Formula 1: three strategies to invest in a competitive car

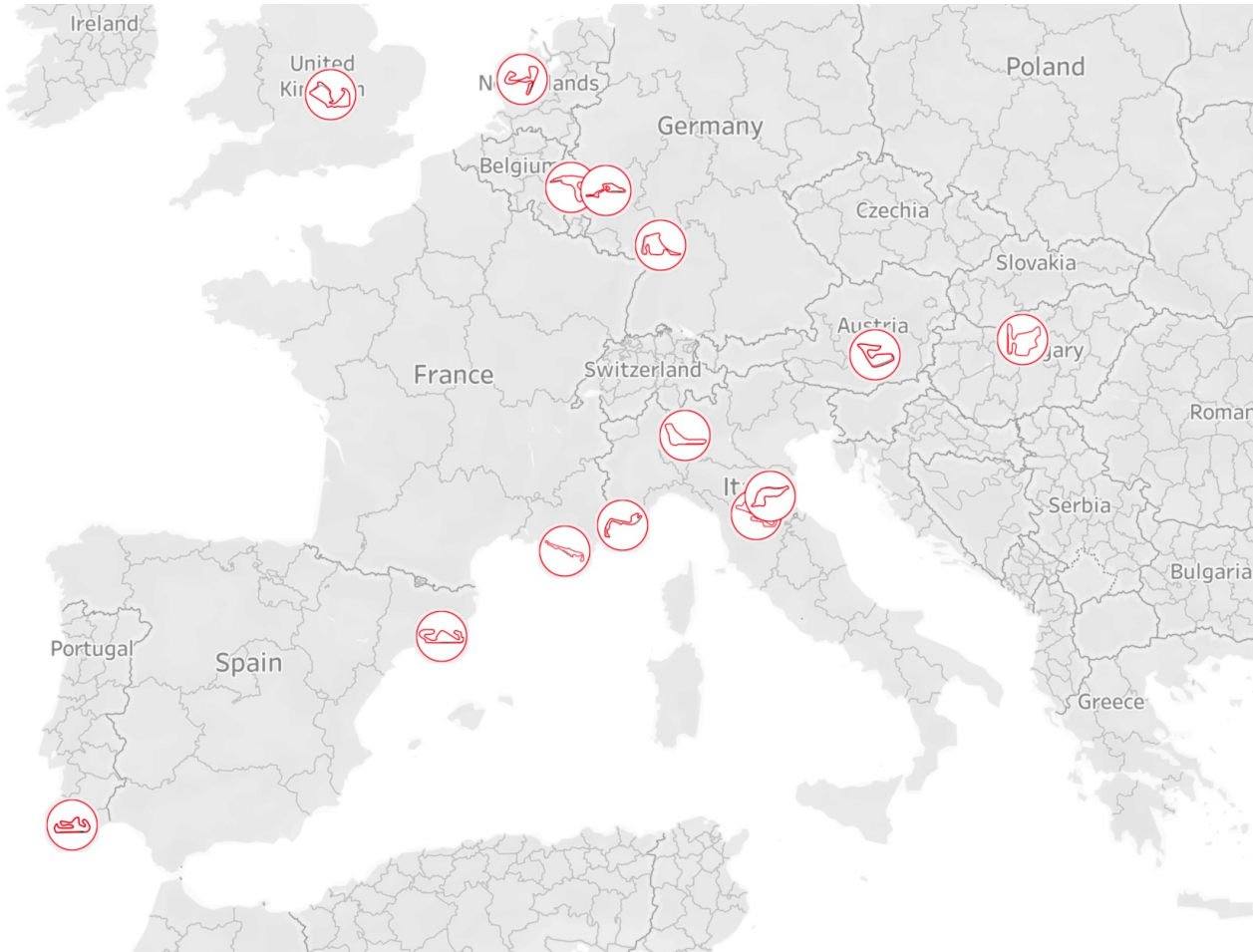
Project by “The Vizards”

The context

We are a consulting firm hired by a big client interested in investing in **next F1 season**.

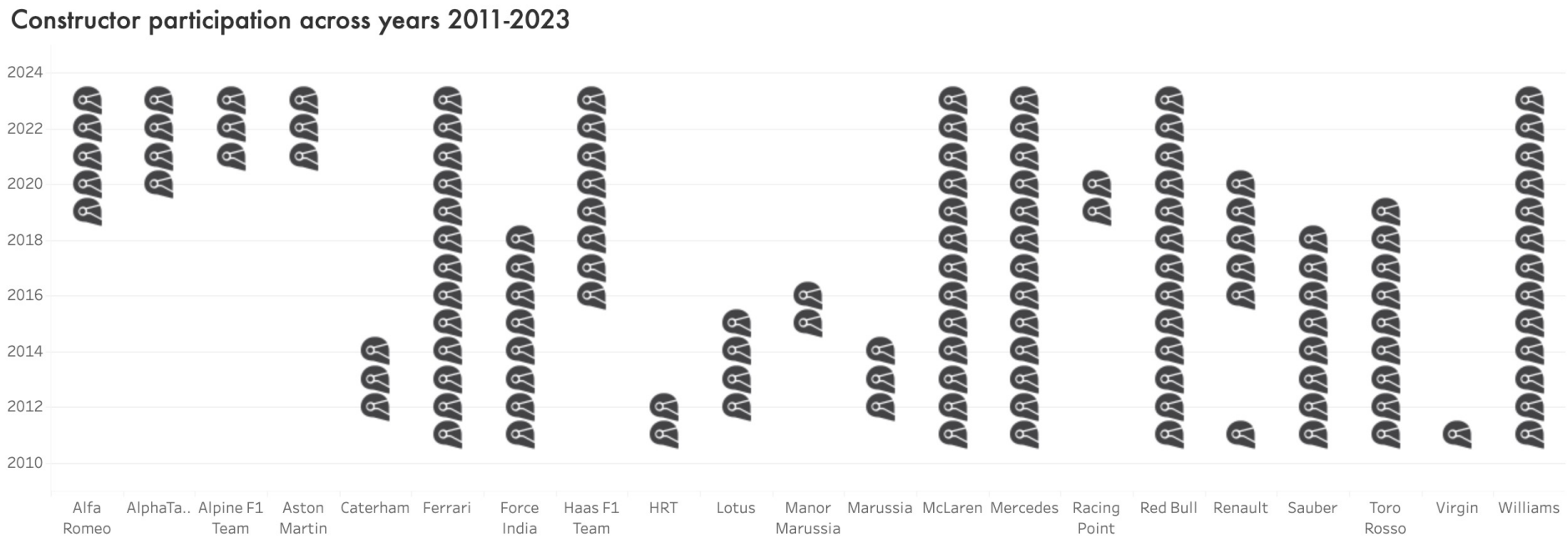
We analyze the races held between 2011 and 2023 in **all the main circuits** around the world, in order to define a proper investment strategy, basing on our client's goals and budget.

As a result of the data analysis, **three different strategies** are developed.



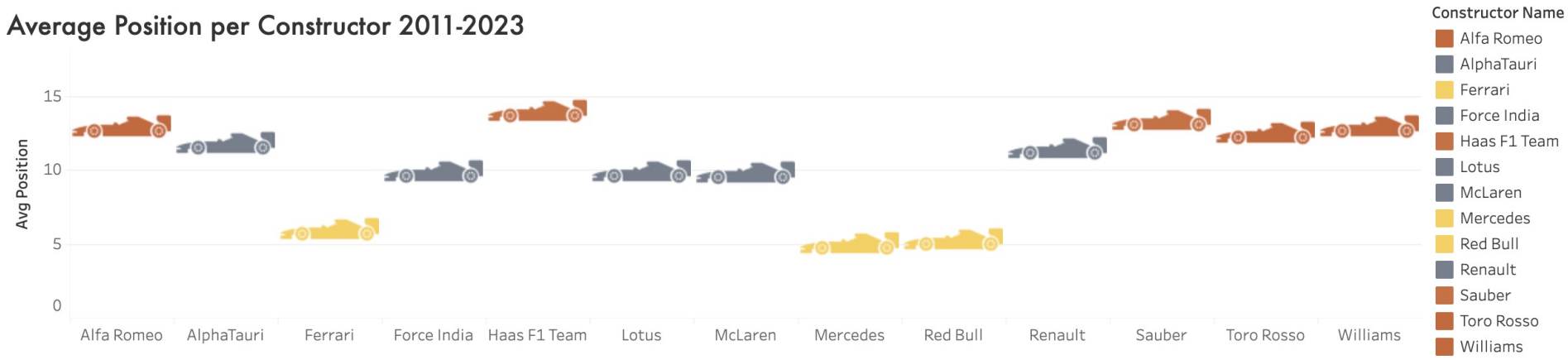
The context

We start by visualizing the **frequency of Constructors' participation** to F1 seasons, in order to eliminate the ones who participated less, which might bias our statistics.



The context

We then create a graph with the average positions with respect to the remaining constructors, so that we can make a “first look” separation between **high range constructors and middle-low range ones**.



Strategy No.1: Winning Strategy

The investor has a huge budget and aims at creating its own car and team with the objective to win the constructor title.

Three main parameters are extracted and analyzed:

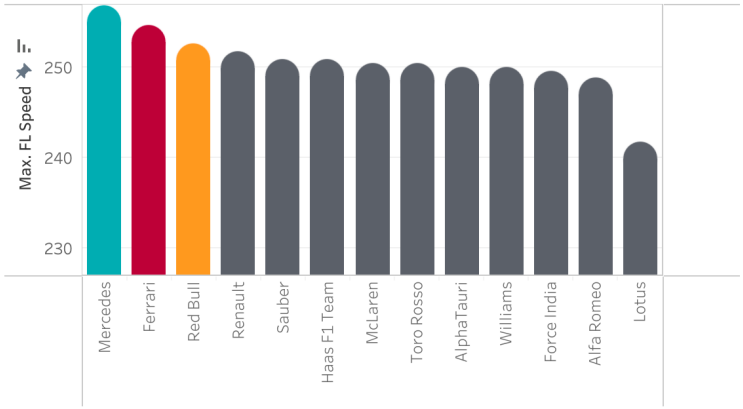
1. **Average Speed per Lap**
2. **Fastest Lap Speed**
3. **Average Pitstop Time** (standardized w.r.t. the race average pitstop time)

with respect to the manufacturers, in order to assemble the best possible car.

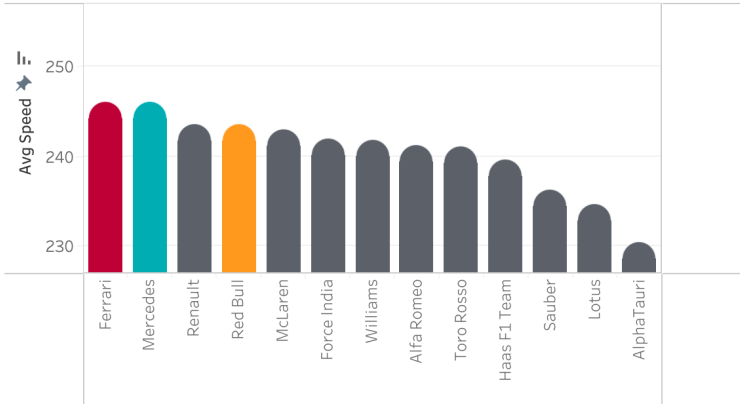
Strategy No.1: Winning Strategy

The result for the Winning Strategy is a combination of the **Ferrari's car body** (that grants a good Avg Speed), the **Mercedes motor** (that wins by far the Fastest Lap Speed competition) and the **RedBull wheels and Pitstop team** (since the lowest Time in Pitlane)

Overall Fastest Lap Speed

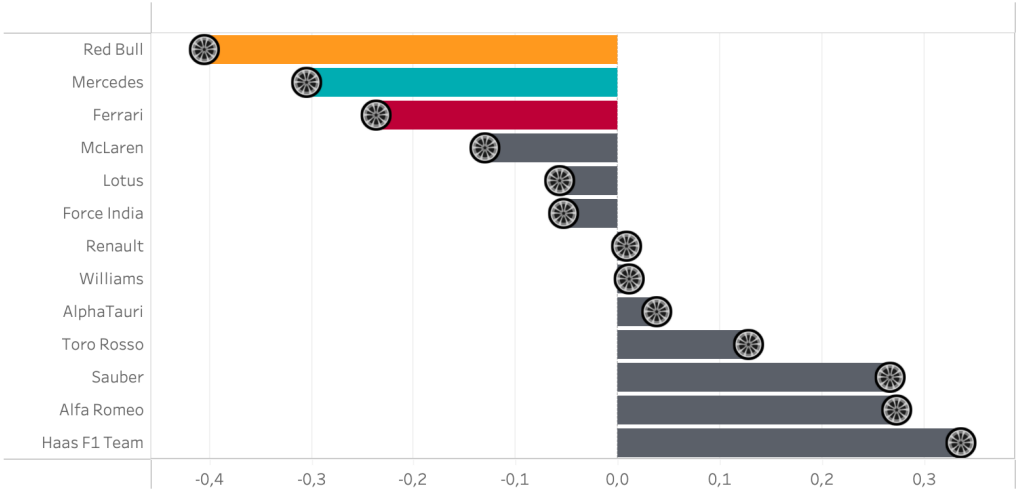


Average Speed per Constructor



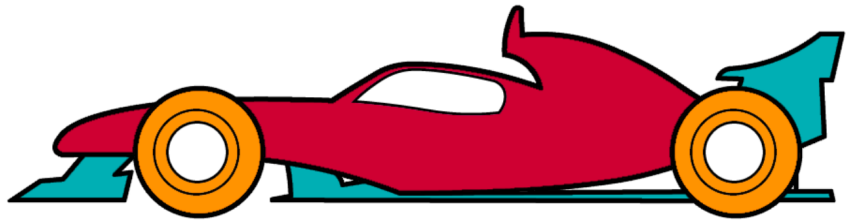
Time in Pitlane (Standardized)

Note: parameter normalized with respect to the race average time. The **lower** the better.



Winning Strategy Car Composition

The best possible car would have Ferrari body, Mercedes motor and RedBull wheels.



Strategy No.2: Progressive Strategy

The investor has medium budget and wants to make a middle term investment on a solid existing constructor.

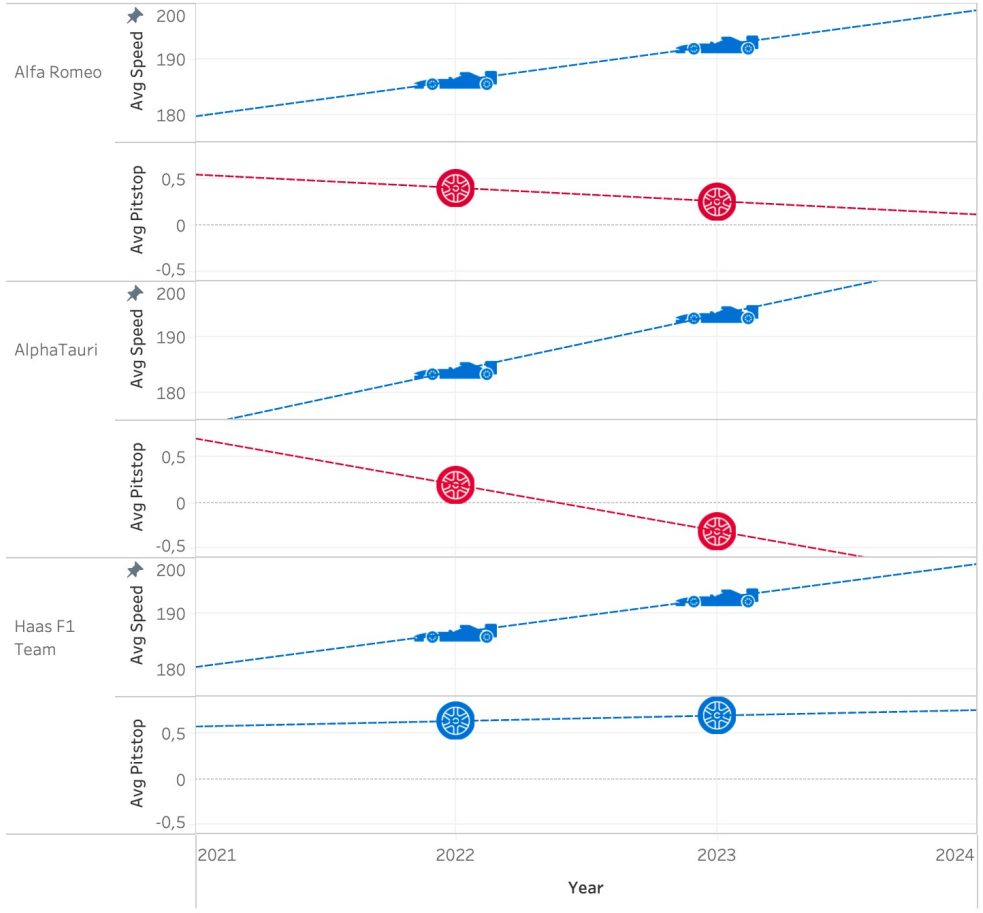
We therefore exclude the high range constructors and focus on the **middle range** ones that have run **the last two year** in order to analyze if there's a **progressive tendence** in the two most relevant parameters of the three visualized before:

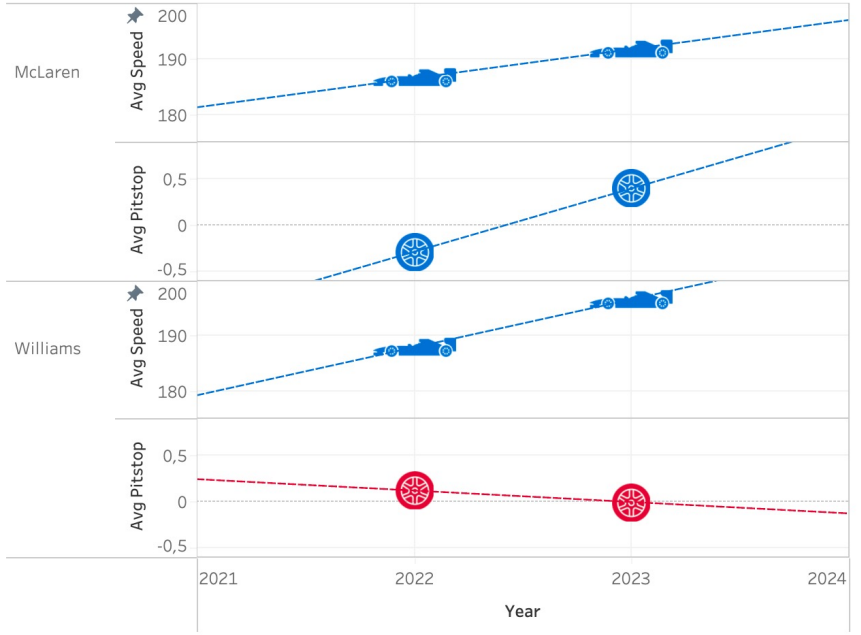
1. Average Speed per lap
2. Average Pitstop Time (standardized as above)

Strategy No.2: Progressive Strategy

The idea is that the constructor presenting the most positive tendence in **Avg Speed** and decreasing one in **Pitlane Time** is the best one to invest on.

The “winners” according to this progressive strategy are therefore the **AlphaTauri** car and team.





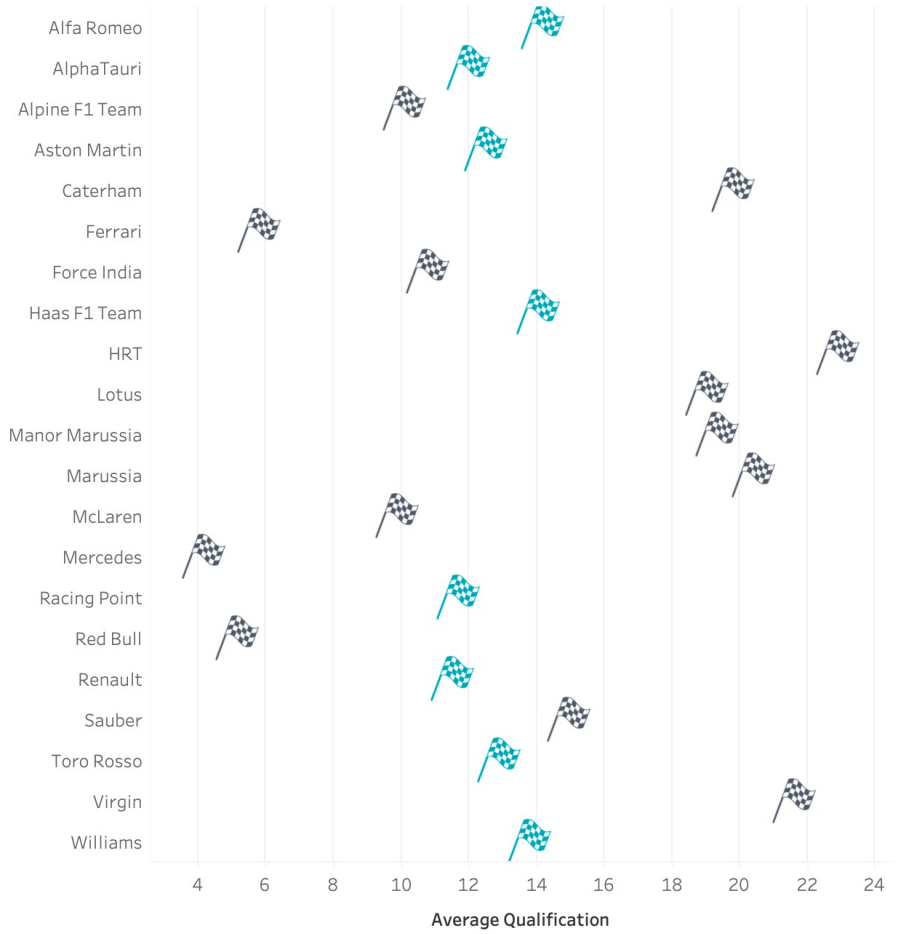
Progressive Strategy Result: AlphaTauri Wins

Strategy No.3: Easy-Money Strategy

The investor has medium-low budget and wants to obtain the best possible gain with the minimum investment on an existing constructor.

We therefore look at the **average qualification** through years 2011-2023, selecting the constructors lying in the middle range and we then compare this parameter with the **average position** in races.

Constructors that have a significant increase in position are the ones more suitable for this kind of investment.



Data sources and cleaning

For our analysis we selected a dataset containing data about all the Formula 1 GPs since 1950, and we focused on the **2011-2023 period** to prevent null values in the Pitstop Feature.

We then added the couple **(City, Country)** to each Grand Prix in order to geographically visualize the circuits.

We then added the circuit lengths to calculate the **Average Speed** and **Fastest Lap Speed**, parameters which are easier to compare with respect to the Pace and the Fastest Lap Time.

Lastly, we **standardized the Pitstop Time** with respect to the Average Time in Pitlane, thus making it a comparable parameter too.

Link to the dataset

Main Challenges

Apart from the pre-processing of data, which was really time consuming, one of the main challenges was to find **effective color combinations** resulting in clean visualizations, having to deal with a great number of constructors.

Another challenging task was to choose the right **icons** to customize graphs, linking them in a stronger way to the racing contest: icons that had to be clear, pertinent and good-looking at the same time.

With respect to Tableau, the really rigid environment made us find non-conventional ways to achieve our purposes (e.g. the **“rounded” bar chart** or the “creative” URL action tactic to show a **dynamic car composition** within the Winning Strategy).

Photoshop was vital for both the circuit icons we put in the map and the multi-coloured car.

Link to Tableau Public