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Saquon Barkley’s Impact on Philadelphia Eagles Game Outcomes

**Objective**: This project analyzes the performance of Saquon Barkley to determine if there’s a correlation between his rushing yards, touchdowns, and the Philadelphia Eagles' success in games.

**Dataset**: A dataset of Barkley’s performance statistics across 8 games, including metrics such as rushing yards, touchdowns, team points, and game outcomes (win or loss).

**Key Findings**

1. **Rushing Yards and Wins**:
   * The average rushing yards in games the Eagles won is **124 yards**, compared to **89.5 yards** in games they lost.
   * Although this difference suggests that higher rushing yards are associated with wins, a statistical t-test found that this difference is not statistically significant (p-value = 0.1321).
2. **Touchdowns and Wins**:
   * The Eagles averaged **1.5 touchdowns** in winning games compared to **0.5 touchdowns** in losing games.
   * This implies that scoring touchdowns may increase the likelihood of a win, but the t-test indicates that this difference is not statistically significant (p-value = 0.2571).
3. **Threshold Analysis**:
   * In games where Barkley rushed for more than 100 yards, the Eagles won 100% of the time (5 out of 5 games).
   * This suggests that reaching a rushing threshold of 100 yards might be an indicator of a successful outcome.
4. **Correlation with Team Points**:
   * The correlation between rushing yards and team points is **0.22**, and the correlation between touchdowns and team points is **0.28**.
   * These moderate positive correlations suggest that Barkley's performance contributes to team scoring but may not be the sole determining factor in game outcomes.
5. **Average Team Points in Wins vs. Losses**:
   * On average, the Eagles scored **27 points** in winning games and **18.5 points** in losing games, indicating that team scoring plays a significant role in determining game outcomes.

**Summary Interpretation**

The analysis shows that higher rushing yards and touchdowns by Saquon Barkley are associated with better outcomes for the Philadelphia Eagles, but these differences are not statistically significant based on the current sample size. However, games with rushing yards above 100 have a strong link to wins, suggesting a performance threshold that positively impacts game results. Additional data could help confirm these trends and offer a deeper understanding of Barkley's impact.