**Stack or Stagger: NBA Lineup Analysis**

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**Abstract**

**Introduction:** The distribution of minutes played among possible 5-man lineups by NBA coaches can have a significant impact on a team’s performance. However, due to the small sample sizes associated with 5-man lineup data, it is often easier to analyze lineup combinations involving less players. As such, this paper seeks to investigate the optimal distribution of minutes between a team’s two best players, defined by their Wins Added (as calculated by bball-index.com). Given a fixed number of minutes played for each player, is it better to play the players together as much as possible (stack), or play them separately and avoid minutes where neither player is on the court (stagger)?

**Methods:** 2-man lineup combination data was collected from pbpstats.com for every team by season since 2010. Additionally, a database of player archetypes and values was gathered from bball-index.com. For each team, a value (τ) was calculated to estimate the mean improvement expected by replacing two minutes of a staggered lineup with two minutes of a stacked lineup. We were able to evaluate the difference between stacking and staggering leaguewide by conducting t-tests on both the proportion of teams with a positive τ, as well as the true mean of τ. A secondary analysis was also conducted by means of an ANOVA evaluating τ across different groups of teams. In this analysis, teams were split by the archetypes of their best players, as defined by bball-index.

**Results:** The proportion of teams that would benefit from staggering was found to be significantly greater than 0.5 (α = 0.05). Additionally, the mean increase in net rating from a stacked lineup to a staggered lineup was found to be significantly greater than 0 (α = 0.05). Finally, by breaking teams down into groups based on the archetype of their two best players, there was no significant difference found between different pairs of archetypes.

**Conclusion:** Leaguewide, staggering the minutes of a team’s two top players appears to be a more effective strategy than stacking. Additionally, there does not appear to be any significant difference in the benefits of stacking vs staggering across different archetypes of players. This suggests a potential new strategy for NBA coaches when developing rotations: emphasizing the equal dispersion of talent, regardless of position and playstyle.