Business Intelligence and Analytics
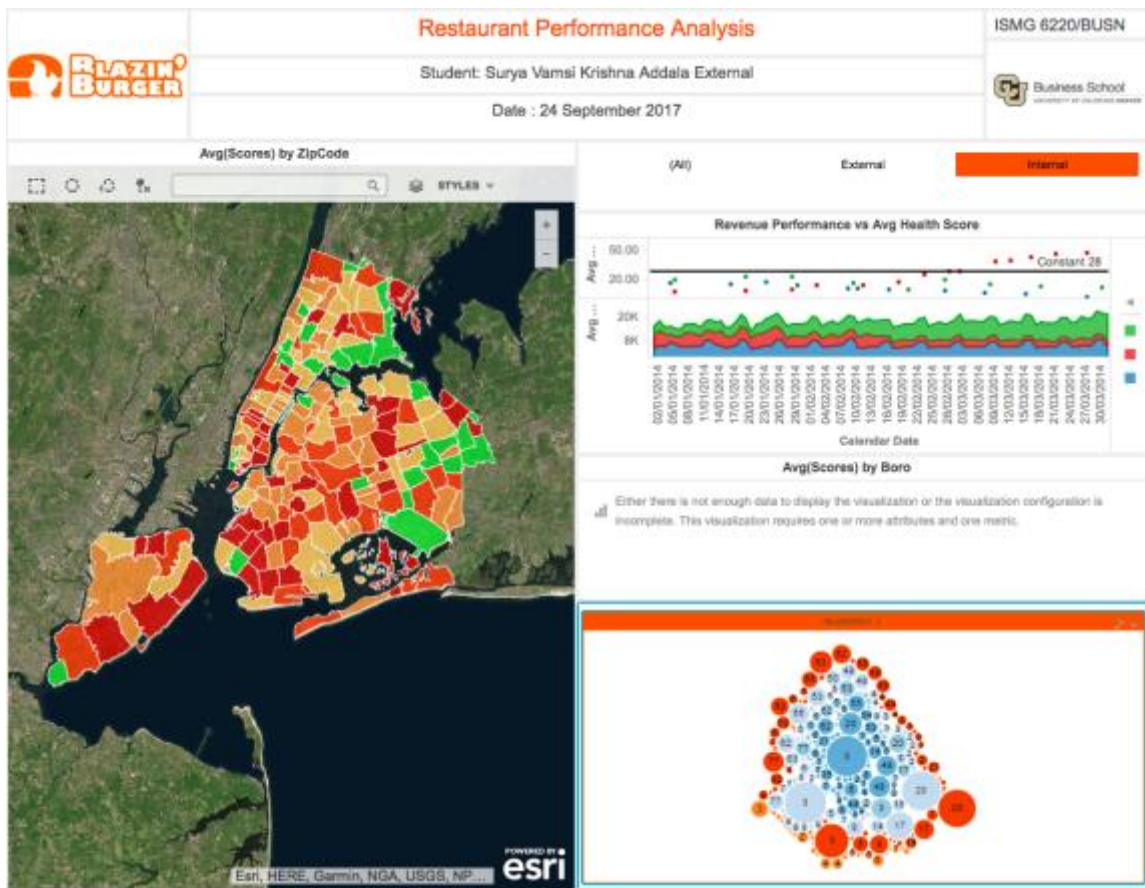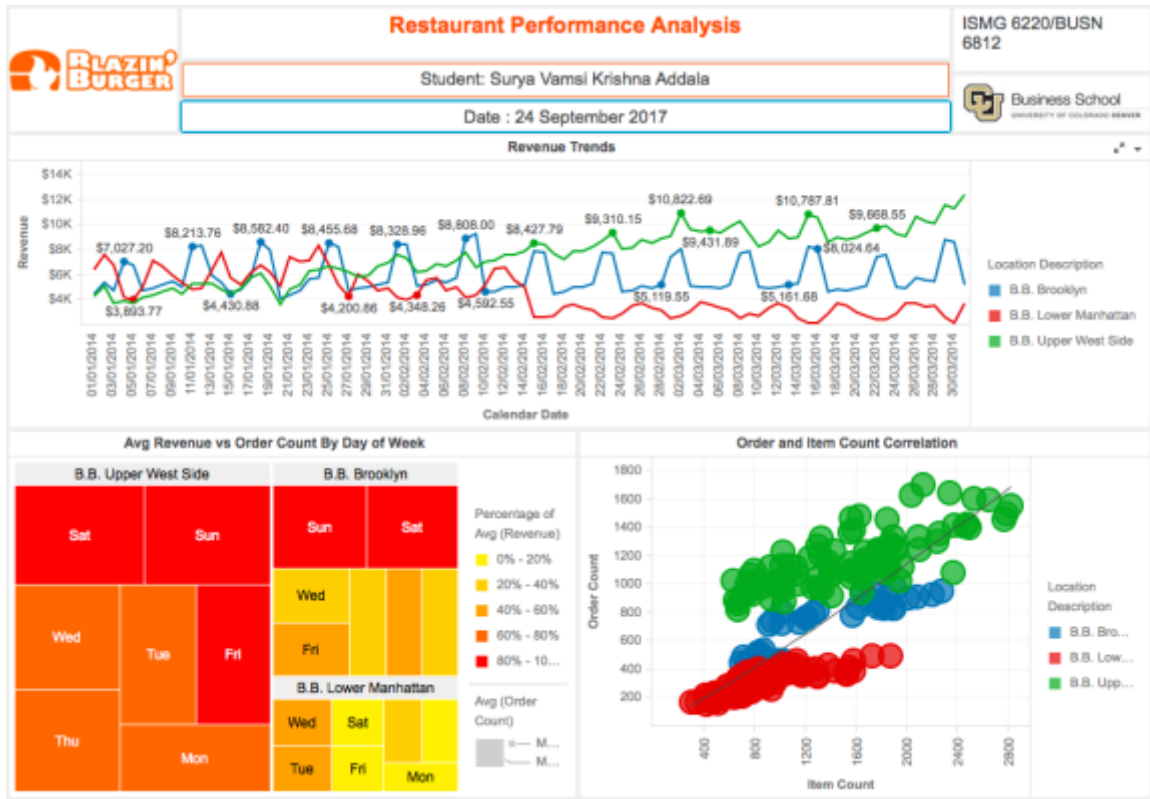# ISMG 6220/ BUSN 6812

BI Project

Introduction

Over the last year, the three New York locations of fast-food restaurant Blazin' Burger have produced mixed financial results. You, the regional manager, have been tasked with analyzing the performance data from each location, gathering additional external data, and identifying the causes of these results.

Your first assignment is to create a presentation-ready dashboard to monitor the Key Performance Indicators (KPIs) for all three restaurant locations. To achieve this, you have been given access to the latest Sales and Marketing data for those locations.

The final result of your Analysis should look like this (Two pages)

Restaurant Performance Analysis

ISMG 6220/BUSN 6812

Student: Surya Vamsi Krishna Addala

Date : 24 September 2017

BLAZIN' BURGER

Business School
UNIVERSITY OF COLORADO DENVER

Revenue Trends

Revenue (y-axis): $14K, $12K, $10K, $8K, $6K, $4K

Data labels: $7,027.20, $8,213.76, $8,582.40, $8,455.68, $8,328.96, $8,808.00, $8,427.79, $9,310.15, $10,822.69, $10,787.81, $9,431.89, $9,668.55, $8,024.64, $3,893.77, $4,430.88, $4,200.86, $4,348.26, $4,592.55, $5,119.55, $5,161.68

Calendar Date: 01/01/2014, 03/01/2014, 05/01/2014, 07/01/2014, 09/01/2014, 11/01/2014, 13/01/2014, 15/01/2014, 17/01/2014, 19/01/2014, 21/01/2014, 23/01/2014, 25/01/2014, 27/01/2014, 29/01/2014, 31/01/2014, 02/02/2014, 04/02/2014, 06/02/2014, 08/02/2014, 10/02/2014, 12/02/2014, 14/02/2014, 16/02/2014, 18/02/2014, 20/02/2014, 22/02/2014, 24/02/2014, 26/02/2014, 28/02/2014, 02/03/2014, 04/03/2014, 06/03/2014, 08/03/2014, 10/03/2014, 12/03/2014, 14/03/2014, 16/03/2014, 18/03/2014, 20/03/2014, 22/03/2014, 24/03/2014, 26/03/2014, 28/03/2014, 30/03/2014

Location Description
- B.B. Brooklyn
- B.B. Lower Manhattan
- B.B. Upper West Side

Avg Revenue vs Order Count By Day of Week

B.B. Upper West Side: Sat, Sun, Wed, Tue, Fri, Thu, Mon

B.B. Brooklyn: Sun, Sat, Wed, Fri

B.B. Lower Manhattan: Wed, Sat, Tue, Fri, Mon

Percentage of Avg (Revenue)
- 0% - 20%
- 20% - 40%
- 40% - 60%
- 60% - 80%
- 80% - 10...

Avg (Order Count)
- M...
- M...

Order and Item Count Correlation

Order Count (y-axis): 1800, 1600, 1400, 1200, 1000, 800, 600, 400, 200

Item Count (x-axis): 400, 800, 1200, 1600, 2000, 2400, 2800

Location Description
- B.B. Bro...
- B.B. Low...
- B.B. Upp...

Before Getting Started

For a quick reference or additional help, you can click on help in the menu bar to troubleshoot, access video references or the user guide.
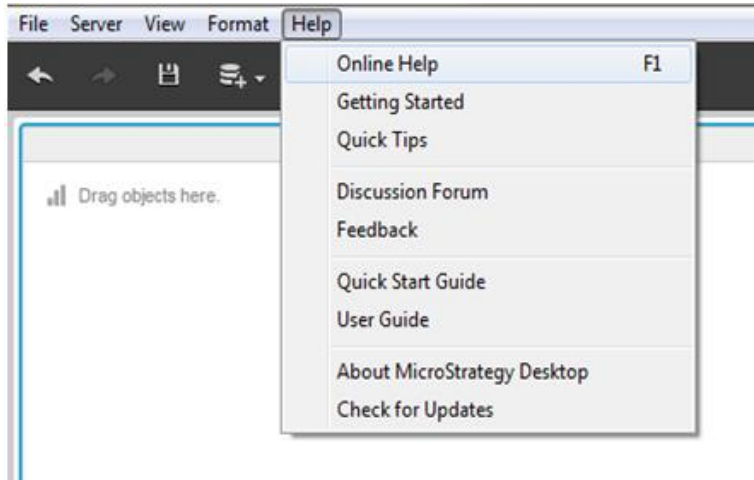

It is recommended to have a copy of the **User Guide** close by for a quick refresher of steps when needed.

Also review the video recordings available under the **Getting Started** > **See Video Tutorials**

Troubleshoot:

While doing your analysis, if you were to encounter a notification similar to the below, your only action is to close out of Desktop and restart your efforts from where you last saved your work. Throughout the document there are reminders to save your work progress, but please save frequently to ensure your rework will be limited.
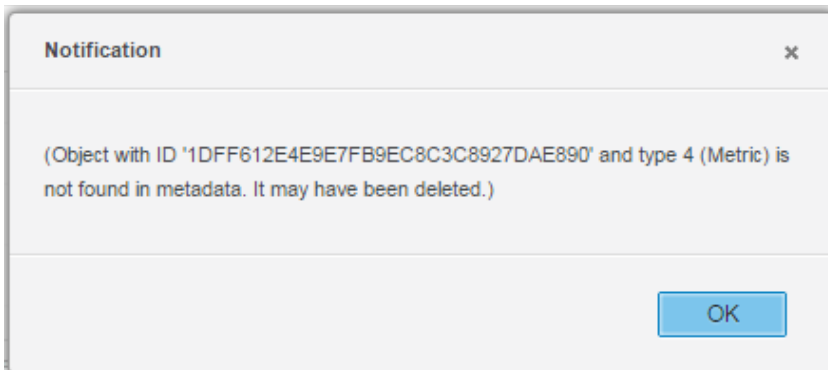
Getting Started

Connect to Your Data

In order to find out what factors are driving the performance of the three restaurant locations you were tasked with analyzing, you will need to connect to the data.

The data sources you will use for this project are:
- Regional Store performance
- NYC_Health_Inspections

The data preparation for each is:

1. **Regional_Store_Performance**
   - Worksheet to bring in is **3Locations**
   - Once the dataset is brought into your Visualization editor you will rename the dataset within the dashboard dataset panel to **Regional_Store_Performance**
     (Don't forget to complete this step later on)

> **TIP**
>
> If the Excel file has several sheets, the Select Worksheets screen allows you to import multiple sheets at once as part of the same dataset. Each sheet is imported as a separate table within the dataset and you can create joins between tables.
>
> MicroStrategy automatically maps the columns as attributes (your business dimensions) and metrics (your performance indicators or KPIs) that will be available for analysis. This mapping is based on the column data types, and content.

   - Preparation of the data needs to be done on the columns are as follow:
     - **Camis – Location ID**
       Split the column on the separator (-) into two columns
       Call the first column **Camis** and the second column **Location ID**
     - **Country**
       Needs to be **Filled Down** to fill in the empty fields
     - **State**
       The "New York" entries in the **State** column are spelled differently, one with Init caps and the other all lowercase, they need to be edited to display the same value as **New York**.

       > **TIP**
       >
       > To view a summary of the content of the column, click the drop down option by **State**, then select **Text Facet**

✋ ⇨ The Data Wrangling tool creates a script of all the actions you perform on the dataset. This script needs to be saved (exported) as **<Student Name>_<Date>.txt** and included with your project submission at the end.

History Script ← →   ↓ ↑ Reset to Initial Data

2. NYC_Health_Inspections
- Only **Score** is a Metric, all other columns should be listed as Attributes
- Ensure **Inspection Date** is of **Date** datatype

TIP   Right mouse Click on columns provide option to change or verify data types

Once the datasets are imported you need to enrich and conform the data as follow:

- Create a **Day of Week** off of the **Calendar Date** in the **Dashboard Datasets** panel
- Ensure your **Revenue** metric is in **Currency Format** with 2 decimal positions
- Join (link) your two datasets as follow:
  · **Business Name** attribute and **Location Description** attribute
  · **Calendar Date** attribute to **Inspection Date** attribute
  · Create a new metric called **(Avg) Score** that provides the average health inspection score off of the **Score m**etric by selecting Aggregate By>Average

TIP   Right mouse Click on attributes within the dashboard dataset panels provide option to choose from

✋ ⇨ With the datasets added, take a moment to save the dashboard. When saving your dashboard, name it **<Student Name> - Restaurant Location Analysis**

TIP   Data Blending allows you to combine data from multiple, diverse sources in a single dashboard and even visualization. This is particularly useful when you are trying to analyze data that is related but maintained separately and allows you to greatly expand your analysis.

Visualize Insights

Worksheet 1

1. Three images (logo's) as part of the heading

The Image URL's for the images are as follow:
- Top left: Download the below image for your use :

-
- Top Right - Text: ISMG 6220/BUSN 6812
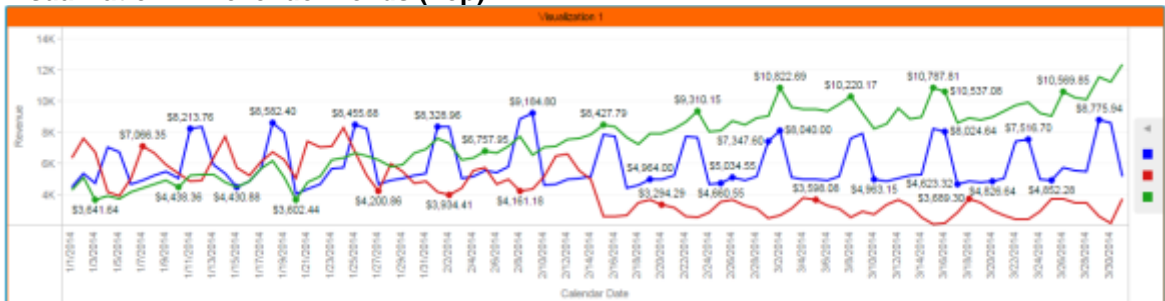- Top Right - CU: http://tinyurl.com/zoqmz3m

2. Two Text Boxes as part of the heading

The text boxes contain the heading of the dashboard in the top and student information in the second text box and then the current date in the bottom in the format " DD MONTH YEAR" as shown in the screenshot.

3. Three Visualizations

Visualization 1: Revenue Trends (Top)

Graph Type: Line Chart
Y Axis: Revenue
X Axis: Calendar Date
Grouped By: Location Description

You can now easily see in the line chart how revenue for all three locations was very similar until the middle of February. At this point, there was a big change—one greatly improved, one held steady, and the third significantly worsened. Now that you have identified the revenue trends, you need to create additional visualizations to find other insights.

Visualization 2: Avg Revenue vs Order Count By Day of Week (Bottom Left)
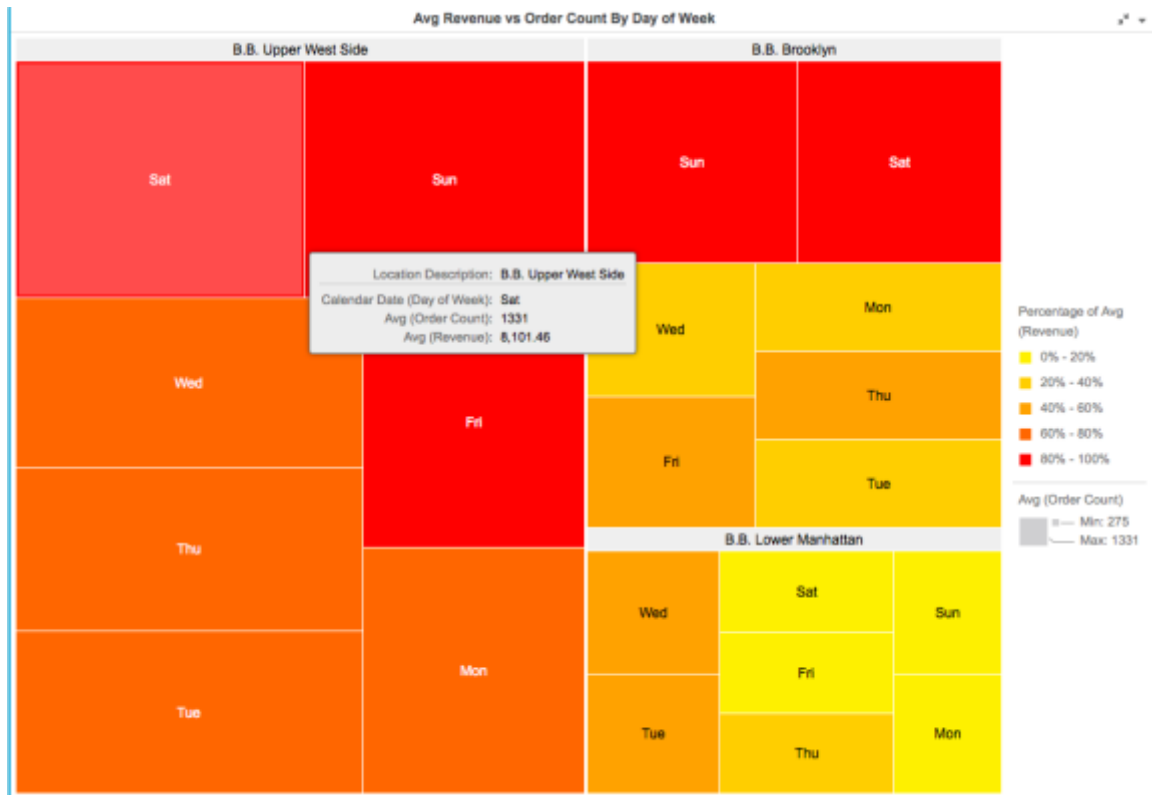
Graph Type: Heatmap
Grouping : Location Description and Calendar Date (Day of Week)
Size By: Avg(Order Count)
Color By: Avg(Revenue)

Note: Change the color thresholds accordingly to match the image as attached above. Color **Hint:** Orange (Reversed)

Threshold color is set on Avg (Revenue)

The new heat map you have created allows you to quickly compare average order counts and revenue across all three locations for specific days of the week. The color tells you the average revenue and the size of each box indicates the average order count for that day in a specific location.

Create a third visualization to further explore the Order Count and Item Count data.

Visualizaiton 3: Order and Item Count Correlation (Bottom Right)
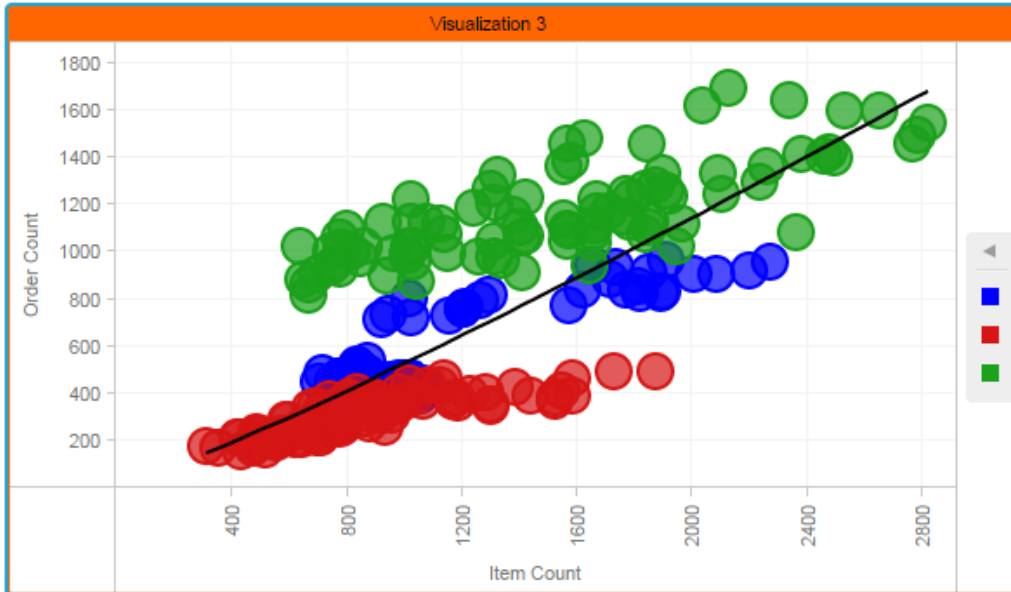
Graph Type: Bubble Chart
X Axis: Item Count
Y Axis: Oder Count
Color Legend: Location Description
Break By: Calendar Date

Polish (Finishing touches) Worksheet 1

1. Provide descriptive names as titles to each visualization instead of the default titles generated
2. Apply "**Use as a Filter**" from the Heatmap to control the Bubble chart
3. Enable the **Trend Line** on Order Count in the bubble chart
4. Apply your own preference on formatting of colors for box lines, text, and backgrounds.

⇨ Save you work progress to the same file name used as before.
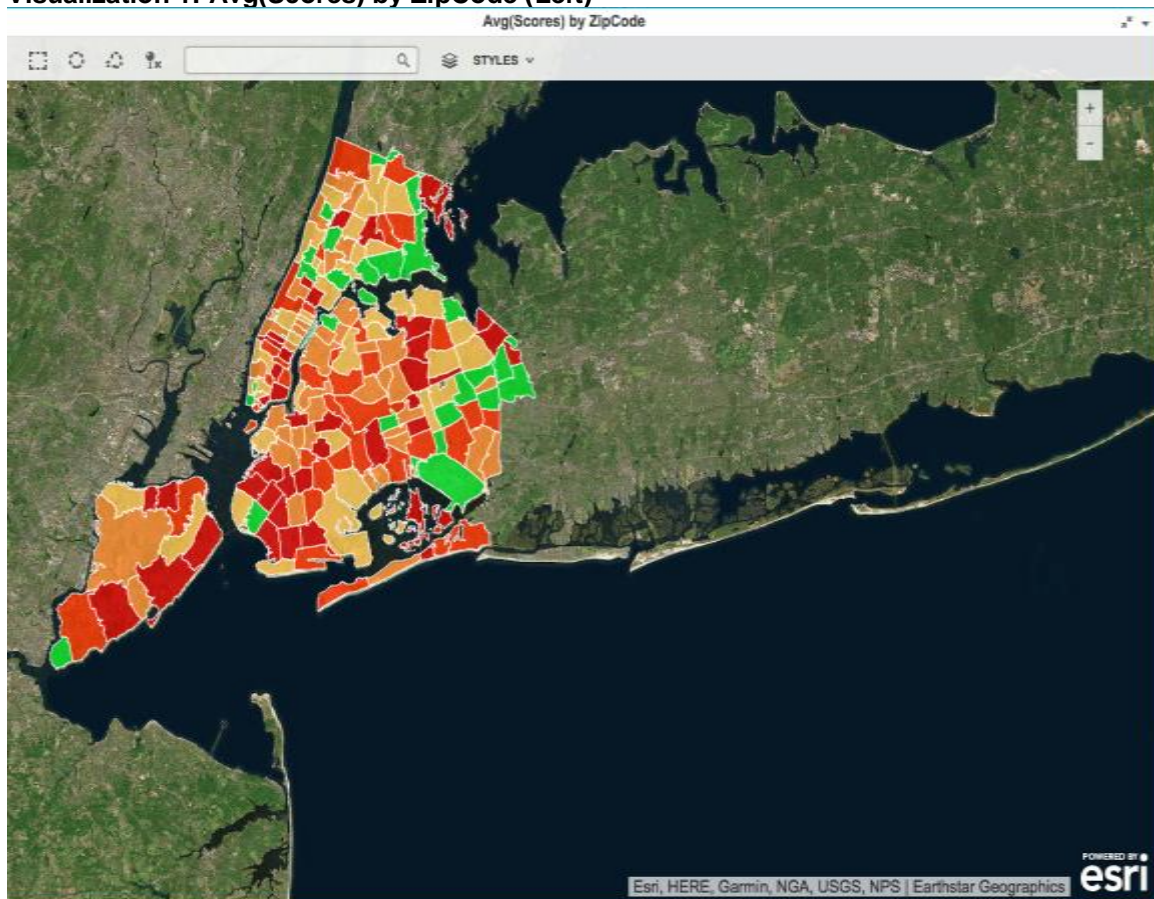
Worksheet 2

Now that you have analyzed the KPIs in the one dataset and identified which restaurant locations are performing the worst, we want to find the cause for these problems. In order to achieve this goal, we make use of the feature data blending from the additional dataset that was brought in. In this case, we will now compare the location data with the NYC Health Inspection data and see if there are any correlations.

1. Title with text boxes and images (logo's) are the same as for worksheet 1, please follow steps 1 and 2 from when building out worksheet 1.

2. Three Visualizations

Visualization 1: Avg(Scores) by ZipCode (Left)


Geo attribute: Zipcode
Threshold: Avg(Score) with **Color** option set to Red-Orange-Green
Map Properties:
-    Map Style: Satellite
-    Map Type: Area
-    Boundries: ZipCode
-    Zoom: Keep Current zoom level

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The map shows you the zip codes of New York colored by the average health inspection score of the restaurants in that area. The lower the score, the better the grade, so lower numbers are green and higher numbers are red. Now that you see general trends for the city, let's find out how health inspection results affected the revenue performance of each restaurant location

Visualization 2: Revenue Performance vs Avg Health Score (Top Right)
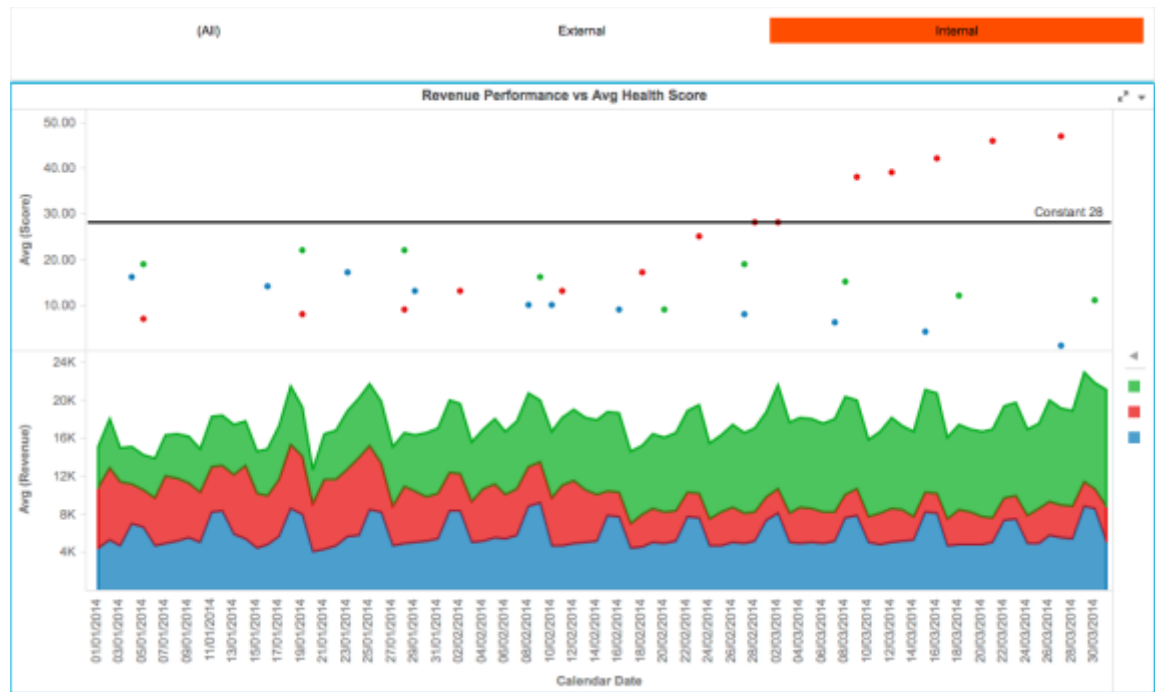
Filter panel: Controls Visualization 2 (Area Chart)

Graph Type: Area Chart
Attribute: **Internal/External** from NYC_Health_Inspection Dataset
Filet on: External
      (Why? – Your Reginal Location Dataset only contains 3 restaurants information)

X Axis (Horizontal): **Calendar Date** with display format of **Date**
Y Axis (Vertical): **Avg(Score)** and **Avg(Revenue), Metric Names (Drag it if it is in some other section)**
Legend (Color): Business Name
Break By: Business Name (Stacked)

Reference line on Avg(Score) is set with option as **Constant** and value **28**

Any health inspection score above the reference line receives a C grade, the lowest possible result. In this bubble chart, you can compare the revenue performance and the health inspection scores over time for all three restaurant locations. It becomes clear that the health inspection score heavily impacts revenue performance for the restaurant location.

Data Blending allows you to combine data from multiple, diverse sources in a single dashboard and even visualization. This is particularly useful when you are trying to analyze data that is related but maintained separately and allows you to greatly expand your analysis.

Make sure your data between the two datasets are linked on:
1. **Business Name** attribute and **Location Description** attribute
2. **Calendar Date** attribute to **Inspection Date** attribute

Finally add visualization that show Avg(Scores) based on Cuisine Type and by Boro. See if there are any specific Cuisines that fare good across multiple boro's

Visualization 3: Avg(Scores) by Boro (Bottom Right)
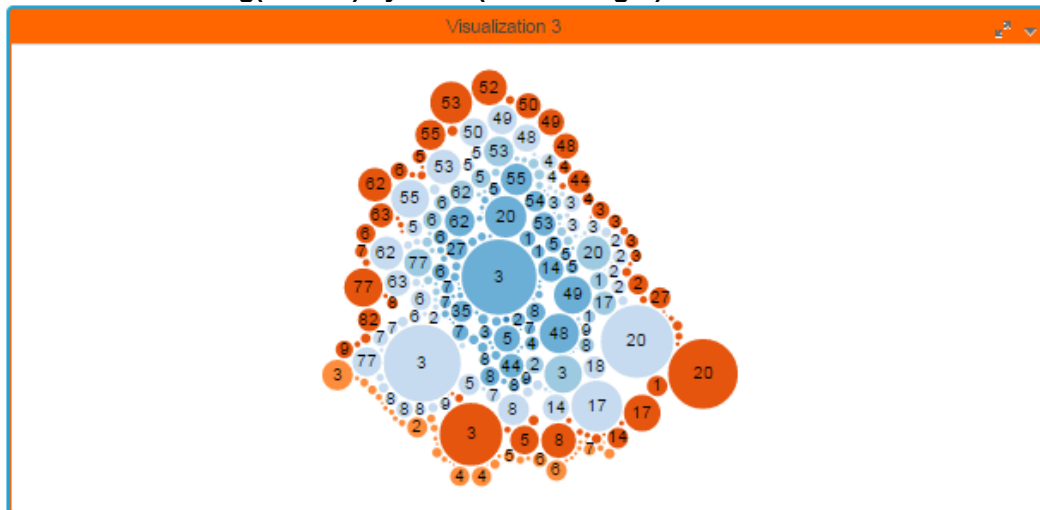
Graph Type: D3 Bubble Chart
Attributes: Boro and Cuisine Type Code
Metric: Avg(Score)

Polish (Finishing touches) Worksheet 2

1. Provide descriptive names as titles to each visualization instead of the default titles
2. Apply "**Use as a Filter**" from the ESRI Map to control the D3 Bubble Chart
3. Add a Reference Line on Avg(Score) option of **Constant** set to **28**
4. Apply your own preference on formatting of colors for box lines, text, and backgrounds.
5.

⇨ Save you work progress to the same file name used as before.

With step #2 completed above, select different areas on the map and see how the bubble updates and how specific cuisine codes do not have great scores in every boro.

Submission of Your Work

Once your Analysis is complete the following needs to be submitted for grading

1. Your Dashboard, This is the .mstr file you saved through the analysis process
   File Name: **<Student Name> - Restaurant Location Analysis.mstr**
2. Your Data Wrangling Script saved during the import process
   File Name: **<Student Name>_<Date>.txt**
3. Your Project Summary