Using Google Sheets to Create, Organize & Explore Your Humanities Data

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Workshop Agenda

1. Introduction
2. Tutorials & demonstrations
    a. **Starting in Google Sheets**
    b. **Code tables**
    c. **Data Validation**
    d. **Conditional Formatting**
    e. **VLookup**
    f. **Column Statistics & Filters**
    g. **Pivot Tables**
3. Mapping your data

Starting in Google Sheets

Setting up Your Spreadsheet

- Start a new Google Sheets project → "Blank spreadsheet."
- Enter your data manually or import an existing dataset.
- Create column/row headers to distinguish categories of information.
  - Color, date, name, material, acquisition, location, coordinates, true/false, etc.

A	B	C	D	E
Artwork Title	**Artist Name**	**Artist Birthplace**	**Artist BY**	**Residential Hall Name**

F	G	H	I	J	K
Building Location	**Building Lat.**	**Building Long.**	**Campus Name**	**Campus Lat.**	**Campus Long.**

**Images taken from sample dataset.*

Entering and Viewing Data

- Tips:
  - Hit the **enter** key to start typing in a cell and to jump one cell down.
  - Use **option/alt + enter** to create a new line in a cell.
  - Use the **arrow** keys to move to adjacent cells one at a time.
  - Hit the **tab** key to move one cell to the right.
  - **Hide** columns by highlighting them, right-clicking, and selecting “Hide column.”
  - **Freeze** rows by highlighting them, selecting “View” in the menu, then choosing “Freeze.”
  - Drag the bold blue corner of a cell to copy function and formats to cells.

Tool 1:
Code Tables

Code Tables

- Create a table of **codes** to pull from (with recurring data) to be used for **Data Validation** and **VLookup**.
  - Helpful in saving you time and effort!

	A	B	C	D	E	F	G
1	**Residence Hall Name**	**Building Location**	**Building Lat.**	**Building Long.**	**Campus Name**	**Campus Lat**	**Campus Long**
2	Palladium Hall	Manhattan	40.73338	-73.98829	NYU New York	40.72949	-73.99647
3	Gramercy Green	Manhattan	40.73937	-73.98309	NYU New York	40.72949	-73.99647
4	A6A	Abu Dhabi	24.52234	54.4356	NYU Abu Dhabi	24.52393	54.43457
5	Alumni Hall	Manhattan	40.73033	-73.98901	NYU New York	40.72949	-73.99647
6	Coral Tower	Manhattan	40.73348	-73.98683	NYU New York	40.72949	-73.99647

- Tip:
  - Install the ***Geocode*** add-on (by Awesome Table) to automatically add latitude + longitude coordinates.

**Image taken from sample dataset.*

Creating a Code Table

1. Open a new tab at the bottom of your file and name it “Codes.”
2. Determine what information you will use the most and that recurs in every row (something with a more limited range of options).
    a. Example: the 15 authors published by a publishing house, the 20 venues at an art exhibition, etc.

➢ <u>Tip:</u>

- Organize the information in the same order in which it will appear in your main spreadsheet to facilitate the **VLookup** process.

E	F	G	H	I	J	K
Residential Hall Name	**Building Location**	**Building Lat.**	**Building Long.**	**Campus Name**	**Campus Lat.**	**Campus Long.**

**Image taken from sample dataset.*

Tool 2:
Data Validation

Data Validation

- Using the **Data Validation** tool will create a dropdown selection list in specified columns to limit the possible entries.

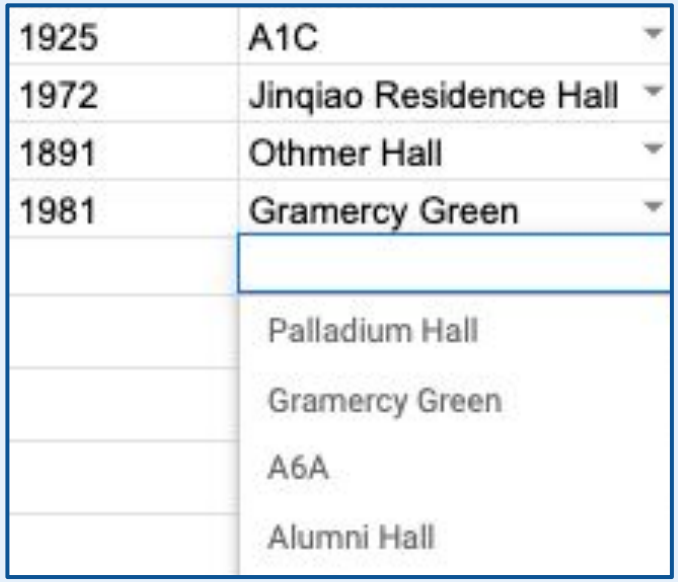


**Image taken from sample data.*

Enabling Data Validation

1. Highlight the column or cells to which you'd like to apply this tool.
2. Right-click and scroll down to "Data validation."
3. In the dialogue box that appears, edit your range (1) and inputs (2).

➢ <u>Tips:</u>

- Format the range as:

[Tab]![StartLocation]:[EndLocation]

- "Data!E2:E" indicates a range starting in tab "Data," cell E2 and encompassing the rest of E.

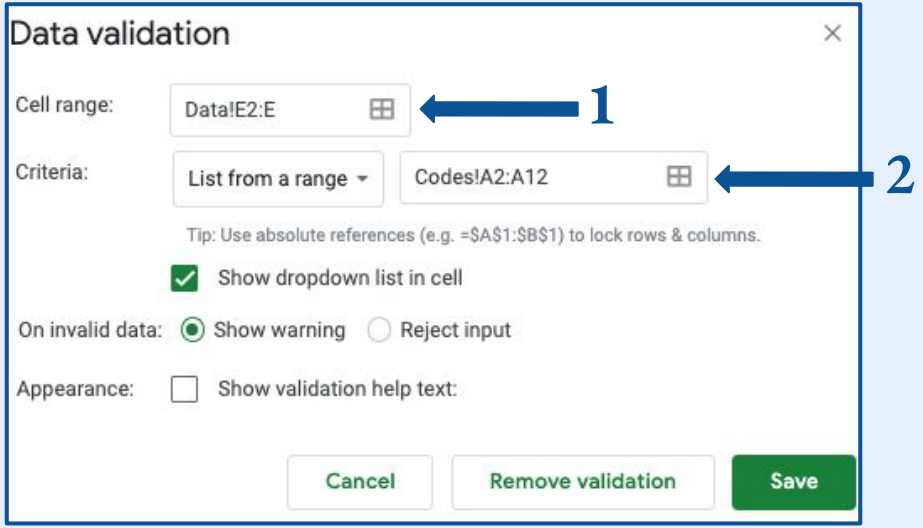


**Image taken from sample dataset.*

Tool 3:
Conditional Formatting

Conditional Formatting

- **Conditional Formatting** is a tool that enables you to format columns or cells according to your instructions for specific entries.

**Images taken from sample dataset.*

Enabling Conditional Formatting

1. Highlight the columns or cells you'd like to format.
2. Right-click and scroll to "Conditional formatting."
3. For the range, use the same structure as in DV.
4. Specify rules for Sheets to follow (i.e., *if cell is empty*, *if text is exactly*, *if greater than*, etc.).
5. Choose the format you'd like to apply, from editing the text to filling in the cell.

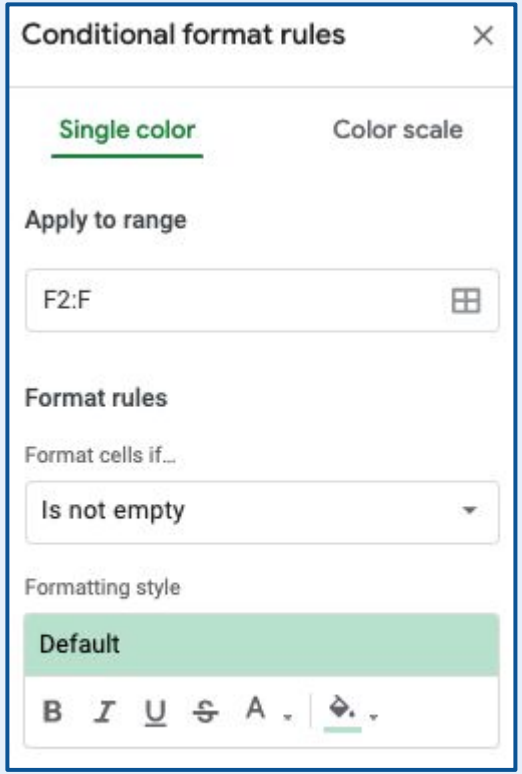


**Image taken from sample dataset.*

Tool 4:
VLookup Function

VLookup

- Use a **VLookup** formula to automatically populate your table with information found elsewhere in your sheet (code table!).

=VLOOKUP([search_key], [range], [index], [is_sorted])

- Search Key: cell/information you want to look up in another table
- Range: where you want the function to find your information
- Index: the number of the column that contains your return value
- Is Sorted: TRUE/1 if approximate match, FALSE/0 if exact match
- [( )]: used to group together the formula
- [$]: used to create absolute references (so that the range does not change when the formula is applied elsewhere)

Using the VLookup Function

- Recall the VLookup function structure:
  - `=VLOOKUP([search_key], [range], [index], [is_sorted])`
- So, to automatically fill in the information for columns F–K that corresponds to the value in column E, use this formula:
  - `=VLOOKUP(E2,Codes!$A$2:$G$12,2, FALSE)`

	E	F	G	H	I	J	K
1	**Residential Hall Name**	**Building Location**	**Building Lat.**	**Building Long.**	**Campus Name**	**Campus Lat.**	**Campus Long.**
2	Palladium Hall						

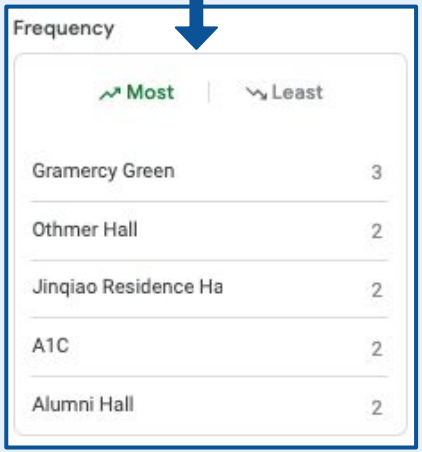
**Images taken from sample dataset.*

Tool 5:
Column Statistics & Filters

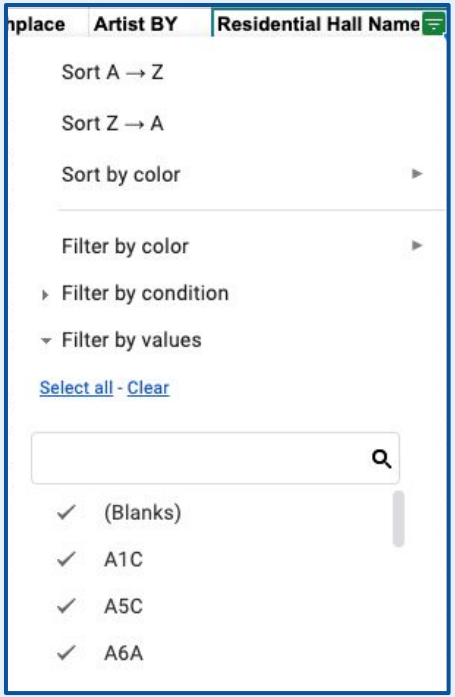
Column Statistics and *Filters*

➢ These two features allow you to get a bird's-eye view of your data.

Column statistics



Filtering columns

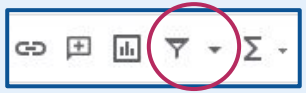


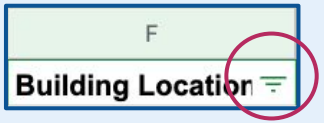
**Images taken from sample dataset.*

Viewing Column Stats and Adding Filters

- **Column Statistics**
  1. Highlight your desired column, right-click, and select “Column stats” at the bottom.
  2. Check out your spreadsheet statistics on the right side of the screen.

- **Filters** (2 ways)
  - Highlight your desired column and, in the toolbar, click on the funnel icon to add a filter.
  - Highlight your desired column and click on “Data” in the menu then select “Create a filter.”
  - *Use the triangle icon in the column header to customize filters.*



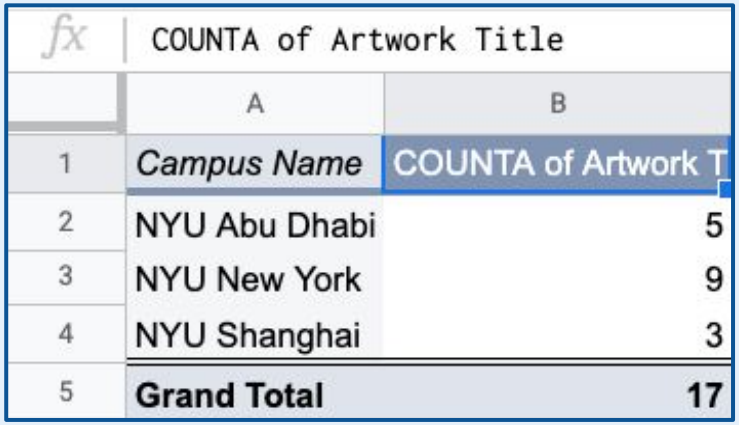


**Images taken from sample dataset.*

Tool 6:
Pivot Table

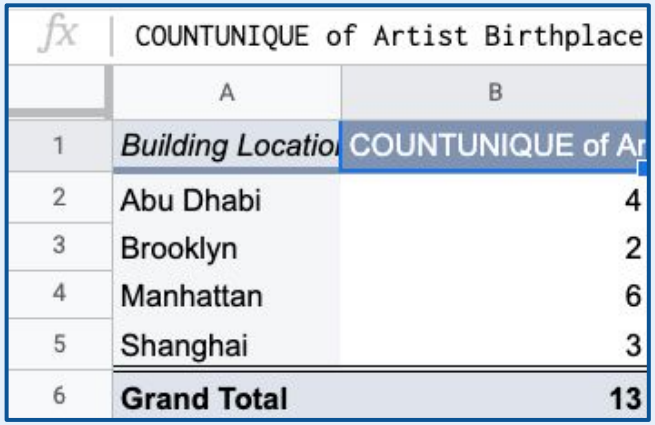
Pivot Table

- A **Pivot table** allows you to summarize, sort, average, and count parts of your data, giving you an overall view of your spreadsheet.
  - This is especially useful for making heatmaps or generating % calculations.



fx COUNTA of Artwork Title

	A	B
1	*Campus Name*	COUNTA of Artwork T
2	NYU Abu Dhabi	5
3	NYU New York	9
4	NYU Shanghai	3
5	**Grand Total**	**17**



fx COUNTUNIQUE of Artist Birthplace

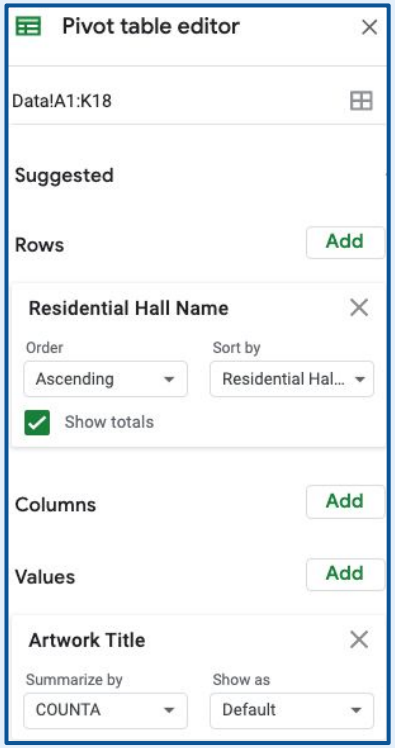
	A	B
1	*Building Locatio*	COUNTUNIQUE of Ar
2	Abu Dhabi	4
3	Brooklyn	2
4	Manhattan	6
5	Shanghai	3
6	**Grand Total**	**13**

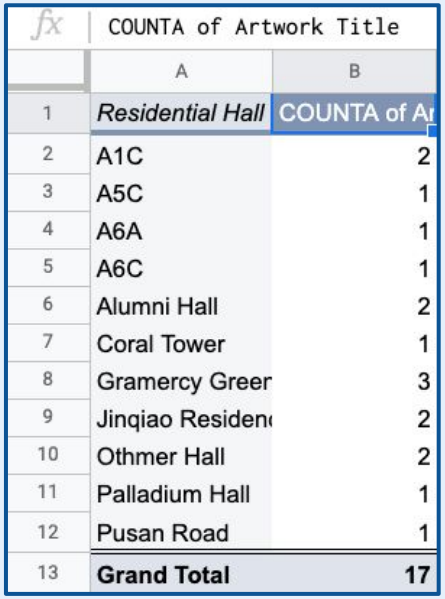
**Images taken from sample data.*

Creating Pivot Tables

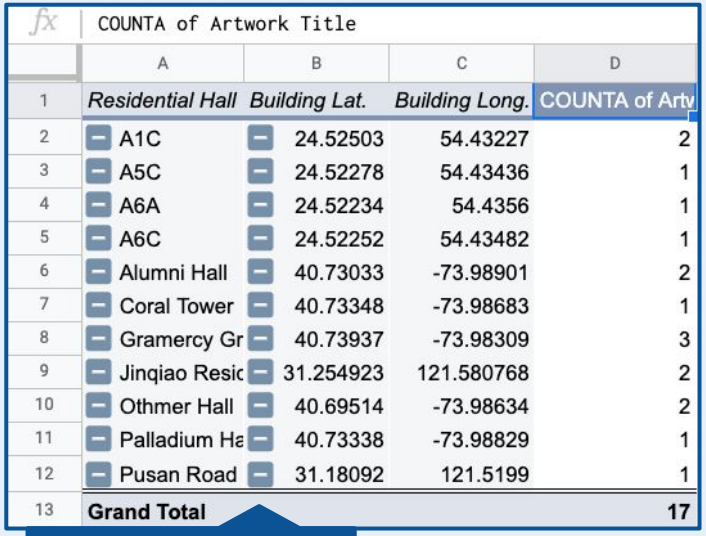
1. Highlight the data (rows and columns) that you'd like to analyze.
2. In the menu, select **Data → Pivot table** to create one in a new sheet.
3. Select the data category to analyze and format it into rows or columns.
4. Apply a function under **Values** (COUNTA, COUNTUNIQUE, etc.)
    a. **Values** is where you can choose what about your data you would like to analyze (like the # of unique residential hall names per campus).
5. Adjust viewing settings in **Values** to see data as % of total data if needed.
6. Add latitude and longitude columns to later turn into a map.

Editing Pivot Table Settings





	A	B
1	Residential Hall	COUNTA of Ar
2	A1C	2
3	A5C	1
4	A6A	1
5	A6C	1
6	Alumni Hall	2
7	Coral Tower	1
8	Gramercy Greer	3
9	Jinqiao Residen	2
10	Othmer Hall	2
11	Palladium Hall	1
12	Pusan Road	1
13	**Grand Total**	**17**



	A	B	C	D
1	Residential Hall	Building Lat.	Building Long.	COUNTA of Artv
2	A1C	24.52503	54.43227	2
3	A5C	24.52278	54.43436	1
4	A6A	24.52234	54.4356	1
5	A6C	24.52252	54.43482	1
6	Alumni Hall	40.73033	-73.98901	2
7	Coral Tower	40.73348	-73.98683	1
8	Gramercy Gr	40.73937	-73.98309	3
9	Jinqiao Resic	31.254923	121.580768	2
10	Othmer Hall	40.69514	-73.98634	2
11	Palladium Ha	40.73338	-73.98829	1
12	Pusan Road	31.18092	121.5199	1
13	**Grand Total**			**17**

*Hide totals here to minimize clutter.

Images taken from sample dataset.

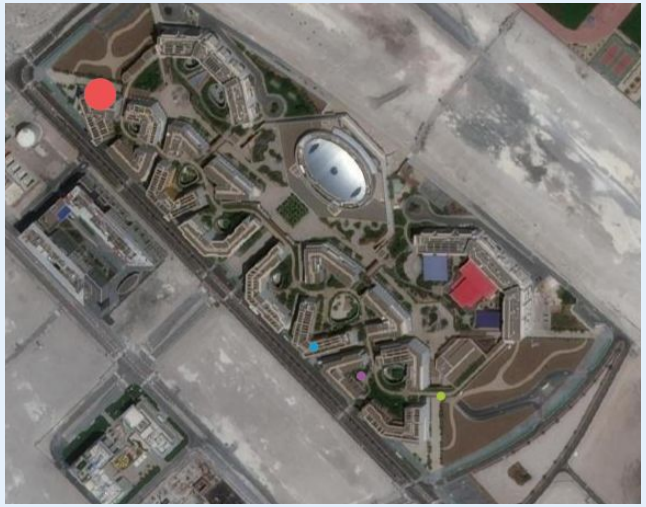
Bonus Feature!

Use the **Explore** option on the bottom right of your spreadsheet window to view various analyses and visualizations of your data generated by Google Sheets.

Mapping Your Data

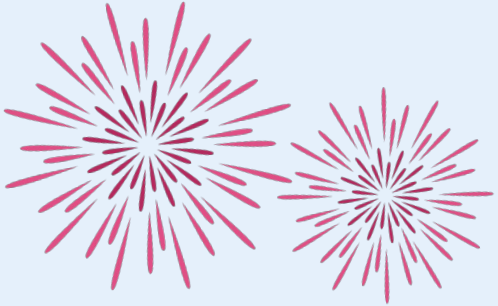
Mapping Your Data

- Choose a mapping software (Google Maps, ArcGIS/QGIS, UMap).
- Import data sheet *and* pivot table as CSV into your software.
- Manipulate map features to highlight different elements of your data.



**Images taken from sample dataset maps.*

All done!



Congratulations on picking up new skills (or sharpening your expertise) in these Google Sheets features!

I hope this short tutorial brought you one step closer to organizing and analyzing your data, no matter the subject.