Group two decided to perform an analysis on Washington State 2020-2023 Powerball jackpots. To answer these questions, we looked for the most often drawn numbers and the highest dollar winnings, both filtered by day and by month. The goal of this project is to determine the frequency of the powerball/power play to increase our odds of maximizing our payout.

Some background to the powerball lottery jackpot, this lottery is played in 44 states of the United States of America. Players choose five numbers between 1 to 69; These values are called ‘white numbers’. Players then choose one Powerball number between 1 to 26, and finally a powerplay number between 2 to 5 and 10. If the Powerball number is chosen you will win $4, your powerplay number is a multiplier of your winnings. So, if your powerball number is chosen and your powerplay number of 5 is chosen, then you will win 4$ times the powerplay number which gives you 20$.

The first of our exploratory questions asks what were the most common powerball/power play numbers depending on the day between 2020 to 2022? The most often drawn Powerball number by day could be used as a data point to base your numbers on, but the data didn’t show enough significance to count on it. We grouped the data by date for each year, then combined each of the modes to calculate them for the three-year span.  
  
 The second of our exploratory questions asks what were the most common power ball/powerplay numbers depending on the month? According to our data, between the years 2020 to 2022.  The powerball number that is randomly picked the most frequently every month is 18.  The powerplay number that is most often randomly picked every month is 2.  This data is acquired by taking a mode function of aggregate data.  This aggregate data is first grouped by weekdays, then these weekdays are grouped by their respective months.  By doing this, we are effectively performing a mode function over all selected weekdays per month. Allowing a bar graph to be made which represents the most frequent powerball/power play numbers per month for 2020 to 2022.

The third of our exploratory questions asks, “What were the most common powerball/power play numbers overall? This one is a little more interesting to us since the two years have the same mode. Both 2020 and 2022 had a mode of 18. We did the same thing for this one but grouped mode by year instead of month or day.

The four of our exploratory questions ask what are the top five greatest dollar months jackpot? According to our data between the years 2020 to 2022, 2022 (November, October, January) had the highest jackpot winnings. The findings were acquired by grouping the aggregate data by month and then applying the max function to find the top 5 maximum values. Since 2022 held the top 5 highest jackpot winnings, we decided to display the top 5 jackpot winnings for 2020 and 2021. The highest jackpot winnings were in November 2022 $120,000,000,000, October 2022 $1,000,000,000, $825,000,000, $700,000,000 and January 2022: $630,000,000.

The fifth of our exploratory questions asks which day of the week had the highest jackpot? According to our data between the years 2020 to 2022, Wednesday had the highest jackpot winnings. The findings were acquired by grouping the aggregate data by weekday and then applying the max function to find the maximum values for each draw day. The highest jackpot winnings were drawn on Wednesday 2022 $120,000,000,000.  This is such a large jackpot that comparable to our other jackpot data it can be considered an outlier.