

# Trending and Forecasting in Intellicus

Version: 7.3

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**Dated: September 2015**

## **Acknowledgements**

Intellicus acknowledges using of third-party libraries to extend support to the functionalities that they provide.

For details, visit: <http://www.intellicus.com/acknowledgements.htm>

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# 1 Trending and Forecasting

Intellicus employs Trend Lines under charts in order to know patterns and relationships in data. On the Ad-hoc chart wizard or Ad hoc Visualizer, you can select a value field and open trend line dialog to choose one or more trend algorithms to draw trend lines. Intellicus also provides an automatic selection of best applicable algorithm based on the data at runtime.

You can extend the trend lines to predict forecast values. Intellicus supports both forward and backward predictions. The forecasting should be assumed as in the same units as the actual data. This enables you to predict future behavior and take planned actions/ decisions in a timely manner.

## Selecting Trend Lines and Forecast

Under Navigation > Design > Ad hoc Report Wizard > Chart (or Navigation > Analytics > Ad hoc Visualizer > Chart), the **Chart Properties** screen appears:

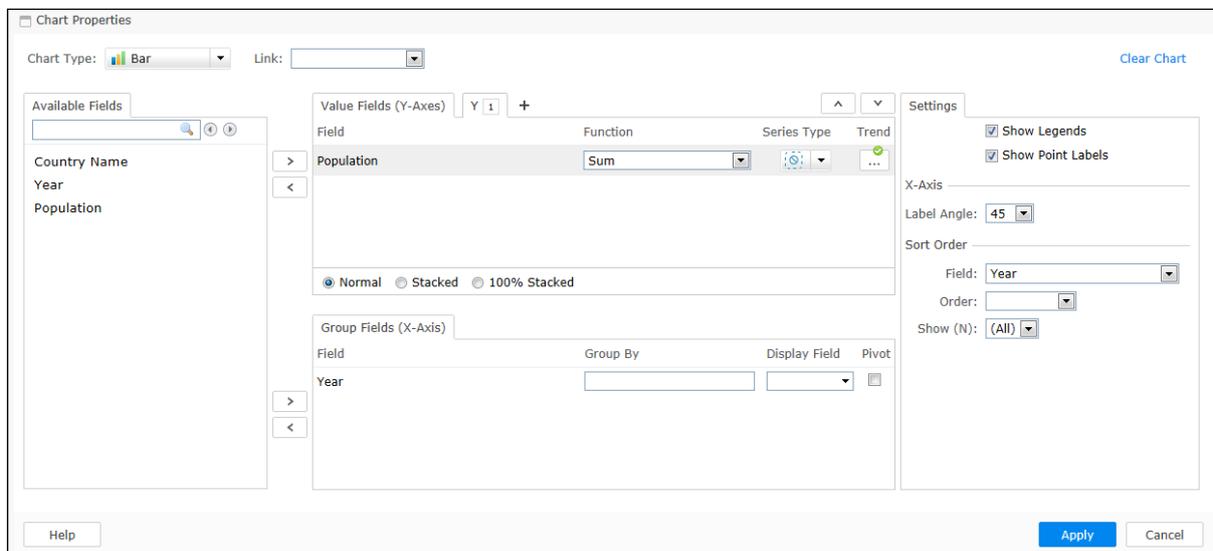
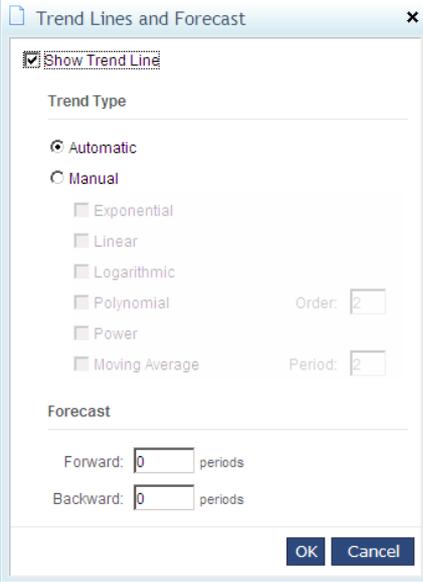


Figure 1: Chart Properties

Upon selecting the **Trend** button on the Value Fields, you can choose options on the **Trend Lines and Forecast** dialog as given in the underneath table:

Item	Values	Comments
Trend	Set Trend options 	Opens Trend Lines and Forecast dialog
Show Trend Line	Check/Uncheck	Check = Adds a trend line to this series. Trend line will be a line type chart (straight or curved) irrespective of base chart type and series chart type  Uncheck = Switch off trend line for this series
Trend Type	Automatic  Manual	Automatic = The tool selects one of the trending algorithms automatically based on the data  Manual = You can choose one of the algorithms for drawing trend line: Exponential, Linear, Logarithmic, Polynomial, Power, Moving Average
Trend Manual Polynomial - Order	0-5	Defines the order of polynomial trend line.  The order of the polynomial determines by the number of fluctuations in the curve
Trend Manual Moving Average	0-N	Determines the number of data points to average and use as average value for trending

Forecast	Forward Backward	Specify trend line for future or back period of time
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Choosing a Trend Line Type depends upon your data. You can select the following:

Trend Line Type	Data Type
Exponential	When data values rise or fall at increasingly higher rates. Data should not contain zero or negative values
Linear	Works best with simple linear data sets. A linear trend line usually shows that something is increasing or decreasing at a steady rate
Logarithmic	When the rate of change in the data increases or decreases quickly and then levels out. A logarithmic trend line can use negative and/or positive values
Polynomial	When data fluctuates, for example, for analyzing gains and losses over a large data set. The order of the polynomial can be determined by the number of fluctuations in the data
Power	With data sets that compare measurements that increase at a specific rate — for example, the acceleration of a race car at one-second intervals. You cannot create a power trend line if your data contains zero or negative values
Moving Average	A moving average trend line uses a specific number of data points (set by the Period option), averages them, and uses the average value as a point in the trend line

**Note:** The **Trend** button is enabled in case the Chart Type is Bar, Line, Area, Curve, Curve Area or Scatter.

## Forecasting Examples

An interactive chart showing Population on its Y-axis and Year on X axis with Trend Line algorithm selected as Exponential is shown below.

You can see predictive values in the chart upon adding forecasting (say for 5 Periods) based on this trend line algorithm.

Generally it is advised to forecast not more than 10-15% extended units of input data, for example if you have 40 input data units, forecast 4-6 units.



Figure 2: Forecasting Values (Exponential Trend Line Type Algorithm)

Interactive charts help you study chart data points in detail by zooming in and out. You can interactively switch on or off each trend line to compare among them and actual data.

You can also see forecast values of your data choosing another Trend Line algorithm (selected as Moving Average in the underneath chart).

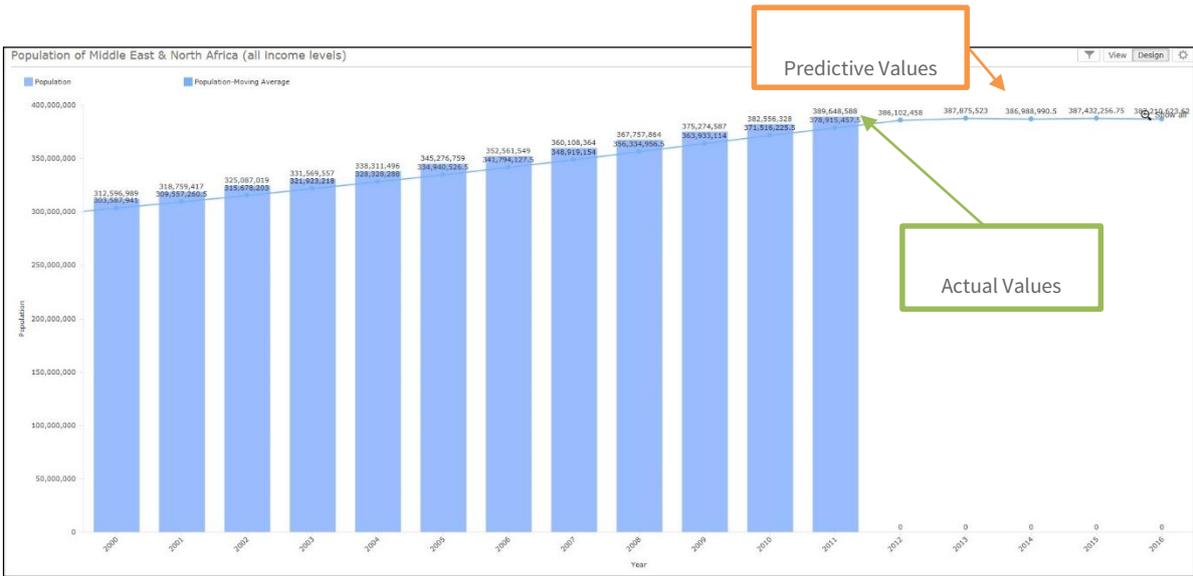


Figure 3: Forecasting Values (Moving Average Trend Line Type Algorithm)