Business Analytics Practicum (MGT 4803)

Zhaohu (Jonathan) Fan

Information Technology Management

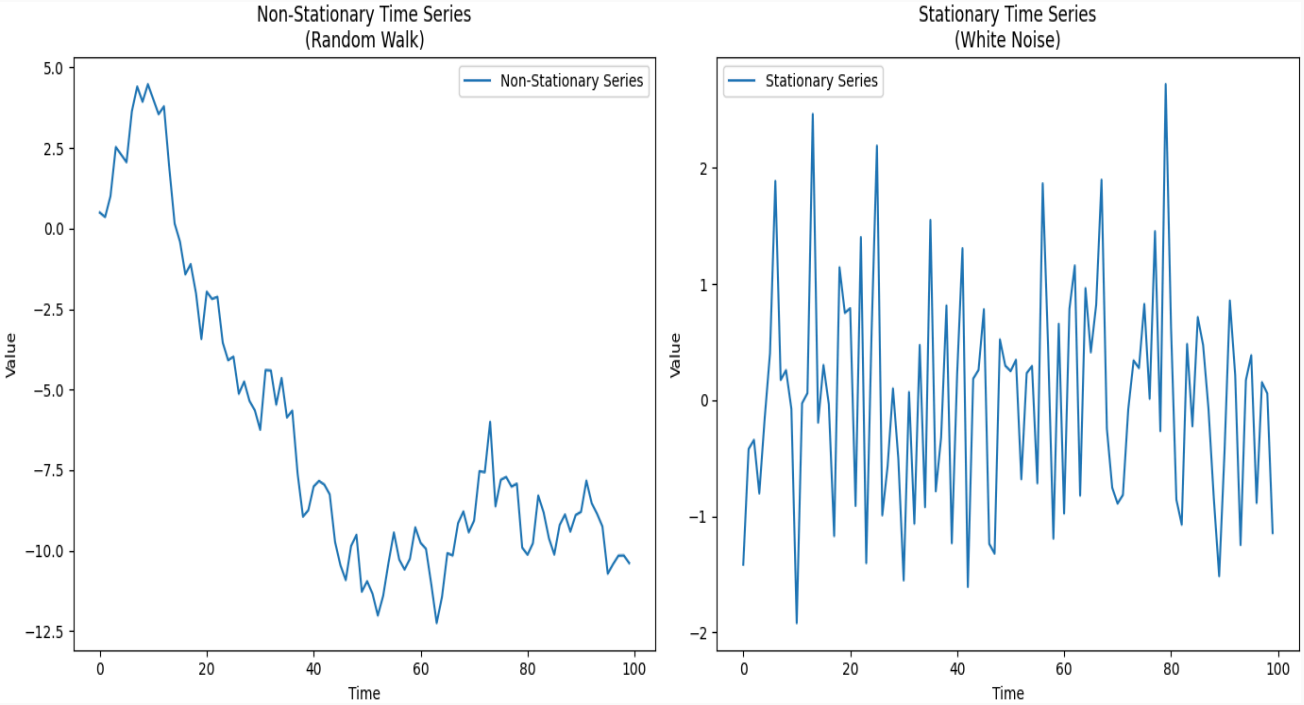
Scheller College of Business

Georgia Institute of Technology

March 14, 2024

Time Series Data

- **Non-Stationary Series (Random Walk)**: Exhibits cumulative sum behavior, meaning its properties change over time.
- **Stationary Series (White Noise):** Properties remain constant over time, with no clear pattern or trend.



Augmented Dickey-Fuller test to check

- **Purpose**: The Augmented Dickey-Fuller test checks if a series of data points (like stock prices over time) changes around a steady mean. If it does, the data is called "stationary."
    - **Main Idea:** It tests if the data keeps wandering off (non-stationary) or tends to return to a specific value (stationary).

Augmented Dickey-Fuller test to check

- **How It Works**: It looks at the data and tries to see if there's a pattern that repeats over time without drifting away.
- **Null Hypothesis:** The default assumption is that the data is non-stationary.
- **Decision:** If the test result is below a certain number (critical value), we think the data is stationary; if not, it's non-stationary.
- **P-value:** A p-value below 0.05 usually means the data is stationary.

Why It Matters: Many forecasting methods need stationary data to work well, so this test helps prepare data for analysis.

Python (Google Colab) Demonstration

- Please click on the link provided below
  - Examples