



2017-18 Secondary Math Placement: *Disproportionate Impact Analysis*

Introduction

In order to ensure equity in mathematics placement in compliance with the *California Mathematics Placement Act (2015)*¹ this analysis examines whether implementation of the assessment tool or policy will have a disproportionate impact (sometimes also called disparate impact) on any particular student groups described in terms of gender, race/ethnicity, English language fluency, and socio-economic status.

For reference, the most recent math sequence is re-printed in the appendix.

Pasadena Unified administers math placement assessments at two time-points. The first occurs in grade 5 as students exit Math 8 and is used to identify students for an accelerated math course sequence beginning grade 6. The second placement assessment occurs in grade 8 and identifies students for Honors course section placement. The central District office makes recommendations for placement based on math assessment test results in conjunction with the students' course history, and state summative assessment performance, and ultimately school sites make the final placement of students into courses. Therefore, for this analysis, only eligible student placements, those where the student enrolled in a PUSD math course in the subsequent year (by October 2018), are considered.

Disproportionate impact occurs if the placement rate in the upper level courses in a course sequence for a minority group is less than 4/5ths or 80% of the placement rate for the majority group with the highest placement rate.

Grade 5

Table 1 below summarizes the number of 5th grade students who were assessed at each school site in the spring of the 2017-18 school year and the number who ultimately enrolled in a math course in the fall of the following school year. It is possibly noteworthy, and an area for future improvement, that assessment was not uniform at all school sites; for instance, students at Norma Coombs and Roosevelt Elementary Schools did not participate.

¹ California Education Code; EDC § 51224.7



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Table 1. Count and % of grade 5 students assessed who subsequently enrolled in a math course within PUSD, disaggregated by school site.

School Name	Total Grade 5 Assessed	Total Eligible Count
Altadena Elementary	46	42
Cleveland Elementary	30	24
Don Benito Fundamental	92	69
Field Elementary	61	56
Franklin Elementary	0	0
Hamilton Elementary	82	64
Jackson Elementary	62	55
Jefferson Elementary	52	45
Longfellow Elementary	88	79
Madison Elementary School	67	62
McKinley Elementary School	113	100
Norma Coombs Elementary School	0	0
Roosevelt Elementary School	2	1
San Rafael Elementary School	63	49
Sierra Madre Elementary School	105	98
Washington Accelerated School	65	58
Webster Elementary School	67	61
Willard Elementary School	92	80
Districtwide Total	1087	943

Table 2 below summarizes the degree to which District course recommendations were followed in the ultimate course placement. Shaded cells reflect those where the recommendation was followed. For instance, of the 943 students assessed who ultimately enrolled, 62 (6.6%) were recommended by central office for the accelerated Math Academy course sequence. Of those 62 students who were recommended for acceleration 36 (58%) enrolled in the Math Academy’s first course; an accelerated, combined Math I/II course.



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In summary, 76.5% (721) of the course recommendations were followed. In 20% (190) cases, the student was enrolled in a higher level course than recommended and in 3.4% (32) cases, in a lower level course than recommended. About 6 in 10 students identified for participation in Math Academy did so.

Table 2. Counts of eligible students disaggregated by District office course recommendation and actual fall 2018 course placement.

District Recommendation	Fall 2018 Course Placement			Total Eligible
	Math 6/Math 6 SPED	Math 6 Honors/ Math 7 Honors	Math I/II Accelerated (Math Academy)	
Math 6	612	187		799
Math 6H	6	73	3	82
Math Academy 6 (Integrated Accelerated Math I/II)		26	36	62
Total	618	286	39	943

Disproportionate Impact (Grade 6)

In assessing the disproportionate impact for gender, the minority or impacted group used was females. Based on the sample of students who took the grade 5 math assessment, female students were placed into the Math Academy sequence (i.e. Accelerated Math I/II course) at a disproportionately lower rate (1.7%) compared to the majority male reference group (6.6%).

Table 3 presents the data for assessing disproportionate impact for ethnicity/gender and the majority reference group used was white students. For simplicity, the largest four ethnic groups are included. Sample sizes for other groups were not large enough for stable estimates. In the future, as more years of assessment data are available, this can potentially be remedied by examining data for multiple years at a time.

Table 3. Disproportionate Impact by Gender.

Gender	Math 6	Upper Level Courses		Total Eligible	
		Math 6 Honors	Math I/II Accelerated (Math Academy)		
Female	64.7%	33.6%	1.7%	100%	476
Male	66.4%	27.0%	6.6%	100%	467
80% of placement rate for males		21.6%	5.3%		



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There is evidence of disproportionate impact for Black and Hispanic students who were placed into the higher level math courses, both Math 6 Honors and Accelerated Math I/II (Math Academy), at less than 80% of the rate at which the White reference group students were. Roughly 2 in 10 Black and Hispanic students who were assessed were placed into Math 6 Honors, compared to 4 in 10 White students. Nearly 10% of White students were placed into the highest course, Accelerated Math I/II, compared to 0% of Black students and only 2% of Hispanic students.

Table 4. Disproportionate Impact by Ethnicity/Race.

Ethnicity/Race	Math 6	Upper Level Courses		Total Eligible	
		Math 6 Honors	Math I/II Accelerated (Math Academy)		
Asian	20.9%	58.1%	20.9%	100%	43
Black/African-American	78.0%	22.0%	0%	100%	91
Hispanic	73.9%	24.2%	1.9%	100%	571
White	48.2%	42.3%	9.5%	100%	189
80% of placement rate for white students		33.8%	7.6%		

Table 5 presents the data for assessing disproportionate impact for language fluency and the majority group used was English only. English only students are typically monolingual English speakers who did not need to be assessed for English language fluency upon enrollment in a US school. All other groups include students who speak another language and were assessed for English fluency. IFEP (Initially Fluent English Proficient) are students who upon initial assessment were determined to be English fluent. Non-fluent students, English Learners, are then assessed annually and reclassified or redesignated as RFEP (reclassified Fluent English Proficient) upon demonstrating English fluency.

Table 5. Disproportionate Impact by English fluency.

English Fluency	Math 6	Upper Level Courses		Total Eligible	
		Math 6 Honors	Math I/II Accelerated (Math Academy)		
English Learner	99.1%	0.9%	0.0%	100%	110
English only	60.8%	34.4%	4.7%	100%	549
IFEP	42.1%	45.6%	12.3%	100%	57
RFEP	66.5%	30.8%	2.6%	100%	227
80% of placement rate for English Only		27.5%	3.8%		



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English Learners were placed into Math 6 Honors at a disproportionately lower rate (1%) than English only students (34%). Both English learners as well as students Reclassified Fluent English Proficient (RFEP) were placed into the highest level course, Accelerated Math I/II, at disproportionately lower rates (0% and 3%, respectively) compared to English only students (5%).

In table 6 the data show the disproportionate impact for socio-economic status with the majority group being students from non-disadvantaged families. While about half of non-disadvantaged students were enrolled into Math 6 Honors, only 21%, less than 80% of the majority group rate of 38%, were enrolled in the same course. In the highest course, Accelerated Math I/II, nearly 2% of disadvantaged students were enrolled compared to 9% in the non-disadvantaged group.

Table 6. Disproportionate Impact by socio-economic status.

Socio-economic Status	Math 6	Upper Level Courses		Total Eligible	
		Math 6H	Math I/II Accelerated (Math Academy)		
Non-disadvantaged	43.2%	47.9%	8.9%	100%	336
Socio-economically disadvantaged	77.9%	20.6%	1.5%	100%	607
80% of placement rate for non-disadvantaged		38.3%	7.1%		



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Grade 8

In the spring semester of grade 8, students take one of two math assessments depending on their enrolled course. Students enrolled in Math 8, take the appropriate test for that math level and are recommended for Math 1 or Math 1 Honors depending on their performance on the assessment and course history. Meanwhile students who in grade 6 were placed into the honors track (Math 6 Honors) would have completed Math 7 Honors in grade 7, and be enrolled in Math 1 Honors, the next course in the “honors sequence”, in grade 8. Accordingly, these students take a different assessment test appropriate for placing students who are exiting Math I.

As summarized in Table 7, in 2017-18, 801 students took the “HSA” test, meant for students exiting Math 8 and 687 (85.8%) of them were enrolled in a math course at PUSD in the fall semester of 2018-19 making them eligible for inclusion in this analysis. Similarly, 233 students took the “ISP” test meant for students exiting Math I and 188 (81%) of them ultimately enrolled the following year and were included in this analysis.

Table 7. Count and % of students assessed who subsequently enrolled in a math course within PUSD, disaggregated by test and school site.

School Name (grade 8)	HSA40D16 (Math 8 Exit)		ISP40D16 (Math I Exit)	
	Assessed #	Eligible #	Assessed #	Eligible #
Blair High School	102	89	28	25
Eliot Middle School	83	72		
Marshall Fundamental	144	132	112	105
McKinley	104	83		
Sierra Madre Middle School	73	42	58	29
Washington STEAM Magnet Academy	161	149		
Wilson Middle School	134	120	35	29
Districtwide Total	801	687	233	188

Final course enrollments are made by the school sites and so Fall 2018 course enrollments are used for the disproportionate analysis, however Table 8, on the next page, summarizes the district central office recommendations by the final enrolled course. For example, in the regular track 86.6% of the 568 students recommended for enrollment in Math 1 were enrolled in Math 1 (or Math 1 SDAIE, a section for ELs), while about 13% were enrolled in a higher level course.



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Across both honors and non-honors tracks, in 681 cases (78%) students were enrolled in the recommended course. In 142 cases (16%) students were enrolled in a higher level course and 52 students (6%) were enrolled in a lower level course than recommended.

Table 8. Counts of eligible students disaggregated by District office course recommendation and actual fall 2018 course placement.

District Recommendation	Fall 2018 Course Placement						Total	Eligible #
	Math 8	Math I/SDAIE	Math I Honors	Math II	Math II Honors	Math III/ Math III Honors		
Regular Track								
Math 1	0.4%	86.6%	12.5%	0.2%	0.2%	0.2%	100%	568
Math 1 Honors	0.0%	31.9%	62.2%	5.0%	0.8%	0.0%	100%	119
Regular Track Total	0.3%	77.1%	21.1%	1.0%	0.3%	0.1%	100%	687
Honors Track								
Math 2	0.0%	3.6%	3.6%	49.6%	43.2%	0.0%	100%	139
Math 2 Honors	0.0%	0.0%	2.0%	2.0%	93.9%	2.0%	100%	49
Honors Track Total	0.0%	2.7%	3.2%	37.2%	56.4%	0.5%	100%	188
Grade 8 Total	0.2%	61.1%	17.3%	8.8%	12.3%	0.2%	100%	875

Disproportionate Impact (Grade 6)

The impact for each track, honors and regular, are considered separately. Tables 9 and 10 summarize the data for impact for gender and uses male students as the majority reference group. In the regular and honors tracks there is not evidence of disproportionate impact by gender in placement into the higher course. While in the honor track (see table 10) female students were enrolled at a lower rate (55%) than male students (58%), it was not at a rate 80% or lower than that of the male reference group.

Table 9. Disproportionate Impact by gender, regular track.

Gender	Math I	Upper Level Course	Total Eligible	
		Math I Honors or higher		
Female	73.2%	26.8%	100%	328
Male	81.3%	18.7%	100%	359
80% of placement rate for males		15.0%		



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Table 10. Disproportionate Impact by Gender, honors track.

Gender	Math I/ Math I Honors	Math II	Upper Level Course	Total Eligible	
			Math II Honors or higher		
Female	8.8%	36.3%	54.9%	100%	91
Male	3.1%	38.1%	57.7%	100%	97
80% of placement rate for males			46.2%		

Tables 11 and 12 contain the data for comparing impact of placement for ethnicity/race in the regular and honors tracks, respectively.

In the regular track, Asian (39%), Black (14%), and Hispanic (18%) students were placed in the higher level course at a disproportionately lower rate than the white student reference group (53%).

Table 11. Disproportionate Impact by ethnicity/race, regular track.

Ethnicity/Race	Math I	Upper Level Courses	Total Eligible	
		Math I Honors or higher		
Asian	61.1%	38.9%	100%	18
Black/African-American	86.2%	13.8%	100%	87
Hispanic	82.0%	18.0%	100%	483
White	47.2%	52.8%	100%	72
80% of placement rate for white students		42.2%		

In the honors track (see table 12), Black (33%) and Hispanic (41%) of students were placed into the higher level course which was lower than the white reference group (75%) and the rate required to demonstrate disproportionate impact (60.3%).



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Table 12. Disproportionate Impact by ethnicity/race, honors track.

Ethnicity/Race	Math I/ Math I Honors	Math II	Upper Level Courses	Total Eligible	
			Math II Honors or higher		
Asian	0%	12.5%	87.5%	100%	16
Black/African-American	8.3%	58.3%	33.3%	100%	12
Hispanic	6.0%	53.6%	40.5%	100%	84
White	6.2%	18.5%	75.4%	100%	65
80% of placement rate for white students			60.3%		

Tables 13 and 14 summarize course enrollment data for disproportionate analysis for English fluency in the regular and honors tracks, respectively.

In the regular track (see table 13), there is evidence of disproportionate impact for English learners and students who had been reclassified as English proficient (RFEP). No English learners and only 17% of RFEP students were placed into the higher level course compared to 31% of the English only reference group.

Table 13. Disproportionate Impact by English fluency, regular track.

English Fluency	Math I	Upper Level Courses	Total Eligible	
		Math I Honors or higher		
English Learner	100%	0%	100%	61
English Only	68.6%	31.4%	100%	287
IFEP	68.0%	32.0%	100%	50
RFEP	83.0%	17.0%	100%	289
80% of placement rate for English Only		25.1%		

No English learners were included in the honors track (i.e. took the placement test for Math I exiting students) and there's no evidence of disproportionate impact for English fluency among the remaining groups who were included. While the IFEP and RFEP student groups enrolled in the higher level course at 58% and 57% rates respectively which was lower than the English only reference group (66%), this was not sufficiently lower than the rate required to demonstrate disproportionate impact (53%).



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Table 14. Disproportionate Impact by English fluency, honors track.

English Fluency	Math I/ Math I Honors	Math II	Upper Level Courses	Total Eligible	
			Math II Honors or higher		
English Learner	n/a	n/a	n/a	n/a	0
English Only	5.3%	28.3%	66.4%	100%	104
IFEP	7.1%	41.7%	58.3%	100%	12
RFEP	6.6%	37.3%	57.1%	100%	61
80% of placement rate for English Only			53.1%		

Tables 15 and 16 summarize data to examine disproportionate impact for socio-economic status. In the regular track (see table 15) socio-economically disadvantaged students were enrolled in the higher level course at a disproportionately lower rate (17%) than non-disadvantaged students (38%).

Table 15. Disproportionate Impact by socio-economic status, regular track.

Socio-economic Status	Math I	Upper Level Courses	Total Eligible	
		Math I Honors or higher		
Non-disadvantaged	61.6%	38.4%	100%	138
Socio-economically disadvantaged	82.6%	17.4%	100%	522
80% of placement rate for non-disadvantaged		30.7%		

Likewise, in the honors track (table 16) socio-economically disadvantaged students were enrolled in the higher level course at a rate of 37% which is sufficiently lower than the rate at which non-disadvantaged students enrolled in the higher level course (75%).



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Table 16. Disproportionate Impact by socio-economic status, honors track.

Socio-economic Status	Math I/ Math I Honors	Math II	Upper Level Courses	Total Eligible	
			Math II Honors or higher		
Non-disadvantaged	6.3%	18.9%	74.7%	100%	95
Socio-economically disadvantaged	4.9%	58.5%	36.6%	100%	82
80% of placement rate for non-disadvantaged			59.8%		

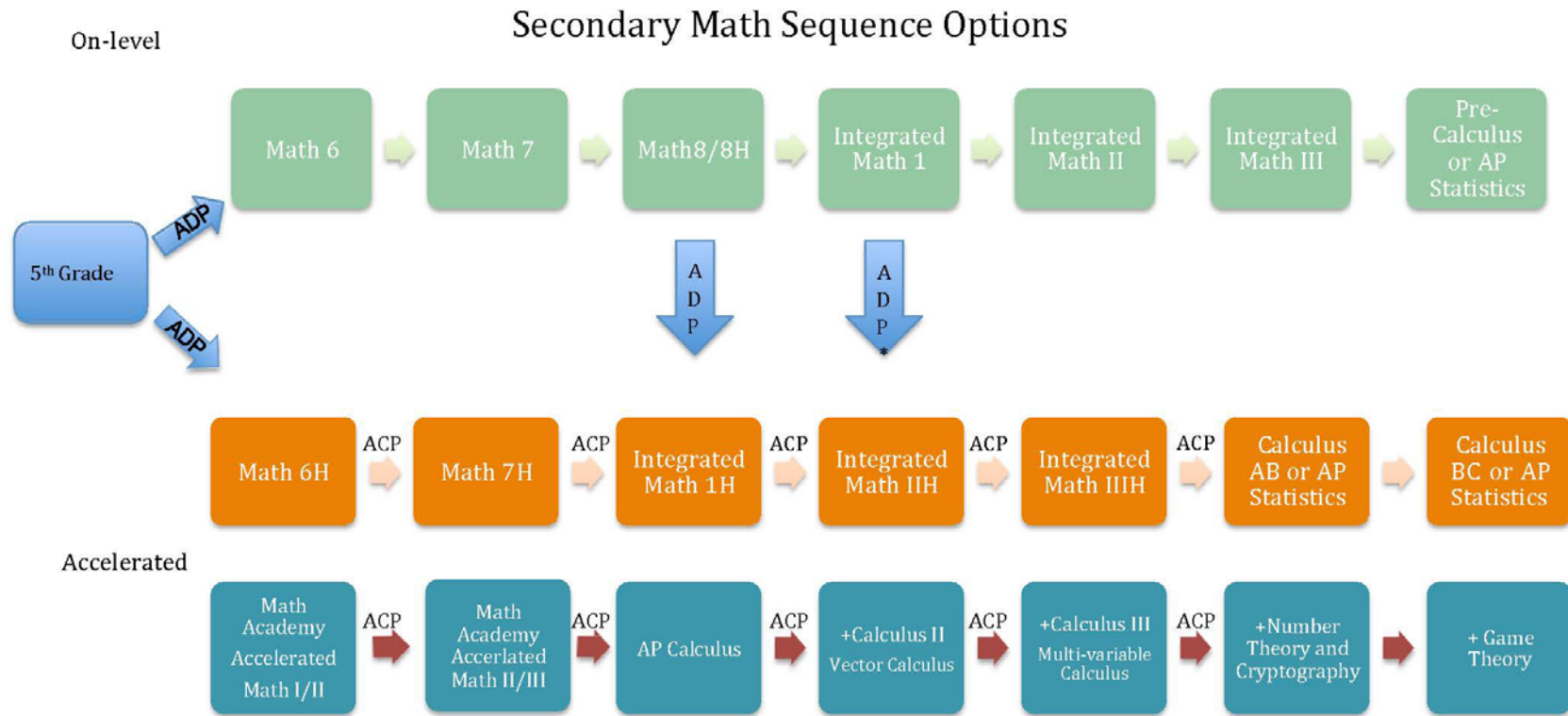
The Academics leadership recognize these disparities in student placement into higher level coursework require direct action to mitigate barriers and engage students and families in earlier systems of support. In particular, with the Math Academy, a specific goal has been included in the current Action Plan with regard to course access and participation:

“Intentionally address the issue of equity in student demographics in the PUSD Math Academy with refinement of administrative structures, processes and supports.”

The action items aligned to this goal that have been identified and are in progress for the current school year include the following. These actions will be refined or expanded based on impact.

- Expanded parent communication at individual school sites, with specific personnel engaging families, such as the community liaison, school principal, and teachers
- Provide targeted Prep Program for 5th graders at the following elementary schools: Jackson, Madison, and Washington STEM
- Provide after-school tutoring for current Math Academy 6th-9th graders on-site once a week at the following middle schools: McKinley, Sierra Madre, Washington STEAM
- Collaborate with Enrollment Office on communication and timelines to ensure access to entry assessment and registration opportunities
- Collaborate with 3rd - 5th grade teachers in specific elementary schools for vertical calibration around math instruction

APPENDIX: Secondary Math Course Sequence



Acceleration Determination Point (ADP)

- At these points in the sequence students are given a grade level assessment to determine if recommendation into an accelerated course would better meet their needs *(Parents and students should review the content of each course before making a decision to accelerate)*
- (* The acceleration from Integrated Math I to Integrated Math III requires that students complete and pass extra units with a grade of B or better that may have to be done independently

Acceleration Check Point (ACP)

- At these points in the sequence students are given a grade level assessment to check that they are still academically ready to move on to the next accelerated class. These check points are in place to help ensure that students are properly placed and are still able and willing to handle the rigor of the accelerated sequence. Students having difficulty meeting the demands of the accelerated sequence may be recommended to “slow down” and enroll in the next class in the on-level sequence.

Acceleration determination and check points are conducted with multiple measures, such as grade level assessments, State test scores, grades and/or teacher recommendation.

+ Proposed Math Academy courses