Introduction to Power BI

**THESE NOTES ARE CURRENT AS OF FEBRUARY 11 2020**

-Setup-

Introduce Etherpad here : <https://bit.ly/2tS0cdK>

Add “Daniel Brett – Moderate Experience with Power BI” to Intro section

Add a questions section and inform everyone to add questions

-Bridge-

PowerBI is a powerful analytics tool that allows you to easily transform your data into useful visualizations. It allows you to create insights that enable fast and easy data analysis, share data with colleagues, and collaborate with others to enhance your research papers and presentations.

-Outcome-

This workshop will introduce you to the different parts of Power BI desktop. We will look at

* loading data into Power BI
* Making sure our data is in the right format
* Combining datasets
* Building visualizations
* And formatting our visualization
* (also the ask a question button)

-Presentation-

You should have Power BI open in front of you. We will not be using any of the Pro features so no need to log in. Close the welcome window.

Welcome to Power BI!

Firstly, we need some data. Power BI is able to get data from pretty much anywhere, not just local files. For today, we are just going give it a URL and Power BI will go to that site and retrieve everything it finds.

I will demonstrate what I mean and then we will all connect to some data that I prepared beforehand for this workshop.

* Go to <https://en.wikipedia.org/wiki/Table_(information)> and show off the web page
* Copy the URL and go back to Power BI
* Click Get Data, under other select Web or use the drop down arrow and select Web
* Show what was retrieved then close example

Now all together

* ***Enter link in etherpad to copy and paste:*** <https://raw.githubusercontent.com/BrockDSL/Intro_to_PowerBI_Workshop/master/Mahogany%20Mary%202018%20Sales%20Data.csv>
* Now we have the preview screen. Click Edit to open the Power Query Editor
* Lets take a minute to look around the Query Editor
  + Notice the Refresh button at the top. Talk about connecting to active data sources while GitHub loads changes
  + Symbols at the top of a column to change it to the correct type of data
  + Applied steps panel on the right hand side to revert changes
* Once you are happy with your data click “Close and Apply”
* Congratulations! Data has been added!

Now that we have some data lets go to the data view to look at it. Here you can view all your loaded data sets and explore them a bit to try and glean some insights.

* Open the data
* Sort it by product, look for outliers (there should be two)
* Fix error on Github and refresh
* Clear sort

Ok so we are familiar with our data now. Lets get to work on our report!

Give tour of Report view

* Refresh button again to ensure most accurate data
* The Report space
  + This is where you will build your report out of visualizations and tiles
  + Report can be multiple pages long. Don’t try and force everything onto one page.
* Visualizations Menu
  + Where you choose what kind of visualization you want to make
    - Fields Menu
      * Where fill in the values needed for the selected type of vizualization.
    - Format Menu
      * Where you adjust the appearance of your vizualization
* Filters Menu
  + Filters are used to focus the visualizations in a report. More on this later
* Drillthrough
  + This is another kind of filter tool that is a bit more advanced and is most useful on complex datasets. We will not be looking at this today but I encourage you to look at Power BI’s website if you are interested to learn more about this tool.
* Fields Menu
  + This is where your data is! We will use this menu to choose what kind of data is in each visualization we make.

QUESTIONS??

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Let’s make our first visualization

* My favorite “The Donut Chart!”
  + Select Sale Total to add “filling”
  + Lets divide this up a bit by selecting country
* Make sure you always have the visualization that you are currently working on selected or else some strange things may happen!
* Lets make it look a bit better using the format menu
  + Change Data colors and then talk about themes and accessibility
  + Increase Detail label text size and adjust visualization as needed
  + Thicken doughnut in shapes
  + Change title to Furniture Sales by Country, center it, and make it bigger

Looking pretty good! Lets try another one.

* Clustered Bar Chart
* Sale Total will be our focus again here
* This time lets split it up by Product
* Now I want you guys to adjust the formatting to make it look like your other visualization. It is important to keep your formatting consistent so that your report looks tidy.
  + [match previous formatting]

So far we have made our visualizations just by selecting a style and then picking what fields we want to add and letting Power BI do the rest.

For our next visualization we are going to get a bit more involved in the process.

* Pie Chart
* Select Product and see it automatically be put into Axis
* What if we want a chart showing how many of each product was sold? We would want it to be separated by product but how are we going to get our values? Drag product to values and see it become “count of product”. The AI figured out what we wanted and helpfully counted how many sales were made for each product!

Now we have a pie but it is hard to tell what’s going on. It is very important that you think critically about what type of visualization you are using. In this case a pie chart does not work too well. Lets try changing the type to something else. Get suggestions (show Cluster bar, Line, and Funnel)

Do not forget to format the chart!

Next, let’s add time to the equation! We want to see how our sales looked throughout the year. lets do sale total and order date. Not very compelling right? lets open up order date and take a closer look.

Because Power BI was told that these values are dates (in the power query earlier) it has broken the values down for us to make them more useful.

Run through different levels of date. Pick a good chart type (line or column is good here for month)

Format it

Talk about filtering by clicking on different parts of visualizations.

Talk about if this report was sent out to all of Mary’s employees. Each department would only care about certain things. Show off using the filters menu to filter by product.

We can get more complex visualizations by making more detailed frameworks.

Challenge

**On a new page, lets make a Clustered Bar chart showing the sale total of each product in each quarter. *HINT – It will be called Sale Total by Quarter and Product***

Lets solve this together!

Answer: Axis:Date, Legend:Product, Value:Sale total

Now that I have shown you the proper way to make visualizations, lets look at the tool that made Power BI so popular in comparison to other similar tools. Its AI!

Show the Ask a question tool (make sale total by quarter an product)

We will take some time now for you to play with the tool. Make some new visualizations on this page or new pages, up to you. Get comfortable with it! Any questions that you have, type into the Etherpad and I will answer them as we explore.

5-10 minutes

QUESTIONS??

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While we were working, Mary sent us some more data about the sales from 2018! After each sale, the customers were asked to rate the product on a scale of 1 to 10 and given the option to provide a tip! Lets get this data!

<https://raw.githubusercontent.com/BrockDSL/Intro_to_PowerBI_Workshop/master/Customer%20Satisfaction.csv>

* Get Data
* Open power query to check data types
* Load data

Talk about how the AI noticed a matching field and connected the tables together.

Show this off by making a pie of tip by country (then adjust tip “filling” to be max, average, total, etc.)

Another change that has happened is Mary bought another company in 2018! Instead of doing this process all over again for the new data why don’t we just add it in? Bring in : <https://raw.githubusercontent.com/BrockDSL/Intro_to_PowerBI_Workshop/master/Desk%20Co.%202018%20Sale%20Data.csv>

Use power query to append it to our current data