

How Tall and How Many?

Utah Secondary Mathematics Core Curriculum Standards

Computing the mean and median, collecting, recording, organizing, and displaying a set of data with at least two variables, determining and characterizing linear relationships, computing range

GAISE Guidelines for Assessment and Instruction in Statistics Education

Level B Understanding – formulate questions, collect data, analyze data, and interpret the results

Teacher generated question – Is there a linear relationship between height and family size?

Student generated questions – What is the mean height in our class? What is the typical family size in our class?

Learning Outcomes

- Students become interested in statistics
- Students understand how to collect and interpret statistical information
- Students create and conduct a statistical investigation
- Students are given the opportunity to practice measuring

Specific Skills

- Students collect and record data
- Students chart results using paired data
- Students compute mean, median and mode
- Students analyze results

Materials Needed

- 6' measuring tape

Directions

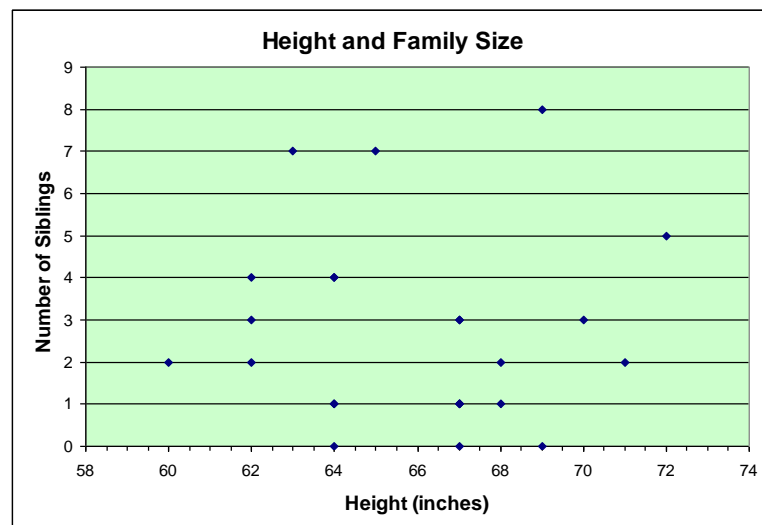
Ask the students if there might be a relationship between a person's height and how many people are in that person's family. Help the students decide how to investigate this question. Make sure they talk about how to make the measurements accurately and with precision. Measure all the students and record their heights in inches along with how many siblings they have. Discuss the concept of paired data with the class. Display the data in a scatterplot. Help the students come to a conclusion. An extension of this experiment is to use age in months instead of number of siblings. Start by asking the students if they expect the relationship between height and age to be a linear relationship.

Created for the American Statistical Association Meeting Within a Meeting Program (2008) for Middle School Teachers

How Tall and How Many?

| <i>Name</i> | <i>Height (inches)</i> | <i># of Siblings</i> |
|-------------|------------------------|----------------------|
| Adam | 64 | 4 |

| | | |
|----------|----|---|
| Mallory | 67 | 3 |
| Marianne | 65 | 7 |
| Patrick | 64 | 1 |
| Darryl | 67 | 0 |
| Taylor | 63 | 7 |
| Tasha | 62 | 4 |
| Wes | 69 | 8 |
| Will | 71 | 2 |
| Amanda | 67 | 1 |
| Dave | 68 | 2 |
| Jason | 62 | 2 |
| Jake | 64 | 0 |
| Darcy | 70 | 3 |
| Marissa | 68 | 1 |
| Paul | 72 | 5 |
| Teal | 67 | 3 |
| Zac | 60 | 2 |
| Ian | 64 | 4 |
| Alan | 67 | 1 |
| Ambreia | 62 | 3 |
| Davis | 69 | 0 |
| Greg | 64 | 1 |
| Javin | 67 | 1 |



Prompt the students to generate and answer data analysis questions.

What is the mean height in the class?

What is the typical family size in the class?

Examine the scatterplot. Is there evidence of a linear relationship between height and family size?

Are the results surprising? Why or why not?