What is F1?
Exploration
Exploration
Scope
Exploring Formula 1
Data Scraping Project
Presentation by Manny Brar (WCD)

What is F1?

History

Points

Scope

Formula One cars are the fastest regulated road-course racing cars in the world, owing to very high cornering speeds achieved through the generation of large amounts of aerodynamic down force.

Formula One racing is governed and sanctioned by a world body called the FIA – Fédération Internationale de l'Automobile or the International Automobile Federation. The name 'Formula' comes from the set of rules that the participating cars and drivers must follow.

The objective of a Formula 1 is for the driver's who crosses the finish line first after completing a pre-determined number of laps is declared the winner. Points are awarded for each race in accordance to race finish order.

Where it all started

History

In 1946, the FIA standardized racing rules and this formed the basis of Formula One racing. The inaugural Formula One World Drivers' championship was then held in 1950, the first world championship series.

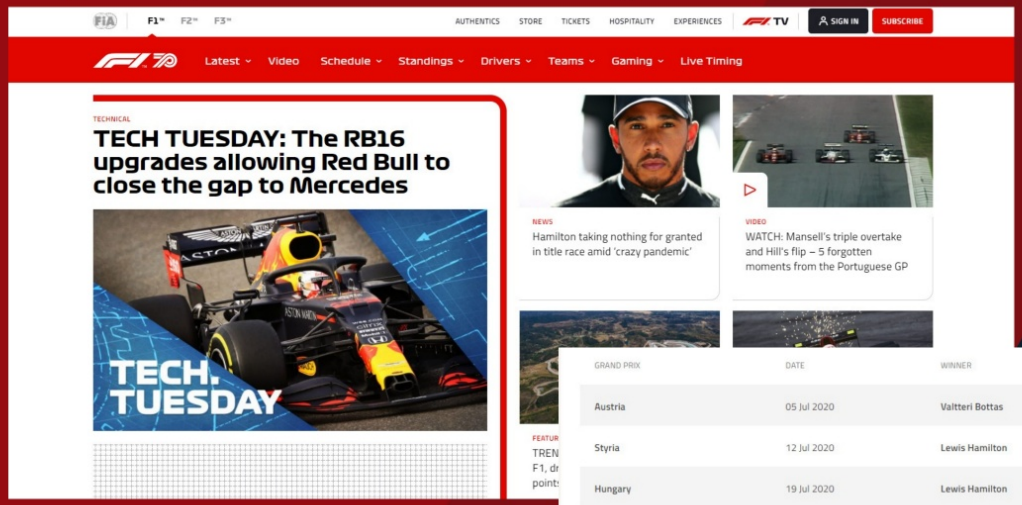
Current Grand Prix Points Distribution:

- 1st:25
- 2nd:18
- 3rd:15
- 4th:12
- 5th:10
- 6th:8
- 7th:6
- 8th:4
- 9th:2
- 10th:1
- *Fastest Lap:1

Points

Exploring F1 through Web Scraping & Data analysis

Scope



GRAND PRIX	DATE	WINNER	CAR	LAPS	TIME
Austria	05 Jul 2020	Valtteri Bottas	MERCEDES	71	1:30:55.739
Styria	12 Jul 2020	Lewis Hamilton	MERCEDES	71	1:22:50.683
Hungary	19 Jul 2020	Lewis Hamilton	MERCEDES	70	1:36:12.473
Great Britain	02 Aug 2020	Lewis Hamilton	MERCEDES	52	1:28:01.283
70th Anniversary	09 Aug 2020	Max Verstappen	RED BULL RACING HONDA	52	1:19:41.993
Spain	16 Aug 2020	Lewis Hamilton	MERCEDES	66	1:31:45.279
Belgium	30 Aug 2020	Lewis Hamilton	MERCEDES	44	1:24:08.761
Italy	06 Sep 2020	Pierre Gasly	ALPHATAURI HONDA	53	1:47:06.056
Tuscany	13 Sep 2020	Lewis Hamilton	MERCEDES	59	2:19:35.060
Russia	27 Sep 2020	Valtteri Bottas	MERCEDES	53	1:34:00.364
Eifel	11 Oct 2020	Lewis Hamilton	MERCEDES	60	1:35:49.641

Race Winners Data (1950-2020)

Columns:
Grand Prix, Date, Winner, Team, Laps, Time

Data Source:
www.formula1.com

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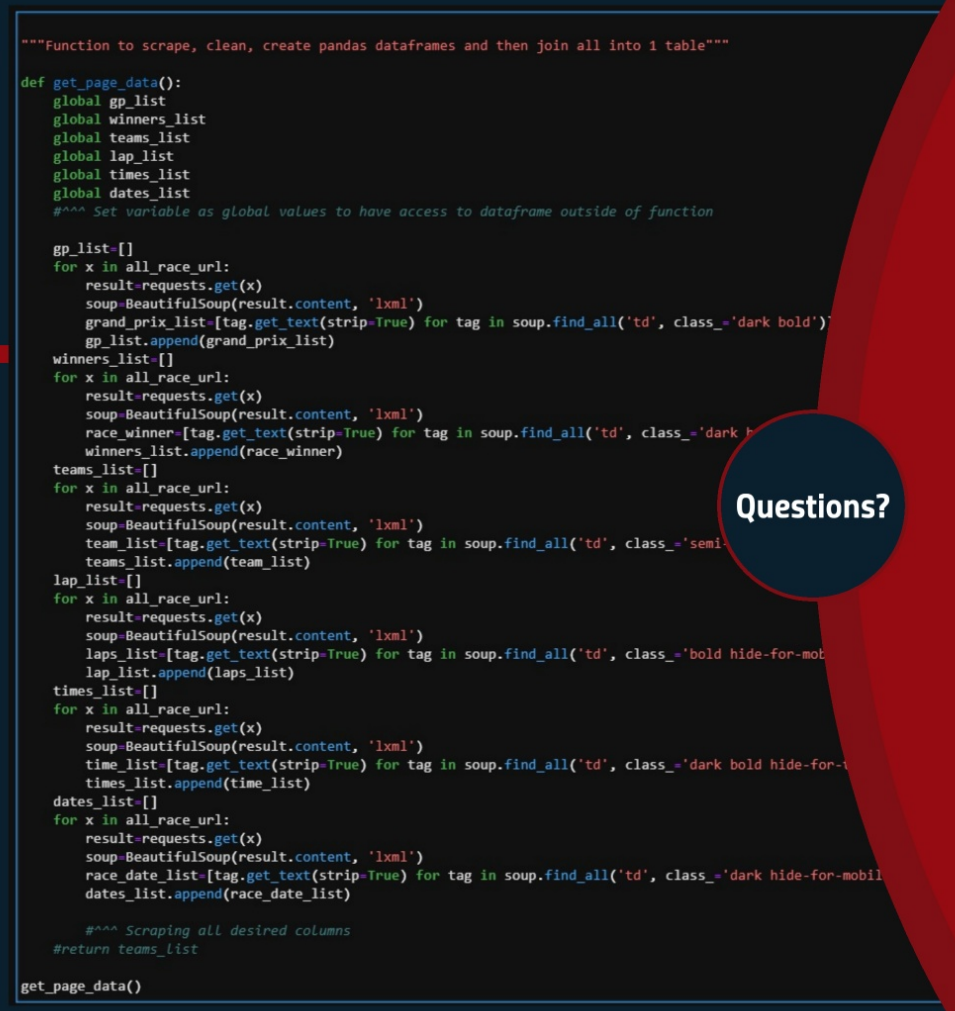
70 years of race winning results Through Exploratory Data Analysis

Tools & Libraries:

- Python
- BeautifulSoup
- SQL
- JupyterLab
- Snowflake
- Seaborn
- Tableau
- Prezi



```
"""Function to scrape, clean, create pandas dataframes and then join all into 1 table"""

def get_page_data():
    global gp_list
    global winners_list
    global teams_list
    global lap_list
    global times_list
    global dates_list
    #^^^ Set variable as global values to have access to dataframe outside of function

    gp_list=[]
    for x in all_race_url:
        result=requests.get(x)
        soup=BeautifulSoup(result.content, 'lxml')
        grand_prix_list=[tag.get_text(strip=True) for tag in soup.find_all('td', class_='dark bold')]
        gp_list.append(grand_prix_list)
    winners_list=[]
    for x in all_race_url:
        result=requests.get(x)
        soup=BeautifulSoup(result.content, 'lxml')
        race_winner=[tag.get_text(strip=True) for tag in soup.find_all('td', class_='dark
        winners_list.append(race_winner)
    teams_list=[]
    for x in all_race_url:
        result=requests.get(x)
        soup=BeautifulSoup(result.content, 'lxml')
        team_list=[tag.get_text(strip=True) for tag in soup.find_all('td', class_='semi
        teams_list.append(team_list)
    lap_list=[]
    for x in all_race_url:
        result=requests.get(x)
        soup=BeautifulSoup(result.content, 'lxml')
        laps_list=[tag.get_text(strip=True) for tag in soup.find_all('td', class_='bold hide-for-mob
        lap_list.append(laps_list)
    times_list=[]
    for x in all_race_url:
        result=requests.get(x)
        soup=BeautifulSoup(result.content, 'lxml')
        time_list=[tag.get_text(strip=True) for tag in soup.find_all('td', class_='dark bold hide-for-
        times_list.append(time_list)
    dates_list=[]
    for x in all_race_url:
        result=requests.get(x)
        soup=BeautifulSoup(result.content, 'lxml')
        race_date_list=[tag.get_text(strip=True) for tag in soup.find_all('td', class_='dark hide-for-mobil
        dates_list.append(race_date_list)

        #^^^ Scraping all desired columns
    #return teams_list

get_page_data()
```

Questions?

Questions?

- Most winning driver of all time?
- Most winning team of all time?
- Grand Prix's with most races over 70 years?
- Have the AVG winning lap times improved over time?
- Evolution of car design for speed or safety?

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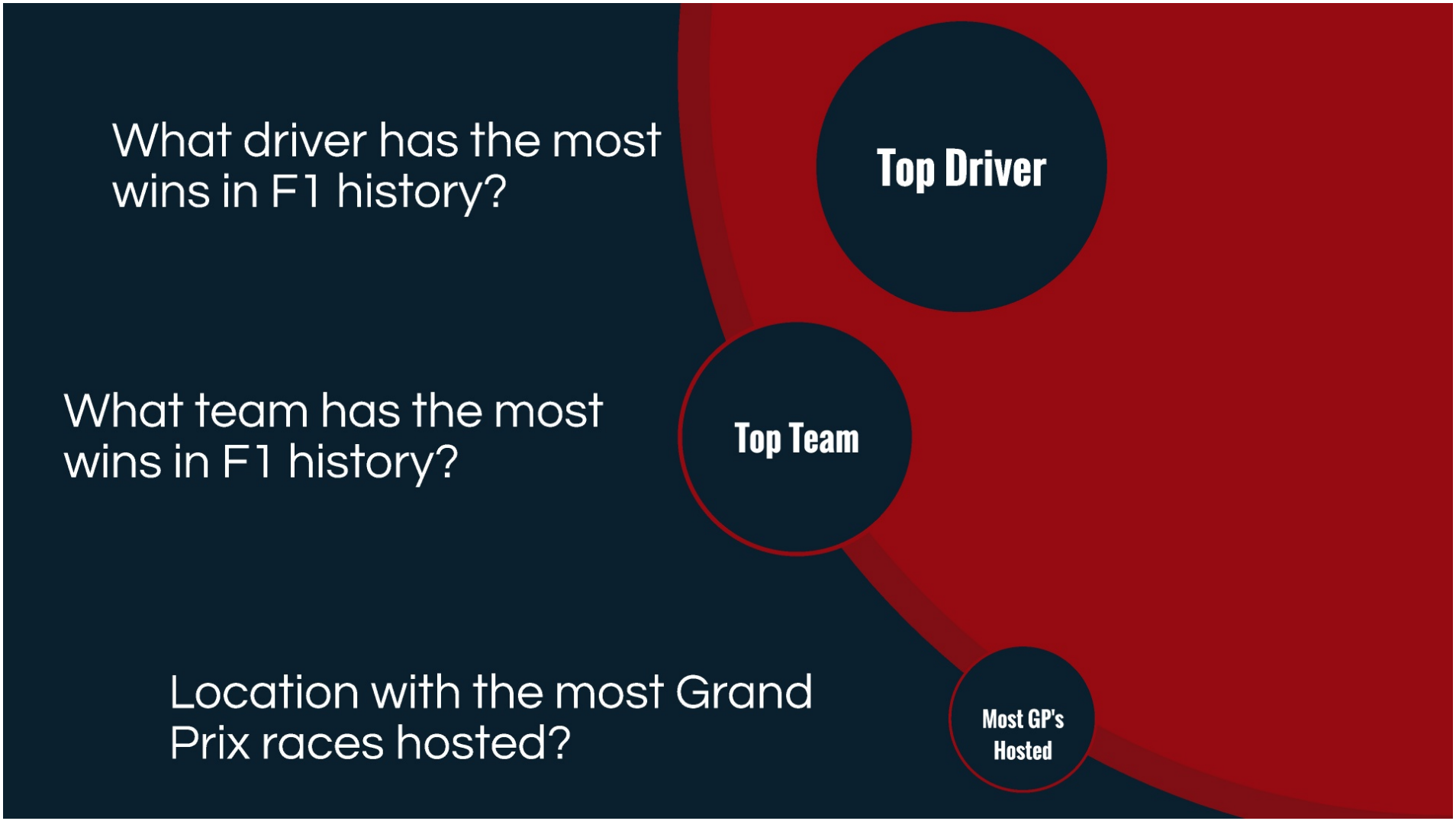
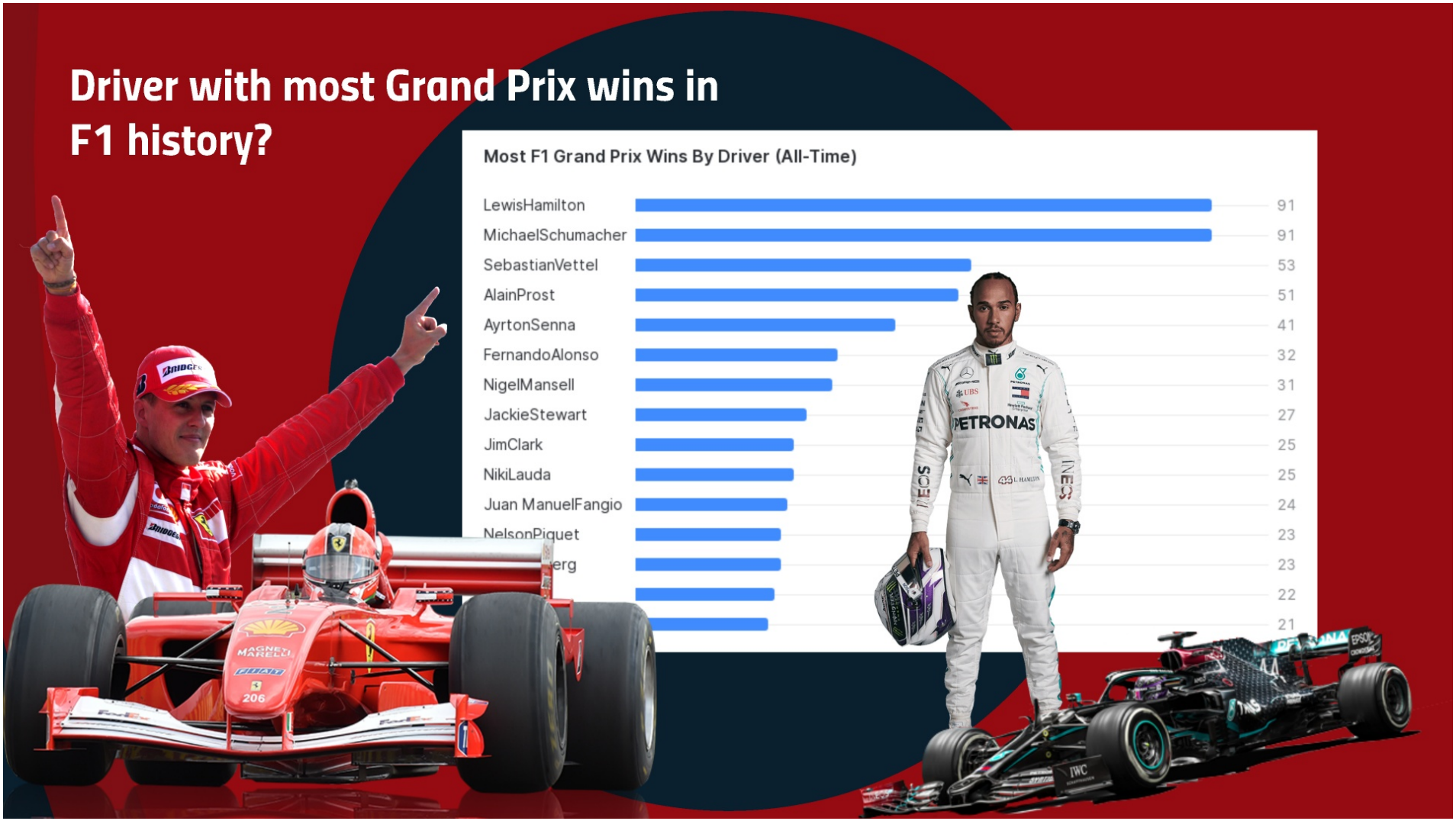
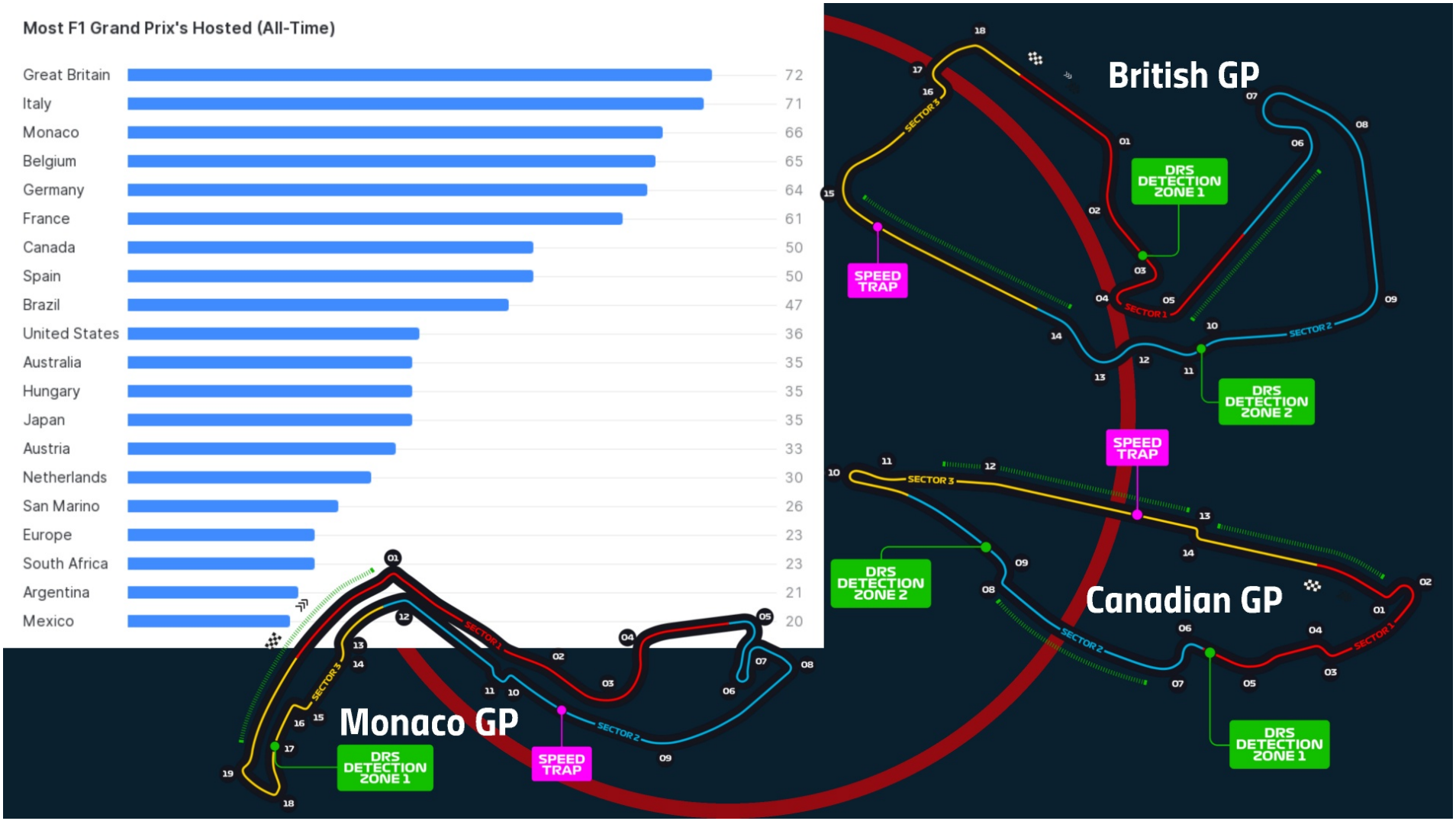

What driver has the most wins in F1 history?
Top Driver
What team has the most wins in F1 history?
Top Team
Location with the most Grand Prix races hosted?
Most GP's Hosted

Driver with most Grand Prix wins in F1 history?



Most GP Wins by Team


Most F1 Grand Prix's Hosted (All-Time)
Great Britain 72
Italy 71
Monaco 66
Belgium 65
Germany 64
France 61
Canada 50
Spain 50
Brazil 47
United States 36
Australia 35
Hungary 35
Japan 35
Austria 33
Netherlands 30
San Marino 26
Europe 23
South Africa 23
Argentina 21
Mexico 20
British GP
DRS DETECTION ZONE 1
SPEED TRAP
DRS DETECTION ZONE 2
SECTOR 1
SECTOR 2
SECTOR 3
Canadian GP
SPEED TRAP
DRS DETECTION ZONE 2
DRS DETECTION ZONE 1
Monaco GP
DRS DETECTION ZONE 1
SPEED TRAP

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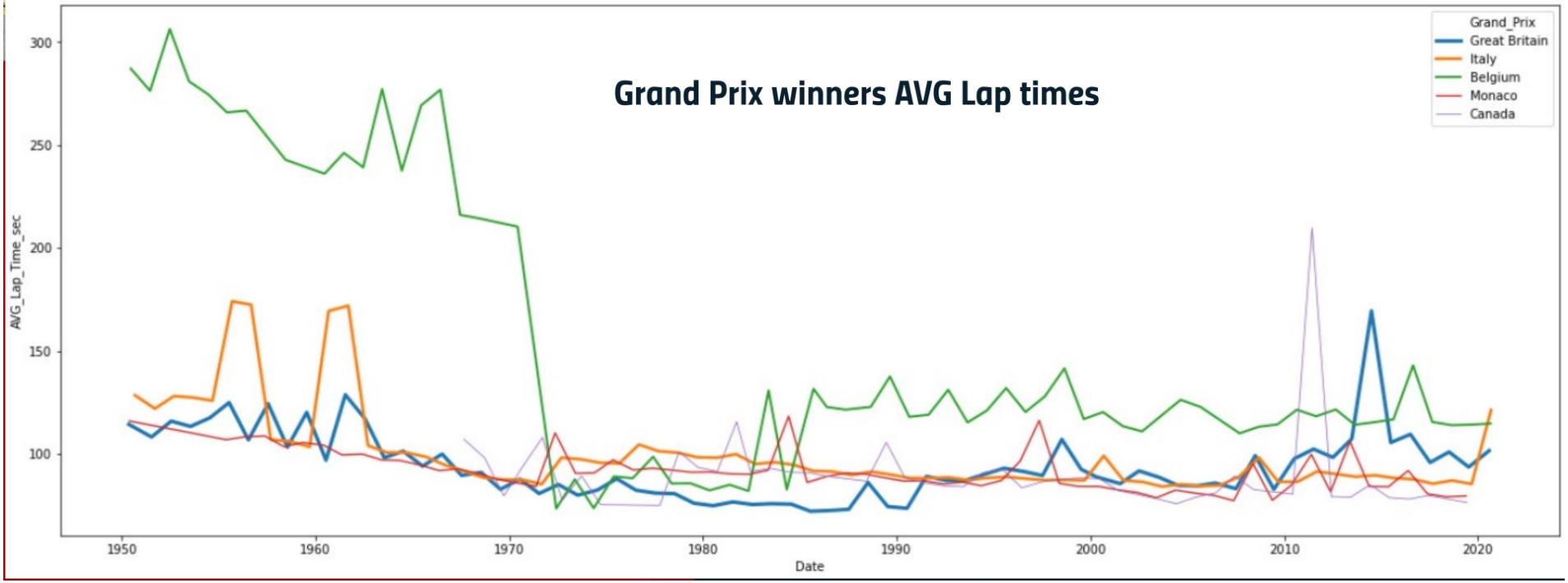
Have the cars gotten faster since 1950?

AVG Lap Times

Car design evolution for safety or performance?

Car Evolution

Have the AVG winning lap times improved over time?



Evolution of Car Design

1950
30

1960
Marlboro

1970
5
GOLD LEA
TEAM LOT
Shell

19
1980
Marlboro
Marlboro
HONDA
Shell
Shell
12

1990
2020

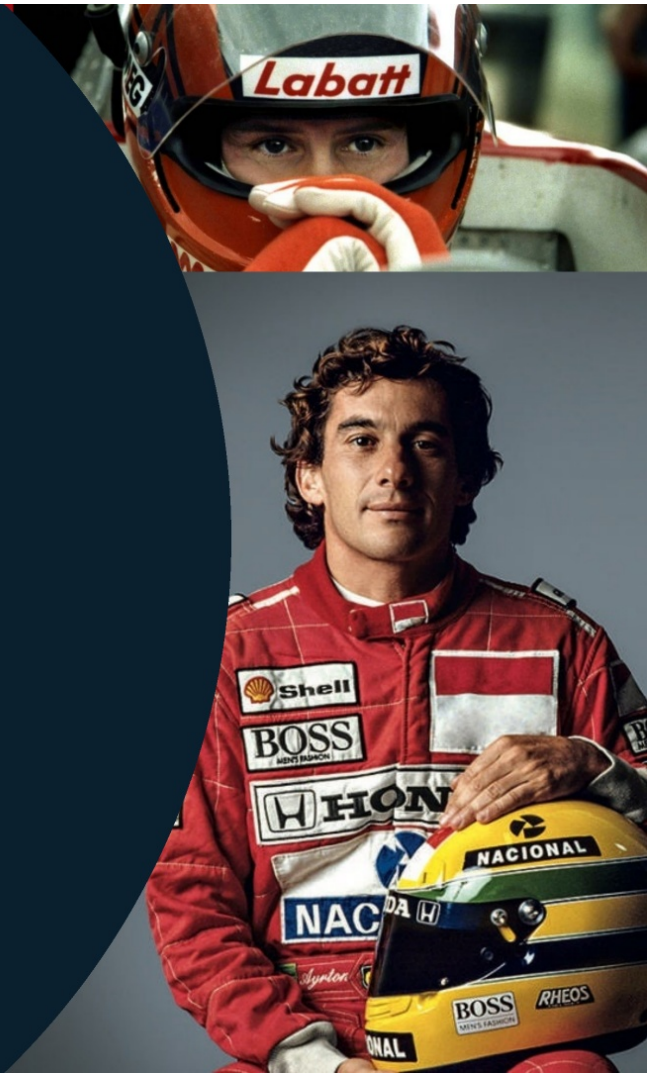
# of Car Design

2010
TOTAL

TIM
2020
PETRONAS
SYNTIUM
PETRONAS
SYNTIUM
IWC

Deaths per Decade

- 1950's: 15 Deaths
- 1960's: 14 Deaths
- 1970's: 12 Deaths
- 1980's: 4 Deaths
- 1990's: 2 Deaths
- 2000's: 2 Deaths
- 2010's: 3 Deaths



Safety Tech & Innovation

kimoa

REX FEATURES

kimoa
16

REX FEATURES
CARRERA

1950
30

1960
Marlboro

1970
5
GOLD LEA
TEAM LOT
Shell

19
1980
Marlboro
Marlboro
HONDA
Shell
Shell
12

# of Car Design

1990
2020

2010

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