



LAB 5

Adobe Illustrator: part 2

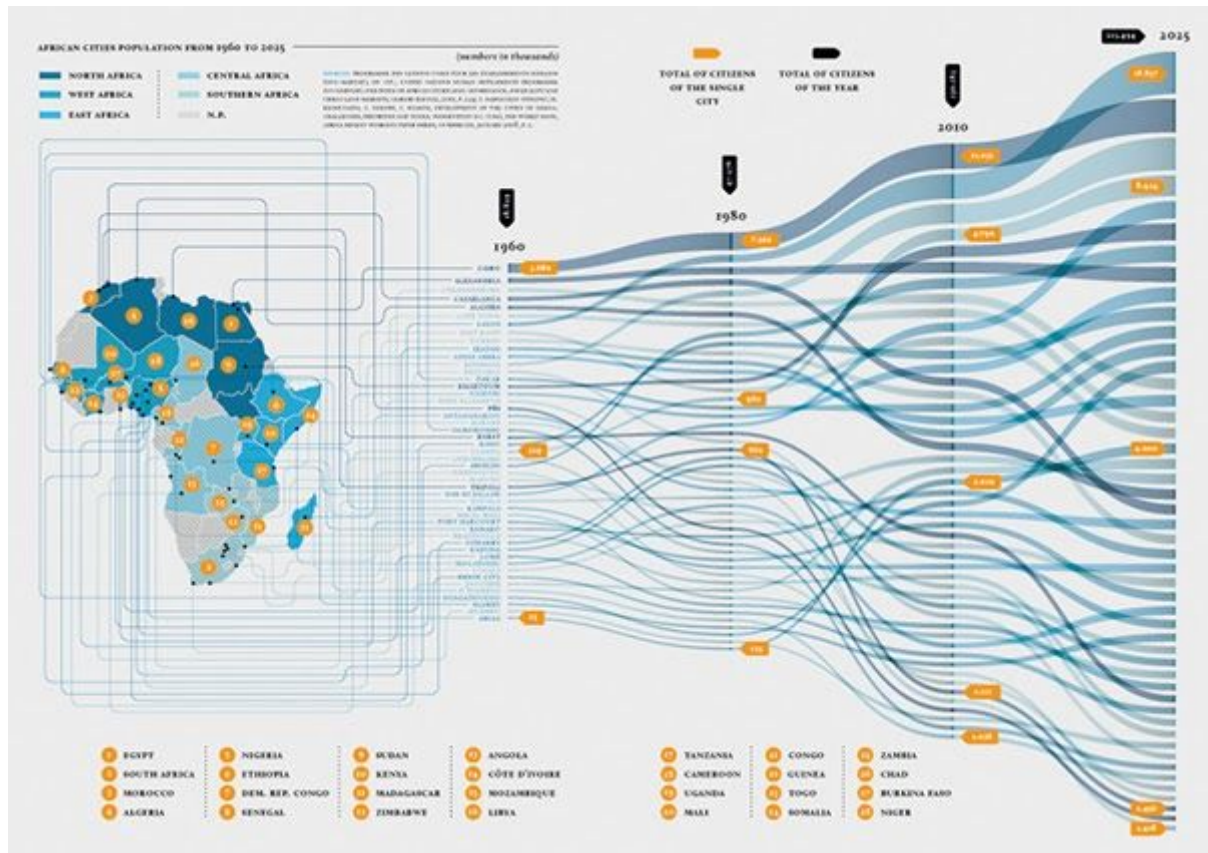


Figure 1: AFRICA - Big Change / Big Chance - Valerio Pellegrini, Stefano Mandato
See the full project [here](#)

The picture above (**figure 1**) is an example of a project that combines two models into one visualization, gathering all the visual elements into a single narrative. The above example was done using Adobe Illustrator.

In the previous Lab, you have explored data and created different models. This Lab will help you mastering the process of a custom visualization creation, merging all the elements into a single work. Lab 4 focused on selecting and (re)designing charts as a foundational elements for composing your final visualization. This Lab will combine all visualizations into a single custom design. Next figure gives the overview of Lab 4 and Lab 5 activities.

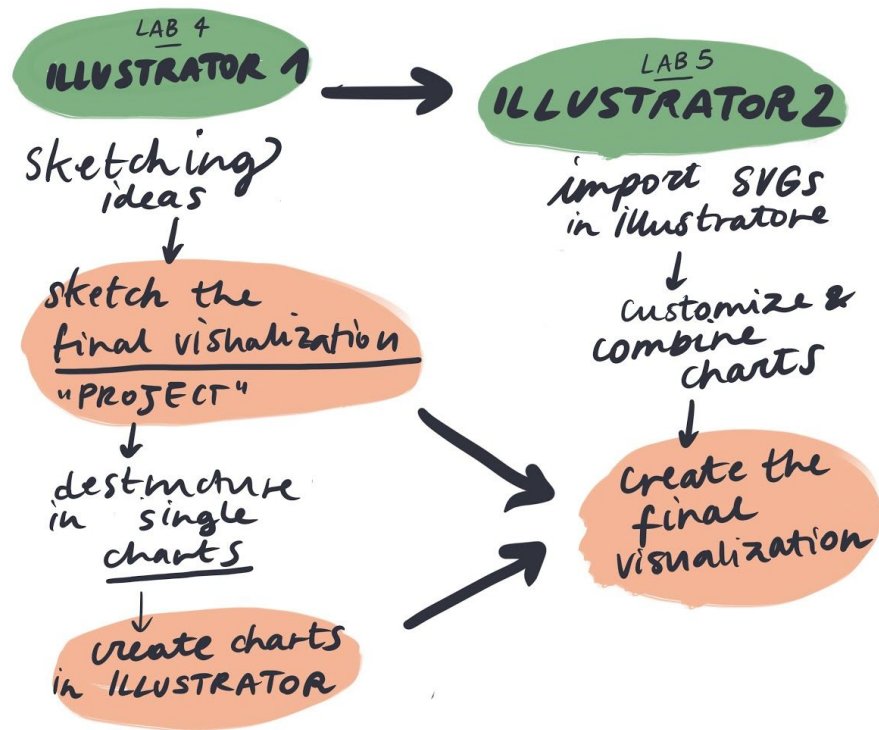


Figure 2: Lab 4 and Lab 5 overview

Introduction

Welcome to E-79 Lab 5!

Index

1. Setting up the AI¹ workspace
 - a. Create a new document
 - b. Workspace and panels
 - c. Layers and Rulers
2. Create a custom module
 - a. Group/Ungroup Elements
3. Design the visualization
4. Create legends: how to read
5. Export a jpg file

¹ AI stands for Adobe Illustrator

Learning Objectives

The expected learning objectives are:

- Create visualizations in Illustrator.
- Customize and combine elements.
- Work with shapes, colors, and paths.
- Work with rulers, guides, and layers.
- Use charts in Illustrator and create custom visualizations.
- Edit and customize SVG drawings.

Expected Outcome

The expected outcome of the Lab 5 is:

A single visualization that combines more than one visual model, reflects your initial “project” idea, and communicates your story about the data.

Note!

As you might noticed, creating visualizations is a challenging process, requiring a lot of practice, data representation, interpretation, and design skills. The purpose of this Lab is not to create a perfect and polished work, but to walk you through the entire process once again.

Lab 4 and Lab 5 process introduces important steps necessary to be perfected before the midterm. Later in the process, and especially during your final project, you will be familiar with principles for composing all known elements into a unique visual system.

Practice with Illustrator as much as you can! It takes a lot of time to master advanced tools, but it takes even more energy to come up with a desirable visual solution. Consider this process as a good way of practice, not only of your technical skills, but also the design of your message. Focus on how to structure the information, what elements to include, and how to compose them into an attractive visualization.

Dataset

Marvel + DC Characters

You can combine or merge both datasets, including Marvel and DC characters, or you can use only one of them.

Dataset: [link](#)

The data is split into two files, for DC and Marvel, respectively: `dc-wikia-data.csv` and `marvel-wikia-data.csv`. Let us go over the data variables one more time:

Variable | Definition -----|-----

- `page_id` | The unique identifier for that characters page within the wikia
- `name` | The name of the character
- `urlslug` | The unique url within the wikia that takes you to the character
- `ID` | The identity status of the character (Secret Identity, Public identity, [on marvel only: No Dual Identity])
- `ALIGN` | If the character is Good, Bad or Neutral
- `EYE` | Eye color of the character
- `HAIR` | Hair color of the character
- `SEX` | Sex of the character (e.g. Male, Female, etc.)
- `GSM` | If the character is a gender or sexual minority (e.g. Homosexual characters, bisexual characters)
- `ALIVE` | If the character is alive or deceased
- `APPEARANCES` | The number of appearances of the character in comic books
- `FIRST APPEARANCE` | The month and year of the character's first appearance in a comic book, if available
- `YEAR` | The year of the character's first appearance in a comic book, if available

Lab 4 recap

In the previous Lab we covered the process of creating custom charts, from sketching ideas to (re)designing visual models. In this lab, we will move forward to the combination of different elements into a single visualization.

At this point of the process you should have done:

1. Exploration of your data
2. Visual brainstorming (explore different types of visual models and their combinations)

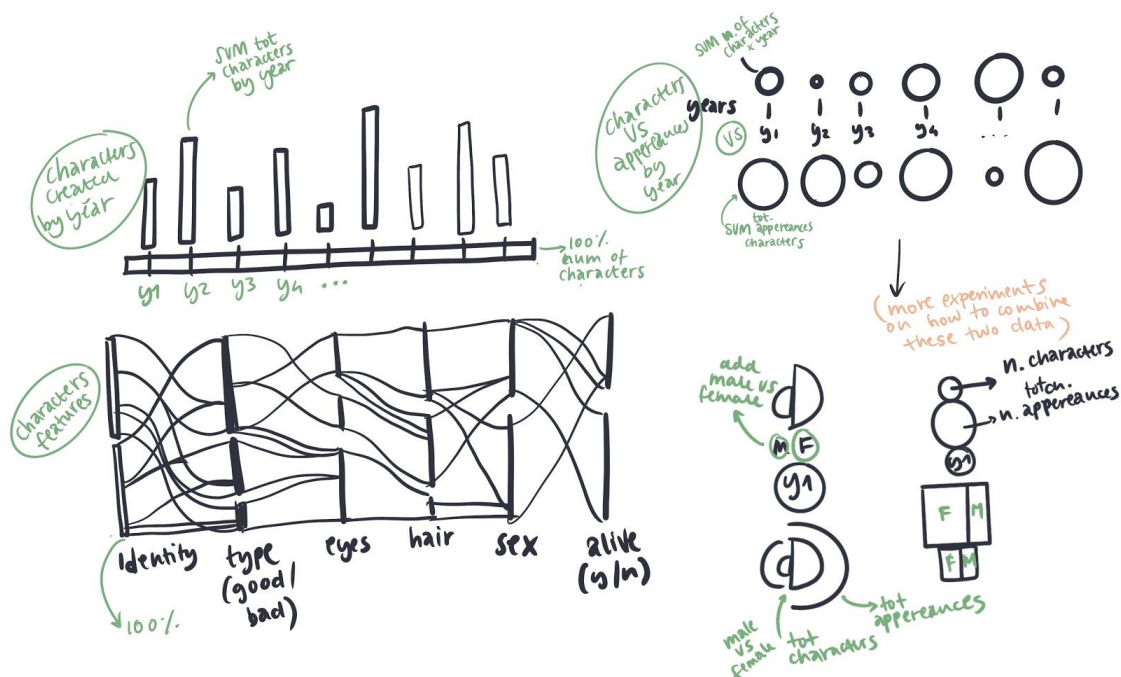


Figure 3: Sketching ideas / Visual Brainstorming

3. Definition of your *Concept*:

- a. Definition of a custom visual model, where you can aggregate different visuals into a single one designed by *You*.
- b. Definition of the approach you want to go with (e.g. small multiples, high density visualization... etc).

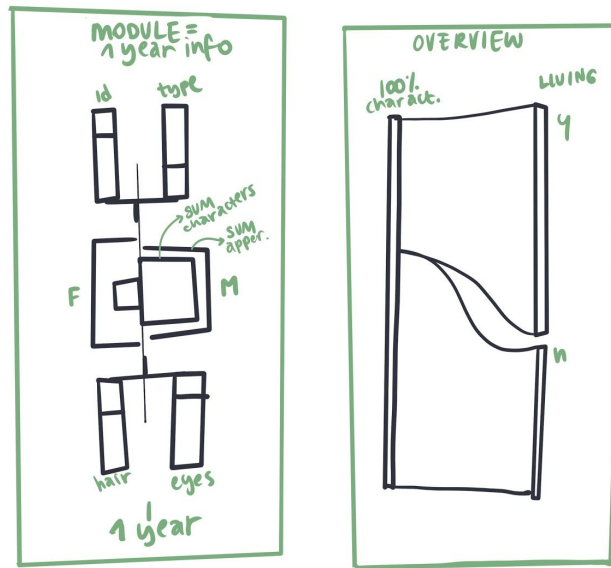


Figure 4: Example of a **custom visual module**

1. stacked barchart to show proportions between dual categories (out of 100%) and a custom proportional area chart to compare female and male characters. The intention is to repeat this module for each year. For this purpose, we will combine different variables into a repeated module, using the concept of small multiples - repeating the same combination of variables indexed by changes in another variable (e.g. time).
2. The second model we want to use is an alluvial diagram representing the total amount of characters split by living status.

4. Creation of a single visual model composing your custom module, using various approaches and techniques

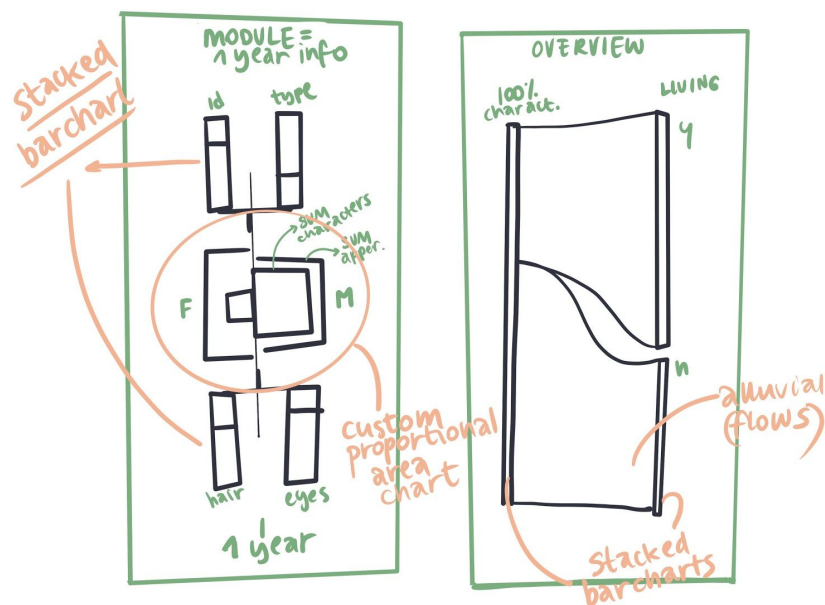


Figure 5 - 1: Analyse and create charts

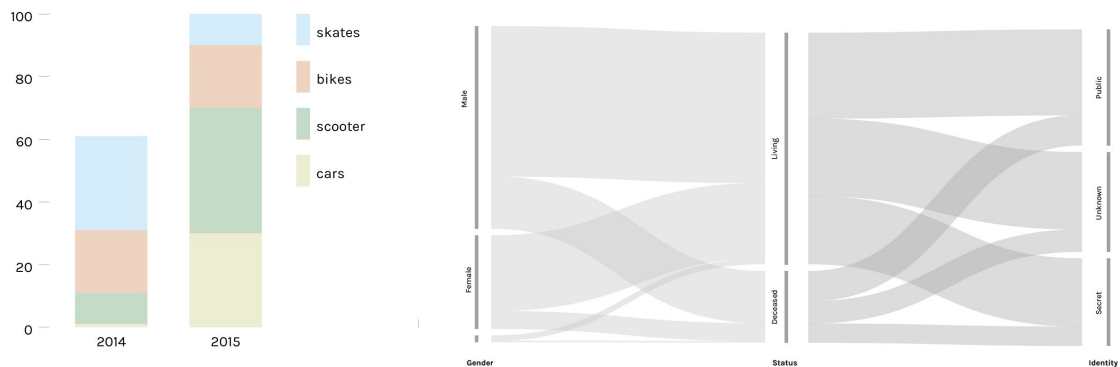


Figure 5 - 2: Analyse and create charts

After following these steps you should be ready to go further with the design of your visualization. Next section will help you combining different elements you have designed into a single module.

Audience | Micro and Macro Readings

For the effective design creation, the most important components to be understood are your audience and the story you want to tell. Since you will be working with a static visualization, we suggest organizing visualization into two different levels:

1. Show a *Big Picture*: an overview of the dataset that can be easily understood with a quick reading.
2. Add some details that allow deeper exploration of your data, with a more attentive reading.

Set up the AI workspace

The final outcome of this tutorial would be a single artboard. Thus, the purpose of this section as well as the Lab 4/5, in fact, is learning how to summarize a visual narrative into a single visualization. In this tutorial we are setting up an artboard for a static visualization, suited for a digital device with constrained dimensions and RGB color scheme.

You can use different artboards during the creation of your visualizations, but remember that the final output should be contained in a single one.

Create a new document

1. Click **CMD + N** or **File > New**

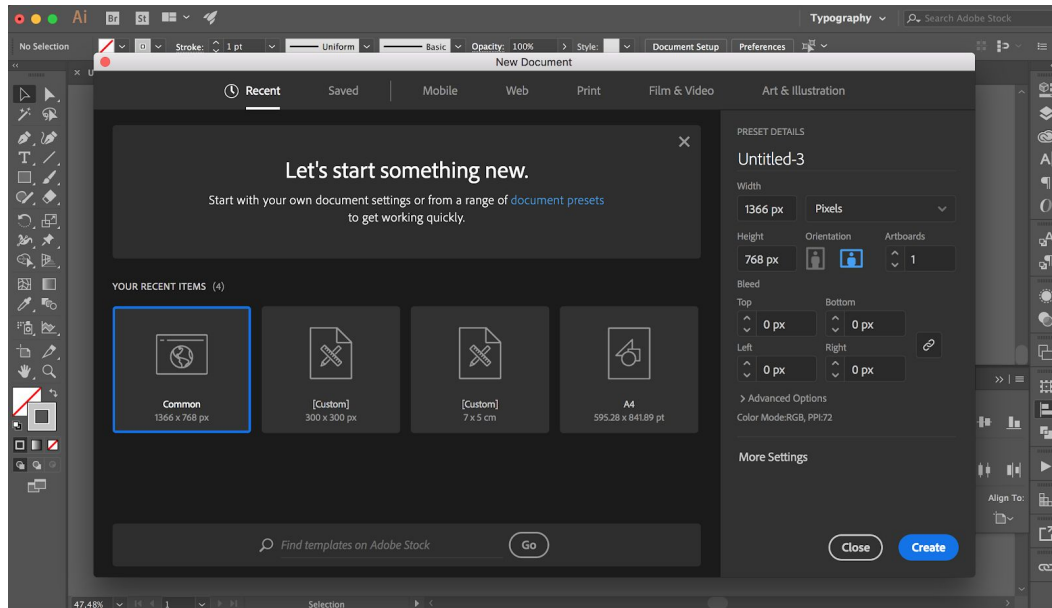


Figure 6: Creation of a new document in Illustrator

2. Set the *preset details* as shown in the figure
 - a. name of your document
 - b. width: 1300px
 - c. height: 700px
 - d. orientation: horizontal
 - e. artboards: 1
 - f. Color mode: RGB Color
 - g. Raster Effects: Medium (150ppi)

Then click the **Create** button

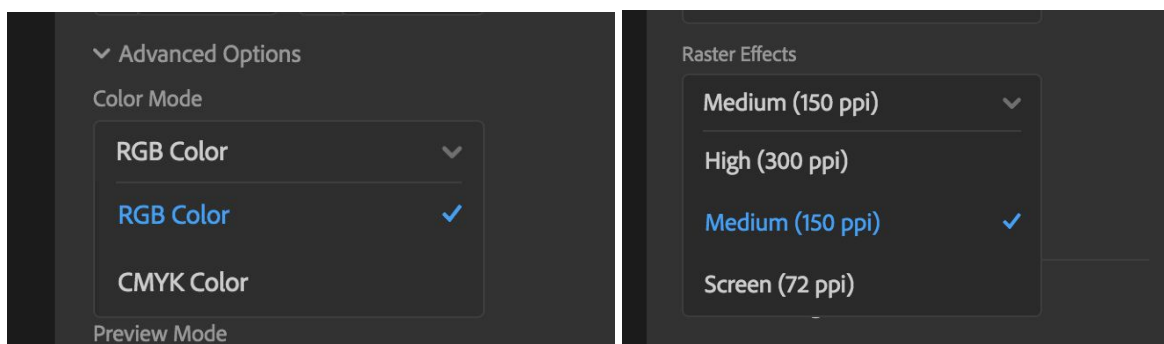
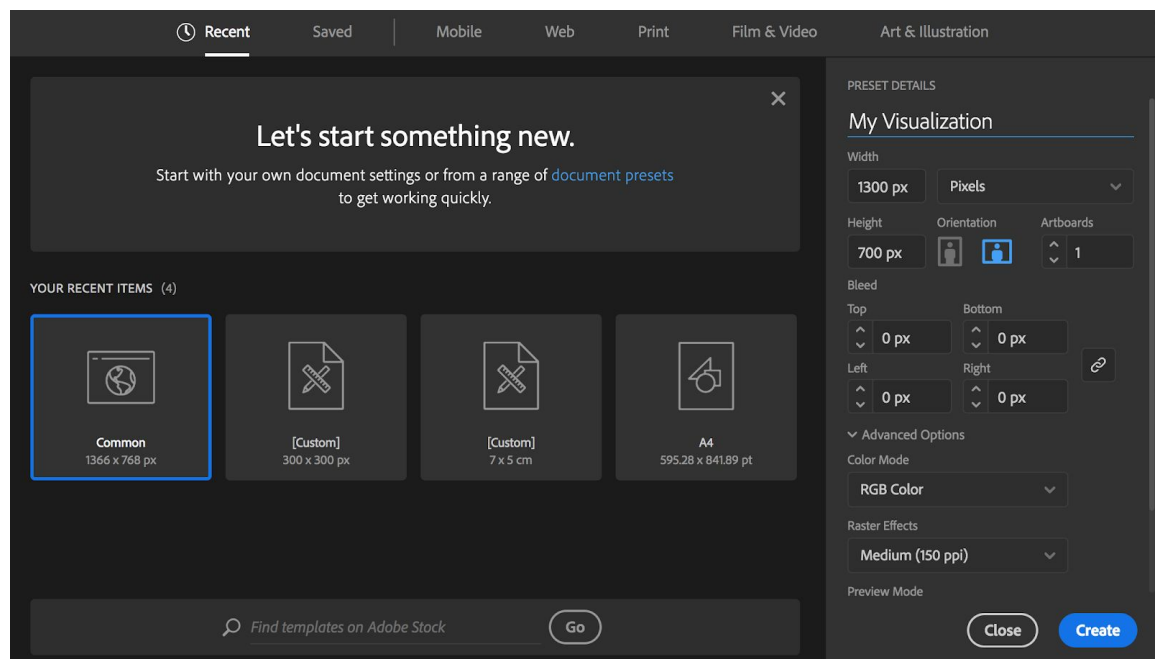


Figure 7: Present Details

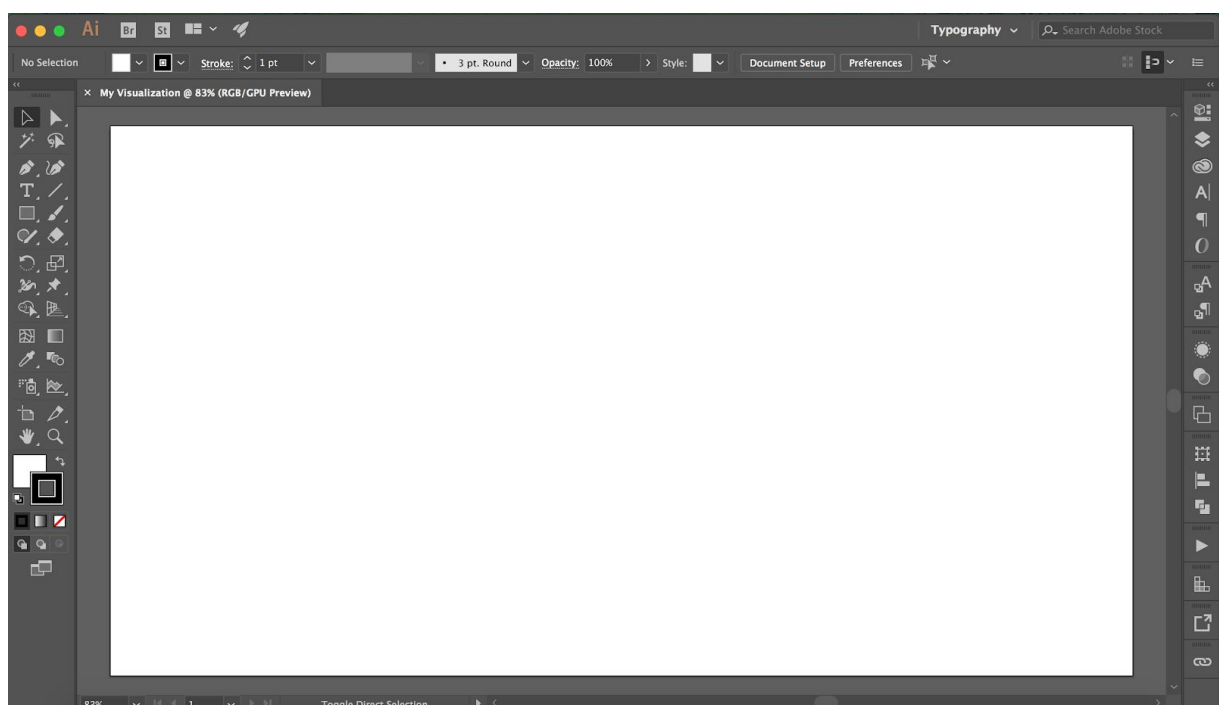


Figure 8: Workspace

Workspace and panels

You can always change the settings of your workspace by clicking on the menu on the top right of the screen (**Workspace Switcher**) and selecting the configuration you prefer. You can also customize your workspace settings by opening new panels in the **Window** and dragging them into the different panels.

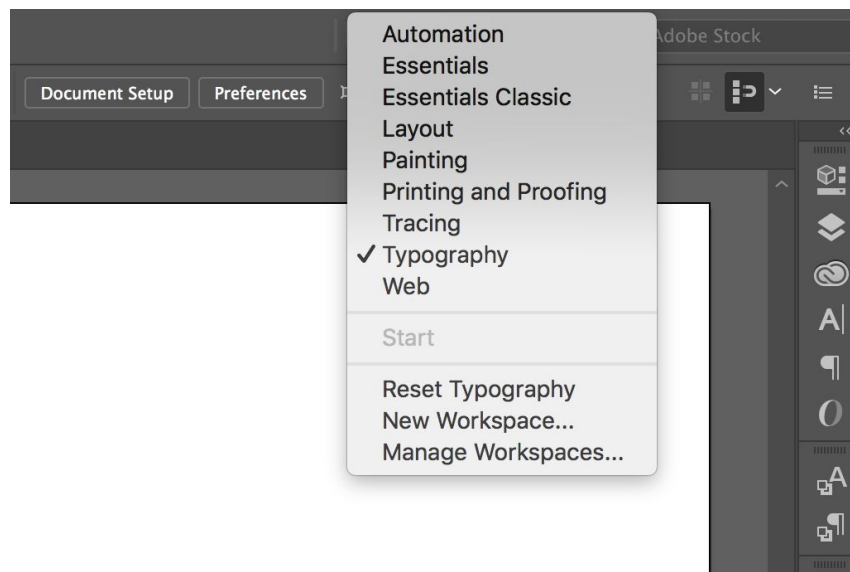


Figure 9: workspace switcher

Layers and Rulers

Something very important to know about Illustrator is how to work with **Layers**. Layers help keeping your design clean and easy to manage. If you don't have your layers panel in your workspace, go to **Window > Layers** and open it. You can also drag it to your right panel.

When creating complex artwork, it's a challenge to keep track of all items in your document window. Small items get hidden under larger items, and selecting artwork becomes difficult. Layers provide a way to manage all the items and elements of your artwork. Think of layer as transparent folder that contains a visual element. If you reshuffle the folders and/or change the stacking order you can produce different artwork. You can move items between folders and even create a subfolders within existing layers.

The structure of layers in your document and its complexity depends completely on you. By default, all items are organized in a single, *parent* layer. You can create new layers and move items into them, or move elements from one layer to another at any time. The Layers panel provides an easy way to select, hide, lock, and change the appearance of attributes. You can even create template layers, used to trace artwork and exchange layers with Photoshop.

Video tutorial: [Organize artwork with layers](#).

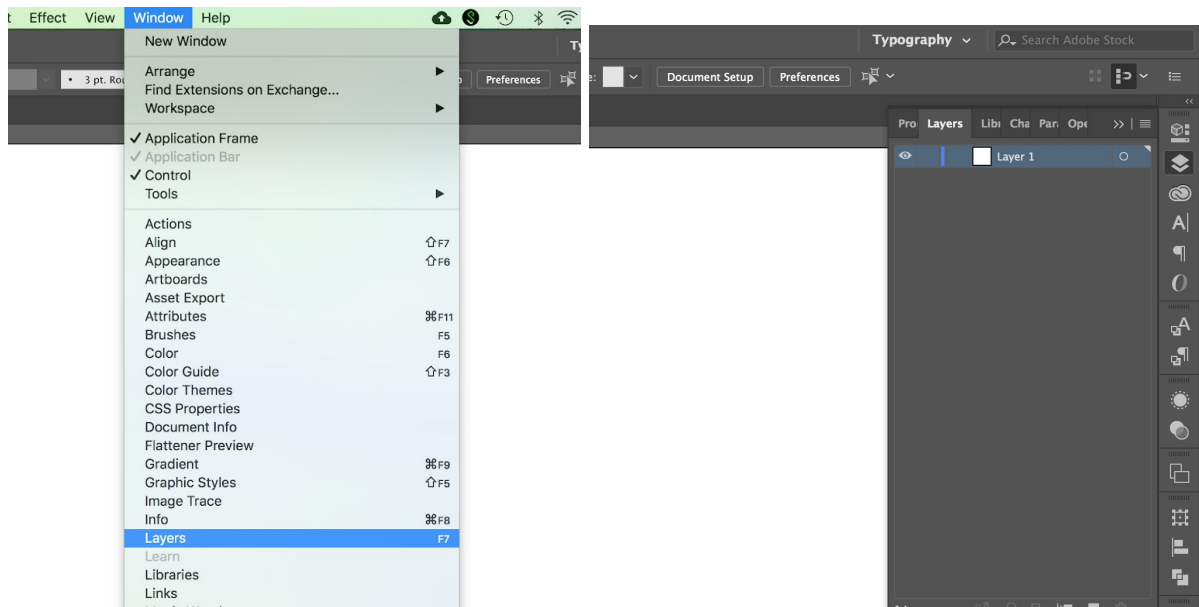


Figure 10: Layers

By default, new document contains one layer, and each object you create is listed under that layer. However, you can create new layers and rearrange items to best suit your own design needs **(figure 11.1)**.

Illustrator assigns a unique color, up to nine colors **(figure 11.2.B)**, to each layer in the Layers panel. The same color is displayed in the illustration window, the bounding box, path, anchor point, and center point of a selected object. You can use this color to quickly locate an object's corresponding layer in the Layers panel, and you can change the layer color at any time.

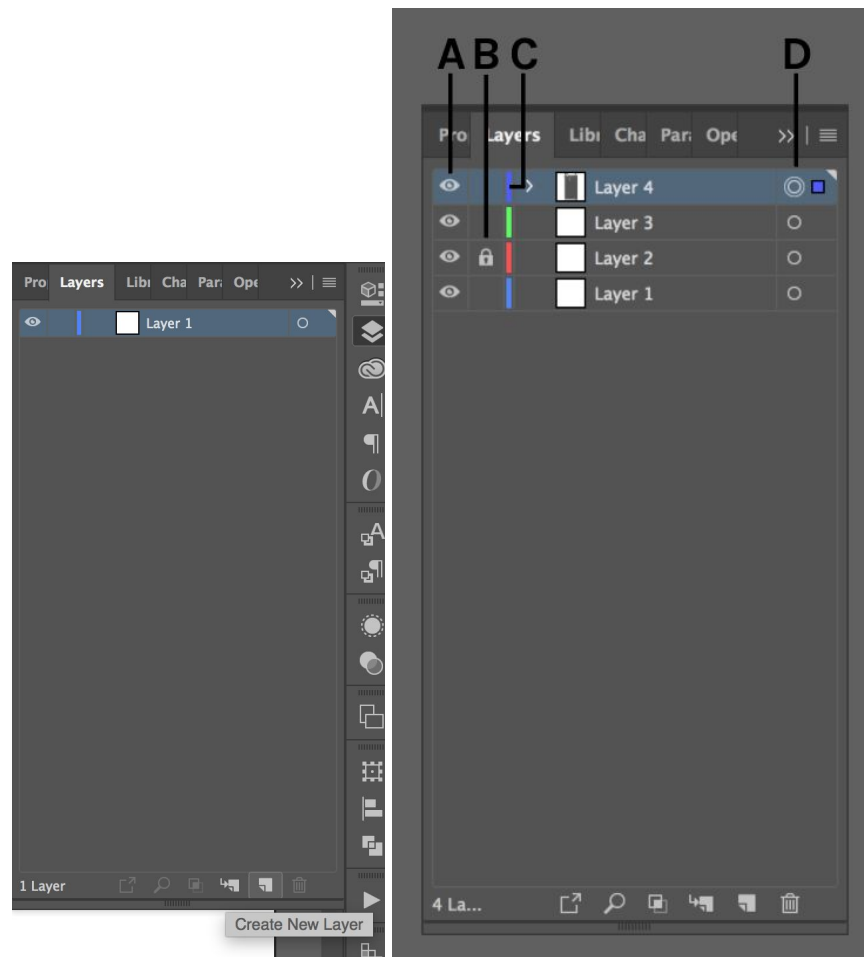


Figure 11: Layers panel

1. create new layer
2. layer panel: **A.** Visibility **B.** Lock **C.** Edit column **D.** Target column

Rulers help you accurately place and measure objects in the illustration window or in the artboard. The point where 0 appears on the ruler is called the *ruler origin*. Illustrator provides separate rulers for documents and artboards. You can select only one of these rulers at a time. *Global rulers* appear at the top and the left sides of the illustration window. The default ruler origin is located at the top-left corner of the window.

Artboard rulers appear at the top and the left sides of the active artboard. The default artboard ruler origin is located at the top-left corner of the artboard. The difference between artboard rulers and global rulers is in the origin point - if you select the artboard ruler, the point changes based on the active artboard. In addition, you can have different origin points for artboard rulers. The default origin point for the global ruler is at the upper-left corner of the first artboard and the default origin for the artboard rulers is at the top left corner of the respective artboard.

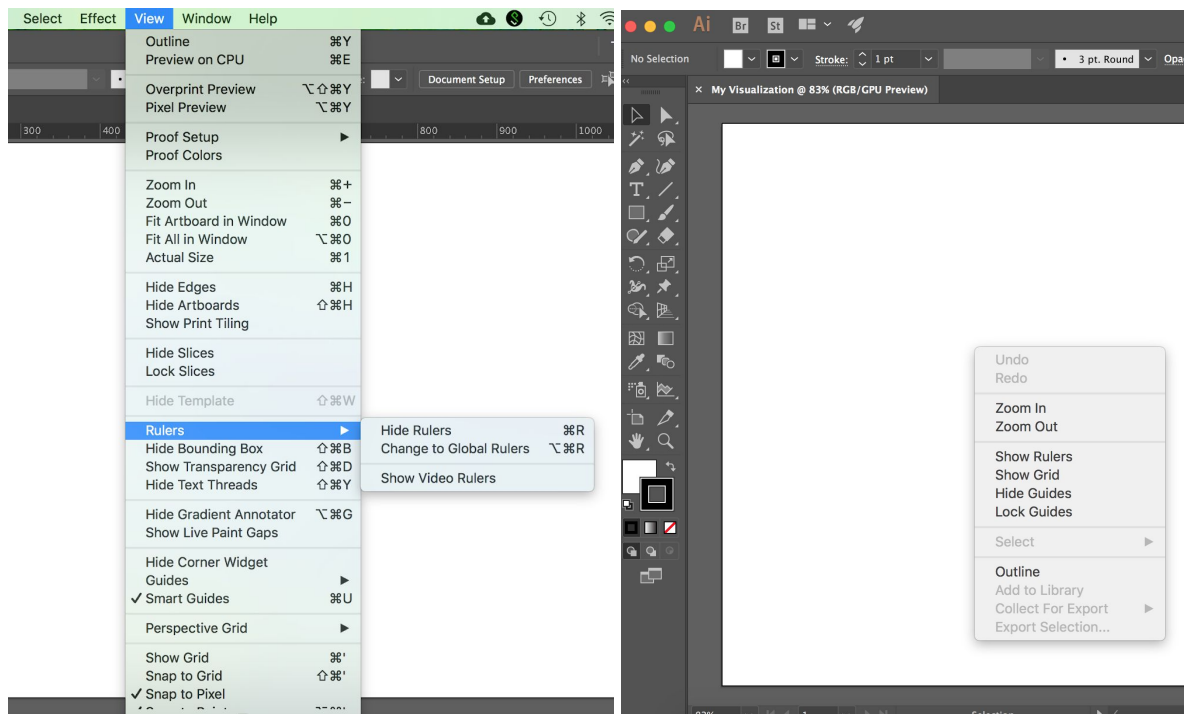


Figure 12: How to show Rulers

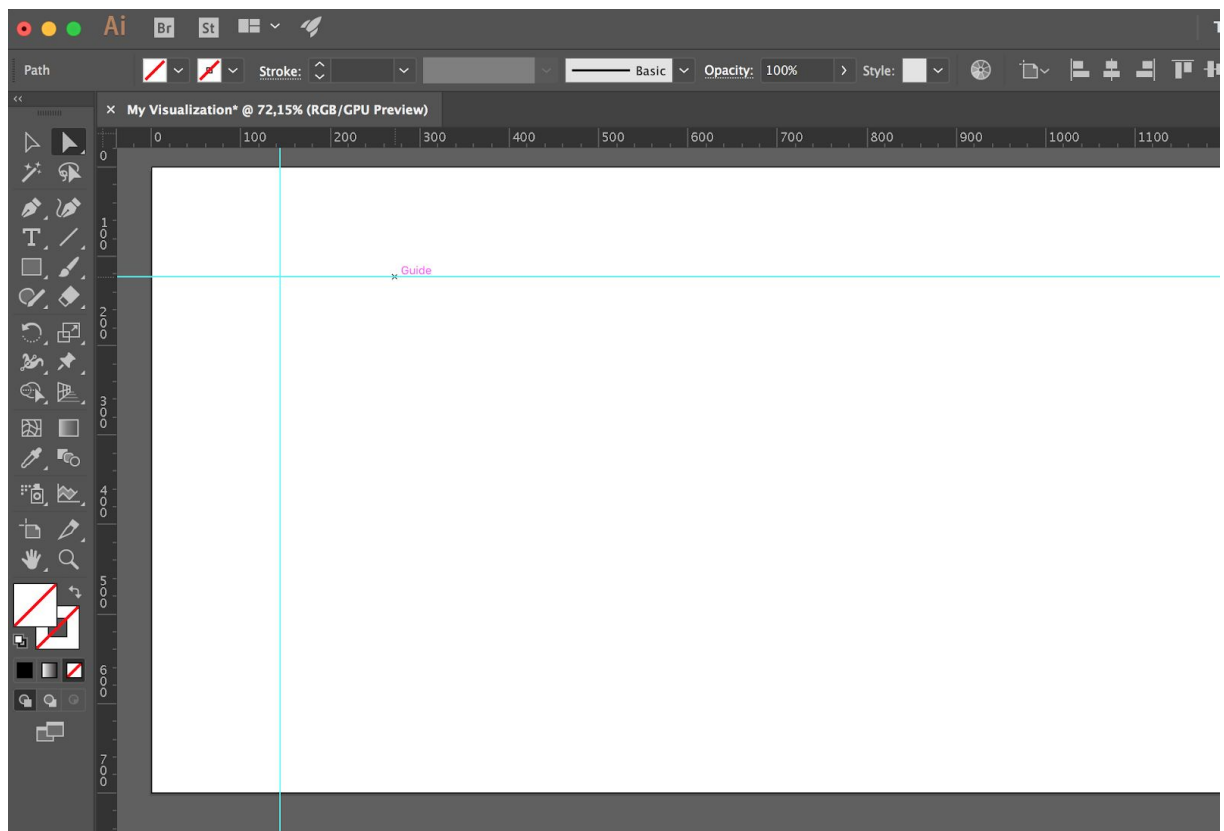


Figure 13: Rulers and guides

Group / ungroup elements

Grouping elements in Illustrator is a very useful practice that helps moving groups of complex objects together. To use groups:

1. Select the objects to be grouped or the group to be ungrouped with one of the selection tools.
2. Choose either Object > Group / Object > Ungroup or use the shortcut CMD + G / CMD + shift + G

Create a custom module

Creating a custom module is very challenging and probably the most complex of all processes in information visualization and graphics design. It requires a lot of practice, deeper level of visual thinking, design software skills, and respecting visualization principles in the creation and combination of the data. The quality of the work depends on creativity given previously mentioned constraints.

In this tutorial we are going to examine different types of custom modules, from a very simple to a very complex designs. It is important to understand what level of customization you can reach when using tools like Illustrator, making yourself a space to go off the grid for the standard visual models.

For this week's task, you don't have to necessarily design complex custom modules, but it is a good exercise to bring your visual thinking to the next level as well as differentiate your work and your narration from the basic visualizations you can create with analytical tools.

Example A

You have seen this project as a teaser image in the previous lab. This visualization is very complex, despite the dataset being quite simple.

What we would like to underline in this project is the custom *visual module* created for better data exploration. The module represents a custom *visual system*, a kind of a dictionary composed by symbols to represent the data. This approach is very methodical, requiring quite a lot of time and redesign iterations, but allowing a designer to display a significant amount of information in a static artwork.

Please, take a closer look at the following visualization. Try to examine every symbol in more detail and to understand designers intentions.

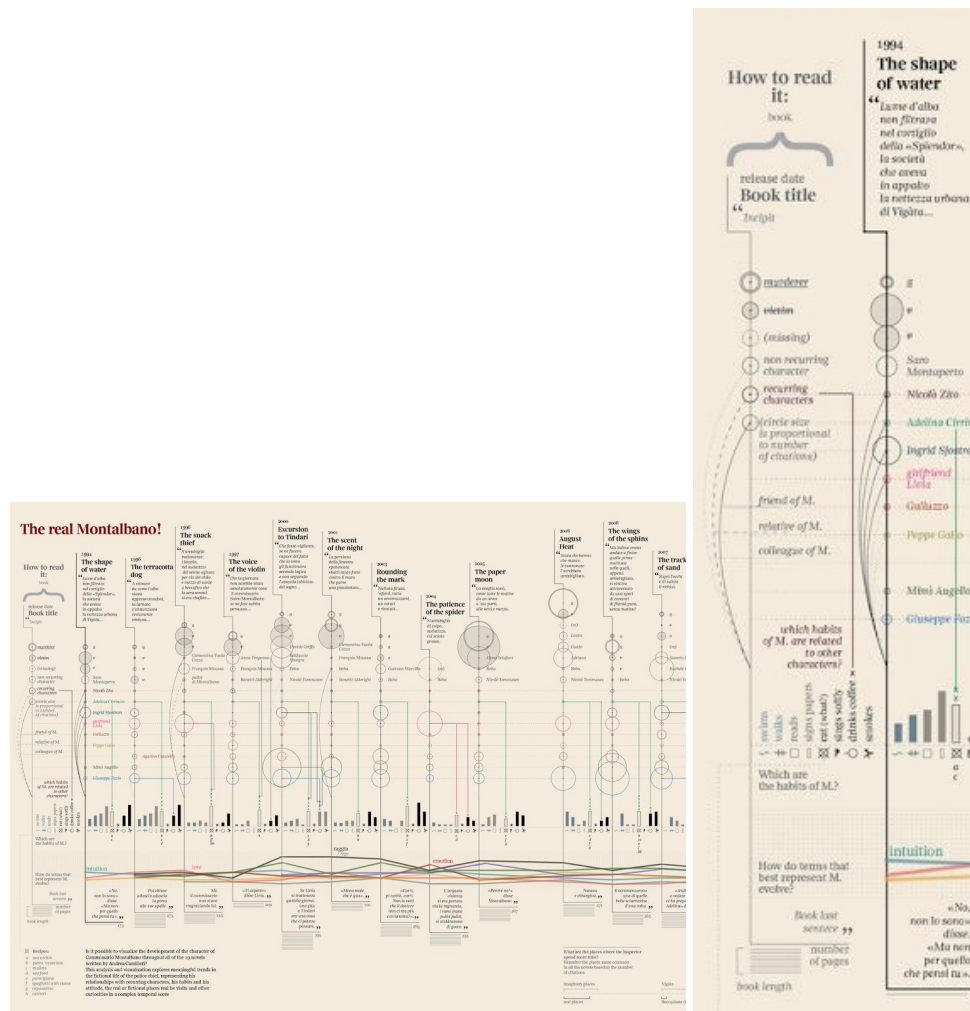


Figure 14: The real Montalbano - Accurat x Corriere della Sera

Example B

The second example we are going to analyze shows a different approach to the creation of a custom module. In this case we can observe how two more common visual elements have been combined into a single module, representing the data about the countries. In this case the author decided to communicate the idea with using the small multiples. The reader is navigated towards the legend first, where the data is explained, and then go through the rest of the visualization for further exploration.

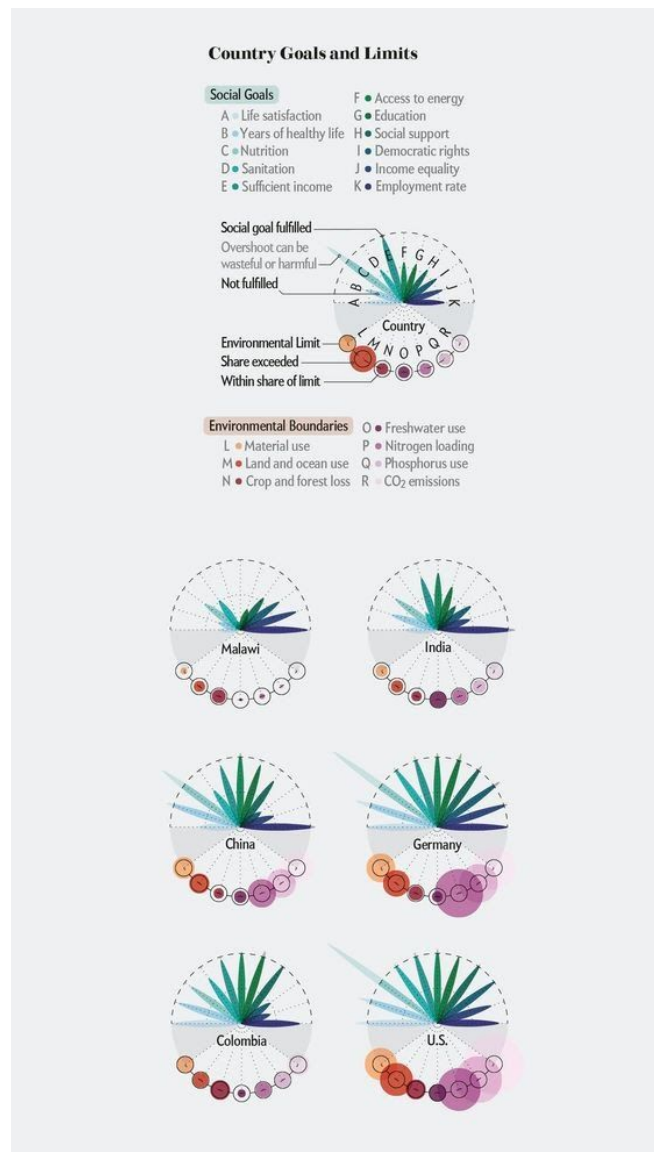


Figure 15: *A Good Life for All* - by Federica Fragapane for Scientific American

Note!

Creating a custom modules is not a mandatory step in order to create an effective visualization. A visual module can be designed at different levels of complexity, depends on the data, users, and purpose of the visualization. The selection above should help you understand different possibilities of customization of a project, but it shouldn't become a limit to your designing process.

Assemble the visualization

Going through different data visualization projects you might have noticed that there are many different ways of representing a data and telling a story. In the next section, we are going to analyze two different approaches of creating a custom data visualization:

1. The approach A combines existing visual models and visually guide the reader through the narration of the story.
2. The approach B uses custom visual modules and present the entire data to the reader, providing a key interpretation of the visualization.

Approach A

The figure 16 shows an example of a visualization created by assembling existing visual models. In this project the author combined an alluvial diagram with bubble charts, barcharts, and typography.

See the full article [here](#).

This project is a good example of how to communicate the data into a single narrative. In this case, the story can be read following the length of the poster, from the top to the bottom. The big title on the top helps, the reader to understand the topic immediately, while the subtitle helps understand the time range we are observing.

In this project it is also important to observe how typography has been included in displaying the data, and focus the attention to specific points of the storytelling. The legend is “included” in the visualization, and the reader can easily understand the visual models used, being combined in a very intuitive and cascade narrative.

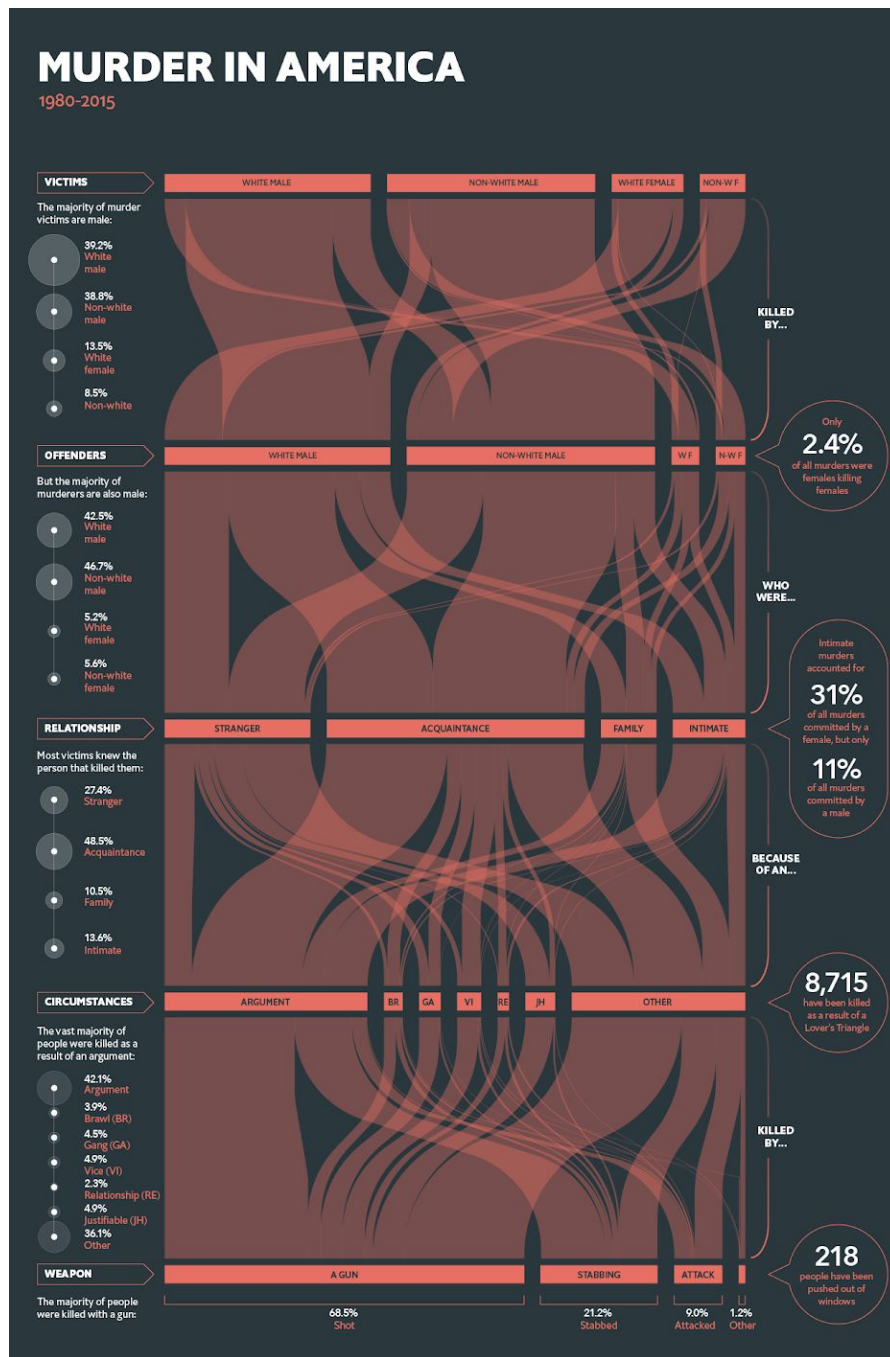


Figure 16: *Murder in America - Signal Noise x The Economist*

Approach B

In this project we can observe a different approaches to visualization. First of all, the author uses a custom visual module, creating a system to translate data into graphical elements. The module designed associates to the main topic - the satellites. There is a lot of data presented in this work, but pay attention to a given complexity and the role of the legend explaining the visual elements used.

Moreover, we can observe how the entire visualization “explodes”. Reader would immediately look at the center circle of the poster and start exploration from there. In fact, the author used the central point of the poster to provide the main information: title and description! From the center, where the main exploration starts, it continues to the sides of the visualization into more detailed and complex information (a sort of a “martini glass” type of the narrative).

This project shows the application of the *micro and macro readings*, layering the information from the center to the sides.

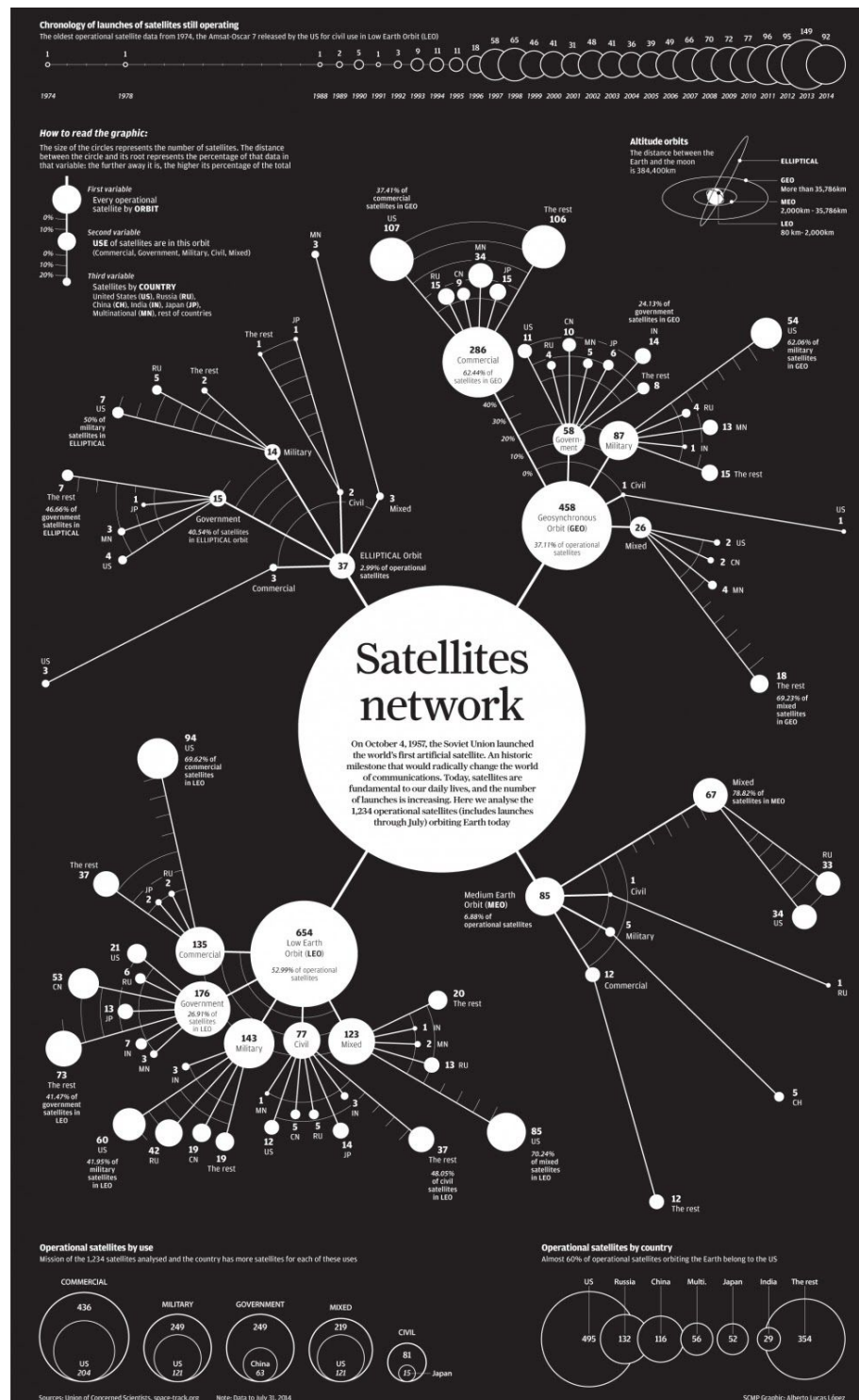


Figure 17: Satellites Network - Alberto Lucas Lopez

Your turn

Merge the charts you have created in the previous lab and assemble your final visualization. Combine or compose your charts into a single artwork. Add a title, and a subtitle if needed, typography, and a *legend* (look for an effective legends in the next section of this tutorial). You don't have to create a complex graphical representation - the main purpose is to communicate the data in a clear message.

You can use different artboards to work on the designs, but before exporting, select and move everything into the final artboard as described at the beginning.

Tips

Define the direction of reading of the visualization, following the information layering from macro to micro reading. Focus on visual consistency among all the elements on the page. Don't focus on the complexity, focus on the effectiveness of your work.

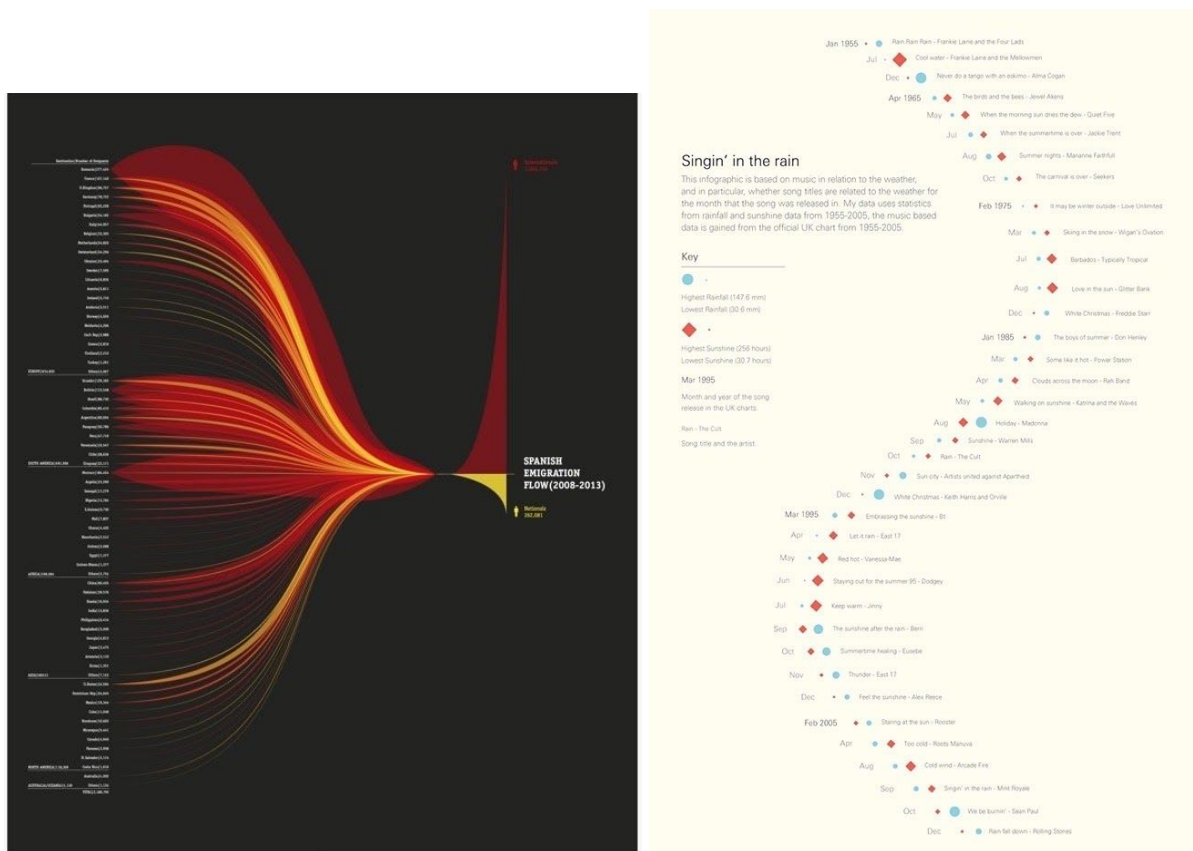


Figure 18: “simple and effective” visualizations

A. Spanish Emigrants Flow

B. *Singin' in the rain*

Design the legend: how to read

The legend is the key element of good data visualization, especially if you are communicating complex visual models to a non expert audience.

It serves two main purposes:

1. To explain the visual element you designed
2. Provide a better interpretation of the data

How to read is very important for the user to understand the approach and to be easily walked through the data interpretation. The legend helps you as a designer to check if the visualization you have created is easy to follow, using a simple graphical schema and effective typography.

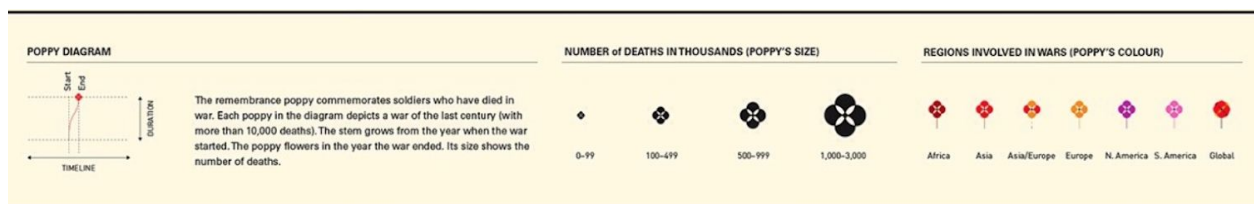
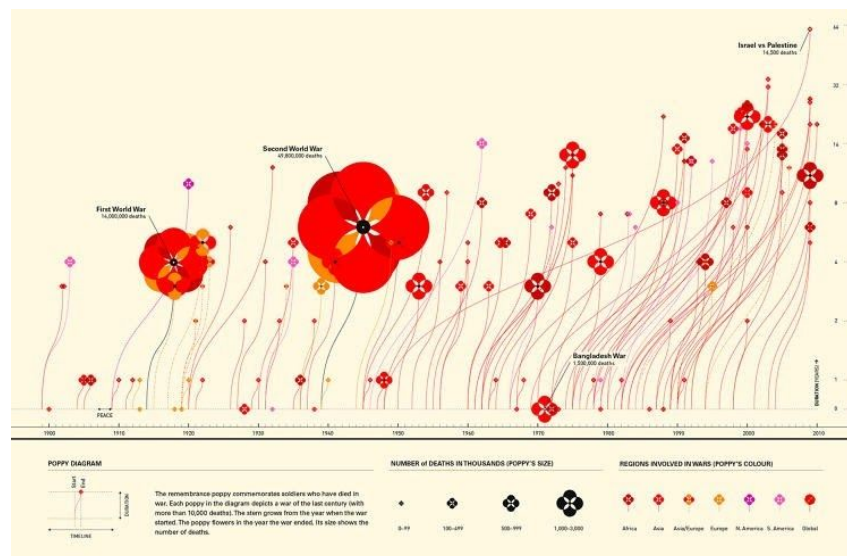


Figure 19: Poppy Field | Valentina D'Elfilippo

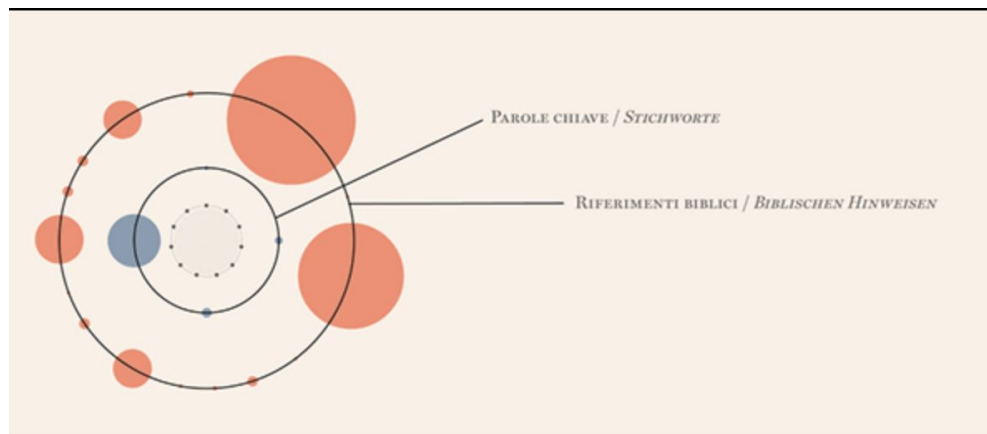
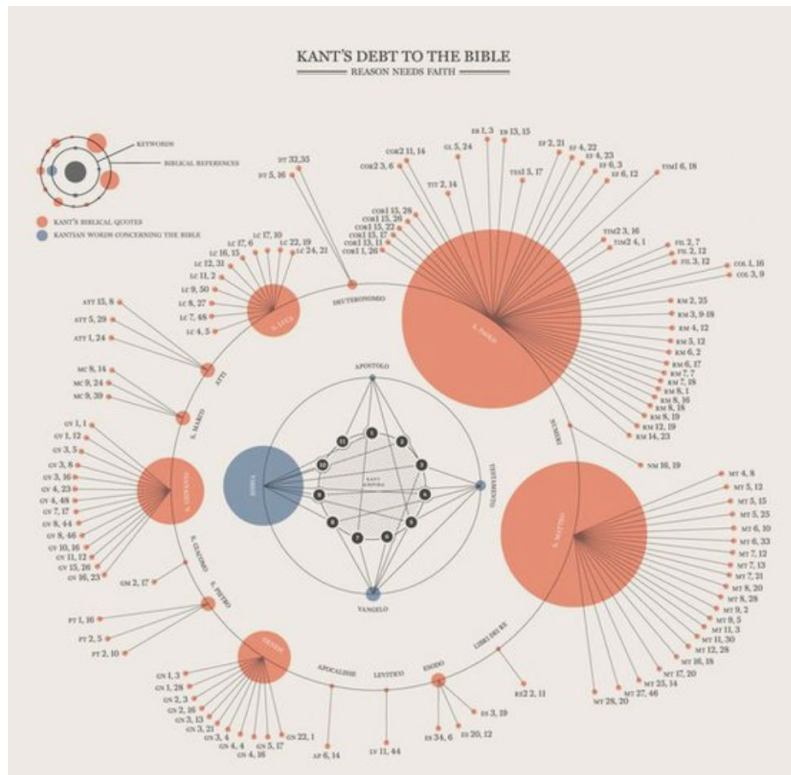


Figure 20: Kant's Debt to the Bible | Valerio Pellegrini

The examples shown above represents very complex visualizations of custom designed modules. Despite the complexity of the models used, you can see the importance of the legend in order to summarize the entire design process and data into simple graphical elements and quick explanations.

Export a jpg file

Once your visualization is ready you can export the artboard as a JPG.

To export the artboard as jpg follow these steps:

1. Select File > Export as.

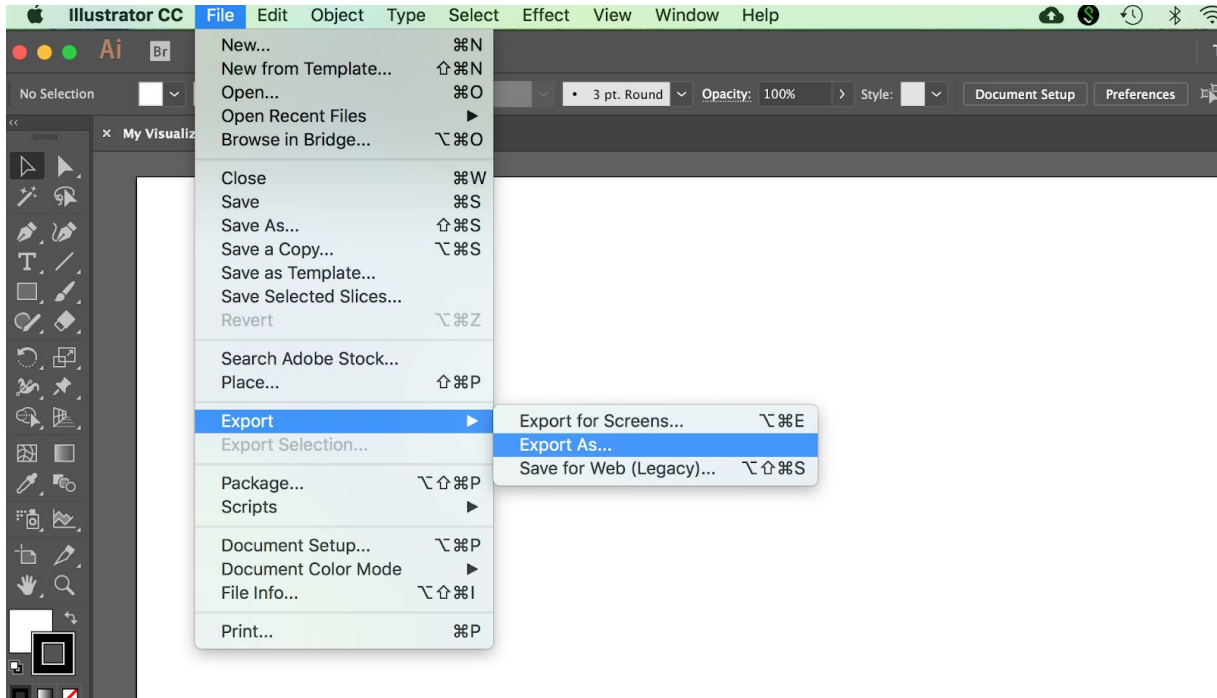


Figure 21: Export an artboard

2. Choose a location for the file, and enter a filename. Select the format JPG and click to Export

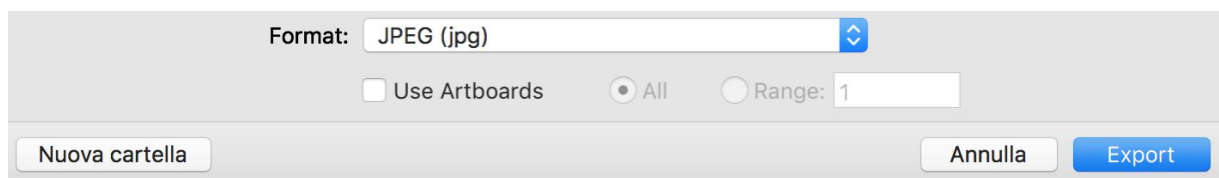


Figure 22: Select file type

3. Set the JPEG options as shown in the figure above:
 - a. Color Mode: RGB
 - b. Quality: medium or high (make sure your jpg size is is note above 1mb)
 - c. Resolution: Medium 150ppi

Click ok!

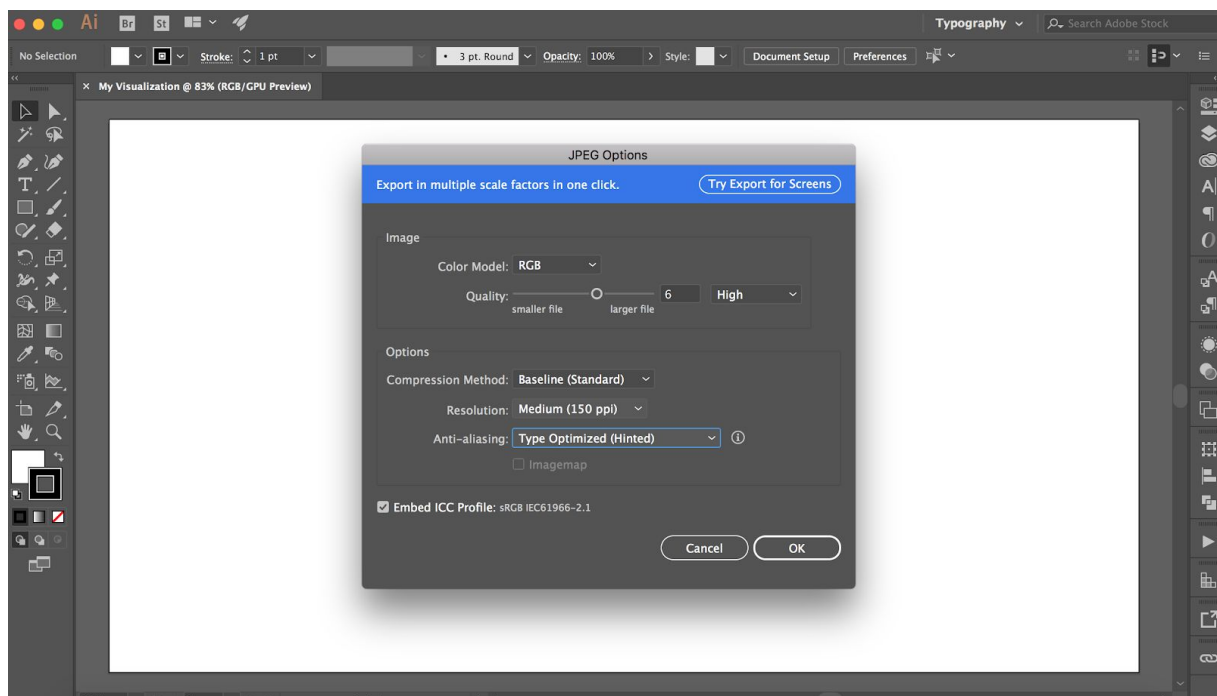


Figure 23: JPEG Options

Credits and additional resources

Guides

01. How to use layers in Illustrator

Url: [Here](#)

02. Rulers, grids, and guides

Url: [Here](#)

Projects

An anatomy of murder

Url: [here](#)

In the long run

Url: [here](#)

Cover-mania by DensityDesign

Url: [here](#)