LifeSure

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LifeSure

- **UK**-based insurance provider offering a range of coverage
- Operates in a **highly competitive market**, requiring innovation to stay relevant.
- Faces **growing customer demand** for more personalized and flexible policies.
- Increasing pressure from clients and regulators to integrate **sustainability** and **social responsibility**.

The Solution

Our Dashboard

- **Customer Insights**: Understand behaviors, needs, and sustainability preferences.
- **Interactive Visualization**: Explore customer trends and impact easily.
- **Sustainability Metrics**: Identify opportunities for greener policies.
- **Decision Support**: Drive policy innovation aligned with expectations.

Phase 01

Datasets selection

Kaggle

Customers & E-commerce

Customer Behavior

Sustainability

Marketing & Policy Optimization

Car insurance & Car emission

Customer Insights

Risk Assessment & Pricing

Marketing & Conversion

Environmental Impact

Home insurance

Customer Behavior

Risk Assessment

Sustainability & Strategy

Phase

02

Data cleaning

- Standardize data cleaning
- Primary data exploration
- Different datasets

Python Code

```
def process_insurance_files(file_paths: List[str]) -> None:
```

```
log_file = f"data_cleaning_log_{datetime.now().strftime('%Y%m%d_%H%M%S')}.txt"
```

```
if pd.api.types.is_numeric_dtype(cleaned_df[col]):
    if cleaned_df[col].dtype == 'int64':
        fill_val = int(cleaned_df[col].median())
    else:
        fill_val = cleaned_df[col].median()
else:
    fill_val = cleaned_df[col].mode()[0] if not cleaned_df[col].mode().empty else 'MISSING'

cleaned_df[col] = cleaned_df[col].fillna(fill_val)
```

```
cleaned_df = cleaned_df.drop_duplicates()
```

Results

Dataset	Missing Values Handled	Duplicates Removed
Home Insurance	Up to 77	0
Car CO2 Emissions	0	1,103
Car Insurance	Up 470,727 116,834 ...	78
Synthetic Customer Data	0	0

Phase

03

Data analyses

- Datasets we used
- Key Metrics
- Main Findings

Phase 02

Datasets

Dataset	Focus
Car CO2 Emissions	Vehicle emissions and fuel usage
Car Insurance	Claims and vehicle risk
Home Insurance	Property types and claim behavior
Synthetic Customer Data	Simulated profiles and behavior

Phase 02

Key Metrics

Metric	Why it's key
CO2 Emissions (g/km)	Directly reflects a vehicle’s environmental impact → essential for any green strategy
Fuel Consumption Comb (L/100 km)	Closely related to emissions and customer cost → indicator of energy efficiency
Fuel Type	Helps distinguish electric, hybrid, diesel, gasoline → enables sustainability segmentation
Engine Size (L)	Larger engines typically emit more CO_2 → relevant for both emissions and taxation

Phase 02

Key Metrics

Metric	Why it's key
Claims Frequency	Identifies high-risk vs. low-risk customer profiles
Total Discounts	Shows promotion sensitivity → useful for campaign targeting
Credit Score	Correlates with reliability and payment behavior
Premium Amount	Measures customer value and revenue potential

Main Findings

Datasets	Main findings
CO2 emissions	• Gasoline and diesel vehicles are the most common, but also the most polluting • CO2 emissions increase significantly with engine size • Certain vehicle classes like SUVs and trucks have the highest environmental impact
Car insurance	• Commercial and utility vehicles have a higher claim rate • Insurance premiums vary considerably based on vehicle type • We could potentially adjust premiums based on environmental risk, by combining this with CO2 data
Home insurance	• Multi-family buildings tend to have a higher claim frequency • Homes with gardens appear to have fewer claims on average • This could support a strategy of rewarding environmentally friendly home features
Synthetic data	◦ We identified ideal customer profiles with low claim frequency, high discounts, and strong credit scores ◦ These profiles could be targeted with personalized, sustainable insurance offers

Phase

04 Dashboard

Quick Walkthrough

Phase

05

Proposed strategies

Sustainability

- Eco-friendly products
- Sustainable Premium Adjustments
- Carbon Offset Programs
- Digital-First Strategy

Phase

05

Proposed strategies

Customer satisfaction strategies

- Personalised Products
- Eco-Friendly Rewards

Phase

05

Proposed strategies

Policy innovation

- Personalised Policies
- Eco-Friendly Options
- Flexible Premiums

- Data-Driven Decision-Making
- Eco-Friendly and Customer-Centric Innovation
- Enhanced Risk Management
- Competitive Edge and Regulatory Compliance
- Commitment to Leadership and Innovation

Conclusion

Sources

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Thank You