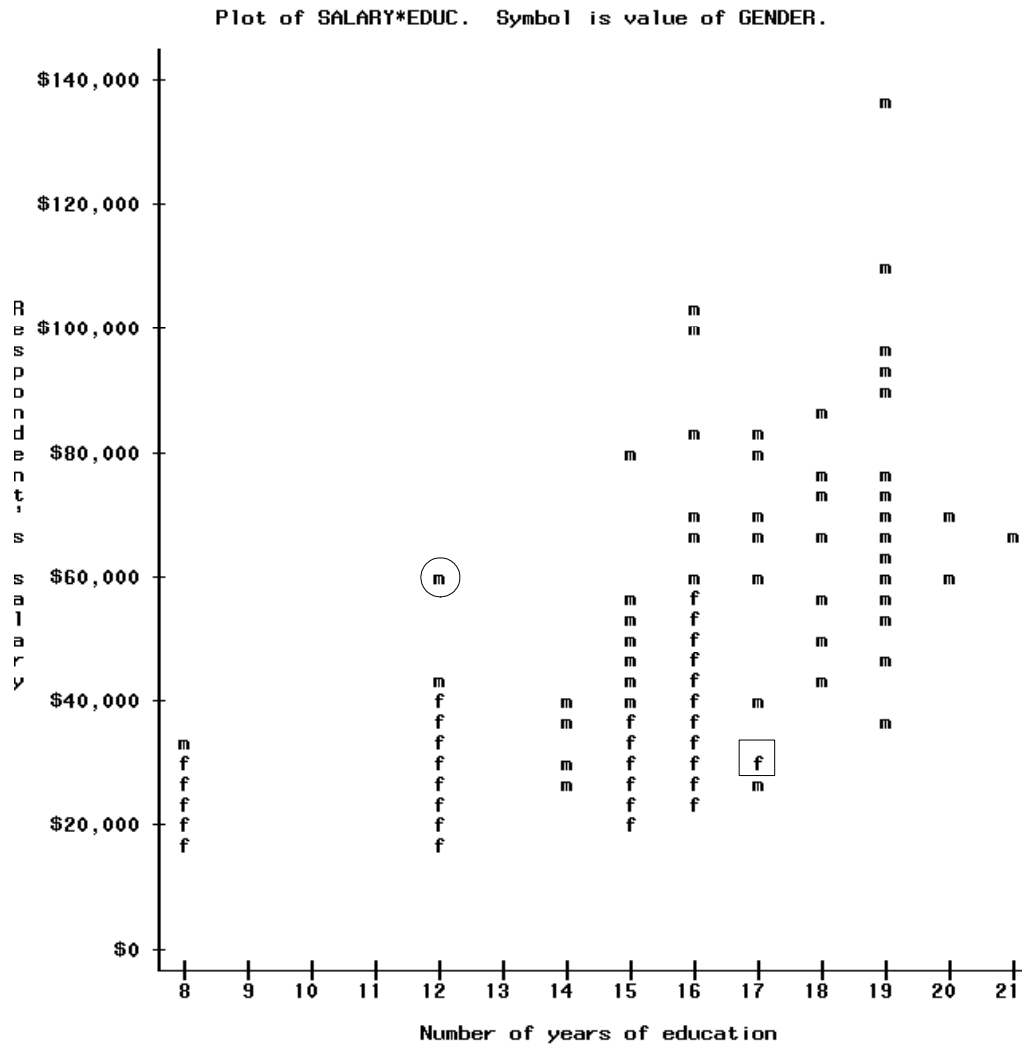


EDUR 7130
Introduction to Educational Research

Practice Exercise for Displaying Data

Note. Answers to questions posed are provided at the end of this exercise.

Display 1



NOTE: 387 obs hidden.

1. How many variables are depicted in Display 1 above, and what are they?
2. One point in Display 1 is identified separately by a circle; specifically there is an “m” in the middle of a circle. For each variable present, what are the corresponding values for this one identified point?

3. Similarly, one point in Display 1 is identified separately by a square; specifically there is an “f” in the middle of a square. For each variable present, what are the corresponding values for this one identified point?
4. Which of the following correlation coefficients best summarizes the nature of the relationship revealed in the Display 1 above?
 - a. 1.00
 - b. 0.60
 - c. 0.00
 - d. -0.60
 - e. -1.00
5. In a brief description, what does Display 1 reveal? What can be learned about the variables plotted in Display 1?

Display 2

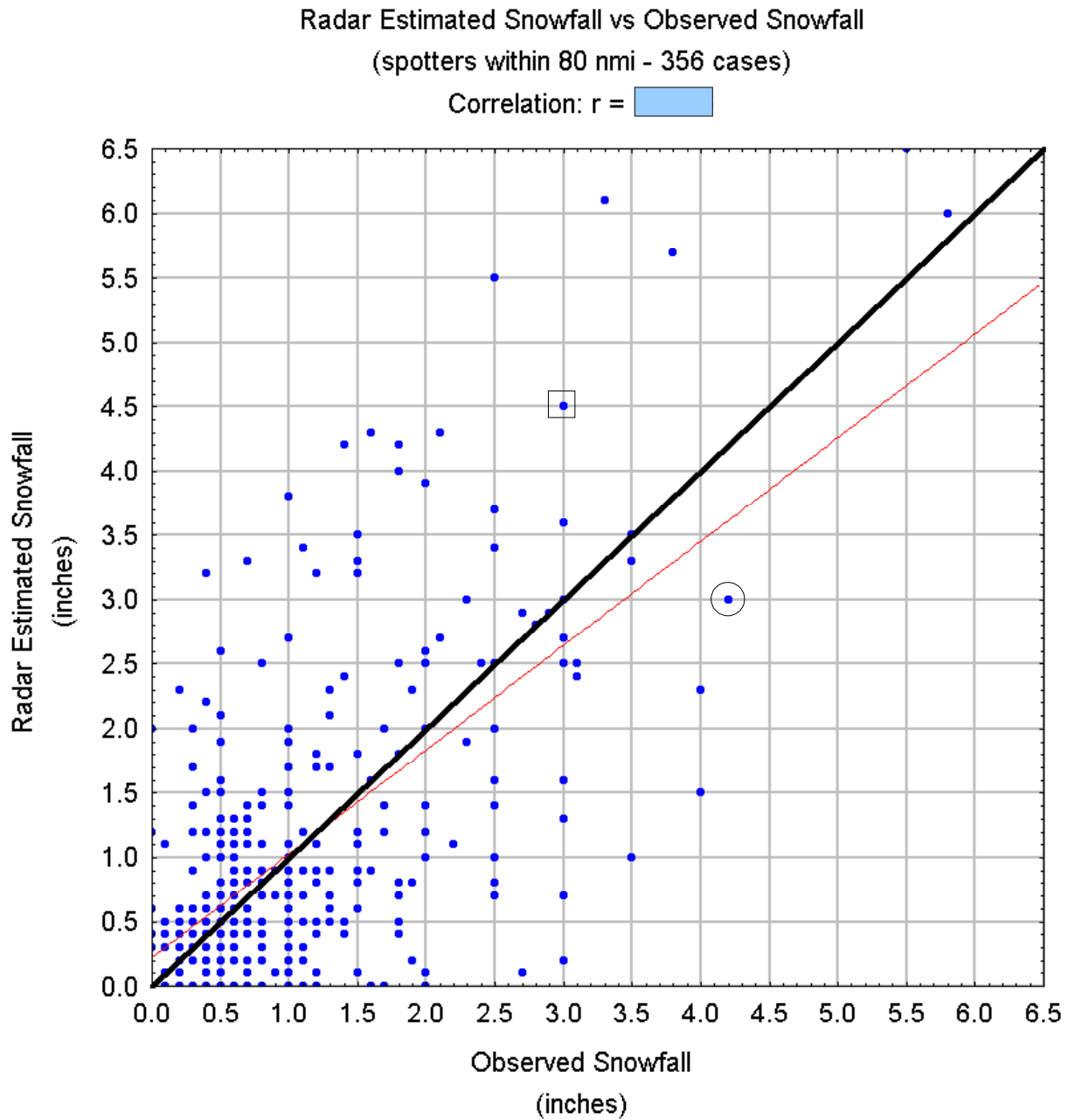
Overall Rating of Instructor			
		Frequency	Percent
Valid	1.00	2	8.0
	2.00	2	8.0
	3.00	3	12.0
	4.00	8	32.0
	5.00	9	36.0
	6.00	1	4.0
	Total	25	100.0

The frequency display illustrated in Display 2 above shows scores recorded from students in an undergraduate class at GSU. The rating stems from the following question: “Overall, how would you rate your instructor?” Responses include one of the following:

- 1 = very poor
- 2 = poor
- 3 = satisfactory
- 4 = good
- 5 = very good

6. Often frequency displays are used to determine whether data entry errors exist. Is there any evidence of a data entry error in Display 2?
7. What is the mean, median, and mode of all scores in Display 2? If there is a data entry error in Display 2, what is the corrected mean, median, and mode dropping the errors?
8. What is the range of scores present in Display 2 (excluding any data entry errors that may exist)?
9. According to Display 2, what percentage of students rated the instructor as good or very good (excluding any data entry errors that may exist)?

Display 3



10. Write a null hypothesis for Display 3.

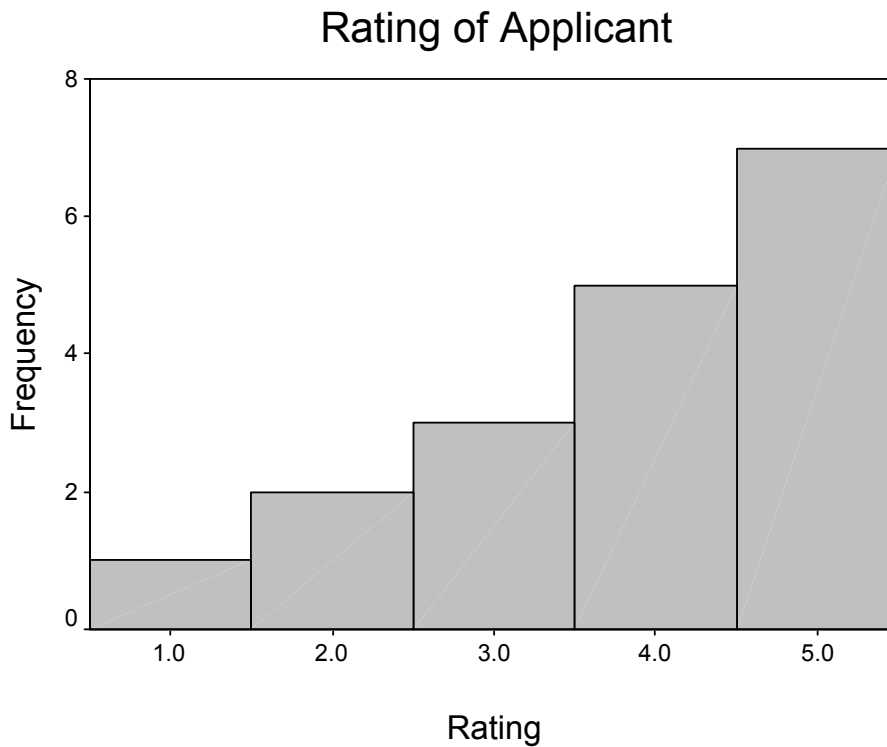
11. What are the scores on the relevant variables depicted in Display 3 for the point identified by the circle? Similarly, what are the scores for the point identified by the square?

12. In a brief description, what does Display 3 reveal? What can be learned about the variables plotted in Display 3?

13. Which of the following correlation coefficients best summarizes the nature of the relationship revealed in the Display 3 above?

- a. 1.00
- b. 0.60
- c. 0.00
- d. -0.60
- e. -1.00

Display 4



The graph in Display 4 above shows scores recorded from faculty members when asked to rate an applicant for a position as assistant professor in education. The rating stems from the following question: “Overall, how would you rate this applicant?” Responses include one of the following:

- 1 = very weak
- 2 = weak
- 3 = acceptable
- 4 = strong
- 5 = very strong

14. How many faculty members provided a rating? What is the mean, median, and mode rating provided? What is the range of ratings?

15. What proportion of faculty members rated this candidate as weak or very weak?

Display 5

**Per Capita Income for Select
Western African Countries**

Stem	Leaf
1	80
2	40 60 70
3	10 30 60 70 90
4	10 80
5	00
6	
7	10 30
8	90

Key: 4 | 80 means an income of \$480.

Display 5 presents per capita income for several African countries. This refers to the annual income per person in U.S. dollars.

16. According to Display 5, the poorest country has an average annual income of how much? The richest country has an average annual income of how much?

17. What is the mean, median, and mode annual income for all the countries charted in Display 5?

18. How many countries are charted in Display 5?

19. What percentage of countries charted in Display 5 have an average annual income less than \$325 per year?

Answers

1. How many variables are depicted in Display 1 above, and what are they?

Three, sex (male vs female), number of years of education, and salary of respondents.

2. One point in Display 1 is identified separately by a circle; specifically there is an “m” in the middle of a circle. For each variable present, what are the corresponding values for this one identified point?

The circled point is a male, with 12 years of experience and \$60,000 salary.

3. Similarly, one point in Display 1 is identified separately by a square; specifically there is an “f” in the middle of a square. For each variable present, what are the corresponding values for this one identified point?

The squared point is a female, with 17 years of experience and about \$25,000 salary.

4. Which of the following correlation coefficients best summarizes the nature of the relationship revealed in the Display 1 above?

- a. 1.00
- b. 0.60**
- c. 0.00
- d. -0.60
- e. -1.00

The association is positive (which eliminates responses 0.00, -.60, and -1.00), clearly not perfect so 1.00 can be ruled out, which leaves 0.60.

5. In a brief description, what does Display 1 reveal? What can be learned about the variables plotted in Display 1?

(1) There is a positive association between years of education and salary. As years of education increase, so too does salary.

(2) The majority of respondents with 16 or more years of experience are male.

(3) Males earn higher salaries than females.

6. Often frequency displays are used to determine whether data entry errors exist. Is there any evidence of a data entry error in Display 2?

Yes, one response is 6, which is not possible given the scale of 1 to 5.

7. What is the mean, median, and mode of all scores in Display 2? If there is a data entry error in Display 2, what is the corrected mean, median, and mode dropping the errors?

Mean for all scores, including the 6, is 3.92, median is 4, and mode is 5. Dropping the 6, the mean becomes 3.83, median 4, and mode 5.

8. What is the range of scores present in Display 2 (excluding any data entry errors that may exist)?

5-1 = 4, so range is 4.

9. According to Display 2, what percentage of students rated the instructor as good or very good (excluding any data entry errors that may exist)?

Excluding the one rating of 6, a total of 24 students rated the instructor. Of these, 8 rated instructor as good, and 9 rated as very good so $8+9 = 17$, $17/24 = .7083$ or 70.83% rated the instructor as good or very good.

10. Write a null hypothesis for Display 3.

There is no association between observed snowfall and radar estimated snowfall.

11. What are the scores on the relevant variables depicted in Display 3 for the point identified by the circle? Similarly, what are the scores for the point identified by the square?

Circle = about 4.2 inches of observed snowfall and 3 inches of radar estimated snowfall.

Square = 3 inches of observed snowfall, and 4.5 inches of radar estimated snowfall.

12. In a brief description, what does Display 3 reveal? What can be learned about the variables plotted in Display 3?

There is a positive relationship between observed and radar estimated snowfall. Radar estimated snowfall, while not perfectly accurate, may serve as a useful proxy for estimating amount of snowfall in some areas.

13. Which of the following correlation coefficients best summarizes the nature of the relationship revealed in the Display 3 above?

- a. 1.00
- b. 0.60**
- c. 0.00
- d. -0.60
- e. -1.00

The association is positive (which eliminates responses 0.00, -.60, and -1.00), clearly not perfect so 1.00 can be ruled out, which leaves 0.60.

In fact, the actual correlation is .68.

14. How many faculty members provided a rating? What is the mean, median, and mode rating provided? What is the range of ratings?

Total number who rated applicant = 18; mean = 3.83; median = 4; mode = 5. Range = 4.

15. What proportion of faculty members rated this candidate as weak or very weak?

Three out of 18 rated applicant as weak or very weak, so $3/18 = .1666$ or 16.66%,

16. According to Display 5, the poorest country has an average annual income of how much? The richest country has an average annual income of how much?

Poorest = \$180, richest = \$890

17. What is the mean, median, and mode annual income for all the countries charted in Display 5?

Mean = 428.66, median = 370, mode = no mode, no most common score

18. How many countries are charted in Display 5?

15

19. What percentage of countries charted in Display 5 have an average annual income less than \$325 per year?

Of the 15 countries, 5 have less than \$325 annual income per year, so $5/15 = .3333$ or 33.33%.