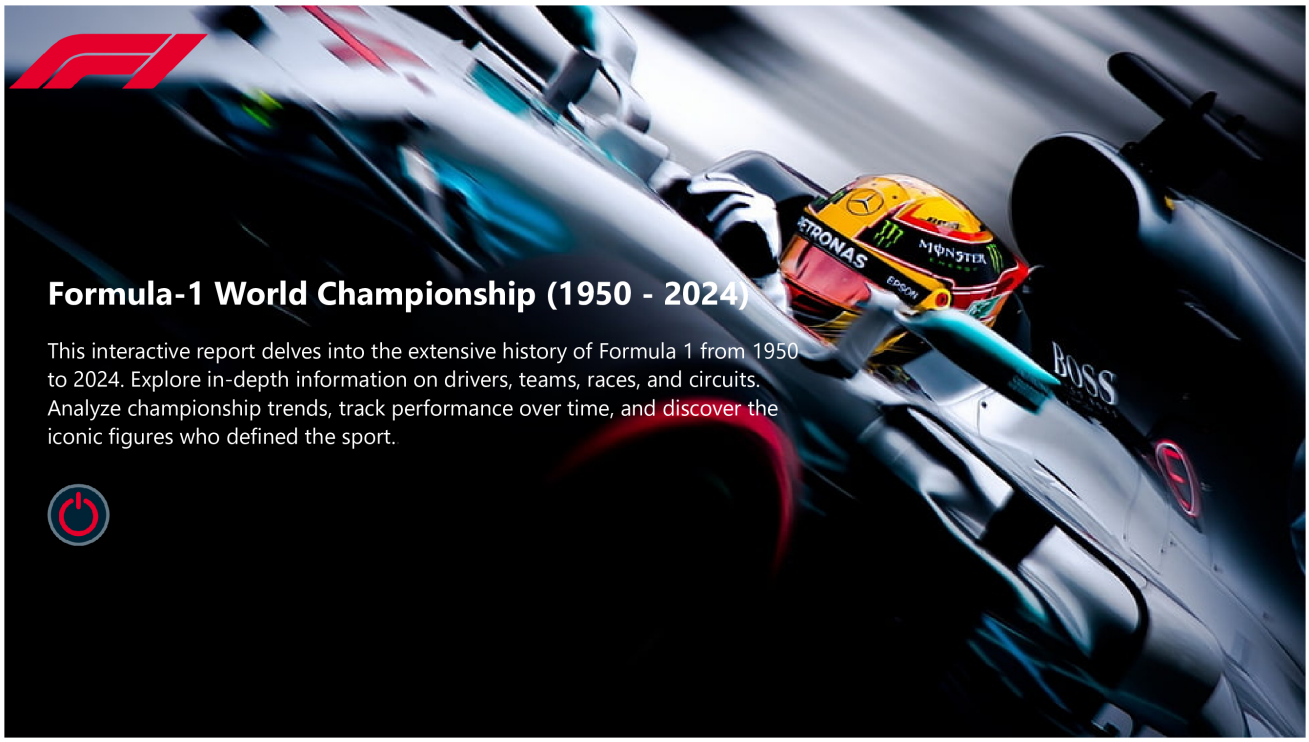
Formula-1 World Championship



Overview

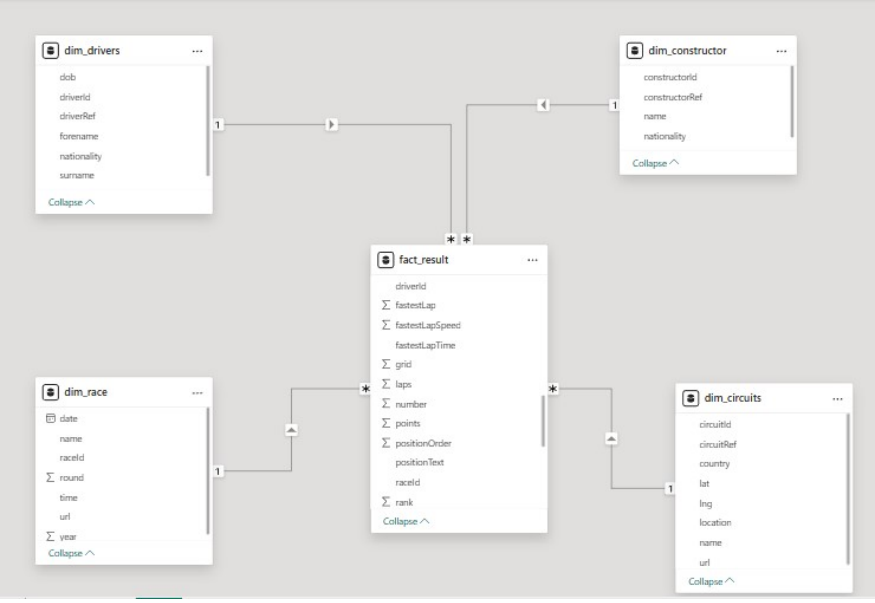
The report is created for Formula 1 Race is a comprehensive and visually engaging tool that offers in-depth analysis and insights into the FIA Formula One World Championship. The dashboard uses data on F1 Race and leverages the powerful features of Power BI to present valuable information to Formula 1 enthusiasts and professionals. The dashboard is designed to be a one-stop destination for users to explore and understand the performance of drivers, constructors, and the championship as a whole over the period of 1950 to 2021 season.

About the Data & Transformation

The dataset for this project was obtained from an open-source platform and consists of multiple dimension tables and a fact table. The raw data was loaded directly into Power BI, where necessary data transformations were performed using Power Query. To ensure efficient data management, a star schema model was developed, comprising:

- 4 Dimension Tables:
    - Drivers
    - Constructor
    - Circuits
    - Race
- 1 Fact Table: Contains detailed quantitative information about each race.

Logical relationships were established between all tables, and the data model ensures seamless querying and analysis. The data model diagram is available within the repository for reference.

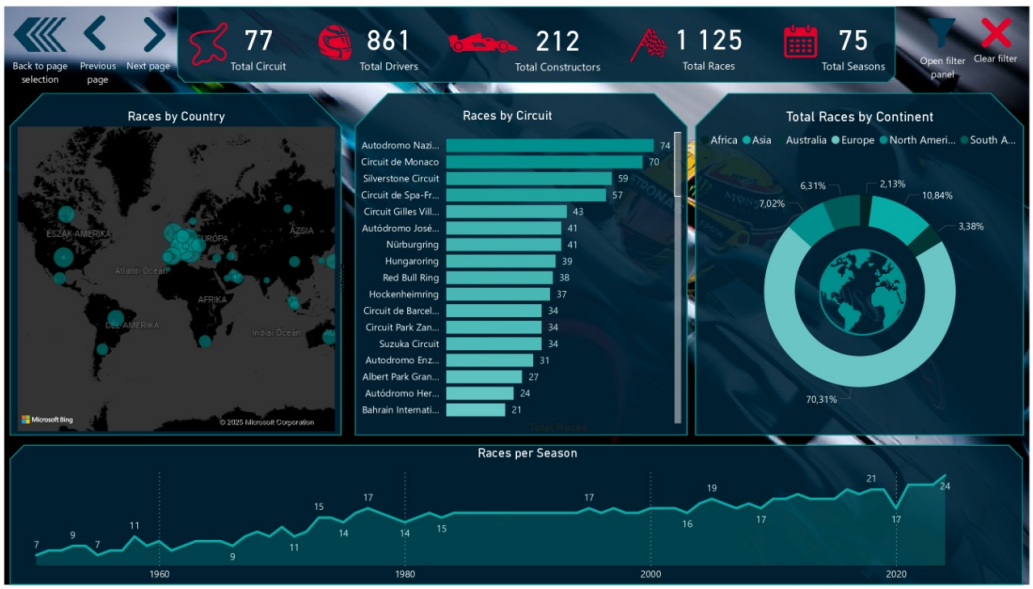


Dashboard & Pages

The primary goal of this dashboard is to facilitate analysis of a large historical dataset in an intuitive and interactive manner. Due to the dataset's size and complexity, multiple pages were developed, featuring visually appealing graphics and appropriate chart selections.

- A custom filter panel is built in that enables users to interactively refine the report by applying filters across multiple data dimensions.
- Navigation Buttons are included, navigating between different pages.
- Dynamic tooltips are provided even more information.

1. Overview Page



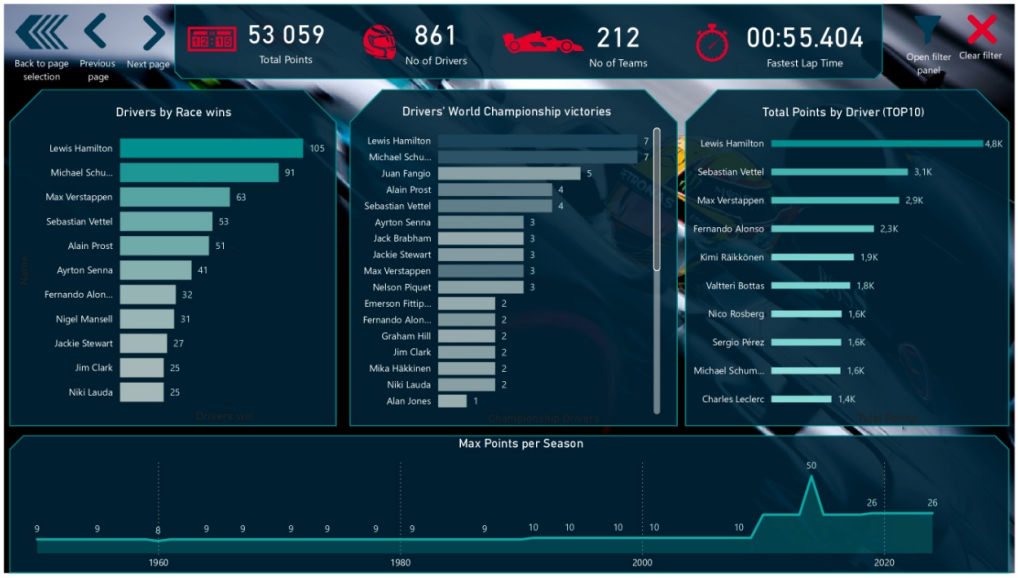
- Displays general details such as:
  - Total Circuit
  - Total Constructors
  - Total Drivers

- Total Races
- Total Seasons

- Features a world map displaying different circuit locations across the globe.
- Hovering over 'Races per Season' line chart reveals additional details about about the podium positions of the drivers.

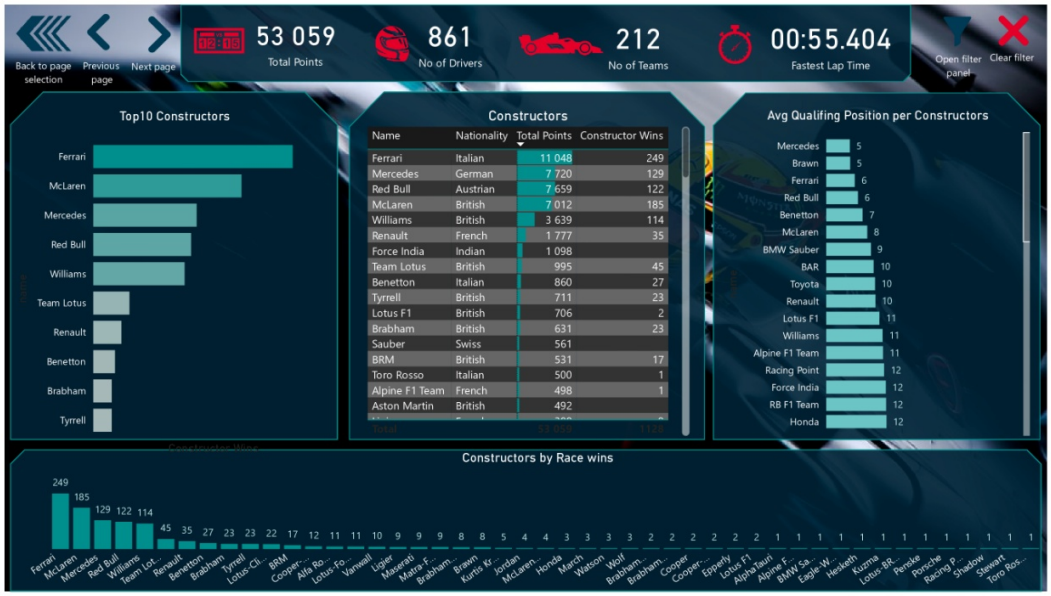
2. Driver Performance Page

- Displays the top drivers based on their points.
- Provides winner information for each Grand Prix.



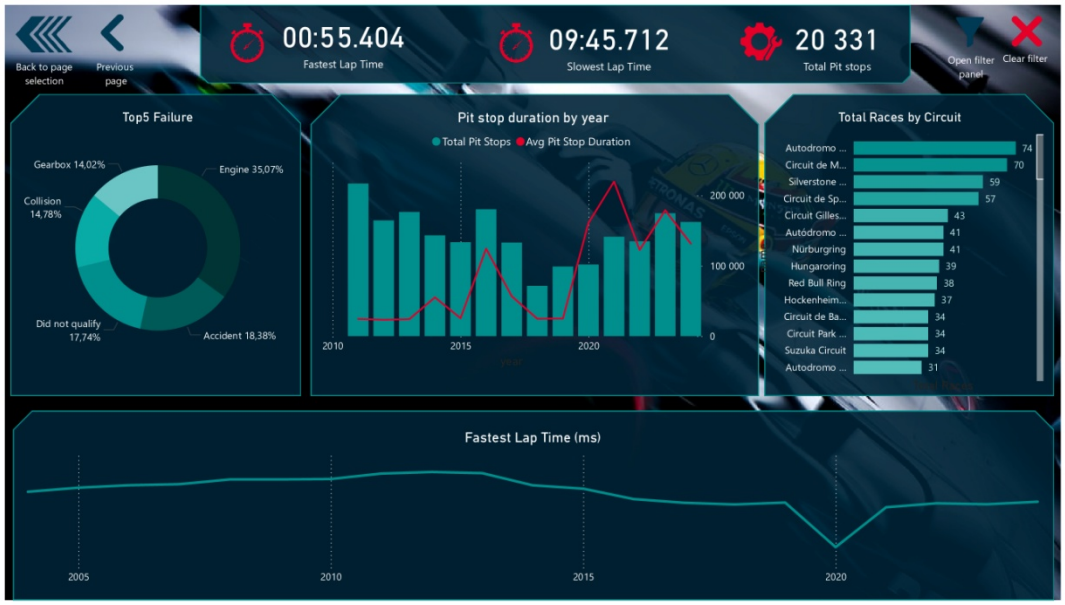
3. Constructor Performance Page

- Highlights top constructors based on race wins.
- Analyzes winning constructors for each Grand Prix.
- A table is included to show the number of wins per constructor across different Grand Prix events.



4. Race Analysis Page

- A Donut Chart visualizing the Top5 failure.
- Analyzes the pit stop duration be year



DAX Formulas

Several DAX calculations were implemented to derive meaningful insights from the dataset. Below are some key formulas used in the dashboard:

```
Championship Drivers =
CALCULATE(
    COUNTROWS('Driver Standings'),
    FILTER(
        'Driver Standings',
        'Driver Standings'[position] = 1
            && 'Driver Standings'[raceId] IN VALUES(LastRacePerSeason[LastRaceId])
    )
)
```

```
Top 2 Driver (Name & Team) =
VAR CurrentYear = SELECTEDVALUE( races[year] )
VAR BaseWinsThisYear =
    FILTER (
        ALL ( results ),
        results[positionOrder] = 1
            && RELATED ( races[year] ) = CurrentYear
    )
VAR WinsPerDriverTeam =
    GROUPBY (
        BaseWinsThisYear,
        results[driverId],
        results[constructorId],
        "Wins", COUNTX ( CURRENTGROUP (), 1 )
    )
VAR Ranked =
    ADDCOLUMNS (
        WinsPerDriverTeam,
        "Rank", RANKX ( WinsPerDriverTeam, [Wins], , DESC, DENSE )
```

```
    )
VAR RankedRenamed =
    SELECTCOLUMNS (
        Ranked,
        "driverId", results[driverId],
        "constructorId", results[constructorId],
        "Wins", [Wins],
        "Rank", [Rank]
    )
VAR TopRows = FILTER ( RankedRenamed, [Rank] = 2 )
VAR WithNames =
    ADDCOLUMNS (
        TopRows,
        "DriverName", LOOKUPVALUE ( drivers[Name], drivers[driverId], [driverId] ),
        "TeamName",   LOOKUPVALUE ( constructors[name], constructors[constructorId], [constructorId] )
    )
RETURN
IF (
    NOT ISBLANK ( CurrentYear ),
    CONCATENATEX ( WithNames, [DriverName] & " (" & [TeamName] & ")", ", " )
)
```

```
Total Races in Season =
VAR CurrentYear = SELECTEDVALUE ( races[year] )
RETURN
CALCULATE (
    DISTINCTCOUNT ( races[raceId] ),
    FILTER ( races, races[year] = CurrentYear )
)
```

Many additional DAX measures were created to further enhance data analysis and visualization.

Conclusion

This analysis transforms a vast historical racing dataset into a **structured, intuitive, and insight-driven resource**. It enables fans, analysts, and data enthusiasts to uncover performance patterns, explore race dynamics, and gain a deeper understanding of the sport's history.