

# lab5

Jason Scheer

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```
# Setup code
```

```
library(readr)
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr      1.1.4      v purrr      1.0.2
## v forcats    1.0.0      v stringr   1.5.0
## v ggplot2    3.4.3      v tibble    3.2.1
## v lubridate  1.9.2      v tidyr     1.3.0
```

```
## -- Conflicts ----- tidyverse_conflicts() --
```

```
## x dplyr::filter() masks stats::filter()
```

```
## x dplyr::lag()     masks stats::lag()
```

```
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(ggplot2)
```

```
switch = read_csv("switch.csv")
```

```
## Rows: 796347 Columns: 12
```

```
## -- Column specification -----
```

```
## Delimiter: ","
```

```
## chr  (9): batter_name, away_team, home_team, events, description, des, stand...
```

```
## dbl  (2): at_bat_number, game_year
```

```
## date (1): game_date
```

```
##
```

```
## 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.
```

```
switch2 = switch |>
```

```
  mutate(pa_id = paste(game_date, away_team, home_team, at_bat_number),
```

```
    H = ifelse(events %in%
                c("single", "double", "triple", "home_run"), 1, 0),
```

```
    O = ifelse(events %in%
                c("double_play", "field_error", "field_out", "fielders_choice_out", "force_out",
```

```
                BB = ifelse(events %in%
                              c("walk", "hit_by_pitch"), 1, 0),
```

```
                Sac = ifelse(events %in%
                              c("sac_fly", "sac_bunt"), 1, 0)) |>
```

```
group_by(batter_name, stand, game_year) |>
```

```
summarise(
```

```
  Hit = sum(H),
```

```
  Out = sum(O),
```

```
  BB = sum(BB),
```

```
  Sac = sum(Sac),
```

```

    PA = Hit + BB + Sac + Out,
    OBP = round((sum(Hit) + sum(BB)) / sum(PA), digits = 3),
    .groups = "keep"
  ) |>
  group_by(batter_name) %>%
  mutate(
    total_PA_left = sum(PA[stand == "L"]),
    total_PA_right = sum(PA[stand == "R"])
  ) %>%
  ungroup() %>%
  filter(total_PA_left >= 100 & total_PA_right >= 100) |>
  filter(PA >= 100)

league_avg_obp = data.frame(
  year = c(2017, 2018, 2019, 2021, 2022),
  OBP_avg = c(0.324, 0.318, 0.323, 0.317, 0.312)
)

switch_with_avg = merge(switch2, league_avg_obp, by.x = "game_year", by.y = "year", all.x = TRUE)

obp = switch_with_avg |>
  select(c("batter_name", "stand", "game_year", "OBP", "OBP_avg")) |>
  arrange(batter_name)

unique_batters = unique(obp$batter_name)

library(shiny)

# UI
ui = navbarPage(
  title = "Switch Hitting Advantage or Disadvantage?",
  tabPanel(
    title = "Visualization",
    titlePanel(title = "Switch Hitting OBP Data 2017-2022"),
    sidebarLayout(
      sidebarPanel(
        selectInput(
          inputId = "batter",
          label = "Batter:",
          choices = unique_batters,
          selected = "Ian Happ"
        ),
      ),
      mainPanel(plotOutput("plot"))
    )
  ),
  tabPanel(title = "About", includeMarkdown("This Shiny App looks at players who have at least 100 PAs a"))
)

# Server
server = function(input, output) {

```

```

output$plot <- renderPlot({
  filtered_obp <- obp[obp$batter_name == input$batter, ]

  ggplot(data = filtered_obp, aes(x = game_year, y = OBP, fill = stand, color = stand)) +
    geom_bar(stat = "identity", position = "dodge") +
    geom_text(aes(label = round(OBP, 3)), position = position_dodge(width = 0.9), vjust = 1.2, size = 3) +
    geom_line(aes(x = game_year, y = OBP_avg, group = 1), data = filtered_obp, color = "darkblue", line) +
    geom_point(aes(x = game_year, y = OBP_avg), data = filtered_obp, color = "darkblue", size = 2) +
    geom_text(aes(label = round(OBP_avg, 3)), data = filtered_obp, vjust = -0.3, size = 3, color = "darkblue") +
    scale_y_continuous(labels = function(x) round(x, 3)) +
    labs(x = "Year", y = "OBP", fill = "Stand", color = "Stand") +
    theme_bw()
})

}

# Run the application
shinyApp(ui = ui, server = server)

```