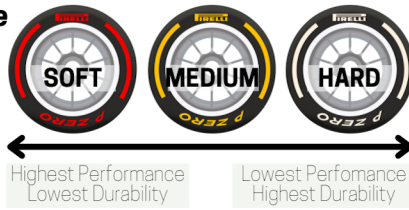


# FORMULA 1

# PIT STOPS

## Time gained from higher performance tires vs time lost being in the pits.

Two major choices: tire type and timing  
Have to use two different tire compounds  
Exception: wet races, no mandatory pit stop



### Before the Race

Free practices are used to test the tires, collect data and inform pit stop strategy.

Computation assists in analyzing all the various factors.

Drivers, strategists and engineers work together to make decisions.

**Available tires** | what has been used in other sessions, are they new or used

**Starting position** | where on the grid and who is around

**Length of the Pit Lane** | longer pit lanes mean more time off track, traveling at a slower speed

**Overtaking** | how easy is it to pass other cars on track

**Performance** | what lap times can be expected from each tire compound

**Duration** | how many laps are each set of tires expected to last, when can a performance drop off be expected

**Track temperature** | a warmer surface will wear out tires more quickly, direct sunlight or overcast

**Track Layout** | turns (right/left, tight/wide) will wear out the tires in different ways

**Track Surface** | rougher surfaces (street tracks) will wear out tires more quickly

**Weight** | cars burn fuel during the race becoming lighter

**Undercut** | Pit before rival, new tires produce faster lap times resulting in being ahead once rival pits

**Overcut** | Stay out while rival pits, increase time gap enough to stay ahead even after a pit stop

**Double Stack** | A team pits both of its cars back-to-back

### Adapting During the Race

**Changes in weather** | on/off rain or cloud cover

**Slower cars** | being held up car wear tires down at a faster rate

**Safety Car** | can get a 'free' pit stop, on track speed is reduced not in the pit lane, reduces tire temperature

**Slow pit stop** | wheel nuts being stuck or human error

**Forced pit stop** | damage to the car or tires, or to serve a penalty

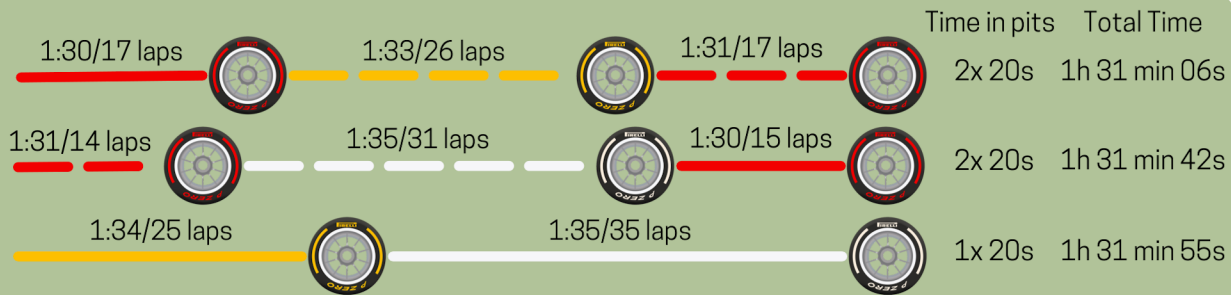
**Other teams** | reacting to competitors

### Example Strategy

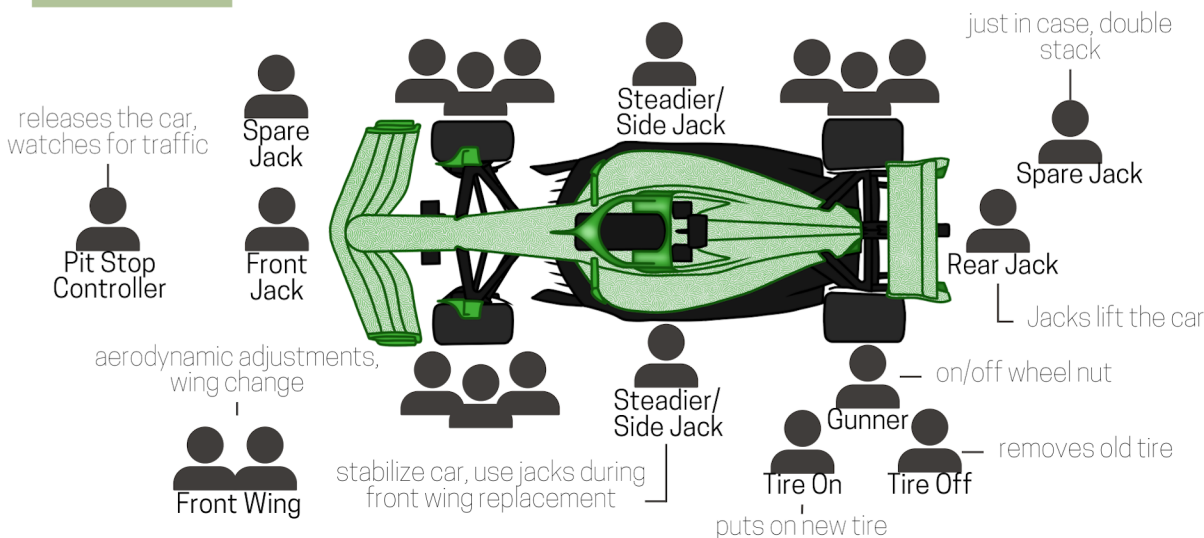
Estimating lap times and durability for each compound (new/used) gives an idea of the total race time possible.

— new  
— used

\*numbers have been simplified



### PIT CREW



**Bonus Job** | all hold wider roles in the garage, teams hold tryouts each year

**Training** | concentrates on core stability and strength

**Practice** | at the factory and at each race, pit boxes all have different layouts

**Other Roles** | fire extinguisher, sledgehammer for stubborn tires, alternates in case of injury/illness

**Communication** | with pit wall for timing/tire compound/adjustments