

## Executive Summary

Five different visualizations were constructed for the MLB betting data from 2021. First, the average total score of all games by date was plotted. This visualization revealed that there was much more uncertainty in the number of runs scored in a given game when the season reached September and October. During these two months, the average number of runs scored per game fluctuated greatly from as low as three runs per game to as high as 15 runs per game. The second visualization, which plotted the average open-close differential per game by the time of year, had a similar outcome. Once the 2021 season reached September and October, this differential jumped up and down. These two visualizations illustrated how volatile the end of the 2021 MLB season was from a bettor's perspective. Runs scored were all over the place, and the general public's betting behavior greatly changed the betting lines from their opening values. The third and fourth visualizations also went together. These visuals detailed the average number of runs scored and runs surrendered per game for every MLB team in 2021. The Astros, Rays, Blue Jays, and Red Sox scored the most runs per game. On the other end, the Marlins, Mets, Orioles, Pirates, and Rangers scored the fewest runs per game. The Orioles, Diamondbacks, Twins, Pirates, Rangers, and Nationals surrendered the most runs per game. The Dodgers, Giants, Brewers, and Braves surrendered the fewest runs per game. With hindsight, these results would have had huge effects on the betting market prior to the start of the season. Considering some teams were at the extreme end of both distributions (i.e. the Rangers surrendering the most and scoring the fewest), their betting lines would have been adjusted prior to the start of the season. Additionally, even though these insights come from after the fact, the 2022 betting lines for these teams (like the Rangers) were probably based on these results from 2021. Finally, the 30 best starting pitchers in 2021 from a team winning percentage perspective were determined. Pitchers with a win percentage of 100% were excluded, due to the fact that they most likely had very few pitching outcomes. Pitchers like Chris Ellis, Jesse Chavez, Alek Manoah, Julio Urias, and Logan Webb led the league in this category.