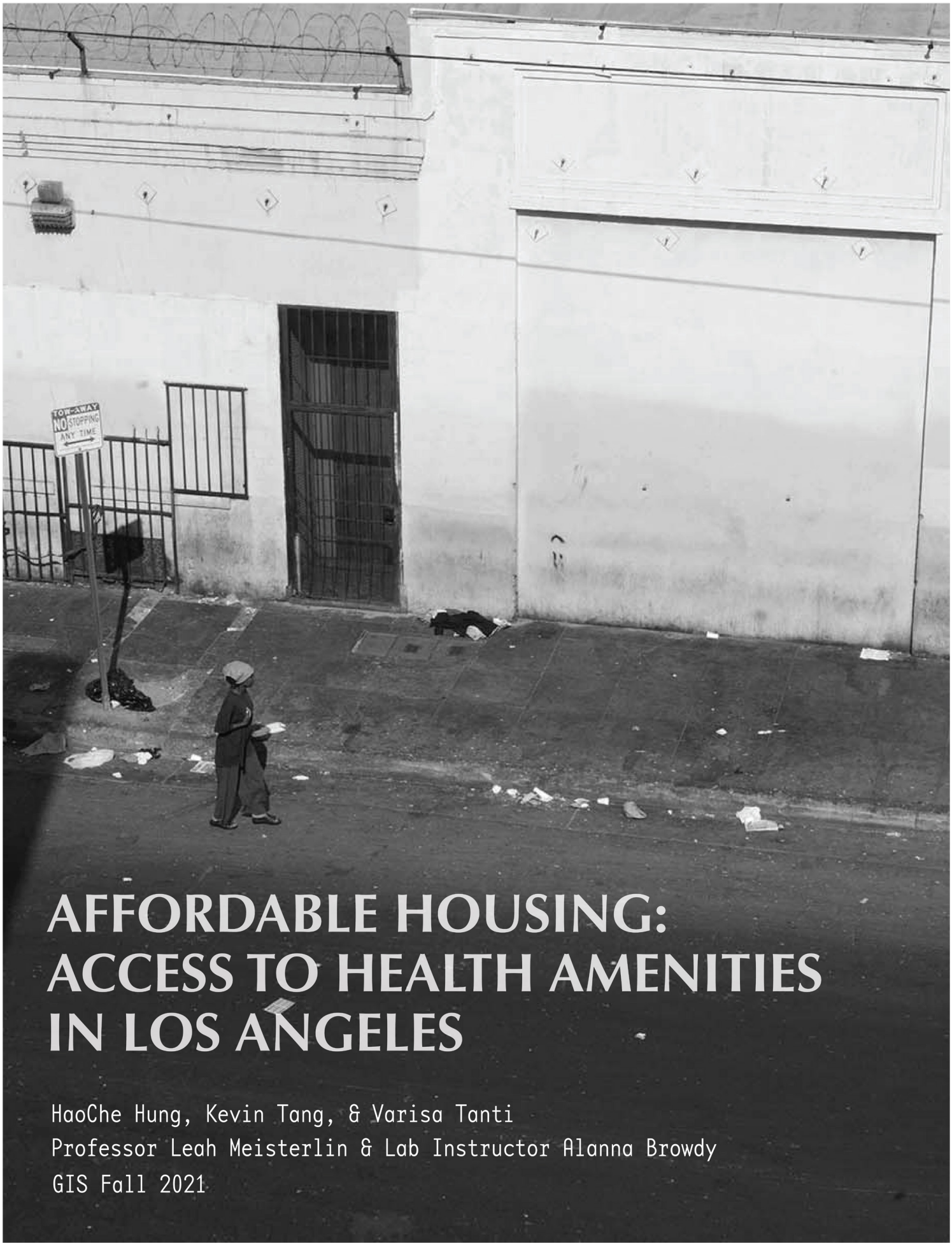

AFFORDABLE HOUSING: ACCESS TO HEALTH AMENITIES IN LOS ANGELES

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GIS Fall 2021

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Affordable Housing: Access to Health Amenities in Los Angeles

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> The ravages of poverty go beyond lack of income. The poor suffer physically as well.

Erika Hayasaki, *UCLA Blueprint*, Fall 2015

INTRODUCTION

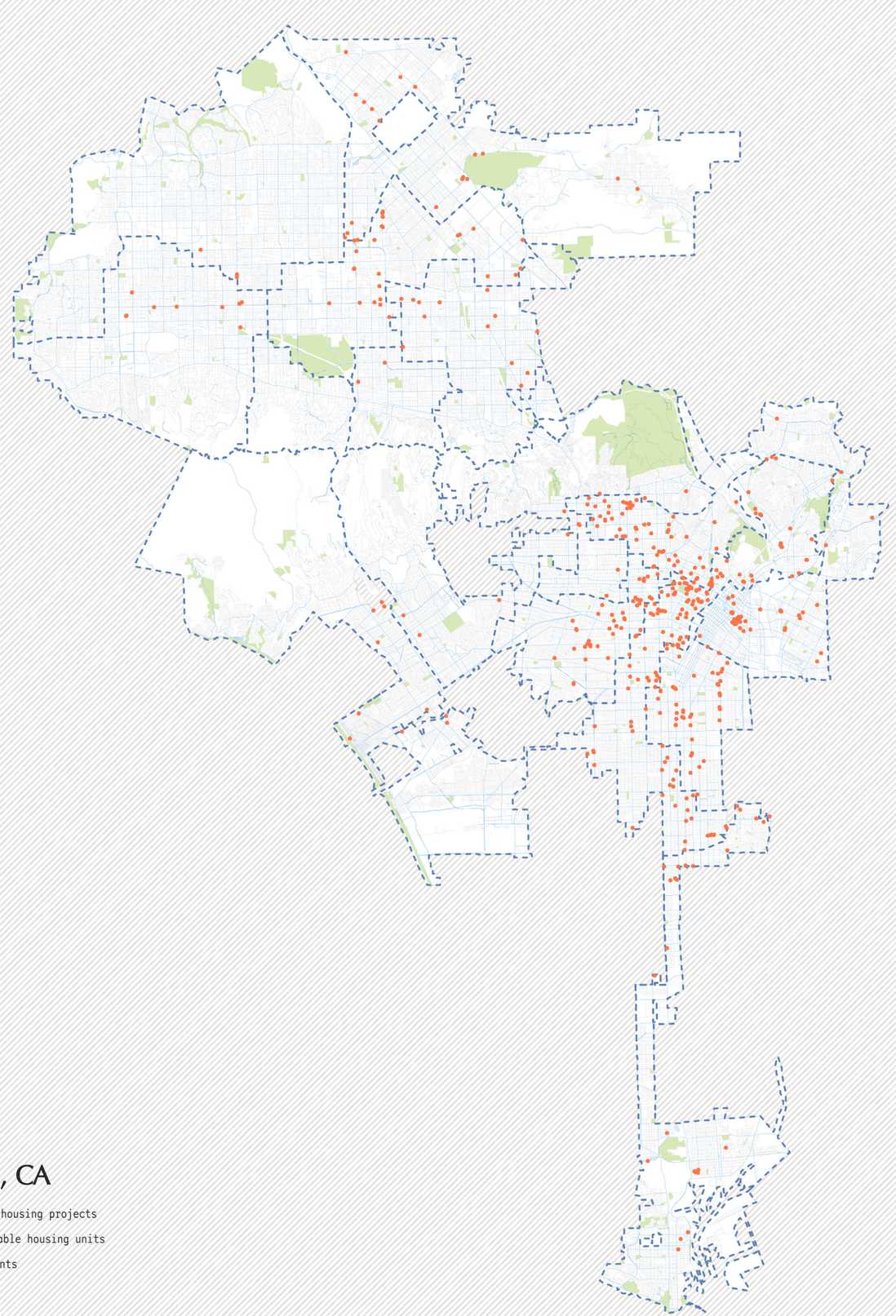
HOUSING, HEALTH, & SPATIAL ACCESSIBILITY

Low-income residents face hardships in accessing health as a result of their housing insecurities. High housing-related costs place economic burdens on disadvantaged families, forcing trade-offs between food, medicine, and other basic needs (Braveman et al., 2011). As a result, low-income households are more likely to experience negative health outcomes. While extensive literature identifies housing as a social determinant of health, the difficulties of accessing health as a result of housing are complex and vary across different geographies.

In the car-centric City of Los Angeles, access to health is inherently a spatial issue. Low-income households are not only less likely to own cars, but they are also more likely to live in neighborhoods with the fewest public transportation options (O'Hara, 2015). Dealt with inadequate mobility options, these families are at times limited to their immediate vicinity of hospitals, health clinics, and public parks.

AFFORDABLE HOUSING AS A CASE STUDY

This can pose a particularly unique issue for residents of affordable housing. While affordable housing provides greater financial security to households by reducing the cost burdens of rent, most affordable housing is concentrated in poorer, more densely-developed locations of the city (Dawkins, 2011). Where clusters of affordable housing are formed, the quality of health is strongly determined by both the areas' proximity to health amenities as well as the amenities' capacity for service.



RESEARCH QUESTIONS & SCOPE OF RESEARCH

1) ARE NEIGHBORHOOD HEALTH AMENITIES IN LOS ANGELES WALKABLE FROM AFFORDABLE HOUSING DEVELOPMENTS?

2) WHAT NEIGHBORHOODS IN LOS ANGELES HAVE HIGH DENSITIES OF AFFORDABLE HOUSING AND APPEAR TO BE IN NEED OF MORE ACCESSIBLE HEALTH AMENITIES IN 2021?

SCOPE

The following research project spatially examines the location of health amenities in relation to identified clusters of affordable housing in the City of Los Angeles. The analysis centers on two buckets of data: 1) affordable housing units that were developed under the oversight of the City of Los Angeles Housing Department; and 2) health amenities, defined as hospitals, health clinics, and parks within the jurisdiction of the County of Los Angeles.

OPERATIONALIZING TERMS

Walkability is defined as the distance between the origin point (affordable housing) and the destination point (amenities) 1 mile is our defined threshold for what is walkable or not.

Accessibility is defined in our study as the spatial proximity of health amenities in relation to affordable housing

LIMITATIONS

Time: Our study is limited to the year 2020 and does not reflect changes in accessibility and affordable housing over time.

Proximity: The analysis is affected by the modifiable areal unit problem due to our use of a 1-mile radius as the threshold for proximity.

Data: Our information is limited to publicly available data, some of which may be fragmented.

Health: Our research defines health by a non-exhaustive list of variables that probably do not fully encapsulate “health.”

Capacity: Our study is focused on the spatial proximity of hospitals, health clinics, and parks near affordable housing rather than the service capacities of these amenities.

DATA

LA City. “Health Clinics” [shapefile]. (2021). Created September 15,2016, updated November 5, 2021, and accessed November 8, 2021 from https://geohub.lacity.org/datasets/lacounty::health-clinics/explore?location=33.804407%2C-118.295000%2C10.64

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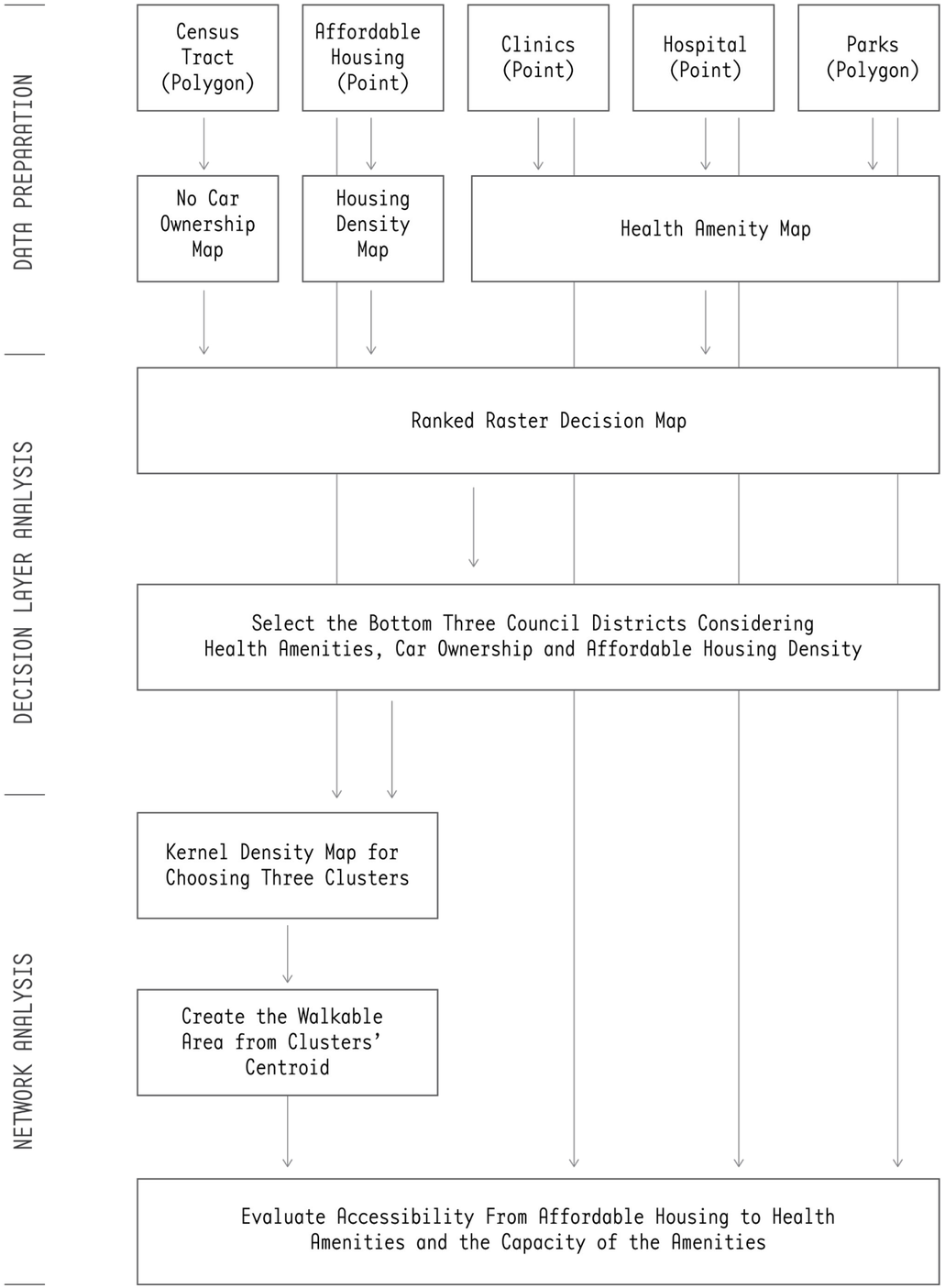
LA City. “The Department of Recreation and Parks’ GIS map of park boundaries in the City of Los Angeles.” [shapefile]. (2020). Created March 18, 2015, updated November 30, 2020, and accessed November 8, 2021 from https://data.lacity.org/Parks-Recreation/Department-of-Recreation-and-Parks-GIS-Map-of-Park/nuub-r4zx

METHODOLOGY

Our methodology is broken down into three sections: data preparation, decision layer analysis, and network analysis. Our framework begins with defining accessibility for the purposes of our study. We narrowed the broad definition into the following three health amenities: hospitals, clinics, and parks. These three criteria will provide the primary weights for our later analysis.

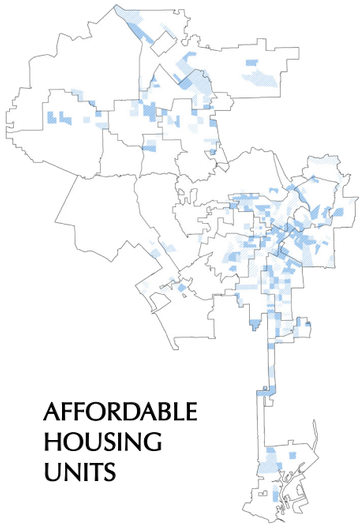


MULTI-CRITERON DECISION ANALYSIS

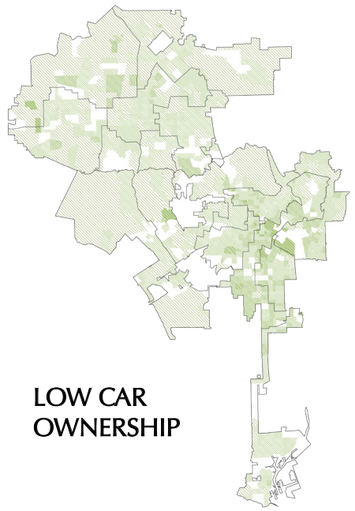
To begin our assessment of health amenities that exist within proximity to affordable housing developments in the City of Los Angeles, we created individual raster maps for each health amenity's density - hospitals, health clinics, and public parks. Once we set the inputs for our spatial analysis, we performed map algebra to aggregate the health amenities to one health accessibility index map. The resultant map was then layered with two other maps, one a kernel density map measuring affordable housing units and the other a map showing car ownership rates across the city.

From there, we noticed certain general pockets of the city that exhibited particularly dark hues, which signified extreme low counts of our tested variables. We focused our attention on Downtown Los Angeles, which not only appeared to have low densities of health amenities but also exhibited the most instances of affordable housing development, depicted in blue on the far-right.

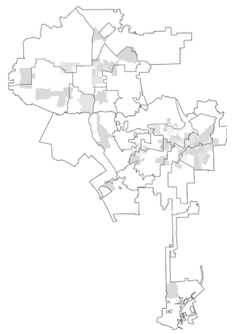
The last step of our analysis was selecting three Council Districts for further analysis. We ultimately decided on Districts 1, 13, and 14, because we were interested by their low health amenities, high counts of affordable housing units, and low rates of car ownership.



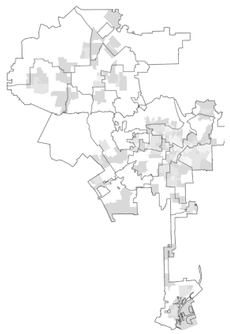
AFFORDABLE HOUSING UNITS



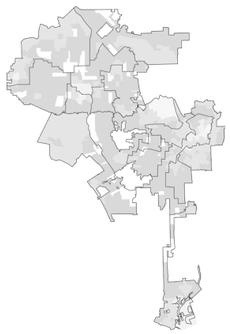
LOW CAR OWNERSHIP



HOSPITALS +



CLINICS +



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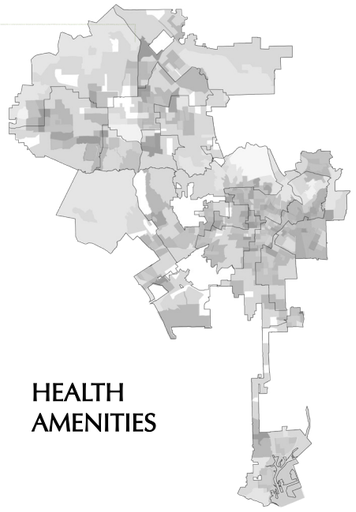
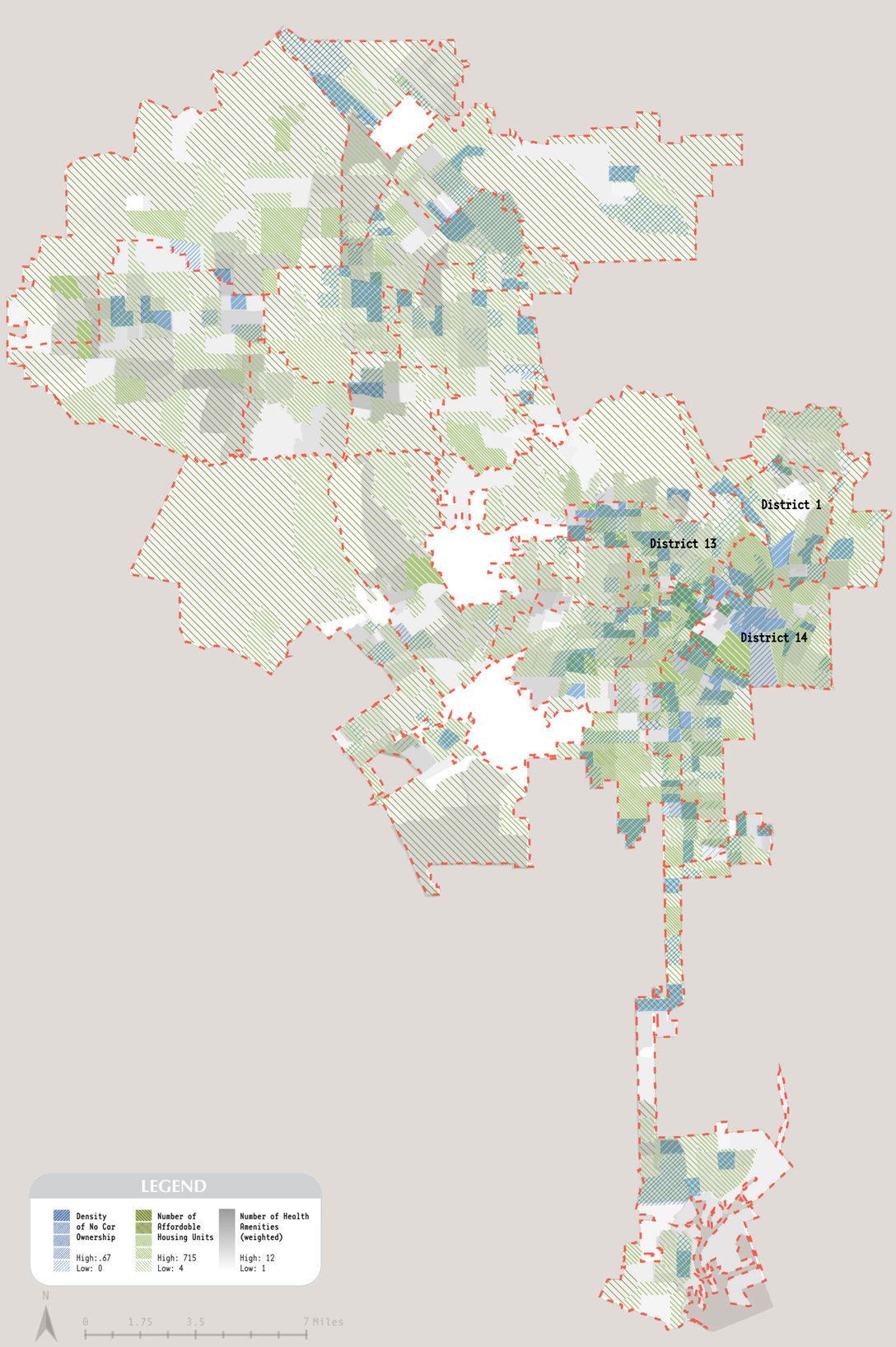


HEALTH AMENITIES



SELECTED COUNCIL DISTRICTS

OVERVIEW OF STATISTICS

	District 1	District 13	District 14	Los Angeles (Total)
Affordable housing units	4,328	5,799	4,328	27,810
Affordable units per acre	.28	.57	.28	.09
No car ratio	.18	.29	.18	.16
Percent minority	57%	66%	57%	50%
Average household size	3.28	2.99	3.28	2.96
Median household income	$96,106	$75,168	$96,106	$90,445

DISTRICT 13

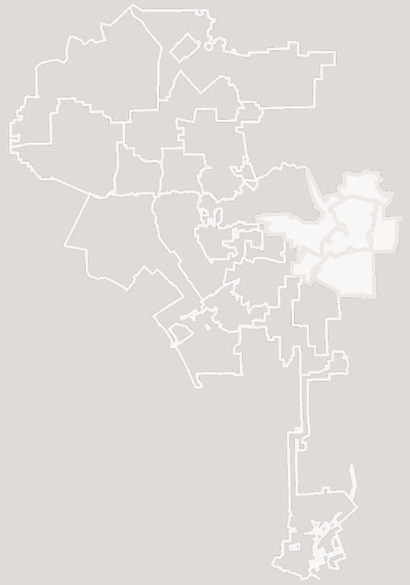
Total population: 243,407
People per acre: 28

STATISTICS

Affordable housing units	3,177
Units per acre	.36
No car ratio	.22
Percent minority	53%
Average household size	2.57
Median household income (renter)	$48,058

LEGEND

- Density of No Car Ownership
  - High: .67
  - Low: 0
- Number of Affordable Housing Units
  - High: 715
  - Low: 4
- # of Health Amenities (weighted)
  - High: 12
  - Low: 1



DISTRICT 1

Total population: 243,613
People per acre: 24

STATISTICS

Affordable housing units	5,799
Units per acre	.57
No car ratio	.29
Percent minority	66%
Average household size	2.99
Median household income (renter)	$40,121

DISTRICT 14

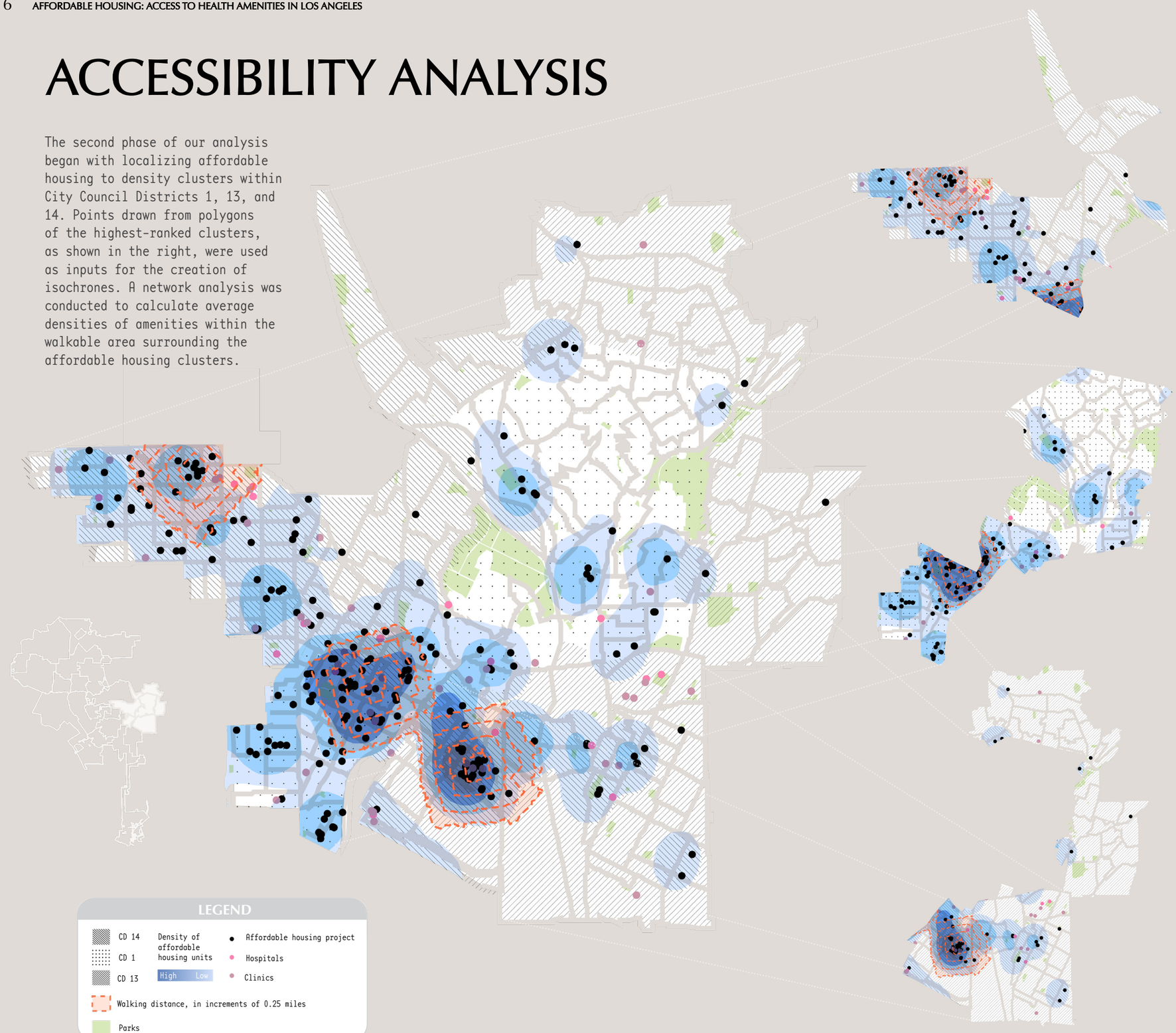
Total population: 365,240
People per acre: 24

STATISTICS

Affordable housing units	4,328
Units per acre	.28
No car ratio	.18
Percent minority	57%
Average household size	3.28
Median household income (renter)	$48,709

ACCESSIBILITY ANALYSIS

The second phase of our analysis began with localizing affordable housing to density clusters within City Council Districts 1, 13, and 14. Points drawn from polygons of the highest-ranked clusters, as shown in the right, were used as inputs for the creation of isochrones. A network analysis was conducted to calculate average densities of amenities within the walkable area surrounding the affordable housing clusters.



DISTRICT 1

OVERVIEW OF STATISTICS

	District 1 Cluster	District 1 (Total)	Los Angeles (Total)
Affordable housing projects	38	93	469
Affordable Units per acre	2.573	0.573	0.092
Hospital center per acre	0.003	0.000	0.000
Health clinics per acre	0.005	0.001	0.000
Park density per acre	0.031	0.039	0.060
No car ratio	0.427	0.283	0.163
Percent minority	73%	66%	50%
Average household size	3.01	2.99	2.96
Median household income (renters)	$34,021	$40,121	$50,709

DISTRICT 13

OVERVIEW OF STATISTICS

	District 13 Cluster	District 13 (Total)	Los Angeles (Total)
Affordable housing projects	16	64	469
Affordable Units per acre	0.313	0.365	0.092
Hospital center per acre	0.001	0.001	0.000
Health clinics per acre	0.001	0.002	0.000
Park density per acre	0.291	0.039	0.060
No car ratio	0.234	0.224	0.163
Percent minority	37%	53%	50%
Average household size	2.16	2.57	2.96
Median household income (renters)	$38,635	$48,058	$50,709

DISTRICT 14

OVERVIEW OF STATISTICS

	District 14 Cluster	District 14 (Total)	Los Angeles (Total)
Affordable housing projects	14	49	469
Affordable Units per acre	1.758	0.280	0.092
Hospital center per acre	0.001	0.000	0.000
Health clinics per acre	0.002	0.001	0.000
Park density per acre	0.007	0.029	0.060
No car ratio	0.499	0.176	0.163
Percent minority	52%	57%	50%
Average household size	1.61	3.28	2.96
Median household income (renter)	$47,746	$48,343	$50,709

CONCLUSION

Accessing health is a challenge that residents of affordable housing in Los Angeles face differently. For some, lack of access stems from their neighborhood's lack of facilities. For others, community amenities may exist but are inadequate in serving areas as dense in population as those where affordable housing is typically found. Our accessibility analysis of the three clusters of affordable housing shows how these disparities can vary across different geographic contexts.

Our three chosen study areas appeared to be served by health amenities. However, their population densities were considerably higher than both the Los Angeles average and their respective Council District averages. This suggests that health facilities near high concentrations of affordable housing may be operating at higher capacities than those of facilities in other neighborhoods. Further studies can extend our definition of health accessibility to identify the capacity of these facilities (e.g., number of beds per population). Likewise, our methodology can also be replicated to include additional variables and other places of context.

What we found interesting was that our research showcased the importance of localizing research on housing and health, especially on topics that revolve around the human experience. Census and ACS data may offer glimpses into the tracts we studied, but our analysis was greatly furthered when it was contained to small, specific areas of study.

Citations

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