



## MultiRate 7.0 Release Notes

A new **left ribbon** now contains prominently-displayed icons for importing data, starting/stopping an analysis, and setting the improvement mode.

The **Define** tab contains all of the specifications for the analysis. In addition to the items previously on the left panel of the previous interface, data fields excluded from the analysis are shown. Data-visualization of the various fields can be obtained by clicking on the “view” button.

When selecting a new data table for analysis, the prompts for selecting fields have been streamlined for clarity and ease.

The **Understand** tab contains elements formerly included on the upper right and lower right panels in the previous interface.

The upper left panel contains the graph or table showing the practical significance of the included characteristics. The default view is with the new Square Graphs, which foster better understanding of the importance of different fields to the analysis. For users that prefer to continue to view pie charts for this information, the option to change the view is in the lower left panel. The user can also choose to view the grid view of the significance and complexity data by selecting in the lower left panel.

In addition to holding the controls for the upper left panel, the lower left panel also includes the information regarding the status/progress of the analysis.

The upper right panel and lower right panel now show information about factors for any given characteristic simultaneously in graphical and tabular format. Previously the user had to toggle between these views. Clicking on any table row, pie slice, or square in the upper left panel will update the graph and table in the right panels to use that characteristic. In addition the squares chart shows which characteristics have been viewed already by changing the color of the square when clicked. Right click to remove the color changes.

The **Evaluate** tab contains the charts previously available by clicking the “view fit graphs” button in the previous interface. The fit decile charts and the lift charts are shown for both training and test data simultaneously so that comparisons can be more easily made. Double clicking on any one of the graphs will maximize it. The escape key will return to the previous view. The Error Dispersion chart has been discontinued.

The **Compare** tab contains the information previously obtained at the end of running autoimprove or by selecting Tools\Compare Analyses in the previous interface, making this important part of the model selection process more visible.



The **Implement** tab now includes the various ways to print model results, export factors and predictions, apply to new data or embed the analysis in other tools. In addition to the previously available COM and NET DLLs, there is now also a Python DLL that can be created.

There is a new option for ordinal numeric or date characteristics. Like “Grouped” The **Grouped-Interpolate** option calculates factors for binned data (and in the same way). But the Grouped-Interpolate option goes an additional step to use clamped quadratic splines to interpolate (and in some cases extrapolate) those bin factors for individual observations within the binned data. This can potentially result in a superior fit on training and out of sample data. Because this is being done at each iteration for a given model and those interpolated factors are applied to the detailed data, the other factors for the other variables are impacted as well, with the potential for superior determination of the marginal impact of those variables as well.

Three parameters are calculated for each bin to describe a quadratic curve. The parameters are determined such that:

- Each bin’s spline connects with its neighboring bins’ splines and has the same slope at the connection point.
- The average of the spline across the observed values in the training data equals the bin factor (which is calculated in the normal way)

In the case of the lowest and highest bins when smoothing is not Variable Gradient-Cyclic, only two factors are determined (linear relationship). When smoothing is Variable Gradient-Cyclic the lowest and highest bins are treated as neighbors with the connection being the upper bound of the data for the high bin and 0 for the low bin.

These various requirements result in a singular solution for any group of specific factors, with no additional measurement or determination (i.e., no addition to the true number of parameters)

It is possible for the quadratic splines to result in non-positive factors for an individual record. In these cases, a factor of 0.01 is used instead of the negative factor.

It is also possible for a model to become divergent and unstable. This is more common for sparse data with a low credibility standard and in cases where the characteristic has high skewness.

When using the smart select feature, Grouped-Interpolate is selected for data that would otherwise be selected as Grouped and has a distance between the mean and the midrange of the data of that is less than 25% of the width of the range. This helps avoid situations where the analysis could become unstable.

There are processing improvements that **increase the speed** of each iteration. The greatest impact is in models with a large number of characteristics. There is also some improvement regarding the speed for geographic fields such as ZIP codes. Note that for each model, iterations other than the final iteration



now only includes factors for the locations represented by the training data. All the other locations (interpolated within the convex shape containing the observations) are now only given factors in the final iteration.

**Help Screens** have been updated to reflect the new features of this release.