

Time

Raoul Grouls, 5 maart 2024

Recap leerdoelen les 2

- Leren toepassen van visualisatie principes
- Omgaan met venv, uv, path, scripts en git
- Oefenen met nieuwe features extraheren met behulp van regular expressions
- Vergelijken van categorieën met behulp van data visualisaties:
 - Barplots
 - Barbell plot
 - heatmaps
- Werken met palettes (en list comprehensions)
- Pandas
 - Pandas groupby & aggregate
 - Pandas cut

Leerdoelen les 3

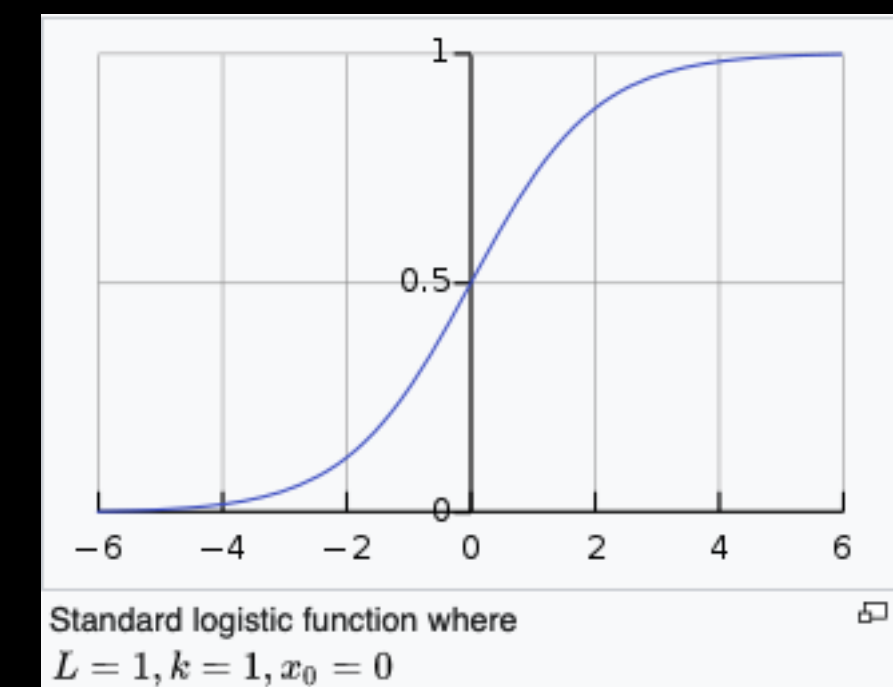
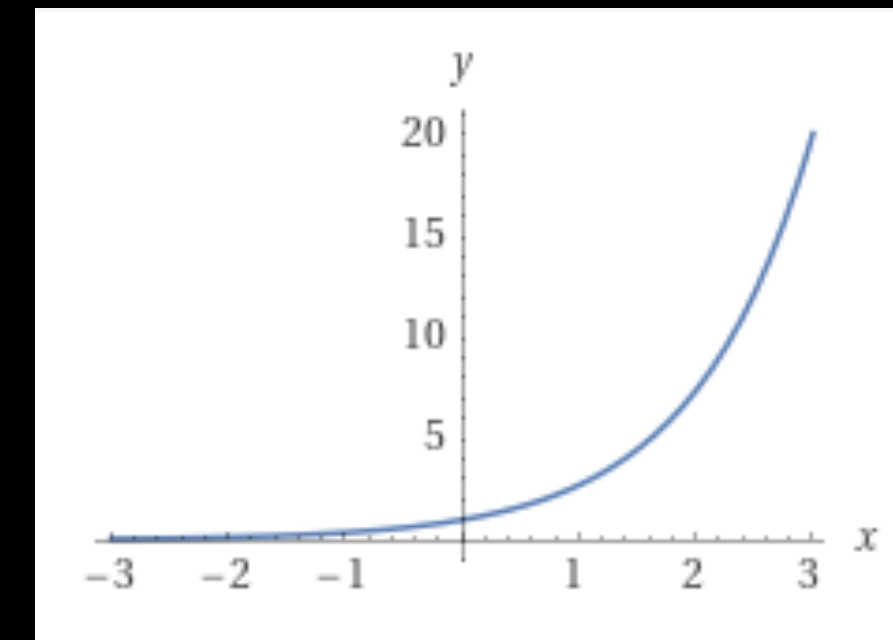
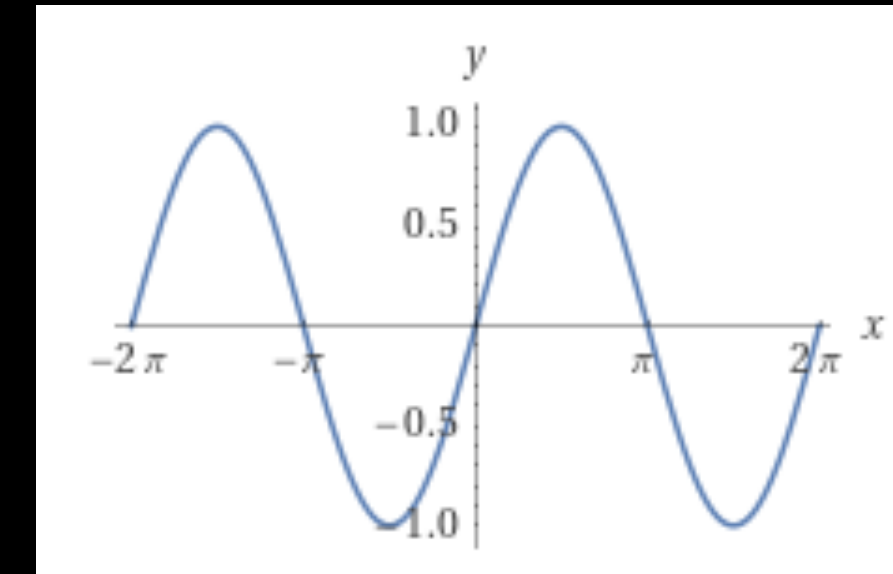
- Leren toepassen van visualisatie principes
 - Vier basisprincipes leren herkennen
 - Werken met timestamps
 - Autocorrelation (statsmodels)
 - Seasonal decompose (Trend, Seasonal, Residu)
 - Fourier transforms: the main idea
 - Using Fourier transforms to model timeseries
- Python
 - Code principes van codestyle leren volgen (niet hardcoden, classes/inheritance, isoleren settings, SRP, open-closed)
 - Pandas .dt (isoweek, date, day_name, see docs for more)
 - Pandas reindex
 - Seaborn FacetGrid
 - Seaborn .map
 - Plotly px.area
 - Statsmodels acf, seasonal_decompose
 - scipy.fft, scipy.signal

The four horsemen of modelling

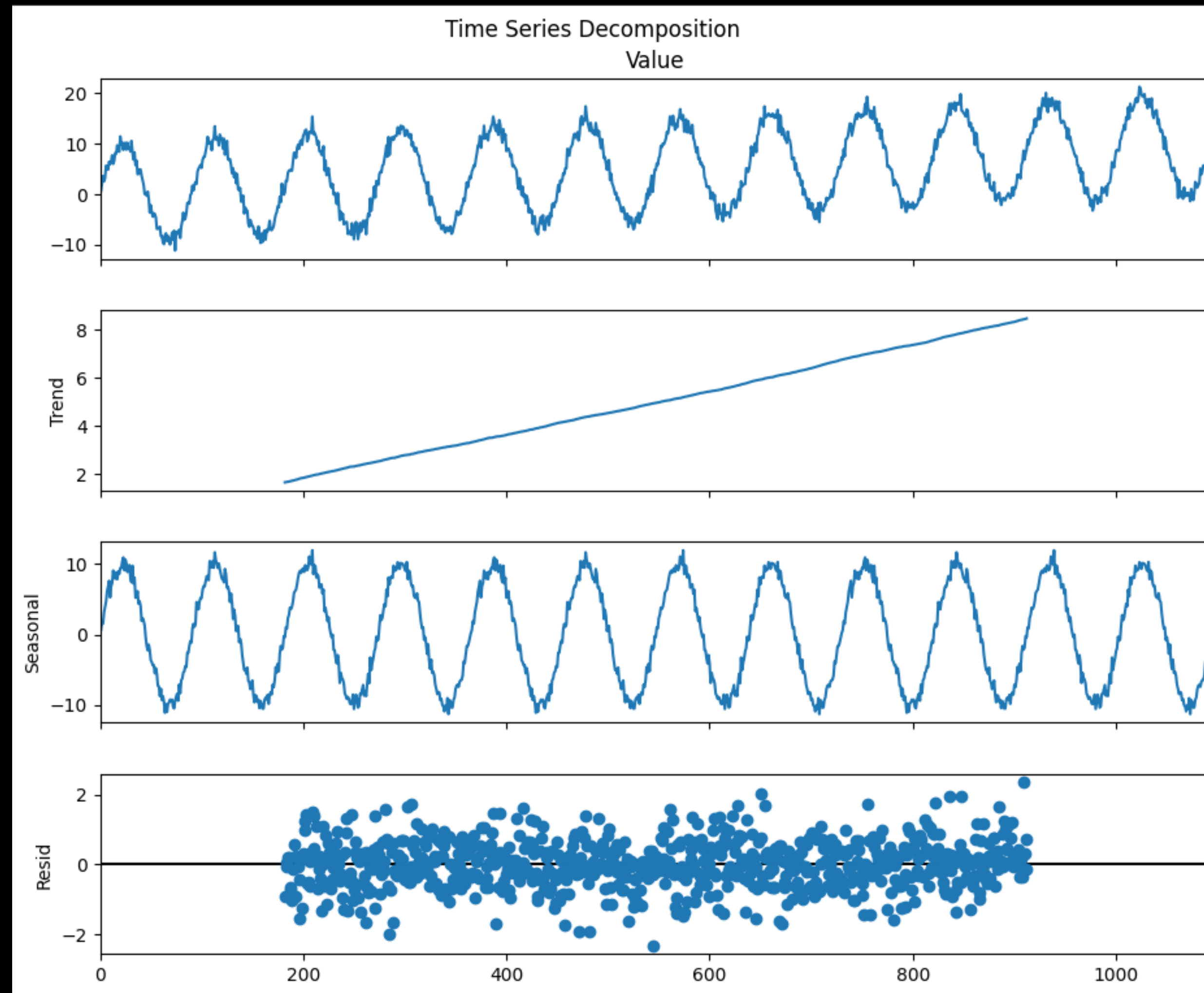
- Linear
- Sine
- Logistic
- Exponential

The four horsemen of modelling

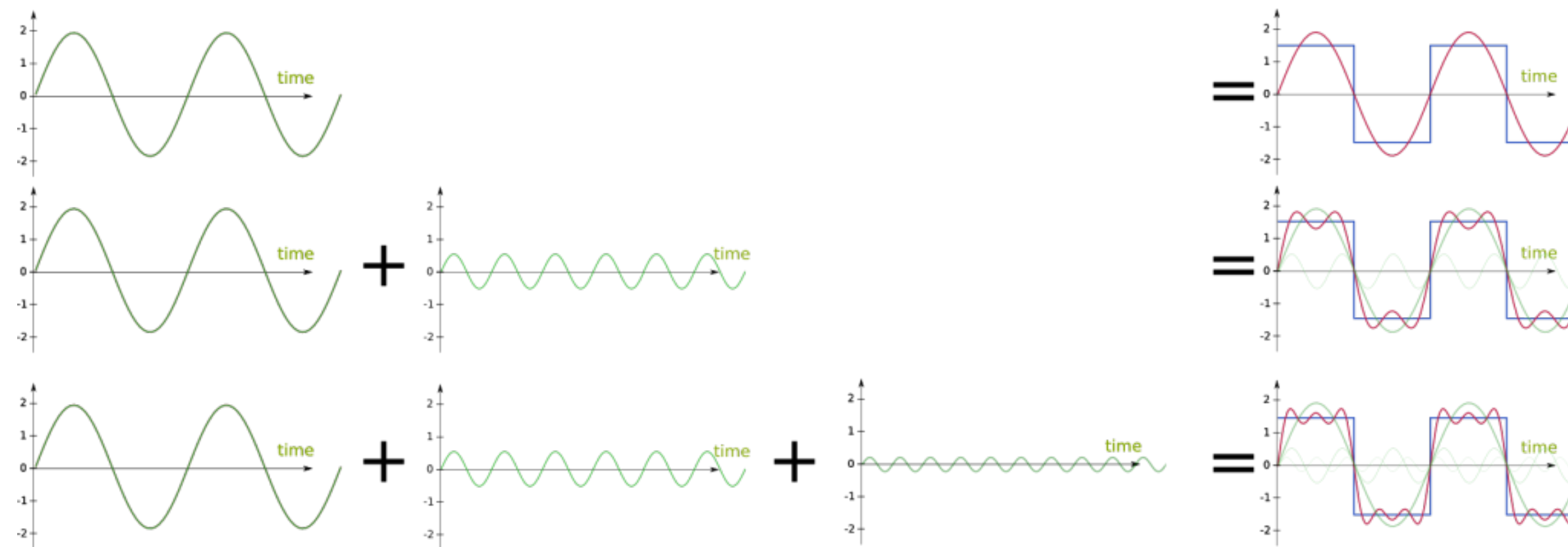
- Linear: $f(X) = WX + b$
- Sine: $f(t) = A \cdot \sin(\omega t + \phi)$ with A for amplitude, ω for angular frequency (radians/sec), and ϕ for phase shift with $0 \leq \phi \leq 2\pi$
- Exponential: $f(x) = e^x$
- Logistic: $f(x) = \frac{L}{1 + e^{-k(x-x_0)}}$ with L max value, k growth rate and x_0 midpoint



Timeseries decomposition

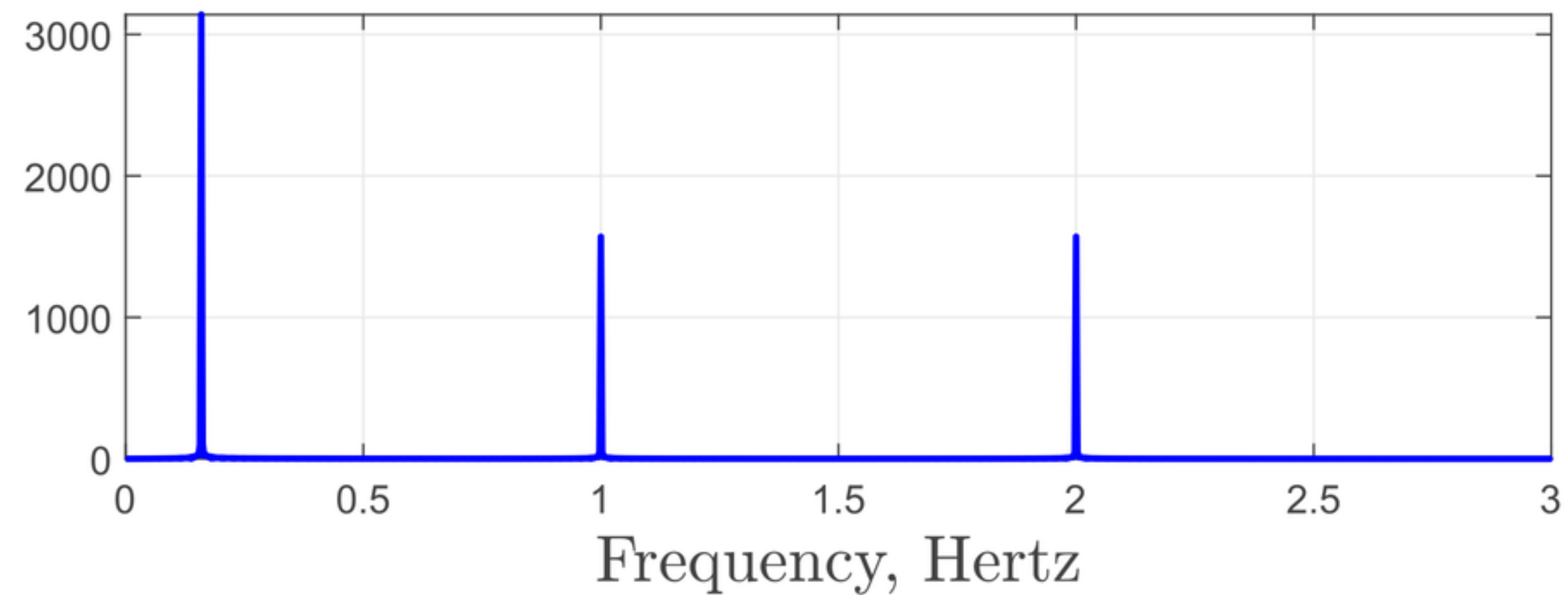
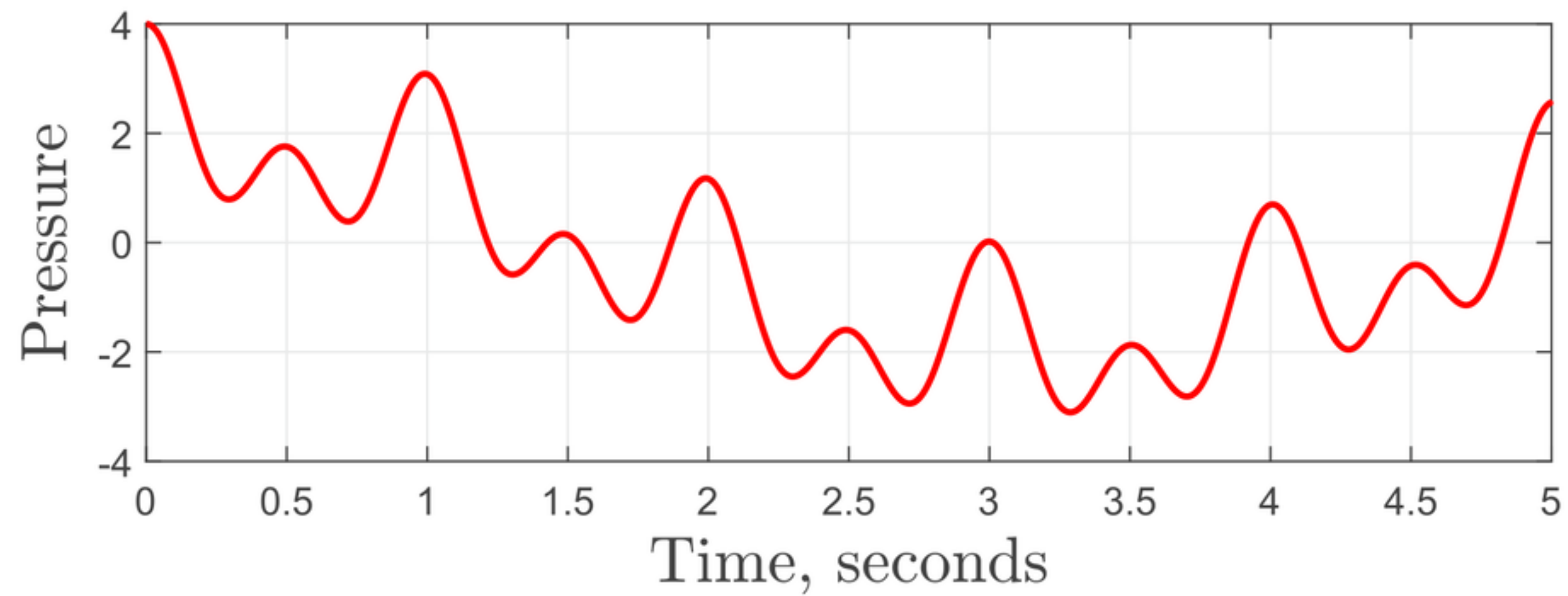


Fourier Transforms



And so on...

Fourier Transforms



Polio

