Predicting F1 Outcomes 

Using Output to Improve Race Strategy & Sponsorship

⚡ The Challenge for Teams & Sponsors

- Teams and sponsors need realistic expectations before lights-out.

- I estimate each driver's pre-race probability of finishing on the podium.

  Data: information known before the race (e.g., starting grid, recent driver/team results, season year).

Sales Pitch 🚀 Value to Sponsors

F1 Team pitch to Companies Using this Model

- Global Visibility on a Winning Stage: Our data-driven race-day model shows we can consistently identify—and fight for—top-3 podium spots. Even a basic model correctly predicted podium finishes 61-68% of the time per race, confirming that our team is competing at the front, where cameras and audiences focus.

Value

- Two big outcomes from successful predictions -
  - 1) Better race strategy and planning
    - When does a team pit, of the teams two drivers, which should be prioritized, etc
  - 2) Ability to showcase team’s performance during the season for sponsors
    - Sponsors want to be with winning teams; accurate predictions make sales pitches more likely to land.

Data

- Via Kaggle
- The dataset consists of all information on the Formula 1 races, drivers, constructors, qualifying, circuits, lap times, pit stops, championships from 1950 till the latest 2024 season.
- Sponsors love F1 - why - because 100s of millions of fans attend or watch each and every race.

Benefit for Team

- Better prediction = Better race strategy
  - A team can prioritize one of two drivers that race for the team
  - Based on starting position of each team driver, the team can plan when each driver will pit
  - Teams can assign different race strategies for each of their two drivers (i.e. one goes for one pitstop while the other driver does two)

Use for Teams for Race Prep

- The model highlights how grid position strongly predicts podium chances, helping engineers and strategists prioritize qualifying-trim upgrades and track-specific setups that maximize front-row starts.
  - Driver & Team Momentum Tracking: By calculating driver/team podium rates over time, the team can spot who's on form and adjust race strategy (e.g., pit-stop aggressiveness, tyre choice) to capitalize on "hot streaks.
  - Scenario Planning for Podium Probability
  - Pre-race simulations use live grid data plus historic patterns to estimate each driver's probability of finishing top-3, guiding decisions such as undercut vs. overcut strategies or defensive vs. aggressive fuel mapping.

💰 Use for Teams Admin and Financials

- Development & Budget Focus:

  — The clear link between qualifying performance, podium conversion, and media visibility helps leadership target spending on areas that deliver the greatest on-track — and marketing — returns.

- Sponsor Confidence through Transparency:

  — Sharing these predictive insights with partners shows a scientific, data-driven performance culture, giving sponsors confidence that their brand backs a team that measures, learns, and improves continuously.

Commercial Side

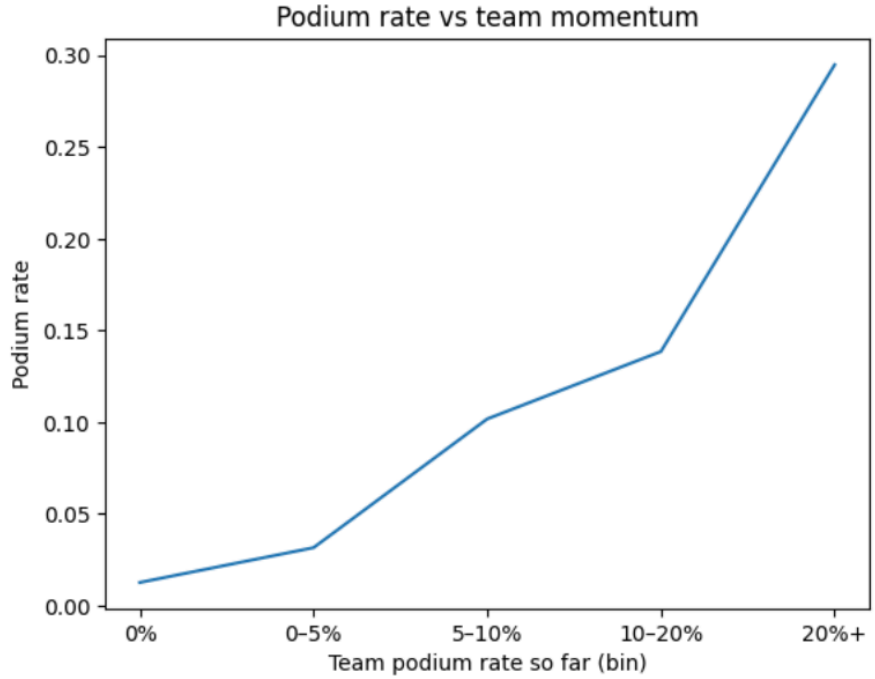
🌍 The Global F1 Stage

- F1 Races
  - 20 to 24 races per year
  - 20 different countries raced in
  - Avg audience per race = 70 million viewers
  - 300-500,000 spectators at each race on avg
- Now you advertise on a winning team, you place your product across these many eyes across these many countries.

Companies Use of this Model

…Identify which team to spend money on

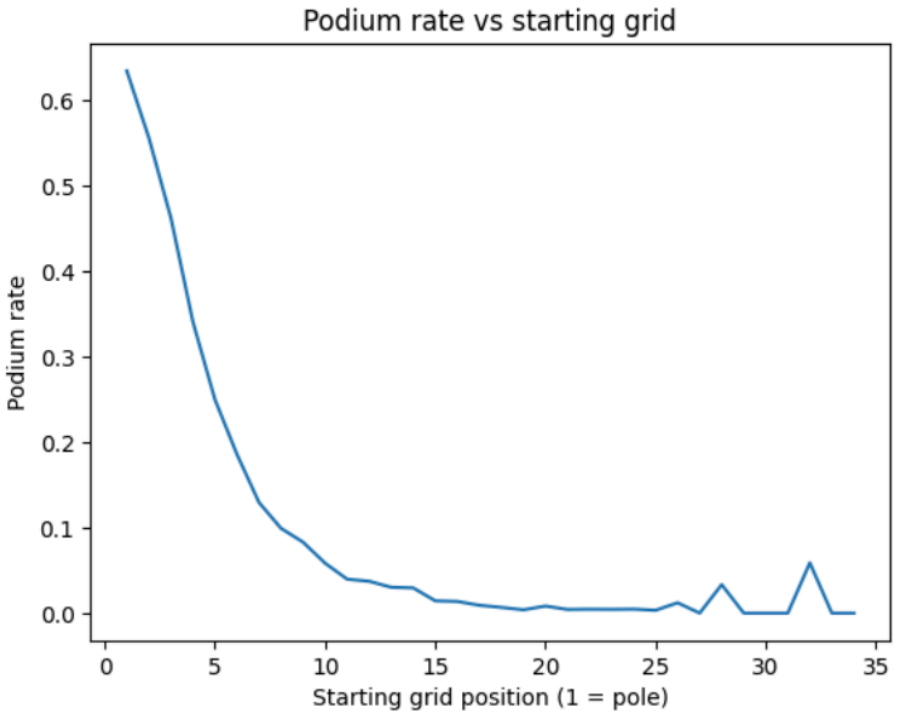
- Strong Momentum Converts to Eyeballs: Podium probability climbs sharply for teams with recent podium momentum. Sponsors ride this momentum curve—meaning more on-screen time, more TV commentary mentions, and more social buzz as the car fights at the sharp end.



Findings 🧠

Starting Up Front Pays Off

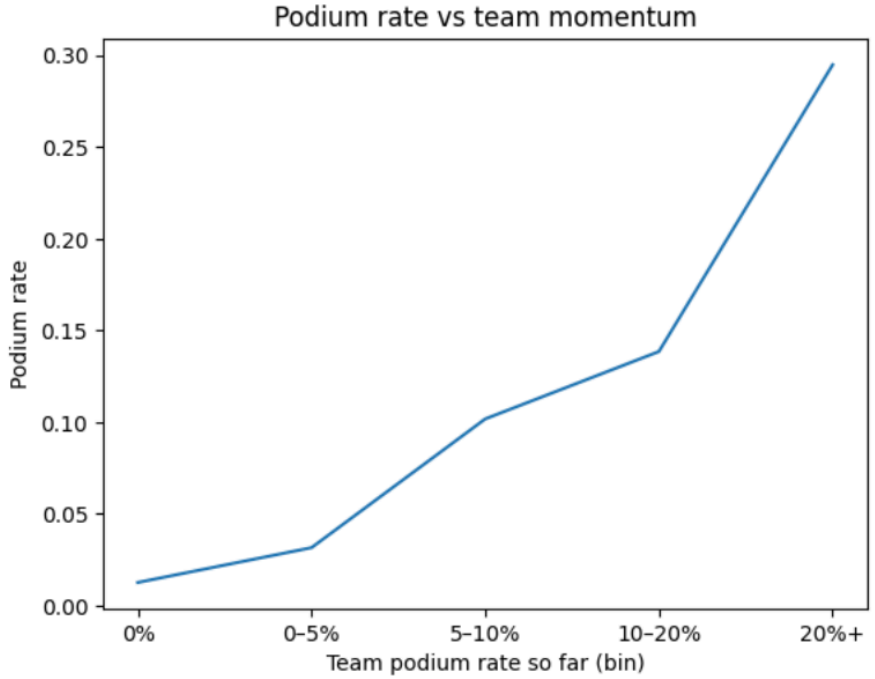
- Drivers starting in the top grid spots deliver the highest podium rates — proof that picking the right team keeps sponsor logos in the spotlight all race long.



Findings

Momentum Builds Visibility

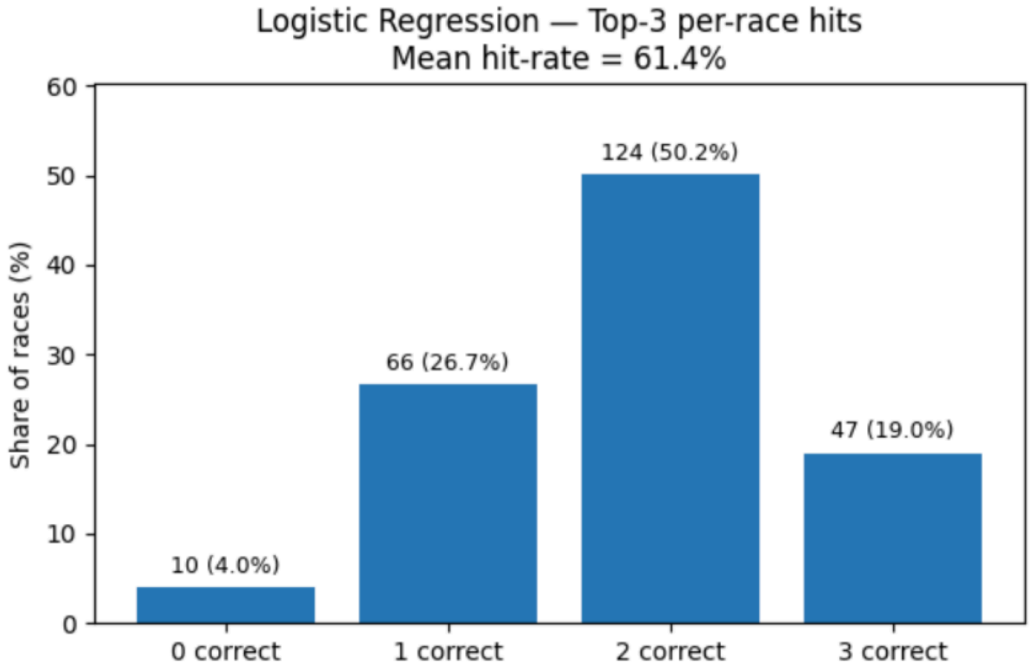
- Teams that recently score podiums are far likelier to repeat — a positive feedback loop that keeps sponsor brands in broadcast graphics and podium ceremonies.
- When a team's "so-far" podium rate is under 5%, the chance of another podium is near zero, but it rises steadily with momentum — surpassing 30% for teams already above a 20% podium rate.
- This upward trend highlights that recent team form is a powerful predictor of future podium finishes.



Top 3 Finishers per Race

Predictably on the Podium: Our model hits 61–68% accuracy picking podium finishers race-by-race, showing our team's podium presence is consistent and statistically backed.

- Strong top-3 recall: In 50% of races the model got 2 of the top-3 right, and in 19% it got all 3 right—the most common outcome is "2 correct."
- Rare total misses: It got at least one top-3 driver correct in 96% of races; only 4% were complete misses.
- Overall performance: Averages 1.84/3 correct per race → mean hit-rate = 61.4% (measures who is in the top-3, not the exact order).



Another way to slice the Top 3

Almost 70% rate in predicting outcome of a race

- Strong accuracy: Mean hit-rate 68.2% ≈ 2.0 of 3 top-finishers correctly identified per race. Most common outcome is 2 correct (53.4%), with perfect top-3 in 27.1% of races.
- Reliable (few misses): Only 3.2% of races are complete misses; in 96.8% of races the model gets at least one top-3 right.
- Beats logistic regression: Improves mean hit-rate by +6.8 pts (68.2% vs 61.4%) and raises perfect predictions (27.1% vs 19.0%), making the decision tree the stronger choice for this task.