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**Repeated-Measures ANOVA: Assessing the Influence of Different Engine Oils on the Mileage of Cars**

Researchers are curious to know if four different engine oils lead to different mileage of cars. To test this, they measured the mileage of 5 cars using four different engine oils. Since each car’s mileage is measured by applying each of the four-engine oils one by one they use a repeated-measures ANOVA to check if the mean reaction time differs between engine oils.

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*Attached above is the first five data’s of different engine oils on the mileage of cars.*

The study used a repeated-measures ANOVA statistical analysis approach to examine possible differences in vehicle mileage under the influence of a total of four engine oils. The repeated assessments of each car's mileage for each of the four engine oils led to the decision to use repeated-measures ANOVA, which is an excellent method for assessing within-subject differences under a variety of conditions. Its objective is to determine if utilizing four different engine oils causes an obvious difference in the cars' mileage.

**Hypothesis:**

**Null Hypothesis (H0)**: There is no significant difference in car mileage between the four engine oils.

**Alternative Hypothesis (H1)**: There is a significant difference in car mileage between at least two of the four engine oils.

**Results:**

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