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  
  
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:  
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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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'amounttypeidentifier': {'count': 712365, 'unique': 34, 'top': 'CLM\_ULT\_AMT', 'freq': 61797, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'reinsurancebasisidentifier': {'count': 712365, 'unique': 3, 'top': 'Gross', 'freq': 302228, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'reinsurancetypeidentifier': {'count': 712365, 'unique': 6, 'top': 'Gross', 'freq': 302228, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'reservingperilidentifier': {'count': 712365, 'unique': 73, 'top': 'SUBS', 'freq': 38188, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'reservingproductidentifier': {'count': 712365, 'unique': 10, 'top': 'R01', 'freq': 275616, 'mean': nan, 'min': nan, '25%': nan, '50%': nan, '75%': nan, 'max': nan, 'std': nan}, 'reservingsubproductidentifier': {'count': 712365, 'unique': 21, 'top': 'R02', 'freq': 269338, 'mean': nan, 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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 examined dataset contains 712365 records across 30 features. The data includes both numerical and categorical columns and appears to relate to insurance claims, covering different products (e.g. 'CMOT', 'CPRO', 'HOME'), perils (e.g. 'BIXS\_ALL', 'PPIB\_ALL', 'TPPD\_ALL') and brands (e.g.'NIGOTH', 'DL4B00', 'DLPL00') among others. Information on metrics, such as the amount values associated with each record, claim year and quarter, and reserve product identifiers are also present.  
  
### Column-by-Column Commentary  
  
There are several categorical columns like 'Product', 'Peril' and 'Segment' that exhibit numerous unique values. 'Product' has 13 unique values, 'Peril' 59 unique values, and 'Segment' 18 unique values.   
  
The 'Brand' column is missing approx. 10% of its data with 66874 null entries. Several columns including 'currencycodeidentifier', 'layeridentifier', 'owneridentifier', 'scenariokey', 'versionidentifier', 'runkey', 'createddate', 'psiclebatchkey', and 'reportingperiodidentifier' are essentially static fields, suggesting limited utility for analytical purposes.  
  
As for numerical columns, ‘accidentyear’, ‘accidentquarter’, and ‘entityidentifier’ provide temporal and entity-specific identifiers respectively. The ‘amounttypevalue' column, interestingly, has both positive and negative numbers, ranging from -722,069,715.71 to 722,069,715.71, with a standard deviation of 34,363,308.0 suggesting high variance.   
  
### Key Patterns, Trends and Correlations  
  
Given the nature and structure of the dataset, it would be beneficial to investigate relationships between product, peril, and amount values. Trends over time using accident year/quarter data could be insightful. Beneficial correlations might be identified between the 'amounttypevalue' and variables such as the 'Product', 'Peril', 'Segment', or 'Brand'.   
  
Visualizations like histograms of numerical fields, heatmaps to visualize correlations, or time series data for accident years and quarters would be useful exploratory tools.   
  
Likewise, regression analysis could be employed during predictive model building, while clustering techniques could potentially identify common patterns amongst specific insurance products, brands, or segments.  
  
### Data Quality Concerns   
  
While missing data in 'Brand' and the high variance in ‘amounttypevalue’ could raise concerns, the most significant issues lie in the dataset’s static fields, which contribute no variability or meaningful insights. These should either be removed or reconsidered in terms of data collection methodologies.  
  
### Recommendations for Next Steps   
  
To improve this dataset, further clarification on the relevance of the static fields should be sought – could they be transformed or populated differently? Additionally, more detailed descriptions or extended metadata would boost understanding of the given categories (e.g., what does each product or peril specifically represent?)  
  
In terms of analytics or reporting, this dataset could help baseline and forecast claim amounts, analyze the incidence of claims across product types and brands, or potentially predict claim outcomes based on historical features. However, a far more detailed and specific analysis and report would depend on the specifics of which dataset questions are being posed.