Final Course Project:

**Analyzing Player's Age Impact To Their Overall Performance Ratings In FIFA 21**

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**Statistical/Hypothetical Question**

The main hypothesis for this research paper was "Does a player's age impact their overall performance ratings in FIFA 21?". The purpose of this analysis was to determine whether a player's age, a basic characteristic, is correlated with higher performance FIFA ratings and possibly particular skills, such as passing or shooting in soccer. The hypothesis assumed a positive relationship between age and overall rating, focusing on identifying peak performance years.

**Outcome of EDA**

Exploratory Data Analysis (EDA) confirmed a moderate positive correlation between age and overall rating (correlation coefficient ~0.47). Age was similarly correlated with skills like shooting and passing, suggesting that as players mature, they likely improve in critical performance areas. Descriptive statistics for each variable (mean, mode, spread) revealed that most players are in their early-to-mid 20s, with skill ratings generally distributed around moderate levels. The analytical distribution and CDF for overall rating showed that player ratings approximately follow a normal distribution, although star players created a slight skew.

**Missed Elements in Analysis**

The analysis should have included more detailed breakdowns of performance by player position, nationality, or league affiliation. Because players in different positions or leagues may have varied career paths and skill development patterns, these factors provide the findings with more depth. Age-related changes may also be better captured by examining dynamic factors, such as performance over several seasons.

**Additional Variables for Consideration**

Variables such as experience (years of professional play) and physical attributes (e.g., stamina, speed) might enhance the analysis. These could reveal the physical or experiential factors contributing to higher ratings among players of different ages.

**Assumptions and Challenges**

A player's age was assumed to have a direct impact on FIFA performance ratings, even if it might only have an indirect effect on certain skills. Furthermore, it is important to use caution when interpreting FIFA's composite ratings because they are impacted by several factors not separately considered in the analysis. Key challenges included handling outliers (e.g., top-rated or veteran players) and needing more data on some skill attributes. Understanding the significance of correlation and applying PMFs required careful treatment, and interpreting the results for broader populations introduced questions about the generalizability of FIFA data to real-world performance.

**Conclusion**

In conclusion, while EDA provided meaningful insights into the relationship between age and performance, exploring additional player characteristics and performance trends could refine these findings.