Package Vignette

```
library(stat5555sor)
```

Workflow

Web scrape data and format

Everything starts with the sum_sor function, which will in turn call all the rest of the helper functions. It is not the only function exported though as some users may want to see the changes in data in between steps.

To start off, the data is pulled from the two following websites, https://kenpom.com/cbbga23.txt and https://www.warrennolan.com/basketball/2023/net and then formatted into a more viewable data frame. This function was exported as there is a parameter of date that the function will include all games up until that date. So, a user could find the sor score for half a season if they wanted. In this example below, we chose the date of selection sunday for this year.

```
test <- get_combined_data(2023, "2023-03-12")
#> No encoding supplied: defaulting to UTF-8.
head(test)
#> # A tibble: 6 x 12
#> # Rowwise:
#>   Date       Away_team Away_score away_NET Home_team Home_score home_NET score_diff site   neutral ho
#>   <date>     <chr>          <int>    <int> <chr>          <int>    <int>      <int> <chr>    <dbl>
#> 1 2022-11-07 Jackson ~         56      305 Abilene ~         65      206          9 Abil~        0
#> 2 2022-11-07 South Da~         80      155 Akron             81      102          1 Akron        0
#> 3 2022-11-07 Longwood          54      166 Alabama           75        2         21 Alab~        0
#> 4 2022-11-07 Nicholls~         75      263 Arizona          117       10         42 Ariz~        0
#> 5 2022-11-07 Tarleton~         59      162 Arizona ~         62       66          3 Ariz~        0
#> 6 2022-11-07 North Da~         58      215 Arkansas          76       21         18 Arka~        0
```

sor_points function

This is the function that contains the algorithm we created to find the change in sor score for one game. It was exported as well so that users have the ability to see the sor change for any specific game. As an example we will take the data from the first row of the test dataset and run the function to see the change in sor for Jackson State.

```
sor_points(56, 65, 206, 363, FALSE, FALSE)
#> [1] -0.5366492
```

sum_sor results

Finally, the sum_sor function will sum up the sor changes for each row and each team. It will then create a new data frame with two columns, the team name and the total sor score.

```
test_sor <- sum_sor(2023, "2023-03-12")
#> No encoding supplied: defaulting to UTF-8.
head(test_sor)
#>            Team      SOR ranking
#> 114     Houston 8.075916       1
#> 4       Alabama 7.806283       2
#> 133      Kansas 7.701571       3
#> 318        UCLA 7.557592       4
#> 238      Purdue 7.520942       5
#> 208 North Texas 6.767016       6
```

Additional Package Uses

If I wanted to look at the past seasons and make a visualization for their sor scores over that time period, here is how I could do it using this package (note that this is an example dataset that is included within the package already):

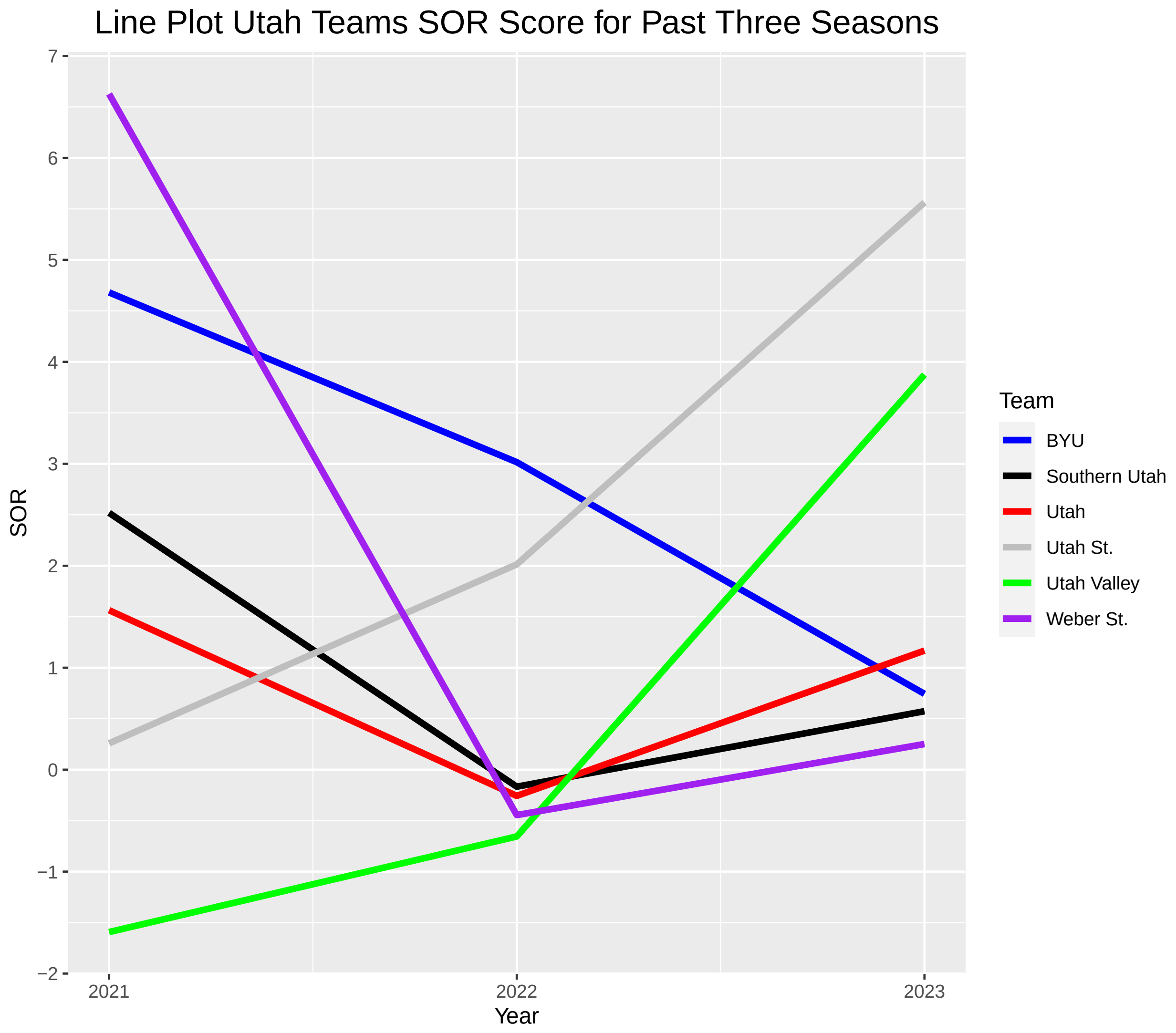
```
## Getting data for each year
year_2023 <- sum_sor(2023,"2023-03-12")
year_2022 <- sum_sor(2022,"2022-03-13")
year_2021 <- sum_sor(2021,"2021-03-14")

## Adding year to data before combining
year_2023$year <- rep(2023, nrow(year_2023))
year_2022$year <- rep(2022, nrow(year_2022))
year_2021$year <- rep(2021, nrow(year_2021))

## binding data
combined_years <- rbind(year_2023, year_2022, year_2021)

usethis::use_data(combined_years, overwrite = TRUE)
```

This gives me a dataset with every team's total sor score over the past three seasons. I could now filter it to only contain Utah teams by running this code:

```
  library(stat5555sor)
  # Load dataset from within package
  data("combined_years")
  # filter dataset to only include rows where the state column contains "Utah"
  df_utah <- combined_years[grepl("Utah|BYU|Weber St", combined_years$Team),]
  # exclude Utah Tech
  df_utah <- df_utah[!grepl("Utah Tech", df_utah$Team),]
  head(df_utah)
#>              Team       SOR ranking year
#> 331       Utah St. 5.5628272       8 2023
#> 333   Utah Valley 3.8743455      32 2023
#> 330           Utah 1.1675393      99 2023
#> 35             BYU 0.7434555     120 2023
#> 275 Southern Utah 0.5732984     126 2023
#> 348      Weber St. 0.2513089     138 2023
```

From here, to create a line plot to be able to better visualize the change in total sor over the past three seasons, I could run this code:

```
library(ggplot2)
  ggplot(data = df_utah, aes(x = year, y = SOR, group = Team, color = Team)) +
    geom_line(size = 1.5) +
    scale_x_continuous(breaks = seq(min(df_utah$year), max(df_utah$year), by = 1)) +
    scale_y_continuous(breaks = seq(round(min(df_utah$SOR)), round(max(df_utah$SOR))),
                       labels = function(x) format(x, scientific = FALSE)) +
    scale_color_manual(values = c("blue", "black", "red", "grey", "green", "purple")) +
    labs(title = "Line Plot Utah Teams SOR Score for Past Three Seasons", x = "Year", y = "SOR") +
    theme(plot.title = element_text(size = 16, hjust = 0.5))
```


Line Plot Utah Teams SOR Score for Past Three Seasons
SOR
Year
Team
BYU
Southern Utah
Utah
Utah St.
Utah Valley
Weber St.