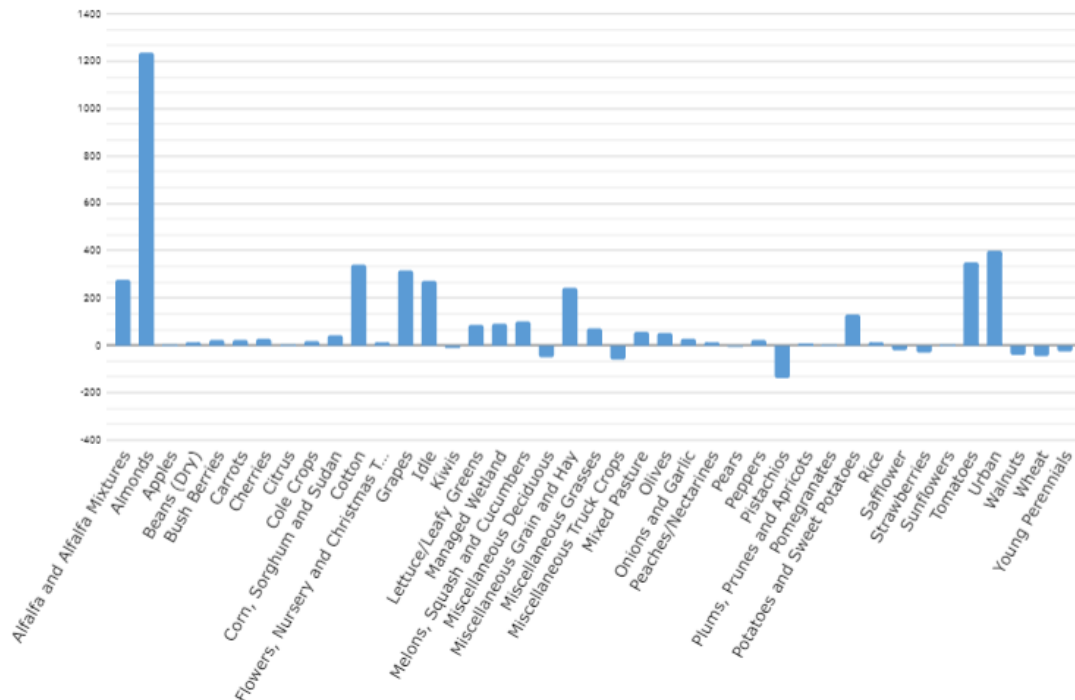# Laboratory 2 (Case Study 2-2)

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Differences between shape areas and raster areas in hectares (vector-raster), using 330-meter pixels

Describe your submission in a few sentences. Describe what your chart is depicting and discuss your results.

- The chart depicts the difference between shape areas and raster areas in hectares. It shows the differences of amounts of crops between shape and raster. For example, for Apples, it has a very large difference of around 1200, which shows the possible large difference that shape areas and raster areas can have. This shows that they are dissimilar to each other since there is a big difference.   However, this chart ultimately shows that the data of the vector's crops are overall much larger than the raster data. In other words, the vector data points were often bigger than the raster data points. When the raster data points were bigger than the vector data points, this produced the negative results which is why there is a negative range. This seems to show that vector data is much better and more efficient than raster data in this context. Vector data seems to be the most accurate.

Export a map of your result. Describe your submission in a few sentences. Discuss the differences between your original crop cover clip and the result of your vector-to-raster-to-vector conversion.
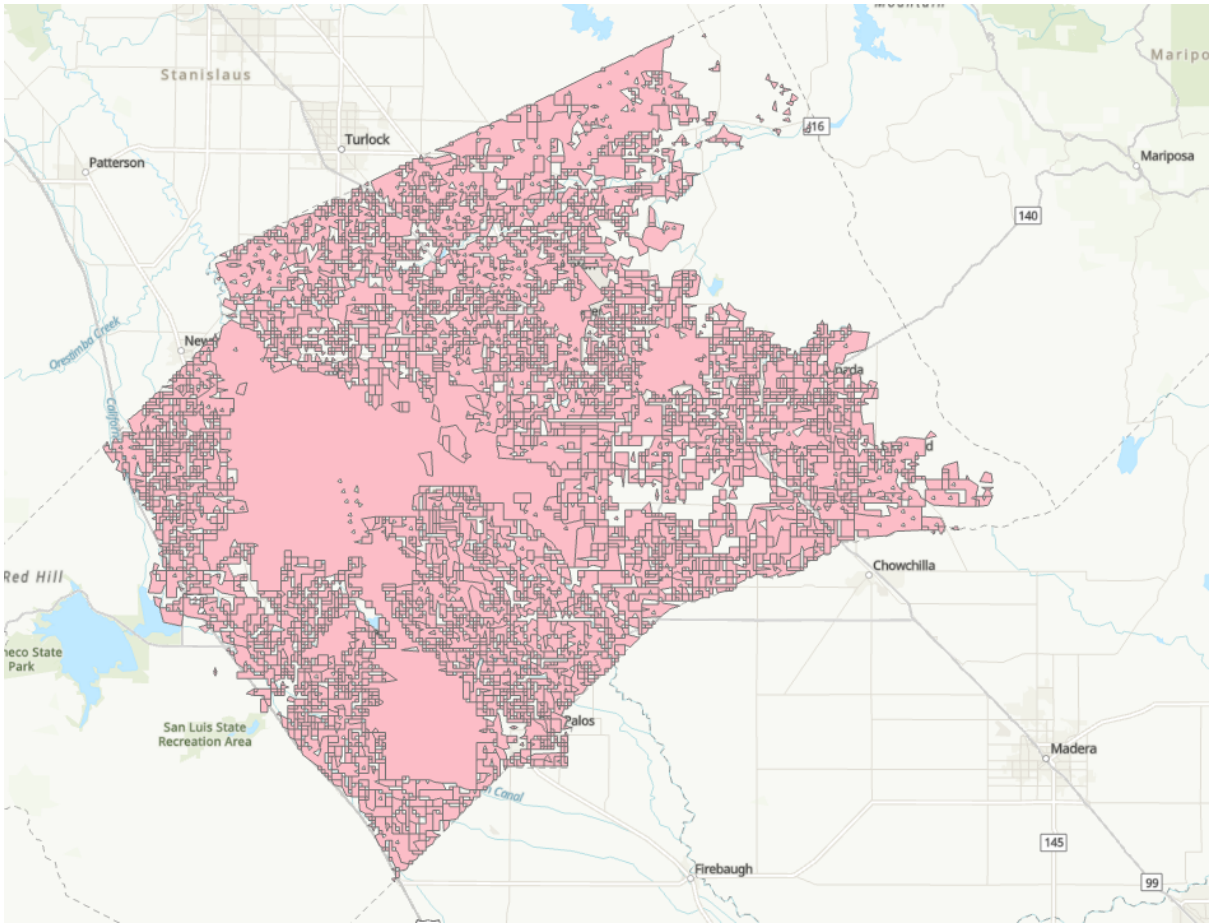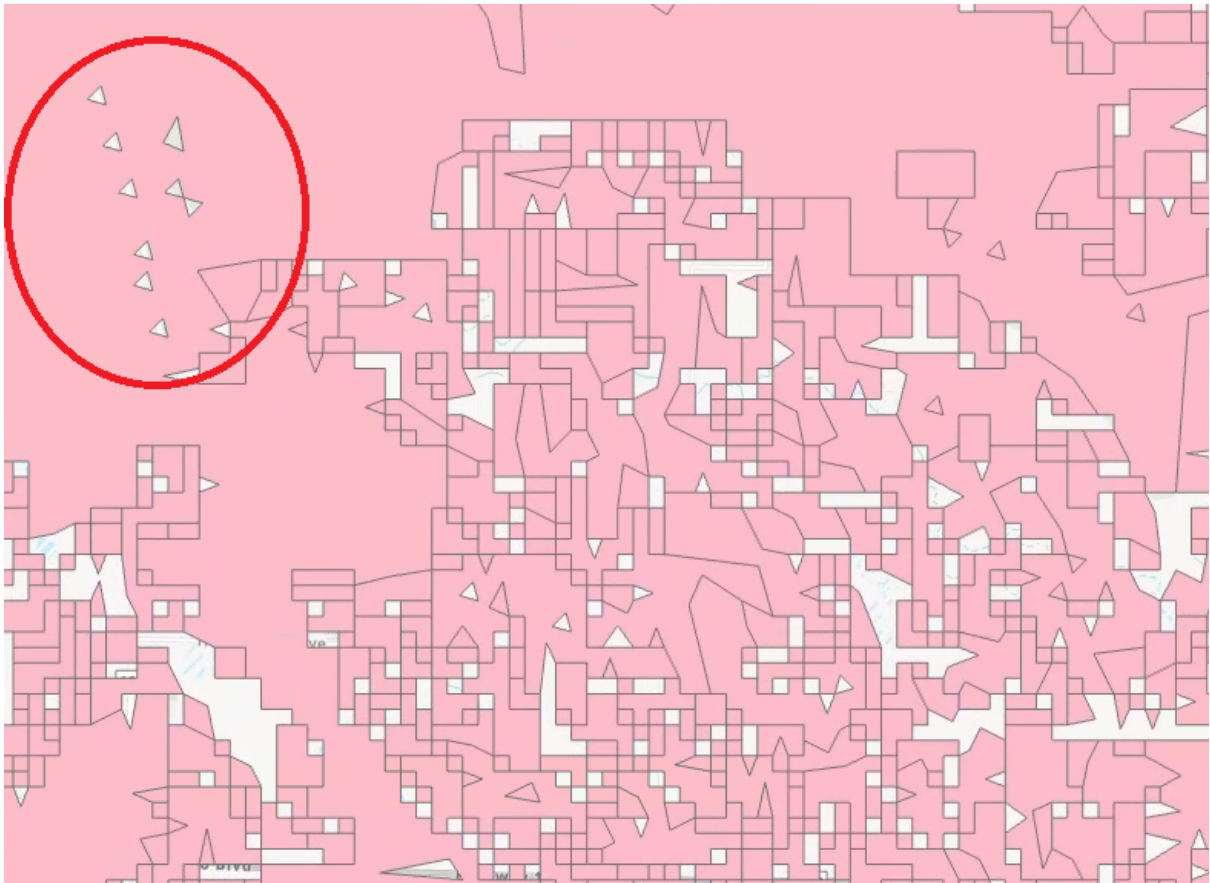
- The difference between these two are mainly shown in the two images above of the same area. One difference is that the color of the map has changed from a multiple variety of colors to just one focused color. This means that the vegetation is represented as one color which prevents people viewing the map from seeing the different vegetations. Another noticeable difference is that the first image doesn't match the second image (original) and has a lot of inconsistencies. The first image roughly matches the region, but it is very inaccurate and less precise than the second

image. The connected polygon near the top left above the red and yellow and purple in the second image becomes a series of random triangles that aren't connected in the first image. Refer to the red circles in each image to see the specific areas I was trying to describe for a better visualization of the difference. This is an example of the lack of precision and accuracy. The second image is more accurate because it's more detailed and the first one is less accurate because it's less detailed. It looks like information and the structure of the map boundaries were lost in the process of the conversion which makes it less accurate. There seems to be more room for error and inaccuracies in the first image than in the second image.

Answer: Provide one scenario for each: When would you want to use raster tiles? When would you want to use vector tiles?

- Vector tiles would be used in a scenario where the size of map tiles and styling flexibility is important. Vector tiles also can be used in scenarios where data management is vital and saving space is crucial. This is because vector tiles are small which result in enabling global high resolution maps, fast map loads and efficient caching. Raster tiles would be used in a scenario where maps need to be able to work on any types of devices. This includes working on slower devices. Raster tiles can be used in a scenario where a user doesn't have the best hardware to generate the best map. Raster tiles are less demanding on end-users hardware, but more demanding on the server-side. Raster tiles can also be sometimes suitable for some data types like satellite or aerial imagery. Raster tiles are however big in size compared to vectors.

References:

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Mapbox. (n.d.). *Vector tiles introduction*. Mapbox. Retrieved June 14, 2022, from https://docs.mapbox.com/data/tilesets/guides/vector-tiles-introduction/

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%7E:text=Raster%20map%20tiles%20are%20larger,demanding%20on%20e

nd%2Dusers%20hardware.