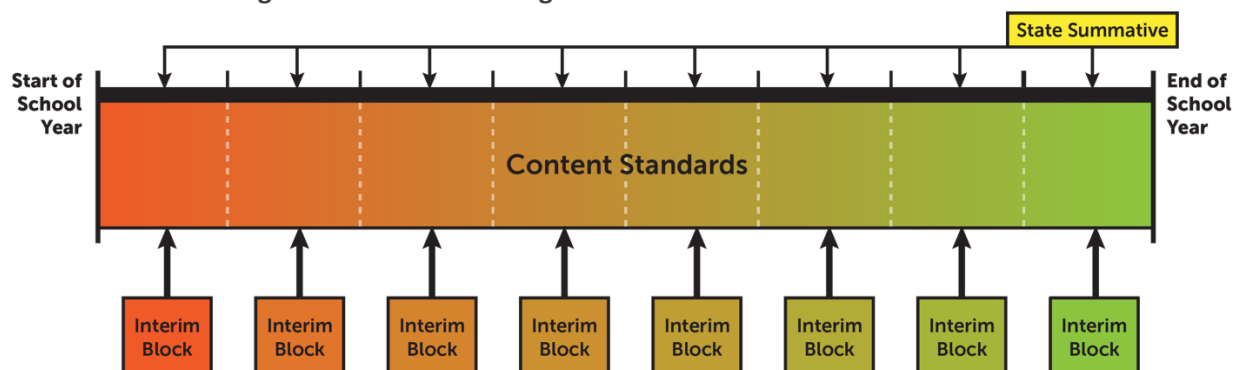


The Relationship between Student **Participation** on the Smarter Balanced Interim Assessment Blocks and Student **Growth** on the Smarter Balanced Summative Assessment- 2022-23 Data

Introduction

Unlike the Smarter Balanced Summative Assessments that sample the content standards for the *entire* grade and are best designed to measure overall achievement and growth, Smarter Balanced Interim Assessment Blocks (IABs)—both Focused Interim Assessment Blocks and Interim Assessment Blocks—in English language arts (ELA) and mathematics are short, fixed-form assessments that focus on a subset of the grade-level standards (Smarter Balanced, 2019). Figure 1 visually illustrates the difference in scope between the state summative assessment and the IABs in the Smarter Balanced Assessment System (Connecticut State Department of Education, 2022).

Figure 1: Content Coverage of Summative Assessment and IABs



There are many benefits to utilizing the IABs when using the Smarter Balanced system. Interims are intentionally designed with a narrower focus in order to allow teachers and students to gain greater insight into how students are progressing. Teachers can use the information from the IABs to adjust their instruction to enhance student learning. The IABs contain high-quality test questions that are developed in the same rigorous manner as that for the summative, and they cover the range of depth of knowledge

described in the Connecticut Core Standards. They are delivered on the same testing platform as the summative assessments and incorporate a wide array of accommodations and supports. The tests are scored immediately; moreover, teachers can view the test questions, scoring rubrics, and student responses to obtain greater insight into student cognition and reasoning. In addition to administering the entire IAB as a stop-and-test event, the IABs can also be used in non-standard ways. For instance, a teacher may use test items from an IAB to illustrate the expectation of the standard, as a Do-Now exercise in the classroom, or as an exit ticket to check for understanding. The IABs are a critical component of the system because they can align coherently with a district's curriculum and assessment practices (Marion et al, 2019).

This study replicates the methodology used in the [2020 study](#) to examine if *sustained participation* in the IABs during the 2022-23 SY has any relationship to improved performance on the summative in terms of growth on the Smarter Balanced vertical scale score on the end-of-grade summative assessment from 2021-22 to 2022-23. When referring to the IABs for the purpose of this paper, both typical interim blocks that assess 3-8 targets and the focused interim blocks that assess 1-3 targets are included. *Sustained participation* is defined as a student who participates in *at least four* different IABs in a subject area during the school year. Since the IABs cover only a portion of the content standards, participation in four different IABs is considered to represent reasonable coverage of the breadth of the standards and is therefore a suitable standard for examination of growth on the end-of-grade summative score. Moreover, administration of four or more different IABs during the school year may be representative of a more systematic integration of the IABs into the curriculum.

Data

The data for this analysis were the following administrative, student-level data sets:

- The interim assessment participation data in the 2022-23 school year; and
- The spring 2022 and spring 2023 summative assessment results to evaluate growth.

Results

The number of times a specific IAB was administered in both ELA and mathematics is presented in Tables 1, 2, and 3. The ELA Read Literary Texts block was the most frequently administered ELA block across

Grades 3 through 8, followed by Read Informational Texts block (Table 1). The least administered blocks were Revision for Grade 3, 4, and 5, and Brief Writes for Grade 6, 7, and 8.

Table 1. Number of ELA IABs Administered in 2022-23

Interim Block	Grade						
	3	4	5	6	7	8	Total
Brief Writes	4,790	4,205	3,523	3,396	1,712	1,462	19,088
Editing	7,684	7,539	6,686	7,576	7,203	9,099	45,787
Language and Vocabulary Use	8,634	8,573	8,320	6,474	5,182	4,375	41,558
Listen/Interpret	10,364	9,783	9,547	6,963	5,031	5,510	47,198
Read Informational Texts	9,023	18,682	17,784	17,510	14,553	13,822	91,374
Read Literary Texts	17,112	18,310	16,309	15,179	13,946	15,771	96,627
Research	10,011	11,419	11,586	14,355	17,519	15,483	80,373
Revision	2,872	2,772	3,261	4,241	2,915	0	16,061
Write and Revise	7,658	7,396	8,053	6,450	6,033	5,648	41,238
Total	78,629	89,058	85,375	82,317	74,168	71,199	480,746

Due to the organization of the Connecticut Core Standards in mathematics, the IABs in Grades 3-5 are different from those in Grades 6-8. In the elementary grades, the Operations and Algebraic Thinking block was the most frequently administered block, followed by Number and Operations – Fractions block (Table 2). Besides the PT block, the least administered blocks were Geometry for Grades 3 and 5 and Measurement and Data for Grade 4.

Table 2: Number of Mathematics IABs Administered in 2022-23 – Grades 3-5

Interim Block	Grade			
	3	4	5	Total
Geometry	4,736	5,132	3,903	13,771
Measurement and Data	9,649	3,178	11,969	24,796
Number and Operations - Fractions	14,537	26,310	20,605	61,452
Number and Operations in Base Ten	14,929	21,823	23,859	60,611
Operations and Algebraic Thinking	31,400	22,044	8,567	62,011

PT	860	480	465	1,805
Total	76,111	78,967	69,368	224,446

The Number System block and Expressions & Equations block were the most frequently administered blocks in Grades 6 and 7 respectively, while Statistics and Probability was the least frequently administered block besides PT (Table 3). In Grade 8, the Expressions & Equations block was the most frequently administered block.

**Table 3: Number of Mathematics IABs Administered in 2022-23 –
Grades 6-8**

Interim Block	Grade			
	6	7	8	Total
Expressions & Equations	13,794	15,840	21,839	51,473
Expressions & Equations II	0	0	2,893	2,893
Functions	0	0	7,223	7,223
Geometry	4,974	5,469	13,282	23,725
PT	736	714	401	1,851
Ratio and Proportional Relationships	15,627	15,273	0	30,900
Statistics and Probability	1,807	1,713	0	3,520
The Number System	23,484	12,813	4,476	40,773
Total	60,422	51,822	50,114	162,358

Among the students in Grades 3 through 8 who took the Smarter Balanced Summative Assessments statewide, 59-73 percent took at least one IAB in ELA, and 57-76 percent took at least one IAB in mathematics during the 2022-23 school year (Table 4). In both ELA and mathematics, student participation was stronger in the elementary grades (3-5) than in the middle school grades (6-8). These are the highest participation rates observed since 2018-19.

**Table 4. Percentage of Students Taking
at Least One IAB**

Grade	ELA	Math
3	71	76
4	73	75
5	70	71
6	69	66

7	62	61
8	59	57
Total	67	67

Table 5 and Figure 2 (ELA) and Table 6 and Figure 3 (math) show the essential outcomes for this analysis. Students who took the assessment in spring 2022 and in the next higher grade in spring 2023 were matched based on their state assigned unique student identifier. The mean scale score gain from spring 2022 to spring 2023 achieved by these matched students was grouped based on their spring 2022 performance level (PL).

These results are further disaggregated based on eligibility for free- or reduced-price meals (FRPM). ELA results are in Table 7 and Figure 4, while mathematics results are in Table 8 and Figure 5.

**Table 5:
Number/Percentage of Students Taking ELA IABs and Mean Scale Score Gain
on the ELA Summative Assessment from Spring 2022 to Spring 2023**

2023 Grade	2022 PL	Total Matched Students	0 IABs Taken			1-3 IABs Taken			4 or more IABs Taken		
			N	%	Mean Gain	N	%	Mean Gain	N	%	Mean Gain
4	1	10,467	3,408	32.6	60	5,057	48.3	60	2,002	19.1	69
	2	7,521	2,055	27.3	50	3,528	46.9	53	1,938	25.8	56
	3	7,040	1,717	24.4	48	3,331	47.3	50	1,992	28.3	54
	4	8,913	1,909	21.4	40	4,330	48.6	40	2,674	30.0	45
5	1	11,477	3,901	34.0	53	5,559	48.4	55	2,017	17.6	66
	2	5,939	1,747	29.4	47	2,864	48.2	49	1,328	22.4	55
	3	7,610	2,172	28.5	43	3,624	47.6	45	1,814	23.8	51
	4	9,485	2,406	25.4	37	4,651	49.0	35	2,428	25.6	42
6	1	10,121	3,722	36.8	52	4,821	47.6	51	1,578	15.6	53
	2	6,470	1,990	30.8	37	3,129	48.4	37	1,351	20.9	39
	3	9,278	2,548	27.5	28	4,559	49.1	28	2,171	23.4	31
	4	8,707	2,192	25.2	17	4,252	48.8	19	2,263	26.0	18
7	1	9,448	4,068	43.1	41	3,950	41.8	44	1,430	15.1	47
	2	8,590	3,249	37.8	36	3,724	43.4	39	1,617	18.8	44
	3	10,397	3,694	35.5	31	4,613	44.4	32	2,090	20.1	33
	4	6,516	2,159	33.1	21	2,891	44.4	22	1,466	22.5	23
8	1	9,870	4,317	43.7	46	4,336	43.9	51	1,217	12.3	57
	2	8,111	3,305	40.8	29	3,495	43.1	33	1,311	16.2	35

3	11,960	4,605	38.5	25	5,211	43.6	28	2,144	17.9	30
4	6,224	2,206	35.4	18	2,819	45.3	20	1,199	19.3	21

Figure 2: Mean Scale Score Gain on ELA Summative Assessment from Spring 2022 to Spring 2023 Based on ELA IAB Participation

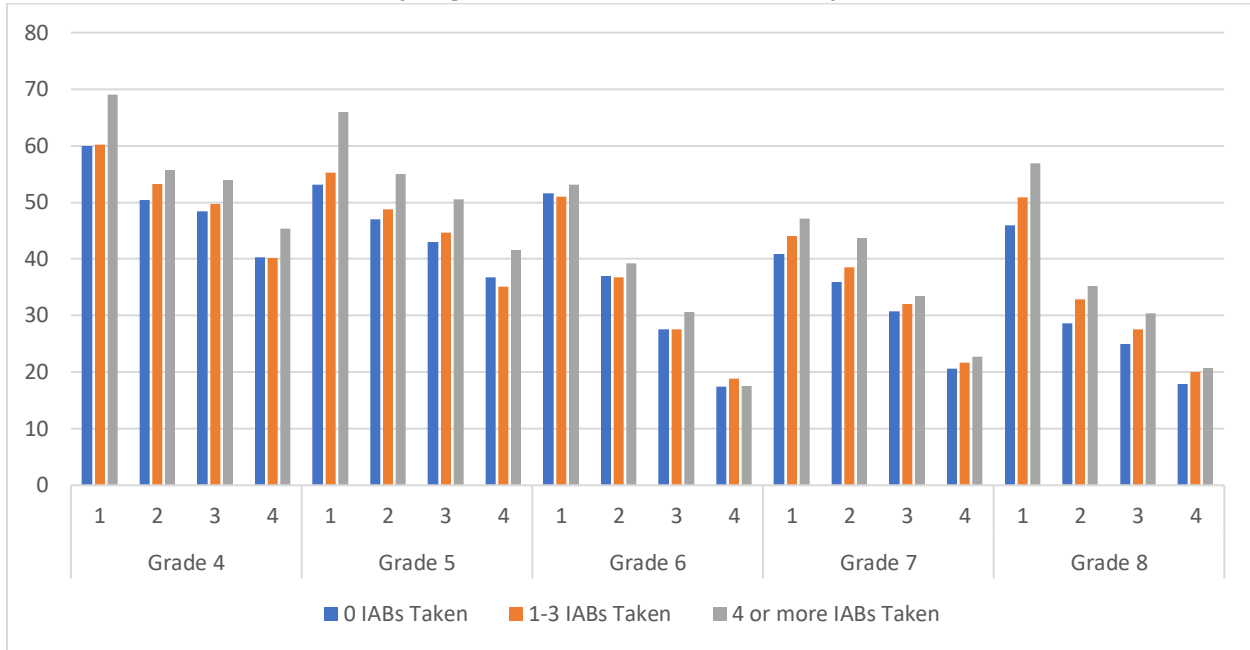
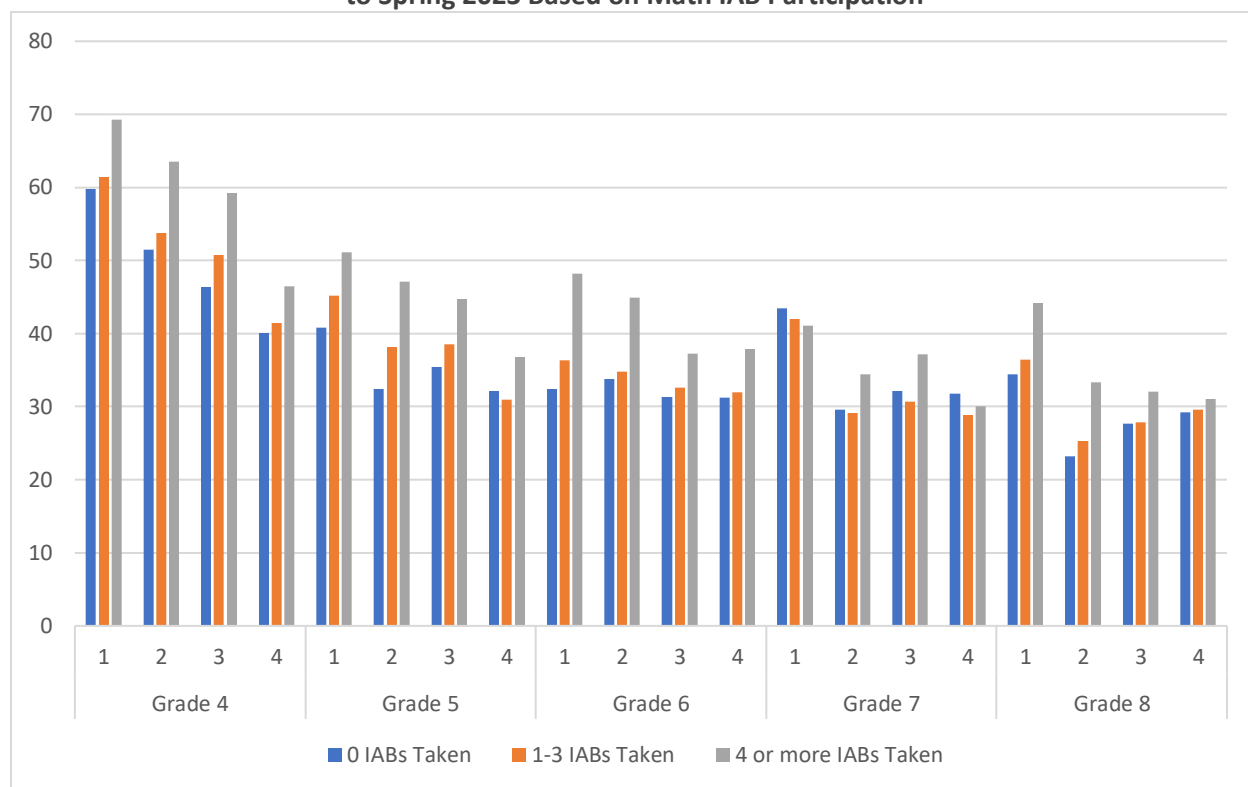


Table 6: Number/Percentage of Students Taking Math IABs and Mean Scale Score Gain on the Math Summative Assessment from Spring 2022 to Spring 2023

2023 Grade	2022 PL	Total Matched Students	0 IABs Taken			1-3 IABs Taken			4 or more IABs Taken		
			N	%	Mean Gain	N	%	Mean Gain	N	%	Mean Gain
4	1	10,341	2,881	27.9	60	6,437	62.3	61	1,023	9.9	69
	2	7,319	1,740	23.8	52	4,443	60.7	54	1,136	15.5	63
	3	8,682	1,924	22.2	46	5,102	58.8	51	1,656	19.1	59
	4	7,486	1,623	21.7	40	4,317	57.7	41	1,546	20.7	46
5	1	9,355	2,966	31.7	41	5,812	62.1	45	577	6.2	51
	2	9,326	2,741	29.4	32	5,582	59.9	38	1,003	10.8	47
	3	8,342	2,174	26.1	35	4,966	59.5	39	1,202	14.4	45
	4	7,375	1,914	26.0	32	4,170	56.5	31	1,291	17.5	37
6	1	12,390	4,593	37.1	32	7,064	57.0	36	733	5.9	48

2023 Grade	2022 PL	Total Matched Students	0 IABs Taken			1-3 IABs Taken			4 or more IABs Taken		
			N	%	Mean Gain	N	%	Mean Gain	N	%	Mean Gain
	2	8,584	2,806	32.7	34	4,897	57.1	35	881	10.3	45
	3	6,113	1,913	31.3	31	3,424	56.0	33	776	12.7	37
	4	7,290	2,274	31.2	31	4,049	55.5	32	967	13.3	38
7	1	12,288	5,081	41.4	43	6,873	55.9	42	334	2.7	41
	2	9,275	3,387	36.5	30	5,397	58.2	29	491	5.3	34
	3	6,393	2,324	36.4	32	3,554	55.6	31	515	8.1	37
	4	6,642	2,593	39.0	32	3,356	50.5	29	693	10.4	30
8	1	12,995	5,757	44.3	34	6,658	51.2	36	580	4.5	44
	2	8,966	3,534	39.4	23	4,760	53.1	25	672	7.5	33
	3	6,973	2,737	39.3	28	3,586	51.4	28	650	9.3	32
	4	6,775	3,278	48.4	29	2,897	42.8	30	600	8.9	31

Figure 3: Mean Scale Score Gain on Math Summative Assessment from Spring 2022 to Spring 2023 Based on Math IAB Participation



- Generally, students at lower performance levels tended to take 4 or more IABs at a lower rate than their higher achieving peers.
- Among students in every grade and at almost every performance level, those who took 4 or more IABs generally showed substantially greater mean scale score gains on the summative from spring 2022 to spring 2023 than those who took fewer or no IABs. This remains true even when the data are further disaggregated by eligibility for FRPM (Table 7 and 8 and Figures 4 and 5 in the Appendix).
- As expected, mean gains were greater in the lower grades and for those at lower performance levels.

Conclusion

This report confirms the overall findings from the 2020 study. It affirms that in both ELA and math, in all grades, and regardless of the performance level or socioeconomic status of the student, those who take four or more different IABs during the year generally demonstrate greater mean scale score gains than those taking fewer or no IABs. While these are descriptive results and as such do not support a causal inference, they do provide ongoing evidence for further inquiry into the thoughtful integration of Smarter Balanced IABs to support classroom teachers to implement high-quality instruction.

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Appendix

Table 7: Number/Percentage of Students Taking ELA IABs and Mean Scale Score Gain on ELA Summative Assessment from Spring 2022 to Spring 2023

2023 Grade	2022 PL	Meal Eligibility Status 2022	Total Matched Students	0 IABs Taken			1-3 IABs Taken			4 or more IABs Taken		
				N	%	Mean Gain	N	%	Mean Gain	N	%	Mean Gain
4	1	FRPM	6,999	2,395	34.2	58	3,387	48.4	57	1217	17.4	65
		Not FRPM	3,468	1,013	29.2	66	1,670	48.2	67	785	22.6	75
	2	FRPM	3,668	1,113	30.3	46	1,650	45.0	47	905	24.7	49
		Not FRPM	3,853	942	24.5	56	1,878	48.7	59	1033	26.8	61
	3	FRPM	2,377	654	27.5	44	1,030	43.3	41	693	29.2	46
		Not FRPM	4,663	1,063	22.8	51	2,301	49.4	54	1299	27.9	58
	4	FRPM	1,591	372	23.4	34	752	47.3	35	467	29.4	38
		Not FRPM	7,322	1,537	21.0	42	3,578	48.9	41	2,207	30.1	47
5	1	FRPM	7,639	2,627	34.4	50	3,679	48.2	52	1333	17.5	63
		Not FRPM	3,838	1,274	33.2	60	1,880	49.0	62	684	17.8	71
	2	FRPM	2,817	917	32.6	42	1,278	45.4	42	622	22.1	52
		Not FRPM	3,122	830	26.6	53	1,586	50.8	54	706	22.6	58
	3	FRPM	2,596	801	30.9	36	1,204	46.4	38	591	22.8	44
		Not FRPM	5,014	1,371	27.3	47	2,420	48.3	48	1223	24.4	54
	4	FRPM	1,754	517	29.5	29	781	44.5	32	456	26.0	36
		Not FRPM	7,731	1,889	24.4	39	3,870	50.1	36	1,972	25.5	43
6	1	FRPM	6,694	2,584	38.6	49	3,149	47.0	48	961	14.4	50
		Not FRPM	3,427	1,138	33.2	58	1,672	48.8	56	617	18.0	58
	2	FRPM	3,225	1,070	33.2	35	1,559	48.3	33	596	18.5	34
		Not FRPM	3,245	920	28.4	40	1,570	48.4	40	755	23.3	43
	3	FRPM	3,150	1,003	31.8	23	1,506	47.8	23	641	20.4	26
		Not FRPM	6,128	1,545	25.2	30	3,053	49.8	30	1,530	25.0	33
	4	FRPM	1,598	465	29.1	15	781	48.9	16	352	22.0	16
		Not FRPM	7,109	1,727	24.3	18	3,471	48.8	19	1,911	26.9	18
7	1	FRPM	6,163	2,764	44.9	39	2,491	40.4	41	908	14.7	45
		Not FRPM	3,285	1,304	39.7	46	1,459	44.4	49	522	15.9	51
	2	FRPM	4,089	1,683	41.2	32	1,742	42.6	34	664	16.2	41
		Not FRPM	4,501	1,566	34.8	40	1,982	44.0	43	953	21.2	46

2023 Grade	2022 PL	Meal Eligibility Status 2022	Total Matched Students	0 IABs Taken			1-3 IABs Taken			4 or more IABs Taken		
				N	%	Mean Gain	N	%	Mean Gain	N	%	Mean Gain
	3	FRPM	3,248	1,289	39.7	26	1,404	43.2	28	555	17.1	29
		Not FRPM	7,149	2,405	33.6	33	3,209	44.9	34	1,535	21.5	35
	4	FRPM	1047	385	36.8	19	445	42.5	21	217	20.7	25
		Not FRPM	5,469	1,774	32.4	21	2,446	44.7	22	1249	22.8	22
8	1	FRPM	6,359	2,851	44.8	45	2,813	44.2	49	695	10.9	53
		Not FRPM	3,511	1,466	41.8	48	1,523	43.4	54	522	14.9	62
	2	FRPM	3,941	1,771	44.9	27	1,608	40.8	27	562	14.3	34
		Not FRPM	4,170	1,534	36.8	31	1,887	45.3	38	749	18.0	36
	3	FRPM	3,657	1,605	43.9	22	1,523	41.7	22	529	14.5	25
		Not FRPM	8,303	3,000	36.1	27	3,688	44.4	30	1,615	19.5	32
	4	FRPM	1041	448	43.0	15	418	40.2	16	175	16.8	18
		Not FRPM	5,183	1,758	33.9	19	2,401	46.3	21	1024	19.8	21

Figure 4: Mean Scale Score Gain on ELA Summative Assessment from Spring 2022 to Spring 2023 Based on ELA IAB Participation (Performance Levels 1 and 2 Only)

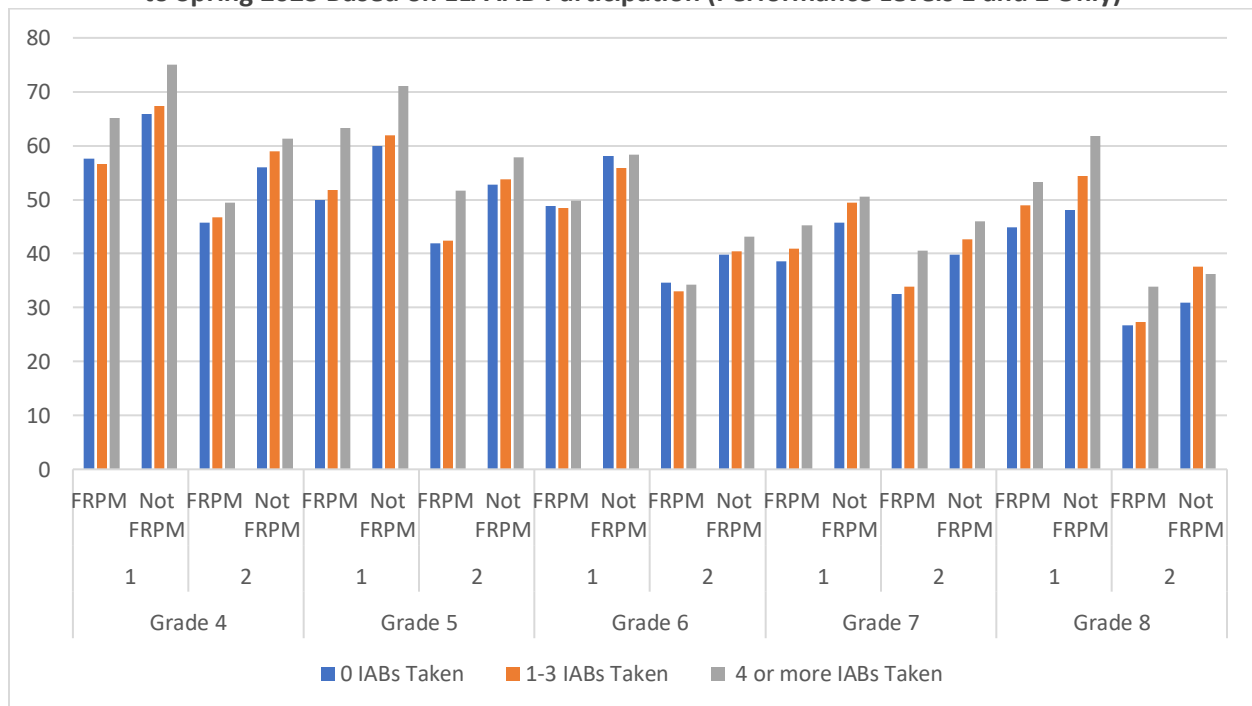


Table 8: Number/Percentage of Students Taking Math IABs and Mean Scale Score Gain on Math Summative Assessment from Spring 2022 to Spring 2023

2023 Grade	2022 PL	Meal Eligibility Status 2022	Total Matched Students	0 IABs Taken			1-3 IABs Taken			4 or more IABs Taken		
				N	%	Mean Gain	N	%	Mean Gain	N	%	Mean Gain
4	1	FRPM	7,135	1,971	27.6	58	4,558	63.9	60	606	8.5	67
		Not FRPM	3,206	910	28.4	65	1,879	58.6	66	417	13.0	72
	2	FRPM	3,551	888	25.0	47	2,205	62.1	49	458	12.9	59
		Not FRPM	3,768	852	22.6	56	2,238	59.4	58	678	18.0	67
	3	FRPM	2,721	682	25.1	42	1,630	59.9	46	409	15.0	55
		Not FRPM	5,961	1,242	20.8	49	3,472	58.3	53	1247	20.9	61
	4	FRPM	1,155	262	22.7	39	711	61.6	38	182	15.8	44
		Not FRPM	6,331	1,361	21.5	40	3,606	57.0	42	1364	21.5	47
5	1	FRPM	6,609	2,060	31.2	39	4,200	63.6	44	349	5.3	51
		Not FRPM	2,746	906	33.0	44	1,612	58.7	48	228	8.3	51
	2	FRPM	4,524	1,352	29.9	28	2,786	61.6	34	386	8.5	45
		Not FRPM	4,802	1,389	28.9	37	2,796	58.2	42	617	12.9	48
	3	FRPM	2,485	704	28.3	29	1,532	61.7	35	249	10.0	36
		Not FRPM	5,857	1,470	25.1	38	3,434	58.6	40	953	16.3	47
	4	FRPM	1,110	304	27.4	29	655	59.0	28	151	13.6	31
		Not FRPM	6,265	1,610	25.7	33	3,515	56.1	31	1140	18.2	38
6	1	FRPM	8,159	3,040	37.3	29	4,715	57.8	33	404	5.0	43
		Not FRPM	4,231	1,553	36.7	39	2,349	55.5	42	329	7.8	54
	2	FRPM	3,606	1,261	35.0	30	2,068	57.4	30	277	7.7	39
		Not FRPM	4,978	1,545	31.0	37	2,829	56.8	38	604	12.1	48
	3	FRPM	1,685	559	33.2	25	923	54.8	26	203	12.1	30
		Not FRPM	4,428	1,354	30.6	34	2,501	56.5	35	573	12.9	40
	4	FRPM	1,081	333	30.8	26	623	57.6	25	125	11.6	38
		Not FRPM	6,209	1,941	31.3	32	3,426	55.2	33	842	13.6	38
7	1	FRPM	8,021	3,362	41.9	43	4,477	55.8	41	182	2.3	37
		Not FRPM	4,267	1,719	40.3	44	2,396	56.2	44	152	3.6	45
	2	FRPM	3,823	1,440	37.7	27	2,233	58.4	24	150	3.9	29
		Not FRPM	5,452	1,947	35.7	32	3,164	58.0	33	341	6.3	37
	3	FRPM	1,608	593	36.9	27	910	56.6	27	105	6.5	37

2023 Grade	2022 PL	Meal Eligibility Status 2022	Total Matched Students	0 IABs Taken			1-3 IABs Taken			4 or more IABs Taken		
				N	%	Mean Gain	N	%	Mean Gain	N	%	Mean Gain
	4	Not FRPM	4,785	1,731	36.2	34	2,644	55.3	32	410	8.6	37
		FRPM	880	316	35.9	30	475	54.0	26	89	10.1	29
		Not FRPM	5,762	2,277	39.5	32	2,881	50.0	29	604	10.5	30
8	1	FRPM	8,276	3,740	45.2	32	4,217	51.0	34	319	3.9	39
		Not FRPM	4,719	2,017	42.7	38	2,441	51.7	40	261	5.5	51
	2	FRPM	3,722	1,527	41.0	17	1,963	52.7	21	232	6.2	27
		Not FRPM	5,244	2,007	38.3	28	2,797	53.3	28	440	8.4	37
	3	FRPM	1,809	710	39.3	21	955	52.8	21	144	8.0	33
		Not FRPM	5,164	2,027	39.3	30	2,631	51.0	30	506	9.8	32
	4	FRPM	884	378	42.8	21	435	49.2	25	71	8.0	26
		Not FRPM	5,891	2,900	49.2	30	2,462	41.8	30	529	9.0	32

Figure 5: Mean Scale Score Gain on Math Summative Assessment from Spring 2022 to Spring 2023 Based on Math IAB Participation (Performance Levels 1 and 2 Only)

