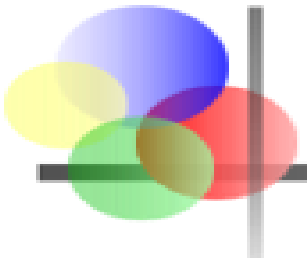
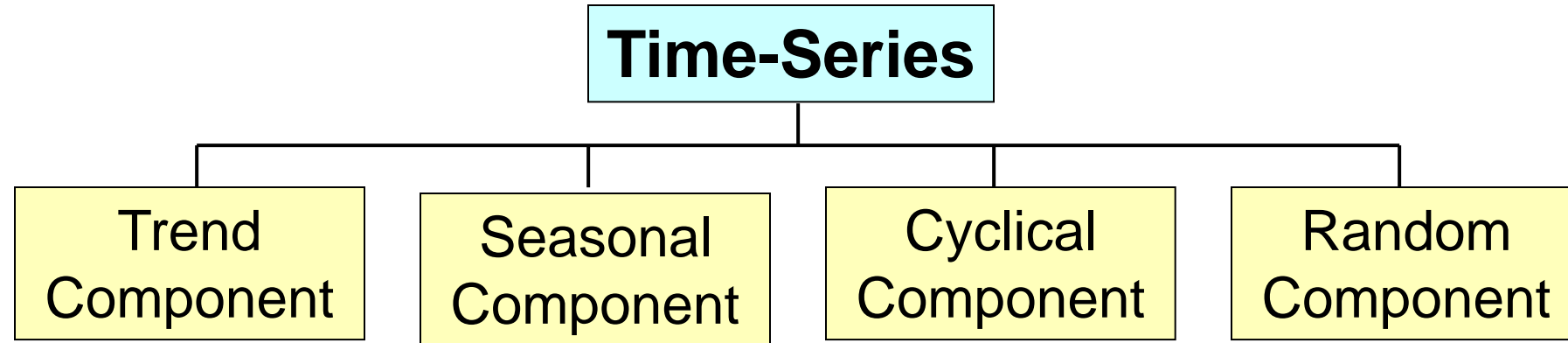


# Time Series

Part 2

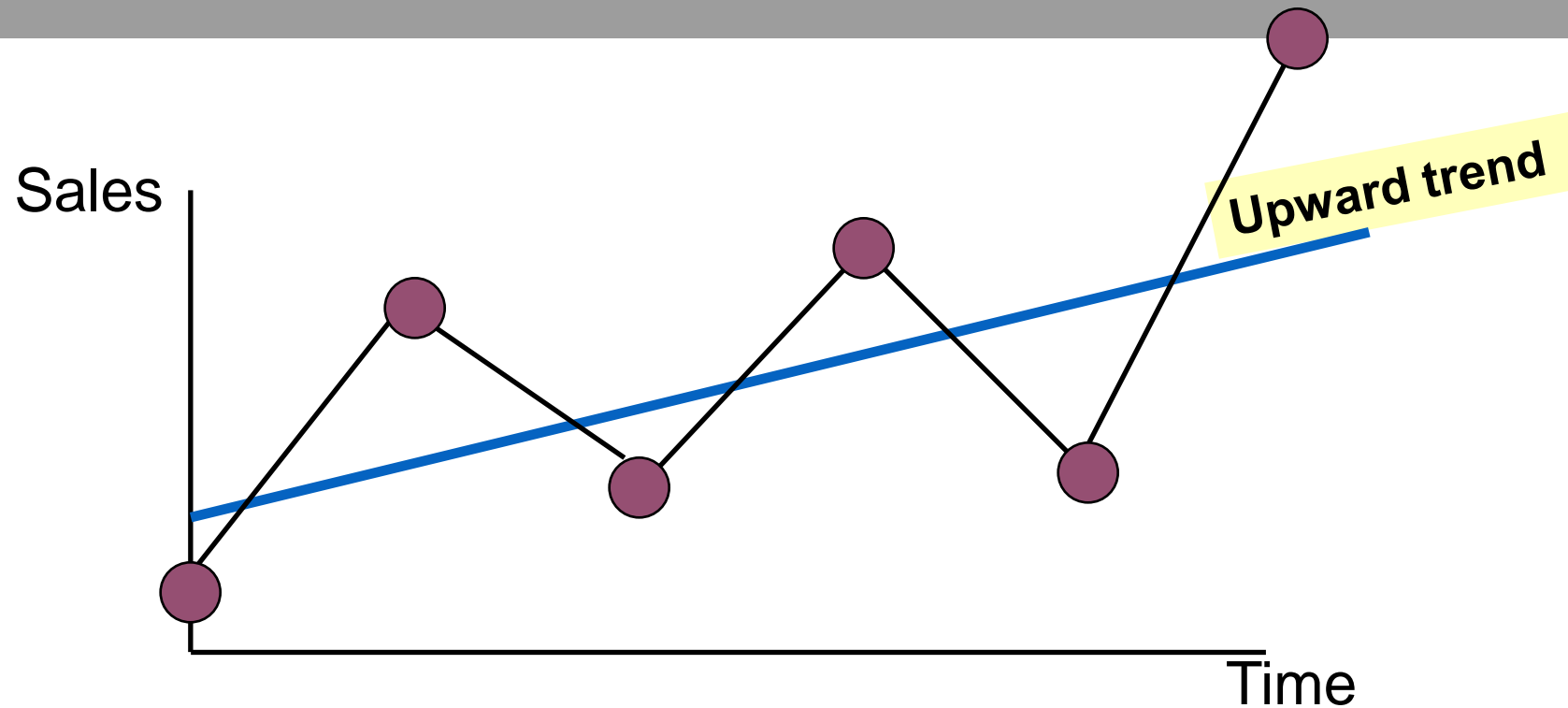


# Time-Series Components



# Trend Component

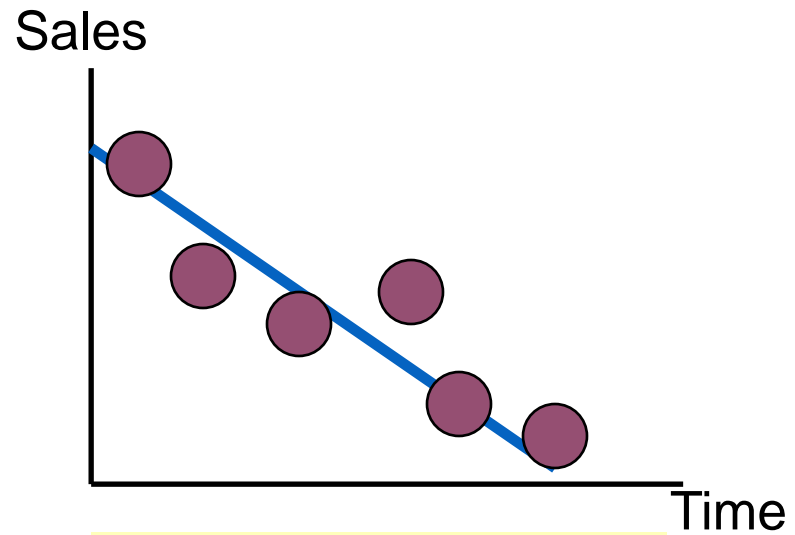
- Long-run increase or decrease over time (overall upward or downward movement)
- Data taken over a long period of time



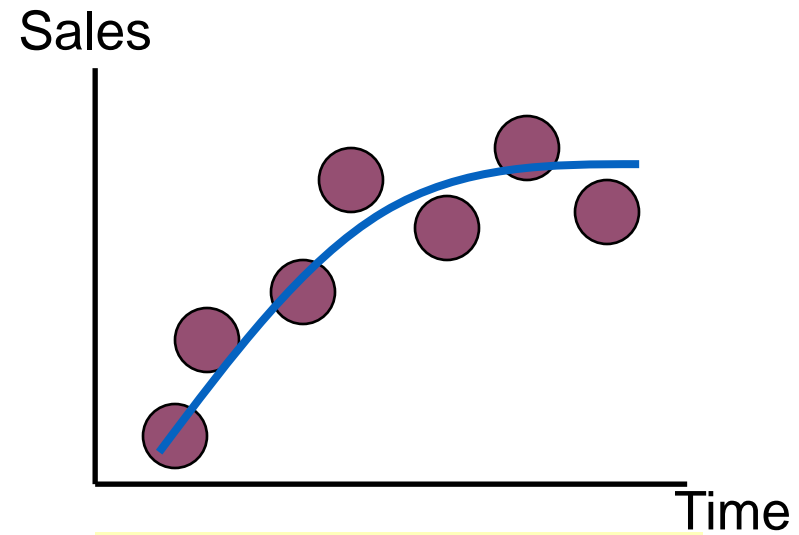
# Trend Component

*(continued)*

- Trend can be upward or downward
- Trend can be linear or non-linear



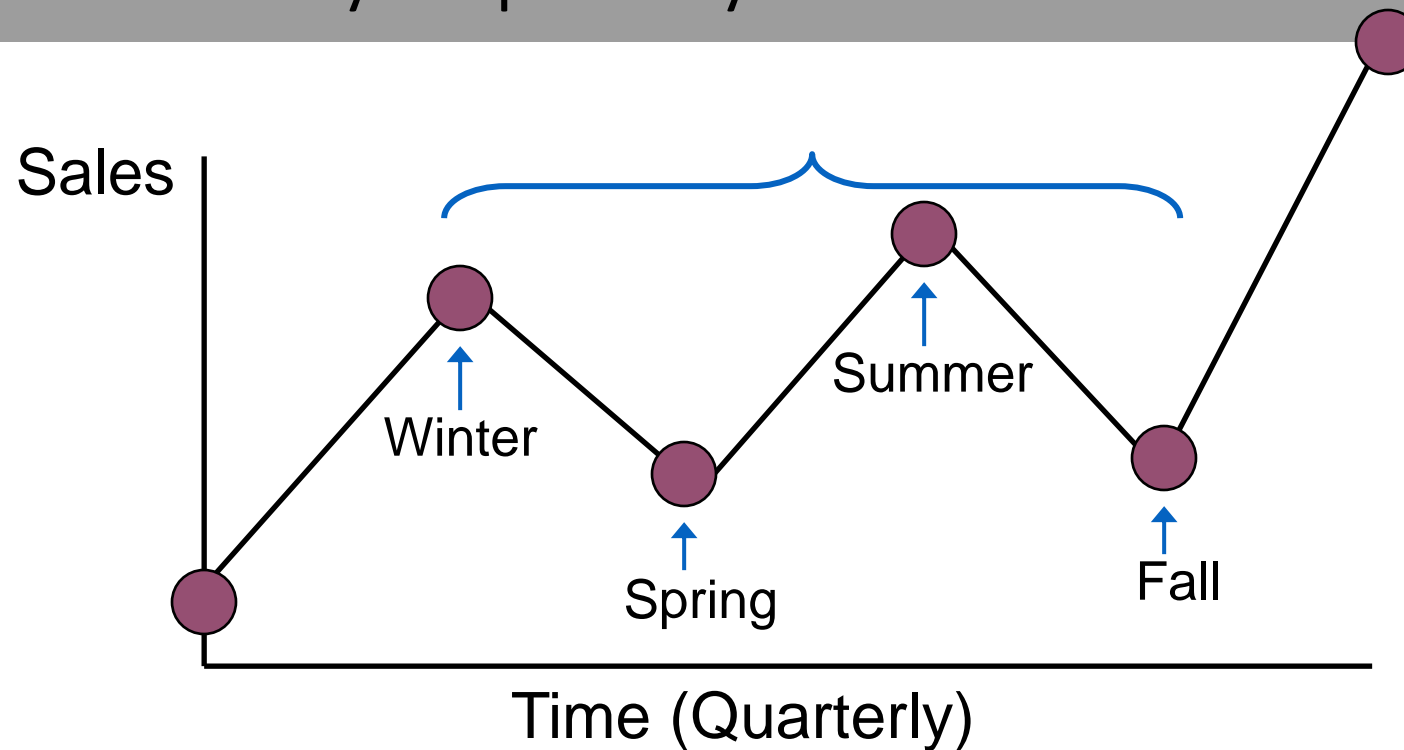
Downward linear trend

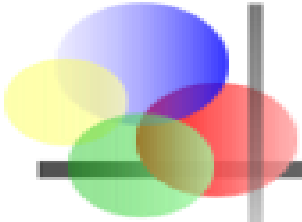


Upward nonlinear trend

# Seasonal Component

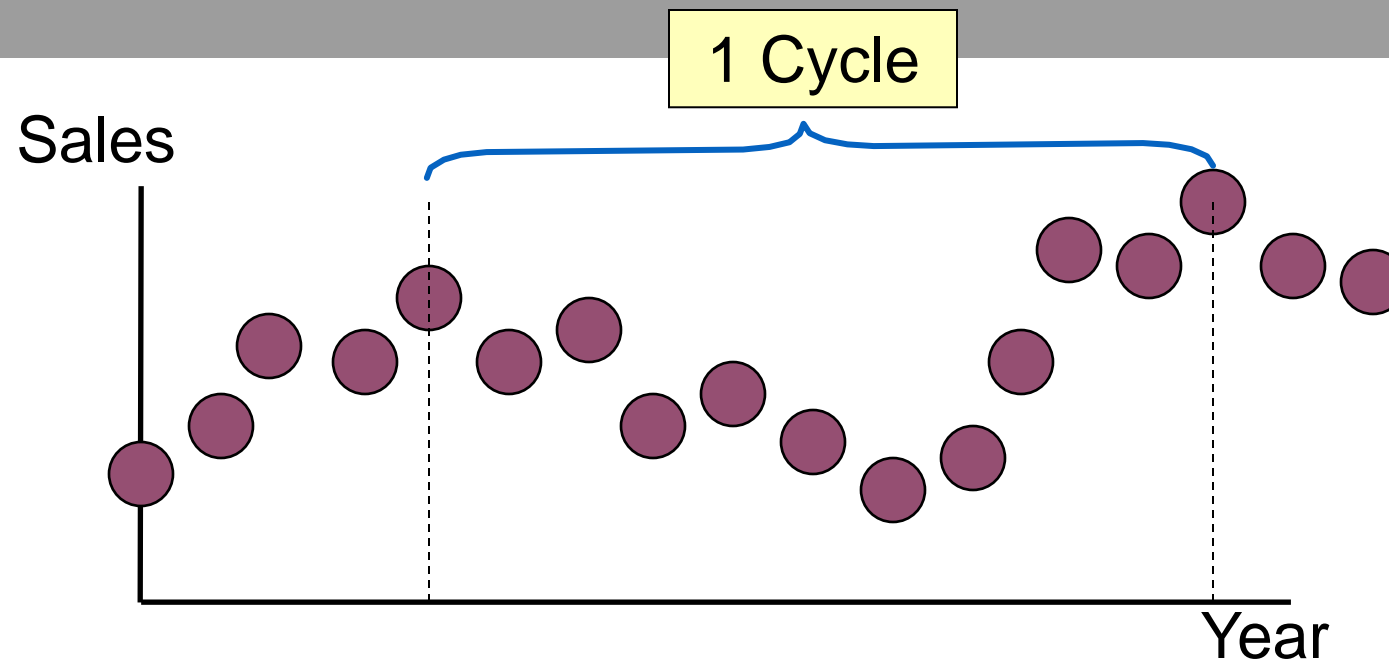
- **Short-term** regular wave-like patterns
- Observed within 1 year
- Often monthly or quarterly





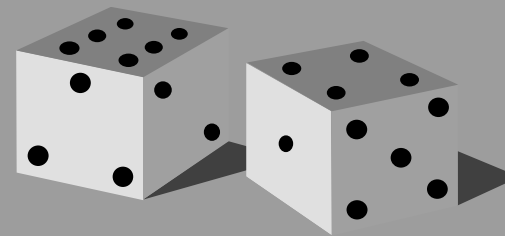
# Cyclical Component

- Long-term wave-like patterns
- Regularly occur but may vary in length
- Often measured peak to peak or trough to trough



# Random Component

- Unpredictable, random, “residual” fluctuations
- Due to random variations of
  - Nature
  - Accidents or unusual events
- “Noise” in the time series





# Time Series Components

**THANK YOU**