# Postgame.R

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```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.6     v purrr   0.3.4
## v tibble  3.1.7     v dplyr   1.0.9
## v tidyr   1.2.0     v stringr 1.4.0
## v readr   2.1.2     v forcats 0.5.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(ggplot2)
library(gsheet)
library(gt)
rm(list = ls())

setwd("~/Documents/Portfolio/UC MBB")

raw_head_to_head <- read_csv(file = "head_to_head.csv")
```

```
## New names:
## * `` -> `...1`

## Rows: 3 Columns: 47
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (46): Team, Field Goal, Field Goal %, 3 Point, 3 Point %, Free Throw, Fr...
## dbl  (1): ...1
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
traditional <- read_csv(file = "traditional_comparisons.csv")
```

```
## New names:
## Rows: 6 Columns: 48
## -- Column specification
```

```
## ------------------------------------------------------- Delimiter: "," chr
## (47): Chicago, Chicago.1, Rebounds, Assists, Turnovers, Points off Turno... dbl
## (1): ...1
## i Use `spec()` to retrieve the full column specification for this data. i
## Specify the column types or set `show_col_types = FALSE` to quiet this message.
## * `` -> `...1`
```

```
advanced <- read_csv(file = "advanced_comparison.csv")
```

```
## New names:
## Rows: 6 Columns: 9
## -- Column specification
## ------------------------------------------------------- Delimiter: "," chr
## (8): Team, POSS, PPP, PTS DIFF PER80, REB%, ORB%, DRB%, TO% dbl (1): ...1
## i Use `spec()` to retrieve the full column specification for this data. i
## Specify the column types or set `show_col_types = FALSE` to quiet this message.
## * `` -> `...1`
```

```
####################

head_to_head <-
  select(raw_head_to_head,
         PTS, FG, `FG%`, `3PT`, `3P%`, FT, `FT%`,
         AST, REB, OREB, DREB, STL, BLK, PF,
         TOV,
         `PTS OFF TOV`,
         PAINT,
         FASTBREAK,
         BENCH,
         `2ND CHANCE`)
head_to_head1 <-
  select(raw_head_to_head,
         PTS, FG, `FG%`, `3PT`, `3P%`, FT, `FT%`)
head_to_head2 <-
  select(raw_head_to_head,
         AST, REB, OREB, DREB, STL, BLK, PF)
head_to_head3 <-
  select(raw_head_to_head,
         TOV,
         `PTS OFF TOV`,
         PAINT,
         FASTBREAK,
         BENCH,
         `2ND CHANCE`)

traditional <-
  select(traditional,
         PTS, FGA, `3PA`, FTA, `FG%`, `3P%`, `FG%`,
         AST, REB, OREB, DREB, STL, BLK, PF,
         TOV,
         `PTS OFF TOV`,
         `2ND CHANCE`,
         `PAINT`,
```

```
        `FASTBREAK`,
        BENCH)
traditional1 <-
  select(traditional,
        PTS, FGA, `3PA`, FTA, `FG%`, `3P%`, `FG%`)
traditional2 <-
  select(traditional,
        AST, REB, OREB, DREB, STL, BLK, PF)
traditional3 <-
  select(traditional,
        TOV,
        `PTS OFF TOV`,
        `2ND CHANCE`,
        `PAINT`,
        `FASTBREAK`,
        BENCH)

####################

differential_sign <- function(number) {
  if (substr(format(number, nsmall = 1), 1, 1) != "-") {
    return(paste("+", format(number, nsmall = 1), sep = ""))
  } else {
    return(paste("-", format(abs(number), nsmall = 1), sep = ""))
  }
}

postgame_traditional <-
  function(dataframe, type, opponent, date) {
    dataframe %>%
      t() %>%
      data.frame() %>%
      select(X3, X1, X2) %>%
      gt() %>%
      cols_label(X3 = '',
                 X1 = raw_head_to_head$Team[1],
                 X2 = raw_head_to_head$Team[2]) %>%
      tab_style(style = list(cell_text(weight = "bold")),
                locations = cells_body(columns = X3)) %>%
      tab_header(title = md(paste('**Post-Game Report: ', type, '**', sep =
                                    '')),
                 subtitle = date)
  }
traditional_comparison <-
  function(dataframe, type, opponent, date) {
    dataframe <-
      dataframe %>%
      t() %>%
      data.frame() %>%
      select(X3, X1, X4, X2, X5) %>%
      mutate(Diff1 = as.numeric(X4) - as.numeric(X1),
             Diff2 = as.numeric(X5) - as.numeric(X2))
    dataframe %>%
```

```
      mutate(
        Diff1 = map(dataframe$Diff1, differential_sign),
        Diff2 = map(dataframe$Diff2, differential_sign)
      ) %>%
      gt() %>%
      cols_label(
        X3 = '',
        X1 = 'Average',
        Diff1 = '',
        X2 = 'Average',
        X4 = 'Game',
        Diff2 = '',
        X5 = 'Game'
      ) %>%
      tab_spanner(label = "UChicago",
                  columns = c(X1, Diff1, X4))  %>%
      tab_spanner(label = opponent,
                  columns = c(X2, Diff2, X5)) %>%
      tab_style(style = list(cell_text(style = "italic", size = "small")),
                locations = cells_body(columns = c(Diff1, Diff2))) %>%
      tab_style(style = list(cell_text(weight = "bold")),
                locations = cells_body(columns = X3)) %>%
      tab_header(title = md(paste(
        '**Post-Game Report: ', type, ' Comparison**', sep = ''
      )),
      subtitle = date)
  }
advanced_comparison <-
  function(dataframe, opponent, date) {
    dataframe <-
      dataframe %>%
      select(-`...1`,-Team) %>%
      t() %>%
      data.frame() %>%
      select(X3, X1, X4, X2, X5) %>%
      mutate(Diff1 = as.numeric(X4) - as.numeric(X1),
             Diff2 = as.numeric(X5) - as.numeric(X2))
    dataframe %>%
      mutate(
        Diff1 = map(dataframe$Diff1, differential_sign),
        Diff2 = map(dataframe$Diff2, differential_sign)
      ) %>%
      gt() %>%
      cols_label(
        X3 = '',
        X1 = 'Average',
        Diff1 = '',
        X2 = 'Average',
        X4 = 'Game',
        Diff2 = '',
        X5 = 'Game'
      ) %>%
      tab_spanner(label = "UChicago",
```

```
                  columns = c(X1, Diff1, X4))  %>%
      tab_spanner(label = opponent,
                  columns = c(X2, Diff2, X5)) %>%
      tab_style(style = list(cell_text(style = "italic", size = "small")),
                locations = cells_body(columns = c(Diff1, Diff2))) %>%
      tab_style(style = list(cell_text(weight = "bold")),
                locations = cells_body(columns = X3)) %>%
      tab_header(
        title = md('**Post-Game Report: Advanced Comparison**'),
        subtitle = date
      )
  }

# info <- c('Colorado', 'Away', 'November 6, 2021')
info <- c('Lake Forest', 'Home', 'November 10, 2022')

# postgame_traditional(head_to_head1, 'Scoring', info[1], info[2], info[3])
# postgame_traditional(head_to_head2, 'Offensive', info[1], info[2], info[3])
# postgame_traditional(head_to_head3, 'Miscellaneous', info[1], info[2], info[3])

postgame_traditional(head_to_head, 'Head-to-Head', info[1], info[3])
```

**Post-Game Report: Head-to-Head**

November 10, 2022

| | Lake Forest | Chicago |
|---|---|---|
| PTS | 67 | 78 |
| FG | 25-64 | 31-54 |
| FG% | 39.1 | 57.4 |
| 3PT | 9-26 | 8-18 |
| 3P% | 34.6 | 44.4 |
| FT | 8-15 | 8-14 |
| FT% | 53.3 | 57.1 |
| AST | 15 | 19 |
| REB | 29 | 40 |
| OREB | 10 | 8 |
| DREB | 19 | 32 |
| STL | 3 | 3 |
| BLK | 1 | 4 |
| PF | 18 | 16 |
| TOV | 6 | 12 |
| PTS OFF TOV | 14 | 11 |
| PAINT | 18 | 42 |
| FASTBREAK | 2 | 7 |
| BENCH | 18 | 34 |
| 2ND CHANCE | 12 | 6 |

```
# traditional_comparison(traditional1, 'Scoring', info[1], info[3])
# traditional_comparison(traditional2, 'Offensive', info[1], info[3])
# traditional_comparison(traditional3, 'Miscellaneous', info[1], info[3])

traditional_comparison(traditional, 'Traditional', info[1], info[3])
```

## Post-Game Report: Traditional Comparison

November 10, 2022

| | UChicago | | | Lake Forest | | |
|---|---|---|---|---|---|---|
| | Average | | Game | Average | | Game |
| PTS | 64.0 | +3.0 | 67 | 56.0 | +22.0 | 78 |
| FGA | 57.3 | +6.7 | 64 | 57.0 | -3.0 | 54 |
| 3PA | 23.3 | +2.7 | 26 | 19.7 | -1.7 | 18 |
| FTA | 12.7 | +2.3 | 15 | 12.3 | +1.7 | 14 |
| FG% | 43.0 | -3.9 | 39.1 | 37.5 | +19.9 | 57.4 |
| 3P% | 30.0 | +4.6 | 34.6 | 23.1 | +21.3 | 44.4 |
| AST | 11.7 | +3.3 | 15 | 10.7 | +8.3 | 19 |
| REB | 41.0 | -12.0 | 29 | 33.3 | +6.7 | 40 |
| OREB | 13.3 | -3.3 | 10 | 11.0 | -3.0 | 8 |
| DREB | 27.7 | -8.7 | 19 | 22.3 | +9.7 | 32 |
| STL | 5.3 | -2.3 | 3 | 5.7 | -2.7 | 3 |
| BLK | 3.0 | -2.0 | 1 | 1.0 | +3.0 | 4 |
| PF | 16.0 | +2.0 | 18 | 15.3 | +0.7 | 16 |
| TOV | 12.3 | -6.3 | 6 | 11.0 | +1.0 | 12 |
| PTS OFF TOV | 11.0 | +3.0 | 14 | 11.3 | -0.3 | 11 |
| 2ND CHANCE | 8.3 | +3.7 | 12 | 8.3 | -2.3 | 6 |
| PAINT | 32.0 | -14.0 | 18 | 23.3 | +18.7 | 42 |
| FASTBREAK | 4.7 | -2.7 | 2 | 0.7 | +6.3 | 7 |
| BENCH | 24.3 | -6.3 | 18 | 17.0 | +17.0 | 34 |

```
advanced_comparison(advanced, info[1], info[3])
```

## Post-Game Report: Advanced Comparison

November 10, 2022

| | UChicago | | | Lake Forest | | |
|---|---|---|---|---|---|---|
| | Average | | Game | Average | | Game |
| POSS | 92.45 | -17.42 | 75.03 | 93.48 | -15.14 | 78.34 |
| PPP | 0.92 | +0.12 | 1.04 | 0.81 | +0.05 | 0.86 |
| PTS DIFF PER80 | 9.08 | +5.66 | 14.74 | -9.08 | -5.66 | -14.74 |
| REB% | 55.5 | -54.92 | 0.58 | 0.45 | -0.03 | 0.42 |
| ORB% | 38.2 | -37.9 | 0.3 | 0.28 | -0.04 | 0.24 |
| DRB% | 72.3 | -71.54 | 0.76 | 0.62 | +0.08 | 0.7 |
| TO% | 13.4 | -13.26 | 0.14 | 0.13 | -0.06 | 0.07 |