Data Dictionary:

circuits.csv - Information on the circuit(track) including location, longitude, latitude and altitude.

- circuitId - Numerical id
- circuitRef - Short circuit name
- name - Full name of circuit
- location - City
- country - Country
- lat - Latitude
- long - Longitude
- alt - Altitude
- url - Url to circuit

constructor_results.csv - Information on the constructors(teams) championship result for each season.

- constructorResultId - Numerical id
- raceId - Numerical id {See races.csv}
- constructorsId - Numerical id {See constructors.csv}
- points - Points scored for a constructor at each race
- status - ???

constructor_standings.csv - Information on a constructor's standing at each race for each season.

- constructorStandingsId - Numerical id
- raceId - Numerical id {See races.csv}
- constructorsId - Numerical id {See constructors.csv}
- points - Points scored for a constructor at that point in a season
- position - Position for a constructor at that point in a season
- positionText - Position for a constructor at that point in a season string

constructors.csv - Information on the constructors.

- constructorsId - Numerical id
- constructorsRef - short team name
- name - Team name
- nationality - Nationality
- url - Wikipedia url

driver_standings.csv - Information on a driver's standing at each race for each season.

- driverStandingsId - Numerical id
- raceId - Numerical id {See races.csv}
- driverId - Numerical id {See drivers.csv}
- points - Points scored for a driver at that point in a season
- position - Position for a driver at that point in a season
- positionText - Position for a driver at that point in a season string
- wins - Number wins for a driver at that point in a season

drivers.csv - Information on drivers.

- driverId - Numerical id
- driverRef - Short driver name
- number - Driver's number
- code - Driver's code
- forename - First name
- surname - Last name
- dob - Date of birth
- nationality - Driver nationality
- url - Driver's wikipedia's page

races.csv - Information on race including the year, circuit, and times for practice sessions, qualifiers, sprint races(if applicable), and the race.

- raceId - Numerical id
- year - Season year
- round - Race round in season
- circuitId - Numerical id {See circuits.csv}
- name - Circuit name
- date - Race date
- time - Race time
- url - Wikipedia url to circuit
- fp1_date - First practice date
- fp1_time - First practice time
- fp2_date - Second practice date
- fp2_time - Second practice time
- fp3_date - Third practice date
- fp3_time - Third practice time
- quali_date - Qualifying date
- quali_time - Qualifying time
- sprint_date - Sprint date
- sprint_time - Sprint time

results.csv - Information on each race's result.

- resultId - Numerical id
- raceId - Numerical id {See races.csv}
- driverId - Numerical id {See drivers.csv}
- constructorId - Numerical id {See constructors.csv}
- number - Driver number
- grid - Starting position on grid for driver at raceId
- position - Finish place for driver at raceId
- positionText - Finish place for driver at raceId string
- positionOrder - Finish place for driver at raceId
- points - Points scored for driver at raceId
- laps - Total number of laps

- time - Total race time
- milliseconds - Total race time in milliseconds
- fastestLap - Lap number
- fastestLapTime - Lap time
- statusId - Numerical id {See status.csv}

sprint_results.csv - Information on each sprint race's result. A subset of results.csv

- resultId - Numerical id {See results.csv}
- raceId - Numerical id {See races.csv}
- driverId - Numerical id {See drivers.csv}
- constructorId - Numerical id {See constructors.csv}
- number - Driver number
- grid - Starting position on grid
- position - Finish place
- positionText - Finish place string
- positionOrder - Finish place
- points - Points scored
- laps - Total number of laps
- time - Total race time
- milliseconds - Total race time in milliseconds
- fastestLap - Lap number
- fastestLapTime - Lap time
- statusId - Numerical id {See status.csv}

status.csv - Information on cars or drivers (DNFs, Retirements, DNS, Retirement Issues etc.)

- statusId - Numerical id
- status - Name

Dataset Transformation:

Weather dataset

1. Date of weather record (YYYY-MM-DD)
2. Location
    a. Latitude (degrees)
    b. Longitude (degrees)
    c. Altitude (meters above sea level, optional)
3. Temperature (degrees in Celsius/Fahrenheit)
4. Rainfall (millimeters or inches)
5. Weather conditions (categorical data: sunny, cloudy, rain, storm)
6. Wind speed (meters per second or miles per hour)
7. Humidity (percentage)

Race dataset

1. Date of race (YYYY-MM-DD)

2. circuitRef - Short circuit name
3. Circuit name - Full name of circuit
4. Race location
    a. Latitude (degrees)
    b. Longitude (degrees)
    c. Altitude (meters above sea level, optional)
5. Start time
6. Time zone
7. Race ID (numerical)
8. Team names/ID (textual or numerical)
9. Race results–positions of drivers and teams (numerical order)
10. Race results–points scored by drivers and teams (numerical order)
11. Race results–points and position standings by drivers and teams after each round (numerical order)
12. Number of laps (count)
13. Race duration (time in hh:mm:ss)
14. Status
15. Fastest lap number

Team spending/revenue dataset

1. Year (YYYY)
2. Team names/ID (textual or numerical)
3. Total spending (currency value, e.g. USD or Euros)
4. Revenue generated (currency value, e.g. USD or Euros)
5. Team's championship position by year-end (numerical order)
6. Number of wins (count)
7. Number of podiums (count)

Status -
Finished - Finished race
+1 Lap - Finished with 1 lap less than race winner
Wheel - DNF due to wheel issue
Engine - DNF due to engine issue
Steering - DNF due to steering issue
Brakes - DNF due to brake issue
Puncture - DNF due to tire puncture
Electrical - DNF due to electrical issues
Collision damage - DNF from collision damage (Could be driver error)
Accident - DNF due to accident (Could be driver error)
Collision - DNF due to collision (Could be driver error)
+2 Laps - Finished with 2 laps less than race winner
+3 Laps - Finished with 3 laps less than race winner
Gearbox - DNF due to gearbox
Oil leak - DNF due to oil leak

Turbo - DNF due to turbo issue
Exhaust - DNF due to exhaust issue
Fuel pressure - DNF due to fuel pressure issue
Hydraulics - DNF due to hydraulics issue
Power Unit - DNF due to power unit issue
Tyre - DNF due to tyre issues
Retired - Car retired and DNF
Power loss - DNF due to power loss
Suspension DNF due to suspension issue
Disqualified - Car or Driver disqualified
Mechanical - DNF due to mechanical issue
Battery - DNF due to battery issue
Overheating - DNF due to overheating issue
Damage - DNF from damage (Redundant) (Could be driver error)
Out of fuel -DNF due to lack of enough fuel left in car
Transmission - DNF due to transmission issue
Spun off - DNF due to driver spinning off (Driver Error)
Water pressure - DNF due to water pressure issue
Withdrew - Driver or car withdrawn from race
Electronics - DNF due to electronics issue
+5 Laps - Finished with 5 laps less than race winner
Debris - DNF due to debris on track
Radiator - DNF due to radiator issue
Illness - Driver ill and didn’t race
Wheel nut - DNF due to wheel nut issue
Driveshaft - DNF due to driveshaft issue
Rear wing - DNF due to rear wing issue (probably damage from collision)
Cooling system - DNF due to cooling system issue
Water pump - DNF due to water pump issue
Fuel leak - DNF due to fuel leak
Front wing - DNF due to front wing issue (probably damage from collision)
Water leak - DNF due to water leak issue
Vibrations - DNF due to vibrations
Fuel pump - DNF due to fuel pump issue
Undertray - DNF due to floor damage (probably damage from collision or driver hitting kerbs)
+6 Laps - Finished with 6 laps less than race winner
Differential - DNF due to differential

Screenshot showing cost between 2015 and 2019

F1 Teams	Budget Between 2015 & 2019				
	2015	2016	2017	2018	2019
Mercedes	$527.6M	$352M	$352.1M	$400M	$484M
Ferrari	$474.7M	$483.3M	$295.3M	$410M	$463M
Red Bull	$532.5M	$286.2M	$284M	$310M	$445M
McLaren	$528.3M	$246.4M	$240.8M	$220M	$269M
Alpine (Renault/Lotus)	$149.8M	199.8M	$195.4M	$190M	$272M
Aston Martin (Racing Point/Force India)	$147.3M	$119.2M	$117M	$120M	$188M
AlphaTauri (Toro Rosso)	$156.1M	$132.8M	$130.6M	$150M	$138M
Alfa Romeo (Sauber)	$117.2M	$126M	$123.8M	$135M	$132M
Williams	$217.7M	$139.6M	$136.3M	$150M	$141M
Haas	NA	NA	$130.6M	$130M	$173M

Questions:

1. How does weather affect the results of F1?
2. How does abnormal weather (rain or too hot) conditions affect the role it plays in driver position by the end of each year from 2018-2022?
    a. Can join weather and race datasets on latitude, longitude, altitude
    b. Can join race and spending/revenue datasets on team names or team id