Spot the Connection

Compare yes rates for bus riders and walkers.

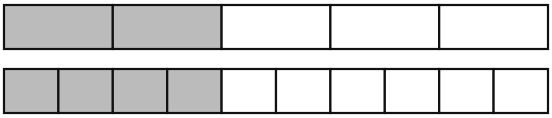
A1P.DSP.D.35 "Analyze the possible association between two categorical variables. a. Summarize categorical data for two categories in two-way frequency tables and represent using segmented bar graphs. b..."

NAME _____ DATE _____

SAME YES RATE

The top bar shows bus riders, and the bottom bar shows walkers. If the shaded share is equal in both bars, the groups show no association with the yes response.

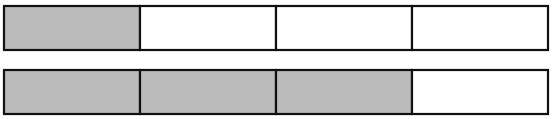
Figure A: Both groups have 40% shaded.



DIFFERENT YES RATES

If the shaded shares are different, the groups may be associated with the yes response. Compare each group's shaded share, not just its number of shaded sections.

Figure B: One group has 25% shaded, and the other has 75% shaded.



1 SORT

8 items

Each section represents one student, and shading means the student answered yes to "Did you bring a reusable bottle?"; compare the top bar of bus riders with the bottom bar of walkers, then circle SAME or DIFFER for each figure.

1.

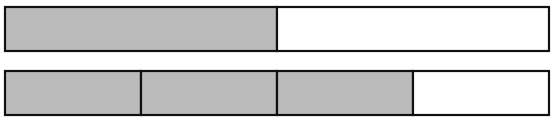


Figure 1

SAME DIFFER

2.

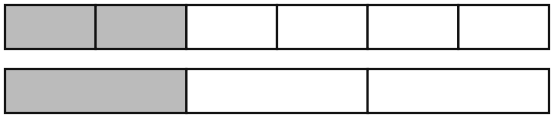


Figure 2

SAME DIFFER

3.



Figure 3

SAME DIFFER

4.

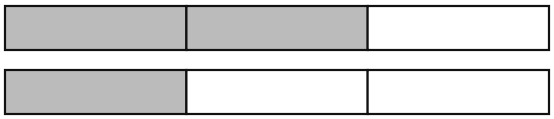


Figure 4

SAME DIFFER

5.

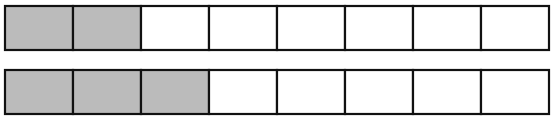


Figure 5

SAME DIFFER

6.

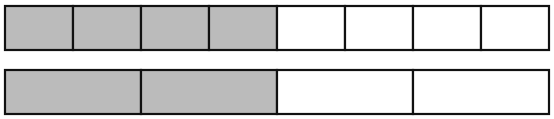


Figure 6

SAME DIFFER

7.

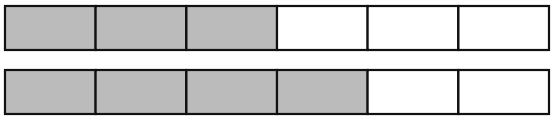


Figure 7

SAME DIFFER

8.

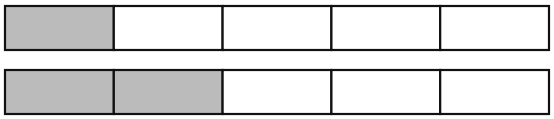


Figure 8

SAME DIFFER

2 PROVE IT

Explain your thinking

Pick one figure from each category and explain each choice using the two groups' yes rates.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Write one new pair of top and bottom shaded fractions for SAME and one new pair for DIFFER.

SAME _____

DIFFER _____

CHALLENGE

Find the overall shaded fraction in Figure 2, then explain why that fraction alone cannot tell you whether the groups are associated.

ANSWER KEY # Spot the Connection

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1 (fractionbars)	**DIFFER**	The conditional yes rates are 1/2 and 3/4.
2	Figure 2 (fractionbars)	**SAME**	Both conditional yes rates are 1/3.
3	Figure 3 (fractionbars)	**SAME**	Both conditional yes rates are 3/5.
4	Figure 4 (fractionbars)	**DIFFER**	The conditional yes rates are 2/3 and 1/3.
5	Figure 5 (fractionbars)	**DIFFER**	The conditional yes rates are 2/8 and 3/8.
6	Figure 6 (fractionbars)	**SAME**	Both conditional yes rates are 1/2.
7	Figure 7 (fractionbars)	**DIFFER**	The conditional yes rates are 3/6 and 4/6.
8	Figure 8 (fractionbars)	**DIFFER**	The conditional yes rates are 1/5 and 2/5.

PART 2 · PROVE IT

Task: Pick one figure from each category and explain each choice using the two groups' yes rates. Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **SAME**: Top 1/3 shaded, bottom 2/6 shaded.
- **DIFFER**: Top 1/3 shaded, bottom 2/3 shaded.

Challenge: Overall, 3 of 9 sections are shaded, or 1/3. The overall fraction alone hides the two group rates, which must be compared to judge association.

For PROVE IT, accept explanations that compare the conditional yes rates in one SAME figure and one DIFFER figure. Equal rates show no association in these data; different rates suggest a possible association, not a cause.