

Getting Started with Adobe Illustrator

[Form link](#) for submission of answers

Learning Objectives

1. Locate appropriate GIS materials and acquire them for inclusion in a map.
2. Convert csv data to a feature for display in ArcPro.
3. Compile a map in ArcPro and properly export a PDF version so that it can be opened successfully in Adobe Illustrator.
4. Open and apply a predefined style in ArcPro.
5. Style a map using Adobe Illustrator.
6. Add finishing touches using Adobe Photoshop.

Introduction

When you were younger you probably heard the story of the Salem Witch trials of 1692. A series of trials and executions of women and men believed to be witches. The Salem Witch Trials, however, were not the only witch trials to take place. According to [R. Vabanaugh \(2016\)](#) the first witch trial took place in Hartford, Connecticut in 1647. There is a great deal of research about the Salem Witch trials, even geographic research. In Salem alone, 172 people were accused of witchcraft, tried under the assumption guilty until proven innocent, and led to a number of false admissions and in some cases deaths.

This lab will utilize a dataset that I collected from a PhD student in 2016 that they were compiling for their dissertation research. There are other similar datasets available on [Kaggle](#) if you wanted to extend this project.

Finding Data

Oftentimes you will not have the data you need at your fingertips. Instead you will need to do some sleuthing in order to locate the data you need.

1. For the first step in this lab, I would like you to find a shapefile that contains the original 13 colonies. You will use this as part of your basemap. I found the shapefile using Google. Copy the link you used to obtain your colonies shapefile in the form.

2. To use the data you will want to select *Open in ArcGIS Desktop* and then select *ArcGIS Pro* from the dropdown. This will download a file for you called *item.pitemx* which you can then open in ArcPro.
3. To use this file in your own map, right-click on it in the Table of Contents and select *Sharing and Save as Layer File*. You can then reopen this file as a LYRX file in your witches map. You will have full design flexibility even though it is not a shapefile.

Adding Data

4. Now, add the shapefile that you just found along with the *witches.csv* file. You should find the CSV file listed under *Tables* in the Table of Contents. How many records does this file have?
5. To add the spatial information from the *witches.csv* file open the *XY to Point* tool from the Geoprocessing toolbar. Make sure to use the *GCS_WGS_1984* for the initial import since you are working with latitude and longitude coordinates.
6. Project both of your shapefiles to an *equal area projection* that is appropriate for the United States. Which projection did you use?
7. Go to the *Map Properties* and select *Coordinate Systems* to make sure the projection of the map matches the projection you used for your data. If it is not the same you should change it under *XY Systems Available*.
8. Finally, change the ESRI basemap to *World Dark Gray Reference*.

From Map to Layout

By this point you have pulled together all of the geographic data that you need and made sure your thematic data is in an equal area projection. Now, it is time to create a nice layout to export. This is where you will add all of your map accessories as well.

9. Under *Insert* select *New Layout* and then navigate to this new layout.
10. To add the map to your Layout you need to go up to *Map Frame* and select your map. You can reposition the map on the page by dragging the handles on the map.
11. Expand your map so that it fits the entirety of the Layout. No white edges. Make sure that all of the colonies are visible and prominent. You may need to select *Activate* under *Layout* and use the hand tool to reposition the map within the layout.

12. Next, let's add a legend to the map and a north arrow. You will find both of these items under the *Insert* tab. You can pick whichever north arrow you like.

- a. Legends. Select the *Legend* button and drag a square to add the legend. Our legend doesn't have a lot of information in it, just a point symbol for the witch trials and a polygon for the colonies.
 - i. Note: The default of the legend text color is black. Make sure to change that now so you can read the legend properly! (Hint: Under *Text Symbol > Appearance*)
 - ii. In order to see the changes, you need to remember to click *Apply*. I cannot tell you how many times I have forgotten this step.

13. Moving back to the main Legend panel, select the *Legend Items Show Properties...* button to change the legend items individually. You can turn on and off the various layer names. You can also change layer names by double-clicking on them in the Table of Contents in the Map view.

- a. Select the appropriate arrangement and items so that your legend matches the one below. Screen capture your legend and submit it in the form.



Getting Down to Style

Now that you have all the basic pieces for your map it is time to get to styling it. While I will provide instructions for you to create the map I have previously created, I do expect you will add a bit of your own creativity to color, font, and texture choices.

One of the nicest resources available from ESRI is their curated styles. John Nelson, who we have mentioned a number of times in class, has a wide variety of styles that he has created for public use. You can check out his YouTube channel, or just search his name for a seemingly endless list of tutorials.

14. We will use the firefly symbology for this lab. You should download the style file from [here](#). Once you have downloaded the file, make sure it is in your proper folder.

15. Open *Catalog View*. Open the Styles folder listed under the Project in the

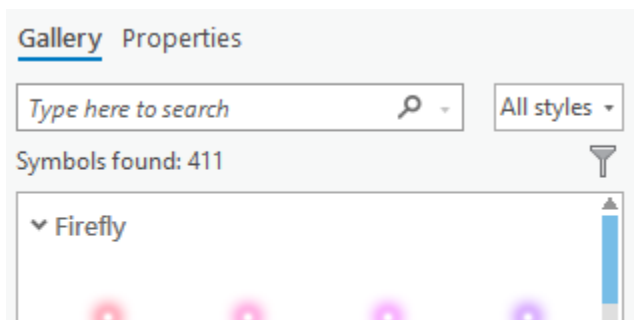


Table of Contents window. You will find a list of standard styles including ColorBrewer Schemes. To add a style click on the *Add* button, navigate to the Firefly style and add it. Now, when you change the style of your points or polygons this new style will be added to the old trusty style gallery.

16. The firefly symbology is also reminiscent of actual fire. A familiar theme that has been explored in relation to the witch trials along with water. We will use the combination of the firefly theme and the year of the trial to create a proportional symbol map.
 - a. Select the witch trial shapefile and change the symbology so that it is a Proportional Symbol Map based on the Date. Technically, we should be using a count for this, but there really isn't a good count-based attribute for this file. For illustrative purposes this will do.
 - b. Next, we can use this same symbology on the polygons. Go ahead and change the map symbology for the colonies using the firefly symbology.
17. You hopefully noticed that the map legend is problematic. It does not show the variation in point symbology that corresponds to the individual dates. We will fix this using Illustrator.

Exiting ArcPro

Exporting from ESRI ArcMap and ArcPro has gotten substantially better throughout the years, however, it still comes with complications. Do not be surprised by the unwieldiness of this process!

ArcPro Side

18. Make sure your Layout is open on your screen and then go to *Share*. Select *Export Layout*. There are a number of options to choose from. You can output either a vector file or raster file. For our purposes we will be using a vector file. Use the following settings and then export your file.
 - a. File Type: PDF
 - b. Clip to Graphic Extent- Checked
 - c. Vector Resolution: 300 DPI
 - d. Embed Fonts

A couple of cautions:

1. This may take awhile!
2. Make sure you do not have any base layers on the top of your layers at export. If you have your world reference (labels) on top, you will get an image output even when you export as a PDF.

Don't close ArcPro just yet.

Adobe Illustrator Side

19. Open Adobe Illustrator.
20. Under File, Open... and navigate to the file you just exported.

You will likely notice that Illustrator hasn't really brought everything in as nice layers like we had in ArcPro. Instead individual vector objects are separated out and the basemap is treated as a separate set of raster tiles. Save a screenshot of your map open in Illustrator at this point. Submit it on the form.

Working with your PDF in Illustrator

Next, you should complete the following changes to your map. These are all things we did in the tutorial last week, so I won't give you step by step directions. If you have a difficulty, use Google search to find a solution. Illustrator is wildly popular and there are numerous tutorials and help available.

21. Which state has the highest number of trials? Use Excel to find out. Submit your answer on the form.
22. Use the direct selection tool (white arrow) to change the color of the state with the highest number of witch trials.
23. Create a legend item that corresponds to "State with Most Trials" that highlights the polygon representing that colony.
24. Recreate the date legend item. To do this, create individual icons for earliest date, middle date, and final date. You can use the ArcPro attribute table to locate that information. Screen capture your legend timeline and submit it via the form.
 - a. To create the symbols for the legend you can use the direct select tool to select individual points in the Illustrator. You can also scale the symbols using the handles. Make sure though that the symbol size correctly matches (to the best of your ability) with the symbology on the map.
25. Add a title to your map and a brief explainer about the data you are displaying. There are a lot of resources about witch trials, so use Google. A couple of brief sentences should suffice.
26. Try using the magic wand tool and the eyedropper tool to edit the polygon symbology. It doesn't have to be drastic, but should be readily noticeable to your TA.
 - a. Hint: Using the Stroke Color instead of Fill color here will help you a lot!

27. We will export this map so we can do some final touchups in Adobe Photoshop.

Illustrator to Photoshop

We won't do much with Photoshop in this course, but if you are interested in raster cartography be sure to tune in next semester where we will cover this topic in more depth.

28. From the File menu select Export and Export As. Export the final map as a jpeg file. If you were doing something more professional, I suggest TIFF, but for this lab jpeg is going to be preferable due to size limitations. Use the default settings.

29. Once you have your map saved, open it with Photoshop.

Once you have opened it in Photoshop you will likely notice a common issue with exporting across tools. There are lines outlining the boundaries of the tiles from the original export. For now we will just ignore them, but recognize this is a common problem when using the basemaps or remote sensing imagery.

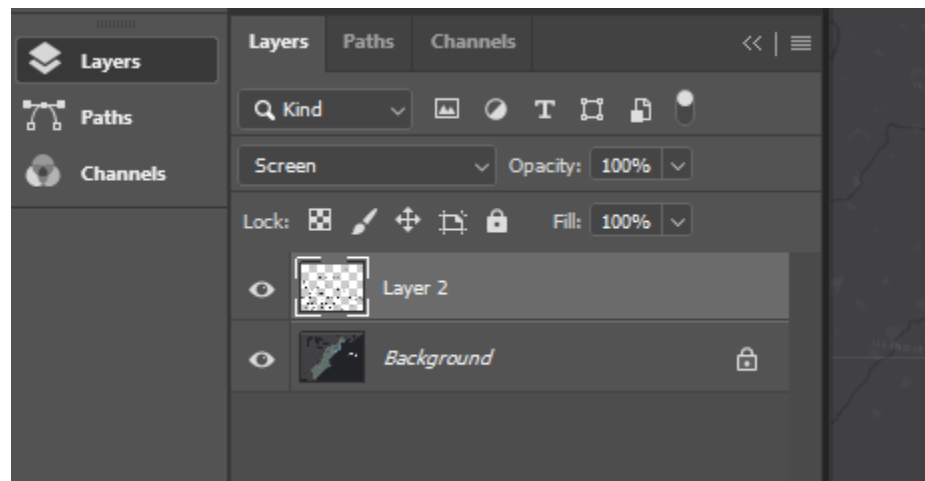
30. You might notice there is a small text that is indiscernible in the lower right-hand corner. This is the island of Bermuda. Use the Spot Healing brush to remove this.

31. As a last step we will add texture to the map. I have provided a texture png file for you in the zip folder. You can open that with Photoshop.

32. Next, create a new layer in your map image. Use the fill bucket tool to fill it with white.

33. Copy and paste the png layer into that new layer. In the Layer window, you

will see a dropdown menu, from that menu select *Screen*. You should see the texture form on the image. You can play with opacity and the other overlay methods until you find something you like.



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34. Once you are happy with your result, export the image as a jpeg. In the size setting, make the longest side 1000 pixels. Make sure that the height and width are linked so that they stay in the correct proportion. Add your final map to the form and submit.