

# COM480 Milestone 2 - Formula1

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## 1 Project Goal

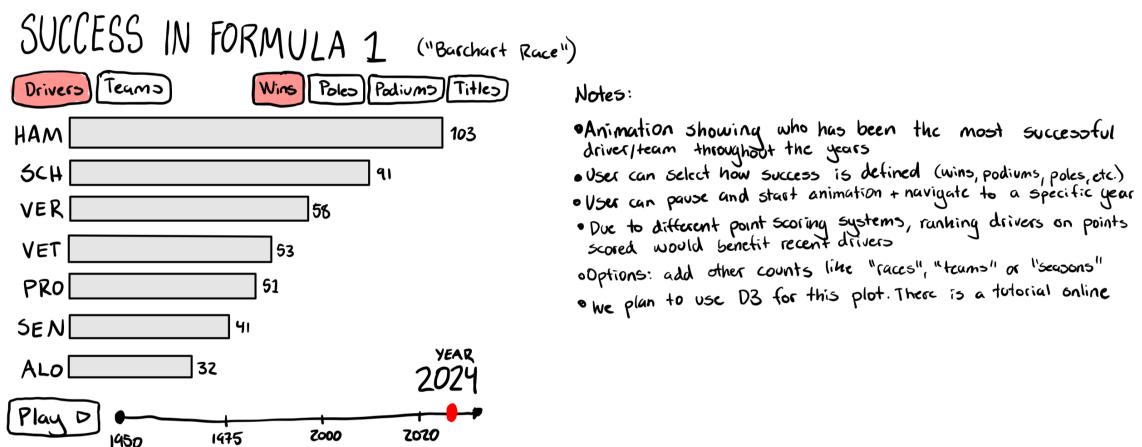
The goal of our project is to provide novel perspectives on Formula 1, tackling both historical and current topics like point distributions, inter-race travel, F1s global presence and which drivers/teams have had the most success. We seek to make the visualizations intuitive and easy to use to allow users with a novel to intermediate understanding of F1 to explore these topics themselves, deriving new insights.

## 2 Outline

Our website is structured as a data story. In the hero-section, we include a 3D model of an F1 car and the main header behind it. After a short introduction to the sport and our project, we move onto the historical context.

*Driver and teammate battles - how are two or more drivers comparing across races, qualifying and seasons?*

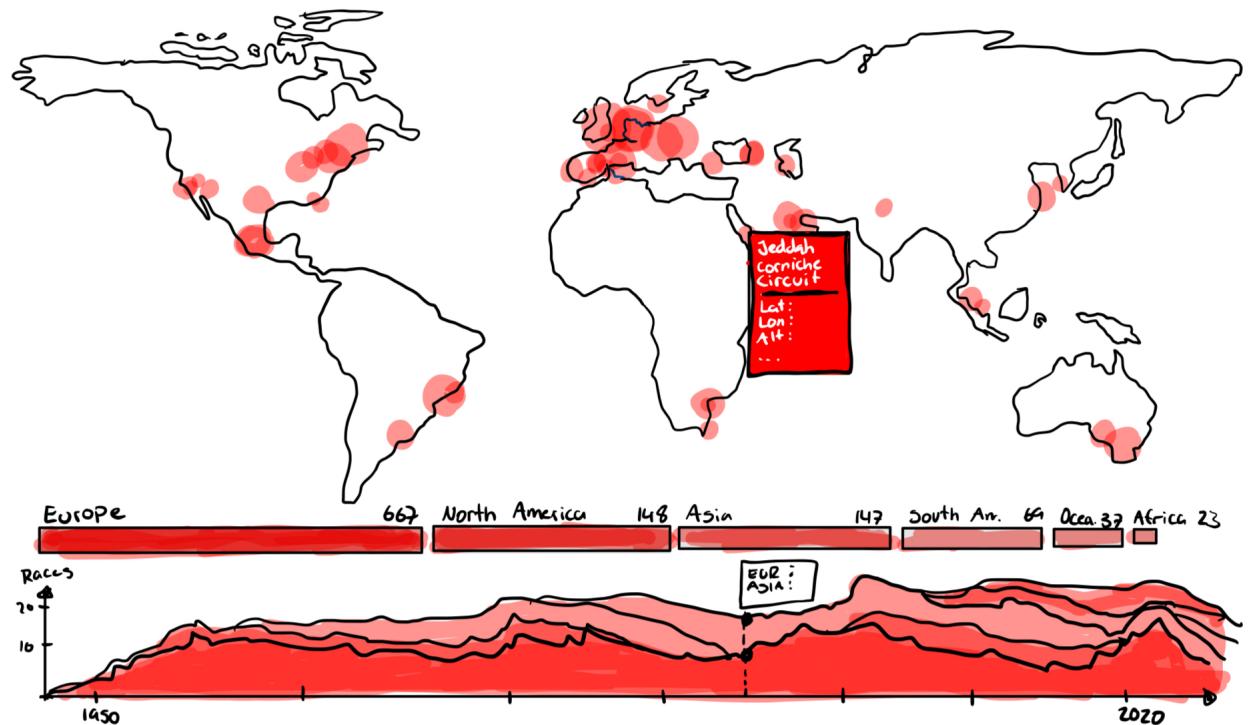
To address this research question, our first visualisation is an interactive bar graph of the most successful drivers and teams of all time. With the ability to choose between drivers, teams, wins, poles, podiums, and championships, the user is presented complex information in a simple way. We aim to make the bar chart animated, but a simple slider for year might suffice for an MVP.



The next question we consider is the global presence of the sport. While not targeting a specific research question, this plot is useful to provide further context and insights into the efforts of involving non-European countries in a historically European sport. The visualisation is three-fold, the first being an interactive bubble map with the countries and their respective circuits. The second is a segmented bar which represents the proportion of races held per continent, and the third is a stacked area chart showing the proportion of races in each continent as a time series.

# GLOBAL PRESENCE

Is F1 really a global racing series?



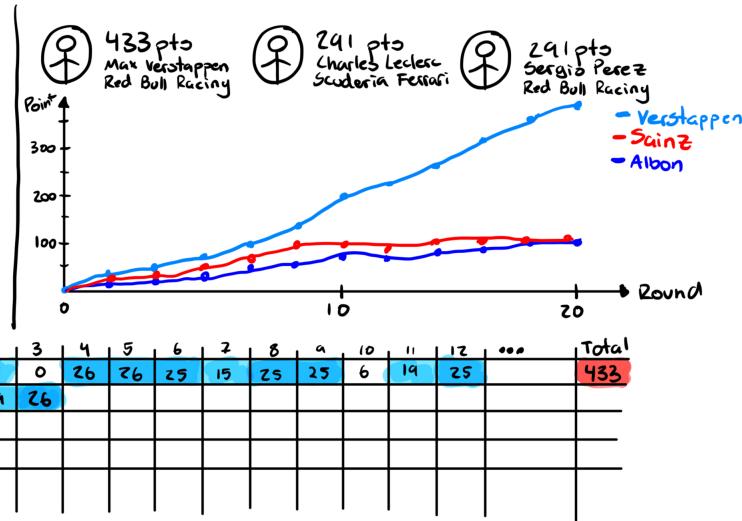
*Point system - How would a different point system affect seasonal championship outcomes?*

In this section we begin to cross over into an advanced beginner understanding of the sport, wherein we discuss the hypothetical scenario of a new points system. Currently, the points system is famously controversial for only rewarding the top 10 finishing drivers with points, effectively reducing the practical implications of finishing outside the top 10 to 0. With this visualisation, we allow the user to explore championship outcomes envision an alternate point system and the respective outcomes using a three-part map.

The user is able to choose the year, points system and championship and are presented with a heatmap of points, where the X-Axis is the round and the Y-Axis is the driver.

# POINTS

Select year:  
2022 ✓  
Championship:  
Drivers Teams  
Point System:  
Current Old New



Environmental impact of race calendar - how could the race calendar be reorganized to minimize environmental impact/race travel mileage?

An extensive report into F1's environmental impact revealed the championship was responsible for generating 256,000 tonnes of CO2 emissions during the 2019 season. The same year, Formula 1 announced its commitment to be Net-Zero Carbon by 2030 as part of their wider Sustainability Strategy. In an effort to visualise their noble cause, we developed an alternative race calendar. The user is able to choose between years and see the difference between the kilometres in the original and revised calendar, along with the reduced CO2 emissions.

# RACE CALENDARS

Can the race calendar be reorganized to reduce inter-race travel?  
YEAR 2022 ✓

Original Cal: 116,138km Revised Cal: 52,248km

Delta:

-55%

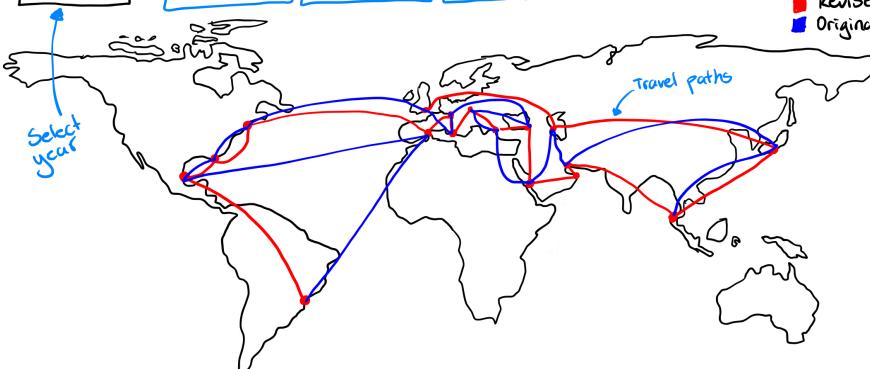
Reduced CO2 16.3 tonnes

Show original and revised calendar for comparison

Revised  
Original

Round	Original	Revised
1	Bahrain	Bahrain
2	Saudi	UAE
3	Australia	Saudi
4	Italy	Azerbaijan
5	USA	Hungary
6	Spain	Austria
7	Monaco	Italy
8	Azerbaijan	Italy
9	Canada	Monaco
10	UK	France

Colour by continent



## 3 Technologies

For the high-fidelity prototype, we used Figma. We implemented the official F1 assets to create a mockup of the website before development. For the development, we do not employ a framework. Instead, we use the native HTML, CSS in conjunction with D3.js for the interactive graphs that load on scroll. The lectures were implemented as follows:

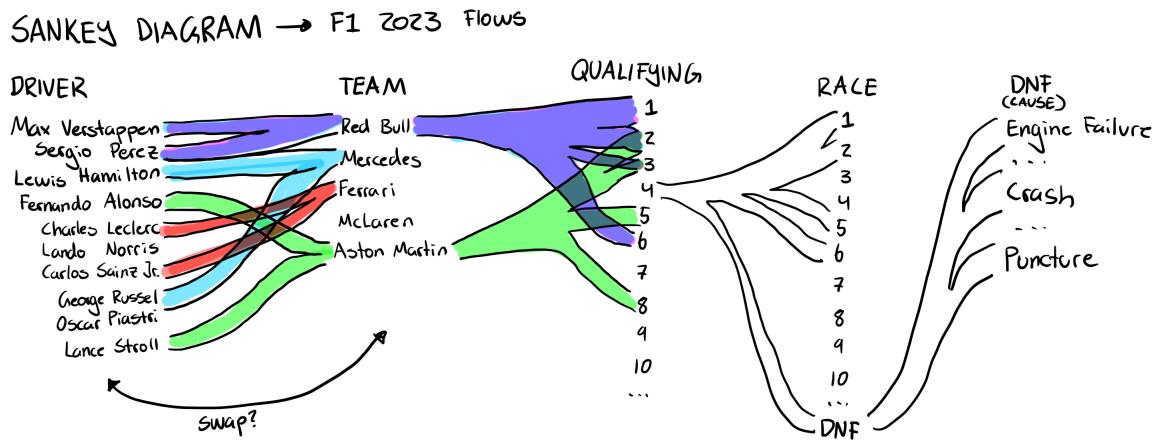
1. Data - Used to combine the datasets from FastF1 and Kaggle
2. D3.js - Basic implementation of D3 in our skeleton

3. Interactions - used to design the interactive experience for our potential user

## 4 Additional Ideas

Should time permit (and as long as it doesn't complicate the user's experience), we would like to implement the following additional ideas:

1. On load, the 3D model should pan and rotate with the scroll, and stick to the final position (as shown currently) when the user reaches the end of the header section.
  2. An interesting functionality would be to have the maps wrap and unwrap from [orthographic to equirectangular projection](#).
  3. In addition to the previous idea, implementing a [world tour](#) representation of the race calendars for a more dynamic visualisation.
  4. An additional visualisation we could implement are race flows using a Sankey Diagram. On hover, the user can see the associated nodes (driver-team-qualifying-race) and gives a clearer picture of the connections made.



- Finally, using a sunburst, we may show circuit statistics with the larger categories indicating countries, and subsequently representing continents, circuit, and driver or team.