Exercise 2: Communicate your analysis using ArcGIS StoryMaps

i   How can I print an exercise to PDF format?

Software requirements
- ArcGIS Online (Creator or GIS Professional user type)

Technical note
When you are using ArcGIS StoryMaps, use the latest version of one of these browsers:
- Apple Safari
- Google Chrome
- Microsoft Edge
- Mozilla Firefox

This exercise was developed using Google Chrome. If you use a different web browser, your results might be slightly different from the results that are shown.

Software requirements
For this exercise, you will use ArcGIS Online and ArcGIS StoryMaps. Sign in to these websites with your course ArcGIS account (your username that ends with _sds).
To reduce potential sign-in issues, use two different web browser windows to complete the exercises.

Use the first web browser window to access the MOOC:
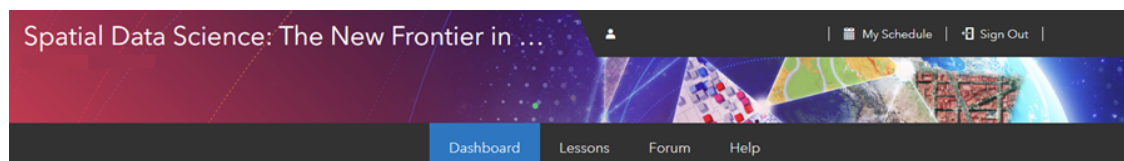
Use a private or incognito web browser window to access ArcGIS Online and ArcGIS StoryMaps:
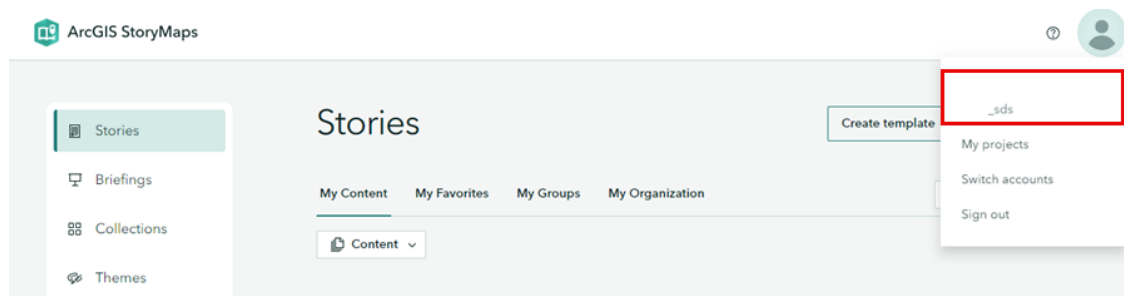
Introduction
Creating stories using ArcGIS StoryMaps can help data analysts effectively communicate the results of their analysis to executives and decision makers. In this exercise, you will use your skills to create your own story to communicate the results of analyses that were previously completed in the MOOC.

Scenario
For this exercise, you will create a story that communicates the results from the pattern detection and space-time pattern mining analyses.

The pattern detection analysis examined Supplemental Nutrition Assistance Program (SNAP) participation rates in the contiguous United States for 2019. You completed a hot spot analysis and outlier analysis to find meaningful patterns of high and low SNAP participation. The space-time pattern mining analysis examined SNAP participation from 2010 to 2019, examining how SNAP participation rates changed over time. The information from these analyses can help decision makers distribute resources more efficiently and equitably, ensuring that healthy food is accessible to all SNAP recipients.

Note: The exercises in this course include View Result links. Click these links to confirm that your
results match what is expected.

Estimated completion time in minutes: Approximately 90 minutes

[Expand all steps ▼]   [Collapse all steps ▲]

-   **Step 1: Identify your audience**

Before creating your story, you must identify the audience to determine the important messages, or takeaways, that you want to share.

a   Review and answer the following questions, which can help you identify this information:
- Who are you explaining this analysis to—an analyst, a decision maker, the general public?

- What do you want the audience to do with the information that you share—make a decision, share the story with others, critique the analysis?
- What is the problem that your analysis is trying to resolve?
- Which analysis is the focus of your story—pattern detection, space-time pattern mining, or both?
- What are the most important aspects of this analysis?

The answers to these questions will help you determine the scope and emphasis of your story. You will use this information to outline the story, noting potential text, images, and maps.

-   Step 2: Create your content inventory

Your story will include maps and a scene that illustrate the results from the pattern detection and space-time pattern mining analyses. These analyses were completed in ArcGIS Pro, which means that the analysis results need to be published to ArcGIS Online and then added to web maps and web scenes. To save time, the analysis results have been published and added to web maps and a web scene that are available for you to use.

In this step, you will create your content inventory by saving a copy of the maps and scene that you will include in the story.

a Open a new private or incognito web browser window.

b Go to the Spatial Data Science MOOC group page in ArcGIS Online.

> **Note:** The complete URL to this group is https://www.arcgis.com/home/group.html?
> id=2eb4affd53384172a5d0a25ac057d386#overview.

Step 2b***: Create your content inventory.

ArcGIS Online groups are collections of maps, scenes, and apps that relate to a specific area of interest or topic. This group is a collection of maps and scenes that illustrate the results of the pattern detection and space-time pattern mining analyses that were previously completed in this MOOC.
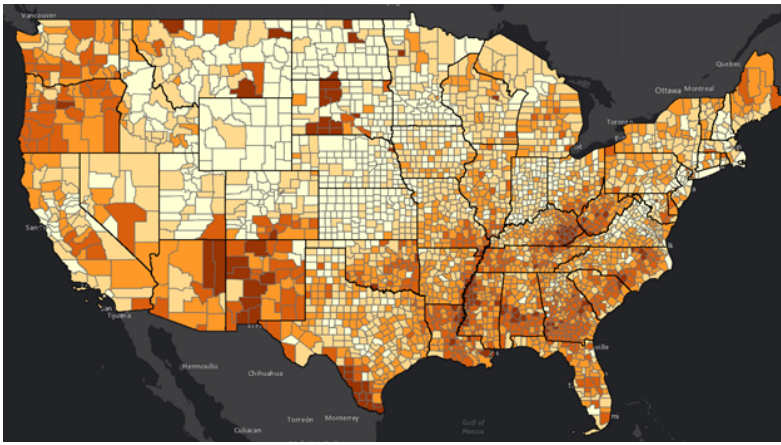
c Find the Pattern Detection web map that is owned by EsriTrainingSvc.

Step 2c***: Create your content inventory.

d Point to the map thumbnail and click Open In Map Viewer.

Step 2d***: Create your content inventory.

A map illustrating the counties in the contiguous United States appears in Map Viewer. Map Viewer is one of many ArcGIS Online apps. It features responsive mapping and real-time updates to your map as you work. With Map Viewer, you can create interactive web maps that you can share.

e Sign in to ArcGIS Online using your provided course ArcGIS account (your username that ends with _sds).

f To the left of the map, on the Contents toolbar, click the Save And Open button 🗀 and choose Save As.

g In the Save Map dialog box, for Title, type **Pattern Detection <your initials and today's date>**.

h Click Save.

i In the top-left corner of Map Viewer, click the Menu button ☰ and choose Content.

Title ▼		Modified ▼			
☐ Pattern Detection	🖼 Web Map	Aug 15, 2024	👤	Preview	•••

Step 2i***: Create your content inventory.

A copy of the map is saved to your content. Your map title and Modified date will be different from what is shown in the View Result graphic.

j Return to the Spatial Data Science MOOC group.

k Repeat the preceding instructions for both the Space_Time Pattern Mining 2D map and the Space_Time Pattern Mining 3D scene.

> **Note:** When you are saving a copy of the scene, perform the following steps:
>
>   1. Open the scene in Scene Viewer.
>   2. On the left side of the scene, click the Save button.
>   3. In the Save Scene dialog box, change Title to include the name of the map and
>   also your initials and today's date, and then click Save.

-   Step 3: Create an outline

You identified your target audience, which helped you define the key takeaways for your story, and you created your content inventory. The final step in the preparation phase is to create your outline. You can use various outline formats, including a simple bulleted list, a slide deck, or even a collection of index cards that you organize on your desk. The exact format is not that important—what matters most is that you choose a format that works for you.

a Create an outline for your story, indicating the type of information that you will include and the order of the information, images, maps, and other media.

> **Note:** If you do not have the images or maps yet, you can note the type of image or map and
>   where you would like to add it.

b Review your outline to ensure that it includes the following information:

  • The problem that you are trying to resolve

  • An introduction to the analysis

  • An explanation of the analysis methodology

  • An explanation of the analysis results

  • The answer to the problem that you were trying to resolve

  • A clear definition of next steps

• Additional resources that the reader can explore

The depth and extent to which you address the information mentioned previously will vary based on the audience and focus of your story.

If you are looking for some inspiration, you may want to review the stories Emerging Hot Spots of Forest Loss and Discovering Patterns in Global Wildfires. These stories communicate the results of GIS analyses in an engaging and effective way. You can also look through the ArcGIS StoryMaps Gallery to see examples of stories covering a wide array of topics.

- **Step 4: Add media to your content inventory**

Previously, you created a content inventory with your analysis results. To make your story engaging for your audience, you can use media, such as images, to use in media blocks. By adding the media that you will use for your story to your content inventory, you will have your analysis results and media in one centralized location.

In this step, you will add media to your content inventory.

While finding images for your story, make sure to consider these questions:

• If you do not own the image, do you have permission to use it? If so, do you need to provide a photo credit?

• If the image is accessed on the internet, is it shared publicly?

• Does the image represent or support the important takeaways of this story?

• How large is the image? Will the image display well in the story?

a Find images that match your outlined ideas, keeping the previous considerations in mind.

b For each image, note the following information:

• Its URL if you do not have a local copy of the image

• If the photograph requires credits and, if so, who should be credited

Images are one type of content that you can add to your story. However, the steps and considerations that are mentioned here apply to all types of content —images, videos, maps, and scenes. In the next step, you will prepare your maps and scenes, keeping these considerations in mind.

- **Step 5: Prepare maps and scenes**

Your content inventory may include existing maps or scenes that require further preparation to support your story's takeaways.

In this step, you will prepare the maps and scenes that you will add to your story.

a Go to the private or incognito web browser window that contains your ArcGIS Online content.

Note: If you closed the private or incognito web browser window, complete the following steps:

1. Open a private or incognito web browser window and go to www.arcgis.com.
2. Sign in to ArcGIS Online using your provided course ArcGIS account (your username that ends with _sds).
3. At the top of the page, click Content.

b On the Content page, click the title of the Pattern Detection map that you copied.

The item page appears.

c Click Open In Map Viewer.

Note: If you see Open In Map Viewer Classic, click the down arrow to choose Open In Map Viewer.

The map illustrates the counties in the contiguous United States. Each county is symbolized by the rate of the population that participated in SNAP during 2019. To the left of the map is the Contents toolbar with the Layers pane open. The Contents toolbar allows you to manage and view key components of the map; for example, you can change the basemap or add layers. The Layers pane lists the layers in the map. You can organize layers to draw in any order. You also can click the Visibility button 👁 to hide or show individual layers.

d On the Contents toolbar, click Layers ⬙, if necessary.

**e** In the Layers pane, review the layers that are listed.
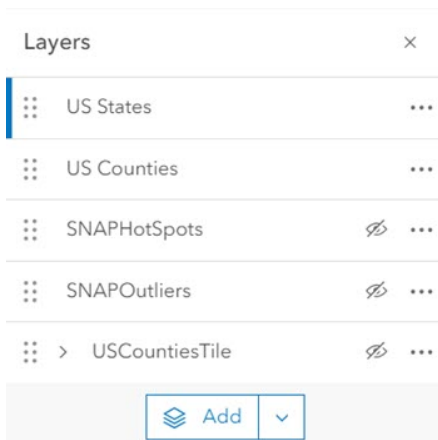
Step 5e***: Prepare maps and scenes.

This map includes the original layer from the pattern detection analysis, US Counties, and the results from the hot spot analysis and outlier analysis.

> **Note:** The names of the map layers match the output names from your analysis to help you
> remember what each layer represents. It is recommended that you rename these layers so
> that your audience understands what they are showing. To learn more about renaming
> layers, go to ArcGIS Online Help: Organize layers (Map Viewer).

f In the Layers pane, next to US Counties, click the Options button ⋯.
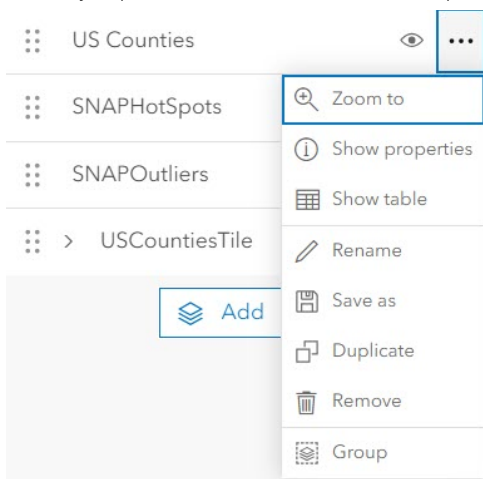
Step 5f***: Prepare maps and scenes.

A list of options under the layer expands. The US Counties layer, SNAPHotSpots layer, and SNAPOutliers layer were published to ArcGIS Online as feature layers. You can interact with and modify feature layers by filtering the features, changing the symbology (style), and so on. When you select a layer in the Layers pane, the Settings toolbar appears on the right and enables you to configure pop-ups, filters, clustering, labels, and more for the selected layer. To learn more about feature layers, go to ArcGIS Online Help: Feature layers.

g Pan, zoom, and click the map to explore this layer's functionality and performance.

h In the Layers pane, click the USCountiesTile layer, and then click the Options button ⋯.
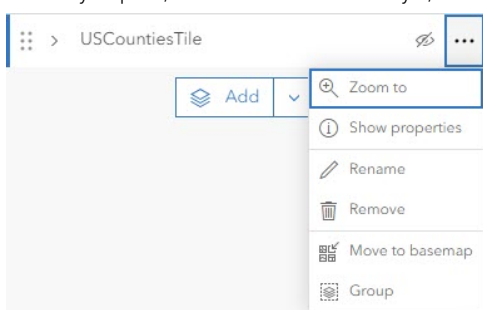
Step 5h***: Prepare maps and scenes.

There are fewer options for this layer in both the Layers pane and the Settings toolbar. The USCountiesTile layer was published to ArcGIS Online as a tile

layer. Tile layers draw more quickly, improving the performance of your map. Tile layers are tiled images of the layer, which means that the layer can maintain complex symbology, but the symbols, labels, and so on cannot be modified. For example, in the Space_Time Pattern Mining 2D map, the emerging hot spot analysis layer symbology is simplified in the feature layer but maintained in the tile layer. To learn more about the different layer types, go to ArcGIS Online Help: Layers.

i In the Layers pane, hide the US Counties layer and show the USCountiesTile layer.

j Pan, zoom, and click the map to compare functionality and performance.

You may want to add the same map to your story multiple times, turning on and off different layers based on the context of the story. Choosing to use the feature layers or tile layers will depend on what you want to show in the map and how you want your readers to interact with the layers in the map.

The following guidelines can help you decide which layers to use:

- If you want to change the symbology of a layer, use feature layers.
- If you want to focus on a particular state or large-scale region, use feature layers.
- If the underlying, or source, data for a layer changes frequently, use feature layers.
- If you want readers to visually review the map for overall trends, use tile layers.
- If you want to maintain complex symbology, use tile layers.

k Remove layers in the map that you will not use in the story.
- Hint

In the Layers pane, click the Options button ••• for the layer that you want to remove, and then choose Remove.

You may want to further modify the map to emphasize the focus of your story. There are various ways to modify the map and its layers: You can change the basemap, modify the symbology (style), configure the pop-ups, and so on. If you would like to explore these options, go to ArcGIS Online Help: Organize layers (Map Viewer).

l If necessary, modify the map and its layers based on the focus of your story.

m Click the Save And Open button ▤ and choose Save.

n Use the preceding instructions to modify and save the Space_Time Pattern Mining 2D map and the Space_Time Pattern Mining 3D scene.

Note: For the 3D scene, in Scene Viewer, use the Layers tool on the Designer toolbar.

- **Step 6: Create a new story**

With the preparatory steps complete, you are ready to create your story.

a In a private or incognito web browser window, go to https://storymaps.arcgis.com.

b If necessary, sign in with your provided course ArcGIS account (your username that ends with _sds).

c In the upper-right corner, click Create Story and choose Start From Scratch.

Step 6c***: Create a new story.

The story builder opens with a blank story template.

d Add a title to your story.

Adding a title will ensure that your story will autosave.

e If a byline was not automatically added, click Add A Byline (Optional) and type your name.

- Step 7: Add story elements

Now that you have created a blank story template, you can add story elements such as text, media, and immersive blocks.

In this step, you will use your outline to determine which story elements you want to include.

a Open and review your story outline.

Using your outline as a guide, you will add text to your story.

b Under the byline, scroll down, if necessary, and then next to Tell Your Story, click the Add Content Block button ⊕ .

Basic

- A≣ Text
- ▭ Button
- -- Separator
- { } Code
- ▦ Table

Media

- ⬙ Map
- 🖾 Image

*Step 7b***: Add story elements.*

The block palette appears with different elements that you can use to add content to your story:

- Text blocks like a paragraph, heading, or quote
- Visual accents like a separator or a button
- Media blocks like an image, video, map, or embed (for external web content)
- Immersive blocks like a sidecar or map tour (full-screen blocks that provide a different interactive reading experience)

You will begin with a text block.

c In your story, from the block palette, choose Text.

d Type text for your story (for example, you can start your story by explaining the purpose of your analysis).

You added your first text block to your story. For more information about adding narrative text to a story, go to ArcGIS StoryMaps Help: Add narrative text.

e Continue your story by adding media, such as images and videos.

For more information and guided steps on adding media to a story, go to ArcGIS StoryMaps Help: Add media.

Another element that you can add to your story is an immersive block, like a sidecar. For more information and guided steps on adding a sidecar immersive block to a story, go to ArcGIS StoryMaps Help: Add sidecars.

f If you would like, add a sidecar to your story.

After adding text, media, and immersive blocks to your story, you will add maps and scenes.

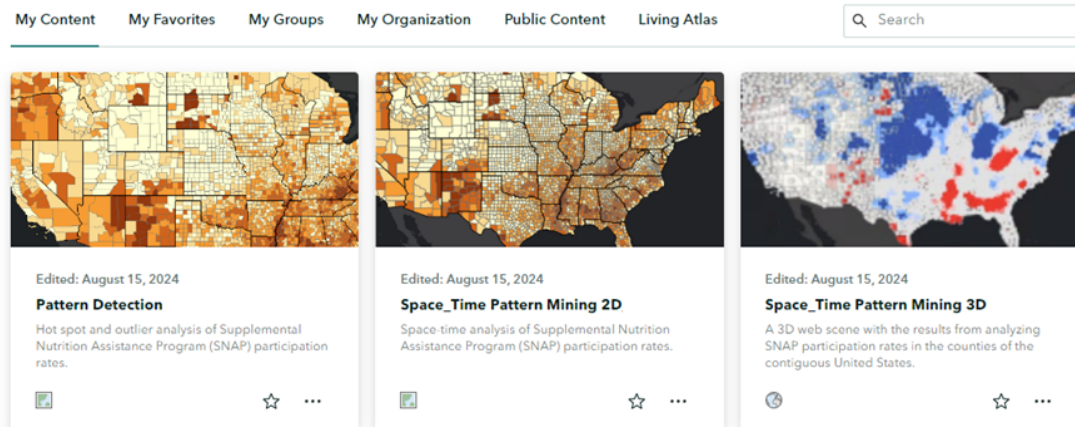**- Step 8: Add maps and scenes**

In this step, you will add maps and scenes. You will use the saved copies of the maps and scenes that were added to your ArcGIS Online content page.

a In the story builder, find the location at which you want to add your first map or scene.

b Click the Add Content Block button ⊕ and choose Map.
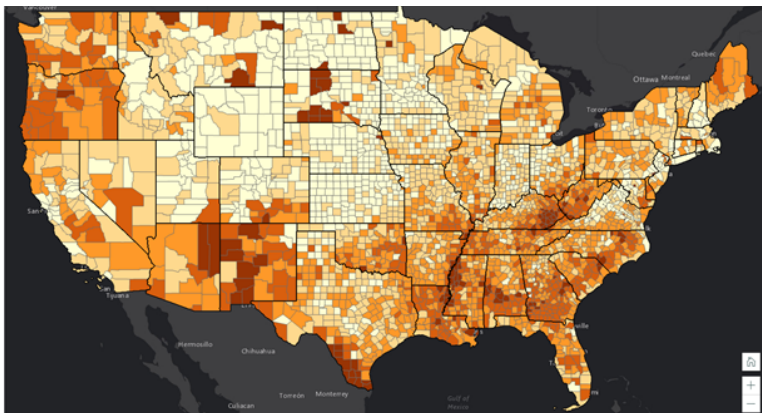

Step 8b***: Add maps and scenes.

The Add A Map page opens. You will see the maps and scenes that are located in your ArcGIS Online content.

> **Note:** You may see different maps and scenes, depending on the number of maps and scenes that you copied for your story.

c Click the map or scene that you want to add.

Step 8c***: Add maps and scenes.

The map displays in the map designer.

> **Note:** Your map or scene may vary from the View Result graphic, depending on the map or scene that you chose and the modifications that you made to it. The following instructions are based on the Pattern Detection map and may need to be adjusted for your map or scene.

d Using the side panel, make any final adjustments to the map. For example, you can turn on and off layers or turn on the legend.

> **Note:** Any edits that are made in the map designer are applied only to the map or scene that is added to the story.

e In the bottom-right corner, under the map, click Save.
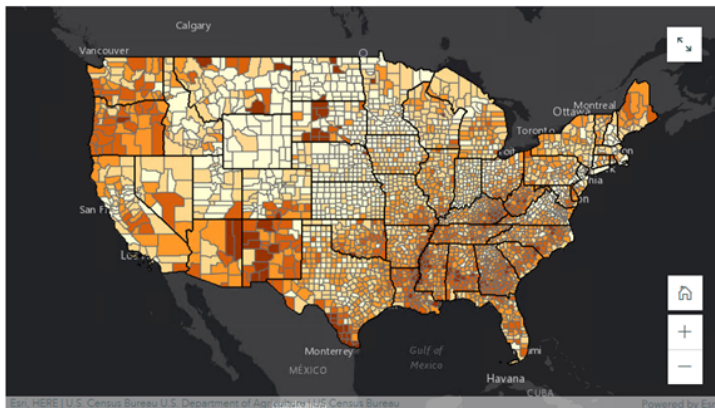
Step 8e***: Add maps and scenes.

The map is added to the story. You can zoom and pan this map directly in the story. Depending on the types of layers in the map, you may be able to query information by clicking a feature.

f Repeat these steps for any remaining maps and scenes.

For more information about adding maps to a story, go to ArcGIS StoryMaps Help: Add maps.

You created an initial draft of your story. Before publishing the story, you will review it.

- Step 9: Choose a story design

Now that your story is populated with various elements based on the outline that you created, it is ready for the finishing design choices.

In this step, you will apply a theme that matches the tone of your story and then review the story.

a At the top of the story builder, click Design.

b In the Design panel, choose a cover and theme that best match the tone of your story and the story's visuals.

For more information about setting a theme for a story, go to ArcGIS StoryMaps Help: Set a theme.

c Preview your story and, if necessary, make any remaining changes to it.

After applying the last design elements, it is important to review your story to ensure that the content is accurate and that it represents the best way to tell your story.

- Step 10: Publish a story for sharing

After reviewing your story, you are ready to share it.

In this step, you will publish your story and share it with the other MOOC participants.

a At the top of the story builder, click Publish.

Note: If you are still in Preview mode, click the Close Preview button ✕ to return to the Draft view and see the Publish option.

b Under Share, click the down arrow and choose Everyone (Public).

c Click Publish.
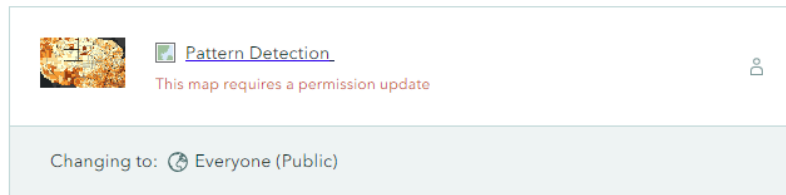
Step 10c***: Publish a story for sharing.

Because you included both maps and scenes in your story, the Share Items window appears. The maps and scenes must have the same sharing settings as your story. In this example, they must be shared with everyone. You can use this window to automatically update the sharing settings on these items.

d Click Yes, Share These Items.

The story, and its associated maps and scenes, is now available to the general public. You will share a link to the story for other MOOC participants to easily access the story.

e At the top of the story, copy the URL.

f Post the URL to the Lesson Forum and be sure to add the **#section6** hashtag to the subject line of the post.

g Review other MOOC participant stories to explore different ways to communicate the results of an analysis.

Communicating the results of your analysis is one of the most important steps in spatial data science. Esri provides various tools that you can use to communicate your results with analysts and decision makers. Such tools include ArcGIS Notebooks, ArcGIS Dashboards, ArcGIS StoryMaps, and more. The tool that you choose will depend on the audience and information about the analysis that you want to share. In this exercise, you used ArcGIS StoryMaps to create a compelling and effective story that explains the reason for the analysis, the results, and how this information can be used going forward. To explore more apps that visualize and communicate results, see the highlighted apps in ArcGIS Living Atlas of the World.