Catch probability

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rSys.Date()

```
library(tidyverse)
library(rjson)
```

Load in data

We scrape individual play data for every fly ball hit to a qualified outfielder during the 2024 season. This chunk only needs to be run once.

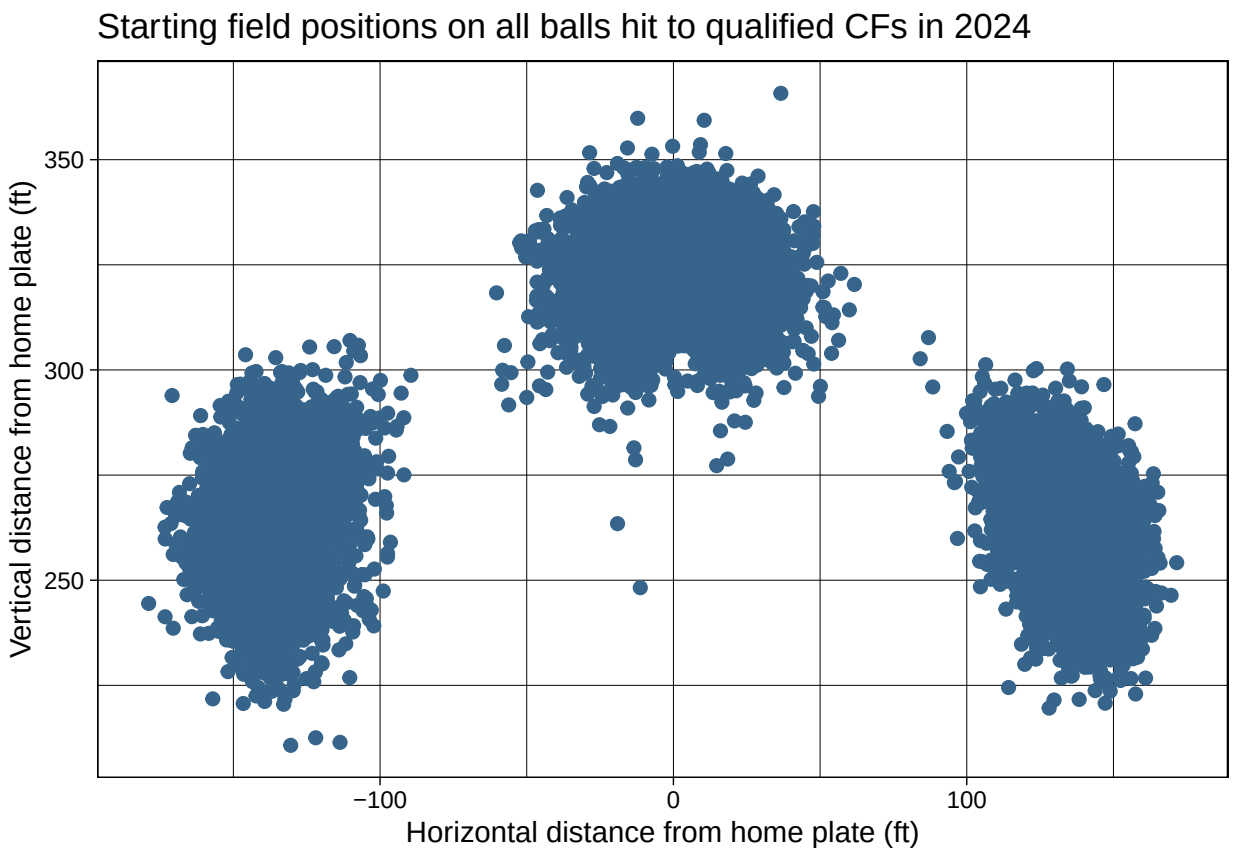
```
# Outfielders' player IDs
playerIDs <- read_csv("../data/of_playerIDs_2024.csv") %>% select(player_id)

# Scrape play-by-play data
data <- lapply(1:nrow(playerIDs),
           function(j) {
             # Scrape data
             rawdata <- fromJSON(
               file = paste0("https://baseballsavant.mlb.com/player-services/range?playerId=",
                             playerIDs[j,], "&season=2024&playerType=fielder"), simplify = TRUE
             )

             # If the URL exists:
             if (length(rawdata) > 0) {

               # Change any null columns (e.g., sprint_speed) to NA
               for (k in 1:length(rawdata)) {
                 rawdata[[k]][sapply(rawdata[[k]], is.null)] <- NA
               }

               # Convert raw data to tibble
               tibble(data.frame(matrix(unlist(rawdata),
                                        nrow = length(rawdata),
                                        byrow = TRUE,
                                        dimnames = list(1:length(rawdata),
                                                        names(rawdata[[1]])))))) %>%
                 mutate(across(c(game_pk:name_display_first_last, pos),
                               as.factor),
                        across(c(stars:distance, hang_time, out:sprint_speed),
                               as.numeric))
             }
           }
```

```
          )

data_final <- tibble(do.call(rbind.data.frame, data))

# Write tibble to csv
data_final %>% write_csv("../data/of_catch_prob_2024.csv")
```

```
# Load in data
data_final <- read_csv("../data/of_catch_prob_2024.csv")
```

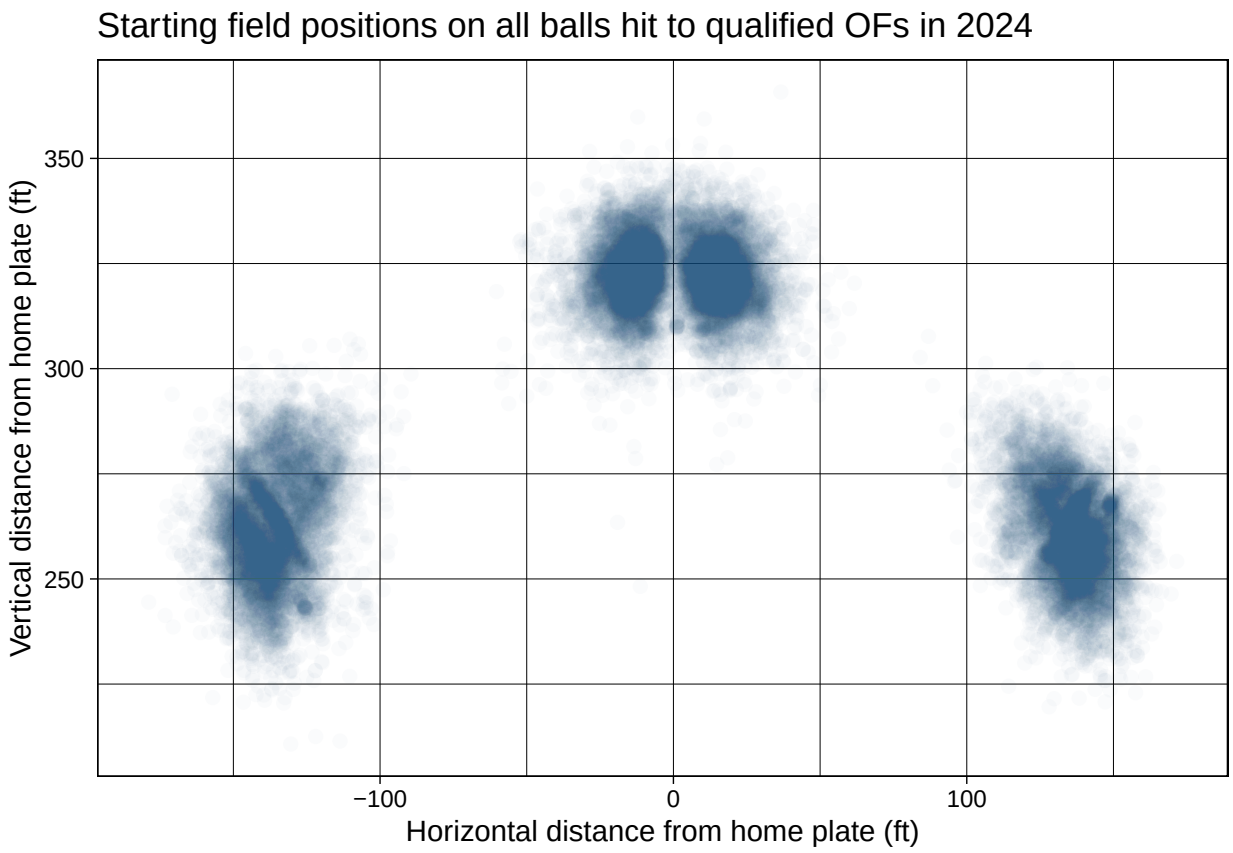
January 2nd

```
jan2_1 <- data_final %>%
            ggplot(aes(x = start_pos_x, y = start_pos_y)) +
            geom_point(col = "steelblue4", size = 2, shape = 19) +
            labs(title = "Starting field positions on all balls hit to qualified CFs in 2024",
                 x = "Horizontal distance from home plate (ft)",
                 y = "Vertical distance from home plate (ft)") +
            theme_linedraw()

jan2_1
```



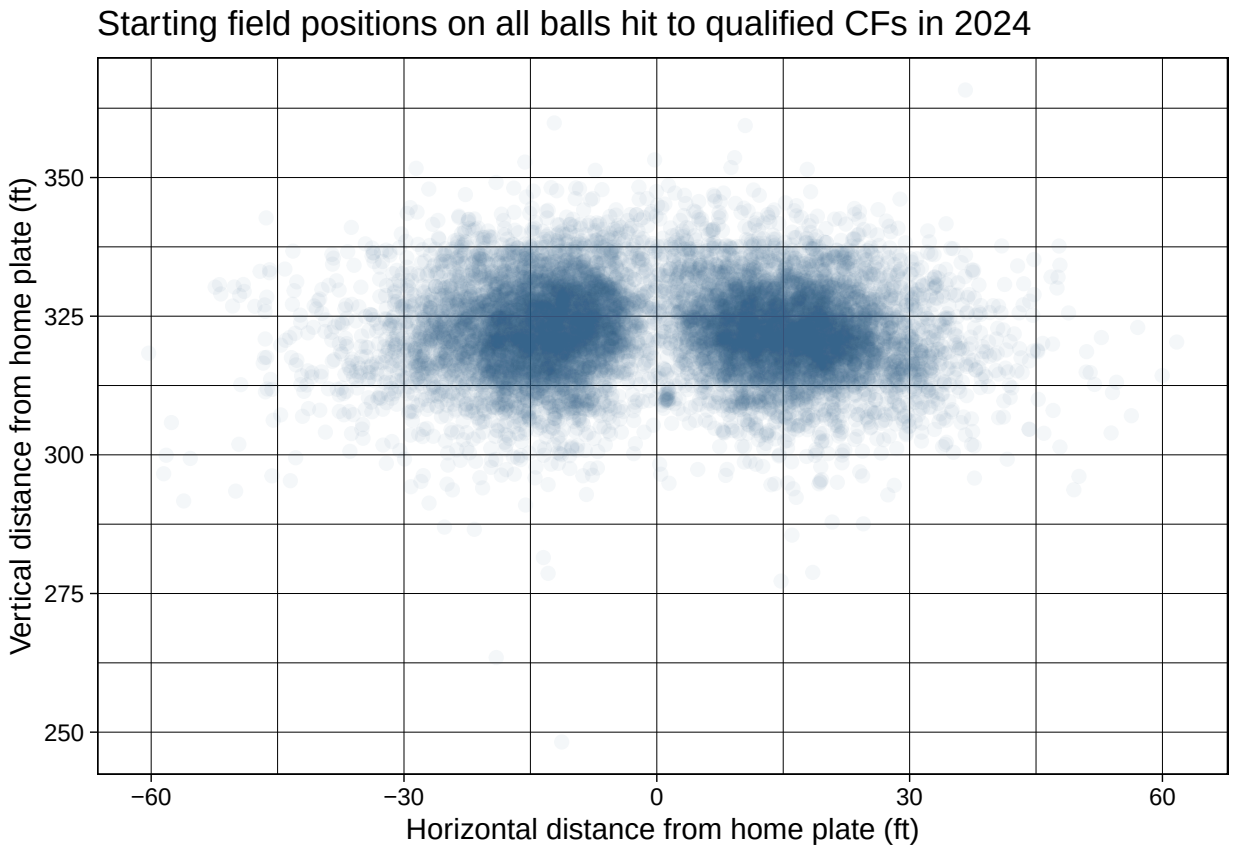
```
ggsave("../figures/jan2_1.png", plot = jan2_1)
```

```
jan2_2 <- data_final %>%
            ggplot(aes(x = start_pos_x, y = start_pos_y)) +
            geom_point(col = "steelblue4", size = 2, shape = 19, alpha = 0.025) +
            labs(title = "Starting field positions on all balls hit to qualified OFs in 2024",
                 x = "Horizontal distance from home plate (ft)",
                 y = "Vertical distance from home plate (ft)") +
            theme_linedraw()

jan2_2
```




```
ggsave("../figures/jan2_2.png", plot = jan2_2)
```

```
jan2_3 <- data_final %>%
            filter(pos == 8) %>%
            ggplot(aes(x = start_pos_x, y = start_pos_y)) +
            geom_point(col = "steelblue4", size = 2, shape = 19, alpha = 0.05) +
            labs(title = "Starting field positions on all balls hit to qualified CFs in 2024",
                 x = "Horizontal distance from home plate (ft)",
                 y = "Vertical distance from home plate (ft)") +
            theme_linedraw()

jan2_3
```




```
ggsave("../figures/jan2_3.png", plot = jan2_3)
```