8.SP US Airports, Assessment Variation

Task

The scatter plot below shows the relationship between the number of airports in a state and the population of that state according to the 2010 Census. Each dot represents a single state. The number of airports in each state comes from data on http://www.nationalatlas.gov/atlasftp.html?openChapters=chptrans#chptrans. The data for population comes from the 2010 census: http://www.census.gov/2010census/data/

![Scatter plot of State Population vs. Number of Airports](image)

a. How would you characterize the relationship between the number of airports in a state and the state's population? (Select one):
i. The variables are positively associated; states with higher populations tend to have fewer airports.

ii. The variables are negatively associated; states with higher populations tend to have fewer airports.

iii. The variables are positively associated; states with higher populations tend to have more airports.

iv. The variables are negatively associated; states with higher populations tend to have more airports.

v. The variables are not associated.

LaToya uses the function \( y = (1.35 \times 10^{-6})x + 6.1 \) to model the relationship between the number of airports, \( y \) and the population in a state, \( x \).

b. How many airports does LaToya’s model predict for a state with a population of 30 million people? \([_____]\).

c. What does the number 6.1 that appears in LaToya’s function mean in the context of airports vs. populations? (Select one.)
   i. The average number of airports in a state is 6.1.
   
      ii. The median number of airports in a state is 6.1.
   
      iii. The model predicts a population of 6.1 people in a state with no airports.
   
      iv. The model predicts 6.1 airports in a state with no people.
   
      v. The model predicts that 6.1 states have no airports.
   
      vi. The model predicts 6.1 more airports, on average, for each additional person in a state.
   
      vii. The model predicts 6.1 fewer airports, on average, for each additional person in a state.
   
      viii. The number 6.1 cannot be interpreted in this context.

d. What does the number \( 1.35 \times 10^{-6} \) that appears in LaToya’s function mean in the context of airports vs. populations? (Select one.)
   i. The average number of airports in a state is \( 1.35 \times 10^{-6} \).
ii. The median number of airports in a state is $1.35 \times 10^{-6}$.

iii. The model predicts $1.35 \times 10^{-6}$ airports in a state with no people.

iv. The model predicts $1.35 \times 10^{-6}$ people in a state with no airports.

v. The model predicts that $1.35 \times 10^{-6}$ states have no airports.

vi. The model predicts $1.35 \times 10^{-6}$ more airports, on average, for each additional person in a state.

vii. The model predicts $1.35 \times 10^{-6}$ fewer airports, on average, for each additional person in a state.

viii. The number $1.35 \times 10^{-6}$ cannot be interpreted in this context.

e. Fill in the following newspaper headline based on this relationship:

On average, a state in the contiguous 48 US states has 1 additional airport for every ____________ additional people.