Introduction

- why am I doing this, why look at tyres

- what do I want to look at (three questions)

- what did I use

- ergast api

- python packages

- what did I find (claims)

Methods:

- what did I use

- how did I perform my analysis per question

Results:

- what do the results say

- answer each of three questions

Discussion:

- input on what results show

- per three questions

- limitations

Conclusion:

- reiterate interest

- reiterate claims

- reiterate conclusions

- further investigation

Introduction

I wanted to look at tyre performance because there are a lot of factors that vary from team to team. I feel that in order to assess performance compared to other teams and understand yourself as well as your competitors, you need to look at the variables that are consistent amongst all teams.

**Why tyres?**

Tyres are an integral component of a cars performance, as they are the basis of strategy due to its impact on the car’s pace. In formula 1, Pirelli supplies the tyres that each team uses during a race weekend. There are a total of 5 different tyre options (compounds) that are scaled from more grip/fastest degradation (softer) to less grip/more durability (harder) (Fig 1). From these 5 compounds, 3 are allowed per race weekend, and it is up to the teams to decide which compounds to outfit the car with at different stages of the race, to put them in the best position to win or score points. For example, if a car is trailing another car by a few seconds in the earlier stage of a race, then they may elect to pit earlier for a harder compound, to get a head start on warming the tyres up and making up ground while the car ahead of them continues to degrade their current tyres.

The purpose of this article is to investigate three main questions regarding tyres in Formula 1:

1. Tyre usage – How long was each tyre used for?

2. How effective was each tire

3. When was each tyre used

To answer these questions, I utilized the ergast API to query lap time data from the 2020 Formula 1 season. The dataset included lap times from each driver in each race, as well as pit stop information. Additionally, I utilized the data published on Race-Fans.net to complete the dataset with information on what compounds each driver was on during the laps of each race. From this collection of data, I was able to utilize the timing information to categorize stints, stint length (km), total race length (km) which were imposed as constraints to compare the data on the same scale.