An Introduction to SAS® Visual Analytics 8.1

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ABSTRACT

The first release of SAS® Visual Analytics version 8.1 on SAS® Viya™ has something exciting for everyone. The latest version is a clean, modern HTML5 interface. SAS® Visual Analytics Designer, SAS® Visual Analytics Explorer, and SAS® Visual Statistics are merged into a single web application. Whether you are designing reports, exploring data or running interactive, predictive models, it is all integrated into one seamless experience. The application delivers on the same basic promise: get pertinent answers from any-size data. This paper will walk you through key features that you have come count on from auto charting to display rules and more. It will acclimate you to the new interface and highlight a few exciting new features like web content and donut pie charts. Finally, this paper will touch upon the ability to promote your existing reports to the new environment.

INTRODUCTION

This paper will serve as an introduction to SAS® Visual Analytics 8.1 (VA). It is the tenth release of the software and the first release on SAS® Viya™. The interface has been completely rewritten in HTML5. It is a clean, modern interface we hope you will enjoy. In addition, we took this opportunity to merge SAS® Visual Analytics Designer and SAS® Visual Analytics Explorer into a single application. The add-on SAS® Visual Statistics is also fully integrated into this new web application. There is more. SAS® Visual Data Mining and Machine Learning is also available as a fully integrated add-on. SAS Visual Analytics gives you a one stop shop for all your interactive data exploration, modeling, and reporting.

SAS® Visual Analytics

Get pertinent answers from any-size data. Smart data exploration makes it clear. Interactive reporting makes it collaborative. Self-service analytics makes it usable by anyone. And scalability and governance make it the perfect fit.
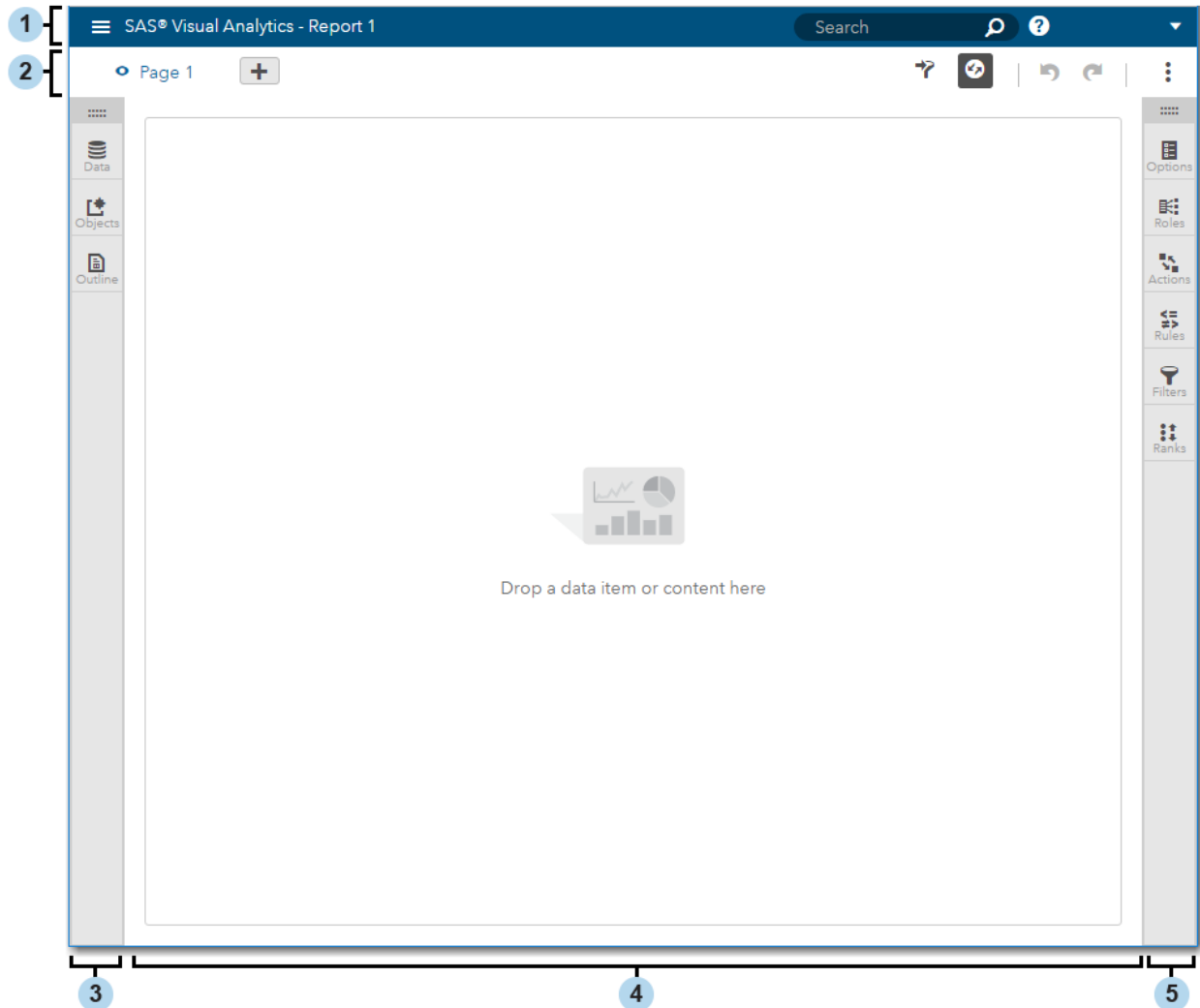
SAS® Viya™

From the world leader in analytics comes a modern, open platform that conquers analytics challenges – from experimental to mission-critical. SAS Viya is a single, cloud-ready environment that serves everyone – from data scientists to business analysts, application developers to executives – with the reliable, scalable, secure analytics management and governance essential for agile IT.

CLEAN, MODERN INTERFACE

The application has been completely rewritten in HTML5. The visual design is very different; however, the user interface builds upon elements that are familiar to current users of SAS Visual Analytics. It is worth taking a tour.
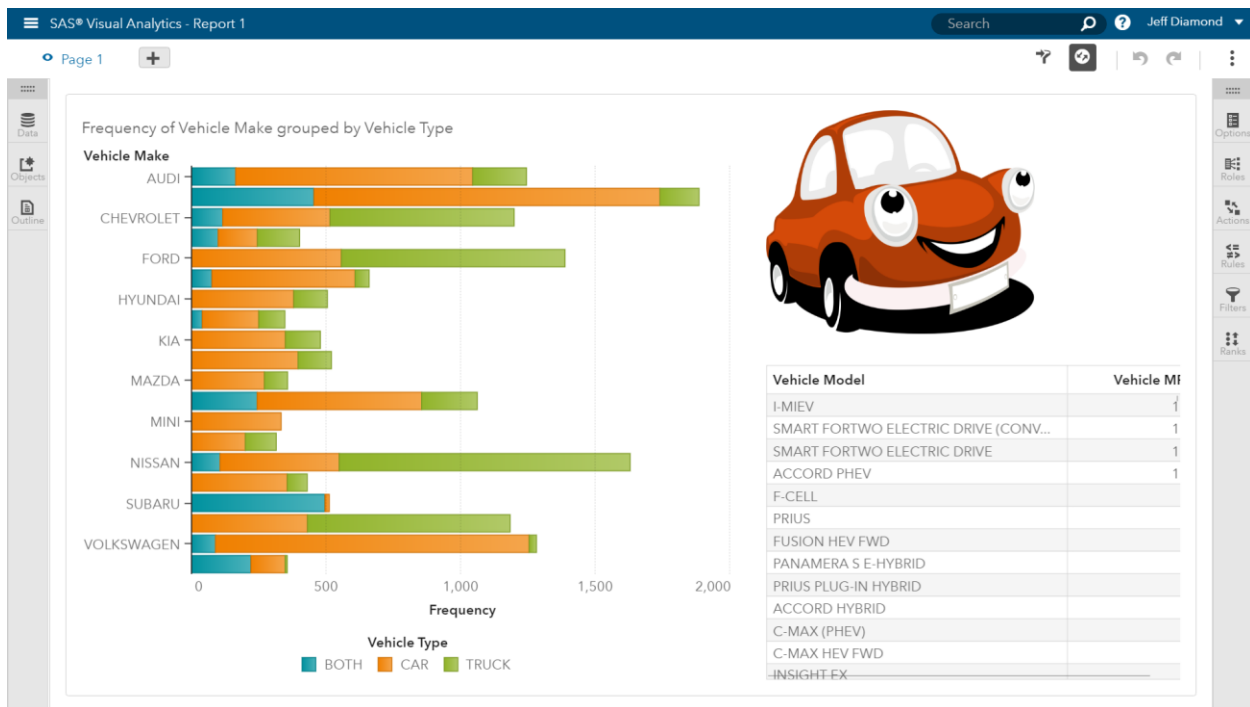
Current users of SAS Visual Analytics will immediately recognize the three pane design. The left pane (3) contains Data, Objects and an Outline view that is new for 8.1. Your report (4) is in the center. The right pane contains Options, Roles, Actions, Rules, Filters, and Ranks (5).

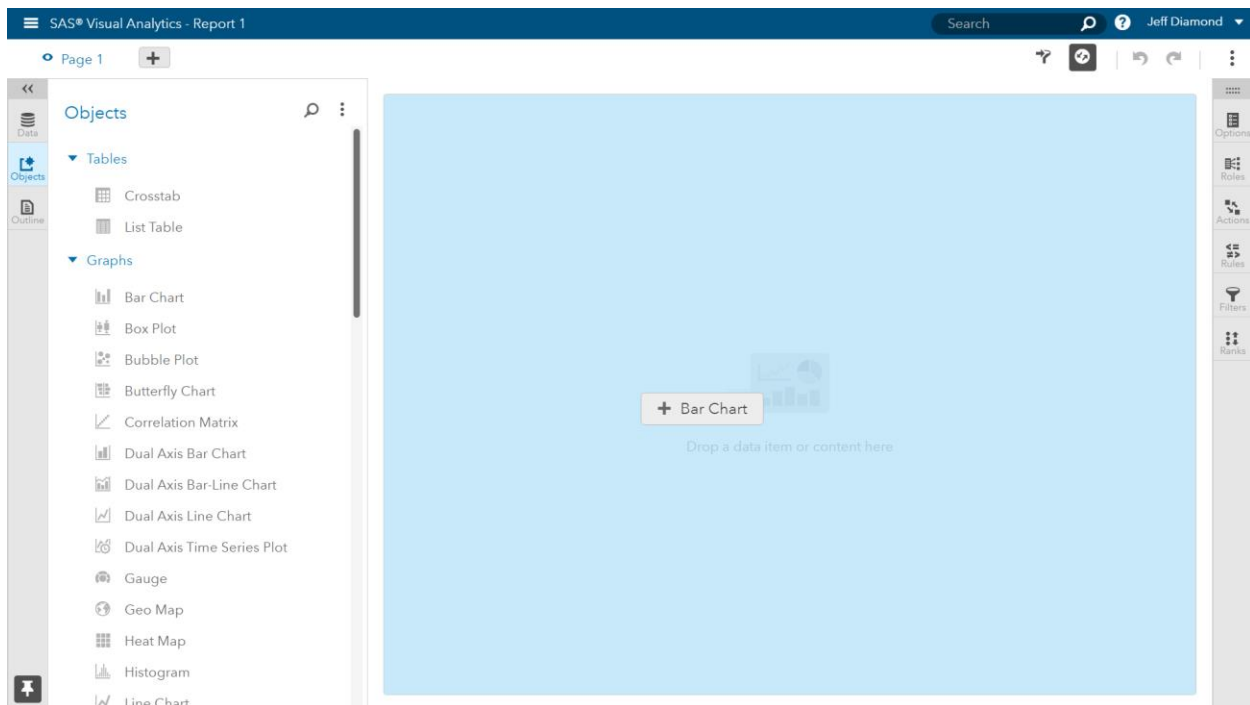**Display 1. Main Interface for SAS Visual Analytics**

There are a few twists to the core three pane design. The left and right panes can be pinned or unpinned. An unpinned pane will automatically open when selected and disappear when an operation is complete. A pinned pane can be collapsed and expanded, but will remain expanded while in use. Either pane may be pinned or unpinned. By default, the left pane is unpinned and the right pane is pinned. Adventurous users can also tear off the panes or place them adjacent to one another. In today's world screen sizes vary greatly and these panes will adapt to meet your needs.

Your report takes center stage and the application's interface is designed to be as unobtrusive as possible; there when you need it and in the background when you do not.

Display 2. Sample Report

Anyone who uses SAS Visual Analytics for 5 minutes will want to add objects and data to a report. To add objects to a report you open the objects pane on the left. SAS Visual Analytics offers a few dozen different types of objects. Click on the object you would like to add and drag it onto the canvas. There will be a blue box or line that indicates where the object will be added.
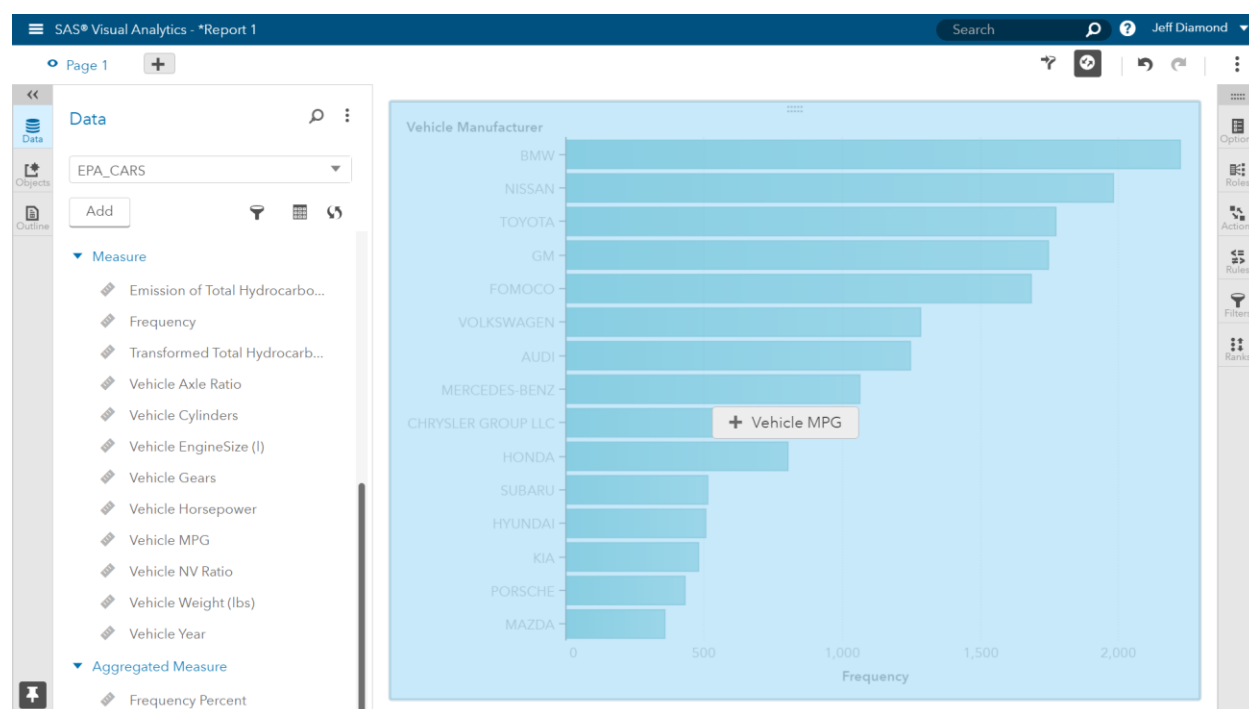

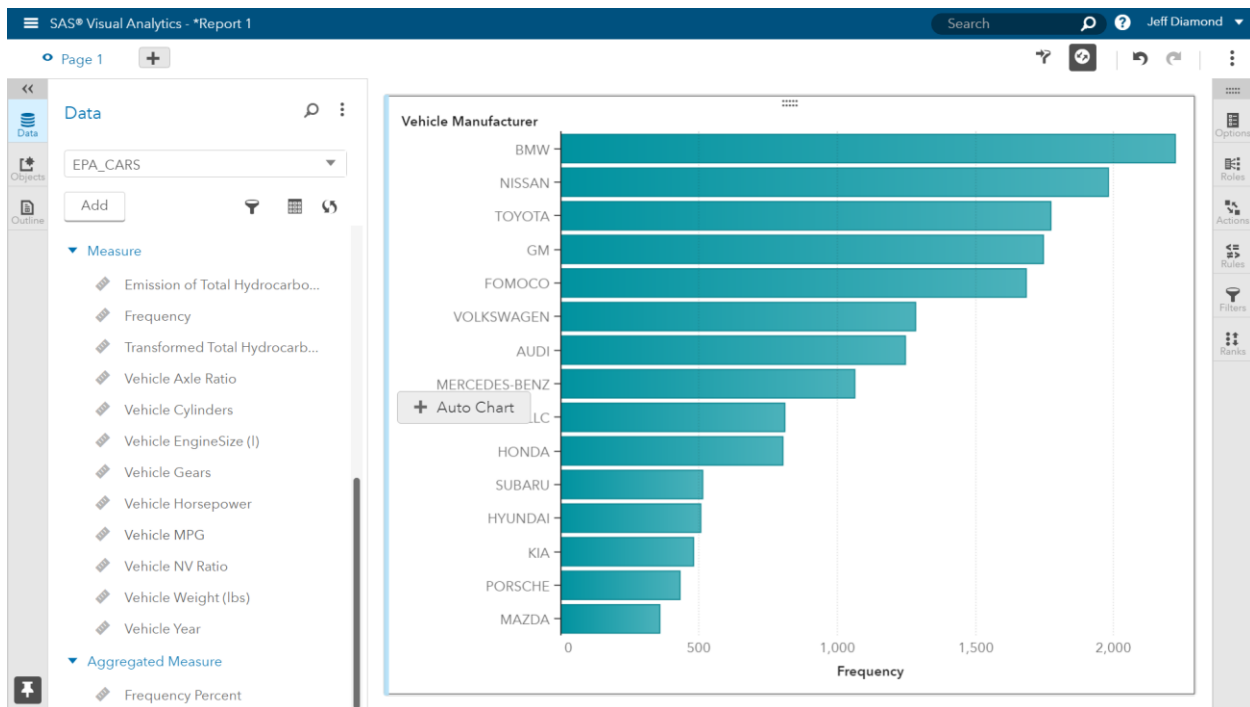**Display 3. Drop Zone for Report Object**

If you did not choose data when prompted by the Welcome Dialog, then you will need to first select a data source. To do this you can open the Data pane.

Once you have added your data table you will want add data to your report. This can work in two ways. If you wish for SAS Visual Analytics to automatically choose the best chart for your data, then you can select one or more data items of interest and drag them to the report. At first your report canvas will be empty and the first object will be added. SAS Visual Analytics will choose the best chart, but if you prefer a different choice it's easy to change.

If you want to add more data, you will need to think about whether to add the data to an object that's already in the report or whether to create a new object. If you want to add the data item to an object already in the report then drag it to the center of the object. When you see a big blue box let go to add the data item. Alternatively, if you prefer to add a new object based on the data item then drag it to the left, right, top, or bottom of the object. You will see a blue line indicating where the new object will be added.
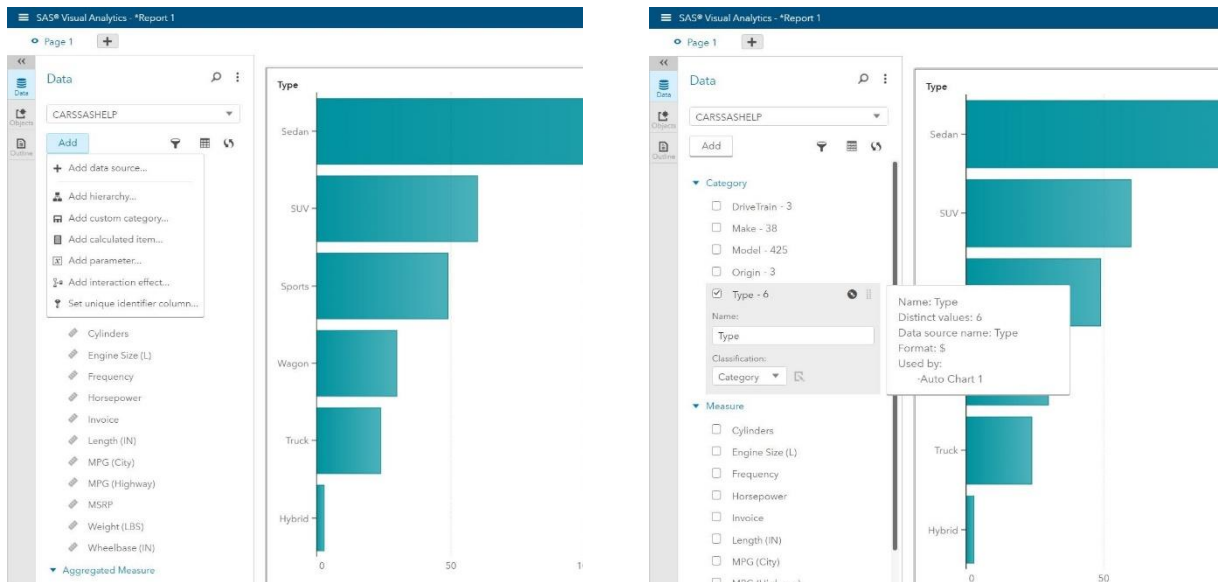

Display 4. Add Data to Report Object

Display 5. Add Data to Report

There are many tasks you can initiate from the data pane: add or manage data sources, hierarchies, calculated items, custom categories, parameters, global filters and more. This paper will not cover these tasks in detail. You may also view or modify attributes of each data item.
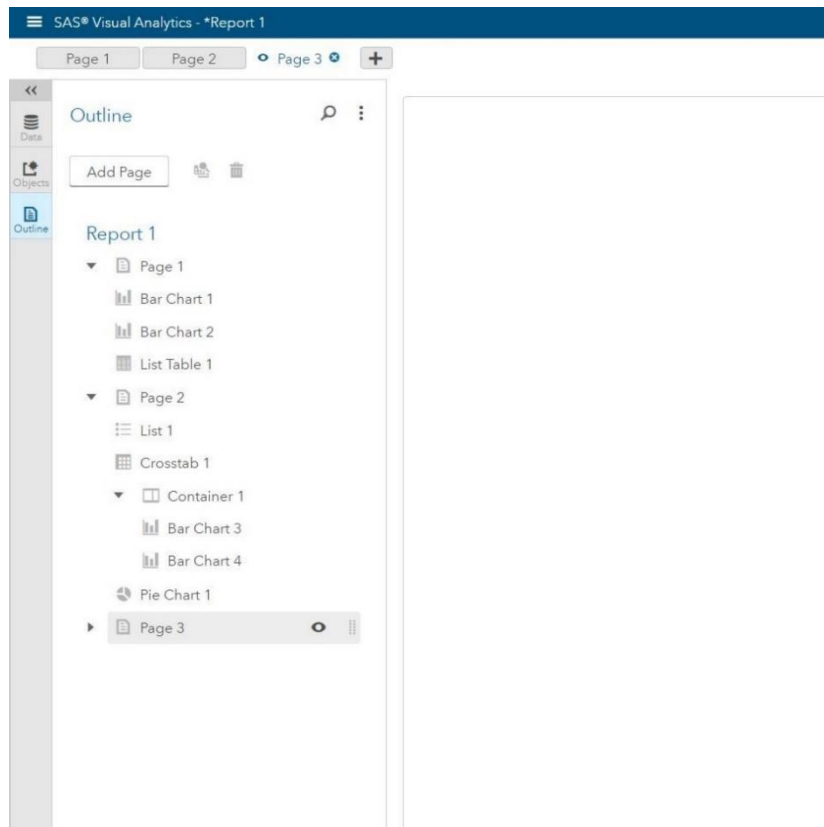

Display 6. Data Pane

The objects pane contains a robust set of choices ranging from essential data visualization objects to objects tailored for reporting and modeling. You may find that some of the objects near the bottom

appear gray. The application is called SAS Visual Analytics, but in order to offer you a seamless, interactive experience the application encompasses objects that are part of the SAS Visual Analytics bundle as well as the SAS Visual Statistics and SAS Visual Data Mining and Machine Learning bundles. Please contact your account executive if these objects are of interest to you.
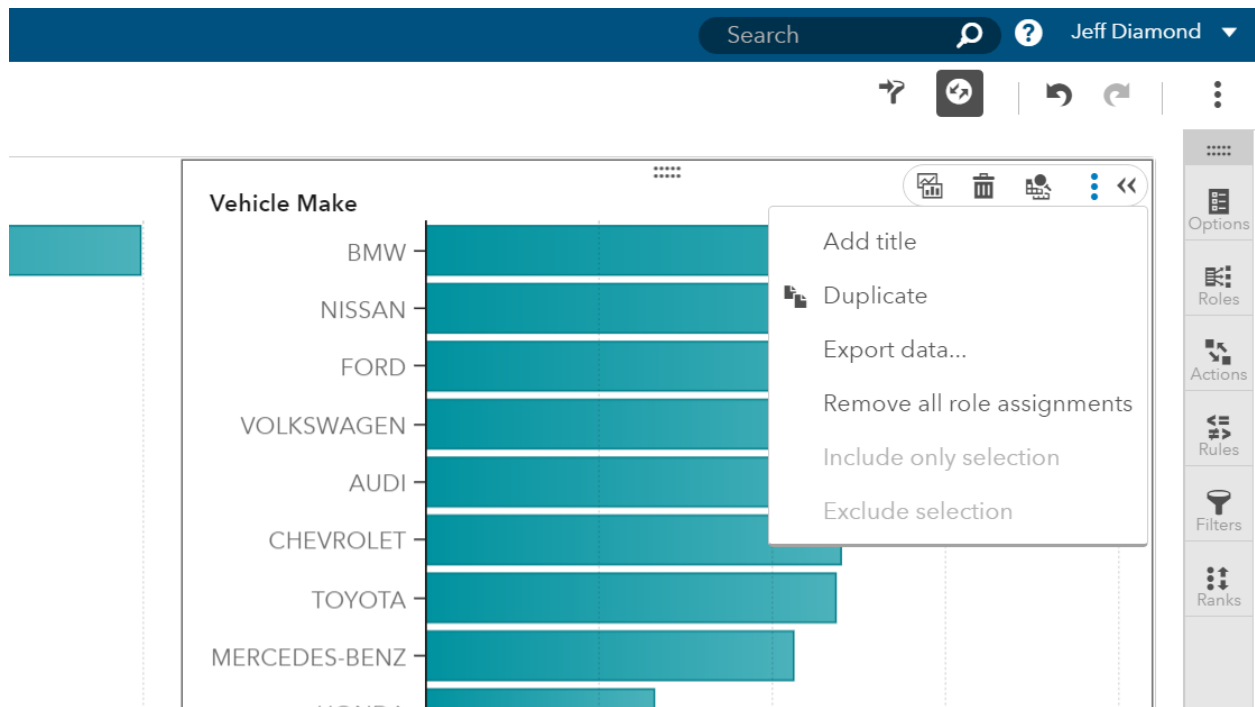
The outline pane is new in 8.1. It acts like a table of contents for your report and provides an overview of the pages and objects within the report. You can also rename or move object and pages from within this pane.
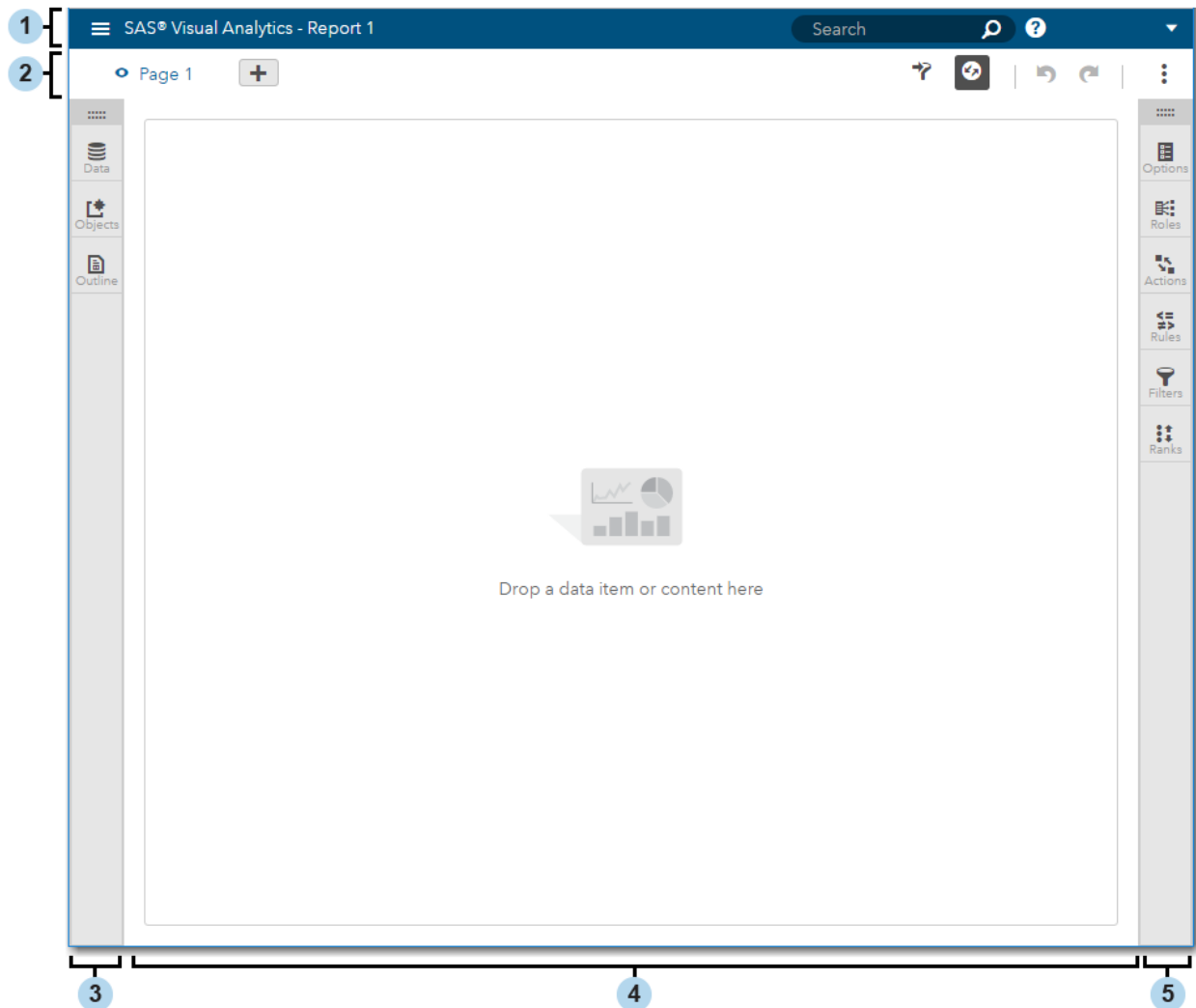

Display 7. Outline Pane

The right pane contains various elements that apply to the selected object. These will be familiar to you if you are a current SAS Visual Analytics user. However, a few of the names have changed. There is a wealth of product capabilities within each these panes, but this paper will not cover them in detail. Each type of object has an associated set of options that can be set. In SAS Visual Analytics 8.1 the "properties" and "styles" have been organized together in the Options pane. The Roles pane allows fine-grained control of how the data is assigned to the objects. This pane also supports drag and drop from the Data pane or between roles within pane. The Actions pane used to be referred to as Interactions, but it retains the same purpose. It was renamed to avoid confusion with statistical interactions. You can define page and report links from this pane. You can also add filter and linked selection actions between objects. Display rules, or more simply Rules, allows you to visually format an object based upon the value of a particular category or measure. Finally, the Filter and Rank panes allow robust control of the data query that's associated with the selected object.

One final note about the objects. Every object also contains a toolbar which allows you to perform many other actions such as export data, add a title, change the type of the object, and many more.

Display 8. Object Toolbar

Now that you are oriented to the left, middle, and right side of the application there is only one part that remains, the top.

Display 9. Main Interface for SAS Visual Analytics

The banner (1), a blue bar across the top, is common across SAS web applications. The side menu is invoked from the "hamburger" (three horizontal white bars) in the top left. It will allow you to easily navigate to other SAS applications you have access to use. There is a terrific Help Center available on the banner as well.

Just below the banner is a toolbar where there are a number of application tasks to get familiar with (2). You can add, reorder, rename and delete pages in your report.

The report and page prompt bars can be quickly expanded or collapsed via the ⤏ on this toolbar. These prompt bars are an efficient way to filter all the objects in a page or report.
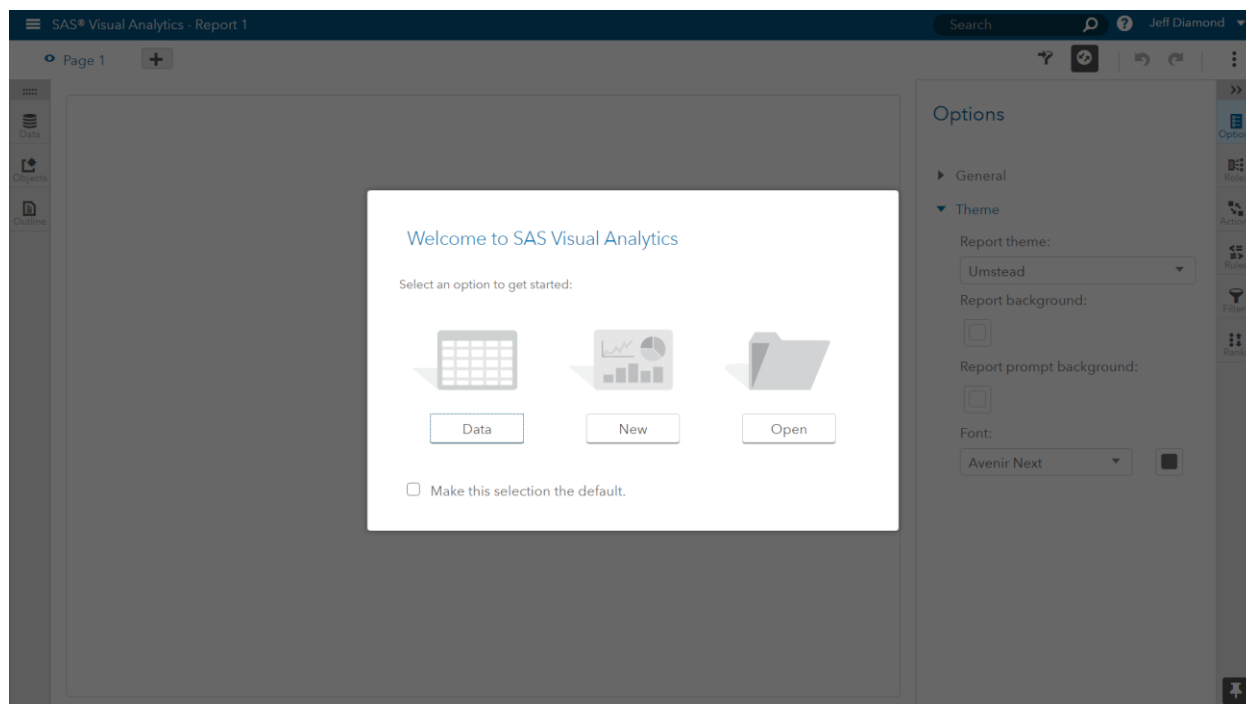
There is also a 🌀 to temporarily disable queries. This can be useful if you have several compute intensive settings to perform. This is more common when modeling your data.

You will not miss the ↩ and ↪ . To the right of these buttons there are a number of options in the overflow menu including Save.

MERGING OF APPLICATIONS

Whatever your task SAS Visual Analytics aims to make it feel natural. You can move seamlessly between data exploration, reporting, and modeling.

SAS Visual Analytics lets you work the way you want to work. When you load SAS Visual Analytics you will see the Welcome Dialog which invites you to choose data, open an existing report, or start with a blank report that does not contain data. You can make any of these options the default and opt to skip this step in the future. The purpose is to allow you to choose how you work. Some users want to get straight to the data while other users may build out the layout and visuals in their report before assigning data.

Display 20. Welcome Dialog

In SAS Visual Analytics all objects work seamlessly alongside one another. Previously, objects like a histogram or box plot were available only within SAS Visual Analytics Explorer (Explorer). These objects can be added directly into your report and will participate as targets of filter actions. The limitations that were present when exporting objects from the Explorer to SAS Visual Analytics Designer (Designer) are no longer present.

The benefits go in both directions. Operations found only in the Explorer can now be applied to objects that were found only in the Designer. For example, the ability to change the type of an object extends to traditional reporting objects like a pie chart. The auto charting logic found in the Explorer is also present in SAS Visual Analytics and is expanded to controls. You can drop a hierarchy onto one of the prompt bars and it will resolve to a set of controls with cascading filters. The appropriate controls will be chosen based upon the cardinality of the participating categories.

In SAS Visual Analytics there is only one type of document and it is referred to as a Report. Whether you are working with Text or a Linear Regression all report objects are added to the pages within a report. All objects can participate in the richness of the various layouts supported within SAS Visual Analytics.

At the same time SAS Visual Analytics offers a more transient page that is referred to as Explore mode. With the click of a button on the object toolbar you can quickly see the data behind your objects. This is

true for basic objects like a bar chart, but also for basic analytics like a correlation matrix or more advanced analytics like gradient boosting. More advanced objects will show supplemental information that helps describe the object.

Display 31. Explore Mode, Supplemental Table

In Explore mode it's also easy to compare two or more objects. Regardless of where the objects might live in the report you can select or deselect objects via the Outline pane to see them, side-by-side, in Explore mode or hide them from view without deleting them from the report. You can even add new objects on this page by duplicating an existing object or adding new objects directly to the page. These new objects will automatically be added to your report even when you exit Explore mode.

Display 42. Explore Mode, Comparison

There are many other benefits which are inherent when blending the best of all SAS Visual Analytics applications. Everything you build can be viewed on the Web or Mobile or in Office. All reports can be printed to PDF and the data for all objects can be exported.

The blending of data exploration, reporting and modeling into a single application will reduce confusion about which application to use. In addition, it will reduce the frustration of moving across tools with similar, but sometimes different interfaces. The sometimes hard to explain functional differences simply disappear.

MOVING FROM VERSION 7 TO VERSION 8

SAS recognizes the importance of making it easy for you to move from Version 7 to Version 8.

This starts with content. The format of SAS Visual Analytics reports remains unchanged. You can export all your reports to a package (.spk) and import them into your SAS Viya environment. As in the past you can use SAS® Management Console to create packages. In 8.1 SAS offers a well-documented command line interface (CLI) to import packages. A traditional user interface is planned for a later release. The import will bring all of your reports into your new environment. As in the past it will retain all images used by this report and all links between reports. The folder structure will be retained as well; however, the permissions on these folders will have to be reapplied. This is a known limitation and a problem we aim to resolve. Finally, while all reports can be promoted to the new environment you will not be able to promote your explorations until the upcoming 8.2 release. For the time being the explorations can be exported as a report in Version 7 and moved to Version 8. This will allow most, but not all, of the content in the exploration to be promoted.

In addition to moving your content you will also want to move your data. Because SAS Visual Analytics 8.1 is built atop SAS Viya you will need to move your data from LASR to CAS. First, it's useful to offer a little perspective about CAS. CAS is the next generation in memory server for SAS Viya. It can run all the SAS Visual Analytics operations that LASR supported. It offers key advantages as well. The most important is failover protection. Also, if data used by a report is not loaded it will automatically load it (Just-In-Time) when the report is loaded.
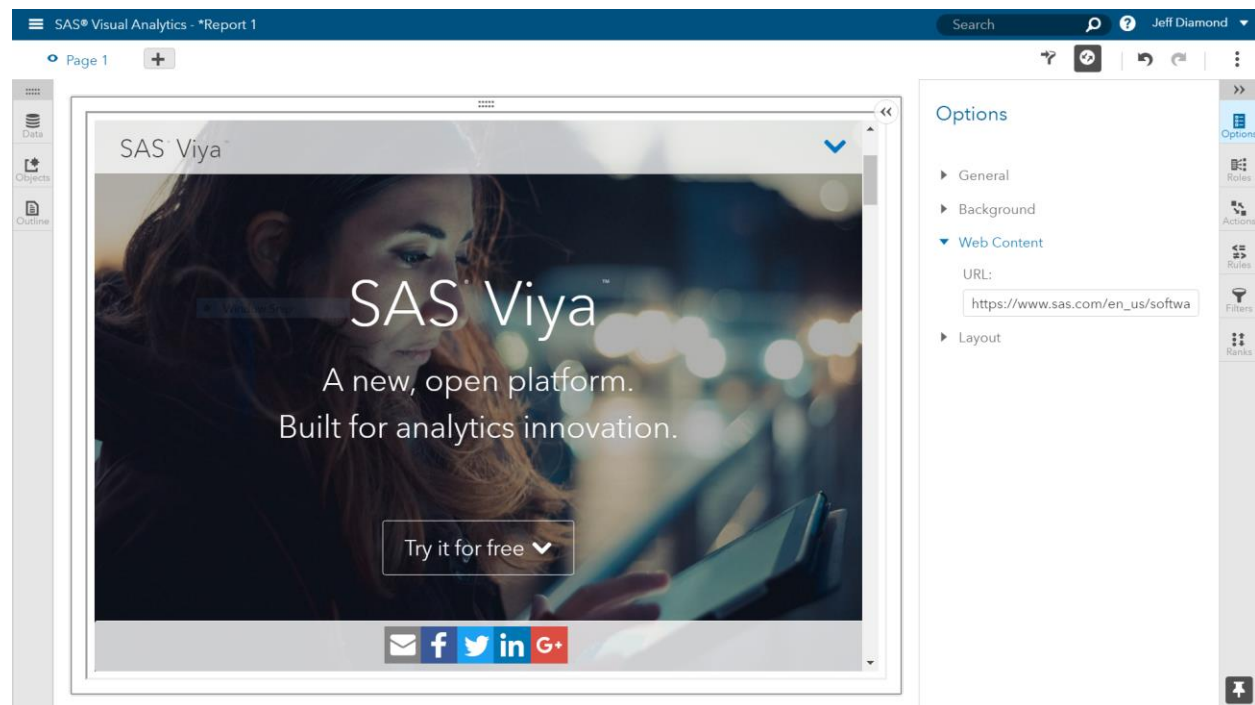
There are a few ways to move your data. One of the easiest and most common ways to move data from LASR to CAS is to import the data via SAS® Visual Data Builder or SAS Visual Analytics. You simply provide the credentials to your LASR server and choose the LASR tables you want to load into CAS. You can also load the data directly from a number of different formats including but not limited to SAS Data Sets, Excel, Hadoop, and Oracle.

After you move your content and data to SAS Visual Analytics 8.1 there are a couple of things to be aware of. First, all reports can be viewed immediately in the SAS® Report Viewer. With the exception of Stored Processes and custom report themes the reports should look and behave just as they did in Version 7. If you need to edit these reports there will be a few more caveats to be aware of. Custom graphs and KPI Grids will remain intact in the report, but will not be rendered. There are a small number of additional features that are not supported in 8.1, but are planned for 8.2. Please check with your account representative to see if these apply to your situation.
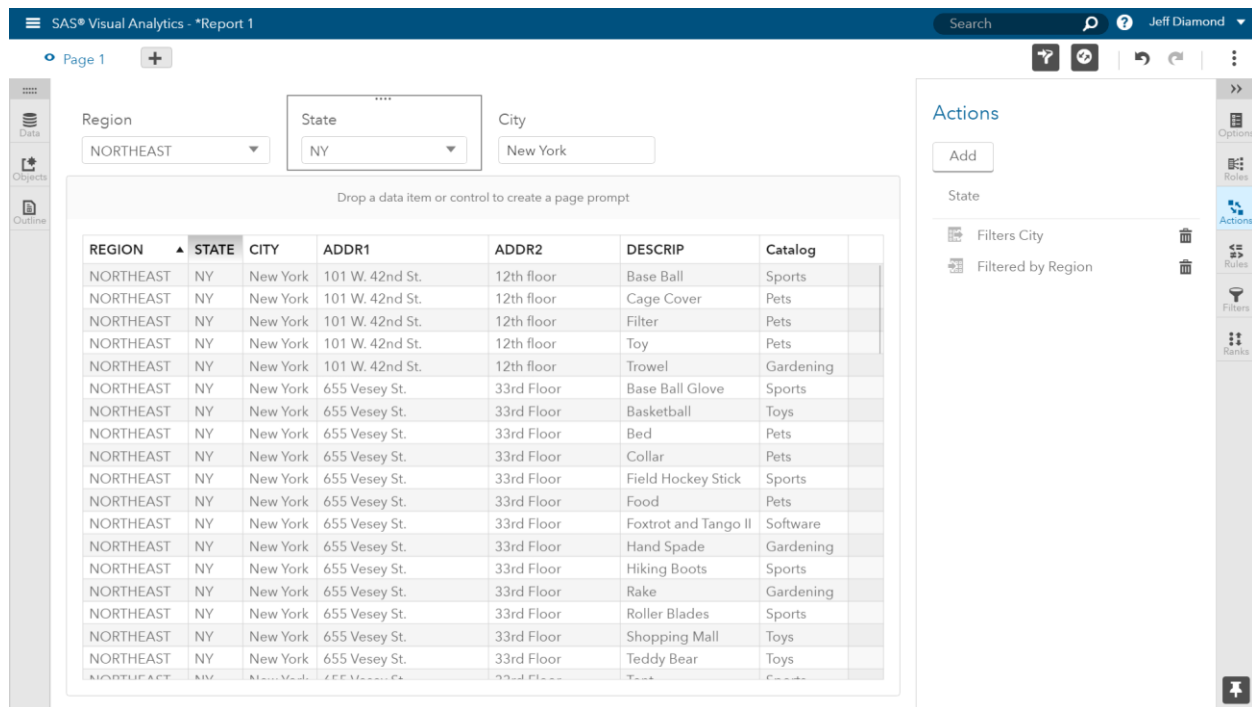
WHAT'S NEW

The application is written to work atop the SAS Viya platform. All interfaces are written in HTML5 instead of Flash. SAS Visual Analytics Designer, SAS Visual Analytics Explorer, and SAS Visual Statistics are merged into a single web application. A new offering, SAS Visual Data Mining and Machine Learning, is also integrated into the same web application. The interface is redesigned from the ground up to offer a very modern look and feel. These are the most significant enhancements for SAS Visual Analytics 8.1, but there are also a number of other important functional and usability enhancements.

There is a new type of object called Web Content. With this object you can integrate any HTML content that can be rendered in an iFrame. This includes video content. For sites that are running SAS 9 you can also use the URL for your SAS 9 Stored Process and integrate it directly in your 8.1 report.
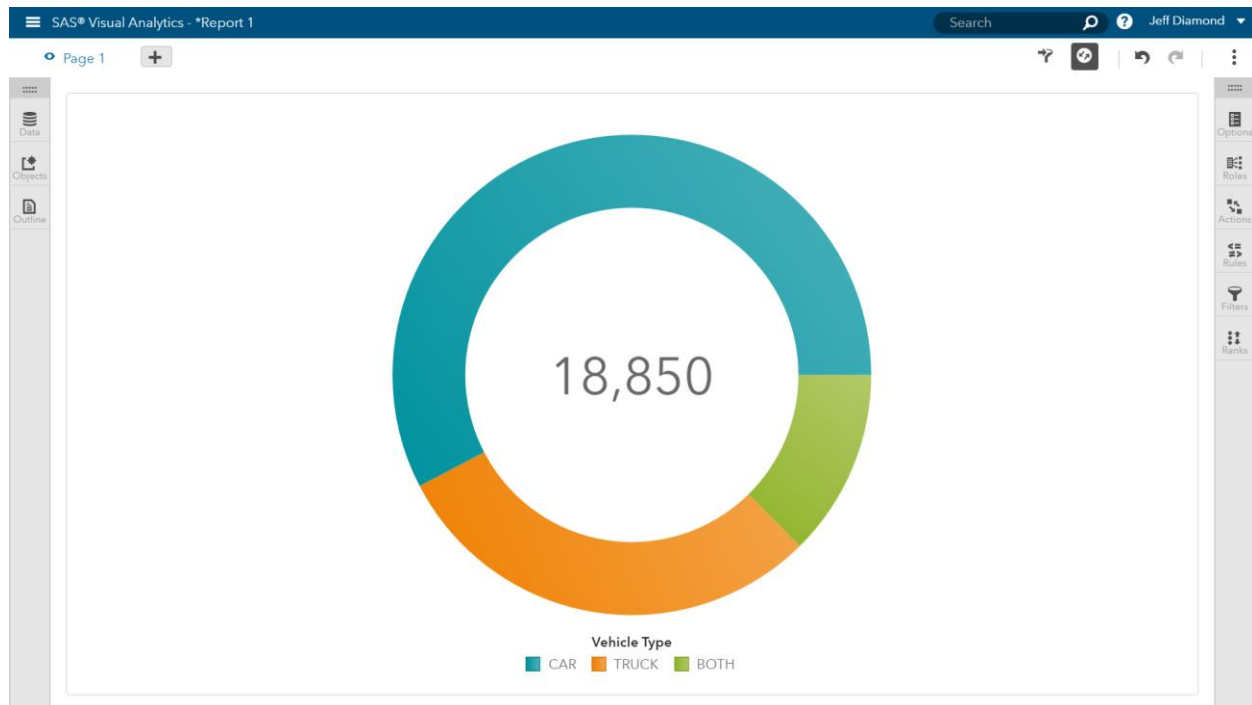

Display 53. Web Content

Have you always wanted cascading prompts in your report and page headers? SAS Visual Analytics 8.1 allows you filter and brush objects within these prompt bars.

Display 64. Cascading Prompts

Your pie chart can easily be turned into a donut. The graph animations have been improved considerably.

Display 75. Pie Chart (Donut)

There are modern touches strewn throughout. The new report theme, Umstead, offers a new color palette and there is more padding around objects.

There is deeper integration with ESRI including Geo search and drive time analysis.

An inventive data cache has been added so that like queries will not make additional calls to the in memory server. This cache analyzes the security context and applies across users and reports. This can mean faster results and less load on your server.

The controls and text now support preferred sizing. This is important because it will make reports more portable across varying screen sizes. There will be significantly less empty space in your report (when moving to bigger screens) and fewer scrollbars (when moving to smaller screens).

If you are a user of precision layout you no longer need to make an entire page "precision" to take advantage of this feature. You can now make an individual container use precision layout and apply the extra effort only where you need it. This will make precision reports faster to author and potentially more portable across varying screen sizes.

Subtle delighters abound: heat map matrix, titles on prompt bars, URL images, and measures on lists, dropdowns, and text inputs. You can import data directly from your clipboard and drag data or images directly onto the interface for inclusion in the report. Titles can be edited inline and the interfaces for aggregated measures and calculated items were merged into one. Look around long enough and you'll find more!

We listened. You can now undo and redo all modifications to the report.

CONCLUSION

SAS Visual Analytics 8.1 has something exciting for everyone.

As you can see, SAS Visual Analytics has a fresh, new design that retains many familiar elements from previous release. It offers a clean, modern interface which is written using HTML5.

SAS Visual Analytics is a consolidation of SAS Visual Analytics Designer, SAS Visual Analytics Explorer, and SAS Visual Statistics. There is no more confusion of which tool is right for the job. There is no more frustration that one tool is missing a particular feature that is critical for you. This visual, interactive interface has also grown to include capabilities from new offerings like SAS Visual Data Mining and Machine Learning.

It is written for the SAS Viya environment and runs with the next generation in memory server. There are interfaces to help you move your data and reports from your SAS 9 environment to your SAS Viya environment.

Finally, there are many new features in version 8.1 and many more to come in the upcoming releases.

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