**Calculating Risk Ratios – How to**

**Risk Ratio Defined:**

A risk ratio is the probability that an educational outcome will occur within one group to the probability of the outcome occurring in a comparison group. For example, nationally, African American students are 2x as likely as white students to not complete school and Latino students are 2.9x more likely than white students to not complete school.

Calculating risk ratios is important to ensure that our systems prioritize fair outcomes for all students. At the school and district level, teams can use risk ratios to compare different data sets for their own populations by looking at various student characteristics. This can be applied to more than race. For instance, attendance data, disciplinary data, and grading data can each be broken down by gender, disability status, ELL status, and/or zip code, to name a few.

**Risk Ratio Equation:**

**Risk ratio = X/Y**

X = percent of subgroup with particular outcome (ex: percentage of African American students who drop out)

Y = percent of majority group with same outcome (percentage of White students who drop out)

**Risk Ratio Calculation Example:**

Here is an example of the process one would take in order to calculate the risk ratios of attendance by grade:

1. Find the total number of students in 9th grade (ex: 100).
2. Find the TOTAL number of absences from all 9th grade students combined (ex: 567).
3. Divide the total number of absences (567) by the total number of students (100) to get a percentage (567/100 = 5.67).
4. Divide the resulting percentage (5.67) by itself (5.67/5.67) to get a risk ratio of 1.00. This is the number that you will be comparing the other populations to.
5. Find the total number of students in 10th grade (ex: 320).
6. Find the TOTAL number of absences from all 10th grade students combined (ex: 300).
7. Divide the total number of absences (300) by the total number of students (320) to get a percentage (300/320 = 0.94).
8. **Divide the percentage of 10th grade absences (0.94) by the percentage of 9th grade absences (5.67) (0.94/5.67 = 0.17).**If you remember, the risk ratio for 9th grade absences was 1.00. Comparatively, the risk ratio for 10th grade absences is 0.17. So, proportionately, 10th graders are much less likely to be absent than 9th graders.
9. Find the total number of students in 11th grade (ex: 200).
10. Find the TOTAL number of absences from all 11th grade students combined (ex: 350).
11. Divide the total number of absences (350) by the total number of students (200) to get a percentage (200/350 = 1.75).
12. **Divide the percentage of 11th grade absences (1.75) by the percentage of 9th grade absences (5.67) (1.75/5.67 = 0.31).** As you can see, proportionately, 11th graders are more likely to be absent than 10th graders, but not as likely as 9th graders.
13. Repeat the process with the data for 12th graders. Always compare the percentage of a population with the percentage of the first population calculated (in this case, 9th graders).

**Want to Learn More?**

* For a more in depth-explanation of risk ratio and examples, see [this video](https://www.youtube.com/watch?v=pPtvKtJ5Ol8) from Wisconsin PBIS.
* For a risk ratio calculator, see the [Wisconsin PBIS calculator](https://www.wisconsinrticenter.org/resources/risk-ratio-calculator/) which is set up to examine discipline and academic screening outcome data by race. It is possible to edit the Wisconsin Calculator and keep the formulas but change the criteria to meet you school/district’s individual needs.
* For tools to respond to risk ratio data, see **the** [**what educators can do**](http://www.delawarepbs.org/what-educators-can-do/) **section of the DE-PBS equity page for next steps.**