DISPLAYR

Key Concepts

- Add raw data sets to the **Data Sets Tree** (bottom-left), or, add pre-calculated data to existing visualizations (see Workflow).

- The **Data Sets Tree** contains sets of one or more variables (*variable sets*); the *structure* of a variable set determines how it is analyzed.

- Create tables and other analyses using options in **Ribbon > Insert** or by dragging data from the **Data Sets Tree** (bottom-left) onto the page.

- Press **Ribbon > Home > New Page** to create new pages. Drag and drop pages to organize documents. Folders are created by dragging pages onto other pages.

- Pages and other objects can be hidden from exports by clicking **Ribbon > Appearance > Hide**.

- Arbitrary calculations are performed using **Ribbon > Insert > R Outputs** (see Extracting results from tables using R Outputs).

- Modify objects by clicking on them and either
    - Directly manipulating them (e.g., moving or resizing them).
    - Modifying more commonly used options in the **Ribbon** (top of the screen).
    - Modifying options in the **Object Inspector** (right-side of the screen).

- Trace any calculation back to the original data by hovering over the data input and pressing the ⊕ that appears in the preview window.

- Use **Ribbon > Export** to publish the document as a web page, PDF, PowerPoint, or Excel file.

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1. Plan your dashboard	Create a detailed plan for the dashboard (e.g., in PowerPoint). It should show all the pages you want to create and the layout on each of those pages.
2. Design and layout	(Optional) Get a graphic artist to create a color palette, style guide, and images as PNGs and JPEGs Dashboard Design: Working with a Graphic Designer (Optional) Perform more advanced customizations using via the CSS Customizing Logos, Icons, CSS, HTML Headers, and Language in Displayr
3. Create a document	Log in to Displayr and click **+ Add Document** (If using in conjunction with Q, see Using Q Projects in Displayr) Add and modify text, shapes and images: **Ribbon > Insert > Text and images** and **Appearance** Create folders by dragging pages on top of other pages

4. Hook up visualizations to data: there are four flows	**Flow A: Type in data** • **Ribbon > Insert > Visualization** • **Object Inspector > Properties > DATA SOURCE > Paste or type data**	**Flow B: Insert Pre-Calculated Tables** • **Ribbon > Insert > Paste Table** • Extract results from tables using R Outputs • **Ribbon > Insert > Visualization** • **Object Inspector > Properties > DATA SOURCE: Outputs in 'Pages'**	**Flow C: Analyze imported data sets (raw data)** • **+ Add a data set** • Create a table (Tables) • Extract results from tables using R Outputs • **Ribbon > Insert > Visualization** • **Object Inspector > Properties > DATA SOURCE: Outputs in 'Pages' or Variables in 'Data'**	**Flow D: Live updating** Either Flow B or Flow C, except with Updating with Revised Data

5. Duplicate	Create something, and press **Home > Duplicate**, and modify the input data. You can apply this to everything from a text box through to a whole report.
6. Export	**Ribbon > Export > Excel**, **PDF**, **Private Web Page**, **Public Web Page** When exporting to a web page, the resulting dashboard is seen by the viewer in *view mode*. Prevent items from being exported by selecting them and pressing **Ribbon > Appearance > Hide**
7. Filters for clients	Select the variables(s) in the **Data Tree** and click **Insert > Create Filters from Selected Data**
8. Create navigation	Set hyperlinks to text, shapes, images, and charts: **Insert > Hyperlink** Hide the navigation bar (pages) from view mode by clicking the bottom of **Export > Private Web Page** and checking **Hide Navigation Pane**
9. User management	Press ▦ (top left of Displayr) **> Company Settings**, press **Expand** if not already clicked (at bottom) and **+ New User**. To allocate a license to a user, go to **Licenses** tab and press **Add** (to buy a new license) or **Assign** (to assign an existing license to that user). To create groups of users (with access to different documents), press **+ New Group** To assign user access to individual document, go to the Documents page, hover over your document and click **Settings,** then go to **Properties** and modify which use groups have access to the document (**Authorized for…**) and individual pages in the document (**Set tab-based access to document**)

10. Updating with revised data	**A. Manual updating of a data set** Click on the data set in the **Data Sets Tree**, and press **Update** in the **Object Inspector**	**B. Manual updating of a table/ visual-ization** Click on the table or visualize-ation and click **Object Inspector > Inputs > DATA SOURCE > Edit Data**	**C. Automatic updating via SQL** **Data Sets Tree > + Add a data set > URL >** specify **Automatic-ally refresh every**	**D. Automatic updating via URL** **Data Sets Tree > + Add a data set > URL >** specify **Automatic-ally refresh every**	**E. Automatic updating of R Outputs** **Ribbon > Insert > R Output** `flipTime::UpdateEvery` Automatically Updating R Outputs, R Variables, and R Data Sets	**F. Automatic updating of R Outputs** **Data Sets Tree > + Add a data set > R**	**G. API** If you have program-ing skills, you can write code to update using the API

Creating Outputs

Tables

Note that the one of the main ways of modifying a table is to change the data in the table, and when this is done all other tables using the same data will also change (see **Manipulating tables**)

Summary tables	Drag dragging from the **Data Sets Tree** onto the page
Crosstabs	Create *crosstabs* by dragging a variable set from the **Data Sets Tree** and releasing it on the **Columns** slot of an existing table
Duplicate a table	**Ribbon > Home > Duplicate**
Changing the data	**Object Inspector > Inputs > DATA**
View additional statistics	**Object Inspector > Inputs > STATISTICS**
Multiway table (layers)	**Ribbon > More > Tables > Multiway Table**
Create lots of tables	**Ribbon > Insert > Report**

Manipulating tables

If a table is created by dragging variables sets from the **Data Sets Tree**, the categories of the table can be manipulated by dragging and dropping, and the changes apply to all other analyses based on the variable sets.

Merging categories	Click on the row or column name on a table and drag ☰, or, select all the categories to be merged and press **Ribbon > Data Manipulation > Merge**
Creating NETs	Select the categories and press the **Ribbon > Data Manipulation > Create NET**
Sorting/Re-ordering categories	Click on the row or column name on a table and drag ☰, or, **Ribbon > Data Manipulation > Sort**
Removing a category and/or rebasing	Click on the variable set in the **Data Sets Tree** and press **Object Inspector > Properties > DATA VALUES > Missing values**
Switch between % and averages as main statistics on a table	Click on the variable set in the **Data Sets Tree** and change the **Object Inspector > Properties > INPUTS > Structure** (see Variable Set Structures)

Weights and filters

Weights and filters can be applied to the entire project or to selected tables and plots.

Where visualizations and R Outputs are created from tables, weights need to be applied to the source table.

Create weights from existing variables	**Ribbon > Insert > Utilities > Filtering > Create Filters from Selected Data**
Use existing variables as filters/weights	Select the variable in the **Data Sets Tree** and press **Object Inspector > Properties > GENERAL > Usable as a filter** or **Usable as a weight**
Create new weights or filters manually	**Ribbon > Insert > New Filter** or **New Weight**
Create weights and filters	Weights and filters can be created and applied from the **Inputs** tab of the **Object Inspector**.
Create complicated weights and filters	**Ribbon > Insert > New R/JavaScript (Variable) > Numeric** and press **Object Inspector > Properties > GENERAL > Usable as a filter**
Apply filters and weights to an object	Click on the object: **Object Inspector > Inputs > WEIGHTS/FILTERS**
Show sample size on page	**Ribbon > Insert > More (Analysis) > Data > Sample Size Description**
Linking filters to controls	How to Connect Filters to a Combo Box (Control) Combo Boxes (Controls) With Dynamic Lists in Displayr
Weights and filters in R Code	The filter variable is called `QFilter` and the weights can be used as either `QPopulationWeight`, which contains the raw weight, or `QCalibratedWeight`, which sums to the effect sample size computed using Kish's approximation

Extracting results from tables using R Outputs

R Outputs are general-purpose outputs, which can contain text, tables, and visualizations. Code is used to determine their contents.

A common use case for R Outputs is to contain results from a larger table.

Creating an R Output	**Ribbon > Insert > R Output**
Finding the name of a table	Click on the table: **Object Inspector > Properties > General > Name**
Extracting a value from a one-dimensional table	For example, to extract the result for Males from a table containing gender data: `table.Gender["Male"]` or, if the males are in the second cell of the table: `table.Gender[2]`
Extracting a value from a two-dimensional table	For example, to extract the result for Males aged 35 to 44: `table.Gender.by.Age["Male", "35 to 44"]`
Extracting ranges of data from a table	For example, to extract the result for Males for columns 2 through 4: `table.Gender.by.Age["Male", 2:4]`

Variables

Tables, visualizations, and analyses take variables and *variable sets* as inputs. A variable set is a set of one or more variables.

Displayr automatically groups variables into variable sets when data sets are imported.

Split a variable set into individual variables	Click on the variable set in the **Data Sets Tree** and press **Ribbon > Data Manipulation > Split (Variables)**
Combine individual variables into a variable set	Click on the variables in the **Data Sets Tree** and press **Ribbon > Data Manipulation > Combine (Variables)**
Change the structure of a variable set	Click on the variable set in the **Data Sets Tree** and press **Object Inspector > Properties INPUTS > Structure** (see Variable Set Structures)
Recode the values of a variable set (including missing values)	Click on the variable and review **Object Inspector > Properties > VALUES > Labels, Values, Missing Values**
Create a new variable	**Ribbon > Insert > New R** or **New JavaScript**
Recode into a different variable	Select the original variable and press **Ribbon > Home > Duplicate** and then see *Recode the values of a variable set*
Banding/categorizing a numeric variable	**Ribbon > Insert > New R (Variable) > Numeric Variable** with **R CODE** of `cut(VARIABLE.NAME, 2)` to create two categories, then set **Object Inspector > Properties INPUTS > Structure** to **Nominal**

DISPLAYR **Troubleshooting**

When you are stuck, click on whatever you are trying to modify and:
- Click **Suggestions**
- Look around the **Ribbon**
- Look around the **Object Inspector**: it has multiple tabs and groups to be expanded

Read our wiki and our blog

If writing R code, hover your mouse over code to see additional documentation, use google, and read the warnings and errors that appear above the **Object Inspector**

Click on any errors and warnings in the **Pages Tree** and the **Data Set Tree**

Contact us: support@displayr.com

What to do when the data in a table looks wrong		
	Check the sample size a table	When you create a table, the sample size is shown at the bottom of the page. Brand attitude SUMMARY sample size = from 180 to 292; total sample size = 327; 147 missing; 95% confidence level
	Check count and sample size	**Object Inspector > Inputs > STATISTICS > Cells > Count** or **Sample Size**
	Check the variable set structure	Click on the input variables in the Data Sets Tree, and review **Object Inspector > Properties > INPUTS > Structure** (see Variable Set Structures)
	Check that the Filter and Weight are correct	**Object Inspector > Inputs > FILTERS & WEIGHTS**
	Review the value attributes of the input variable(s)	Click on the variable and review **Object Inspector > Properties > VALUES**
	View the raw data	See Viewing raw data
	Review how the input variables have been constructed	Click on the variable and review its **R CODE** or **JAVASCRIPT CODE** in the **Object Inspector > Properties**
	If using Q: In Q check that the correct Rules are applied and, try and remove the rules	If a *rule* has been applied, a pink Rules tab will appear at the bottom of the table. Control when applied using the **Apply** dropdowns Table Rules
	If using Q: In Q, check if empty rows/columns are are hidden (Q users only; in Q)	Check to see if is depressed (this hides empty rows and columns)

What to do when a visualization looks wrong		
	Check the source data	Click on the visualization, hover over the data inputs (**Object Inspector > Inputs > DATA SOURCE**), and click the ⊕ to go to the the input or inputs. **Click here** **Hover here** R outputs in the 'Pages' tree (top-left) ▲ DATA SOURCE table.Age.by.Gender ⊕ Output in 'Pages' 📊 table.Age.by.Gender Table ▷ DATA MANIPULATION Column % Male Female NET ▷ ROW MANIPULATIONS See What to do when the data in a table looks wrong
	View the data table	Set **Object Inspector > Inputs > OUTPUT > Chart type** to **Table**
	Modify the data manipulation settings	If the data table looks wrong, but the inputs look correct, check the settings in **Object Inspector > Inputs > DATA MANIPULATION**, **ROW MANIPULATION**, and **COLUMN MANIPULATION**

Viewing raw data		
	Viewing the raw data for a variable set	Drag the variable onto the page, and in the **Object Inspector** set **Inputs > DATA > Columns** to **RAW DATA**
	Seeing raw data for lots of variables in Excel	1. Select the variables in the **Variables and Questions** tab 2. Right-click: **Export variables to Excel** 3. In Excel: **VIEW > Freeze Panes > Freeze Top Row** 4. In Excel: **DATA > Filter**
	Viewing the raw data for multiple variables	**Insert > More (Analysis) > Tables > Raw Data** and select the **Variables** and check **Automatic**

When you create a table in Displayr from data stored in a *data set,* the way the table appears is determined by the *structure* of the *variable set* (group of variables). Each variable set is represented as a folder in the Data Sets Tree. Each *structure* is represented by an icon. Structures are set automatically when importing data and can be modified in the Object Inspector.

Structure	Description	Example
Text	A single variable containing text (or, numeric data that is interpreted as text)	What is your name? _____
Nominal	A single variable that contains unordered, mutually exclusive, and exhaustive categories (i.e., has a nominal measurement scale)	Gender categories: Male, Female, Unknown
Ordinal	A single variable that contains ordered, mutually exclusive, and exhaustive categories (i.e., has an ordinal measurement scale).	Age categories: Under 18, 18 to 24, 25 to 29, 29 to 54, 54 or more
Numeric	A numeric variable (i.e., *interval* or *ratio* scale).	The amount of money in a bank account.
Date /Time	A numeric variable where the values represent times and/or dates. It contains the number of milliseconds since 1/1/1970.	What is your date of birth? ____ / ____ / 19____
Text – Multi	A set of related text variables.	First Name, Last Name, and Street Address
Binary – Multi	A set of related nominal variables, where each value only takes two non-missing values (perhaps after merging categories).	Which of the following have you bought in the past week? ☐ Coke ☐ Pepsi ☐ Fanta
Nominal – Multi	Multiple related nominal variables.	Which meal did you eat most recently at... Breakfast Lunch Dinner McDonald's ❍ ❍ ❍ Burger King ❍ ❍ ❍ Wendy's ❍ ❍ ❍
Ordinal – Multi	A set of related ordinal variables (The icon is the same as for Nominal – Multi.)	Please rate your satisfaction with the following airlines: Low Med High United ❍ ❍ ❍ British Airways ❍ ❍ ❍ Qantas ❍ ❍ ❍
Number – Multi	A set of related numeric variables measured on the same scale.	Balance of Savings Account, Balance of Credit Card, Balance of Home Loan
Binary Multi – Grid	This is a generalization of a Binary – Multi, where the variables can be ordered in two dimensions.	Which of these brands are cool? ☐ Coke ☐ Pepsi ☐ Fanta Which of these brands are young? ☐ Coke ☐ Pepsi ☐ Fanta Which of these brands are sexy? ☐ Coke ☐ Pepsi ☐ Fanta
Number – Grid	This is a generalization of a Number – Multi, where the variables can be ordered in two dimensions.	In the past month, how many *economy flights* did you take on... Qantas ____ United ____ Delta ____ ...and how many *business class flights* did you take on... Qantas ____ United ____ Delta ____
Ranking	A set of related numeric variables that represent a ranking, where the highest number is most preferred, and ties are permitted.	Rank the following brands according to how much you like them... Coke _____ Pepsi _____ Fanta _____
Binary – Multi (Compact)	The same underlying data as Binary - Multi, except that is stored as a Nominal – Multi and the unique values correspond to underlying binary variables. For example, in data storing people's car model ownership, rather than having a binary variable for each model of car, instead the first variable represents peoples first care, the second variable is for their second car, etc. This format should only be used to represent data where it provides massive data storage gains, as it is generally difficult to manipulate and cannot accommodate the notion of missing data well.	
Experiment	This structure is used to represent the various types of experiments, from randomized experiments (''Fully randomized experiments'' through to ''Conjoint Analysis'' and ''Choice Modeling'')	Which of these would you buy? Coke $2.00 Can Pepsi $4.20 Bottle Fanta $3.20 Flask