

A Hands-On Introduction to SAS® Visual Analytics Reporting

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ABSTRACT

This Hands-On work shop will walk through SAS Visual Analytics functionality and will allow users to build a report(s) using data loaded into memory.

INTRODUCTION

SAS has introduced a number of different applications over the years but one of the most exciting in recent years is Visual Analytics. Visual Analytics is an in-memory application that allows analysts to quickly evaluate data for trends, anomalies and relationships. It also provides highly interactive reporting that is simple to create and easier to utilize.

The purpose of this paper and hands on workshop is to introduce SAS users to the basic concepts behind building reports and explorations in the SAS Visual Analytics environment utilizing multiple tables and any reporting options currently available in revision 7.3.

VISUAL ANALYTICS HUB

The Hub is the first page most users and analysts will be exposed to and is considered the home page for Visual Analytics. On this page the user is presented with various buttons/options based on the roles they have been granted by their SAS administrator.

These Roles Include:

1. Report Viewer – Can only view reports and has limited interaction options.
2. Analyst – Includes both Data Explorer and Report Designer has the ability to create both explorations and reports and can access any data loaded into memory
3. Data Builder – Has the ability to load data from external sources and SAS datasets into memory
4. Administrator – Has the ability to set permissions on folders and reports, few overall system statistics and restart the LASR server when necessary.

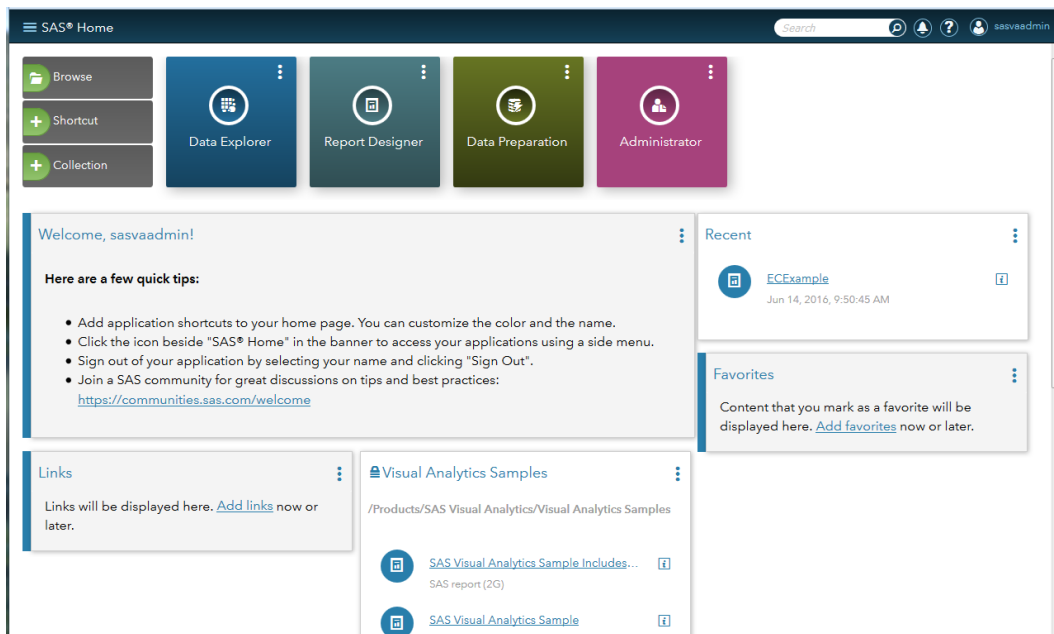


Figure 1: Visual Analytics Hub

ADMINISTRATOR

SAS Visual Analytics is very dependent on the metadata to control and organize reports, explorations and reports. There are 2 methods of updating libraries permissions and folders; the traditional path of the SAS Management Console and the Administrator tab in Visual Analytics. The Administrator view, shown below, allows the administrator to see how much data is loaded into memory, control the folders where data is stored and provides access control at both the folder/report level as well as row level security where a field is available to limit access.

The screenshot displays the SAS Manage Environment Administrator interface. On the left is a 'Folders' tree view showing a hierarchy: SAS Folders > LoadedData > BASEBALL. The main area shows the 'Effective permissions' for the selected 'BASEBALL' folder. The permissions table is as follows:

Identity	ReadMetadata	Read	WriteMetadata	Write	Administer	Create
PSI VA Admins	✓	✓	✓	✓	✓	✓
PSI VA Users	✓	✓	✗	✗	✗	✗
PUBLIC	✗	✗	✗	✗	✗	✗
SAS Administrators	✓	✓	✓	✗	✓	✗
SAS System Services	✓	✓	✗	✗	✗	✗
SASUSERS	✓	✓	✗	✗	✗	✗

Figure 2: Manage Environment

DATA EXPLORER

The Data Explorer option takes you to the exploration screen. The exploration interface is designed around visualizing and analyzing information from a single data set, as a result the first thing you are prompted for is the data set you want to explore. Once the data source has been selected the user is provided with a blank slate and the data table selected for exploration. By default the automatic chart option is selected so the analyst need only drop the columns they are interested onto the center canvas and SAS will dynamically select what it perceives to be the best chart bases on the types of data you have selected. For the purpose of this example, the baseball dataset included with SAS Help Data and a spreadsheet containing fantasy football running back statistics was imported.

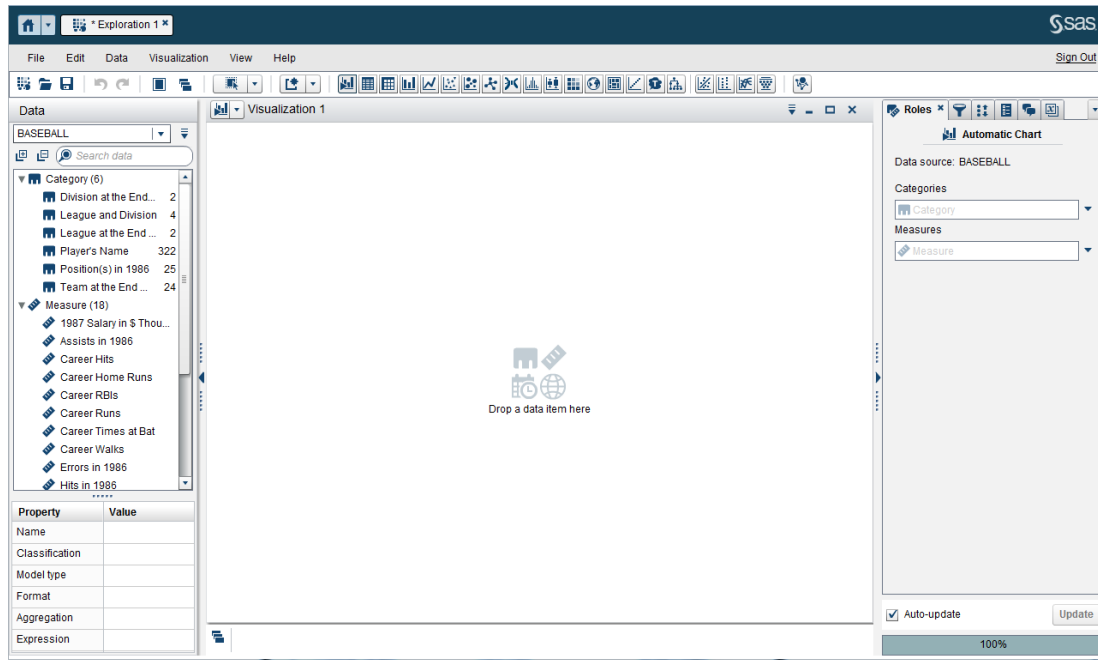


Figure 3: Exploration Visualization

SAS Visual Analytics recognizes 3 primary types of data; category, measure and geography. By default categories are text and measures are numbers. The challenge with this is that numeric values are not always measures to analysts. To this end SAS has made it very simple to change a measure into a category, by selecting the variable and either right clicking the item and choosing category or by changing the classification property as shown in figure 4 below

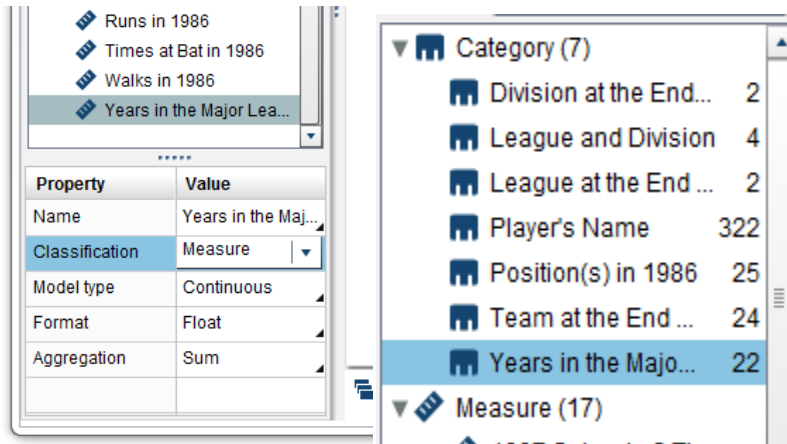


Figure 4: Changing Measure to Category

Once the Data items are classified correctly and the appropriate formats and summarizations are applied the analyst can then begin dragging values onto the visualization and start exploring the data. Explorations also can take advantage of more sophisticated statistics including forecasting and correlation matrices. If you are interested in a wider range of statistics SAS Visual Statistics can be added to Visual Analytics.

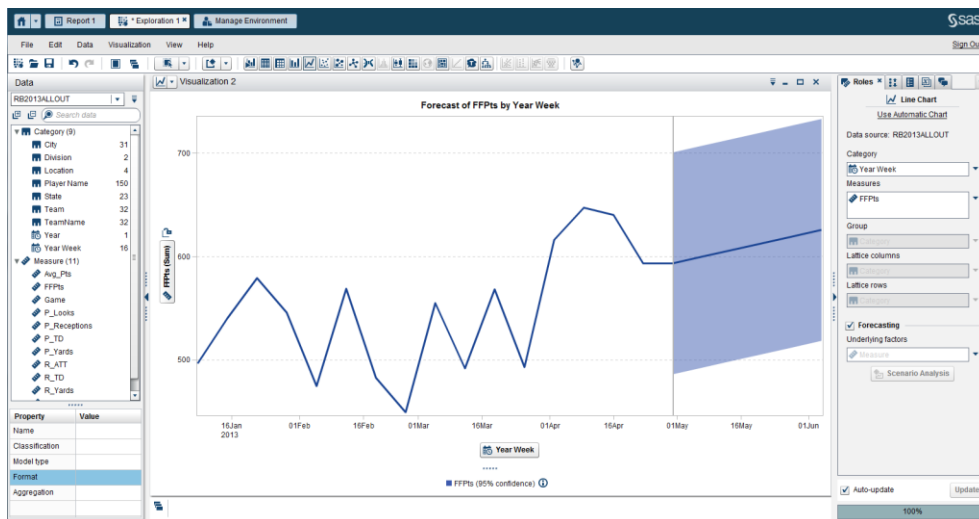


Figure 5: Forecasting against time based data

REPORT DESIGNER

The most widely used tool in SAS Visual Analytics is the Report Designer. This tool allows the analyst to create dynamic reports that can link multiple tables and charts. These reports can then be surfaced across the company and ultimately to external clients if desired. These reports can benefit the c-level executives all the way down to an individual teller at a bank by putting information relevant to their role at their fingertips. Unlike the explorations, reports start with the design layout where the analyst starts to think about the data and the story they want to tell or the interactions they believe may provide deeper insights into how related data may interact or impact other variables.

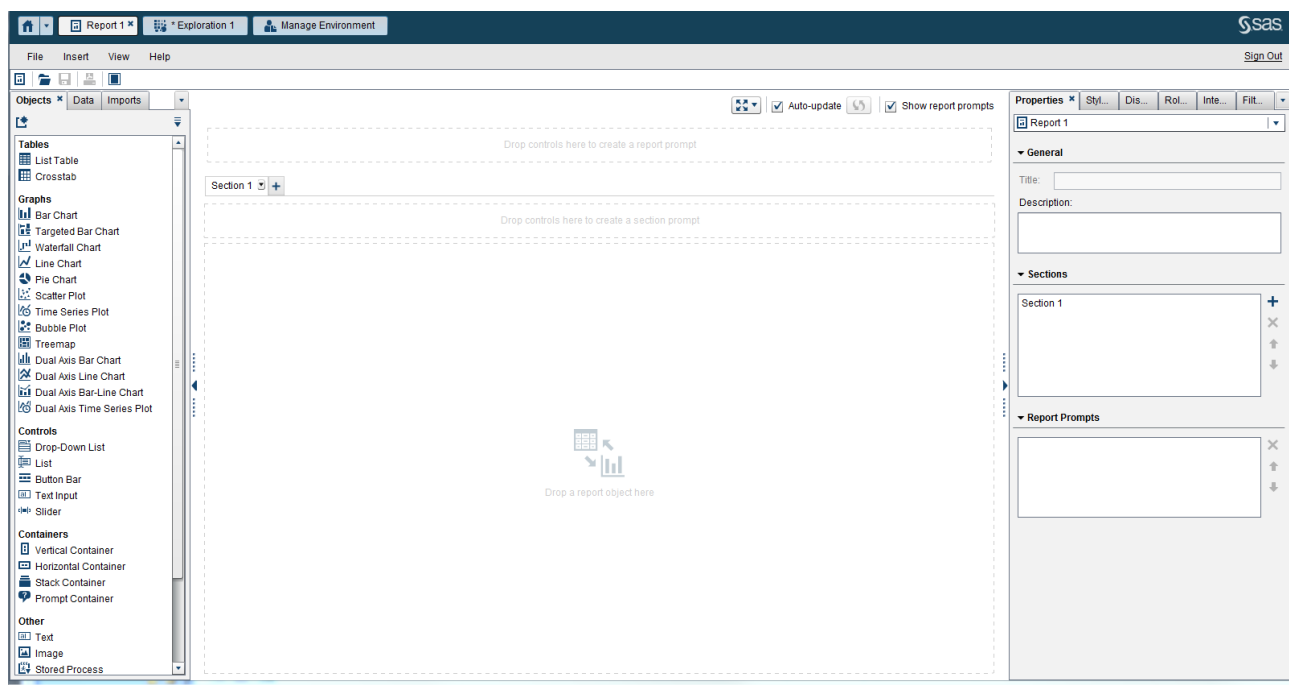


Figure 6: Report designer starting page

The Report Designer Screen is split into 3 sections. The left section contains the objects to build the reports and the data sources to populate the objects. The middle or design section is the report workspace where objects are dropped in and can be arranged using the green positioning guide when they are dragged onto the screen. The right section or panel is used for the detail control of each object and reflects the properties and options for whatever object is selected in the design section.

LEFT PANEL

The objects are broken into categories tables and graphs are fairly self explanatory. however it should be noted that there are more graphs available than are displayed under the standard list above. The other graphs can be added using the show or hide option on the top right corner of this panel. The controls allow various filtering options. Containers allow multiple charts to be scrolled through in a single location and the other section provides various elements to help develop a story.

By redefining data elements as category or measure there are a number of very useful options in the data tab. By right clicking you can make copies of a field so it can be used for different functions or in the case of measures different calculations such as having an average and a total column for the same original measure. The analyst can also define hierarchies and create calculated items and aggregated measures.

MIDDLE/DESIGN PANEL

The Design Panel is where the creative process takes place as the analyst try to organize the views into a pattern that will allow the viewers of the report to visualize the data and discover relationships that they might not have noticed in a static report environment.

There are a number of graphs and charts to choose from, but for this paper, and workshop the pie chart, bar chart, tree map and a Geo map will be created resulting in the following images.

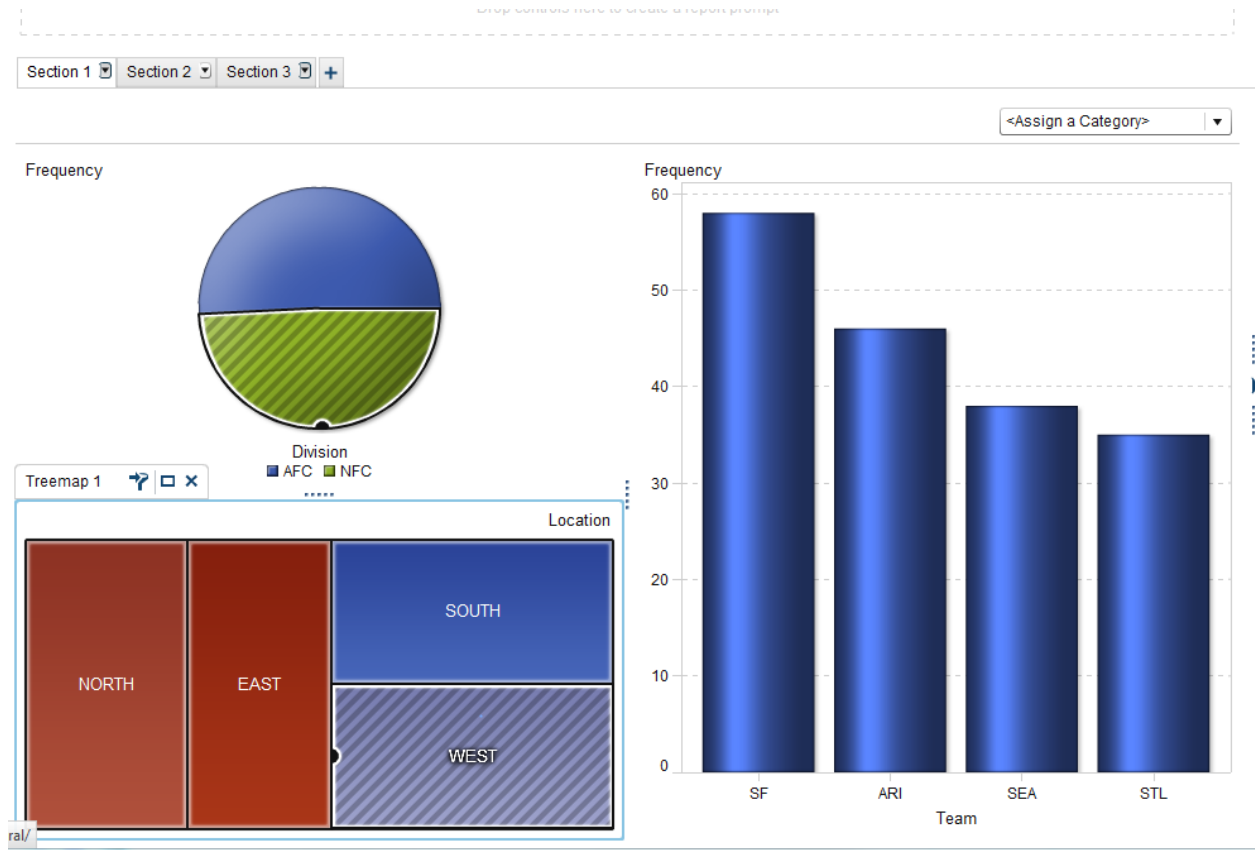


Figure 7: Simple report layout

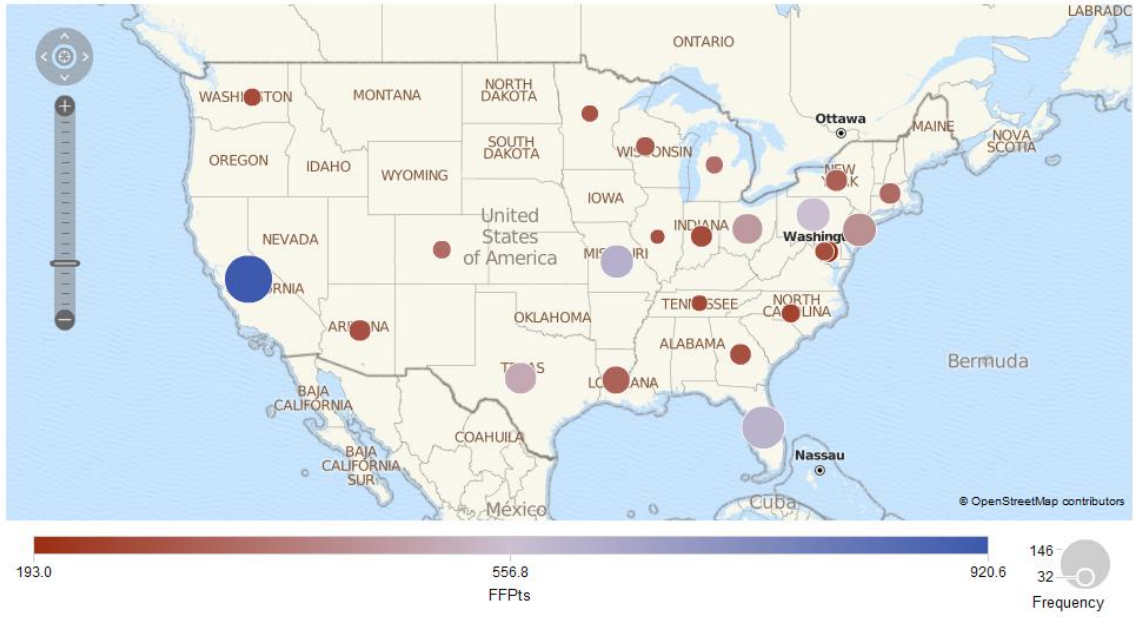


Figure 8: Geo Map detailing fantasy points by city

The Design Screen is also where the interactions between objects can be defined. As shown below.

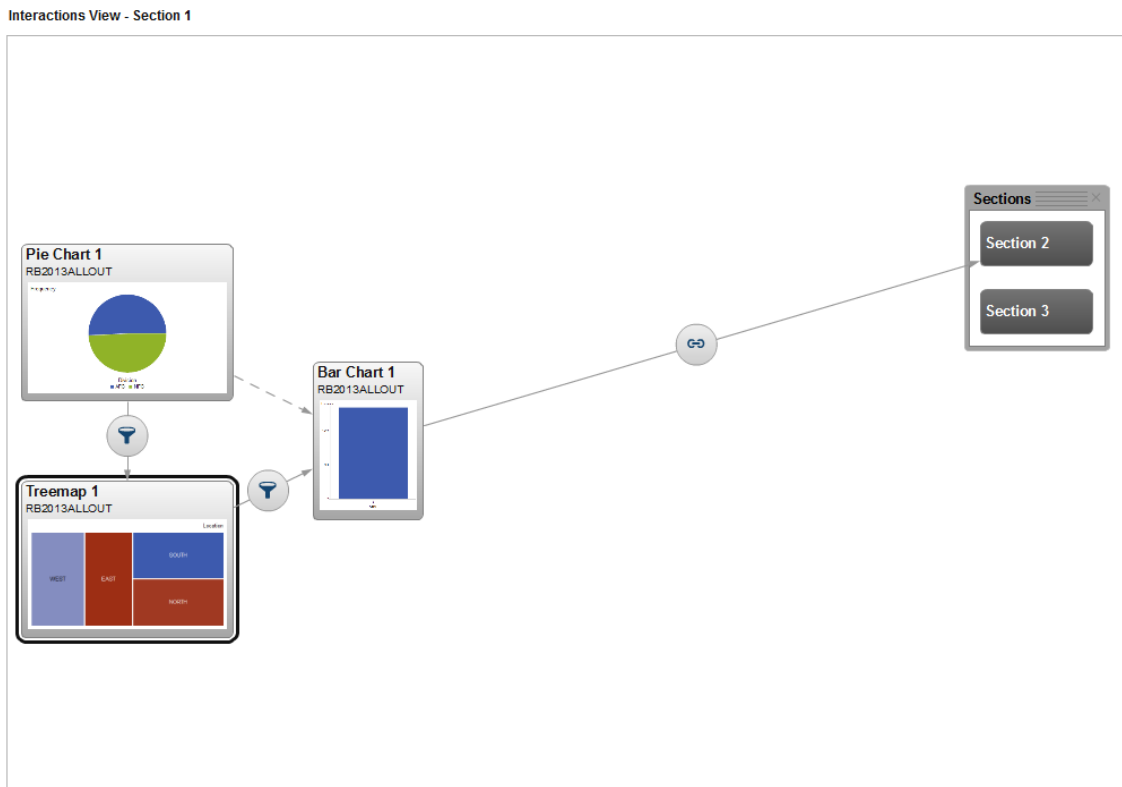


Figure 9: Interaction view

RIGHT PANEL

The right panel provides detailed controls for each object through the following tabs:

- Properties – General characteristics
- Style – colors, textures, colors frame and text styling
- Display Rules – adds indicators to charts and allows specific colors to be assign based on a field value
- Roles – fine tuning the variables used and displayed on the chart
- Filters – chart level filters that the analyst does not want to allow viewers to change
- Alerts – provided the ability to generate alerts, based on a value display in the charts.
- Ranks – provide the top or bottom count or percentages

CONCLUSION

SAS provides a number of training videos and classes around Visual Analytics, so the goal of this presentation was to quickly introduce people to the options and was kept short in the hope the Hands on attendees will have time to dive in and play with different data and report settings to get a good feel for how valuable and effective this SAS tool can be. Enjoy!

RECOMMENDED READING

- *Base SAS® Procedures Guide*
- *SAS® For Dummies®*
- SAS® Visual Analytics 7.3: User's Guide
- Getting Started with Visual Analytics Administration and Deployment

CONTACT INFORMATION

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