

AFL Goal Accuracy Analysis

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Contents

```
#####
```

```
# Load data
```

```
weather <- fetch_results_afl(2023:2025)
```

```
## Warning in comp_ids$season == season: longer object length is not a multiple of
## shorter object length
```

```
weather <- weather %>% select(
  match.date, round.year, round.roundNumber,
  match.homeTeam.name, match.awayTeam.name, weather.weatherType
)
```

```
#####
```

```
# Player positions
```

```
seasons <- 2023:2025
```

```
player_details_specific <- map_dfr(seasons, ~{
  fetch_player_details(season = .x, source = "AFL")
})
```

```
## Returning player details for current season from source 'AFL'
```

```
## i Fetching player details for Adelaide Crows, 2023
```

```
## v Fetching player details for Adelaide Crows, 2023 [589ms]
```

```
##
```

```
##
```

```
## i Fetching player details for Brisbane Lions, 2023
```

```
## v Fetching player details for Brisbane Lions, 2023 [501ms]
```

```
##
```

```
##
```

```
## i Fetching player details for Collingwood, 2023
```

```
## v Fetching player details for Collingwood, 2023 [500ms]
```

```
##
```

```
##
```

```
## i Fetching player details for Gold Coast SUNS, 2023
```

```
## v Fetching player details for Gold Coast SUNS, 2023 [438ms]
```

```
##
```

```
##
```

```
## i Fetching player details for Carlton, 2023
```

```
## v Fetching player details for Carlton, 2023 [464ms]
```

```

##
##
## i Fetching player details for North Melbourne, 2023
## v Fetching player details for North Melbourne, 2023 [430ms]
##
##
## i Fetching player details for Port Adelaide, 2023
## v Fetching player details for Port Adelaide, 2023 [474ms]
##
##
## i Fetching player details for Western Bulldogs, 2023
## v Fetching player details for Western Bulldogs, 2023 [510ms]
##
##
## i Fetching player details for Hawthorn, 2023
## v Fetching player details for Hawthorn, 2023 [500ms]
##
##
## i Fetching player details for Geelong Cats, 2023
## v Fetching player details for Geelong Cats, 2023 [504ms]
##
##
## i Fetching player details for St Kilda, 2023
## v Fetching player details for St Kilda, 2023 [502ms]
##
##
## i Fetching player details for Essendon, 2023
## v Fetching player details for Essendon, 2023 [505ms]
##
##
## i Fetching player details for Sydney Swans, 2023
## v Fetching player details for Sydney Swans, 2023 [501ms]
##
##
## i Fetching player details for Fremantle, 2023
## v Fetching player details for Fremantle, 2023 [216ms]
##
##
## i Fetching player details for GWS GIANTS, 2023
## v Fetching player details for GWS GIANTS, 2023 [388ms]
##
##
## i Fetching player details for Richmond, 2023
## v Fetching player details for Richmond, 2023 [499ms]
##
##
## i Fetching player details for Melbourne, 2023
## v Fetching player details for Melbourne, 2023 [503ms]
##
##
## i Fetching player details for West Coast Eagles, 2023
## v Fetching player details for West Coast Eagles, 2023 [606ms]
##
##

```

```

## Returning player details for current season from source 'AFL'
## i Fetching player details for Adelaide Crows, 2024
## v Fetching player details for Adelaide Crows, 2024 [590ms]
##
##
## i Fetching player details for Brisbane Lions, 2024
## v Fetching player details for Brisbane Lions, 2024 [502ms]
##
##
## i Fetching player details for Collingwood, 2024
## v Fetching player details for Collingwood, 2024 [499ms]
##
##
## i Fetching player details for Gold Coast SUNS, 2024
## v Fetching player details for Gold Coast SUNS, 2024 [710ms]
##
##
## i Fetching player details for Carlton, 2024
## v Fetching player details for Carlton, 2024 [113ms]
##
##
## i Fetching player details for North Melbourne, 2024
## v Fetching player details for North Melbourne, 2024 [485ms]
##
##
## i Fetching player details for Port Adelaide, 2024
## v Fetching player details for Port Adelaide, 2024 [504ms]
##
##
## i Fetching player details for Western Bulldogs, 2024
## v Fetching player details for Western Bulldogs, 2024 [504ms]
##
##
## i Fetching player details for Hawthorn, 2024
## v Fetching player details for Hawthorn, 2024 [502ms]
##
##
## i Fetching player details for Geelong Cats, 2024
## v Fetching player details for Geelong Cats, 2024 [504ms]
##
##
## i Fetching player details for St Kilda, 2024
## v Fetching player details for St Kilda, 2024 [81ms]
##
##
## i Fetching player details for Essendon, 2024
## v Fetching player details for Essendon, 2024 [514ms]
##
##
## i Fetching player details for Sydney Swans, 2024
## v Fetching player details for Sydney Swans, 2024 [91ms]
##
##
## i Fetching player details for Fremantle, 2024

```

```

## v Fetching player details for Fremantle, 2024 [610ms]
##
##
## i Fetching player details for GWS GIANTS, 2024
## v Fetching player details for GWS GIANTS, 2024 [502ms]
##
##
## i Fetching player details for Richmond, 2024
## v Fetching player details for Richmond, 2024 [507ms]
##
##
## i Fetching player details for Melbourne, 2024
## v Fetching player details for Melbourne, 2024 [499ms]
##
##
## i Fetching player details for West Coast Eagles, 2024
## v Fetching player details for West Coast Eagles, 2024 [607ms]
##
##
## Returning player details for current season from source 'AFL'
## i Fetching player details for Adelaide Crows, 2025
## v Fetching player details for Adelaide Crows, 2025 [384ms]
##
##
## i Fetching player details for Brisbane Lions, 2025
## v Fetching player details for Brisbane Lions, 2025 [74ms]
##
##
## i Fetching player details for Collingwood, 2025
## v Fetching player details for Collingwood, 2025 [520ms]
##
##
## i Fetching player details for Gold Coast SUNS, 2025
## v Fetching player details for Gold Coast SUNS, 2025 [607ms]
##
##
## i Fetching player details for Carlton, 2025
## v Fetching player details for Carlton, 2025 [177ms]
##
##
## i Fetching player details for North Melbourne, 2025
## v Fetching player details for North Melbourne, 2025 [418ms]
##
##
## i Fetching player details for Port Adelaide, 2025
## v Fetching player details for Port Adelaide, 2025 [73ms]
##
##
## i Fetching player details for Western Bulldogs, 2025
## v Fetching player details for Western Bulldogs, 2025 [141ms]
##
##
## i Fetching player details for Hawthorn, 2025
## v Fetching player details for Hawthorn, 2025 [429ms]

```

```
##
##
## i Fetching player details for Geelong Cats, 2025
## v Fetching player details for Geelong Cats, 2025 [89ms]
##
##
## i Fetching player details for St Kilda, 2025
## v Fetching player details for St Kilda, 2025 [461ms]
##
##
## i Fetching player details for Essendon, 2025
## v Fetching player details for Essendon, 2025 [118ms]
##
##
## i Fetching player details for Sydney Swans, 2025
## v Fetching player details for Sydney Swans, 2025 [137ms]
##
##
## i Fetching player details for Fremantle, 2025
## v Fetching player details for Fremantle, 2025 [532ms]
##
##
## i Fetching player details for GWS GIANTS, 2025
## v Fetching player details for GWS GIANTS, 2025 [440ms]
##
##
## i Fetching player details for Richmond, 2025
## v Fetching player details for Richmond, 2025 [129ms]
##
##
## i Fetching player details for Melbourne, 2025
## v Fetching player details for Melbourne, 2025 [125ms]
##
##
## i Fetching player details for West Coast Eagles, 2025
## v Fetching player details for West Coast Eagles, 2025 [400ms]
```

```
position <- player_details_specific %>%
  mutate(
    Player = paste(firstName, surname),
    is_key_forward = as.integer(position == "KEY_FORWARD")
  ) %>%
  select(Player, is_key_forward) %>%
  filter(is_key_forward == 1)

#####
# Player stats
stats <- fetch_player_stats_afl(2023:2025)
```

```
## i Fetching match ids
```

```
## Warning in comp_ids$season == season: longer object length is not a multiple of
## shorter object length
```

```
## v Fetching match ids [1.5s]
## i Finding player stats for 72 matches.v Finding player stats for 72 matches. [9.3s]
```

```
forward_positions <- c("CHF", "FF", "FPL", "FPR", "HFFR", "HFFL")

stats <- stats %>%
  select(
    utcStartTime, round.roundNumber,
    player.player.player.givenName, player.player.player.surname,
    player.player.position, goals, behinds, shotsAtGoal, goalAccuracy
  ) %>%
  filter(player.player.position %in% forward_positions) %>%
  mutate(
    match.date = as_datetime(utcStartTime),
    Player = paste(player.player.player.givenName, player.player.player.surname)
  ) %>%
  left_join(position, by = "Player") %>%
  left_join(weather, by = "match.date")
```

```
## Warning in left_join(., position, by = "Player"): Detected an unexpected many-to-many relationship b
## i Row 2 of 'x' matches multiple rows in 'y'.
## i Row 26 of 'y' matches multiple rows in 'x'.
## i If a many-to-many relationship is expected, set 'relationship =
##   "many-to-many"' to silence this warning.
```

```
## Warning in left_join(., weather, by = "match.date"): Detected an unexpected many-to-many relationship
## i Row 270 of 'x' matches multiple rows in 'y'.
## i Row 2 of 'y' matches multiple rows in 'x'.
## i If a many-to-many relationship is expected, set 'relationship =
##   "many-to-many"' to silence this warning.
```

```
#####
```

```
# Prepare forwards dataframe
```

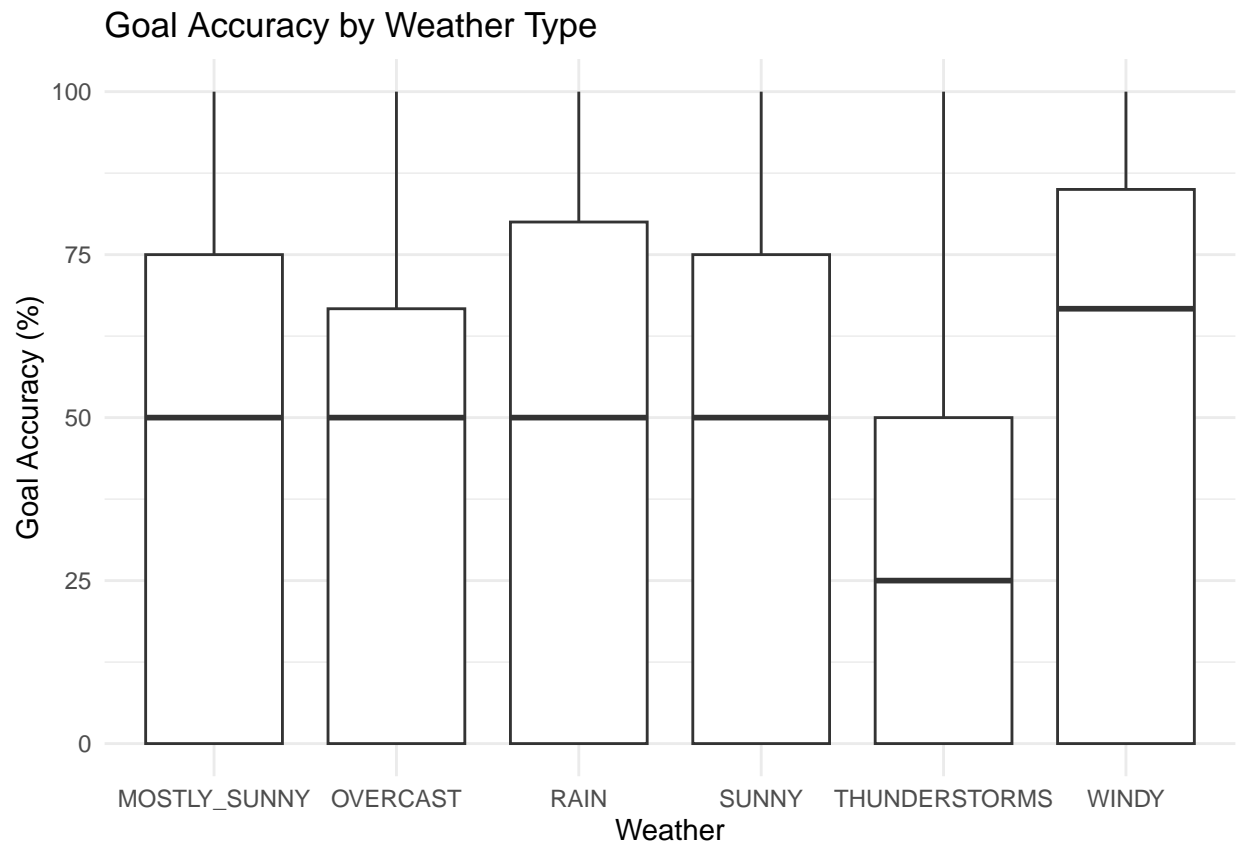
```
forwards <- stats %>%
  mutate(
    Date = match.date,
    Round = round.roundNumber.x,
    Name = Player,
    Position = player.player.position,
    Weather = weather.weatherType
  ) %>%
  select(
    Date, Round, Name, Position, is_key_forward,
    goals, behinds, shotsAtGoal, goalAccuracy, Weather
  )

colSums(is.na(forwards))
```

```
##           Date           Round           Name           Position is_key_forward
##           0             0             0             0             647
##        goals        behinds    shotsAtGoal    goalAccuracy        Weather
##           0             0             0             0             0
```

```
forwards <- forwards %>% mutate(is_key_forward = replace_na(is_key_forward, 0))
colSums(is.na(forwards))
```

```
##      Date      Round      Name      Position is_key_forward
##      0         0         0         0         0
## goals    behinds shotsAtGoal goalAccuracy    Weather
##      0         0         0         0         0
```



```
##      Df Sum Sq Mean Sq F value Pr(>F)
## Weather      5    7181    1436    1.059    0.381
## is_key_forward 1   68605   68605   50.584 1.7e-12 ***
## Weather:is_key_forward 5    9719    1944    1.433    0.209
## Residuals   1625 2203902    1356
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Conclusion Weather alone does not significantly impact goal accuracy. Key forwards are significantly more accurate, regardless of weather. There's no evidence key forwards handle weather differently.