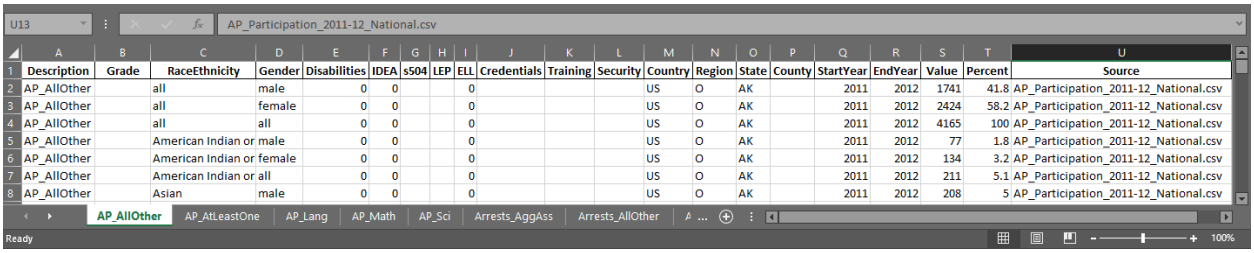
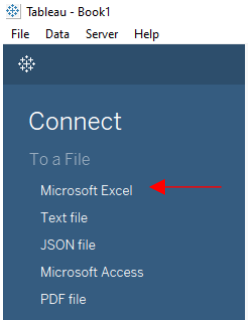
An updated version of the master dataset (`S2PP_Master.xlsx`) contains a different sheet for each **variable** (see variables along bottom of screenshot).

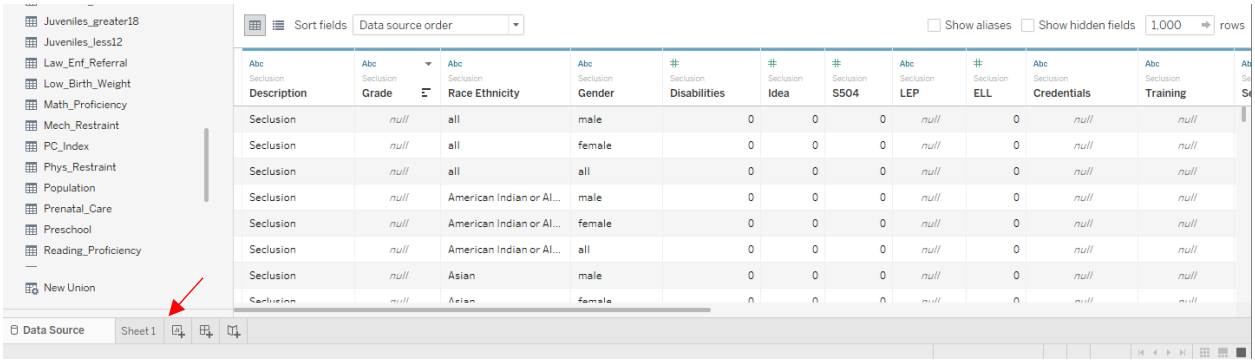


Description	Grade	RaceEthnicity	Gender	Disabilities	IDEA	s504	LEP	ELL	Credentials	Training	Security	Country	Region	State	County	StartYear	EndYear	Value	Percent	Source
AP_AllOther		all	male	0	0			0				US	O	AK		2011	2012	1741	41.8	AP_Participation_2011-12_National.csv
AP_AllOther		all	female	0	0			0				US	O	AK		2011	2012	2424	58.2	AP_Participation_2011-12_National.csv
AP_AllOther		all	all	0	0			0				US	O	AK		2011	2012	4165	100	AP_Participation_2011-12_National.csv
AP_AllOther		American Indian or	male	0	0			0				US	O	AK		2011	2012	77	1.8	AP_Participation_2011-12_National.csv
AP_AllOther		American Indian or	female	0	0			0				US	O	AK		2011	2012	134	3.2	AP_Participation_2011-12_National.csv
AP_AllOther		American Indian or	all	0	0			0				US	O	AK		2011	2012	211	5.1	AP_Participation_2011-12_National.csv
AP_AllOther		Asian	male	0	0			0				US	O	AK		2011	2012	208	5	AP_Participation_2011-12_National.csv

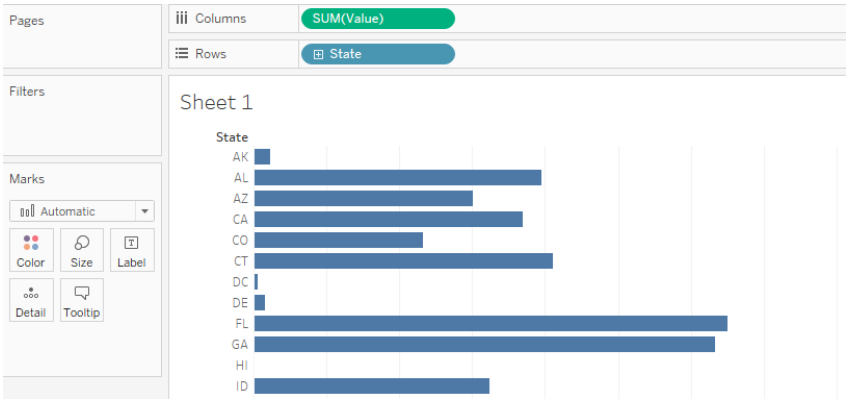
This makes it easy to do some basic analysis in Tableau. For reference, what follows is a basic tutorial that you can follow to perform some analysis of these data.



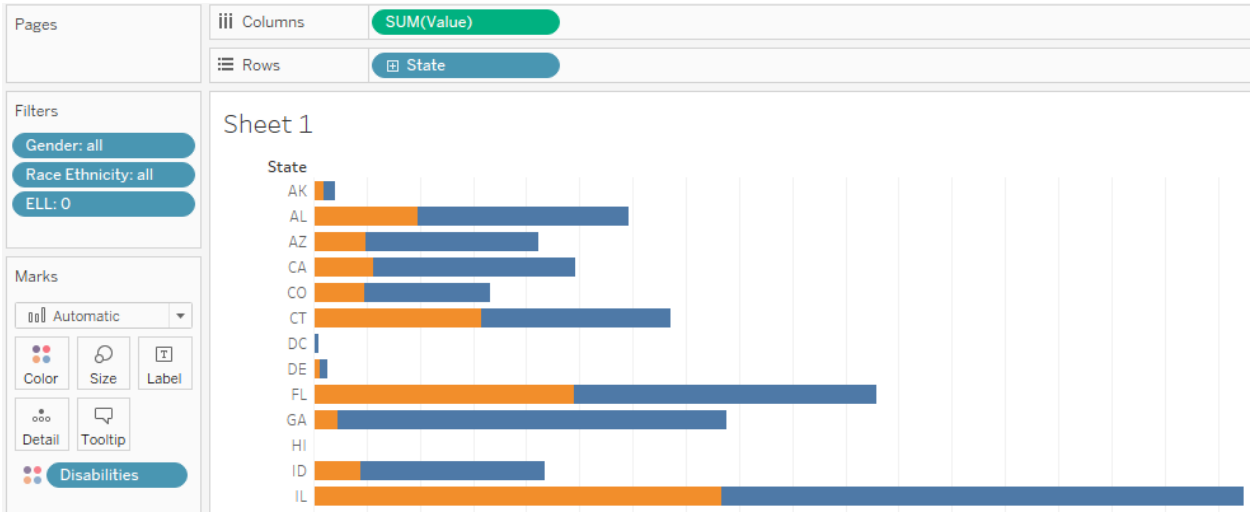
1. When you open up Tableau for the first time, you will have the option to connect to a Microsoft Excel file. Select this option and navigate to the `S2PP_Master.xlsx` file. It may take a second for the file to load, since it's a large dataset.
2. You should see a list of all the variables (sheets in the excel workbook) on the left side of the screen. Pick a variable you are interested in and double-click it (in this example, I've chosen `Seclusion`). This will set that variable as part of your **Data Source**. The icons above your column names tell you what type of data Tableau thinks that the column represents.



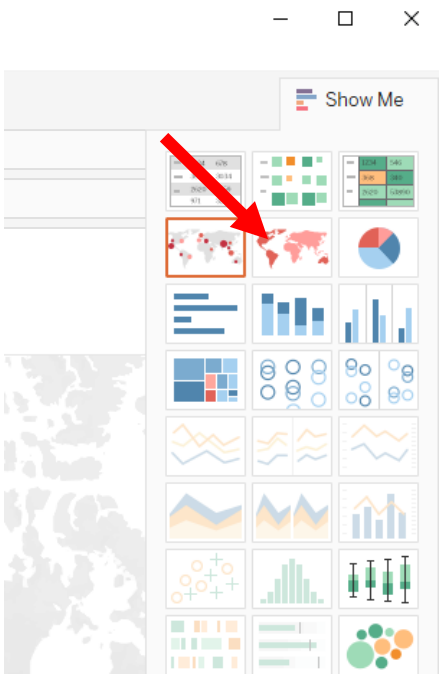
3. To start making visualizations, click on **Sheet1** on the bottom left of the screen. This opens up a **Tableau Worksheet**. On the left side of your screen, you will see the column headings from the dataset displayed in two different sections: **Dimensions** and **Measures**. Dimensions are categorical data, or data divided into groups, like `State` or `RaceEthnicity`. **Measures** are quantitative data, or numbers, such as `Value` or `Percent`. You should make sure that the `Value` and `Percent` fields show up under **Measures**. If one of them doesn't, right click on it and choose "Convert to Measure."
4. To the right, you should see panes for **Pages, Filters, Marks, Columns, Rows,** and your worksheet itself. We will use these to help clarify which data we want to visualize, and how.
5. Drag the `Value` field from the **Measures** box up to **Columns**, and the `State` field from the **Dimensions** box up to **Rows** (this will, of course, change depending on what dataset you are interested in and how you want to visualize it). You should see a bar chart appear in your worksheet.



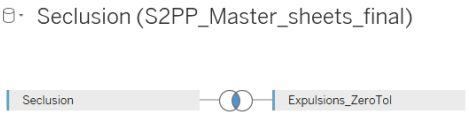
6. If you hover over one of the bars, you'll see that the values are really high (>10k cases of seclusion in IL in one year!). This is because Tableau defaults to **summing** all the numbers in the `Value` field for each state, so it is summing the value for each combination of race, gender, and disability status.
7. To fix, this, we use the **Filters** box, which tells Tableau to only visualize the numbers for which certain dimensions show specified values. First, drag the `Gender` field from the **Dimensions** to **Filters**. Check the box for 'all' and click OK. This filters the data down to just looking at the aggregate total for all genders.
8. Do the same with `RaceEthnicity`, and choose 'all.'
9. Do the same for `Disabilities` and English language learners (`ELL`), and choose '0' for non-disabled, non-english language learners. These will likely appear under **Measures**, since the True/False data is interpreted numerically as 0 or 1. If so, you will want to convert these to **Dimensions** first.
10. To make sure that you've filtered down the data properly, right click on `SUM(Value)` and change the measure to "Count." You should see that there is only one count for each state.
11. But what if, rather than just looking at the number of seclusion cases involving non-disabled students, we want to compare this to the number of seclusion cases for disabled students. We can do this by dragging the `Disabilities` field from the **Filters** box and dropping it on top of the **Color** field in the **Marks** box. You should see something like this below, where the orange bars now represent the number of seclusion cases for people with disabilities.



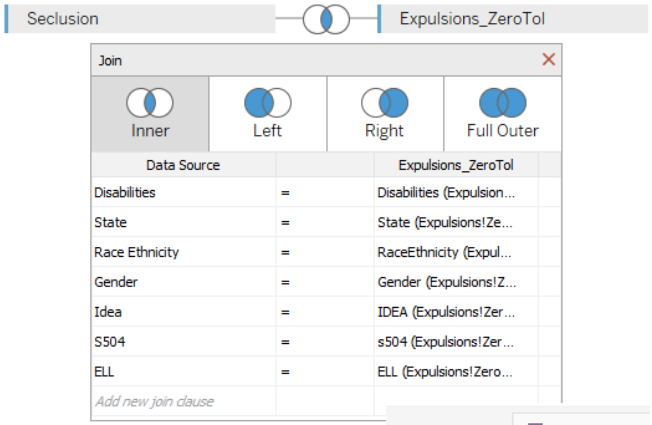
12. We can also use Tableau to make maps! Go over to the **Show Me** button on the top right, and choose the map option. You should see two maps pop up, one showing seclusion with disabilities, and one showing it without disabilities.



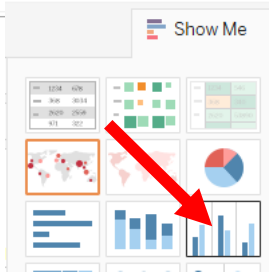
13. What if we are interested in comparing two variables, i.e. comparing seclusion to expulsion? We do this by returning to our **Data Source**, and double-clicking on the new variable of interest to open it up (in this case, I chose `Expulsions_ZeroTol`). Tableau will automatically attempt to join these two datasets, i.e. match each row in one dataset to a row in another dataset based on whether their attributes match.



14. Click on the "venn-diagram" icon in between the two datasets to decide which attributions to join on. In this case, we know each row is identified by the variables `State`, `RaceEthnicity`, `Gender`, `Disabilities`, `IDEA`, `s504`, `ELL`. We need to make sure each of these variables is listed as a join clause.



15. Now, we should have two properly joined datasets, so we can make a visualization comparing cases of seclusion and expulsion. Make a new sheet (from the bottom left corner).
16. Notice that your **Measures** and **Dimensions** boxes now have variables from both datasets. Drag the `State` variable from the dimensions up to the **Columns** box. Drag both `Value` variables to the rows box. You should see two bar charts, one for the number of expulsions, one for the number of seclusion cases.
17. It might be easier to compare these values if they were on the same chart. To make this more complicated visualization, we just Tableau's **Show Me** button again (top right). We choose the side-by-side bar chart option. You should now see two bars for each state, one showing the seclusion cases and one showing expulsions.



Use this document as a guide to get you started with this dataset in Tableau. Experiment with other variables in the dataset and other and visualization types! Remember that you can come into DASIL (HSSC S1310) weekdays from 10am – noon, 1pm-5pm, and 7pm-11pm to get help with data analysis and visualization in Tableau, Excel or other software.