

MATH 239 Applied Data Science

Madison Hernandez
Spring 2026

Where is cannabis even
allowed in Los Angeles?

If a city voted for cannabis to be
allowed, then does that mean
that it is allowed in that city?



**We already know where in the city
cannabis is allowed or not.**

We also can feel it.

What if we could infer why it is allowed based on:

- Percent of Yes Vote on Prop 64
- House Median Value
- City Square Mileage

**Voters should
know how their
election outcomes
impact their cities.**

Standout Findings

Los Angeles has 88 cities

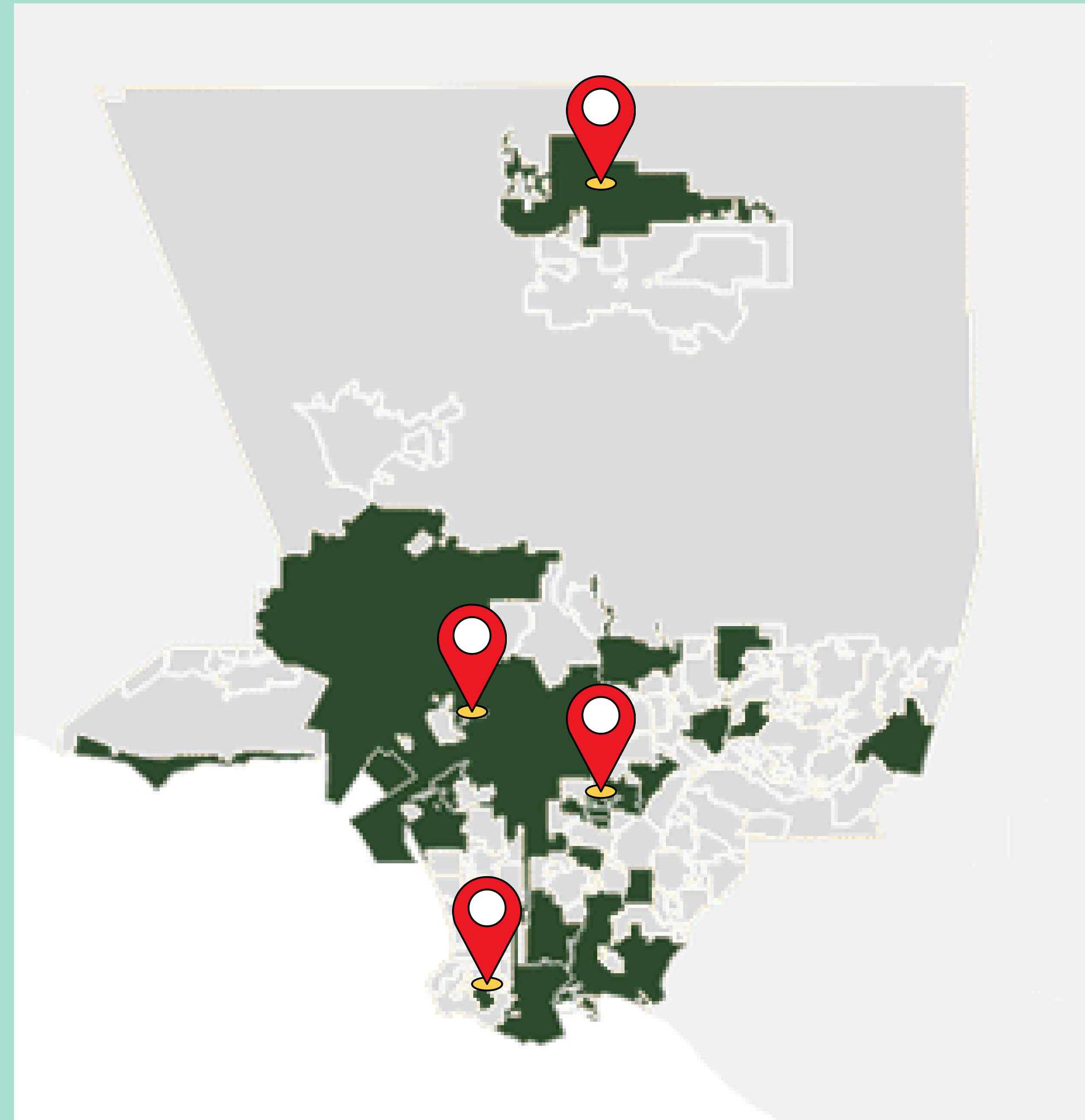
25 - cities that allow at least 1 type of cannabis business.

WeHo - Highest yes on 64 vote but only 2/6 businesses allowed

Rolling Hills - Wealthiest city and allows cannabusiness on a limited-medical basis

Lancaster - Poorest city, allows all business

Maywood - 2nd smallest city and allows all 6 cannabusinesses despite having 20.34% of it's area be for school zones



Data Sorting Stage

This study focuses on 86 cities in Los Angeles County

Excluded cities: Avalon (Catalina Island) (0/6, with limited-medical Retail Delivery permission) and La Cañada Flintridge (0/6)

First, current permissions

*11 cities with 6/6
63 cities with 0/6*

**Second, Percentage of Yes
Vote on Prop 64 in 2016**

*Weho (83.16% Yes)
Industry (42.97% Yes)*

Third, House Median Value

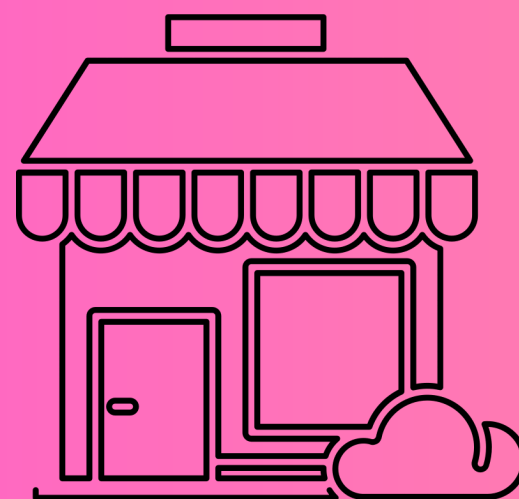
*Rolling Hills (\$2M)
Lancaster (\$186,000)*

Lastly, city size by sq mi

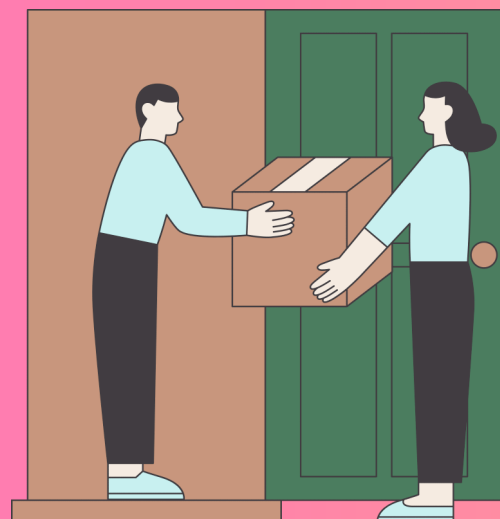
*Largest City: LA
Smallest: Hawaiian Gardens*

Permissions

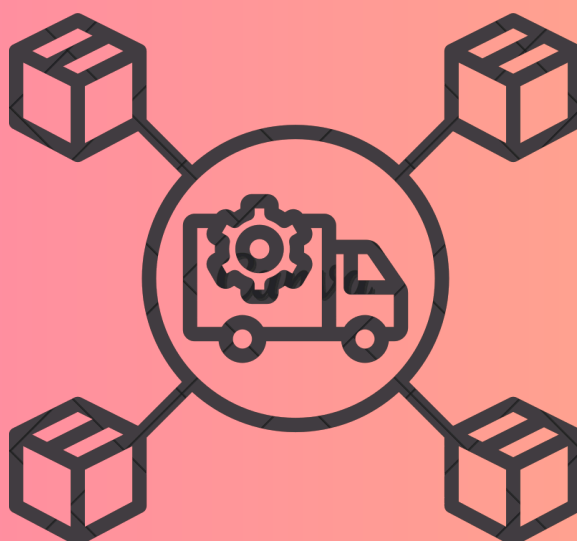
With this data on where cannabis business is allowed, or not, this study creates an **“Openness Score”** on a scale of zero to six, based on how many of the following businesses that they allow:



Retail Storefront



Retail Delivery



Distribution



Manufacturing



Cultivation



Testing.

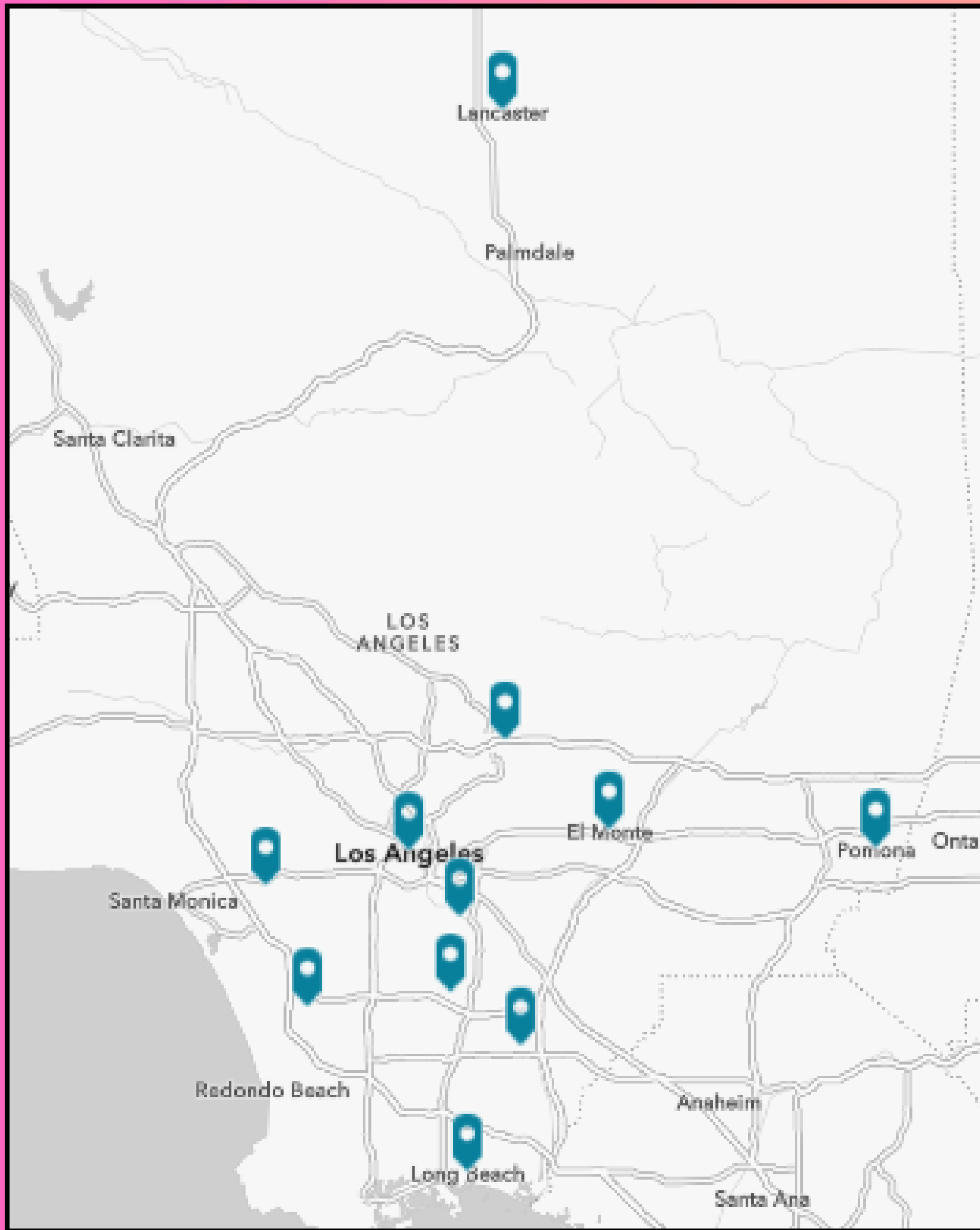


Prop 64 pertains to Adult Use

Only considers “Allowed” or “Prohibited” status
Ignores “Limited-Medical Only” permissions

CITY_NAME	Openness_Score	Retail (Storefront)	Retail (Delivery)	Distribution	Manufacturing	Cultivation	Testing
Bellflower	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Culver City	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
El Monte	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Lynwood	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Maywood	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Los Angeles	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Long Beach	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Lancaster	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Hawthorne	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Pasadena	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Pomona	6	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Montebello	5	Prohibited	Allowed	Allowed	Allowed	Allowed	Allowed
Commerce	5	Prohibited	Allowed	Allowed	Allowed	Allowed	Allowed
Baldwin Park	4	Allowed	Prohibited	Allowed	Allowed	Allowed	Prohibited
Carson	4	Prohibited	Prohibited	Allowed	Allowed	Allowed	Allowed
Covina	3	Allowed	Allowed	Prohibited	Prohibited	Prohibited	Allowed
Huntington Park	3	Limited-Medical Only	Allowed	Prohibited	Allowed	Allowed	Prohibited
Malibu	2	Allowed	Allowed	Prohibited	Prohibited	Prohibited	Prohibited
Artesia	2	Allowed	Allowed	Prohibited	Prohibited	Prohibited	Prohibited
West Hollywood	2	Allowed	Allowed	Prohibited	Prohibited	Prohibited	Prohibited
Bell Gardens	1	Allowed	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
Monrovia	1	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited	Allowed
Redondo Beach	1	Allowed	Limited-Medical Only	Prohibited	Prohibited	Prohibited	Prohibited
Santa Monica	1	Allowed	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited
South El Monte	1	Allowed	Prohibited	Prohibited	Prohibited	Prohibited	Prohibited

Cities that allow any of the cannabis businesses



Cities with the most Permission

11 cities with a 6/6 score

allows for all types of cannabis businesses:
Retail Storefront, Retail Delivery, Distribution,
Manufacturing, Cultivation, and Testing.

*Bellflower
Culver City
El Monte*

*Hawthorne
Lancaster
Long Beach
Los Angeles
Lynwood*

*Maywood
Pasadena
Pomona*

Some Permission for Cannabibis Businesses

14 cities

prohibits storefront

Commerce
Montebello

5/6 score

prohibits
delivery &
testing

Baldwin Park
Carson

4/6 score

prohibits
storefront &
delivery

prohibits
distribution,
manufacturing &
cultivation

Covina
Huntington Park

3/6 score

prohibits distribution,
testing & storefront
(limited-medical only)

only allows retail
storefront and delivery

Artesia
Malibu
WeHo

2/6 score

only allows retail storefront except for
Monrovia which only allows testing

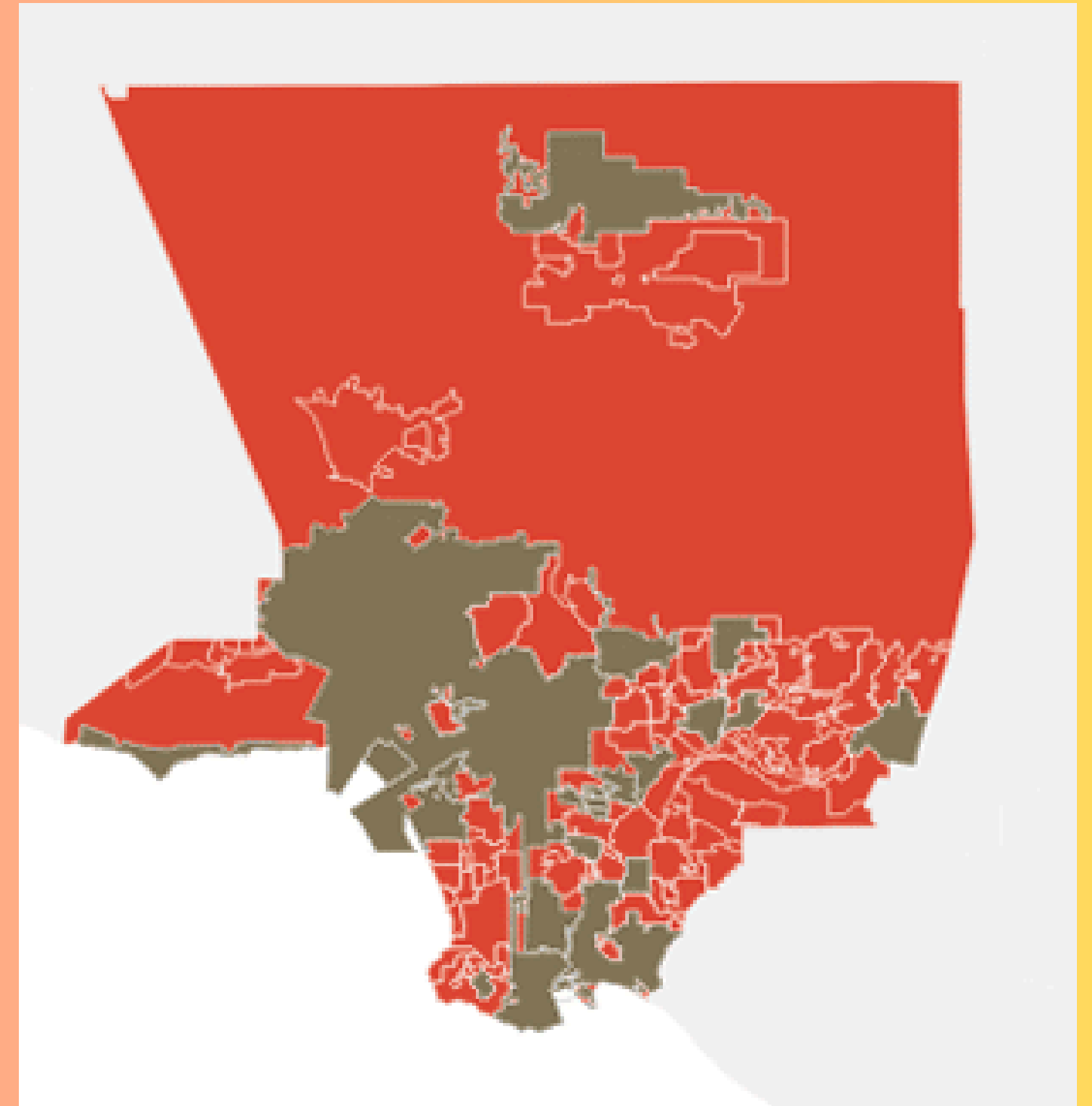
*Bell Gardens, Monrovia, Redondo Beach, Santa
Monica, and South El Monte*

1/6 score

No Permissions for Cannabis Businesses

63 cities

Agoura Hills, Alhambra, Arcadia, Avalon (Catalina Island), Azusa, Bell, Beverly Hills, Bradbury, Burbank, Calabasas, Cerritos, Claremont, Compton, Cudahy, Diamond Bar, Downey, Duarte, El Segundo, Gardena, Glendale, Glendora, Hawaiian Gardens, Hermosa Beach, Hidden Hills, Industry, Inglewood, Irwindale, La Cañada Flintridge, La Habra Heights, La Mirada, La Puente, La Verne, Lakewood, Lawndale, Lomita, Manhattan Beach, Monterey Park, Norwalk, Palmdale, Palos Verdes Estates, Paramount, Pico Rivera, Rancho Palos Verdes, Rolling Hills, Rolling Hills Estates, Rosemead, San Dimas, San Fernando, San Gabriel, San Marino, Santa Clarita, Santa Fe Springs, Sierra Madre, Signal Hill, South Gate, South Pasadena, Temple City, Torrance, Vernon, Walnut, West Covina, Westlake Village, Whittier.



What is the economic downside of prohibiting cannabis business?

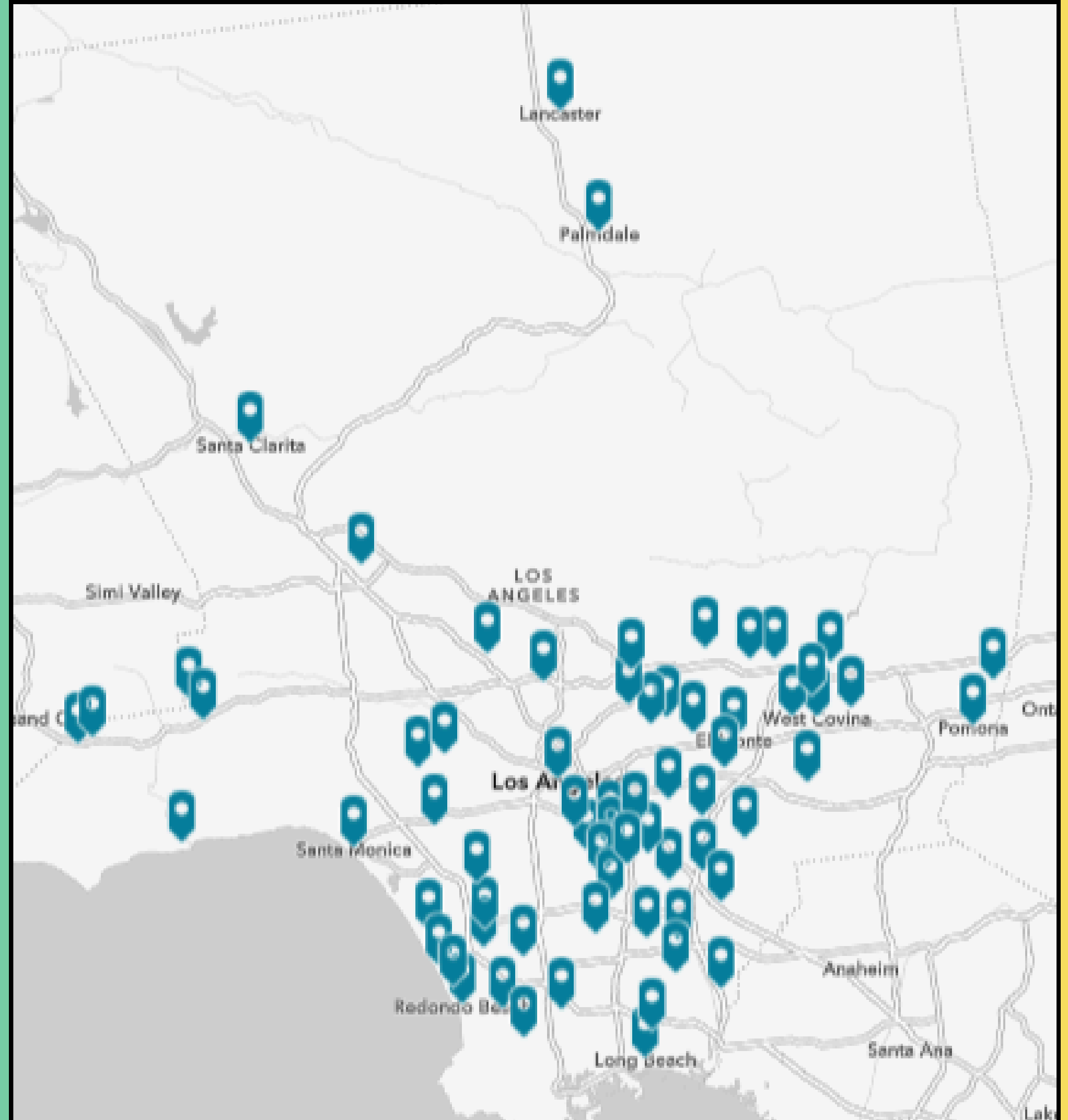
% Yes on Prop 64

Cities that won the
majority vote

67 out of 86



*Even tho 77.91% of cities voted Yes on 64,
73.26% of cities prohibit all cannabusinesses.*



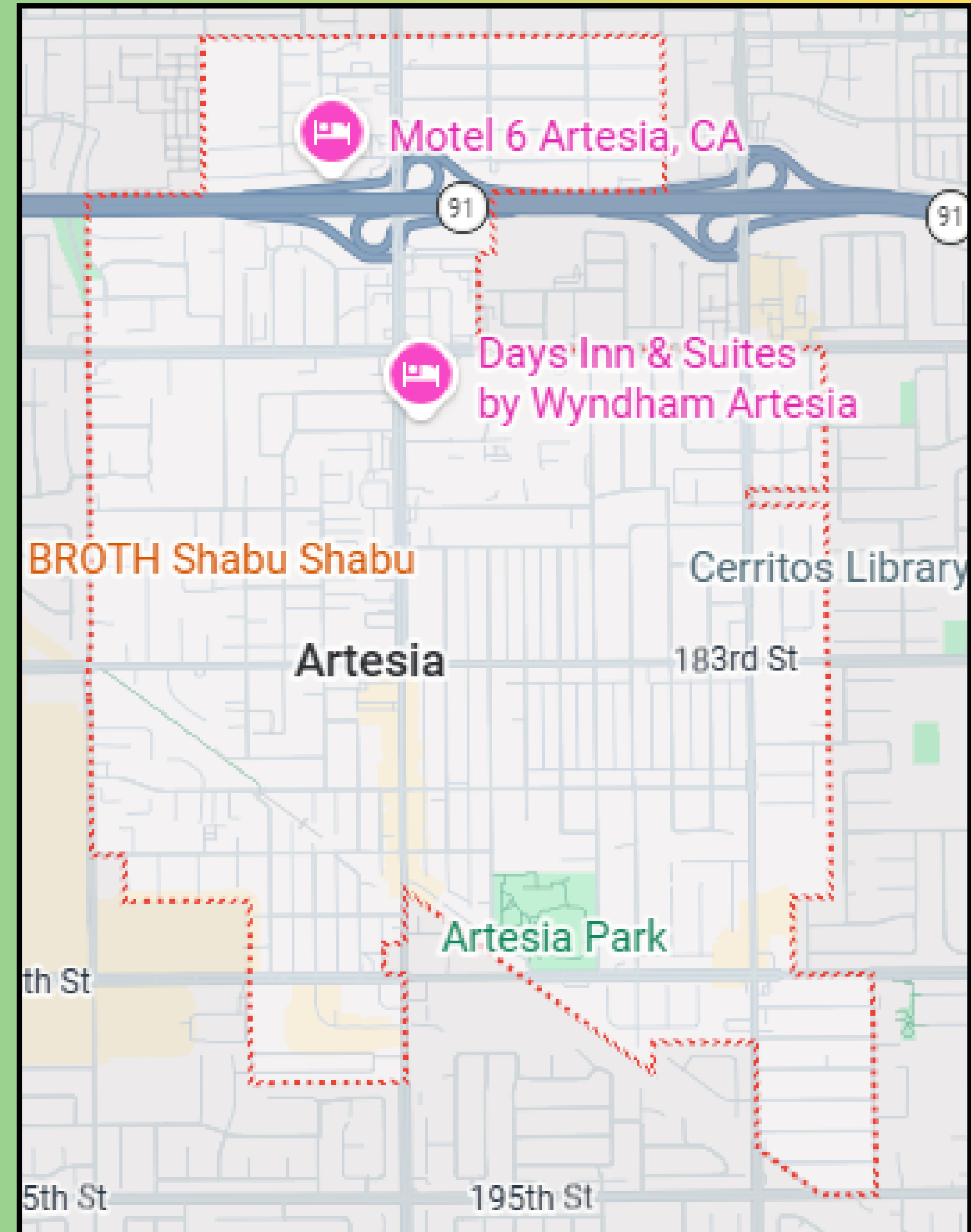
Cities that did not win the vote

19 cities

All but one,
prohibit
cannabis

Artesia (49.77%)
Score: 2/6

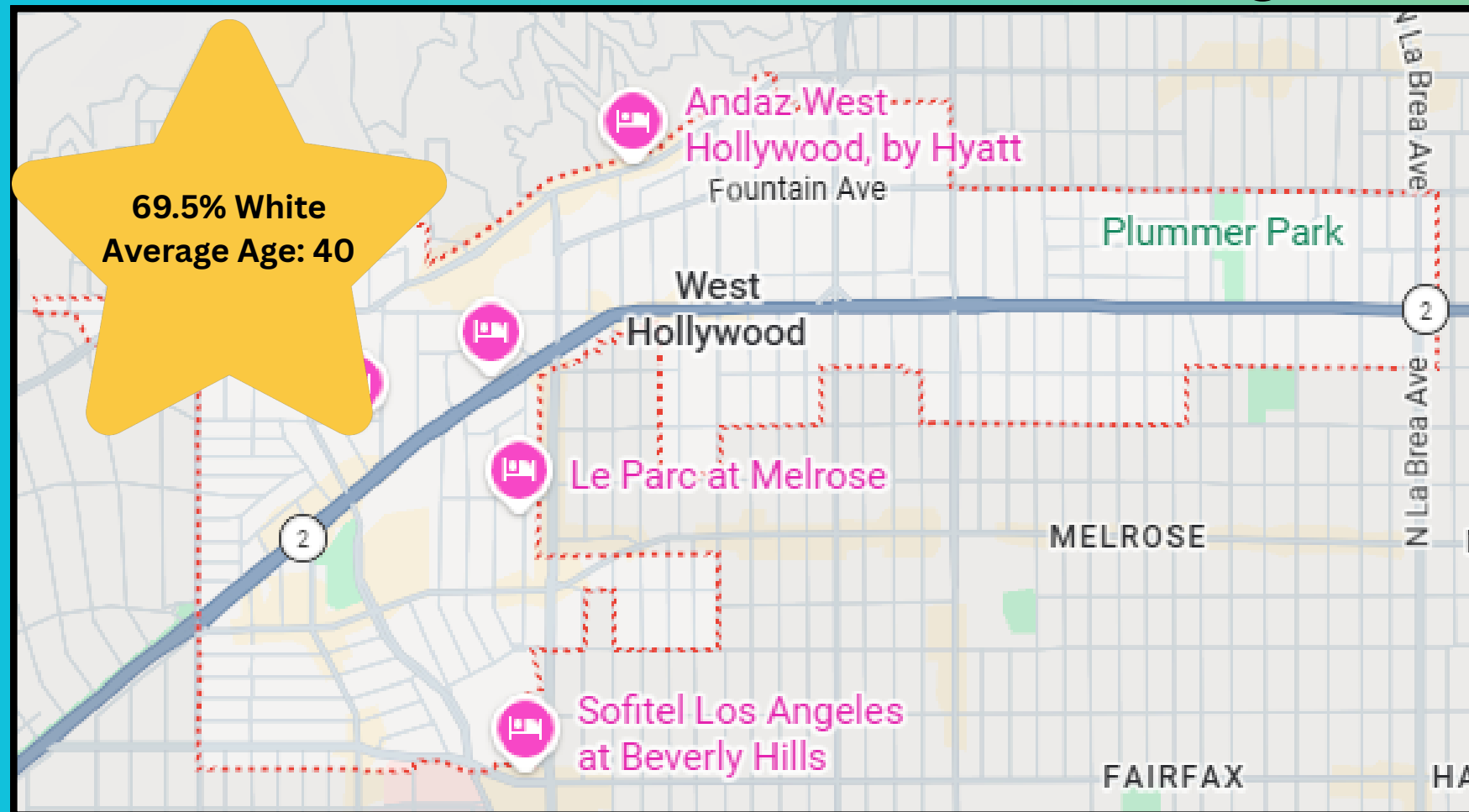
San Dimas (49.24%)	La Mirada (47.15%)
Monterey Park (49.21%)	Rolling Hills (47.14%)
Bradbury (49.07%)	Diamond Bar (47.12%)
La Verne (48.82%)	Rolling Hills Estates (46.99%)
La Habra Heights (48.78%)	Temple City (46.95%)
Glendora (48.62%)	Walnut (46.67%)
Palos Verdes Estates (48.41%)	Arcadia (44.22%)
Rancho Palos Verdes (47.60%)	Cerritos (43.93%)
	San Marino (43.60%)
	Industry (42.98)



West Hollywood: the city with highest Yes Vote

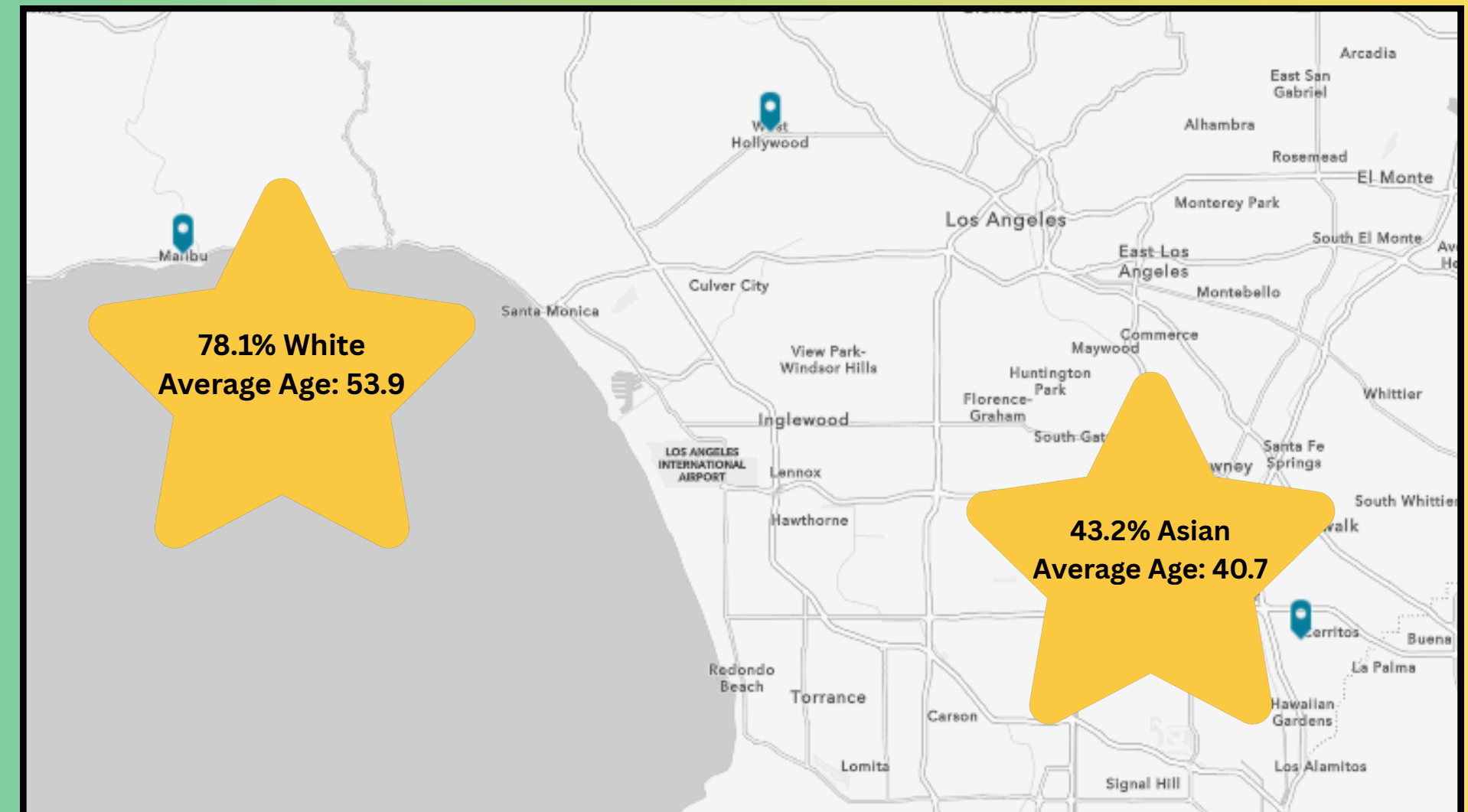
83.16%

Yet only allows Retail Storefront and Delivery



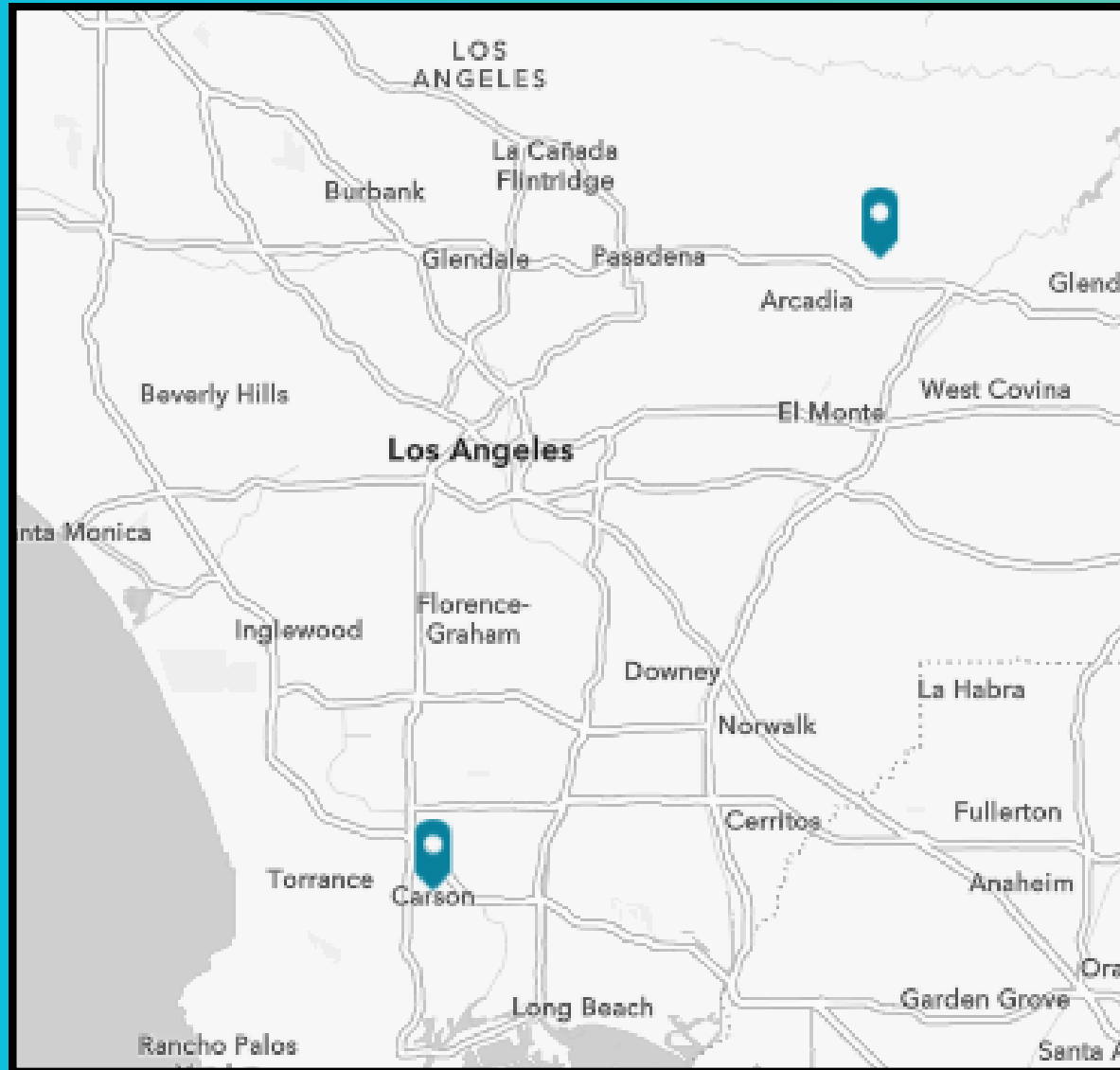
Cities w/similar permissions despite their voting:

Malibu (68.6%) and Artesia (49.76%)

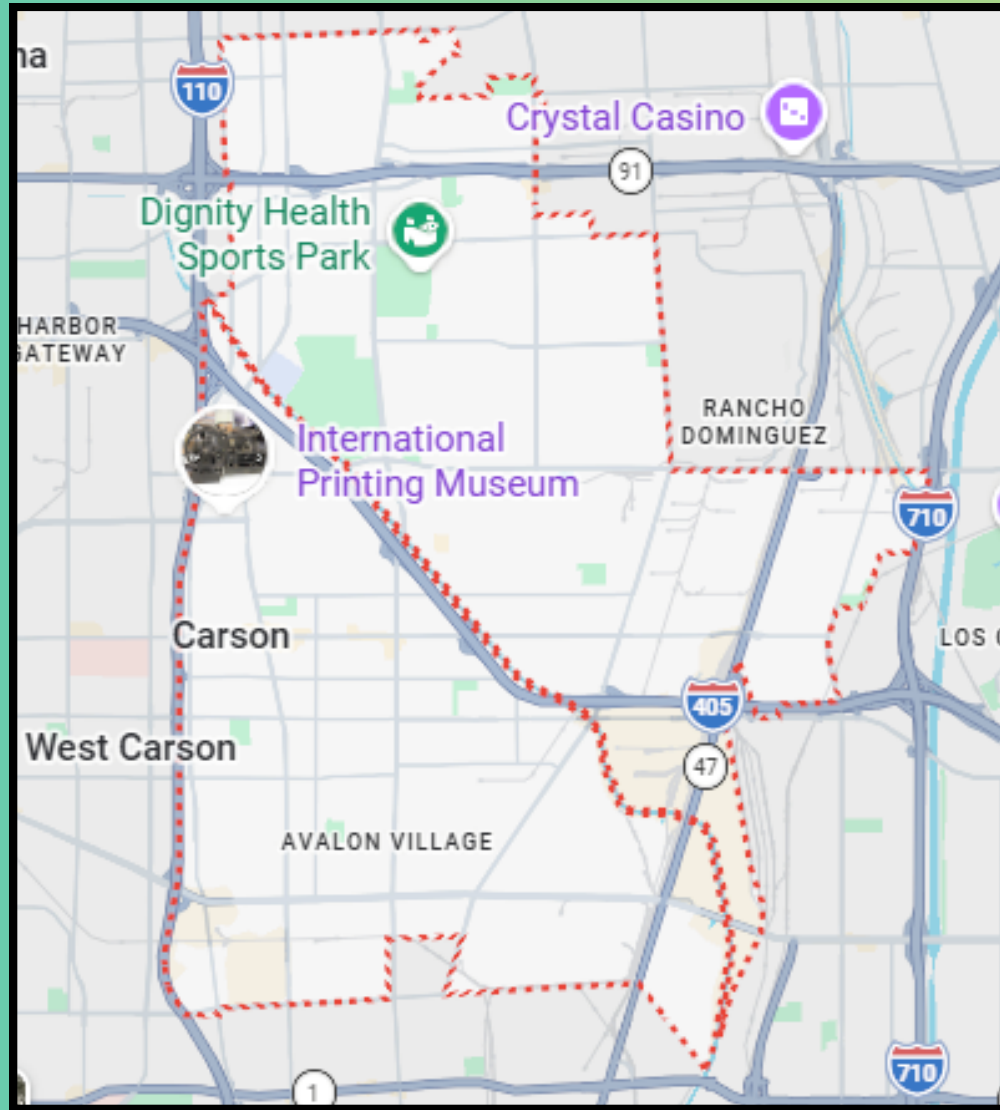


What might these cities have in common? Ethnicity, Age, Etc.

Carson



Cities that Voted to approve cannabis but prohibit all Retail (while allowing other business types)



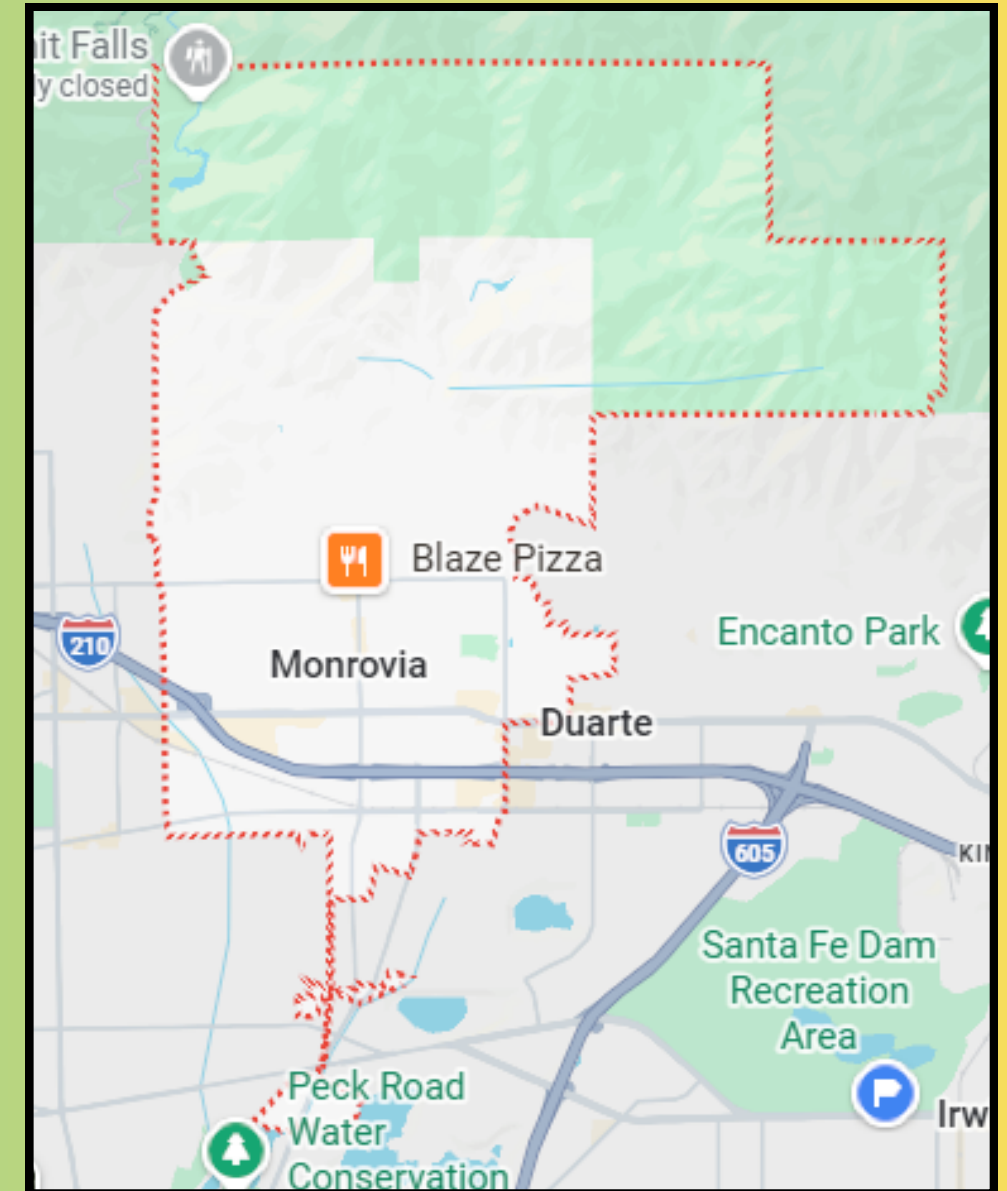
Openness Score: 4 out of 6 (allows Distribution, Manufacturing, Cultivation, and Testing)

Voter Will: 55.75% voted Yes on Prop 64

Economic Power: \$366,700 Median House Value

City Area: 19.24 Sq Miles

Monrovia



Openness Score: 1 out of 6 (allows Testing)

Voter Will: 57.03% voted Yes on Prop 64

Economic Power: \$583,300 Median House Value

City Area: 13.69 Sq Miles

How Significant is Voter Will?

Logit

(p = 0.003): STRICTLY SIGNIFICANT.

The coefficient is 0.1583

The voters' voice still matters!
Cities that strongly supported
legalization in 2016 are
mathematically more likely to have
open permissions today.

Probit

(p = 0.002): SIGNIFICANT.

The coefficient is 0.0964.

A higher percentage of "Yes"
votes in 2016 strongly
predicts a city being "Open"
today. Because the p-value
dropped from 0.003 (Logit)
to 0.002, this model is even
more certain about this
relationship.

Clog Log

(p = 0.002): HIGHLY SIGNIFICANT.

The coefficient is 0.1196.

This is the strongest p-value yet.
When we account for the fact
that "Open" cities are a minority,
the 2016 vote becomes an even
more powerful "green light" for
current policy.

Cities with a House Median Value of <\$1M

13 out of 86

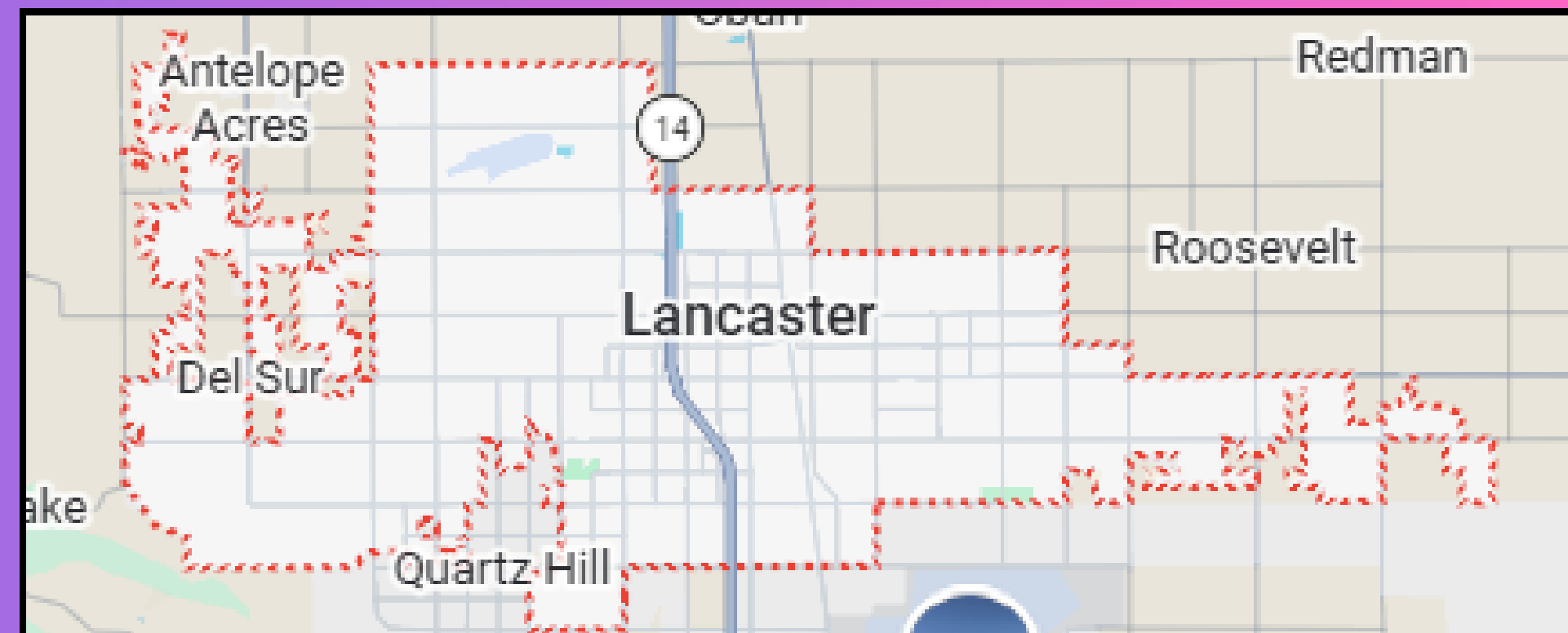
Rolling Hills	\$2,000,000	0/6
Hidden Hills	\$2,000,000	0/6
Beverly Hills	\$1,900,500	0/6
Malibu	\$1,802,800	2/6
Palos Verdes Estates	\$1,609,500	0/6
Bradbury	\$1,595,200	0/6
Vernon	\$1,571,400	0/6
Manhattan Beach	\$1,537,200	0/6
San Marino	\$1,518,400	0/6
Hermosa Beach	\$1,166,800	0/6
Rolling Hills Estates	\$1,096,400	0/6
Santa Monica	\$1,086,300	1/6
Rancho Palos Verdes	\$1,003,300	0/6

City with the lowest House Median Value

LANCASTER

\$186,000 6/6

Despite being on the lower end of this wealth indicator scale, Lancaster allows for all 6 business types.



How Significant is House Median Value?

Logit

(p = 0.031): SIGNIFICANT.

The coefficient is negative (-2.353e-06).

This confirms your NIMBY (Not In My Backyard) Theory. As house values go up, the probability of the city allowing cannabis businesses goes down. Wealth acts as a "buffer" or a "veto" against these businesses.

Probit

(p = 0.018): SIGNIFICANT.

The coefficient is negative (-1.367e-06).

The NIMBY Theory holds firm here. Wealthy enclaves remain the most resistant to cannabis business permissions. Interestingly, this model finds wealth more significant than the Logit model did (0.024 vs 0.031).

Clog Log

(p = 0.039): HIGHLY SIGNIFICANT.

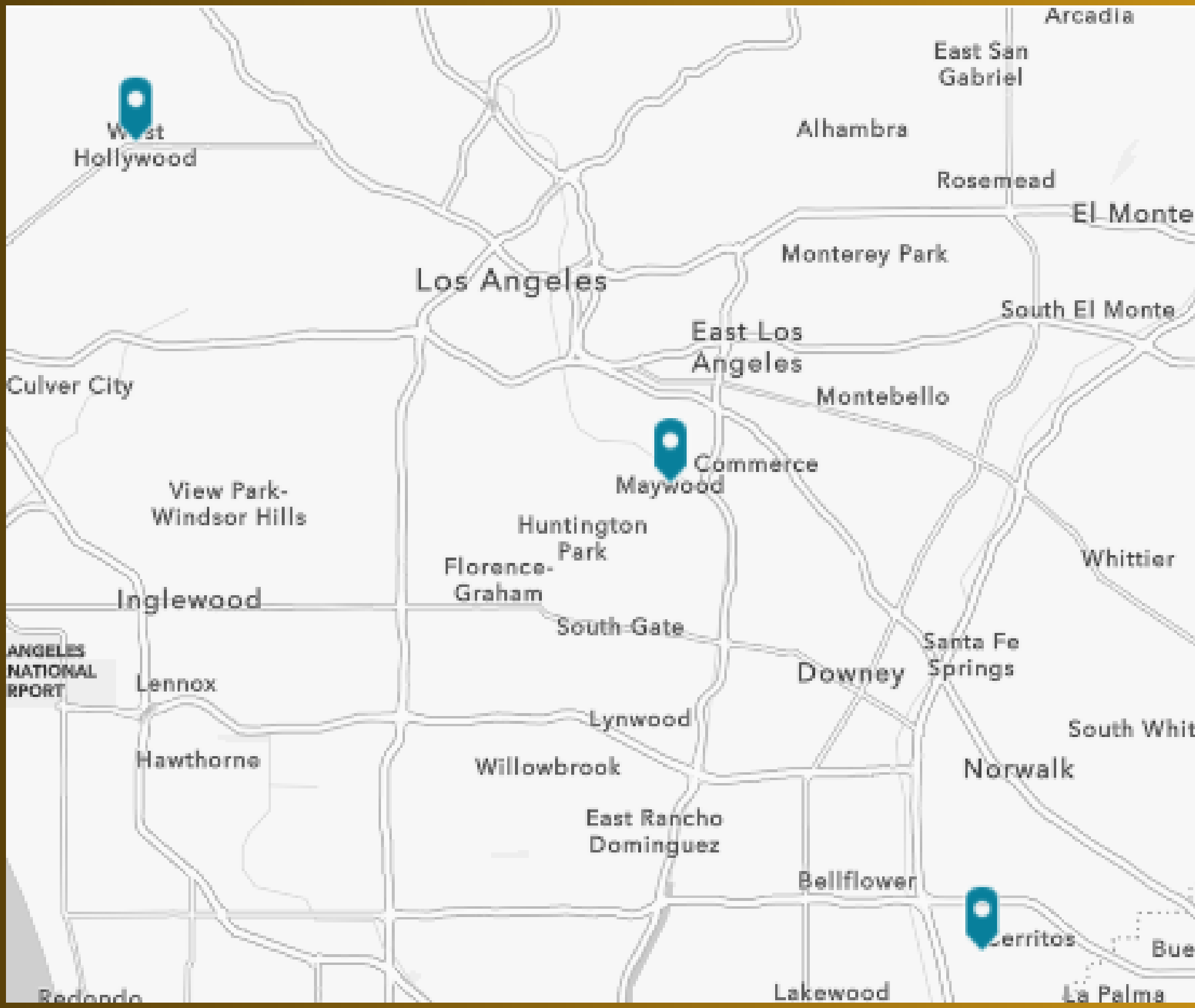
The coefficient is negative (-1.799e-06).

In the model most suited for your lopsided data, the NIMBY effect is its most visible. The p-value fell below 0.01, suggesting that wealth is a massive "veto" factor that is statistically impossible to ignore.

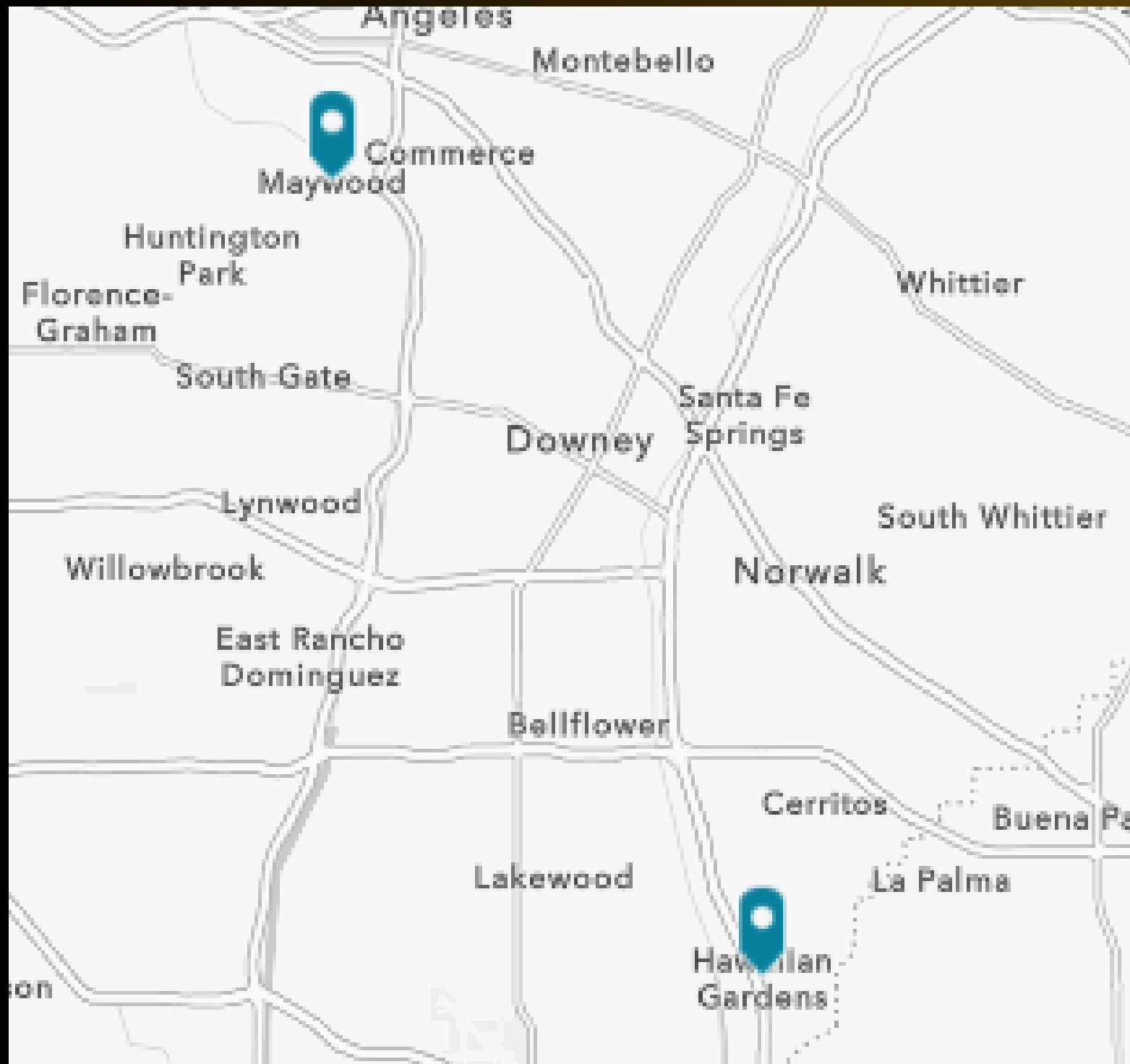
Smallest Cities (>2 sq mi)

9 out of 86

West Hollywood	1.98 sq mi	2/6
Lawndale	1.93 sq mi	0/6
Lomita	1.89 sq mi	0/6
Hidden Hills	1.71 sq mi	0/6
Artesia	1.61 sq mi	2/6
Hermosa Beach	1.36 sq mi	0/6
Cudahy	1.21 sq mi	0/6
Maywood	1.18 sq mi	6/6
Hawaiian Gardens	0.96 sq mi	0/6



The two smallest cities have opposite permissions



What could be the biggest difference between these similar sized cities?

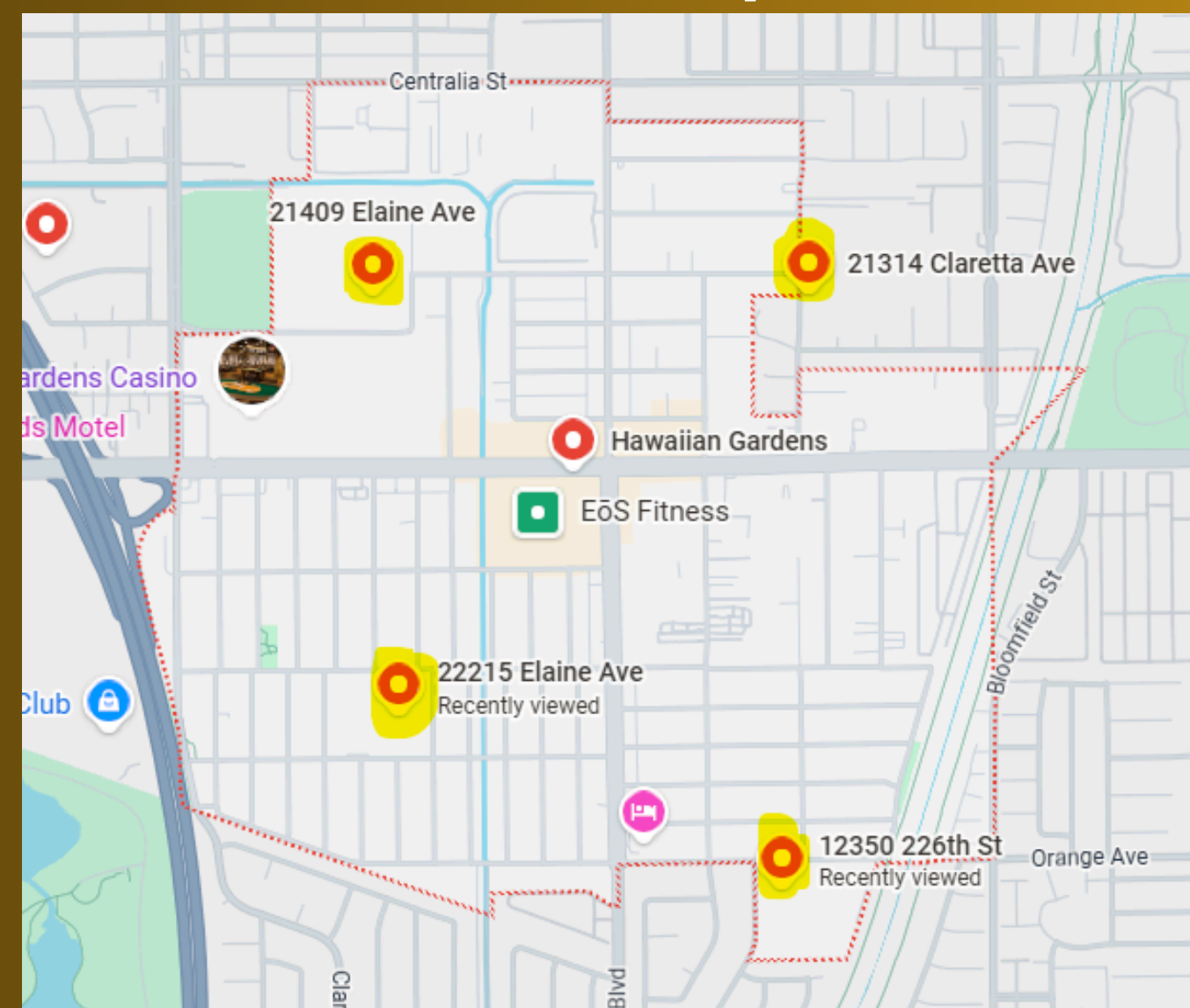
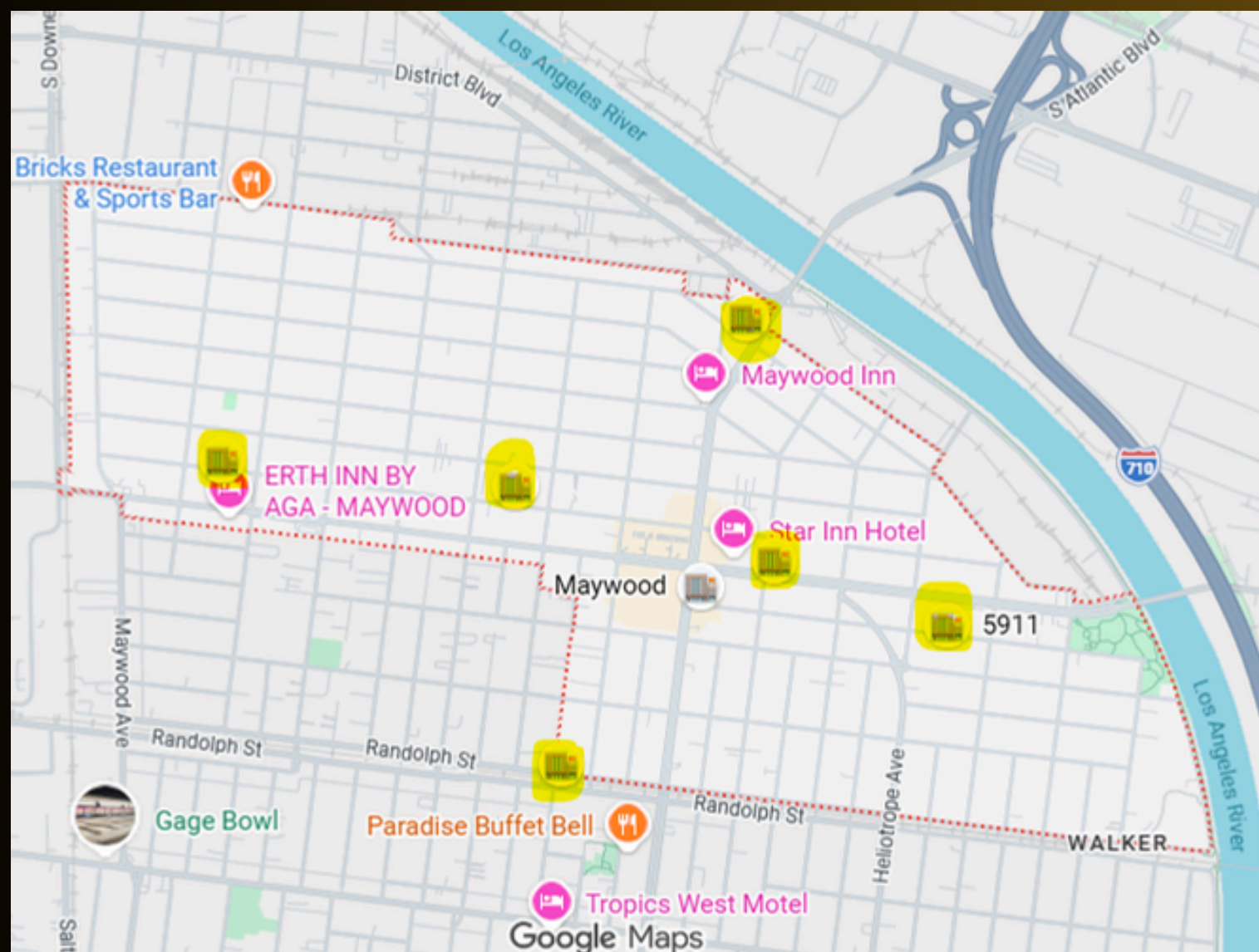
Places that cannot have a Cannabis Business within 600 ft (0.04 sq mi)

- *Schools*
- *Day Care Center*
- *Youth Centers*
- *Public Parks*
- *Public Libraries*
- *Drug/Alcohol Recovery Facilities*
- *Permanent Supportive Housing*
- *Game Arcades*

Are School Zones a factor for cannabis permission?

Maywood (1.18 sq mi)

Hawaiian Gardens (0.96 sq mi)



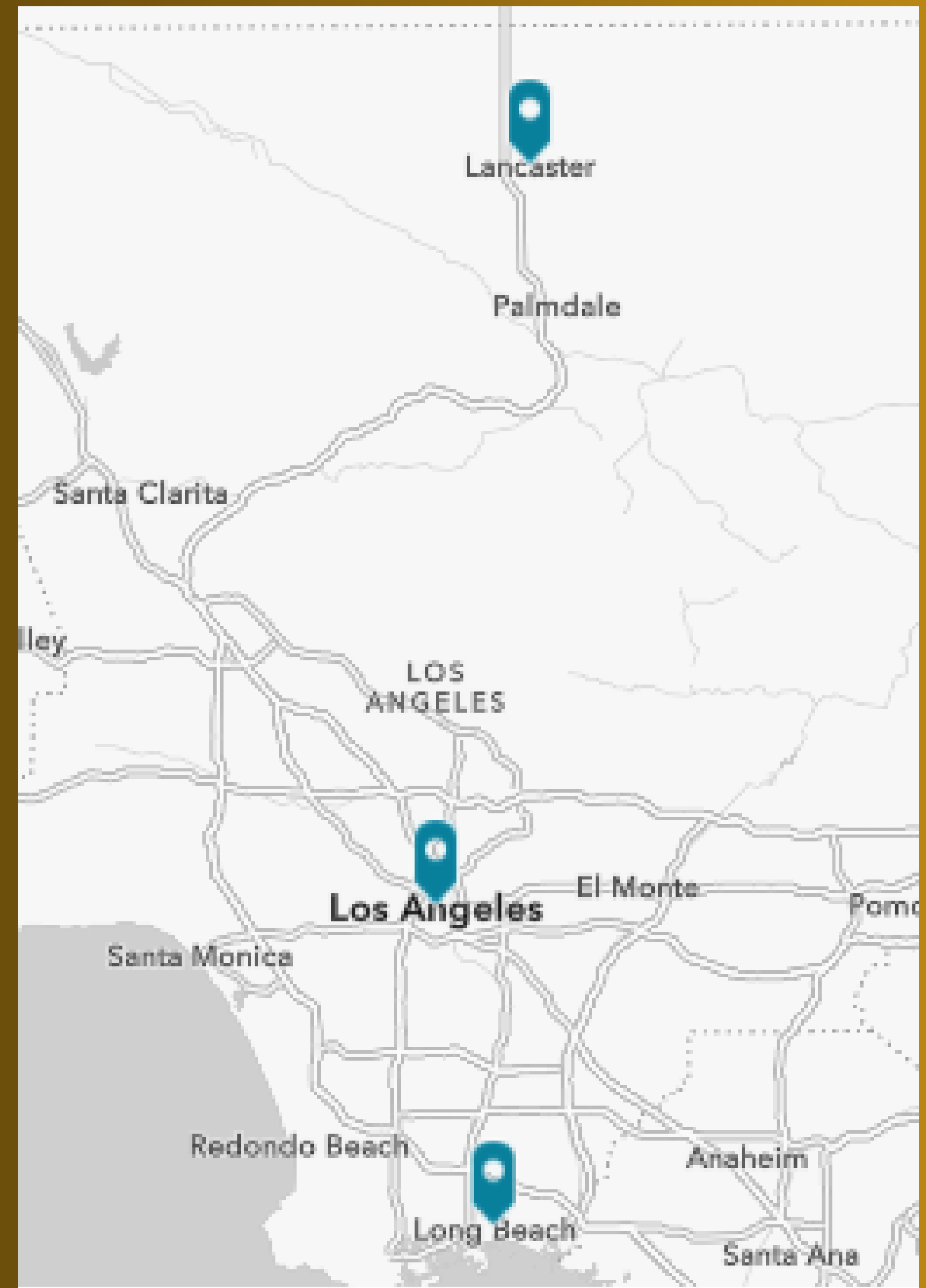
51.23% Yes | Score: 6/6
School Zones: Up to **20.34%**

54.94% Yes | Score: 0/6
School Zones: Up to **16.66%**

Largest Cities (<50 sq mi)

5 out of 86

Los Angeles 468.85 sq mi	6/6
Palmdale 104.64 sq mi	0/6
Lancaster 94.18 sq mi	6/6
Santa Clarita 52.32 sq mi	0/6
Long Beach 50.31 sq mi	6/6



How Significant is City Square Mileage?

Logit

(p = 0.494): NOT SIGNIFICANT.

At 0.49, this is nowhere near the 0.05 threshold. This means that, according to your data, the physical size of a city (square mileage) has almost zero impact on whether they allow cannabis. A tiny city and a massive city are equally likely to be prohibited.

Probit

(p = 0.482): NOT SIGNIFICANT.

Size still doesn't matter. Whether a city is a sprawling 50 square miles or a tiny 1-mile pocket, geography is not a factor in the council's decision-making.

Clog Log

(p = 0.600): NOT SIGNIFICANT.

Even in this specialized model, the physical size of the city remains irrelevant.



Google Colab

 [google.com](https://colab.google.com)

Let's test the tool

On the ballot: Measure CB

APPLYING CANNABIS BUSINESS **TAXES TO UNLICENSED CANNABIS** BUSINESSES.

(10% on cannabis sales; 5% on medical cannabis sales; 2% on manufacturing, cultivation or other commercialization; 1 % on transportation, testing or research)

generating approximately \$30-35 million annually

for **general City services**, such as street/sidewalk repairs, 911 emergency response, fire protection, and parks

**YOUR VOTE
MATTERS**

until ended by voters.

**YOUR VOTE
MATTERS**

A "yes" vote supports applying the city's tax on cannabis businesses to unlicensed cannabis businesses. A "no" vote opposes applying the city's tax on cannabis businesses to unlicensed cannabis businesses.