Revealing Change

Group 4

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Decomposing a time series

Summary of the manipulation

- Separate time series into 3 components:
    - Trend
    - Seasonality
    - Noise

Types of patterns this manipulation makes easier for a viewer

- Good for anything that have a circular/seasonal pattern
    - Removing seasonality can show long-term trends
- Reducing noise reduces random anomalies that can't be accounted for that can skew results
- Breaking into components separately helps paint the whole picture and easier for viewers to digest what you're trying to show

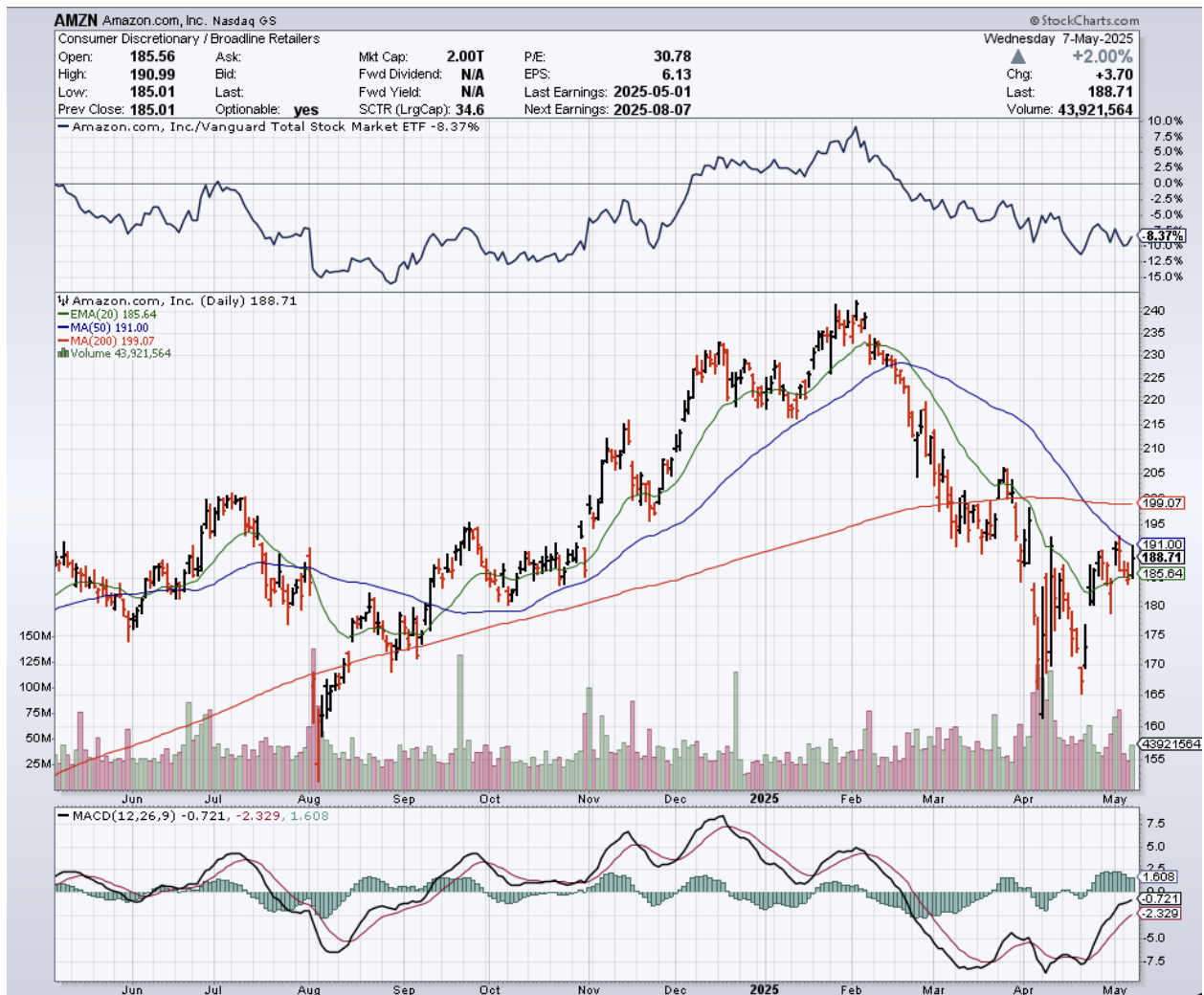### Example of graphic from beyond the book

Source

Figure 1: Stock charts show moving averages in addition to daily variability

Using a single index

Summary of the manipulation

- Use a single index origin as a reference point and graph % change relative to that point rather than absolute change

Types of patterns this manipulation makes easier for a viewer

- Direct comparison to reference point
- Shows relative change vs absolute change which is easier to compare and demonstrate your point
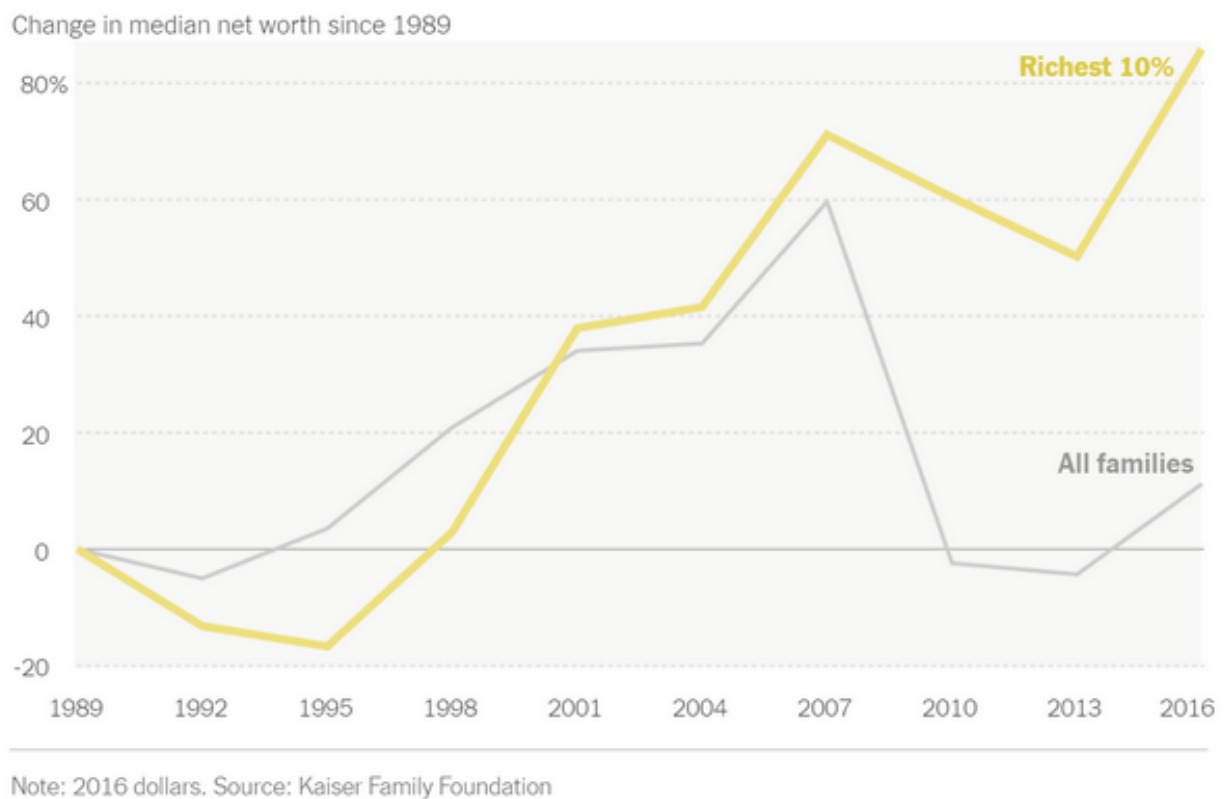
Example of graphic from beyond the book

Figure 2: Shows median net worth change in relation to values in 1989.

Source

Using a rate of change

Summary of the manipulation

- Calculates ratio between consecutive time periods
  - For exponential growth or large ranges, log values can be used

Types of patterns this manipulation makes easier for a viewer

- Can highlight potential warning signs that aren't readily apparent from raw data
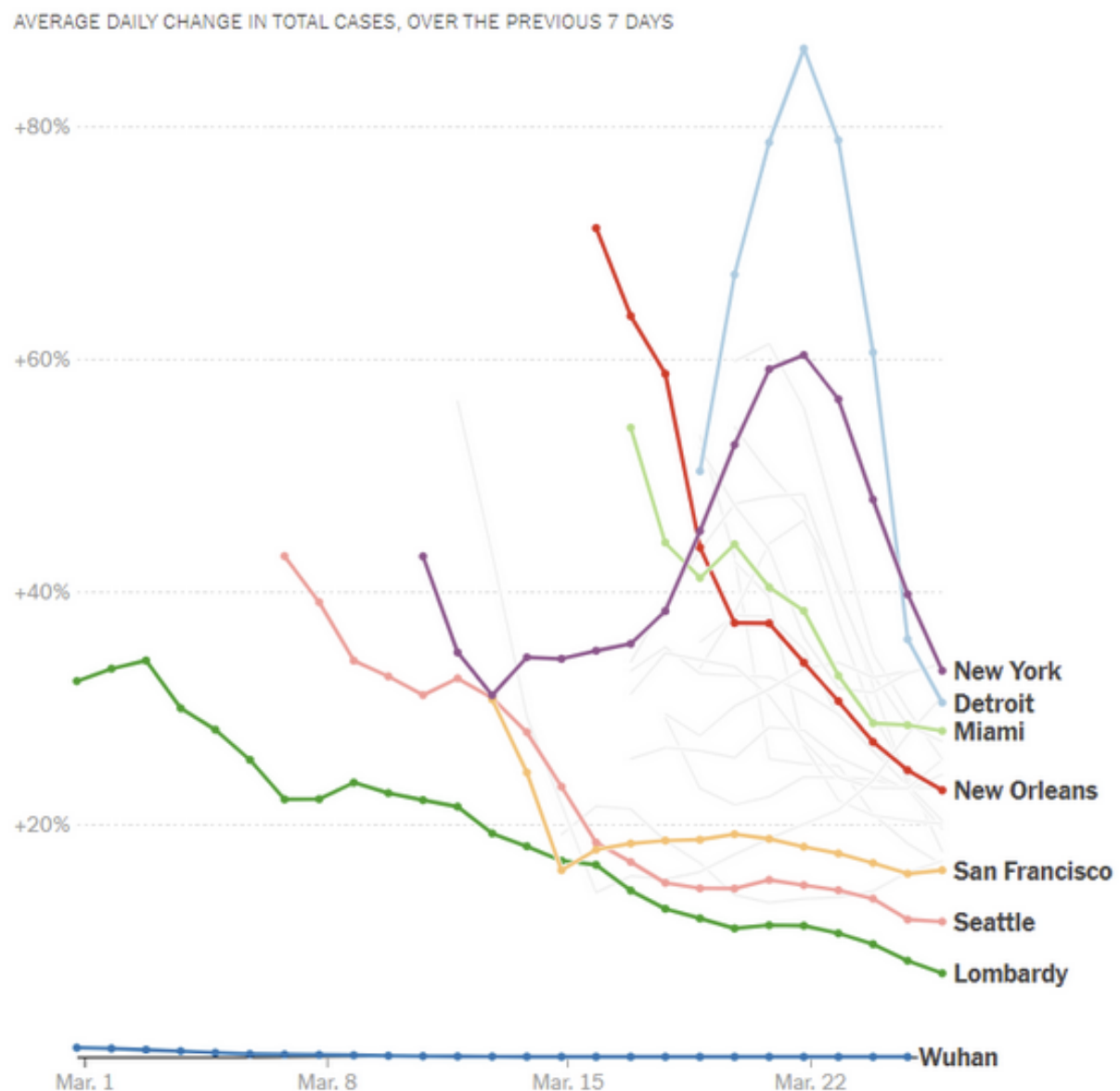
Example of graphic from beyond the book

Figure 3: Displays rate of change in COVID cases in different cities

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Source