Splendor Analytics Insurance Data Analysis Project

Project Overview

Splendor Analytics Insurance is a company specializing in offering a variety of insurance products to its customers. The company's portfolio includes auto insurance, which covers losses or damages related to vehicles. The provided dataset contains anonymized information about the policyholders, their vehicles, and their claim histories. The goal of this project is to analyze this dataset to uncover insights that can help Splendor Analytics Insurance improve its services, optimize premiums, and reduce claim costs.

Splendor Analytics Insurance aims to enhance its auto insurance division by leveraging data analysis to:

- Identify patterns in claim frequencies and amounts.
- Understand the demographics and characteristics of high-risk and low-risk policyholders.
- Optimize premium pricing models based on risk factors.
- Develop targeted marketing strategies to attract and retain customers.

Data Dictionary

Columns	Description
ID	Unique identifier for the policyholder
Birthdate	Birthdate of the policyholder
Marital Status	Marital status of the policyholder (Single, Married, etc.)
Car Use	Purpose of car use (Private, Commercial)
Gender	Gender of the policyholder (Male, Female)
Kids Driving	Number of kids of the policyholder who are driving
Parent	Whether the policyholder is a parent (Yes, No)
Education	Education level of the policyholder (High School, Bachelors, etc.)
Car Make	Make of the policyholder's car
Car Model	Model of the policyholder's car
Car Color	Color of the policyholder's car
Car Year	Year of the policyholder's car
Claim Freq	Frequency of claims made by the policyholder

Coverage Zone	Area of coverage (Highly Urban, Urban, Suburban, Rural, Highly Rural)
Claim Amt	Amount claimed by the policyholder
Household Income	Household income of the policyholder

Methodology

To analyze the relationship between age and insurance claims, a bar chart was utilized to visualize claim frequency and claim amount across different age groups.

Insights

Based on the analysis:

- **Claim Frequency**: Younger age groups (22-31) exhibit higher claim frequencies compared to middle-aged groups (42-51, 52-61).
- **Claim Amount**: Older age groups (62-71, 72-75) show lower claim frequencies but higher claim amounts, potentially due to higher repair costs associated with aging vehicles.

Actionable Recommendations

To optimize insurance products and services based on these insights, the following recommendations are proposed:

1. **Tailor Insurance Products for Younger Age Groups (22-31)**:
   o Develop youth-oriented insurance packages that cater to the specific needs and risk profiles of younger policyholders.
   o Promote proactive risk management and safe driving initiatives among this demographic.
2. **Enhance Coverage Options for Older Age Groups (62-75)**:
   o Provide comprehensive coverage options that address the higher repair costs typically associated with older vehicles.
   o Ensure that insurance products for older policyholders include benefits that align with their unique needs and usage patterns.
3. **Implement Personalized Customer Engagement Strategies**:
   o Use demographic insights to personalize customer interactions and communications.
   o Develop targeted marketing campaigns that resonate with different age groups based on their insurance behavior and preferences.

Methodology

To analyze the relationship between car make and insurance claims, a text table was employed to visualize claim frequency and claim amount across different car makes.

Insights

Based on the analysis:

- **Claim Frequency and Amount**:
    - **High Claim Frequencies and Amounts**: Ford and Chevrolet owners have the highest claim frequencies and claim amounts.
    - **Low Claim Frequencies and Amounts**: Volkswagen and Mercedes-Benz show lower claim frequencies and amounts.

Actionable Recommendations

To optimize insurance products and services based on these insights, the following recommendations are proposed:

1. **Develop Specialized Insurance Plans for Ford and Chevrolet Owners**:
    - Design insurance plans tailored to the specific needs and risk profiles of Ford and Chevrolet owners.
    - Offer enhanced coverage options and benefits that cater to the frequent and higher claim amounts associated with these car makes.
2. **Review and Streamline Insurance Options for Volkswagen and Mercedes-Benz Owners**:
    - Evaluate existing insurance options for Volkswagen and Mercedes-Benz owners to ensure they are cost-effective and provide adequate coverage.
    - Streamline insurance offerings to sustain lower claim frequencies and amounts for these car makes, potentially adjusting premiums and coverage levels accordingly.

Methodology

A bar chart was utilized to visualize factors indicative of high-risk policyholders.

Insights

Based on the analysis:

- **Household Income and Claim Amounts**:
    - Higher household income correlates with higher claim amounts.
    - Lower-income households tend to have lower claim frequencies.
- **Coverage Zone and Claim Amounts**:

- o The Urban zone shows the highest claim amounts.
- o Policyholders in Urban areas typically have higher household incomes.

Actionable Recommendation

To optimize insurance products and services based on these insights, the following recommendation is proposed:

- **Focus on Urban Policyholders with Higher Household Incomes**:
    - o Develop tailored insurance products and risk assessment models specifically for urban policyholders with higher household incomes.
    - o Customize coverage options and benefits to effectively manage higher claim amounts and meet the unique needs of this demographic segment.

Methodology

A bar chart was employed to visualize policyholders who make frequent claims.

Insights

Based on the analysis:

- **Claim Frequency by Marital Status**:
    - o Single policyholders exhibit the highest claim frequency.
    - o Married policyholders follow with a lower but significant claim frequency.

Actionable Recommendation

To optimize claims handling efficiency and enhance customer satisfaction, the following recommendation is proposed:

- **Implement Targeted Customer Support and Claim Management Strategies**:
    - o Prioritize the development and implementation of proactive claim management strategies tailored for single policyholders, given their higher claim frequency.
    - o Extend these strategies to married policyholders to effectively manage their claims and enhance overall claims handling efficiency.

Methodology

A bar chart was used to visualize policyholders with high household income and low claim frequency.

Insights

Based on the analysis:

- **Claim Frequency by Education Level and Household Income**:
  - Policyholders with PhDs and Masters degrees exhibit the lowest claim frequency despite having high household incomes.
  - Bachelor's degree holders are identified as high-value customers due to their high income and relatively low claim frequency.

Actionable Recommendation

To capitalize on these insights and enhance customer engagement, the following recommendations are proposed:

- **Develop Specialized Insurance Packages for PhDs and Master's Degree Holders**:
  - Create tailored insurance products that cater to the specific needs and preferences of policyholders with PhDs and Masters degrees, focusing on their low claim frequency and higher household income demographics.
  - Offer enhanced coverage options and benefits that appeal to this demographic segment, ensuring comprehensive protection and personalized service.
- **Target Marketing Efforts Toward Bachelor's Degree Holders**:
  - Implement targeted marketing campaigns to effectively reach and engage with bachelor's degree holders, highlighting their status as high-value customers within the insurance market.
  - Showcase the benefits of insurance products that align with their lifestyle and financial expectations, aiming to strengthen brand loyalty and increase customer retention.

Methodology

A bar chart was utilized to visualize policyholders who make frequent claims.

Insights

Based on the analysis:

- **Claim Frequency by Marital Status**:
  - Single policyholders exhibit the highest claim frequency.
  - Married policyholders follow with a lower but significant claim frequency.

Actionable Recommendation

To enhance claims handling efficiency and improve customer satisfaction, the following actionable recommendation is proposed:

- **Implement Targeted Customer Support and Proactive Claim Management Strategies**:
  - o Prioritize the development and implementation of targeted customer support initiatives specifically designed for single policyholders, given their higher claim frequency.
  - o Extend these proactive strategies to married policyholders to effectively manage their claims and enhance overall claims handling efficiency.

Methodology

A bar chart was used to visualize car usage by marital status.

Insights

Based on the analysis:

- **Car Usage by Marital Status**:
  - o Single policyholders predominantly use their cars for private purposes, showing the highest ownership in this category compared to other marital statuses.

Actionable Recommendation

To optimize insurance offerings and enhance customer satisfaction, the following actionable recommendation is proposed:

- **Target Single Policyholders with Private Car Usage**:
  - o Develop customized insurance plans specifically tailored to single policyholders who primarily use their cars for private purposes.
  - o Ensure these insurance plans offer comprehensive coverage options that align closely with their usage patterns and lifestyle needs.

Methodology

A bar chart was used to visualize claim amount and frequency across coverage zones.

Insights

Based on the analysis:

- **Claim Frequency and Amount by Coverage Zone**:
  - o Suburban and Urban zones exhibit both the highest claim frequency and claim amounts compared to other coverage zones.

Actionable Recommendation

To optimize insurance offerings and mitigate risks effectively, the following actionable recommendation is proposed:

- **Enhance Risk Management and Insurance Offerings for Suburban and Urban Zones**:
  - Develop and implement targeted risk management strategies specifically tailored for policyholders residing in Suburban and Urban zones.
  - Customize insurance products and coverage options to address the higher claim frequencies and amounts observed in these zones, ensuring comprehensive protection and customer satisfaction.

Methodology

A bar chart was utilized to visualize regional trends in insurance claims.

Insights

Based on the analysis:

- **Claim Frequencies and Amounts by Region**:
  - Urban areas exhibit significantly lower claim frequencies compared to suburban and rural areas.
  - Despite lower claim frequencies, urban areas show slightly higher average claim amounts.

Actionable Recommendation

To optimize marketing strategies and claims management processes, the following actionable recommendation is proposed:

- **Targeted Marketing Efforts in Suburban and Rural Areas**:
  - Focus marketing efforts on suburban and rural areas to address higher claim frequencies observed in these regions.
  - Develop targeted campaigns that emphasize the importance of comprehensive coverage and risk management tailored to the specific needs of suburban and rural policyholders.
- **Optimize Claims Management in Urban Areas**:
  - Enhance claims management processes and capabilities in urban areas to efficiently handle potentially higher-value claims.
  - Invest in technology and training to streamline claims processing and ensure prompt and accurate settlements for urban policyholders.

Methodology

A bar chart was used to visualize policyholders who have kids driving.

Insights

Based on the analysis:

- **Claim Amounts by Marital Status and Number of Kids Driving**:
  - Married policyholders with 1-3 kids driving show higher claim amounts.
  - Divorced policyholders with 1 kid driving also exhibit high claim amounts.

Actionable Recommendation

To address specific risk profiles and enhance customer satisfaction, the following actionable recommendation is proposed:

- **Develop Targeted Insurance Packages**:
  - Create specialized insurance packages tailored for married policyholders with 1-3 kids driving.
    - Focus on offering comprehensive coverage options that cater to the increased risk associated with having multiple kids driving.
  - Tailor insurance offerings for divorced policyholders with 1 child driving to address their unique needs and potential higher claim amounts.
    - Customize insurance plans to provide adequate coverage and support for single-parent households facing specific driving-related risks.

Methodology

A bar chart was used to visualize claim frequency and amount affected by kids driving.

Insights

Based on the analysis:

- **Impact of Kids Driving on Claim Frequency and Amounts**:
  - Kids who are not driving show higher claim frequency and claim amounts compared to those who are driving.

Actionable Recommendation

To optimize risk management and insurance products, the following actionable recommendation is proposed:

- **Implement Targeted Risk Management Strategies**:
  - Develop and implement targeted risk management strategies that specifically address the impact of children who are not driving.
  - Focus on identifying and mitigating potential risks associated with non-driving children to reduce claim frequency and manage higher claim amounts effectively.