The Dota 2 Landscape in R

Vishalin Pillay

DERIVCO

DELIVERING A LEGENDARY GAMING EXPERIENCE

What is Dota 2?
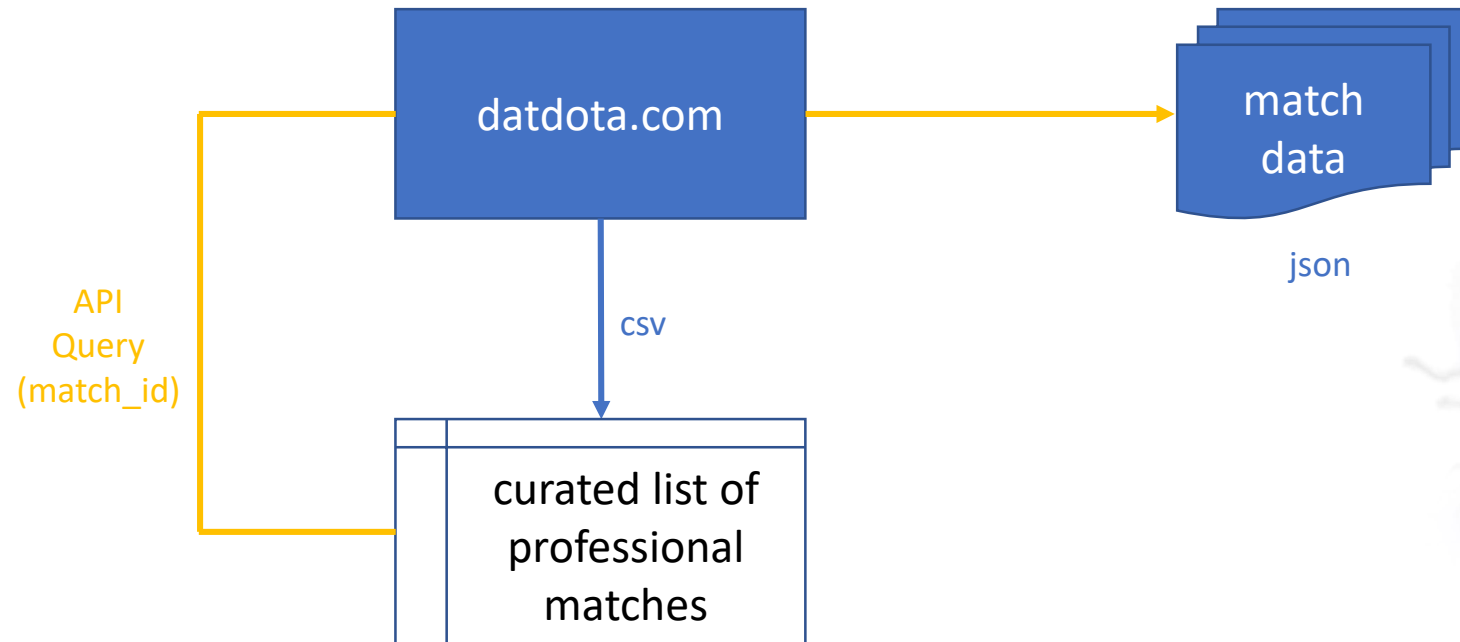
- **Dota 2** is a strategy game played in real-time between two teams of 5 players.

- **Dota 2** ≈ Chess

- Both teams battle for dominance over the map, with one ultimately claiming victory by destroying the other's **Ancient**.

- Dota 2 is the highest paying eSports game in the world, with last year's most prestigious tournament, The International 2018, boasting a prize pool of over **$25.5 M**.

Why Dota 2?

- Incredibly competitive → generates interesting **statistics**

- Virtual playing field → built for **data capture** and **analytics**

- Wealth of match data **catalogued** and **exposed** online

- I love playing the game, following the pro-scene, and this brings me closer to the **community**.

Sourcing Match Data

datdota.com

API
Query
(match_id)

csv

curated list of
professional
matches

match
data

json

Invoking the API

```r
premium <- read.csv('datdota/matches_p1.csv', header=T) %>%
  rename(MatchId = ï..Match.ID)

datdota_url <- 'https://www.datdota.com/api/matches/'
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vishalin.pillay@outlook.com if usage is problematic")

matches <- list()

for(i in 1:nrow(premium))
{
  start <- Sys.time()

  match_url <- paste0(datdota_url, premium$MatchId[i])
  match_json <- fromJSON(match_url)

  matches <- c(matches, match_json)

  Sys.sleep(ifelse(1.2 - as.numeric(Sys.time() - start, 'secs') > 0, 1.2 -
    as.numeric(Sys.time() - start, 'secs'), 0))

  print(paste0(i, ' - ', as.numeric(Sys.time() - start, 'secs')))
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saveRDS(matches, 'matchdata/matches_json.rda')
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Glorious Invocation!

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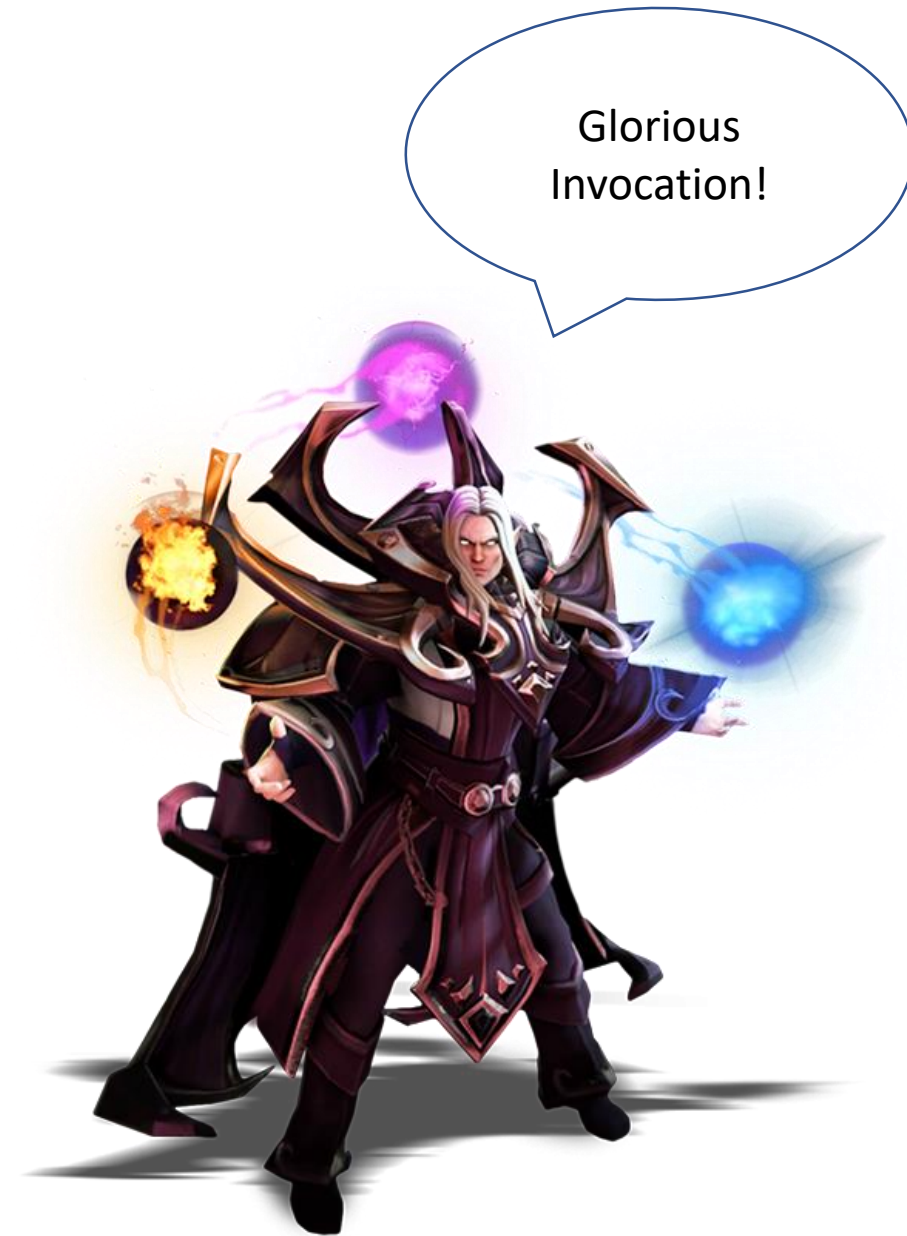
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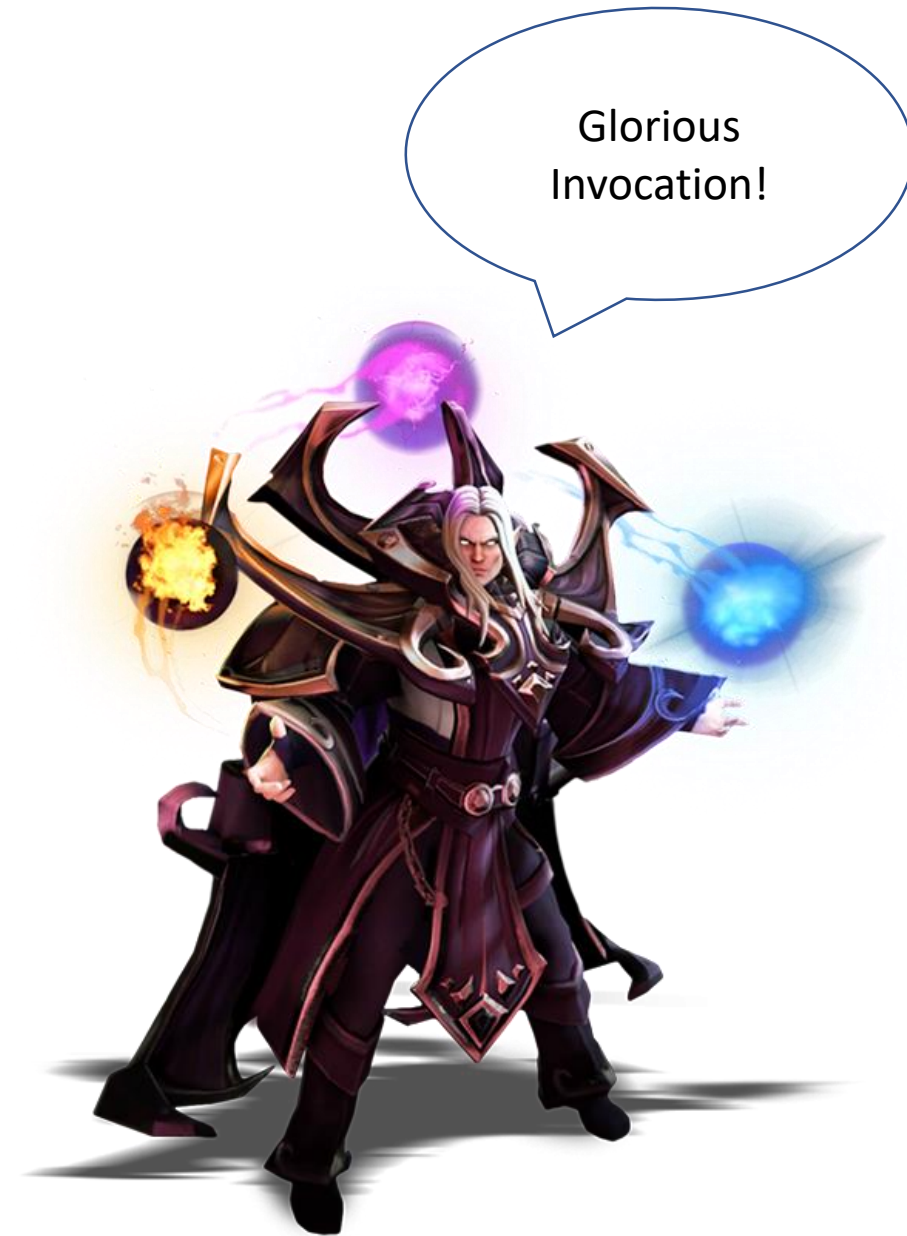
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Data Wrangling

JSON

TIDY

```
"match_id": 4590973188,
"duration": 1619,
"radiant_victory": true,
"has_error": true,
"patch": "7.21",
"start_date": 1553940662000,
"state": {
    "web": true,
    "parser": true,
    "audio": true
},
"league": {
    "league_id": 10810,
    "name": "MDL Disneyland Paris Major"
},
"radiant": {
    "team": {
        "name": "Fnatic",
        "valve_id": 350190,
        "tag": "Fnatic",
        "logo": "812181939783674919",
        "display": true
    },
    "player_performances": [
        {
            "player": {
                "nickname": "Abed",
                "steam32": 154715080
            },
            "performance": {
                "hero": {
                    "valve_id": 17,
                    "short_name": "stormspirit"
                },
                "level": 22,
                "kills": 12,
                "deaths": 3,
                "assists": 11,
                "gpm": 596,
                "xpm": 793,
                "building_damage": 278,
                "hero_damage": 21354,
                "hero_healing": 0,
                "end_game_gold": 320,
                "gold_spent": 16420,
                "items": [
                    {
                        "item_id": 15,
                        "time": -89,
                        "name": "item mantle"
```
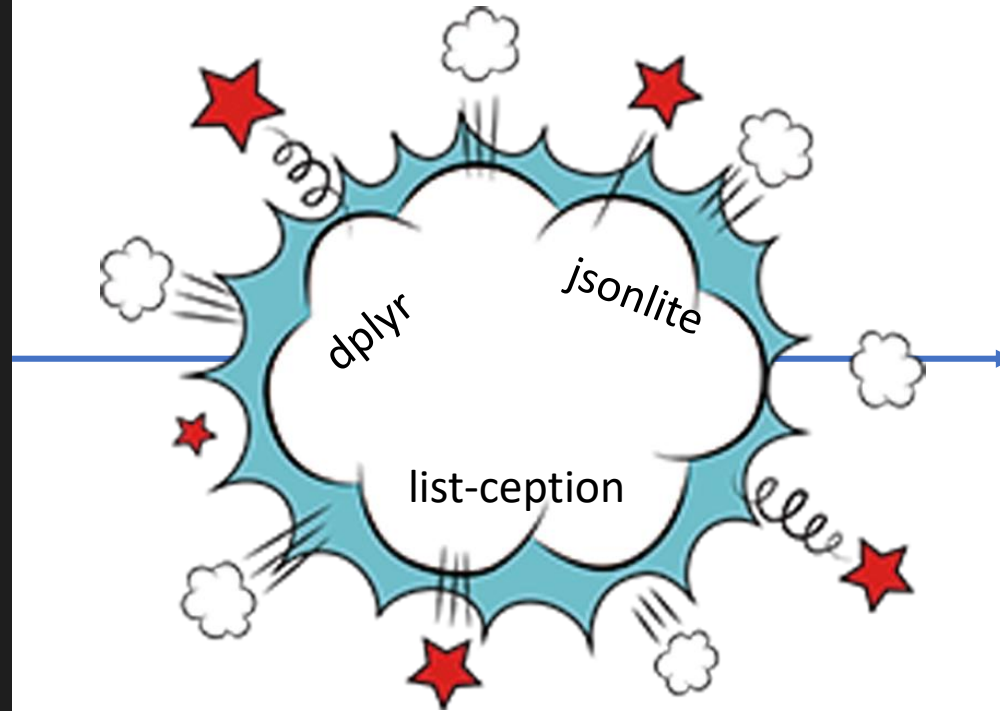
short_name	level	kills	deaths	assists	gpm	xpm	build
lifestealer	25	7	1	19	586	649	
jakiro	24	11	4	24	370	582	
necrolyte	24	8	5	21	486	584	
tiny	20	3	8	26	351	436	
darkseer	22	10	7	23	463	521	
vengefulspirit	14	4	14	11	231	242	
tidehunter	21	2	5	15	347	475	
nevermore	25	11	4	9	615	689	
tusk	20	3	11	18	225	428	
trollwarlord	24	5	5	11	580	620	
stormspirit	22	12	3	11	596	793	
pangolier	17	2	5	16	467	530	
jakiro	14	3	6	8	282	374	
batrider	16	6	4	16	332	472	
lifestealer	21	6	0	10	649	735	
kunkka	18	3	2	6	444	576	
phantomlancer	16	7	5	3	496	479	
furion	12	3	6	8	288	267	
leshrac	10	3	8	4	223	219	
ursa	12	2	8	2	300	285	
trollwarlord	23	9	1	14	732	700	

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dplyr   jsonlite   list-ception

TIDY

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dplyr jsonlite

IMAGINATION

list-ception

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Quick Terminology

- Kills – Number of times a player 'kills' a player on the enemy team
- Deaths – Number of times a player is 'killed'
- Assists – Number of times a player is involved in 'killing' an enemy player (however without dealing the final blow)
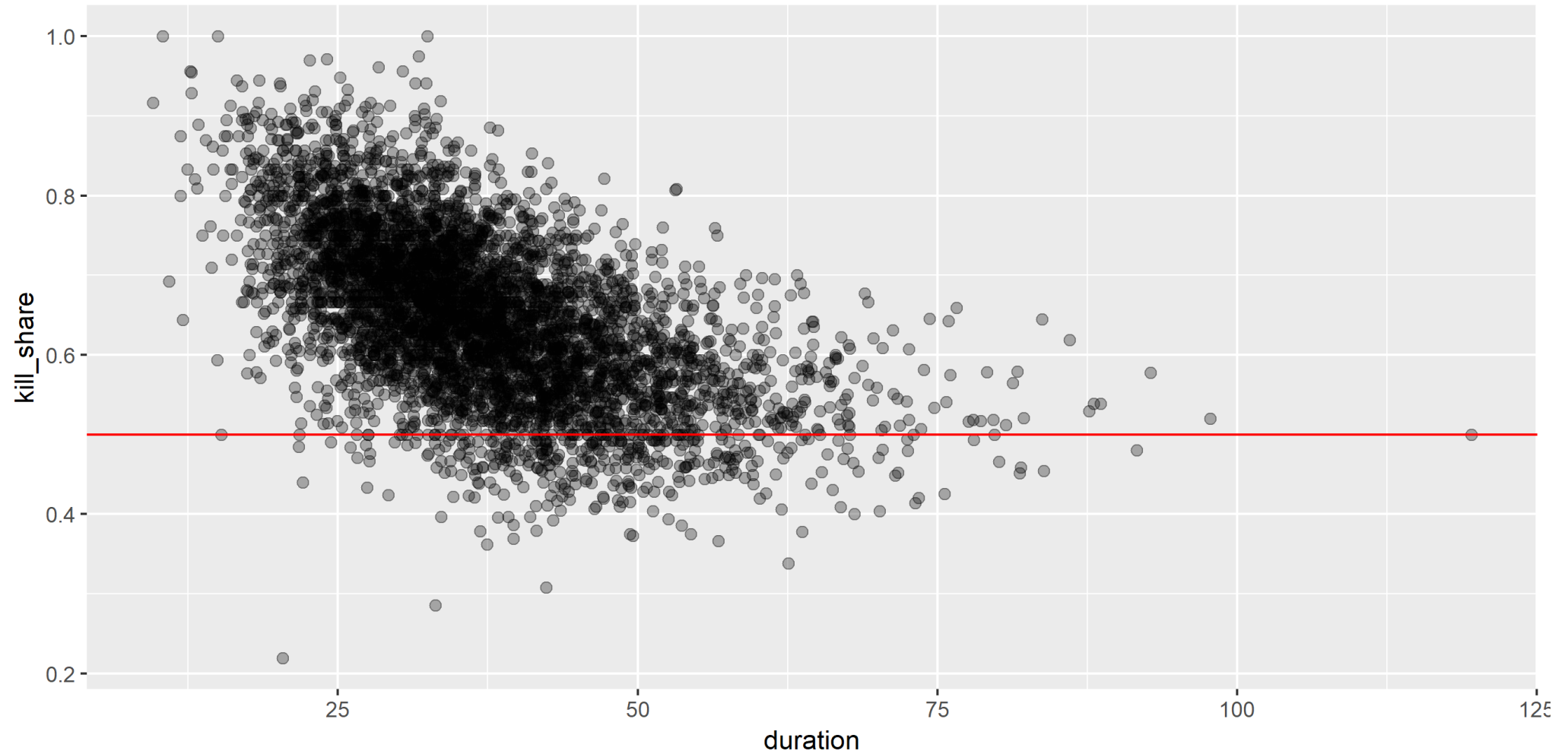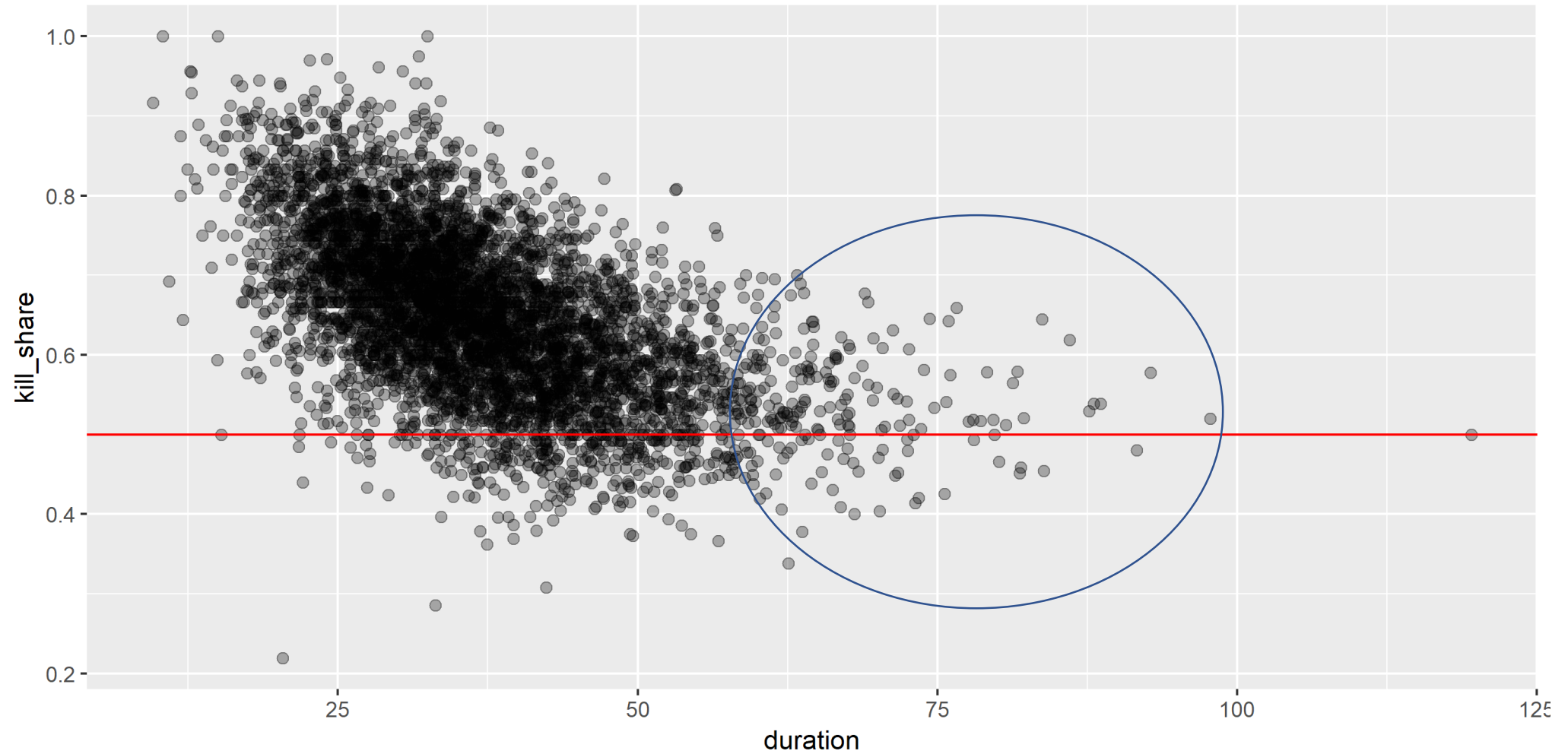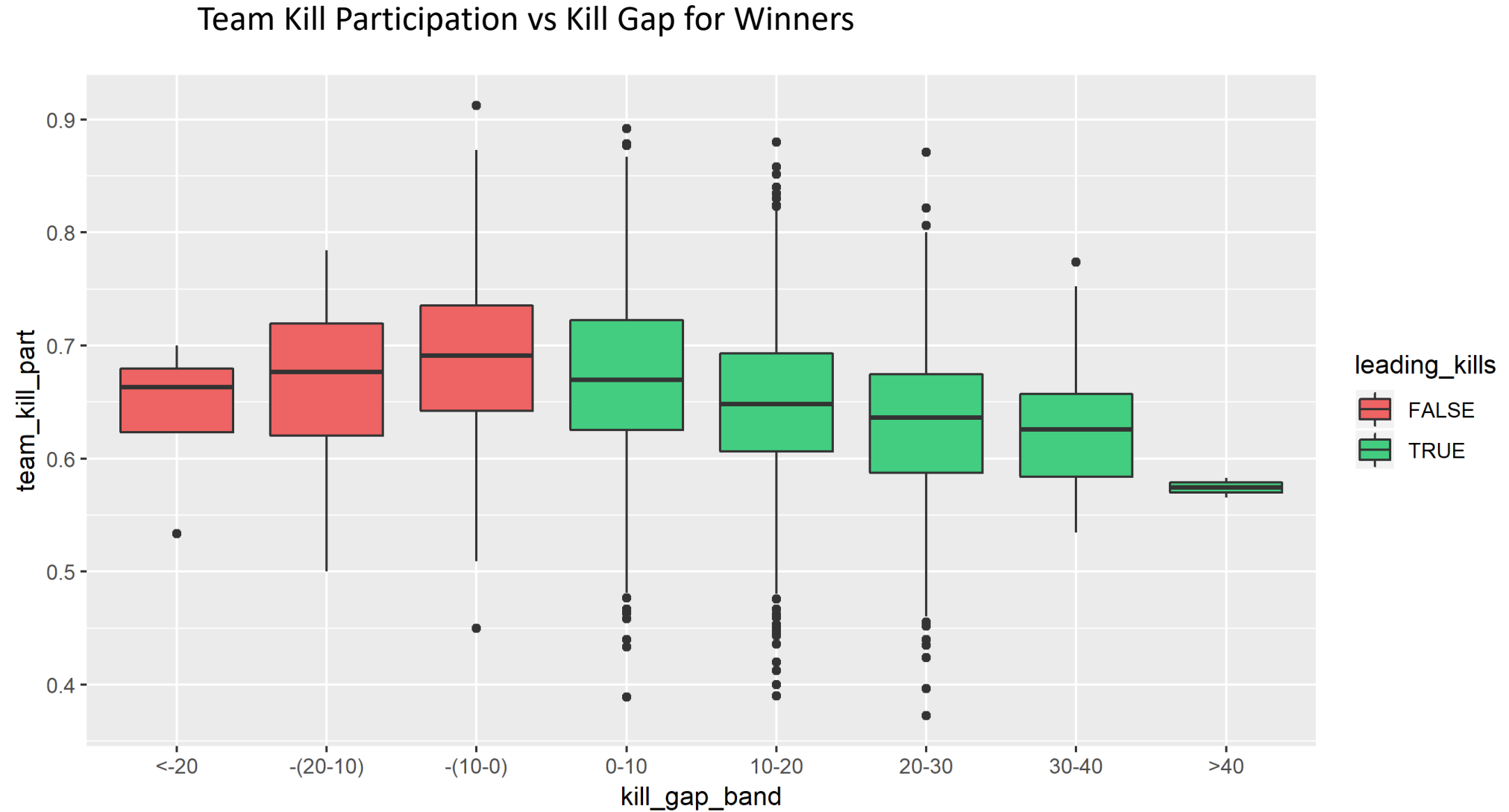
Visualization
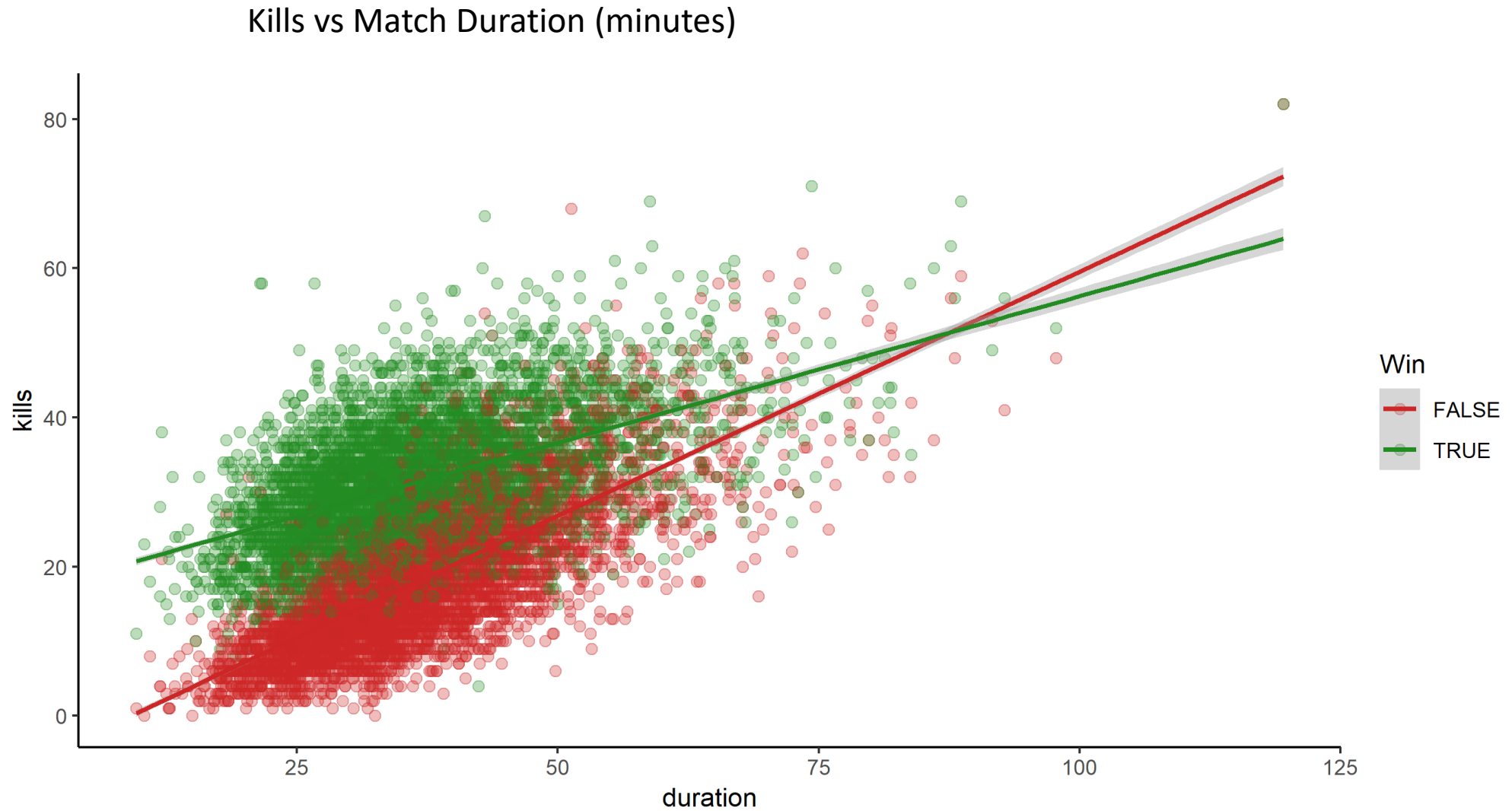
Kills vs Match Duration (minutes)

Visualization

Kill Share vs Match Duration (minutes)

Visualization

Kill Share vs Match Duration (minutes)

Visualization

Team Kill Participation vs Kill Gap for Winners

Closing Remark

Teams that kill together, win together! Unfortunately, teams that die together, also lose together!

Questions, Collaboration, Discussion…

https://github.com/vishalinp/DotaLandscape