

## Project Overview

The goal of this project is to analyze and visualize data from the **Automobile Insurance Company Complaint Rankings** dataset. The driving question is: *"How do different automobile insurance companies rank based on the volume and type of complaints, and what trends or patterns can be identified over time?"* The aim is to provide insights into the quality of service across companies, highlight patterns in consumer dissatisfaction, and assist stakeholders in understanding which companies perform well and which face the most complaints.

## Audience

The primary audience includes:

- **Consumers:** Individuals looking to choose an automobile insurance company based on service quality and complaint history.
- **Insurance Companies:** Stakeholders interested in identifying areas of improvement by benchmarking against competitors.
- **Regulators and Policymakers:** Agencies responsible for monitoring consumer rights and ensuring fair practices in the insurance industry.

## Data Description

The **Automobile Insurance Company Complaint Rankings** dataset, sourced from [Data.gov](https://data.gov), provides comprehensive data on complaints lodged against various automobile insurance companies, beginning in 2009. It includes key variables such as company name, total complaint count, market share, and the status of complaint resolutions. This dataset offers insights into consumer dissatisfaction, allowing for a comparative analysis of companies based on complaint volume and market performance, and helps identify trends in customer service quality over time.

## Project Goals

1. **Analyze Complaint Patterns:** Identify complaint trends for different companies, including changes over time and patterns related to specific companies or regions.
2. **Interactive Visualizations:** Develop dashboards that allow users to interactively explore complaint data, filter by company, year, and resolution status.
3. **Insights for Stakeholders:** Provide clear, data-driven insights that can guide consumers, industry stakeholders, and regulators in their decision-making.

## Milestones

1. **Milestone 1: Data Cleaning and Exploration**
  - Collect and clean the dataset, ensuring that data is structured, and missing values are handled.

- Perform an exploratory data analysis (EDA) to understand the basic structure and features of the data.
- Generate initial summary statistics and visualizations.

## 2. Milestone 2: Interactive Visualization Development

- Develop interactive visualizations using tools like Plotly or Tableau. This includes visualizing trends in complaints over time, by company, and by type of complaint.
- **Bar Plot: Complaint Count by Insurance Company**
  1. The bar plot will show the number of complaints for each insurance company. The x-axis will represent the company names, and the y-axis will represent the total number of complaints.
  2. Goal: Users should be able to hover over each bar to see exact complaint counts.
- **Scatter Plot: Complaint Volume vs. Market Share**
  1. The scatter plot will display the relationship between each company's complaint volume and their market share. The x-axis will represent the market share, and the y-axis will represent the number of complaints.
  2. Goal: Enable hover interactions so that users can view the specific company name, complaint count, and market share at each point.

## 3. Milestone 3: Final Refinements and Report

- Refine visualizations and ensure they are user-friendly and informative.
- Create **interactive** bar and scatter plots using Plotly, which will allow hovering for additional information.
- Add **filtering** options (such as a dropdown) so users can explore data by specific year or region.
- **Implement Advanced Interaction Features**
  1. **Color Grading:** Apply a color gradient to visual elements to represent variables like complaint severity or resolution rate (e.g., higher complaints in darker red shades).
  2. **Zoom Functionality:** Implement zoom and pan features for users to explore data more closely, especially in dense areas of scatter plots.
  3. **Dropdown:** Allow users to select different complaint types (e.g., billing issues, claims disputes) to view how complaints vary by company and complaint category.