STAT9005 – *'Time Series and Factor Analysis'*

CRN 26645
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This module provides methods to develop and critically evaluate structural equation modelling and time series models. To view the module descriptor, click here.

Among the many topics covered are:

- **Factor analysis**: Data screening, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), Structural Equation Modelling (SEM);

- **Time series analysis:** Decomposition (trend, periodicity, seasonality, white noise), Smoothing Techniques, Autoregressive (AR), Moving Average (MA) and mixed (ARIMA) models.

- Use of *RStudio* to generate and analyse models.
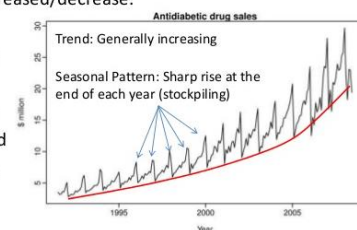
Structural Equation Modeling
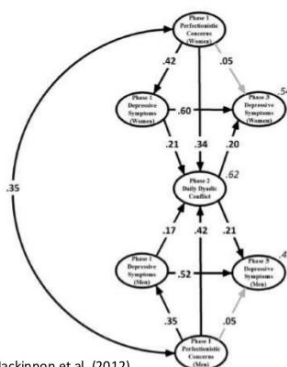
Like path analysis, except looks at relationships among latent variables

Useful, because it accounts for the unreliability of measurement so it offers more un-biased parameters

Also lets you test virtually any theory you might have

Mackinnon et al. (2012)

Time Series Data

- Observations (at regular intervals) sequentially over time.
- Forecasting extrapolates trend and seasonal patterns.
- Trend : long term increased/decrease.
- Seasonal: e.g. daily weekly, yearly (fixed & known length).
- Cycle: rises/falls that are not a fixed period (variable & unknown length).

Antidiabetic drug sales

Trend: Generally increasing

Seasonal Pattern: Sharp rise at the end of each year (stockpiling)

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