

Auto Defect Insights

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<https://github.com/pbollineni04/auto-defect-insights>





Finding defect patterns early

- Help auto quality teams
- Cut complaints, cut recalls
- Prioritize top failure drivers
- Use SQL + dashboards
- Support smarter sourcing



Aligned with Sanmina's mission

Key Requirements Fulfilled

- Extract & clean data
- Visualize KPIs clearly
- Deliver business insights
- Build efficient pipelines
- Drive process improvements

About the job

Job Description

Sanmina Corporation (Nasdaq: SANM) is a leading integrated manufacturing solutions provider serving the fastest growing segments of the global Electronics Manufacturing Services (EMS) market. Recognized as a technology leader, Sanmina Corporation provides end-to-end manufacturing solutions, delivering superior quality and support to Original Equipment Manufacturers (OEMs) primarily in the communications networks, defense and aerospace, industrial and semiconductor systems, medical, multimedia, computing and storage, automotive and clean technology sectors. Sanmina Corporation has facilities strategically located in key regions throughout the world.

Data Analyst Intern

- Implement efficient ways of collecting data from various sources
- Review and analyze collected data to provide actionable insights to the management team
- Develop and maintain databases, data systems, and data visualization tools
- Collaborate with different teams to identify opportunities for process improvement and optimization
- Design and implement data-driven strategies to support business objectives
- Monitor and analyze key performance indicators (KPIs) to evaluate the success of initiatives
- Handling sensitive data and details in line with established protocols.

NHTSA Recalls API Database

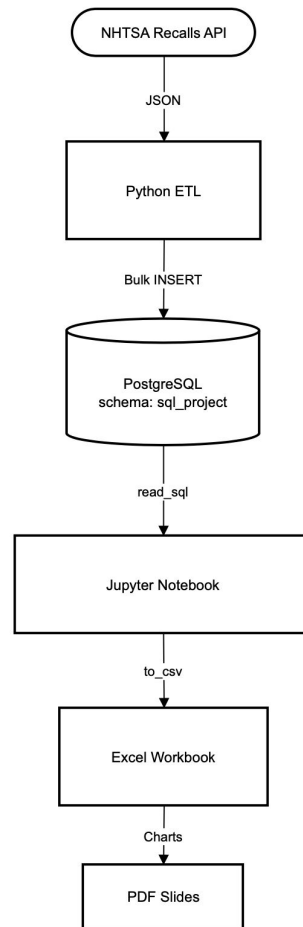
Fields:

- Make
- Model
- Year
- Component

Supports trend analytics

Used SQL windowing + CTEs

Diagram: see next slide

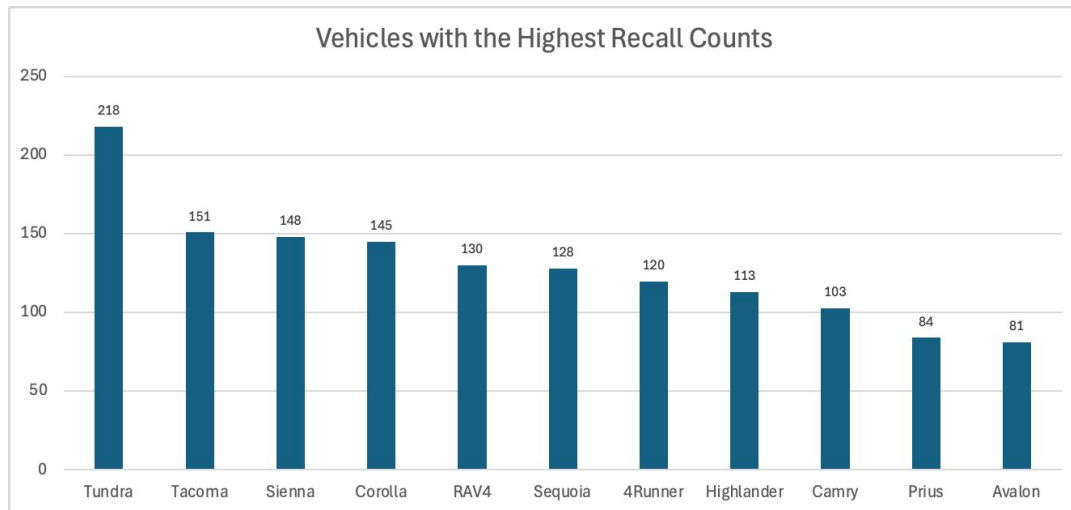


Top 5 Toyota Models = 41% of Recalls

Which Toyota models have the most recalls?

Insight:

Tundra, Tacoma, Sienna, Corolla, and RAV4 account for over 40% of all Toyota recalls.





Recommendation and Prediction

Recommendation

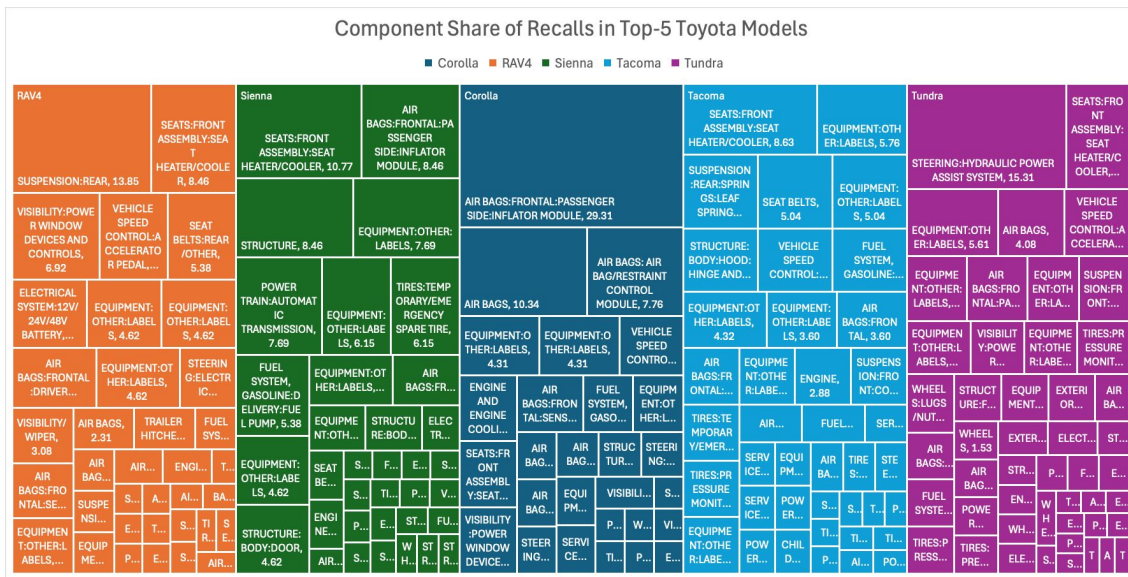
- Monitor open campaigns for these five models and alerts QA teams when any model exceeds 5 recalls in a given quarter.

Prediction

- A focused effort to reduce recalls in just these five models could reduce Toyota's total recall volume by 20–25% over the next 12–24 months.

What components account for most recalls within the top 5 Toyota models?

Each model has a single dominant failure type—for example, 29% of Corolla recalls are due to airbag inflators.





Recommendation and Prediction

Recommendation

- Start root cause analyses and supplier audits with the #1 component issue per model. Prioritize these for redesign, stricter QA, or targeted field fixes.

Prediction

- Addressing each model's top failure category could reduce recall volume by 15–30% per vehicle line and cut downstream campaign costs substantially.

CarComplaints.com (live data)

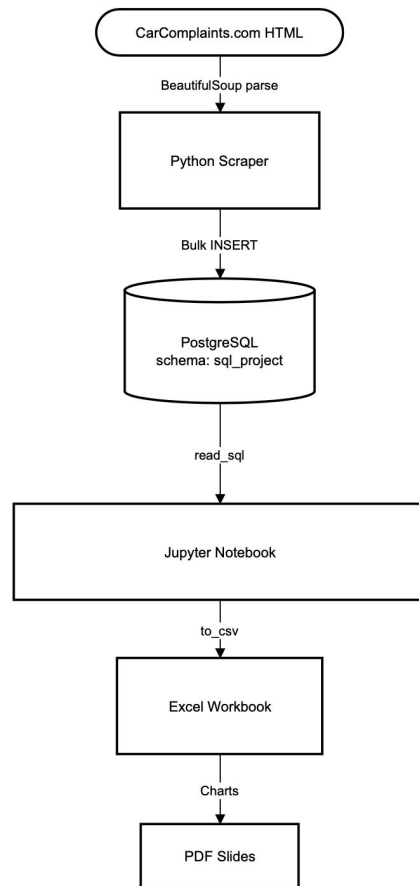
Fields:

- Make
- Model
- Complaint Count

Voice of the customer

Matches API signals

Helps predict recall trends

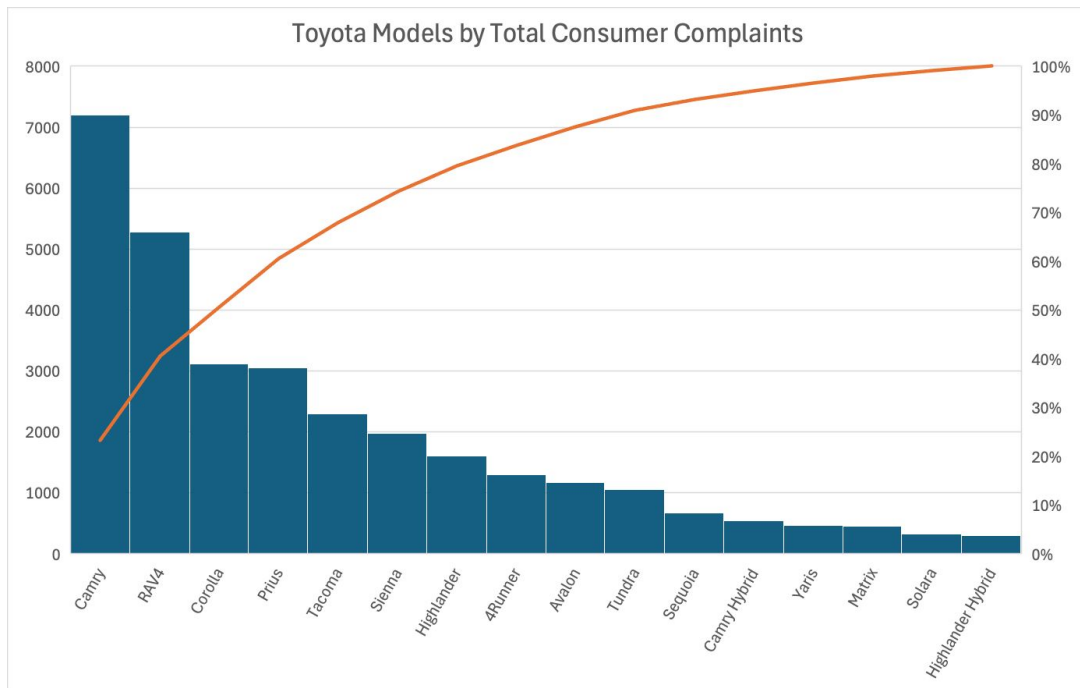


Five Models Cause 64% of All Complaints

Which Toyota models receive the most consumer complaints?

Insight:

Camry, RAV4, Corolla, Prius, and Tacoma account for nearly two-thirds of all Toyota complaints filed on CarComplaints.com.





Recommendation and Prediction

Recommendation

- Focus quality engineering and customer support efforts on these five vehicles. Fixing key recurring issues here will yield the greatest impact.

Prediction

- If complaints are reduced by just 20% for the top five models, Toyota's total complaint volume would fall by around 13%.

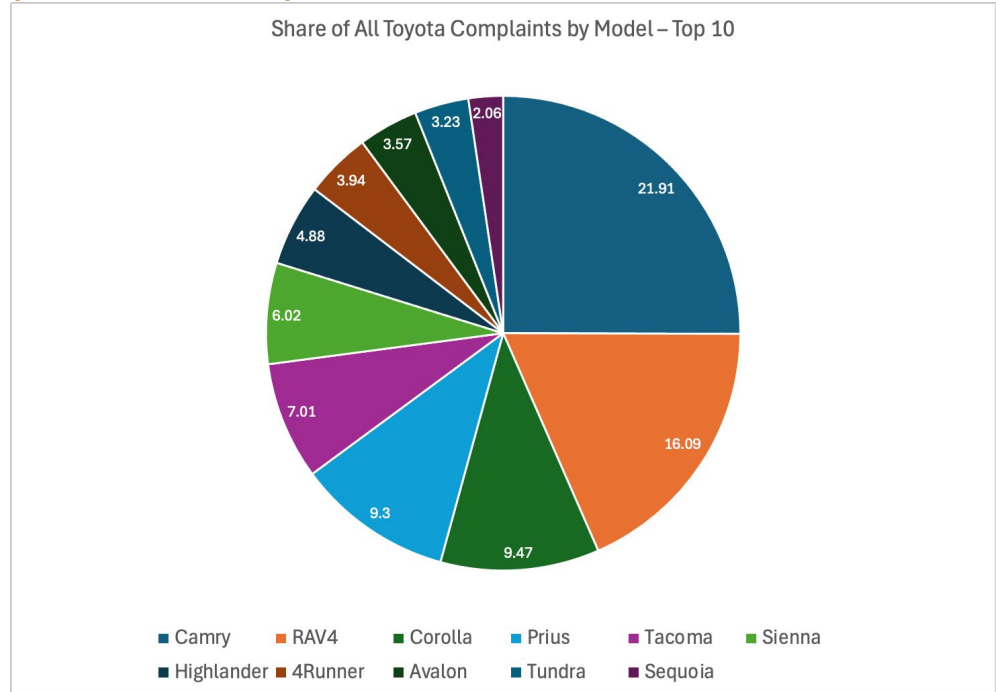
Camry and RAV4 = 38% of Complaints

What percent of total Toyota complaints come from each model?

Insight:

Camry accounts for 22% of all Toyota complaints, and RAV4 accounts for 16%.

Together, these two models generate over one-third of total complaints.





Recommendation and Prediction

Recommendation

- Assign support and resolution teams specifically to Camry and RAV4 issues first. This will maximize results with minimal spread across the team.

Prediction

- Reducing complaints for just these two models by 15% each would cut Toyota's total complaints by roughly 6%, even without touching the rest of the lineup.



From Raw Data to Actionable Business Impact

What I Built

End-to-end pipeline:
scrape/API → DB

SQL notebooks for insight
extraction

Excel dashboards for
visual delivery

Reusable, modular project
structure

What I Found

5 models drive most
complaints /recalls

One key component often
to blame

Camry & RAV4 dominate
customer issues

Aligns to the Role

Extracted + transformed
data

Built clear, visual analytics
outputs

Supported actionable
decisions

Matches analyst scope at
Sanmina

Why I'm a Fit

Comfortable across
Python, SQL, Excel

Strong communicator of
insights

Proactive, structured
problem-solver

Project proves job
readiness