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## Introduction

The City of Long Beach was officially incorporated in 1897 and quickly began to expand, eventually annexing East 7<sup>th</sup> Street in 1909. This annexation was essential to the growth and development of Long Beach by linking the downtown with east Long Beach. The area eventually grew to a population of over 23,000. As a result, the East 7<sup>th</sup> Street History Project (E7HP) was formed to preserve and inform the public of the historical significance of the area. The project intends to expand upon the prior results of a similar study from 2011 and the additional research done in 2014 by former CSULB master's student, Joanne Galvin, whose work was concentrated on one of the eleven 1920 enumeration districts within the East 7<sup>th</sup> Street project area. The goal of the current project was to develop choropleth and dot density maps of the project area to learn more about the history and demographics of the neighborhoods. The maps covered all associated 1920 enumeration districts.



Figure 1. Illustrates the geographic area of East 7<sup>th</sup> Street by enumeration district and precinct.

## Data and Data Sources

The project used data from the U.S. Census and several other sources, most of which were local government agencies (Table 1). Most of the local data, while derived from the source, was first introduced by Joanne Galvin two years prior who also worked on the E7SHP. The one, and major, data source that wasn't locally derived was the U.S. Census data for 1920 and 1930. This data was originally generated by the U.S. Census, but was actually downloaded from Ancestry.com.

Dataset	Source
1920 and 1930 census data	Ancestry.com/U. S. National Archives
City of Long Beach building permits	City of Long Beach
Sanborn maps	CSULB Geography Department
Assessor parcel boundaries	City of Long Beach
Current building footprints	City of Long Beach
Roads shapefiles	U. S. Census
LA County address data points	LA County GIS portal
LA County Countywide Address Management System (CAMS) locator file	LA County GIS portal
Pearsall maps	LA Public Library

Table 1. Datasets used in the project

## Methodology

This project consisted largely of data acquisition (Figure 2). United States census data from 1920 and 1930 were extracted from Ancestry.com using a conversion script that converted the HTML data to CSV files. The dataset was large and was stored on a Dropbox Pro account shared by all participants on the research team. After the 1920 data were converted, data were checked for quality by comparing the original handwritten census sheets with the digitized products on Ancestry.com. Once the data were combined in a single CSV file, there was an attempt to join the address data with the 2014 LA County Assessor Parcel Data, which resulted in a match rate of only 8%. As an alternative to the failed join procedure, the data were geocoded with an address locator that was created using the CAMS street reference data. The geocoded point data contained all the census attributes and had a 95% match rate. Therefore these results were used to illustrate the census data using ArcMap. The data were then imported into Microsoft Access so that they could be queried by precinct. This allowed for the data to be joined to the precinct boundary feature class in order to represent the data in a choropleth map. Graduated color symbolization was used to represent relevant attributes in the census data records. Later, a spatial join was performed on the address point data and the LA County Parcel layer. This represents the data at a parcel level. The spatial join made the dot density and birthplace maps possible.

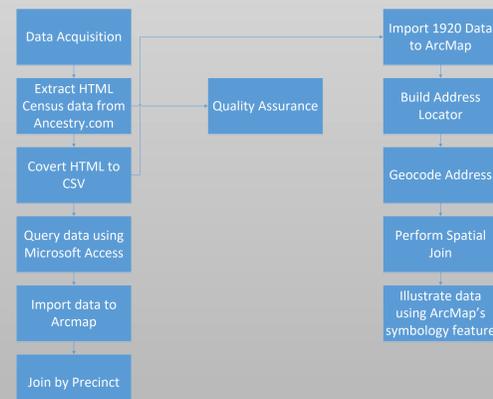


Figure 2. Diagram of the methods used in data processing, analysis, and visualization

## Timeline

Date	Description
September 16, 2015	Presentation of E7SHP by Gretchen Swanson
October 10, 2015	Team met with Joanne Galvan
January 11, 2016	Gathering of 1920 Census Data
March 21, 2016	Gathering of 1930 Census Data
March 23, 2016	Receive grant
May 23, 2016	1920 QA Complete
June 6, 2016	1930 QA Complete
June 7, 2016	1920 and 1930 dataset is complete and ready for use
July 11, 2016	Geocoding Complete
June 15, 2016	Lit Review Complete
June 22, 2016	Ethics Complete
July 19, 2016	Maps Complete
July 20, 2016	Methods Complete
July 27, 2016	Results Final Draft Complete
August 1, 2016	Discussion Final Draft Complete
August 8, 2016	Abstract, Intro and Conclusion complete
August 4, 2016	Powerpoint Presentation and Poster Complete
August 13, 2016	Final Presentation

Table 2. Table of significant dates in the project

## Results

Results consist of a large dataset of 1920 and 1930 U.S. Census data that can be used for future research. We created a collection of various maps depicting the population from the 1920s census data. The maps display demographic data that includes population density using choropleth and dot density symbolization, to illustrate various population dynamics. The maps produced provide a way to visualize how historically relevant demographic attributes varied across the study area (Figures 3-5).

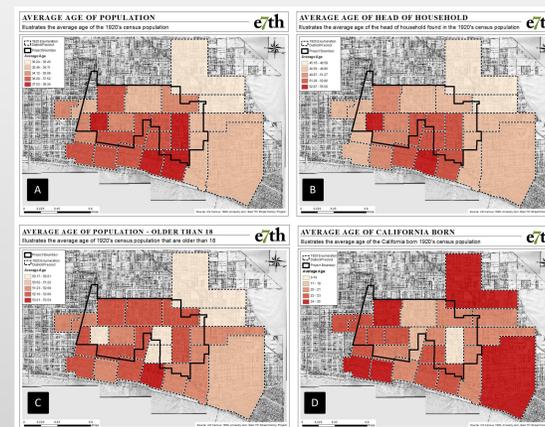


Figure 3. A comparison of these 4 maps shows that the average age of the adult population in the central part of the study area tended to be younger.

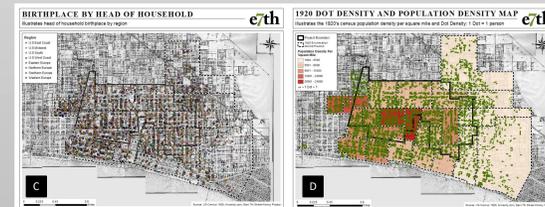


Figure 4. 4A: The head of household by birthplace map didn't show any cluster's are segregation. 4B: Population density map shows that the rural areas are sparsely populated, and the central core of the study area was more dense.

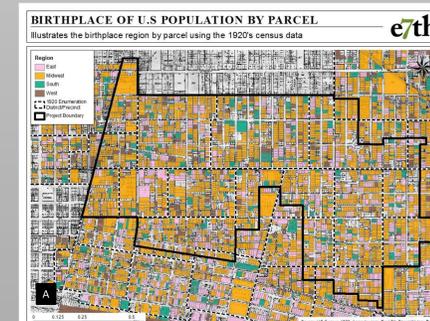
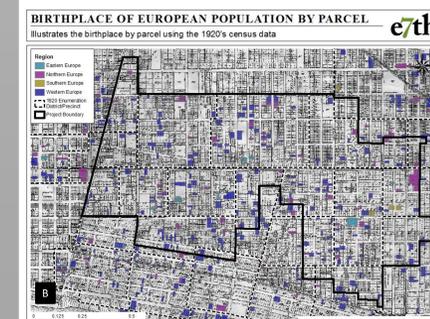


Figure 5. East 7<sup>th</sup> Street in Long Beach has been referred to as the "Midwest by the Sea", which implies that many people migrated from other parts of the United States. The birthplace by region (5A) and birthplace by parcel (5B) maps verify that a majority of the adults in the study area were in fact, from areas outside of California.



## Discussion

Efficiency of the project was reasonable, but overall much of the time was spent on data acquisition. As a result, there wasn't enough time to spend on map creation. However, the conversion script was able to complete many functions that would have taken more time if done manually. The accuracy of the resulting data was very good because most of the written sheets were accurate. Errors identified were a result of digitization or poor penmanship. The average age of the population maps showed that when only looking at adults, the central part of the study area tended to be younger than the outlying areas.

When we began this project, part of the passed down lore of the East 7<sup>th</sup> Street area of Long Beach was that it was the "Midwest by the sea", implying that there were many people from other parts of the United States that had migrated to Long Beach to take part in the nation's westward expansion. By building the two databases and analyzing the census data about where adults were born, we verified that much of the population in the study area were in fact, from areas other than California.

## Conclusion

The initial plan to provide story maps and web maps to the East 7<sup>th</sup> Street Collaboration shifted from map development to development of datasets that will be used in future research due to difficulties with data processing. The change in scope of the project can be attributed to a lack of hard due dates for data acquisition. The resulting deliverable was successful in that we were able to process historical census records to answer questions about history of the neighborhoods we studied. We delivered two high quality datasets that have been through an initial QA process and are ready to be further analyzed. The methodology developed can be expanded to additional years and the resulting dataset can be used to explore additional demographic questions about the changing populations in Long Beach over time.

## Future Research

Future researchers will have an easier time analyzing and creating GIS products for the East 7<sup>th</sup> Street Consortium. In moving forward with further research, we recommend one additional QA step be completed on the two datasets, a randomized analysis of 5% of the data rows to verify the overall quality of the data. We also recommend that some of the street misspellings be corrected, that in turn would improve the geocoding results above 95%. The use of the Long Beach City Guide to manually verify street names is recommended. We found this to be the most successful, but the most time consuming process in getting accurate street names.

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