FAST™ Custom Benchmarks with State Accountability Tests

June 24, 2019

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This document provides FAST™ aReading and FAST™ aMath scores associated with each of three probabilities (75%, 50%, and 25%) of meeting or exceeding the proficiency achievement level on various end-of-year state tests (Illinois, Minnesota, Michigan, New York, and Wisconsin). The scores are intended to help FastBridge® customers evaluate the performance of their students relative to meeting expectations on the state assessments in Grades 3 – 8. The information can supplement, but it not intended to replace the national benchmarks provided in the FAST™ system.

A statistical model called logistic regression was used to generate the cut scores. The model generates probabilities of meeting specified state test performance expectations for each score on the FAST™ aReading (or FAST™ aMath) test. The probabilities can also be interpreted as the *odds* of meeting expectations. For instance, the cut score associated with a 75% probability indicates that a student with that score has 3 to 1 odds of meeting expectations on the state test. FAST™ scores above that cut score are associated with higher odds, and scores below that cut score are associated with lower odds.

The three FAST™ cut-scores provided in the tables below were generated for four subgroups.

- Students with scores below the 25% cut score are at *high* risk of not meeting expectations on the state test
- Students with scores between the 25% and 50% cut score are at *high to moderate* risk of not meeting expectations on the state test
- Students with scores between the 50% and 75% cut score are at *moderate to low* risk of not meeting expectations on the state test
- Students with scores above the 75% cut score are at *low* risk of not meeting expectations on the state test

As an illustration of the logistic model, Figure 1 shows the logistic regression plot of the probability of meeting expectations on the PARCC math test relative to fall FAST™ aMath scores for Grade 5 students. The probability of meeting expectations on PARCC increases as the FAST™ aMath score increases. The red horizonal line it plotted at the 0.75 (75%) probability. The red vertical line shows the corresponding FAST™ aMath score (223). Note in Table 2 a fall FAST™ aMath score of 223 corresponds to a 75% probability of meeting expectations on the PARCC test.

The figure and tables are based on data from various school districts for 2016-17, 2017-18, and/or 2018-19 school years. Each table shows the FAST™ aReading (or FAST™ aMath) score, labeled "Cut Score"

corresponding to a given probability of meeting expectations on the state test. Cut scores for fall, winter, and spring screening are provided.

The strength of the association between FAST™ aReading (or FAST™ aMath) and state scaled scores is indicated by the Pearson correlation coefficient, labeled "Corr." in the tables. Correlation coefficients range from -1 to +1. Coefficients in the .70s represent a strong association and coefficients in the .80s and higher represent very strong association.

All predictions contain some error; thus, it is helpful to use other indices such as a metric known at the area under the curve (AUC) to interpret the results. The AUC ranges from 0.5 (chance classification) to 1.0 (excellent classification). AUC's greater than .80 are considered very good. The AUC depends on the cut-score of the criterion measures (i.e., the state test proficiency levels).

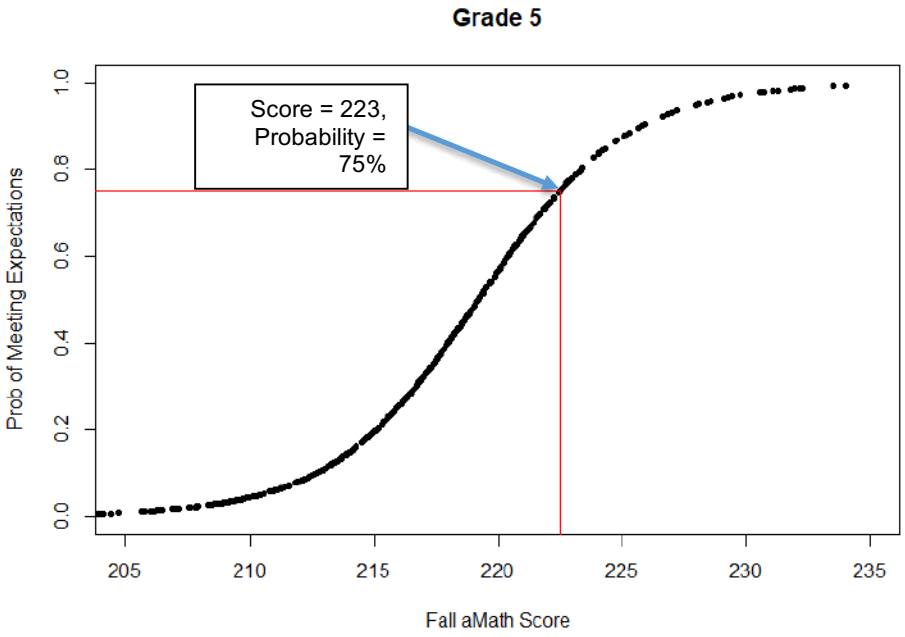

Figure 1. Probability of meeting expectations on PARCC math in Grade 5 based on fall FAST™ aMath scores.

Illinois (PARCC)

Table 1. Custom Benchmarks between FAST™ aReading and PARCC Reading

Grade	Season	FAST™ aReading Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	487	497	507	1,412	.75	.87
	Winter	494	504	515	1,438	.73	.86
	Spring	504	512	519	1,443	.78	.90
4	Fall	494	504	514	2,146	.76	.88
	Winter	501	511	521	2,171	.75	.89
	Spring	509	518	526	2,174	.78	.90
5	Fall	507	518	529	2,211	.73	.86
	Winter	514	524	534	2,244	.76	.87
	Spring	520	528	536	2,254	.76	.90
6	Fall	515	527	539	2,200	.68	.84
	Winter	521	531	541	2,198	.71	.85
	Spring	527	537	547	2,187	.73	.86
7	Fall	515	526	538	3,018	.73	.85
	Winter	520	531	542	3,014	.73	.85
	Spring	526	536	546	3,032	.76	.87
8	Fall	523	534	546	2,624	.72	.85
	Winter	528	538	548	2,629	.73	.86
	Spring	533	542	552	2,628	.74	.87

Table 2. Custom Benchmarks between FAST™ aMath and PARCC Math

Grade	Season	FAST™ aMath Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	201	205	210	1,416	.72	.88
	Winter	206	210	213	1,454	.80	.87
	Spring	209	212	215	1,457	.83	.90
4	Fall	210	213	216	2,154	.77	.89
	Winter	213	216	219	2,189	.80	.90
	Spring	217	221	225	2,191	.84	.91
5	Fall	214	218	222	2,209	.79	.90
	Winter	219	223	227	2,253	.80	.90
	Spring	223	226	229	2,267	.83	.95
6	Fall	218	223	226	2,191	.78	.91
	Winter	223	227	231	2,200	.83	.93
	Spring	226	230	234	2,188	.86	.95
7	Fall	222	226	231	3,018	.83	.90
	Winter	225	229	234	3,030	.85	.91
	Spring	228	231	235	3,027	.86	.94
8	Fall	225	229	234	2,624	.78	.91
	Winter	228	231	235	2,633	.81	.94
	Spring	229	233	236	2,619	.82	.94

Michigan (M-STEP)

Table 3. Custom Benchmarks between FAST™ aReading and M-STEP Reading

Grade	Season	FAST™ aReading Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	482	494	506	4,958	.66	.83
	Winter	494	503	513	5,058	.69	.84
	Spring	504	510	516	5,094	.73	.89
4	Fall	492	502	512	5,697	.73	.86
	Winter	501	510	519	5,769	.72	.86
	Spring	510	515	521	5,742	.81	.92
5	Fall	506	515	525	6,185	.72	.86
	Winter	512	520	527	6,194	.74	.88
	Spring	518	525	531	6,311	.80	.92
6	Fall	514	525	536	3,262	.72	.84
	Winter	516	526	539	3,515	.64	.84
	Spring	524	532	540	3,554	.78	.90
7	Fall	521	529	537	3,511	.77	.88
	Winter	524	532	540	3,633	.77	.89
	Spring	526	534	542	3,616	.80	.90
8	Fall	523	532	542	3,684	.74	.88
	Winter	529	538	548	3,805	.74	.87
	Spring	533	542	551	3,836	.80	.89

Table 4. Custom Benchmarks between FAST™ aMath and M-STEP Math

Grade	Season	FAST™ aMath Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	200	204	208	4,940	.70	.89
	Winter	206	208	211	5,067	.79	.91
	Spring	209	211	213	5,067	.86	.94
4	Fall	208	211	214	5,704	.73	.89
	Winter	211	213	216	5,776	.77	.89
	Spring	215	217	220	5,742	.88	.95
5	Fall	214	218	221	6,184	.79	.91
	Winter	219	222	226	6,202	.85	.93
	Spring	222	225	229	6,337	.86	.94
6	Fall	219	223	228	3,366	.84	.91
	Winter	222	226	230	3,511	.84	.92
	Spring	225	228	232	3,516	.88	.94
7	Fall	221	225	229	3,508	.85	.92
	Winter	226	229	233	3,642	.86	.94
	Spring	229	232	235	3,567	.85	.95
8	Fall	227	230	234	3,711	.84	.94
	Winter	230	233	237	3,803	.82	.93
	Spring	230	234	237	3,745	.83	.93

Minnesota (MCA-III)

Table 5. Custom Benchmarks between FAST™ aReading and MCA-III Reading

Grade	Season	FAST™ aReading Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	483	492	500	3,592	.81	.91
	Winter	496	503	510	2,726	.82	.91
	Spring	500	506	512	2,799	.84	.92
4	Fall	497	504	512	3,572	.80	.90
	Winter	507	512	518	2,771	.82	.91
	Spring	510	516	521	2,778	.83	.92
5	Fall	499	507	515	3,414	.78	.92
	Winter	508	514	521	2,473	.83	.92
	Spring	510	516	522	2,571	.85	.93
6	Fall	511	519	527	2,492	.78	.90
	Winter	515	523	531	2,523	.79	.90
	Spring	515	523	532	2,554	.77	.91
7	Fall	521	529	538	886	.79	.90
	Winter	526	534	542	878	.82	.91
	Spring	528	534	542	398	.83	.95
8	Fall	526	534	542	873	.74	.88
	Winter	532	541	549	678	.78	.89
	Spring	532	541	549	386	.83	.95

Table 6. Custom Benchmarks between FAST™ aMath and MCA-III Math

Grade	Season	FAST™ aMath Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	199	203	206	3,385	.75	.89
	Winter	204	207	210	2,476	.77	.90
	Spring	206	209	211	2,035	.82	.93
4	Fall	203	207	211	3,531	.74	.89
	Winter	208	211	214	2,756	.77	.90
	Spring	210	213	216	2,253	.89	.95
5	Fall	211	216	220	3,393	.79	.89
	Winter	216	220	224	2,176	.84	.93
	Spring	219	222	226	2,059	.86	.95
6	Fall	216	220	225	2,271	.80	.90
	Winter	220	223	227	1,936	.87	.94
	Spring	223	226	229	1,945	.88	.95
7	Fall	220	225	229	641	.81	.90
	Winter	223	226	229	302	.89	.95
	Spring	225	228	231	296	.89	.96
8	Fall	220	222	225	298	.84	.95
	Winter	---	---	---	---	---	---
	Spring	221	225	228	300	.85	.95

New York (NYST)

Table 7. Custom Benchmarks between FAST™ aReading and NYST Reading

Grade	Season	FAST™ aReading Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	484	498	513	122	.63	.82
	Winter	497	508	519	126	.76	.84
	Spring	508	515	522	126	.81	.88
4	Fall	502	511	521	138	.75	.90
	Winter	511	518	526	141	.77	.91
	Spring	519	525	532	142	.78	.93
5	Fall	519	529	539	108	.77	.87
	Winter	525	536	546	109	.77	.86
	Spring	532	540	550	109	.80	.88
6	Fall	---	---	---	---	---	---
	Winter	---	---	---	---	---	---
	Spring	---	---	---	---	---	---
7	Fall	520	529	538	124	.77	.89
	Winter	523	533	541	126	.71	.87
	Spring	528	537	545	126	.75	.87
8	Fall	542	550	556	117	.73	.91
	Winter	546	555	563	121	.68	.86
	Spring	550	559	567	121	.71	.88

Table 8. Custom Benchmarks between FAST™ aMath and NYST Math

Grade	Season	FAST™ aMath Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	202	205	208	126	.77	.86
	Winter	206	209	212	129	.79	.88
	Spring	210	213	215	129	.83	.90
4	Fall	212	214	216	137	.82	.93
	Winter	215	216	218	140	.88	.95
	Spring	218	220	223	142	.90	.97
5	Fall	216	220	223	106	.78	.90
	Winter	221	223	226	109	.83	.94
	Spring	226	228	231	110	.86	.96
6	Fall	---	---	---	---	---	---
	Winter	---	---	---	---	---	---
	Spring	---	---	---	---	---	---
7	Fall	220	224	229	122	.82	.92
	Winter	226	228	231	122	.83	.94
	Spring	227	230	233	120	.85	.96
8	Fall	224	230	236	118	.82	.85
	Winter	228	233	237	118	.81	.90
	Spring	231	235	240	116	.83	.90

Wisconsin (Forward Exam)

Table 9. Custom Benchmarks between FAST™ aReading and Forward Exam Reading

Grade	Season	FAST™ aReading Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	488	494	501	3,288	.77	.90
	Winter	---	---	---	---	---	---
	Spring	500	505	511	3,313	.79	.91
4	Fall	501	508	516	3,882	.73	.88
	Winter	---	---	---	---	---	---
	Spring	510	515	521	3,947	.76	.91
5	Fall	507	516	526	3,693	.75	.86
	Winter	---	---	---	---	---	---
	Spring	516	522	529	3,753	.77	.89
6	Fall	519	526	533	3,368	.76	.89
	Winter	---	---	---	---	---	---
	Spring	524	530	537	3,451	.79	.90
7	Fall	518	528	537	5,821	.71	.84
	Winter	---	---	---	---	---	---
	Spring	524	533	541	5,870	.73	.87
8	Fall	536	545	554	5,321	.66	.85
	Winter	---	---	---	---	---	---
	Spring	542	551	560	5,351	.68	.86

Table 10. Custom Benchmarks between FAST™ aMath and Forward Math

Grade	Season	FAST™ aMath Cut Score			Number of Students	Corr.	AUC
		25%	50%	75%			
3	Fall	200	203	206	3,265	.71	.89
	Winter	---	---	---	---	---	---
	Spring	205	207	210	3,304	.74	.90
4	Fall	203	207	211	3,882	.60	.85
	Winter	---	---	---	---	---	---
	Spring	208	212	216	3,938	.74	.90
5	Fall	207	211	215	3,645	.76	.89
	Winter	---	---	---	---	---	---
	Spring	212	217	221	3,750	.80	.93
6	Fall	209	215	220	3,378	.77	.86
	Winter	---	---	---	---	---	---
	Spring	217	222	227	3,442	.83	.90
7	Fall	220	224	229	5,781	.71	.89
	Winter	---	---	---	---	---	---
	Spring	225	229	233	5,825	.80	.91
8	Fall	226	230	234	5,346	.77	.89
	Winter	---	---	---	---	---	---
	Spring	231	235	239	5,354	.77	.92