Sibling Scatter Plots

Question: Do you think that people from large families tend to have large families of their own, small families of their own, or do you think that there's no relationship there?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Person | Own Sibs | Dads Sibs | Moms Sibs |  | Person | Own Sibs | Dads Sibs | Moms Sibs |
| 1 |  |  |  |  | 16 |  |  |  |
| 2 |  |  |  |  | 17 |  |  |  |
| 3 |  |  |  |  | 18 |  |  |  |
| 4 |  |  |  |  | 19 |  |  |  |
| 5 |  |  |  |  | 20 |  |  |  |
| 6 |  |  |  |  | 21 |  |  |  |
| 7 |  |  |  |  | 22 |  |  |  |
| 8 |  |  |  |  | 23 |  |  |  |
| 9 |  |  |  |  | 24 |  |  |  |
| 10 |  |  |  |  | 25 |  |  |  |
| 11 |  |  |  |  | 26 |  |  |  |
| 12 |  |  |  |  | 27 |  |  |  |
| 13 |  |  |  |  | 28 |  |  |  |
| 14 |  |  |  |  | 29 |  |  |  |
| 15 |  |  |  |  | 30 |  |  |  |
| 16 |  |  |  |  | 31 |  |  |  |

1.  Record in the following table the number of siblings (brothers and sisters) of you and your classmates. Record the number of siblings of each person's father, and the number of siblings of each person's mother.  So that everyone "counts" the same way, decide as a class whether or not to count step-siblings and half-siblings.

2. Enter the data you collected above concerning family sizes into 3 different lists in the calculator: OWN,
DAD, MOM.

3. Examine the distribution of OWN by itself.  Comment briefly on the distribution (be sure to address each of the 4 items discussed in class!), and also report the mean, standard deviation, and five-number summary.

4.  To examine the relationships between the pairs of data lists, use Stat Plots.   Choose the first type of plot, which shows a scatter plot.  In the XLIST put one list, and in the YLIST put another.  Examine the relationships between an individual's siblings and fathers' siblings (OWN and DAD), each individual's siblings and mothers' siblings (OWN and MOM), and between fathers' siblings and mothers' siblings (DAD and MOM).   Write a paragraph summarizing your findings concerning whether an association exists between any pairs of these variables. Comment on each of the four items discussed in class!

5. Identify the explanatory variable(s) and response variable(s) in this activity.

6. Indicate what you would expect for the direction (positive, negative, or none at all) and strength (none, weak, moderate, or strong) of the association between the pairs of variables listed below.

|  |  |  |
| --- | --- | --- |
| Pair of Variables | Direction of association | Strength of association |
| height and armspan |  |  |
| height and shoe size |  |  |
| height and G.P.A. |  |  |
| SAT score and college G.P.A. |  |  |
| Latitude and ave. January temp. in U.S.A. |  |  |
| Serving size and calories of fast food sandwiches |  |  |
| Air fare and distance to destination |  |  |
| Cost and quality of peanut butter brands |  |  |
| Governor's salary and ave. pay in state |  |  |
| reading ability and shoe size of children |  |  |
| exercise and heart attack rate |  |  |

**Correlation**

7. Use a calculator to compute the correlation coefficients for each of the three pairs of variables.  First, you need to tell the calculator to turn on the Diagnostics.  Enter 2nd, Catalog (on the 0 button), scroll down to DiagnosticOn, and hit enter twice.  Now your calculator is ready to calculate the correlation coefficients.  Enter STAT, CALC, choose #8, LinReg (a + bx).  The calculator will wait for you to enter two lists, separated by a comma.  Then hit enter.

8. What are the correlation coefficients for the three pairs of variables?

 Which pair has the highest (in absolute value) correlation?

    Which pair has the lowest correlation?

9. Write a brief paragraph comparing the correlations of each of our variable combinations. Does this information support your findings in #4?

10. Compute the correlation coefficient for MOM vs. OWN. Compare this to your results for OWN vs. MOM. What do you notice?

11. Answer: