AB705: Historic Throughput Rates

MATHEMATICS/QUANTITATIVE REASONING

Briana Todhunter
SOUTHWESTERN COMMUNITY COLLEGE DISTRICT | OFFICE OF INSTITUTIONAL RESEARCH AND PLANNING
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AB705: Historic Throughput Rates for Mathematics/Quantitative Reasoning

Introduction

Purpose

The purpose of this report is to summarize student placement, entry, and success within Mathematics/Quantitative-Reasoning coursework within a time period prior to any substantial modifications to placement or curriculum related to Mathematics/Quantitative-Reasoning. For Southwestern College, substantial change in this area began with placements given for the Fall 2016 term; therefore, this report focuses on five years prior to that point in time, summarizing student data from Fall 2011 – Spring 2016. The data and analyses included in this report serve as a baseline of comparison for outcomes measured after this relatively stable period of time, especially as it relates to outcomes associated with implementation of AB705[1] legislation.

Methodology

Data Included

Students included in this report met criteria under one of the following:

1) *Placement Results*: Received a MATH placement for Fall 2011 through Spring 2016 found with CAPP
2) *Entry and Throughput*: First attempted a MATH/Quantitative-Reasoning course (see *Table 1* for courses included) at SWC between Fall 2011 and Spring 2016.
    a. Attempt of a course is considered if any of the following transcripted grades were received: A, B, C, D, F, I, P/CR, NP/NC, RD, W

Data Source

The data used for capturing first attempt in mathematics/quantitative-reasoning, successful completion of a transfer-level mathematics/quantitative-reasoning course, and the demographics used for disaggregation were pulled from SWC's internal database via BusinessObjects.

The data used for placements and disaggregating course attempts and course completion by High School Grade Point Average (GPA) was captured from SWC's CAPP database, a retired software used for assessment testing and course placement prior to Fall 2019. High School GPA used in this report is self-reported by the student.

Disproportionate Impact Analysis

Detailed documentation on disproportionate impact analyses performed in this report can be found on the CCCCO Accountability website (https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Digital-Innovation-and-Infrastructure/Network-Operations/Accountability).

[1] Assembly Bill No. 705 (https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB705)

Mathematics/Quantitative-Reasoning

In order to transfer to a CSU or UC institution, students must complete a quantitative-reasoning requirement. For the most part, this requirement is fulfilled by successfully completing a transfer-level mathematics course (MATH), but there are a few other courses outside of the MATH subject area and MATH TOP CODE (CB03[2] = 1701.00) that meet this requirement, and additionally not all transfer-level MATH subject courses meet this requirement. Below is a table of courses that were used in this analysis at each respective course-level.

Course-Level (CB21[3])	**Course Name**
Three-Levels Below Transfer (CB21 = C)	MATH 35
Two-Levels Below Transfer (CB21 = B)	MATH 45, MATH 48
One-Level Below Transfer (CB21 = A)	MATH 60, MATH 70
CSU General Education Breadth Requirements B4 (Mathematics/Quantitative Reasoning) (CB21 = Y)	MATH 100, MATH 101, MATH 104, MATH 110, MATH 111, MATH 115, MATH 119, MATH 120, MATH 121, MATH 122, MATH 244, MATH 250, MATH 251, MATH 252, MATH 253, MATH 254, MATH 260, MATH 265, PSYC/SOC 270, GEOG 150
IGETC Area 2 (Mathematical Concepts and Quantitative Reasoning) (CB21 = Y)	MATH 101, MATH 115, MATH 119, MATH 120, MATH 121, MATH 122, MATH 244, MATH 250, MATH 251, MATH 252, MATH 253, MATH 254, MATH 260, MATH 265, PSYC/SOC 270

Table 1: Courses included in each course-level for analysis. Applicable as of SWC's 2016-17 Catalog.

Definition of AB705 Throughput

Throughput Definition

In this report, throughput is defined as the proportion of students that successfully complete (grade of A, B, C, or P) a transfer-level course in the selected course subject area within a given time-frame. Throughput under AB705 is defined as the proportion of students that successfully complete (grade of A, B, C, or P) a transfer-level mathematics or quantitative-reasoning course within two primary semesters of first attempting any-level mathematics or quantitative-reasoning course. For example, if a student attempts Math 35: Pre-Algebra in the Fall 2014 semester, the student is measured in Fall 2014 and Spring 2015 for successful completion of a transfer-level mathematics or quantitative-reasoning course.

Differences between AB705 Throughput and SCFF Success Measurement

Throughput under AB705 and successful completion of transfer-level English & Math within the Student-Centered Funding Formula have a two key differences.

1) Under the SCFF, successful completion of transfer-level English & Math analyzes data only for one academic year (SU – FA - SP), whereas AB705 captures data two primary semesters from first attempt, which could be SP – SU – FA, FA – SP, or SU – FA- SP.

[2] CCCCO Data Element Dictionary (https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Digital-Innovation-and-Infrastructure/Management-Information-Systems/Data-Element-Dictionary)
[3] CCCCO Data Element Dictionary (https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Digital-Innovation-and-Infrastructure/Management-Information-Systems/Data-Element-Dictionary)

2) Under the SCFF, only first-time in college students are measured for the given academic year, whereas AB705 captures students upon their first attempt in a course subject, which may be after the first year of enrollment in a community college.

FERPA Suppression

All individual table cells with less than 10 students are redacted for data security purposes pursuit to FERPA guidelines. In cases in which only one table cell < 10 students and by process of elimination, the cell size could be determined given other information available in the table, the next smallest cell is also redacted.

Results

Placement Level

Between Fall 2011 – Spring 2016, 38,484 placements were given in MATH (MDTP). Placements included in this analysis were unique to students within a term. For example, if a student received two MDTP placements within 11/FA, only the highest was retained for analysis. However, if a student received one MDTP placement within 11/FA and one placement within 12/SP, both placements were retained for analysis. Below is a table of placements given by individual level and the corresponding courses applicable to the placement. The most common placement was at three-levels below transfer (MATH-35 or below), with 51.7% (n = 19,889) of placements assigned to this level.

MDTP Placement Value	Corresponding Courses	Levels Below Transfer (CB21)	Placements	%
0	MATH-35	Three-Levels Below	107	0.3%
1	MATH-35	Three-Levels Below	5977	15.5%
2	MATH-35	Three-Levels Below	13805	35.9%
3	MATH-45, MATH-48	Two-Levels Below	11161	29.0%
4	MATH-60	One-Level Below	4737	12.3%
5	MATH-70 / MATH-100 / MATH-110 / MATH-112	One-Level Below	1918	5.0%
6	MATH-101, MATH-104, MATH-119, MATH-120, MATH-121, MATH-130, MATH-244	Transfer	614	1.6%
8	MATH-250	Transfer	165	0.4%
Total			***38484***	**100%**

Table 2: Placements between Fall 2011- Spring 2016 within SWC's CAPP software. MDTP Placement value of "0" was given to students whose test/questionnaire was incomplete or unable to generate an MDTP placement; students were asked to return for further testing, but could enroll in MATH-35. MDTP Placement value of "0" was only retained if no other placement score was present for the student during the testing term. MDTP Placement value of "1" was previously assigned to courses four-levels below transfer; this placement value was phased into the MATH-35 placement level, but still assigned through Spring 2016.

Placement Level by Race/Ethnicity

Race/Ethnicity	Placement Level								Total
	Three-Levels Below		Two-Levels Below		One-Level Below		Transfer-Level		
	n	%	n	%	n	%	n	%	
Asian	397	31.0%	372	29.0%	402	31.4%	110	8.6%	*1281*
American-Indian/Alaskan Native			66	24.2%	45	16.5%	13	4.8%	*273*
Black/African-American	1734	63.5%	672	24.6%	305	11.2%	20	0.7%	*2731*
Filipino	1011	38.7%	808	30.9%	732	28.0%	61	2.3%	*2612*
Hispanic	13922	54.2%	7354	28.6%	4006	15.6%	389	1.5%	*25671*
Native Hawaiian/Pacific Islander	239	44.8%	173	32.4%	111	20.8%	11	2.1%	*534*
Other, Non-White	243	56.1%	117	27.0%	57	13.2%	16	3.7%	*433*
White, Non-Hispanic	1616	42.0%	1304	33.9%	803	20.9%	125	3.2%	*3848*
Unknown/Unclear Response	206	67.1%							*307*
No Response	366	46.7%	229	29.2%	159	20.3%	30	3.8%	*784*
Not Found									*10*
Total	*19889*	*51.7%*	*11161*	*29.0%*	*6655*	*17.3%*	*779*	*2.0%*	*38484*

Table 3: Placements between Fall 2011- Spring 2016 within SWC's CAPP software by student race/ethnicity. A full report on disproportionate impact within placement for mathematics, English, reading, and ESL was performed on data between Fall 2012 –Fall 2015. This report can be requested from the Office of Institutional Research and Planning.

Entry Level

Between Fall 2011 – Spring 2016, 19,994 students first attempted a MATH or quantitative-reasoning course at SWC at any level; amongst these students, 13.0% (n = 2,594) first attempted a course at transfer-level. The majority (34.0%, n = 6,789) began two-levels below transfer, followed by 31.6% (n = 6,312) three-levels below transfer.

Entry Level by Race/Ethnicity

	Entry-Level										**Transfer-Level Entry Disproportionate Impact Analysis**		
	Three-Levels Below		**Two-Levels Below**		**One-Level Below**		**Transfer-Level**		***Total***				
	n	%	n	%	n	%	n	%	*n*	*%*			
Total	*6312*	*31.6%*	*6789*	*34.0%*	*4299*	*21.5%*	*2594*	*13.0%*	*19994*	*100%*			
Race/Ethnicity											**PPG - 1**	**80% Using Highest Performing**	**80% Using Historical Majority**
American-Indian/Alaskan-Native	60	40.5%	36	24.3%	38	25.7%	14	9.5%	*148*	*0.7%*	**-3.5%**	**0.243**	**0.518**
Asian	61	14.0%	102	23.4%	103	23.7%	169	38.9%	*435*	*2.2%*	**26.5%**	**1.000**	**2.128**
Black or African-American	358	38.4%	295	31.6%	164	17.6%	116	12.4%	*933*	*4.7%*	**-0.6%**	**0.320**	**0.681**
Filipino	366	20.8%	546	31.0%	503	28.5%	348	19.7%	*1763*	*8.8%*	**7.4%**	**0.508**	**1.081**
Hispanic	4456	34.8%	4483	35.0%	2606	20.4%	1249	9.8%	*12794*	*64.0%*	**-8.9%**	**0.251**	**0.535**
Native Hawaiian/Pacific Islander	46	30.5%	57	37.7%	28	18.5%	20	13.2%	*151*	*0.8%*	**0.3%**	**0.341**	**0.725**
Two or More Races	106	23.5%	156	34.6%	116	25.7%	73	16.2%	*451*	*2.3%*	**3.3%**	**0.417**	**0.887**
White	805	25.4%	1066	33.7%	717	22.6%	578	18.3%	*3166*	*15.8%*	**6.3%**	**0.470**	**1.000**
Unknown	54	35.3%	48	31.4%	24	15.7%	27	17.6%	*153*	*0.8%*	**4.7%**	**0.454**	**0.967**

Table 4: Entry Level in first attempted Math/Quantitative-Reasoning course by race/ethnicity. Disproportionate Impact analysis included for comparison of entry level at transfer. If disproportionate impact was found, the race/ethnicity is highlighted in red. References are highlighted in green.

Throughput

Throughput from Any Level

From Fall 2011 – Spring 2016, there were 19,994 students that first attempted a MATH or quantitative-reasoning course at SWC at any level; of those students, 35.8% (n = 7,165) successfully completed at least a degree-applicable MATH course that could be applied towards meeting AA degree requirements (EDC § 55063[4]) within a one-year time-frame (two primary semesters). Among the same 19,994 students, 12.1% (n = 2,410) successfully completed a CSU or IGETC quantitative reasoning course within a one-year time-frame (two primary semesters).

	Total	**Throughput (One-year)**		**Overall Throughput Rate Disproportionate Impact Analysis**		
		n	%			
Total	*19994*	*2410*	*12.1%*			
Race/Ethnicity				PPG - 1	80% Using Highest Performing	80% Using Historical Majority
American-Indian/Alaskan-Native	*148*	15	10.1%	**-1.9%**	**0.294**	**0.594**
Asian	*435*	150	34.5%	**22.9%**	**1.000**	**2.022**
Black or African-American	*933*	93	10.0%	**-2.2%**	**0.289**	**0.584**
Filipino	*1763*	329	18.7%	**7.2%**	**0.541**	**1.094**
Hispanic	*12794*	1184	9.3%	**-7.8%**	**0.268**	**0.543**
Native Hawaiian/Pacific Islander	*151*	16	10.6%	**-1.5%**	**0.307**	**0.621**
Two or More Races	*451*	59	13.1%	**1.1%**	**0.379**	**0.767**
White	*3166*	540	17.1%	**5.9%**	**0.495**	**1.000**
Unknown	*153*	24	15.7%	**3.7%**	**0.455**	**0.920**

Table 5: Throughput rate from all first attempted Math/Quantitative-Reasoning course by race/ethnicity. Disproportionate Impact analysis included for comparison of throughput rate. If disproportionate impact was found, the race/ethnicity is highlighted in red. References are highlighted in green.

[4] Title 5 : 55063 (https://www.smc.edu/ACG/AcademicSenate/CurriculumCommittee/Documents/Minimum%20Requirements%20for%20the%20Associate%20Degree.pdf)

Throughput from Any Level by Educational Goal to Transfer

Amongst these 19,994 students that first attempted a MATH or quantitative-reasoning course between Fall 2011 and Spring 2016, there were 13,025 (65.1%) students that ever declared an educational goal to transfer to a 4-year university; within a one-year time-frame (two primary semesters), 38.0% (n = 4,945) successfully completed at least a degree-applicable MATH course that could be applied towards meeting AA degree requirements (EDC § 55063), and 12.6% (n = 1,644) successfully completed a CSU or IGETC quantitative reasoning course.

Throughput from Transfer-Level

From Fall 2011 – Spring 2016, there were 2,594 students that first attempted a MATH or quantitative-reasoning course at SWC at transfer-level; of those students, 70.2% (n = 1,821) successfully completed at least a degree-applicable MATH course that could be applied towards meeting AA degree requirements (EDC § 55063) within a one-year time-frame (two primary semesters). Among the same 2,594 students, 70.0% (n = 1,816) successfully completed a CSU or IGETC quantitative reasoning course within a one-year time-frame (two primary semesters).

	Total	**Entry at Transfer-Level**		**Throughput (One-year)**		**Throughput Rate from Transfer-Level Entry Disproportionate Impact Analysis**	
		n	%	n	%		
Total	*19994*	*2594*	*13.0%*	*1816*	*70.0%*		
Race/Ethnicity						**PPG - 1**	**80% Using Highest Performing**
American-Indian/Alaskan-Native	*148*	14	9.5%	11	78.6%	**8.6%**	**1.071**
Asian	*435*	169	38.9%	122	72.2%	**2.3%**	**0.984**
Black or African-American	*933*	116	12.4%	74	63.8%	**-6.5%**	**0.870**
Filipino	*1763*	348	19.7%	255	73.3%	**3.8%**	**0.999**
Hispanic	*12794*	1249	9.8%	849	68.0%	**-3.9%**	**0.927**
Native Hawaiian/Pacific Islander	*151*	20	13.2%	14	70.0%	**0.0%**	**0.954**
Two or More Races	*451*	73	16.2%	49	67.1%	**-3.0%**	**0.915**
White	*3166*	578	18.3%	424	73.4%	**4.3%**	**1.000**
Unknown	*153*	27	17.6%	18	66.7%	**-3.4%**	**0.909**

Table 6: Throughput rate from transfer-level first attempted Math/Quantitative-Reasoning course by race/ethnicity. Disproportionate Impact analysis included for comparison throughput rate from transfer-level entry. If disproportionate impact was found, the race/ethnicity is highlighted in red. References are highlighted in green. In this case, the highest performing and historical majority group (White students) were the same, so only one column "Highest Performing" is included.

Throughput from Transfer-Level by Educational Goal to Transfer

Amongst these 2,594 students that first attempted a MATH or quantitative-reasoning course at transfer-level between Fall 2011 and Spring 2016, there were 1,711 (66.0%) students that ever declared an educational goal to transfer to a 4-year university; within a one-year time-frame (two primary semesters), 69.6% (n = 1,191) successfully completed at least a degree-applicable MATH course that could be applied towards meeting AA degree requirements (EDC § 55063), and 69.3% (n = 1,186) successfully completed a CSU or IGETC quantitative reasoning course.

Throughput from Any Below-Transfer-Level

From Fall 2011 – Spring 2016, there were 17,400 students that first attempted a MATH course at SWC below transfer; of those students, 30.7% (n = 5,344) successfully completed at least a degree-applicable MATH course that could be applied towards meeting AA degree requirements (EDC § 55063) within a one-year time-frame (two primary semesters). Among the same 17,400 students, 3.4% (n = 594) successfully completed a CSU or IGETC quantitative reasoning course within a one-year time-frame (two primary semesters).

	Total	**Entry Below Transfer**		**Throughput (One-year)**		**Throughput Rate from Below Transfer Entry Disproportionate Impact Analysis**		
		n	%	n	%			
Total	*19994*	*17400*	*87.0%*	*594*	*3.4%*			
Race/Ethnicity						**PPG - 1**	**80% Using Highest Performing**	**80% Using Historical Majority**
American-Indian/Alaskan-Native	*148*	134	90.5%			**-0.4%**	**0.284**	**0.666**
Asian	*435*	266	61.1%	28	10.5%	**7.2%**	**1.000**	**2.348**
Black or African-American	*933*	817	87.6%	19	2.3%	**-1.1%**	**0.221**	**0.519**
Filipino	*1763*	1415	80.3%	74	5.2%	**2.0%**	**0.497**	**1.167**
Hispanic	*12794*	11545	90.2%	335	2.9%	**-1.5%**	**0.276**	**0.647**
Native Hawaiian/Pacific Islander	*151*	131	86.8%			**-1.9%**	**0.145**	**0.341**
Two or More Races	*451*	378	83.8%	10	2.6%	**-0.8%**	**0.251**	**0.590**
White	*3166*	2588	81.7%	116	4.5%	**1.3%**	**0.426**	**1.000**
Unknown	*153*	126	82.4%			**1.4%**	**0.452**	**1.062**

Table 7: Throughput rate from below transfer first attempted Math/Quantitative-Reasoning course by race/ethnicity. Disproportionate Impact analysis included for comparison throughput rate from below transfer-level entry. If disproportionate impact was found, the race/ethnicity is highlighted in red. References are highlighted in green.

Throughput from Any Below-Transfer-Level by Educational Goal to Transfer

Amongst these 17,400 students that first attempted a MATH course at SWC below transfer between Fall 2011 and Spring 2016, there were 11,314 (65.0%) students that ever declared an educational goal to transfer to a 4-year university; Within a one-year time-frame (two primary semesters), 33.2% (n = 3,754) successfully completed at least a degree-applicable MATH course that could be applied towards meeting AA degree requirements (EDC § 55063), and 4.0% (n = 458) successfully completed a CSU or IGETC quantitative reasoning course.

Throughput by High School GPA

	Entry Level in MATH/Quantitative-Reasoning								
	Any Level			Below Transfer			At Transfer		
	Total Students	Throughput (One-year)		Total Students	Throughput (One-year)		Total Students	Throughput (One-year)	
	N	n	%	N	n	%	N	n	%
Overall	*19994*	*2410*	*12.1%*	*17,400*	*594*	*3.4%*	*2,594*	*1816*	*70.0%*
by High School GPA									
Missing	2490	948	38.1%	1139	47	4.1%	1351	901	66.7%
No Response	1053	70	6.6%	991	24	2.4%	62	46	74.2%
0.0-0.9	11			11					
1.0-1.4	87			84					
1.5-1.9	745			736					
2.0-2.4	3476	65	1.9%	3425	33	1.0%	51	32	62.7%
2.5-2.9	5276	280	5.3%	5039	122	2.4%	237	158	66.7%
3.0-3.4	4900	526	10.7%	4454	216	4.8%	446	310	69.5%
3.5-4.0	1956	511	26.1%	1521	148	9.7%	435	363	83.4%

Table 8: Entry Level in first attempted Math/Quantitative-Reasoning course and throughput from first attempted Math/Quantitative-Reasoning course by self-reported High School GPA.

The most common incoming HS GPA was between 2.5 and 2.9 for students first attempting a Math/Quantitative-Reasoning course at any level. When students with a 2.5-2.9 HS GPA started in a below-transfer Math/Quantitative-Reasoning course, their throughput rate within one year was 2.4%, however, when starting at a transfer-level Math/Quantitative-Reasoning course, their throughput rate was 66.7%.

Throughput from Levels-Below Transfer by High School GPA

	Entry Level in MATH/Quantitative-Reasoning from Below Transfer								
	Three-Levels Below Transfer			Two-Levels Below Transfer			One-Level Below Transfer		
	Total Students	Throughput (One-year)		Total Students	Throughput (One-year)		Total Students	Throughput (One-year)	
	N	n	%	N	n	%	N	n	%
Overall	*6312*	*2*	*0.0%*	*6,789*	*54*	*0.8%*	*4,299*	*538*	*12.5%*
by High School GPA									
Missing	325			367			447	45	10.1%
No Response	483			347			161	20	12.4%
0.0-0.9									
1.0-1.4	55			25					
1.5-1.9	395			262			79		
2.0-2.4	1600			1334			491	25	5.1%
2.5-2.9	1816			2086			1137	113	9.9%
3.0-3.4	1306			1813	20	1.1%	1335	195	14.6%
3.5-4.0	325			552	10	1.8%	644	138	21.4%

Table 9: Entry Level in first attempted Math/Quantitative-Reasoning course in the three levels below transfer and throughput from first attempted Math/Quantitative-Reasoning course by self-reported High School GPA.

The most common incoming HS GPA was between 2.5 and 2.9 for students first attempting a Math/Quantitative-Reasoning course three- and two-levels below transfer, whereas when starting one-level below transfer, the most common incoming HS GPA was between 3.0-3.4. Not only did throughput rate increase for each level of incoming HS GPA by levels below transfer (the closer the student started to transfer-level, the higher the throughput rate within the same HS GAP bands), but within each level below transfer entry, throughput rate increased by higher incoming HS GPAs.

Throughput from One-Level-Below Transfer (Course Detail) by High School GPA

	Throughput from One-Level Below Transfer Course Detail					
	MATH-60			MATH-70		
	Total Students	Throughput (One-year)		Total Students	Throughput (One-year)	
	N	n	%	N	n	%
Overall	*3426*	*236*	*6.9%*	*873*	*302*	*34.6%*
by High School GPA						
Missing	356	24	6.7%	91	21	23.1%
No Response	139	11	7.9%	22		
0.0-0.9						
1.0-1.4						
1.5-1.9	64			15		
2.0-2.4	422			69	17	24.6%
2.5-2.9	931	47	5.0%	206	66	32.0%
3.0-3.4	1050	88	8.4%	285	107	37.5%
3.5-4.0	461	57	12.4%	183	81	44.3%

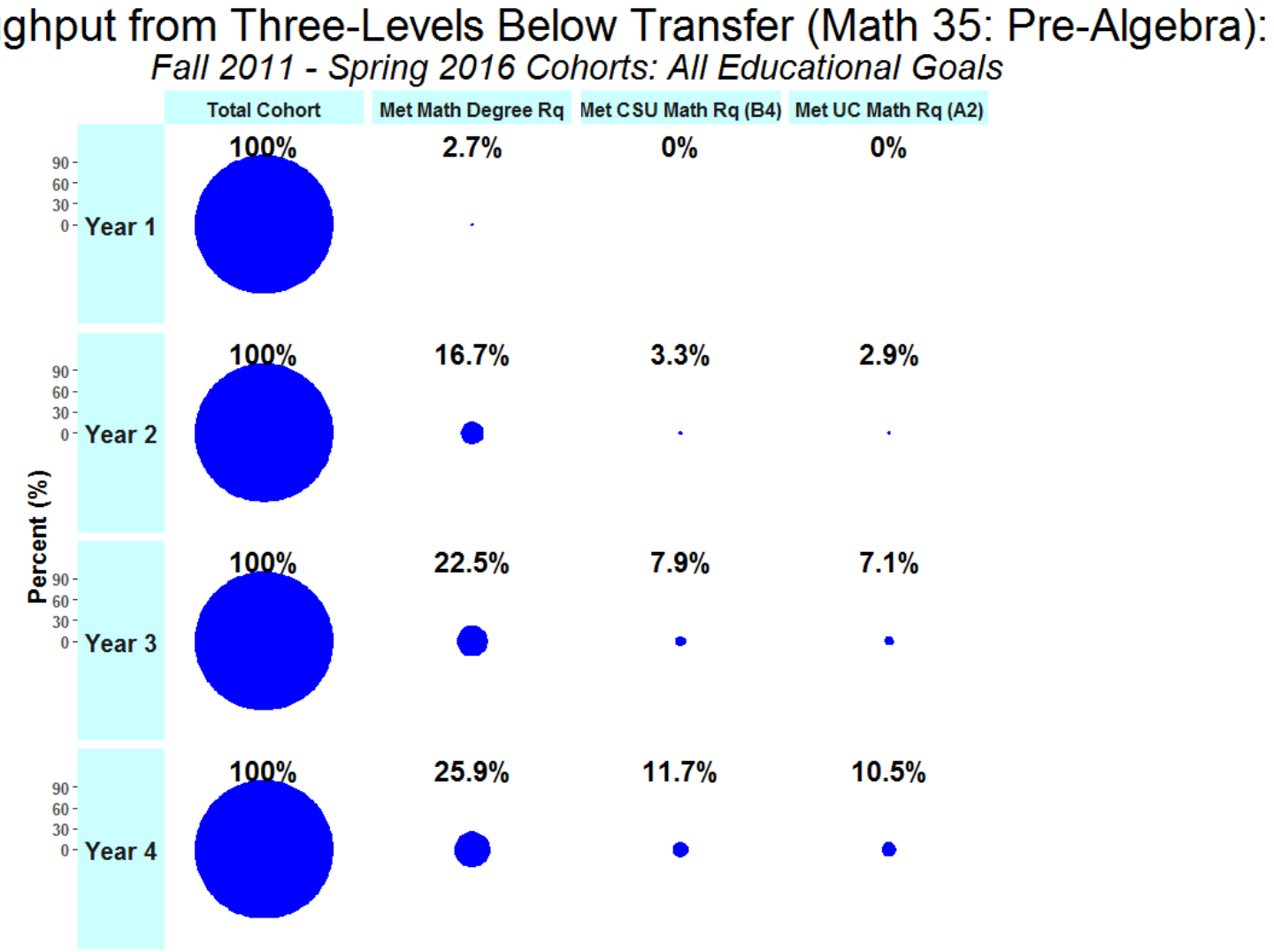
Table 10: Entry Level in first attempted Math/Quantitative-Reasoning course in one-level below transfer courses and throughput from first attempted Math/Quantitative-Reasoning course by self-reported High School GPA.

The most common incoming HS GPA was between 3.0 and 3.4 for students first attempting a Math/Quantitative-Reasoning course one-level below transfer. Not only did throughput rate increase within each level of incoming HS GPA between Math-60 and Math-70, which has more transfer-level courses available after completion than Math-60, but within each course one-level below transfer, throughput rate increased by higher incoming HS GPAs.

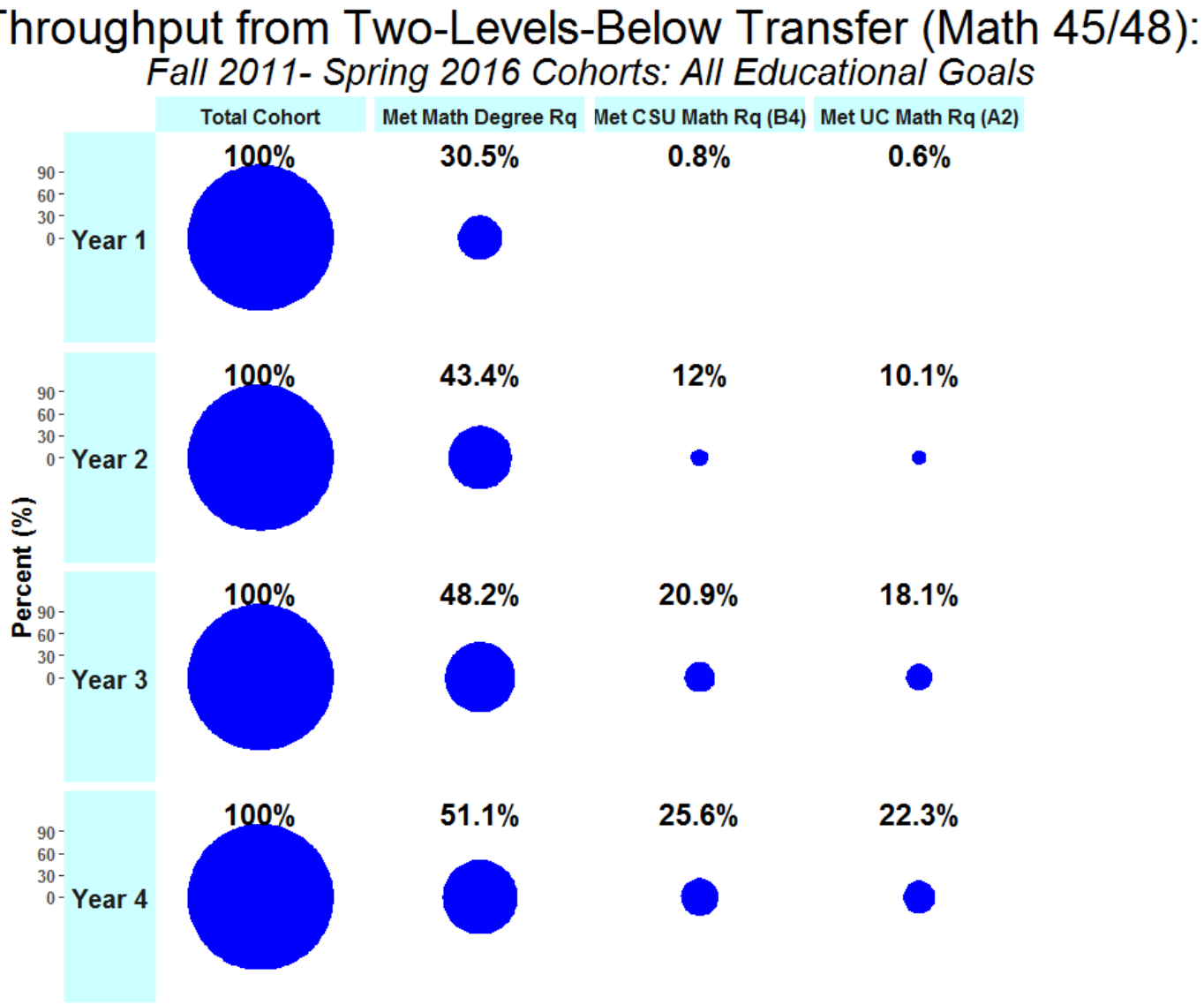
Appendix

Graphics: Four-Year Throughput by MATH/Quantitative-Reasoning Entry Level

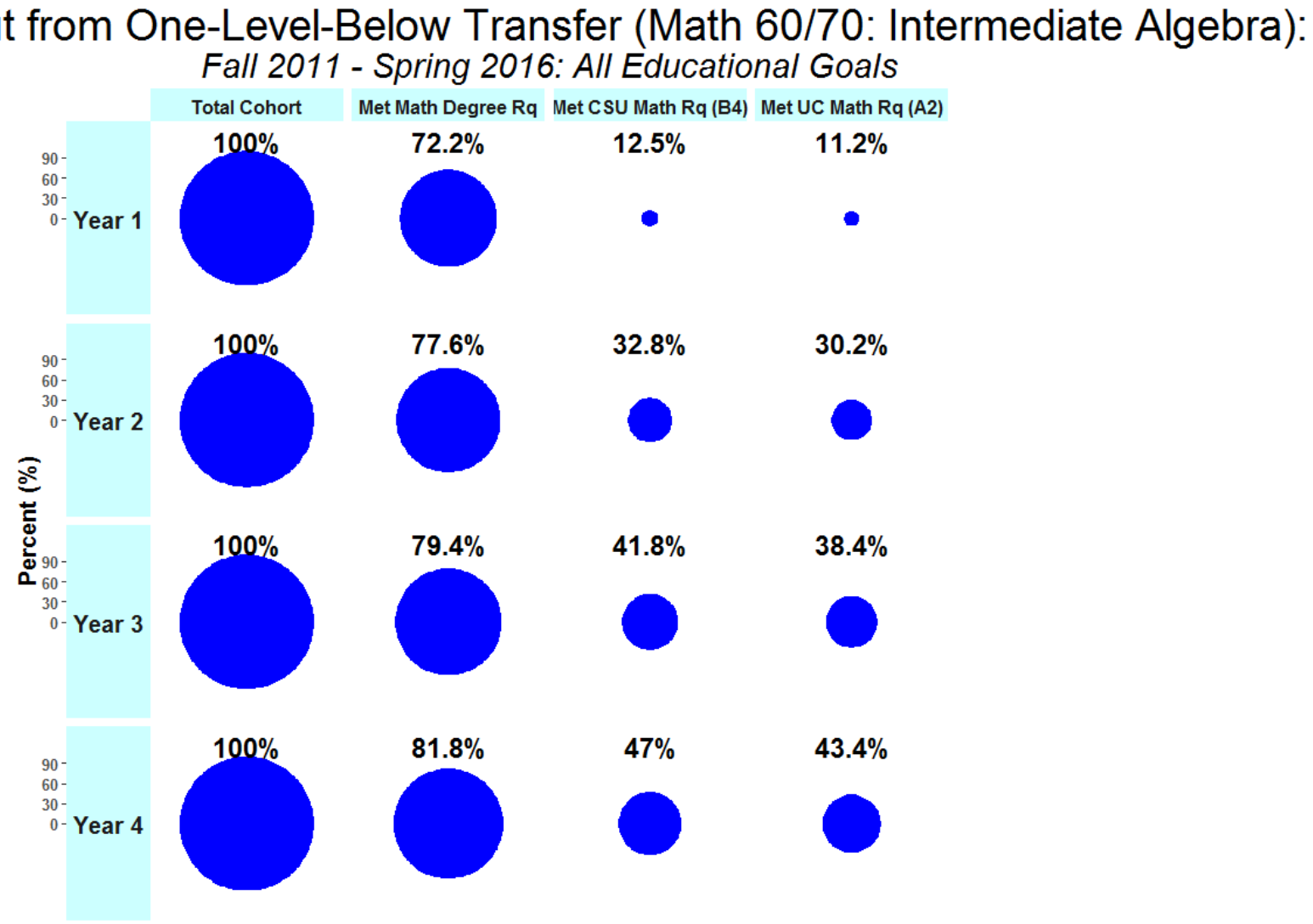
Graphic: Four-Year Throughput from Three-Levels Below Transfer Entry



Graphic: Four-Year Throughput from Two-Levels Below Transfer Entry

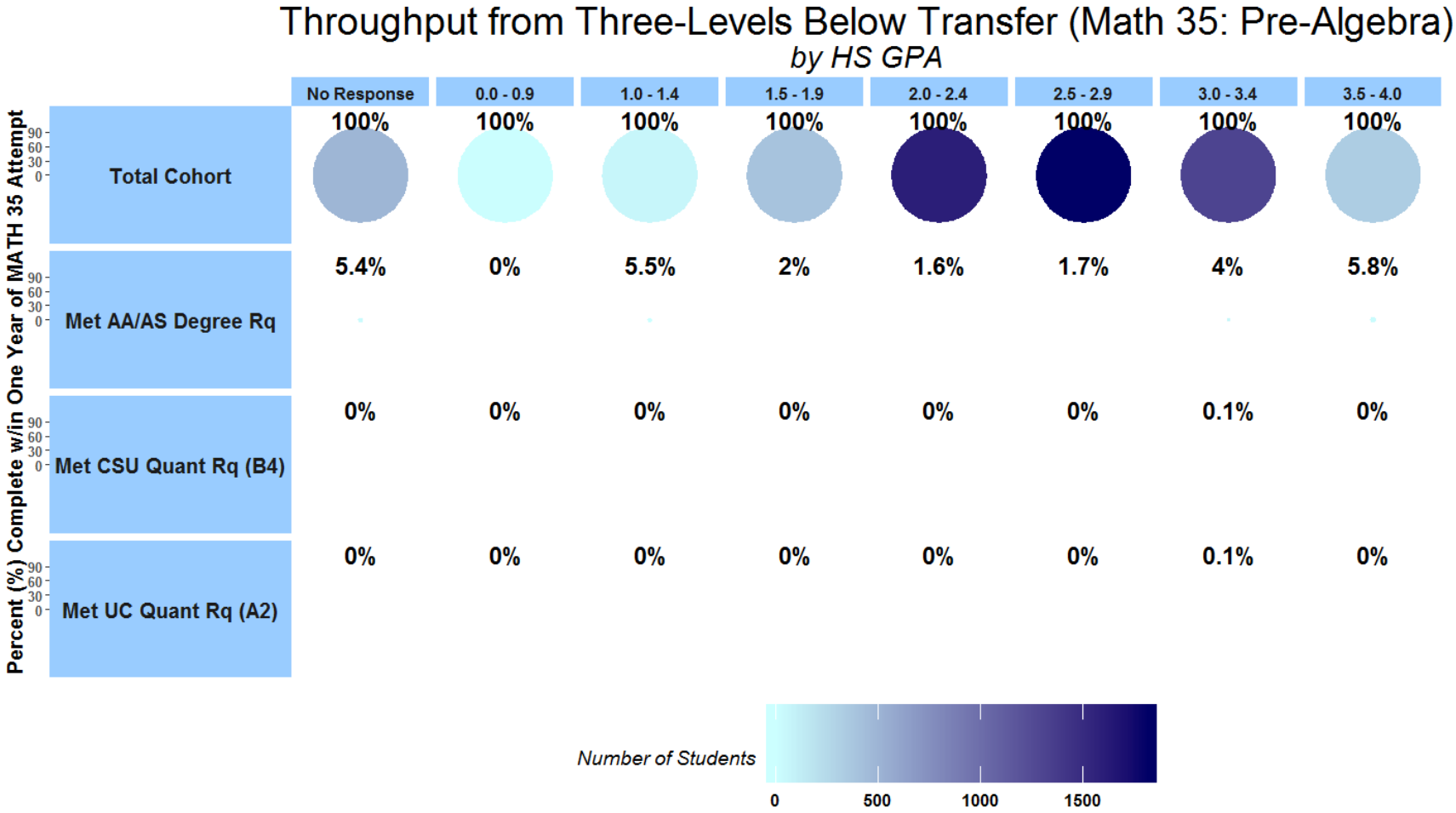


Graphic: Four-Year Throughput from One-Level Below Transfer Entry

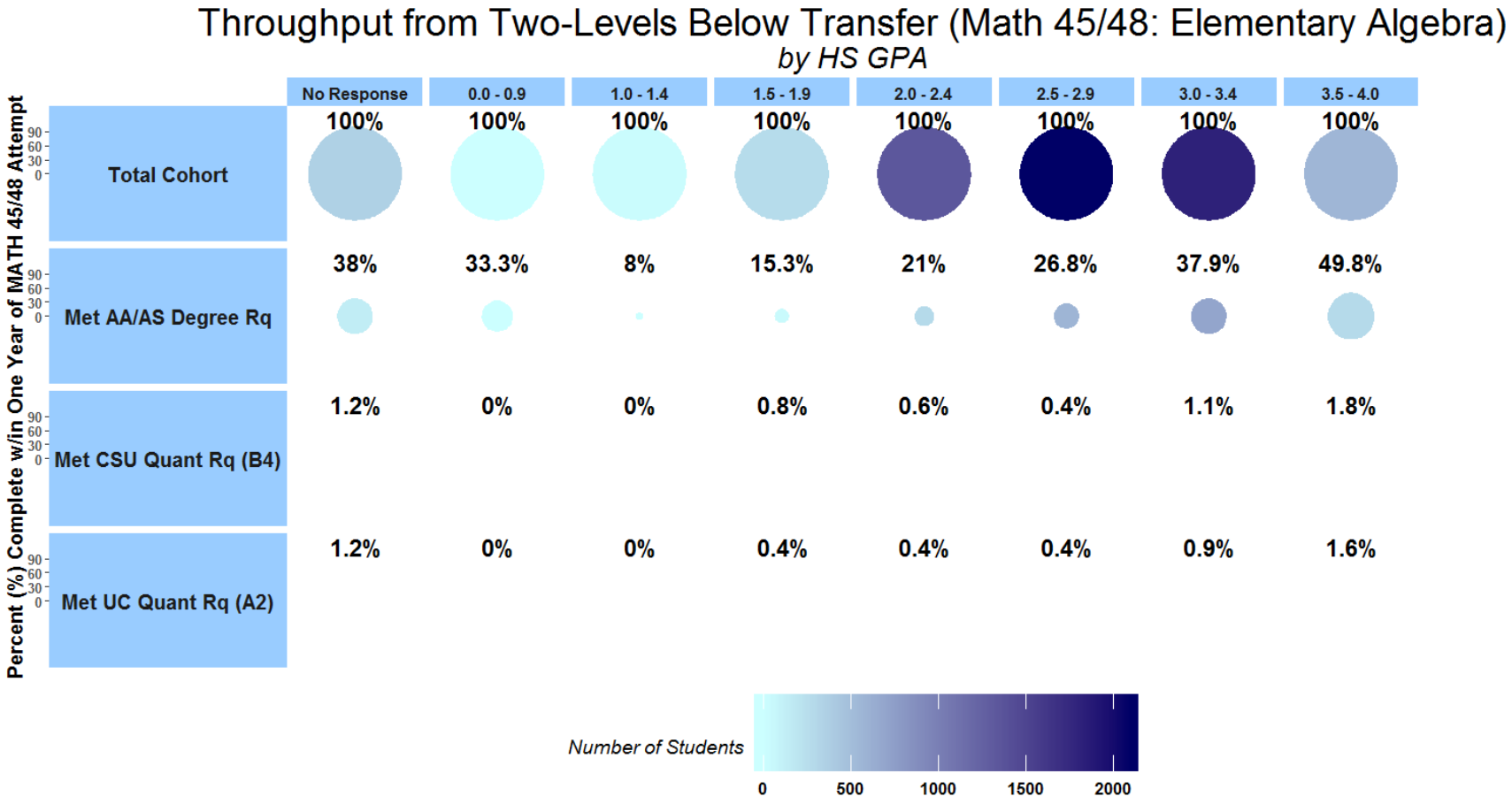


Graphics: Throughput by High School GPA

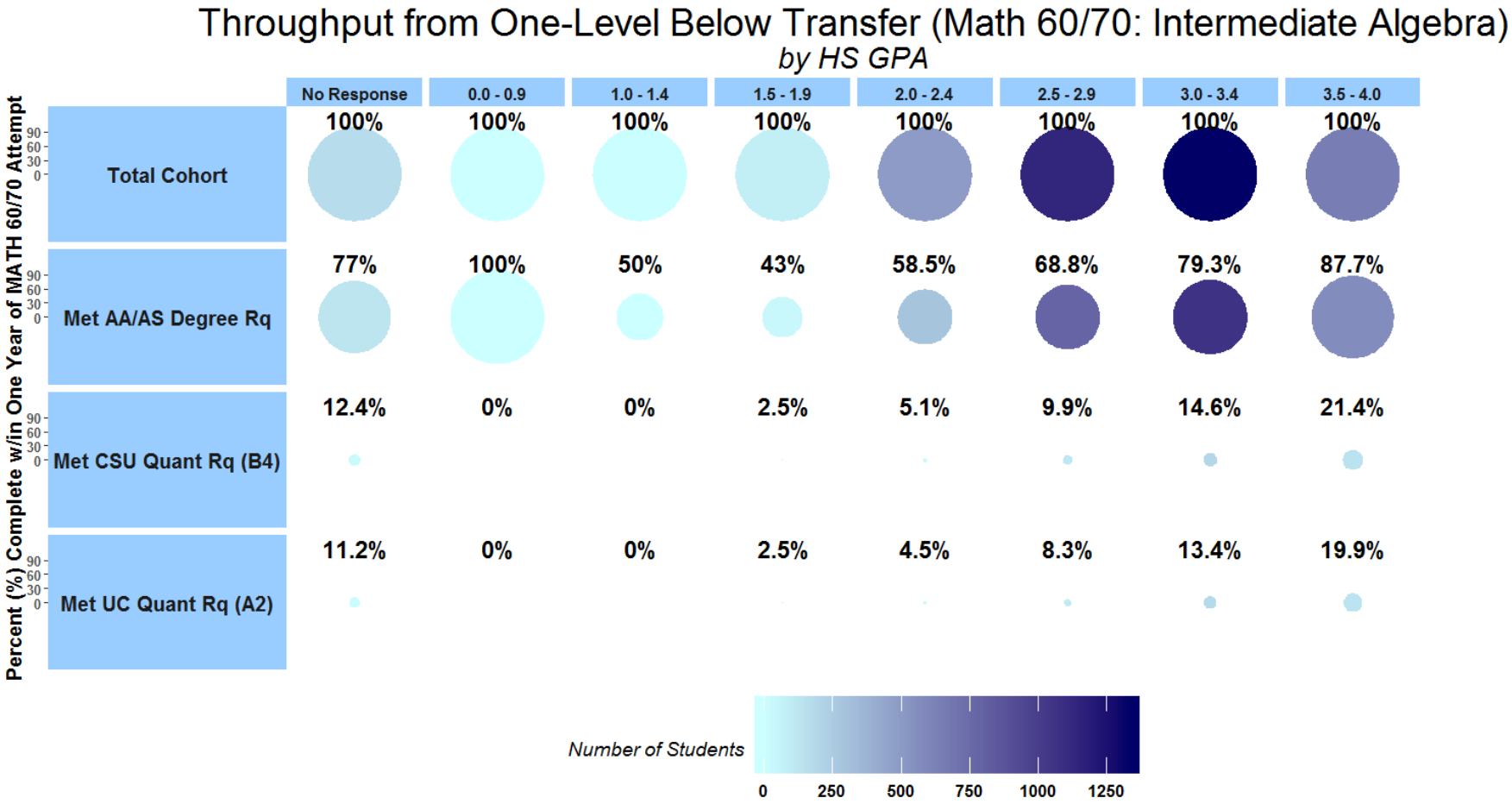
Graphic: Throughput from Three-Levels-Below Transfer by High School GPA



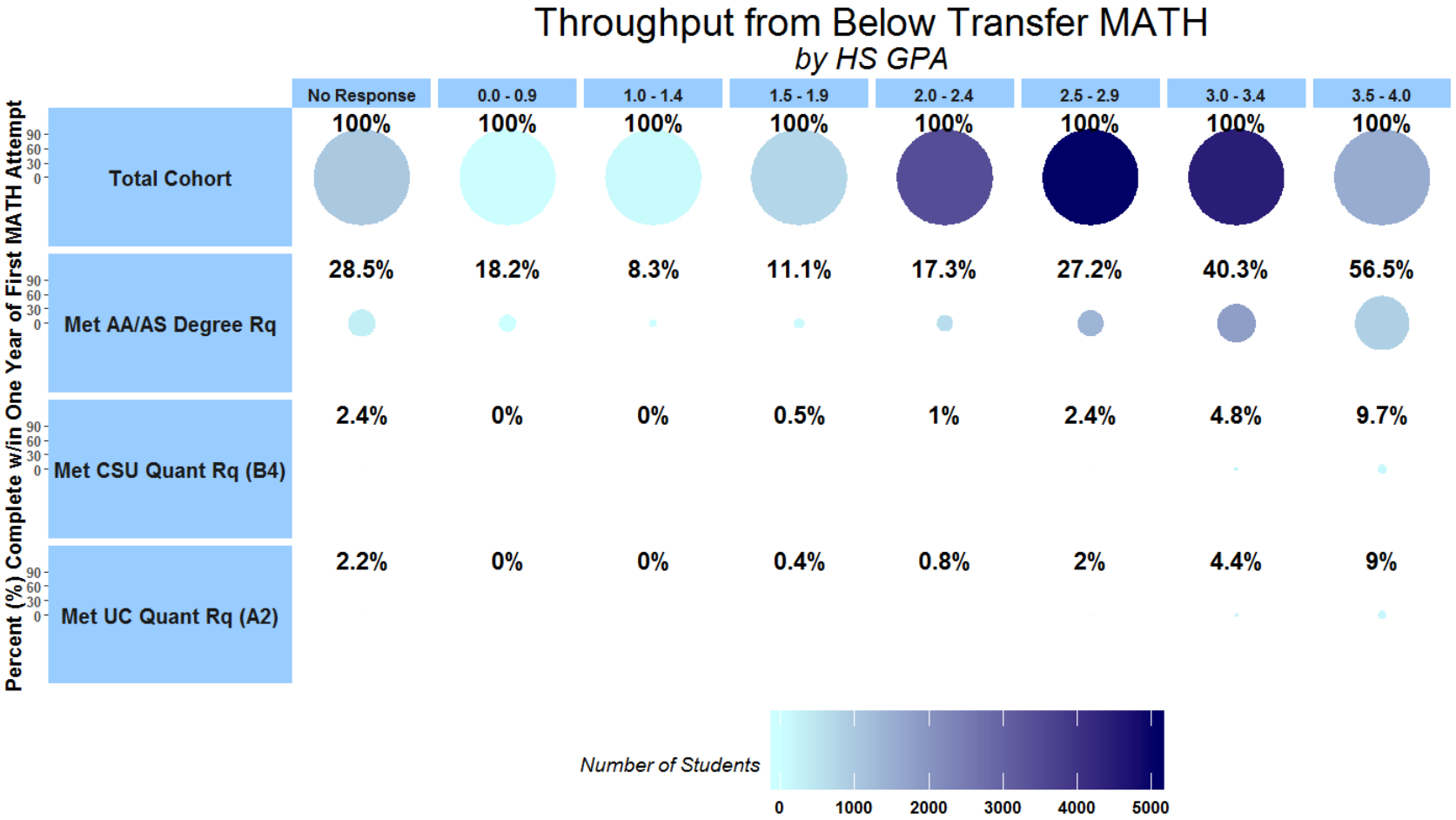
Graphic: Throughput from Two-Levels-Below Transfer by High School GPA



Graphic: Throughput from One-Level-Below Transfer by High School GPA



Graphic: Throughput from Any Below Transfer by High School GPA



Graphic: Throughput from Transfer Level by High School GPA