MarioKart 64 World Records

Gary Lu

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Data is from Thomas Mock (2021). Tidy Tuesday: A weekly data project aimed at the R ecosystem. https://github.com/rfordatascience/tidytuesday. https://github.com/rfordatascience/tidytuesday/blob/master/data/2021/2021-05-25/readme.md

The data this week comes from Mario Kart World Records and contains world records for the classic (if you're a 90's kid) racing game on the Nintendo 64.

This video talks about the history of Mario Kart 64 World Records in greater detail. Despite it's release back in 1996 (1997 in Europe and North America), it is still actiely played by many and new world records are achieved every month.

The game consists of 16 individual tracks and world records can be achieved for the fastest single lap or the fastest completed race (three laps). Also, through the years, players discovered shortcuts in many of the tracks. Fortunately, shortcut and non-shortcut world records are listed separately.

Furthermore, the Nintendo 64 was released for NTSC- and PAL-systems. On PAL-systems, the game runs a little slower. All times in this dataset are PAL-times, but they can be converted back to NTSC-times.

Credit: Benedikt Claus

```
## --- Compiling #TidyTuesday Information for 2021-05-25 ----

## --- There are 2 files available ---

## --- Starting Download ---

##
##  Downloading file 1 of 2: `drivers.csv`
##  Downloading file 2 of 2: `records.csv`

## --- Download complete ---
```

Sample questions

- How did the world records develop over time?
- Which track is the fastest?
- For which track did the world record improve the most?
- For how many tracks have shortcuts been discovered?
- When were shortcuts discovered?
- On which track does the shortcut save the most time?

- Which is the longest standing world record?
- Who is the player with the most world records?
- Who are recent players?

How did the world records develop over time?

The 90s were a time where everyone was trying to get the fastest times, records have been relatively quiet up until 2020 which saw a spike in records being broken.

Which track is the fastest?

Data will be split by 3 lap and 1 lap records

```
## `summarise()` has grouped output by 'track'. You can override using the `.groups` argument.
```

```
## # A tibble: 28 x 4
## # Groups:   track [16]
##    track                shortcut mean_time median_time
##    <chr>                <chr>        <dbl>       <dbl>
##  1 Wario Stadium        Yes           22.6        15.4
##  2 D.K.'s Jungle Parkway Yes          24.8        24.4
##  3 Frappe Snowland      Yes           26.0        26.1
##  4 Yoshi Valley         Yes           36.1        33.6
##  5 Mario Raceway        Yes           62.2        61.9
##  6 Choco Mountain       Yes           68.5        78.5
##  7 Luigi Raceway        Yes           77.3        91.6
##  8 Toad's Turnpike      Yes           80.8       109.
##  9 Moo Moo Farm         No            88.4        88.0
## 10 Mario Raceway        No            88.9        88.3
## # ... with 18 more rows
```
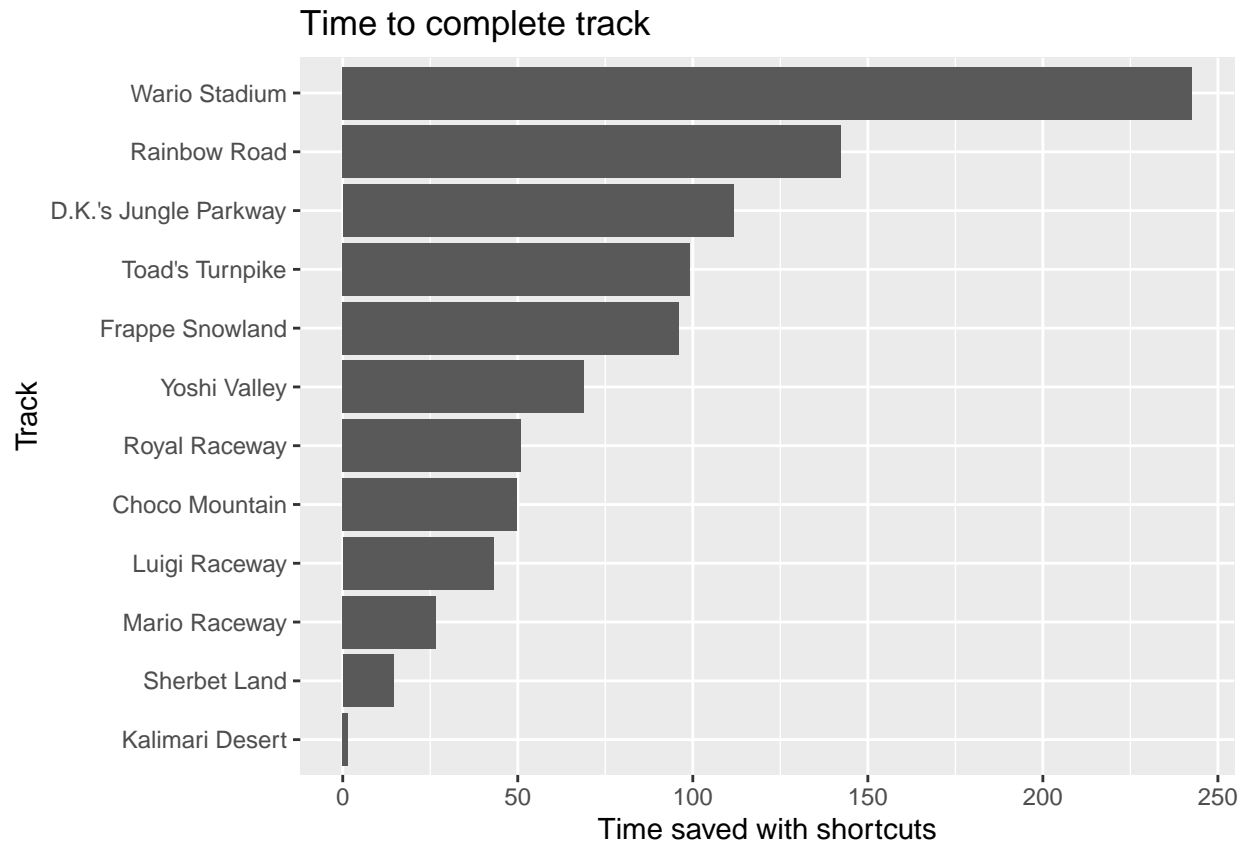
The shortcut column indicates if a shortcut was used or not in the WR attempt, and as you can see, it makes a big difference in most stages

Mario Raceway is the first track to show up twice when grouped by track then shortcut which indicates that it is, on average, the fastest track for speedrunners to complete.

Rainbow Road takes the longest out of all tracks to complete regardless of a shortcut (it is notorious for being the most difficult track in all Mario Kart games)

Looking at which tracks are most dependent on shortcuts

```
## `summarise()` has grouped output by 'track'. You can override using the `.groups` argument.
```
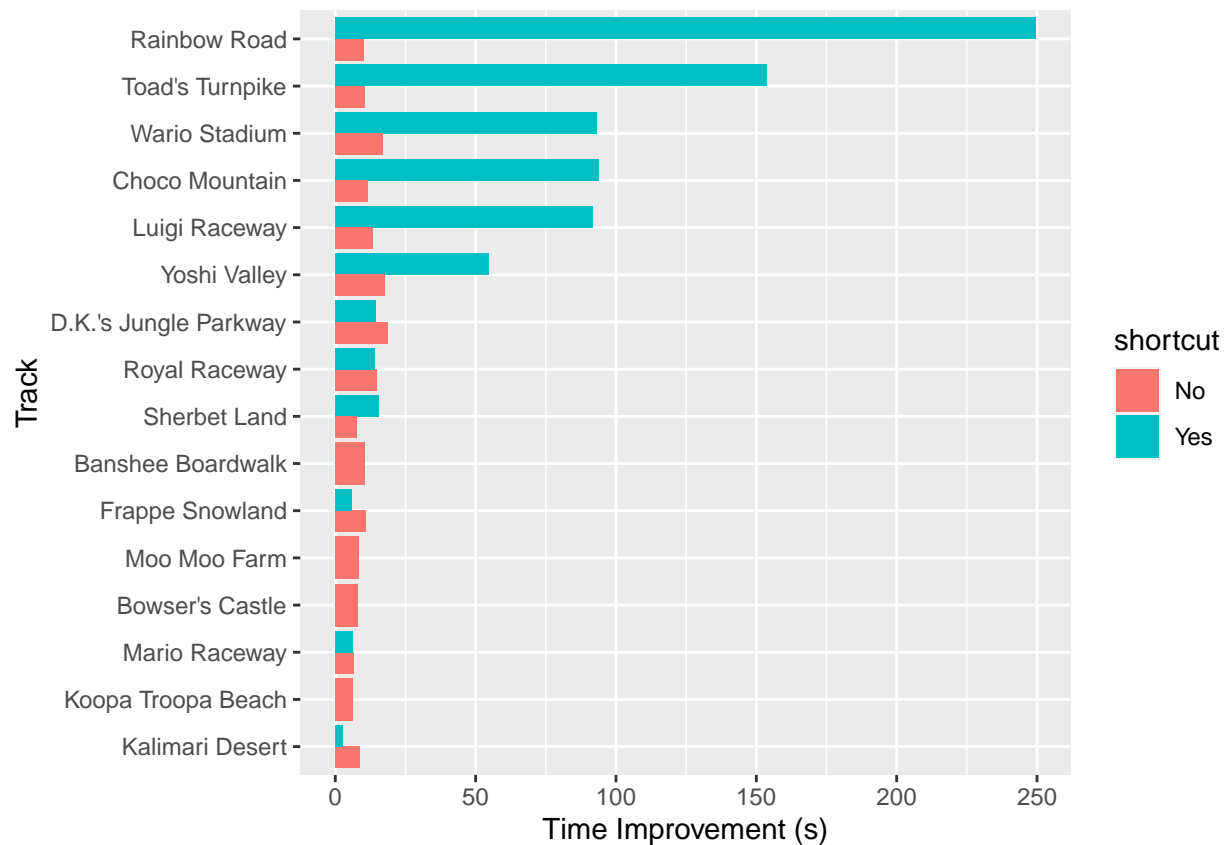
Time to complete track

It seems learning the shortcut on Wario Stadium is one of the most important shortcuts to learn as it saves nearly 4 minutes of time (something to consider if you want to make your friends angry!)

Rainbow Road on average saves the 2nd most time with the shortcut, but still makes it one of the longer tracks to complete.

For which track did the world record improve the most?

Splitting between NTSC and PAL systems

```
## `summarise()` has grouped output by 'track'. You can override using the `.groups` argument.
```

Counting shortcuts, Rainbow Road has seen the most improvement in record times, With DK Jungle Parkway showing the most improvement without shortcuts

When were shortcuts discovered?

```
## # A tibble: 12 x 2
##    track               date_found
##    <chr>               <date>
##  1 Choco Mountain      1997-03-10
##  2 D.K.'s Jungle Parkway 1997-03-10
##  3 Frappe Snowland     1997-03-10
##  4 Kalimari Desert     1997-03-10
##  5 Luigi Raceway       1997-02-16
##  6 Mario Raceway       1997-03-10
##  7 Rainbow Road        1997-03-07
##  8 Royal Raceway       1997-03-10
##  9 Sherbet Land        1997-03-10
## 10 Toad's Turnpike     1997-03-10
## 11 Wario Stadium       1997-03-10
## 12 Yoshi Valley        1997-03-07
```
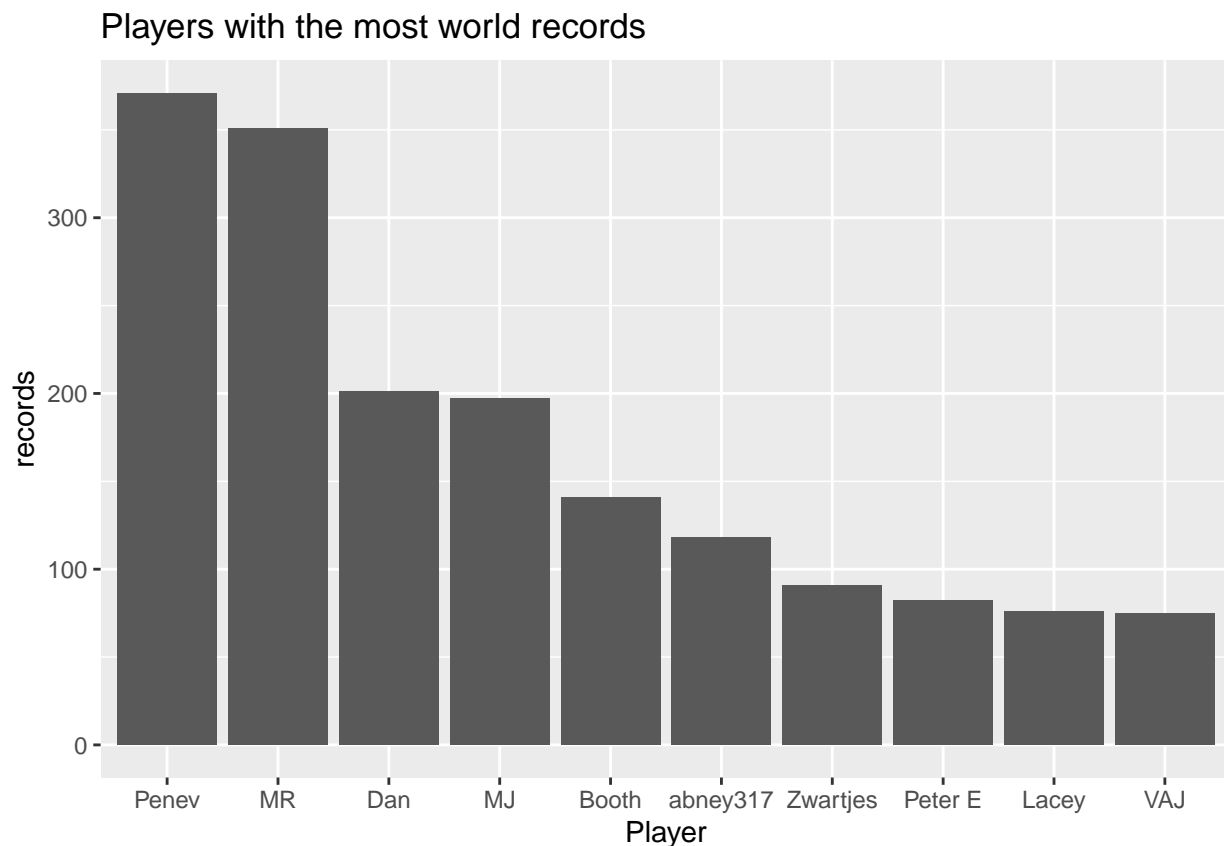
On which track does the shortcut save the most time?

Answered above

Which is the longest standing world record?

```
## # A tibble: 10 x 9
## # Groups:   system_played, track, type [6]
##    track      type    shortcut player system_played date       time_period  time
##    <chr>      <chr>   <chr>    <chr>  <chr>         <date>     <chr>       <dbl>
##  1 Yoshi Val~ Three~  Yes      Alex G PAL           2010-11-27 33.39S       33.4
##  2 Yoshi Val~ Three~  Yes      VAJ    PAL           2012-06-05 33.39S       33.4
##  3 Koopa Tro~ Singl~  No       MJ     PAL           2004-09-06 30.92S       30.9
##  4 Royal Rac~ Three~  No       Troy   NTSC          2004-09-03 2M 52.29S    172.
##  5 Luigi Rac~ Singl~  No       MJ     PAL           2003-10-05 37.69S       37.7
##  6 Luigi Rac~ Singl~  Yes      MJ     PAL           2003-10-05 37.69S       37.7
##  7 Choco Mou~ Three~  Yes      VAJ    PAL           2007-05-08 1M 12.5S     72.5
##  8 Yoshi Val~ Three~  Yes      Greg I PAL           2013-07-31 33.39S       33.4
##  9 Yoshi Val~ Singl~  No       Michae~ NTSC         2005-06-29 31.48S       31.5
## 10 Yoshi Val~ Singl~  Yes      Michae~ NTSC         2005-06-29 31.48S       31.5
## # ... with 1 more variable: record_duration <dbl>
```
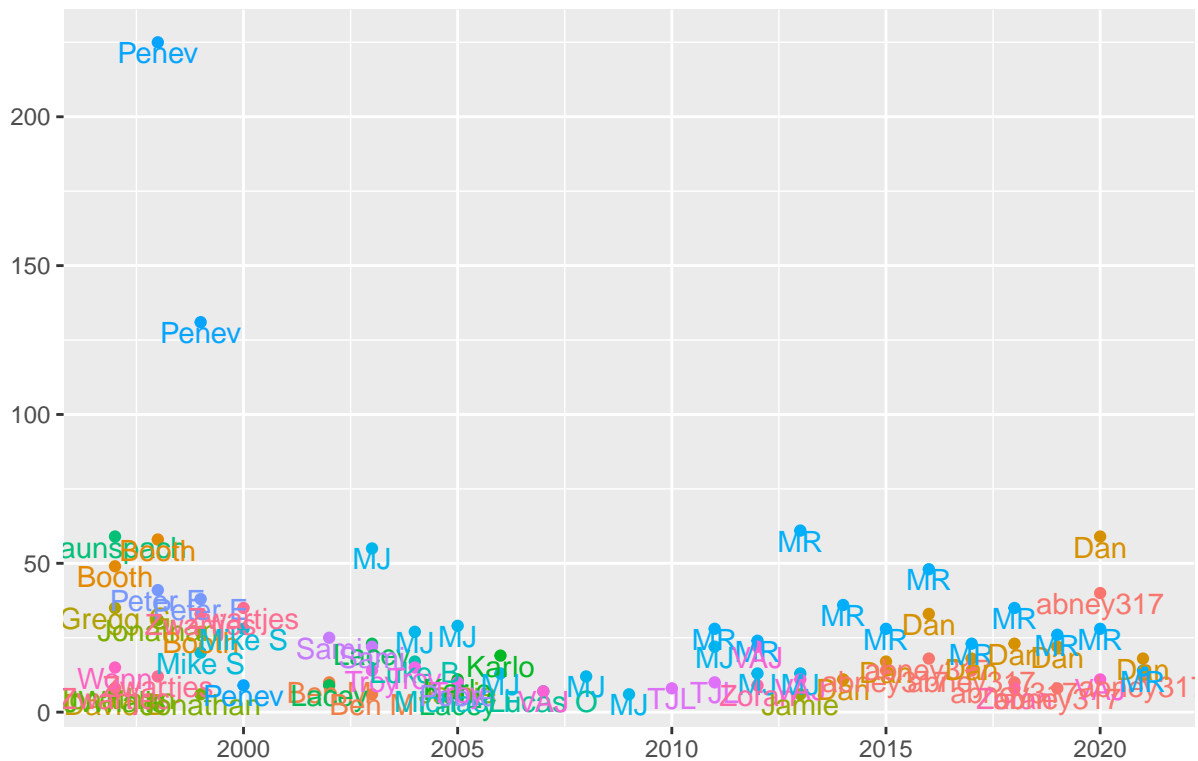
Who is the player with the most world records?

Players with the most world records

Breaking it down per year

```
## `summarise()` has grouped output by 'year'. You can override using the `.groups` argument.
```

Number of records each player has made per year (at least 5 records)

We see that players like Penev and MJ had the most records for the first years of playing. MR, DAN, and abney317 had the most records during the later years In MR's case, it's more impressive since he has the 2nd most overall records
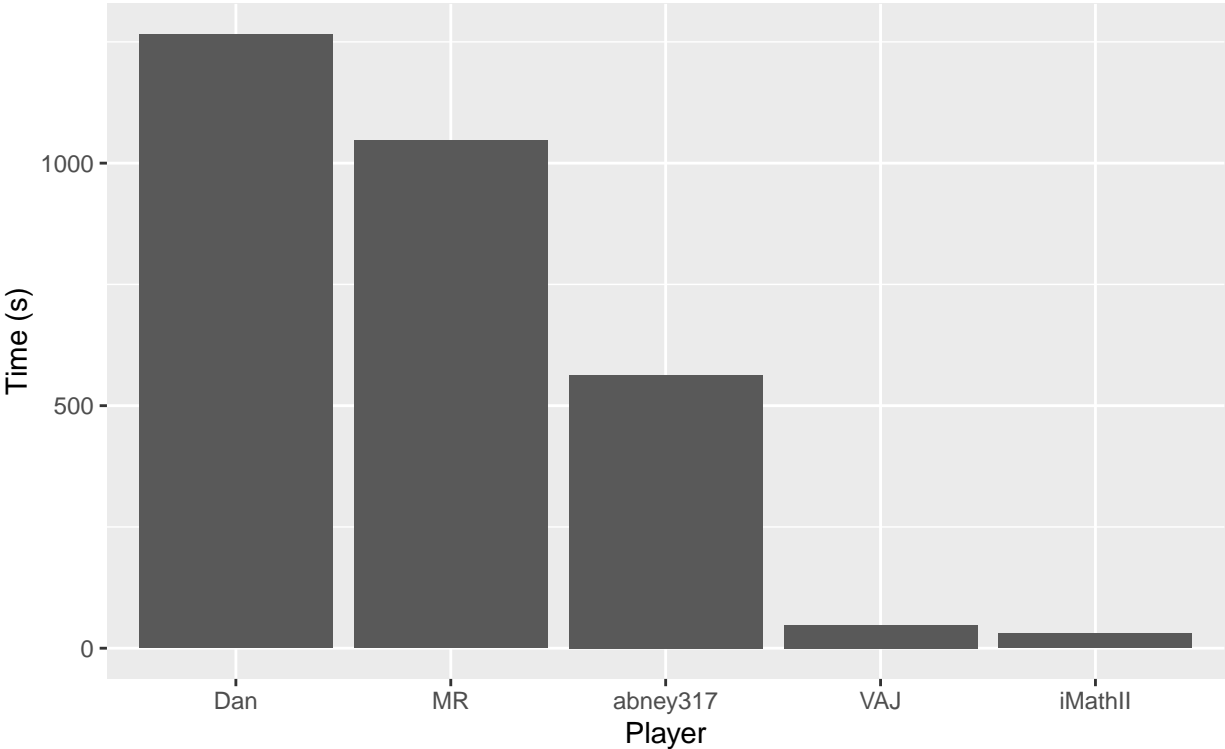
Can we determine a GOAT? (Greatest of all time)

If we are to determine a GOAT in a game that has been played for 20 years, we need to determine what makes the GOAT? Some ideas are * Fastest cumulative time over all stages + The problem with this is that not all players will have a record on all stages * Total record duration (i.e. longest unbroken records)
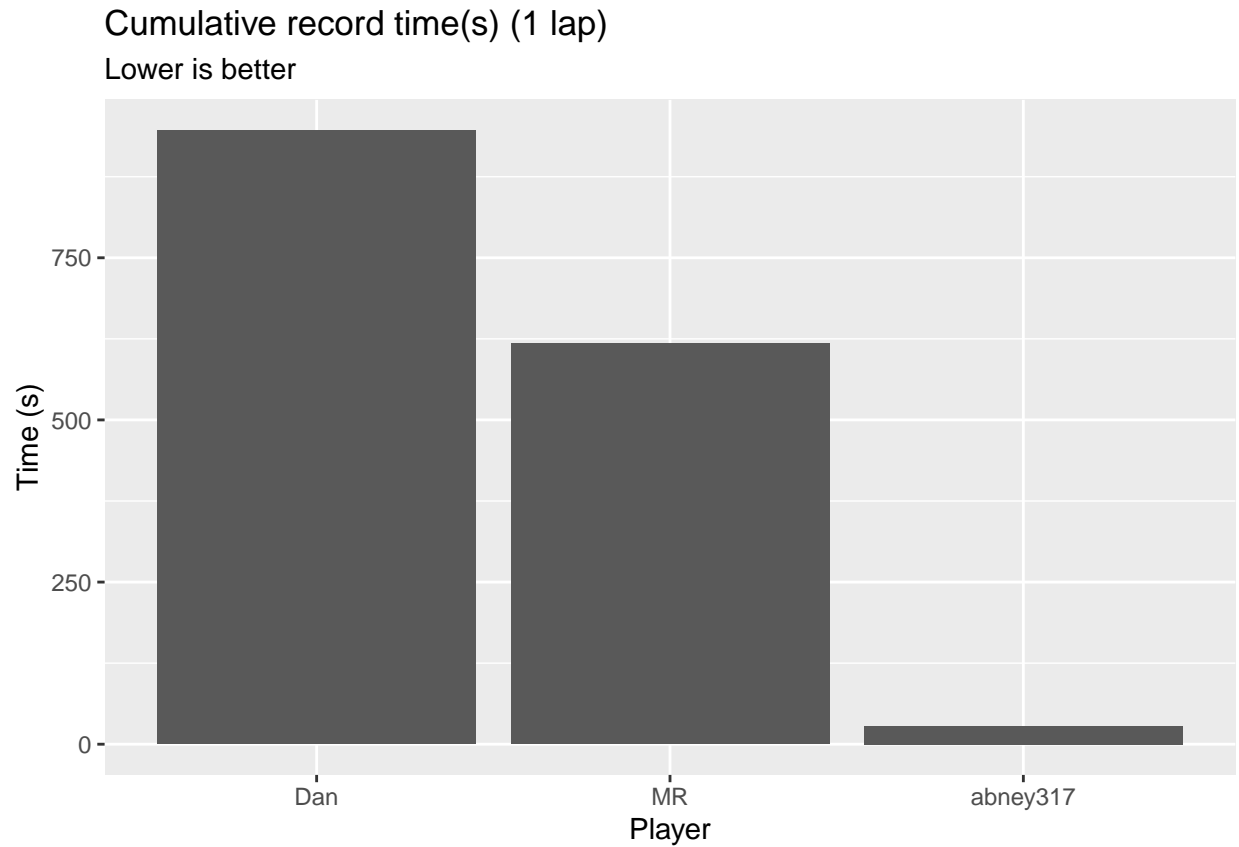
Fastest cumulative time over all stages

I will break this down into 3 lap and 1 lap since techniques can vary and further broken down into whether shortcuts were used or not

Cumulative record time(s) (3 laps)
Lower is better

Cumulative record time(s) (1 lap)
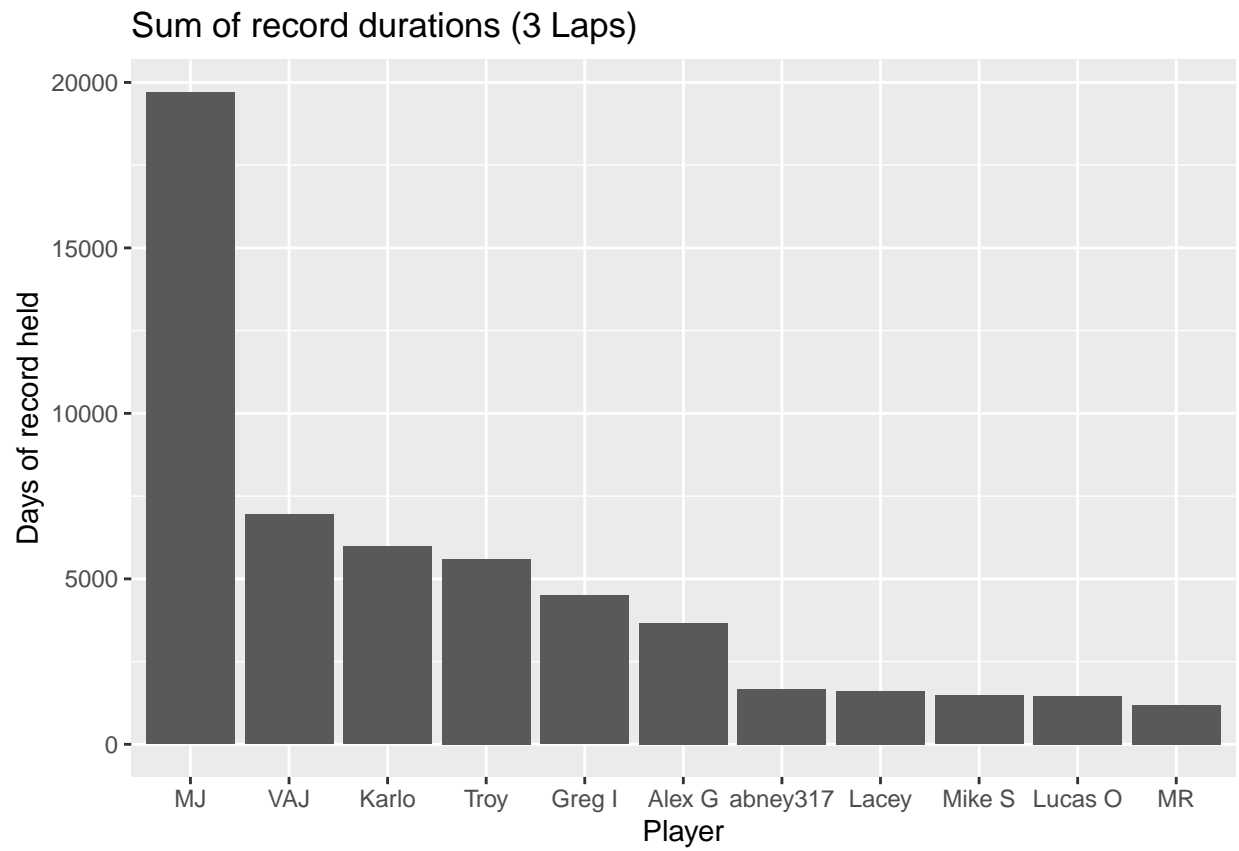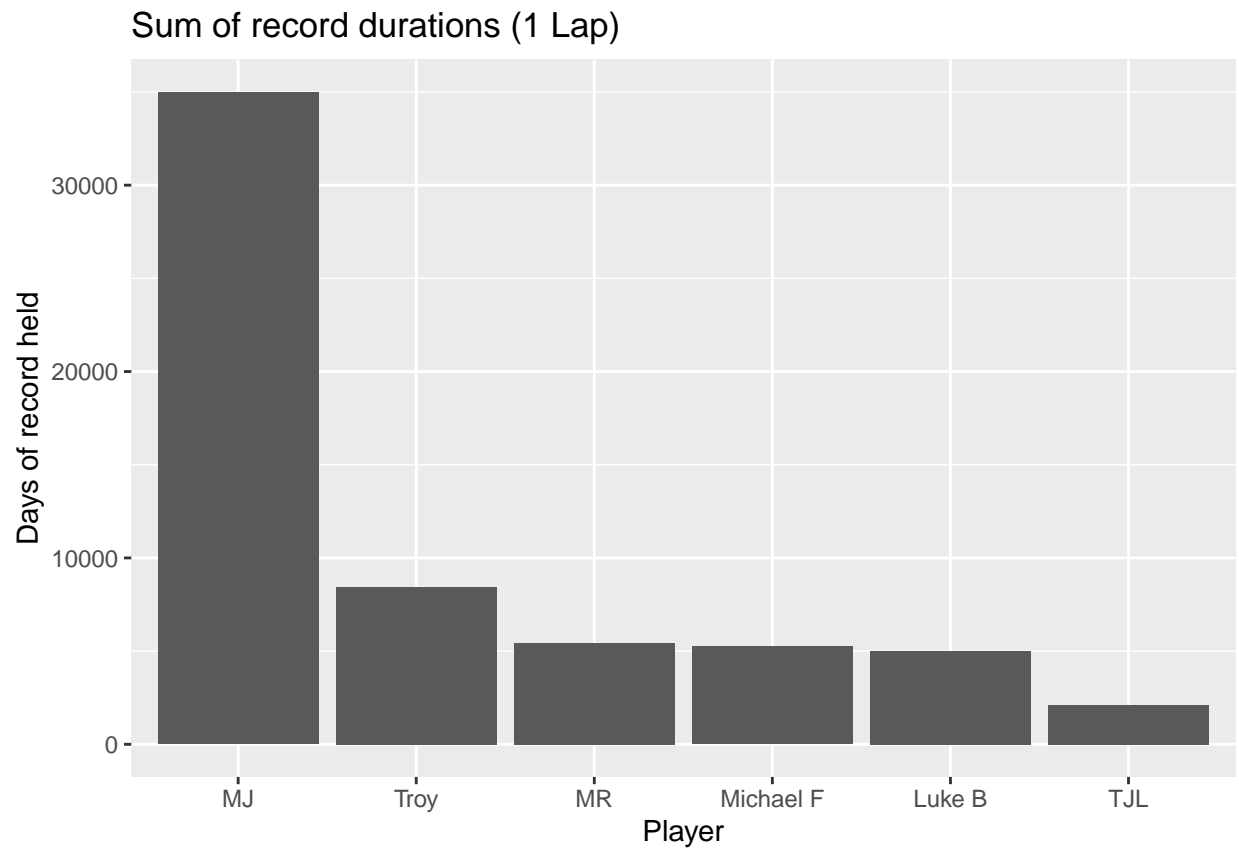Lower is better

The problem with a plots like this is that players that only have 1 record on the shortest stage in the game will look like they place higher. Mostly just using this as an idea of players to keep an eye on
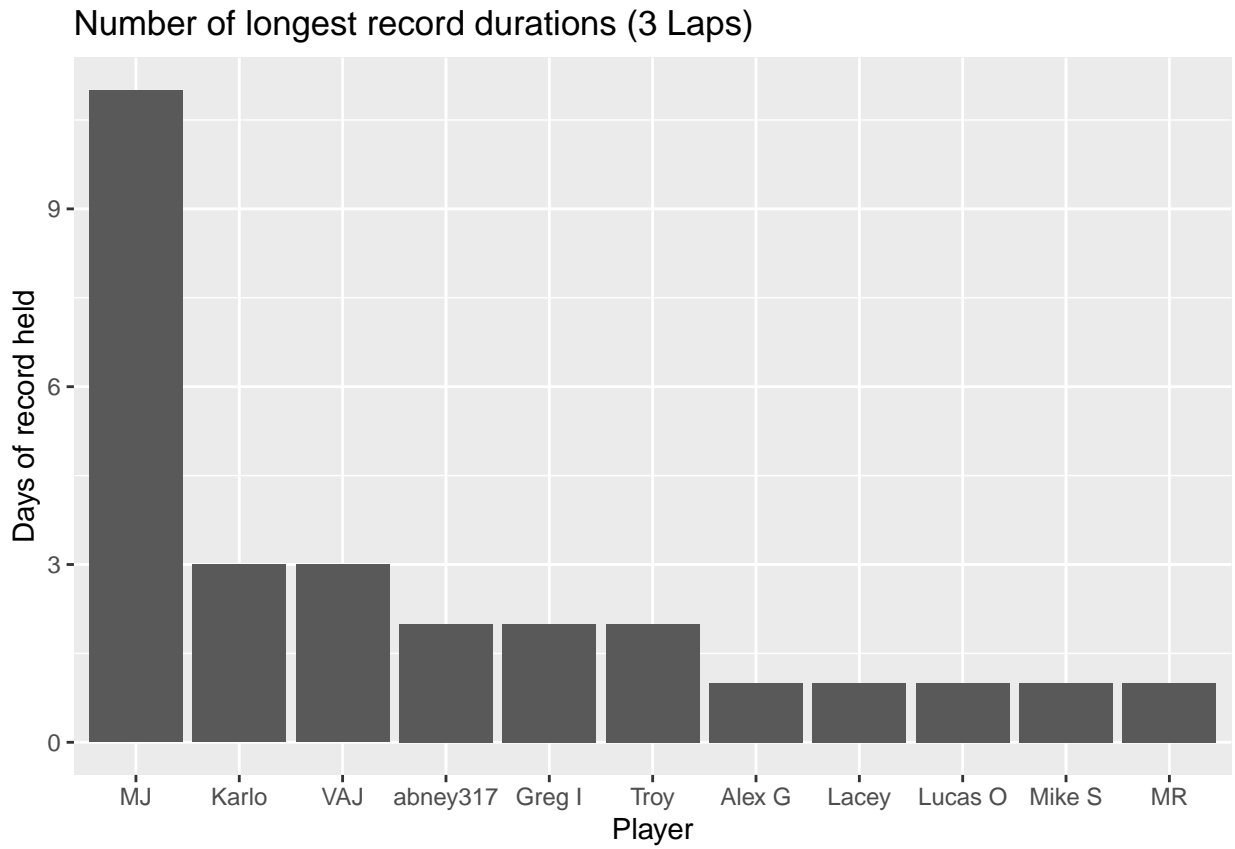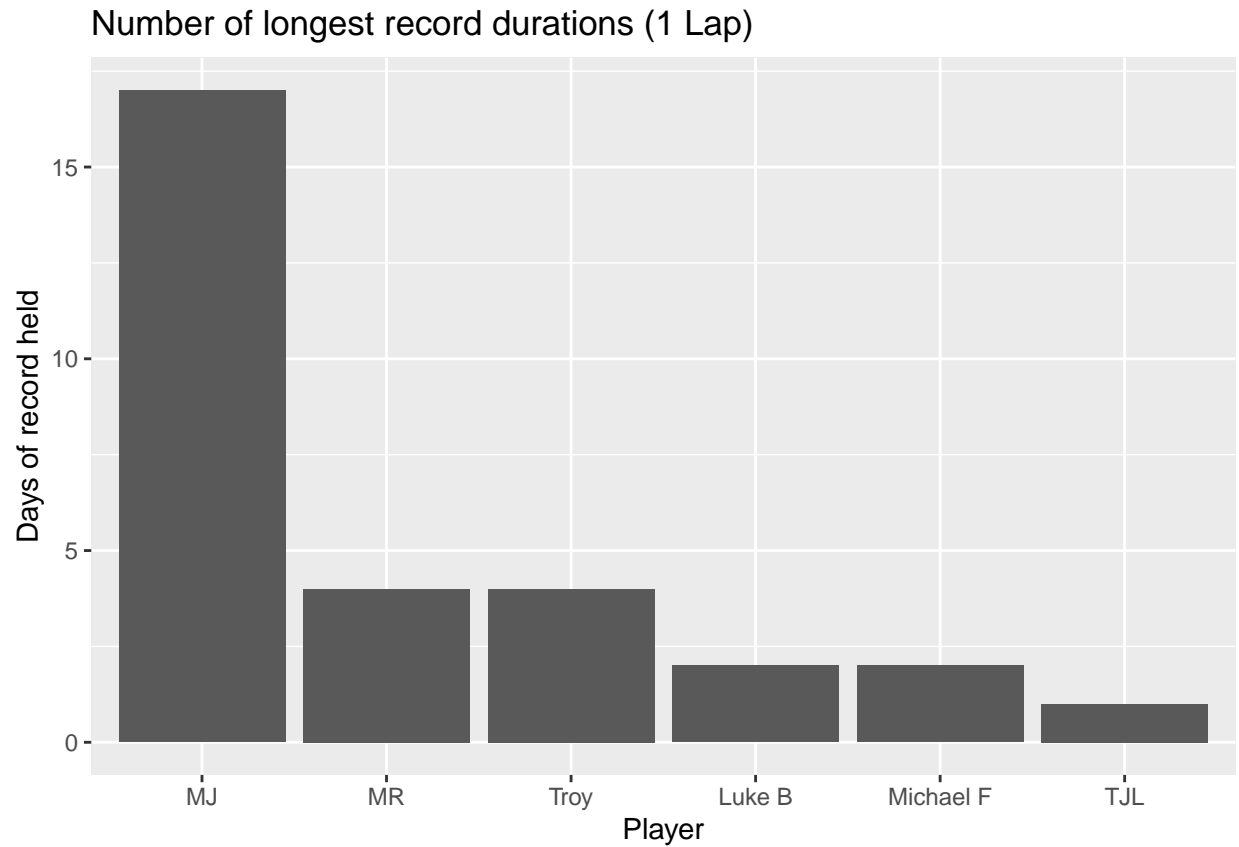
Total record duration

Again I will split between 3 laps and 1 lap

Sum of record durations (3 Laps)

Sum of record durations (1 Lap)

Graphing the number of longest records

Number of longest record durations (3 Laps)

Number of longest record durations (1 Lap)

Conclusions I came up with based on the data * Penev, One of the first to ever start speedrunning Mario Kart 64 but has not broken any records after the first few years * MJ and MR have shown up in almost all plots that I created so it might be safe to say that they have the biggest influence on the game