ETS Decomposition

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ETS

- stands for Error, Trend, and Seasonality
- a method used to break down a time series into three components

Trend (T)

- Overall direction in which the time series is moving (upward, downward, stable/flat)

Seasonality (S)

- Repeating patterns in the series (e.g. daily, monthly, yearly)

Residual/Error (E)

- The noise or irregular fluctuations that cannot be explained by trend or seasonality

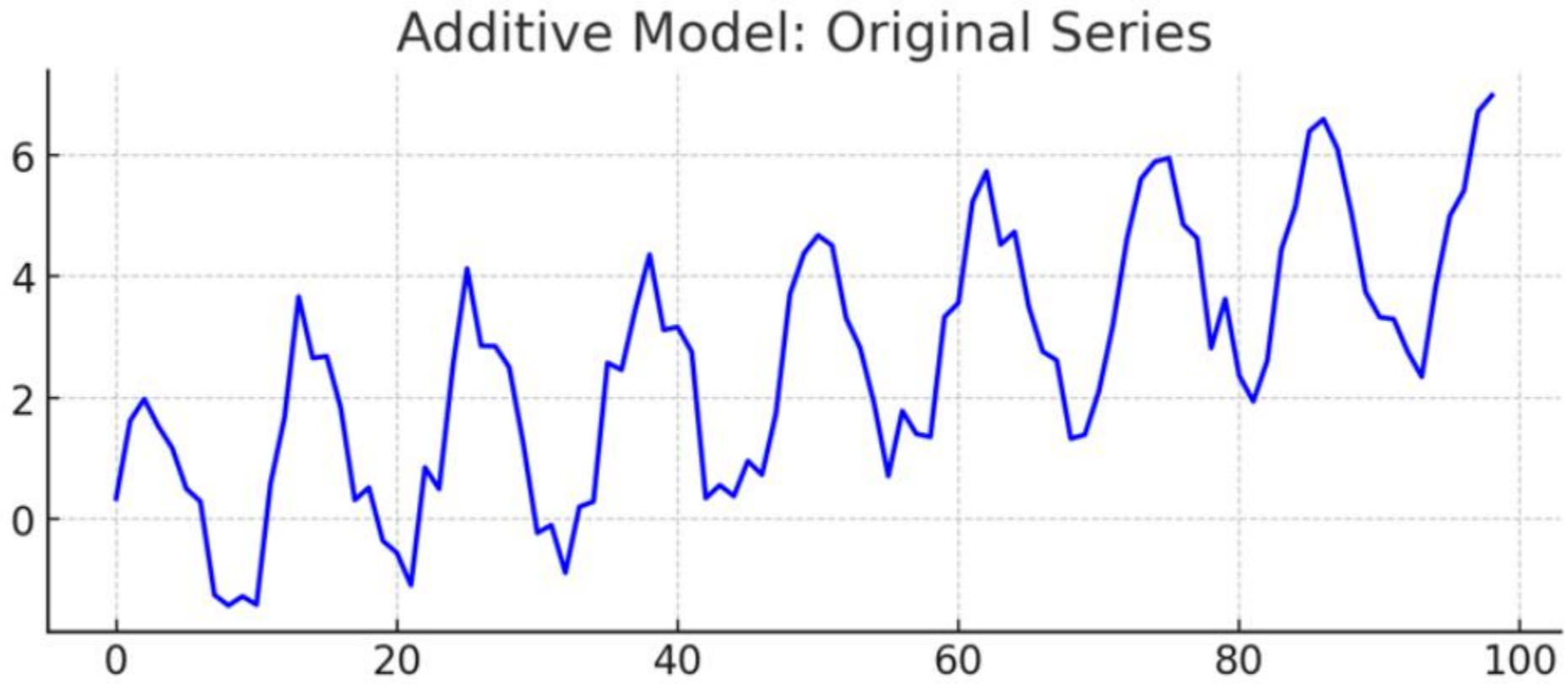
ETS decomposition allows us to understand the underlying patterns in a time series and helps in forecasting

Types of ETS Models

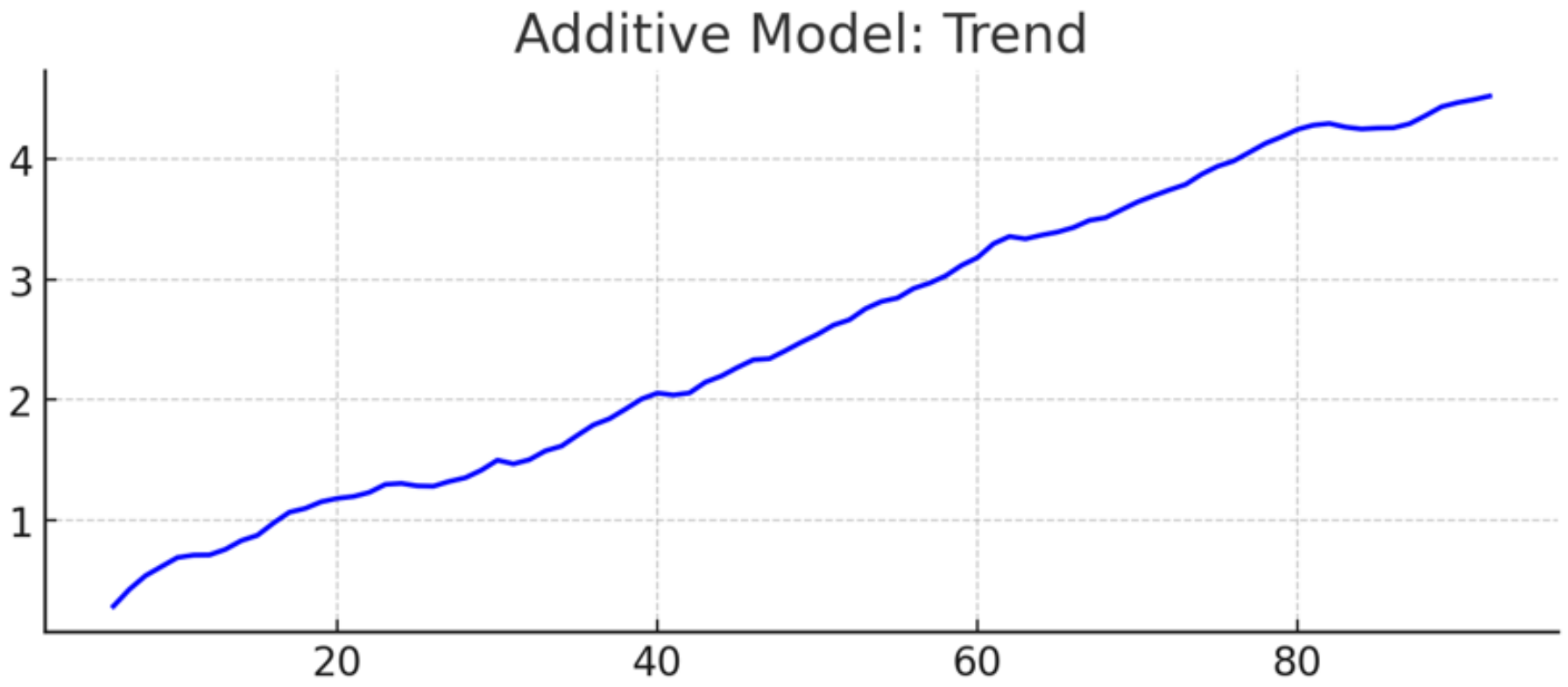
1. Additive Model

   - when seasonal variations remain constant over time

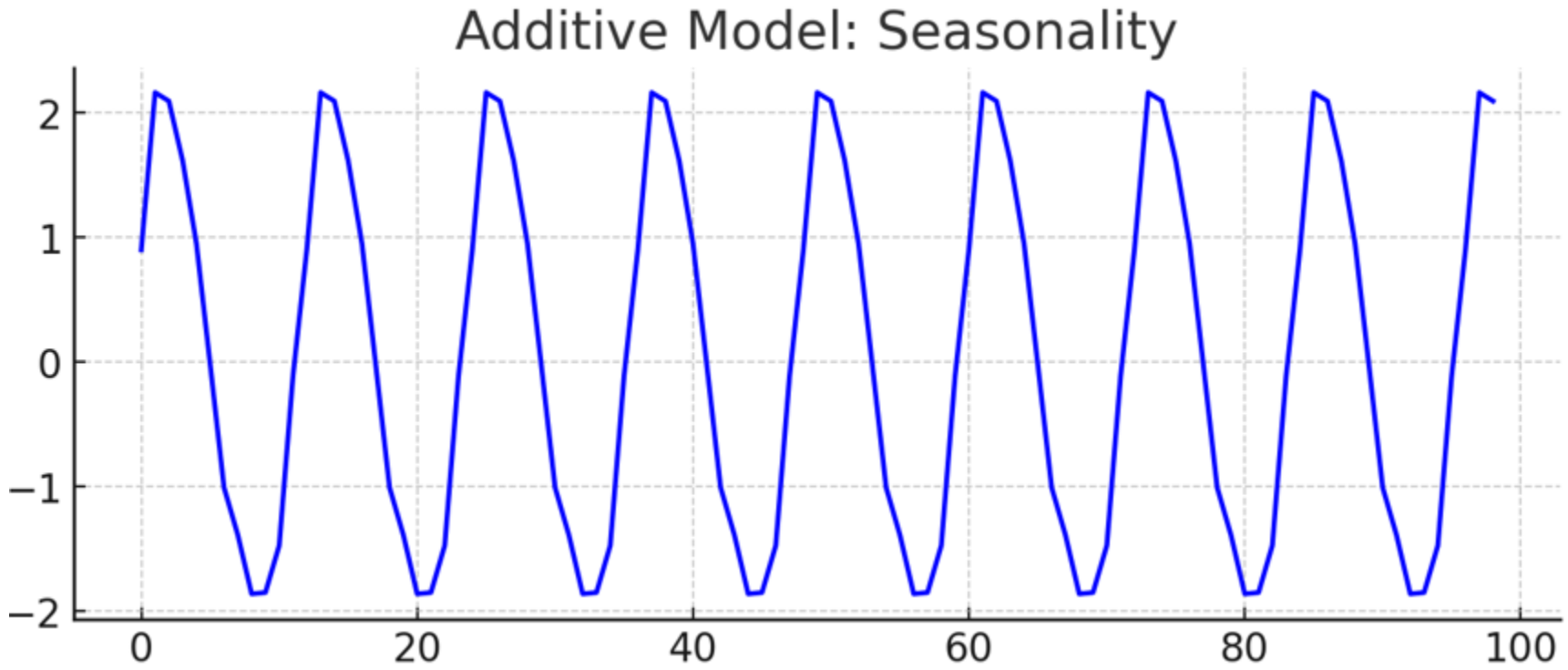
Cognate/Professional Electives



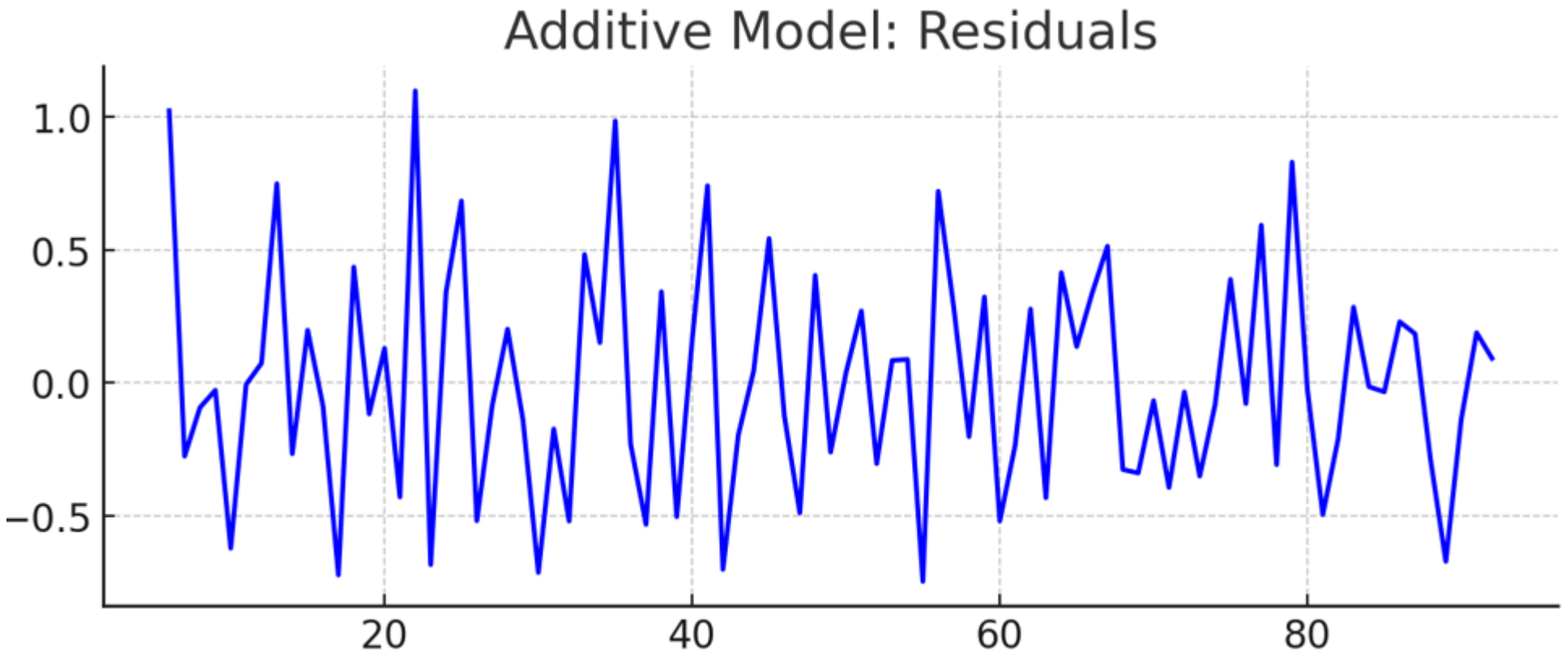
ETS DECOMPOSITION



Additive Model's trend increase linearly over time



Additive Model's seasonal pattern remains constant in magnitude (fixed oscillations)



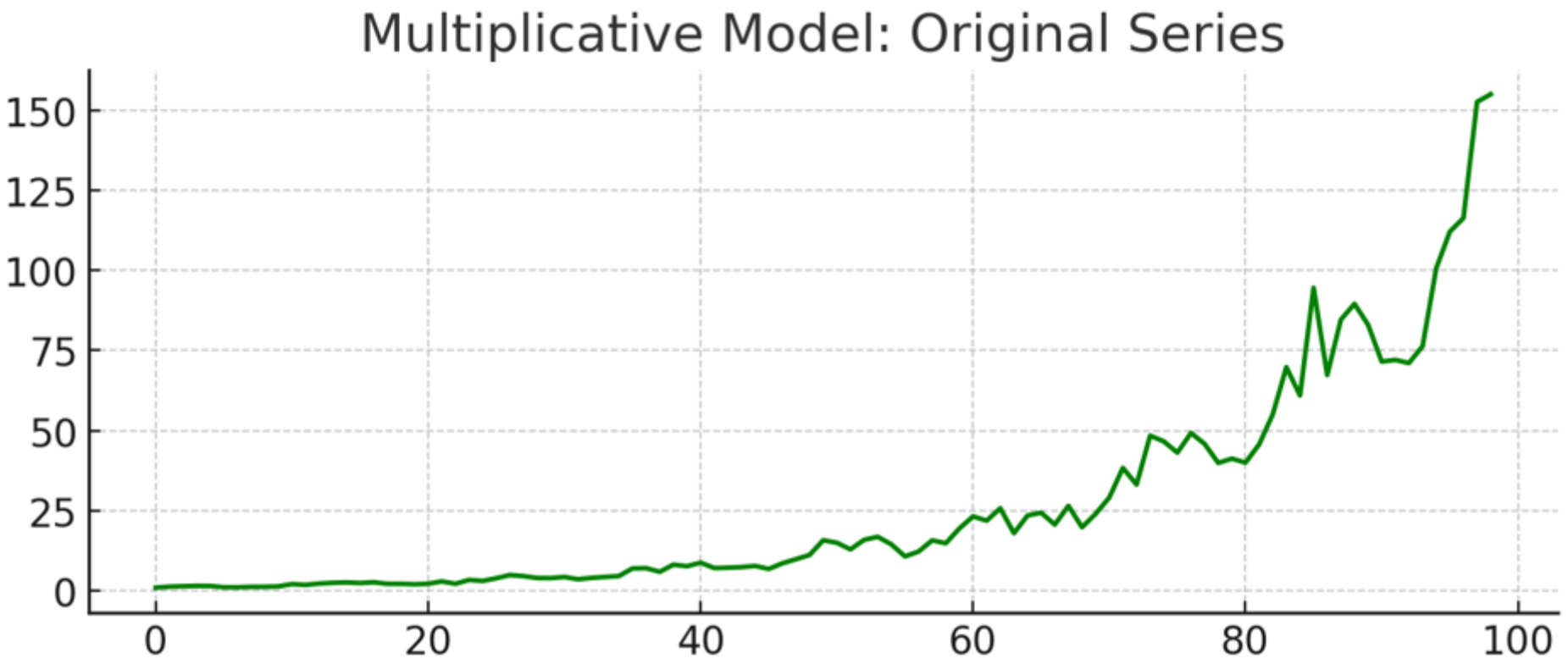
Additive Model’s residuals have constant noise over time

Types of ETS Models

2. Multiplicative Model

   - when seasonal variations increase or decrease in size over time

Cognate/Professional Electives



ETS DECOMPOSITION

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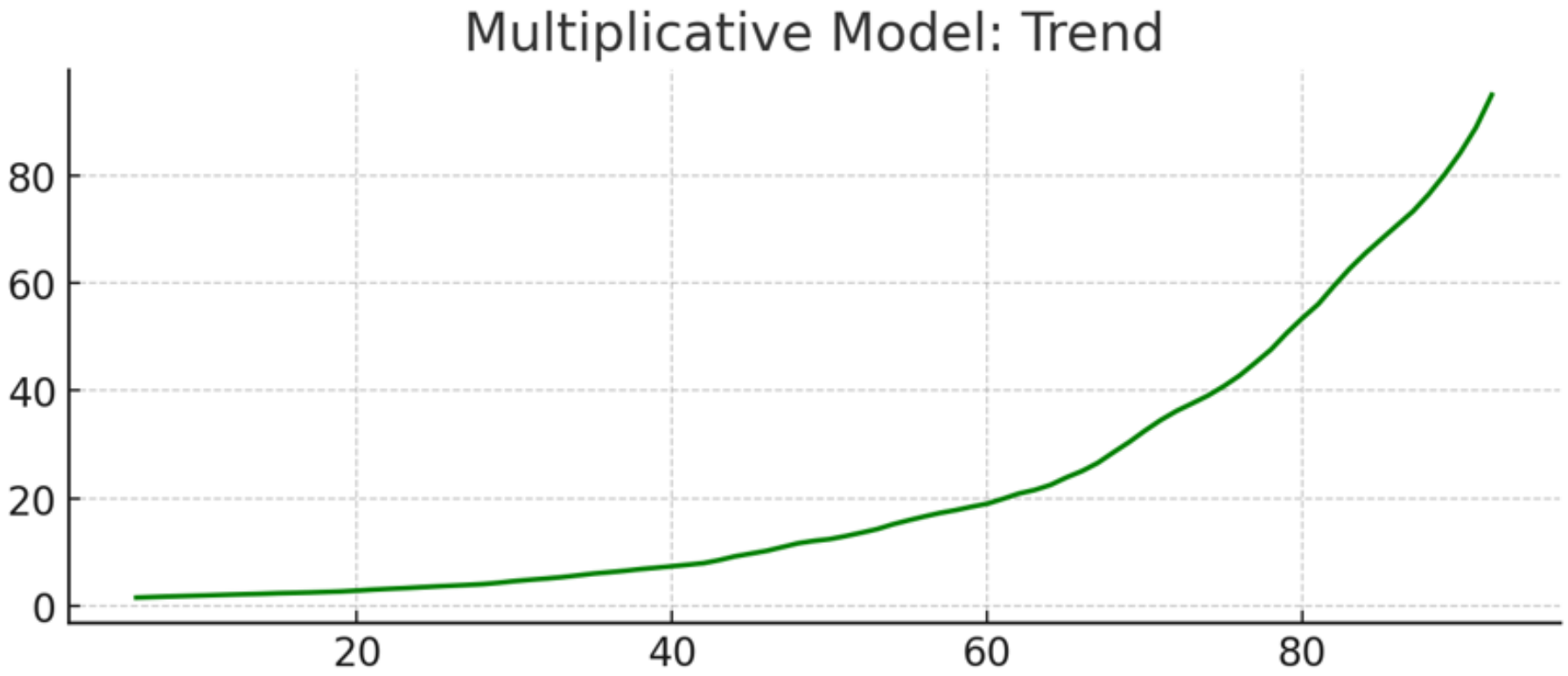
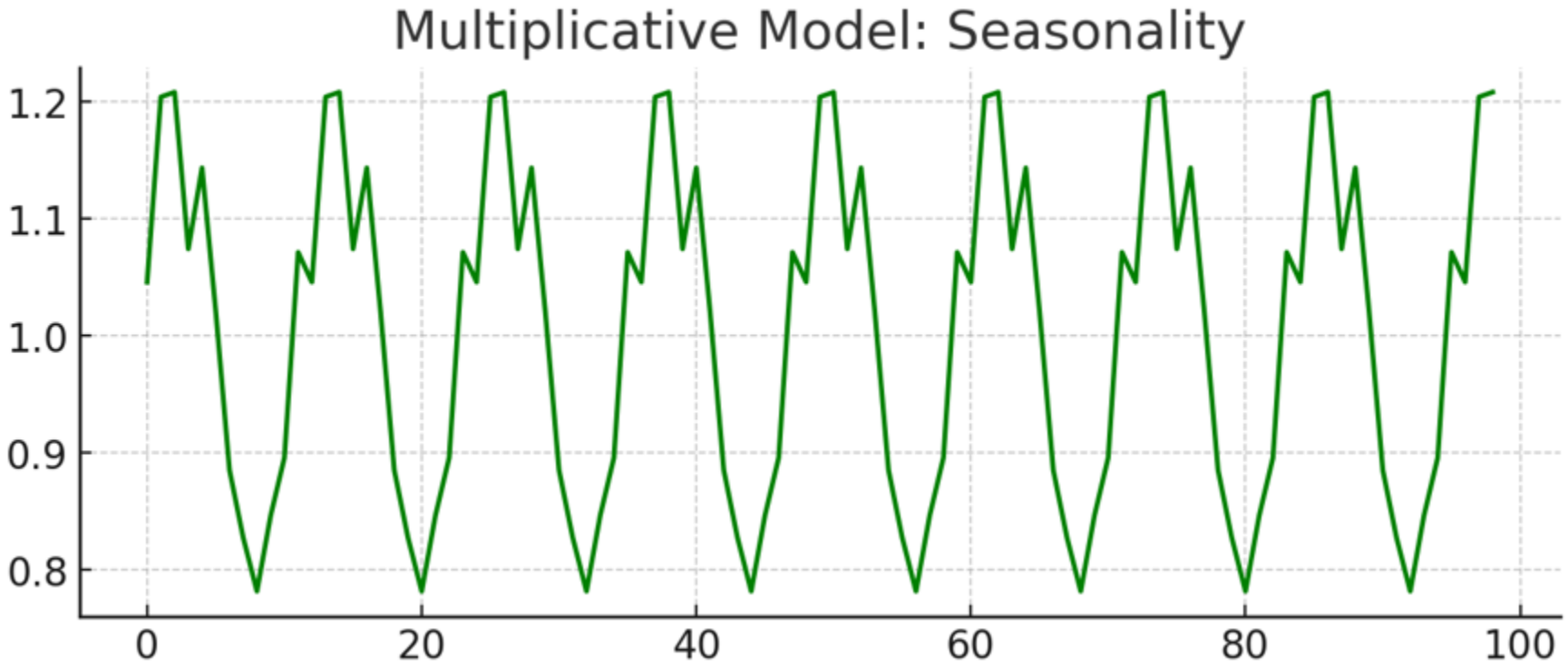
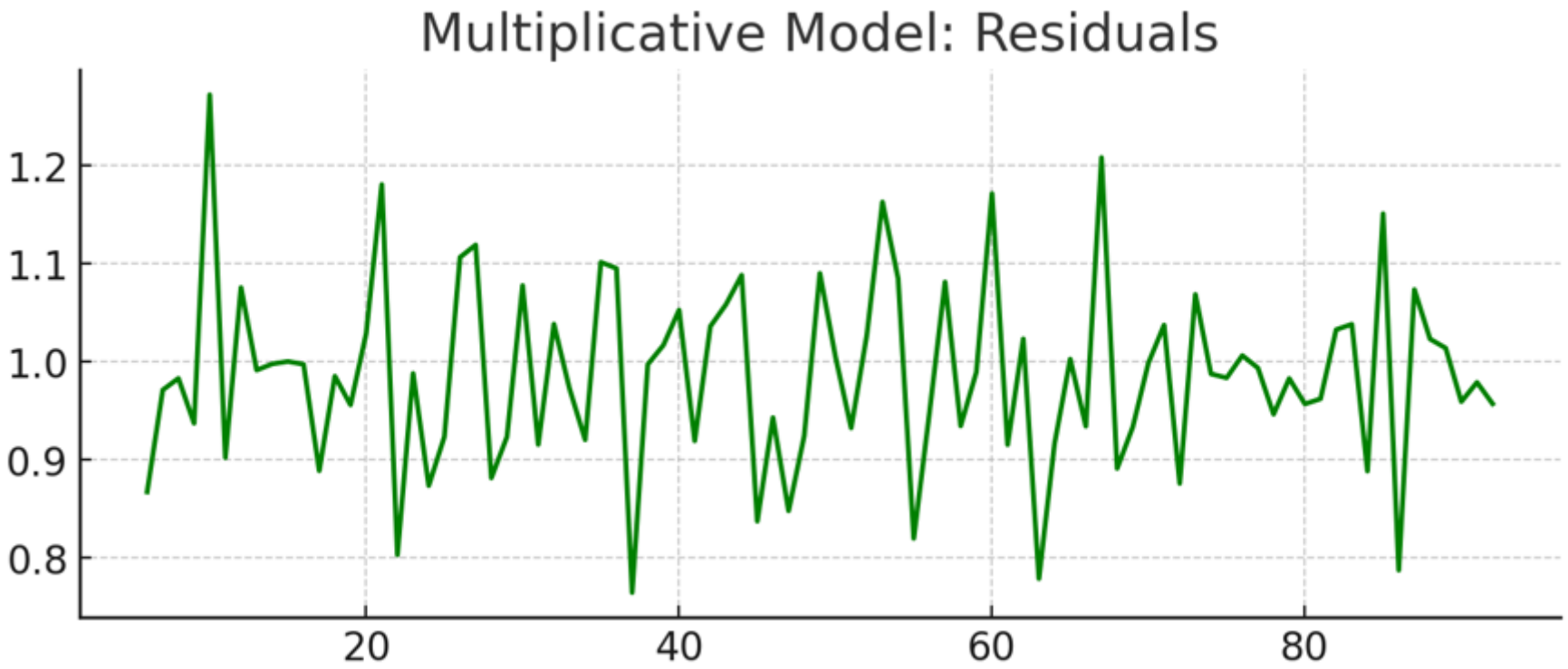


Multiplicative Model’s trend grows exponentially

Cognate/Professional Electives



Multiplicative Model's seasonal pattern increases in magnitude over time (amplitude grows larger)



Multiplicative Model’s residuals noise grows larger as the series increases

[Code Demo]

Thank you very much for listening.