Learning Goal: Use a scatterplot to display the relationship between two quantitative variables. Describe the overall pattern and striking deviations from the pattern.

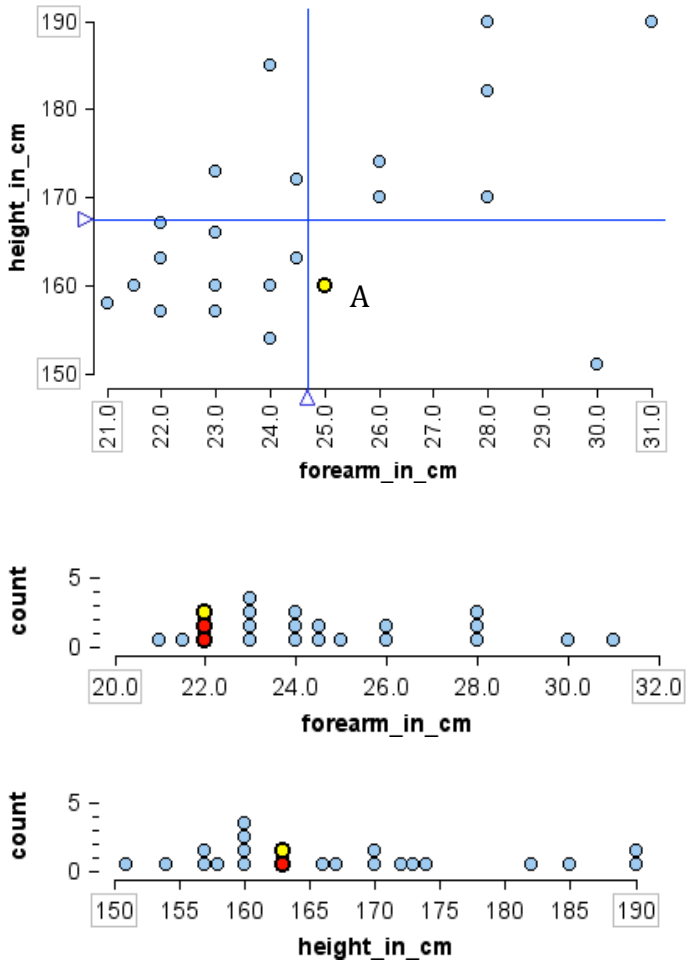
Specific Learning Objectives:

- Read and interpret scatterplots
- Describe the pattern in a scatterplot as positive or negative association, if appropriate.

Overview: Previously we looked at data that comes from taking one measurement for each individual in the group. Now we will take two measurements for each individual and look at how the two measurements relate to each other. We will use a scatterplot to graph both measurements for each individual.

Use these graphs to answer the questions on the next page.

	forearm...	height...
1	30.0	151
2	21.5	160
3	26.0	170
4	24.5	172
5	31.0	190
6	23.0	166
7	28.0	182
8	26.0	174
9	28.0	190
10	28.0	170
11	24.5	163
12	23.0	160
13	22.0	167
14	22.0	163
15	23.0	157
16	24.0	185
17	24.0	160
18	25.0	160
19	24.0	154
20	22.0	157
21	23.0	173
22	21.0	158



These questions will help you read and interpret scatterplots.

1) One dot is highlighted in the scatterplot and marked A. What do we know about this person? Label person A in each dot plot.

2) Three dots are highlighted in the forearm dot plot. What do these 3 people have in common? Find these people in the other two graphs and label them B, C, D.

3) Find another group of people in the scatterplot who have the same forearm measurement. Circle these people in your scatterplot.

4) Two dots are highlighted in the height dot plot. What do these 2 people have in common? Find these people in the other two graphs and label them E and F.

5) Circle a different group of people in the scatterplot who are the same height as each other. Circle these people in your scatterplot.

6) Find the two people in the scatterplot who differ the most in their forearm measurements and label them G and H.

7) Find the two people in the scatterplot who differ the most in their heights and label them I and J.

These questions will help you build understanding of formal definitions of positive and negative association.

The mean forearm length for this data is 24.7 cm. The mean height is 167.4 cm. These means are marked on the scatterplot with lines.

8) Find someone who has a shorter than average forearm and who is also shorter than average in height. Are there lots of these people to choose from?

   Circle all the people who fit this description.

9) Find someone in the data set who has a longer than average forearm and who is also above average in height. Are there lots of these people to choose from?

   Circle all the people who fit this description.

10) Find someone who has a longer than average forearm but who is also shorter than average. Are there lots of these people to choose from?

If there is an association between the two variables, statisticians describe the association as "positive" or "negative." Here is the definition given in one statistics textbook:

Two variables are positively associated when above-average values of one tend to accompany above average values of the other, and below average values also tend to occur together.

Two variables are negatively associated when above-average values of one tend to accompany below average values of the other, and vice versa.

11) In the forearm-height scatterplot do you think the association is "positive" or "negative"? Why?

12) What would people look like if the association between forearm length and height was negative? Sketch some stick people to illustrate your point.