 Calculate a Correlation Coefficient and Create a Scatterplot

A researcher was interested in whether there was an association between the sales of coats and the sales of boots to determine a strategic advertising campaign. The data has been sourced from the USA using [Google Trends](https://trends.google.com/trends/explore?date=all_2008&geo=US&gprop=froogle&q=Coats,Boots) stored in the spreadsheet.

**Resource**: correlation-data-scatter.XLSX

1. What information does the chart provide about the association between the two variables? What is the direction of the association? How did you determine this? Does it appear to be a small, moderate, or strong association? Why?

2. Click anywhere on the chart to select it and then select Chart from the menu bar and scroll down to Add trendline to produce a line of best fit (also known as a regression line) for the scatterplot. The default selection linear is the most appropriate option; therefore simply click on OK to produce the trendline. How does the trendline fit with your perception of the strength and direction that you determined in Question 1? Does the presence of the trendline alter your perception at all? Why or why not?

3. Interpret the correlation coefficient. What is the strength of the association? What is the direction of the relationship? Do you believe this correlation to be small, moderate, or large? How does your interpretation fit with the one based on the scatterplot?

4. Write a statement summarizing the results of the correlation you calculated. Be sure to include information about what the variables are as well as the direction of the association.

SCATTER PLOT Question 1 Answer:

The scatterplot indicates a positive association between the two variables. This can be detected by noticing that as the values for one variable increase, so do the values for the other variable. The points are reasonably close together, so it would seem that the association is moderate to strong.

SCATTER PLOT Question 2 Answer:

The trendline supports the interpretation of a positive association, as it increases from left to right.

PEARSON CORRELATION Question 3 Answer:

The correlation coefficient is $0.93$, which is a strong positive association. However, to understand the relative strength of the association, one must always take into consideration the variables that are correlated and what different degrees of strengths mean in terms of those variables. The coefficient of $.93$ fits with the interpretation of a positive association based on the scatterplot.

PEARSON CORRELATION Question 4 Answer:

Among third graders, communicative skills are positively correlated with quality of peer relations, $r=0.93$.