REVIEW QUESTIONS

Based on the first part of this exercise, answer True or False to the following items:

a. The federal government owns more than 50 percent of the land in several western states.  T F

b. If the correlation coefficient between two variables is large, it means that one variable is the cause of the other.  T F

c. The correlation coefficient shown when two maps are on the screen is interpreted differently than the correlation coefficient that appears in the scatterplot task.  T F

d. A negative correlation coefficient confirms that two variables are not associated with one another.  T F

e. When a correlation coefficient is not followed by any asterisks, we treat it as a zero correlation.  T F

f. States where people have high median family incomes tend to be the same states where people pay the most income taxes.  T F

EXPLORE QUESTIONS

If you have any difficulties using the software to obtain the appropriate information, or if you want to learn additional features of the MAPPING or SCATTERPLOT tasks, refer to the online help.

1. Let's compare the unemployment rate in states with the per capita expenditures by state.

   ▶ Data File: STATES
   ▶ Task: Mapping
   ▶ Variable 1: 150) UNEMPLOY
   ▶ Variable 2: 197) STA EX/CAP
   ▶ View: Map

   In this particular situation, it would be quite difficult to examine the maps visually and determine whether there is a pattern. Fortunately, we can simply use the Pearson correlation coefficient.

   a. Write in the value of the Pearson correlation coefficient.  \( r = 0.41 \)

   b. Is the relationship statistically significant?  Yes No

Exercise 2: Federalism: “A More Perfect Union”
c. Is the relationship positive or negative?  
   Positive  Negative

(d. Based on these results, could we conclude that increases in state  
   spending lead to higher unemployment?  
   Yes  No

(e. Briefly explain your answer below.
   Higher unemployment might lead to a need for states  
   to spend more money. Also, some other variable  
   might be involved. Just because two variables  
   are correlated does not mean that one causes  
   the other.

2. Under the federalism system of government, states have substantial autonomy in how they spend tax  
   dollars. Are states responsive to the unique needs of their populations, or do states tend to spend  
   money similar to one another? Let's first look at a mapping of the violent crime rate, and then we will  
   compare this with a mapping of the money that states spend on corrections.

   Data File: STATES
   Task: Mapping
   Variable 1: 115) VIOL.CRIME
   View: Map

   a. This map shows the violent crime rate for the 50 states. While there is no absolutely clear-cut  
      pattern here, which of the following statements is most accurate concerning the states  
      with the highest crime rates? (Circle the number of the most appropriate answer.)
      1. Many of the states with higher crime rates are in the Midwest.
      2. Many of the states with higher crime rates are coastal states, especially in the South  
         and Southwest.
      3. Most of the states with higher crime rates are in the Northeast.

   b. If states with higher violent crime rates also have higher rates of spending on correction facilities  
      (e.g., prisons), when we compare the maps for these two variables they should be  
      1. similar to each other.
      2. opposite of each other.
      3. neither similar nor opposite.
      4. We can't predict what the maps will look like.

   c. If states with higher violent crime rates have lower rates of spending on corrections, then  
      these maps should be  
      1. similar to each other.
      2. opposite of each other.
      3. neither similar nor opposite.
      4. We can't predict what the maps will look like.
3. Let's look at both maps so that we can see if the violent crime rate has any effect on how much a state spends on corrections.

Data File: STATES
Task: Mapping
Variable 1: 115) VIOL.CRIME
   ➤ Variable 2: 112) CORR$CAP
   ➤ Views: Map

These maps are
a. similar to each other.
b. opposite of each other.
c. neither similar nor opposite.

4. Sometimes it is difficult to determine how alike two maps are simply by looking at them. Let's use the SCATTERPLOT task to examine these same variables.

Data File: STATES
➤ Task: Scatterplot
➤ Dependent Variable: 112) CORR$CAP
➤ Independent Variable: 115) VIOL.CRIME
➤ View: Reg. Line

Note that the SCATTERPLOT task requires you to choose two variables. Make sure your screen matches the scatterplot shown above.

a. The states that have the highest rates of spending on corrections should appear as dots at the
   1. right of the scatterplot.
   2. left of the scatterplot.
   3. top of the scatterplot.
   4. bottom of the scatterplot.
   5. We cannot tell where these dots should be.

b. The states that appear as dots at the right of the scatterplot represent those that have the
   1. highest violent crime rates.
   2. lowest violent crime rates.
   3. highest rates of spending on corrections.
   4. lowest rates of spending on corrections.
   5. The location of the dots is not related to the value of the cases on either variable.
c. Identify the case that is highest on CORR$/CAP:

- Alaska
  - 249.56
  - 90.1

- Florida
  - 1023.6
  - 123.96

- 4.71**

   - Yes
   - No

k. The results indicate that states with higher violent crime rates spend higher proportions of money on corrections.

   - True
   - False

5. Another way of examining the connection between the crime problem and the government's response to this problem is to check the connection between the violent crime rate and the number of police officers in the state and local governments. We could hypothesize that states with higher rates of violent crime would have more police officers (per 10,000 population).

   Data File: STATES
   Task: Scatterplot
   ➤ Dependent Variable: 128 POLICE
   ➤ Independent Variable: 115 VIOL.CRIME
   ➤ View: Reg. Line

   a. Write in the Pearson correlation (r) for this relationship.
      - 0.486**

   b. Is the relationship statistically significant?
      - Yes
      - No

   c. In general, states that have higher crime rates have more police officers per 10,000 population.
      - True
      - False

   d. Which state has the highest number of police officers per 10,000 population?
      - New York
6. In the preliminary part of this exercise, you saw that people in some states pay much higher levels of income taxes than people in other states. Perhaps the high levels of income taxes are offset by lower levels of other taxes, such as property taxes. Let's take a look.

Data File: STATES

- Task: Mapping
- Variable 1: 114) PROP. TAX
- Variable 2: 20) INCOME TAX
- View: Map

\[ r = 0.47^{**} \]

a. Write in the Pearson correlation (\( r \)) for this relationship.

b. Is the relationship statistically significant?

\( \text{Yes} \) \( \text{No} \)

c. States with high income taxes tend to have low levels of property taxes.

\( \text{T} \) \( \text{F} \)

d. States in the Northeast (e.g., New York, New Jersey, Connecticut) tend to have high levels of both income taxes and property taxes.

\( \text{T} \) \( \text{F} \)

e. Most states in the South tend to have relatively low levels of both income taxes and property taxes.

\( \text{T} \) \( \text{F} \)

f. Based on the discussion provided in the preliminary part of this exercise, what might be the reason that people in some states pay higher property taxes than people in other states?

\text{ANSWERS WILL VARY}

States where people earn the most money are states where people pay the most property tax.

Some states provide more services and must raise more tax money.

The variable 105) \% HII EDUC $ represents the percentage of state and local spending that goes to higher education. The variable 21) STATE DEBT indicates the amount of per capita debt that states have, while 110) WELFS/CAP is the amount of per capita spending by states on welfare. Finally, as you saw above, the variable 112) CORRS/CAP is the per capita spending on corrections.

Do the following analyses and fill in the information requested.

Data File: STATES

- Task: Scatterplot
  - Dependent Variable: 110) WELFS/CAP
  - Independent Variable: 106) \% HII EDUC $
  - View: Reg. Line

Exercise 2: Federalism: "A More Perfect Union"
a. Write in the Pearson correlation (r) for this relationship.

b. Is the relationship statistically significant?

c. States that spend higher amounts on education tend to spend welfare (circle answer).

Data File: STATES
Task: Scatterplot

Dependent Variable: 112) CORRS/CAP
Independent Variable: 106) HIG EDUC
View: Reg. Line

d. Write in the Pearson correlation (r) for this relationship.

e. Is the relationship statistically significant?

f. States that spend higher amounts on education tend to spend corrections (circle answer).

Data File: STATES
Task: Scatterplot

Dependent Variable: 21) STATE DEBT
Independent Variable: 110) WELFS/CAP
View: Reg. Line

g. Write in the Pearson correlation (r) for this relationship.

h. Is the relationship statistically significant?

i. States that spend higher amounts on welfare tend to have lower state debt (circle answer).

Data File: STATES
Task: Scatterplot

Dependent Variable: 21) STATE DEBT
Independent Variable: 112) CORRS/CAP
View: Reg. Line

j. Write in the Pearson correlation (r) for this relationship.

k. Is the relationship statistically significant?

l. States that spend higher amounts on corrections tend to have higher levels of state debt (circle answer).
8. One basis of inequality in the balance between the federal government and the states concerns the fact that the federal government does not treat all states the same when it comes to spending its money or giving grants to state and local governments.

Data File: STATES
  Task: Mapping
  Variable 1: 16) FED$ RATIO
  View: List; Rank

a. How many states receive more money back from the federal government than they pay in?

b. Which states receive exactly the same amount back from the federal government as they pay in?

Florida
Rhode Island

9. Let's see if we can determine what might affect this exchange ratio. We read and hear a great deal about the problems of big cities. Perhaps the more urban states have a better exchange ratio with the federal government than the less urban states.

Data File: STATES
  Task: Scatterplot
  Dependent Variable: 16) FED$ RATIO
  Independent Variable: 4) URBAN00
  View: Reg; Line

a. The dot representing the state with the most favorable exchange ratio will be at the
   1. top of the scatterplot.
   2. bottom of the scatterplot.
   3. left of the scatterplot.
   4. right of the scatterplot.

Exercise 2: Federalism: 'A More Perfect Union'
b. The dot representing the most urban state will be at the
   1. top of the scatterplot.
   2. bottom of the scatterplot.
   3. left of the scatterplot.
   4. right of the scatterplot.

c. Which state has the most favorable exchange?

d. What is its exchange rate?

e. What percentage of this state lives in urban areas?

f. Which state is the most urban?

g. What is its exchange rate?

h. What percentage of this state lives in urban areas?

i. What is the value of the correlation coefficient?

j. Is it significant?

k. Do these results support the idea that the more urban states get a better exchange rate than the less urban states?

10. Perhaps the "wealth" of a state affects its exchange ratio.

    Data File: STATES
    Task: Scatterplot
    Dependent Variable: 16) FEDS RATIO
    Independent Variable: 13) FAMILY$
    View: Reg Line

    a. Write in the Pearson correlation (r) for this relationship.

    b. Is the relationship statistically significant?

    c. The higher the median family income, the lower the exchange ratio.

11. Median income is one indicator of the wealth of a state—the higher the median income, the wealthier the state. We could also use poverty as an indicator of the wealth of a state—the lower the poverty rate, the wealthier the state.

    Data File: STATES
    Task: Scatterplot
    Dependent Variable: 16) FEDS RATIO
    Independent Variable: 15) % POOR
    View: Reg Line

Part I: Foundations
a. Write in the Pearson correlation (r) for this relationship: 
   \[ r = 0.509 \] **

b. Is the relationship statistically significant?
   \[ \text{Yes} \quad \text{No} \] 
   T \quad \text{F}

c. The higher the poverty rate, the lower the exchange ratio.

12. Those who favor a strong federal government argue that the federal government can play the role of Robin Hood, taking from the rich states and giving to the poor states and thus compensating for inequalities in resources across the states. Do the results in Questions 10 and 11 support the idea that the federal government is, in fact, doing this? Be sure to cite the evidence for your conclusion.

Yes. These results support the idea that the federal government is involved in income redistribution among the states. States that are poorer have a higher exchange ratio; states that have higher income have lower exchange ratios.

Exercise 2: Federalism: "A More Perfect Union"