



Applied PPG-1 Method to Further Examine Disproportionate Impact



PPG-1 Applied: Secondary Disaggregation by Gender and Intersectional Disproportionate Impact for Student Equity and Achievement Data

One of the requirements of AB504 and the associated requirements in California Code of Regulations, Title 5 described in *2022 UPDATE : Percentage Point Gap Minus One Method*, is that colleges examine their outcomes for disproportionate impact amongst different subgroups of specified student characteristics (such as race/ethnicity, gender, disability status, veteran status, socio-economic status, sexual orientation, homelessness, foster youth status, and first generation in a post-secondary education) *and* to explore for potential disproportional impact that occurs for students at the intersection of each of those subgroups and gender. In this note and in the Student Equity and Achievement data, these two types of disproportionate impact are identified as 1) primary subgroup disproportionate impact (e.g., when the persistence rate of Hispanic students is lower than for all other students) and 2) intersectional disproportionate impact (e.g., when the persistence rate of female Hispanic students is lower than for male Hispanic students).

As described in the updated methodological paper referenced earlier, the PPG-1 method helps guide colleges' attention to observed adverse disproportionate impact for specific groups of students. When applying the PPG-1 methodology to analyze disproportionate impact for different subgroups of the primary student characteristics listed above, the performance rates of each subgroup within a characteristic (i.e., a primary subgroup) is compared to the performance rate of all other students *excluding students in that subgroup*. The difference is examined, along with the margin of error, to determine if a disproportionate impact is observed.

The PPG-1 method can also be used to determine whether disproportionate impact is observed for other student characteristics within a primary student characteristic, or intersectional disproportionate impact. In the Student Equity and Achievement Program data, each of the primary student characteristics (e.g., race/ethnicity) are further disaggregated by gender and a second PPG-1 value is calculated for gender (referred to as **Secondary Gender Subgroups**) within each specific subgroup of the primary characteristic. This additional level of analysis allows us to examine whether students of different genders within a subgroup of the primary characteristic differ in their outcomes, indicating intersectional disproportionate impact. In the application of PPG-1 for the



purposes of exploring for intersectional disparate impact, the **scope of reference group** is slightly different depending on whether disproportionate impact is observed for the primary disaggregated subgroup. As a result, intersectional disparate impact is examined under two circumstances: 1) when primary disproportionate impact is observed, to determine whether the disproportionate impact observed is different for students of different genders and 2) when primary disproportionate impact is not observed to determine whether the intersection of the primary characteristic and gender leads to unique intersectional disproportionate impact.

Table 1 provides an example to explain the differences. Here the primary disaggregated subgroup is Hispanic students, and the secondary disaggregated subgroup is Female Hispanic students.

Notes on Equity Gap Number Calculation

As described in *2022 UPDATE : Percentage Point Gap Minus One Method*, the PPG-1 method allows for the estimation of the number of additional students achieving the outcome needed to close the equity gap, or what might be referred to as the full equity number. Calculation of the full equity number is slightly different depending on whether or not disproportionate impact (DI) is observed for the primary disaggregated subgroup.

When DI is not observed in the primary group (e.g., Hispanic students), the full equity number is calculated to close the equity gap observed for an intersection of the two identities (e.g., Female Hispanic students) by comparing to all other students (e.g., All Students Who Are Not Female Hispanic Students).

However, when DI is observed in the primary group, if full equity was calculated to close the gap by comparing to the reference group (e.g., in this example, All Hispanic Students who are not Female), then the calculation would only bring the subgroup outcomes up to the primary disaggregation subgroup, which is flagged as experiencing DI, and would not close both levels of DI. Therefore, the full equity number is calculated as the number of additional members of the subgroup (e.g., Female Hispanic students who need to attain the metric outcome for their success rate to equal the success rate of all students not in the primary group (e.g., All Non-Hispanic Students)).



Table 1. Comparing Primary Disaggregated Group and Secondary Disaggregated Gender Subgroup

	Primary Disaggregated Subgroup	Secondary Disaggregated Gender Subgroup																																																																												
		When DI is Observed in the Primary Subgroup	When DI is NOT Observed in the Primary Subgroup																																																																											
Target subgroup	All Hispanic Students	All Female Hispanic Students ¹																																																																												
Reference Group	All Non-Hispanic Students	All Hispanic Students who are not Female (i.e., all Male, Non-Binary, and Gender Non-Respondent Hispanic students)	All Other Students Who are Not Female Hispanic Students (i.e., all Female Non-Hispanic, Non-Female Hispanic, and Non-Female Non-Hispanic students)																																																																											
Illustration (Green*= Target, Red♦ = Reference) ²	<table><tr><td></td><td>A</td><td>B</td><td>H</td><td>W</td></tr><tr><td>B</td><td>1♦</td><td>1♦</td><td>2*</td><td>2♦</td></tr><tr><td>F</td><td>157♦</td><td>83♦</td><td>911*</td><td>1048♦</td></tr><tr><td>M</td><td>107♦</td><td>60♦</td><td>524*</td><td>754♦</td></tr><tr><td>X</td><td>5♦</td><td>2♦</td><td>13*</td><td>23♦</td></tr></table>		A	B	H	W	B	1♦	1♦	2*	2♦	F	157♦	83♦	911*	1048♦	M	107♦	60♦	524*	754♦	X	5♦	2♦	13*	23♦	<table><tr><td></td><td>A</td><td>B</td><td>H</td><td>W</td></tr><tr><td>B</td><td>1</td><td>1</td><td>2♦</td><td>2</td></tr><tr><td>F</td><td>157</td><td>83</td><td>911*</td><td>1048</td></tr><tr><td>M</td><td>107</td><td>60</td><td>524♦</td><td>754</td></tr><tr><td>X</td><td>5</td><td>2</td><td>13♦</td><td>23</td></tr></table>		A	B	H	W	B	1	1	2♦	2	F	157	83	911*	1048	M	107	60	524♦	754	X	5	2	13♦	23	<table><tr><td></td><td>A</td><td>B</td><td>H</td><td>W</td></tr><tr><td>B</td><td>1♦</td><td>1♦</td><td>2♦</td><td>2♦</td></tr><tr><td>F</td><td>157♦</td><td>83♦</td><td>911*</td><td>1048♦</td></tr><tr><td>M</td><td>107♦</td><td>60♦</td><td>524♦</td><td>754♦</td></tr><tr><td>X</td><td>5♦</td><td>2♦</td><td>13♦</td><td>23♦</td></tr></table>		A	B	H	W	B	1♦	1♦	2♦	2♦	F	157♦	83♦	911*	1048♦	M	107♦	60♦	524♦	754♦	X	5♦	2♦	13♦	23♦
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PPG-1	(outcome rate of Hispanic Students) – (outcome rate of Non-Hispanic Students)	(outcome rate of Female Hispanic Students) – (outcome rate of Non-Female Hispanic Students)	(outcome rate of Female Hispanic Students) – (outcome rate of Students who are not Female Hispanic)																																																																											

¹ Identical calculations would be conducted for all male Hispanic students.

² This is an example illustration simplified due to space limitation. The rows are genders, and columns are races. Column: A= Asian, B= Black, H= Hispanic, W= White. Row: B= Non-Binary, F= Female, M= Male, X= Unknown.



	Primary Disaggregated Subgroup	Secondary Disaggregated Gender Subgroup	
		When DI is Observed in the Primary Subgroup	When DI is NOT Observed in the Primary Subgroup
Margin of Error (E) parameters	n = size of Hispanic Students \hat{p} = outcome rate of Hispanic Students	n = size of Female Hispanic Students \hat{p} = outcome rate of Female Hispanic Students	n = size of Female Hispanic Students \hat{p} = outcome rate of Female Hispanic Students
Full equity #	Number of additional Hispanic Students who need to attain the metric outcome for their success rate to equal the success rate of All Non-Hispanic Students	Number of additional Female Hispanic Students who need to attain the metric outcome for their success rate to equal the success rate of All Non-Hispanic Students	Number of additional Female Hispanic Students who need to attain the metric outcome for their success rate to equal the success rate of All Students Who Are Not Female Hispanic