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Subject: Analysis of Total Test Time for MO Interim Assessment: Literacy and Mathematics

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This document shows the results of total test time analysis for Missouri interim assessment (also known as Classroom Diagnostic Tool (CDT)) in Literacy and Mathematics. The analyses were based on CDT data available as of 12/14/2015. The analyses were done separately for Literacy and Mathematics

All students who completed testing by 12/14/2015 were included in the student count analyses (see Table 1 and Table 2). For students who tested multiple times, multiple data records were included.

Response time to individual items is not available for CDT; therefore only total test time was considered in these analyses. Students who did not complete the assessment within one day were excluded from the summaries because for these students the total test time cannot be reliably estimated. The assessment start and completion date was used to determine if a student completed the assessment in one day.

Tables 3 and 4 show the following statistics for Literacy and Mathematics: number of students who completed the test in one day, mean test time, median test time, standard deviation of the test time, minimum and maximum test times, and test time at selected percentiles. All test times are expressed in minutes and rounded to the nearest minute.

Note that in each case the mean is higher than the median indicating a positively skewed distribution. The test time means are affected by extreme cases with very long test time. It is possible that students with very long test times (see Maximum test times and test times at and above the 95th percentile in Tables 3 and 4) might have taken breaks during the assessment. The breaks are not captured in the system but they can artificially increase the test times for these students. Conversely, some students show unreasonably short test times (see Minimum test times and test times at the 1st percentile in Tables 3 and 4). It is possible that many of these students simply clicked through the test without making effort to read the questions. There are fewer cases with extremely short test times than cases with extremely long test times.

The median is the midpoint of the frequency distribution of test time with an equal proportion of students (50%) falling above or below it. The median is not affected by the extreme values and accurately reflects the middle of the data set.

The percentiles indicate the test time in minutes below which a given percentage of students fall. For example, the test time at the 50th percentile for Grade 3 Literacy is 79 minutes (see Table 3). This means that 50 percent of Grade 3 students who took the Literacy assessment completed it in less than 79 minutes. The test time at the 75th percentile for Grade 3 Literacy is 132 minutes meaning that 75 percent of Grade 3 students completed the Literacy assessment in less than 132 minutes. If you consider

the difference between the test time at the 50th and the 75th percentile, you can conclude that 25 percent of Grade 3 students spent between 79 and 132 minutes on the Literacy assessment. Percentiles are often used to show the distribution of values.

Table 1. Number of students who completed the Literacy assessment.

Literacy	Number of students who completed the assessment		Total
	Grade	Within 1 day	
3	3059	1658	4717
4	2878	1573	4451
5	3346	1439	4785
6	2180	1777	3957
7	1666	1442	3108
8	2146	1487	3633
Total	15275	9376	24651

Table 2. Number of students who completed the Mathematics assessment.

Mathematics	Number of students who completed the assessment		Total
	Grade	Within 1 day	
3	3698	600	4298
4	3831	753	4584
5	3520	790	4310
6	2722	1815	4537
7	1775	2019	3794
8	1963	1600	3563
Total	17509	7577	25086

Table 3. Testing time (in minutes) for Literacy: students who completed assessment within one day.

Statistics	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Valid N	3059	2878	3346	2180	1666	2146
Mean (minutes)	105	102	94	94	78	71
Median (minutes)	79	82	78	81	65	63
Std. Deviation (minutes)	74	66	58	54	53	44
Minimum (minutes)	5	6	5	7	7	3
Maximum (minutes)	386	386	383	400	402	392
Percentile	Average testing time (in minutes) at selected percentiles					
1st	19	20	23	20	16	13
5th	31	34	36	37	28	28
10th	39	42	44	45	35	34
25th	55	58	58	62	47	46
50th	79	82	78	81	65	63
75th	132	124	107	109	87	83
90th	221	200	166	163	126	106
95th	271	256	222	211	181	136
99th	354	317	325	296	298	264

Table 4. Testing time (in minutes) for Mathematics: students who completed assessment within one day.

Statistics	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Valid N	3698	3831	3520	2722	1775	1963
Mean (minutes)	63	66	72	83	66	65
Median (minutes)	51	54	57	68	56	55
Std. Deviation (minutes)	45	41	50	53	48	46
Minimum (minutes)	8	9	7	8	5	3
Maximum (minutes)	365	359	380	398	376	399
Percentile	Average testing time (in minutes) at selected percentiles					
1st	20	22	23	24	13	8
5th	27	30	31	34	24	22
10th	32	35	35	39	30	29
25th	40	43	44	50	41	40
50th	51	54	57	68	56	55
75th	67	73	77	94	74	72
90th	100	106	136	148	100	118
95th	160	142	175	198	158	149
99th	273	263	289	317	294	278