Understanding Equity Gap Charts and Disproportionate Impact on the Community College Pipeline for Access, Completion, Transfer and Earnings November 2022

# Contents

Overview of Equity Gap Charts in Community College Pipeline
Background Information on Display of Equity Gaps on Community College Pipeline
Methodologies to Calculate Disproportionate Impact
Chancellor's Office PPG-1 2022 Methodology and other DI Reports and Tools4
Method 1) 80% Rule
Method 2) Proportionality Index5
Method 3) Percentage Point Gap (PPG)5
Method 4) Percentage Point Gap (PPG) - 16
Examples of Equity Gap Charts in Community College Pipeline7
Example 1a) Equity Gaps in Access: Student Summary View for Race/Ethnicity
Example 1b) Equity Gaps in Access: Student Detailed Data View for Race/Ethnicity
Example 2a) Equity Gaps in Completion and Transfer: Success Summary View for Gender9
Example 2b) Equity Gaps for Completion and Transfer: Success Detailed Data View for Gender 10
Example 3a) Equity Gaps in Median Annual Earnings: Earnings Summary View for Age Groups12

# Overview of Equity Gap Charts in Community College Pipeline

As part of the 2020-21 build of the Community College Pipeline, Equity Gap charts have been added back to the Summary and Detailed Views for access, completion, and transfer to a four-year institution. These charts and tables display calculated disproportionate impact (DI) for age groups, gender, and race/ethnicity of students. As part of the 2021-22 build of the dashboard, disproportionate impact calculations have also been added for students considered economically disadvantaged using the Perkins definition for the same metrics.

"Disproportionate impact" is a condition where access to key resources and supports or academic success may be hampered by inequitable practices, policies, and approaches to student support or instructional practices affecting a specific group of students. Disproportionate impact occurs when an outcome for a subgroup of students within a larger category (gender, ethnicity, etc.) has significant differences in outcomes compared to another subgroup of students, e.g., the highest performing subgroup or all other students in the category. These equity gaps are disparities in educational outcomes and student success across disaggregations and intersectionalities (e.g., male Hispanic, first generation African American or Black) and often signal that current practices and procedures are not effectively supporting all students.

There are several methods to determine whether there is disproportionate impact for a student population with the possibility of conflicting results. One methodology may show significant DI while another may not for the same subgroup of students. One important consideration is whether the equity gap has been persistent over time for a subgroup of students no matter what methodology is used.

The Proportionality Index (PI) is the methodology used to calculate disproportionate impact or DI for the Community College Pipeline. The proportionality index helps answer the question, "If a subgroup of students represents 40% of the student body, does that same subgroup also represent at least 40% of the students who achieve the desired outcome?" The index or ratio compares the percentage of a subgroup in the student population to the percentage of that same subgroup out of the student population who met the metric outcome. The PI ratio is calculated for unsuppressed non-generated subgroups for four disaggregations: age group, gender, race/ethnicity, and Perkins economically disadvantaged. For more information about methodology for calculating disproportionate impact, see the methodology section below.

A 1:1 ratio indicates that there is no disproportionate impact for a subgroup of students. In the Community College Pipeline, subgroups are considered to be underrepresented with disproportionate impact if the ratio is less than or equal to 0.85.<sup>1</sup> For a subgroup with a ratio or index greater than one, that subgroup is overrepresented. For a subgroup with a ratio less than 1 but more than 0.85, that subgroup is considered to be underrepresented but not disproportionately impacted

PI Ratio	Implication	Equity Gap Chart
1:1	No disproportionate Impact	PI ratio = 1
Less than or equal to .85	Underrepresented with DI	Red bars displayed in an area of
		the graph shaded as light red
Greater than one	Overrepresented	Gray bars displayed in an area of
		the graph shaded as light gray
Less than 1 but greater than .08	Underrepresented without DI	Gray bars displayed in an area of
		the graph shaded as light blue

These ratios are displayed within the equity charts in the following ways for the student subgroups:

The charts displaying equity gaps are found on the Summary and Detailed Data Views for Students and Success with a section for "Equity Gaps" in the left navigation on the Detailed Data View. For Equity Gaps related to Earnings, the calculation of DI using the Proportionality Index is not possible. Therefore, on the Summary View for "Are There Equity Gaps in Earnings?" median annual earnings with a drilldown for unmasked student subgroups is displayed instead of the PI ratios. The Equity Gap charts for access or enrollment that are displayed on the Student Views require that the user make any selection besides "All Programs" under "Program or Sector." This selection is necessary because the ratio compares the percentage of students in the subgroup in the program or sector selected to the percentage of students in the subgroup in the program or sector selected to the percentage of students in the subgroup in "All Programs."

The Equity Gap charts on the Summary Views only show the number of students needed to close the equity gap for underrepresented subgroups with DI, displayed as red bars on the chart. The charts do not provide the PI ratios nor information in the hover over. The reason for limiting the functionality on the Equity Gap Summary View charts is to help users focus on student populations who are significantly underrepresented and the size of those equity gap in terms of the number of students needed to enroll, to complete, or to transfer in the program or sector to close that equity gap or to reach full equity.

<sup>&</sup>lt;sup>1</sup> Giovanni Sosa, RP Group, Using Disproportionate Impact Methods to Identify Equity Gaps, 2017



For all student populations flagged as experiencing any disproportionate impact, it is important to consider if these equity gaps have persisted over time. Since the Community College Pipeline does not have a cohort view, the disproportionate impact calculations are performed on data that are a snapshot in time. Metric outcomes display the number of students who met achieved that outcome in the selected year. Students who achieve one outcome in the selected year may or may not be the same students as those achieve another outcome in the selected year. Those students are not part of a cohort or group of students who started in the same year or who are defined as a cohort for the purpose of tracking progress over time. By exporting the data to csv or by just updating the year displayed in the header, users can calculate in a spreadsheet or quickly see if the red bars keep appearing for the same student populations for the same metric year after year.

As an example, if red bars keep appearing for Hispanic students for Transfer a Four-Year Institution year after year for the Computer Science (Transfer) program at your college, then it is apparent that specific strategies are needed to support Hispanic students. To determine supports or interventions are needed requires engagement with Hispanic students, faculty, counselors, student services, and possibly other on campus to figure out what is required to close that equity gap for CS transfer for Hispanic students. The Community College Pipeline allows you to look at Hispanic students in the CS Transfer program at a statewide, macroregion, microregion, district and college level to see if this an issue specific for your college. If there is an issue districtwide or regionwide, then engagement at another level might be appropriate to consider Hispanic student experiences and strategies regionwide for closing the gap.

As noted on the Summary View Equity Gap Charts, the Detailed View in the Equity Gap section provides much more information for the same chart:

- PI ratios are displayed for all subgroups for the drilldown selection
- Hover over provides the same information about the number of students needed to close the gap but only for those subgroups displayed with red bars who are underrepresented with DI.
- A table below provides all of the information for each subgroup used to calculate the DI including:
  - % Enrolled (Completed or Transferred)
  - % of Total Enrolled (Completed or Transferred)
  - Ratio of those two %s or the PI Ratio
  - o Number of Students Who Enrolled (Completed or Transferred)
  - o Total Number of Students Needed for a One to One Ratio
  - Number of Students Who Need to Enroll (Complete or Transfer) for a One to One Ratio

## Background Information on Display of Equity Gaps on Community College Pipeline

In a prior version of the Community College Pipeline, equity gaps were displayed for the same student demographic subgroups and for similar metrics but were removed in 2019-20 since the methodology used to calculate DI and the display of the equity gaps needed to be validated by the Chancellor's Office. During the summer and fall of 2020, WestEd and the Chancellor's Office met with the Student Success Metrics Advisory Group to get feedback on the four main methodologies to calculate DI. During 2021, the visualizations and calculations were finalized by WestEd working closely with the Chancellor's Office.

## Methodologies to Calculate Disproportionate Impact

Much of the information included in this section was taken from this <u>DI Impact Methodologies Brief</u> created for the summer and fall 2020 subgroup meetings of the Student Success Metrics Advisory



Committee. AB 504 requires a "standard methodology" but not necessarily a single method. Four common methods of determining DI have been used by the California Community College system:

- 80% Rule
- Proportionality Index
- Percentage Point Gap (PPG)
- PPG minus 1 (PPG-1)

For the calculation of disproportionate impact for the 2022 Student Equity Plans (SEP) on first-time cohort data from the Student Success Metrics dashboard, the Chancellor's Office updated their methodology to PPG minus 1 (PPG-1) to remove the outcome rate of the primary subgroup from the reference group. The Chancellor's Office Research and Data Analytics unit describes the updated methodology in the first resource linked below.

### Chancellor's Office PPG-1 2022 Methodology and other DI Reports and Tools

- 1. Chancellor's Office Official PPG-1 Methodology updated in 2022
  - <u>CCCCO PPG-1 Methodology Notes 2022</u> from the Chancellor's Office Research and Data team for the calculation of disproportionate impact on primary disaggregations for the 2022 Student Equity Plans
  - <u>CCCCO Applied PPG-1 to Further Examine DI\_2022</u> from the Chancellor's Office Research and Data team for the calculation of disproportionate impact on gender secondary disaggregations for the 2022 Student Equity Plans to determine intersectional disproportionate impact with a different reference group used depending on whether substantive DI was observed for the primary subgroup of the secondary gender disaggregation
- 2. Other Disproportionate Impact Reports or Tools
  - <u>DI Tool</u> developed by the Data Disaggregation Guided Pathways Team of Craig Hayward, Carolyn Holcroft, Jared Lessard, and Gio Sosa, updated July 2020. The initial creation of this program was supported by the Institutional Effectiveness Partnership Initiative (IEPI).<sup>2</sup>
  - <u>Using Disproportionate Impact Methods to Identify Equity Gaps</u> developed by RP Group under IEPI, updated February 2018
  - <u>Percentage Point Gap Method</u> from the Chancellor's Office, updated 2017
  - <u>80% Method and Proportionality Index Method</u> from the Chancellor's Office, updated 2014
  - <u>Ensuring Equitable Access and Success: A Guide to Assessing and Mitigating</u> <u>Disproportionate Impact in Student Success and Support Programs</u> from the Chancellor's Office, August 2013

### Method 1) 80% Rule

"Equal Employment Opportunity Commission (EEOC) 80% Rule, outlined in the 1978 Uniform Guidelines on Employee Selection Procedures, and was used in Title VII enforcement by the U.S. Equal Opportunity Commission, Department of Labor, and the Department of Justice"

-CCCCO 2015 Equity Guidelines

<sup>&</sup>lt;sup>2</sup> The DI Calculation worksheet was shared on a June 2020 RP Group webinar on "Focus on Equity: Identify Disproportionate Impact in Excel Confirmation."



Example Calculation:

- Reference group has a completion rate of 70%.
- 70% x 80% = 56%
- Any subgroup with a rate less than or equal to 56% is defined as exhibiting disproportionate impact.

Strengths and Weaknesses:

- Easiest to method to calculate.
- Rooted in federal policy.
- Can be represented in a dashboard with a snapshot view but can be confusing
- Not always clear that the highest performing category should be chosen as the reference group
- Does not account for size of subgroup.

### Method 2) Proportionality Index

"Compares the percentage of a disaggregated subgroup in an initial cohort to its own percentage in the resultant outcome group"

- CCCCO 2015 Equity Guidelines

Example Calculation:

- Group A accounts for 30% of the college population and 20% of the completions
  20% / 30% = .67 therefore underrepresented in completions with DI
- Group B accounts for 30% of the college population and 30% of the completions
  30% / 30% = 1 therefore equally represented in completions with no DI
- Group C accounts for 40% of the college population and 50% of the completions
  - $\circ$  50% / 40% = 1.2 therefore overrepresented in completions with no DI

Strengths and Weaknesses:

- Fairly easy to calculate.
- Easy to explain and can be represented in a dashboard with a snapshot view
- It does not specify at which point or at which percentage a subgroup should be considered as DI. Therefore, the designation of which subgroups should be considered as DI would not necessarily be consistent across colleges.
- It does not account for size of subgroup.

This methodology is used in the Community College Pipeline for the equity gap charts displayed on the Summary and Detailed Views for Access, Completion and Transfer with a threshold of 0.85 to signify underrepresented groups with disproportionate impact<sup>3</sup>.

### Method 3) Percentage Point Gap (PPG)

"Compares the percent of students in a disaggregated subgroup who succeed in an outcome with the percent of all students who succeed in the same outcome" -CCCCO 2015 Equity Guidelines

Calculation Example:

• Subgroup completion rate is 40%, and college average is 50%.

<sup>&</sup>lt;sup>3</sup> Bensimon and Malcolm-Piqueux (cited by California Community College Chancellor's Office, 2015), recommended a cut-off value of 0.85.



40% - 50% = −10%

A level of significance or threshold needs to be established to determine whether or not the -10% is significant and indicates DI for that subgroup

- From the 2017 CO memo linked above, the recommendation is to use the margin of error (MOE): "The detection of disproportionate impact in the point gap method uses a threshold or margin of error that is adjusted by the sample size (n) or cohort size of the subgroup. The standard margin of error is 3% if the sample size of the subgroup is at least 800 (n ≥ 800). The margin of error decreases as the sample size increases."
- If you have fewer than 800 students in the subgroup, then the PPG value necessary for determining DI will be higher than 3%. If the subgroup is 30 or less, then DI should be viewed cautiously since the thresholds for PPG (based on 95% confidence interval) are 18-30%. It is recommended that colleges consider aggregating two or more years of data especially if the subgroup is less than ten.

Strengths and Weaknesses:

- Fairly easy to calculate.
- Cannot be represented in a dashboard with a snapshot view because it requires a cohort
- By using the margin of error to gauge when a subgroup is considered DI, the size of the cohort is taken into consideration. However, by using margin of error, there is a presumption that one is working with sample data, and there is no sampling error since college outcomes metrics are based on actual COMIS data.
- Since the reference group is based on outcomes data from all subgroups, then if there is one large subgroup at the college (e.g., Hispanic students), then the values for that subgroup will be close to the overall average resulting in relatively low PPG differences. These minimal differences do not necessarily indicate that Hispanic students are not experiencing DI.

## Method 4) Percentage Point Gap (PPG) - 1

This version of PPG compares the percent of students in a disaggregated subgroup who succeed in an outcome with the percent of all other students who succeed in the same outcome. The difference between PPG and PPG – 1 is that students in the subgroup considered are removed from the college average in PPG – 1. Removing the subgroup considered for DI from the reference group removes the influence of the subgroup's own performance on the overall comparison rate, improving the accuracy for detecting cases of disproportionate impact for groups that might make up a sizable proportion of a college. See the Chancellor's Office Methodology briefs above for more information on PPG-1.

Example:

- Subgroup completion rate is 40%, and college average without the subgroup is 50%.
  - o **40% 50% = -10%**

The level of significance or threshold needs to be established to determine whether or not the -10% is significant and indicates DI for that subgroup

- CO recommendation is that the gap must also be larger than the calculated margin of error.
- For the 2019 and 2022 Student Equity Plan calculations of disproportionate impact using PPG-1, it was decided to include a hard cut-off as to what size percentage gap would be considered substantive DI. After examining the distribution of PPG values across the state, it was decided that only gaps of 2% or larger would be considered "substantive" DI.



# Examples of Equity Gap Charts in Community College Pipeline

### Example 1a) Equity Gaps in Access: Student Summary View for Race/Ethnicity

# Access Example: Statewide | Education and Human Development | 2020-21 | All



Ratio: percentage of the subgroup who completed compared to the percentage of the subgroup at the locale selected (college, district, microregion, macroregion, statewide)

With Race/Ethnicity selected in the Drilldown menu on the Student Summary View, the user can easily see that three subgroups are underrepresented with DI in terms of Access.

- For the three groups of students, represented with red bars, the text box indicates how many more Asian, Filipino and Pacific Islander or Hawaiian Native students need to enroll in TOP codes or programs mapped to the Education and Human Development sector to achieve a one to one ratio to have equitable representation or to reach full equity. These student groups are enrolled in Education or Human Development programs at lower rates than in all programs statewide in 2020-21. Therefore, they are underrepresented with observed disproportionate impact.
- 2. For the two groups of students, represented with gray bars in the blue shaded section, there is disproportionate impact. More students who identify as White or Two or More Races students also need to enroll in TOP codes or programs mapped to the Education and Human Development sector to achieve a one to one ratio or to be equitably represented. However, since their PI ratio is greater than 0.85, then those groups of students are not significantly disproportionately impacted since that is the threshold selected to determine if rate differences are significant or possibly due to random chance.
- 3. For the one group of students, American Indian/Alaska Native, their rate of enrollment in programs mapped to the Education and Human Development sector is the same as their rate of enrollment in all programs statewide in 2020-21 since the calculated PI ratio is equal to one.
- 4. For those two groups of students, represented with gray bars above the one to one ratio, there is no disproportionate impact. Black or African American and Hispanic students are overrepresented and enrolled at higher rates in Education or Human Development programs than in all programs statewide in 2020-21.





### Example 1b) Equity Gaps in Access: Student Detailed Data View for Race/Ethnicity

Access Example: Statewide | Education and Human Development | 2020-21 | All



Over Represented Over Represented Over Represented Over Represented

Note: Please make any selection besides "All Programs" as this calculation is based on comparing subgroup enrollments in a particular program or All CTE Programs, etc. against subgroup enrollments in All Programs. To see how large the gap is in terms of the number of additional students who need to enroll to close the gap or to attain a 1:1 ratio, hover over red bars for under represented subgroups with DI.

	% Enrolled	% of Total	% Enrolled / % of Total	PI Ratio	Students			1
Ethnicity					# of Students Enrolled	Total # Needed for 1:1 Ratio	# Needed to Enroll for 1:1 Ratio	Under with Disproportionate Impact (0.85 or less), Under without Disproportionate Impact, Over Represented
American Indian/Alaska Native	0.30%	0.30%	0.30% / 0.30% =	1	465	467	2	Under without DI Impact
Asian	7.10%	10.00%	7.10% / 10.00% =	0.71	9,685	13,690	4,005	Under with DI Impact
Black or African American	5.70%	5.60%	5.70% / 5.60% =	1.03	7,832	7,602	N/A	Over
Filipino	2.20%	3.10%	2.20% / 3.10% =	0.71	3,063	4,289	1,226	Under with DI Impact
Hispanic	55.00%	46.40%	55.00% / 46.40% =	1.19	75,249	63,503	N/A	Over
Pacific Islander or Hawaiian Native	0.30%	0.40%	0.30%6 / 0.40% =	0.8	456	567	111	Under with DI Impact
White	22.20%	24.50%	22.20% / 24.50% =	0.91	30,428	33,523	3,095	Under without DI Impact
Two or More Races	3.60%	4.10%	3.60% / 4.10% =	0.88	4,928	5,578	650	Under without DI Impact

With Race/Ethnicity selected in the Drilldown menu on the Students Detailed Data View, the following information is provided.

- 1. For all groups of students, the PI ratios are displayed at the ends of the bars.
- For the three groups, represented with red bars, the hover over text will provide the same information displayed on the Summary View to indicate how many more Asian, Filipino and Pacific Islander or Hawaiian Native students need to enroll in TOP codes or programs mapped to the Education and Human Development sector to have equitable representation.
- 3. For all groups of students, a table is provided underneath the graph with all calculations to determine equity gaps.





#### Example 2a) Equity Gaps in Completion and Transfer: Success Summary View for Gender

#### Completion Example: Statewide | Education and Human Development | 2020-21 | All

Are there Equity Gaps in Completion using a <u>Proportionality Index?</u> For more detailed information, go to the Detailed Data view under the Equity Gap section.



Ratio: percentage of the subgroup who completed compared to the percentage of the subgroup at the locale selected (college, district, microregion, macroregion, statewide)

With Gender selected in the Drilldown menu on the Success Summary View, students who identify as male are underrepresented in terms of Completion for Statewide in 2020-21 in the Education and Human Development sector compared to all students who completed for Statewide in 2020-21 in the Education and Human Development sector.

Transfer Example: Statewide | Education and Human Development | 2019-20 | All



Ratio: percentage of the subgroup who completed compared to the percentage of the subgroup at the locale selected (college, district, microregion, macroregion, statewide)

With Gender selected in the Drilldown menu on the Success Summary View, neither male nor female students are underrepresented for Transfer for Statewide in 2019-20 in the Education and Human Development sector compared to all students Statewide in 2019-20 in the Education and Human Development sector.

Wested.org November 2022

## Example 2b) Equity Gaps for Completion and Transfer: Success Detailed Data View for Gender

Completion Example: Statewide | Education and Human Development | 2020-21 | All



**Note:** Note: In some programs, the TOP code assigned to the award is different than the code assigned to the related courses. In this case, the chart may not appear. To see how large the gap is in terms of the number of additional students who need to complete to close the gap or to attain a 1:1 ratio, hover over red bars for under represented subgroups with DI.

Gender % Complet			% Completed / % of Total	PI Ratio		Students		Under with Disproportionate Impact (0.85 or less), Under without Disproportionate Impact, Over Represented
	% Completed	% of Total			# of Completers	Total # Needed for 1:1 Ratio	# Needed to Complete for 1:1 Ratio	
Female	94.90%	83.40%	94.90% / 83.40% =	1.14	6,939	6,094	N/A	Over
Male	4.30%	15.60%	4.30% / 15.60% =	0.28	314	1,137	823	Under with DI Impact
Non- Binary	*	*		*	*	*	*	

With Gender selected in the Drilldown menu on the Detailed Data View, more information is provided for Completion Equity Gaps.

- 1. For all groups of students, the PI ratios are displayed next to the bars.
- 2. For students who identify as male, represented with a red bar, the hover over text will provide the same information on the Summary View to indicate how many more students who identify as male need to complete in TOP codes or programs mapped to the Education and Human Development sector to have equitable representation.
- 3. For all genders, a table is provided underneath the graph with all calculations to determine equity gaps. Data has been FERPA suppressed to protect student identity for the non-binary gender disaggregation.





#### Transfer Example: Statewide | Education and Human Development | 2019-20 | All

#### Success ✔ Students Earning Awards

✔ Average Units or Time

✓ Number of Awards

✓ Transfer

✓ Skills-Builders ✓ Adult Education

∧ Equity Gaps

#### **Equity Gaps for Transfer**

The proportionality index @ indicates whether a subgroup of students is represented equitably among those who transferred compared to the subgroup''s representation among all exiting Community College Pipeline students in the selected program at the selected locale



Note: To see how large the gap is in terms of the number of additional students who need to transfer to close the gap or to attain a 1:1 ratio, hover over red bars for under represented subgroups with DI.

						Students		
Gender 7 Trans	% Transferred	% of Total	% Transferred / % of Total	PI Ratio	# of Students Who Transferred	Total # Needed for 1:1 Ratio	# Needed to Transfer for 1:1 Ratio	Under with Disproportionate Impact (0.85 or less), Under without Disproportionate Impact, Over Represented
Female	80.80%	82.80%	80.80% / 82.80% =	0.98	8,418	8,621	203	Under without DI Impact
Male	18.50%	16.10%	18.50% / 16.10% =	1.15	1,929	1,681	N/A	Over
Non- Binary	*	*		*	*	*	*	

With Gender selected in the Drilldown menu on the Detailed Data View, more information is provided for Transfer Equity Gaps.

- 1. For all groups of students, the PI ratios are displayed at the end of the bars.
- 2. For students who identify as female, since the PI ratio is less than one, they are underrepresented for transfer. However, since the ratio is greater than 0.85, there is no significant disproportionate impact.
- 3. For all genders, a table is provided underneath the graph with all calculations to determine equity gaps. Data has been FERPA suppressed to protect student identity for the non-binary gender disaggregation.





### Example 3a) Equity Gaps in Median Annual Earnings: Earnings Summary View for Age Groups

Example: Statewide | Education and Human Development | 2019-20 | All

With Age Group selected in the Drilldown menu on the Earnings Summary View, the age groupings and median annual earnings after exiting are displayed. Disproportionate impact using the Proportionality Index cannot be calculated because the metric is expressed as a dollar value and not a count of students.



The same view is available on the Detailed Data View for Earnings on the Median Annual Earnings After Exiting by using the Drilldown menu to disaggregate the metric.

In these cases, users may want to compare differences between median annual earnings to see where further investigation is required.

#### Earnings



#### Median Annual Earnings After Exiting\*

Among students who exited the community college system and who did not transfer to any postsecondary institution, median earnings measured immediately following academic year of exit



