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# Title: Analyzing the Disparity in Age at Death between Left-Handers and Right-Handers: A Bayesian Approach

**Apurva Hasmukhbhai patel**
Student
MedTourEasy

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**Abstract:**

This research investigates the correlation between handedness and lifespan, focusing on the age at which left-handed individuals and right-handed individuals decease. Utilizing a comprehensive dataset sourced from death certificates, medical records, and surveys, we employ a combination of classical frequentist statistics and Bayesian methods to elucidate patterns, disparities, and potential implications associated with handedness and longevity. While handedness has intrigued researchers across disciplines, its impact on lifespan remains a compelling question. We utilize Google Colab, a cloud-based platform, along with Python libraries such as Pandas, NumPy, and Matplotlib for data analysis and visualization. Our findings provide insights into the age differences between left-handers and right-handers, shedding light on this intriguing phenomenon.

## Introduction:

Handedness, the preference for using one hand over the other, has long fascinated researchers. Previous studies have explored various facets of handedness, but its relationship with lifespan remains relatively unexplored. This research aims to fill this gap by analyzing a diverse dataset to uncover patterns in the age at death between left-handers and right-handers.

## Objective:

The primary objective of this study is to utilize Bayesian statistics to investigate the probability of individuals being a certain age at the time of their death, considering their handedness. Additionally, we aim to assess the statistical significance of the reported age difference between left-handers and right-handers.

**Methodology:**

Data Collection and Preprocessing: We compile a dataset encompassing death certificates, medical records, and surveys, ensuring rigorous cleaning processes to remove missing values and standardize entries.

Descriptive Statistics: Summary statistics including mean age at death, median age at death, and standard deviation are calculated for both left-handers and right-handers.

Hypothesis Testing: Formulation of null and alternative hypotheses, followed by a two-sample t-test to compare the means and ascertain statistical significance.

Bayesian Approach: Estimation of posterior distributions, calculation of credible intervals, and probability analysis to assess the likelihood of left-handers living longer than right-handers.

**Implementation:**

Utilizing Google Colab, Python code is written to analyze the dataset and visualize the results using libraries like Matplotlib. Bayesian methods are applied to complement frequentist approaches, providing a comprehensive understanding of the age disparity between left-handers and right-handers.

**Conclusion:**

Our analysis reveals significant insights into the age at death disparity between left-handers and right-handers. By combining classical frequentist statistics with Bayesian methods, we provide a holistic understanding of this phenomenon, contributing to the existing body of knowledge on handedness and lifespan. Further research in this area could yield valuable implications for healthcare and societal understanding.