

# Data Analytics Portfolio



The image shows a screenshot of a Power BI dashboard titled "Formula 1 Seasons 2023 – 2024 Dashboard". The background features a dark Formula 1 race track with two cars in motion. The top left corner displays the F1 logo. Below the title, a sub-header reads "Select a section below to explore the data:". Four rectangular cards are displayed horizontally, each representing a different data category:

- Season Overview
- Driver Performance
- Team Comparison
- Race Highlights

Power BI : DAX, Power Query

- Project Overview
- Dataset
- Data Transformation (Power Query)
- Data Model & Relationships
- DAX Measures
- Final Dashboard & Key Insights

## Project Overview

### Purpose:

The purpose of this project was to analyze the 2023 and 2024 Formula 1 seasons and extract actionable insights across drivers, teams, and races. The dashboard highlights key performance metrics, identifies trends, and supports strategic planning, performance optimization, and competitive benchmarking.

### Key Achievements:

- Identified top-performing drivers and teams and highlighted patterns of consistency and peak performance
- Revealed gaps between qualifying and race performance, uncovering operational and strategic opportunities
- Provided interactive insights enabling scenario analysis and comparison across drivers and teams
- Demonstrated ability to translate complex datasets into actionable insights applicable to business performance tracking

## Dataset

The dataset was sourced from Kaggle and consists of 16 individual CSV files (separate data for each season) and two Excel files created manually (images)

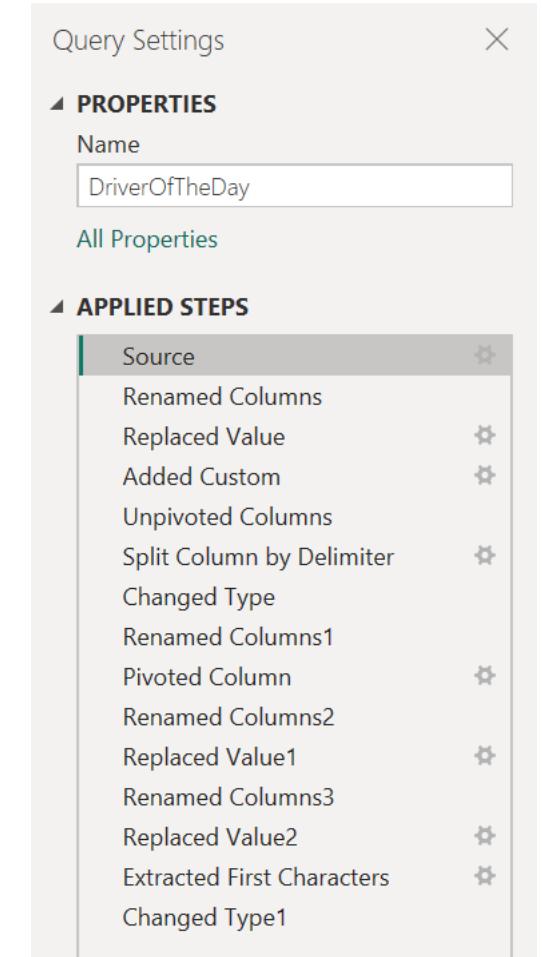
- Season Calendar: Grand Prix names, dates, and circuit details
  - Race & Sprint Results: Driver positions, lap times, and race outcomes
  - Sprint Shootout & Qualifying: Session times and grid positions
  - Driver: Driver profiles including nationality, team, career highlights
  - Team: Team details and historical performance
  - Driver of the Day: Fan voting results per race
  - Images: Manually created tables with driver and circuit images

## Data Transformation (Power Query)

- Merged separate source tables for the 2023 and 2024 seasons into a unified dataset and created a custom RaceID to distinguish seasons and races
- Standardized and corrected data types
- Performed pivot and unpivot transformations to optimize the data model
- Cleaned the dataset by removing, renaming, and reordering columns

```
= Table.NestedJoin(#"Renamed Columns", {"Country", "Year"},  
    SeasonCalendar, {"Country", "Year"}, "SeasonCalendar",  
    JoinKind.LeftOuter)
```

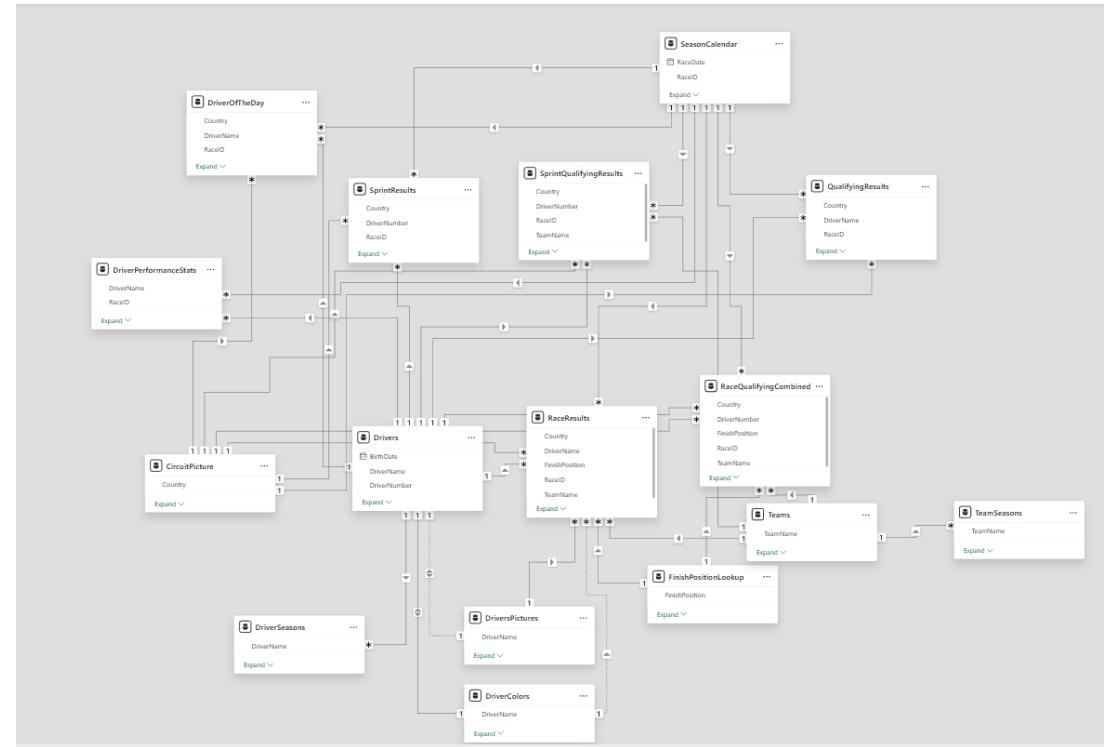
```
= Table.AddColumn(#"Removed Columns", "RaceID", each [Country] & "_" &  
    Text.From([Year]))
```



## Data Model & Relationships

The Power BI semantic model was built on cleansed and transformed source data, with a focus on scalability, analytical flexibility, and performance.

- Designed a multi-table relational data model integrating race results, qualifying, sprint, and calendar data
- Used RaceID and DriverNumber as primary identifiers to ensure consistent relationships across seasons
- Structured the model to support cross-filtering, time-based analysis, and advanced DAX calculations



## DAX Measures

- Developed dynamic performance KPIs for drivers and teams, including total points and ranking metrics
- Implemented statistical performance measures (average, min, max finishing positions) for comparative team analysis
- Built dynamic text measures to generate automated analytical insights within the dashboard
- Designed cumulative and ranking calculations to enable longitudinal season analysis

```
1 TeamsWithConsistentPointsText =
2 VAR TeamsWithPoints =
3   FILTER(
4     VALUES('RaceResults'[TeamName]),
5     CALCULATE([WorstTeamPoints]) > 0
6   )
7 VAR TeamList =
8   CONCATENATE(TeamsWithPoints, 'RaceResults'[TeamName], " & ")
9 RETURN
10 TeamList & " are the only teams who scored points in each race"
```

```
1 TotalPoints =
2 CALCULATE(
3   SUM(RaceResults[RacePoints]),
4   FILTER(
5     RaceResults,
6     RaceResults[DriverName] = DriverSeasons[DriverName]
7       && RaceResults[Year] = DriverSeasons[Year]
8   )
9 )
```

```
1 Wins =
2 CALCULATE(
3   COUNTROWS(RaceResults),
4   RaceResults[FinishPositionNum] = 1
5 )
```

## DAX Measures - Calculated Tables

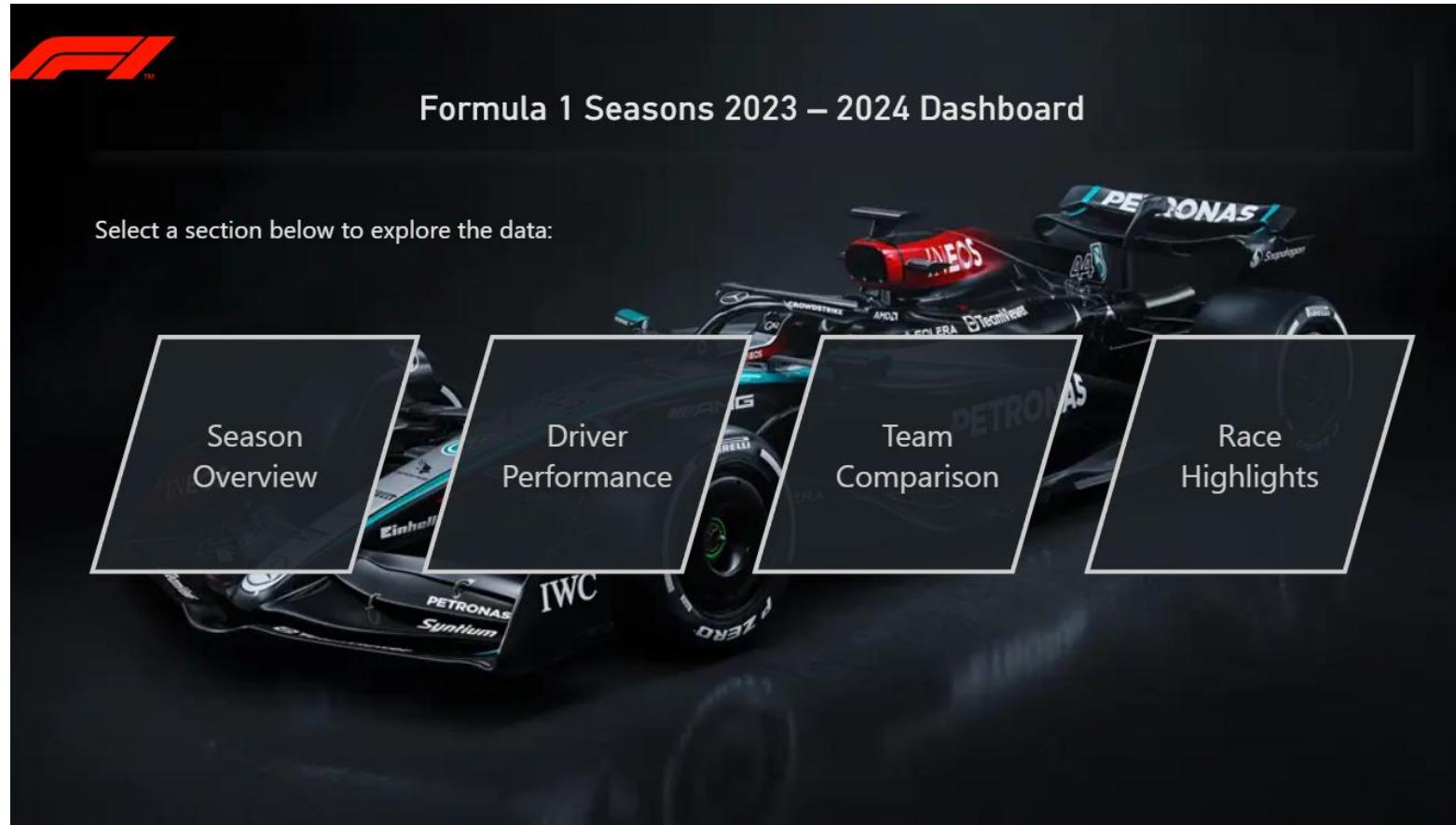
Created FinishPositionLookup table to enable proper sorting and ranking of finish positions containing non-numeric values (DNF, NC).

```
1 FinishPositionLookup =
2 DATATABLE(
3     "FinishPosition", STRING, "FinishSort", INTEGER,
4     {
5         {"1", 1},
6         {"2", 2},
7         {"3", 3},
8         {"4", 4},
9         {"5", 5},
10        {"6", 6},
11        {"7", 7},
12        {"8", 8},
13        {"9", 9},
14        {"10", 10},
15        {"11", 11},
16        {"12", 12},
17        {"13", 13},
18        {"14", 14},
19        {"15", 15},
20        {"16", 16},
21        {"17", 17},
22        {"18", 18},
23        {"19", 19},
24        {"20", 20},
25        {"DQ", 21},
26        {"NC", 22}
27    }
```

Created DriverPerformanceStats to aggregate driver achievements such as wins, podiums, and fastest laps for statistical analysis.

```
1 DriverPerformanceStats =
2 UNION(
3     SELECTCOLUMNS(
4         FILTER(RaceResults, RaceResults[FinishPositionNum] = 1),
5         "DriverName", RaceResults[DriverName],
6         "RaceID", RaceResults[RaceID],
7         "StatType", "Win",
8         "Year", LOOKUPVALUE(SeasonCalendar[Year], SeasonCalendar[RaceID], RaceResults[RaceID]),
9         "GrandPrix", LOOKUPVALUE(SeasonCalendar[GrandPrix], SeasonCalendar[RaceID], RaceResults[RaceID]),
10        "Country", LOOKUPVALUE(SeasonCalendar[Country], SeasonCalendar[RaceID], RaceResults[RaceID])
11    ),
12    SELECTCOLUMNS(
13        FILTER(RaceResults, RaceResults[FinishPositionNum] IN {1, 2, 3}),
14        "DriverName", RaceResults[DriverName],
15        "RaceID", RaceResults[RaceID],
16        "StatType", "Podium",
17        "Year", LOOKUPVALUE(SeasonCalendar[Year], SeasonCalendar[RaceID], RaceResults[RaceID]),
18        "GrandPrix", LOOKUPVALUE(SeasonCalendar[GrandPrix], SeasonCalendar[RaceID], RaceResults[RaceID]),
19        "Country", LOOKUPVALUE(SeasonCalendar[Country], SeasonCalendar[RaceID], RaceResults[RaceID])
20    ),
21    SELECTCOLUMNS(
22        FILTER(RaceResults, RaceResults[FastestLapFlag] = "Yes"),
23        "DriverName", RaceResults[DriverName],
24        "RaceID", RaceResults[RaceID],
25        "StatType", "Fastest Lap",
26        "Year", LOOKUPVALUE(SeasonCalendar[Year], SeasonCalendar[RaceID], RaceResults[RaceID]),
27        "GrandPrix", LOOKUPVALUE(SeasonCalendar[GrandPrix], SeasonCalendar[RaceID], RaceResults[RaceID])
```

## Final Dashboard & Key Insights



The image shows a screenshot of the Formula 1 Seasons 2023 – 2024 Dashboard. At the top left is the F1 logo. Below it, the title "Formula 1 Seasons 2023 – 2024 Dashboard" is displayed. A sub-header "Select a section below to explore the data:" is followed by four rectangular buttons with rounded corners, each containing a section name. The buttons are semi-transparent and overlap. The background features a dark, slightly blurred image of two Formula 1 race cars, one red and one black, positioned diagonally.

- Season Overview
- Driver Performance
- Team Comparison
- Race Highlights

- Presents the dashboard structure
- Enables navigation to one of the four analytical sections

# Season Overview

**Select Season**

**24** Races    **10** Teams    **24** Drivers    **7** GP Winners    **1** World Champion

**Season Overview**

**Driver Performance**

**Team Comparison**

**Race Highlights**

Grand Prix Schedule:

Round	Date	Grand Prix	Location	Winner	Team
1	2 mar 2024	Gulf Air Bahrain GP	Bahrain	Max Verstappen	Red Bull Racing
2	9 mar 2024	STC Saudi Arabian GP	Saudi Arabia	Max Verstappen	Red Bull Racing
3	24 mar 2024	Rolex Australian GP	Australia	Carlos Sainz	Ferrari
4	7 kwie 2024	MSC Cruises Japanese GP	Japan	Max Verstappen	Red Bull Racing
5	21 kwie 2024	Lenovo Chinese GP	China	Max Verstappen	Red Bull Racing
6	5 maj 2024	Crypto.com Miami GP	Miami	Lando Norris	McLaren
7	19 maj 2024	MSC Cruises Gran Premio Del Made in Italy e Dell'Emilia-Romagna	Emilia Romagna	Max Verstappen	Red Bull Racing
8	26 maj 2024	Grand Prix de Monaco	Monaco	Charles Leclerc	Ferrari
9	9 cze 2024	AWS Grand Prix du Canada	Canada	Max Verstappen	Red Bull Racing
10	23 cze 2024	Aramco Gran Premio de España	Spain	Max Verstappen	Red Bull Racing
11	30 cze 2024	Orlen Airways Austrian GP	Austria	George Russell	Mercedes

**Drivers' Championship**

Driver	Points
Max Verstappen	399
Lando Norris	344
Charles Leclerc	327

**Constructors' Championship**

Constructor	Points
McLaren	609
Ferrari	595
Red Bull Racing	537

World Map showing race locations:

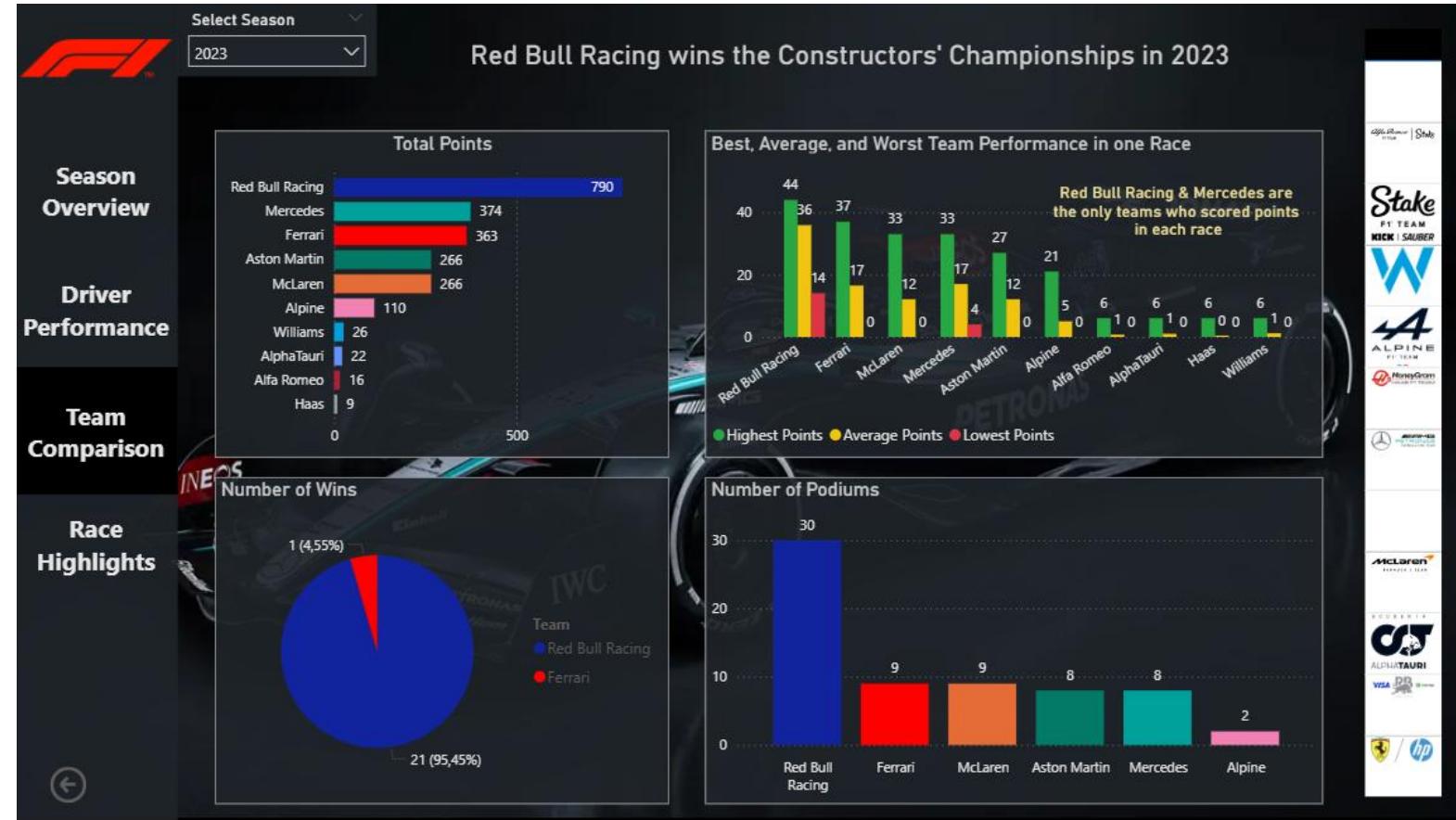
- Identified competitive dominance patterns across drivers and teams
- Analyzed global race distribution to assess market footprint and expansion opportunities
- Provided executive KPIs summarizing season outcomes and structure

# Driver Performance



- Benchmarked drivers using points, wins, and podium metrics
- Analyzed consistency and cumulative performance trends across the season
- Identified gaps between qualifying potential and race execution
- Identified high-impact races and outlier results

# Team Comparison



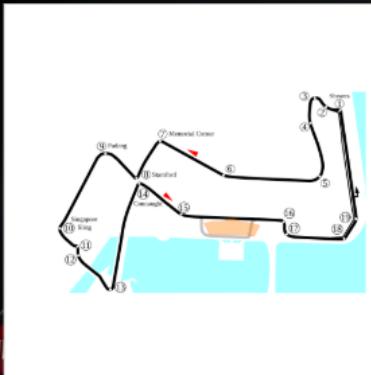
- Highlighted championship dominance driven by consistent team performance
- Showed trends in results to support decision-making and optimization
- Compared team performance to uncover gaps in strategy or execution

# Race Highlights

Select Season  
2024  
Select Location  
Singapore

Date  
22 wrz 2024

### Season Overview



### Race Highlights

Position	Driver	Team	Laps	Time/Status	Fastest Lap	Points
1	Lando Norris	McLaren	62	1:40:52.571	1:34.925	25
2	Max Verstappen	Red Bull Racing	62	+20.945	1:35.967	18
3	Oscar Piastri	McLaren	62	+41.823	1:35.745	15
4	George Russell	Mercedes	62	+61.040	1:37.047	12
5	Charles Leclerc	Ferrari	62	+62.430	1:35.371	10
6	Lewis Hamilton	Mercedes	62	+85.248	1:37.393	8
7	Carlos Sainz	Ferrari	62	+96.039	1:36.561	6
8	Fernando Alonso	Aston Martin	61	+1 lap	1:37.741	4
9	Nico Hulkenberg	Haas	61	+1 lap	1:37.470	2
10	Sergio Perez	Red Bull Racing	61	+1 lap	1:37.477	1
11	Franco Colapinto	Williams	61	+1 lap	1:37.262	0
12	Yuki Tsunoda	RB	61	+1 lap	1:36.393	0
13	Esteban Ocon	Alpine	61	+1 lap	1:37.964	0
14	Lance Stroll	Aston Martin	61	+1 lap	1:37.851	0
15	Guanyu Zhou	Kick Sauber	61	+1 lap	1:37.461	0
16	Valterri Bottas	Kick Sauber	61	+1 lap	1:37.524	0
17	Pierre Gasly	Alpine	61	+1 lap	1:36.927	0
18	Daniel Ricciardo	RB	61	+1 lap	1:34.486	0
19	Kevin Magnussen	Haas	57	DNF	1:37.425	0

Driver of the Day (% of Votes)

Daniel Ricci...	20,1%
Lando Norris	17,8%
Charles Lecl...	13,6%
Franco Cola...	8,7%
Oscar Piastri	8,0%

Lap Record (min)  
1:34.486

Record Holder  
Daniel Ricciardo

Circuit  
Marina Bay Street Circuit

City  
Singapore

Length (km)  
4,94

Laps  
62

Race Distance (km)  
306,14

First GP  
2008

DRS Zones  
4

- Extracted key track factors to guide technical and operational decisions
- Used fan-engagement data to surface commercial value beyond performance
- Surfaced race-specific performance patterns useful for forecasting future results