**Lab 5 Tile Layers and Map Image Layers**

**-Answers-**

**REMINDER: DO NOT CHANGE THE FORMAT OF THIS DOCUMENT. ALTER SPACING BETWEEN QUESTIONS AS NECESSARY.**

**/42**

**Name: Jacob Dietrich**  **Date: 9/25/2021**

1. **Referring to the metadata file, what does the *TotalAcres* mean in the *Wildfires* layer?** *(1)*

The TotalAcres field is referring to the number of acres affected at the moment the wildfire was contained.

1. **Referring to the metadata file, what does the “*loss” value of 1 mean for a tornado on 2015-12-23*?** *(1)*

The loss field is referring to the amount of dollars (in millions) that was cost due to the tornado.

1. **What are the benefits to use *Web Mercator* coordinate system for the web service?** *(2)*

The benefits of using Web Mercator coordinate system for web services is because it maps the Earth to a sphere, which helps simplify calculations. It also eases indexing issues, which allows for continuous panning and zooming.

1. **How do the *levels of detail* and *tiling format* influence the volume of the vector tile files?** *(2)*

The levels of detail influence the volume of the files exponentially. Each level of detail adds divisions to each tile. The tiling format influences the volume of the files by determining how the tiles are indexed. The flat tiling format produces a regular tile for each area on the map, regardless of the data.

1. **For the same dataset and levels of detail, which tile volume is larger, vector tile or raster tile?** *(1)*

For the same dataset and levels of detail, raster tile volume is larger.

1. **What is the name of the map image layer you identified and why do you want to use this layer in your disaster map?** *(2)*

ACS Vehicle Availability Variables – Boundaries

I want to use this layer in my disaster map because I would like to see the relationship between damages and how likely it is that any one of those households could have a vehicle.

1. **Which layer has pop-up to configure, vector tile layer, raster tile layer, or map image layer?** *(2)*

Map image layer

1. **What relationship have you found between the natural disasters and the population information in your map?** *(3)*

Although not seen universally, it seems that there may be some correlation between the loss from natural disasters and the lack of vehicle availability. There seems to be clusters of recorded natural disasters more often in areas of vehicle availability depravity.

1. **Prove the URLs for both of your TWO web maps and your compare analysis web app.** *(20, see then rubric)*

Vector tile: <https://arcg.is/150S8H1>

Raster tile: <https://arcg.is/1541fn>

Analysis web app: <https://umw.maps.arcgis.com/apps/Compare/index.html?appid=936dbe92b0bb4acdb3c6c4a22e87d3d5>

1. **Based on your observation and the content from the lecture, write a paragraph summarizing the differences between raster tile layers and vector tile layers?** *(4)*

The differences between raster tile layers and vector tile layers can be fairly subtle. One of the subtleties is that vector tiles can and do have smaller file sizes, which means maps, specifically web maps, will be faster and have better performance than raster tiles. Vector tiles are also rendered client side versus on server side, where raster tiles are rendered. Resolution can also be a subtle difference. Raster tiles may have a more limited resolution than vector tiles.

1. **Based on your observation and the content from the lecture, write a paragraph summarizing the differences between raster tile layers and dynamic map image layers?** *(4)*

When viewing raster tile layers and dynamic map image layers side-by-side, you’ll notice a few things are key differences. On a dynamic map image layer, labels, symbologies, visibility, and rendering capabilities are all changeable as well as are able to adjust to the extent and zoom level of the map. On a raster tile layer, labels specifically will stay in the same size and font, while not rotating to fit the map’s current extent, unlike on a dynamic map image layer.