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Get Started with Data Visualization

Bryant University Research and Instruction

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Getting Started with Data Visualization

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Research and
Instruction

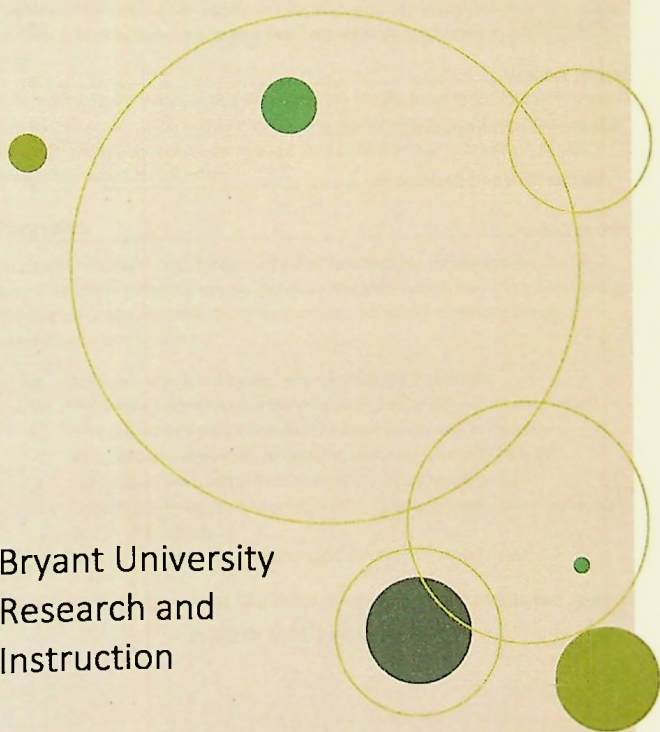


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INTRO TO EXCEL

Excel is the leader of spreadsheet software, and for good reason! Excel is fantastic for producing clean, easy to work with data. There's two aspects of Excel that you should utilize to make your data cleaner and clearer: Conditional Formatting, and Formulas.

Conditional Formatting

Conditional Formatting sets up simple rules that excel applies to your data. You might set this up to color code cells, create data bars, color scales, highlight unique data and more.

Data that can be formatted using these rules are broken down in the following ways: All cells based on their data, only cells containing specific data, top or bottom values, only cells with values above or below average, only unique or duplicate values, or cells determined based on a formula.

Formulas

Along with the basic math functionality they're known for, Excel formulas can be incredible useful in organizing data and extracting information from data. Microsoft has lots of great guides available online for formulas, but here's a few that are used frequently in data curation:

- Xlookup – searches an array, and retrieves the first match
- IF – Simple but powerful, especially when nested in, or containing other nested functions. Allows you to set conditions on data in formulas
- Concatenate – Allows you to combine various cells into a single cell
- Substitute – Swap parts of a cell, great for anonymizing data
- Upper/Lower – Upper converts your text to all uppercase, lower converts your text to all lowercase
- Countif – returns the number of cells that contain specific data

Make sure to save your file with a name you'll remember, and in a place that's easy to find!

INTRO TO POWERBI

PowerBI is Microsoft's data visualization program. It connects directly to excel (or other CSV files), and allows users to create graphs, visualizations, and more! The intuitive design makes the process quick, and fairly painless for newer users

Getting started

1. Connect to your data
2. Select the items from the data pane that you want to analyze
3. PowerBI will automatically create a simple visualization
4. In the visualizations tab, you can try different types of graphs or charts. Try out a few and see which best represents what you want to convey with your data
5. Once you like a visualization, pin it to your dashboard
6. In your dashboard, you can rearrange and resize various visualizations
7. Try adding some Q&A boxes, which displays answers to questions about your data in a simple title format
8. Don't forget to save your work as you go!

Data Slicers

PowerBI's slicers are interactive filters, that allows you to create a more focused dashboard, and can allow the end user to interact with the data.

Slicers are accessible in the visualization menu, from there you'll add the data you'd like to filter, and you or a user will be able to filter by that data. Slicers have a few options to consider (if you'll allow multi-select, how the slicer should be displayed, etc) which are accessible in the slicer setting menu.

INTRO TO TABLEAU

Tableau is another commonly used data visualization tool. There are student packages available, as well as their widely used free version Tableau Public. There are some differences between tableau Public and the general version of Tableau, generally related to ease of use for the user. Tableau can connect to a wide variety of data formats (Excel, CSV, google sheets, etc), and produce clean data dashboards.

Measures vs Dimensions

After connecting to a data source, you'll notice that tableau automatically sorts your data into two separate areas, these are Measures and Dimensions. Measures are your quantitative data (scores, totals, sums, etc), while Dimensions are your qualitative data (names, dates, addresses). Any data field can be converted to a dimension or measure, so double check that all of your data is sorted appropriately.

Visualizations and Dashboards

The "Show me" tab is an easy way to get started with your data. Open the tab in a worksheet, you'll see many different visualization options, hovering over them will tell you what kind of data it requires (1 dimension, 1 measure, etc). When you select one or more measures/dimensions, you'll see different visualization options highlighted as options to visualize the selected data. Try a couple out and see which visualization works best for your data. Make sure to give the worksheet a name, so you know which is which!

Once you have a few worksheets with visualizations you like, you can move on to creating a dashboard. Once you start a new dashboard tab, you can drag and drop your worksheets directly into the dashboard. You can add these as tiled, which fills the dashboard with the worksheets, or floating which allows you to rearrange and resize the worksheets freely. Don't forget to check out the settings of your worksheet to change backgrounds, and colors!

INTRO TO CANVA

Canva is a graphic design program, with both a free and paid version. It's great for creating simple graphics, posters and flyers. They also have pre-made templates for creating infographics, graphs, charts, and other informative ways of displaying your data. Canva is a great way to make very visually appealing content fairly quickly.

Free vs. Premium

When using Canva, one aspect that can be tricky is knowing what is available as a free user. The biggest thing to watch out for is the small crown symbol, found throughout the website. That symbol indicates that a graphic, or feature is only available to premium user. One trick to getting around this is to upload your own graphics.

Canva video features

Canva can also be used to create simple animations, and straightforward videos. These can be designed for web or mobile video formats. The video editor is fairly simple, but also fairly limited, great for straightforward information sharing.

OTHER DATA VISUALIZATION TOOLS

Flourish.Studio

A Canva Company, Flourish is designed for high quality, visually appealing infographics. Their big selling point is their animated visual graphics. This is a Free service, but there is a premium tier with more options.

Piktochart.com

Free (with premium tier) website for creating clean, eye-catching infographics. Allows creation of simple graphs and charts inside of the program, all exportable as PDF, or PNG files. Designed to be user friendly, very intuitive dashboard.

Photopea.com

Free photoshop program! Great for the creation of simple diagrams and images. Completely free, but has no built in saving, so you must save and then reupload any in-progress projects if you close out the page. It uses a lot of the functionality of Adobe Photoshop, if you know how to use photoshop it's simple to start learning, otherwise there is a bit of a learning curve.

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