

19) Attitudes toward recycled products Recycling is supposed to save resources. Some people think recycled products are lower in quality than other products, a fact that makes recycling less practical. People who actually use a recycled product may have different opinions from those who don't use it. Here are data on attitudes toward coffee filters made of recycled paper among people who do and don't buy these filters:

	Think the quality of the recycled product is:			
	Higher	The same	Lower	Total
Buyers	20	7	9	36
Nonbuyers	29	25	43	97
Total	49	32	52	133

- (a) How many people does this table describe? How many of these were buyers of coffee filters made of recycled paper?

The table describes 133 people.

36 were buyers of coffee filters made of recycled paper.

- (b) Give the marginal distribution of opinion about the quality of recycled filters. What percent of consumers think the quality of the recycled product is the same or higher than the quality of other filters?

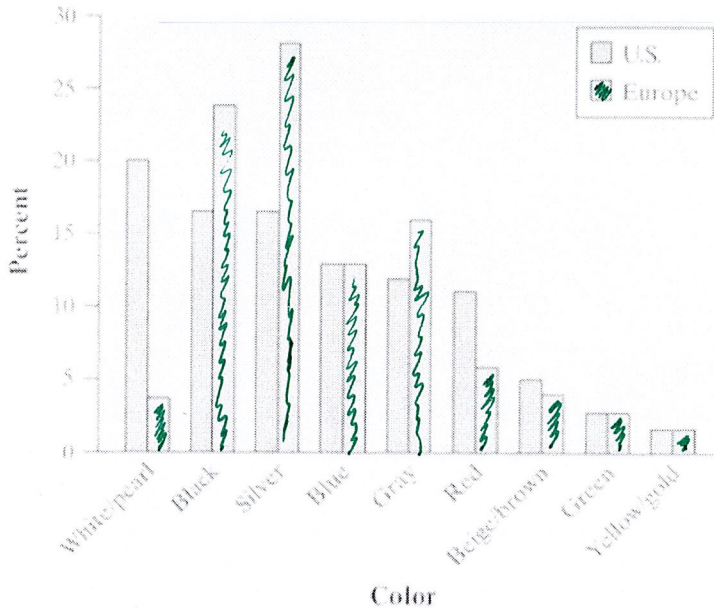
	Higher	The Same	Lower	
Marginal Distribution of Opinion about quality of Recycled Filters	$49/133$ 36.8%	$32/133$ 24.1%	$52/133$ 39.1%	60.9% of consumers think quality of recycled product is the same or higher than quality of other filters.

21) Attitudes toward recycled products Exercise 19 gives data on the opinions of people who have and have not bought coffee filters made from recycled paper. To see the relationship between opinion and experience with the product, find the conditional distributions of opinion (the response variable) for buyers and nonbuyers. What do you conclude?

	Higher	The Same	Lower	
Buyers	$20/36 \approx 55.6\%$	$7/36 \approx 19.4\%$	$9/36 = 25\%$	
Non Buyers	$29/97 \approx 29.9\%$	$25/97 \approx 25.8\%$	$43/97 \approx 44.3\%$	

Buyers are much more likely to consider recycled filters as higher quality, though 25% of buyers still think they are lower quality.

23) **Popular colors—here and there** Favorite vehicle colors may differ among countries. The side-by-side bar graph shows data on the most popular colors of cars in 2008 for the United States and Europe. Write a few sentences comparing the two distributions.



Americans are much more likely to choose white/pearl, while Europeans are much more likely to choose silver. Also, Europeans are more likely to choose black or gray than Americans, while Americans are more likely to choose red than Europeans.

Use the following for exercises 27 – 32. The National Survey of Adolescent Health interviewed several thousand teens (grades 7 to 12). One question asked was “What do you think are the chances you will be married in the next ten years?” Here is a two-way table of the responses by gender:

	Female	Male	Total
Almost no chance	119	103	222
Some chance, but probably not	150	171	321
A 50-50 chance	447	512	959
A good chance	735	710	1445
Almost certain	1174	756	1930
Total	2625	2252	4877

27. The percent of females among the respondents was

- (a) 2625.
- (b) 4877.
- (c) about 46%.
- (d) about 54%.
- (e) None of these.

$$\frac{2625}{4877} \approx 53.8\%$$

marginal distribution
analyzes one variable
among the total

28. Your percent from the previous exercise is part of

- (a) the marginal distribution of females.
- (b) the marginal distribution of gender.
- (c) the marginal distribution of opinion about marriage.
- (d) the conditional distribution of gender among adolescents with a given opinion.
- (e) the conditional distribution of opinion among adolescents of a given gender.

29. What percent of females thought that they were almost certain to be married in the next ten years? given

- (a) About 16%
- (b) About 24%
- (c) About 40%
- (d) About 45%
- (e) About 61%

$$\frac{1174}{2625} = 44.7\%$$

30. Your percent from the previous exercise is part of

- (a) the marginal distribution of gender.
- (b) the marginal distribution of opinion about marriage.
- (c) the conditional distribution of gender among adolescents with a given opinion.
- (d) the conditional distribution of opinion among adolescents of a given gender.
- (e) the conditional distribution of "Almost certain" among females.

31. What percent of those who thought they were almost certain to be married were female? given

- (a) About 16%
- (b) About 24%
- (c) About 40%
- (d) About 45%
- (e) About 61%

$$\frac{1174}{1930} \approx 60.8\%$$

32. Your percent from the previous exercise is part of

- (a) the marginal distribution of gender.
- (b) the marginal distribution of opinion about marriage.
- (c) the conditional distribution of gender among adolescents with a given opinion.
- (d) the conditional distribution of opinion among adolescents of a given gender.
- (e) the conditional distribution of females among those who said "Almost certain."

25) Snowmobiles in the park Yellowstone National Park surveyed a random sample of 1526 winter visitors to the park. They asked each person whether they owned, rented, or had never used a snowmobile. Respondents were also asked whether they belonged to an environmental organization (like the Sierra Club). The two-way table summarizes the survey responses.

	Environmental Clubs		
	No	Yes	Total
Never used	445	212	657
Snowmobile renter	497	77	574
Snowmobile owner	279	16	295
Total	1221	305	1526

Do these data provide convincing evidence of an association between environmental club membership and snowmobile use for the population of visitors to Yellowstone National Park? Follow the four-step process.

STATE: Among visitors to Yellowstone National Park, what is the relationship between whether someone belongs to an environmental organization and their use of a snowmobile?

PLAN: We suspect that belonging to an Environmental Organization will reduce the chances that someone will use a snowmobile, so we'll compare the conditional distributions of snowmobile use for those who belong to an Environmental Club and those who don't.

DO:

	Environment Club	
	No 1221	Yes 305
	1221	

Never	$445/1221 \approx 36.4\%$	$212/305 \approx 69.5\%$
Renter	$497/1221 \approx 40.7\%$	$77/305 \approx 25.2\%$
Owner	$279/1221 \approx 22.9\%$	$16/305 \approx 5.2\%$

CONCLUDE: (Side by Side Bar Graph)

Those who belong to an environmental club are much more likely to have never used a snowmobile, about 69.5%, whereas only 36.4% of those who don't belong to a club have never used a snowmobile. Those in an environmental club are less likely to have rented or owned a snowmobile than those not in an environmental club.