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DATA VISUALISATION

BY

TABLEAU

CAR INSURANCE COMPANY

BUSINESS REPORT

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PROBLEM STATEMENT:

Accidents occur globally due to various factors such as negligent driving, adverse weather, and poor infrastructure, resulting in numerous insurance claims. Accurately predicting claims is crucial for insurance companies to manage financial reserves and ensure business sustainability. Analysing claims data helps in understanding trends, detecting fraud, optimizing pricing, and improving customer segmentation.

OBJECTIVE:

To analyse the Car Insurance Claims dataset, identify key patterns, and extract meaningful insights. The goal is to present findings through an interactive and visually compelling storyboard, enabling data-driven decision-making for policy optimization and risk management.

DATASET OVERVIEW

Assumption	Car Owner and Driver are same Amounts are in Dollars ($)
ID	Identification Variable
KIDSDRIV	Number of teenagers among the car owner's children who can drive a car.
BIRTH	Date of birth of the driver
HOMEKIDS	No of childern the car owner has
YOJ	Years on Job. How many years has the owner of the car been working?
INCOME	Income of the driver
PARENT1	Is the car owner a Single Parent
HOME_VAL	Value of the house owned by the car owner
MSTATUS	Marital status of the car owner
GENDER	Gender of the driver
EDUCATION	Maximum Education level of the driver
OCCUPATION	Occupation of the driver
TRAVTIME	Time taken to get to work on an average
CAR_USE	Purpose of using the car
BLUEBOOK	What is the worth of the car. Value of the Vehicle(in dollars)
CAR_TYPE	Car type
OLDCLAIM	Total claim (in past 5 years - in dollars)
CLM_FREQ	Number of claims (in past 5 years)
CLM_AMT	If car was in a crash, what is the currently claimed amount(in dollars)
CAR_AGE	Age of car
URBANICITY	Where the car is being driven primarily

EXECUTIVE SUMMARY

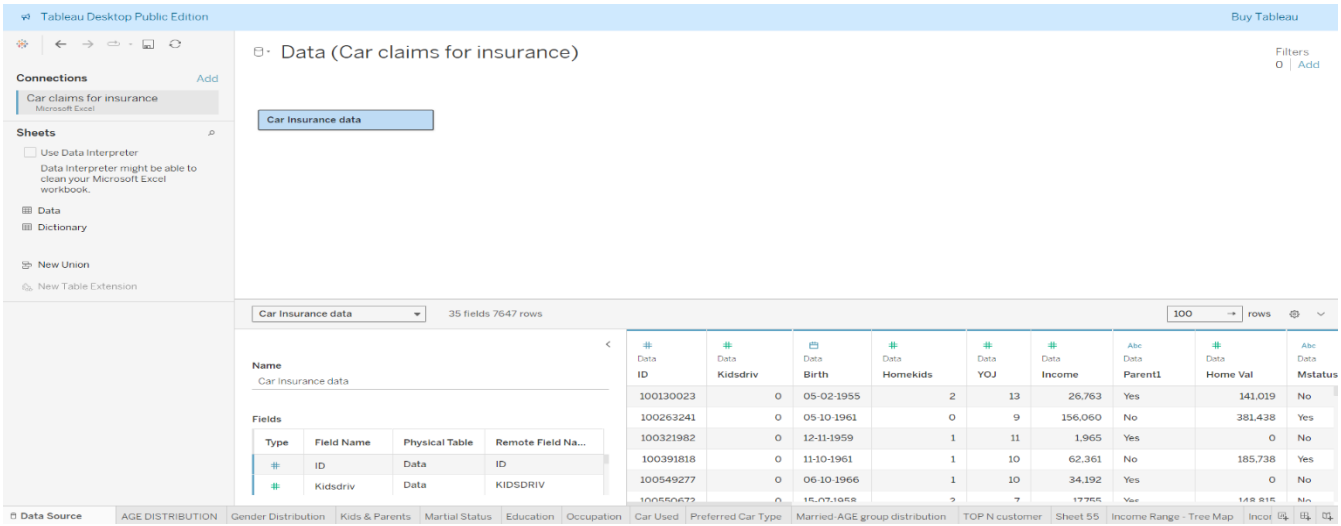
This project analyses car insurance claim data using Tableau dashboards to understand the factors influencing claim amounts and frequency. We will explore how variables like gender, marital status, education, and income relate to claim outcomes. By examining these relationships, we aim to provide insights for improved customer care.

The goal of this project is to use Tableau dashboards to analyse car insurance claims and identify the drivers of claim amounts and frequency. We will investigate the impact of various independent variables, including demographics (gender, marital status), socio-economic factors (education, income), and car characteristics (age, type), on claim outcomes. This analysis will support data-driven decision making and enhance customer care.

We will try to analyze univariate and/or multivariate analysis to identify the relationship and impact of each variable on car insurance claim amount and claim frequency.

DATA VISUALISATION

The data analysis process began with setting up the environment using Tableau Public. The car insurance data, stored in an Excel file, was imported into Tableau by connecting to the source file.



As illustrated in the accompanying figure, the 'Car Insurance' worksheet was then dragged and dropped into the sheet environment within Tableau. This action enabled the analysis of the imported data, laying the groundwork for creating visualizations and deriving insights.

URL for the assignment submission

CAR CLAIM INSURANCE - DASHBOARD

Key Insights from Data Visualization:

1. **General Claim Trends:**
    - 50% of insured customers have never filed a claim, indicating potential barriers to claiming that require further investigation.
    - Customers with a high school or bachelor's degree contribute to 60% of total claims, making them a key target group for policy improvements.
    - Female customers exhibit a higher claim frequency than males.
2. **Vehicle Type and Claim Frequency:**
    - SUVs contribute to 50% of total claim frequency over the last five years, suggesting the need for a revised premium structure.
    - 60% of SUVs and 70% of minivans have had zero claims in the past five years, presenting an opportunity for targeted engagement strategies.
    - Private vehicle owners constitute 77% of customers, while commercial vehicles account for only 23%. Partnerships with businesses could expand commercial insurance coverage.
3. **Single Parents & Customer Service Considerations**:
    - Single-parent customers represent only 13% of total customers. Improving customer service, such as offering pickup/drop services and faster issue resolution, may encourage participation from this segment.
4. **Gender-Based Vehicle Ownership Trends:**
    - Females dominate SUV (96%) and sports car (98%) ownership, while males primarily own panel trucks (95%) and vans (87%).
    - Given that SUVs account for 30% of the customer base, female customers significantly influence the market.
5. **Correlations Between Variables:**

- No significant correlation exists between claims and car age, years on the job, or income.
- A strong positive correlation is observed between income and home value, while a moderate correlation exists between income and car value.

6. Education Level & Claim Behaviour:

- High school graduates have the highest claim amounts but lower average incomes.
- PhD holders have the highest average income but the lowest claim amounts, suggesting they could be targeted with premium service offerings such as faster claims processing and home pickup/drop-off.

7. Blue-Collar Customers & High-Risk Segments:

- Blue-collar customers exhibit the highest claim frequency across all car types, particularly SUVs.
- SUV owners file the most claims, indicating a potential need for premium adjustments.

8. Impact of Children on Insurance Claims:

- Customers without children are more likely to file claims.
- Among those with children, SUV owners have the highest number of dependents and the highest claim frequency.
- Blue-collar customers with more children tend to claim more frequently, whereas doctors, who have fewer children, file the least claims.
- High school graduates with at least one child who drives have the highest claim frequency.

9. Target Customer Strategy:

- Preferred Low-Risk Customers: PhD holders and doctors, as they file the fewest claims and could be upsold premium insurance services.
- High-Risk Customers (for Increased Premiums): Female SUV owners and blue-collar customers, due to frequent claims.
- Untapped Opportunity: Despite SUVs and minivans being frequently claimed vehicles, 60% of their private owners have not filed a claim in the last five years. Further analysis is needed to understand this segment's behavior.

10.Data Enhancements for Improved Insights:

- Car Age Adjustment: Corrected an anomaly where car age values started from -3.
- Dimension Selection: Enabled categorical filtering for interactive analysis.
- Claim Type Selection: Allowed toggling between historical and current claim data.
- Total Claim Calculation: Defined as the sum of old and current claims for better financial assessment.
- Additional Calculated Fields: Claim Rate, Current Claim Amount, and Overall Claim Amount were introduced for deeper insights into claims analytics.