When is it appropriate to use counts and when is it appropriate to use percents?

Example 1. Why use percents?

Consider Professor Wendall's US history class at UT, which had enrollment of 280 at the beginning of the semester. At the end of the semester, only 237 students were enrolled, meaning that 43 had withdrawn.

Consider Professor Janow's US history class at UT, which had enrollment of 42 at the beginning of the semester. At the end of the semester, only 38 students were enrolled which means that 4 had withdrawn.

A entry on an Internet rating site gave the number of students who withdrew from each course during the semester to help students decide which professor they might want to enroll with. The website did not give the total number of students enrolled in the class, either at the beginning of the semester or the end of the semester. Is comparing the numbers who withdrew that a fair way for students to make the comparison?

Discussion: It would be more fair to compare the percentages of students who withdrew than the numbers of students who withdrew. It is important to use percentages to compare when the number of people in the groups are not the same. If the number of people in the groups are the same, then comparing counts and comparing percentages are comparable.

Example 2. Why use counts?

Suppose we had data on men and women and their majors in a College of Business and we want to answer the question "What percentage of women in this college are Accounting majors?" The data was provided to us in the following way.
Why can't we use this data to answer this question?

	Men	Women	total
Accounting	54.6%	45.4%	100%
Administration	48.1%	51.9%	100%
Finance	58.9%	41.%	100%
total	52.4%	47.6%	100%

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Solution: To answer the question, we'd need to convert a fraction to a percentage. The denominator of the fraction would have to be the total number of Accounting majors and the numerator would have to be the number of women who are Accounting majors. We don't have enough information here to find either of those numbers.

Here's the data we'd need to answer that question.

In a particular business college which offers three majors, the following table gives the numbers of men and women in various majors. (These are counts, not percentages.)

	Men	Women	total
Accounting	83	**69**	152
Administration	102	110	212
Finance	53	37	90
Total	238	**216**	454

Sometimes students find this confusing because they don't see any difference between these two questions.
What percentage of the women are accounting majors?
What percentage of the accounting majors are women?

Here's a discussion of the difference:

Each of these percentages comes from a fraction. They have the same numerators, but not the same denominators.
What percentage of the women are accounting majors?
Answer: 69/216 = 0.3194 = 31.94%
What percentage of the accounting majors are women?
Answer: 69/152 = 0.4539 = 45.39%

Notice that to compute both of these percentages, you need both total counts, as well as the count of the number of women accounting majors.

Summary statement:

Percentages are very convenient for comparisons, but a table with only percentages in it does not give you as much information as a table with the actual counts. And it may not give you the actual information you want.

When you are doing an analysis of data, it is almost always very useful to know the actual counts. Then you can compute whatever percentages are needed to make the comparisons you need to answer the specific questions asked.