City of Los Angeles-Homeless Project

Team #1:

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Project Overview

Analytics Tool: R (packages: ggplot2, stringr, lubridate, dplyr, rgdal, leaflet, shiny)

Early Stage: Mainly focused on broad areas: SPA levels analysis

Middle Stage: Deeper into exploratory analysis on census tracts/council districts/communities levels
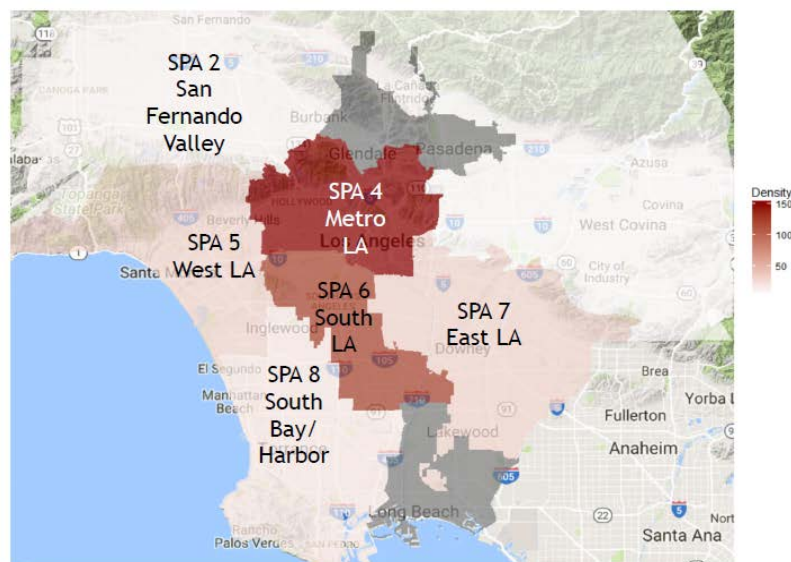
Final Deliverables:

- Analysis and identification of priority for census tracts/ communities that in desperate need of resources allocations
- Actionable Recommendations for mayor's offices to approach homeless problems
- Powerful Interactive Shiny Dashboard for city officers' convenience of data visualization

Early Stage:

Initially, we started our analysis from the Service Planning Area(SPA) levels, which are broad geographical divisions of greater Los Angeles areas. At these levels analysis, we found that no matter for total homeless people counts, unsheltered people counts,311 calls density or crime incidents rate; SPA4(Metro LA) and SPA6(South LA) have the most severe problems.
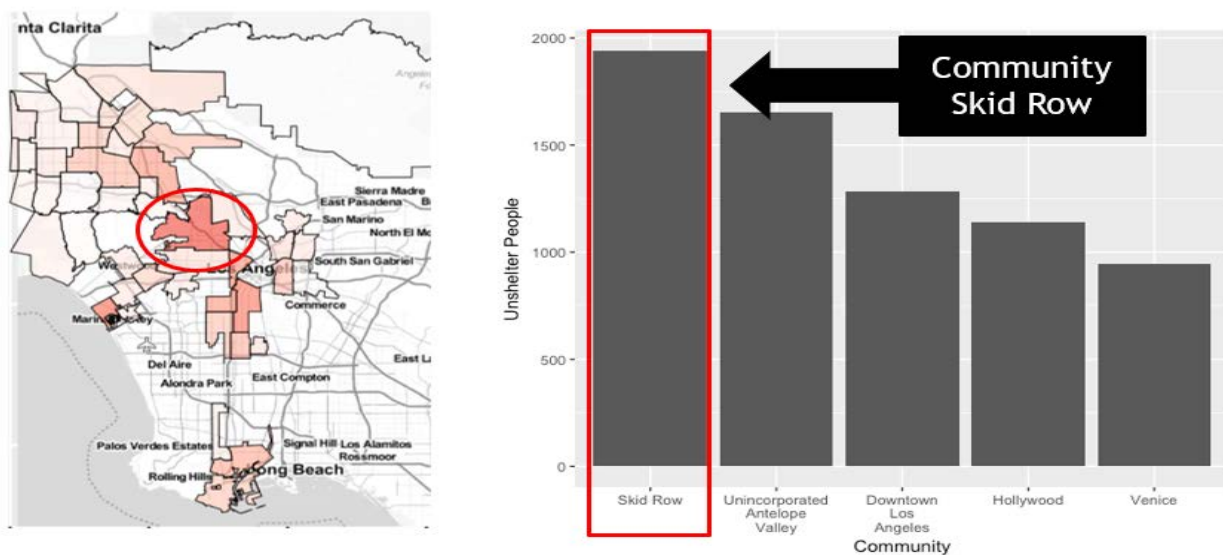
Middle Stage:

Later, we dived into more detailed areas of the city of Los Angeles instead of the greater Los Angeles areas. We plot the density heat map for total homeless people, unsheltered/sheltered homeless people, 311 calls and crime incidents to identify what specific areas of the city of Los Angeles have the most serious homeless problem. At this stage, we found that census tract ID 206300/ Community Skid Row/ Council District 14 are the targeted areas in need of more in-depth analysis.

Unsheltered People by Census Tracts

Unsheltered People by Communities
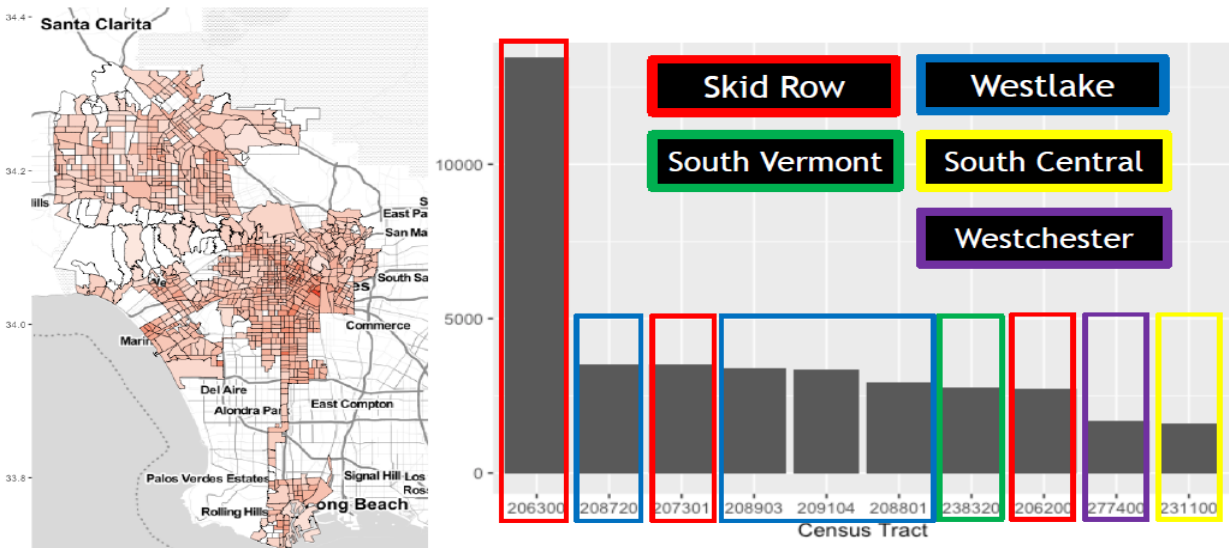
Final Deliverables:

At this stage, we combine the following measurements to prioritize needs for areas:

- Homeless Density
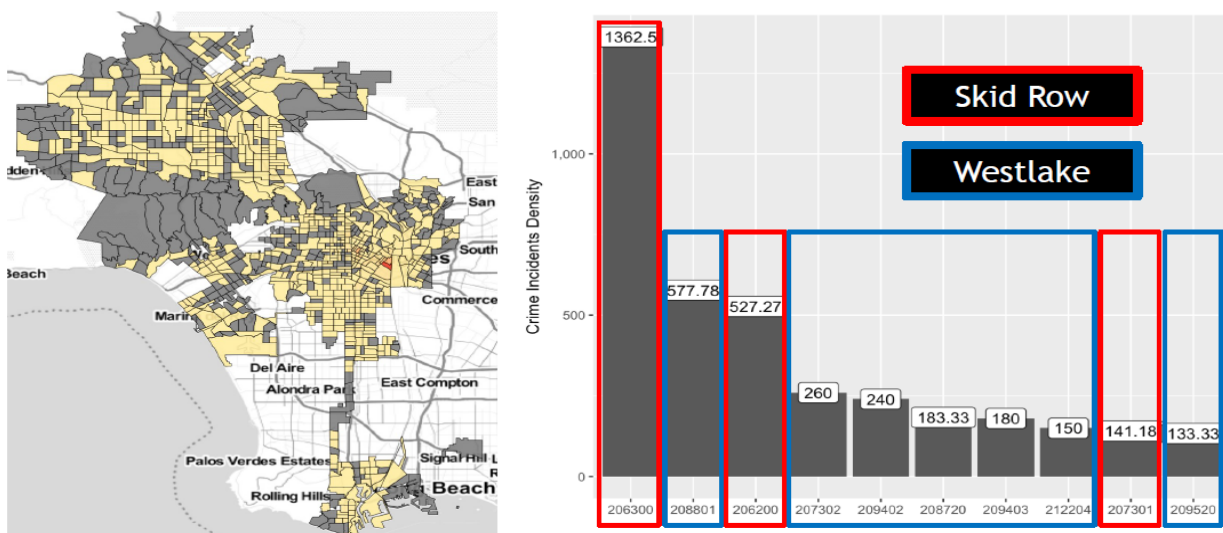- Health & Safety Index
- Migration Pattern

Then, we came up with a list of communities with prioritized needs:

Skid Row, Chinatown, South Central, Westlake, Hollywood, Westchester, Pico-Union, South Vermont
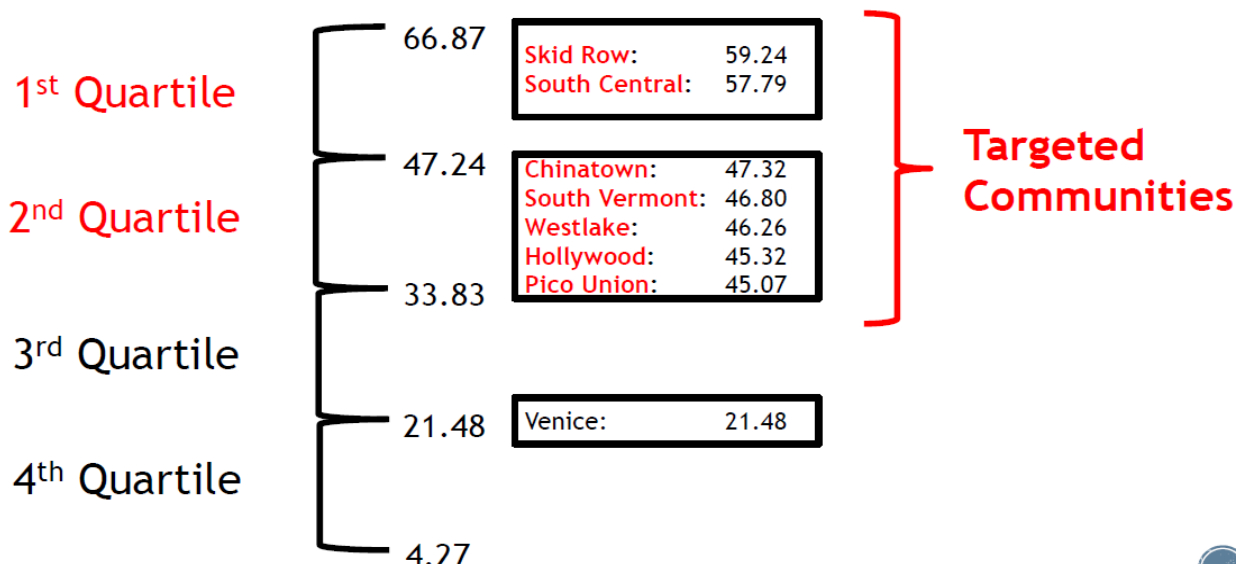
CES Score

1st Quartile	66.87	**Skid Row:** 59.24 **South Central:** 57.79
2nd Quartile	47.24	**Chinatown:** 47.32 **South Vermont:** 46.80 **Westlake:** 46.26 **Hollywood:** 45.32 **Pico Union:** 45.07
3rd Quartile	33.83	**Targeted Communities**
4th Quartile	21.48	Venice: 21.48
	4.27	

Actionable Recommendations:

Short-term:

For communities with vacant properties (Skid Row, Chinatown, South Central, Westlake, Hollywood, Westchester): Build more shelters (especially emergency shelters) in vacant properties.

For communities without vacant properties (South Vermont, Pico Union): Build shelters (especially emergency shelters) with available vacant properties in adjacent areas.

Long-term:

For areas with less unsheltered homeless people but enough vacant properties and reasonable house price:
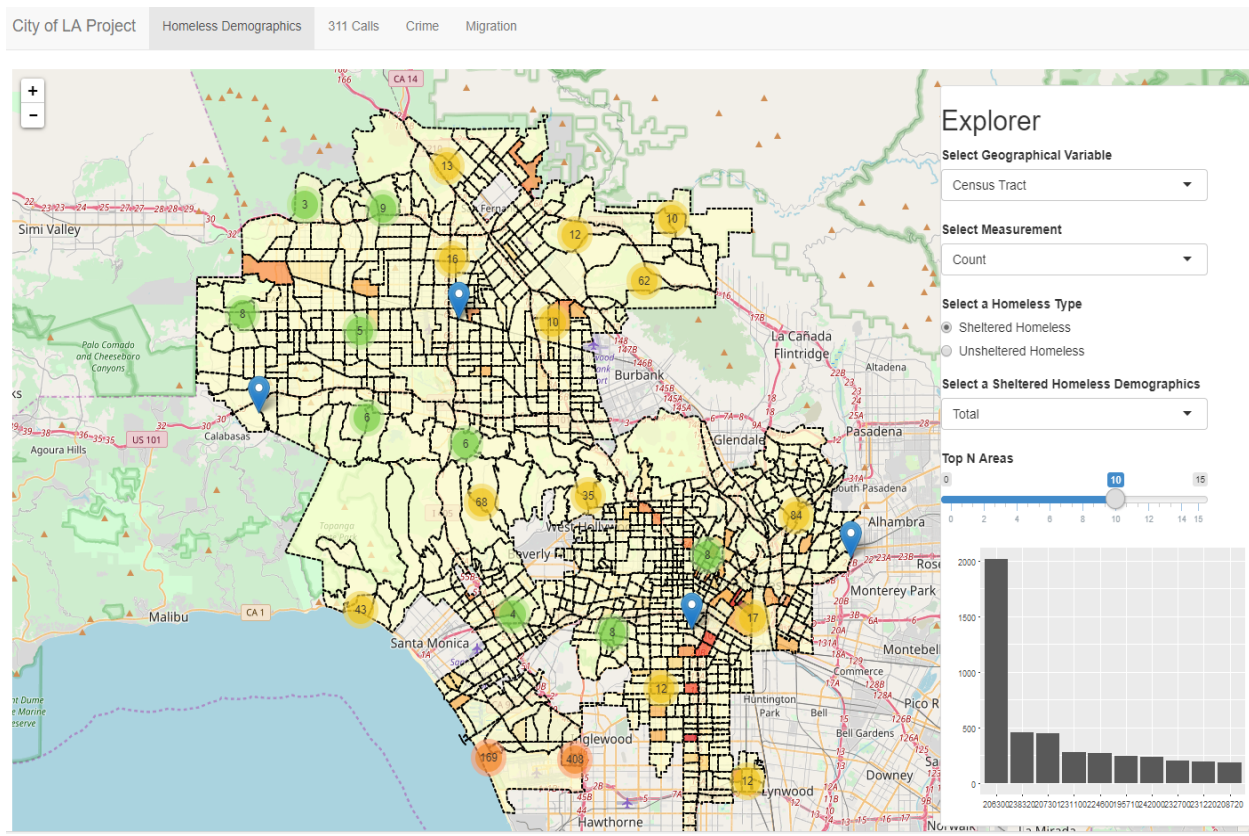
- Build permanent housing or transitional housing in vacant properties
- Relocate homeless people from Skid Row, Chinatown, South Central, Westlake and Pico-Union to eagle rock

Other Possible Initiatives:

I. Introduce initiatives like the Denver Day Works program, to employ the homeless.
II. Improve health services by repurposing old buses into showers and toilets to serve homeless populations
III. Since more than 25% of the homeless population is college educated, it would be a wise idea to build more public libraries.
Example: "The San Francisco City Library" which offers a "homeless and poverty outreach library team."

Interactive Shiny Dashboard Demonstration:

Main Interface:

Key Features:

- Our Interactive Shiny Dashboard is powered by leaflet, which makes the map can be zoomed and markers will pop-up automatically.
- We created a side navigation bar called "Explorer" which is draggable in order to avoid intervening the whole visualizations.
- On the Top of the Dashboard, we created tabs for different measures of homeless problems: Demographics, 311 Calls, Crime, Migration.
- For each tab, Explorer will give different ways to visualize the geospatial data including:
    - Dropdown box for different types of geographical variables: Census Tract or Council District
    - Dropdown box for different measurements: Absolute counts or Density
    - Selection box for Homeless Type: Sheltered or Unsheltered Homeless
    - Conditional dropdown box/ selection box (if applicable) for details information
    - Input Box for migration visualization for specific census tract
    - Slide Bar and Bar chart for detailed list of the Top N most severe areas with the according measure

For more details of our Interactive Shiny Dashboard, feel free to go for immediate utilization.

Explorer

Select Geographical Variable

Census Tract ▼

Select Measurement

Count ▼

Select a Homeless Type

◦ Sheltered Homeless
● Unsheltered Homeless

Select an Unsheltered Homeless Demographics

Total ▼

● Vacant_Property
◦ Problematic Encampment
◦ Null

Top N Areas

0 —————●10————— 15

Explorer

Select Geographical Variable

Council District ▼

Select Measurement

Density ▼

Top N Areas

0 —————●10————— 15