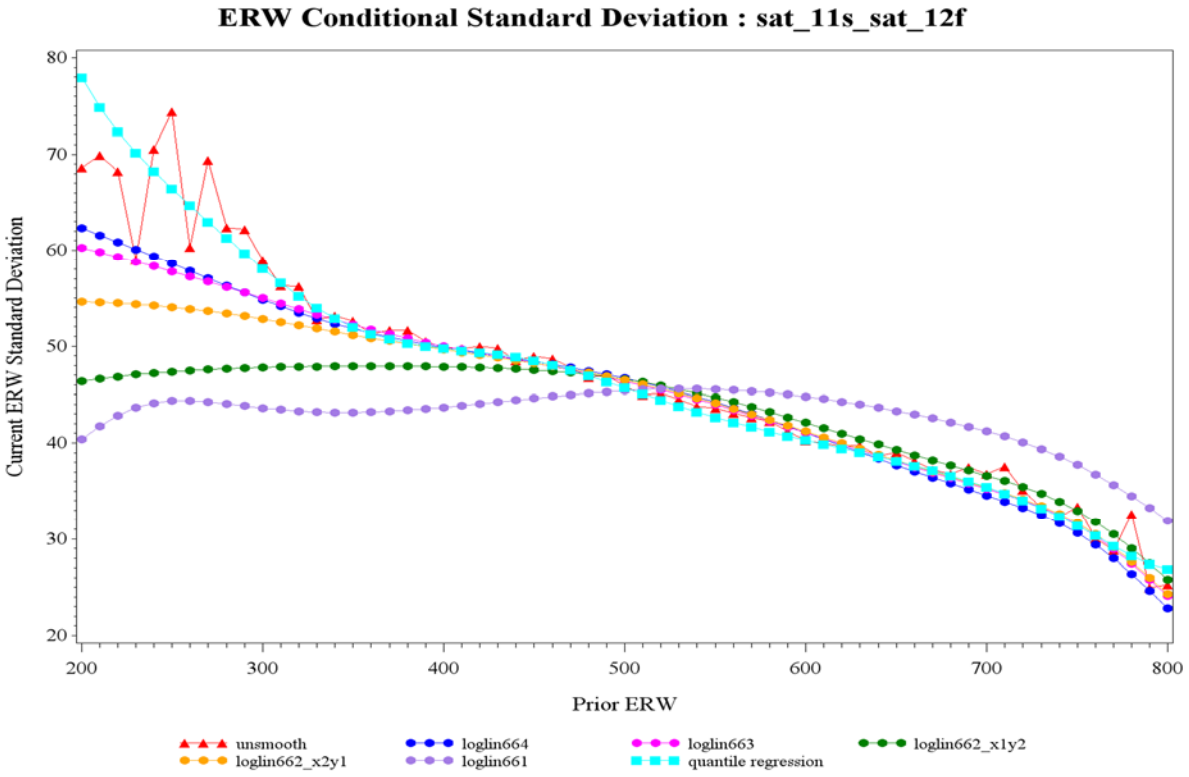

Figure 19: Math Section Score Growth Results—Group 1 Conditional Mean

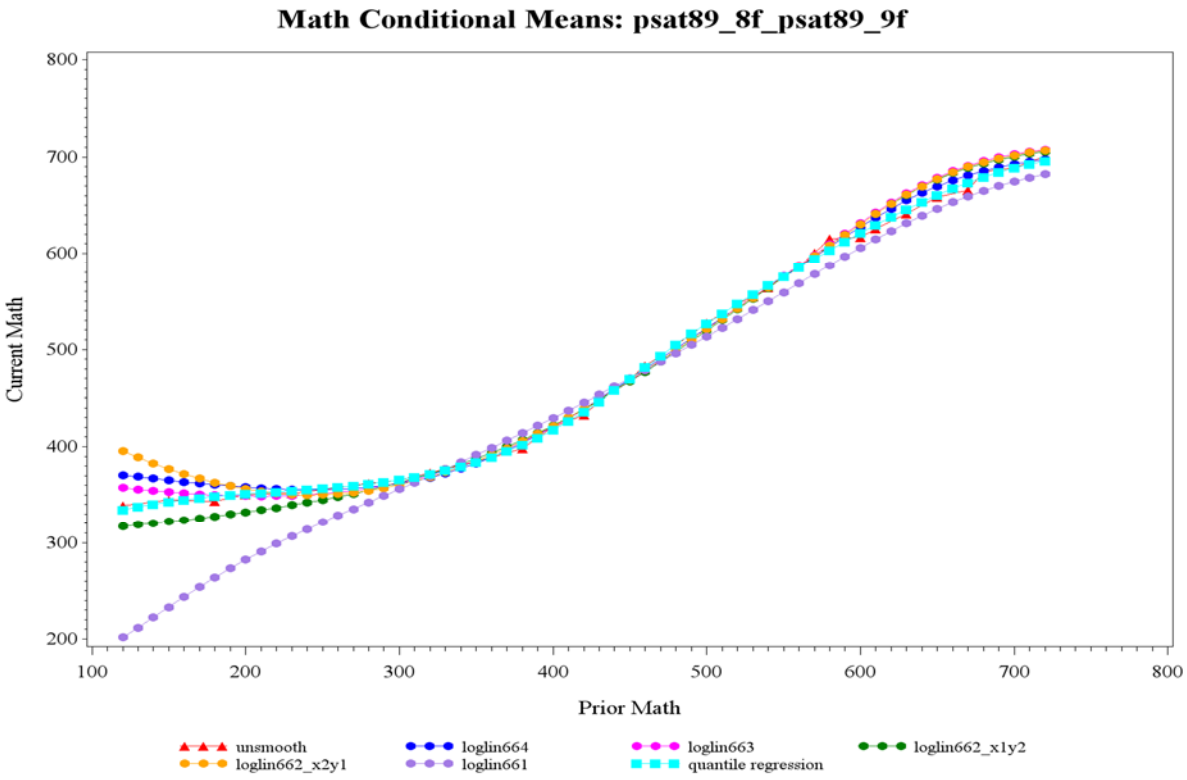

Figure 20: Math Section Score Growth Results—Group 2 Conditional Mean

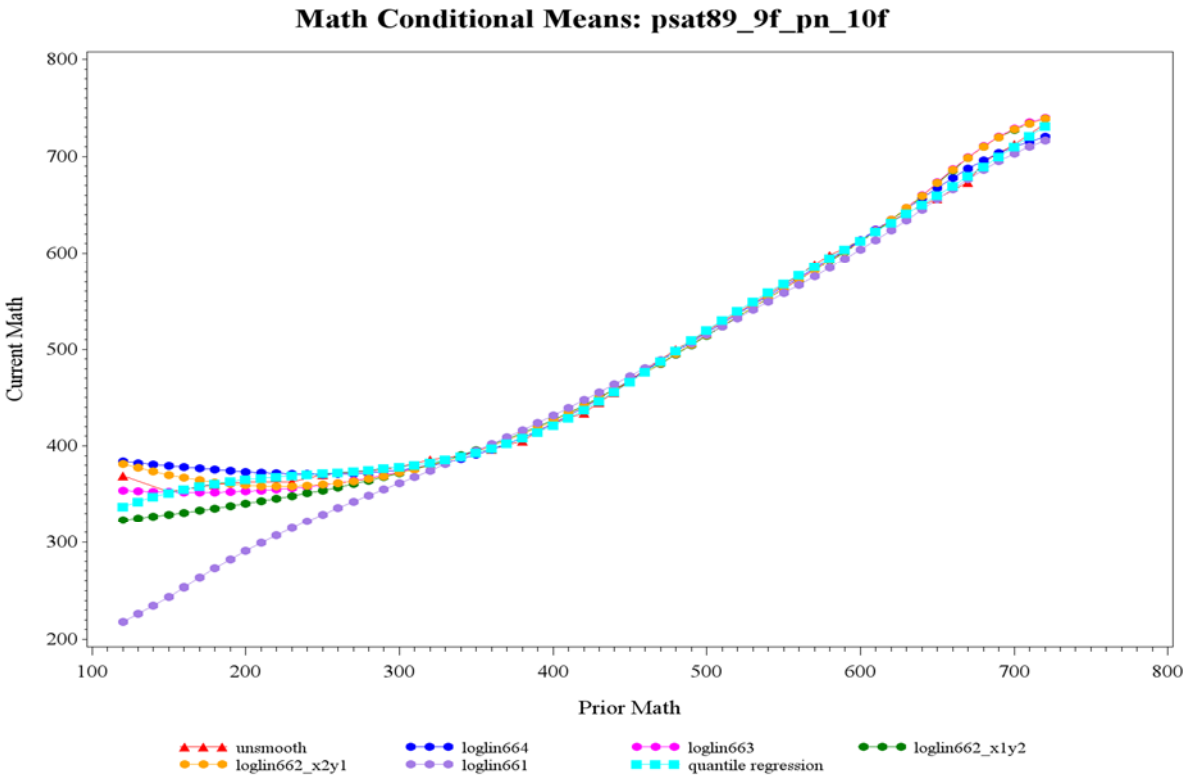

Figure 21: Math Section Score Growth Results—Group 3 Conditional Mean

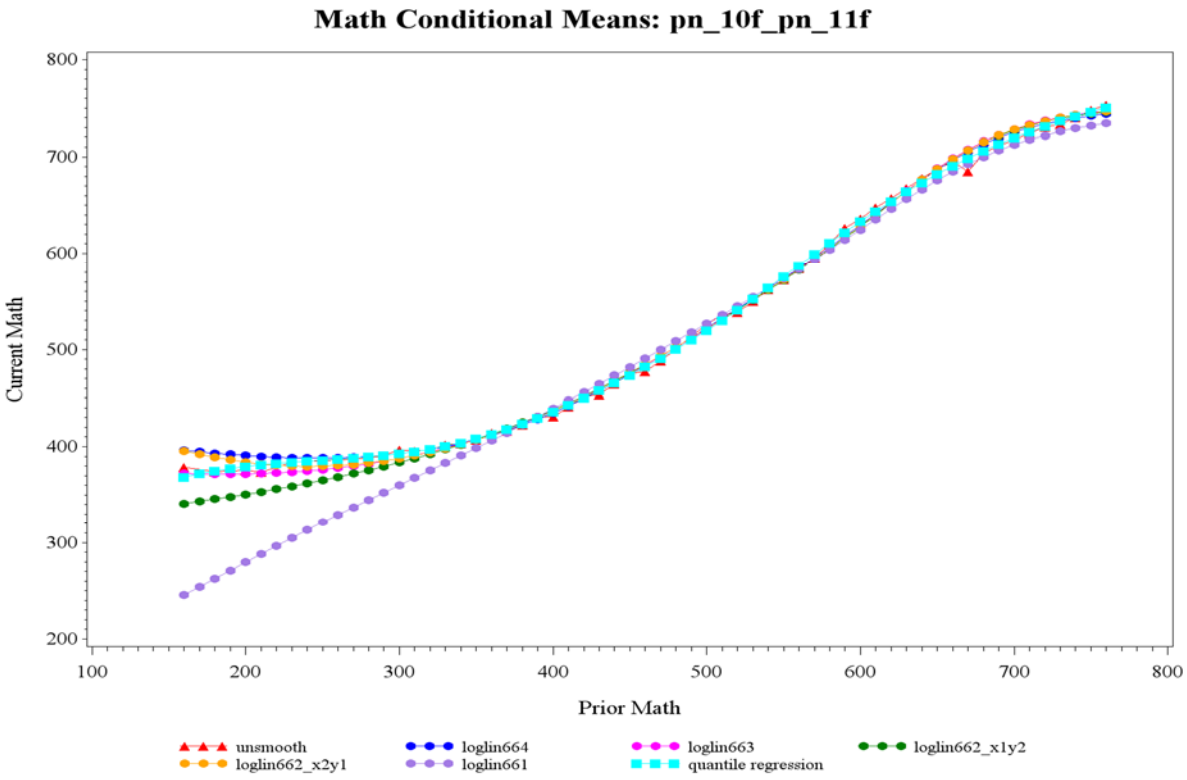

Figure 22: Math Section Score Growth Results—Group 4 Conditional Mean

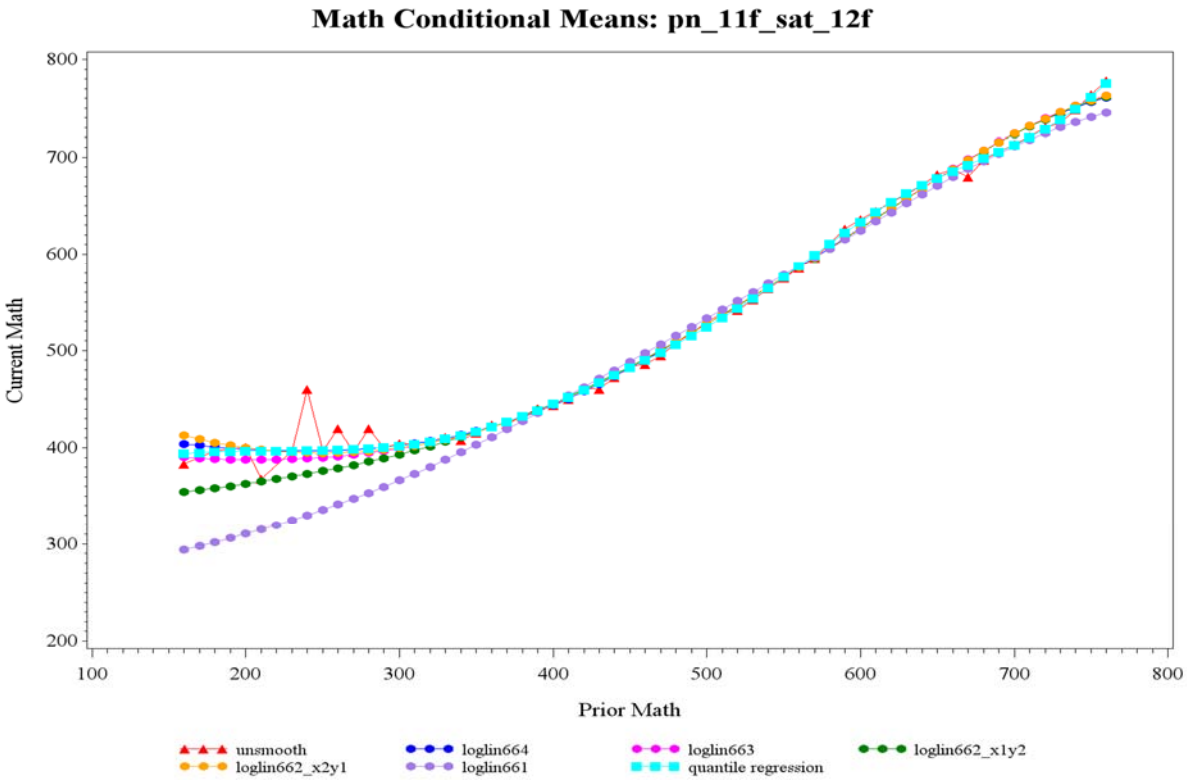

Figure 23: Math Section Score Growth Results—Group 5 Conditional Mean

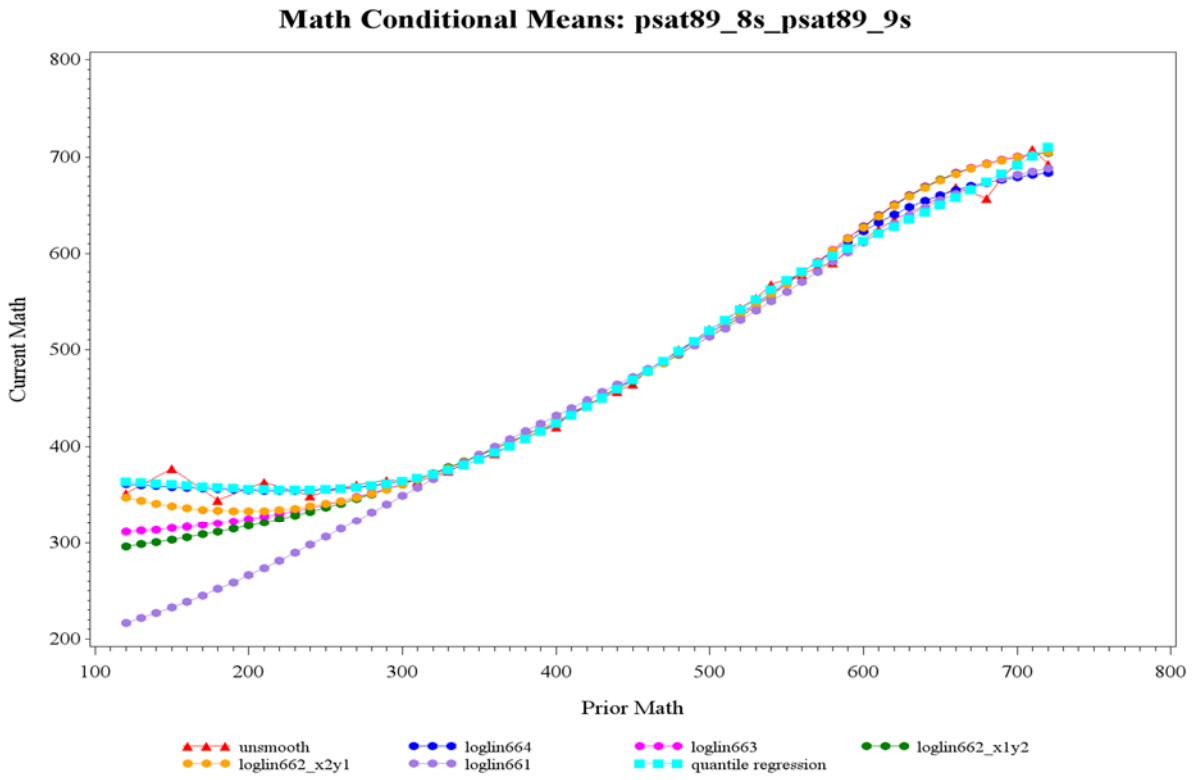

Figure 24: Math Section Score Growth Results—Group 6 Conditional Mean

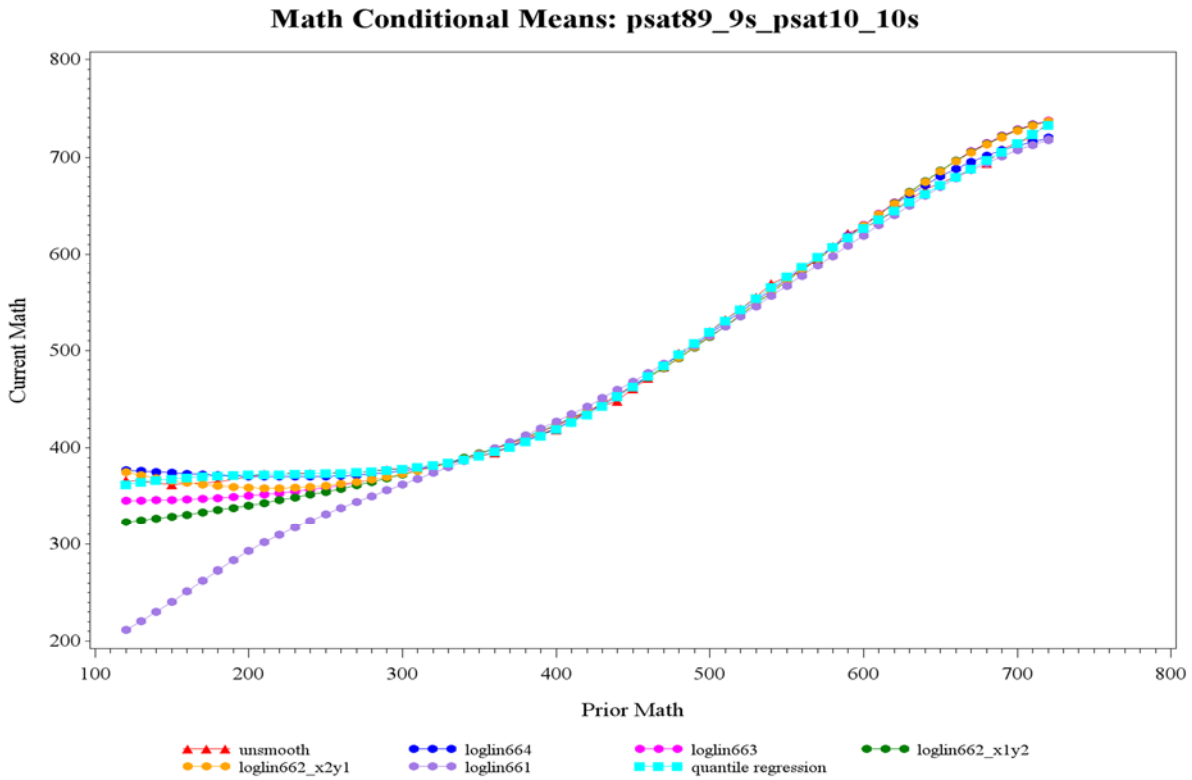

Figure 25: Math Section Score Growth Results—Group 7 Conditional Mean

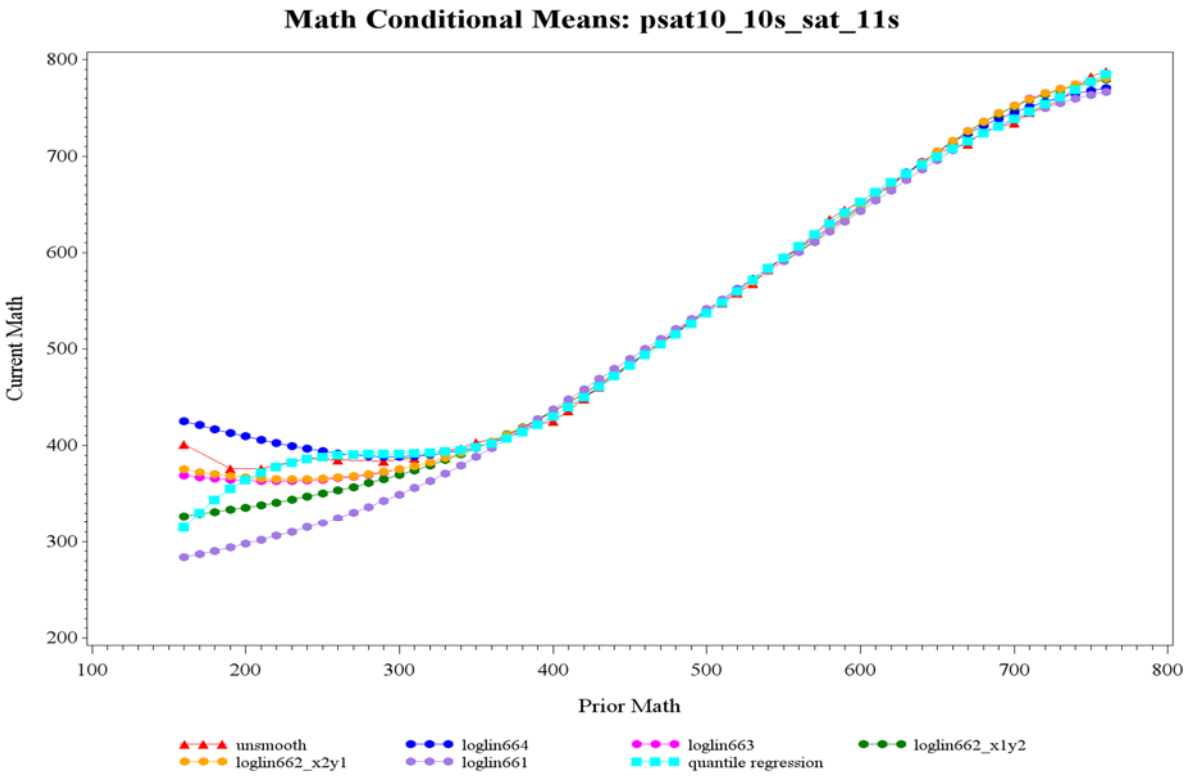

Figure 26: Math Section Score Growth Results—Group 8 Conditional Mean

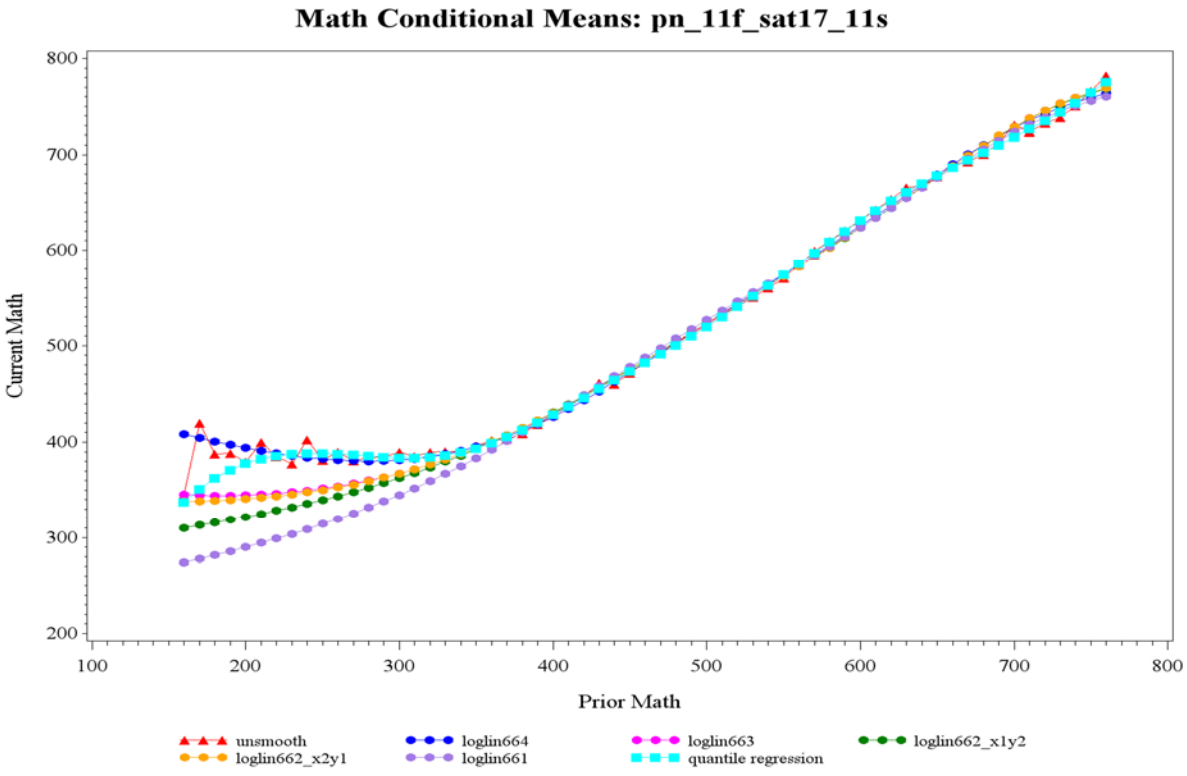

Figure 27: Math Section Score Growth Results—Group 9 Conditional Mean

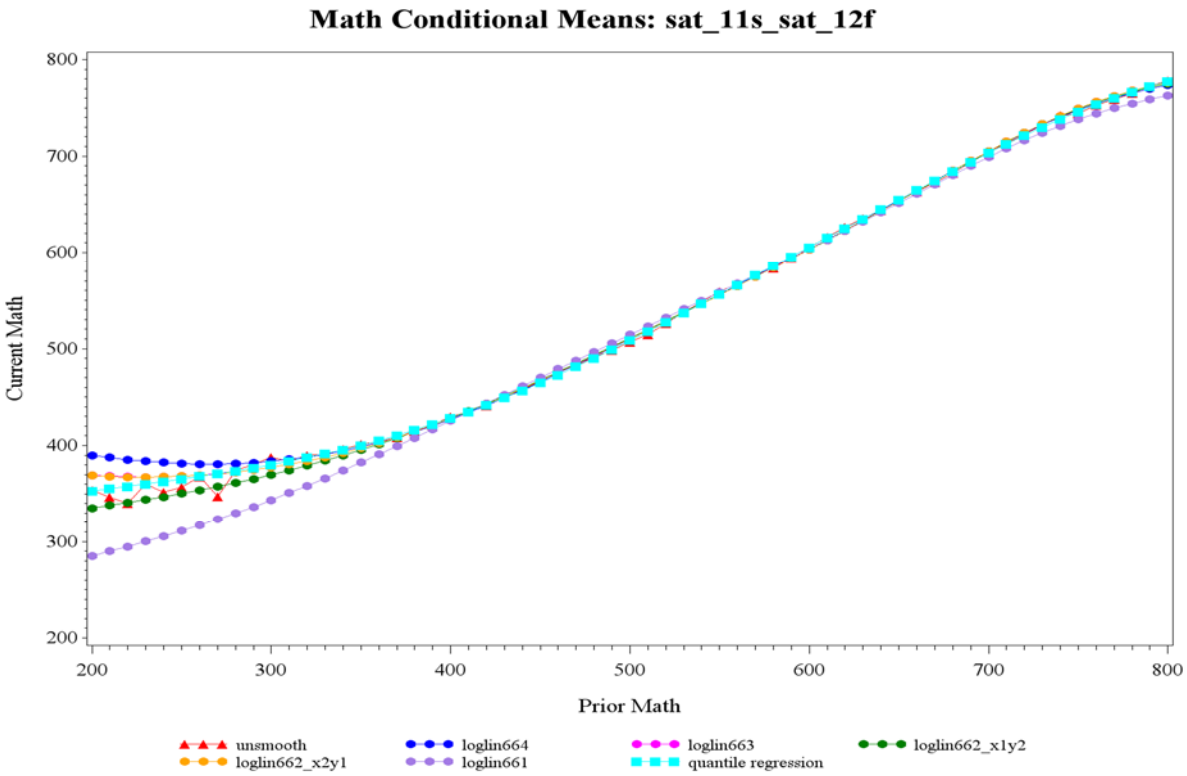

Figure 28: Math Section Score Growth Results—Group 1 Conditional Standard Deviation

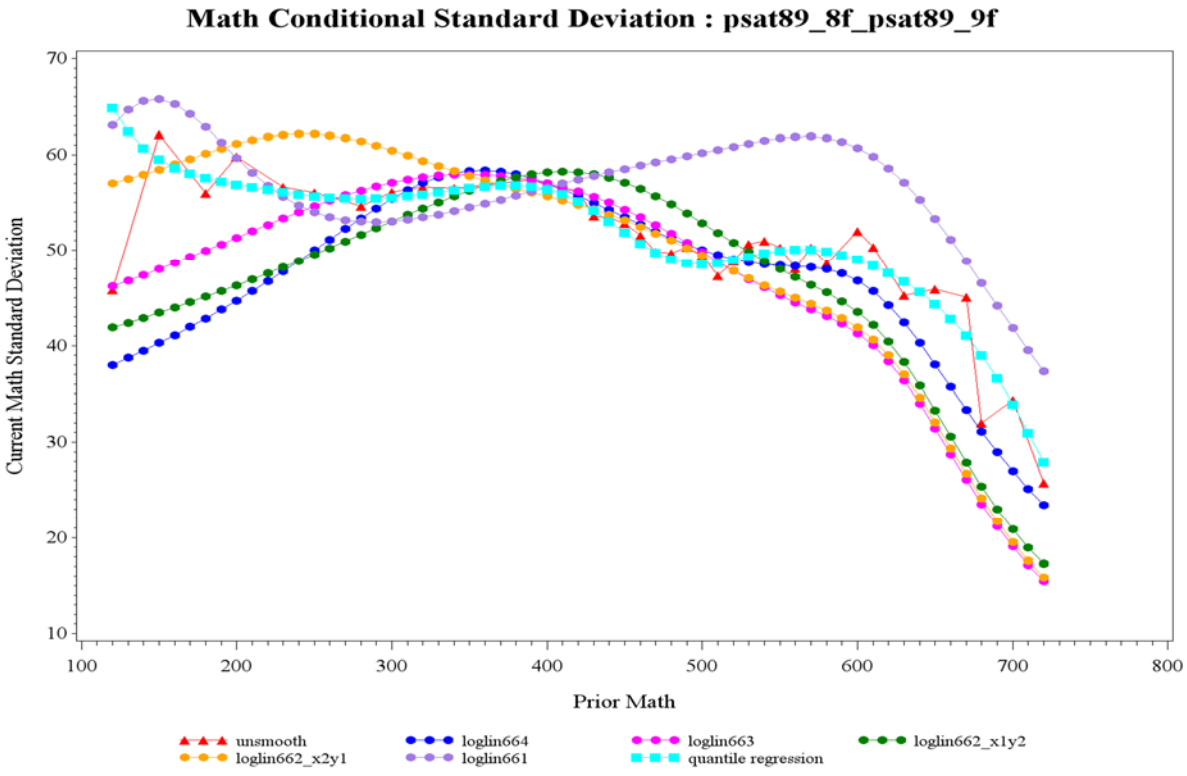

Figure 29: Math Section Score Growth Results—Group 2 Conditional Standard Deviation

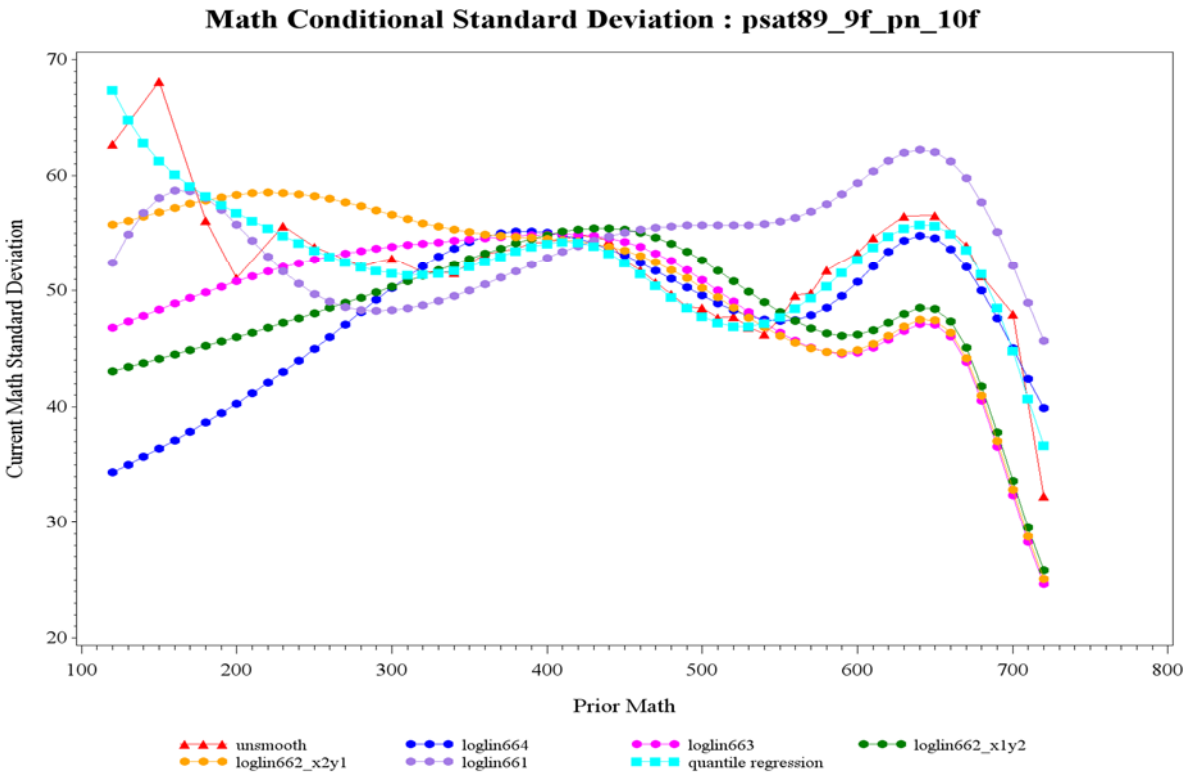

Figure 30: Math Section Score Growth Results—Group 3 Conditional Standard Deviation

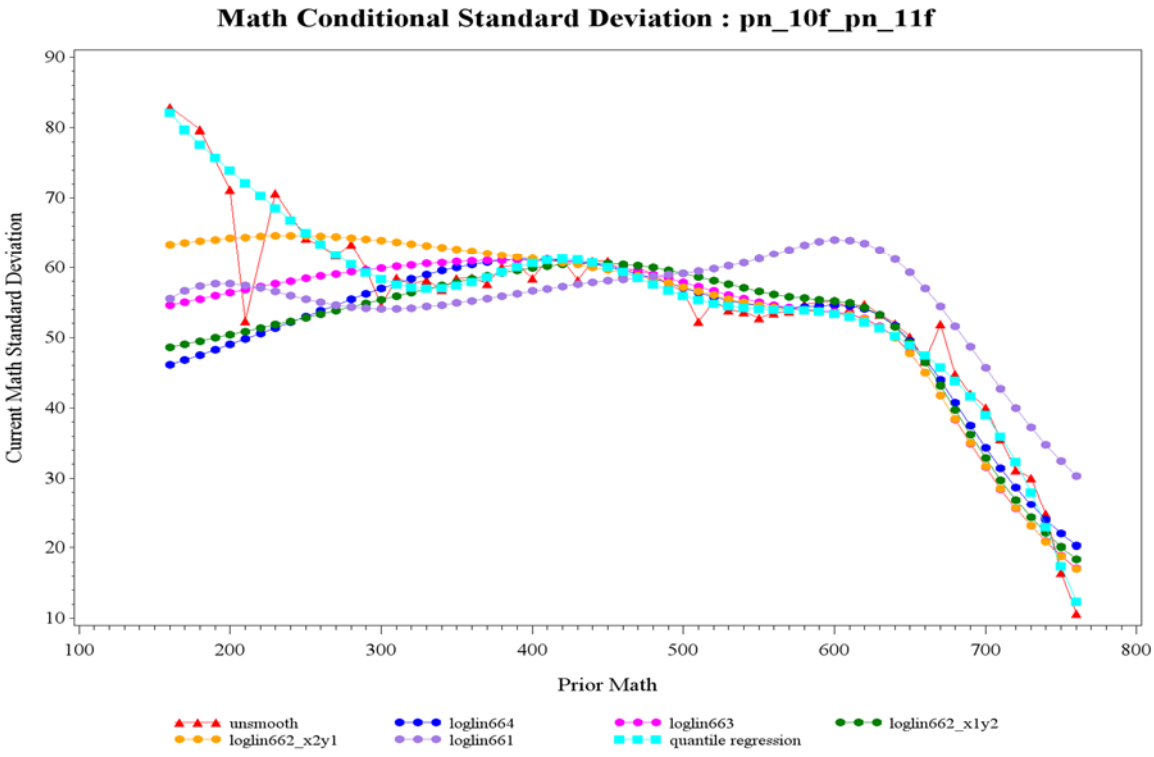

Figure 31: Math Section Score Growth Results—Group 4 Conditional Standard Deviation

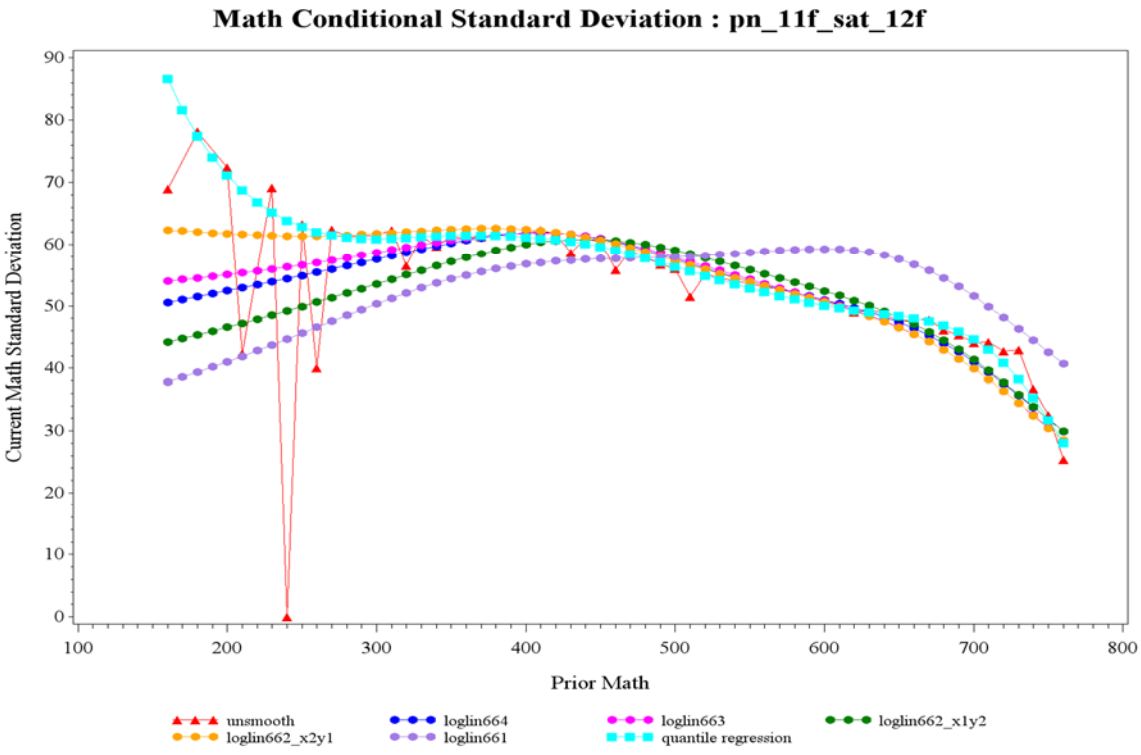

Figure 32: Math Section Score Growth Results—Group 5 Conditional Standard Deviation

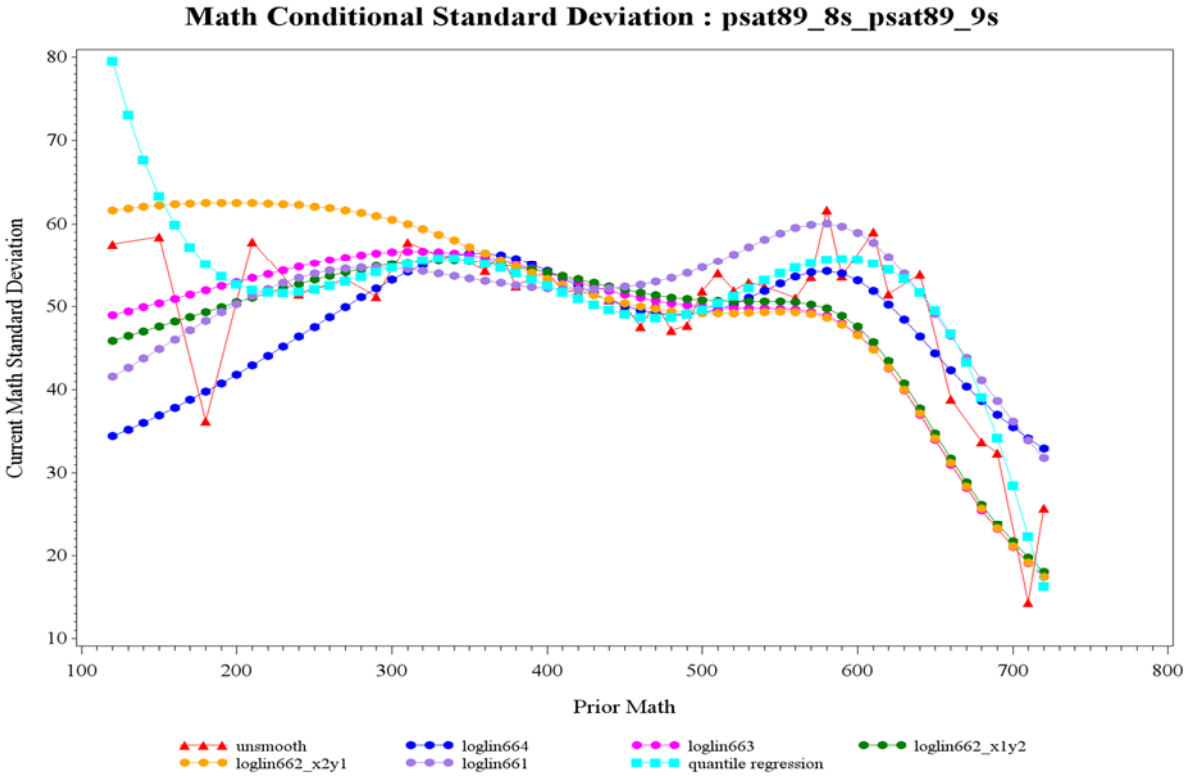

Figure 33: Math Section Score Growth Results—Group 6 Conditional Standard Deviation

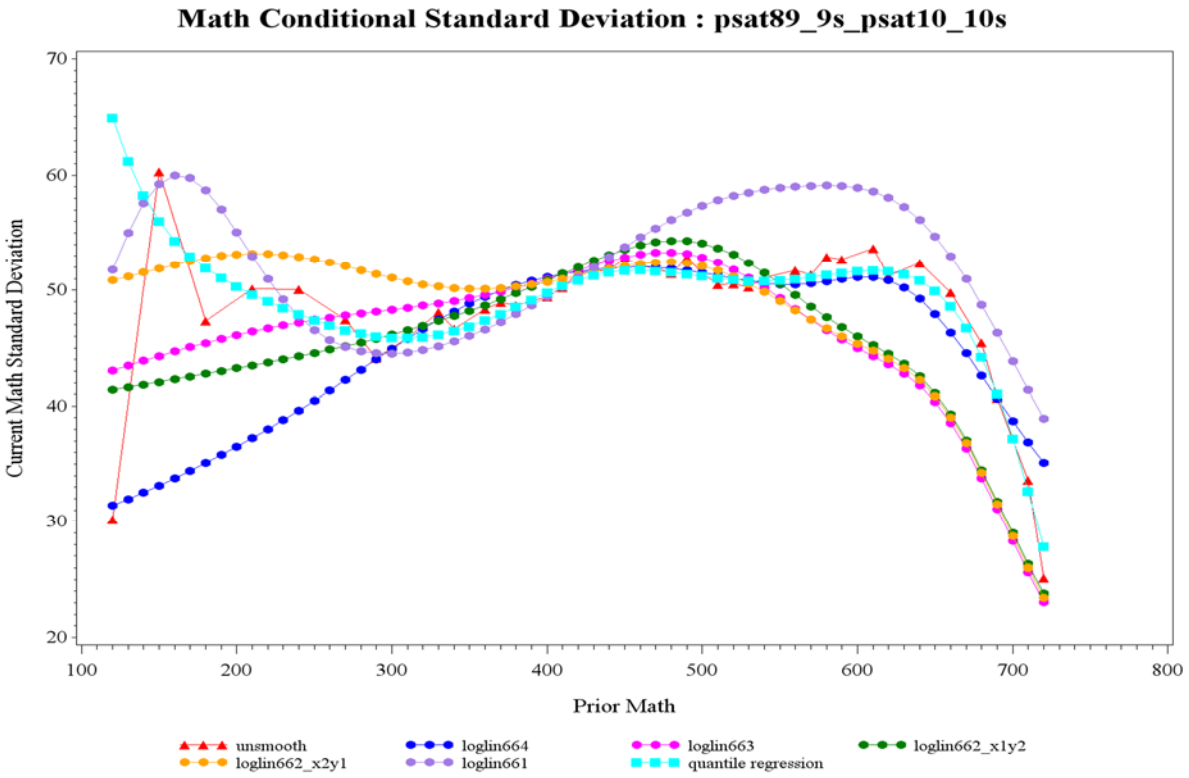

Figure 34: Math Section Score Growth Results—Group 7 Conditional Standard Deviation

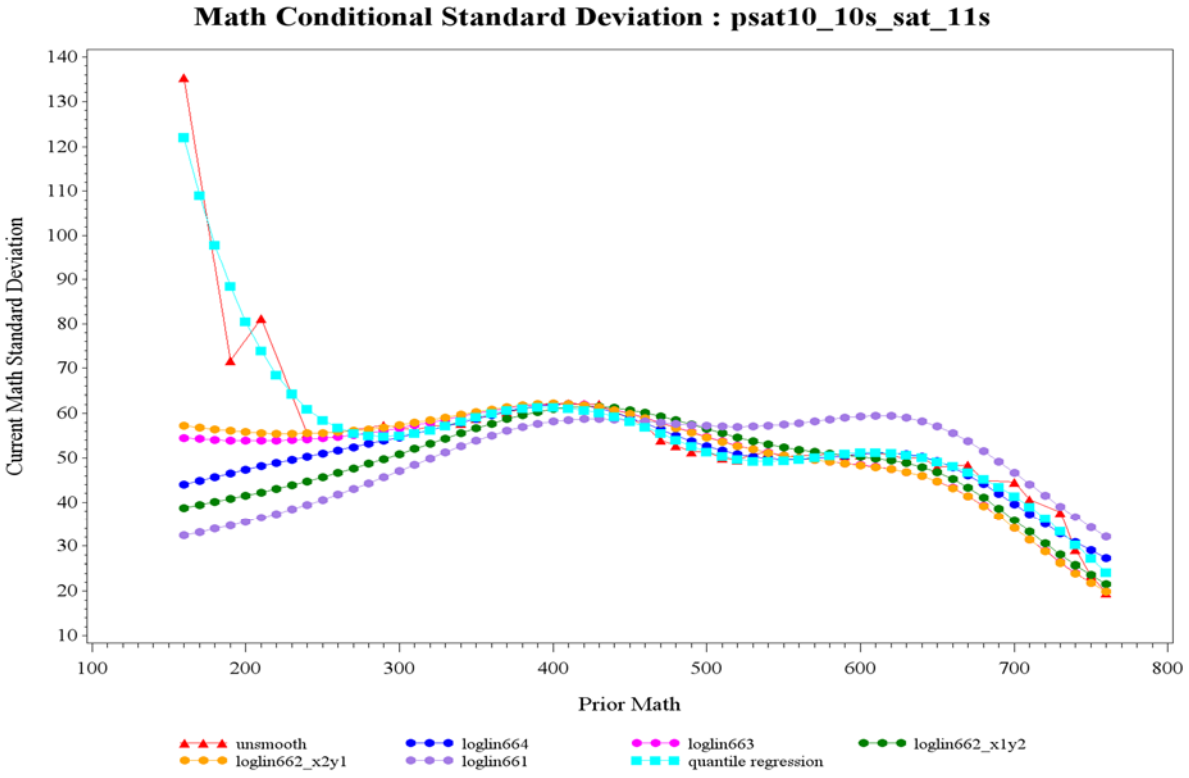

Figure 35: Math Section Score Growth Results—Group 8 Conditional Standard Deviation

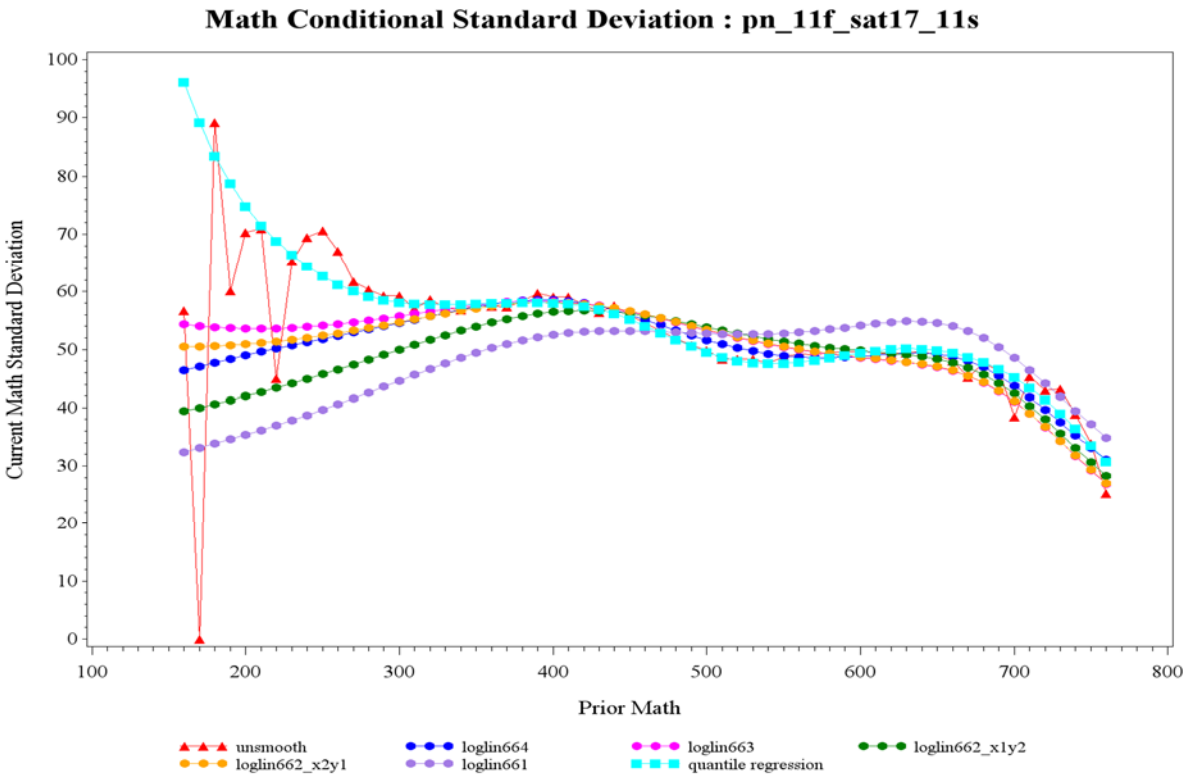

Figure 36: Math Section Score Growth Results—Group 9 Conditional Standard Deviation

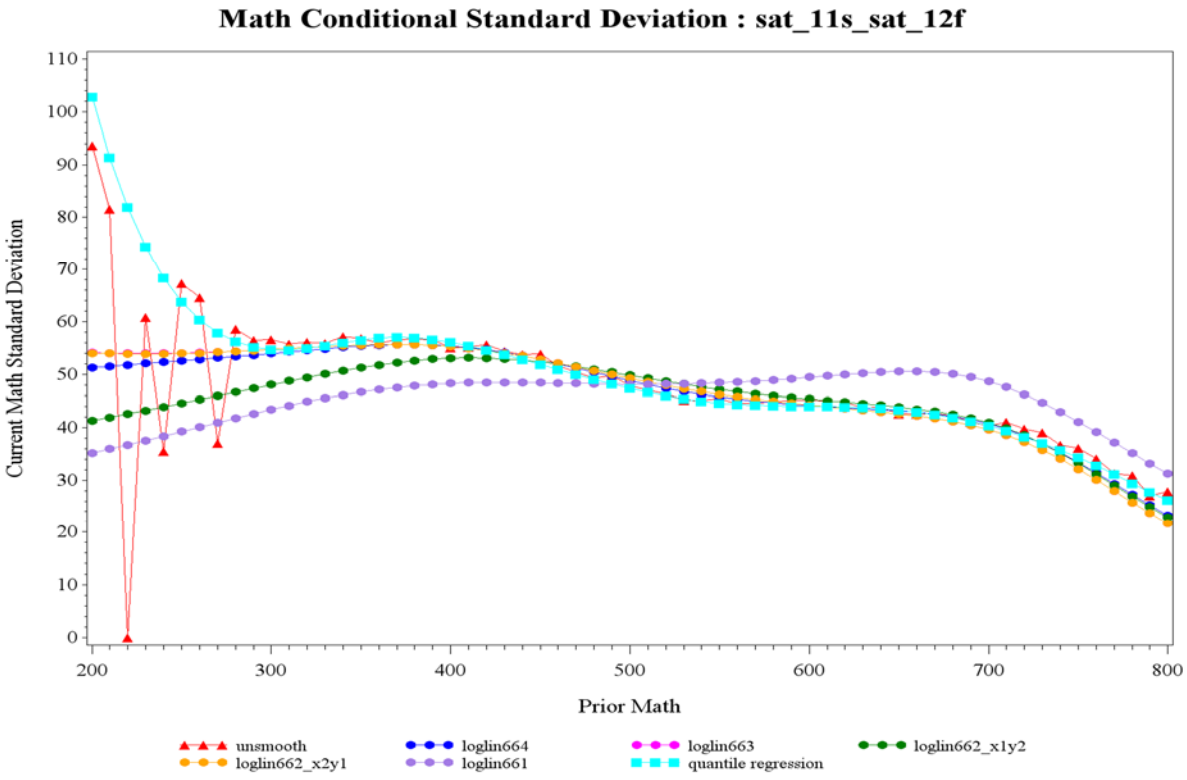

Figure 37: ERW Section Score Growth Results—Conditional Skewness for Group 3

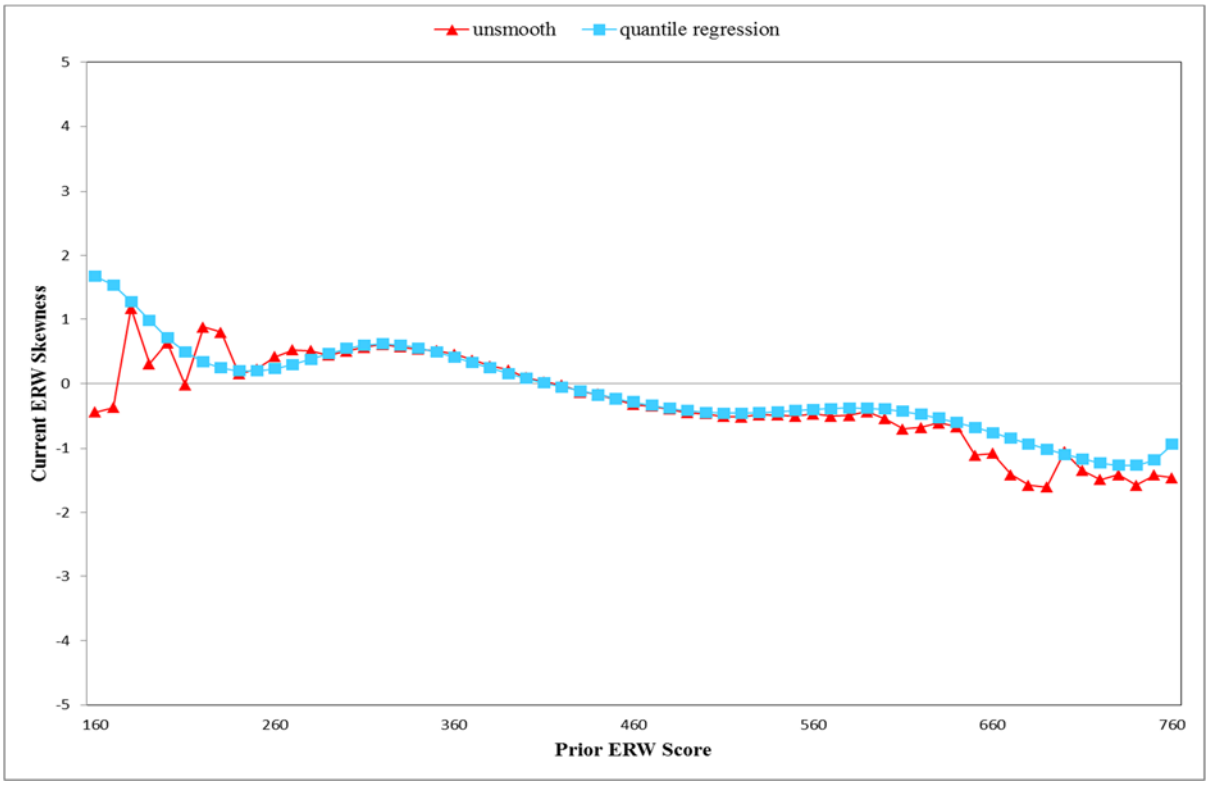

Figure 38: Math Section Score Growth Results—Conditional Skewness for Group 3

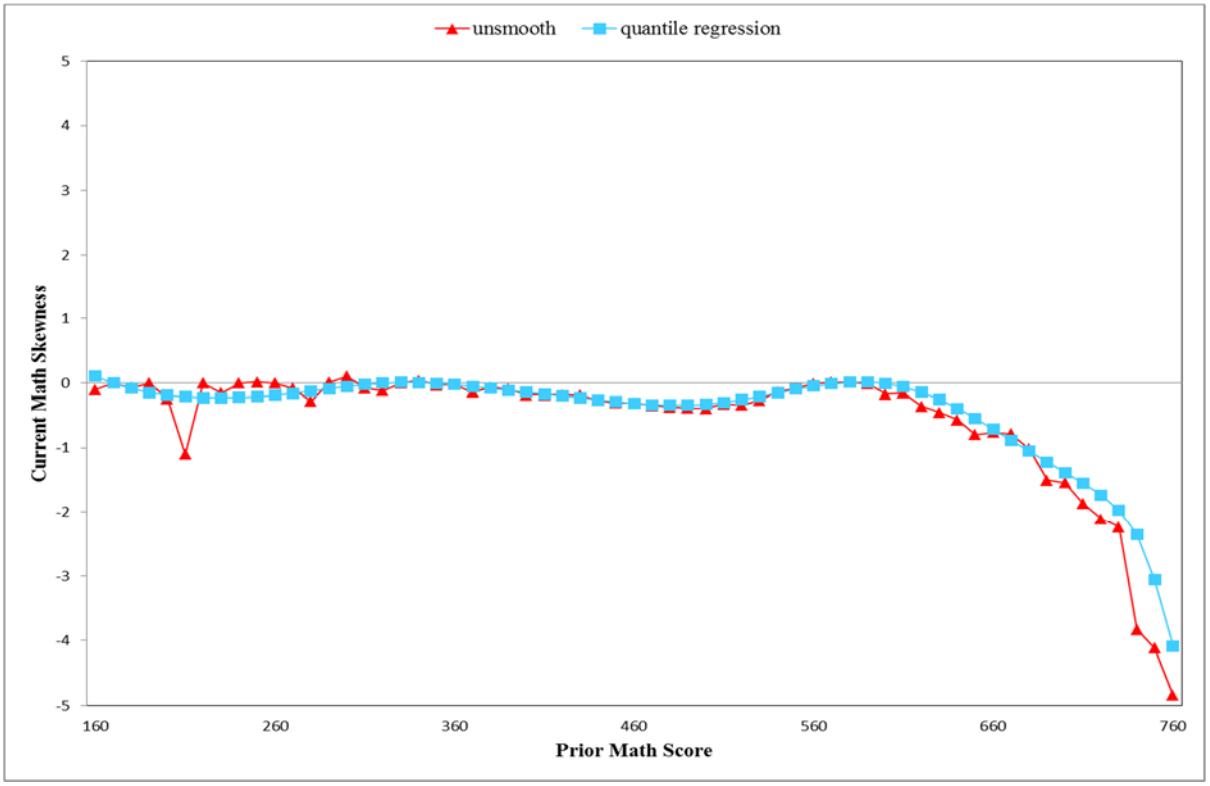

Figure 39: ERW Section Score Growth Ranges for Group 3

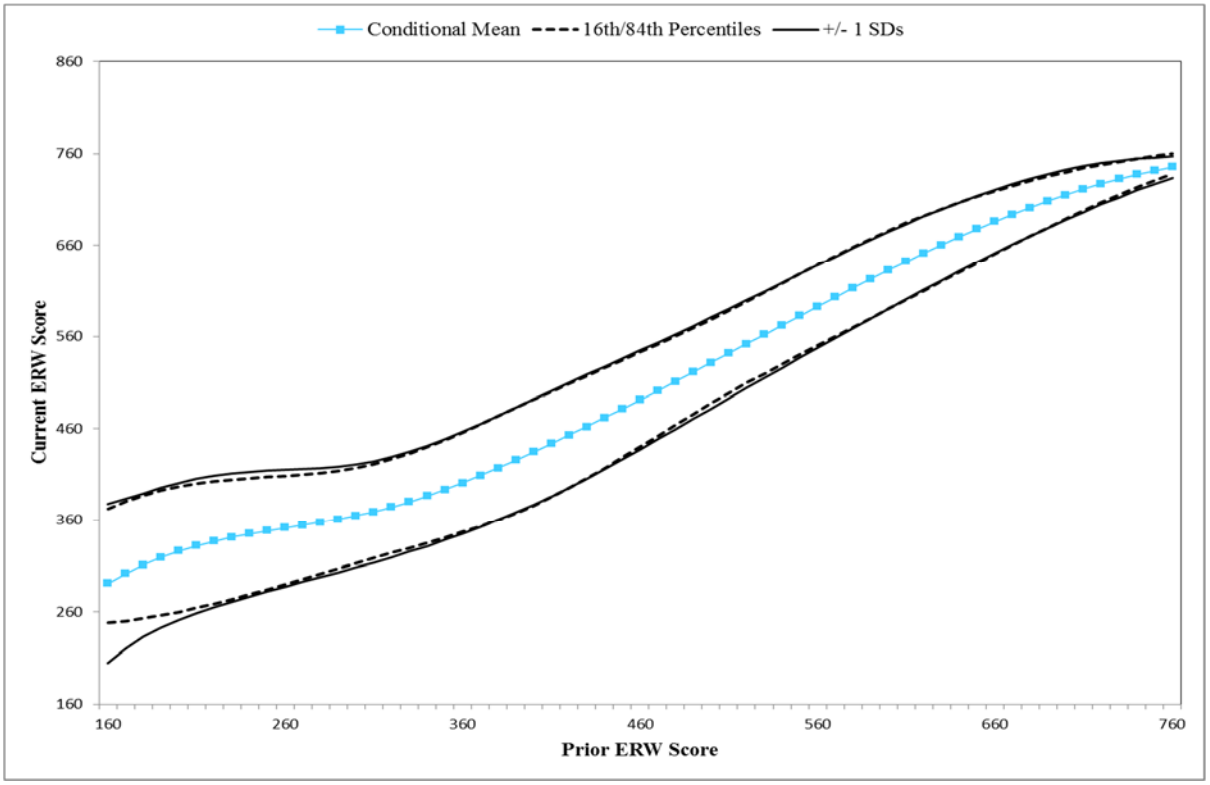

Figure 40: Math Section Score Growth Ranges Group 3