Data Insight Report

# Prompt Sent to GPT

You are a highly skilled data analyst, data scientist and technical writer. Your task is to examine the dataset and generate a professional, structured insight report.  
  
Your responsibilities include:  
  
1. Generate meaningful high-level overview/summaries of the dataset  
2. Providing column-by-column commentary on structure and contents  
3. Identifying trends, anomalies, outliers, and significant patterns  
4. Highlighting relationships and correlations across key variables  
5. Recommending visualizations (e.g., histograms, time series, heatmaps) and statistical techniques (e.g., regression, clustering, correlation analysis) for deeper analysis  
6. Detecting data quality concerns and limitations  
7. Suggesting relevant data aggregations or transformations  
8. Provide recommendations for how this dataset can be used in reporting or analytics  
9. Creating and displaying examples of any recommendations, especially visualisations (charts and summary tables)  
  
In addition, consider the following use cases for this dataset:  
- Predicting outcomes based on historical features  
- Analyzing performance by different cohorts over time  
- Identifying emerging trends and behavioral patterns by cohort  
- Supporting actuarial, pricing, and portfolio strategy initiatives  
  
You are provided with:  
- Summary statistics for numerical and categorical columns  
- Metadata on column types, nulls, unique values, and sample entries  
- Flagged data quality issues such as high nulls or suspiciously constant fields  
  
Use this to produce a structured written report output, including:  
- Dataset overview  
- Column-by-column commentary / descriptions  
- Key observations, patterns and correlations  
- Data quality concerns  
- Suggestions for improvement / Recommendations for Next Steps  
  
Summary Stats:  
{'Product': {'count': 712365, 'unique': 13, 'top': 'PMOT', 'freq': 251707, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'Peril': {'count': 712365, 'unique': 59, 'top': 'SUBS\_ALL', 'freq': 38188, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'currencycodeidentifier': {'count': 712365, 'unique': 1, 'top': 'GBP', 'freq': 712365, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'Segment': {'count': 712365, 'unique': 18, 'top': 'TOT', 'freq': 518132, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'layeridentifier': {'count': 712365, 'unique': 1, 'top': 'ORIG', 'freq': 712365, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'Brand': {'count': 645491, 'unique': 28, 'top': 'DLIRET', 'freq': 104783, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'owneridentifier': 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Detected Issues:  
{'currencycodeidentifier': 'Single unique value (likely static column)', 'layeridentifier': 'Single unique value (likely static column)', 'owneridentifier': 'Single unique value (likely static column)', 'scenariokey': 'Single unique value (likely static column)', 'versionidentifier': 'Single unique value (likely static column)', 'runkey': 'Single unique value (likely static column)', 'createddate': 'Single unique value (likely static column)', 'psiclebatchkey': 'Single unique value (likely static column)', 'reportingperiodidentifier': 'Single unique value (likely static column)'}

# Summary Stats

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# Column Metadata

{'Product': {'dtype': 'object', 'nulls': 0, 'unique': 13, 'sample\_values': ['CMOT', 'CPRO', 'HOME']}, 'Peril': {'dtype': 'object', 'nulls': 0, 'unique': 59, 'sample\_values': ['BIXS\_ALL', 'PPIB\_ALL', 'TPPD\_ALL']}, 'currencycodeidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 1, 'sample\_values': ['GBP']}, 'Segment': {'dtype': 'object', 'nulls': 0, 'unique': 18, 'sample\_values': ['NIG', 'GUP', 'DLI']}, 'layeridentifier': {'dtype': 'object', 'nulls': 0, 'unique': 1, 'sample\_values': ['ORIG']}, 'Brand': {'dtype': 'object', 'nulls': 66874, 'unique': 28, 'sample\_values': ['NIGOTH', 'DL4B00', 'DLPL00']}, 'owneridentifier': {'dtype': 'object', 'nulls': 0, 'unique': 1, 'sample\_values': ['ACT']}, 'accidentquarter': {'dtype': 'int64', 'nulls': 0, 'unique': 157, 'sample\_values': [199004, 199102, 199104]}, 'Section': {'dtype': 'object', 'nulls': 0, 'unique': 567, 'sample\_values': ['CMOT\_NIG\_BIXS\_ALL\_MOTT\_TOTL\_NIGOTH', 'CMOT\_GUP\_PPIB\_ALL\_FMWB\_TOTL\_NIGOTH', 'CMOT\_GUP\_PPIB\_ALL\_MOTT\_TOTL\_NIGOTH']}, 'accidentyear': {'dtype': 'int64', 'nulls': 0, 'unique': 40, 'sample\_values': [1990, 1991, 1992]}, 'amounttypevalue': {'dtype': 'float64', 'nulls': 0, 'unique': 258132, 'sample\_values': [35718.1, 1866.37, 184244.72]}, 'amounttypeidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 34, 'sample\_values': ['CLM\_ULT\_AMT', 'CLM\_INC\_AMT', 'CLM\_PAID\_AMT']}, 'reinsurancebasisidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 3, 'sample\_values': ['Gross', 'Net', 'RI']}, 'reinsurancetypeidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 6, 'sample\_values': ['Gross', 'Net', 'OM XoL']}, 'reservingperilidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 73, 'sample\_values': ['BIXS', 'PPIT', 'TPPD']}, 'reservingproductidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 10, 'sample\_values': ['R62', 'R01', 'R73']}, 'reservingsubproductidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 21, 'sample\_values': ['R65', 'R69', 'R71']}, 'reservingsubproduct2identifier': {'dtype': 'object', 'nulls': 0, 'unique': 32, 'sample\_values': ['R66', 'R70', 'R72']}, 'operatingsegmentidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 4, 'sample\_values': ['RX6', 'RX2', 'RX3']}, 'reservingbrandidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 27, 'sample\_values': ['RB161', 'RB171', 'RB141']}, 'entityidentifier': {'dtype': 'int64', 'nulls': 0, 'unique': 2, 'sample\_values': [320, 401]}, 'scenariokey': {'dtype': 'object', 'nulls': 0, 'unique': 1, 'sample\_values': ['No\_Scenario\_provided']}, 'versionidentifier': {'dtype': 'object', 'nulls': 0, 'unique': 1, 'sample\_values': ['V26']}, 'runkey': {'dtype': 'int64', 'nulls': 0, 'unique': 1, 'sample\_values': [1]}, 'createddate': {'dtype': 'datetime64[ns]', 'nulls': 0, 'unique': 1, 'sample\_values': [Timestamp('2025-04-04 16:24:52')]}, 'psiclebatchkey': {'dtype': 'object', 'nulls': 0, 'unique': 1, 'sample\_values': ['PSIBK20250404162452']}, 'reportingperiodidentifier': {'dtype': 'int64', 'nulls': 0, 'unique': 1, 'sample\_values': [202503]}}

# Detected Issues

{'currencycodeidentifier': 'Single unique value (likely static column)', 'layeridentifier': 'Single unique value (likely static column)', 'owneridentifier': 'Single unique value (likely static column)', 'scenariokey': 'Single unique value (likely static column)', 'versionidentifier': 'Single unique value (likely static column)', 'runkey': 'Single unique value (likely static column)', 'createddate': 'Single unique value (likely static column)', 'psiclebatchkey': 'Single unique value (likely static column)', 'reportingperiodidentifier': 'Single unique value (likely static column)'}

# GPT-4 Insights

Dataset Overview:  
  
The dataset with 712365 records and 29 columns, provides insurance claim information. Columns record various categorical and numerical details about the claims, such as the product, peril involved, various identifiers, accident year and quarter, amount type value, and several specific identifiers used for reserving.  
  
Column-by-Column Commentary:  
  
1. Product: With 13 unique categories, this column likely signifies the type of insurance product involved in the claim.  
2. Peril: 59 unique categories indicate the type of risk or incident that led to the claim.  
3. Currency code identifier: This is a constant column with 'GBP' as the value, indicating that all amount values are in British Pound Sterling.  
4. Segment, Layer identifier, Owner identifier: These fields, each featuring 18, 1, and 1 unique categories respectively, represent various identifying tags but are of less interest due to lack of variability (especially Layer, Owner identifiers).  
5. Brand: This field with 28 unique categories represents the brand under which the insurance product was sold. Missing values are observed in this column.  
6. Accident quarter/year: These numerical fields pinpoint the time of the accident that led to the claim.  
7. Amount type value: This variable, along with amount type identifier, provides details about the financial aspect of the claim.  
8. Various identifiers (Reinsurance basis/type, Reserving peril/product/sub-product, Operating segment, Reserving brand, Entity): These fields with varying number of categories could be related to internal company-specific identifiers or tags.  
9. Scenario key, Version identifier, Run key, Created date, PSI CLE batch key, Reporting period identifier: These fields are likely tied to internal record maintenance and feature no variability, hence providing limited useful insights.  
  
Key observations, patterns and correlations:  
  
The provided statistics and metadata lack enough depth to infer meaningful insights about patterns and correlations at this point. Proper exploratory data analysis considering the variables in greater detail is required for uncovering patterns and correlations.  
  
Data quality concerns:  
  
The dataset has several columns with no variability, as they have only one unique value. These include 'currencycodeidentifier', 'layeridentifier', 'owneridentifier', 'scenariokey', 'versionidentifier', 'runkey', 'createddate', 'psiclebatchkey', 'reportingperiodidentifier'. Given their lack of relevance in further analysis, these fields are candidates for removal.  
  
Suggestions for improvement / Recommendations for Next Steps:  
  
1. Remove redundant columns with only one unique value.  
2. For the 'Brand' column, handle missing values with suitable techniques like imputation.  
3. Perform correlation analysis to uncover relationships among numerical variables.  
4. Execute in-depth exploratory data analysis for detailed insight extraction.  
5. Use statistical techniques like regression for prediction tasks and clustering for segmenting similar data points.  
6. Visualize the data via measures such as histograms, heatmaps, and time series plots for a deeper understanding.  
7. Based on the product and segment correlations, more detailed actuarial and pricing strategies can be developed.  
8. Carry out trend analysis to identify temporal patterns and predict future outcomes.