

CHAPTER 3

THE ADVANTAGES OF SYNCED MAPS

WHAT IS THE DIFFERENCE BETWEEN SYNCING and downloading a map?

Sync and *download* are terms that are often used interchangeably when discussing the Maps for Adobe Creative Cloud workflow. When you are signed in to Maps for Adobe Creative Cloud with a Plus license or ArcGIS Online or ArcGIS Enterprise, an AI file that is downloaded—or created—from the Compilation panel will also be synced with Maps for Adobe Creative Cloud, which creates a beneficial link between the AI file and Maps for Adobe Creative Cloud. As you will learn in chapter 7, an AIX file generated in ArcGIS Pro will also be converted to a synced AI file when you open it in Illustrator. In either workflow, ArcGIS Pro-to-Illustrator or the extension-direct workflow, the link between a synced AI file and Maps for Adobe Creative Cloud connects the AI file to the most recent state of the synced mapboard. This connection benefits mapmakers in several ways.

After reading through this chapter's first tutorial, tutorial 3.1, you will have firsthand experience with some of the advantages of AI files synced to Maps for Adobe Creative Cloud. In tutorial 3.2, you will leverage even more of these advantages by using Maps for

Adobe Creative Cloud to add new layers to a synced mapboard. Both tutorials in this chapter will build on the Minnesota.ai map that you created in chapter 2.

CARTOGRAPHY CORNER

Geographic data types

As you continue reading through this book and working through the tutorials, you will encounter references to point, line, and polygon data. These three terms refer to the different GIS vector data types. When it comes to map design, understanding the differences and advantages of point, line, and polygon data—or map layers—will greatly assist map designers, even those who do not consider themselves GIS experts. In graphics editing programs such as Adobe Illustrator, a map's points, lines, and polygons are essentially the building blocks, or paths, for the aesthetic design.

Point data

Points are an excellent way to display a geographic feature that is too small to depict as

a line or polygon. A single GIS point location consists of one pair of x,y coordinates (x,y,z coordinates if the map is 3D). In a GIS, the x typically indicates the longitude, and the y indicates the latitude. When z is included, it indicates the position's elevation.

In map design, it is common for cartographic point symbols to indicate category or hierarchy. For example, in a small-scale (zoomed out) map that features cities and towns, a large city point symbol will be more prominent than the point symbol for a small town.

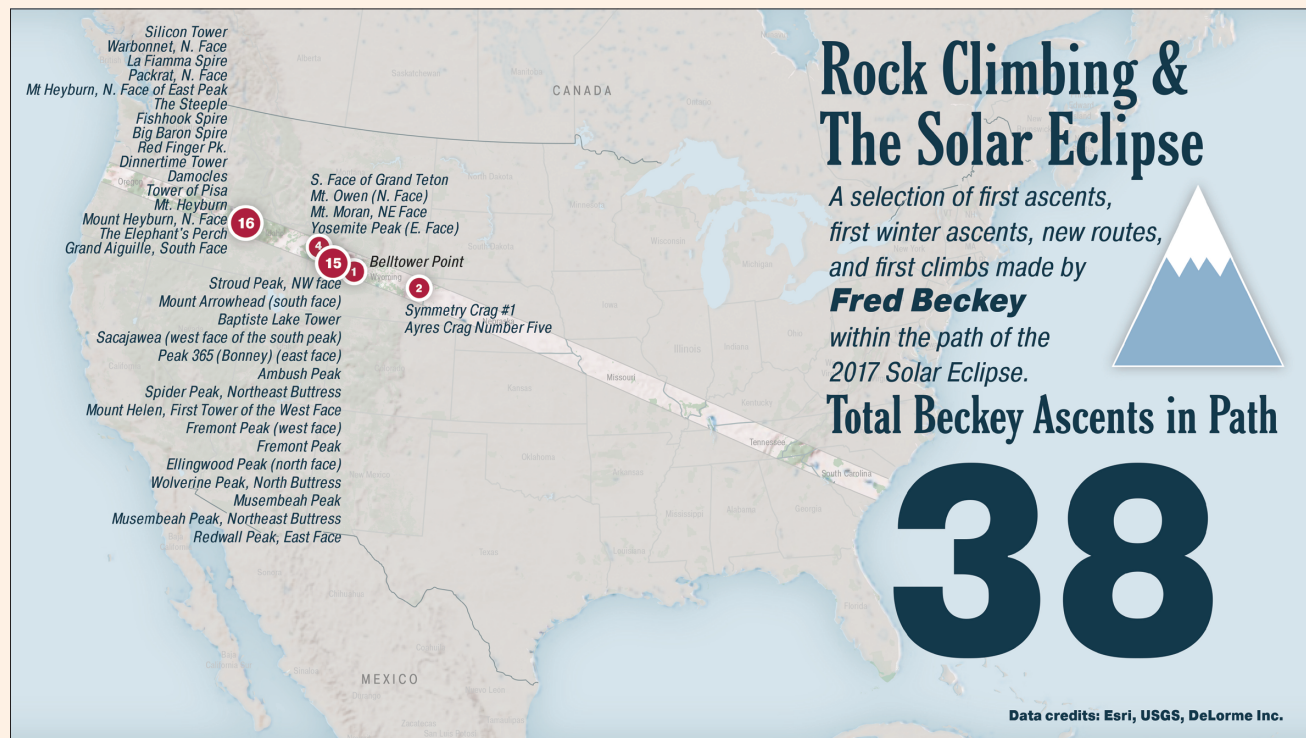
Contest winner Noah Walker's map of Arkansas (figure 3.1) uses points to represent selected cities. The capital city of Little Rock is symbolized by a star point symbol, whereas the remaining cities

are represented by smaller circular point symbols. This strategy indicates the hierarchical difference between two city categories. Walker's Arkansas map was created using Maps for Adobe Creative Cloud.

Points on maps can also represent more than one object. Clustering is a cartographic technique that generalizes many points of interest into a larger symbol indicating a cluster of geographic points. Often the number of points represented in a cluster is indicated by the point's label. On the *Rock Climbing & the Solar Eclipse* map (figure 3.2), notice that the sizes of the points differ, indicating the general amount of first ascents each point represents. This technique is called graduated symbology, and you will be using it in tutorial 4.1.



Figure 3.1. Map of Arkansas by Noah Walker, 2020.



Another method for using a single point symbol to represent multiple geographic phenomena is with a dot density map. For example, a map that uses one dot to represent a certain number of people over a particular area is called a dot density map. On dot density maps, dots are scattered across their respective regions for the purpose of illustrating the density of the mapped geographic phenomenon. A nice addition to the dot density technique is to ensure that dots are closer to geographic features where they are more likely to occur. For example, you can map dots that represent people close to towns and cities rather than homogenously scattering the dots across a polygon.

Figure 3.2. I created this map using point clustering to show selected climbing ascents by Fred Beckey that occurred within the path of the 2017 solar eclipse across North America.

Line data

In cartography, lines represent features that are conceptually long and narrow, and too small to be depicted as areas. In GIS datasets, streets and linear water features, such as creeks and rivers, are commonly represented by line data. These data are made up of nodes that are joined by lines into a single feature. A river, especially when mapped at the large scale, can be represented by a polygon.

However, linear data are optimal for mapping linear features at a small scale. Polygonal rivers will lose much of their detail at the small scale and add unnecessary complexity to the map as well as increase the file size.

Lines are also used to represent map features that do not have an aerial shape but have length. Boundary lines, such as the USA-Canada border that you added to your map in tutorial 2.2, and isolines such as elevation contours are excellent examples of this kind of linear data.

The *I-10 Closure Map* by California Department of Transportation senior graphic designer and contestant Andrew Pham (figure 3.3) was created using Maps for Adobe Creative Cloud. This winning map

shows the temporary closure of a small section of one of California's major interstates, as well as the official proposed detour during this closure period. Pham cleverly symbolized the closure segment with a thick, solid red line underneath an attention-grabbing brighter dashed line. The detour segment is green, telling readers that this is the best route during the closure period.

Polygon data

Polygon data represent the aerial coverage of geographic features. Like line data, polygon features are made up of nodes connected into a single feature. However, unlike lines, the nodes of polygons are connected into a closed polygonal

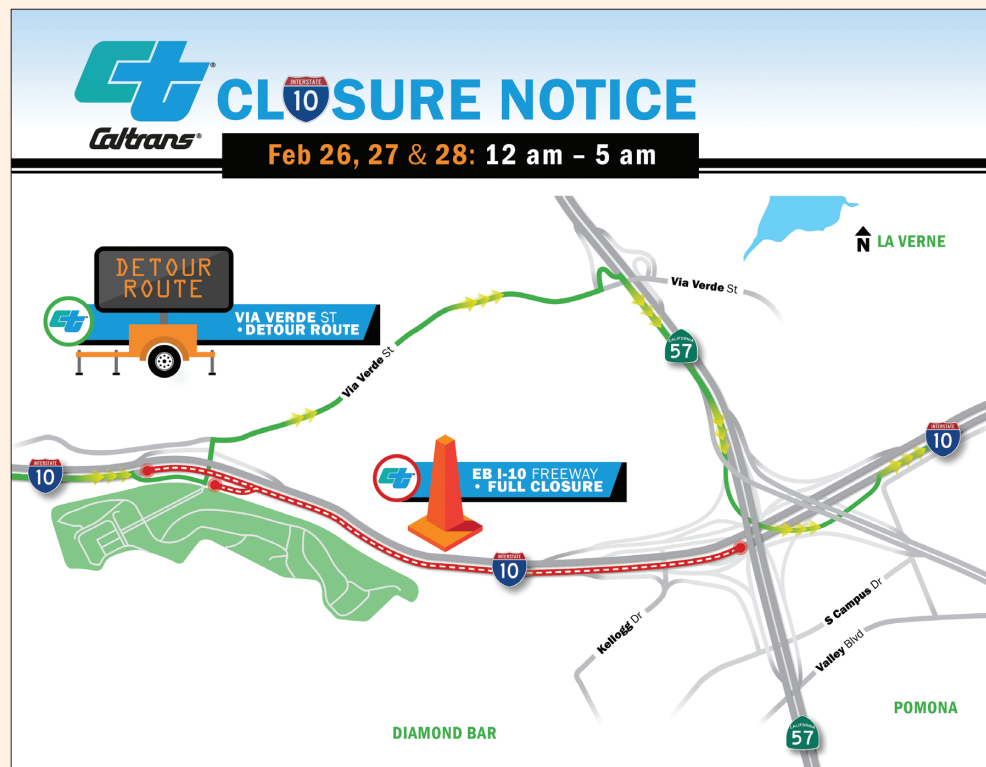
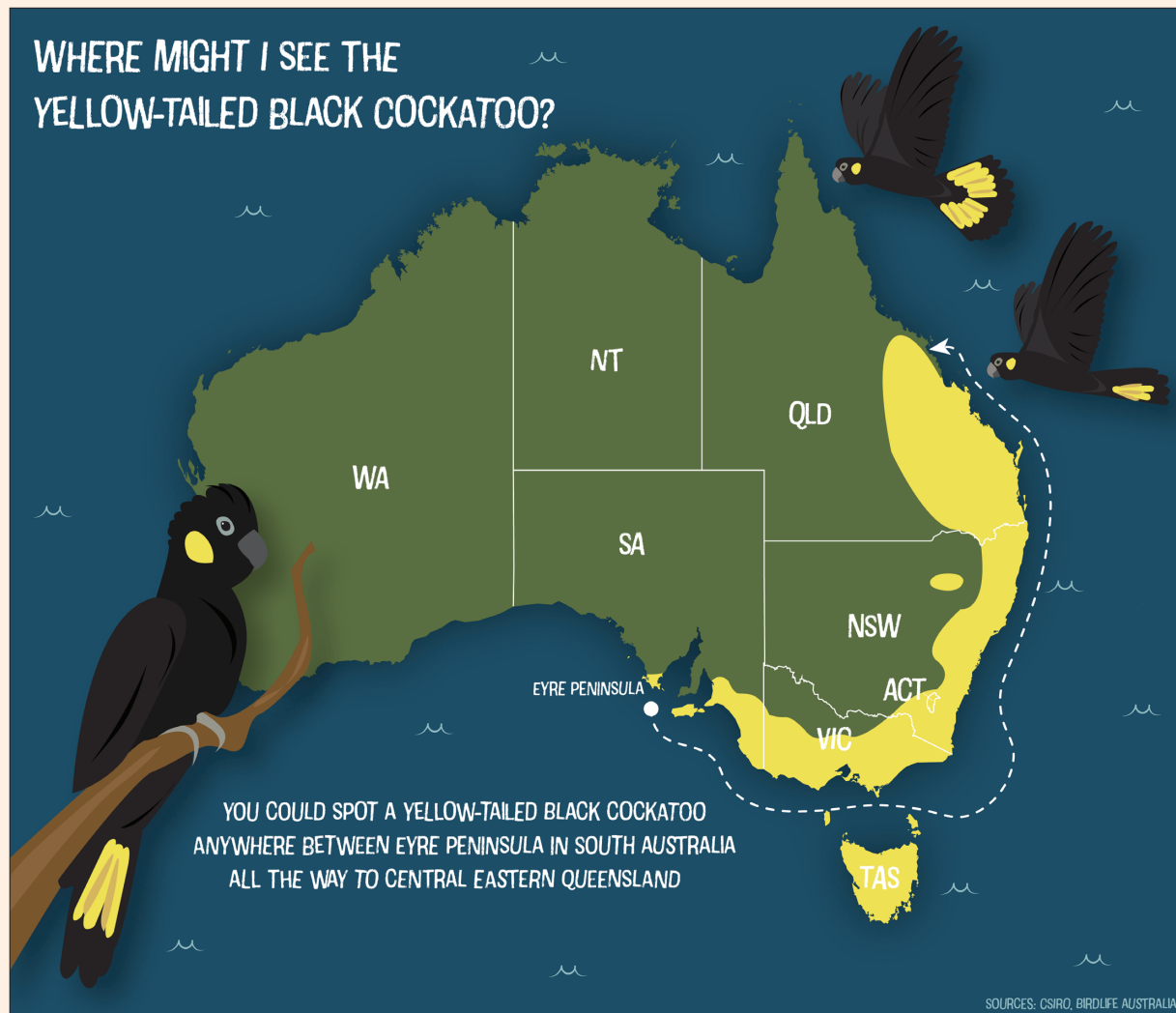


Figure 3.3. I-10 closure map by Andrew Pham, 2020.

shape. The following map by contest winner Katelin Volkanovski uses bright-yellow polygons to show the habitat distribution of the yellow-tailed black cockatoo, a variety of Australia's black cockatoo. In addition to the bird habitat polygons, the country of Australia also comes from polygon data. Volkanovski created this map (figure 3.4) using Maps for Adobe Creative Cloud.

Figure 3.4. *Where Might I See the Yellow-Tailed Black Cockatoo?* by Katelin Volkanovski, 2020. The map shows the distribution of one of six varieties of Australia's black cockatoo.



Tutorial 3.1: Exploring a synced map file

Scenario

Tutorial 3.1 is an exploratory exercise investigating the Maps for Adobe Creative Cloud settings on a synced mapboard and the layer structure of an AI file created using the extension-direct workflow. Throughout this exercise, you will be using your synced Minnesota.ai file that you created in tutorials 2.1 and 2.2 and synced in tutorial 2.2. You will learn how AI files created using Maps for Adobe Creative Cloud are organized as you examine the Minnesota.ai file layers. If you still have Illustrator open, it is recommended that you close and reopen the program before beginning this tutorial.

Note: Because this tutorial highlights the advantages of synced files, a Plus, ArcGIS Online, or ArcGIS Enterprise license is required.

Learning objectives

- **Synced mapboards:** Become familiar with the advantages of synced mapboards
- **Contents Panel layer settings:** Learn about the Compilation panel's layer sync setting
- **Layer organization:** Understand the layer structure of an Illustrator file created directly in Maps for Adobe Creative Cloud

Synced mapboards

Open the synced map

- 1 Open Illustrator, and then sign in to Maps for Adobe Creative Cloud (Window > Extensions > ArcGIS Maps for Adobe).

Do not open the Minnesota.ai file yet.

- 2 While keeping the Mapboards panel in view, open your Minnesota.ai map (File > Open). Browse to EsriPress/MappingByDesign or the location on your computer where you saved your folder, and open the file Minnesota.ai.

When opening your file, the extension's window might automatically minimize or become placed behind Illustrator's user interface. If this occurs, reselect Maps for Adobe Creative Cloud from the Illustrator Extensions menu to pull the extension into view again.

Once the Minnesota.ai file is open, the Mapboards panel displays the Minnesota mapboard extent (figure 3.5).

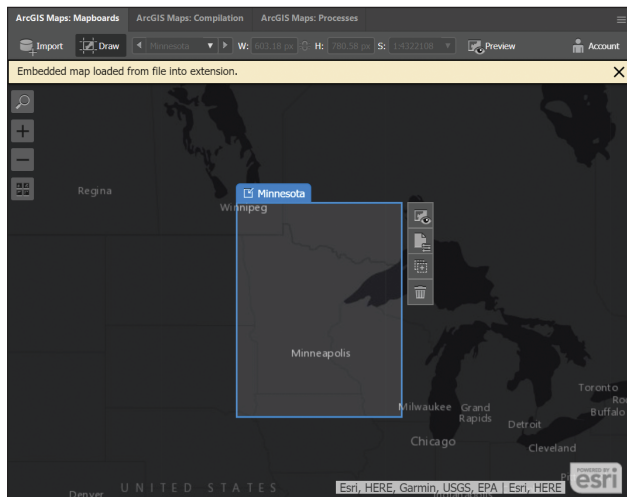


Figure 3.5. When the Minnesota.ai file is open, the synced mapboard extent will appear on the Maps for Adobe Creative Cloud Mapboards panel. Your mapboard may be different depending on the basemap you have selected, which is fine.

- 3 Open the Mapboard Options dialog box by clicking the Mapboard Options button on the vertical toolbar to the right of your mapboard. The Mapboard Options button is the second button from the top.

Notice that the fields on the dialog box are dimmed. The reason that these fields are no longer editable is that settings such as size, scale, and extent are permanently synced to this mapboard and can no longer be changed.

- 4 Click OK to close the dialog box.

Contents panel layer settings

Explore syncing and visibility

Just like the layer visibility setting in Illustrator, the visibility of the data layers on the Compilation panel's Contents panel can be toggled on or off. When a layer's visibility is toggled off, the visibility icon (eye) disappears. Maps for Adobe Creative Cloud also has a sync setting for each layer on the Contents panel. This sync setting, shown by a down arrow, specifies whether a layer will be added to a map when it is synced.

When you opened the synced Minnesota.ai file, the Compilation panel's Contents panel became populated with all the layers that were present on the Contents panel during the AI file's most recent sync.

- 1 Open the Compilation panel, and turn on the sync setting for the counties layer by clicking the blank rectangle directly to the right of the visibility icon for the USA Counties (Generalized) layer.

A down arrow will appear (figure 3.6).

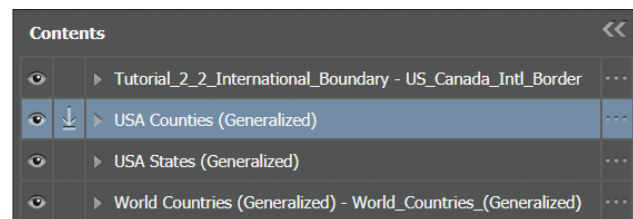


Figure 3.6. The sync setting is on for the USA Counties (Generalized) layer.

Maps for Adobe Creative Cloud automatically turns off a layer's syncing after a mapboard is synced to prevent unwanted duplicate layers in subsequent syncs. A layer's sync setting can be manually toggled on at any time. For this tutorial, keep the sync setting of the counties layer on and the remaining already synced layers off.

MAPMAKER TIP

Syncing with visibility turned off

On the Compilation panel's Contents panel, a layer's visibility and sync setting are somewhat linked. If you turn off layer visibility, the sync setting will also be turned off. But there will be times when you want to download layers with their visibility turned off in your resulting AI file. You can do this, too. If you want to sync a layer while keeping its visibility toggled off, first turn the visibility off and then turn the sync setting on.

Layer organization

Compare the layer structure

An AI file that is created using Maps for Adobe Creative Cloud will be organized with a ready-to-design layer structure that corresponds to the layer arrangement set up on the Compilation panel's Contents panel. However, the layer structure between the Contents panel and the downloaded AI file may differ slightly depending on how the data were organized in the original map data. In this section, you will compare the similarities and differences between the Minnesota.ai file's layer structure and the layer structure from the Compilation panel's Contents panel.

- 1 In Illustrator, open the Layers panel, and expand the Minnesota_Elements layer by clicking the arrow to the left of the layer name.

This is a parent layer containing a sublayer for a vector Esri logo and a sublayer for any map credits that were included by the original data's author.

- 2 Expand the Minnesota_Sync_1 parent layer to reveal its sublayers.

Whenever you sync a map, a parent layer for that sync is created with the naming convention Mapboard-Name_Sync_1, in which the mapboard name is at the beginning and the chronological sync number is at the end. For example, your parent layer is called Minnesota_Sync_1 because the name of the synced mapboard is Minnesota, and this parent layer contains sublayers added during the first sync.

MAPMAKER TIP

Category sublayers

As you will learn in tutorial 3.2, map data layers can contain categories, which are useful for cartographic design and organization. For example, on the Compilation panel, you can symbolize a transportation layer by its categories. For example, the transportation categories could be railroads, ferry routes, city streets, and highways. When using the Maps for Adobe Creative Cloud Change

Style feature layer options menu to symbolize the transportation layer by these categories, Maps for Adobe Creative Cloud will automatically create sublayers for the synced AI file, one sublayer for each category. These sublayers will be in a parent layer called Transportation. This automatic layer organization makes it simple to edit and design layers in Illustrator.

Checkpoint

You have just completed tutorial 3.1. You have learned about the basic behavior of synced mapboards for maps created using Maps for Adobe Creative Cloud. Your Contents panel on the Com-

pilation panel should match figure 3.6, with USA Counties synced, and your Illustrator Layers panel should match figure 3.7, with all the synced layer's sublayers, although the colors may differ.

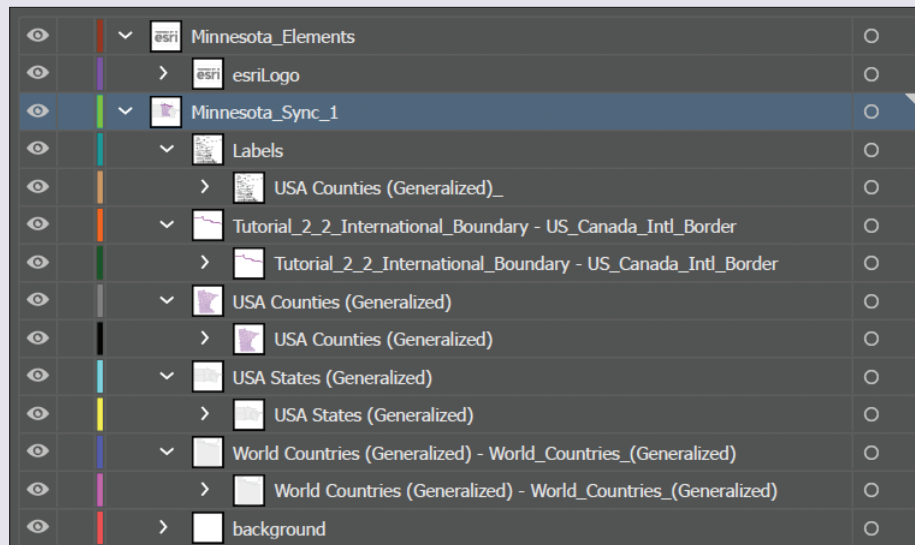


Figure 3.7. After syncing, the Illustrator layers panel will have the same layers as shown in the figure.

Making changes to synced mapboards

- **Add and remove layers, labels, and geospatial analyses:** Although changes cannot be made to a synced mapboard's settings (size, scale, spatial extent, and name), you can add and remove layers and resync layers to a synced AI file. You can also add labels and perform geospatial analyses. A new sync will add these updates to the AI file as new sublayers in a new synced parent layer.
- **Modify the Contents panel:** If you remove a layer from the Maps for Adobe Creative Cloud Contents panel, it will not remove the layer from an AI file.
- **Duplicate or delete mapboards:** On the Mapboards panel, you can duplicate or delete synced mapboards. By duplicating a mapboard, you are creating an unsynced mapboard, which copies all layers that still exist in the mapboard that is being duplicated. In a duplicated mapboard, you can make changes to the size, scale, and spatial extent if the duplicated mapboard is not yet synced. Be aware that deleting a synced mapboard from the Mapboards panel will permanently remove the link between your downloaded AI file and Maps for Adobe Creative Cloud. Deleting a synced mapboard will not delete an AI file.
- **Review:** When you export an AIX file from ArcGIS Pro or ArcGIS Map Viewer, the mapboard associated with the AIX file is automatically synced.

CARTOGRAPHY CORNER

Data classification

Natural breaks (Jenks)

Developed by cartographer George Frederick Jenks, this algorithmic data classification groups data into categories that have the smallest amount of statistical variance (figure 3.8).

Because of this minimal variation within classes, the natural breaks classification is suitable for grouping features that are similar for a given numerical attribute. This method is especially useful for a dataset with high variance.

Number of Seats Per Theater

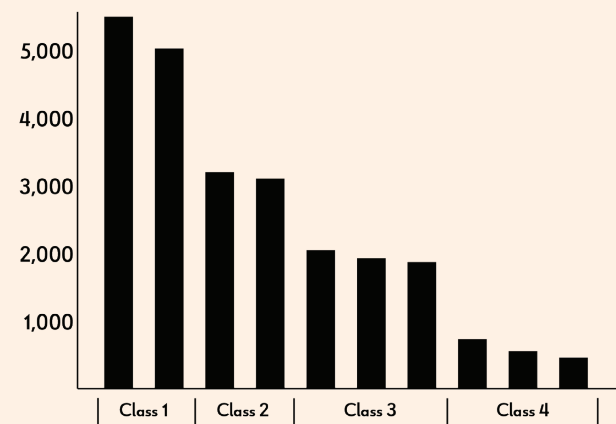


Figure 3.8. Each bar in the chart represents a theater. The classes represent natural breaks, where bars are designated for classes with the least amount of variance in the number of seats per theater.