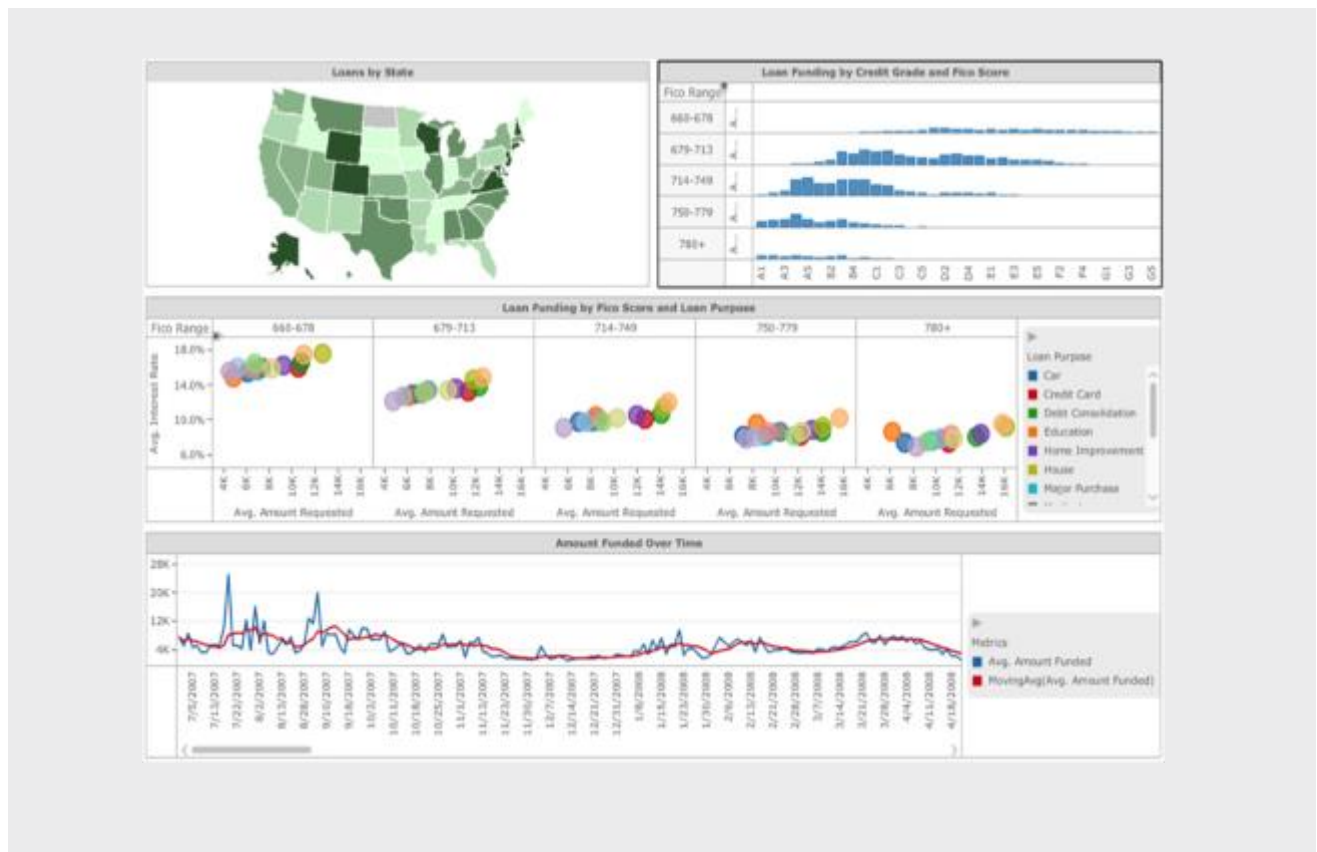


BI Concepts, Tools and Applications

Module# 3: Business User Created Dashboard



Objective

For this exercise, you will be using the **MicroStrategy Analytics Desktop** interface to design a dashboard for a Financial Services company. To create this dashboard, you will use a wide variety of MicroStrategy components and features, including:

- Data Import
- Bar, bubble, and map charts and visualizations
- On-the-fly derived metrics
- Data Blending
- Selector control for filtering data as displayed in adjacent visualizations

Introduction

A dashboard is an analytical tool designed to make business data easily accessible and provide an overview of performance at a glance. With MicroStrategy, multiple reports can be consolidated into a single, highly dynamic dashboard to provide business users with all the information they need at a glance, enabling better decision making and enterprise alignment.

MicroStrategy dashboards not only scale to huge data volumes, but also to thousands of concurrent users, providing everyone in the business the information they need to be successful, as well as a trusted, single version of the truth.

With MicroStrategy dashboards, business users are empowered to graphically explore and display any set of data without the need for IT support. Users can quickly create a publishing-quality, highly visual dashboard featuring a wide range of compelling data visualizations.

Business context

Banks need to determine what interest rates to charge borrowers, but every borrower is different. Each applicant has a unique profile of FICO scores, employment history, income, assets, liabilities, and loan requests. Do the borrowers with the best FICO scores get the best interest rates? Are borrowers with low FICO scores denied loans? How can banks manage risk across its entire portfolio of loans?

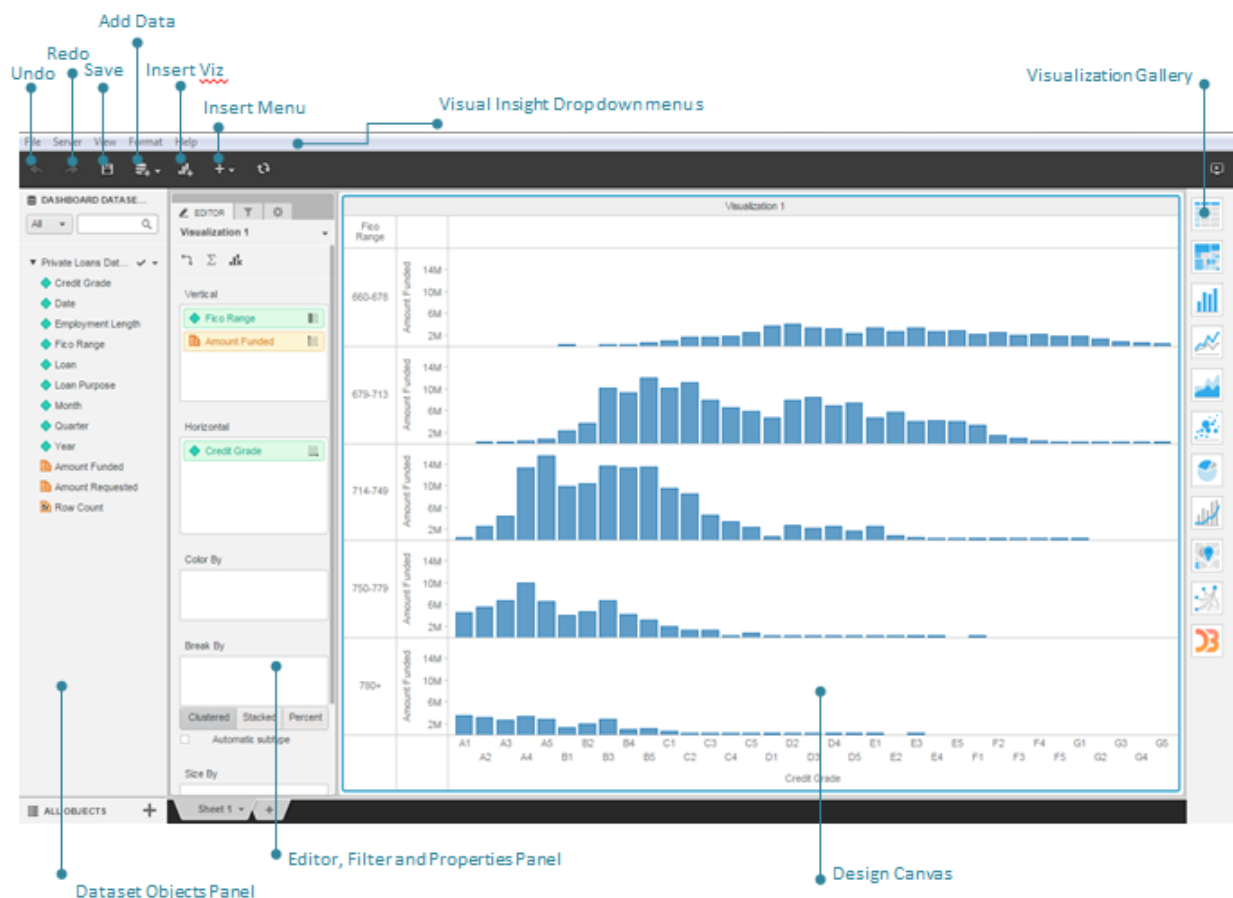
Some useful terminology:

- **FICO Score**


FICO (Fair Isaac Corporation) score is the most widely used credit rating model in the United States and ranges from 300 to 850. The higher the value, the better the score is.

- **Credit Grade**

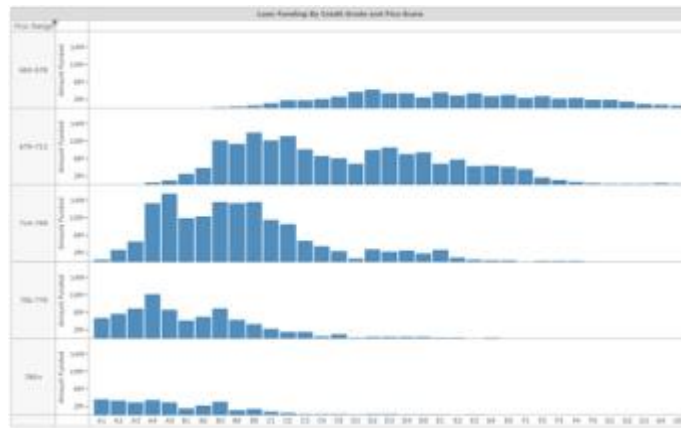
This credit score model ranges from 501 to 990 and also assigns letters from A (best) to G (worst) to the different credit score ranges.



Step by step

1. Open Up your MicroStrategy Desktop 
2. Click on File, and select Open
3. Navigate to your folder where you downloaded the required files and select “Private Loans Dashboard.mstr”

The dashboard that you see should look like the following image:



This dashboard has been built with pre-existing data in the MicroStrategy environment, and will act as the starting point for our analysis.

- Click on the Insert Visualization button on the Visual Insight toolbar to add an additional visualization to your dashboard

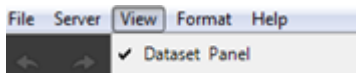


- From the Visualization Gallery select Bubble chart



- If not available, bring up the **Dataset Objects** panel by clicking **View** on the Visual Insight toolbar and choosing

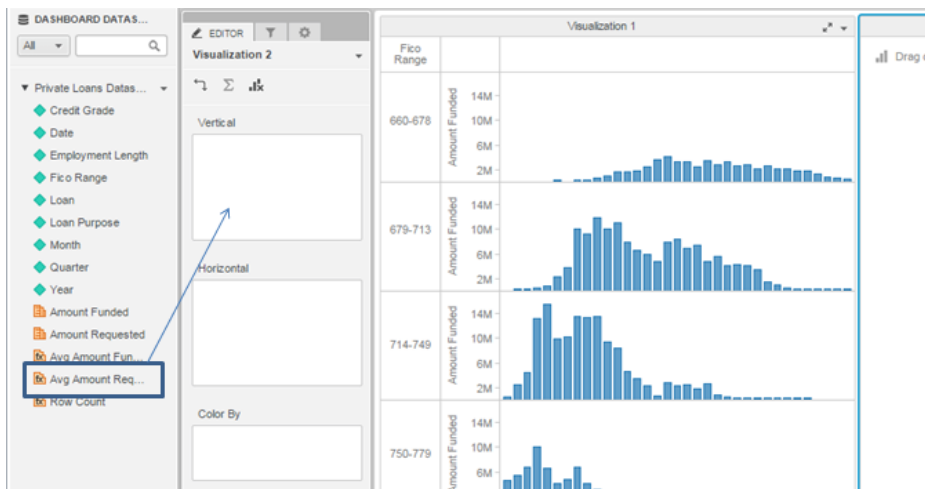
Dataset Panel from the available options



The **Dataset Objects** panel shows you the list of attributes and metrics that can be analyzed and visualized. You can also create new calculations based on existing objects in order to enhance your analytical capabilities.

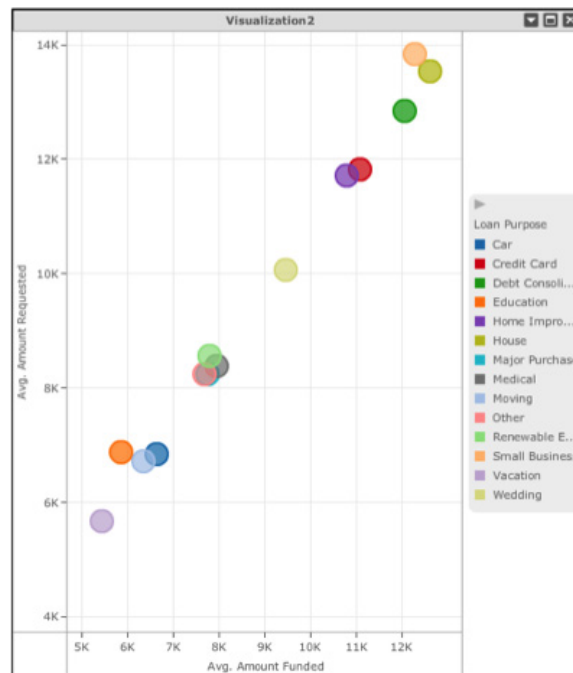
TIP To improve visibility in your working area, you can adjust the width of each one of the panels by dragging the resizable control available when you hover the mouse on top of the panel dividers.

- Drag and drop the **Avg. Amount Requested** metric onto the newly created blank visualization



8. Finish defining the visualization by adding the following objects to the Drop Zone:
 - Vertical Axis: **Avg. Amount Requested**
 - Horizontal Axis: **Avg. Amount Funded**
 - Color By: **Loan Purpose**

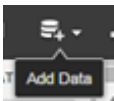
At this point your visualization should look like the following image:



This visualization shows the relationship between the amount requested and the amount ultimately funded for various loan types. We can easily see that this relationship is roughly linear, but what if we are interested in analyzing the interest rates of these various loan types?

You will notice that interest rates are not part of the original dataset that we are working with, but using MicroStrategy's data blending capability within Visual Insight we can easily leverage an excel file that contains the interest rate data we are interested in studying.

9. Click on the down arrow section of the **Add Data** button on the Visual Insight Toolbar and select **New Data**

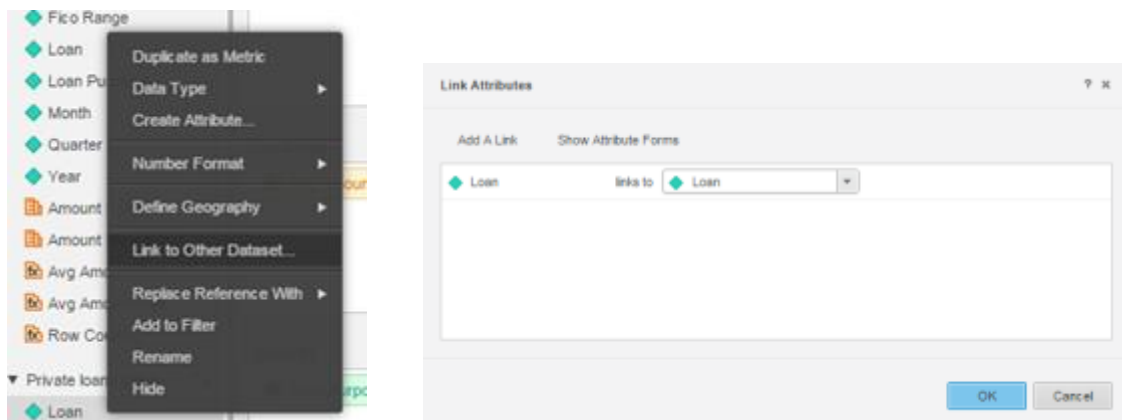



10. From the available options, choose **File From Disk**. The data source for this exercise is in Excel format, click on Choose Files, locate in your working folder the Excel file called **Private Loans States.xlsx**
11. Click **Prepare Data**, select **Sheet 1** and click on Select.
12. MicroStrategy is making an educated guess at what are attributes and what are Metrics based on the data types. But Loans needs to be an attribute. Right mouse click on Loans and select **Convert to attribute**

Your data preview should now look similar to the image below:

Loan	State Code	State	Interest Rate
487686	CA	California	11.1%
1322908	MD	Maryland	11.7%
850621	IL	Illinois	10.4%
683648	WA	Washington	10.4%
872614	CA	California	11.0%
1322959	CA	California	11.7%
1342944	FL	Florida	11.7%
1339871	UT	Utah	11.7%
477049	MI	Minnesota	10.4%
880327	NV	Nevada	10.4%

13. Click **Finish** to import the dataset
14. The two datasets needs to be linked; right mouse click on the Loan attribute and select **Link to Other Dataset...** and select **loan** from the drop down list to link loan to loan among different datasets.



The link is denoted by the  icon now attached to the **Loan** attribute. This link allows us to create visualizations that leverage both datasets, greatly increasing our analytical power and flexibility.

At this point it is a good idea to save the work that you have done so far.

15. Using the MicroStrategy Web toolbar, click the **Save As** button to save your dashboard

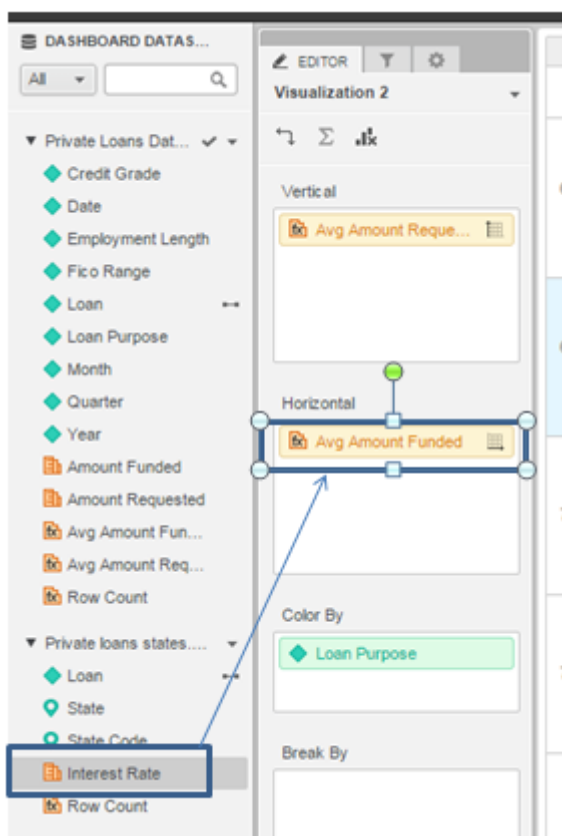


16. In the **Save** dialog, keep the default destination folder and your dashboard **Private Loans Dashboard v2**

17. Click **OK** to close the dialog

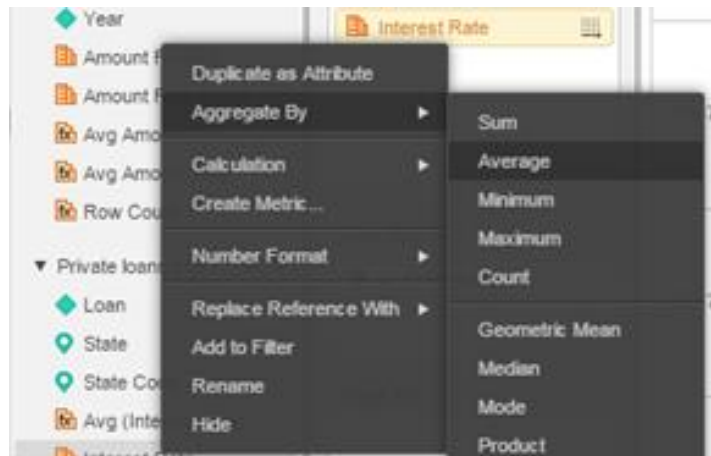
TIP After saving the dashboard, you will notice that there is blue outline around the visualization, this means that it is the visual selected for editing. Before continuing please click on **Visualization 2** to make sure it is the selected visualization.

18. Drag and drop **Interest Rate** onto the **Avg. Amount Funded** in the **Horizontal Axis** section of the drop zone to replace it



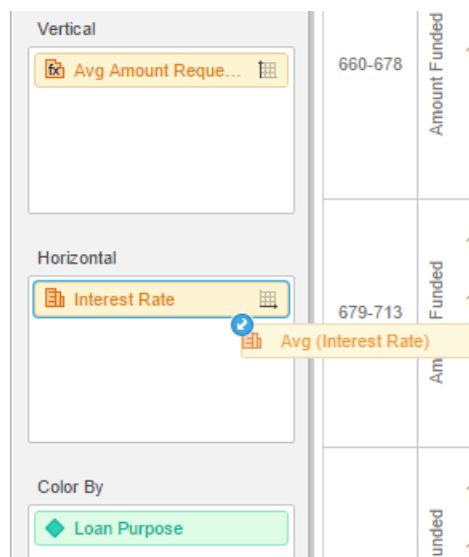
When we add **Interest Rate** to the visualization, we see numbers for interest rates that are unreasonably high. This is because the metric is summing up the individual interest rates for each loan under each loan purpose. In order to fix this we will quickly create an on-the-fly derived metric.

19. Under **Dataset Objects**, select the **Private Loans States** dataset from the available options in the dataset object panel
20. Right mouse click on **Interest Rate** and select **Aggregate By**
21. Select **Average**



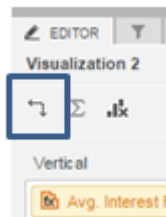
TIP Derived metrics are metrics that you can create based on existing metrics in the analysis. A derived metric performs a calculations on-the-fly with the data available on an analysis, without re-executing the analysis against the data source. You can create a new derived metric using data from a Visual Insight analysis, and then add the new metric to the analysis.

22. Replace **Interest Rate** in the horizontal axis section of the Drop Zone and replace it with the newly created **Avg (Interest Rate)** metric



We can easily rename this derived metric so that it matches the other average metrics in the dataset

23. Right mouse click on **Avg (Interest Rate)** in the dataset objects panel to bring up the context-sensitive menu
24. On the popup menu **Rename** from the available options
25. Rename the metric to **Avg. Interest Rate**
26. On the Visual Insight toolbar, click on the **Swap** button to quickly get a different view of the data



27. Drag and drop **Fico Range** (from the Private Loans dataset) into the **Break By** section of the Drop Zone. By breaking the data by **Fico Range** we can begin to see a rough pattern emerge in the data. If that removes the Loan Purpose from Color By, try dragging and dropping the **Loan Purpose** into the **Color By** section. This might add the Loan Purpose in the Break By section as well, but that is totally fine and would not affect the visualization in a wrong way.

Resulting sections would be as bellows:

Break By: Loan Purpose and Fico Range

Color By: Loan Purpose



28. Now drag and drop **Fico Range** from the **Break By** section to the **Horizontal Axis** above Avg. Amount Requested.
29. Double-click the Visualization title bar and rename the visualization to **Loan Funding by Fico Score and Loan Purpose**
30. Click on the **Loan Funding by Fico Score and Loan Purpose** title bar, and drag it under the **Loan Funding by Credit Grade and Fico Score** bar chart

When rearranging the visualization layout, look for the semi-transparent block representing the visualization being moved, and the blue highlight that indicates where the visualization will be placed.



TIP Feel free to save your dashboard at any point. When asked, select to replace the existing object with your newer dashboard definition. You can continue enhancing your analysis after the saving process is completed.

31. On the **Visual Insight** toolbar, click on the **Add Visualization** button
32. Drag the newly created blank visualization to the left of the **Loan Funding by Credit Grade and Fico Score** bar chart



33. Click on **Select a Visualization** to bring up the Select a Visualization dialog



34. From the Visualization Gallery select **Bar Chart**

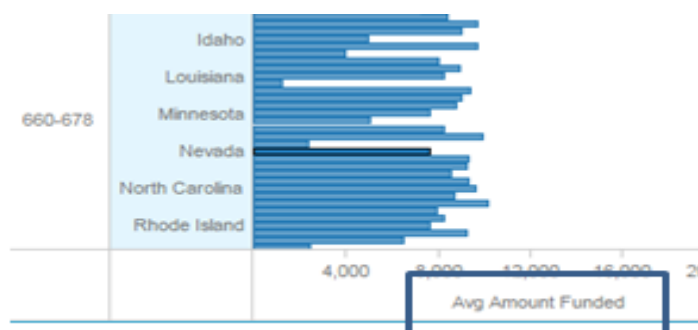
35. Define the visualization as follows:

- Vertical Axis: **FICO Range** from the **Private Loans** Dataset and **State**—from the **Private Loans States** dataset.
- Horizontal Axis: **Avg. Amount Funded**—from the **Private Loans** dataset
- Color By: None
- Break By: None

The Drop Zone should now look like the image below:

A screenshot of the 'Visualization 1' configuration panel. The panel has a title bar 'Visualization 1' with a dropdown arrow. Below the title bar are three icons: a refresh icon, a sum icon, and a bar chart icon. The panel is divided into sections: 'Vertical' with two green buttons labeled 'Fico Range' and 'State'; 'Horizontal' with one orange button labeled 'Avg Amount Funded'; 'Color By' with an empty white box; 'Break By' with an empty white box; and a bottom section with three tabs: 'Clustered' (selected), 'Stacked', and 'Percent'. Below the tabs is a checkbox labeled 'Automatic subtype' which is checked.

36. At the bottom of the visualization, right mouse click on the X Axis title, **Avg. Amount Funded**, to bring up the context-sensitive menu



37. Click on the arrow to open the menu, from the options available, select **Sort Descending**
38. Right mouse click on the **Loan** attribute in the dataset objects panel to bring up the context-sensitive menu
39. Select **Duplicate as Metric** from the available options
40. Drag and drop the newly created **Sum(Loan)** metric to the **Color By** section of the Drop Zone
41. Double-click the title bar and rename the visualization **Loans by State**
42. Save your work
43. Hover over the **Loans by State** title bar to bring up the context-sensitive menu
44. Click on the down arrow, and select **Change Visualization** from the available options
45. Select the **Map** category.
46. Right mouse click on **Sum(Loan)** in the Color By section in the editor panel and select **Thresholds**

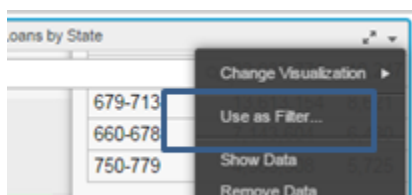
TIP In addition to the defaults, you can create custom thresholds based on your needs.

47. Switch the color to Green

TIP To increase interactivity within this dashboard, you can make the map control what information is displayed in the other visualizations. This will enable you to analyze your data at both a country-wide and state level with a simple click of the mouse.

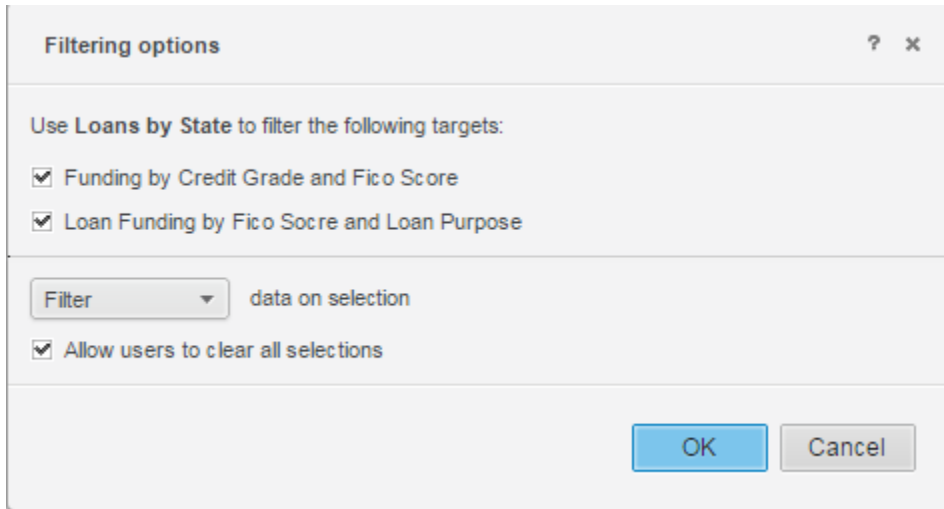
To clear selections, click anywhere on the empty areas of the chart.

48. Hover over the **Loans by State** visualization title bar to bring up the context-sensitive menu
49. Click the down arrow, and select **Use as Filter** from the available options



50. In the **Filtering Options** dialog, check both **Loan Funding by Credit Grade and Fico**

Score and Loan Funding by Fico Score and Loan Purpose



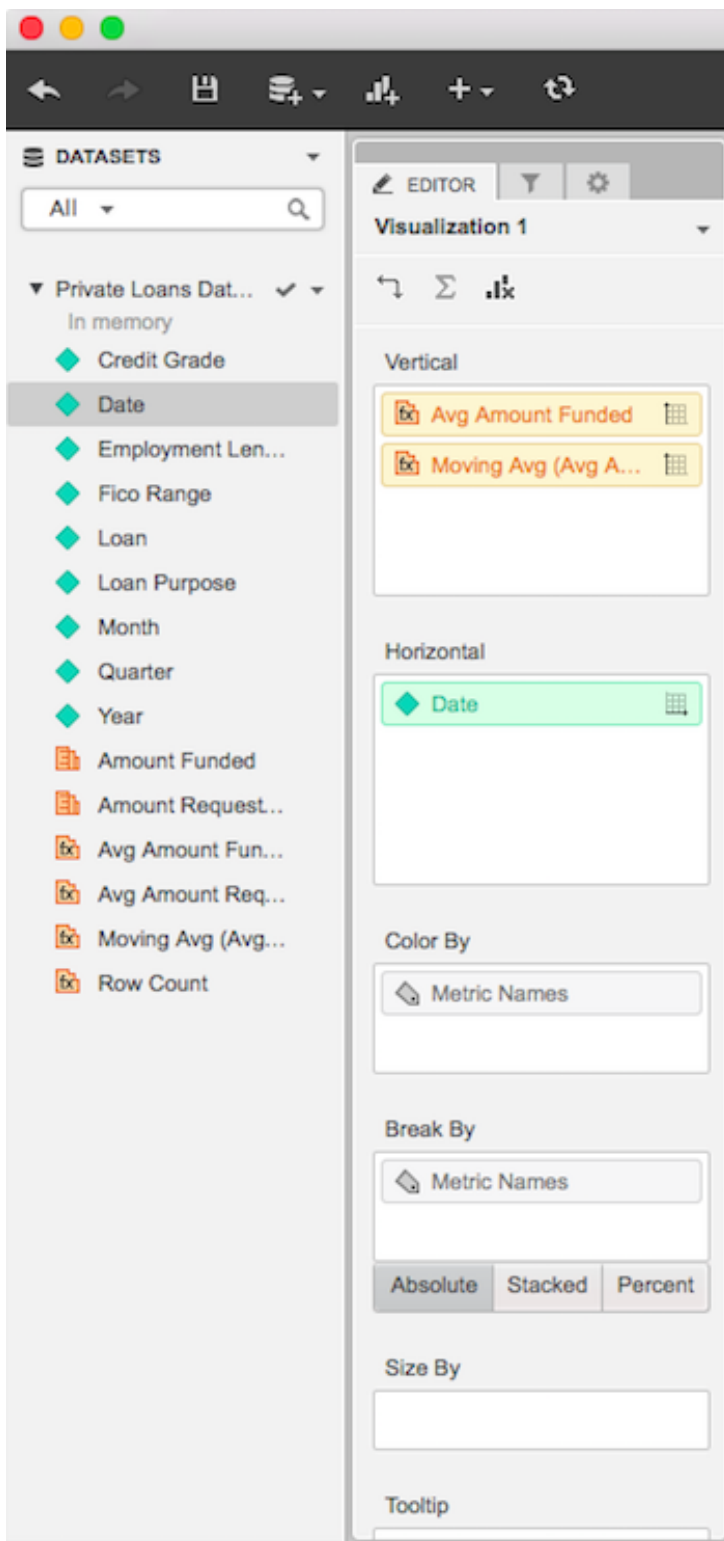
51. Click **OK** to accept the changes and close the dialog

You have just set the map to act as a filter for the **Loan Funding by Credit Grade and Fico Score** and **Loan Funding by Fico Score and Loan Purpose** visualizations. If you select any state from the map, both visualizations will change accordingly and display loan data for only the state you selected.

To change your filter selection, click on any state to visualize information for that state. To clear the filter selection, click anywhere on the white area surrounding the map.

52. Using the **Visual Insight toolbar**, click the **Add Visualization** button
53. Click on the **Select a Visualization** button
54. From the Visualization Gallery choose **Line chart**
55. Define the visualization as follows:
 - Vertical Axis: **Amount Funded** with **Avg. Amount Funded**—from the **Private Loans** dataset
 - Horizontal Axis: **Date**
 - Color By: **Metric Names**—drag from **Drop Zone** to duplicate if not auto populated.
 - Break By: **Metric Names**—from the **Private Loans** dataset, drag the **Metric Names** from the vertical Axis drop zone if not auto-populated.

The Drop Zone should now look like the following image:



56. Right mouse click on the **Avg. Amount Funded** metric in the **Vertical Axis** section of the Drop Zone to bring up the context-sensitive menu
57. Choose **Shortcut Metric, Moving Average**

58. Select **Avg** from the drop down menu and enter 7 as the value for the **Starting Size**
59. Click **OK** to create a new 7-day moving average

(NOTE: If it gives an error, go to **File -> Preferences**. On the 'General' tab, change the 'Language' to 'English(US)' and 'Number and Date Format' to 'English(US)' if it is not already set to the same. Redo from step -56 to create Moving Average and it should not show error this time.)

A moving average is a mathematical technique for analyzing data over time. A moving average is a series of averages across different time subsets of a dataset. They are most commonly used to smooth out short-term fluctuations in the data in order to better highlight longer-term trends.

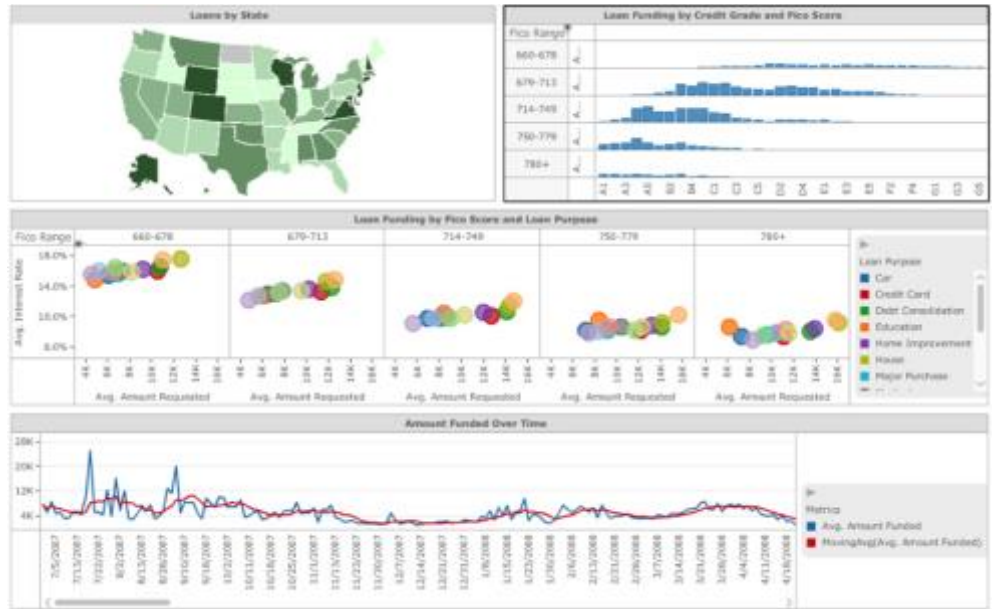
By creating a moving average for the **Avg. Amount Funded** metric, we can now more clearly see the overall trend in loan funding as it changes over time.

60. Hover over the newly created **Moving Avg(Avg. Amount Funded)** metric in the dataset objects panel to bring up the context-sensitive menu
61. Click on the down arrow and select **Rename** from the available options
62. Rename the metric to **Amount Funded 7 Day Average**, and add this newly created metric to vertical axis replacing **Amount Funded**.
63. Double-click the title bar and rename the visualization **Amount Funded Over Time**

Now would be a good time to save the work that you have completed so far.

As we have seen throughout these exercises, the Visual Insight workspace is a highly customizable interface that enables users to easily resize and reposition visualizations, change titles, and choose custom thresholds for conditional formatting.

Your dashboard should now look like the image below:



In minutes, you created a dashboard that you or your workgroup can use immediately to gain new insights about your business. These business user-created dashboards facilitate the exploration of data in new ways, and because IT is not required these dashboards can rapidly change to reflect new KPIs, metrics, or layouts to suit your unique needs.