CAR INSURANCE ANALYSIS

A Strategic overview

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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 upper management was interested in, such as the number of insurance policies, total claim amount, average claim amount, and maximum claim amount.
- **Dashboard Design**: Designed the dashboard in Tableau, ensuring it visually represented these key metrics effectively.
- **Added Visualizations**: Included various charts and graphs such as bar graphs for different car brands, customer ages, and education levels, and a bubble chart for marital status and claim amount.
- **Added Interactivity**: Incorporated filters buttons for parent, gender, car use, client age, 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.

Executive Dashboard: Insights from Car Insurance Data

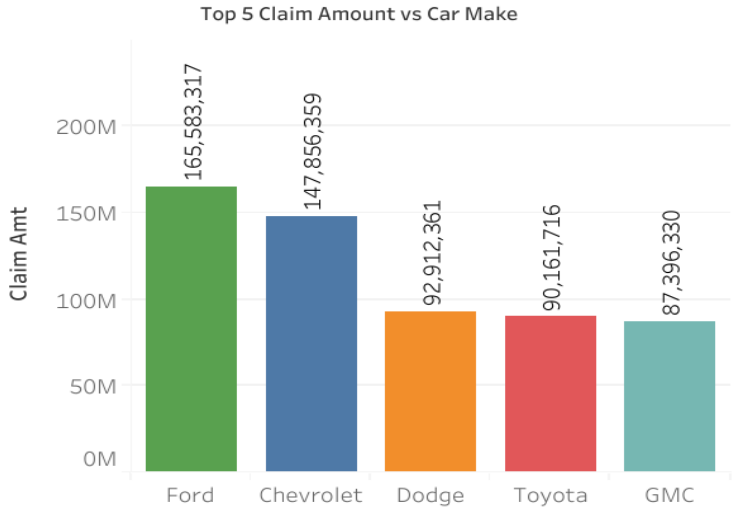
Car Insurance Analysis: A Strategic Perspective for Upper Management

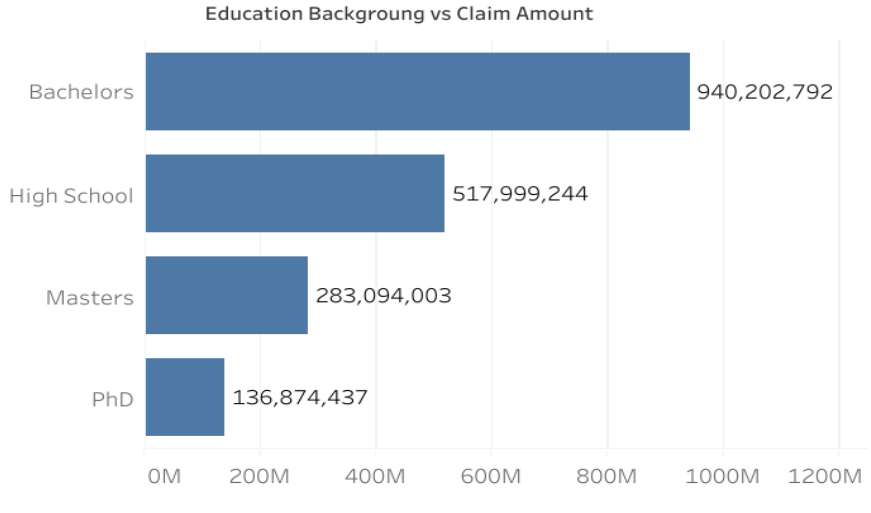
Key Metrics

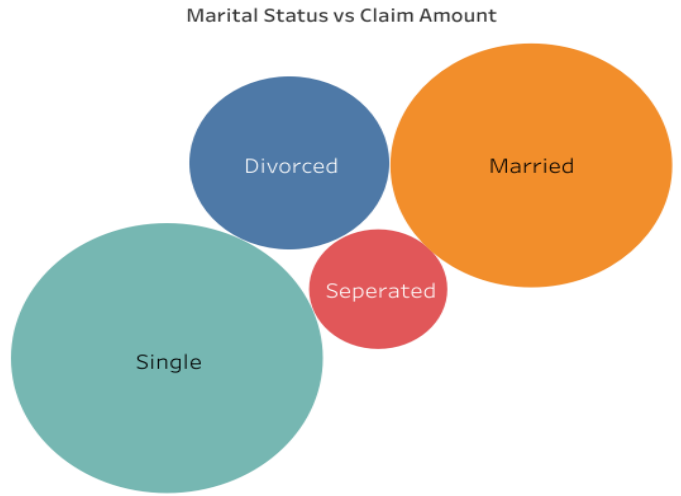
Insurance Policies	Total Claim Amount	AVG Claim Amount	Max Claim Amount
37,542	1,878,170,476	50,029	99,998

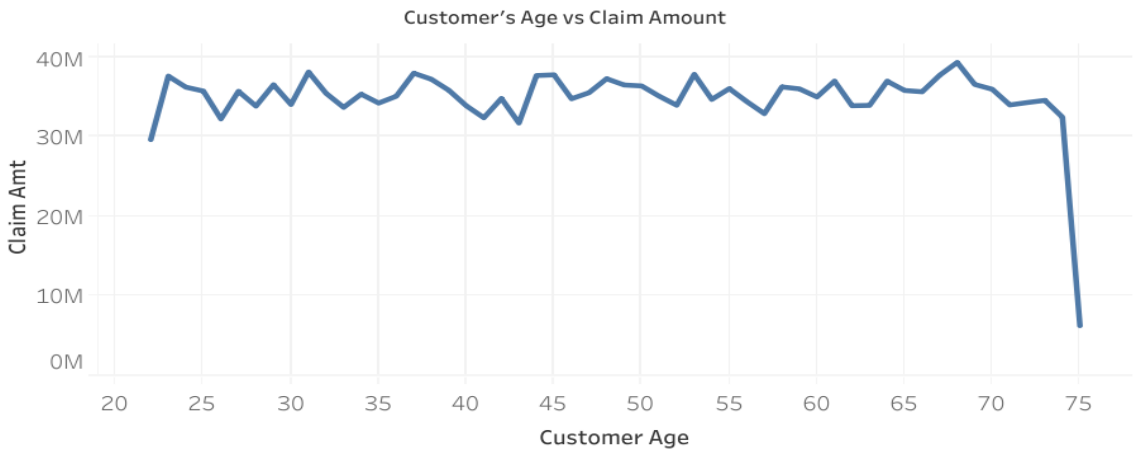
Parent: No, Yes
Gender: Female, Male
Car Use: Commercial, Private

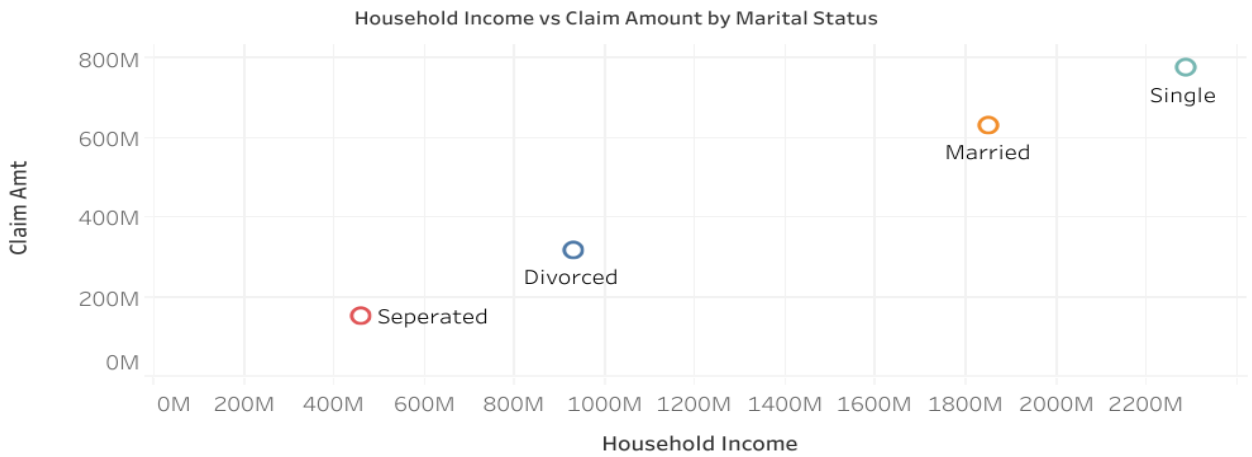
Client Age
Inc/CAmt
Education











Interpretation of Findings - KPIs

Insurance Policies (37,542): 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.

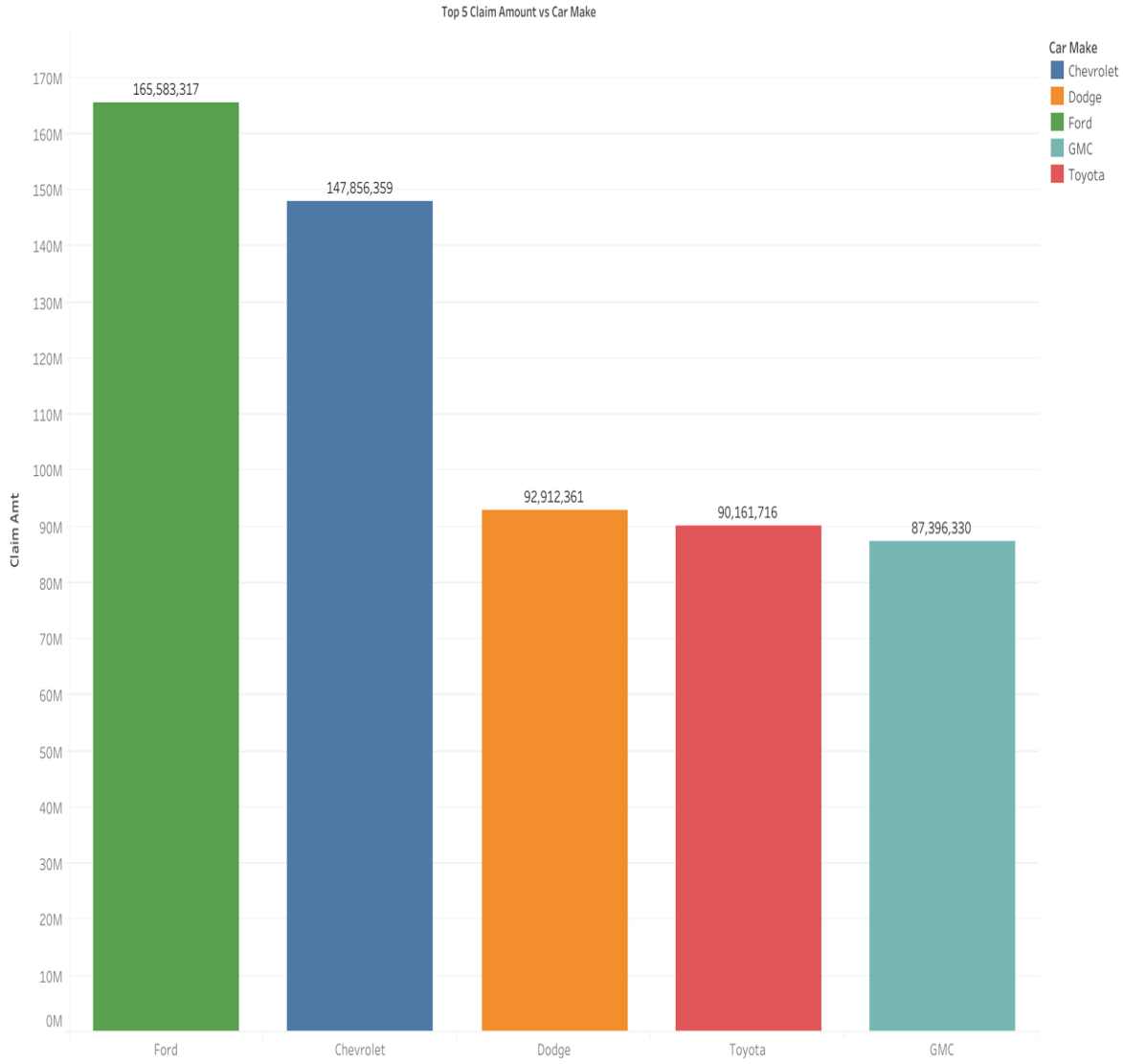
Total Claim Amount (1,878,170,474): This is the sum of all the claim amounts that have been paid out. It's a crucial indicator of the total liabilities incurred by the insurance company. A higher total claim amount could suggest a higher risk profile of the insured population or more frequent incidents leading to claims.

Average Claim Amount (50,029): 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.

Max Claim Amount (99,998): This is the highest claim amount that has been paid out. It gives an indication of the maximum liability from a single claim that the insurance company has had to cover.

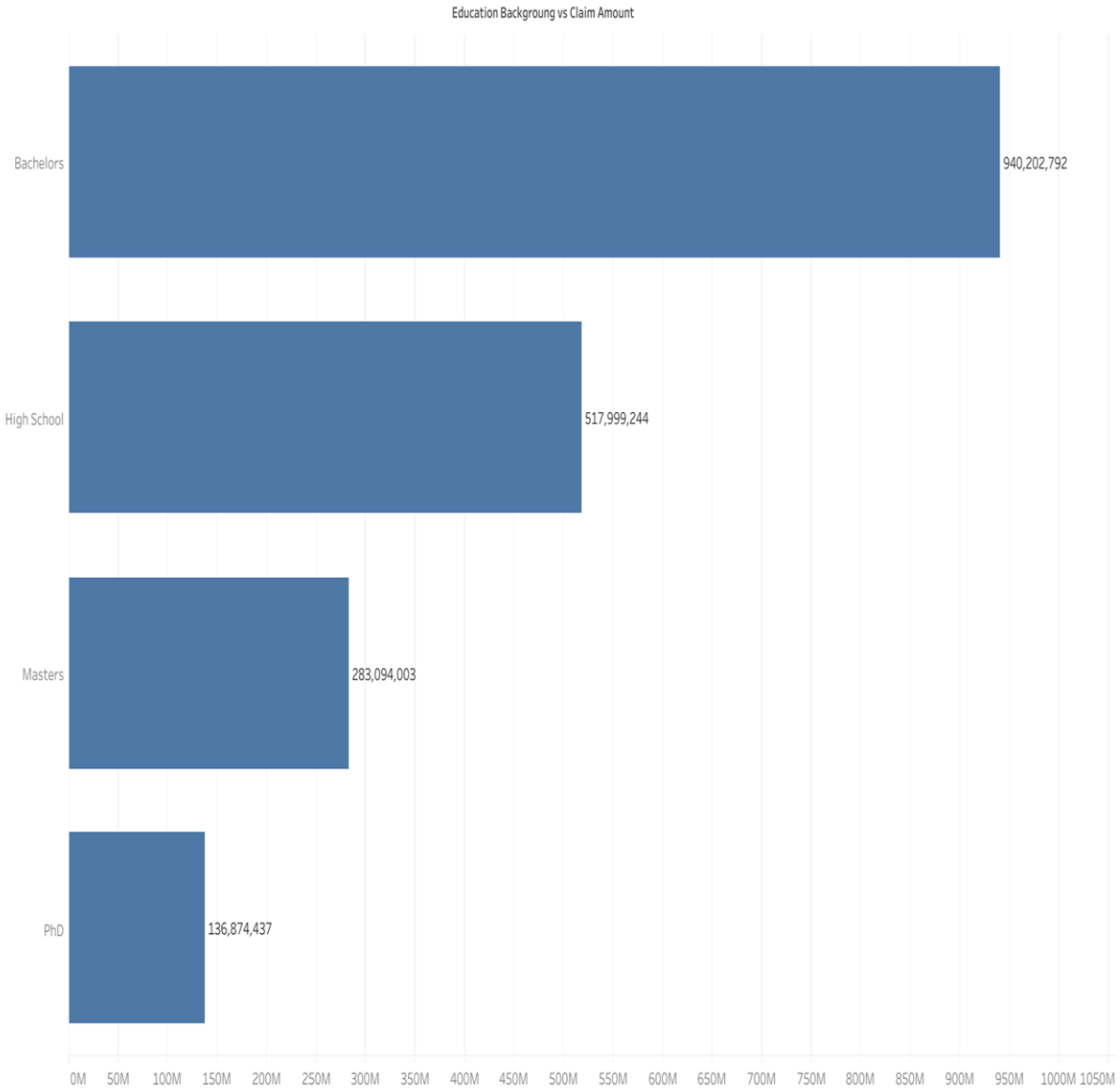
Interpretation of Findings – Claim Amt vs Car Make

- **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**.



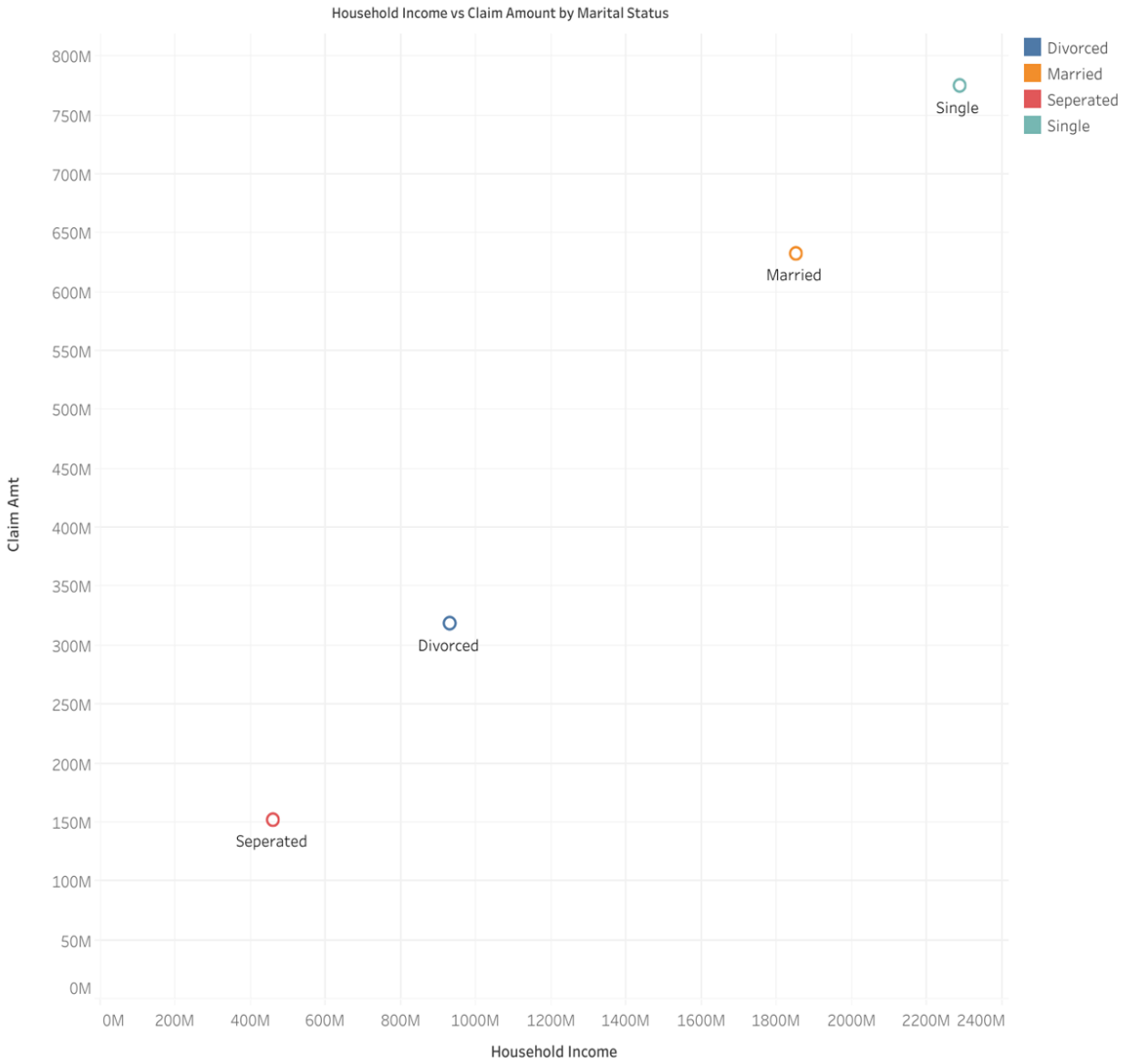
Interpretation of Findings – Claim Amt vs Education

- **Bachelors**: Individuals with a Bachelor's degree have the highest claim amount of approximately **940.2M**. 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 amount of around **518M**. This group might have a different car ownership or driving pattern compared to the other groups.
- **Masters**: Master's degree holders show a claim amount of **283.1M**, 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 amount at approximately **136.9M**. This group might own less expensive cars, drive less often, or engage in safer driving behaviors.



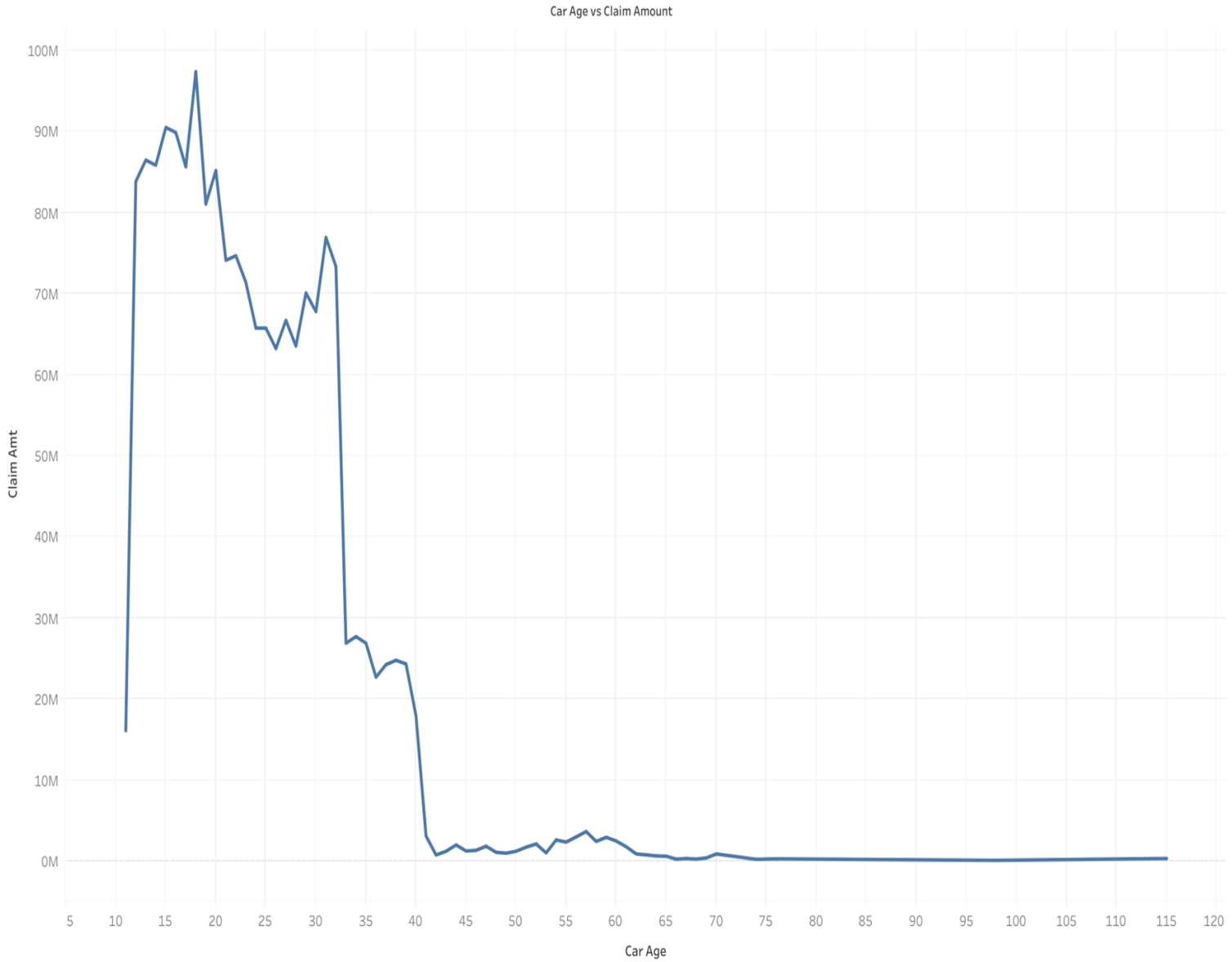
Interpretation of Findings – Claim Amt vs Income

- **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.



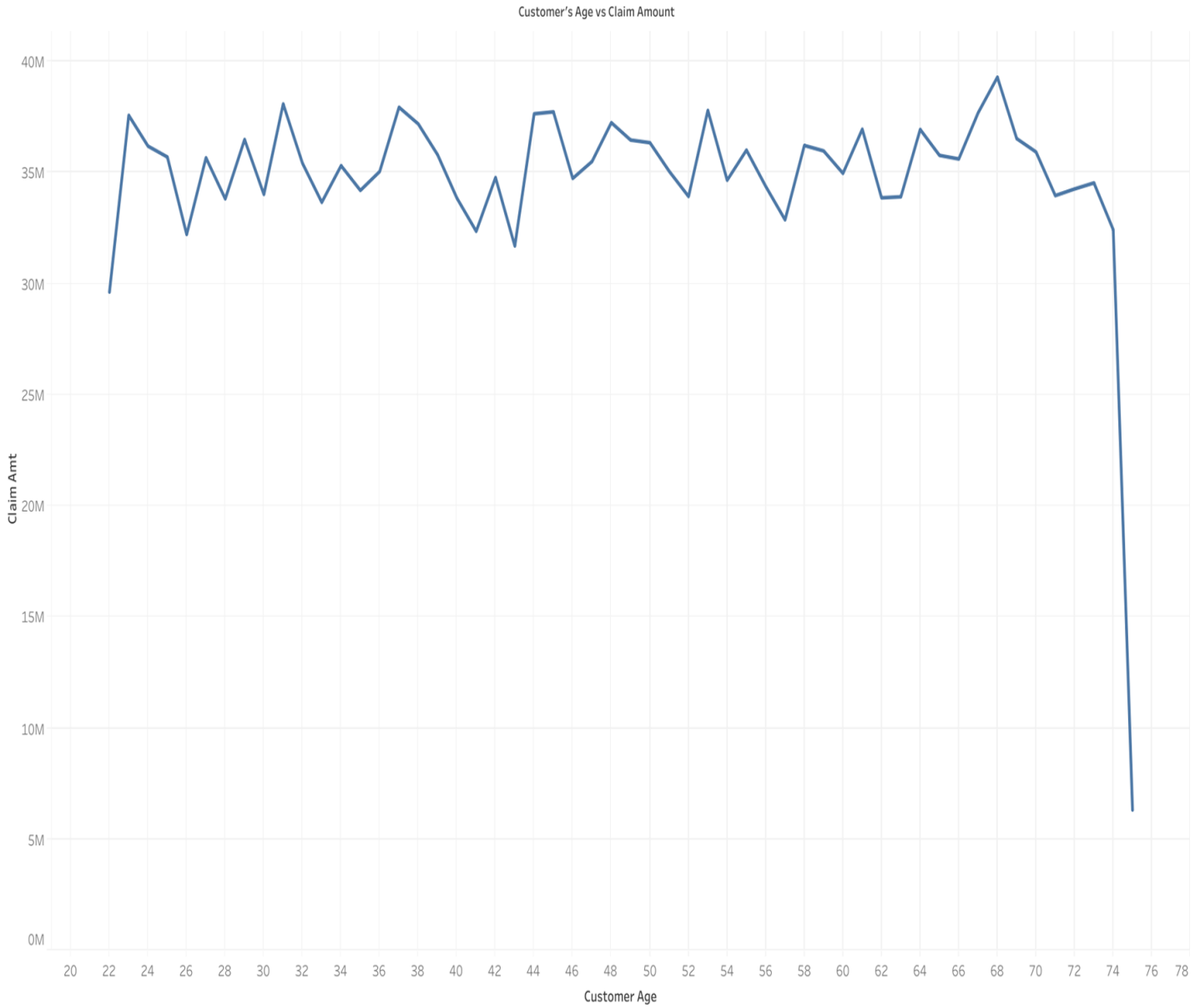
Interpretation of Findings – Claim Amt vs Car Age

- **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** (12-40 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



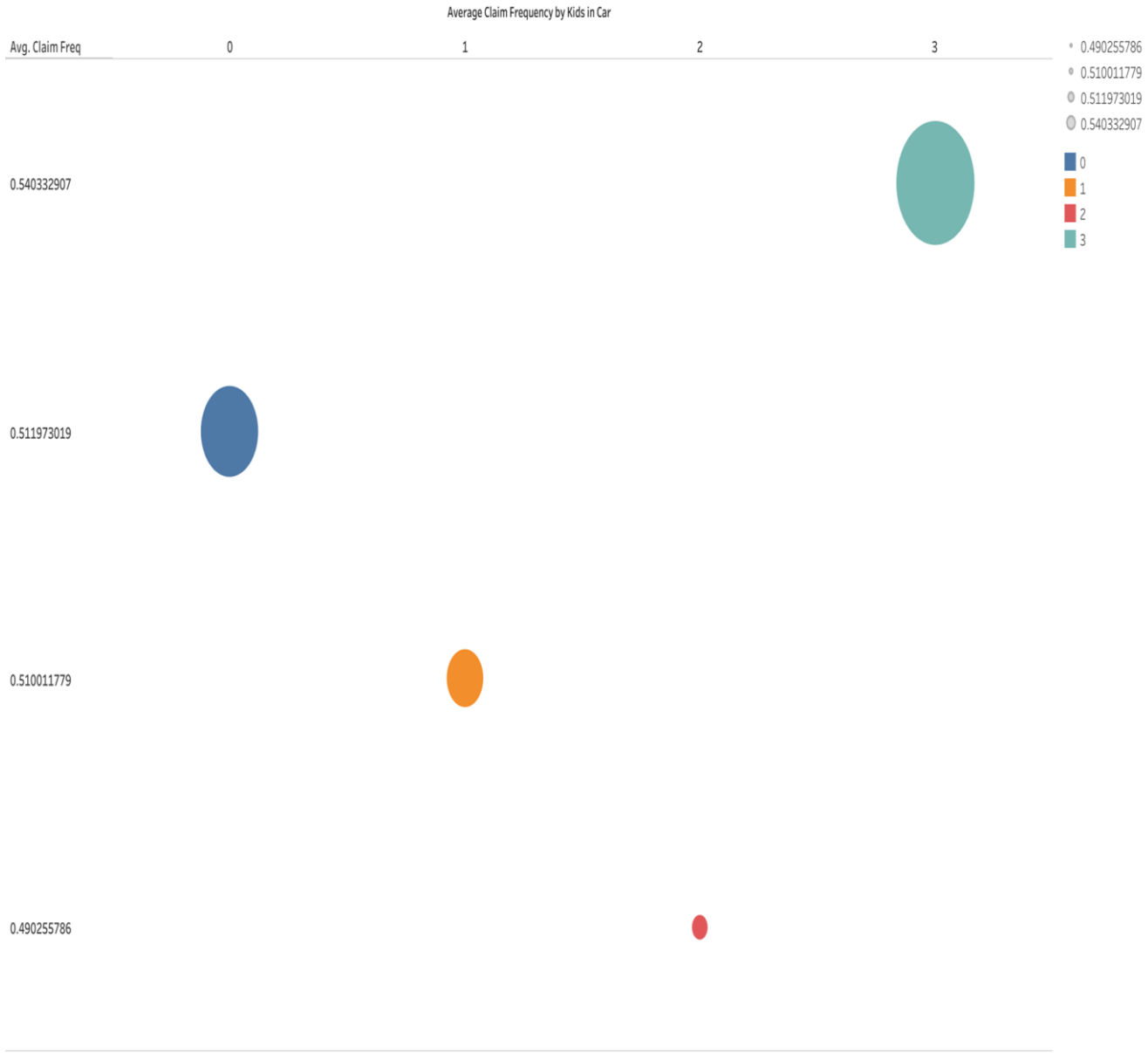
Interpretation of Findings – Claim Amt vs Client Age

- **Young Customers** (20-35 years): The average claim amount for customers in this age group is relatively high, fluctuating slightly around the range of 29M to 40M. This could be due to factors such as driving habits, car type, or insurance coverage.
- **Middle-aged Customers** (35-70 years): The average claim amount remains relatively stable for customers in this age range. This could suggest that middle-aged customers have consistent driving patterns and car ownership.
- **Older Customers** (70+ years): There is a drastic drop in the average claim amount for customers aged above approximately 70. This could be because older customers might drive less frequently, own less expensive cars, or have lower insurance coverage



Interpretation of Findings – Claim Freq vs Kids

- 0 Kids: Cars with no kids have an average claim frequency of **0.5197**. This suggests that drivers without kids in the car tend to have a moderate number of claims.
- 1 Kid: Cars with one kid have a slightly lower average claim frequency of **0.51001**. This could be due to increased responsibility leading to more cautious driving.
- 2 Kids: Cars with two kids show a lower average claim frequency of **0.49025**. The presence of more kids in the car might not significantly increase the claim frequency compared to having one kid.
- **3 Kids**: Cars with three kids have the highest average claim frequency of 0.5403. This suggests that having more kids in the car leads to more claims, possibly due to increased distraction or the need for larger, potentially more accident-prone vehicles.



Recommendations

Risk Assessment: Consider the car make, customer's education background, marital status, number of kids in the car, and car age when assessing the risk profile of a customer. These factors have been shown to significantly influence the claim amount and frequency.

Premium Calculation: Adjust the insurance premiums based on the risk factors identified. For instance, higher premiums could be charged for insuring middle-aged cars and cars owned by individuals with certain education backgrounds or marital statuses due to the higher average claim amounts.

Customer Segmentation: Segment customers based on these risk factors for more targeted marketing and customer service. For example, different insurance packages could be offered to customers based on their marital status or the number of kids they have in the car.

Claim Prevention: Implement claim prevention measures targeting the high-risk groups identified. This could include safe driving programs, regular vehicle check-ups, or incentives for using advanced safety features.

Policy Terms: Review the terms of the insurance policies for the high claim frequency groups. Consider whether the coverage provided is appropriate given the claim frequency and amounts.

Thank You

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