A Quick Tour of SAS® Visual Analytics 8.3: More Visual, More Analytics

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ABSTRACT

SAS® Visual Analytics 8.3 introduces exciting new features to make it easier to craft beautiful reports. The new release improves efficiency by enabling report authors to reuse work done for data preparation, maintain report states across sessions, and use fewer clicks to get to a report. Users can create more compelling reports by using guides to lay out the report, visual tables with graphical representations in table cells, and enhanced geo-analytics to explore geographic data. The report playback feature is a new way to present the report. Integration with the new SAS® Drive makes it easy to manage reports and share access with collaborators.

INTRODUCTION

SAS Visual Analytics 8.3 is designed for non-expert business users, data scientists, and tech-savvy report consumers. It provides a powerful user interface to extract insights from data and tell a story. It does this by making the building blocks of reporting more effective and easier to reuse and have more features for data manipulation and analytics. This paper provides an overview of the major enhancements in user experience for the software released in 2018.

MORE VISUAL

New additions to drag-and-drop, pop-up menu items, automatic features, and object manipulation make the user interface more visual and easier to manipulate with simple point and click actions.

INTERACTIVE USER EXPERIENCE

A precision grid in the report helps to lay out objects in the report. Resizing and moving objects is easier as positions automatically align to the grid. See Figure 1. Precision Grid. A denser grid is displayed when the Ctrl key is pressed.

Figure 1. Precision Grid

Reference lines in charts can be repositioned with a click and drag. A richer pop-up menu shown in Figure 2. Pop-up Menu enables sort, replace, or remove actions on a data item, moving an object to another page, or changing aggregation type in the data pane.

Figure 2. Pop-up Menu

Report Playback in SAS Report Viewer automatically presents the contents of a report in sequence. This is primarily used for audiences who don't navigate through the report but consume it in a more passive manner, such as at a kiosk. Settings allow the content to be displayed by page or object, show navigation, and specify the speed of the playback. See Figure 3.
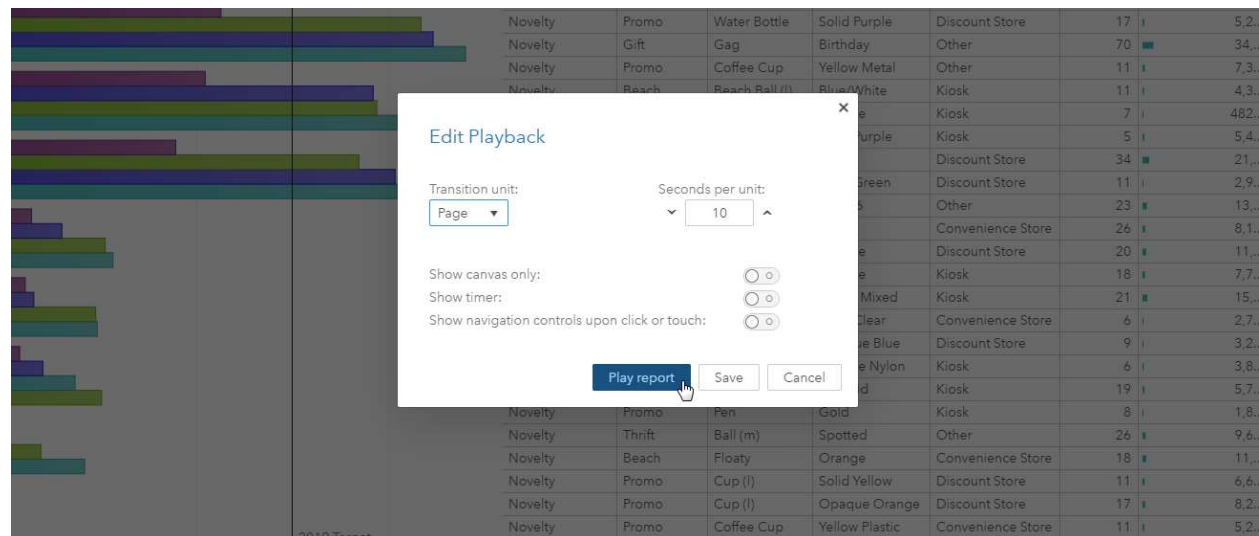

Figure 3. Edit Report Playback

A report summary for a report can be embedded with live data values using point and click actions. See Figure 4. This summary can be consumed within the report, when previewing the report in SAS Drive, in report distribution emails, and in SAS Visual Analytics Apps.
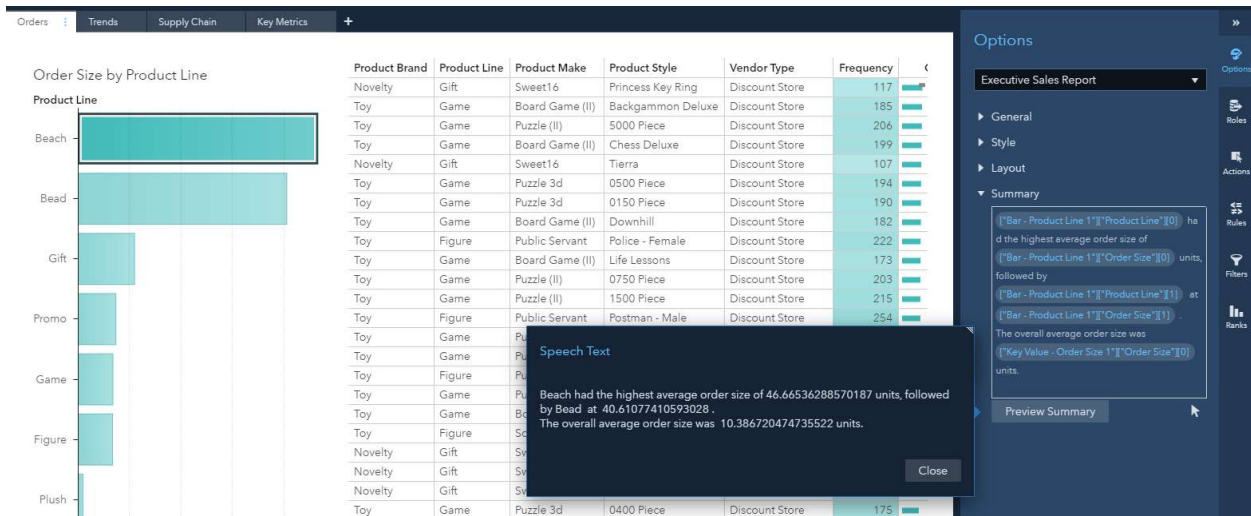
Figure 4. Report Summary

OBJECTS

Crosstabs now fit their columns to width. List tables and crosstabs have condensed row heights, which can be expanded with a setting in the options pane. List tables visualize data better with bars or a heat map within a measure column. See Figure 5.

Product Brand	Product Line	Product Make	Product Style	Vendor Type	Frequency	Order Amount ▼	Order Size	Order Sales Cost
Toy	Figure	Health Care	Female	Discount Store	785	222,9...	5125	27,160.71
Toy	Figure	Health Care	Male	Discount Store	790	188,3...	5046	26,773.76
Toy	Figure	Health Care	Female	Other	467	132,8...	3319	16,835.76
Toy	Game	Board Game (III)	Kitchen Masters	Discount Store	273	124,8...	1913	18,897.33
Toy	Figure	Health Care	Male	Other	459	123,3...	2995	15,274.03
Toy	Game	Board Game (III)	Cars	Discount Store	256	115,0...	1785	19,859.83
Toy	Game	Board Game (III)	Life Lessons Deluxe	Discount Store	279	114,5...	1671	17,239.09
Toy	Figure	Movie Star	Nurse - Female	Discount Store	385	105,7...	2644	13,316.46
Toy	Figure	Movie Star	Doctor - Male	Discount Store	352	102,8...	2397	12,695.74
Toy	Game	Board Game (III)	War Wizards	Discount Store	259	102,7...	1495	16,198.89
Toy	Game	Board Game (III)	Life Lessons Deluxe	Other	192	100,0...	1452	15,133.07
Novelty	Gift	Sweet16	Princess Magnet	Other	141	96,11...	1518	9,893.54
Toy	Game	Board Game (III)	Rise-and-Fall	Discount Store	234	95,04...	1403	13,255.38
Novelty	Gift	Sweet16	Tierra	Other	142	93,94...	1553	10,852.48
Toy	Figure	Movie Star	Doctor - Female	Discount Store	397	90,94...	2479	12,437.40
Toy	Figure	Movie Star	Nurse - Male	Discount Store	381	90.17	2350	12,749.65

Figure 5. Cell Graphs

Bar charts can alter the spacing between the bars, which changes the bar widths. The legends in graphs in general have improved so that even when the legend is collapsed, the information is presented via a pop over. Images can be shown in the nodes of network analysis using display rules.

Navigation in a stacked container has various visual options and positions. As Figure 6 shows, stacked containers allow the use of buttons, dots, links, tabs and numbers for navigation, and they can be positioned in various alignments at the top, bottom, or sides of the container.
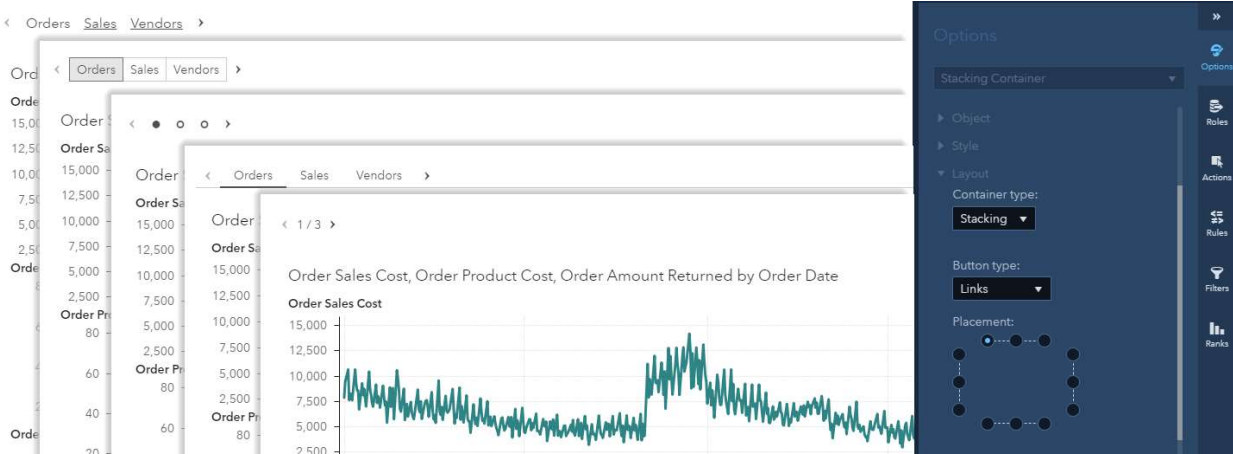
Figure 6. Navigation Options in a Stacked Container

Automatic object names and hierarchy names make it easier to track report content while building the report. This feature is especially useful during data exploration since it eliminates the need for manual name updates.

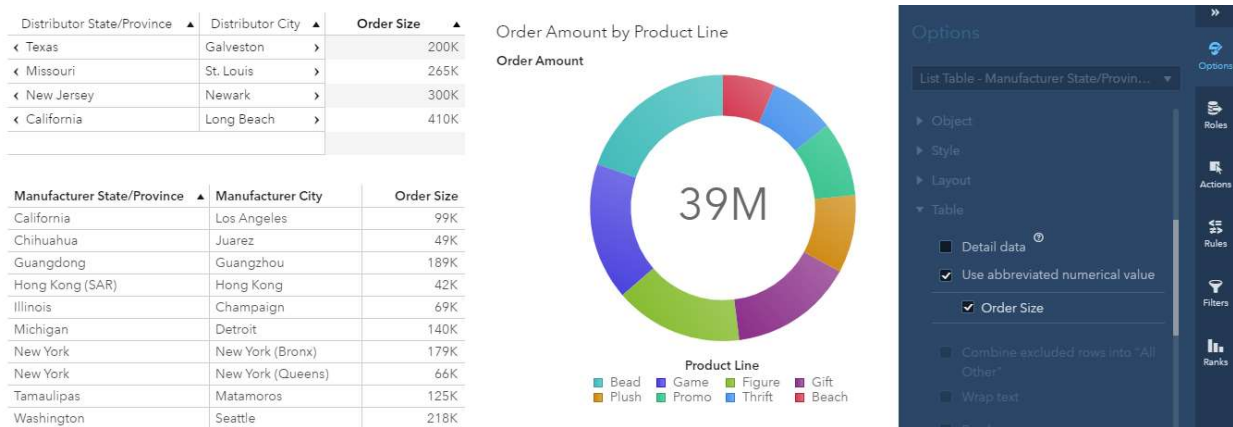Automatic number compaction has been added to the list table, cross tab, and pie chart. See Figure 7.

Figure 7. Number Compaction

While the user interface has become more visual, the report authoring experience has become more accessible to users with visual impairments. Keyboard navigation has been improved. Bar charts, line charts, pie charts, scatter plots, bubble plots, and time series plots can now access the SAS Graphics Accelerator, a browser plug-in that enables users with visual impairments to explore and share these graphs.

MORE REUSE

Three new features enable the reuse of data source edits, filter definitions, and object properties: Data views, common filters, and object templates. They are embedded in the existing user experience to keep it familiar but make it more efficient.

REPORT DATA VIEWS

Data views save the settings of a data source in the report. These include the filters applied, the names, formats, show/hide statuses, classifications and aggregations of the data items, any hierarchies, custom categories, and calculated items. Data views are specific to a data

source. See Figure 8. A data source can have a default data view set by an administrator, and a default data view per user set by the user. Like data sources, a data view can be used across multiple reports. Modifying a data view does not affect the report.
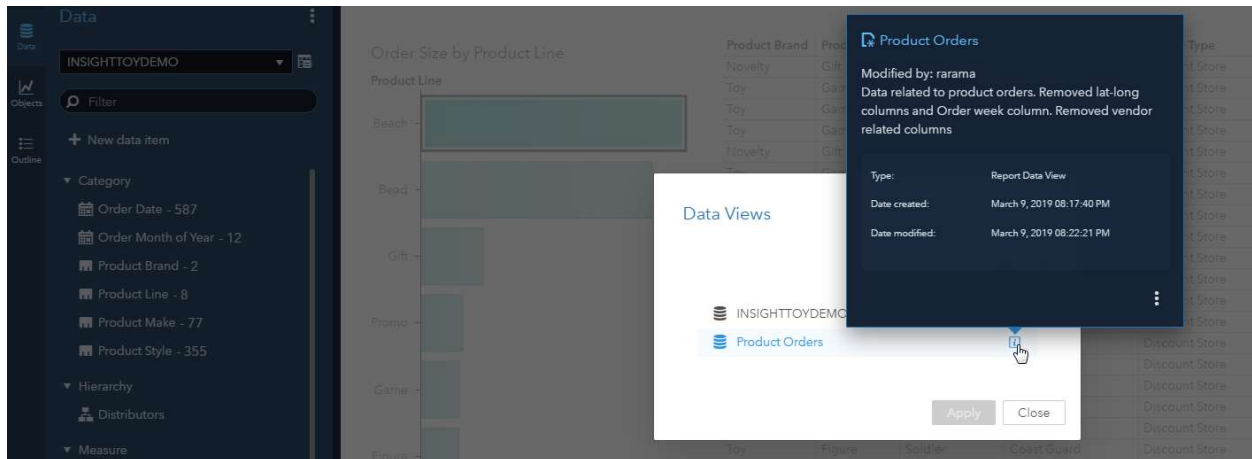

Figure 8. Report Data Views

COMMON FILTERS

Common filters are defined once and can then be applied across multiple objects in a report. Edits to the filter affect all the objects that it is applied to. Common filters are listed in the data pane. See Figure 9.
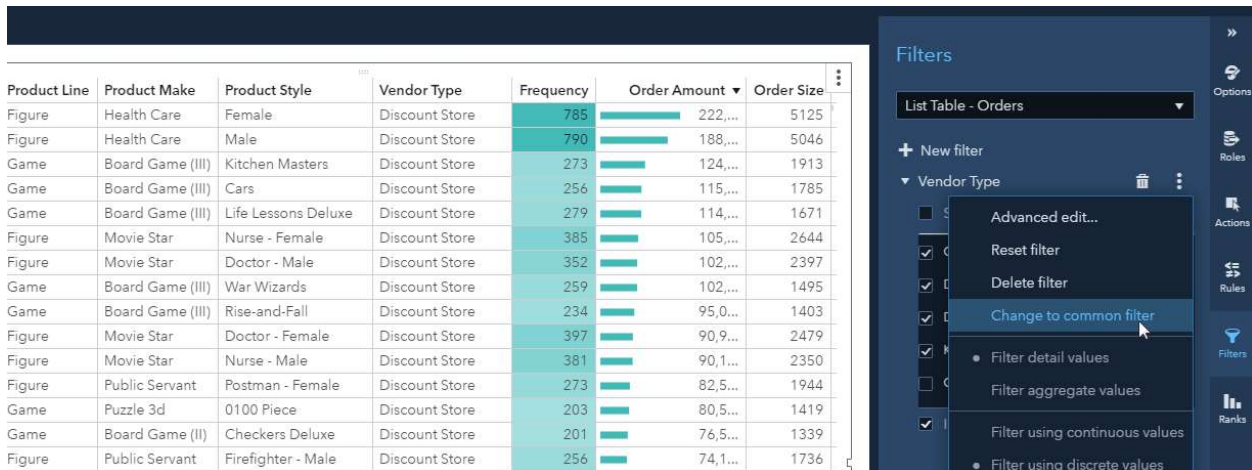
Figure 9. Common Filters

OBJECT TEMPLATES

Object templates save the properties assigned to the object. They help to save customizations made to the properties of report objects. Saved object templates are listed in the Objects pane and can be added to the report canvas like any other objects. They do not save the data settings. See Figure 10.
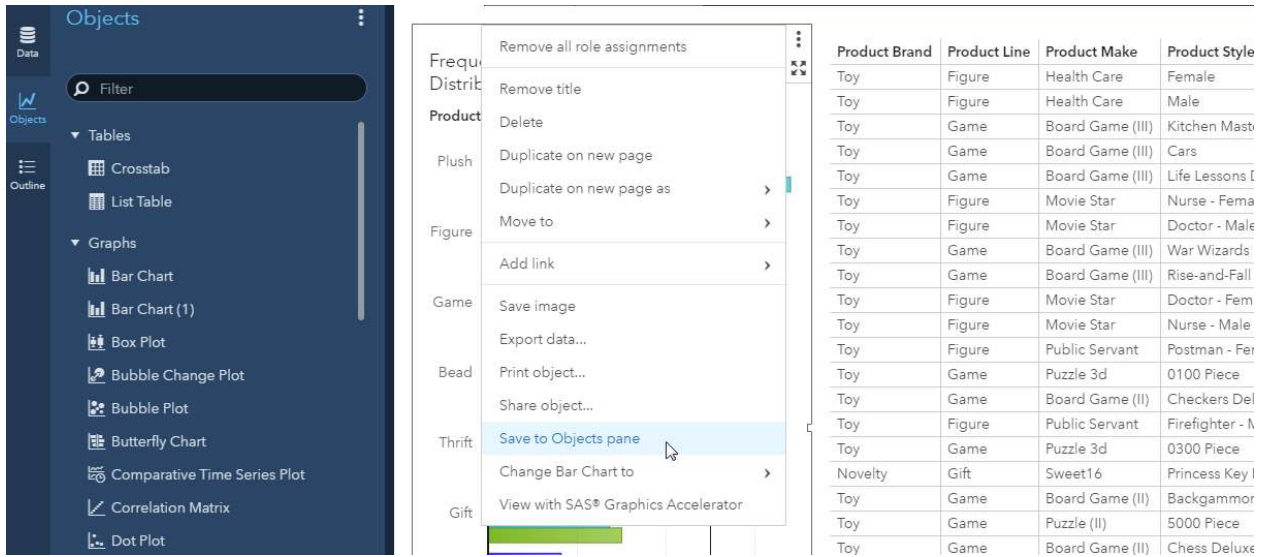
5

Figure 10. Object Templates

MORE DATA

An Excel spreadsheet is quickly imported into the report canvas with a simple drag-and-drop operation. Handling data is easier with the ability to join data sources and create an aggregated data source within the user interface. The one-click automated analysis object and new features in geo maps add more powerful analytics to the straightforward user experience.

DATA SOURCE JOIN

Two data sources can now be combined to create a new data source made up of data from the original data sources. The default join type is Left join, which can be changed to Right, Inner or Full joins. When two data sources are specified, the data source join is automatically based on the first column between the two data sources that have the same name. Additional conditions can be added to more accurately define the join, and output columns can be specified to limit the size of the combined data set. See Figure 11.
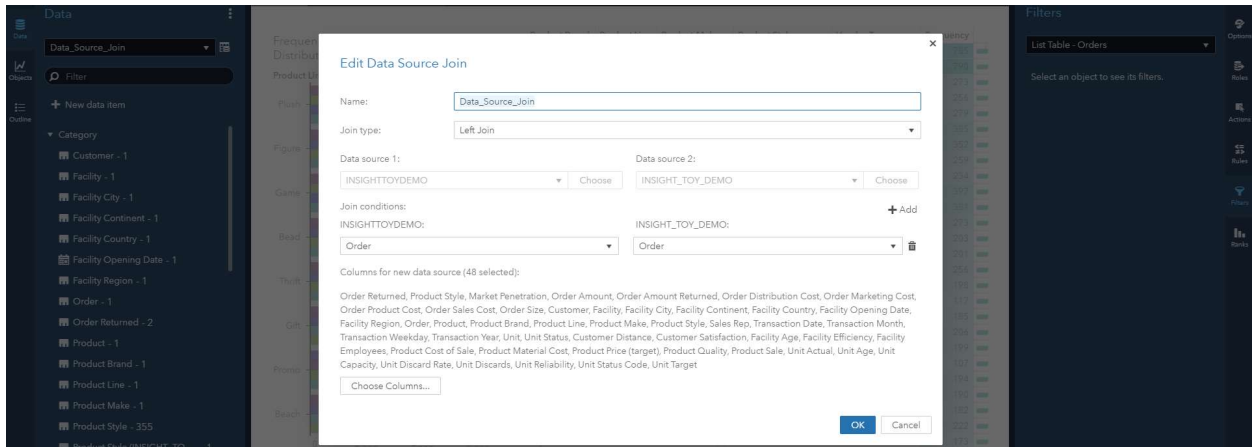

Figure 11. Data Source Join

AGGREGATED DATA SOURCE

A data source can be reduced by creating an aggregated data source with fewer rows and columns. The rows are aggregated based on the category variables selected and the filters assigned when creating the aggregated data source. The aggregation type of columns is based on the type in the original data source. Aggregated data sources are report-specific and generated when the report is opened. You can join two aggregated data sources if they don't have a data source filter assigned. See Figure 12.
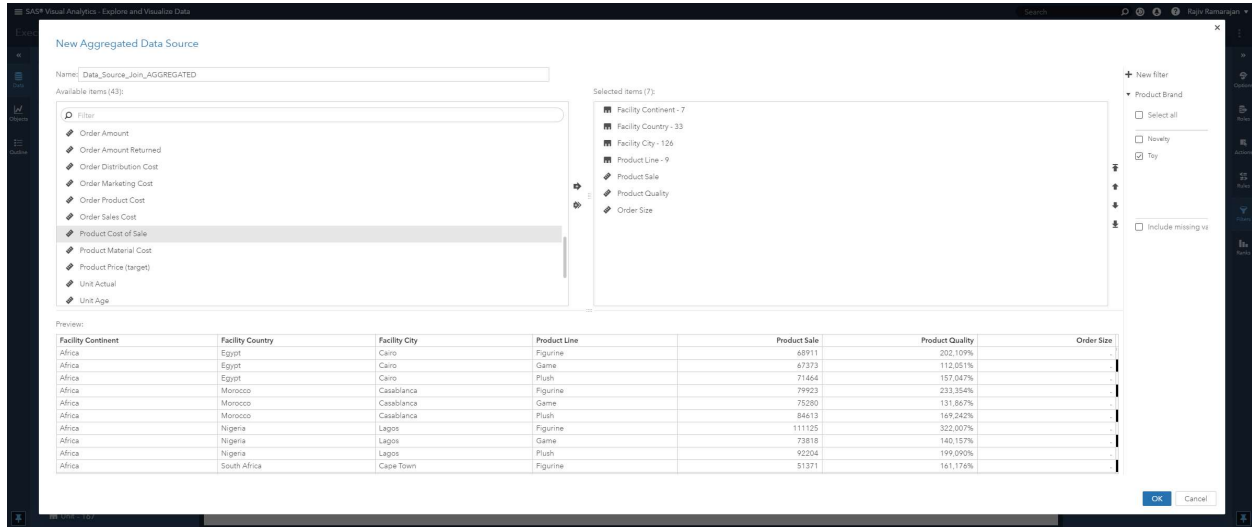

Figure 12. Aggregated Data Source

In addition to the above, period calculations now support week, quarter, and day levels. Date-time formats now support events with millisecond precision. The new AggregateTable operator allows you to calculate aggregations of measures across values of categories that are not assigned to the object.

MORE ANALYTICS

AUTOMATED ANALYSIS

A new report object, Automated Analysis, identifies and displays the most important underlying factors for a selected response variable in a single click. See Figure 13. For measures, the object displays the four groups that show the greatest values of the measure, and two groups that show the least. For category response variable, the object shows the top four groups that contain the greatest percentage of a selected category value, and two groups that contain the least. The target category value can be changed.

The underlying factors are displayed sorted by their relative importance. Selecting an underlying factor variable highlights it in the result groups that explain the response. A visualization and explanation showing the relationship between the response variable and the selected underlying factor is also displayed.

Figure 13. Automated Analysis

GEO ANALYTICS

Pins in Geo maps enable you to mark a location on the map, draw routes between two points, and select geographic areas around that location. See Figure 14. The new contour map type makes it easier to visualize dense data. Another way to visualize data is by animating the geo map across the values of a measure.
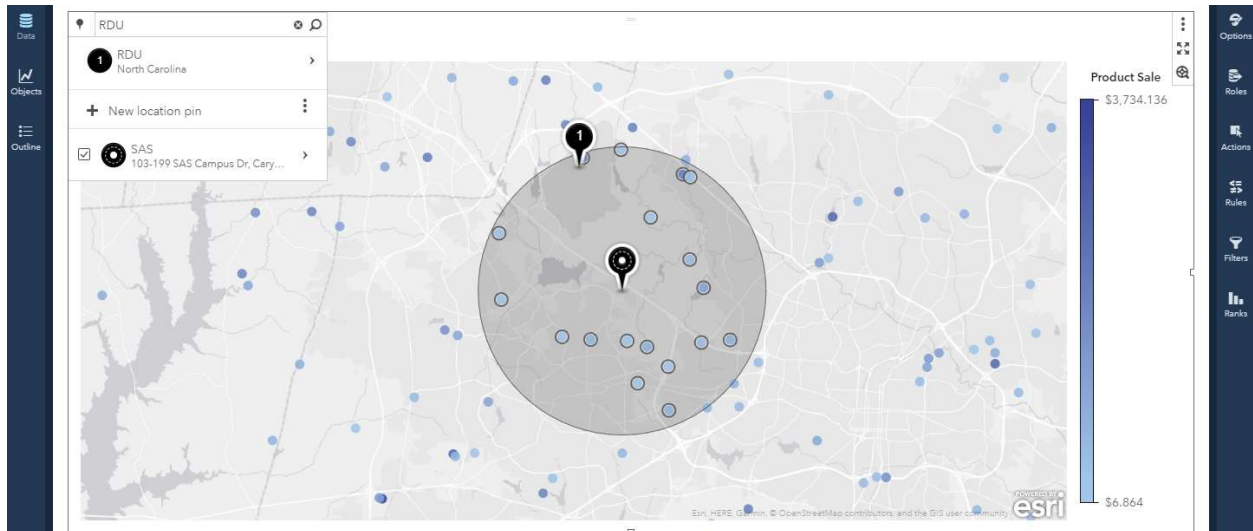

Figure 14. Pins in Geo maps

In addition to these features, the new Bayesian Network object enables visualizing effective predictive models during supervised data mining.

CONCLUSION

SAS® Visual Analytics 8.3 makes the building blocks of reporting more visual, easier to reuse, and with more features for richer data manipulation and analytics. The new features build on the strong design groundwork laid by previous releases presented analytics in an easy-to-consume user experience. The features suggest a new direction toward more

flexible data handling, bringing analytics to the forefront and presenting insights – akin to storytelling.

REFERENCES

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ACKNOWLEDGMENTS

RECOMMENDED READING

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