

## 10.4

# Oh! Switch the Station!

## Drawing Conclusions from Data

### LEARNING GOALS

In this lesson, you will:

- Analyze different categorical data.
- Use categorical data to make decisions.

**H**ave you ever gotten into a car, tuned to your favorite radio station, and then realized . . . it isn't the same station? It seems like overnight all of the on-air personalities and even the genre of music changed! Why does this happen? While there may be other factors, chances are your favorite radio station didn't have very high ratings. In the United States today there are over 10,000 AM and FM commercial radio stations. These stations earn most of their money from advertisements. Advertisers pay the radio stations to play their commercials in the hopes that people will hear the commercials and buy whatever they are selling. Companies want to make sure that there are many people listening to their commercials but if the ratings for a station are low, that means fewer people are listening. Companies will not give money to the station if the ratings are too low so, unfortunately for you, the radio station as you know it may be cancelled and something new will come on in its place in the hopes of attracting new listeners. Luckily today we have so many radio stations that you will probably be able to find a new favorite!

**PROBLEM 1** Sifting Through Data to Make a Point



Andres is a new radio station general manager at KYWN. The radio station unfortunately has sagging ratings and low advertising. He has been charged with making the station more popular in the hopes that with more popularity, more companies will want to advertise on KYWN. The station owners have given him the authority to do anything to turn around the ratings; however, if things don't change, he'll be doing overnight radio in the Gobi Desert!

Andres is considering changing the genre of the radio station. Currently, the station features country music. However, if he changes the genre, what will the new genre be?

Andres wants to target one of the highest demographics in radio listening: teenagers. He decides to sponsor the next dance at Rawlings High School. KYWN will provide the food, drinks, and most importantly, the music for the dance. Prior to the dance, he surveys the students. He will use this data to determine the new genre of KYWN.

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| Music Genre |                            |           |             |       |         |
|-------------|----------------------------|-----------|-------------|-------|---------|
| Grade Level | Rock (Classic/Alternative) | Classical | Hip-Hop/Rap | Dance | Country |
| 12          |                            |           |             | x     |         |
| 9           |                            | x         |             |       |         |
| 10          |                            |           |             | x     |         |
| 10          |                            |           |             |       | x       |
| 9           |                            |           |             |       | x       |
| 11          |                            |           | x           |       |         |
| 12          |                            | x         |             |       |         |
| 10          | x                          |           |             |       |         |
| 9           |                            |           |             |       | x       |
| 9           |                            |           |             | x     |         |
| 10          |                            | x         |             |       |         |
| 12          |                            |           |             | x     |         |
| 11          | x                          |           |             |       |         |
| 12          |                            |           |             | x     |         |
| 11          |                            |           | x           |       |         |
| 9           | x                          |           |             |       |         |
| 9           | x                          |           |             |       |         |
| 10          |                            |           |             |       | x       |
| 11          | x                          |           |             |       |         |
| 9           | x                          |           |             |       |         |
| 12          |                            |           |             | x     |         |
| 12          |                            |           | x           |       |         |
| 11          |                            |           | x           |       |         |
| 10          |                            | x         |             |       |         |

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| Grade Level | Music Genre                |           |             |       |         |
|-------------|----------------------------|-----------|-------------|-------|---------|
|             | Rock (Classic/Alternative) | Classical | Hip-Hop/Rap | Dance | Country |
| 9           |                            |           | x           |       |         |
| 12          |                            |           | x           |       |         |
| 11          |                            |           |             | x     |         |
| 9           |                            |           | x           |       |         |
| 10          | x                          |           |             |       |         |
| 10          | x                          |           |             |       |         |
| 12          |                            |           |             |       | x       |
| 9           |                            |           |             | x     |         |
| 9           |                            |           |             | x     |         |
| 9           |                            |           |             |       | x       |
| 10          |                            | x         |             |       |         |
| 12          | x                          |           |             |       |         |
| 12          | x                          |           |             |       |         |
| 12          |                            | x         |             |       |         |
| 10          |                            | x         |             |       |         |
| 10          |                            |           | x           |       |         |
| 10          |                            |           |             | x     |         |
| 11          |                            |           | x           |       |         |
| 9           |                            |           |             | x     |         |
| 9           |                            |           |             |       | x       |
| 10          |                            | x         |             |       |         |
| 10          |                            | x         |             |       |         |
| 12          |                            |           |             | x     |         |
| 11          | x                          |           |             |       |         |
| 12          | x                          |           |             |       |         |
| 11          | x                          |           |             |       |         |
| 11          |                            | x         |             |       |         |
| 12          |                            |           |             | x     |         |
| 12          |                            |           |             | x     |         |
| 12          |                            | x         |             |       |         |
| 11          |                            |           | x           |       |         |
| 11          |                            |           |             |       | x       |

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1. Analyze the data Andres collected.
  - a. In looking at the data, can you determine which music genre is most preferred by the Rawlings High School students?
  - b. How would you advise Andres to organize the data he gathered?

2. Organize the data to help Andres determine which music genre is most popular at Rawlings High School according to the survey he conducted.

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3. Analyze the table you created to organize Andres's data.
- How many students did Andres survey for the dance? How did you determine that you organized Andres data correctly?
  - Can you determine which genre of music was the most popular from the table you created? Explain why or why not.

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c. Do you think the results might be the same or different if Andres conducted another random survey at Rawlings High School? Explain your reasoning.



d. Based on the data you have analyzed, would you advise Andres to change the format of his station? If so, explain why. If not, explain why not. You may use graphs to better represent your advice to Andres.

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**PROBLEM 2** What if We Look at the Data *This Way*?

Data can be analyzed in many different ways, and then used to prove a point of an advertiser, a doctor, a scientist, or just about any occupation you can think of! How that data are interpreted can affect the decisions of people—for better or for worse.

Andres knows that one of the most sought after age groups is the age 18 to 35 group. Generally, if stations, magazines, blogs, and news websites can target and successfully attract viewers or users in this age range, they can then lure advertisers to buy air time or banners.

Knowing this, Andres decides to just use the data he gathered from the seniors he surveyed at Rawlings High School.



1. How could Andres use the table or graph(s) you created in Problem 1 to analyze the data for the seniors?

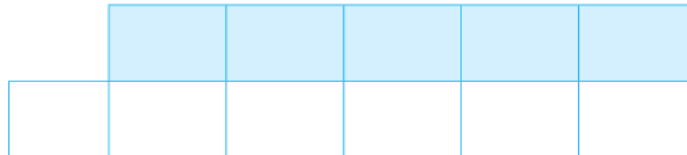
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2. Analyze the tables and graphs you created.

- a. Do you think you can predict which music genre is most popular with the seniors at Rawlings High School using the data Andres collected? Explain why or why not.

- b. Predict (if possible) which music genre is the most popular for the Rawlings High School seniors. Explain how you came to your conclusion.

3. Suppose Andres decides to suggest a music format change for KYWN to dance music. What information would you advise Andres to use to strengthen his suggestion? You can use any of the data and can supply any graphs you think that will strengthen Andres's suggestion. Finally, explain why you chose the information.



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4. Based on the information you analyzed regarding the seniors, would you change the advice you gave to Andres in Problem 1, Question 3, part (c)? Would you change KYWN's music format to match the Rawlings High School seniors' survey results? If yes, explain why using the data you have. If not, explain why not.

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Be prepared to share your solutions and methods.