

A GEOSPATIAL APPROACH FOR ANALYZING THE EFFECTS OF SEX OFFENDER RESIDENCY RESTRICTION LAWS IN LONG BEACH, CALIFORNIA

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Introduction

Over the past several decades, the public has continuously demanded stricter and harsher punishment for sex offenders due to their concern of safety from repeated sexual predators. California citizens response to these safety concerns led to the 2006 passage of Proposition 83, also known as the Jessica's Law. This law restricted registered sex offenders from living within 2,000 feet of a school or park.

This study will identify a method that will determine where these registered sex offenders are allowed to live, and assess how residency restriction laws have affected compliant area between the years 2010 and 2015. The City of Long Beach will be used as a case study.



Figure 1. City of Long Beach. Green highlights areas where sex offenders are allowed to live and be compliant with Proposition 83.

Data and Data Sources

The data that was acquired were parks, zoning and schools. These were obtained from the City of Long Beach website GIS catalog. A zoning use dataset was obtained to identify areas zoned for residential use. Socioeconomic data for compliant areas was accessed through Esri Business Analyst Online (BAO). BAO allows users to import their own polygon or define one to obtain a variety of information for these areas including Census data. All data utilized the North American Datum 1983 State Plane California FIPS V projection coordinate system and were downloaded in a shapefile format.

Table 1. List of data and data sources used in the project

| Dataset | Source | Type |
|------------------------------|------------------------------------|---------|
| Parks | Long Beach GIS Catalog | Polygon |
| Schools | Long Beach GIS Catalog | Polygon |
| Zoning Use | Long Beach GIS Catalog | Polygon |
| City of Long Beach Boundary | Long Beach GIS Catalog | Polygon |
| U.S. Census Statistical Data | Esri Business Analyst Online (BAO) | Table |

Methodology

All shapefiles were imported into a file geodatabase as feature classes because of the geodatabases organizational capabilities. The school and zoning feature classes were filtered to eliminate unnecessary information. Jessica's Law only designates a 2,000 feet buffer around private or public educational institutions for children under the age of eighteen. Zoning use had to identify available housing options, thus removing commercial, industrial, and undeveloped land. Schools only included institutions with students under the age of eighteen.

A buffer analysis of 2,000 feet was conducted on the parks and schools feature class and then merged. This was overlaid with residential zoning, and the erase analysis tool generated a new polygon layer composed of only compliant liveable areas.

Compliant areas were inspected using the Esri imagery base map to ensure that all areas actually permitted residential land use. A total of 23 locations were identified at this step.

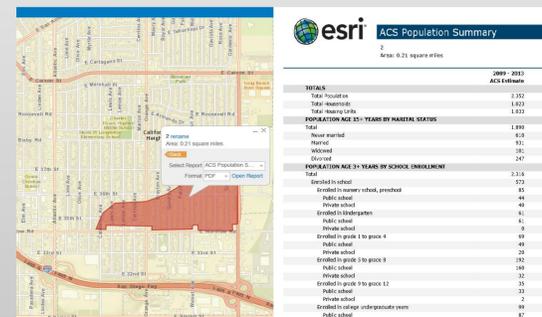


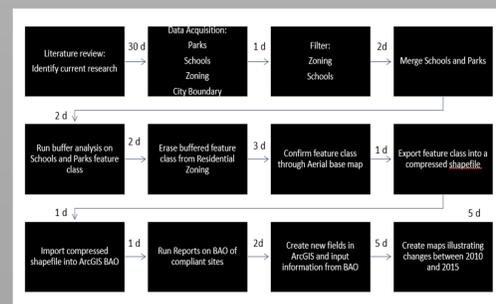
Figure 2. ArcGIS Business Analyst Online (BAO) displaying a polygon and report.

The compliant areas were exported back into a shapefile and had to be compressed in order to be imported to ArcGIS BAO. Areas less than 0.01 square miles in area were eliminated. A total of 14 compliant areas were identified for this study. Three types of reports were generated: demographics (age, race, population), housing information (value, renters, owners), and lastly the average household size and median income (see Figure 2).

Timeline

I originally estimated that I would be able to complete the project in six weeks. However, I did encounter a few obstacles which made it difficult to adhere to this timeline such as finding the right data, and choosing correct geoprocessing tool parameters.

Figure 3. Methodology timeline of approximate days it took to complete each task



Results

The data suggests that only 2% of housing would be available to registered sex offenders who reside in Long Beach. It also suggests that the majority of compliant areas are located along the city boundaries, with very few areas located near the downtown area of the city. This study also compared the median income with average housing value to determine whether there was affordable housing within these compliant areas (see Figure 5A & B). A natural breaks classification of 6 classes was used to help analyze how many of these compliant areas were available as an option to registered sex offenders based on affordability. A count of all the registered sex offenders living within compliant areas revealed that registered sex offenders were congregated in one compliant area (see Figure 6).

Figure 4A and B. Compares the median housing value with median income for 2010. A natural breaks classification with 6 classes was used. Areas with the same color classification indicated that their income supplemented the average housing value in their location.

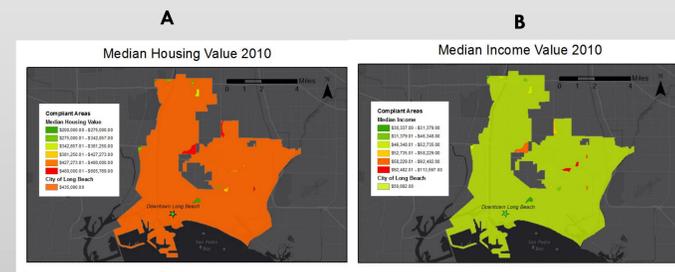
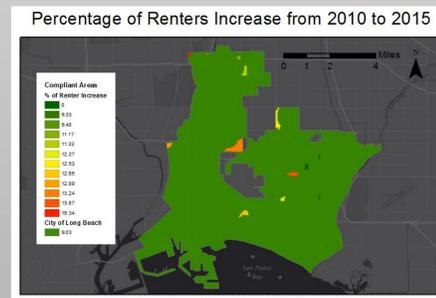


Figure 5. Percentage of Renters increase from 2010 to 2015.



Number of Registered Sex Offenders (RSO) in compliant areas

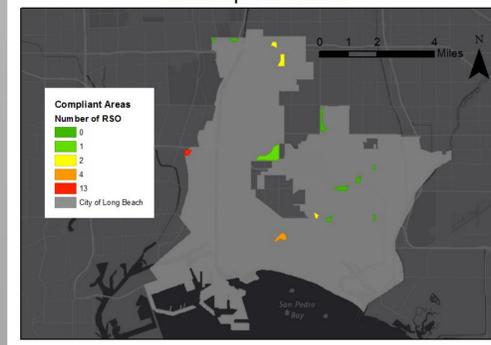


Figure 6. Number of registered sex offenders living within each compliant area as of July 30, 2015.

Discussion

This project identified that majority of compliant sites were located along the outskirts of the city boundaries. A total of 1% of the entire city would allow registered sex offenders to be compliant with Proposition 83, while only 2% of residential land use would be considered an option for them as a primary place of residency. Long beach observed a 9% average increase of renters between the years of 2010 and 2015. Three compliant areas observed no increase of having more renters, while all other compliant areas observed an increase greater than the city average. In one compliant area, the percentage of renters was double the City of Long Beach. The increase in renters could be the result of unstable housing because of its proximity to social services, or housing located in areas that are frequented with crime. This constant movement of sex offenders moving in and out of neighborhoods may cause local residents to move themselves due to an increase fear in their neighbourhood thus, allowing homes to become available for rent.

One of the critical limitations that this study observed was the lack of data available to adequately identify the effects that residency restriction laws have. Crime data was unavailable, and would have yielded information as to whether or not sex offenders were contributing to an increase in crime. Another limitation to this study, was that neighbouring city's parks and schools were not taken into account. Majority of compliant areas were along the edge of the city boundaries. By not taking into account for another city's parks or schools, it could result in a non-compliant area because Proposition 83 is a State law rather than a city ordinance.

Conclusion

Proposition 83 restricts registered sex offenders from living in certain areas forcing them to congregated into specific areas. With approximately only 2% of available housing options available to registered sex offenders, this would allow authorities (law enforcement, parole or probation officers) to easily monitor their location. With an increase of sex offenders living in a confined area, concerns for safety would impact a neighborhood negatively. Home owners would likely leave, either selling their property or renting it out causing housing value and median income to decrease.

Future studies could look into using parcel data rather than land use to more accurately identify available housing options. Crime data could be implemented to identify whether or not sex offenders contribute to an increase in crime. Lastly, in order to effectively identify impacts of residency restriction laws, demographic data should be collected year-to-year, analyzing the data at five year intervals.

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