

Presenting Analysis: Using ArcGIS Online Web Application Builder in Public Safety

Knowledge, Skills, and Abilities (KSAs) Supported:

This training module is a continuous explanation of the previous tutorial “Public Safety - Crime Mapping and Spatial Analysis Using ArcGIS Online for Police Officers”.

The main purpose of the training module is to focus on the ability to properly develop web applications that represent spatial crime data according to the Uniform Crime Report.

Using Web AppBuilder allows us to develop consistent applications for mobile devices such as smartphones, tablets and phablets, publish and share the content easily through the users.

Knowledge Gained:

- ✓ Identifying and highlighting suspicious incidents and events that may require further investigation.
- ✓ Supporting the pattern and trend analysis across multiple jurisdictions.
- ✓ Rapidly reconfigure beats and reallocate resources after analyzing crime trends over time.
- ✓ Identify risk factors including businesses, buildings, or other locations that draw crime.
- ✓ Develop plans for special crime abatement teams to address regional or seasonal high density locations.
- ✓ Educating the public with visual information to clarify crime concerns and enlist community action.

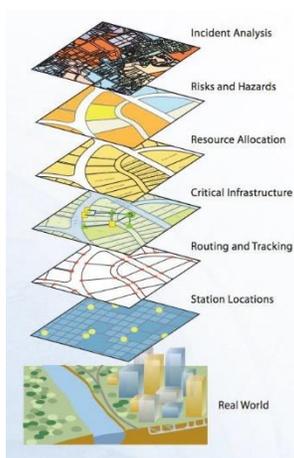


Image provided is courtesy of Esri:
<http://www.esri.com/~media/Files/Pdfs/library/brochures/pdfs/crime-analysis.pdf>

Skills and Abilities Developed:

- ✓ Understanding the function and utility of the Web AppBuilder in ArcGIS Online.
- ✓ Defining how GIS is used in Law Enforcement applying the four components of the crime Analysis: Planing, Data Management, Situational Awareness & Field Operations.
- ✓ How to use the Time Aware template to develop Web Map Applications that show information about specific crime incidents & represent the Pattern and Trend of them.
- ✓ How to configure the different elements that are addressed in the web application template, such as, Theme, Title, Logo, About, Search, Tools (legend, zoom, controls and scale bar) and Share (Provide ability to share app via social media, email, or generate HTML for embedding in web pages).



Scenario and Data

This tutorial provides the following scenarios:

- Construction of a Crime Mapping Application that shows the different categories of Burglary in Broward County, Florida according to particular dates through November 2014.
- Development of a Crime Mapping Application that analyzes the Burglary patterns and trends in Broward County, Florida during November 2014.

Esri has selected HERE Map Content (www.esri.com/here) as the foundation street data for its cloud-based mapping platform as well as for StreetMap Premium and numerous other Esri products.

Esri uses HERE map content and HERE point addressing to build the geocoding locators used in both ArcGIS Online (AGOL) and StreetMap Premium (SMP).

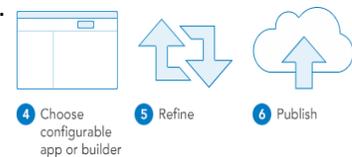
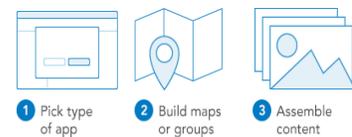
Exercise Overview and Requirements

Requirements: To successfully complete this module training, you must complete the “Public Safety - Crime Mapping and Spatial Analysis Using ArcGIS Online for Police Officers” tutorial. Otherwise, the layers needed for this tutorial will not be available. In addition, this tutorial will continue to use Broward County data just as the previous educational materials did.

Scenario:

Develop Web Map Applications that represent spatial crime data using the following steps:

- **Pick** the type of application according to the data that is being represented.
- **Build** maps or groups.
- **Assemble** content, by organizing the data, symbology and text.
- **Choose a configurable app or builder.** In this particular case Time Aware is going to be used in order to build crime mapping apps since this template displays layers in a web map using a time slider.
- **Refine.** Creating an effective app is an iterative process where the developer has to modify, add, delete, or change features in terms of representing correctly the message of the map.
- **Publish.** After the web map application is completed, there are several options for publishing: hosting the app on ArcGIS Online, hosting the app on your own organization’s servers, or using third-party resources.
- **Share Maps**, by sending an email with a link, posting it to your Facebook or Twitter account, embedding it in a website or blog, or creating a link for google plus.



* The text, Image and Graphic provided above come from Esri Law Enforcement Webpage: <http://www.esri.com/~media/Files/Pdfs/library/brochures/pdfs/crime-analysis.pdf>

Exercise

Step 1: Sign In to AGOL

Go to <http://napsg.maps.arcgis.com/home/> and take a moment to familiarize yourself with the mission and resources provided by NAPSG.



If NAPSG provided you with credentials, click [Sign In](#) and enter them. **If you do not have NAPSG credentials**, navigate to your own organization's ArcGIS Online page, and sign in there with your credentials. Depending on which organization's ArcGIS page your using, the sign in window will look different.

Username: XXXXXX

Password: XXXXXX

Sign in to NAPSG Foundation


Username

Password

Keep me signed in

[Forgot password?](#) [Forgot username?](#)

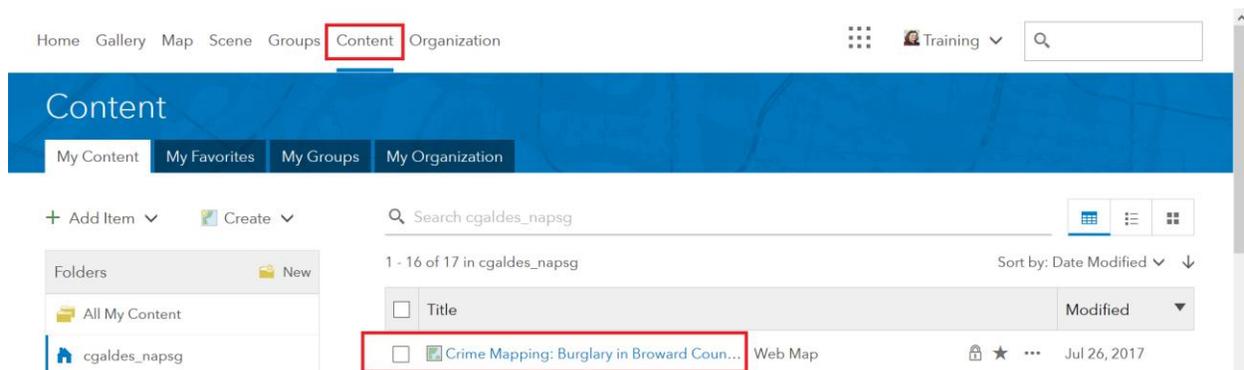
Once you have entered your credentials, click [Sign In](#).

If you signed into NAPSG's ArcGIS page, then your screen should look like below. If you signed into your own organization's page, the home screen will be different.



Step 2: Navigate to your ArcGIS Online (AGOL) Content

Click on the **Content** tab and click on “Crime Mapping: Burglary in Broward County, Florida.” You will then be taken to the details page for this webmap. Click on **Open in Map Viewer**.



Note that the name of the Web Map created might be different according to the title you gave it previously.

Crime Mapping: Burglary in Broward County, Florida Edit

Overview Usage Settings

Edit Thumbnail



Add a brief summary about the item.

by [cgaldes_napsg](#)
Last Modified: July 26, 2017

Web Map

Add to Favorites

Open in Map Viewer

Open in ArcGIS Desktop

Create Presentation

Create Web App ▼

Share

Description

Add an in-depth description of the item.

Layers

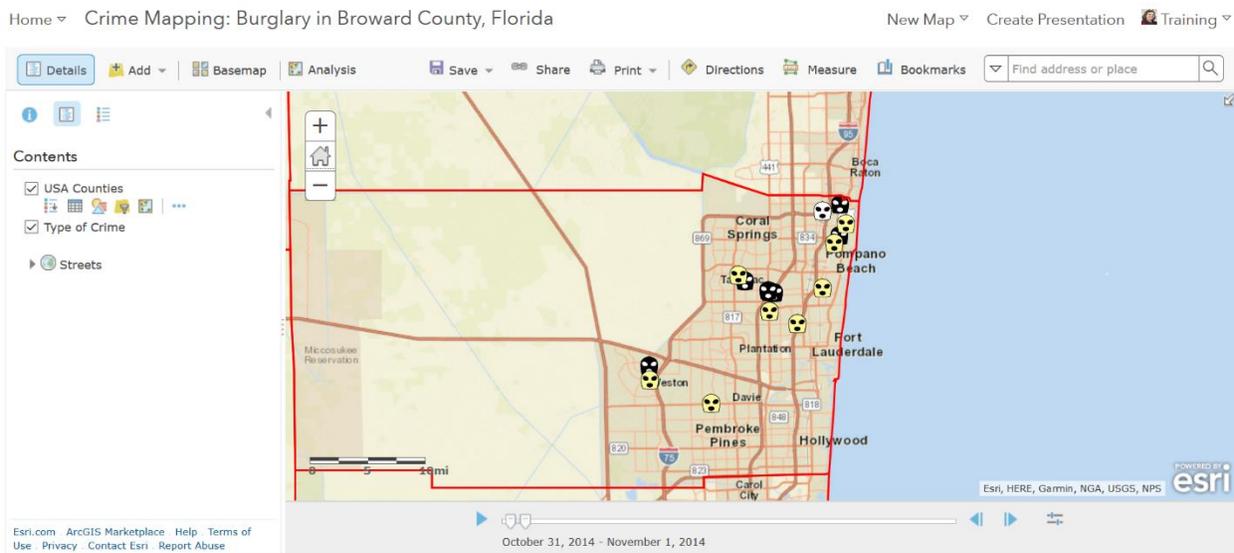
napsg.maps.arcgis.com/home/webmap/viewer.html?webmap=f4ff5f2b3f74b2598130cdda183be0c

Details

★★★★★ (0) views: 9

Created: June 6, 2017

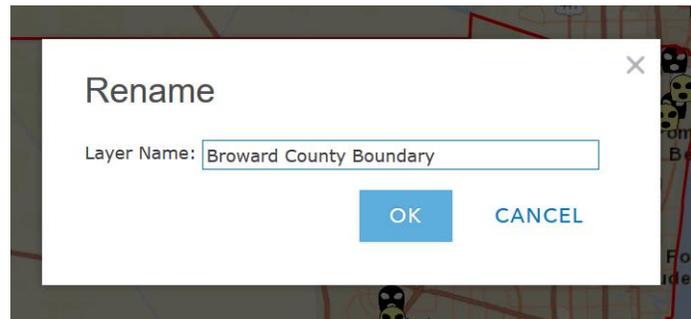
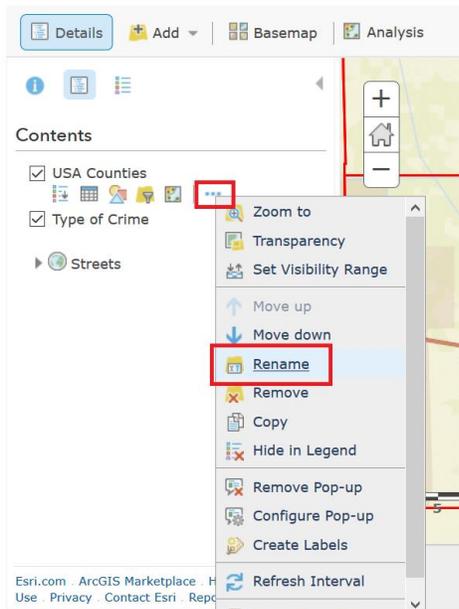
The map will look like this after completing Steps 1 and 2:



Step 3: Change Layer Names

Click on the ellipses to access a drop-down menu for the layer and click **Rename**. Rename the county layer to “Broward County Boundary.” If your layer with Broward county crime data is not yet named “Type of Crime,” go ahead and change this layer name as well.

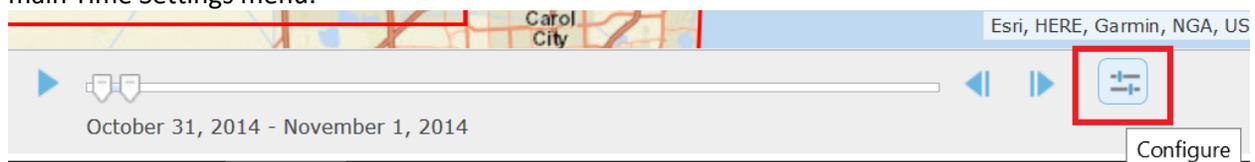
Home ▾ Crime Mapping: Burglary in Browe



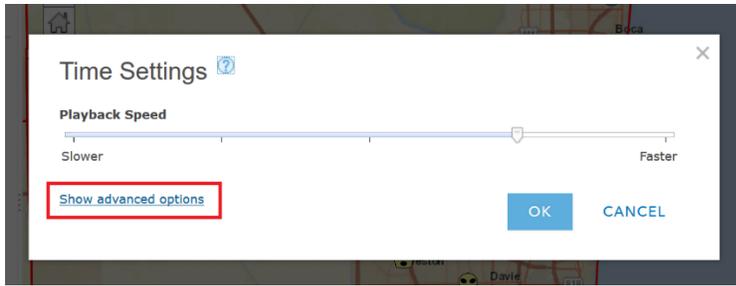
Click **OK** to save your new layer name. Note that this step is very important because the title of the layers will appear in the final Web Map App and clear layer names help the user have a better idea of what he or she is viewing.

Step 4: Change the Time Setting and Save your Map

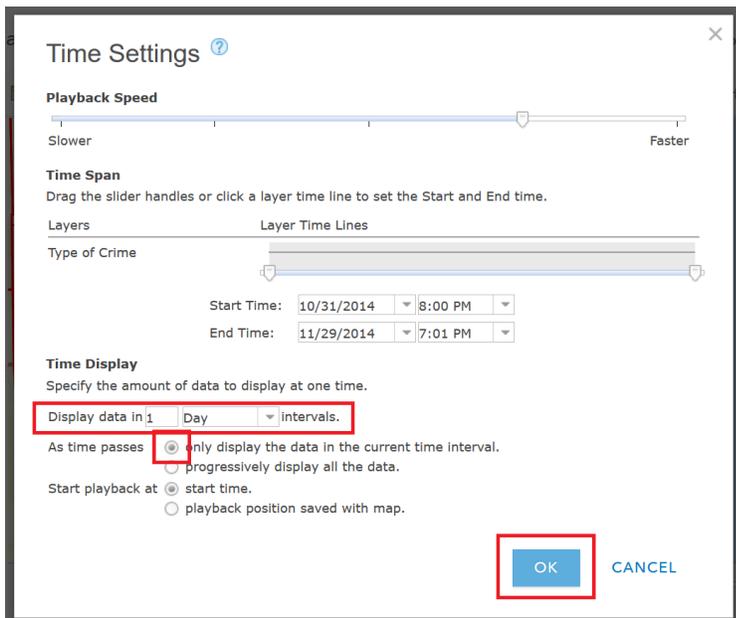
Click on the Time Settings Icon on the right side of the time slider widget below the map. This is the main Time Settings menu.



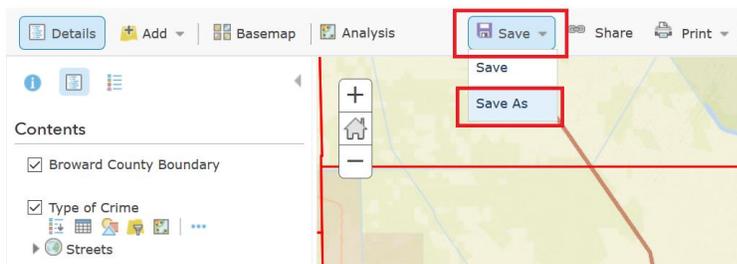
In the main menu, click **Show advanced options**.



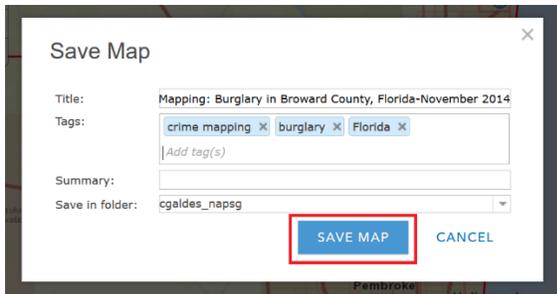
In the Time Display section, change the display data to **1 Day intervals**. Also make sure the **Only Display Data in the Current Time Interval** option is checked. When you're finished, click **OK**.



Your map is now finished. We will need to save our map before we can transform it to a web application. In the map viewer, click on the **Save** tab and then on the **Save As** button to save your map.

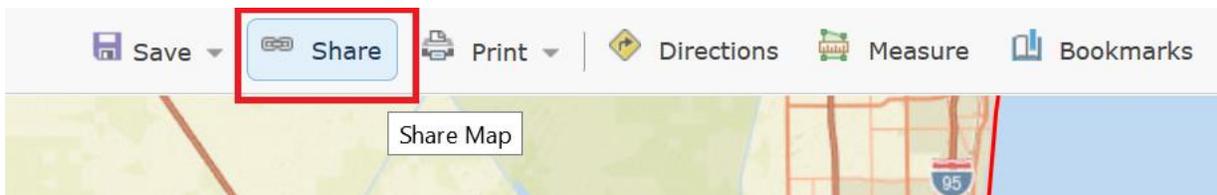


In the Save As menu, change the title to "Crime Mapping: Burglary in Broward County, Florida-November 2014." Add some tags to indicate what the map depicts, as pictured below, by typing the word or phrase, then hitting Enter on your keyboard. Make sure the map will be saved in your personal AGOL folder. When you're finished, click **Save Map**.

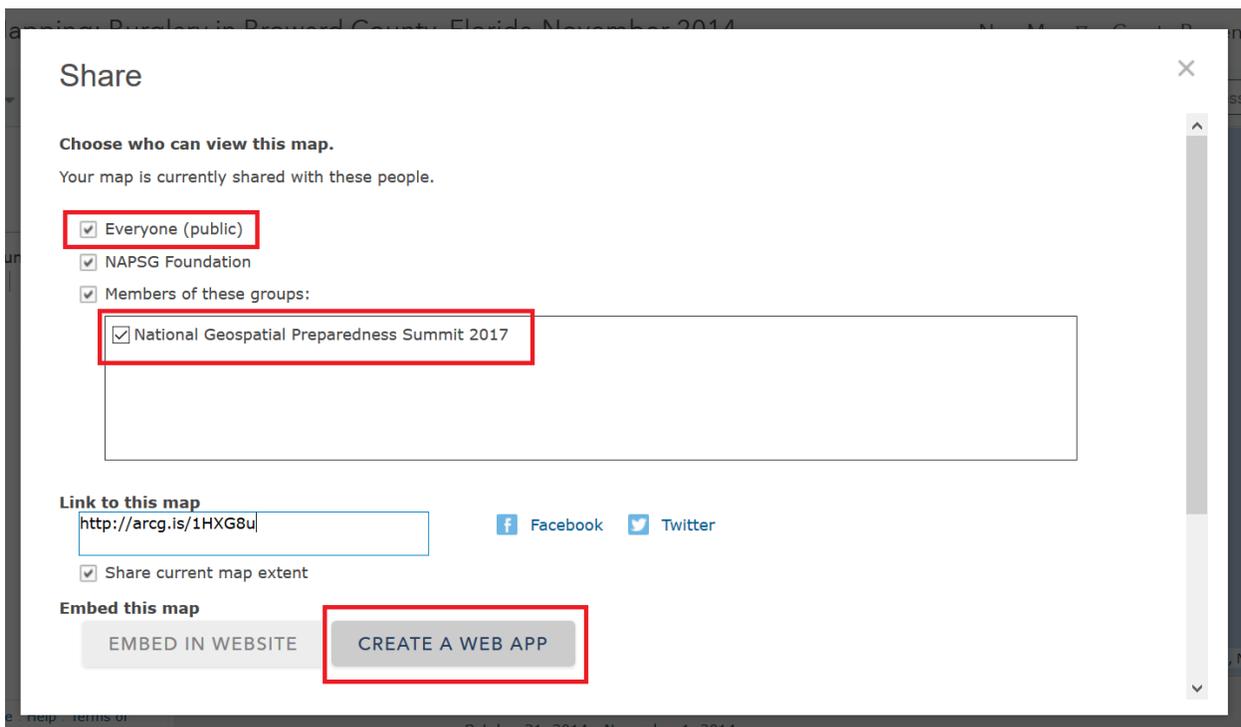


Step 5: Develop a Web Map Application for Specific Criminal Data

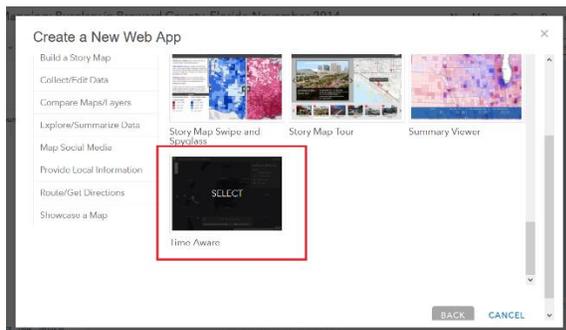
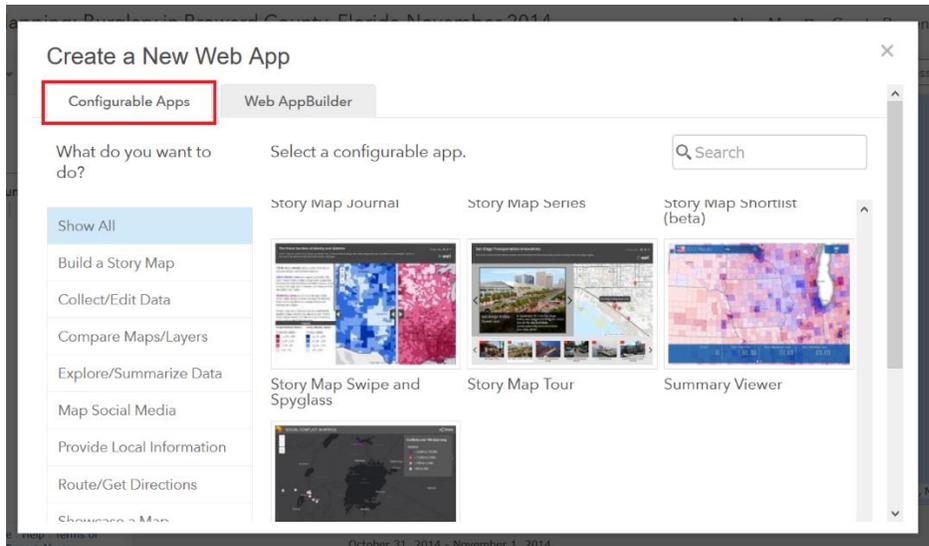
After you save your map, you will return to the Map Viewer. Click on the **Share** tab in the main menu bar.



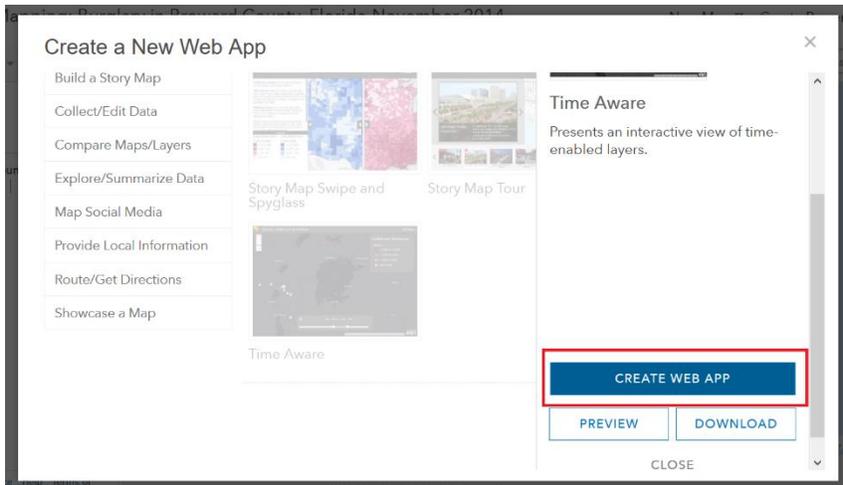
In the Sharing menu, check **Everyone** to share your map with everyone. AGOL will automatically check the box next to NAPSG Foundation as well. Then check **National Geospatial Preparedness Summit 2017** to share your map with participants at the Summit. Finally, click **Create A Web App**.



Next you'll be taken to the Create a New Web App menu. In the **Configurable Apps** tab, scroll down until you see the **Time Aware Template**.

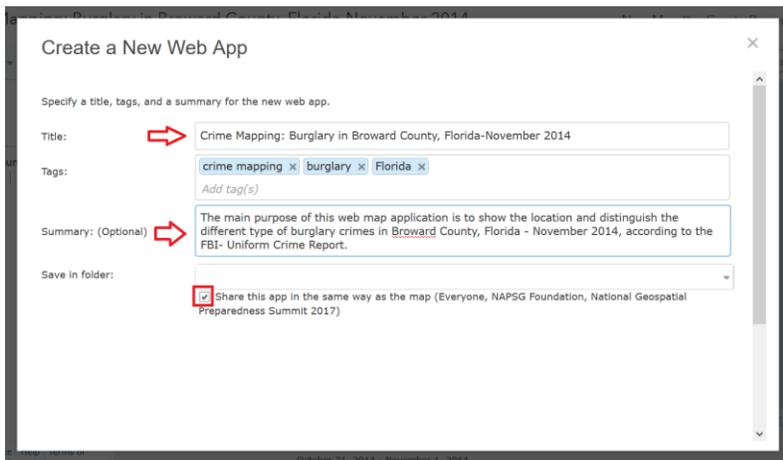


When you hover over the thumbnail it will say "Select"—click on the thumbnail, and in the next menu click **Create Web App**.



In the next Create a New Web App menu, notice that AGOL automatically defaults to giving the app the same title as your web map, which is what we want in this case.

Add the following text to the **Summary** box: “The main purpose of this web map application is to show the location and distinguish the different type of burglary crimes in Broward County, Florida - November 2014, according to the FBI- Uniform Crime Report.” Notice that a box is checked indicating that the web app will have the same sharing settings as the web map—that is what we want, so keep this checked.



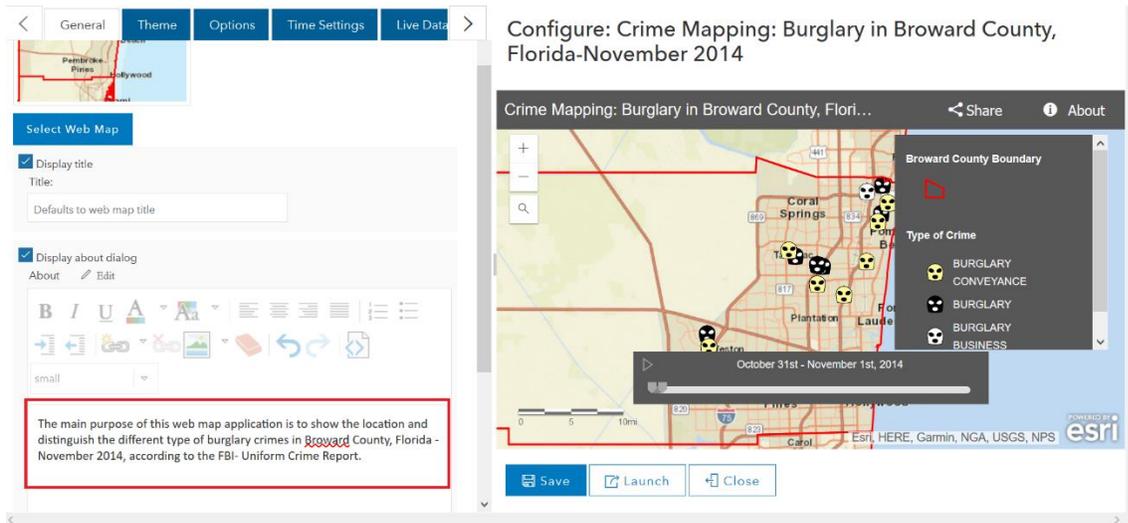
Step 6: Configure your Web Application

General

In the **General** tab, leave the defaulted check marks for “display title” and “display about dialog.” In the **About** dialog box, choose “small” for your text size, and then add the following text:

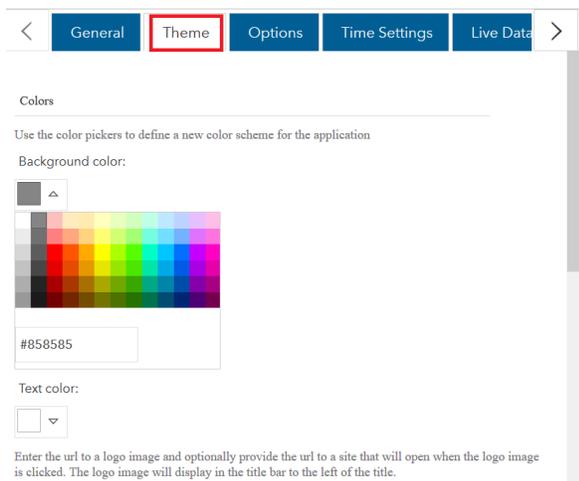
The main purpose of this web map application is to show the location and distinguish the different type of burglary crimes in Broward County, Florida - November 2014, according to the FBI- Uniform Crime

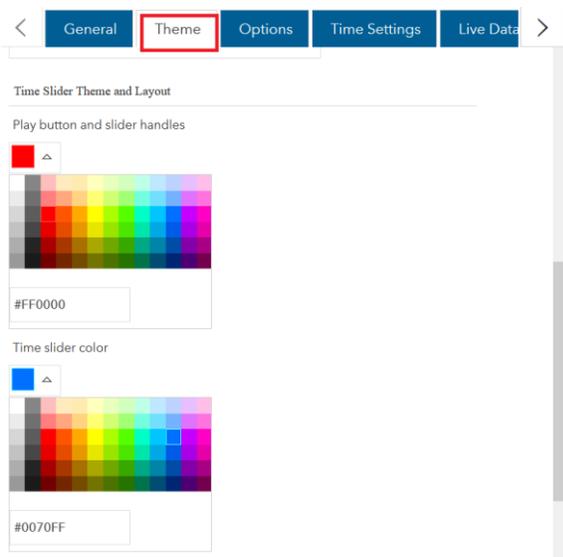
Report.



Theme

In the **Theme** tab, configure the **Background Color** and the **Text Color** by selecting a color from the color chart or by inserting a specific code for your desired color. You can also choose the default colors, as we did.

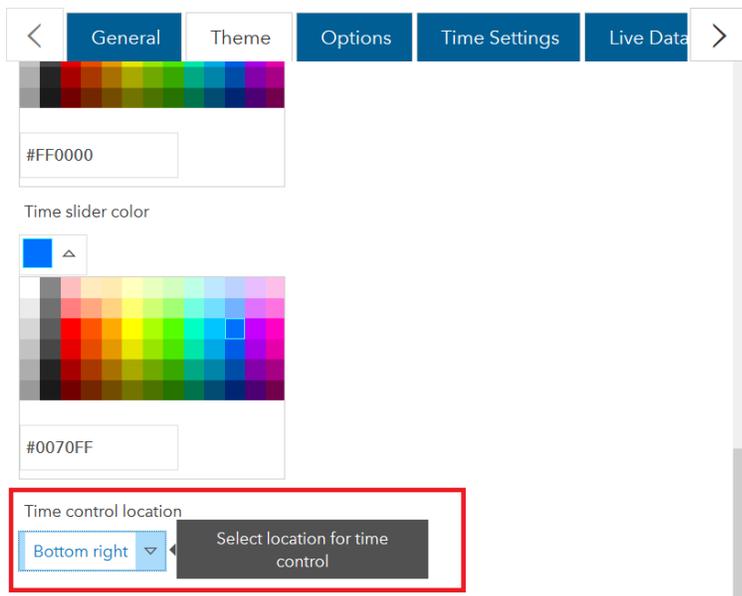




AGOL also lets you choose the colors for the time slider, as well as the time slider play button and slider handles. You can leave these as the default colors or pick your own colors; I chose NAPSG Foundation colors!

Remember that it is better to use darker colors for the background and bright or light colors for the foreground to achieve contrast and visibility.

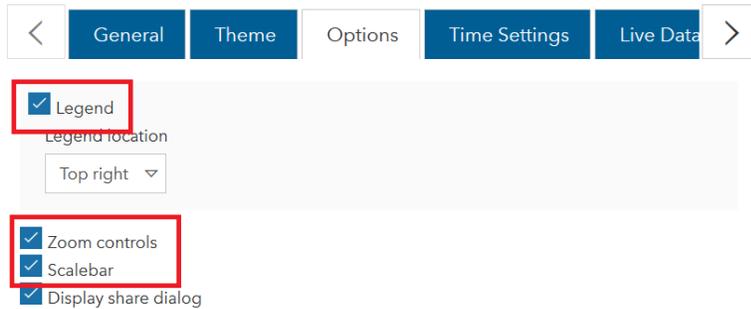
Finally, for **Time Control Location**, place the time slider to the **Bottom Right**.



Options

Click on the **Options** tab. In order to show the principal elements of the web map, you need to select the **Legend**, **Zoom Controls** and **Scale Bar**.

“Display Share Dialog” will automatically be checked—leave this as is.



Time Settings

In the **Time Settings** tab, ensure that both **Display Time** and **Loop Time Continuously** are checked. These options must be selected in order for the time slider to display properly and show a smooth animation of the map's symbology.

It is also important to display the control buttons of the time slider. To do so, select **Show Navigation** and **Add Tick Marks to Slider**.

Lastly, check the option for a **Playback Speed Button**, which will assume a speed of 1,000 milliseconds.

Do not change the other selections that AGOL defaults to, such as the date/time format settings.

< General Theme Options **Time Settings** Live D >

If the selected web map is time aware use the options in this section to configure the time behavior for the application. To disable time in the app set *Display time* to false.

- Display time
- Loop time continuously
- Automatically play slider

Set 'Update time immediately' to true if you want to see time data update as you drag the time slider handles. Note: if your dataset is large you may see performance decrease with this enabled.

- Update time immediately

Set *Hide slider control* to true to hide the slider portion of the time display and show just the play control and date.

- Hide slider control
- Show navigation buttons
- Add tick marks to slider
- Playback Speed Button

Playback speed:

Search

The search option will allow to other users find a location or data in the map. In the [Search](#) tab, select **Enable Search Tool**.

You may have noticed the Live Settings tab. We do not have any live data to incorporate into the application, so we do not need to configure these settings.



Enable search to allow users to find a location or data in the map. Configure the search settings to refine the experience in your app by setting the default search resource, placeholder text, etc.

Enable search tool

Configure Search

Enable	Source name	Edit
<input checked="" type="checkbox"/>	USNG Geocoder (FEMA)	Edit
<input checked="" type="checkbox"/>	Esri World Geocoder	Edit

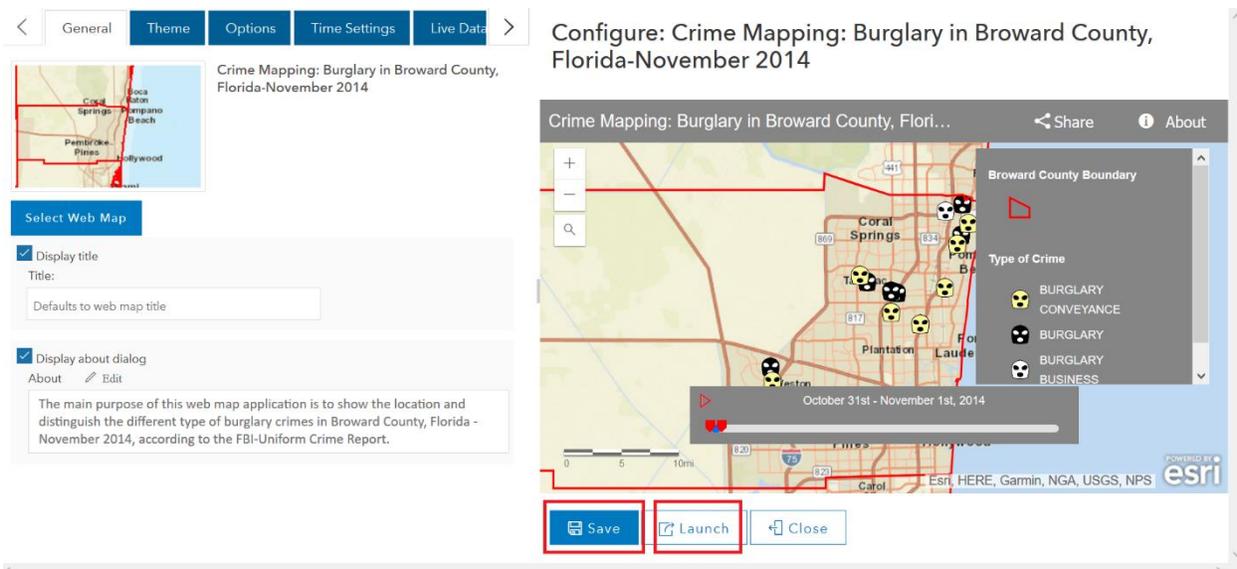
Select default source

USNG Geocoder (FEMA) ▼

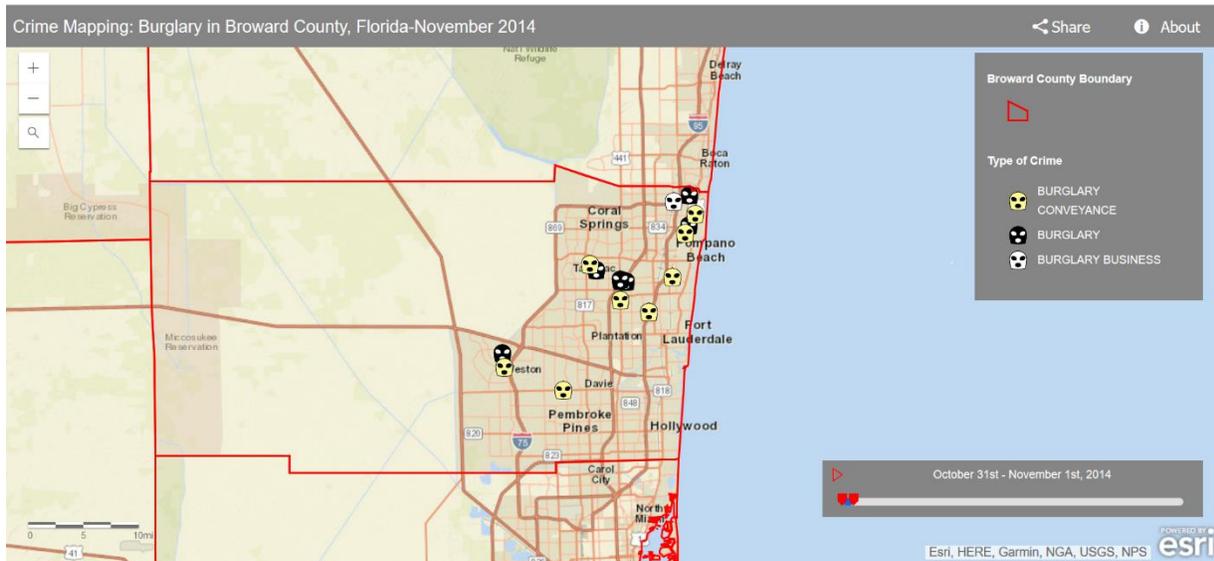
Search all sources

Step 7: Review the Web Map and Save the Changes

Once you have reviewed all the elements of your final Web Map App—General, Theme, Options, Time Settings, Search—click on **Save** and then **Launch**.



Your Web Map App will be generated in a new tab in your browser.



Your Web Map App should look something like this; you should be able to see the elements that you configured in previous steps, such as the colors you chose.

Step 8: Exploring the Share Component of the Web Map Application

You can share your Web Map App with your organization or with other users by sharing it through Facebook, Twitter, Google Plus, Email or by copying and pasting the Map Link provided by AGOL.



Additionally, you can embed your Web Map App in your personal website using the code provided in the Share menu. Adjust the size of your Web Map App before you copy/paste the embed code, since that

setting will be reflected in the code.

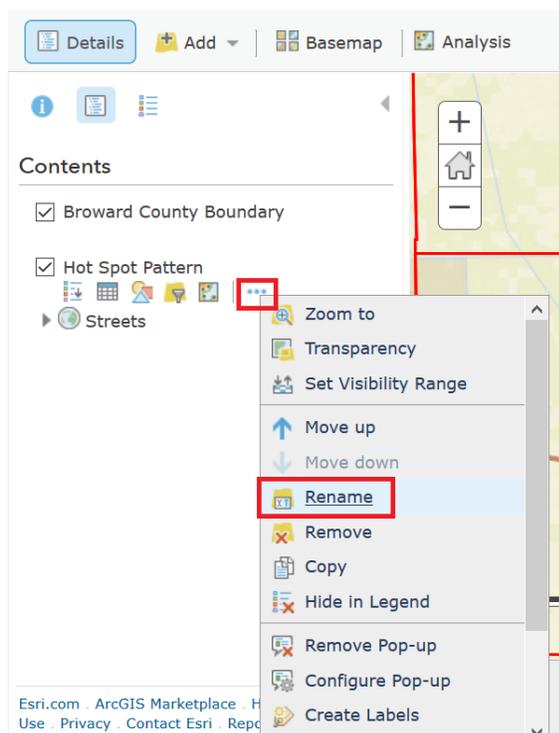
Step 9: Create a New Web Map Application that shows the burglary patterns and trends

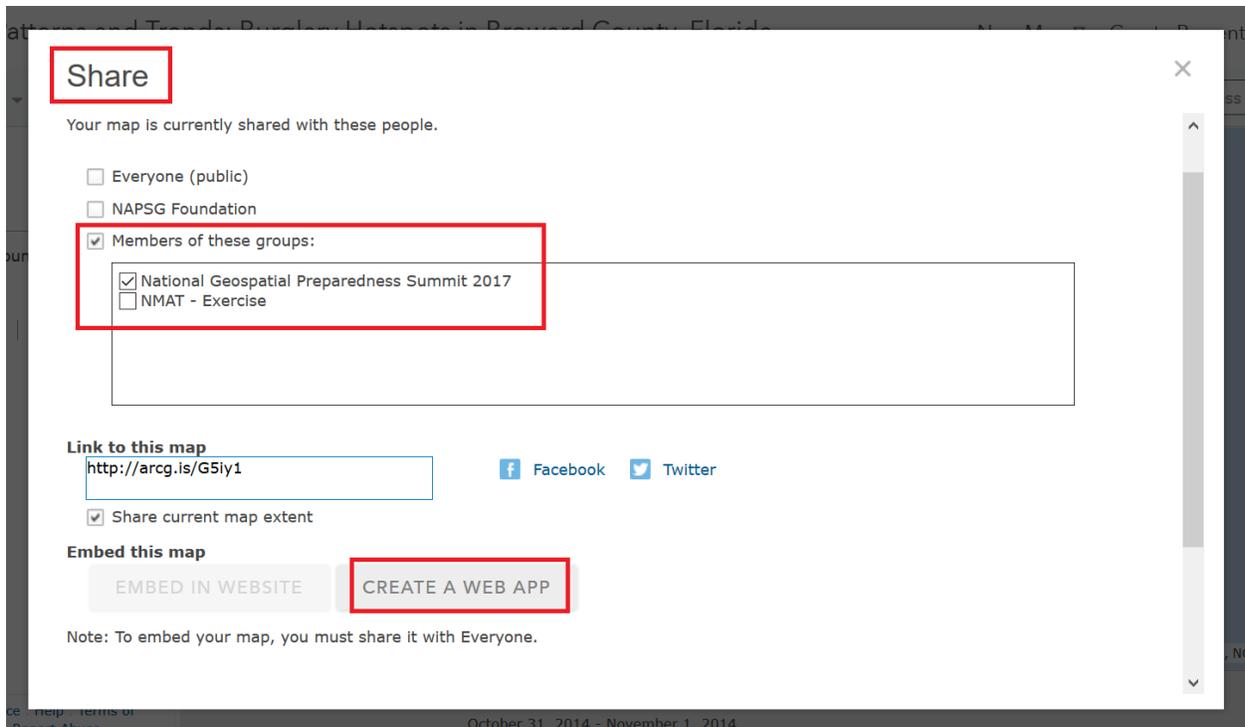
To create a second Web Map Application that shows the patterns and trends of burglary across Broward County, you first need to follow the previous 10 steps. Then you need to follow some additional steps that will be outlined here.

This tutorial will briefly review the main elements that need to be changed for this second Web Map Application.

Return to My Content and Open the Heat Map that you already created in the first tutorial “Public Safety - Crime Mapping and Spatial Analysis Using ArcGIS Online for Police Officers”.

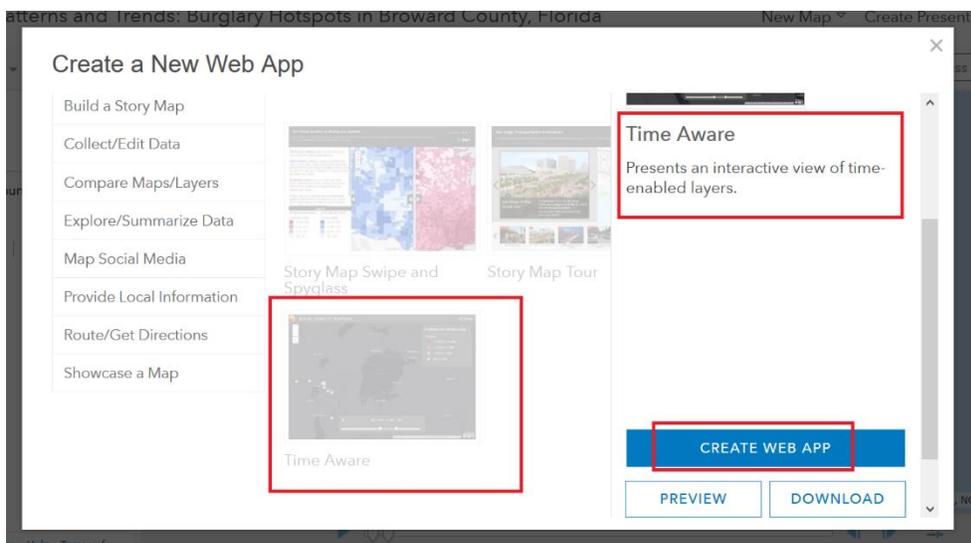
Rename the titles of the layers to: Broward County Boundary (county boundaries layer) and Hot Spot Pattern (burglarly data layer).





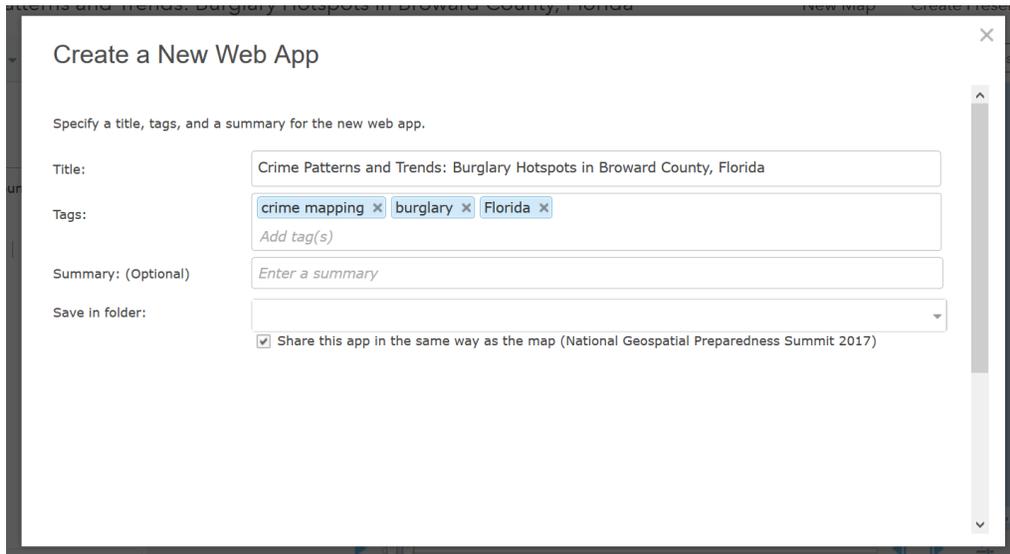
Next, click on the **Share** tab. For the purposes of this tutorial, we will just share the Web Map App with the **National Geospatial Preparedness Summit 2017 group**. However, in the future you may need to share with “everyone” to ensure that your audience has access to your application. **Click Create A Web App**.

In the next menu, scroll down to find the **Time Aware** application template at the bottom of the list in the **Configurable Apps** tab. Click on the icon and then click **Create Web App**.



Give the Web App the title: “Crime Patterns and Trends: Burglary Hotspots in Broward County, Florida” Provide some tags, such as Burglary and crime mapping, and check to see that it is saving to your personal AGOL folder. If your folder does not show up (as depicted below), do not worry—it will automatically save in your **Content** folder.

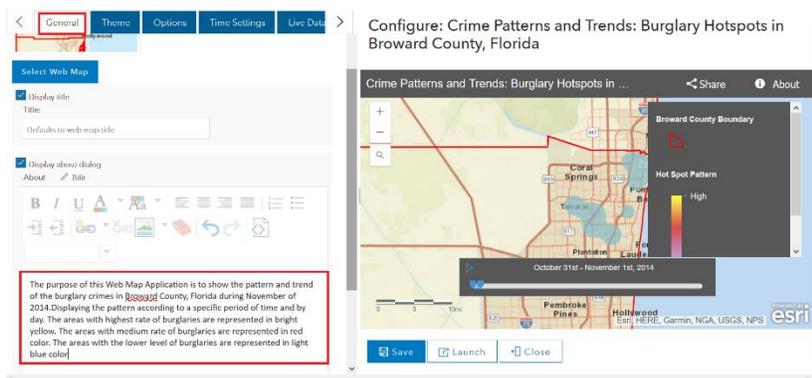
Scroll down and finish by clicking **Done**.



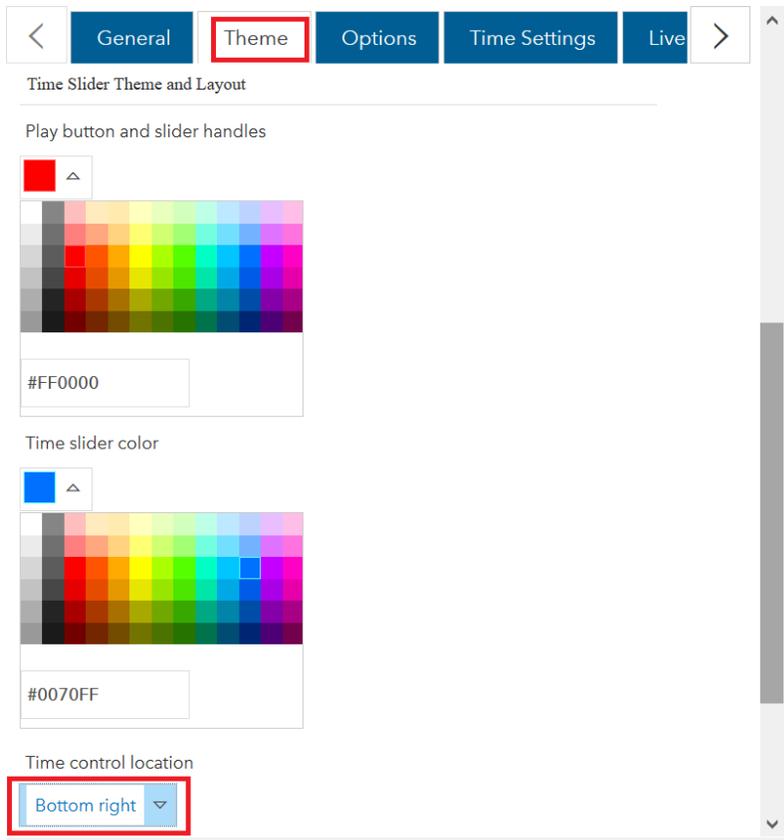
Once you are in the Configuration Menu for your Web App Map, in the **General** tab add the following text to the About section:

“The purpose of this Web Map Application is to show the pattern and trend of the burglary crimes in Broward County, Florida during November of 2014. Displaying the pattern according to a specific period of time and by day. The areas with highest rate of burglaries are represented in bright yellow. The areas with medium rate of burglaries are represented in red color. The areas with the lower level of burglaries are represented in light blue color.”

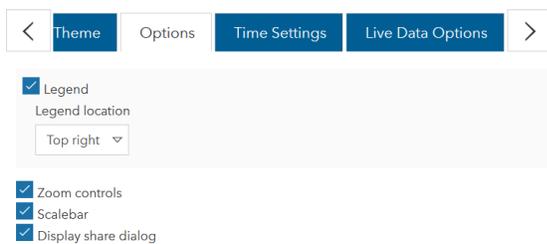
Leave the default checkmarks as is—they will ensure the Title and About sections are displayed in your application.



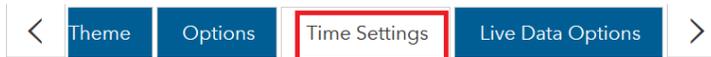
Under the Theme tab, change the colors to your personal design. In this case, we used the defaults for the application's colors, and again used NAPSG colors for the time slider colors. Again, choose **Bottom Right** for the time slider's location.



As was explained previously, in the **Options** tab, make sure the following selections are made:



As was explained previously, in the **Time Settings** tab, make sure the following selections are made:



If the selected web map is time aware use the options in this section to configure the time behavior for the application. To disable time in the app set *Display time* to false.

- Display time
- Loop time continuously
- Automatically play slider

Set 'Update time immediately' to true if you want to see time data update as you drag the time slider handles. Note: if your dataset is large you may see performance decrease with this enabled.

- Update time immediately

Set *Hide slider control* to true to hide the slider portion of the time display and show just the play control and date.

- Hide slider control
- Show navigation buttons
- Add tick marks to slider
- Playback Speed Button

Playback speed:

Finally, in the **Search** tab make sure **Enable Search Tool** is checked. You can leave the rest of the defaults as is.



Enable search to allow users to find a location or data in the map. Configure the search settings to refine the experience in your app by setting the default search resource, placeholder text, etc.

- Enable search tool

Configure Search

Enable	Source name	Edit
<input checked="" type="checkbox"/>	USNG Geocoder (FEMA)	Edit
<input checked="" type="checkbox"/>	Esri World Geocoder	Edit

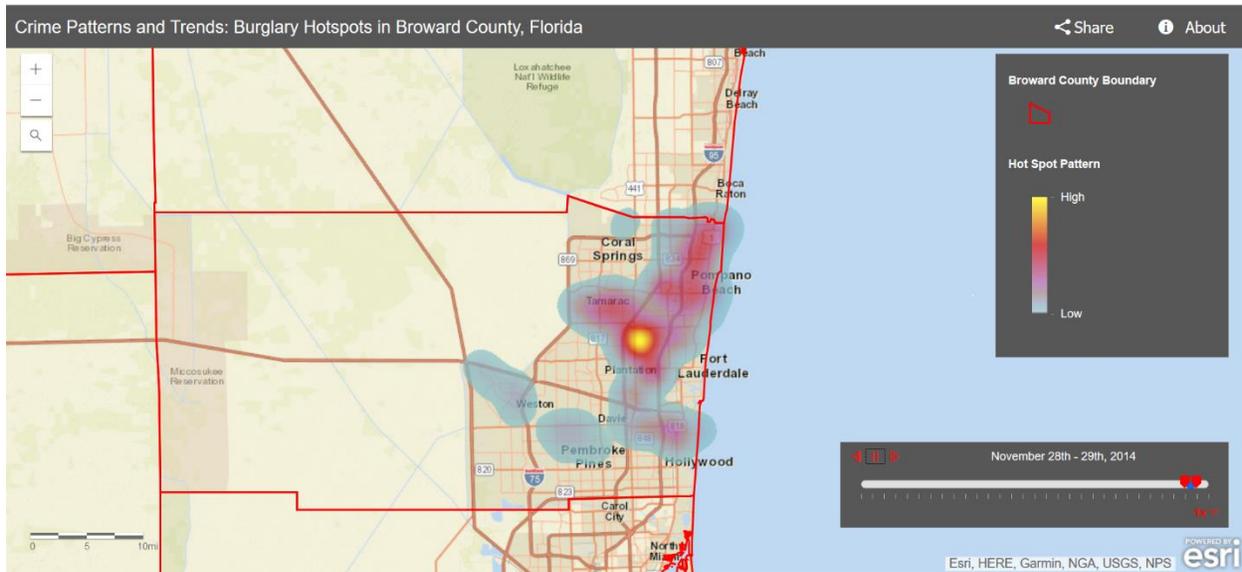
Select default source

USNG Geocoder (FEMA) ▾

- Search all sources

When you have completed all your changes, click on **Save** and then **Launch**. Your Hot Spot Web Map App will launch into a new tab of your browser.

Your Web Map App should look something like this, with the elements you configured, such as color, displayed. Watch as the concentration of burglaries in Broward county is displayed through time!



Remember that you can share your Hot Spot Web Map App in all the same ways as your previous application; through social media, email, or by sharing the Map Link. You can also embed your map into a website using the code provided.

Further information About Hot Spot Analysis

In this exercise, the term ‘Hot Spot Pattern’ is used where maps of density are represented as ‘heat.’ This can be a very effective way to visualize the density of data.

A true *Hot Spot Analysis* is a spatial statistics test that indicates areas of statistically significant high and low areas. Both methods have strengths and weaknesses that a crime analyst should become familiar with.

For more information on this topic, see “Identifying High Crime Areas” by the International Association of Crime Analysts (IACA).

Download available: http://iaca.net/Publications/Whitepapers/iacawp_2013_02_high_crime_areas.pdf
