# ANT Trucks Data Analysis

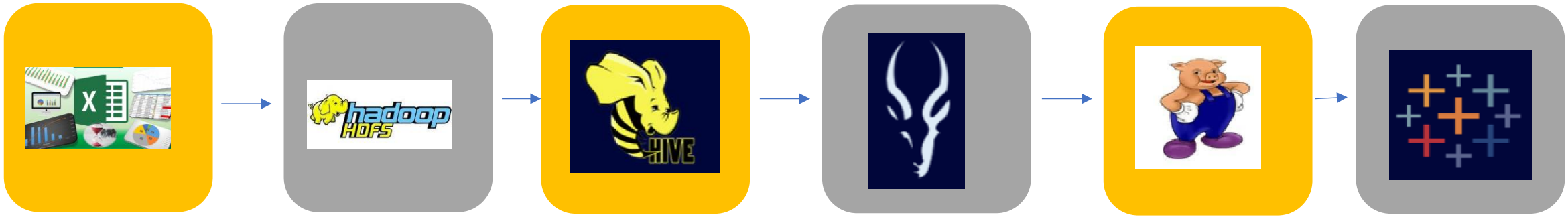
# Problem Statement

- To determine and forecast **risk factors** for driver identification based on a variety of variables, including events, and average speed.

- Analyze the dataset using different criteria, such as location, events, and risk factors, to determine who are the **risky drivers**.

- By using the risk factor threshold, the project aims to generate a report highlighting the drivers with a risk factor greater than or equal to 7.0, allowing the fleet manager to take necessary actions to reduce the risk of accidents and ensure compliance with regulations.

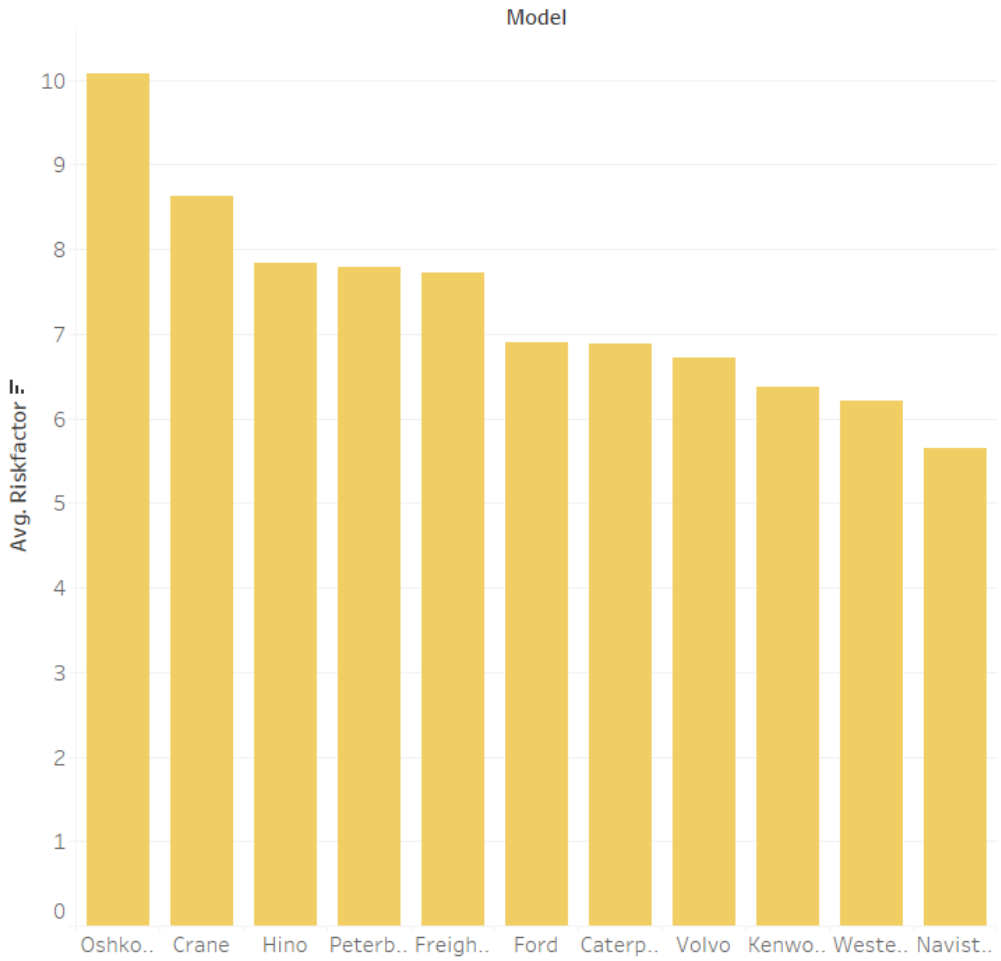
# Workflow


AQUIRE DATA FILES
IMPORT FILES TO HDFS
CREATING TABLES IN HIVE
SYNCING TABLES
POPULATING RISK FACTOR TABLE
DATA ANALYSIS IN TABLEAU

# Risk Factor by Truck Model

## Analysis and Insights

- Models from **Oshkosh, Crane, Hino, Peterbilt and Freightliner** have the avg risk factor.
- The average risk factor for the first 5 models is >7 with Oshkosh being the highest at 10.08.
- Depending on the state of the vehicle, these models can be replaced with new ones or cross-checked for maintenance and repairs.



# Top Risky Drivers by Events

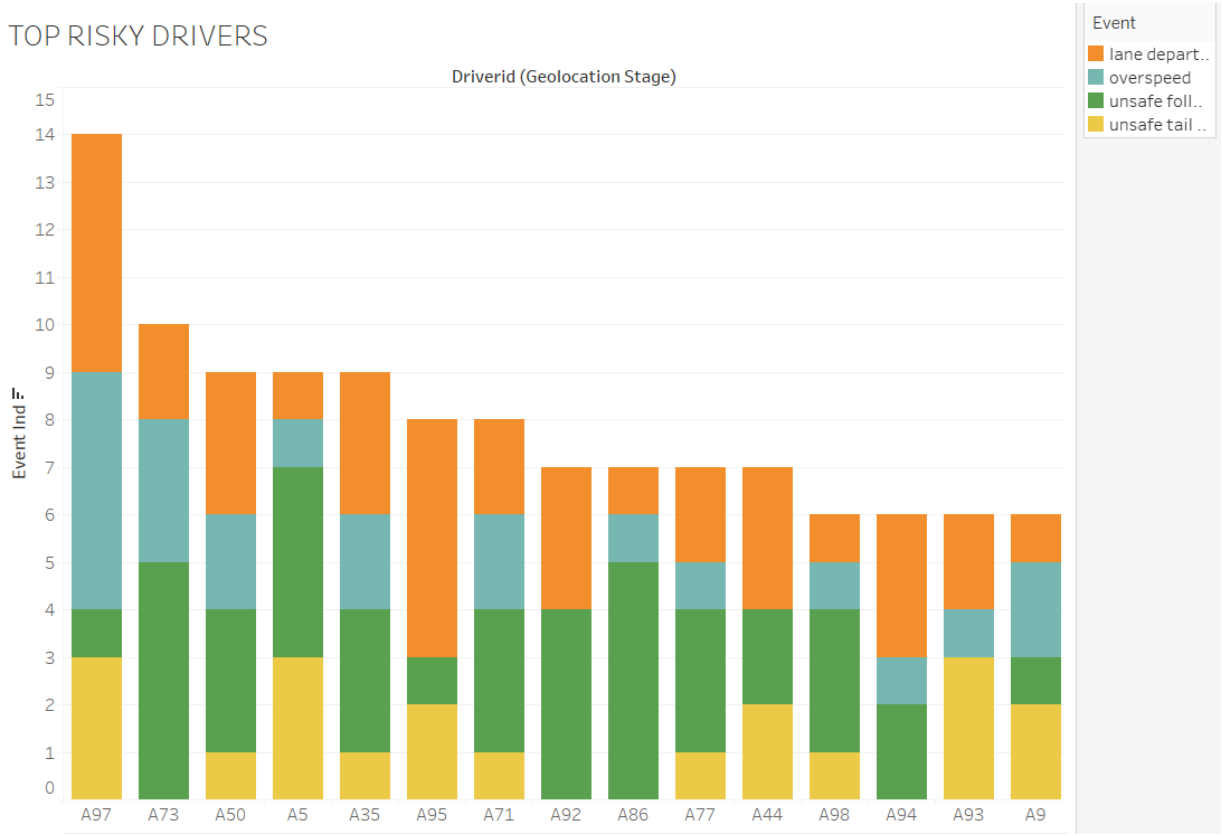
## Analysis and Insights

**Observation:**

- Driver ID A97, A73 and A50 are the top 3 risky drivers with 14,10 and 9 risky events respectively which include over speeding,  lane departure etc.

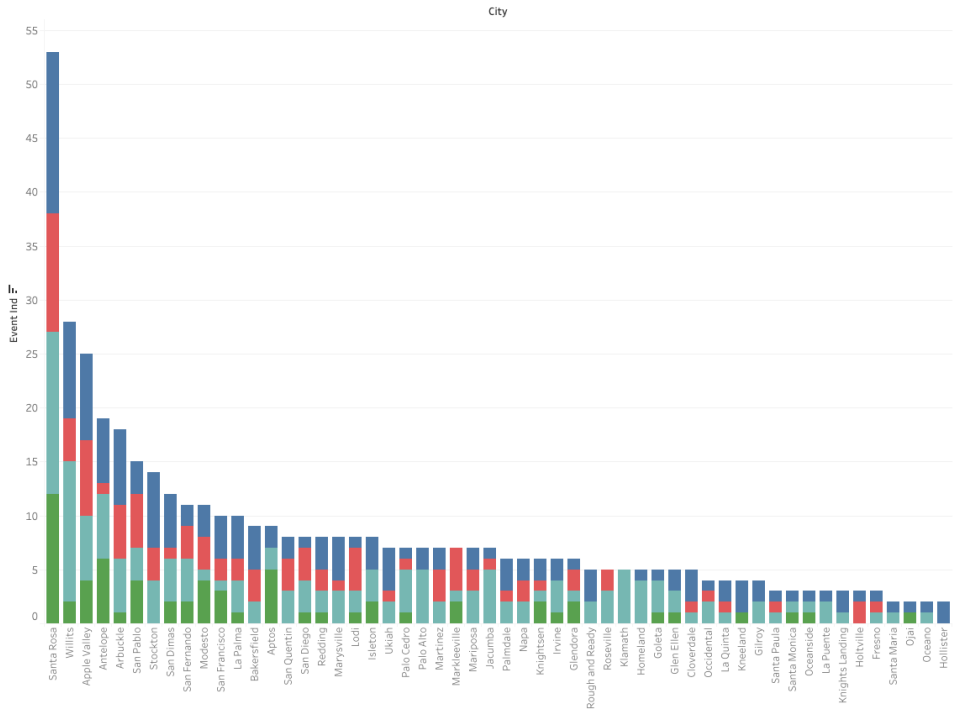
**Suggestion:**

- In order to reduce the frequency of incidents, the company might wish to follow driving habits of the top risky drivers.
- Additional training or strict rules can be imposed on such drivers to reduce risky events.



# City Wise Events

Citites with higher abnormal event types




Citites with higher abnormal event types


## Analysis and Insights

**Observation:**

- **Santa Rosa, Willits, Apple valley, Antelope, Arbuckle** are the 5 cities with major risky events.

**Suggestion:**

- It might be the case that these cities have lenient implementation on regulations so the hiring of drivers in such cities should be done more cautiously.

# Top Risky Models by Events

## Analysis and Insights

- Ford,  Peterbilt and Caterpillar model trucks have the highest risky events. Crane, Western Star and Kenworth have the lowest risky events.

**Suggestion:**

- Implement additional monitoring systems in Ford, Peterbilt and Caterpillar trucks to reduce the no of risky events caused by these trucks and the drivers using them.

| Model | |
|---|---|
| Ford | 89 |
| Peterbilt | 81 |
| Caterpillar | 74 |
| Volvo | 39 |
| Hino | 36 |
| Navistar | 33 |
| Oshkosh | 26 |
| Freightliner | 25 |
| Kenworth | 25 |
| Western Star | 12 |
| Crane | 11 |

# Conclusion

- Each unsafe driver should be paired with an experienced driver (drivers who have driven the greatest number of miles)during the training phase as a proactive measure to mitigate risks and enhance overall safety.
- The company should allow only a certain no of miles to be driven by a driver in a certain period of time.
- Develop an incentive program for the driver, where the company can incentivize if a driver commits less risky events in a given quarter.
- Truck drivers in high-accident regions should be watched over by a specialized team assigned by ANT. Drivers with a history of serious accidents shouldn’t be given longer trips or should be penalized.


Thank you