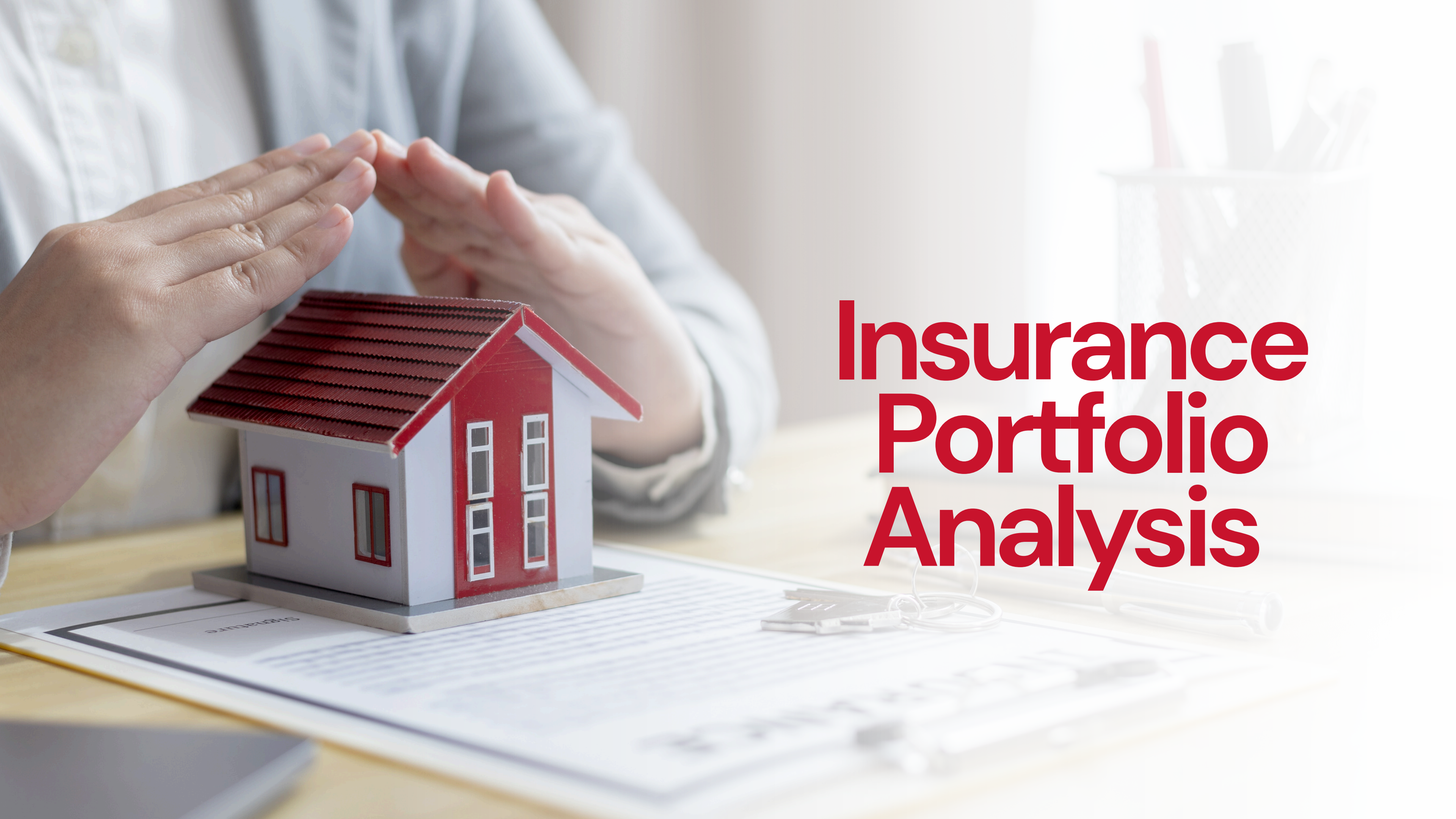# Insurance Portfolio Analysis

Project Objective

The objective of this project is to analyze an insurance company's customer portfolio, insurance revenues, paid claim amounts, and agent performance using SQL and Excel.

Within the scope of the project:

- Total insurance premiums and paid claims are analyzed.
- Profitability and risk levels are evaluated.
- Sales performance is compared across agents, branches, and regions.
- The most risky insurance products are identified.
- The results are visualized using Excel charts and dashboards.

These analyses aim to support better management decisions, risk reduction, and improved profitability.

Database Tables Used

CUSTOMERS
customer_id
full_name
gender
age
city
vehicle_type

AGENTS
agent_id
agent_name
branch
hire_date
region

POLICIES
policy_id
customer_id
agent_id
policy_type
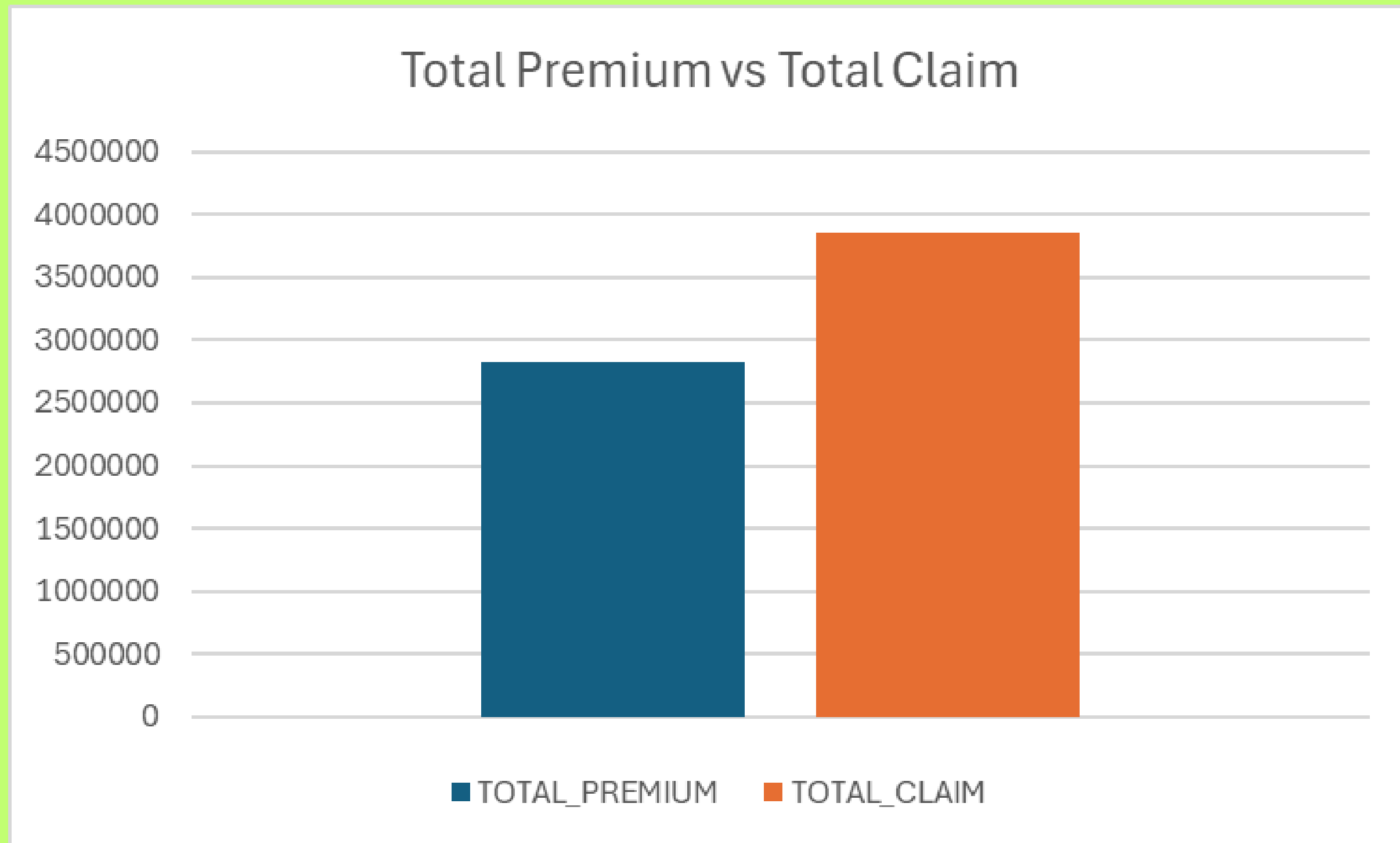start_date
end_date
premium_amount
coverage_amount

CLAIMS
claim_id
policy_id
claim_date
claim_amount
claim_reason
status

PAYMENTS
payment_id
policy_id
payment_date
amount
payment_method

Total Premium vs Total Claim

Total claims significantly exceed total collected premiums, indicating that the portfolio is loss-making overall. In other words, the company incurs approximately 136 AZN in costs for every 100 AZN of premium collected.

Yearly Profit Trend

Yearly Profit Trend

Although losses decreased from 2022 to 2023, they remained almost at the same level in 2024, indicating that the improvement has stalled. This suggests structural issues in the portfolio and that existing measures have not been effective.

Policy Status Distribution

Policy Status Distribution

- 350
- 339
- 311

■ Active ■ Cancelled ■ Expired
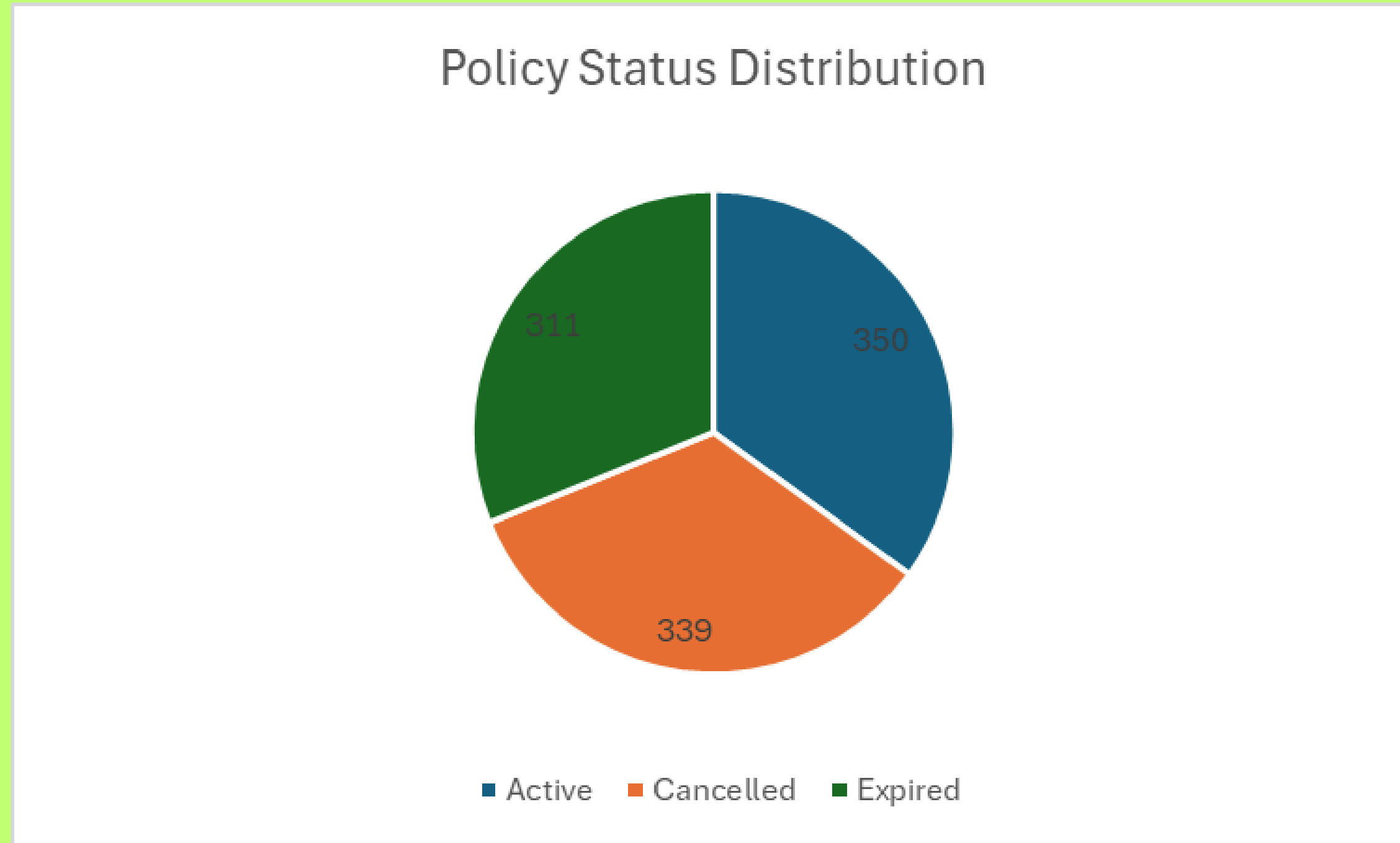
The number of active policies is very close to the number of cancelled and expired policies, which indicates weak customer retention.

Top 5 Agents by Policy Count

Top 5 Agents by Policy Count

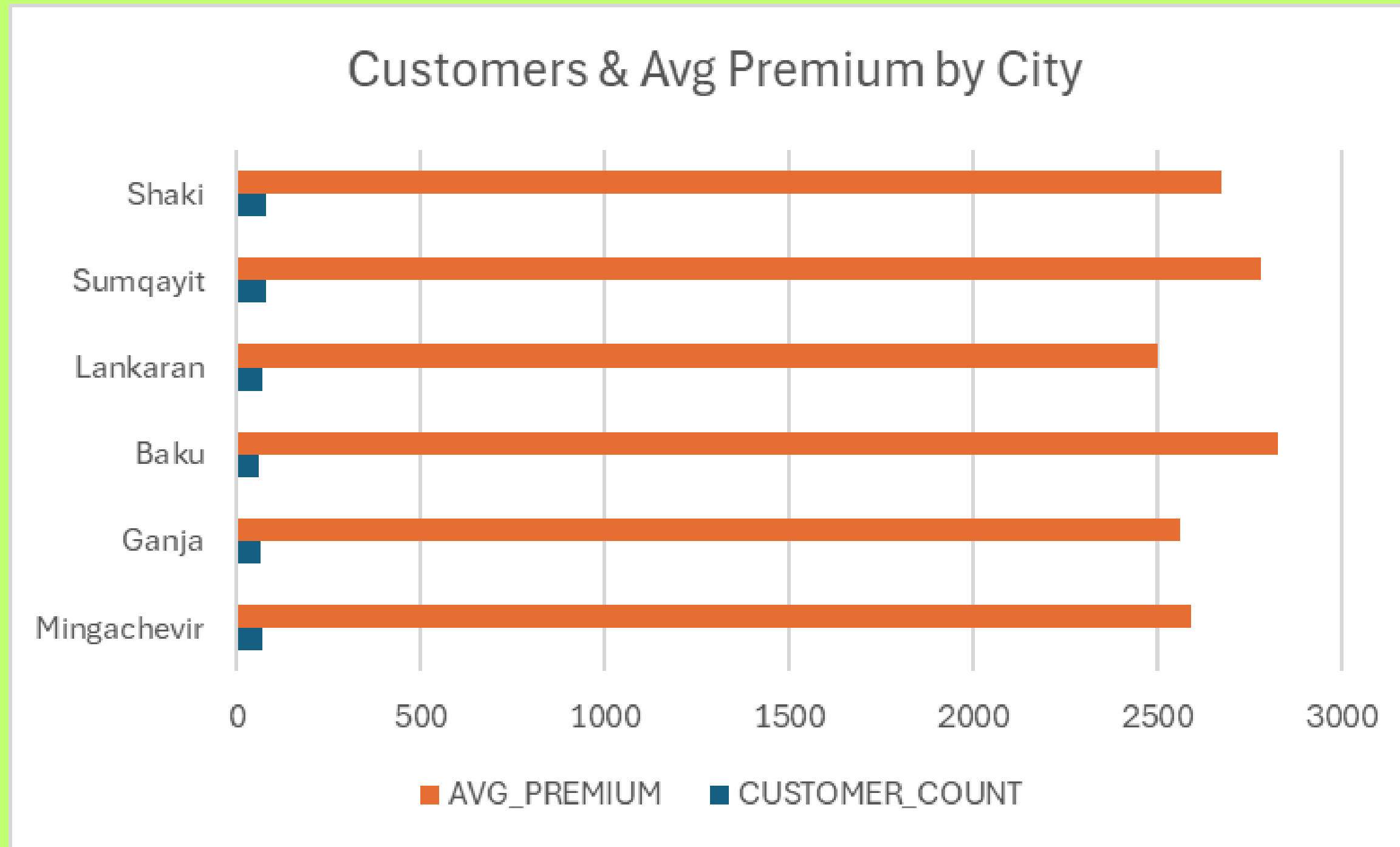|	Agent 49	Agent 11	Agent 16	Agent 70	Agent 52
	49	11	16	70	52
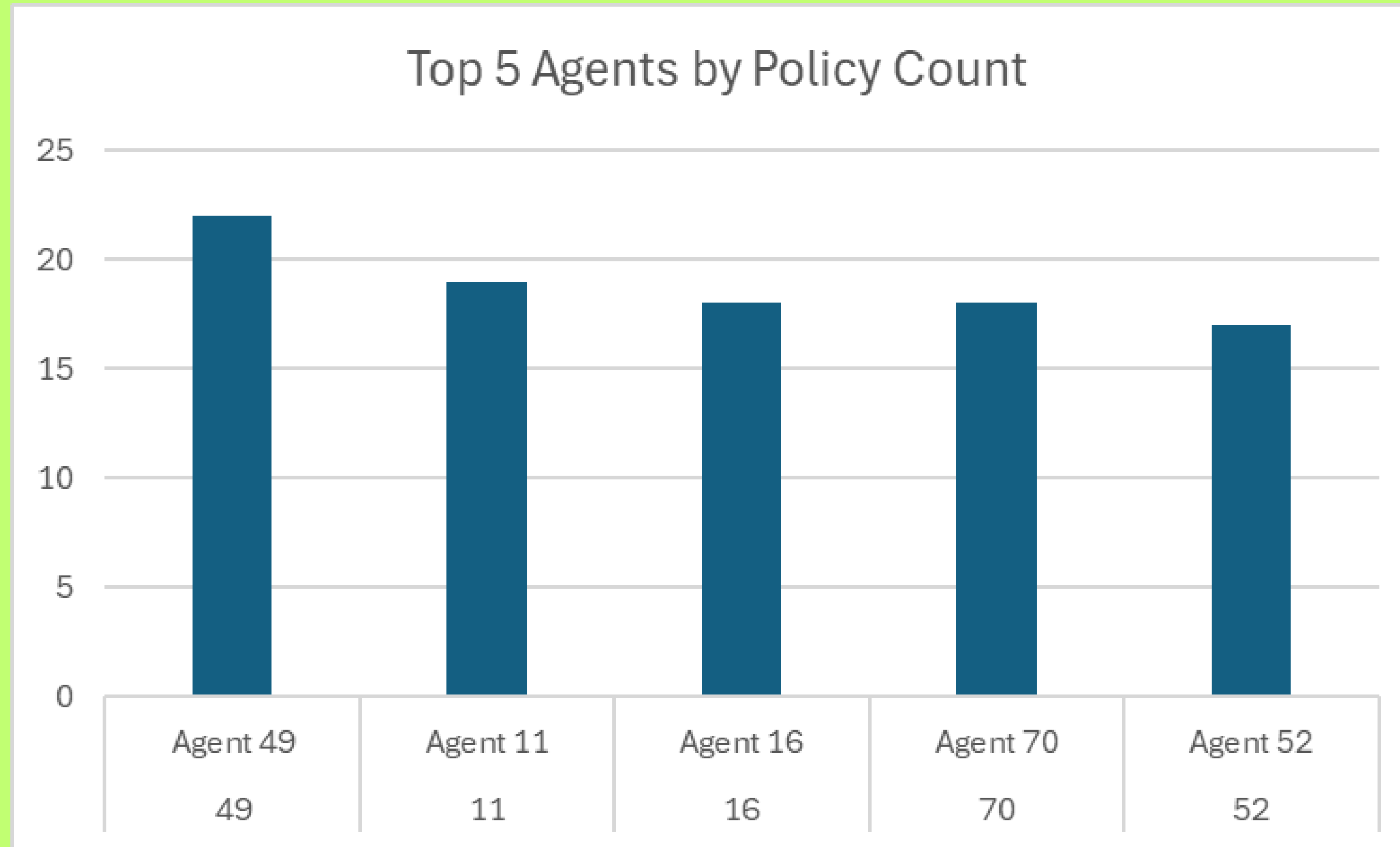
The top-selling agent having only 22 policies shows that sales are widely distributed among agents and that overall productivity is low.

Top 3 Branches by Premium

Top 3 Branches by Premium

|		
East	West	South
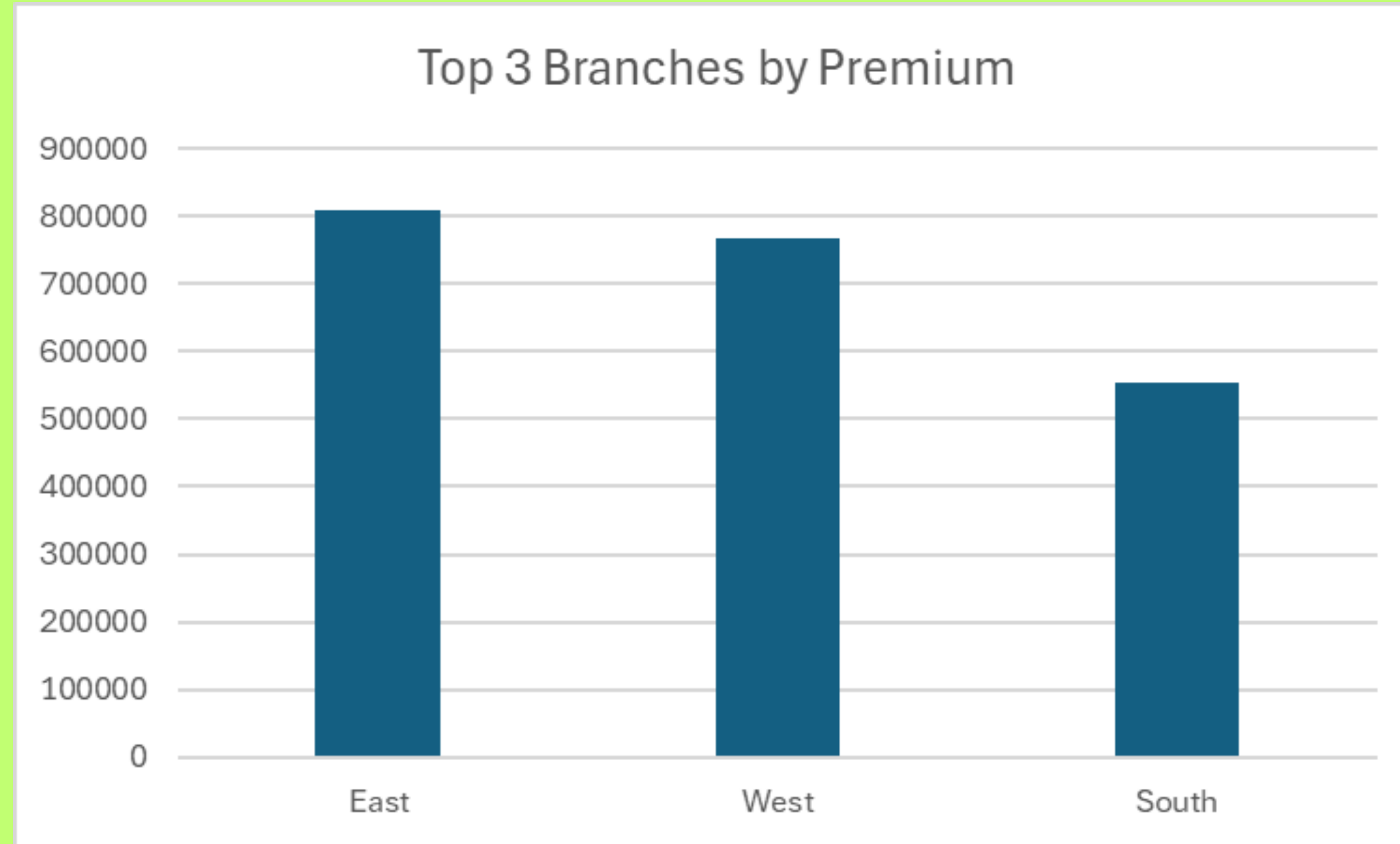
East, West, and South branches generate the highest premium volumes.
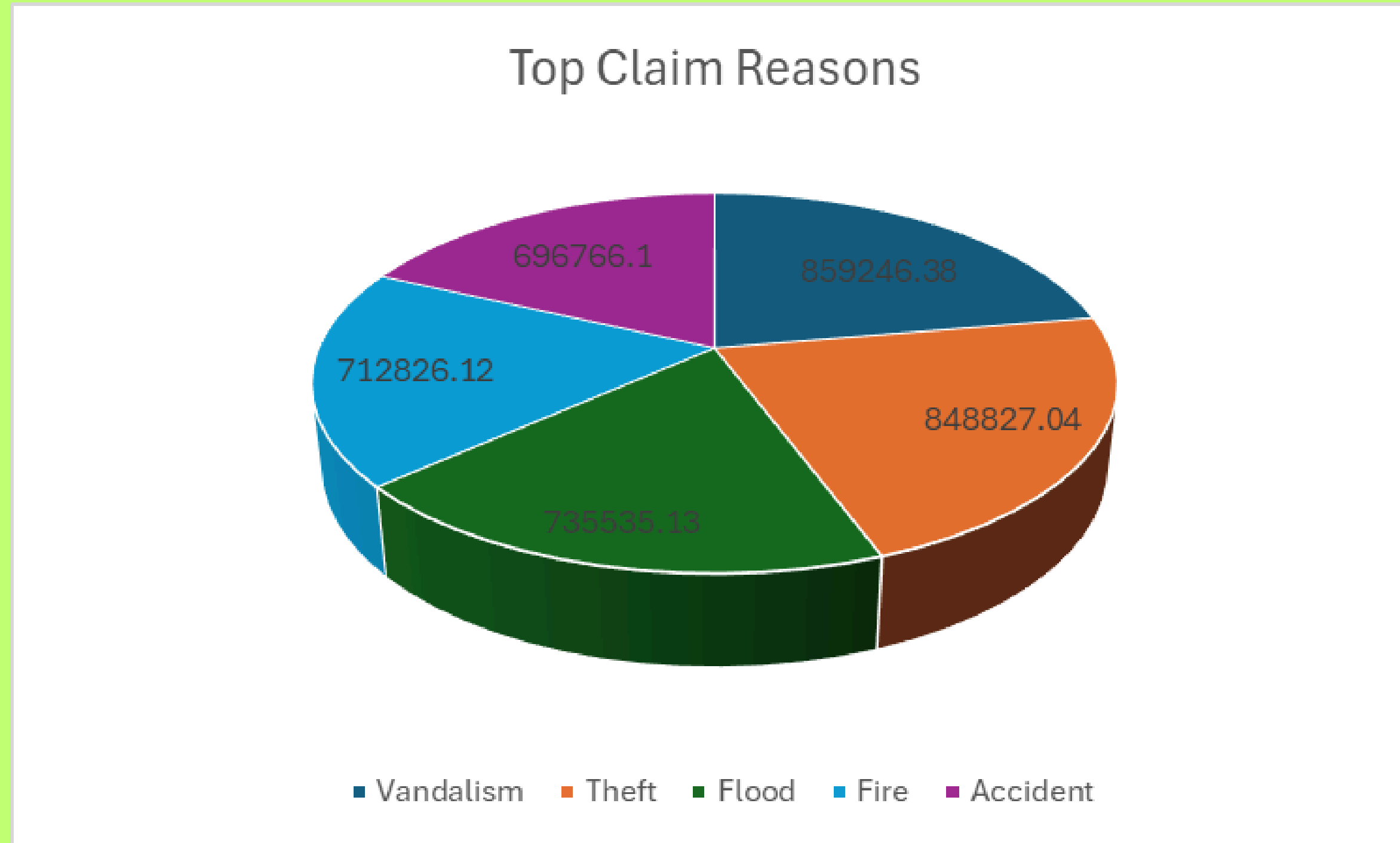
Customers & Avg Premium by City

Baku and Sumgayit have the highest average premiums but do not lead in customer count, indicating a limited customer base despite high pricing.Sumgayit and Shaki are more balanced in terms of both customer count and average premium.

# Avg Claim by Age Group

Avg Claim by Age Group
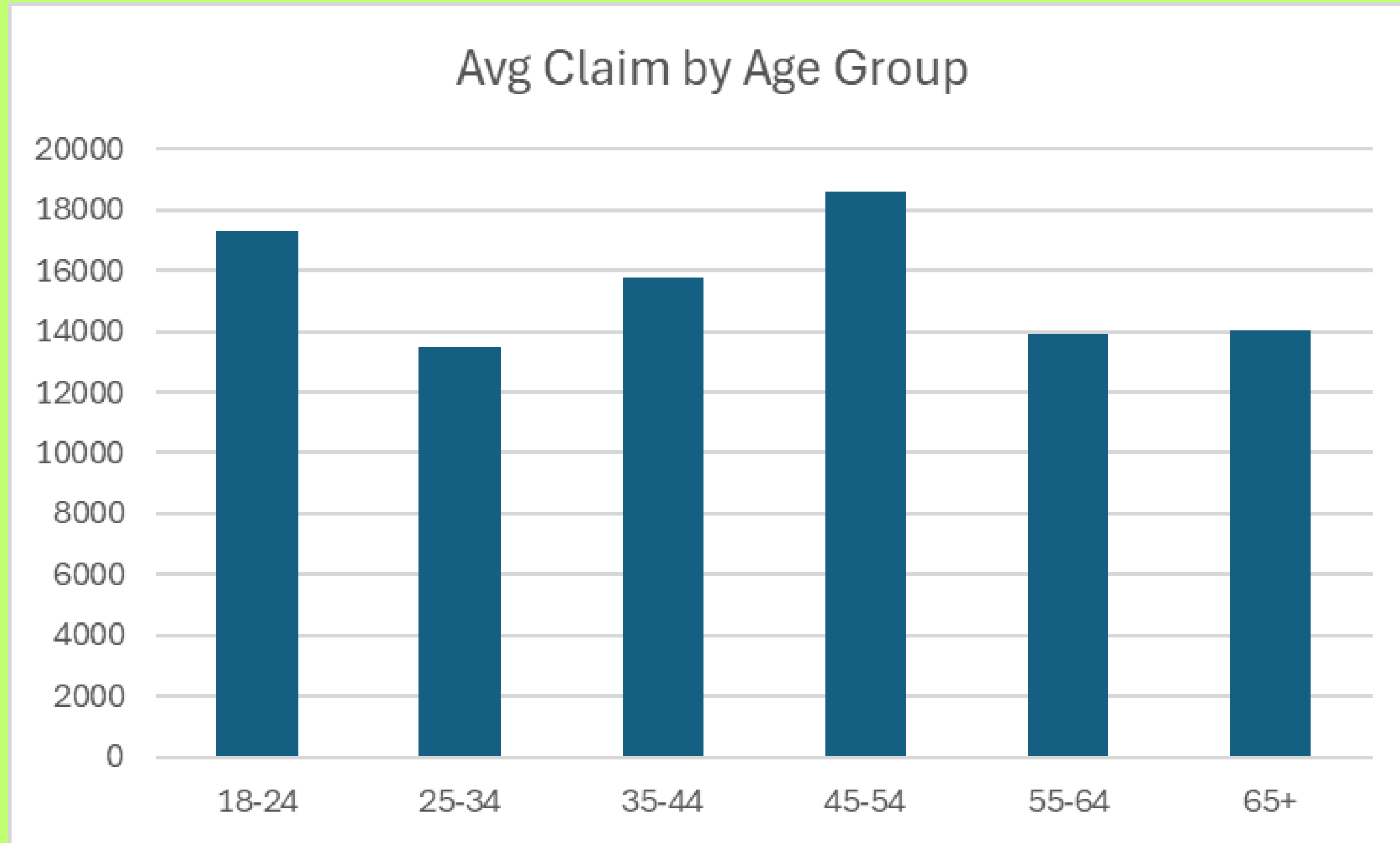
The 45–54 age group has the highest average claim amount, making it the riskiest age segment.
The 18–24 age group also shows high claim levels, while middle age groups are relatively more balanced.

Top Claim Reasons

Top Claim Reasons

696766.1 · 859246.38 · 848827.04 · 735535.13 · 712826.12

■ Vandalism   ■ Theft   ■ Flood   ■ Fire   ■ Accident

The largest portion of claim costs comes from Vandalism and Theft, indicating that losses are mainly driven by human-related risks. Although natural risks exist, their share in total losses is lower.

Risky Policy Types

Risky Policy Types

Health	
Compulsory	
Casco	

0.38 0.385 0.39 0.395 0.4 0.405 0.41 0.415
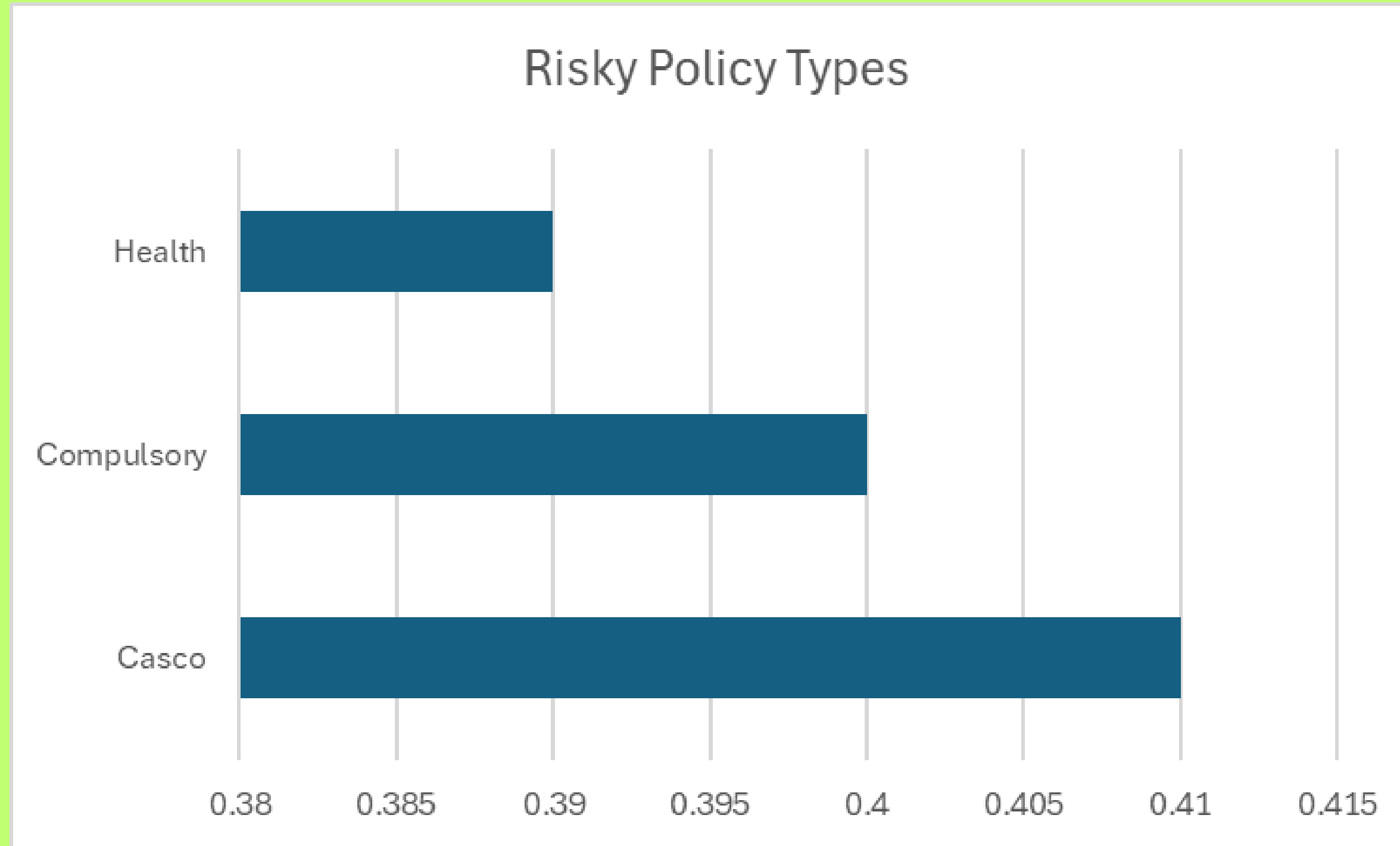
The insurance products with the highest risk levels are Casco, Health, and Compulsory.

Average Coverage for Active Policies

Average Coverage for Active Policies
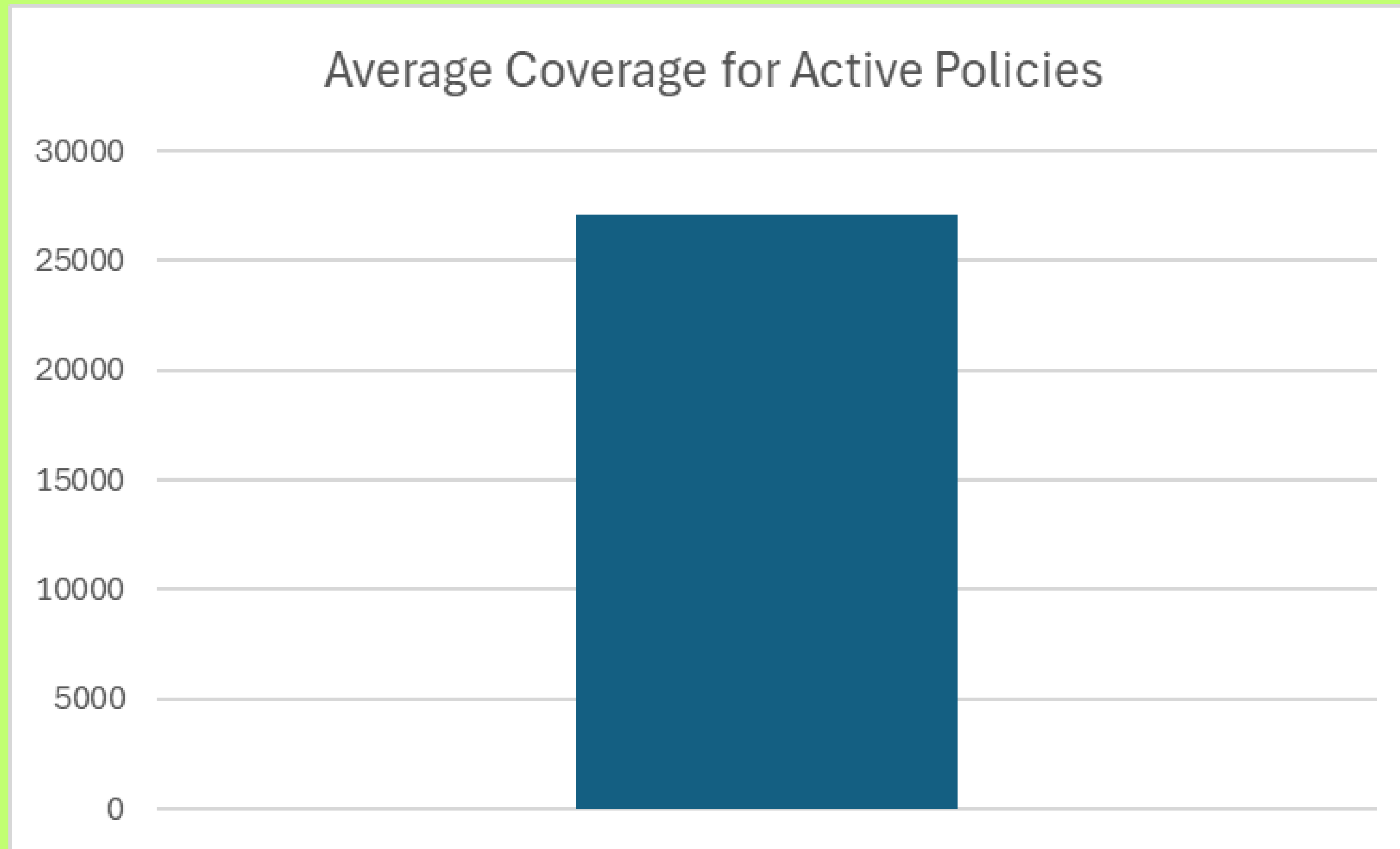
The average coverage amount for active policies is approximately 27,095.2 AZN, indicating high potential claim exposure.

Agent Performance: Premium vs Claim

Agent Performance: Premium vs Claim

■ TOTAL_PREMIUM ── TOTAL_CLAIM
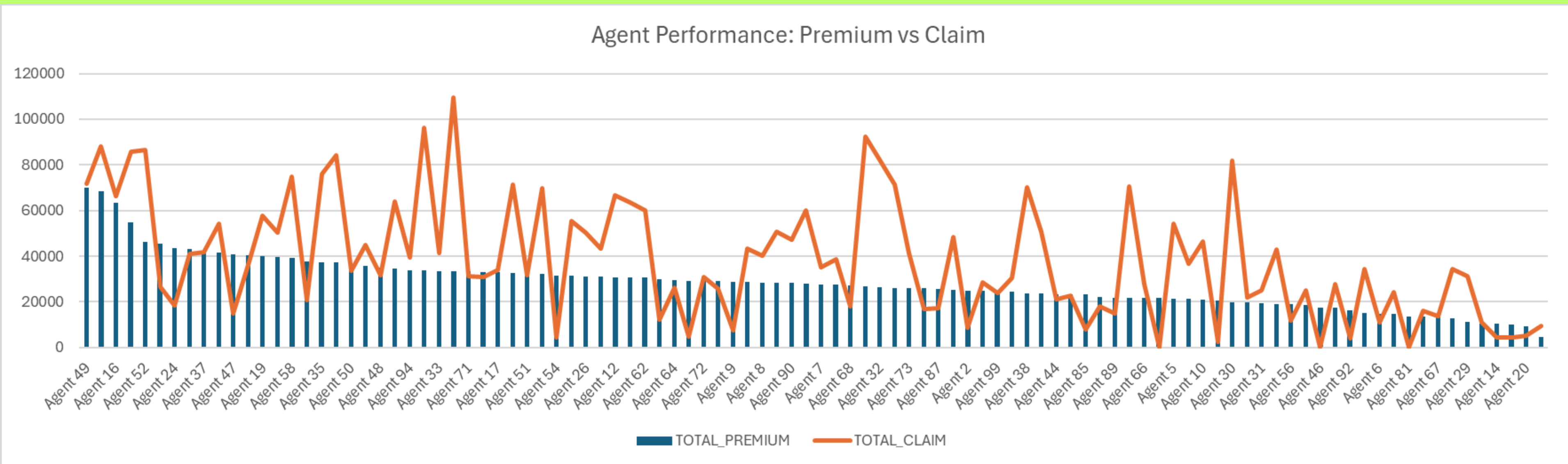
For the majority of agents, total claims exceed total premiums, meaning the portfolio is loss-making at the agent level.

Agent Customers & Avg Premium Title


Agent Customers & Avg Premium Title
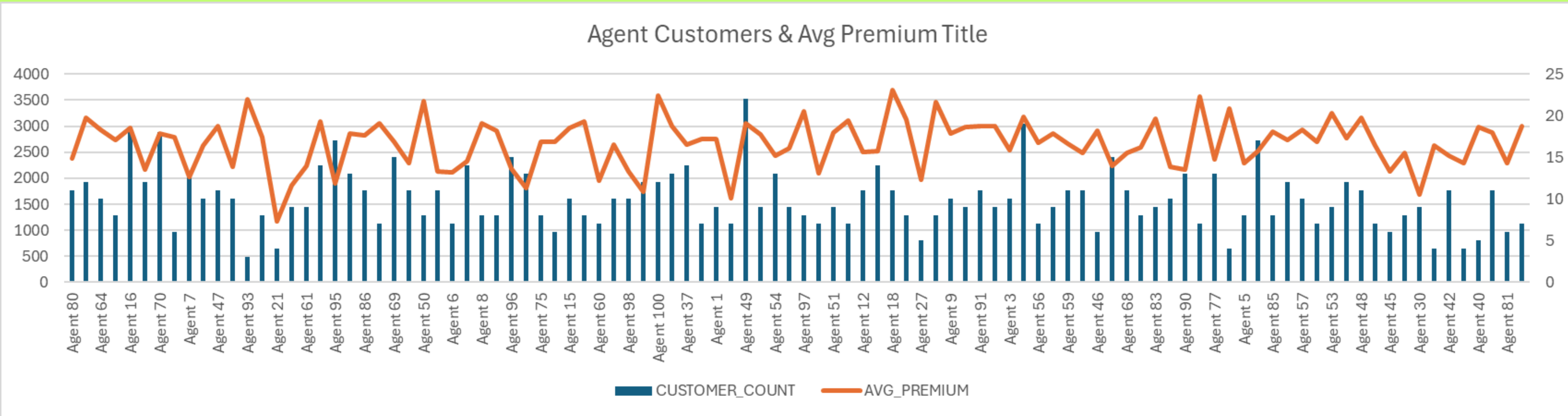
Average premium amounts vary significantly across agents; however, many agents with high average premiums serve a very small number of customers, increasing concentration risk.

Profitability % by Region

Profitability % by Region

- Ganja: -37.63
- Sumqayit: -36.78
- Lankaran: -32.73
- Baku: -37.35
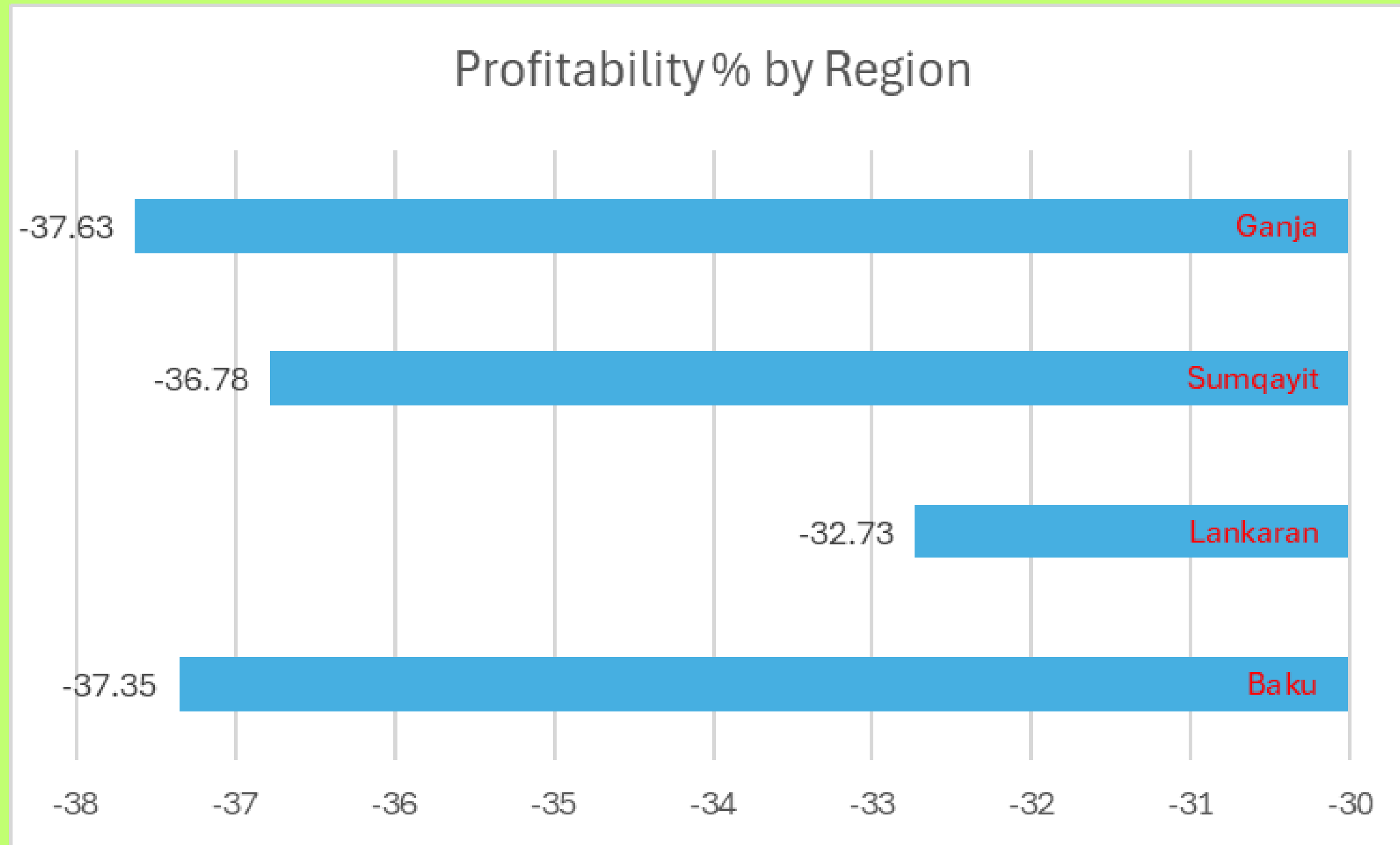
All regions have negative profitability percentages, meaning every region generates losses and no region is currently profitable.

Payment Method Share

Payment Method Share

355

323

322

■ Card   ■ Online   ■ Cash
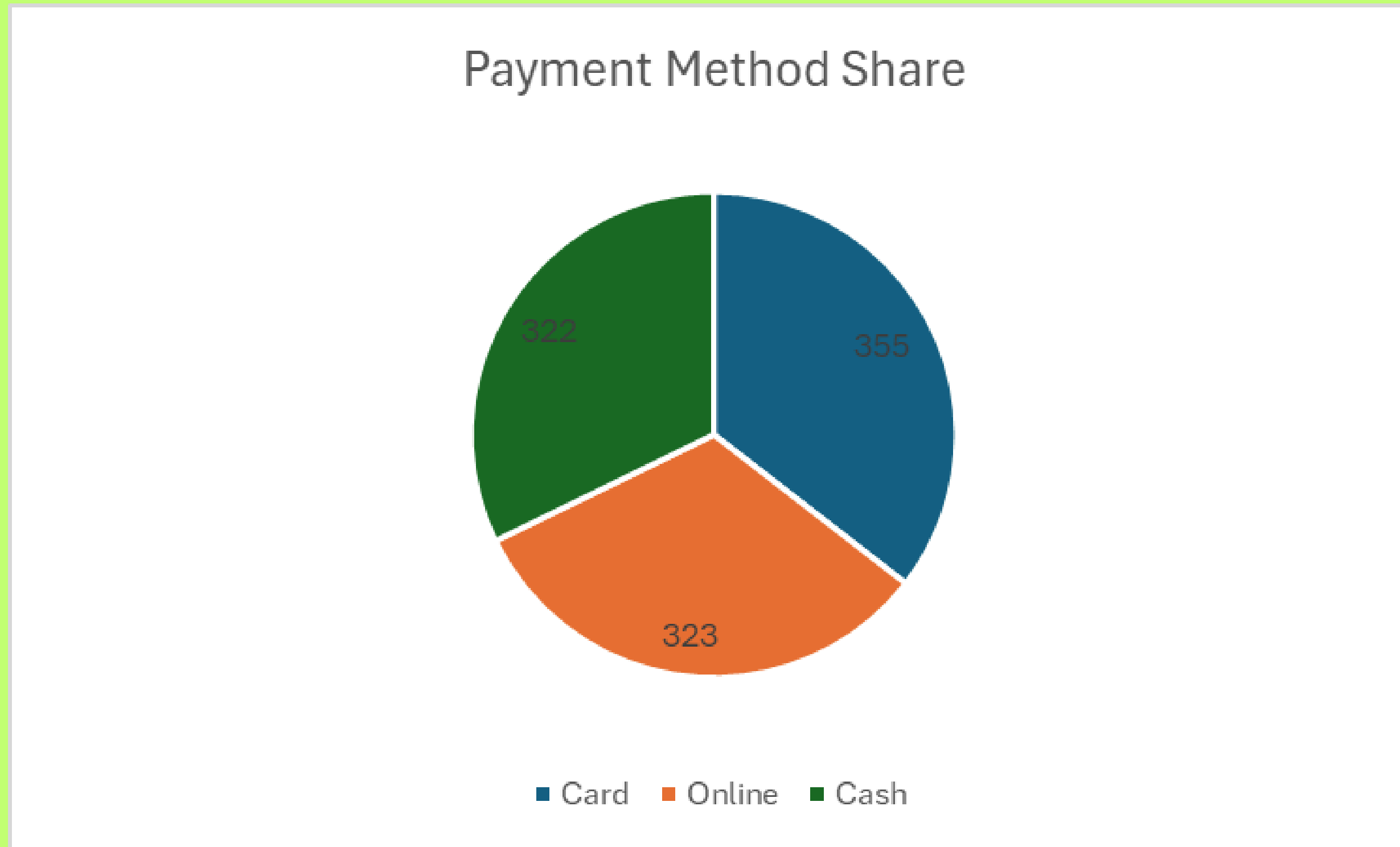
Payment methods are almost evenly distributed. The high share of Card and Online payments indicates strong potential for digital payment adoption.

Late Payment Percentage

Late Payment Percentage
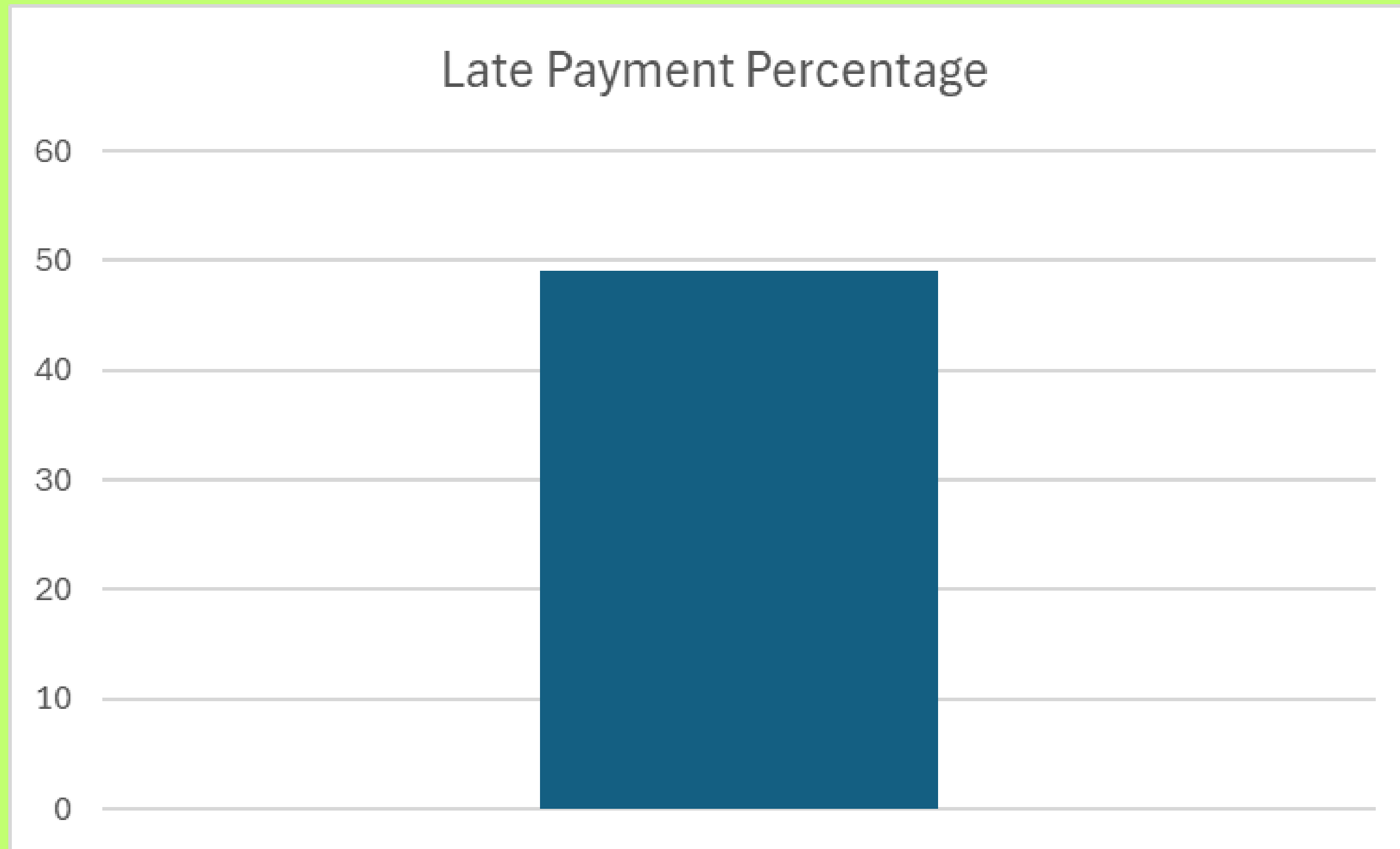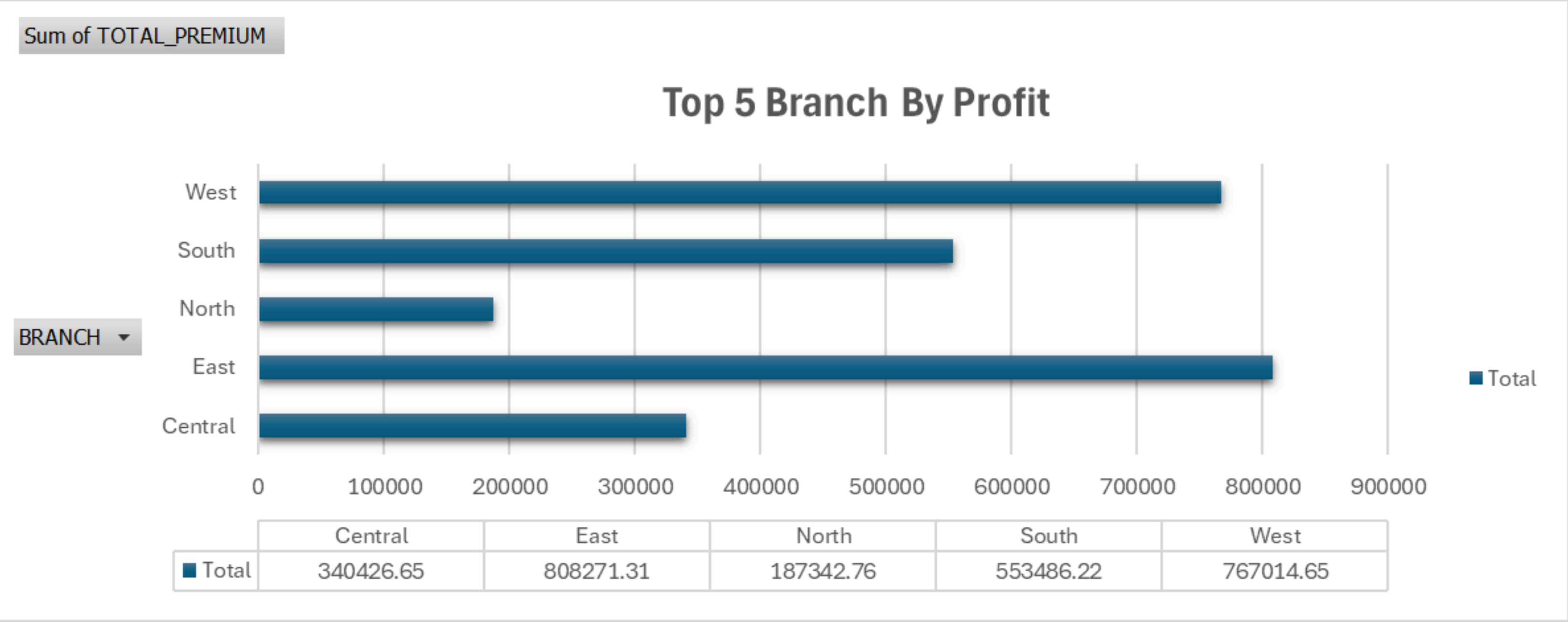
The late payment rate is extremely high at 49%, meaning nearly half of customers do not pay on time.

Avg Payment per Customer

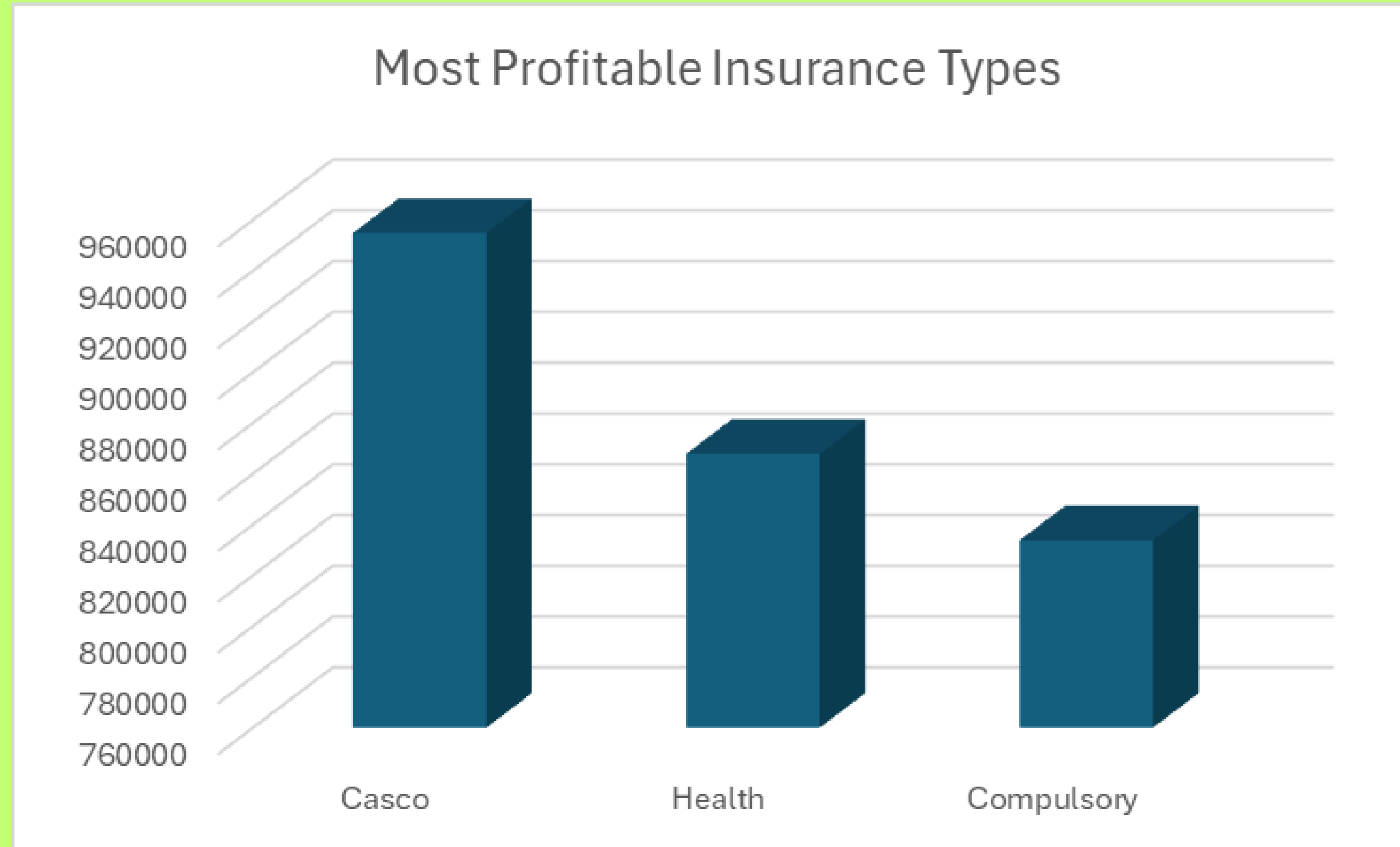Avg Payment per Customer

CUSTOMER_ID — AVG_PAYMENT
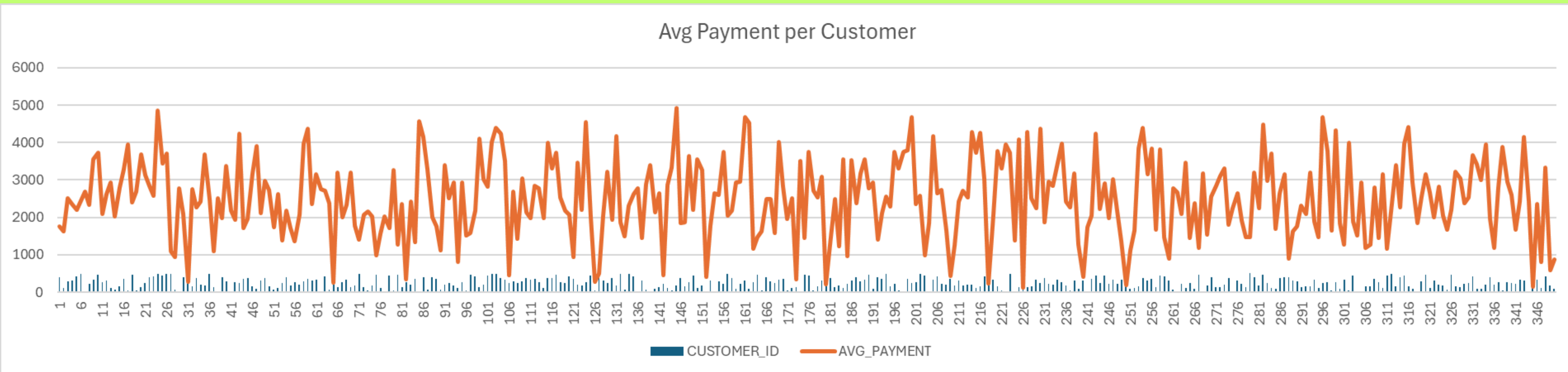
Average payment amounts vary widely across customers.

Top 5 Branch By Profit

Premiums are mainly concentrated in the East and West branches, while Central, North, and South branches lag behind.

Most Profitable Insurance Types

Most Profitable Insurance Types

	Casco	Health	Compulsory
960000			
940000			
920000			
900000			
880000			
860000			
840000			
820000			
800000			
780000			
760000			

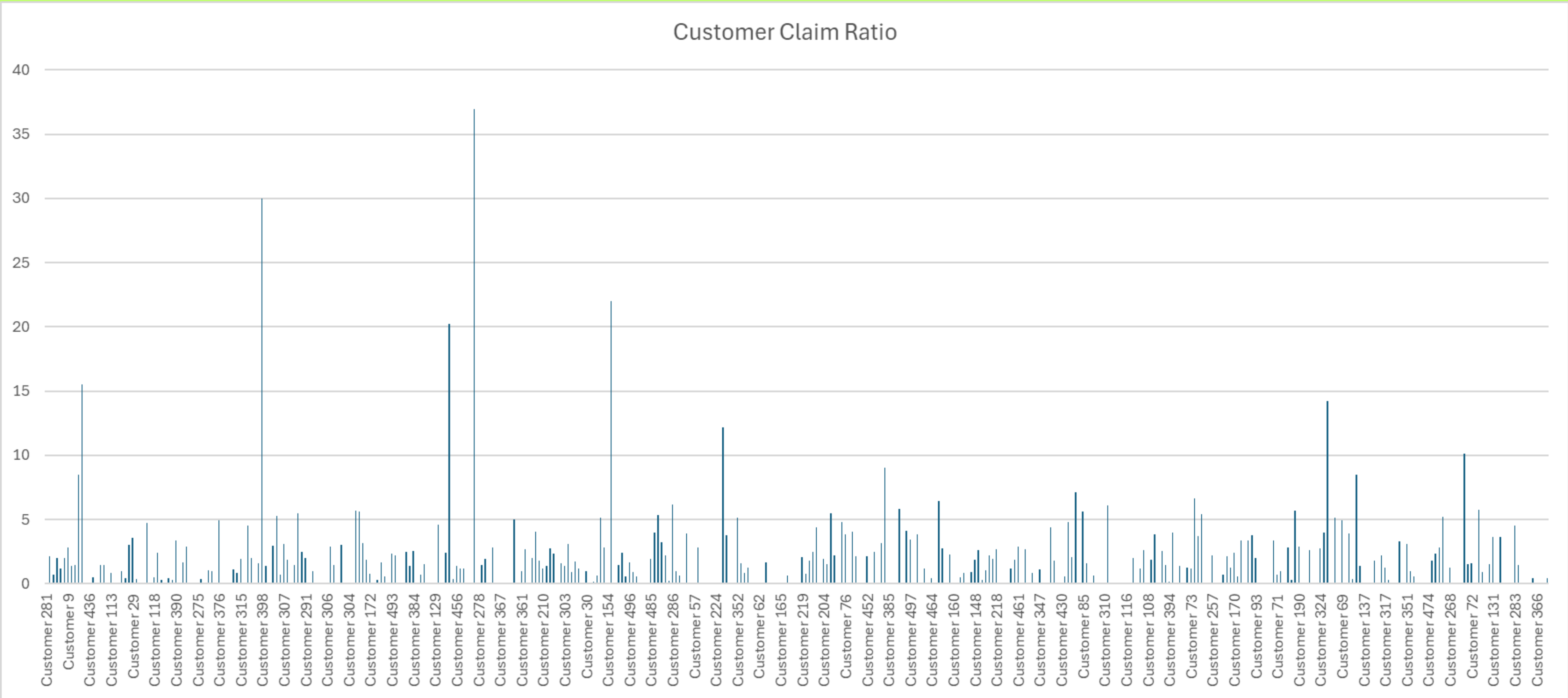**The largest share of premiums comes from Casco insurance, while Health and Compulsory have similar shares.**

Agent Profitability %

Agent Profitability %

The majority of agents have negative profitability percentages, and some agents generate very high levels of losses.

Customer Claim Ratio

Customer Claim Ratio

Most customers have claim ratios close to zero.

Claim Growth % (2023 vs 2024)

Claim Growth % (2023 vs 2024)
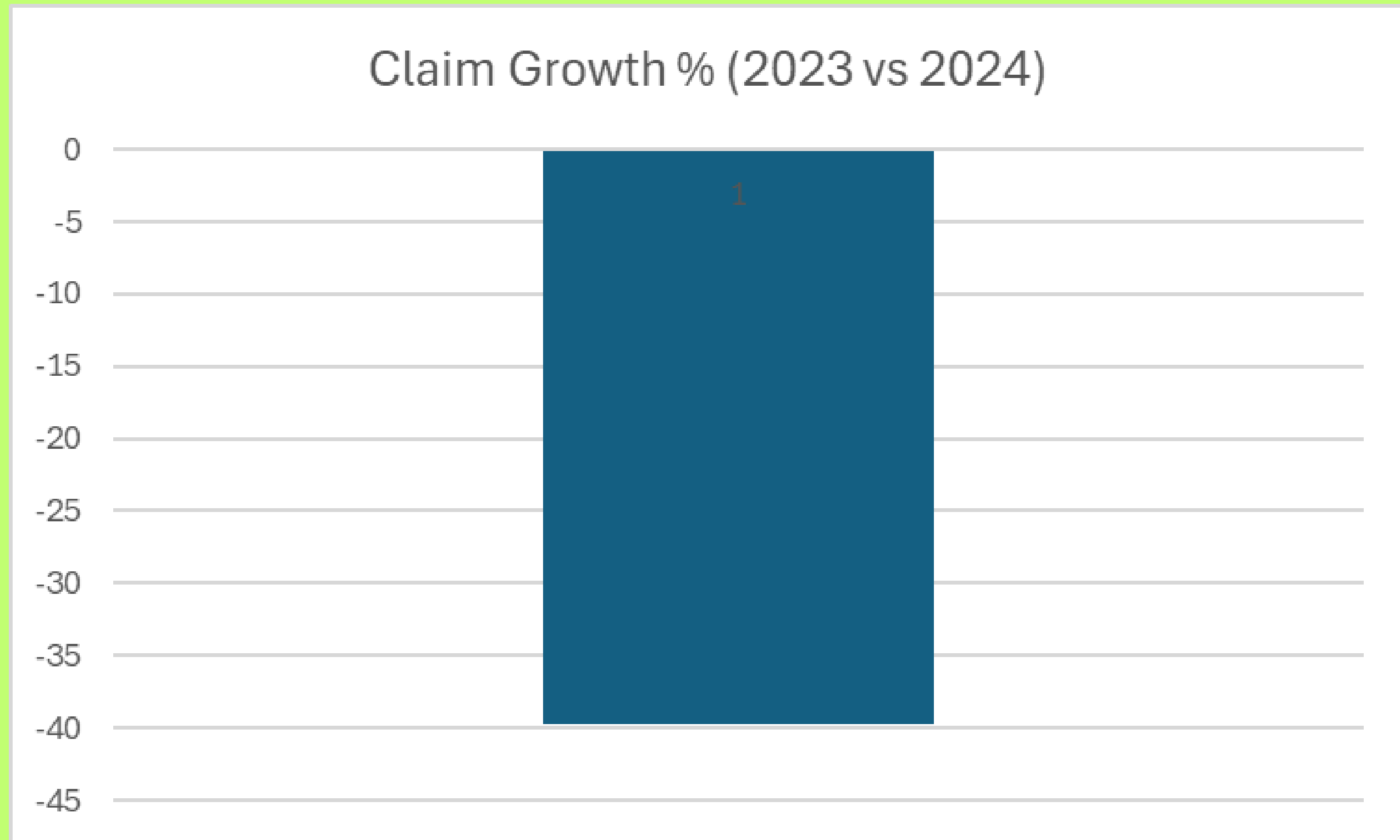
From 2023 to 2024, claim volume decreased by 39.72%, indicating an improvement in risk levels; however, the overall portfolio remains loss-making.

Sales Analysis by Region and Agent
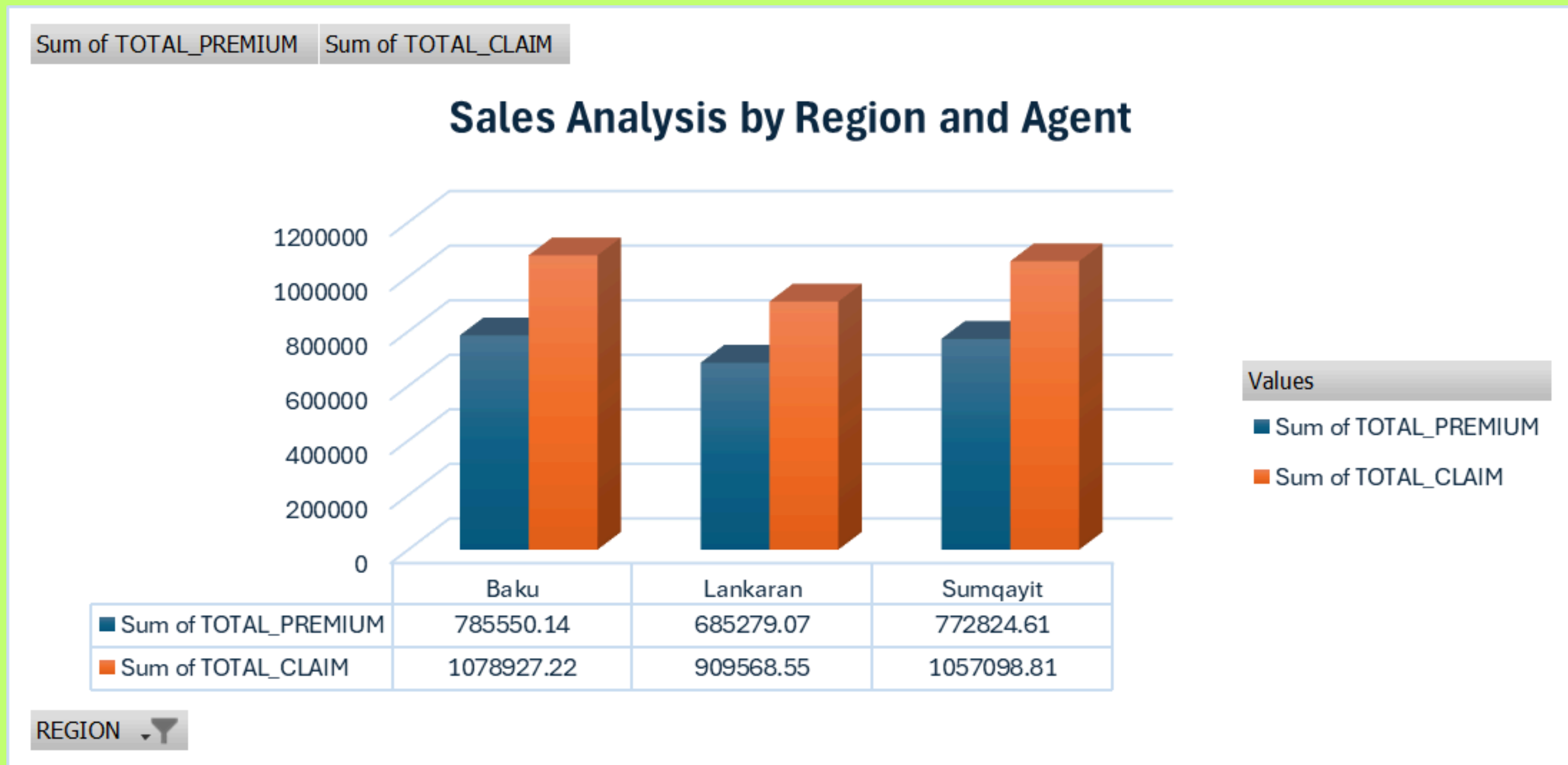
In all regions, many agents generate total claims exceeding total premiums.

Yearly Premium and Claim Trend

Sum of TOTAL_PREMIUM Sum of TOTAL_CLAIM

Yearly Premium and Claim Trend

Values
- Sum of TOTAL_PREMIUM
- Sum of TOTAL_CLAIM

	2022	2023	2024
Sum of TOTAL_PREMIUM	928824.52	1097913.15	803722.38
Sum of TOTAL_CLAIM	1290232.68	1428230.91	1134737.18

YEAR_

In all years, total claims exceed total premiums. Although both premiums and claims increased in 2023, losses persisted, and despite lower volumes in 2024, the profitability issue remains unresolved.
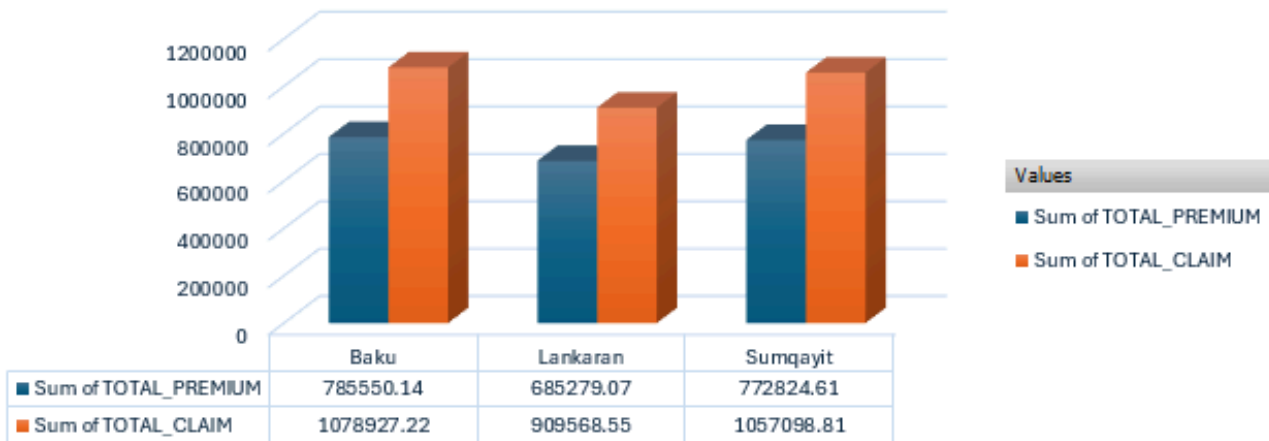
Dashboard

🚗 Insurance Portfolio Analysis

Sales Analysis by Region and Agent
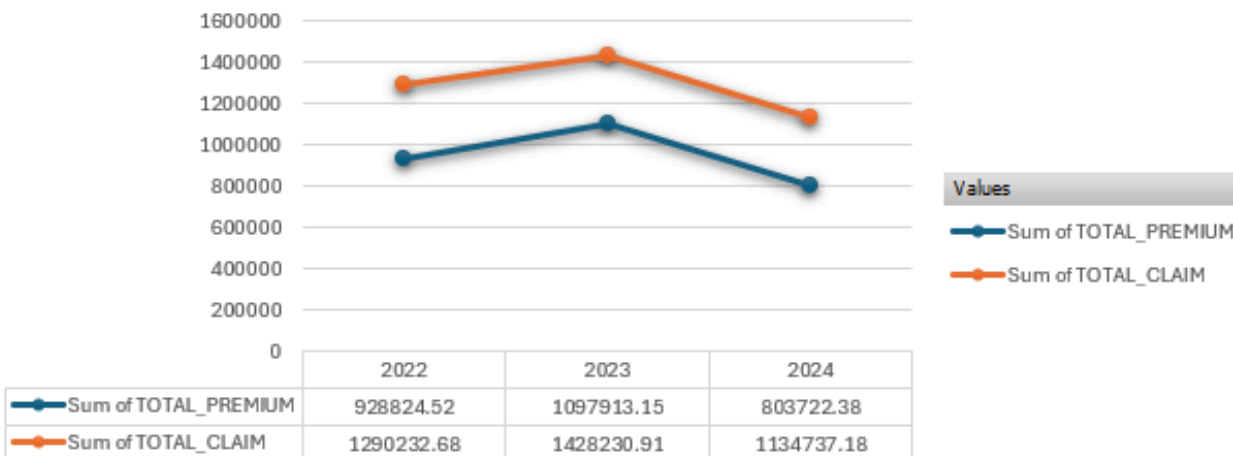
	Baku	Lankaran	Sumqayit
Sum of TOTAL_PREMIUM	785550.14	685279.07	772824.61
Sum of TOTAL_CLAIM	1078927.22	909568.55	1057098.81

REGION

Yearly Premium and Claim Trend

	2022	2023	2024
Sum of TOTAL_PREMIUM	928824.52	1097913.15	803722.38
Sum of TOTAL_CLAIM	1290232.68	1428230.91	1134737.18

YEAR_

RISKIEST POLICY TYPE

Sum of CLAIM_RATIO

Health, 0.39
Casco, 0.41
Compulsory, 0.4

Top 5 Agent By Policies

Sum of POLICY_COUNT

AGENT_NAME

	Agent 49	Agent 11	Agent 16	Agent 70	Agent 52
Total	22	19	18	18	17

Top 5 Branch By Profit

Sum of TOTAL_PREMIUM

BRANCH

	Central	East	North	South	West
Total	340426.65	808271.31	187342.76	553486.22	767014.65
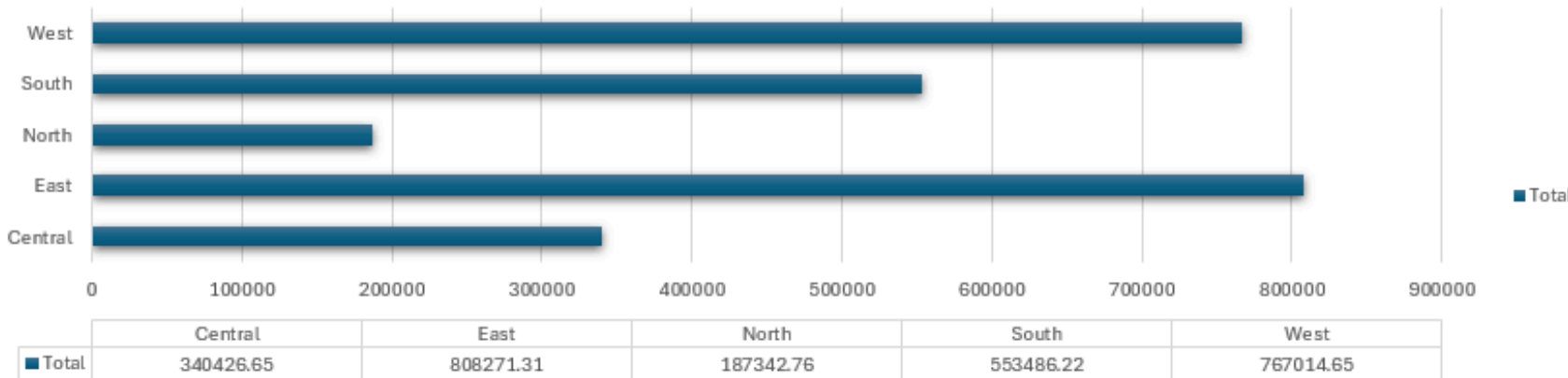
Final Recommendations

- Casco insurance pricing and policy terms should be redefined, as it generates both the highest premiums and the highest risk and losses.
- Agent performance should be evaluated based on profitability percentage rather than sales volume, since most agents generate losses for the company.
- Sales limits and control mechanisms should be applied to agents with negative profitability, as regional losses are largely driven by agent-level performance.
- Lankaran should be selected as a priority optimization region, as it is the least loss-making region compared to others.
- Underwriting rules should be tightened in Baku and Ganja, where high sales volumes are accompanied by high claim levels.
- Customers with high claim ratios should be managed as a separate risk segment, as they account for a large share of total losses.
- Risk-based pricing should be applied to the 45–54 age group, which has the highest average claim amounts.
- Preventive measures should be implemented for Vandalism and Theft claims, as they represent the main drivers of claim costs.
- Card and online payments should be actively encouraged to reduce the critically high late payment rate.
- A pricing model based on region, agent, and product components should be implemented, as the current approach leads to losses across the entire portfolio.

Thank you for your attention!