

UNIT 6 • DESCRIBING DATA

Lesson 2: Working with Two Variables

Instruction

Problem-Based Task 6.2.1: FunZone America Survey

Coaching Sample Responses

- a. Sort the data first by attraction. Then, within each attraction, sort by age.

Visitor	Age	Favorite attraction
27	12	Roller coasters
40	15	Roller coasters
31	16	Roller coasters
3	18	Roller coasters
38	19	Roller coasters
21	20	Roller coasters
12	25	Roller coasters
1	27	Roller coasters
29	29	Roller coasters
26	31	Roller coasters
46	33	Roller coasters
24	34	Roller coasters
49	39	Roller coasters
6	46	Roller coasters
14	46	Roller coasters
37	49	Roller coasters
15	53	Roller coasters

Visitor	Age	Favorite attraction
9	8	Water park
34	9	Water park
10	14	Water park
41	16	Water park
47	21	Water park
36	22	Water park
22	24	Water park
7	25	Water park
17	33	Water park
28	38	Water park
48	53	Water park

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Visitor	Age	Favorite attraction
19	5	Shows
50	6	Shows
25	14	Shows
42	14	Shows
45	20	Shows
16	27	Shows
30	28	Shows
2	30	Shows
5	31	Shows
11	31	Shows
18	34	Shows
4	35	Shows
13	35	Shows
33	37	Shows
8	39	Shows
43	39	Shows
20	41	Shows
32	47	Shows
23	48	Shows
35	48	Shows
44	52	Shows
39	53	Shows

- b. Count the number of attractions selected for each given age range. For example, to fill in the first joint frequency, count the number of people aged 5 through 15 who selected roller coasters. Fill in a two-way frequency table with this information.

Age range	Favorite attraction		
	Roller coasters	Shows	Water park
5–15	2	4	3
16–25	5	1	5
26–35	5	8	1
36–45	1	4	1
46–55	4	5	1

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- c. Find the marginal frequencies. Sum each row, and sum each column.

Age range	Favorite attraction			Total
	Roller coasters	Shows	Water park	
5–15	2	4	3	9
16–25	5	1	5	11
26–35	5	8	1	14
36–45	1	4	1	6
46–55	4	5	1	10
Total	17	22	11	

- d. Which type of conditional relative frequency would show the type of attraction preferred by each age group?

We need to look at how the values in each row are distributed to understand which attraction is preferred by each age group. The conditional relative frequency that is the joint frequency divided by the number of people in each age group will show the percentage of each age group that preferred each attraction.

- e. Calculate the conditional relative frequencies and put them in a table.

Divide each value by the total people in that age group. Make sure the sum of each row is 1.

Age range	Favorite attraction			Total
	Roller coasters	Shows	Water park	
5–15	$\frac{2}{9} \approx 0.22$	$\frac{4}{9} \approx 0.44$	$\frac{3}{9} \approx 0.33$	1.0
16–25	$\frac{5}{11} \approx 0.45$	$\frac{1}{11} \approx 0.09$	$\frac{5}{11} \approx 0.45$	1.0
26–35	$\frac{5}{14} \approx 0.36$	$\frac{8}{14} \approx 0.57$	$\frac{1}{14} \approx 0.07$	1.0
36–45	$\frac{1}{6} \approx 0.17$	$\frac{4}{6} \approx 0.67$	$\frac{1}{6} \approx 0.17$	1.0
46–55	$\frac{4}{10} = 0.4$	$\frac{5}{10} = 0.5$	$\frac{1}{10} = 0.1$	1.0

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- f. Look at the conditional relative frequencies for each age group. Is there an attraction that is preferred by each group?

The shows are preferred by ages 5–15, the roller coasters and water parks are equally preferred by ages 16–25, shows are preferred by ages 26–35, shows are preferred by ages 36–45, and shows are preferred by ages 46–55. There are some age groups with a strong preference for one attraction, such as the shows in the 36–45 age group. In others, there is only a slight preference, or there are two equally preferred attractions.

Recommended Closure Activity

Select one or more of the essential questions for a class discussion or as a journal entry prompt.