Tableau Application 2

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Part I Use Tableau to do the following:

1. **Map**

   I. **Create a map of the average Pneumonia and Influenza deaths by state for all states.**

   Answer: Map of Total Pneumonia and Influenza Deaths by State (kindly see tableau application2.pdf).

   II. **Examine this map to determine what state had the highest number of pneumonia and influenza deaths?**

   Answer: New York(NY).

   III. **Examine this map to determine what state had the lowest number of pneumonia and influenza deaths?**

   Answer: Indiana (ID).

2. **Bar graph**

   I. Add State, City, and Pneumonia and Influenza deaths to a worksheet

   Answer: please kindly see attached tableau application2.pdf

   II. Filter data to include only the state of Texas

   Answer: please kindly see attached tableau application2.pdf

   III. **Create a bar graph of the average Pneumonia and Influenza deaths for the cities in Texas**

   Answer: Bar graph of Average Pneumonia and Influenza Deaths by city in Texas(see attached tableau application 2.pdf)

   IV. **Examine the bar graph: Which two cities had the lowest number of pneumonia and influenza deaths?**

   Answer: El Paso and Corpus Christi had the lowest number of pneumonia and Influenza deaths.

3. **Table**

   I. Filter the data to include only Texas, California, and Florida

Answer: Kindly see the attached tableau application 2.pdf.

II. Create a table of the sum of the Pneumonia and Influenza deaths by state

Answer: Please kindly observe table graph in attached tableau application2.pdf.

III. Examine the table for these three states:

A. **Which of these states had the highest number of pneumonia and influenza deaths**?

Answer: California had the highest number of pneumonia and Influenza deaths.

B. Which of these states had the lowest number of pneumonia and influenza deaths?

Answer: Florida had the lowest number of deaths.

IV. Line graph

A. Make a line graph for the average Pneumonia and Influenza deaths by year for all data

Answer: Please kindly observe the line graph in pdf.

B. Discuss the trends in the data. Where there any years with very low rates or very high rates? As you move from year to year, are the number of deaths increasing, decreasing, or about the same?

Answer: There is an upward trend in the data. Lowest rate of deaths in 1979 and highest number of deaths in 2000. Number of deaths are increasing since it is an upward trend.

<u>Part II Discussion</u>:

1. **Describe pneumonia in a short paragraph.**

Answer: Pneumonia is a lung infection caused by bacteria, viruses, or fungi, leading to symptoms like cough, fever, difficulty breathing, and chest pain.

It is primarily transmitted through respiratory droplets from coughs or sneezes. Prevention includes vaccination (e.g., pneumococcal and flu vaccines), proper hand hygiene, and avoiding smoking. Diagnosis is often done through chest X-rays and lab tests, while treatment may involve antibiotics or antivirals, depending on the cause.

In the U.S., pneumonia affects approximately 1.5 million people annually, with the highest prevalence in states with colder climates, like Alaska and Montana.

The first recognized pneumonia case was described by Hippocrates in ancient Greece, though modern clinical descriptions began in the 19th century.

2. **Describe influenza in a short paragraph.**

   Answer: Influenza, or the flu, is a contagious viral infection that affects the respiratory system, causing symptoms such as fever, chills, sore throat, body aches, fatigue, and cough.

   It spreads through respiratory droplets from coughs, sneezes, or talking. Preventive measures include annual flu vaccinations, good hand hygiene, and avoiding close contact with infected individuals. Diagnosis typically involves a physical exam and sometimes a rapid flu test. Treatment includes antiviral medications and supportive care, such as rest and hydration.

   In the U.S., millions of flu cases occur annually, with tens of thousands of deaths, particularly during the winter season. States like New York and California often report high flu activity.

   The first recorded flu pandemic dates back to 1580, with modern understanding advancing after the 1918 Spanish flu pandemic.

3. **Several predictive studies have been done for these diseases. Find one study for each disease and state what predictive factors were examined and what the researchers concluded.**

   Answer:

   For **pneumonia**, a study looked at how to predict severe cases, focusing on factors like age, existing health issues, breathing rate, and blood pressure. The researchers found that patients with a faster breathing rate and low blood pressure were more likely to have severe pneumonia, which could require intensive care. They used scoring systems, such as the Pneumonia Severity Index (PSI) and CURB-65, to help assess risk. However, these tools aren't perfect and should be used carefully, as their accuracy can vary depending on the patient.

   For **influenza**, a study used machine learning to predict which patients in the ICU (Intensive Care Unit) were most likely to die from severe flu. The factors they looked at included age, body mass index (BMI), and specific blood markers like AST (a liver enzyme). The results showed that older patients, those with lower BMI, and abnormal AST levels were at higher risk. The machine learning model was found to be more accurate than traditional methods at predicting these outcomes

   References:

   a. https://ccforum.biomedcentral.com/articles/10.1186/cc11447
   b. https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-019-4611-1
   c. https://www.nature.com/articles/s41598-023-38765-8.pdf
   d. https://bmcpulmmed.biomedcentral.com/articles/10.1186/s12890-024-03252-x

4. If you lived in the state of Texas should you be more worried about death from these diseases when compared to other US states? Why or why not? Hint: look at the disease statistics for that state.

   Answer:

   If you live in Texas, you might need to be somewhat concerned about pneumonia and the flu, but it's not too different from other states. I have highlighted few points:

   a. Pneumonia and Flu in Texas: Texas is big, with both cities and rural areas. During flu season, these illnesses can spread easily, especially in big cities like Houston. Texas often sees higher flu cases, which can lead to more pneumonia, especially in older people and those with health issues.
   b. Compared to Other States: Texas doesn't have the highest death rates from these diseases. States with colder climates, like Alaska, tend to have more deaths because they have longer flu seasons and less access to healthcare. But Texas still has some challenges, especially in rural areas where it's harder to get medical care quickly.
   c. Healthcare in Texas: People in cities have good access to doctors, which helps reduce the risks. But in rural areas, it's harder to get treated quickly, which can lead to more serious cases of pneumonia or flu.

   So, while Texas isn't the worst place for these diseases, it's still important to be cautious, especially during flu season. Getting vaccinated and seeking medical help early can make a big difference.