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STATUS OF POPULATION WITH DISABILITY (65 and over) in LOS ANGELES COUNTY
Assessing their population concentration(s), lack of resources and accessibility to county hospitals, and potential assets in disaster situations

I. Background

Disproportionately affected populations, namely those who have disabilities, are often overlooked when mapping out simple things, such as daily accessibility to health services, and more complex issues, such as emergency planning. Recently, the Los Angeles County and City of Los Angeles were involved in a class action law suit, that accused them of failing "to conduct the planning required to meet the needs of individuals with disabilities to ensure access for these individuals across the full spectrum of its emergency programs, services, and activities."[1] As a result, both the City and County have undergone an extensive process to revise their current strategies and plans to reflect *written* inclusionary processes.[2] This is a step in the right direction as it, at minimum, established written procedures to reflect inclusionary practices and prepared both the City and County to think about the means and procedures that need to be in place to successfully inform, provide for, and evacuate these disproportionately affected populations.

However, there is still work and analysis remaining and this report serves as a focused effort to analyze particularly where the population of seniors with disability resides in the LA County, their financial condition and potential service obstacles, as well as potential assets (parks and gardens) to prepare for a mass evacuation in the event of a disaster. In terms of level of vulnerability and population of interest, this report highlights the condition of seniors with disability age 65 and over. Arguably, the criteria of "vulnerable" can be addressed and defined in many other ways, however the reason behind focusing on this particular

population segment is two-fold. Firstly, the number of individuals in this age group, specifically over age 60, is expected to double in the next 20 years, increasing from the current estimate of 1.5 million to 3 million in the LA County. [3] This will require additional preparation than is currently in place, as the baby boomers rapidly retire and service needs for this particular group increase (including a greater chance of more individuals with disabilities within this age segment). Secondly, looking at specifically the sub-group of seniors with disability, many of these individuals tend be in a more vulnerable position as they age, potentially live alone, and need additional care and services. [4]

II. Hypothesis

Considering the circumstances stated above, this GIS project aims to identify where the population of seniors with disability reside within the County, their financial condition, the accessibility of these census tract concentrations to services (specifically in this case to LA County Hospitals), and identifying nearby assets, namely open parks, as nearby evacuation sites in the event that a disaster occurs. Identifying these clusters and nearby open sites that can be evacuated to builds upon the current efforts that the LA County and City of LA have already taken in response to the court order by writing out their plans and procedures. The hypothesis is optimistic, such that the concentrations of these populations do in fact have access to at least LA County Hospitals, even if they reside in low-income communities, and that there is potential to develop mass care evacuation sites near their residences, in the event that their homes are destroyed in a disaster. Open spaces in close proximity are a much - needed resource, as those with access and functional needs typically require immediate medical attention, utilizing a varying amount of medical equipment.

III. Data

The data for this project was primarily derived from the U.S. Census (Factfinder) based upon findings from ACS 2009-2013 (5 year estimates) . The tables downloaded (and subsequently cleaned up in Excel) include: "Disability Characteristics" and "Age by Disability by Poverty Status" [5] All additional data layers on LA County Census Tracts (shapefile), LA County Hospitals (shapefile), and Locations/Point of Interest (geodatabase) were downloaded from the LA County Open Data Portal. [6]

IV. Methodology and Limitations

Initially, the focus of this report was going to be based solely on the access of individuals with disabilities to ADA accessible sites to evacuate in case of an emergency. However, this data was not clearly identifiable at the County level and broadened the scope of the project far too much. Focusing in on population with disabilities, limiting the selection to seniors ages 65 and above, seemed to be an ideal choice for further exploration. GIS is an ideal tool to present this data visually, particularly in highlighting the varying percentages of individuals with disabilities overall throughout the census tracts in LA County (See Appendix, Map 1). In addition, it is also an ideal visual tool to convey where the concentrations of the seniors with disabilities reside and what their financial characteristics are (See Appendix, Map 2 & 3). Using this is as a foundation, the analysis was expanded to map LA County Hospitals and their proximity to the identified "clusters" of seniors with disability, as well as the proximity of potential open spaces (Parks and Gardens) for evacuation purposes (See Appendix, Maps 4, 4A, & 5).

In terms of methodology, there were multiple steps involved in putting together the attached maps. First, data was downloaded from Census and processed in Excel. This processing included: modifying "GeoID" numeric fields to text, deleting irrelevant data

columns, as well as generating percentages to display in ArcMap. When the data was uploaded into ArcMap, a "Join" was performed between the table and the LA Census Tract layer to display the data. Various additional tools were used, including "select by attributes" to identify the concentrations, colorfully displaying the data, and the intersect tool, to conduct the analysis (presented below in Section V.).

The analytical methodology is as follows:

- Map 1 is a visual representation, depicting the percentages of individuals with disabilities of all ages within each census tract of LA County.
- Maps 2 elaborates on Map 1 to focus on the population of seniors over 65 (seniors) and where these populations have higher concentrations. The first step was to derive census tracts with 25% or greater population of seniors (total, overall) as compared to the total population (within each census tract). Then of these tracts, additional tracts with a 25% or greater population of *seniors with disability* were generated. These are highlighted accordingly on the map in dark purple. This procedure was implemented in order to more clearly highlight where the clusters or concentrations are present relative to individual census tract population size, so as not to simply find concentrations within census tracts that just have a higher overall total population.
- Map 3 is an extension of the above and seeks to analyze if in fact potentially income could be a correlating factor to these clusters, such that populations of seniors with disability are also concentrated in areas that have more individuals below the poverty level. Again, this data is not sufficient to make a direct

correlation or suggest causation, but it can provide some analysis for the County to explore.

- Map 4 highlights locations of LA County Hospitals and their proximity/intersection to the identified clusters in Map 2.
- Finally, Map 5 highlights potential "assets" of open spaces (parks and gardens) throughout the LA County region.

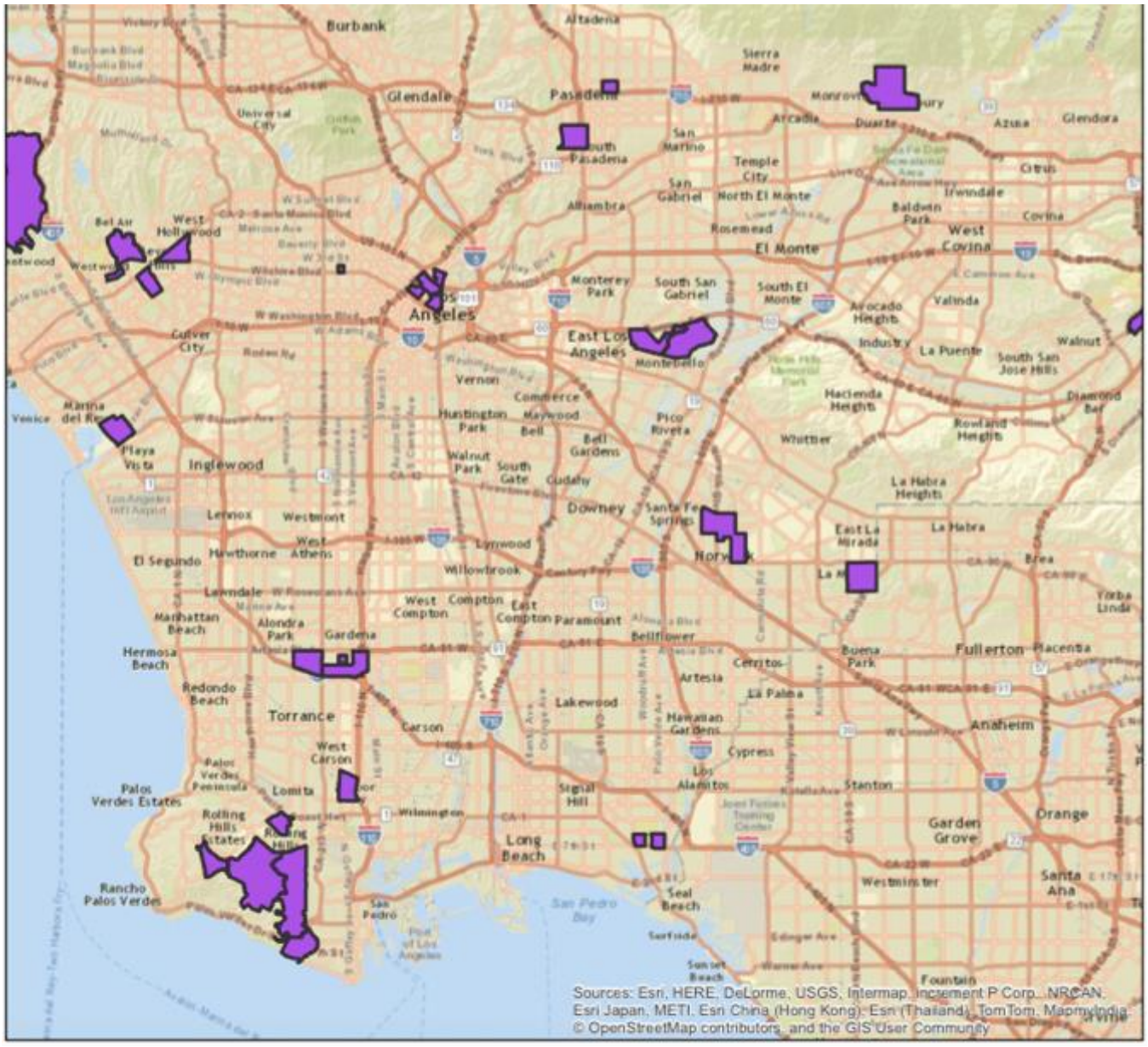
The data is limited in a few regards. Firstly, there can be multiple manipulations of the percentages to highlight different levels of concentrations of seniors with disability. In this case, 25% is the benchmark, but adjustments can be made to another percentage that the County deems more or less significant. Map 3 is also limited in that some census tracts do not have data provided and is limited also in any implications for correlation/causation between low income and clusters of seniors with disability. Map 4 is limited in that there is no hard data to make a connection that seniors with disability need direct access to per say an LA County Hospital as they may get their health needs met at various other hospitals or clinics. However, both Maps 3 and 4 can serve as a point of exploration for the County, considering the projected growth of this population in the coming decades, to analyze trends on (a) where these populations tend to reside and (b) if income or poverty level plays any role in this and (c) if LA County Hospitals are meeting the needs of this population and (d) if more facilities/extension clinics need to built to meet service needs.

V. Analysis and Some Findings to Build Upon

Based upon the maps attached in the appendix, there are a few observations that were expected and a few findings which the LA County can build upon for future analysis.

Map 1, which displays the percent of individuals with disabilities (of all ages) overall per census tracts, illustrates what was expected. There is wide spread of percentages of this population in general, where as some census tracts (that are also larger in population size) have a larger percentage of this population, while there are also smaller tracts with a high concentration. This map can serve as a quick reference to immediately show areas of need (in a dark red color) representing a tract where 25.1-90.5% of the population is facing some form of disability. Again, as mentioned previously, the percentage can be manipulated to be larger or smaller, affecting the overall distribution of the map. This is something the LA County can consider when determining where to focus resources and attention, especially if there are any pilot programs, which can be implemented in places of higher, or even lower need, to develop best practices.

Map 2 then hones in on the population that is focus of this analysis, which is the concentration of seniors with disability (ages 65 and above) within the census tracts. This data was adjusted to reflect the varying population size of each of the census tracts, as was discussed in the methodology section. The clusters are reflected in dark purple. The actual clusters identified are far fewer than what was initially expected. But, this could also mean that this population is more spread out and thus programs and efforts should be closely dispersed throughout the LA County. It may also be of interest to look more closely at the features surrounding these particular clusters or of groups of clusters to find common trends and reasons for the concentrations that were found. Below is a sample zoom-in image, particularly at a serious of such concentrations in close proximity to each other:

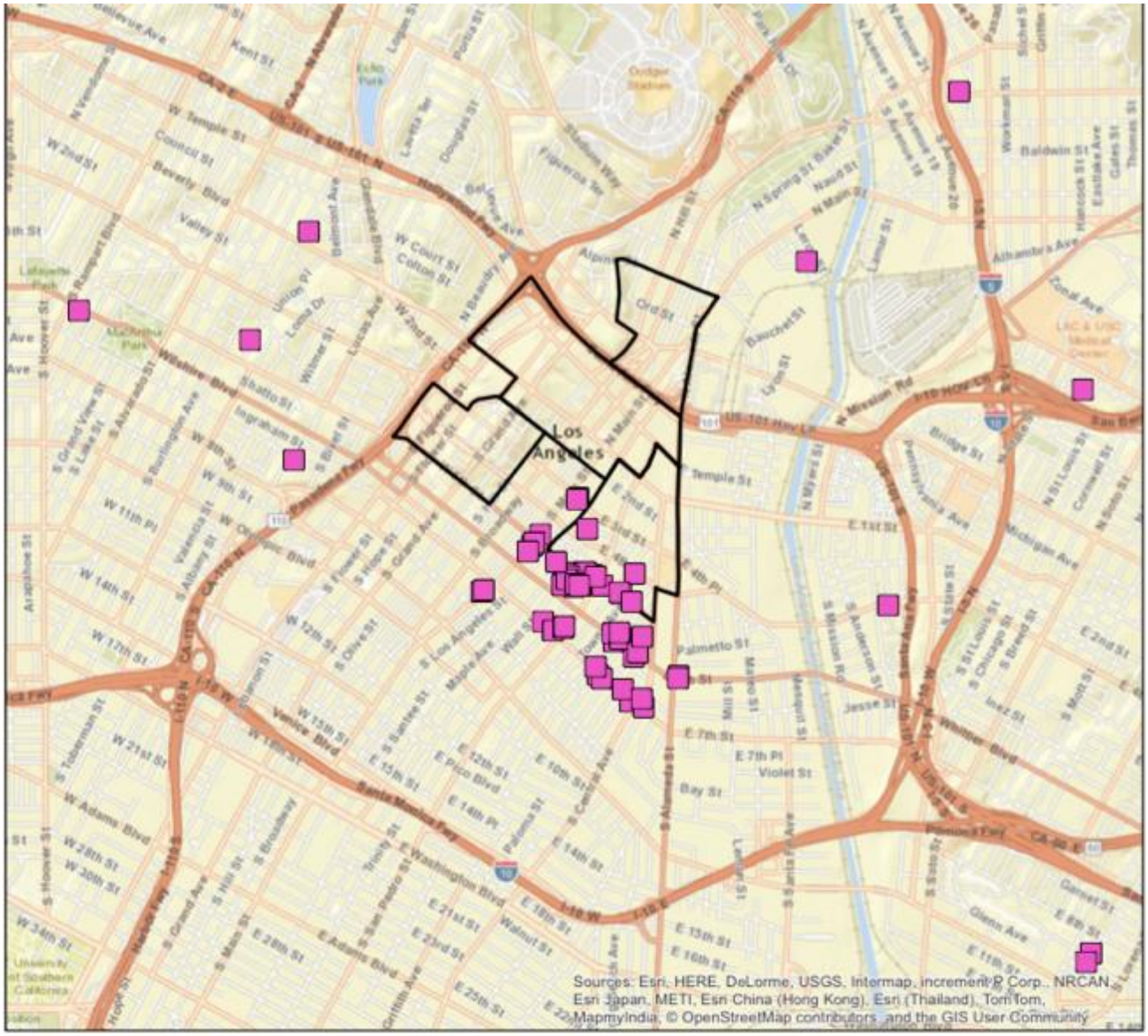


Maps 3 and 4 seek to lay a potential foundation for why seniors with disability may be found within these clusters. However, the picture is not as clear and further exploration will be needed to make a solid claim. Map 3 illustrates a few clusters in orange, of the clusters identified in Map 2, which have 25% or more disabled seniors below the poverty level. There may be a particular reason, such as income, for this clustering, but that conclusion cannot be made from

this analysis. Income is a trait that should be further explored, because it goes hand in hand with increased vulnerability for the elderly and can assist the LA County in identifying areas of high need. Map 4, which depicts all the LA County Hospitals, is another potential theory on clustering of disabled seniors, near county health services, namely hospitals. However, although there are many county hospitals, there were only 5 intersections found among the clusters that had an overlap with a County Hospital **(**See Appendix, Map 4A). To actually draw conclusions from these maps, the County would have to look specifically at potentially the income vs. spending of individuals that are 65 years and above as well as attempt to survey their common health provider locations to see if some correlation is present.

Another theory to consider is the presence of public and low-income housing as a reason for the presence of concentrations of seniors with disabilities. Below is a sample visual that may help to facilitate future research. It is a zoom-in view of identified concentrations of high population of seniors with disability (particularly in City of Los Angeles) and nearby public housing sites (as identified in the Los Angeles County locations database as "Public Housing"). A preliminary look suggests there might be some correlation, but no conclusion can be made

from such a small sample.



Map 5 paints a more optimistic picture of the available assets, in the form of parks and gardens as potential evacuation sites in the event of a disaster. Particularly for individuals with a disability, if their own homes and adjacent resources such as hospitals, are not in tact, there needs to be a proper open space where medical equipment and immediate services can be setup. This map indicates that there are plenty of such available resources. However, additional elements need to be evaluated: Firstly, the ADA accessibility and usability of these sites should

be properly evaluated. Secondly, there are a few clusters (highlighted in dark red to represent a large percentage of individuals with disability) that have very few or no parks within their census tract. This could be problematic, as an evacuation site within walking distance will be needed, and the larger concentration of such individuals, the more the need for such facilities. Additional alternatives can and should be explored.

VI. Conclusion

The aim of this analysis was to provide an overview of the population with disability, particularly seniors, for developing future targeted efforts by the LA County. Particularly with the trend of an increasing number of seniors in the coming future, the LA County should be prepared to address the needs of this growing segment, especially in disaster situations. Although this report cannot make any causal claims about why seniors with disability cluster in specific census tracts or if their needs are being met overall, it does provide some basis to focus future research. Exploring connections to income, accessibility to hospitals, and presence of public housing can be beneficial in understanding where/why seniors with disability choose to reside. In addition, assessing the availability of nearby open spaces to evacuation will be extremely important to quickly and successfully save lives as well as provide immediate medical services.

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[1] "Communities Actively Living Independently and Free, et. al v. City of Los Angeles and County of Los Angeles" *Statement of Interest of the United States* , October 12, 2010, p. 1, http://www.ada.gov/briefs/calif_interest_br.pdf

[2] "The City and County of L.A. will include People with all Types of Disabilities in Emergency Planning" (*and related documents),* http://www.dralegal.org/impact/cases/communities-actively-living-independent-and-free-calif-et-al-v-city-of-los-angeles

[3] "Senior Housing Resources in Los Angeles County", http://housing.lacounty.gov/SeniorHousing.html

[4] Melissa Evans, "Study: Cost of Care too much for the L.A. County Elderly", June 26, 2009, http://www.dailybreeze.com/general-news/20090627/study-cost-of-care-too-much-for-the-la-county-elderly; Steven P. Wallace and Susan E. Smith, "Half A Million Older

Californians Living Alone Unable to Make Ends Meet", February 2009, http://www.insightcced.org/uploads/eesi/UCLA%20Policy%20Brief.pdf

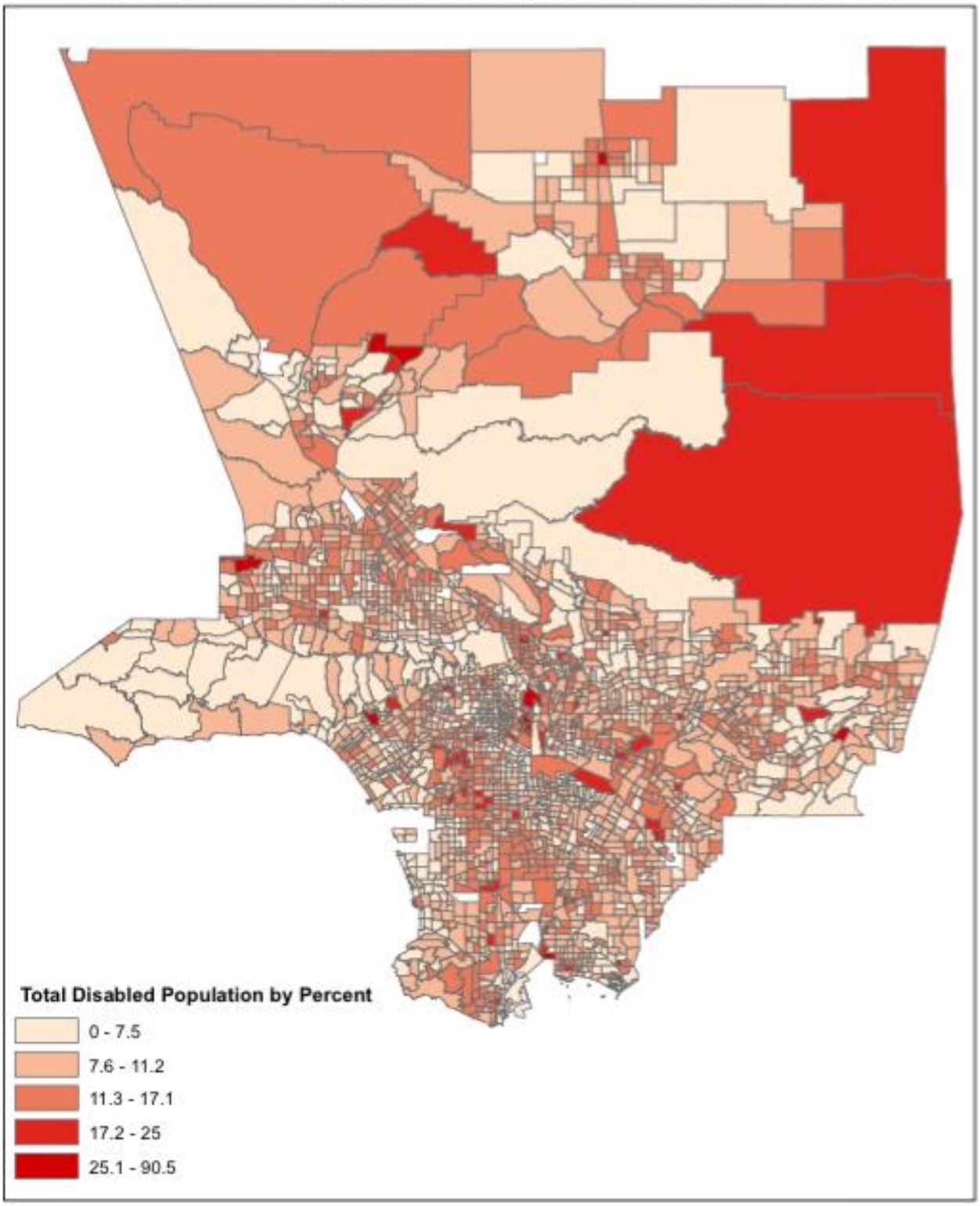
[5] Factfinder.Census.Gov , *ACS 2009-2013, Table Numbers: S1810, C18130,* http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_5YR_S1810&prodType=table; http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_5YR_C18130&prodType=table

[6] Los Angeles County GIS Data Portal, http://egis3.lacounty.gov/dataportal/

APPENDIX

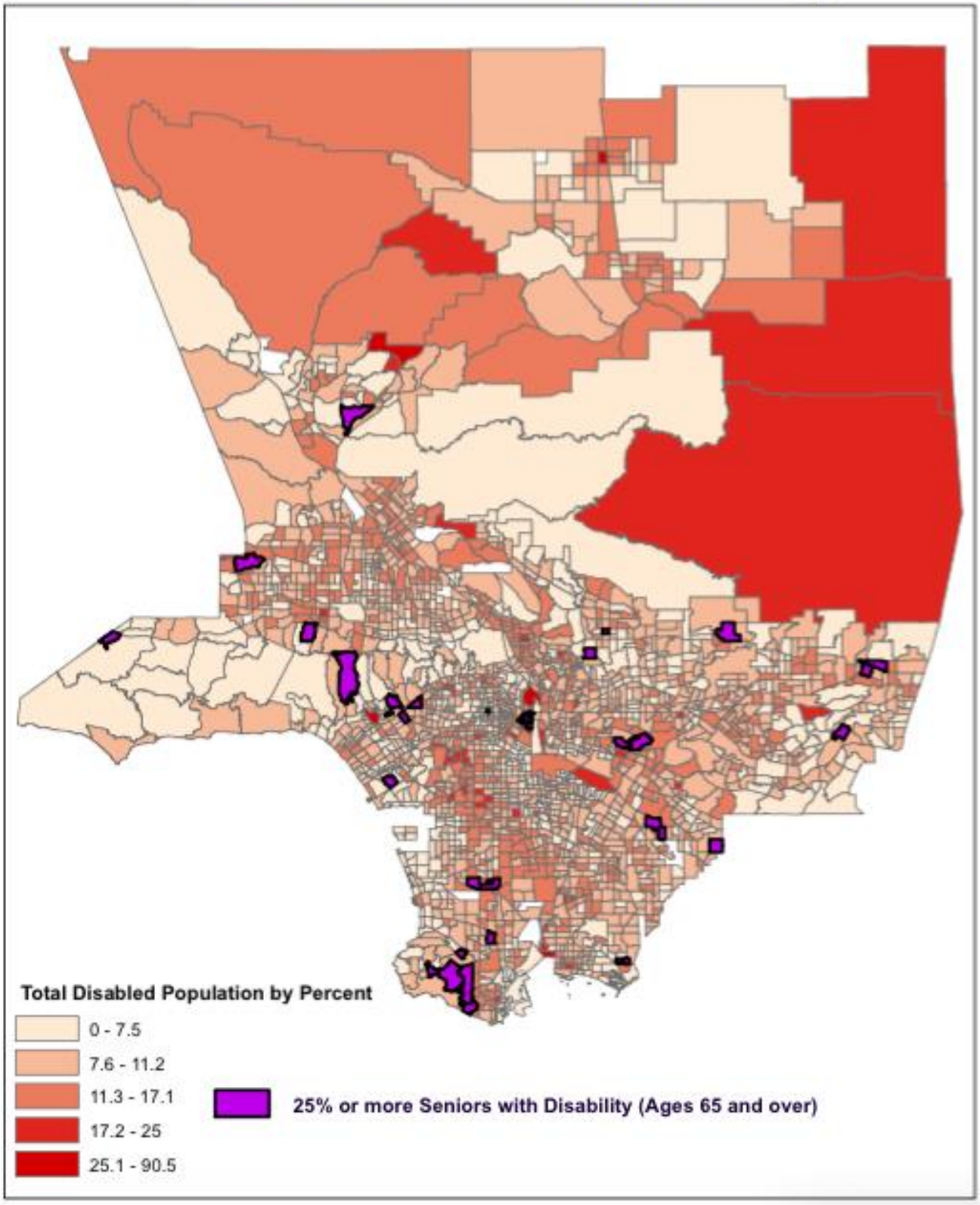
MAP 1

LA County Disability Percentages (All Age Groups)



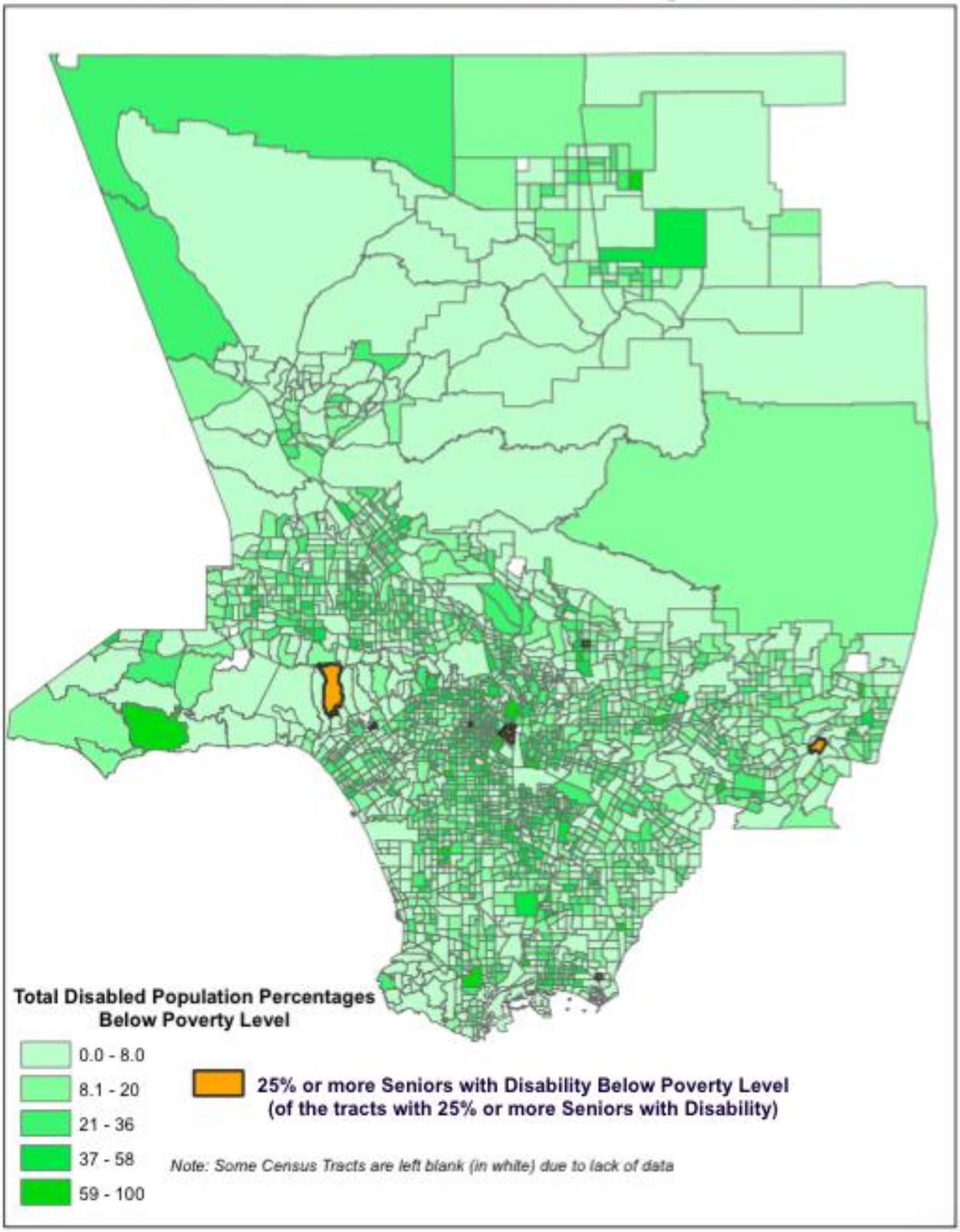
MAP 2

Concentration of Seniors with Disability



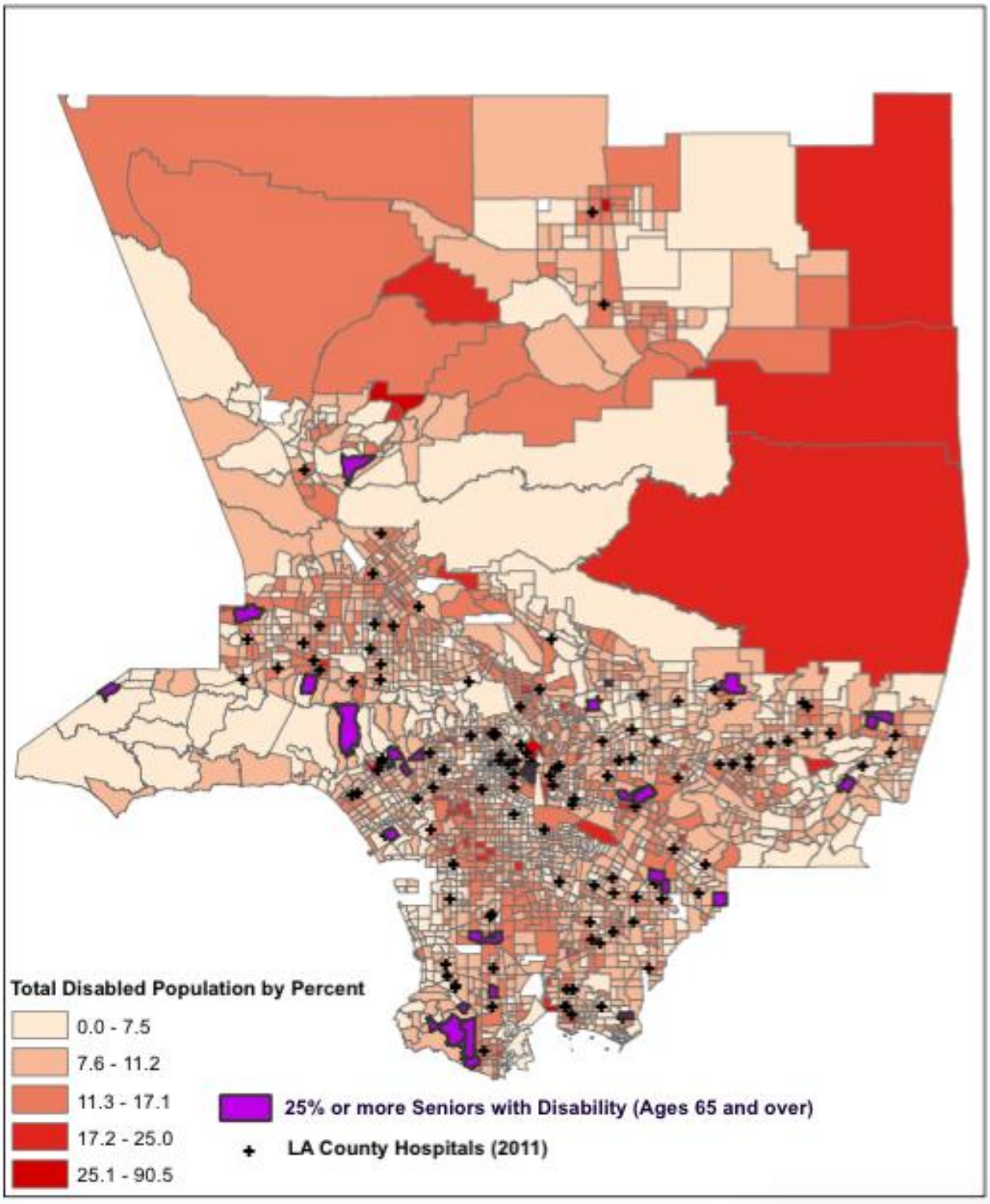
MAP 3

Seniors with Disability Below the Poverty Level



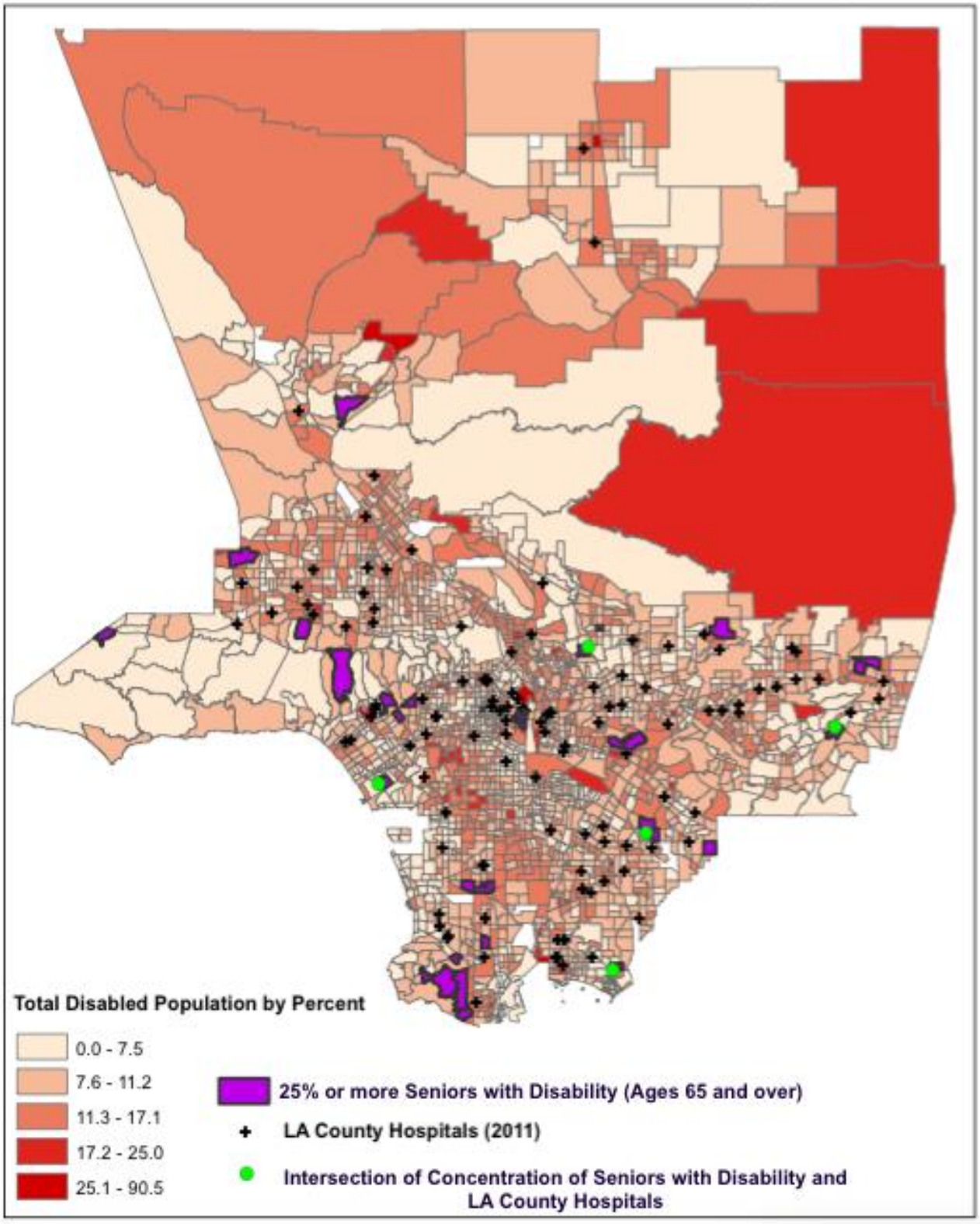
MAP 4

Concentration of Seniors with Disability and LA County Hospitals



MAP 4A

Intersection of Concentrations and LA County Hospitals



MAP 5

Concentrations of Seniors with Disability and Nearby Parks and Gardens