Academic Impact

DASHBOARD TUTORIAL

Welcome!

This tutorial will walk you through the entire process of building your own version of the Academic Impact Dashboard. This includes installing Tableau Public, getting a copy of the Academic Impact Dashboard template, plugging in your own data, making basic customizations, and more. If you are new to CollViz, please read through this tutorial carefully before you begin. If this isn't your first time building a CollViz dashboard, please feel free to skip around, as some material will be common to all of the CollViz tutorials. **You can click on a section title in the Table of Contents (ToC) to skip right to it. Clicking the orange arrow in the bottom left corner of any page will take you back to the ToC**

Academic Impact Dashboard Summary

The **Academic Impact Dashboard** visualizes data surrounding the ways objects or specimens in your collection have been used for academic or scientific purposes. This can include loans, journal citations, data downloads, etc. This dataset may be quite challenging to amass since it likely needs to be pulled for multiple sources and will have various levels of detail. This dashboard is designed to be flexible in the face of these challenges. It assists with objectives such as:

- Illustrating the impact that a collection has had on academia and professional fields across object/specimen categories, time, type of use, party using the collection, etc.
- Observing changes in collection usage over time and reporting on the success of efforts to make the collection more accessible.
- Identifying specimens or objects that fall into specific criteria (for example, fish cited in journals over the past 10 years).

- Communicating the strengths, scope, and trends in a collection's academic use to others like administrators, researchers, colleagues, grant agencies, etc.
- Making informed management decisions based on how the collection is used the most or the least.

This dashboard was designed to accommodate the wide range of data your collection may have available about academic impact. It is a single table or spreadsheet, with each row being an instance of academic impact (or a year's total count) and each column being an attribute. It requires the following columns at a minimum for the dashboard to function properly:

- Impact Type
- Purpose*
- Year
- Specimen/Object Count

- Specimen/Object Category
- Receiving Institution*
- Country*
- State/Region*

- County*
- Journal Title*
- doi*
- Details*

Not required but recommended

The dataset currently connected to this dashboard is just meant to act as a demonstrative placeholder in the dashboard template until you replace it with your own dataset.

> *Here's Tip!* Please note that while these exact headers are required, the actual content of these columns is completely customizable and can be catered to your existing system and type of collections. For example, the placeholder dataset in this dashboard uses Birds, Mammals, Fish etc as values in the **Specimen/Object Category** column, but any vocabulary could be used instead. Use your own categorization that makes sense for you and your collection.

Some of the powerful features of this dashboard include:

- A line graph showing collection use by Specimen/Object Category over time.
- A table parsing the records used by Specimen/Object Category and Type of Use.
- Directly interactable charts, allowing you to hover over elements for more information and to click elements to filter the entire dashboard to those selected records.
- A set of master filters that allow you to perform sweeping searches for impacts of interest.

Want to take a test drive first? View and demo this dashboard on CollViz's Tableau Public Profile. A more detailed tour of its features and functions is included in the Dashboard Tour section of this tutorial.

# Contents

Getting Started with Tableau

This section will cover the very basics of Tableau: how to install it, how it's structured, where the essential buttons are, and how to save a workbook. More detailed tasks will come later on.

I.   Download Tableau Public

If you don't already have it, you will first need to download the free data visualization software [Tableau Public](#) on a computer running either macOS or Windows. Start by creating a profile by clicking **SIGN UP** on the top right. This will also take you to where you can download the software.

Now that you have Tableau downloaded and a profile set up with a username and password, open the program to follow along in the next section.

II.   Tour of a Tableau Workbook
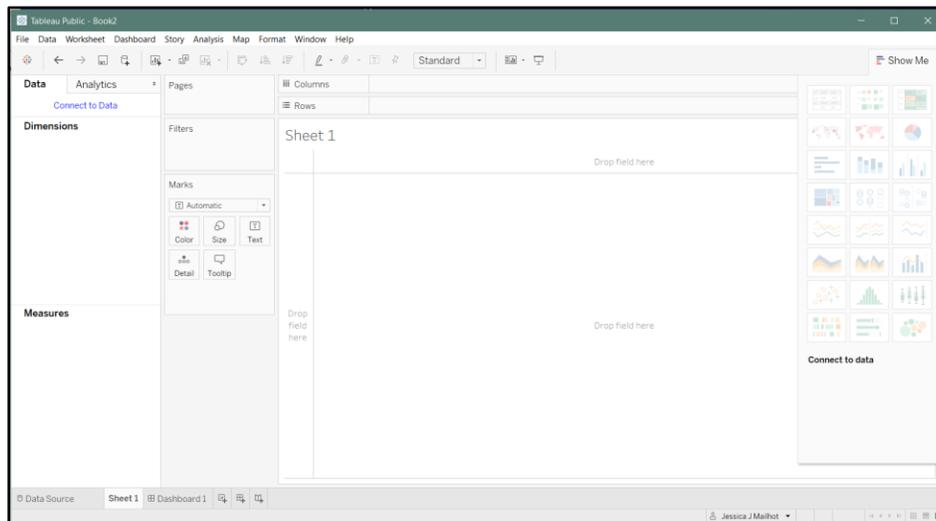
1. **Navigating:** Tableau is set up similarly to Microsoft Excel in a few ways. The entire Tableau project is called a **workbook**. A single workbook is made up of individual pages, shown as **tabs** along the bottom of the screen, just like in Excel. You will see the renamable tabs for the pages you have already made, as well as buttons to add new ones: . Unlike Excel, there are two kinds of pages: worksheets and dashboards. A **worksheet** is where you build a single visualization, and a **dashboard** is where you assemble the worksheets together into one display.
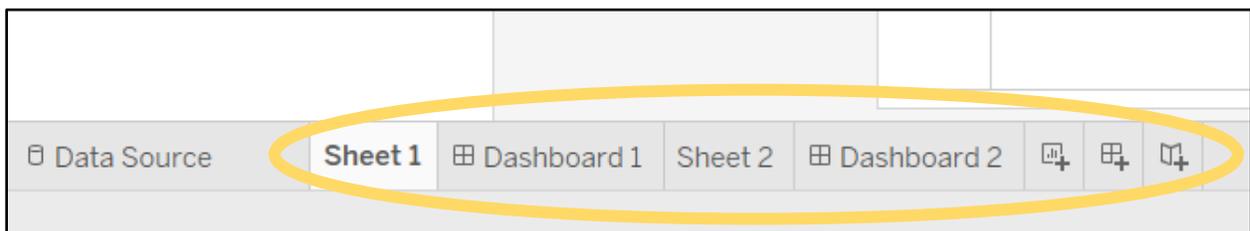
2. **Data**: All of the worksheets and dashboards of a workbook are pulling from the same single data source, which you connect to when you open a new workbook. You can preview or change the data source by clicking "Data Source" in the lower left corner. **Note: If you have not yet imported your dataset, this preview will not appear.** *(See Connecting to your Dataset for more details).*

3. **Overview of a Worksheet (see below):** The left column contains information from the dataset. The **Connected Dataset** name will be at the top. Then, the **Dimensions (Qualitative fields)** from your dataset will be listed out, followed by all of the **Measures (Quantitative Fields)** below that. The next column has boxes that control how the dataset is translated or encoded into the visualization. This includes where you can assign data fields to the characteristic of the **Marks** in your visualization, such as color or size, as well designating which data fields are acting as **Filters**. The large center section is the actual **Worksheet Canvas**, which is where you'll build the visualization itself.
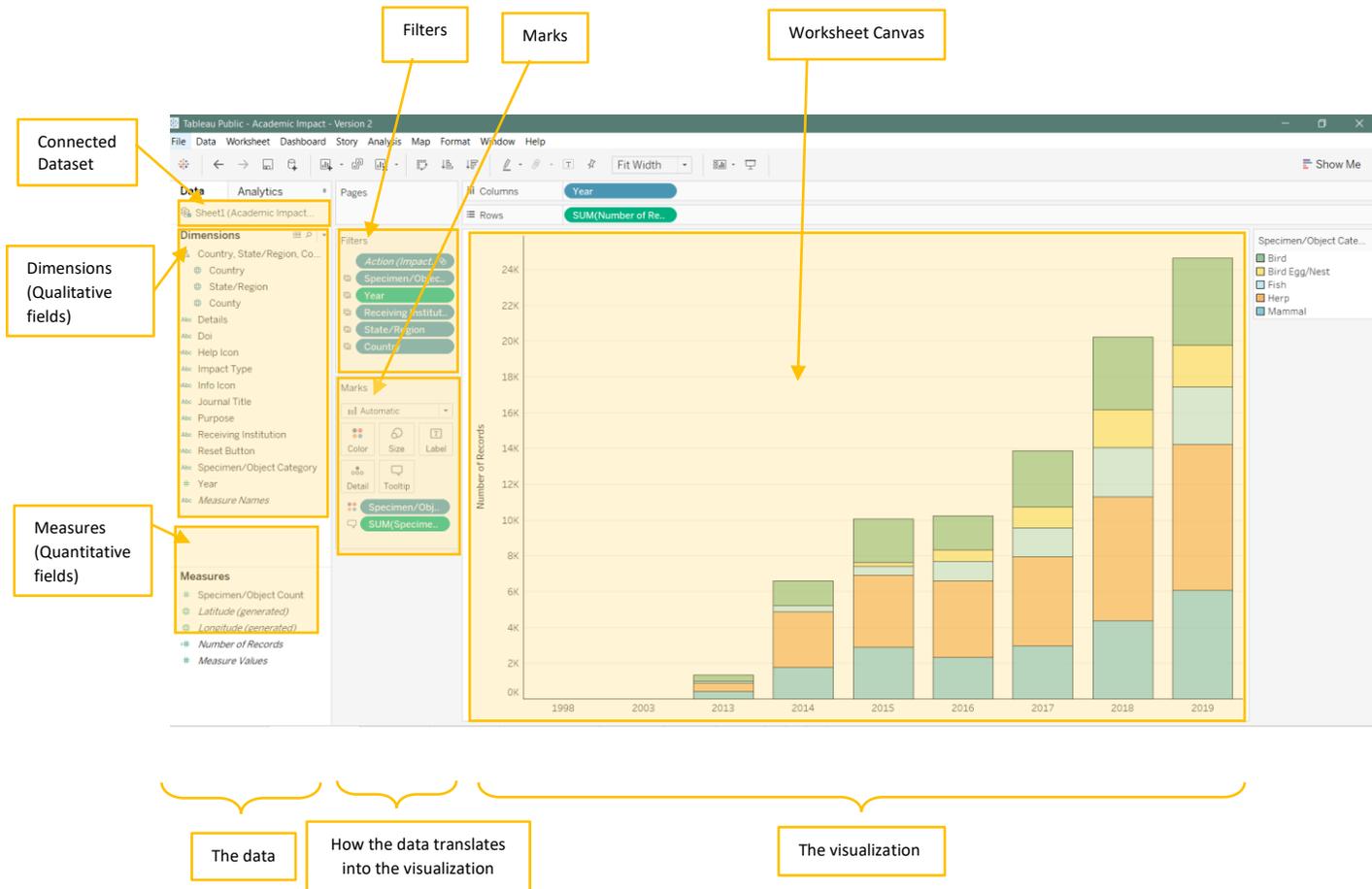
4. **Overview of a Dashboard:** A dashboard tab allows you to arrange any of the worksheets and other elements (like filters, text and legends) into one display. The **Worksheets** are listed out in the lefthand column, alongside options for **Other Objects** to add to your dashboard like text and spacers. The central **Dashboard Canvas** is where the elements are all arranged.

Dashboard Canvas

Worksheets

Other Objects
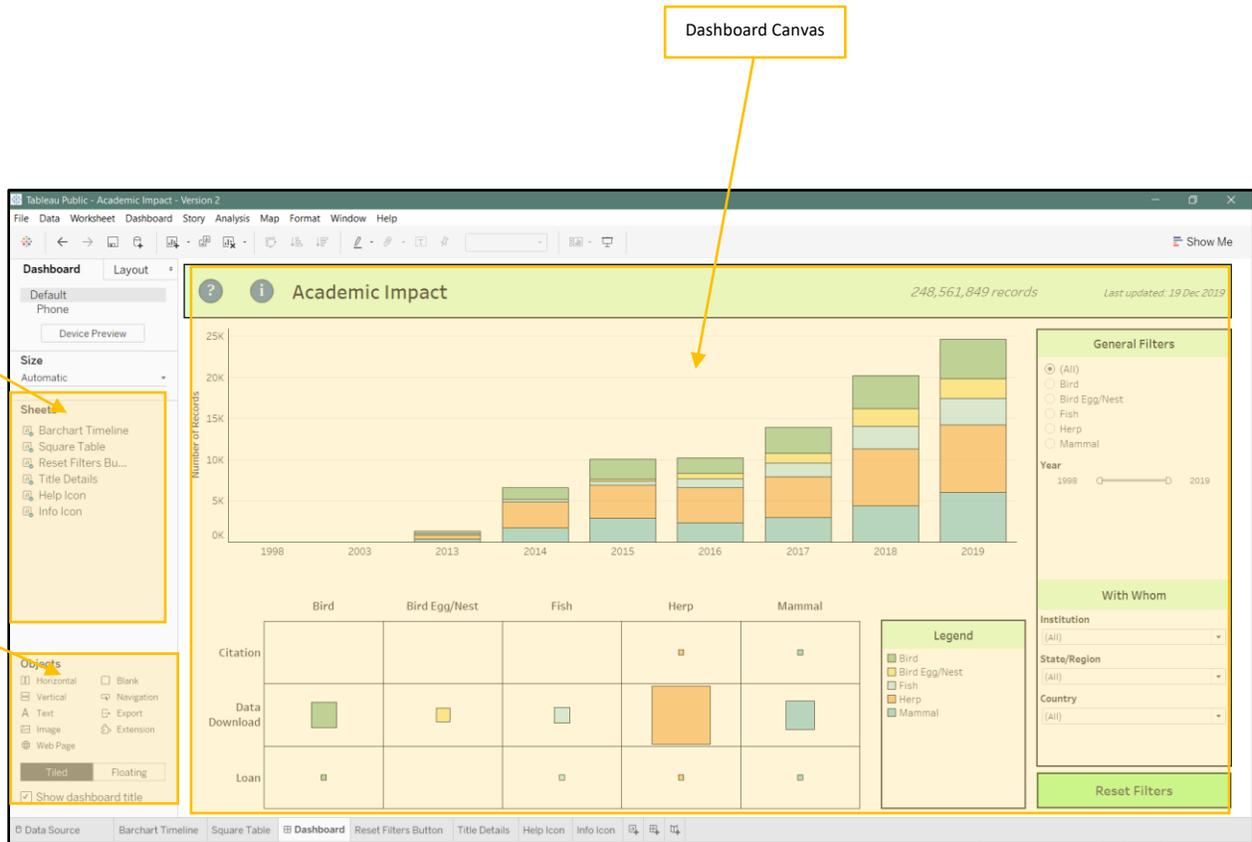
III. Saving Tableau Workbooks

1. **How to Save:** This version of Tableau saves your workbooks to your online profile, not locally on your computer, up to a total of 10 GB. To save a workbook, click on the **File** dropdown menu in the upper left to find the **"Save to Tableau Public"** and **"Save to Tableau Public As…"** functions, or simply click the **floppy disk icon** on the top left of the window. Once you do, you'll be asked to name the file, and once it finishes saving, the direct webpage for the workbook on your public profile will automatically load in a new tab in your default web browser.
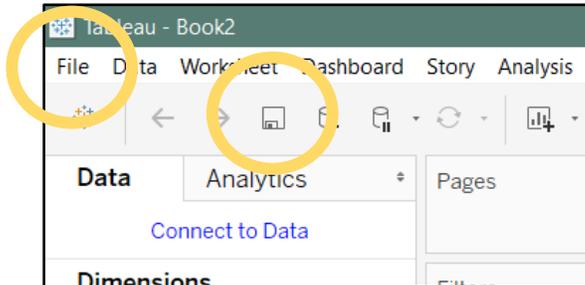
   IMPORTANT: Because Tableau Public loads and saves your workbooks online, you will need a steady internet connection to be able to successfully save your work!

2. **Controlling Privacy**: Because Tableau Public only supports saving online to your public profile, by default all of your workbooks will be *publicly available on your profile for viewing and downloading*. This is exactly how you are able to view and download all of CollViz's templates. However, *there are actions you can take to control access to your workbooks.*

   a. **Disable Downloading:** You can manually turn off the ability for someone to download your workbooks. To do this, go to your workbook webpage on your Tableau Public Profile. Scroll down to the **Details** section below your dashboard and click on **"Edit Details"**:
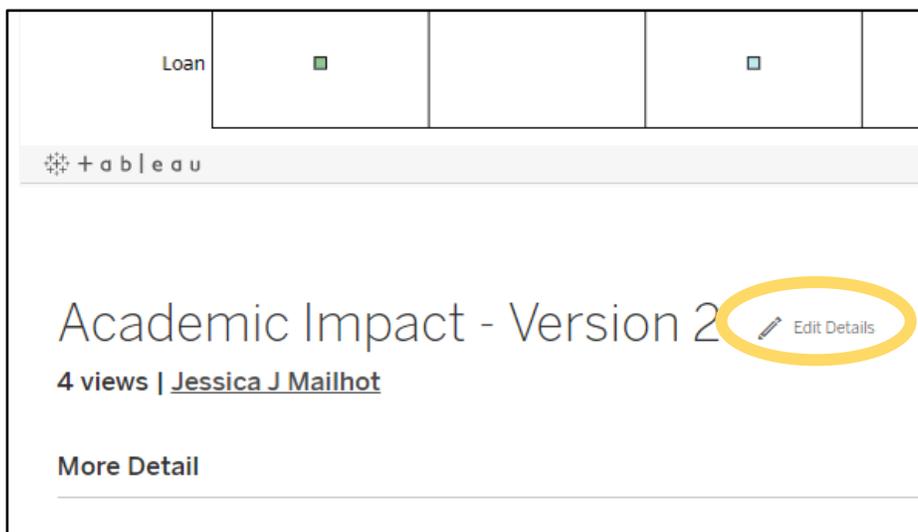
b. Under **Toolbar Settings**, unselect the check box for **"Allow workbook and its data to be downloaded by others"**. Then click **"Save."** This will disable anyone from downloading a copy of your dashboard. They can still view and interact with the workbook online however. To make a workbook invisible, see the next step.
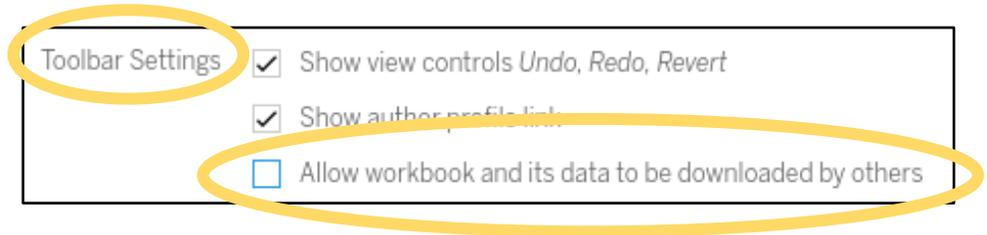
c. **Toggling Workbook Visibility**: You also have the option to toggle your workbooks as "invisible" on your profile. ***This means that someone viewing your profile gallery will not see that workbook, but they can see it if they have the direct url to that workbook webpage.*** To toggle invisibility, go to your Tableau Public Profile webpage and hover over the workbook. An **eye button** will appear in the top right corner. Click once to set as invisible. Once you move the mouse away, you should now see the crossed-out eye button, indicating it is invisible. Click it again to reset as visible.

| Visible | Toggle | Invisible |
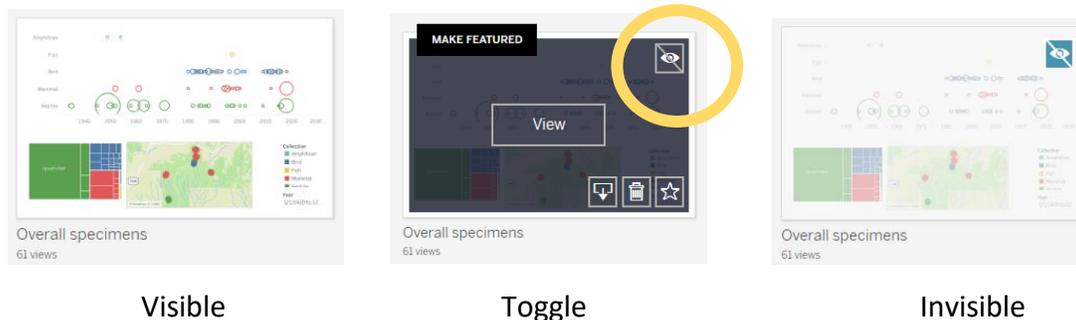
IMPORTANT: Toggling something invisible <u>is not</u> the same action as disabling download. If someone can access to the workbook's direct url, they can still download it. Toggling invisibility only controls if it shows on your public profile gallery. CollViz recommends taking both actions.

IMPORTANT: Please consider excluding or modifying data fields which may be inappropriate or confidential depending on the audience and context. For example, data about research not yet published, what's not approved by partnering institutions, staff contact information, etc.

Here's Tip! You can also set your profile settings to save your workbooks as invisible and unable to download by default. Login to your Tableau Public Profile online, hover over your profile image icon in the upper right corner of the screen, and click "Settings". Under the first "Defaults" tab, you can check or uncheck saving as invisible, or disabling downloads. Note: changing these settings will affect any saving you do in the future, not any current workbooks saved to your profile.

Let's Make a Dashboard

This section will walk you through how to download and open the Academic Impact Dashboard Template in Tableau, ensure your dataset is compatible, and then how to swap the placeholder dataset with yours.

## I.   Get your copy of the Dashboard Template

1. **Downloading**: You can find the Academic Impact Dashboard Template on CollViz's Tableau Public Profile. In the Gallery, click on the Academic Impact Template to go to its page. Simply click the **Download button** in the top right of the dashboard: ⊡ Download . The workbook will download as a .twbx file. Save it somewhere easy to find.

2. **Opening**:
    a.   Open Tableau Public.
    b.   Click **"File"** in the upper left, then click **"Open…"**
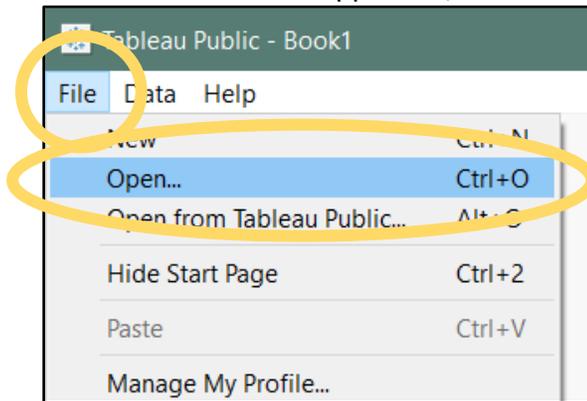
    c.   Navigate to where you saved the .twbx file, select it and click "Open"
    d.   Tableau may take a few moments to open the workbook, so give it a minute.

3. **Saving**: Save your workbook to your Tableau Public Profile right away. There's no need to worry about overwriting the original template since you can only save to your own profile. (*See Saving Tableau Workbooks if you need a refresher on how to save*)

II. Prepare Your Dataset

1. **Overview:** The Academic Impact Dashboard Template has been designed to look for specific data fields (column headers) in the connected dataset. It's vital to have the same headers in your dataset, or else the software will not be able to find what it's looking for. ***Please follow these instructions carefully, otherwise the dashboard cannot communicate with your dataset.***

2. **Dataset structure:** While Tableau can connect to a variety of file types, it's recommended to use one compatible with Microsoft Excel, such as a .csv or .xlsx. The structure of your dataset should be a single sheet table with each row being an instance of collection use (for example, the number of data downloads in 2009, or a

specific loan made to a researcher). The maximum number of rows Tableau can process is 10 million.

3. **Minimum Data Field Requirements:** The following is a table outlining the data fields needed to ensure this dashboard works properly. The first column lists the exact column headers, and the second column outlines the format the actual data needs to be in. **Note: Headers need to be exactly as displayed here.** The columns can be in any order, and more fields than these can be in the dataset, but not having these listed here may prevent the dashboard from functioning properly. Grey rows are the optional columns.

| Column header	Data Format
Impact Type	(text) The kind of academic use of specimens, such as "Loan" or "Data Download." You can use whatever terms you like.
Year	(number) The numeric year, such as "2016".
Specimen/Object Count	(number) The number of specimens involved in that instance of academic use. Or, the number involved for that impact type for a total year.
Specimen/Object Category	(text) The subcollection involved, such as "Mammals". You can use whatever terms you like.
Purpose	(text) The reason for the use of specimens, such as a research topic. You can use whatever terms you like.
Receiving Institution	(text) The institutional affiliation of the research partner, such as another museum or university
Country	(text, geographic) Country of research partner.
State/Region	(text, geographic) State or region of research partner.
County	(text, geographic) County of research partner.
Journal Title	(text) The name of the journal involved.
doi	(text) The doi of the paper involved.
Details	(text) Any other information.

> ***Here's a Tip!*** Is there a data field you just don't have or just isn't useful to you? There is an alternative that may work in some circumstances. **Still include the unwanted data field as a column** in your dataset, and populate every cell in that column with a placeholder, like a period or "0" depending on the data type.

4. **Ensure your Dataset is Clean:** While untidy datasets may not necessarily cause the dashboard to fail, as they say in the data viz world, "garbage in, garbage out". It pays to take the time now to clean your dataset. And although in some cases the CollViz dashboards may help identify problematic data, it's not their intended use and shouldn't be solely relied upon. (*See CollViz's resources for guidance on how to clean a dataset.*)

III. Connecting to Your Dataset

Tableau *makes a live connection* to a dataset, which means it maintains a one-way live link with the dataset. So if you update the dataset, your workbook will too, but not vice versa. When you are ready to connect to your dataset, all we need to do is swap it out with the placeholder dataset currently in the dashboard.

1. Open the Academic Impact Dashboard Template Workbook in Tableau Public.
2. Click the **Add a New Data Source** button in the upper left of the screen:
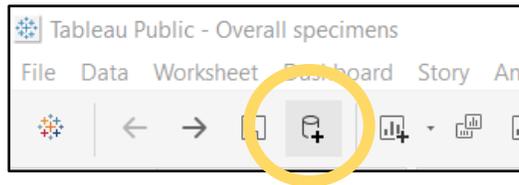
3. A blue menu will appear. You'll find a list of file formats on the left side. Click on the file type of your dataset:
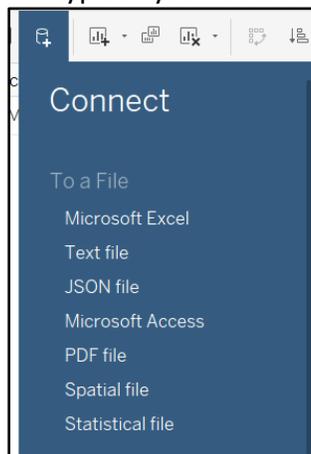

4. A file explorer window will pop up. Navigate to your dataset and double click on it to select.
5. Tableau should then show a preview of your dataset, which includes the first 1000 rows.
   a. ***If you do not see a preview*** and instead see big orange text saying "*Drag sheets here*" that means your dataset has multiple sheets. Since Tableau can only look at one at a time, simply find your desired sheet listed on the left of the screen and drag and drop it into the big box to get the preview.
   b. Look over the dataset to check that there were no glaring mishaps during the connection process.

c. Tableau will recognize your column headers and assign data types to your fields: Text String `Abc` , Number `#` , Geography `⊕`, Date `📅` etc. ***Make sure these were assigned correctly,*** as shown in the following screenshots. If something is not correct, simply click the symbol and choose the correct type from the dropdown list.

Abc	Abc	#	#	Abc	Abc
Sheet1	Sheet1	Sheet1	Sheet1	Sheet1	Sheet1
Impact Type	Purpose	Year	Specimen/Ob...	Specimen/Ob...	Receiving Inst...

⊕	⊕	⊕	Abc	Abc	Abc
Sheet1	Sheet1	Sheet1	Sheet1	Sheet1	Sheet1
Country	State/Region	County	Journal Title	Doi	Details

6. If everything looks correct, navigate to any worksheet using the tabs along the bottom of the screen.
7. Open the **"Data"** menu in the upper left, then click **"Replace Data Source…"**:
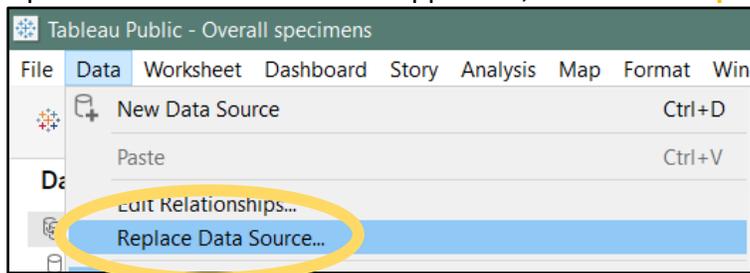
8. A small window will pop up. Make sure that the **"Current"** dataset is the placeholder and the **"Replacement"** is set to your dataset. Click **"OK"**.
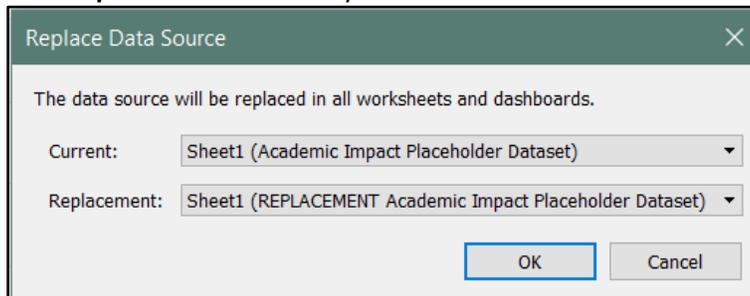

9. Every tab in this workbook should now be pulling data from your dataset, instead of the placeholder. Check each worksheet and the dashboard for errors.

10. Next, navigate to any worksheet. Locate the datasources in the top left corner of the screen. Right click on **the placeholder dataset** and click "**Close**" to remove it from your workbook for good.
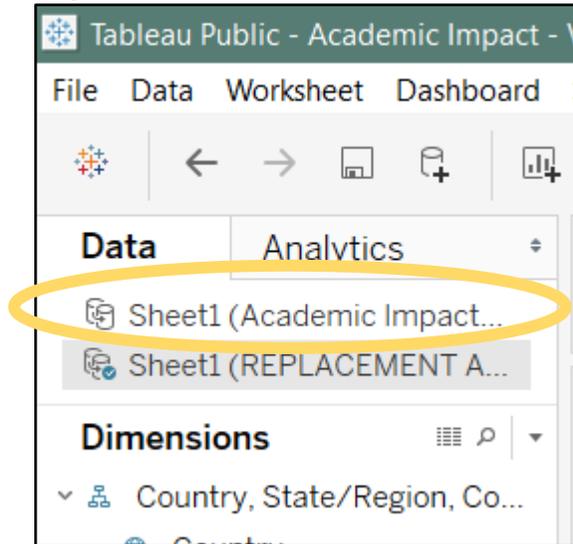
11. Save your workbook.

Dashboard Tour
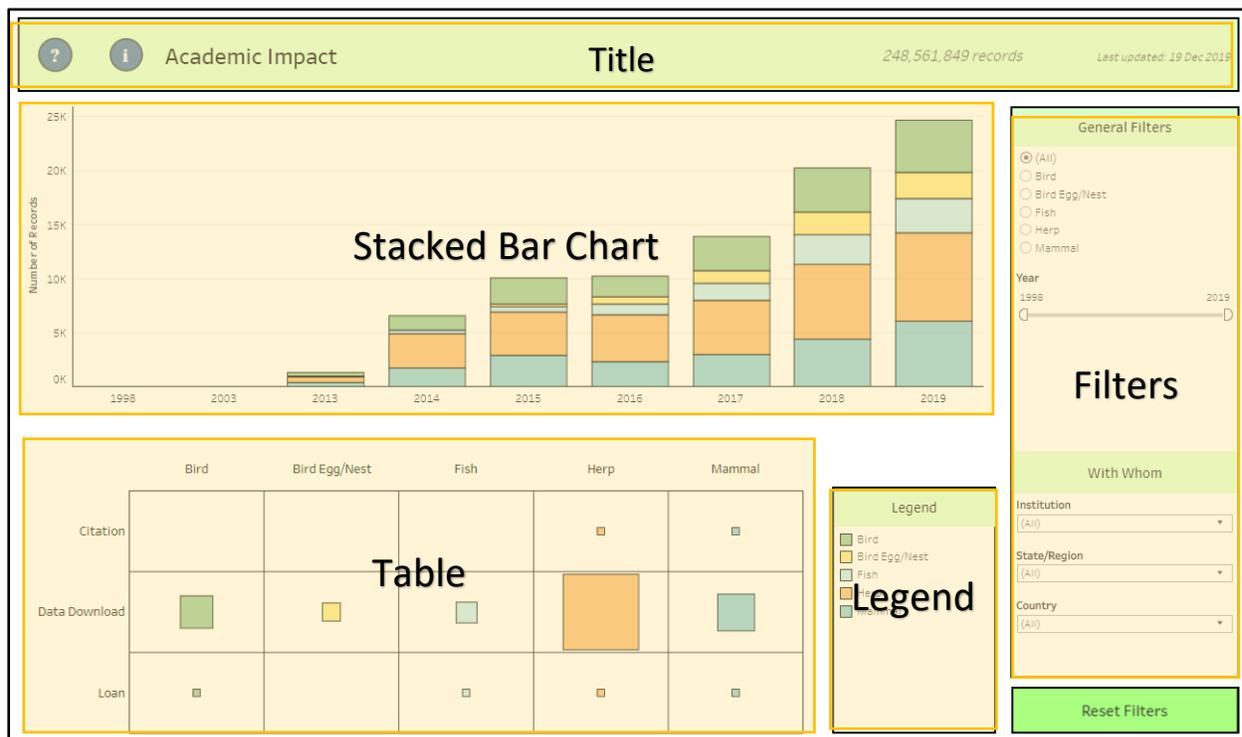
I. The Visualizations

1. Stacked Bar Chart

    a. Parts: Year is along the x axis and Number of Specimens/Objects is along the y axis. There is a colored block in the bars for each of the Specimen/Object Categories. This allows you to see the use of the impact of the entire collection over time as well as of each category.

    b. Interactions: Hovering over a stripe at a particular Year will produce a tooltip box with more information. Clicking on box or a Year label will filter the dashboard to include only those records. You can hold the Ctrl key while clicking to select multiple at a time, or click-and-drag. Click the selection again or a blank space to undo the selection.

2. Table

    a. Parts: This table parses out the number of Specimens/Objects used by Category and Type of Use. Color for Specimen/Object Categories is the same as those in the Stacked Bar Chart. The size of the square reflects the number of records.

    b. Interactions: Hovering over a square will produce a tooltip box with more information. Clicking on a square or table header will filter the dashboard to include only those records. You can hold the Ctrl key while clicking to select multiple at a time, or click-and-drag. Click the selection again or a blank space to undo the selection.

II. Other Features

1. **Legend:** The legend contains the key for interpreting the **Specimen/Object Category** colors. These will update when applying filters.

2. **Filters:** This set of controls allows you to filter the entire dashboard. The timeframe can be controlled by setting a **Year Range,** either by using the sliders to choose the start and end years, or by clicking the labels for the years and simply typing in what you want. You can filter to a specific **Specimen/Object Category** using the dropdown menu. There is also a set of filters on the bottom right for filtering by information associated with the party that used the collection, such as **Country**, **State/Region**, and **Institution**. There are several possible ways to reset filters:
    1. Some can be reset by pressing the Esc key.
    2. Double click on the Reset Filters button.
   3. Click the **Show All Values** symbol in the upper right of the filter:

> *Here's Tip!* There are many types of filters (such as dropdown lists) and you can set them to accept single value or multiple values. To change a filter, click on it on the dashboard, and then click the inverted triangle on the upper right to expand the menu: You can see your choices in the third section of this menu.

3. **Title:** This displays the dashboard's name (the default being "Academic Impact"), the last time the dashboard was updated, and the total count of records, which will update as you filter the dashboard. The "Last Updated" date needs to be changed manually. *(See Customize for how to change this information.)*

4. **Help and Info Icons:** Hovering over these icons shows extra information. Help provides guidance on how to use the dashboard and its components. Info provides details on the content of the dashboard, your organization, your dataset, etc. It can also include contact information for who manages the dashboard and for CollViz as the designer. These pop-up windows are called tooltips, and while they contain example text, you can easily change it. (*See the Customize section below.*)

Customize

Now that you understand the basic functions and features of your new dashboard, here are just a few of the ways you could make you own customizations. Check back with CollViz for updated dashboard templates and extra tutorials for special customizations. **NOTE: Make sure to reset all your filters before starting any customizations.**

I. Moving and Removing Dashboard Elements: While the dashboard was designed in a specific way, nothing is set in stone. You are free to make adjustments how you like, to each piece's dimensions, arrangement, or even if it's there at all.

    1. **To resize an element**, simply click on it in the dashboard to select it. Then, click and drag any of its edges to adjust the dimensions.

    2. **To move an element**, simply click on it in the dashboard to select it. Then, click and drag the grey tab sticking up on its top. Tableau shows you a preview of where it will end up by highlighting the area of the new position in light grey.

    3. **To remove an element**, simply click on it in the dashboard to select it. Then, click the **X** from the buttons found in the top right corner of that element:
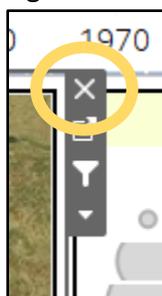

II. Changing Colors**:** You can change the entire color scheme or individual Category colors.

    1. Click on the Category color key in the Legend. Click on the **inverted triangle** to expand the options menu:
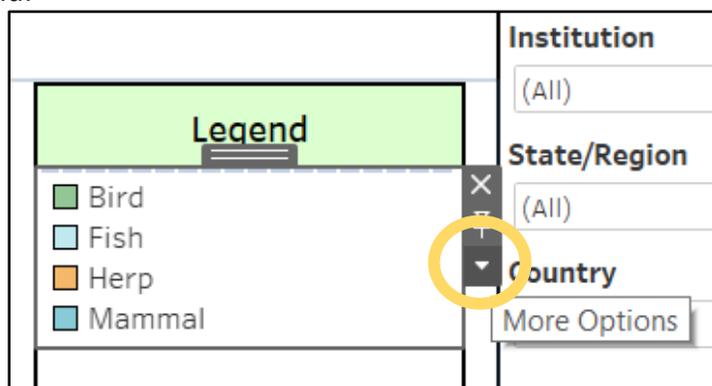
   2. Click "**Edit Colors…**", which is the first listed.

3. To change the whole color pallet, choose another from the **dropdown menu** on the upper right. Click **"Assign Palette"** to automatically change all the Categories to those colors.
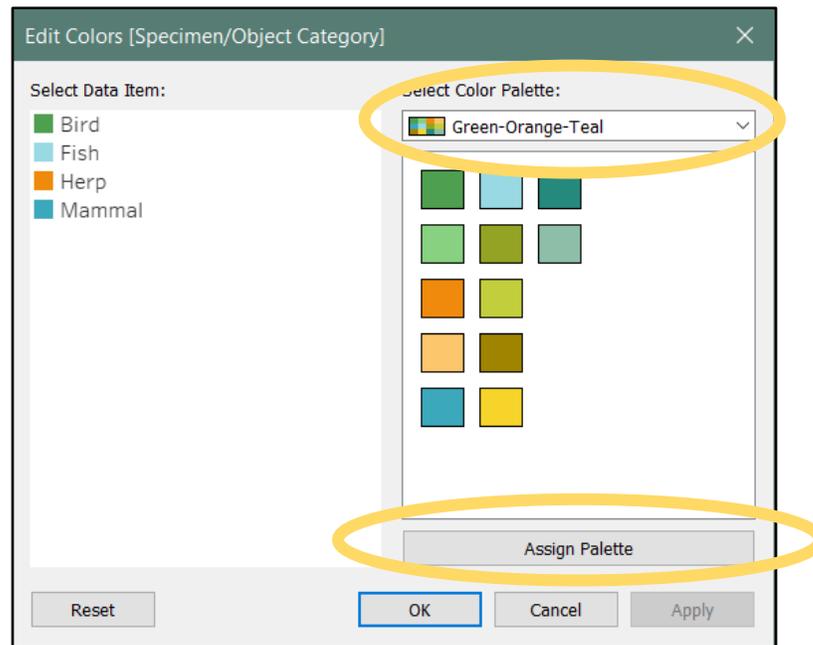

4. To change individual colors, you can either:
   a. Click on the Category name on the left, then on your choice color square in the palette on the right.
   b. Double click on the Category name's color square on the left, and then you can pick any possible color.
5. Click "**Apply**" to preview your color changes on the dashboard. Click "**OK**" to enact them.

II. Changing Tooltip Content: You can change what displays in the tooltip box of any visualization.
   1. Go to the worksheet of the visualization you would like to edit. *(For example, if you wanted to change the Help Icon tooltip text, go to the Help Icon worksheet using the tabs on the bottom of the screen.)*
   2. Click on the **Tooltip** button under Marks.
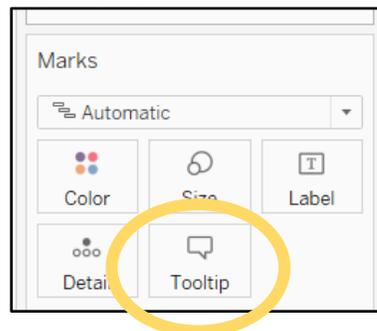
3. In the popup window, you can add, change, or remove text. You can also change the text's color, font, size, alignment etc.
4. Anything highlighted in gray and between < > are live values pulled from the dataset. For example, where you see <Year>, Tableau will pull that value from the dataset and insert it there in the tooltip when you hover over a bar in the chart. Click "**OK**" when finished.
5. To add a new live data field to the Tooltip, exit out of the Tooltip editor, and then click and drag the field from the left column onto the Tooltip Button. Then click the Tooltip Button to reopen the editor. Place your flashing line cursor where you want the live data field to go, then click the "**Insert**" dropdown and click the data field from the list.
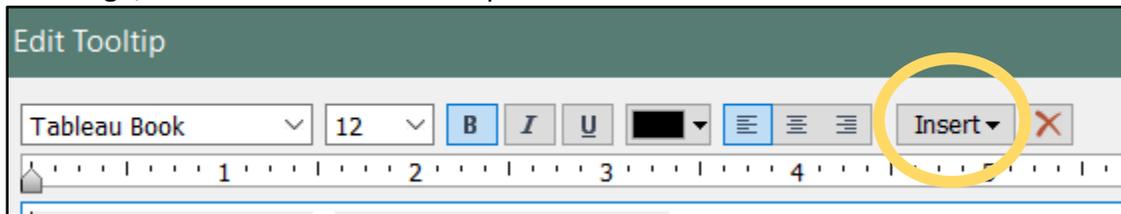
III. Changing the Title and Other Header Information**: The information listed at the top of the dashboard can be easily changed and updated.
   1. To change the Dashboard Title, simply go to the dashboard and double click on the title to open the text editor box.
   2. To change the "Last updated" date, go to the Title Details worksheet tab at the bottom of the screen. Click the **Text Button** under Marks, and then click on the button to open the text editor box and make any changes you like.
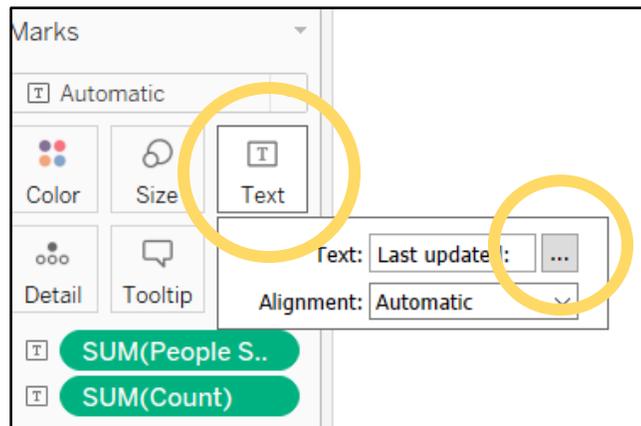
Here's a Tip! Want to make even more customizations? Tableau is a widely-used and very versatile software, and there are plenty of resources out there about how to achieve what you have in mind. You have free rein to change your dashboard however you like. You can find Resources, Discussion Board, and Contact on the CollViz website.

Put it to use

This section will show you how to use and share your dashboard in a few different ways.

I.   A Sample of Tasks

1. **Querying using Filters:** You can narrow down your dashboard to only show data relevant to a set of criteria by applying multiple filters at once. For example, you can filter down to only see citations since 2000 from the Bird Collection.

2. **Exporting Data:** At any time, you can view and export the rows from your dataset that are being displayed in the dashboard. Simply right click anywhere on the dashboard and click "View Data". Then click "Full Data" on the bottom right corner of the popup window. Click and drag to select which rows/columns/cells you like (or press Ctrl-A to select all), then copy and paste into a spreadsheet. For example, you could export data only for international loans.

3. **Internal and External:** Each CollViz dashboard is built to be useful for work within your collection as well as communicating outwards. Be innovative when thinking of how this one could be tailored for your priorities, objectives and current projects.

II.   Sharing

You can share your dashboard as static or interactable for a variety of audiences, including researchers, administrators, colleagues, and even the general public.

1. **Static Screenshots** are flat images of your dashboard, which can be saved, used in presentations, printed onto posters, sent or posted online, embedded into a webpage, etc. Tableau Public unfortunately doesn't offer its own export function, so simply use your device's screenshot method (See this webpage to see how, for Mac or PC). You can also download a JPG, PDF or PowerPoint slide of a dashboard through your Tableau Public Profile. Go to its webpage and click the **Download** button on the lower right and select **the file format you prefer**:
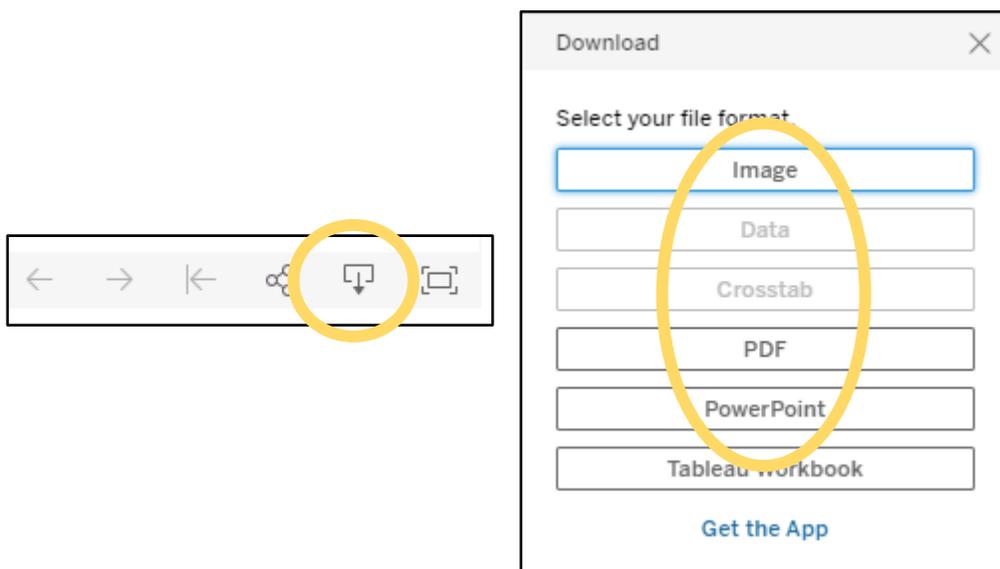
2. **Interactive Displays** aren't flat images but the interactive dashboard itself, with all of the click and hover functions it has when open in Tableau. There are several ways to use this format.

   i. **Presentation Mode**: If you are going to be using a device that has Tableau installed to present or share a dashboard, you can simply open your dashboard and click the **Presentation Mode** button to go full screen, and press the escape key to return:
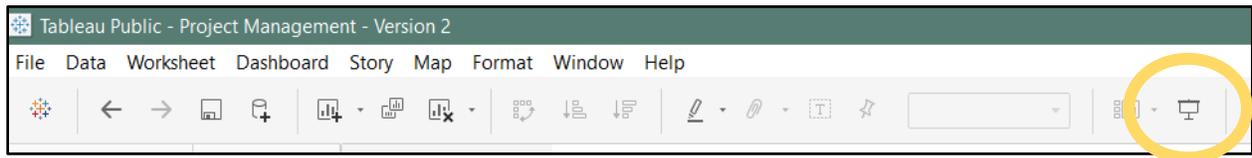
   ii. **Browser**: An intractable version of your dashboard is located on your Tableau Public Profile. This is the webpage that opens whenever you save your workbook. You can navigate to it from your profile's gallery. The url for this page can be sent via email, hyperlinked in a webpage, pulled up during a presentation, etc. **Important: Unless you manually disable download capability, anyone can download your dashboard, even if it is toggled as invisible. Be certain to carefully assess the appropriate level of privacy regarding the dataset. See** Saving Tableau Workbooks **section for more information about how to control privacy.**

   iii. **Embed**: You can embed the dashboard itself into a website. You can find the Embed Code for this interactive version on the same direct webpage. Here's some more info on a helpful blog. Simply click the **Share button** on the lower right and copy the **Embed Code** into your webpage's html code:
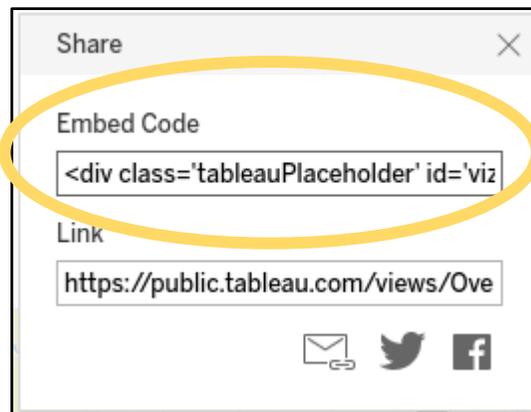

> *Here's a Tip!* Before sharing, presenting or publishing a dashboard, **make sure to clear all filters and selections before saving the final version**. The workbook is saved as is and that includes whatever manipulated state it's in at the time that it's saved. However, this also allows you to save different versions of the same dashboard.

Upkeep

Now that you have your individualized dashboard and know the basics of using Tableau, it's important to ensure your dashboard continues to work properly.

I. Dataset Changes**:** Any edits you make to the connected dataset will show in Tableau when it is refreshed. You can even be working with both the dataset spreadsheet open and Tableau open simultaneously. There are two ways to refresh the data connection.
    1. Press the F5 key.
    2. Click **"Data"** in the top left, then hover over **your dataset name**, then click **"Refresh"**):
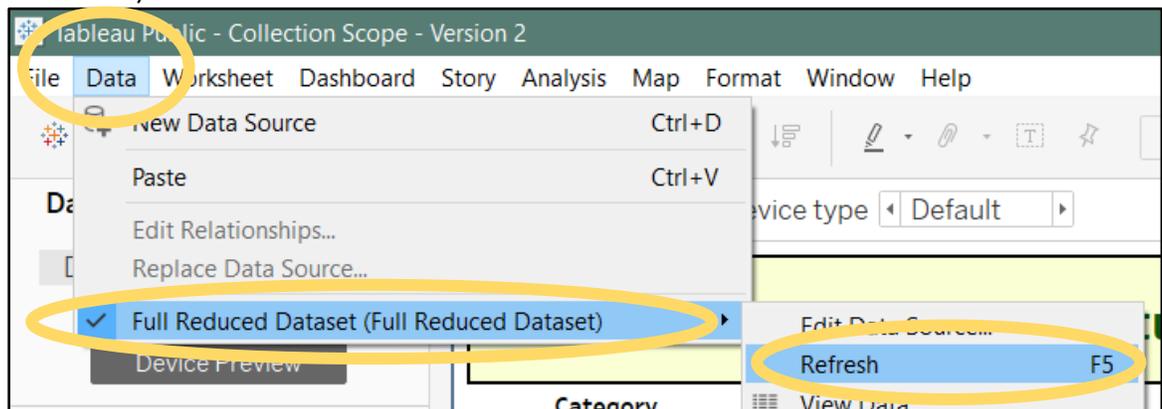
II. Dataset Connection Errors
    1. ***Important: Keep your connected dataset saved in the same location and with the same file name, otherwise Tableau will not find it.***
    2. If your dataset is renamed or moved to a different folder location on your computer, you will need to re-establish the connection, which you can do exactly the same way as swapping datasets. See Connecting to Your Dataset for instructions.

III. Software Updates: Tableau will inform you of any available updates when you open the program. The updates are usually minor and are very unlikely to impact your ability to open and work with any workbooks you have. Update Tableau when it asks nicely to keep taking advantage of their best offerings.

IV. CollViz Updates: CollViz is committed to improving its resources, in part thanks to your help. Any feedback or suggestions will be taken in consideration and will inform new updated versions of tutorials, resource recommendations, and even new dashboard designs.
    1. All previous versions of materials and dashboard templates will be saved in the Archive section of the website, if you prefer previous versions.
    2. Check back frequently or subscribe to the email list to get notified of updates.
    3. Check in with the Discussion Board to find questions and answers.
    4. You can always Contact Jess directly for troubleshooting help, questions, or even specific data visualization project ideas.