

Pitching Trends From 2020-2024

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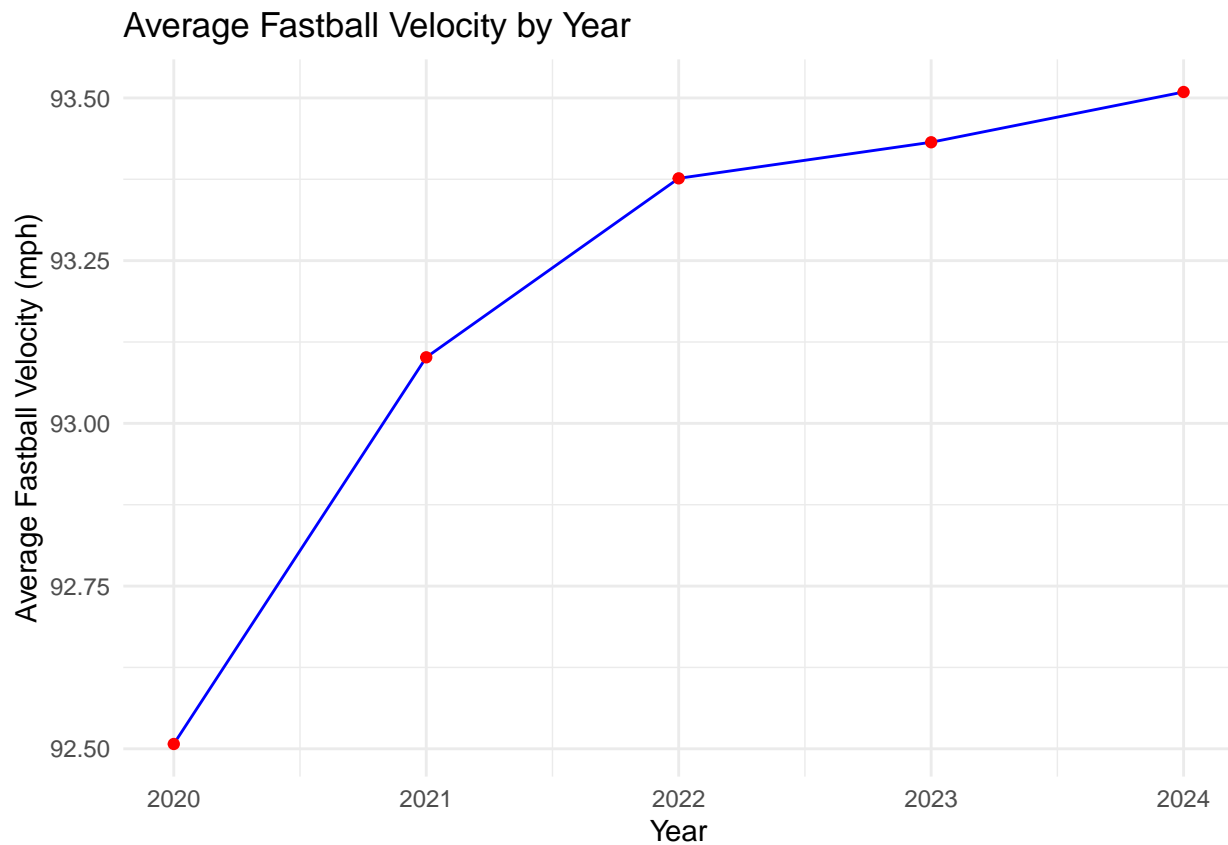
2024-10-31

Note 2020 was a COVID season, so any stats that require summing up values will not be scaled the same due to less games being played

Fastball Velocity Trend

```
avg_velocity_by_year <- D %>%  
  group_by(year) %>%  
  summarize(avg_fastball_velocity = mean(fastball_avg_speed, na.rm = TRUE))  
  
# View the result  
print(avg_velocity_by_year)
```

```
## # A tibble: 5 x 2  
##   year avg_fastball_velocity  
##   <int>         <dbl>  
## 1  2020             92.5  
## 2  2021             93.1  
## 3  2022             93.4  
## 4  2023             93.4  
## 5  2024             93.5
```



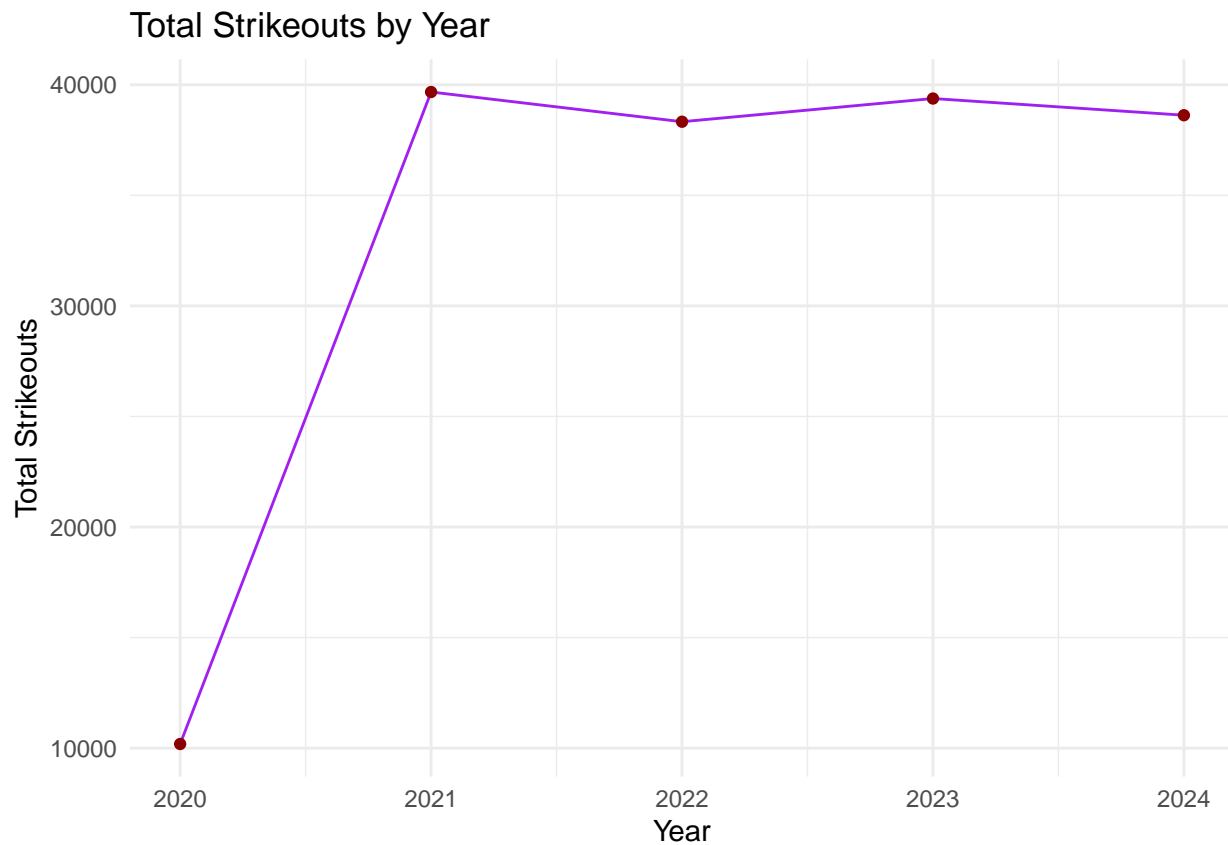
Strikeouts Trend

```
strikeouts_by_year <- D %>%
  group_by(year) %>%
  summarize(total_strikeouts = sum(strikeout, na.rm = TRUE))

print(strikeouts_by_year)
```

```
## # A tibble: 5 x 2
##   year total_strikeouts
##   <int>         <int>
## 1  2020          10188
## 2  2021          39674
## 3  2022          38330
## 4  2023          39379
## 5  2024          38624
```

```
ggplot(strikeouts_by_year, aes(x = year, y = total_strikeouts)) +
  geom_line(color = "purple") +
  geom_point(color = "darkred") +
  labs(title = "Total Strikeouts by Year",
       x = "Year",
       y = "Total Strikeouts") +
  theme_minimal()
```



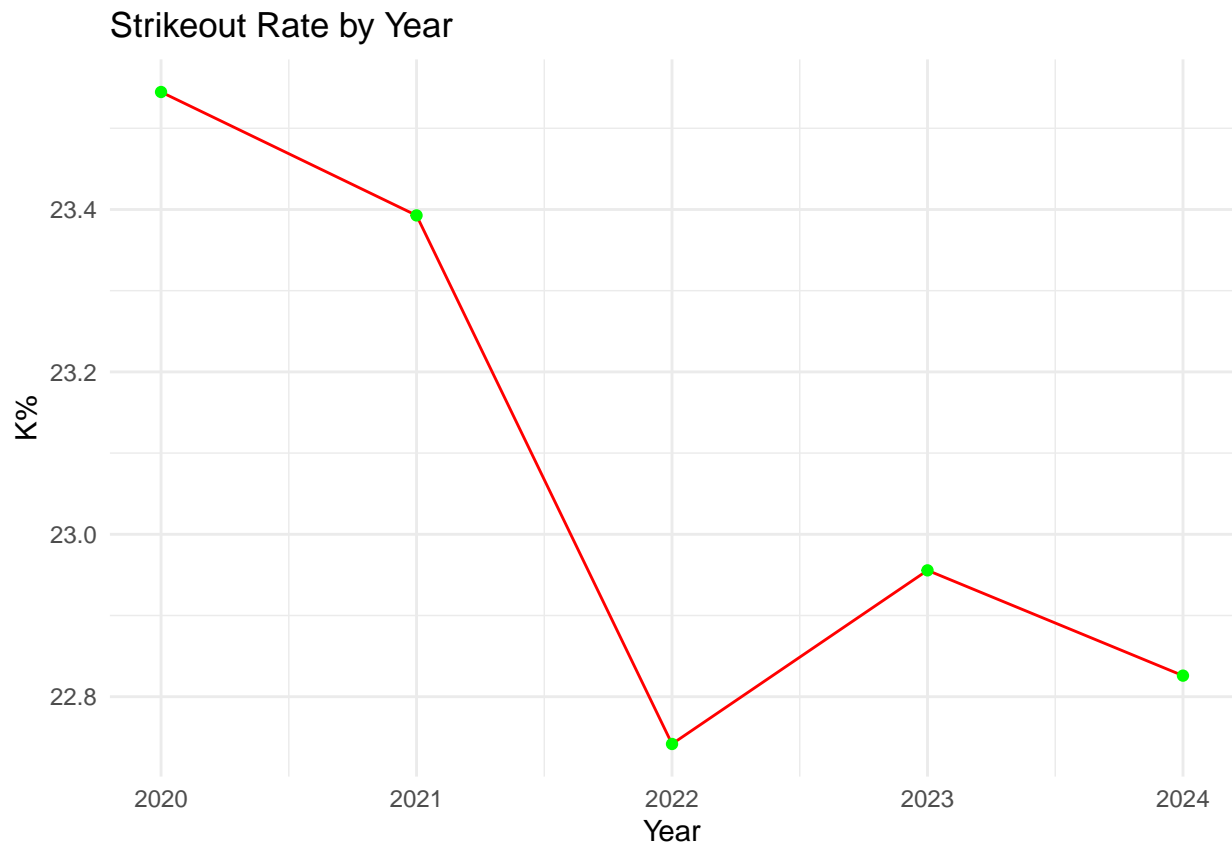
Strikeout Percent

```
Kpercent_by_year <- D %>%
  group_by(year) %>%
  summarize(avg_k_percent = mean(k_percent, na.rm = TRUE))

print(Kpercent_by_year)
```

```
## # A tibble: 5 x 2
##   year avg_k_percent
##   <int>         <dbl>
## 1  2020          23.5
## 2  2021          23.4
## 3  2022          22.7
## 4  2023          23.0
## 5  2024          22.8
```

```
ggplot(Kpercent_by_year, aes(x = year, y = avg_k_percent)) +
  geom_line(color = "red") +
  geom_point(color = "green") +
  labs(title = "Strikeout Rate by Year",
       x = "Year",
       y = "K%") +
  theme_minimal()
```

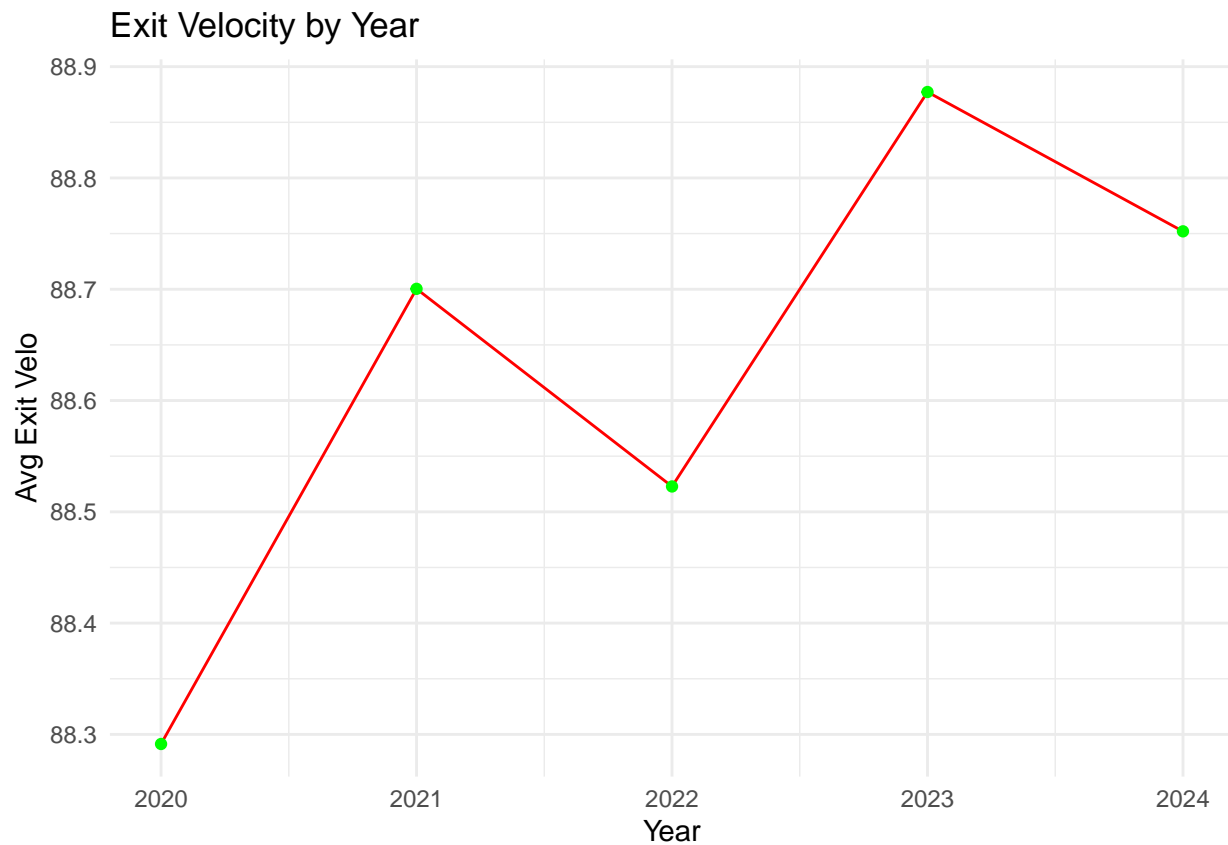


Average Exit Velocity Trends

```
avg_exit_velocity <- D %>%  
  group_by(year) %>%  
  summarize(avg_exit_vel = mean(exit_velocity_avg, na.rm = TRUE))  
  
print(avg_exit_velocity)
```

```
## # A tibble: 5 x 2  
##   year avg_exit_vel  
##   <int>      <dbl>  
## 1  2020         88.3  
## 2  2021         88.7  
## 3  2022         88.5  
## 4  2023         88.9  
## 5  2024         88.8
```

```
ggplot(avg_exit_velocity, aes(x = year, y = avg_exit_vel)) +  
  geom_line(color = "red") +  
  geom_point(color = "green") +  
  labs(title = "Exit Velocity by Year",  
        x = "Year",  
        y = "Avg Exit Velo") +  
  theme_minimal()
```



Avg Fastball Spin Rate Trend

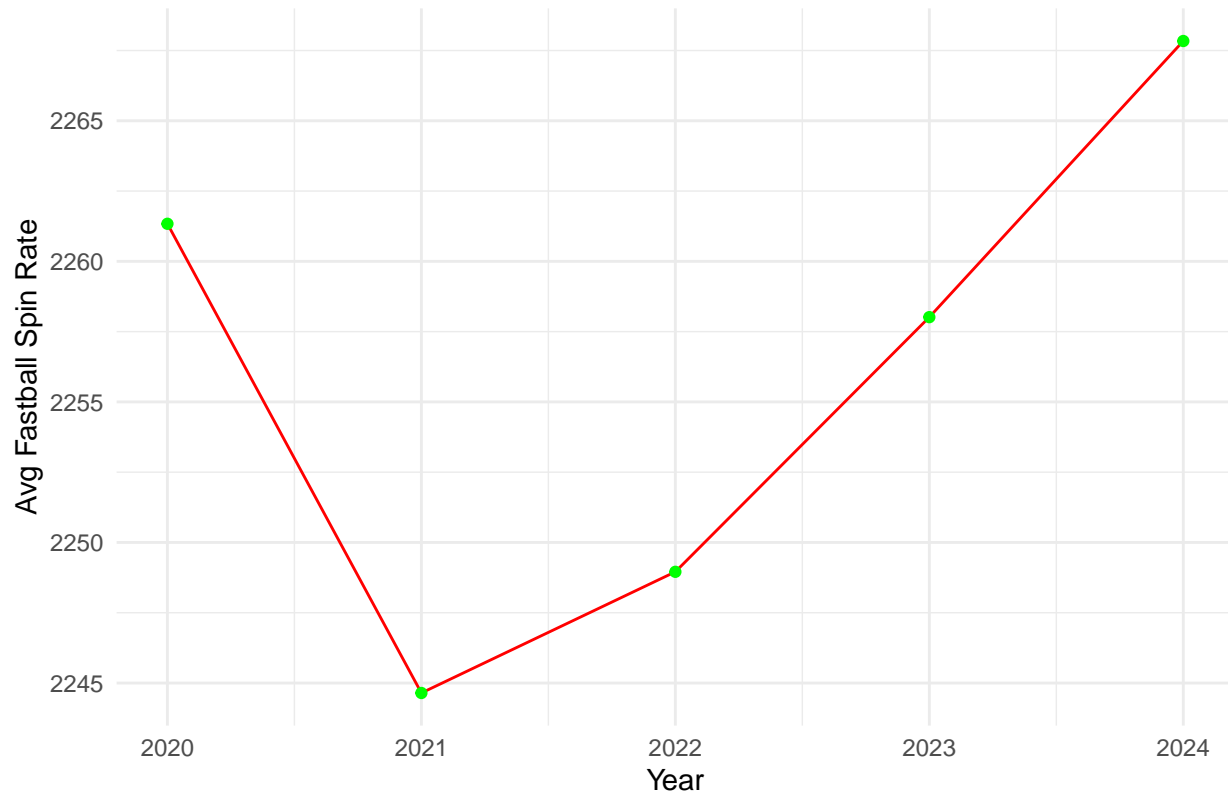
```
avg_spin_fastball <- D %>%
  group_by(year) %>%
  summarize(avg_fastball_spin = mean(fastball_avg_spin, na.rm = TRUE))

print(avg_spin_fastball)
```

```
## # A tibble: 5 x 2
##   year avg_fastball_spin
##   <int>         <dbl>
## 1  2020         2261.
## 2  2021         2245.
## 3  2022         2249.
## 4  2023         2258.
## 5  2024         2268.
```

```
ggplot(avg_spin_fastball, aes(x = year, y = avg_fastball_spin)) +
  geom_line(color = "red") +
  geom_point(color = "green") +
  labs(title = "Avg Fastball Spin Rate by Year",
       x = "Year",
       y = "Avg Fastball Spin Rate") +
  theme_minimal()
```

Avg Fastball Spin Rate by Year

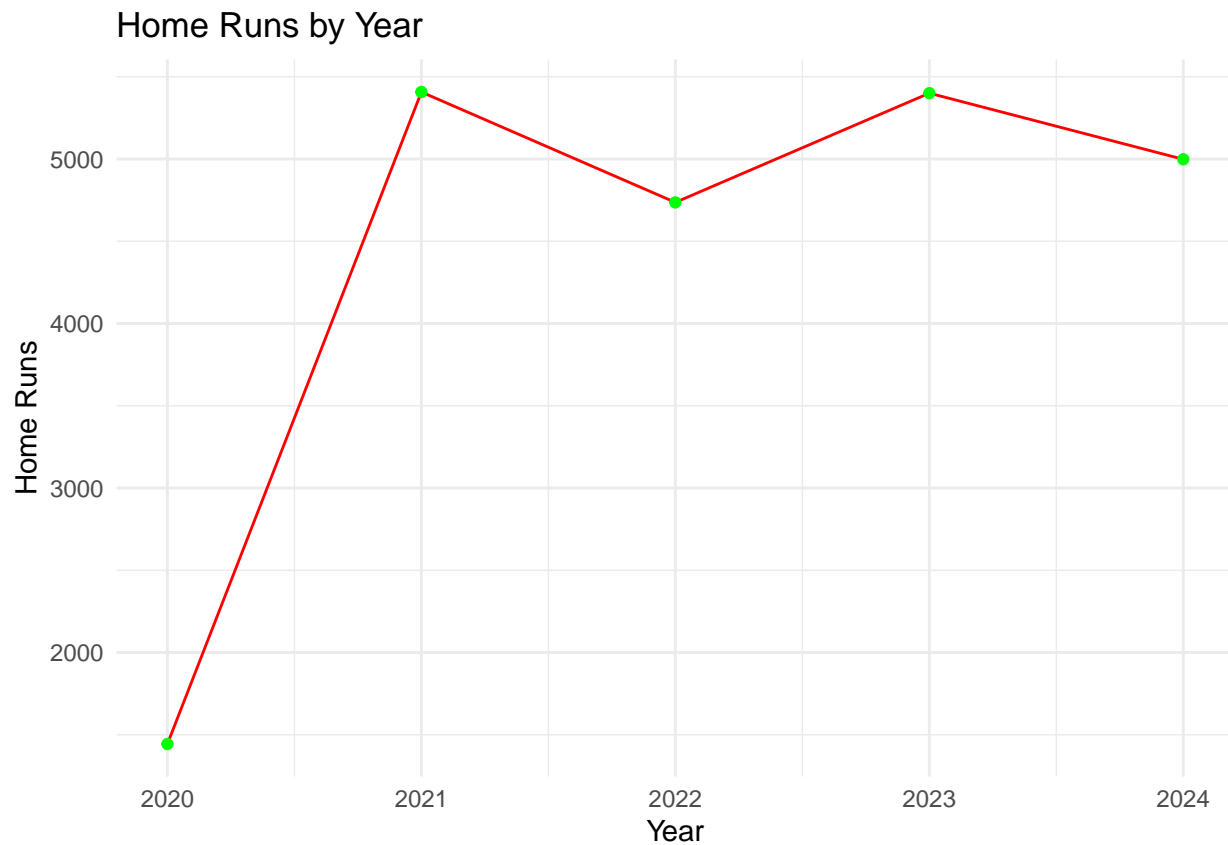


Home Runs Trend

```
home_run_by_year <- D %>%  
  group_by(year) %>%  
  summarize(total_hr = sum(home_run, na.rm = TRUE))  
  
print(home_run_by_year)
```

```
## # A tibble: 5 x 2  
##   year total_hr  
##   <int>   <int>  
## 1  2020    1444  
## 2  2021    5407  
## 3  2022    4736  
## 4  2023    5400  
## 5  2024    4998
```

```
ggplot(home_run_by_year, aes(x = year, y = total_hr)) +  
  geom_line(color = "red") +  
  geom_point(color = "green") +  
  labs(title = "Home Runs by Year",  
        x = "Year",  
        y = "Home Runs") +  
  theme_minimal()
```

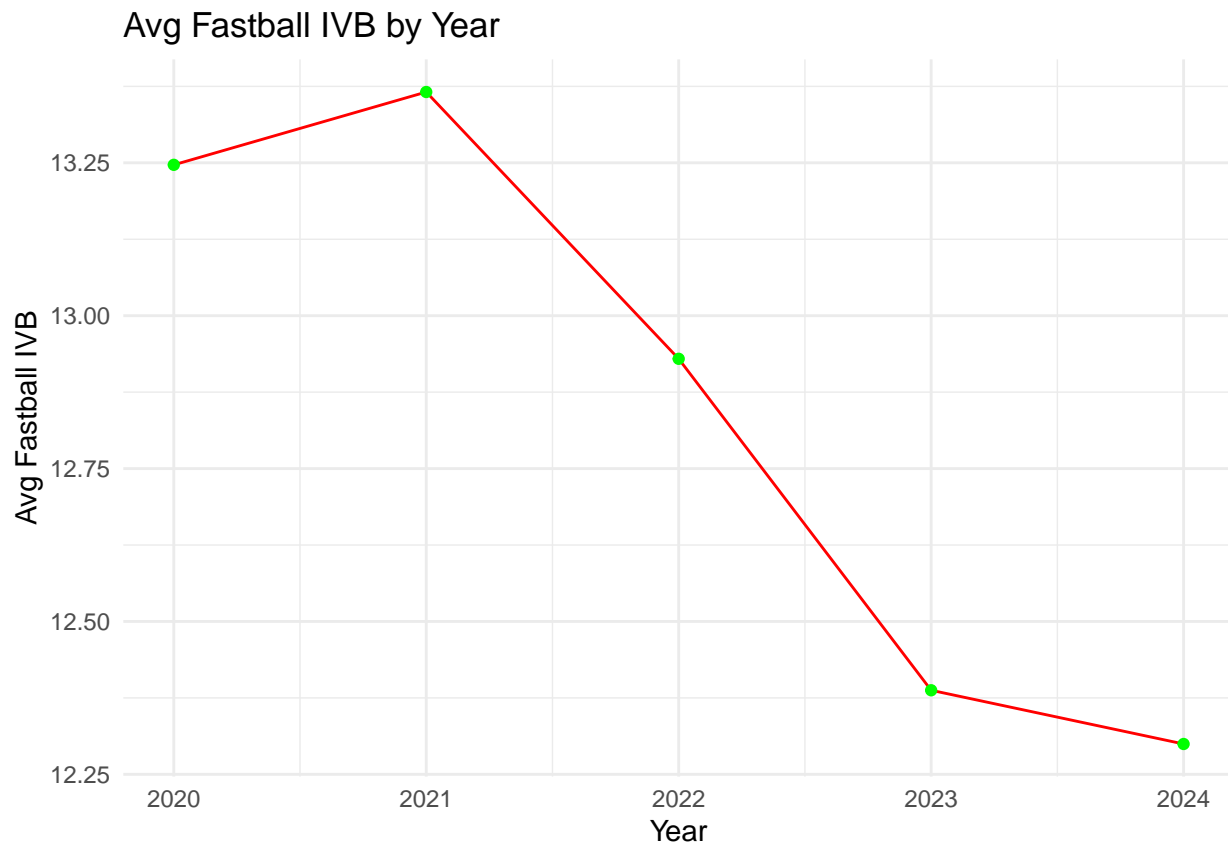


Induced Vertical Break Trend

```
avg_IVB_fastball <- D %>%  
  group_by(year) %>%  
  summarize(avg_fastball_IVB = mean(fastball_avg_break_z_induced, na.rm = TRUE))  
  
print(avg_IVB_fastball)
```

```
## # A tibble: 5 x 2  
##   year avg_fastball_IVB  
##   <int>         <dbl>  
## 1  2020             13.2  
## 2  2021             13.4  
## 3  2022             12.9  
## 4  2023             12.4  
## 5  2024             12.3
```

```
ggplot(avg_IVB_fastball, aes(x = year, y = avg_fastball_IVB)) +  
  geom_line(color = "red") +  
  geom_point(color = "green") +  
  labs(title = "Avg Fastball IVB by Year",  
        x = "Year",  
        y = "Avg Fastball IVB") +  
  theme_minimal()
```



Fastball Percent Trend

```
FB_percent <- D %>%  
  group_by(year) %>%  
  summarize(Fastball_percent = mean(n_fastball_formatted, na.rm = TRUE))  
  
print(FB_percent)
```

```
## # A tibble: 5 x 2  
##   year Fastball_percent  
##   <int>         <dbl>  
## 1  2020         56.6  
## 2  2021         58.0  
## 3  2022         56.2  
## 4  2023         55.9  
## 5  2024         56.0
```

```
ggplot(FB_percent, aes(x = year, y = Fastball_percent)) +  
  geom_line(color = "red") +  
  geom_point(color = "green") +  
  labs(title = "Fastball Usage by Year",  
        x = "Year",  
        y = "Fastball Usage") +  
  theme_minimal()
```