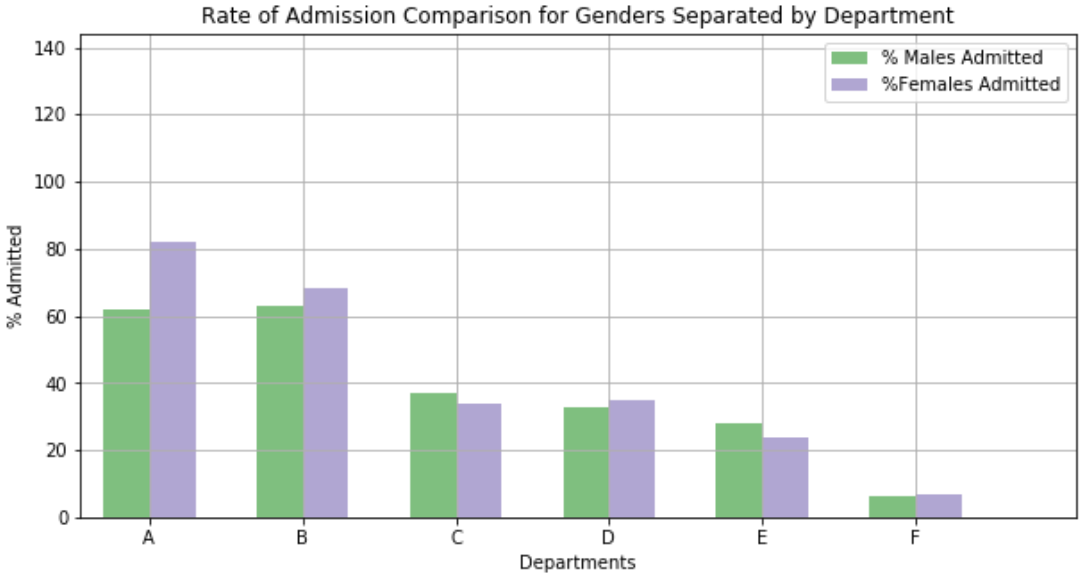
Simpson's Paradox is "a paradox in probability and statistics in which a trend appears in different groups of data but disappears or reverses when these groups are combined."[1]

One famous example of this paradox is evident in the 1973 sex discrimination lawsuit against the University of California, Berkeley. The lawsuit argued that men applying to graduate school at UC Berkeley were more likely to be admitted than women applicants. While this does seem to be a valid argument when the total rate of admission across all departments for both genders is compared, the argument does not hold when each graduate department's rate of admission is evaluated individually. In the latter scenario, it becomes clear that if gender discrimination is occurring, it's happening before the point of graduate school application decisions.

I utilized Python to analyze both cases from the data made available through Udacity. When the rate of admission for both genders is compared across all departments, there is a significant difference. 44% of men but only 30% of women were admitted to graduate programs at Berkeley.

However, when I separated the rate of admissions by department. This difference in admission rates told a completely different story.



In this group bar chart, women applicants are actually admitted more often than their male counterparts in 4 out of 6 of the departments. In Departments C and E, where the rate of admission for men is greater, we can further evaluate the data. Less males applied than females for admission into both departments, but more females were admitted in total than males in both cases. A further question to ask may be: Why are significantly more females applying to these departments than males? Are these humanities departments?

Department	Total Males	Total Females	Admitted Males	Admitted Females	% Males Admitted	%Females Admitted
C	325	593	120	202	37	34
E	191	393	53	94	28	24

Upon closer examination of the data collected for Departments A, B, and F, there are remarkably more male applicants than female applicants. This is also the case to a lesser degree for Department E. A further question to ask here may be: Why are significantly more males applying to these departments than females? Are these science departments?

The distribution of applicants for each department does beg further questioning and may also provide insight into academic socialization of both genders. However, aggregating all of this data causes a case of Simpson's Paradox.

Sources:

1. https://en.wikipedia.org/wiki/Simpson's_paradox