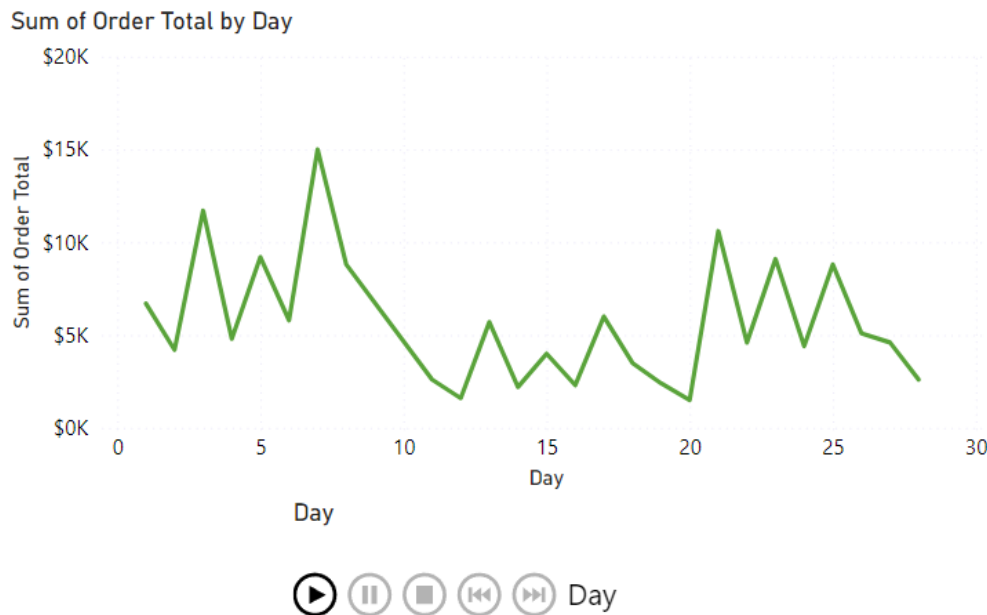


Assignment 8

Niranjana Rao Saraf Srinivas Rao

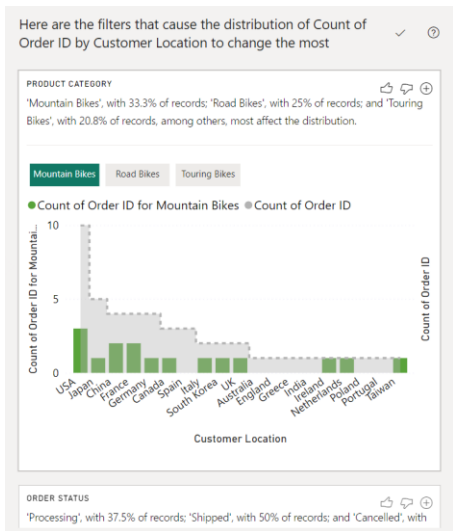
San Jose State University

Conduct time series analysis



In time series analysis, the goal is to model and understand data points collected or recorded at specific time intervals. The analysis is critical for forecasting future values based on historical data patterns. It often includes identifying trends, seasonality, and noise. Techniques such as autoregressive models (AR), moving averages (MA), and ARIMA are commonly used in machine learning for time series forecasting (Box & Jenkins, 1976). Time series analysis allows decision-makers to project future occurrences, making it valuable in industries such as finance, retail, and healthcare.

Use the Analyze feature



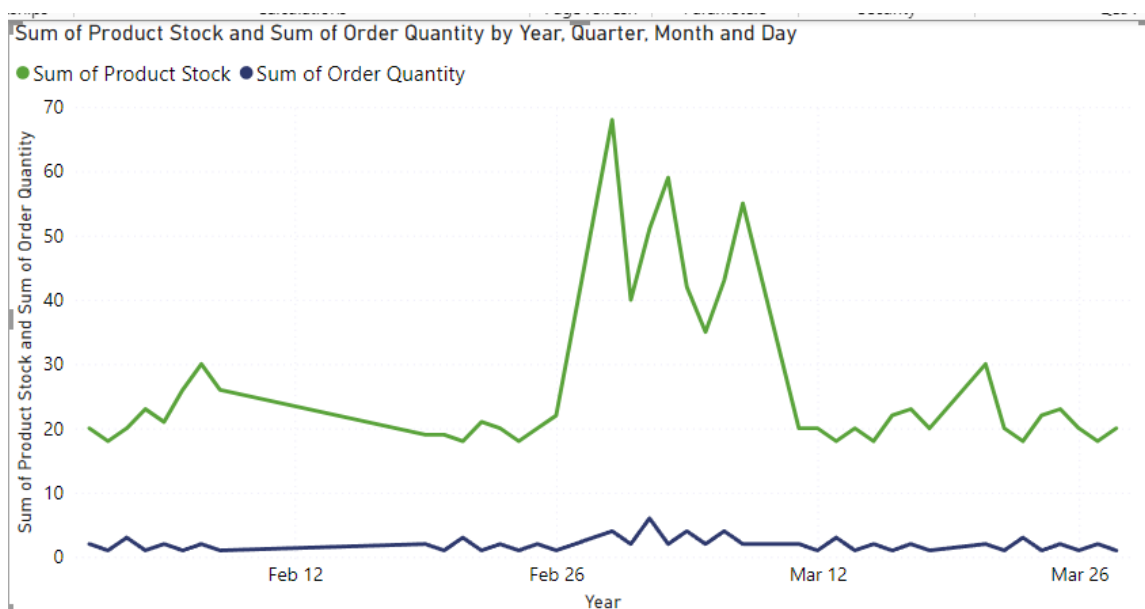
The "Analyze" feature in Power BI provides insights into data by automatically identifying patterns, correlations, and key drivers in datasets. This feature uses machine learning algorithms to explore datasets without requiring manual coding or technical intervention. The insights generated can inform business strategies by identifying key factors that impact the outcome of interest.

Create what-if parametersLinks to an external site.



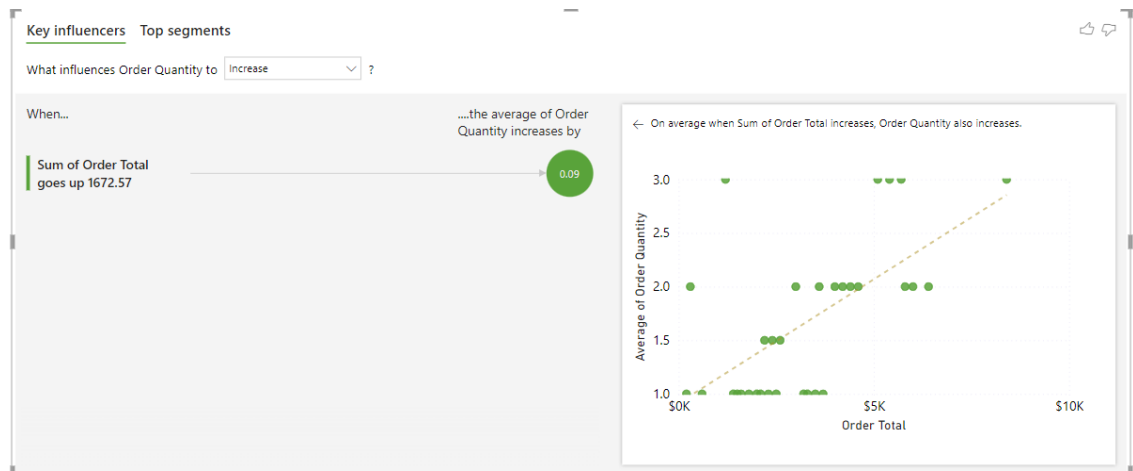
What-if analysis allows users to create hypothetical scenarios to understand the impact of different variables on a specific outcome. By adjusting input parameters, users can forecast changes in outcomes and plan for various situations. In Power BI, what-if parameters let users dynamically change variables to visualize potential results in dashboards, which can aid in strategic decision-making.

anomaly-detection



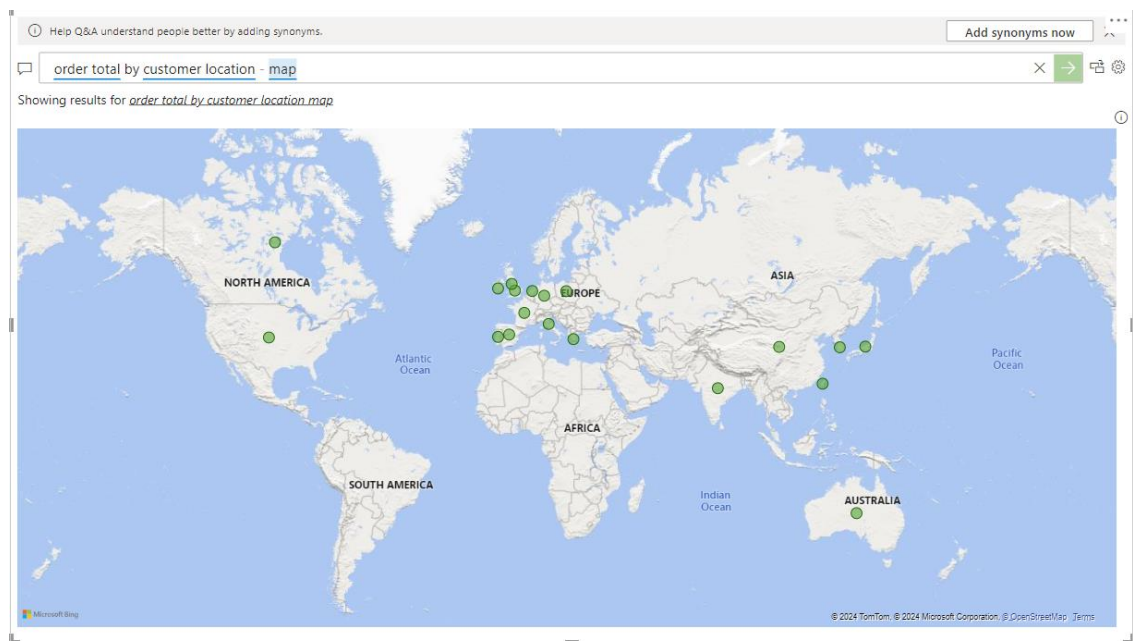
Anomaly detection refers to identifying unusual patterns or outliers in data that do not conform to expected behavior. It is essential in various domains such as fraud detection, network security, and manufacturing quality control. Machine learning algorithms like Isolation Forest and One-Class SVM are frequently used to detect anomalies in datasets (Chandola, Banerjee, & Kumar, 2009). In Power BI, anomaly detection can be visualized in reports to flag potential issues and alert users to irregularities.

visualization-influencers



Influencer visualizations in Power BI help uncover the factors that most influence a particular metric or KPI. It shows the variables that drive changes in a chosen outcome, allowing businesses to focus on the most impactful areas. The tool leverages machine learning models to explain the variance in the target variable based on explanatory variables in the dataset.

q-and-a



The Q&A feature in Power BI allows users to interact with data by asking natural language questions. This feature simplifies data analysis by automatically generating visualizations in response to user queries. It leverages natural language processing (NLP) to interpret questions and retrieve relevant data from the dataset, making it an intuitive way to explore data without requiring advanced technical skills.

References

Box, G. E. P., & Jenkins, G. M. (1976). *Time Series Analysis: Forecasting and Control*. Holden-Day.

Chandola, V., Banerjee, A., & Kumar, V. (2009). Anomaly detection: A survey. *ACM Computing Surveys (CSUR)*, 41(3), 1-58.

Microsoft. (2023). Power BI documentation. Retrieved from <https://learn.microsoft.com/en-us/power-bi/>