CAR INSURANCE ANALYSIS

Operational Metrics

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Agenda

Data Preparation

Data Analysis

Dashboard Creation

Data Preparation

- **Data Import**: Imported the car insurance dataset into Google BigQuery. Connected to an external data source, selecting the relevant data, and importing it into my BigQuery project.
- **Data Cleaning**: Checked for and handled missing or inconsistent data.
- **Data Structuring**: Ensured the data is in a format suitable for analysis. Structured the data into tables, setting appropriate data types for each column, or encoding categorical variables.

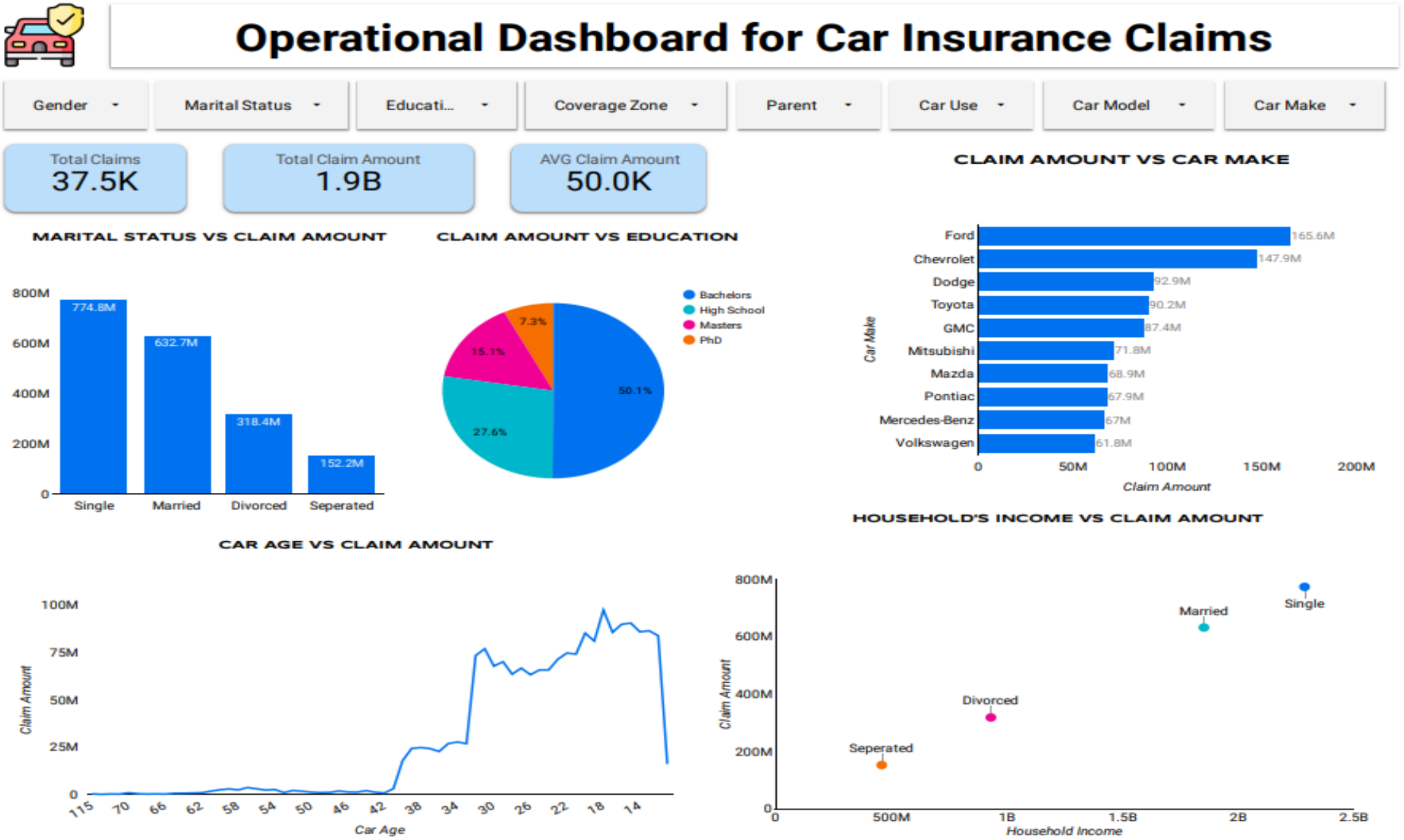
Data Analysis

- **Initial Exploration**: Getting a sense of the data. Involves looking at the number of rows and columns, the range of values in each column, or the number of unique entries for categorical variables.
- **Descriptive Statistics**: Calculate basic statistics for each column. To get a sense of the distribution of values.
- **Data Visualization**: Use plots and charts to visualize the data. Identify patterns, trends, or relationships between variables.

Dashboard Creation

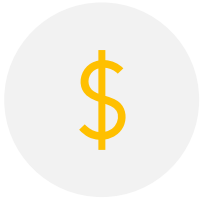
- **Understood Key Metrics**: Identified the key metrics that operational teams was interested in, such as the number of insurance policies, total claim amount, and average claim amount.
- **Dashboard Design**: Designed the dashboard in Google Data Studio, ensuring it visually represented these key metrics effectively.
- **Added Visualizations**: Included various charts and graphs such as bar graphs for different car brands, and education levels, marital status and line chart for car ages and claim amount.
- **Added Interactivity**: Incorporated filters for parent, gender, car use, marital status, coverage zone, car model, car make and education to allow users to customize the view.
- **Final Dashboard**: The result is a comprehensive, interactive, and user-friendly dashboard that provides a strategic perspective on car insurance analysis.

Operational Dashboard: Insights from Car Insurance Data



Interpretation of Findings - KPIs

Insurance Policies (37.5K): This represents the total number of insurance policies that have been issued. A higher number could indicate a larger customer base or more policies per customer.



Total Claim Amount (1.9B): This is the sum of all the claim amounts that have been paid out. It's a crucial indicator of the total liabilities incurred by the insurance company. A higher total claim amount could suggest a higher risk profile of the insured population or more frequent incidents leading to claims.

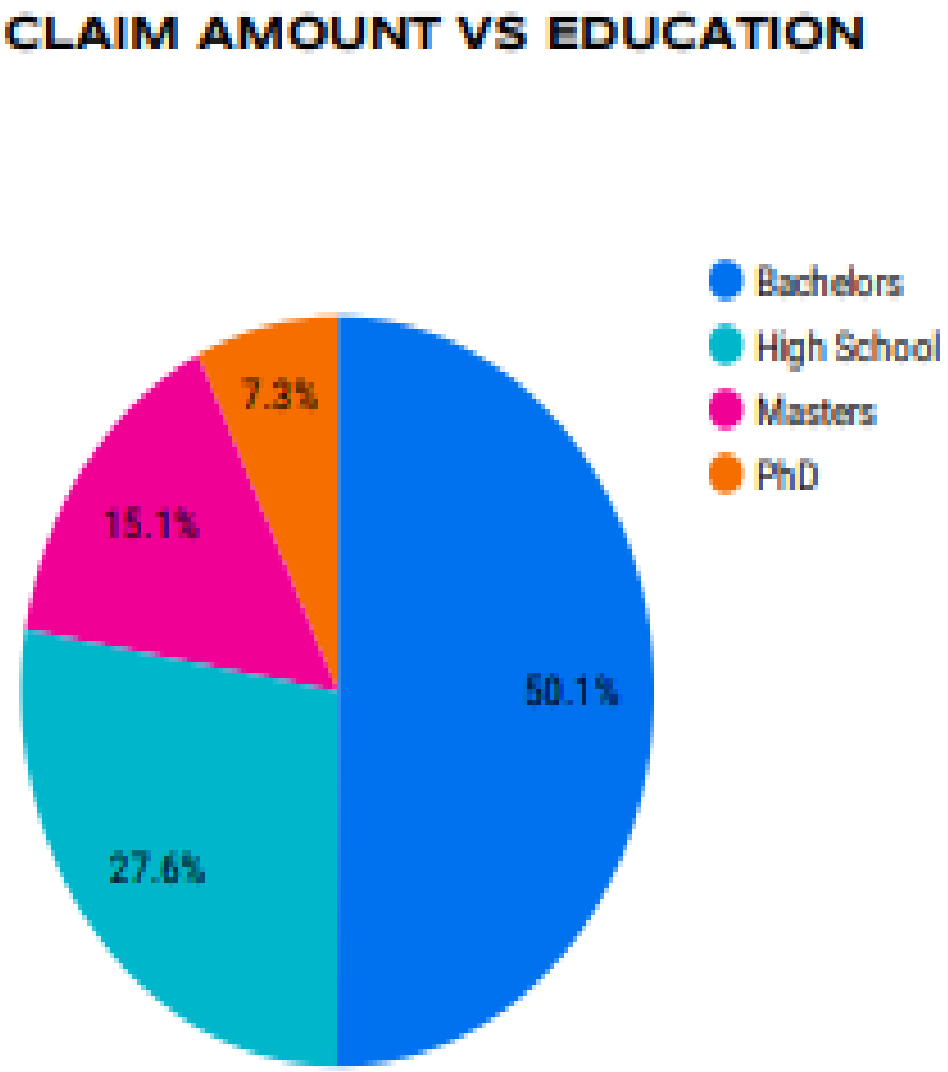
Average Claim Amount (50K): This is the mean claim amount, calculated by dividing the total claim amount by the number of claims. It provides an idea of the typical claim size. A higher average could indicate that the insurance policies are covering higher-risk items or events, or that the terms of the policies are more generous in their payouts.

Interpretation of Findings – Claim Amt vs Car Make

- **Ford** has the highest claim amount at approximately **165.6M**. This could imply that Ford vehicles are either more prone to accidents or damages, or the cost of repairs for these vehicles is higher.
- **Chevrolet** follows with around **147.9M** in claims. Like Ford, this could suggest a higher incidence of claims or higher repair costs.
- **Dodge** has approximately **92.9M** in claims, which is significantly lower than Ford and Chevrolet.
- **Toyota's** claims amount to around **90.1M**, which is slightly lower than Dodge.
- **GMC** has the lowest claim amount at approximately **87.4M**.

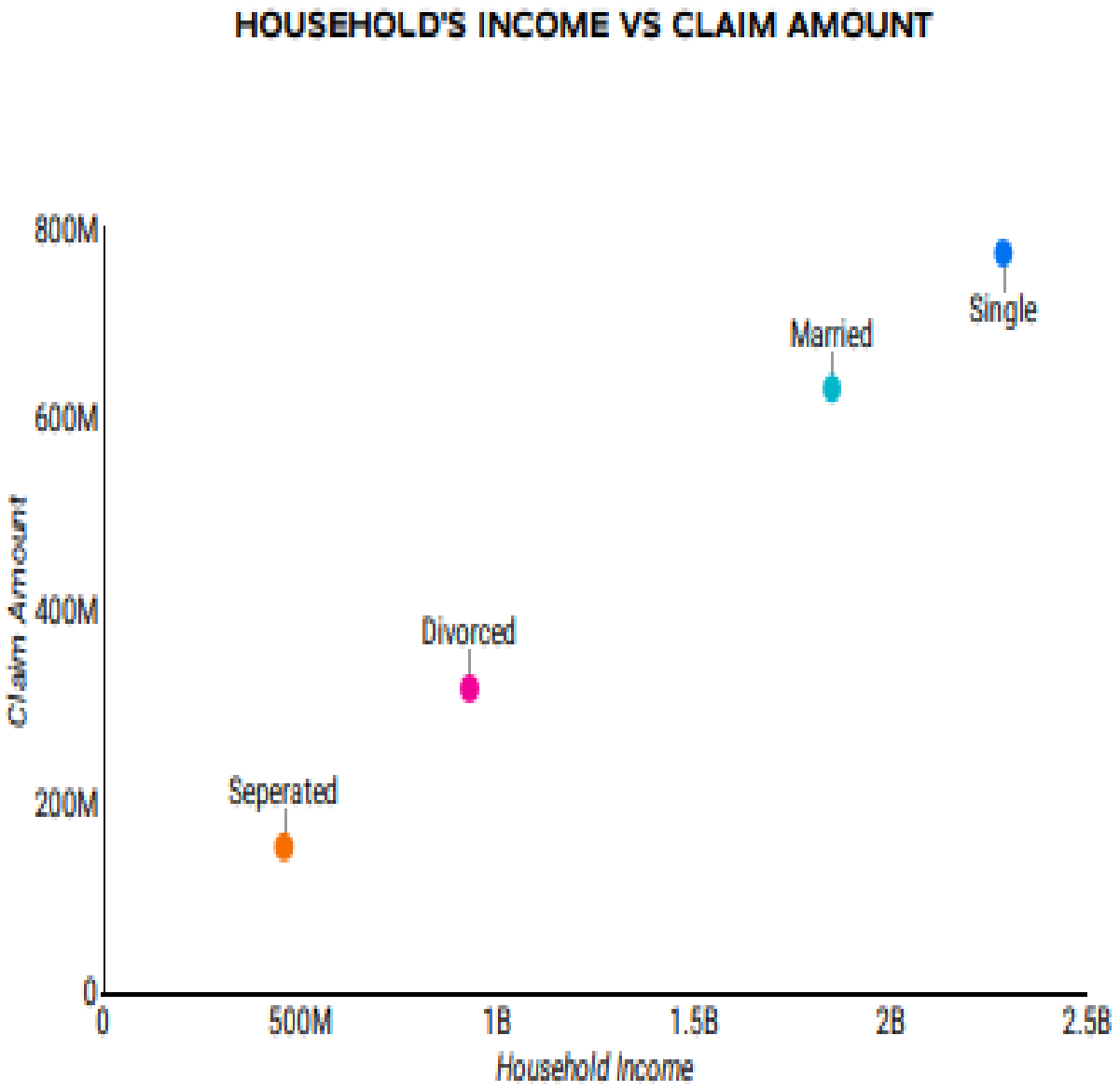
Interpretation of Findings – Claim Amt vs Education

- **Bachelors**: Individuals with a Bachelor's degree have the highest claim percentage of approximately **50.1%**. This could suggest that this group owns more expensive cars, drives more frequently, or engages in riskier driving behaviors.
- **High School**: Those with a high school education have the second highest claim percentage of around **27.6%**. This group might have a different car ownership or driving pattern compared to the other groups.
- **Masters**: Master's degree holders show a claim percentage of **15.1%**, which is significantly lower than the first two groups. This could be due to a variety of factors such as car type, driving habits, or insurance coverage.
- **PhD**: Individuals with a PhD have the lowest claim percenatge at approximately **7.3%**. This group might own less expensive cars, drive less often, or engage in safer driving behaviors.



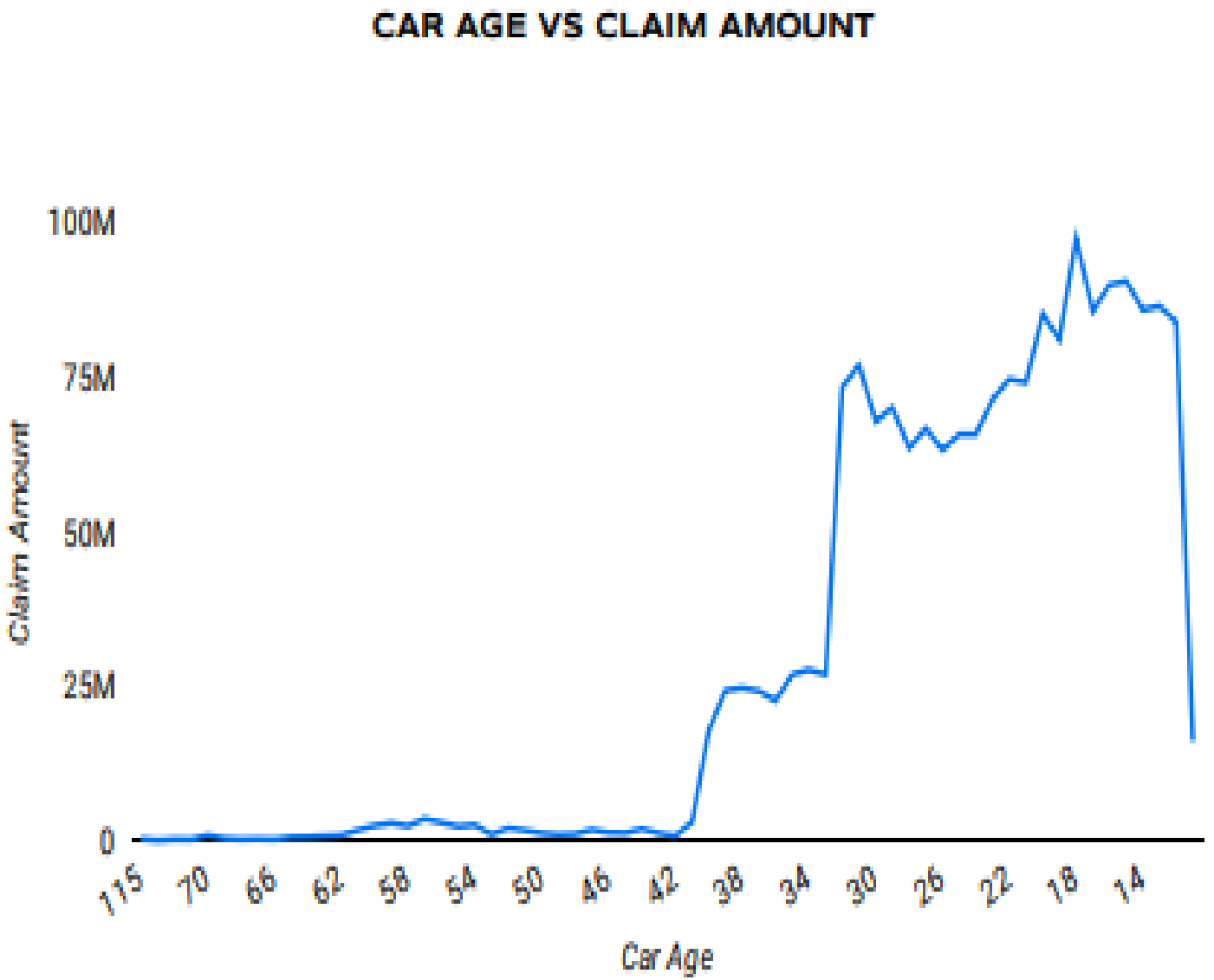
Interpretation of Findings – Claim Amt vs Income

- **Married**: Married individuals have moderate household income but high claim. This could suggest that married couples tend to own more expensive cars or have more cars per household, leading to higher claim amounts.
- **Divorced**: Divorced individuals have lower household incomes but relatively high claim amounts. This could be due to a variety of factors such as the type of car owned, driving habits, or insurance coverage.
- **Separated**: Separated individuals have the lowest household income and claim amounts among all categories. This could suggest that separated individuals own less expensive cars, drive less often, or have lower insurance coverage.
- **Single**: Single individuals have both higher household incomes and claim. This could suggest that single individuals might own more expensive cars or engage in riskier driving behaviors.



Interpretation of Findings – Claim Amt vs Car Age

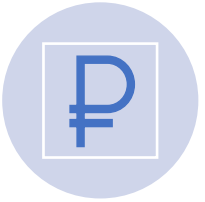
- **Young Cars** (11 years): Cars that are relatively new have lower claim amounts. This could be due to fewer mechanical issues and the presence of advanced safety features in newer models.
- **Middle-aged Cars** (12-30 years): Cars in this age range have the highest claim amounts, peaking at around 18 years. This could be due to increased mechanical issues as the car ages, leading to more claims.
- **Old Cars** (40+ years): The claim amount drastically decreases for cars older than 15 years and remains relatively low. This could be because older cars might be driven less frequently or have lower repair costs due to cheaper parts



Recommendations

Data Management: Accurate and up-to-date data is crucial for our analysis. Please ensure that data on car make, customer's education background, marital status, household income, and car age is accurately recorded and updated.

Customer Service: Our analysis shows that these factors significantly influence the claim amount and frequency. Training customer service representatives to understand these risk factors will help them communicate effectively with customers about their impact on insurance premiums.



Marketing: Our analysis can help tailor marketing strategies. For instance, we can offer special packages or discounts to low-risk groups to attract more customers from these segments.

Claim Processing: Our analysis shows higher claim frequencies from certain customer segments. This could involve staffing adjustments or process improvements in the claim processing department to handle the higher volume.

Collaboration with Underwriting: The underwriting team can adjust insurance premiums based on these risk factors. Regularly reviewing and updating the underwriting guidelines based on the latest data and insights will ensure our premiums are competitive and fair.

Risk Mitigation Programs: We can develop and implement risk mitigation programs targeting high-risk groups. This could include safe driving courses, car maintenance workshops, or family safety programs for customers with kids.

Thank You

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