**Risk Management and Claims Analysis Dashboard**

**Project Overview**  
This project aims to provide a comprehensive risk management and insurance claims analysis solution, visualized through interactive Tableau dashboards. By analyzing claims data, the project highlights critical insights into high-risk clients, fraudulent activities, and trends in claims over time. The dashboards empower stakeholders to identify patterns, mitigate risks, and improve overall claims processing efficiency.

**Link to Project:**  
🔗 [Risk Management Dashboard on Tableau Public](https://public.tableau.com/app/profile/khushi.balar5591/viz/risk_mangamnet/RiskManagementOverview)

**Objective:**  
The primary goal is to deliver a data-driven visualization tool that enables insurance companies to:

* Detect high-risk clients and regions.
* Predict future claims trends.
* Identify and prevent fraudulent claims.
* Gain insights into claims costs and distribution.

**Data and Tools Used:**

* **Dataset:** Insurance claims data (Excel format)
* **Tools:** Python (Data Cleaning and Preprocessing), Tableau Public (Visualization and Dashboarding)

**Methodology:**

1. **Data Cleaning (Python - Jupyter Notebook):**
   * Addressed missing values through imputation techniques (e.g., unknown values for ‘authorities\_contacted’).
   * Removed irrelevant fields such as 'insured\_zip' and 'policy\_number'.
   * Created calculated fields:
     + *Total Claims* (sum of injury, property, and vehicle claims)
     + *Days as Customer* (calculated from policy bind date to incident date)
     + *High-Risk Flag* (claims above the median)
   * Outliers were identified using box plots and capped at the 95th percentile.
2. **Visualization (Tableau Public):**
   * Developed multiple interconnected dashboards providing a holistic view of claims, client risks, and fraud detection.

**Dashboards Created:**

1. **Risk Overview (Executive Summary):**
   * *KPI Cards:* Total Policies, High-Risk Clients, Predicted Claims
   * *Visuals:*
     + Claims Trend (Line Chart with Forecasting)
     + High-Risk Client Map (Heatmap of Incident Locations)
2. **Client Risk Analysis:**
   * Drill-down into individual clients' risk profiles.
   * Bar chart visualization of risk scores categorized into low, medium, and high levels.
3. **Claims Analysis and Forecasting:**
   * *Visuals:*
     + Claim Types by Region (Stacked Bar Chart)
     + Claim Frequency by City (Bubble Chart)
   * Provides a breakdown of claim categories across states and cities.
4. **Fraud Detection and Suspicious Clients:**
   * Highlights fraudulent claims by incident type.
   * Lists top suspicious clients based on incident severity and claim amounts.
5. **Claims Cost Breakdown:**
   * *Visuals:*
     + Breakdown of claims by category over time.
     + Scatter plot visualizing claim costs across different incident types.

**Key Insights and Findings:**

* **High-Risk Areas and Clients:**  
  Certain states and cities show higher concentrations of high-risk clients and severe claims. These regions are flagged for additional monitoring.
* **Fraudulent Patterns:**  
  Multi-vehicle collisions and major property damage show the highest frequency of fraudulent claims.
* **Cost Trends:**  
  Claims related to vehicle theft and severe accidents significantly contribute to overall claim costs.
* **Predictive Analysis:**  
  The forecast indicates stable yet increasing claims, reinforcing the need for proactive risk mitigation strategies.

**Business Impact and Recommendations:**

* *Risk Mitigation:* Focus on preventive measures in high-risk areas to reduce claims and operational costs.
* *Fraud Prevention:* Implement targeted fraud detection protocols for claim categories with recurring suspicious patterns.
* *Operational Efficiency:* Allocate resources to regions with the highest claim volumes and enhance claims processing in fraud-prone areas.

**Conclusion:**  
This project successfully integrates data analysis and visualization, offering a valuable tool for risk management in the insurance sector. By utilizing Python for data preprocessing and Tableau for dashboard creation, the project provides actionable insights that can drive decision-making and operational improvements.