Proportions in aggregated data

A sex-bias study in graduate admissions at UC-Berkeley was done in the 1970's. The study looked at admission data for 1973. Here are data for the six biggest departments:

Female

	Admission status	
Dept	Admitted	Denied
A	89	19
B	17	8
C	202	391
D	131	244
E	94	299
F	24	317

Male

	Admission status	
Dept	Admitted	Denied
A	512	331
B	353	207
C	120	205
D	138	279
E	53	138
F	22	351

1. Compute overall admission rates for females and males. What conclusion do you reach based on these proportions?

2. Compute female and male admission rates for each department. What conclusion do you reach based on these proportions?

3. Are your conclusions for 1 and 2 consistent? If not, how do you explain the difference?

4. Compute the distribution of departments for all female applicants. (To do this, compute the total number of female applicants for each department and then divide each department total by the overall total for female applicants.) Do the same for all male applicants. Use these two distributions to help explain the contradictory conclusions from 1 and 2.

5. In #1, you computed an overall female admission rate of 0.3035. Here's a different way to get this same value: Multiply each department admission rate for females (from #2) by the corresponding department proportion (from #4) and then add these six values. This gives the overall female admission rate as a weighted sum of the individual department female admission rates. Repeat this for the overall male admission rate. Study these calculations to better see how the difference in department proportions for females and males impacts the respective overall admission rates.