

East 7th Street History Project

Data Visualization and Analysis of Historical Datasets for Long Beach Neighborhoods

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Introduction

The City of Long Beach is comprised of many diverse neighborhoods. Sixteen of these neighborhoods have been designated *Historic Districts*, as these areas have been able to preserve structural and landscape features in a way that collectively provides a glimpse of the qualities of the past.

The East 7th Street area that was annexed in 1909 (Figure 1) contains a number of these districts. The East 7th Street History Project, created by residents and members of these districts, aims to collect and share early twentieth-century data related to the area's development and populations through an online repository that can be found at E7shp.org. An important part of the E7shp.org project involves mapping available datasets and using the information gained to further explore the histories of the area. This thesis project serves as a pilot study of the GIS methods and visualizations that can be used to assist in this effort. The pilot study focuses on a smaller portion of the annexed area called, Enumeration District 89 (Figure 1, boxed in red).



Figure 1. Study Area

Data and Data Sources

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

Dataset	Source
Building Permit Data	City of Long Beach
1920 US Census Data	Ancestry.com
Sanborn Maps	CSULB
Assessor Parcel Boundaries	City of Long Beach
Current Building Footprints	City of Long Beach
Roads Shapefile	US Census
Los Angeles County Address Data Points	Los Angeles County GIS Data Portal

The main datasets studied in this project include:

- Building permit data from the City of Long Beach, denoting the first year of building completion, recorded for city parcels.
- Historic Sanborn maps depicting parcel boundaries and building footprints recorded in 1914 and,
- 1920 US Census Data, used to map population information at the individual and household level (see Figure 2).

Additional datasets were also used to assist in geoprocessing and to provide the modern day spatial context of the area of interest. These include road, parcel, building footprint, and address data point shapefiles.



Figure 2. 1920 UC Census Data Sheets

Methodology

The methodology involved in this study consists of three different processes for each of the three main datasets used (Figure 3).

Building Permit Dataset

The building permit dataset was used to create a time-lapse video of building development for the East 7th Street annexation area over time.

The data was first prepared by joining the tabular data, containing the year of building completion, to the corresponding parcel features in the parcel shapefile. The new parcel shapefile was then spatially joined to corresponding building footprints of that parcel, ultimately transferring the building permit data to the building footprint.

Next, a python code was written to read through the updated building footprint shapefile and create separate shapefiles containing all buildings completed for each individual year. One at a time and in chronological order, the code added each shapefile for each year to a map template and printed the map into jpeg images.

Finally, all printed images, each with all buildings completed up to that year, were merged together in Microsoft Windows Movie Maker software to create a video depicting building construction between the years 1824 and 2012. To view this video, please visit the links posted at the bottom of this poster.

1914 Sanborn Maps

Sanborn is a map company that has been publishing fire insurance maps since 1866. These maps, originally used for fire insurance and assessment purposes retain great value for the understanding of building structures. The Sanborn maps used for this study consist of 1914 maps for Enumeration District 89.

These historical maps were georeferenced to the current parcel shapefiles of the area. Georeferencing allows these scanned paper maps to be assigned to its proper spatial location in a geographic coordinate system and allows the data to be viewed and analyzed with other spatial datasets that share the same location.

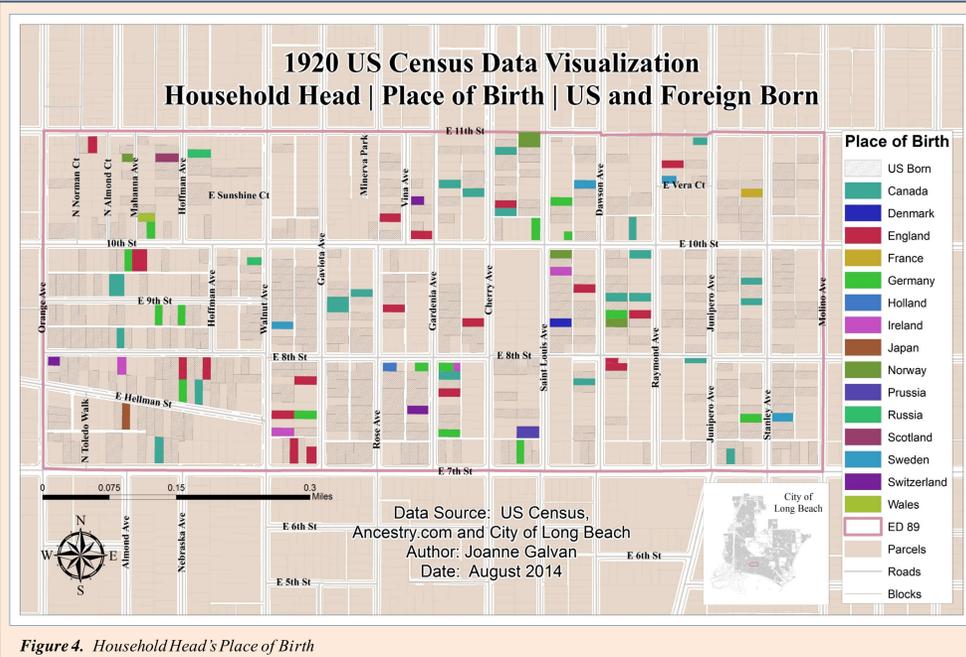


Figure 4. Household Head's Place of Birth

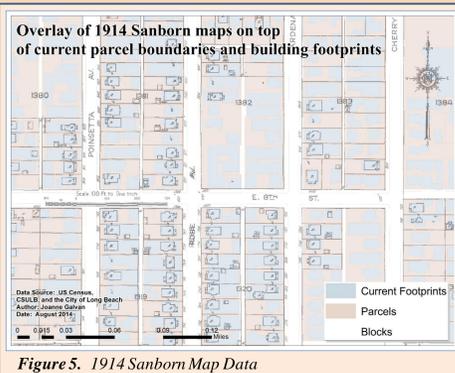


Figure 5. 1914 Sanborn Map Data

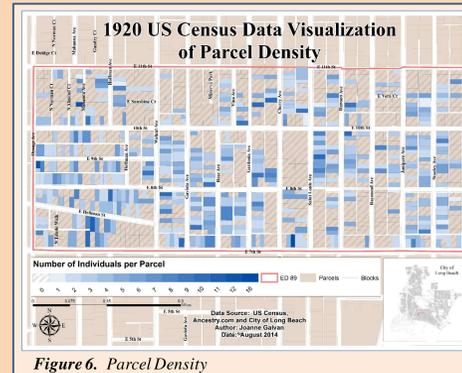


Figure 6. Parcel Density

Results

The results of this study consist of the multiple map outputs using multiple visualization techniques in GIS. The building permit data was used to create the development video. The Sanborn maps were used to overlay with current building data for a visual comparison between the 1914 environment and today. And finally, the 1920 US Census Data was used to create multiple choropleth maps showcasing a variety of demographic data at the parcel level. These results are depicted in Figures 4-9, and consist of the Sanborn maps, as well as demographic information about place of birth, density, homeownership status, marital status, and age.

Discussion

The work accomplished for this research project is a great starting point for exploring the different ways that GIS can be used to map historic data. With the methodologies used and tested for this pilot study, a greater understanding is established for what can be done as the study is expanded from just one enumeration district, to the entire East 7th Street annexation area, and possibly the entire city.

Additionally, this work can be replicated for other historical census years that have been released, providing the opportunity to expand the research from a spatial analysis of population demographics at one time, to a temporal analysis over a long duration of time.

In looking forward to the future, the lessons learned in this project provide a number of important considerations to keep in mind as the project continues. One of the most important limitations of this pilot study is the consideration of the address data accuracy. Addresses have changed over time as new and in-fill development takes place. While much of the area is historic and remains unchanged, some data may not fall exactly where it is used to. In fact, not all data points from the 1920 US Census were geocoded at all, as the reference data did not match the historic address data. Further research will have to be done to address this issue and establish greater data accuracy.

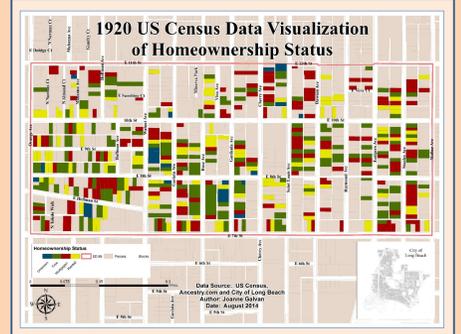


Figure 7. Homeownership Status

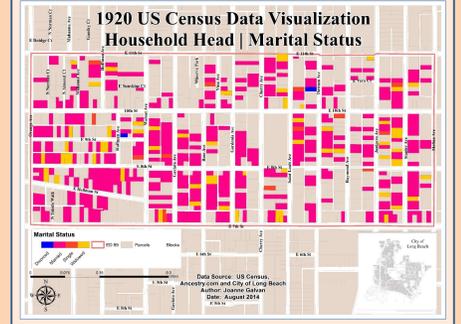


Figure 8. Household Head's Marital Status

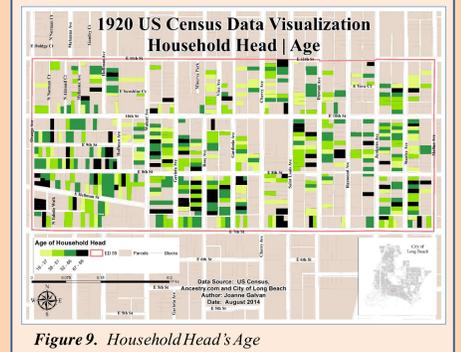


Figure 9. Household Head's Age

Conclusion

The work from this pilot study serves as a model for neighborhoods and communities as they look back on their histories. Using GIS and maps allows a greater comprehension of the people and places that used to be and can help facilitate the process of answering questions and validating assumptions that residents and historians have about a neighborhood's past. Additionally, studies like this gives an example of how GIS can be integrated with other disciplines to enhance the integrity of research.

For the East 7th Street Collaborative group, the map outputs provide more material that can be shared through the online website, E7shp.org, where users can visualize these historic datasets in a spatial context. The maps produced in this study will also serve as supplemental material that will be used in the project's applications for grant funding. Through these funds, the East 7th Street collaborative group hopes to continue and expand the work established here.

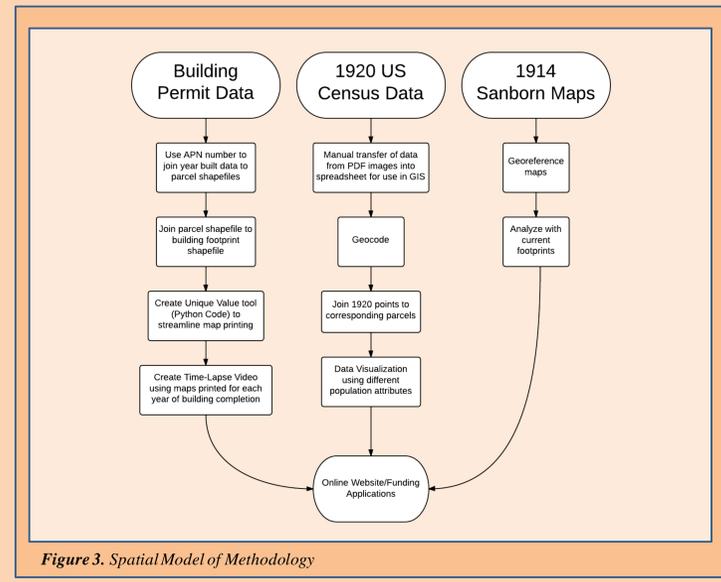


Figure 3. Spatial Model of Methodology

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<http://E7shp.org/>
<https://www.youtube.com/watch?v=OdtPmqd4A>