Project Report

Insurance Loss Analysis – A Data-Driven Overview

Project Overview:

This project aims to analyze the financial performance of an insurance company, focusing on its policies and claims data from 2014-2018. Despite being a prominent motor insurer during these years, the company faced consistent losses and eventually closed operations in 2019. The primary issue identified was that policyholders were claiming more money than the premiums collected, which led to a sustained financial imbalance. This report uses **Power BI** to uncover key trends and patterns, with a focus on analyzing the relationship between premiums and claims.

Data Preparation:

The dataset includes insurance policy and claims data for the years 2014-2018. Key data points include:

- Insurance policy premiums and claims

- Vehicle types and their respective claims

- Premium-to-claim ratios

- Claim amounts over time

Using **Power Query**, I performed data cleaning and transformation:

1. **Data Formatting**: Ensured proper date and numerical formats.

2. **Handling Missing Data**: Filled or removed missing or irrelevant data.

3. **Aggregation**: Aggregated data by year and other key dimensions for meaningful analysis.

Key Insights & Visualizations:

The dashboard presents several visualizations that highlight the company's financial struggles due to the core issue that claims often exceeded premiums:

1. **Financial Performance**:

   o **Total Premium vs. Claims Paid:** The total premiums collected were far lower than the claims paid out, leading to ongoing financial losses. This is a direct result of policyholders claiming more money than what was collected in premiums.

o **Premium to Claims Ratio**: The ratio remained around 44%, a dangerously low level, indicating that the company was paying out more in claims than it was earning from premiums.

2. **Trends Over Time**:

   o **Premium to Claims Ratio**: A chart showing the ratio turning positive (green) only in Q2 of 2018, but by then, the financial damage was already done.

   o **Cumulative Underwriting Losses**: Visualizing the cumulative underwriting losses over time, it became evident that the company was in a losing position as claims consistently outweighed premiums.

3. **Claims Data Analysis**:

   o **Who claims most?**: Visualizing the claims across different categories like **Agricultural**, **Private**, and **Ambulance**, which highlights the disproportion between the amount paid out in claims and the premiums collected in those sectors.

   o **Premium vs. Claim Averages**: A scatter plot showing how claims consistently outpaced premiums for most policy categories, confirming that people were claiming far more than the premiums they paid.

4. **Gender and Claims Insights**:

   o **Policies Opened by Sex**: Insight into how policies were distributed across genders.

   o **Total Claims by Sex**: Comparing claim amounts between male and female policyholders, indicating a higher frequency of larger claims.

Technical Tools & Skills:

- **Power BI**: Used for creating interactive, insightful dashboards that visually represent the data.

- **Power Query**: Used to clean and prepare the dataset for analysis.

- **DAX (Data Analysis Expressions)**: Used for creating complex calculations and metrics like **Premium-to-Claims ratio**, average claims, and trends over time.

- **Data Visualization**: Utilized various chart types (bar, line, scatter) to present the imbalance between premiums collected and claims paid.

Conclusion:

This analysis reveals a critical issue faced by the insurance company: policyholders were claiming more money than the premiums they paid, leading to financial instability and eventual closure. The **Premium-to-Claims ratio**, which remained dangerously low at around **44%**, highlights that the company's operational model was unsustainable.

By creating this interactive dashboard, I demonstrated how data visualization and analysis can uncover important trends, allowing for more informed decisions in risk management and premium pricing. The insights derived from this project can serve as valuable lessons for the insurance industry to ensure that claims do not exceed premiums in the future, preventing financial losses and business failure.