

Songlin Liu

Professor Barry Waite

PPD 631: GIS for Public Policy, Planning and Development

April, 2019

## **LA County housing analysis**

### **1.Introduction:**

Housing is the largest annual expenditure for households in the United States (Bureau of Labor Statistics, 2009). However, such a large proportion of the cost could not guarantee living in a safe and convenient place as there are always richer people occupying better areas. Even if some people are willing to give up considering the other factors such as safety and short distance to jobs to get an affordable house, there are still about 553,000 homeless in United States (Sarah,2018).

Unfortunately, Los Angeles County has both serious housing and safety issues, people with income more than \$112,930 annually could be comfortable to afford a median-priced home, but only 28 percent of residents earn that much (Elijah, 2018). That means 72 percent of residents in Los Angeles County could not comfortably afford a typical home in this area, which is a huge proportion. But there were total 101,995 violent crimes in this county in 2018 (city data, 2018), which indicates living in Los Angeles County is not safe, though the house price is that high. Moreover, Los Angeles County is a place with high level of congestions, people usually need to spend about 31 min for commuting (FRED Economic Data, 2018). As the top one congested area in United States, serious traffic jams have produced great negative impact on people's living quality. In order to make life easier and safer, the choice of housing area is very important.

In this project, I am trying to analyze the relationship between house price and the other factors such as safety and convenience, and then use this analysis to prove the correctness of my initial thought that higher housing price area means safer and more convenient living condition. If it is right, figuring out is there a living area that balanced the prices and factors such as safety and convenience that people could choose to live with relatively low housing price, but high level of safety and convenience would be the final mission of this project. If it is not right, figuring out their relationship and the reasons for this relationship would be the next step.

## **2.Methodology:**

### 2.1 Data Selection:

As it is really struggling to find trustful data resource for the most recent housing price and the housing price is totally different from different data resources, I decided to use housing value to replace housing price and obtained the most recent median of housing value from SimplyAnalytics database. After that, in order to compare the levels of safety and convenience, I decided to gather the data of violent crime rate and the percentage of people taking less than 15 mins to commute to work of different living areas in Los Angeles County. In case there is also a need for class analysis of different living areas, I also obtained the data of median income from SimplyAnalytics database.

### 2.2 Data reference:

All of those data are collected from SimplyAnalytics database.

**Median Housing Value of Los Angeles County in 2017:** Easy Analytic Software, Inc. (EASI) - Census Database,Enhanced Master Database. Retrieved from:

<https://app.simplyanalytics.com/index.html>

**Average Crime Rates of Los Angeles County:** :Easy Analytic Software, Inc. (EASI) - Census Database,Enhanced Master Database. US Department of Justice, Federal Bureau of Investigation (FBI), Uniform Crime Reporting Statistics. Retrieved from:  
<https://app.simplyanalytics.com/index.html>

**Percentage of less than 15 min travel time to work in Los Angeles County:** :Easy Analytic Software, Inc. (EASI) - Census Database,Enhanced Master Database. Retrieved from:  
<https://app.simplyanalytics.com/index.html>

**Median household income of Los Angeles County:** Easy Analytic Software, Inc. (EASI) - Census Database,Enhanced Master Database Retrieved from:  
<https://app.simplyanalytics.com/index.html>

### 2.3 Data processing:

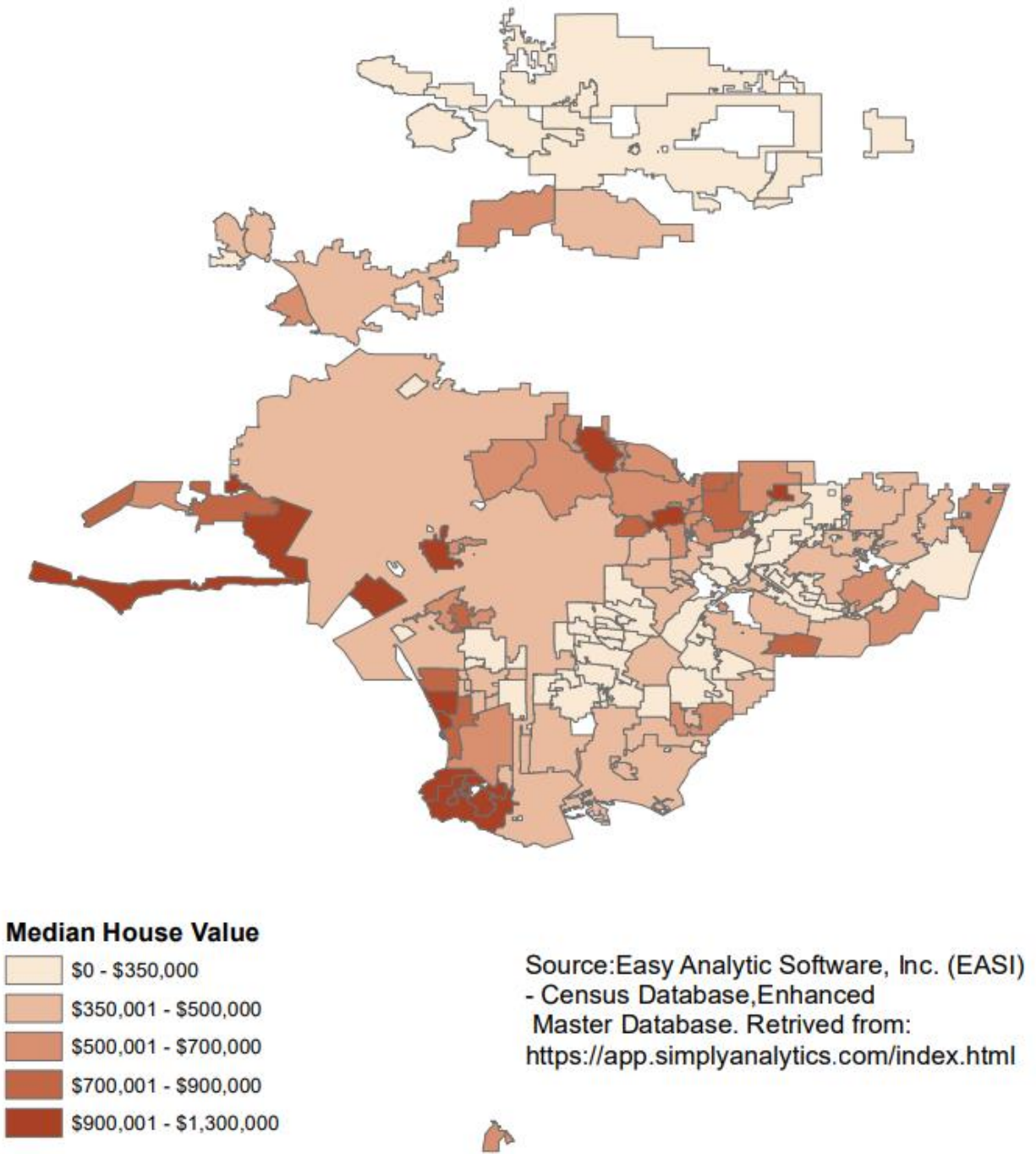
All the data including the base map of Los Angeles County were downloaded from simpleanalytics website <https://app.simplyanalytics.com/index.html>. After obtaining the base map and those data, I used Arcgis to graduated colored the median housing value of Los Angeles County on the basemap, then used it as the basic layer and graduated symbolized average crime rates, median household income, murder and percentage of less than 15-min travel time to work on the basic layer to get all the five maps.

## 3. Analysis:

### Base Map



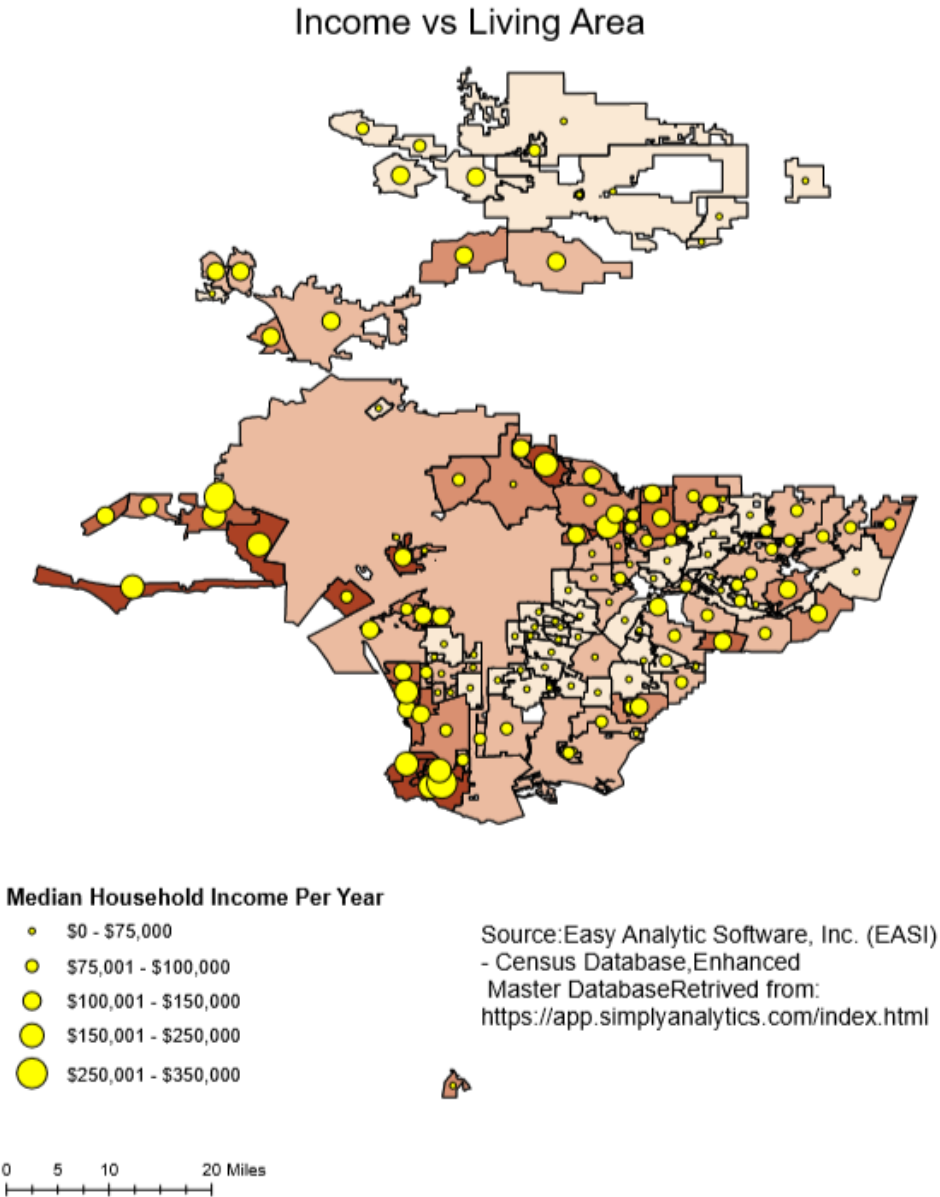
3.1. Distribution of Median Housing Value of Los Angeles County:



As indicated in this map, most of the houses at the western side and Long Beach area have higher values. For the eastern side of Los Angeles County, the median housing values

fluctuate greatly, from less than 350,000\$ to more than 900,000\$. The median house values of the central region and northern region are relatively low, most of them are below 500,000\$. With such huge differences of housing values, livability of those areas might be different, the analysis of the factors associated livability will be done below.

3.2 Median income and living areas analysis:



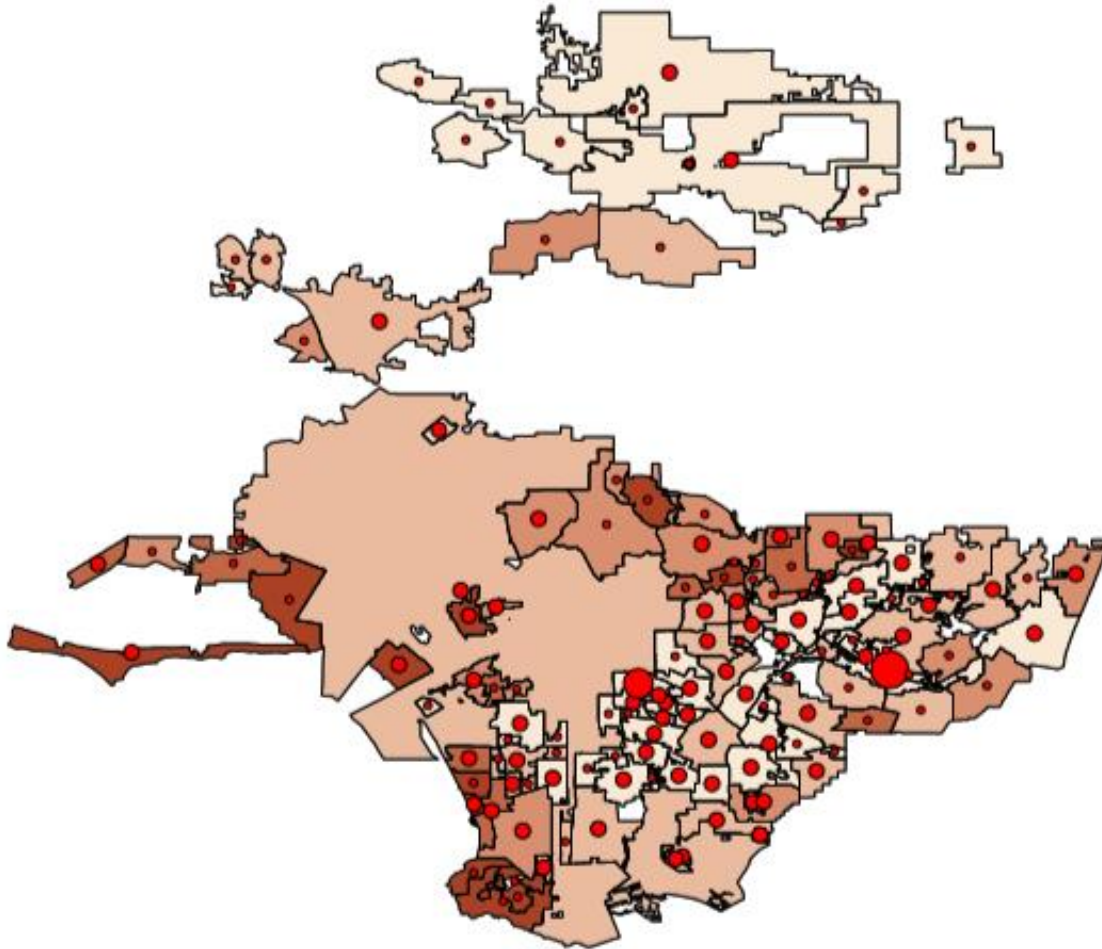
It is a common sense that people with higher income would choose to buy more expensive houses. In this map, the median household income of different living areas in Los Angeles County was plotted on the layer of median housing value, in which the relationship between household income and the housing value in different areas is shown. From the map, higher income people generally have houses with higher value. But special case also exists, in the Malibu, CA, the house value is higher than the house value of Hidden Hills, CA, but the median household income is actually lower, and in the northern side of Los Angeles County, when the house values are in the lowest rank, there are a lot of people earning the same income with those people who live in houses with relatively higher values. So what makes people have relatively low income to buy houses with high values? Or what makes people have enough income to buy houses with higher values choose to buy houses with low values. To find out the reasons, analysis on other factors such as safety and convenience are needed.

### 3.3 Average crime rate in different living areas:

From this map, generally, living areas with higher housing values have lower average crime rates. When the housing values exceed \$350,000, the average crime rates dramatically decrease, especially for living areas with housing values higher than \$700,000, the average crime rates reduce to less than 1,500 per 100,000 people per year. But special case also exists, when the housing values at the northern side of Los Angeles County are at the lowest rank (less than 350,000\$), the average crime rates are very low, most places have less than 150 crimes in 100,000 people per year. That might be the reason why people who have enough income to buy houses with higher values choose to live in this area.

### 3.4 Commuting time vs Median housing value:

## Average Violent Crime Rate vs Location



#### Average violatte crime rate per 100000

- 0 - 150
- 151 - 1,500
- 1,501 - 15,000
- 15,001 - 25,000
- 25,001 - 50,000

Source: Easy Analytic Software, Inc. (EASI)  
- Census Database, Enhanced  
Master Database. US Department of Justice,  
Federal Bureau of Investigation (FBI), Uniform  
Crime Reporting Statistics Retrieved from:  
<https://app.simplyanalytics.com/index.html>



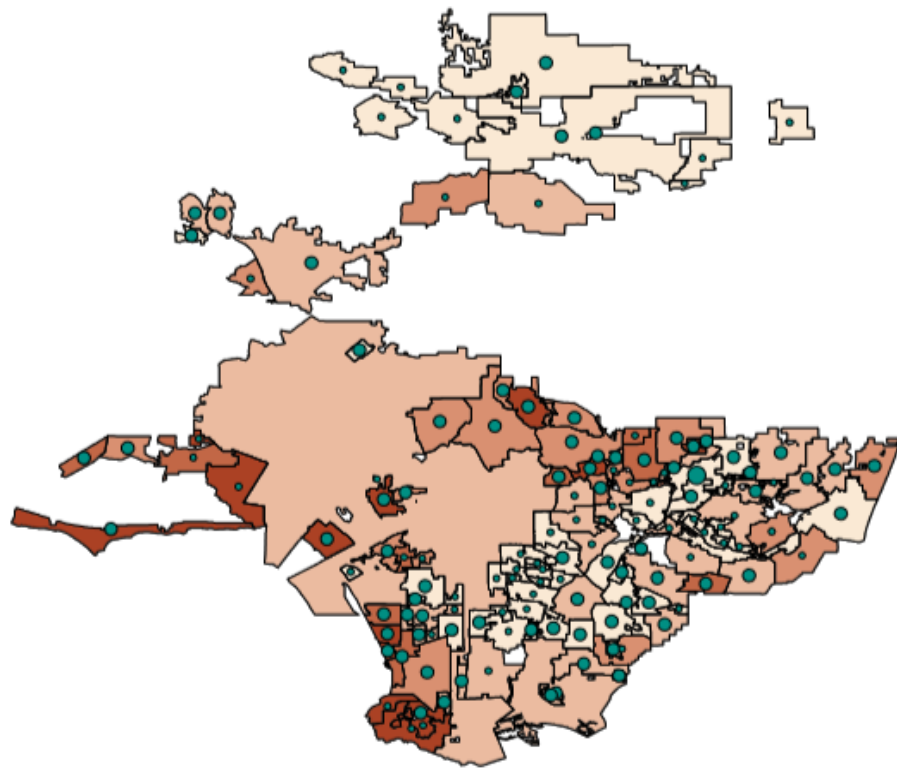
0 5 10 20 Miles



As the map showing below, the place with the highest percentage of commuting time to work that costs less than 15 min is Avalor, which is 74.9%, the reason for that should be that this place is small and kind of isolated, most people who live here work here. For the main area of Los Angeles County, the connection between the percentages of commuting time to work that costs less than 15 min and housing values is relatively small, part of areas with high housing values has low percentage of people could travel to their working places within 15 mins and part of areas with low housing values has high percentage of people could travel to their working places within 15 mins. Irwindale, CA has the highest level of convenience of work, which is even higher than the most expensive area in the main Los Angeles County Hidden Hills, CA, where has only 15.45% of people could arrive to their working places within 15 mins. The reason why such connection is small should be people who could afford relatively more expensive houses would have the financial freedom to choose where to live. For people who can only afford relatively lower priced houses, work is an important factor in their lives, or they would lose the income to support their basic living conditions, especially for those people who cannot afford high transportation costs to travel a long distance for work, choosing to live in areas with low housing prices and close to working places is the best choice for them.

---

## Commuting time vs Median House Value



### Percentage of less than 15min travel time to work

- 0.00 - 16.00
- 16.01 - 40.00
- 40.01 - 55.00
- 55.01 - 70.00
- 70.01 - 100.00

Source: Easy Analytic Software, Inc. (EASI)  
- Census Database, Enhanced  
Master Database. Retrived from:  
<https://app.simplyanalytics.com/index.html>

0 5 10 20 Miles

---

## 4. Conclusion:

After finishing this analysis, I found the housing issue is much more complex than I have ever thought. For some factors, higher housing price would mean higher level, take safety as an example, the highest crime rates are in areas with housing values less than 350,000\$, when the housing values exceed \$350,000, crime rates dramatically decreased, especially for areas with housing values higher than \$700,000, average crime rates reduced to less than 1,500 per 100,000

people per year, people who can afford higher value houses would be less likely to crime..

Although some of areas with low housing values are also relatively safe, houses with higher values averagely have much higher level of safety. But the fact that some of areas with low housing values actually have even higher level of safety kind of proving that houses with highest prices do not mean all of their aspects would be the best, the distribution of the percentages of commuting time to work that costs less than 15 mins furtherly proved it, as the areas with highest housing values do not have the highest percentages of people could travel to their working places within 15 mins, even from average aspect, areas with higher housing values do not have higher percentages of people could spend less than 15 mins to their working places than areas with lower housing values.

Los Angeles County is a rich area where there are a lot of opportunities and high-pay jobs, although the housing and living costs are relatively high, people have the freedom to choose to live and work in such area with attractive opportunities. This analysis of housing in Los Angeles County clearly indicated the safety factor and convenience factor compared with the median housing values in different areas of this county, people who have relatively low annually income and do not want to spend too much money on transportation to work could choose to live in Irwindale, CA, where also has a relatively high level of safety, the relationship between safety, convenience and housing price is best balanced. For rich people, the range of selections is huge since the levels of safety in areas with high housing values are relatively high, they would not be limited by such factor. For those people who want to live near their working places, Avalon, CA would be the best choice, where has the highest percentage of people spending less than 15 mins on the commuting to working places.

There are a lot of other factors not been analyzed in this paper, different people might have different preferences, safety and convenience might not be the most important factors for some people. Although highest housing values do not mean all of their aspects are the best, in such a big county, they can choose where they want to live by their own preferences and income.

### **5. Limitation:**

It is hard to define and grade the level of environmental condition, so there is no such data. But the factor of environmental condition is also important for the selection of living area. Also, there is no the data of the quality and distribution of infrastructures and recreational facilities in Los Angeles County for deeper analysis. Moreover, all of those data are based on cities and places in Los Angeles County instead of on individual communities in those areas. If there is no such limitation, this analysis would be done in a deeper and more completed way.

### **6. Reference:**

Bureau of Labor Statistics. Consumer Expenditures--2008. Table A. Average annual expenditures and characteristics of all consumer units and percent changes, Consumer Expenditure Survey, 2006–2008. Washington D.C.: U.S. Department of Labor; 2009. [[Google Scholar](#)]

Ruiz-Grossman, S, 2018. Homelessness Rises For Second Year In A Row In U.S. After Years Of Decline, retrieved from: [https://www.huffpost.com/entry/homelessness-statistics-united-states-2018\\_n\\_5c1970a9e4b02d2cae8e322e](https://www.huffpost.com/entry/homelessness-statistics-united-states-2018_n_5c1970a9e4b02d2cae8e322e)

Chiland, E, 2018. It takes a salary of over \$110K to afford a typical home in LA. Retrieved from: <https://la.curbed.com/2018/5/15/17358264/los-angeles-home-prices-how-much-to-buy-income>

FRED Economic Data, 2018. Retrieved from: <https://fred.stlouisfed.org/series/B080ACS006037>

Basemap of Los Angeles County. Retrieved from: <https://www.arcgis.com/home/webscene/viewer.html?layers=5bdbcf7d2914f07b33e586180c22233>