



jedox.

V 2.0.2

Jedox Alssisted™ Planning

CHEAT SHEET ON AISSISTED™ PLANNING SERVICES

Univariate Forecasting

STATISTICAL



Linear Model

Data Needs: Trend & Seasonality

Speed & Quality: Fast speed; High quality (Highly data dependent)

Uses **trend and seasonality** to create a linear model for prediction



Holt Winters

Data Needs: Periodicity & Seasonality required, at least 2 periods of data

Speed & Quality: Fast speed; High quality (Highly data dependent)

Uses **trend, season** and level to predict Time Series Forecast; recommended for larger prediction ranges (> 1 year)



Seasonal Naive

Data Needs: Seasonality required

Speed & Quality: Fastest speed; Intermediate quality (Heavily data dependent)

Basic ARIMA modelling assuming **seasonality**



Exponential Smoothing

Data Needs: Periodicity, at least 2 periods of data

Speed & Quality: Intermediate speed; High quality (Highly data dependency)

Uses **trend** and **season** to predict Time Series Forecast; recommended for larger prediction ranges (> 1 year)



ARIMA

Data Needs: No specific data characteristics needed

Speed & Quality: Intermediate speed; Highest quality (Lowest data dependency)

Uses **trend, periodicity, seasonality**, cyclic nature of time to create optimized ARIMA model series; recommended for larger prediction ranges (> 1 year)



Random Walk with Drift

Data Needs: No specific data characteristics needed

Speed & Result Quality: Fastest speed; Intermediate quality (Heavily data dependent)

Uses **automated drift (error)** calculation

Univariate Forecasting

INNOVATIVE



Decompose **non-linear relationships** in season and trend, bias adjustment (Box Cox transformation); recommended for larger prediction ranges (> 1 year)



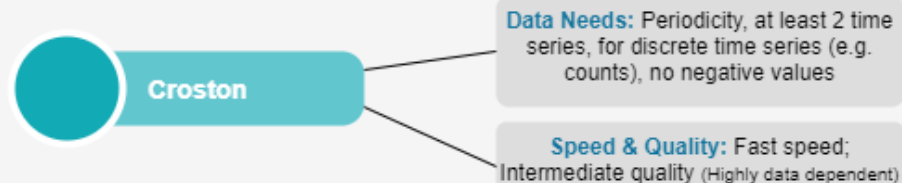
Decompose **non-linear relationships** in season (**automatically optimized**) and trend, bias adjustment (Box Cox transformation); recommended for larger prediction ranges (> 1 year)



Uses **multiple, shifted seasonalities**, bias adjustment (Box Cox transformation); recommended for larger prediction ranges (> 1 year)



Univariate **Neural Network model** (layers, weights), bias adjustment



Combines **exponential smoothing** estimates with **average demand intervals** to create a model for prediction

Multivariate Forecasting

DRIVER BASED



Linear Model

Data Notes: Suitable for simpler problems with fewer features

Speed & Quality: Fastest speed; best results with small number of features



Random Forest

Data Notes: Handles cases with large number of features but smaller number of samples

Speed & Quality: Slow speed, good results possible out of the box, start here

- Each estimator trained on random sample from data



Extra Trees

Data Notes: Handles cases with large number of features but smaller number of samples

Speed & Quality: Intermediate speed, good results possible out of the box, start here

- Similar to Random Forest but with more randomization
- Faster to compute than Random Forest
- Performs better than Random Forest with more features



Adaboost

Data Notes: Sensitive to data with outliers

Speed & Quality: Fast speed, Intermediate quality (overfitting can be a problem)

- Continuously improve estimator by learning from errors of previous one
- Predict based on weighted average, more likely to overfit

Multivariate Forecasting

DRIVER BASED

Gradient Boost

Data Notes: Sensitive to data with outliers

Speed & Quality: Fast speed; Intermediate quality (overfitting can be a problem)

- Similar method to Adaboost; small technical differences
- Gradient Boosting tends to outperform Adaboost

SVM

Data Notes: Works well with large number of features, requires extensive hyper-parameter search for best results

Speed & Quality: Slower to get highest quality results with hyper-parameter search

Support Vector Machines

- Can model more complex non-linear relationships
- Works well with a large number of features
- Training time can increase heavily with bigger database

Nearest Neighbors

Data Notes: Handles more complex non-linear relationships and large amount of features

Speed & Result Quality: Speed increases heavily with larger datasets, good results possible with little tuning

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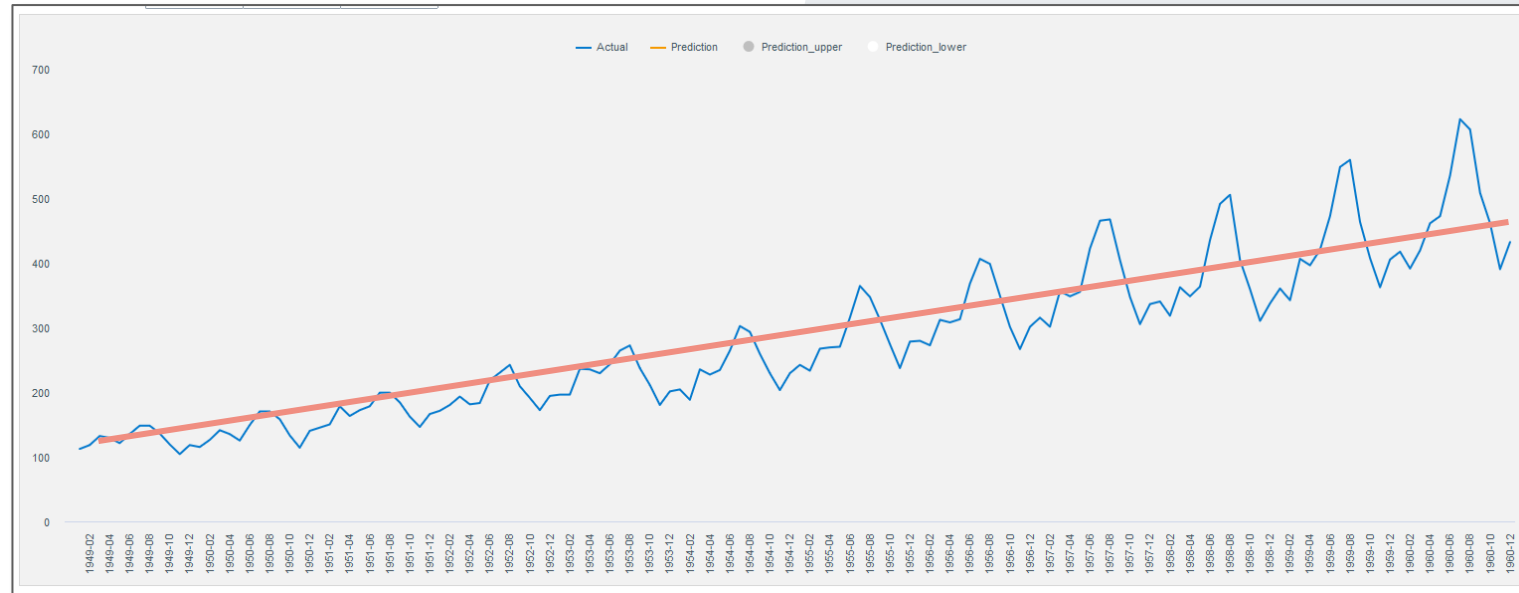


What the Algorithms Do



Trend

Decrease, Increase, Static...



Always Look at Data Before the Project

Saves time, gives you better idea of what level to predict



Simplify Planning, Reporting & Analytics

Jedox Alssisted™ Planning – THE AI



What the Algorithms Do



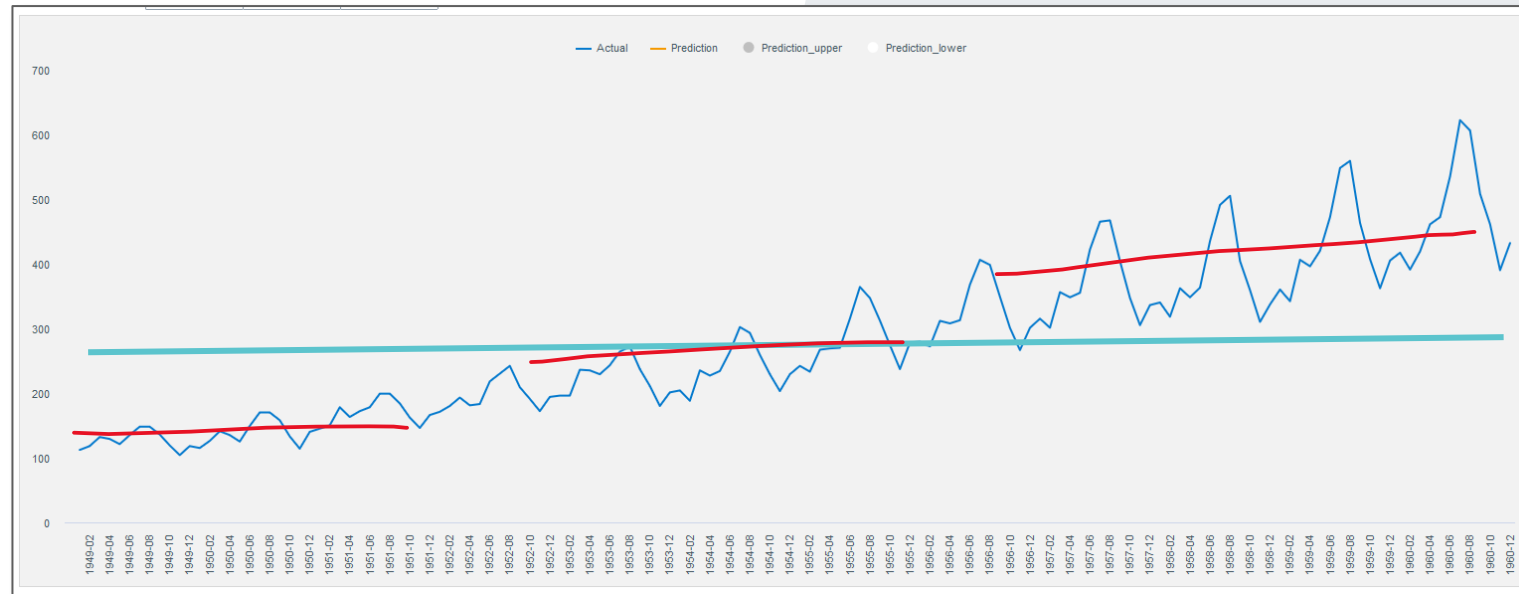
Trend

Decrease, Increase, Static...



Level

Average of Value



Always Look at Data Before the Project

Saves time, gives you better idea of what level to predict



Simplify Planning, Reporting & Analytics

Jedox Alssisted™ Planning – THE AI



What the Algorithms Do



Trend

Decrease, Increase, Static...



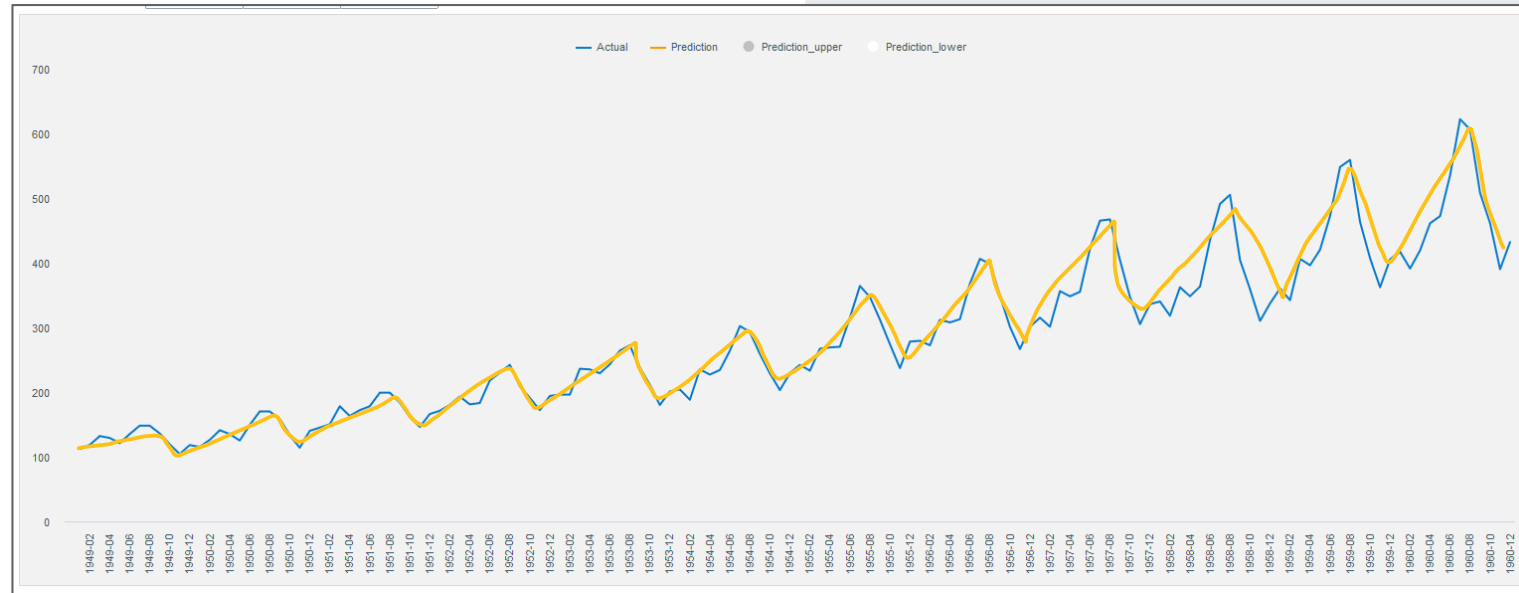
Level

Average of Value



Seasonality

Peaks, valley, etc.



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Saves time, gives you better idea of what level to predict



Simplify Planning, Reporting & Analytics

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What the Algorithms Do



Trend

Decrease, Increase, Static...



Level

Average of Value



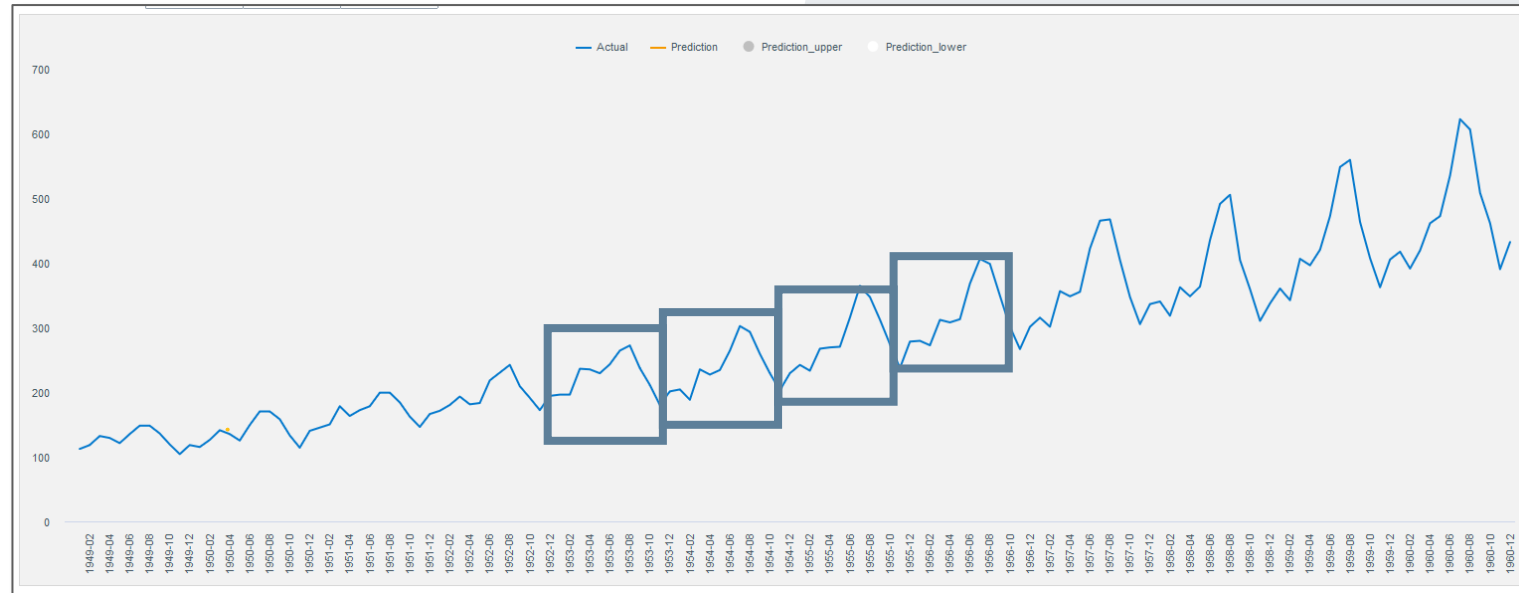
Seasonality

Peaks, valley, etc.



Period

e.g. 1 year



Always Look at Data Before the Project

Saves time, gives you better idea of what level to predict

Jedox Alssisted™ Planning – THE AI



Algorithms take all of this into account to calculate Prediction



Trend

Decrease, Increase, Static...



Level

Average of Value



Seasonality

Peaks, valley, etc.



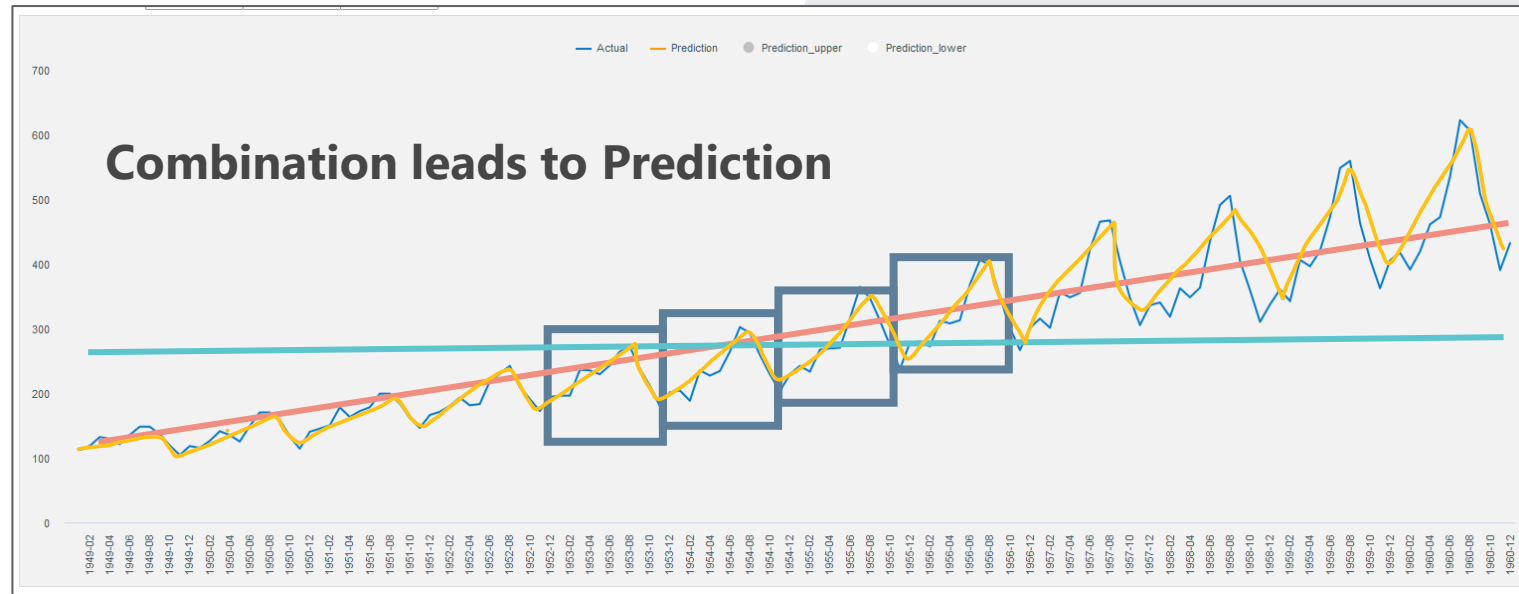
Period

e.g. 1 year



Always Look at Data Before the Project

Saves time, gives you better idea of what level to predict



Data Preparation: Outlier Detection

SIMPLE | MEDIUM | ADVANCED (SEASONAL)

Innovational

Data Notes: Works with most data sets; detects unusual innovation in the generating process that affects all later observations

Speed & Quality: Intermediate speed; High quality

Additive

Data Notes: Works with most data sets; detects outliers affecting only a single observation

Speed & Quality: Intermediate speed; High quality

Level Shift

Data Notes: Works with time series data; detects level shifts

Speed & Quality: Intermediate speed; High quality

Temporary Changes

Data Notes: Works with time series data; detects a spike that takes a few periods to disappear

Speed & Quality: Intermediate speed; High quality

Seasonal Shift

Data Notes: Works with seasonal data; considers seasonal shift

Speed & Quality: Intermediate speed; High quality

Time Series

Data Notes: Works with time series data; basic time series outlier detection

Speed & Quality: Intermediate speed; High quality

Cook's Distance

Data Notes: Works with most data sets; least square-based outlier detection

Speed & Quality: Fast speed; Intermediate quality

Extreme Values

Data Notes: Works with most data sets; Simple fallback function detecting minimum and maximum values

Speed & Quality: Fastest speed; Low quality

Data Preparation: Interpolation

