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Creating a Dashboard to Identify and Enhance Preventive Search and Rescue Efforts

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Agenda

Background

Goals & Objectives

Study Area

Proposed Methodology

Anticipated Results

Future Considerations

Project Value

Timeline



Background: WiSAR

- Wilderness Search and Rescue (WiSAR)
 - About
 - Challenges
- Previous studies
 - Last Known Point (LKP)
 - Lost Person Behavior (LPB)
 - Incident Planning Point (IPP)
 - Mobile Applications



Background: Preventive Search and Rescue (PSAR)



- About
- Importance
- Previous Studies
- Successful PSAR Programs
 - Grand Canyon National Park
 - Yosemite National Park

Photo Credit: RAEng Publications. (2020, March 13). Pixabay.
<https://pixabay.com/photos/engineer-engineering-4925135/>

Background: New York Search and Rescue

- Annually, over 300 individuals are lost or injured in New York's wilderness
- NYS DEC Forest Rangers empowered by NYS Environmental Conservation Law
- Typical missions: lost persons, downed aircraft or rescue operations
- Other Rescue Groups
 - Adirondack Mountain Rescue
 - Lower Adirondack Search and Rescue: LASAR
 - Search and Rescue of Northern Adirondacks
 - Central Adirondack Search and Rescue

Goals & Objectives

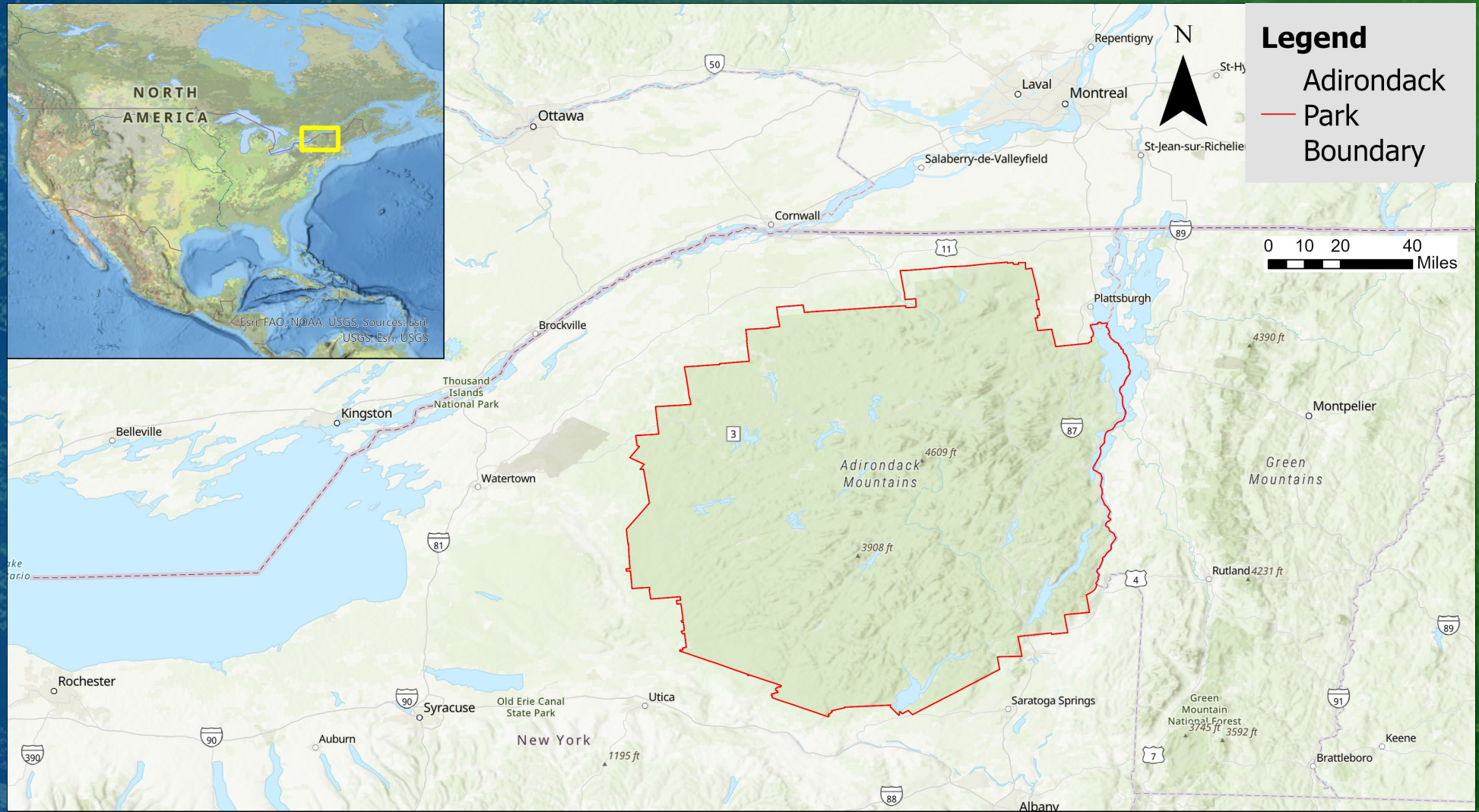
Goals

- To reduce the number of missing persons in the wilderness and Increase people's safety
- Create a template dashboard focused on preventive search and rescue efforts for others
- Discover characteristics that provide insights into reducing people going missing

Objectives

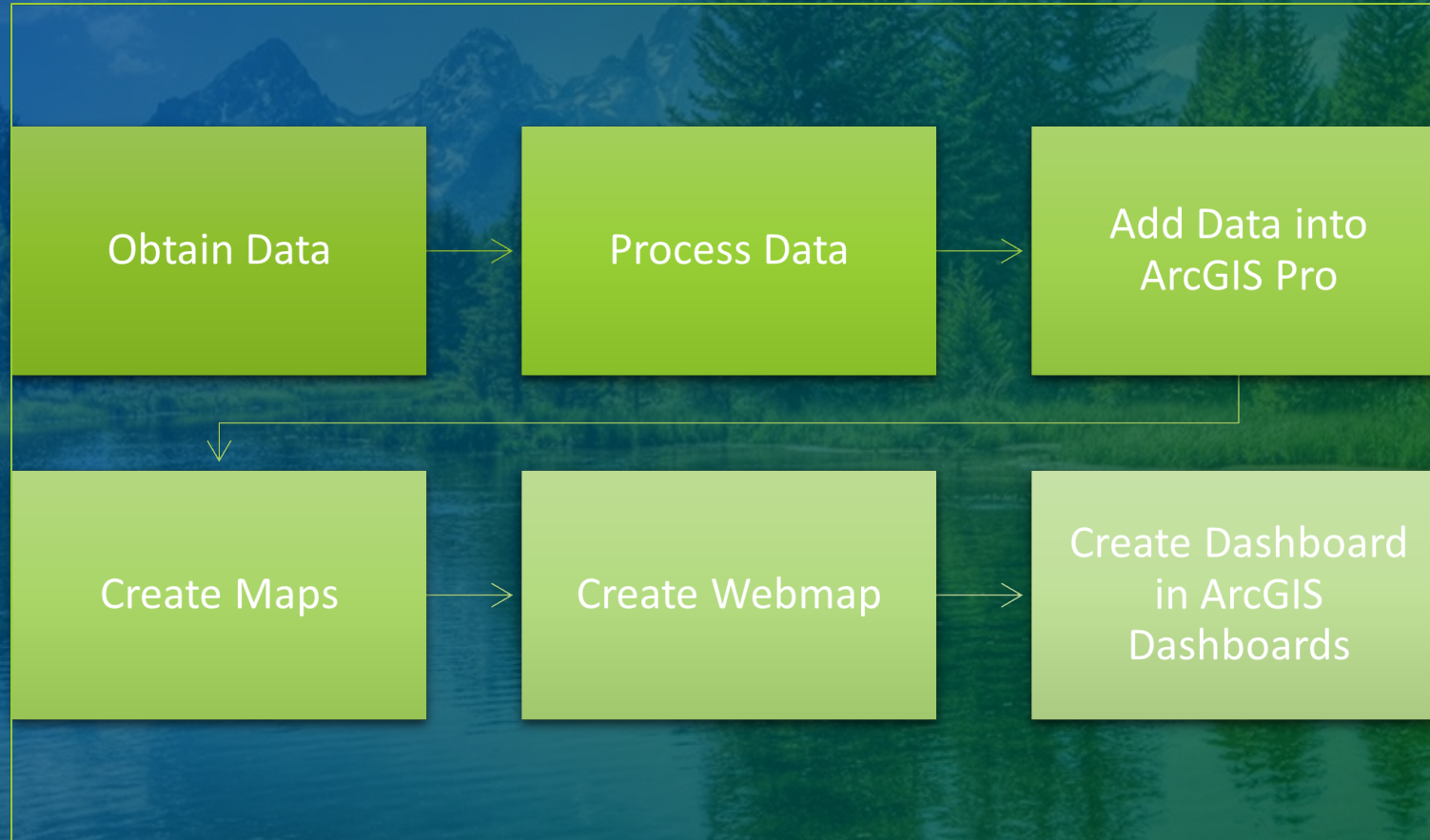
- Create a dashboard from Adirondack Park search and rescue data from 2012 to 2022 that presents information where authorities can implement efforts to prevent future wilderness search and rescue operations.

Study Area



Boundary Line of Adirondack State Park in New York State

Proposed Methodology



Obtain Data

Proposed Methodology: Data

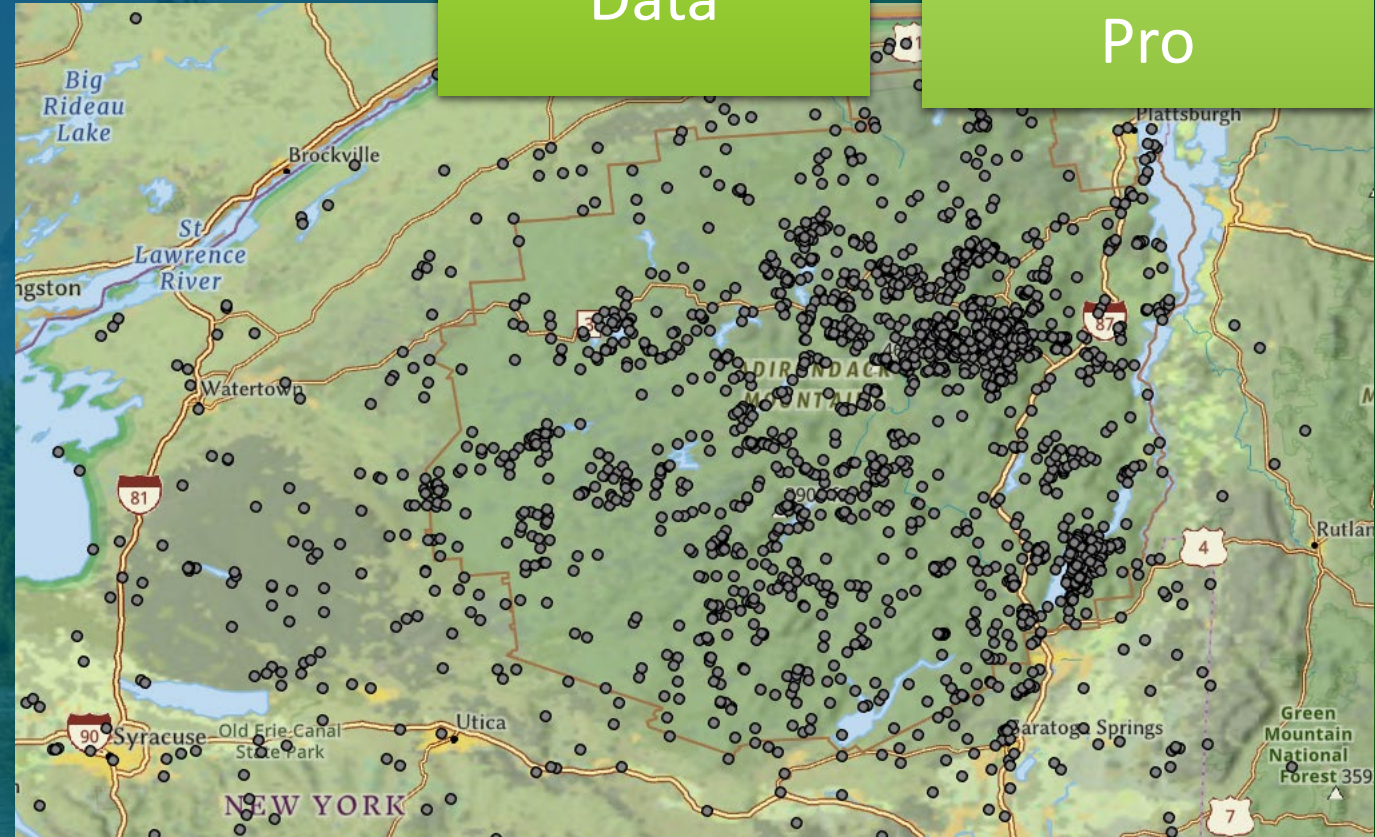
Name	Description	Source
Wildland Search and Rescue Missions by NYS Forest Rangers: Beginning 2012	Shapefile – Date ranges from 2012 to March 2023. Attributes include demographic information, found in search area, last known location county and land cover, number of rangers found, incident time and date, type of SAR incident, and latitude and longitude where found	DATA.NY.GOV: https://data.ny.gov/Public-Safety/Wildland-Search-and-Rescue-Missions-by-NYS-Forest-/u6hu-h7p5
Adirondack Boundary file	Shapefile - Outer boundary of the New York State Adirondack Park as described in Section 9-0101 of the New York Environmental Conservation Law. Also known as the "Blueline."	Adirondack Park Agency ArcGIS Data: https://apa.ny.gov/gis/ApaData.html
Adirondack Park Land Classification	Shapefile - Represents state and private land classifications and open water	Adirondack Park Agency ArcGIS Data: https://apa.ny.gov/gis/ApaData.html

Proposed Methodology: Data

- Total of 5,414 Incidents (Adirondack – 3,414)
- Date span: January 2012 - December 2022
- Incidents

Process Data

Add Data into ArcGIS Pro



Screenshot of All SAR Incidents in Adirondack Park

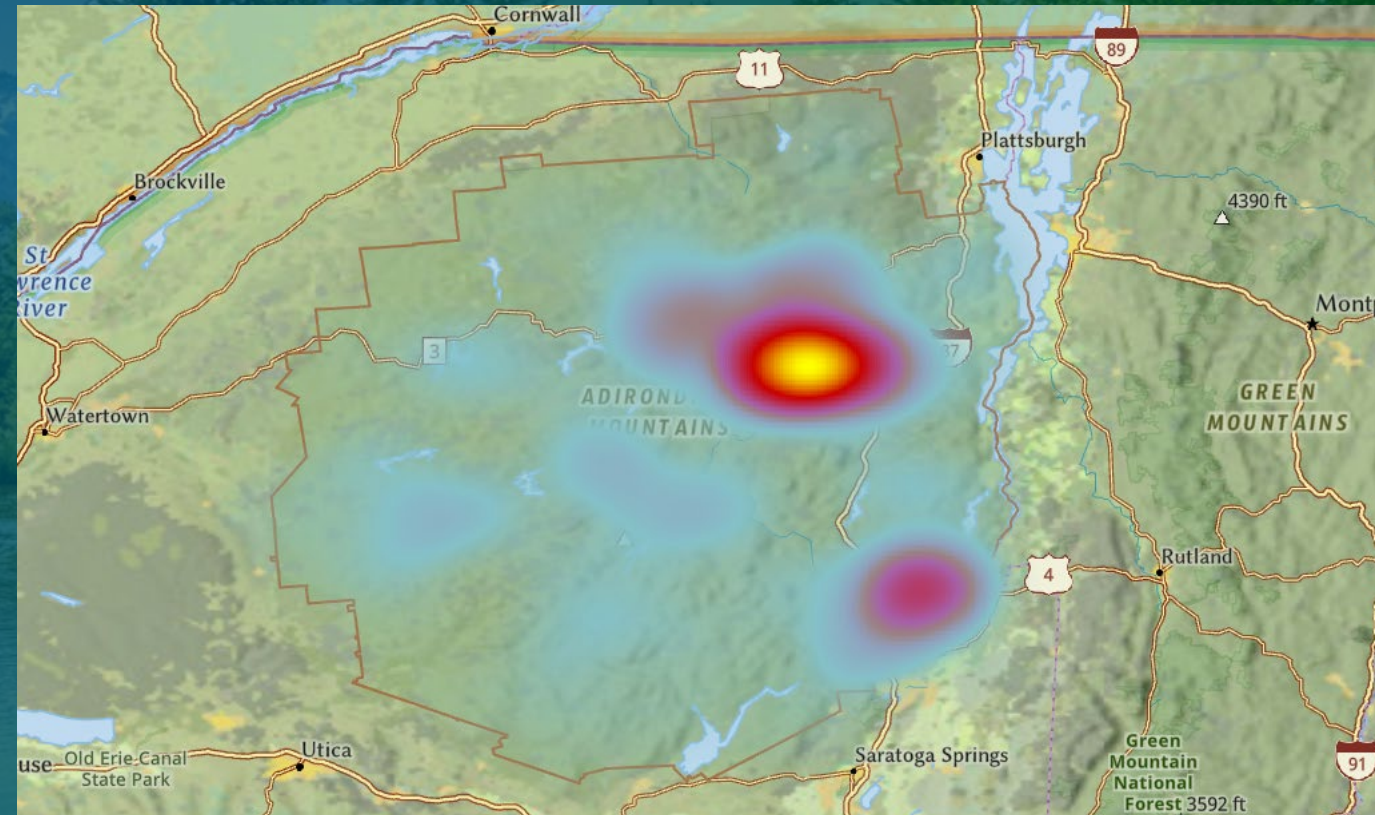
	G	H	I	J	K	L	M	N	
R	SUBJECT GENDER	SUBJECT AGE	SUBJECT STATE	SUBJECT COUNTRY	ACTIVITY	SITUATION	LOCATION FOUND LATITUDE	LOCATION FOUND LONGITUDE	LOCATION
1	M	25	NY	US	Despondent	Missing	42.23613	-73.71002	

Proposed Methodology

- Heat Map/Dot Density Map
- Colocation Analysis
- Spatial Association Between Zones

Create Maps

Create Webmap



Screenshot of All SAR Incidents in Adirondack Park Heat Map

Proposed Methodology

- Add elements
 - Demographics
 - Location
 - Activity
 - Incident Totals and Time of Year
- Interactive Elements

Create
Dashboard in
ArcGIS
Dashboards

Anticipated Results

- Interactive dashboard that identifies trends and patterns to implement targeted PSAR tactics
- Benefit to SAR personnel, resources, and public safety

Dashboard ESRI Example

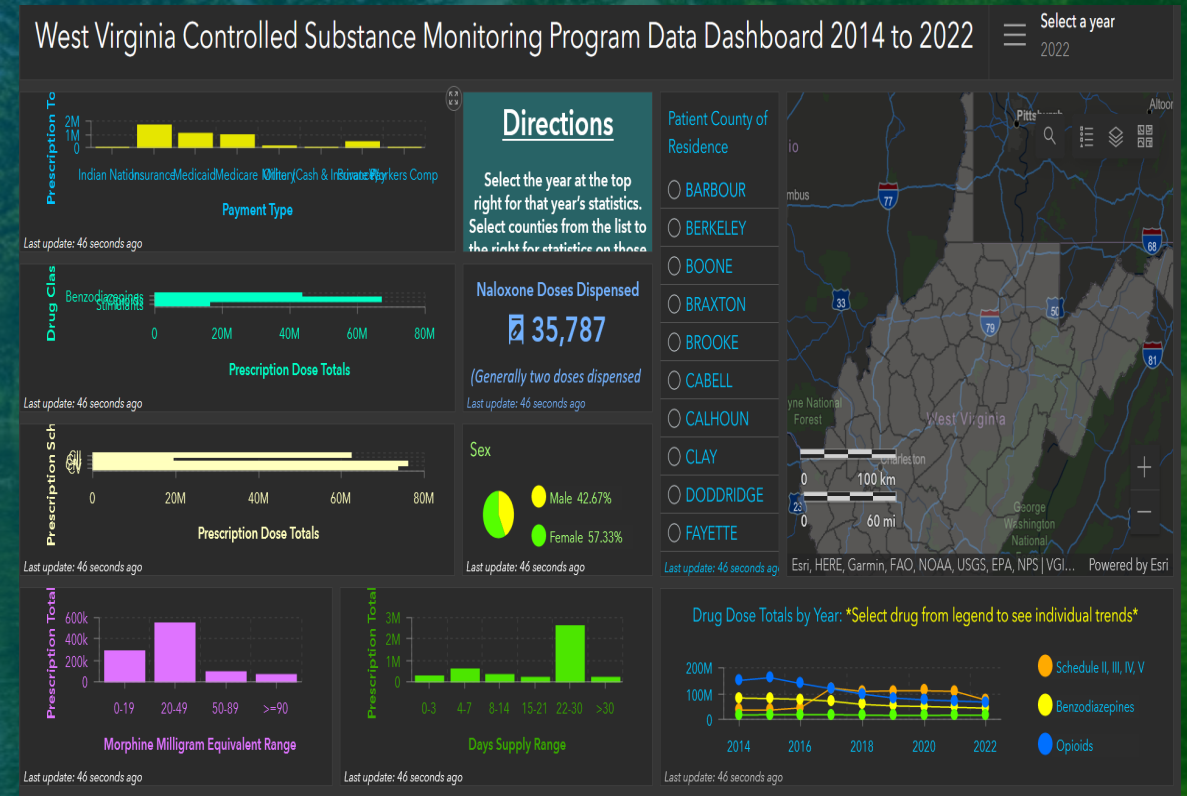


Photo Credit: ESRI. (2023) Screenshot of Tactical Dashboard. Retrieved 18 April, 2023 from <https://www.arcgis.com/apps/dashboards/4b314711d252496d941048cd4867ab85>

Future Considerations



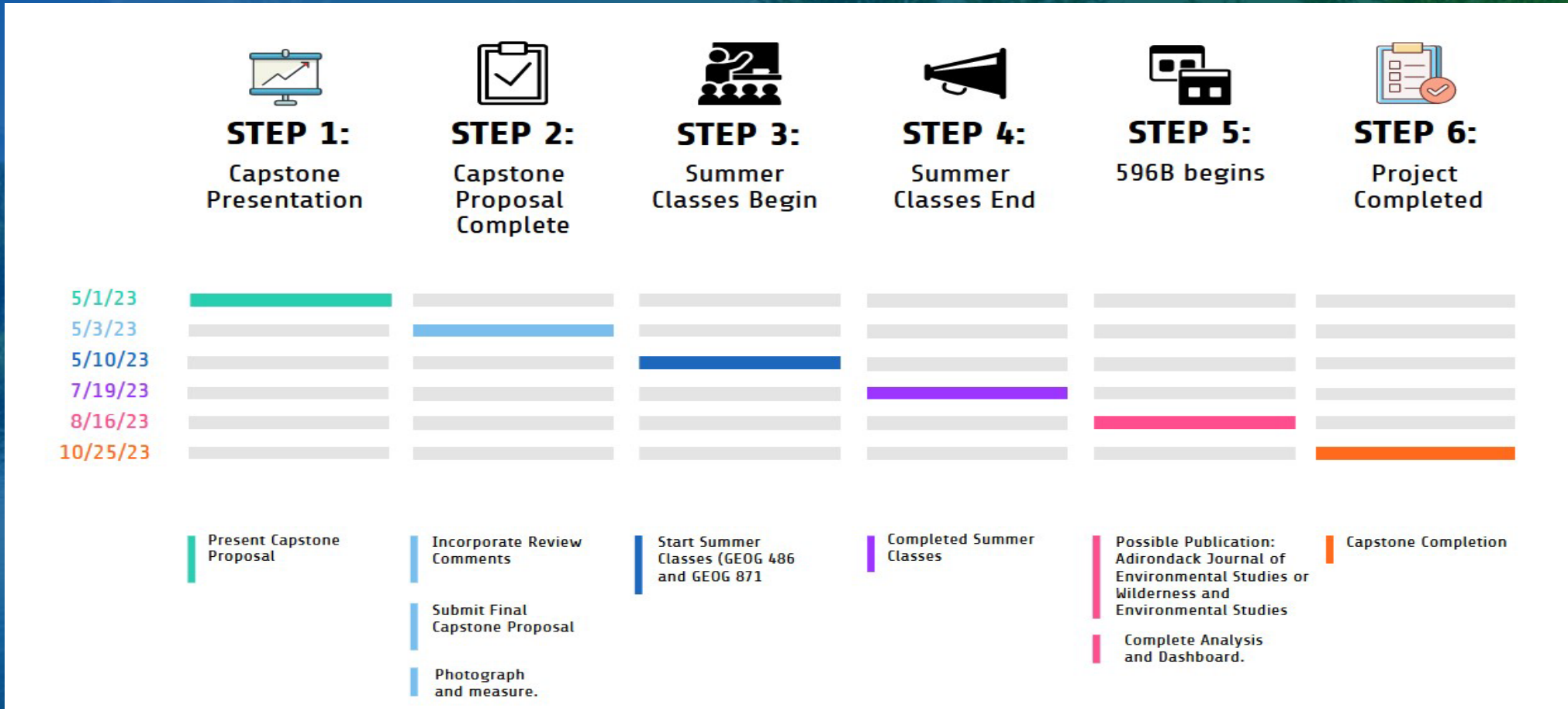
- Dashboard Elements
- Interactive Elements
- Possible FOIL results

Photo Credit: Pixabay. July 7, 2017. [Public Domain]

Project Value

- Analyzing and visualizing historical data will cut down resources and increase public safety
- Shows the importance of collecting standard data points that are critical to WiSAR analysis
- Dashboard could be implemented in other WiSAR efforts depending upon data availability

Proposal Timeline



Questions



References

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