**Pseudocode randomly placing schools**

Description: I have a shapefile with different polygons in Yucatan, Mexico, with polygons (I believe) representing each locality (a locality is a town or a city). I also have new data with schools and I have the school names, addresses, and locality & municipality that they are in. We have done a process using the Google API to Geolocate the school addresses, i.e. matching them to coordinates; *however, not all of the school addresses worked and Google maps did not return an address for about 40% of them.* So, I am figuring out a method to randomly get coordinates for these missing coordinates for these schools, and I plan to randomly sample coordinates within a polygon. The schools that are randomly sampled with coordinates within each polygon cannot be too close to each other.

Overall goal: for the missing school coordinates, randomly place coordinates for those schools within each of the polygons (localities), but don’t have the coordinates for the schools too close to each other. We then must match those randomly placed coordinates to the correct school, so in the end we have a CSV file with school names and addresses *along with coordinates for each school.*

* Create a data frame with “Poly\_ID”, “Num\_Coord\_Known”, “Num\_Schools”
  + Figure out how to match the Poly\_ID from the shp file (our shp file does not have locality names, but I can find a shp file that does have that info) to the locality from our dataset of schools
* Make a loop that will take a Poly\_ID, and within that create a list of vectors, then for each Poly\_ID randomly sample a number of coordinates higher than the total number of schools there using spsample(), then for that Poly\_ID sample a certain number of coordinates needed for that Poly\_ID, which will be “Num\_Schools” – “Num\_Coord\_Known”; and loop through to create a list of vectors which have polygons and within that coordinates for each
* ###This will allow us to store and extract coordinates within each locality (polygon)
* ###Now, we have 2 CSV’s: one with all the schools and their addresses and another with a row ###number corresponding to those schools (same order) and the Google API output (lat/lng ###coordinates or “NO RESULTS)
* We now match the Poly\_ID with the data frame (of the Google API output, whether has results or not) by matching it with the correct locality and for each polygon (so each locality) we add the coordinates for those rows that have “NO RESULTS” so as to fill in the missing coordinates; ideally, the shp file Poly\_ID will have locality name which will match the dataset of schools we have
  + If I cannot find a shp file with locality names stored, then I could manually assign each locality a Poly\_ID in my dataset of schools, so as to match up with the shp file Poly\_ID’s

Need help with cartography sf package to find details of shapefile and how to get polygon ID’s