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**SoftwareFX**  
*Any Chart, Anywhere!*



# Chart FX Statistical Quick Start Guide

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# Chart FX Statistical Quick Start Guide

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## **Introduction**

In the global business and economic environment of today, vast amounts of business data are readily available. In fact, data is being collected and stored at ever increasing rates.

The most successful managers and decision makers are the ones who can understand the data, determine what useful information may be hidden within it and ultimately use that information effectively.

Some of the most crucial information a store of data may hold is its collection of statistical properties and trends. Statistics are used to analyze all aspects of business from markets to quality to processes and even people.

The business leaders of today's success stories know what information they want from their business data. Chart FX Statistical was designed with just these individuals and the developers they work with in mind!

If you think Chart FX Statistical could give you a fresh perspective on your organization's information, Read On!

## **What is Chart FX Statistical?**

Chart FX Statistical extends the power of Chart FX by adding statistical analysis capabilities to your charting applications.

Chart FX Statistical works with a chart's data to give deeper insight by complementing the core functionality of Chart FX with an assortment of studies organized into groups. Developers can devote effort to application specific tasks and let Chart FX Statistical handle mathematical operations and algorithms to realize information including Standard Deviation, Variance, Regression Line, Normal Distribution and F-Test to name a few.

In addition, a collection of calculations have been assembled that can easily be applied to chart data; Developers may even choose to perform tests or apply the supported analysis studies to chart data using this feature.

To present these features to the end user, Chart FX Statistical expands its gallery class with new members for displaying statistical information including Box Plot, Histogram and Regression.

Just take a closer look:

## Analysis Studies

Chart FX Statistical has defined a large set of statistical analysis formulas to allow you to concentrate on your application's business logic and leave the mathematical equations to be handled by Chart FX Statistical. These formulas have been logically classified in to three categories: distribution formulas, analysis formulas and test formulas.

There are a number of common situations that require statistical distributions. One common use is to evaluate the confidence limits for a fitted model, like the mean of a Normal distribution. Chart FX Statistical defines a number of distribution formulas including: Chi Square, Cumulative-Normal, Cumulative-T, F, Inverse-Cumulative-Normal, Normal and a number of others.

The analysis studies, like linear regression, form a group of studies that deal with the classic statistical problem of determining a relationship between multiple random variables. Chart FX Statistical defines many different formulas to deal with various types of data. The "Descriptive Statistics" group defines formulas on a single sample of data; like median, mean, mode, standard deviation, etc.

Chart FX Statistical can also help you to make inferences about the relationship between two independent variables. Examples of this variety include Covariance, Pearson Correlation Coefficient, Linear Regression, etc.

Another important subgroup of analysis studies is Statistical Process Control (SPC). Chart FX Statistical has included a number of SPC calculations including Sigma, Ppk and Weco.

The last category defined by Chart FX Statistical is the test analysis calculations. These tests are used to test for a certain relationship between the data and return a value indicating whether or not they passed the test. The members of this group include RegressionFTest, RegressionTTest and Weco.

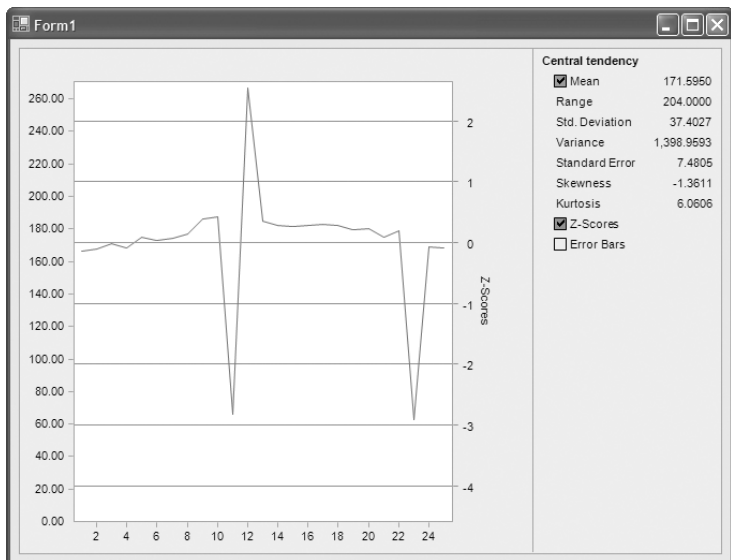
Although these calculations would be complicated to code from scratch Chart FX Statistical has made it very easy to include these studies to your application, for example:

```
statistics1.Studies.Add(Distributions.ChiSquare);  
statistics1.Studies.Add(Analysis.Min);  
statistics1.Studies.Add(Test.RegressionFTest);
```

## Study Groups

As there are so many different studies that can be applied to your data, Chart FX Statistical created a number of “prefab” study groups to help you rapidly integrate the frequently used studies into your charts. These groups allow you to include a number of studies with very little code! For example:

```
statistics1.Studies.Add(StudyGroup.CentralTendencyMean);
```



Statistical indicators have been grouped according to end user preferences.

### Central Tendency Median

Median  
Lower Quartile  
Upper Quartile  
IQR

### Central Tendency Mean

Mean  
Std. Deviation  
Variance  
Standard Error  
Skewness  
Z-Scores  
Error Bars

### X/Y Correlation

Linear Regression  
Pearson's Coefficient  
Coefficient of  
Determination  
Standard Error of  
Estimate  
F-Statistic (Regression)  
t-Statistic (Regression)

### Two Populations

Equal Variances F-Test  
Equal Means t-Test

### Matched Populations

Equal Variances F-Test  
Equal Means t-Test

### Anova

Sum of Squares  
Treatments  
Sum of Squares Error  
Sum of Squares Total  
d.o.f. Treatments  
d.o.f. Error  
d.o.f. Total  
Mean Square Treatments  
Mean Square Error  
F-Statistic (Anova)

## Calculations

In many applications, developers may choose to retrieve actual values from the supported statistical functions and tests rather than simply displaying values in the legend or chart area.

Chart FX Statistical includes added support to gain access to these values by providing a Calculators feature. This feature provides developers with additional statistical functions as well as access to the previously discussed analysis studies and tests.

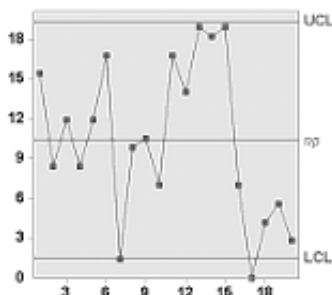
Additional Statistical Calculators include:

CalculateMeanInterval	CalculateRegression
CalculateStandardDeviationInterval	CalculateVarianceInterval
CalculateZScore	CalculateZScoreInverse

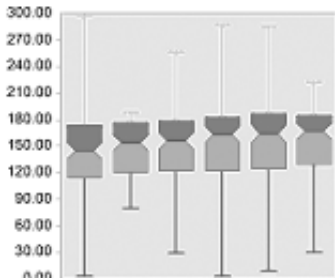
Utilizing this implementation, developers may obtain values from samples passed to the chart for further comparison and processing logic.

## Chart FX Galleries

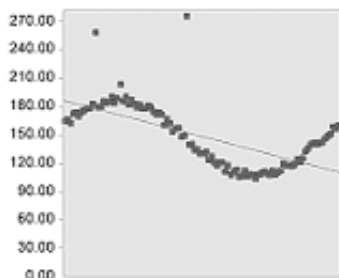
Chart FX Statistical Galleries are designed to give the best possible presentation to the end user. These include the BoxPlot, Frequency Polygon, Histogram, Regression, Ogive, and the SPC chart galleries.



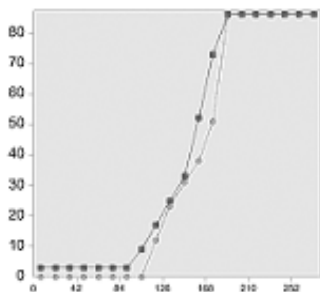
NPChart (SPC)



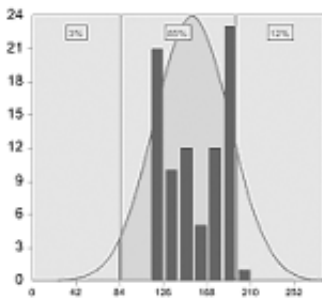
Box Whiskers



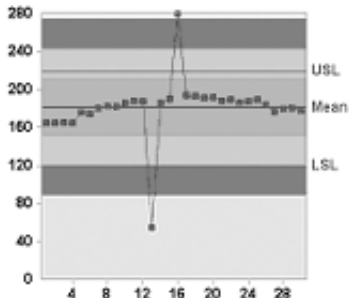
Linear Regression



Cumulative Frequency



Histogram



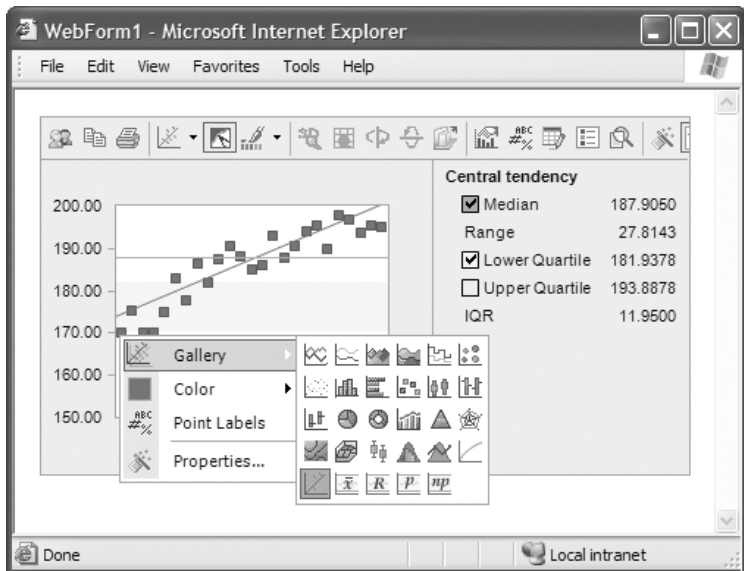
Statistical Process Control



## End User Interaction

At runtime, Chart FX Statistical provides an intuitive statistical legend that allows end users to view calculations and interact with selected analysis studies. By interacting with the legend, end users may enable studies and distributions in the chart area. Also, as with all the Chart FX extensions, the chart's default user interface controls are available. Once Chart FX Statistical is added to an existing chart, the statistical gallery types are available from the toolbar and context menu controls.

The following image illustrates Chart FX Statistical end user interaction in the context of a browser based application:



Note: This interaction is possible in Windows Forms as well as Web Forms applications via the Chart FX Statistical .NET client control which is fully managed and secure when running on the browser.

## Chart FX Statistical and Internet/Intranet Applications

Not only has Chart FX Statistical been developed with the server implementation in mind but its small memory footprint, browser independence and scalability makes it the perfect tool for any commercial or corporate grade application. Also, the Chart FX Statistical .NET client control can be easily and securely deployed across the organization via a single file download from Internet Explorer.

Performance wise, Chart FX Statistical can serve a multitude of end users with sub-second statistical charts and the solution is fully scalable and compatible with intricate server architectures, such as web farms.

## Adding Chart FX Statistical to a Visual Studio .NET Application

**1** Open Visual Studio .NET and select the New Project from the File Menu.

**2** Add Chart FX for .NET to your toolbox.

- Selects Tools-> Customize Toolbox.
- Select the .NET Framework Components tab and check the Chart control checkbox. Important: use the SoftwareFX.ChartFX namespace if you created a Windows Forms applications or SoftwareFX.ChartFX.Internet.Server if you want to use Chart FX Statistical in a Web Forms project.
- Once you have selected the chart control, click Ok.

To integrate the extension using Design-Time controls

**3** Create a Windows Form or Web Forms Charting Application within VS.NET. Select the Statistical control from your Toolbox and drop it to your form or page. This should create a Statistical Extension icon at the bottom of your design pane.

**4** Add a chart control to your form or page. Access the Statistics Properties dialog and configure the Chart property of the Statistics object to the name of the chart object you wish to add the extension, i.e. chart1.

Note: Due to a limitation in VS.NET, if you add the Chart before adding the Statistical extension to the project, you must save and close the project before you are able to configure the Chart property of the statistics object.

## **What's Included on the CD?**

The accompanied CD includes a fully functional version of Chart FX Statistical that you can activate with the license key displayed on the label or receipt. If you didn't purchase a Chart FX Statistical license or if you don't have Chart FX for .NET, the CD bundled with this package also provides a 30-day trial version of Chart FX for .NET and Chart FX Statistical.

If you are not a technical person, please ask a developer in your organization to put up a quick Chart FX Statistical demo application for you.

## **Requirements, Pricing and Licensing**

Chart FX Statistical requires Chart FX for .NET and Visual Studio .NET which are sold and licensed separately.

If you are using Chart FX Statistical in a Windows Forms application, you will need a single license that allows you to build applications; end users are royalty free for distributions. Restrictions apply.

For Web Forms applications, Chart FX Statistical is priced on a per server basis; clients are royalty free for distribution.

If you are a software vendor looking to integrate Chart FX Statistical in a commercial application for resale please contact Software FX at [sales@softwarefx.com](mailto:sales@softwarefx.com) or call us at (561) 999-8888 for additional licensing and pricing information.

# Hurdle the Entry Barrier.



## Develop advanced data visualization solutions for only \$299?

Don't compromise your budget up front only to have the project cancelled 6 months later. The *Chart FX Developer Studio* is a complete data visualization solution for the COM, .NET and Java platforms, as well as for IDEs such as *Microsoft® Visual Studio .NET*, *Delphi* and *C#Builder*. Also included in the Developer Studio are the Chart FX Extensions, including *OLAP*, *Maps*, *Financial*, *Statistical*, *Real-Time* and *Wireless*, which add capabilities or provide a specific functionality. This allows a developer to only include the functionality that is needed and maintain a high level of stability and performance. This collection of non-expiring, full development versions of the entire Chart FX product line into one package makes for a convenient way to develop for different environments and different needs. For more information, visit [www.softwarefx.com](http://www.softwarefx.com).



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