Report for the U.S. Health Department

The effect of regional differences on Hospital Infection Risk

**Introduction:**

The aim of the study is to assess how the regional differences of hospitals can influence the risk of infection. This study can guide targeted interventions to reduce healthcare-associated infections, which leads to improving patient safety.

**Methods:**

Advanced statistical modeling was employed, specifically the Bayesian regression models, to analyze data from various hospitals. This model allowed us to account for other variables like the average age of patients, the average length of stays, the presence of a medical school, and the number of beds in each hospital. This holistic approach provides a more accurate assessment of the true impact of the region on infection risk.

**Finding:**

**A graph of a pyramid

Description automatically generated with medium confidence**

This graph shoes a nuanced view of how different regions affect the risk of infection:

1. North-East: The distribution is mostly centered around zero, indicating a negligible effect on infection risk.
2. South: similar to Northeast but with a slight shift towards negative values, suggesting a potential reduction in risk.
3. West: This distribution is skewed towards positive values, indicating a higher risk of infection

**Conclusion:**

Based on this model, it is safe to conclude that the region does affect the risk of infection in hospitals. Especially hospitals in the Western region which are associated with a higher risk.

Based on this report, we recommend conducting in-depth studies to explore the factors contributing to the higher infection risk in the Western Region and implementing region-specific infection control protocols, by focusing on the Western Region.