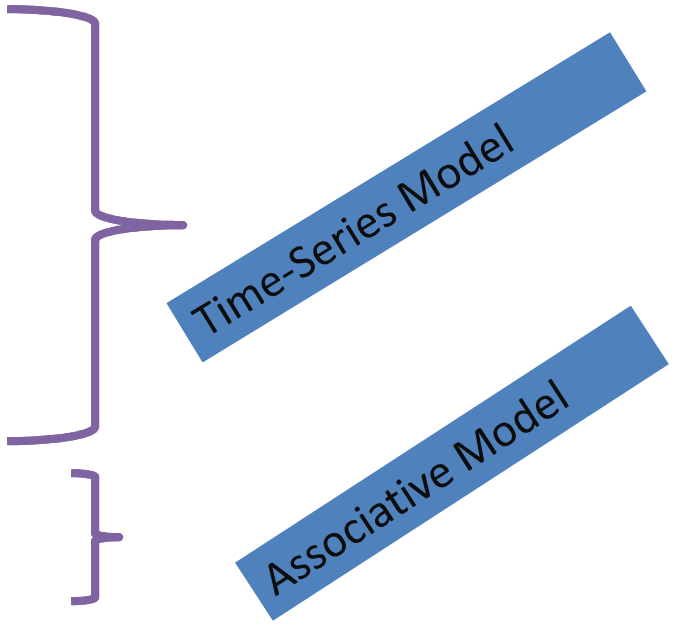
Quantitative Forecasting Methods

- Naïve Approach
- Moving Averages
- Exponential Smoothing
- Trend projection
- *Linear Regression*



Time Series Models

- Future is the function of past
- Use series of past data to forecast

Associative Models

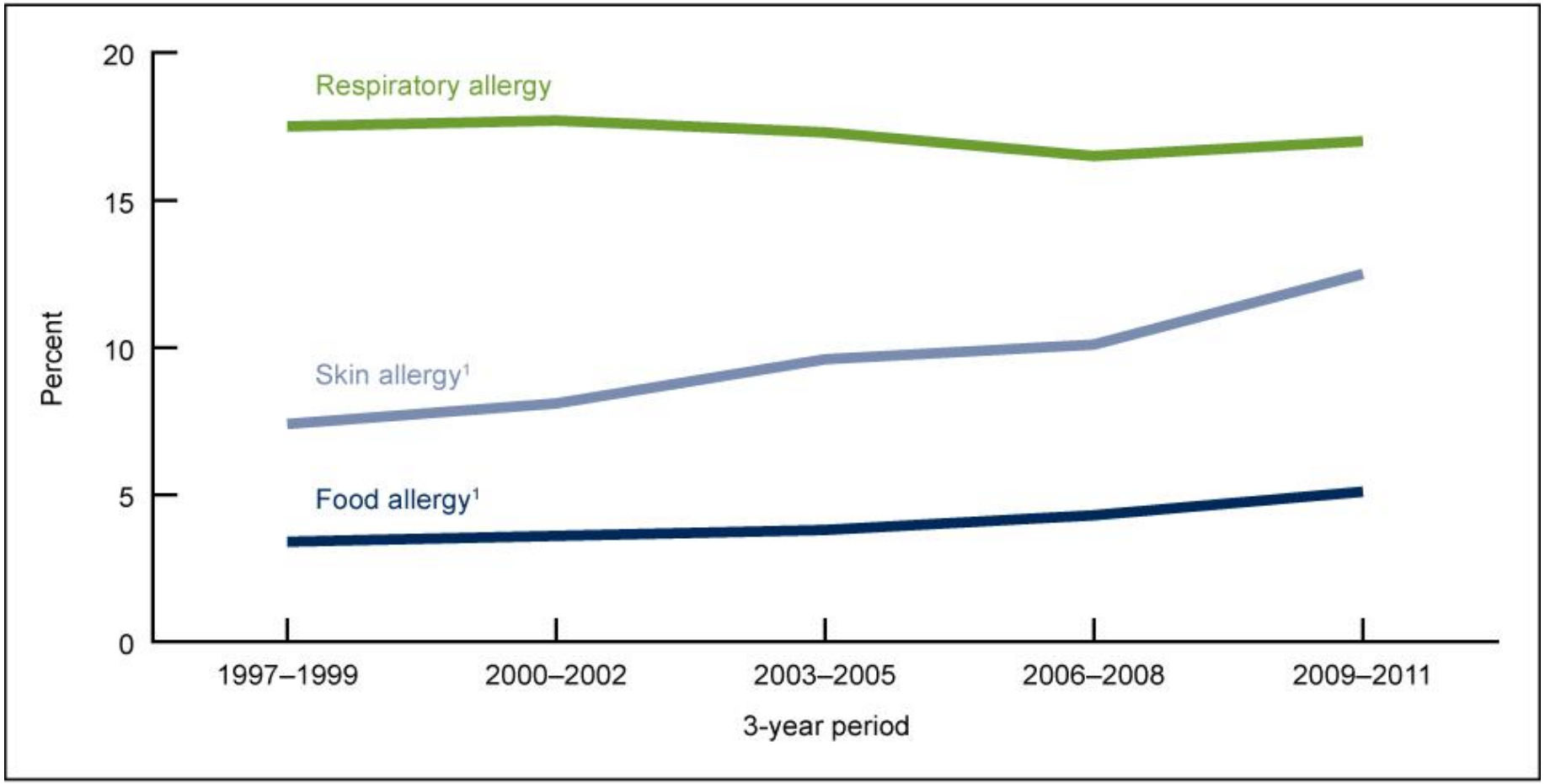
- Causal Models
- Involves variables that might influence the quantity being forecast

Decomposition of Time Series

- Trend- Gradual upward or downward movement of data
- Seasonality-Data that repeats itself after a period of days
- Cycles- Data pattern that occurs after several years
- Random variations- No observable pattern

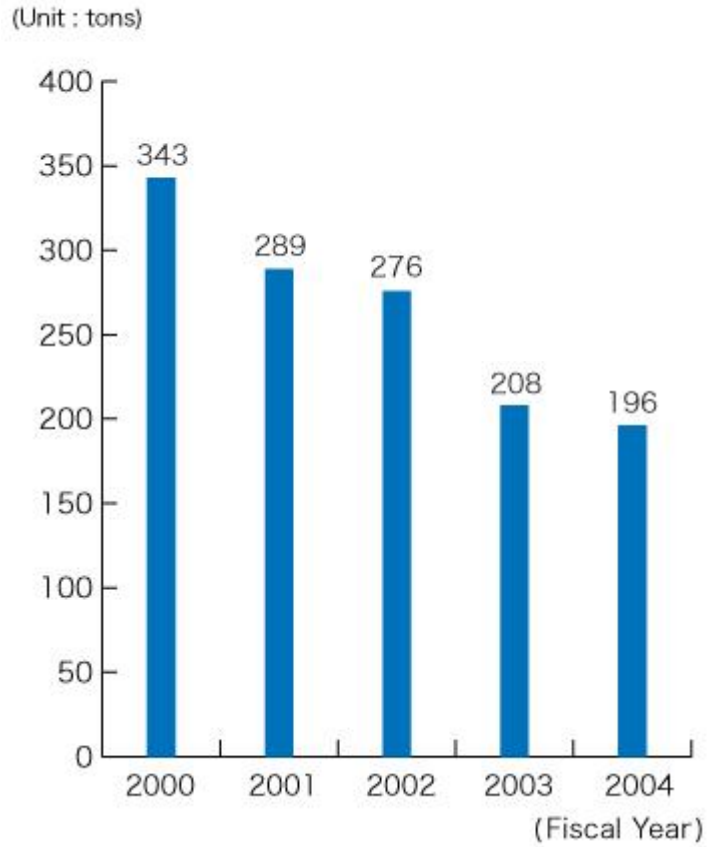
Increasing Trend in Data

Figure 1. Percentage of children aged 0–17 years with a reported allergic condition in the past 12 months: United States, 1997–2011

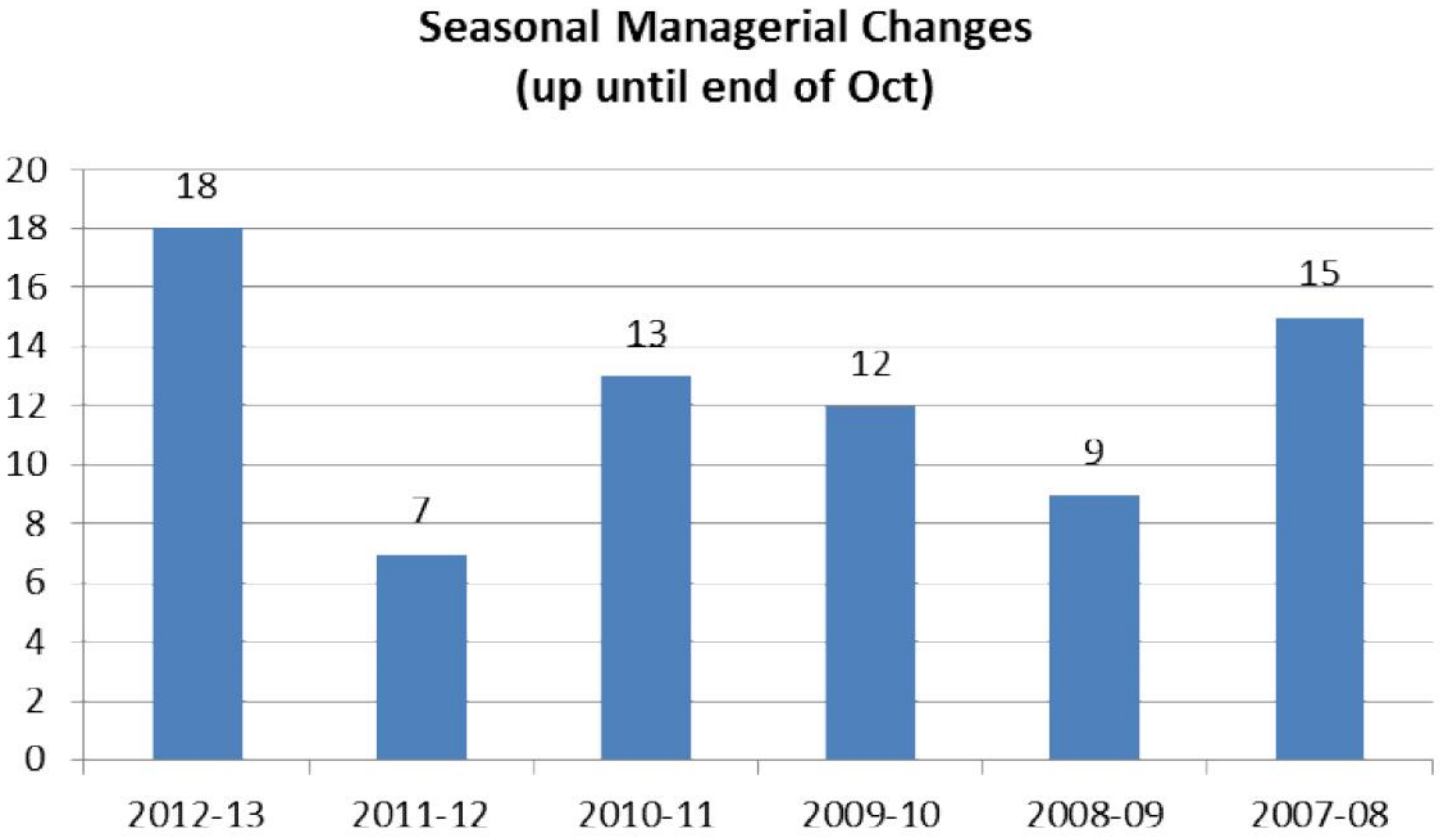


[1]Significant increasing linear trend for food and skin allergy from 1997–1999 to 2009–2011.
SOURCE: CDC/NCHS, Health Data Interactive, National Health Interview Survey.

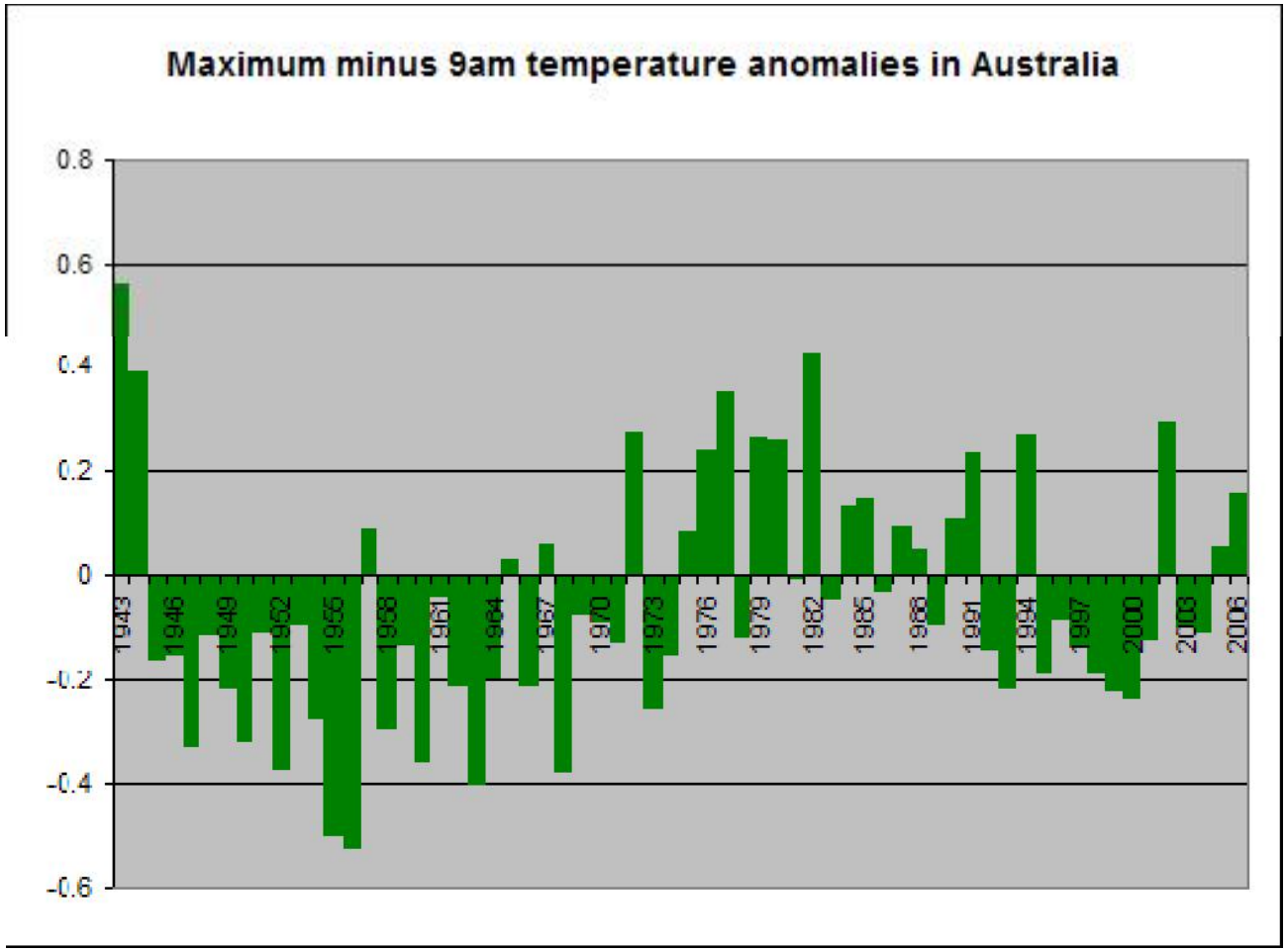
Decreasing Trends



Seasonal Data



Cyclic Data


Maximum minus 9am temperature anomalies in Australia
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
1943
1946
1949
1952
1955
1958
1961
1964
1967
1970
1973
1976
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006