simulation_analysis

2023-11-01

```r
library(knitr)
```

```r
women_sims <- readRDS("~/gym2024data/simulations_Aimi.rds")
men_sims <- readRDS("~/gym2024data/simulations_m_katie.rds")

women_sims2 <- readRDS("~/gym2024data/simulations_seed7.rds")

women_sims3 <- readRDS("~/gym2024data/simulations_Aimi_seed5.rds")
```

```r
men_sims_for_second = men_sims[-1]

max_medals = -1
max_sim_index = -1

for (i in seq_along(men_sims_for_second)){
  summaryTeam <- men_sims_for_second[[i]]@teamSummary
  USA_medals <- summaryTeam$total_medals[summaryTeam$clean_country == "USA"]

  if (USA_medals>max_medals){
    max_medals <- USA_medals
    max_sim_index <- i
  }
}

second_USA_sim <- men_sims_for_second[[max_sim_index]]@teamSummary
print(second_USA_sim$athletes[second_USA_sim$clean_country == "USA"])
```

```
## [[1]]
## [1] "Brody MALONE"      "Javier ALFONSO"     "Curran PHILLIPS"
## [4] "Frederick RICHARD" "Joshua KARNES"
```

```r
# top US simulations for men

USA_medals_m <- vector("list", length = 5000)

for (i in seq_along(USA_medals_m)) {
  summaryTeam <- men_sims[[i]]@teamSummary
  USA_medals_m[i] <- summaryTeam$total_medals[summaryTeam$clean_country == "USA"]
}

USA_medals_m = unlist(USA_medals_m)

top_indices <- order(USA_medals_m, decreasing = TRUE)[1:10]
top_indices
```

```
##  [1]  779 1160 4028  858 1174 1901 2083 2964 3260 3940
```

```r
first_medals_m <- men_sims[[779]]@teamSummary
first_team_usa_m <- first_medals_m$athletes[first_medals_m$clean_country == "USA"]
first_medals_m
```

```
##     clean_country
## 1            CAN
## 2            CHN
## 3            ESP
## 4            GBR
## 5            GER
## 6            ITA
## 7            JPN
## 8            NED
## 9            SUI
## 10           TUR
## 11           UKR
## 12           USA
## 13         Other
##
## 1
## 2
## 3
## 4
## 5
## 6
## 7
## 8
## 9
## 10
## 11
## 12
## 13 Abdelrahman ABDELHALEEM, Ahmed ABDELRAHMAN, Rasuljon ABDURAKHIMOV, Saba ABESADZE, Ahmad ABU, Moham
##    Team_AA_medal indiv_medal VT_medal SR_medal FX_medal PH_medal PB_medal
## 1              0           0        0        0        0        0        0
## 2              2           3        0        0        0        0        3
## 3              0           0        0        0        0        0        0
## 4              0           0        1        0        0        0        0
## 5              0           0        0        0        0        0        0
## 6              0           0        0        1        0        0        0
## 7              0           0        0        0        0        0        0
## 8              0           0        0        0        0        0        0
## 9              1           0        0        0        0        0        1
## 10             0           0        0        0        0        0        0
## 11             0           0        0        0        0        0        0
## 12             3           3        0        5        3        0        2
## 13             0           0        5        0        3        6        0
##    HB_medal total_medals
## 1         0            0
## 2         0            8
## 3         0            0
## 4         0            1
## 5         0            0
## 6         0            1
## 7         0            0
```

2

```
## 8          0          0
## 9          0          2
## 10         0          0
## 11         0          0
## 12         4         20
## 13         2         16
```

```r
# top US simulations for women

USA_medals_w <- vector("list", length = 5000)

for (i in seq_along(USA_medals_w)) {
  summaryTeam <- women_sims[[i]]@teamSummary
  USA_medals_w[i] <- summaryTeam$total_medals[summaryTeam$clean_country == "USA"]
}

USA_medals_w = unlist(USA_medals_w)

top_indices <- order(USA_medals_w, decreasing = TRUE)[1:10]
top_indices
```

```
##  [1] 3864   16  231 1605 1713 1717 2196 2202 3577 3648
```

```r
first_medals_w <- women_sims[[3864]]@teamSummary
first_team_usa_w <- first_medals_w$athletes[first_medals_w$clean_country == "USA"]
first_medals_w
```

```
##    clean_country
## 1            AUS
## 2            BRA
## 3            CAN
## 4            CHN
## 5            FRA
## 6            GBR
## 7            ITA
## 8            JPN
## 9            KOR
## 10           NED
## 11           ROU
## 12           USA
## 13         Other
##
## 1
## 2
## 3
## 4
## 5
## 6
## 7
## 8
## 9
## 10
## 11
## 12
## 13 Jana ABDELSALAM, Lobar AMRILLAEVA, Anastasija ANANJEVA, Caleigh ANDERS, Dildora ARIPOVA, Csenge B
```

```
##    Team_AA_medal indiv_medal VT_medal BB_medal FX_medal UB_medal total_medals
## 1              0           0        0        0        0        0            0
## 2              2           2        0        0        1        0            5
## 3              0           0        0        0        0        0            0
## 4              1           0        0        1        0        0            2
## 5              0           0        0        0        0        0            0
## 6              0           0        0        0        0        0            0
## 7              0           0        0        0        0        0            0
## 8              0           0        0        0        0        0            0
## 9              0           0        1        0        0        0            1
## 10             0           0        0        0        0        0            0
## 11             0           0        0        0        0        0            0
## 12             3           4        5        5        5        1           23
## 13             0           0        0        0        0        5            5
```

Table 1: Men's Artistic Gymnastics: Best Simulated Outcome for Team USA

Event	Gold	Silver	Bronze
Team All-Around	USA	China	Switzerland
Individual All-Around	USA (Brody Malone)	China (Boheng Zhang)	China (Wei Sun)
Vault	Armenia (Artur Davtyan)	Philippines (Carlos Yulo)	Great Britain (Luke Whitehouse)
Still Rings	USA (Javier Alfonso)	USA (Brody Malone)	Italy (Salvatore Maresca)
Pommel Horse	Chinese Taipei (Chih Lee)	Kazakhstan (Nariman Kurbanov)	Uzbekistan (Abdulla Azimov)
Parallel Bars	China (Jingyuan Zou)	USA (Curran Phillips)	Switzerland (Noe Seifert)
High Bar	USA (Frederick Richard)	Kazakhstan (Ilyas Azizov)	USA (Brody Malone)
Floor Exercise	USA (Brody Malone)	Israel (Artem Dolgopyat)	India (Satyajit Mondal)

Team USA Athletes: Brody Malone, Javier Alfonso, Curran Phillips, Frederick Richard, Joshua Karnes
Team USA Medal Count: 8
Team USA Weighted Medal Count: 20 (where Gold = 3, Silver = 2, Bronze = 1)
Team USA Medal Breakdown: 5 Gold, 2 Silver, 1 Bronze

Table 2: Women's Artistic Gymnastics: Best Simulated Outcome for Team USA

Event	Gold	Silver	Bronze
Team All-Around	USA	Brazil	China
Individual All-Around	USA (Simone Biles)	Brazil (Rebeca Andrade)	USA (Konnor McClain)
Balance Beam	USA (Konnor McClain)	USA (Simone Biles)	China (Qingying Zhang)
Vault	USA (Jade Carey)	USA (Simone Biles)	South Korea (Seojeong Yeo)
Floor Exercise	USA (Simone Biles)	USA (Jade Carey)	Brazil (Rebeca Andrade)
Uneven Bars	Algeria (Kaylia Nemour)	Russia (Viktoria Listunova)	USA (Shilese Jones)

Team USA Athletes: Simone Biles, Shilese Jones, Karis German, Konnor McClain, Jade Carey
Team USA Medal Count: 10
Team USA Weighted Medal Count: 23 (where Gold = 3, Silver = 2, Bronze = 1)
Team USA Medal Breakdown: 5 Gold, 3 Silver, 2 Bronze