**ESS162 Lab1: CA geography and population; Spatial patterns of population across CA**

**This is a solo report lab**:

Lab is due online via Canvas at the beginning of Jan 15 class (11A). The rules for solo labs are: You may help your classmates with the data analysis, but the final lab report must be done alone, and lab reports with text or figures that have obviously been duplicated between students will be returned ungraded.

**Goals:**

You will be plotting and analyzing datasets that describe the spatial patterns of population density across California and more generally some aspects of California’s geography. The datasets are contained in a single zip file on the class website (Lab1.zip), which you will download and unzip into a single folder. You will be working with Google Earth Pro and Excel in this lab. The key datasets you will be analyzing are:

1. Ca\_eco-l3.shp open this in Google Earth to see the distribution of ecoregions across CA
2. Census\_county\_clipped\_final.shp open this in Google Earth to see the distribution of counties and their population across CA
3. Census\_tract\_clipped\_2.shp open this in Google Earth to see the distribution of population across CA at a finer scale (individual census tracts)
4. Census\_county\_4.xlsx open this in Excel to analyze the county level population patterns
5. Census\_tract\_3.xlsx open this in Excel to analyze the finer scale level population patterns

**Tools, steps and commands**

Download by clicking on the file

Right click and extract all to unzip the files

You will see a bunch of additional files when you unzip things that have similar names but different extensions (the extension comes after the period in the name – it indicates the file type). You will need to keep all of these files in the folder, though you won’t directly use them.

Google Earth Pro (this is free and it’s great fun)

General navigation – mouse to move, compass in upper right hand, scroll wheel to zoom in

Shift scroll wheel to tilt view

Left side menus - Search to zoom to location, Layers are various things that will show up on map, start with just “borders and labels” and “terrain” – check out UCI

Show ruler

Tools, options, 3D View

Import or open, file type shp, open ca\_eco\_l3.shp

Yes create a style template, create new template

Color, Use random color

Save kst file wherever it wants to put it

In places menu on left side turn the ca\_eco\_l3.shp layer on

Click on individual polygons to get info

Import or open, file type shp, open Census\_county\_clipped\_final.shp

Import all, yes create a style template, create new template

Color, Set color from field, colorfield logdens this log is natural log of density, palette start green, end red, 60 buckets

Height, set height from field, density, continuous

Turn terrain off and Census\_county\_clipped\_final on

Explore and create tilted view looking up CA from the south

Top menu, save, Save Image

Title and save image button

Repeat for Census\_tract\_clipped\_2.shp

Excel

Open or import Census\_county\_4.xlsx

Important columns are: Name (C), Aland (E; m2 area of land), Latitude and Longitude (G and H), populate (I; number of people), density (J; number of people/km2), logdens (K; the long of the density, helpful for visualizing).

Enter equation in L to create a new area column in km2

Enter equation in M to create a new density column in people/km2, confirm this = J

Sort by density

**Writeup**

Include the three figures you created above (1 of eco regions and 2 of census)

What is the area of Aldrich Park?

Diameter = 284.70 m

What county has the densest population, what county has the sparsest and where does Orange County rank?

What county has the largest population, what county has the smallest and where does Orange County rank?

LA has a huge population but doesn’t lead in density, why is this?

What is the overall population and area of the state?

How many people would there be in Aldrich Park given the population density of the most dense county?

How many people would there be in Aldrich Park given the population density of the least dense county?

What does the least dense county look like? What do you think is one of the main types of employment in this county? Find an example of this business in Google Earth and include a figure. How might climate change impact this industry?

What does the third least dense county look like? What do you think is one of the main types of employment in this county? Find two examples of business in Google Earth and include a figure. How might climate change impact this industry?