

Johns Hopkins University

# Baltimore Now and Then

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*Evolution of the Charm City and its Urban Land Use*

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## Introduction

In every city urban planning is a vital aspect that insures the smooth integration of people with the infrastructure, transportation networks, and other facilities in their surrounding environment. Throughout history as people learn through trial and error, the layout of a large urban center may change drastically. It makes sense to think that these changes come about as a result of variations in factors like population, population density, employment, and consumer spending. In order to continue to be an efficient place to live a city must be able to adapt to fluctuations in any of these categories and make adjustments to its land usage accordingly. As Baltimore is a large urban center with a long and storied history it would be useful to take a look at how it has changed throughout the years.

For the GIS final project we will aim to compare the past and present of Baltimore city, analyzing how various factors have influenced the evolution of this city over time. Using scanned old maps of Baltimore provided by the Library database (from the 1840's to the present), we will compare the old and new Charm City and report on how changes in its urban planning reflects changes in other sociological factors. The resulting GIS piece will aim to be an overview of demographics and land use change over Baltimore's history of the better part since its establishment, as well as its recent indexes in multiple fields of living and to address its status as a historic and current American city highlighted by intricate planning.

## Methods

### Maps

Our GIS program analyzes the land use of downtown Baltimore city, also known as the Inner Harbor region and how this area has changed throughout history. We employed four

different time periods: the 1860's, soon after when Baltimore's status as an independent city was established, the 1970's, when rapid development of Inner Harbor, as well as the city's massive shift in demographics, resulted in drastic transformation of the urban landscape, and the more recent 2000's and the 2010's. We created four different maps, each representing land use of Inner Harbor region of respective time periods, and juxtaposed them in chronological order in order to facilitate comparison.

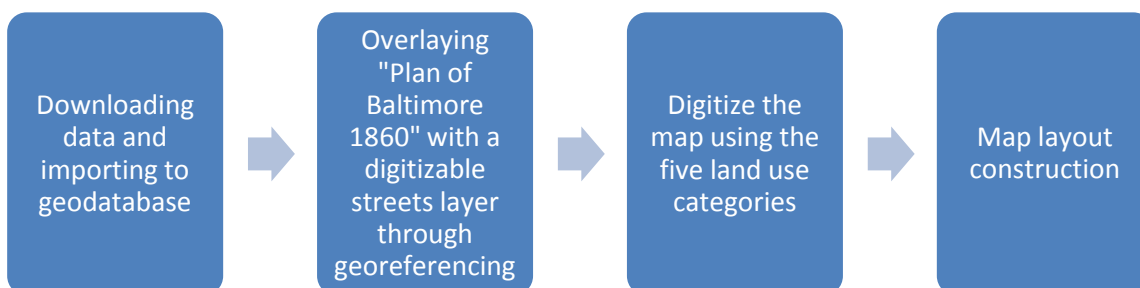
## Land Use Classes

Originally, the Maryland Department of Planning provides land use data through the document "Maryland Department of Planning 2010 Land Use/Land Cover Update" and divides Baltimore into 28 possible land use classes. However, for the sake of visual simplicity, we reduced the numerous land use types into five different land use classes: residential, institutional, commercial, transportation, and other or unknown. Residential areas include all low density, medium density, and high density residential areas. They range from "detached single-family dwelling units [with] yards and associated areas" to "high rise apartments [and] condominiums." Institutional areas are primarily schools (private or public), military installations, "including storage, training, and similar areas," churches, graveyards, medical and health facilities, and other governmental facilities. They represent basic welfare in answer to demand of public education and other benefits, such as health. Sports venues and campgrounds owned by community groups are also considered as institutional areas. Commercial areas are those used primarily for the manufacturing and sale of products and services. They also include areas where surface mining operations undergo, associated laboratories, warehouses, storage yards and parking areas." Airports and power plants too are considered to be included in this land use class.

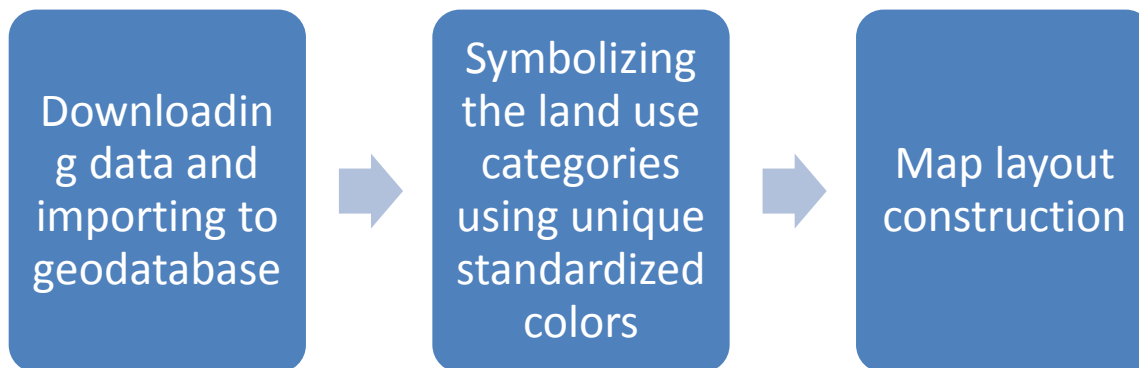
Transportational areas are land that serve as major highways, rail systems, metro station, and large “Park ‘N Ride” lots.”

## Steps taken in GIS

### Land Use in 1860



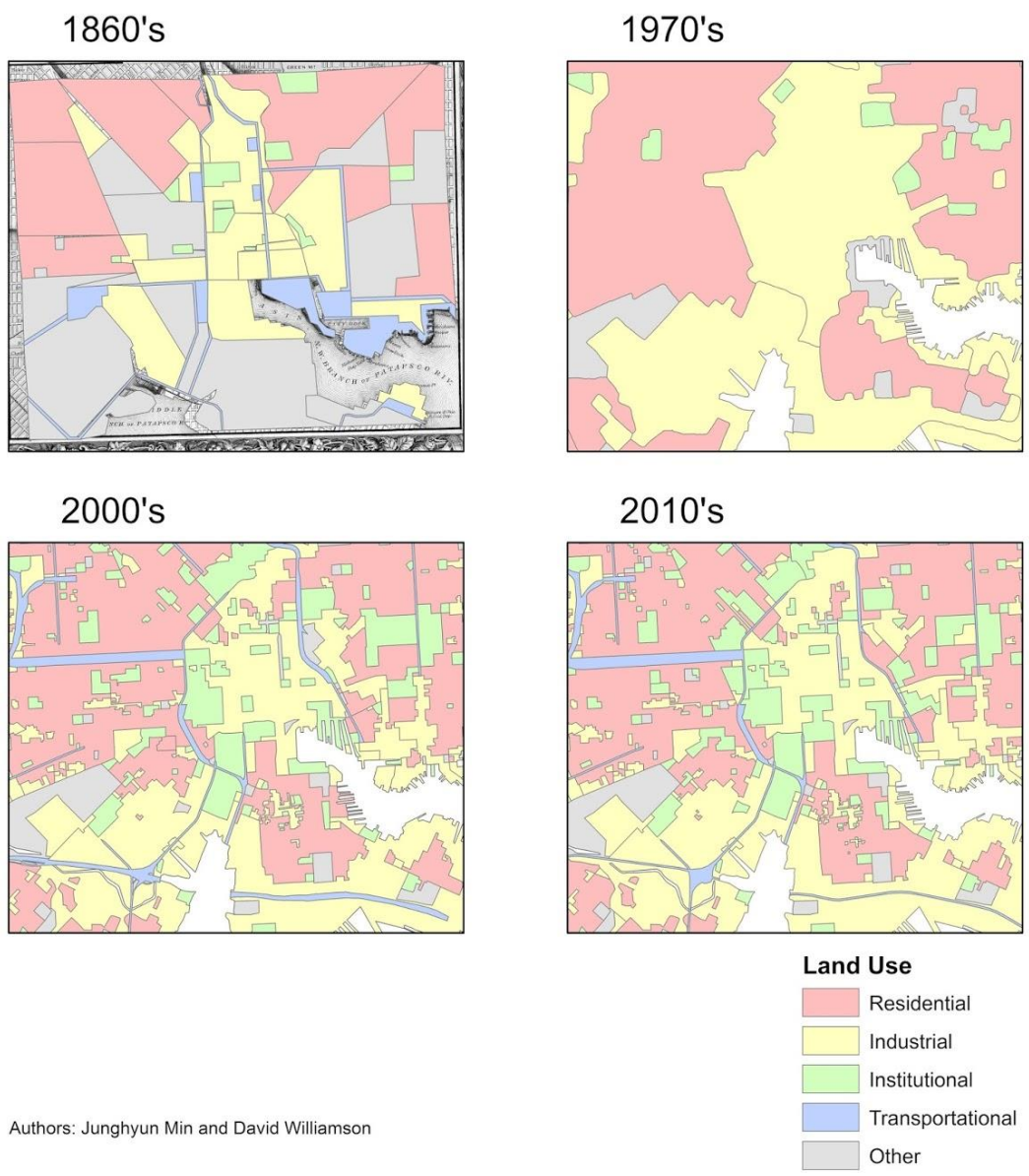
### Other Maps



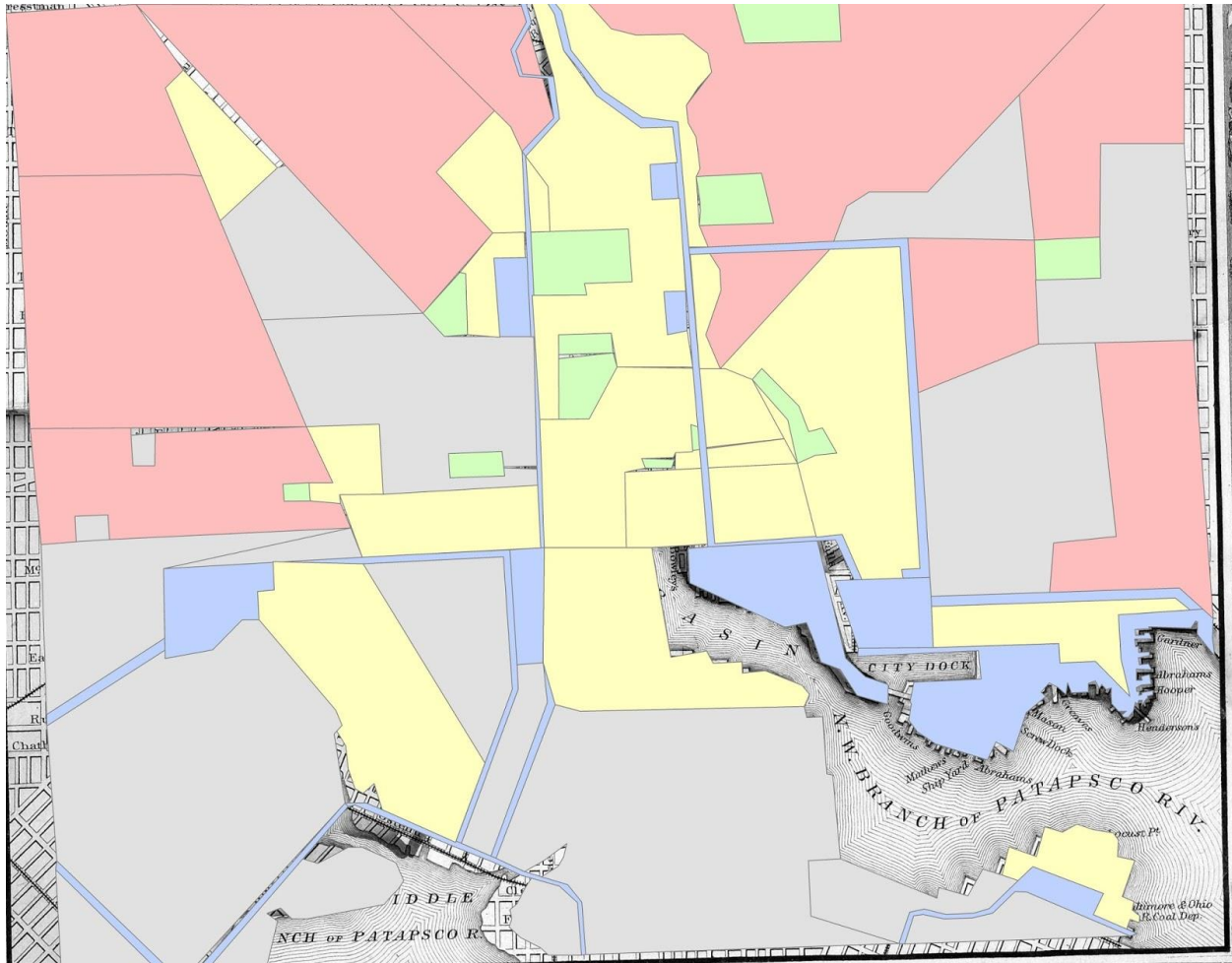
## Results

### Map Layout Page

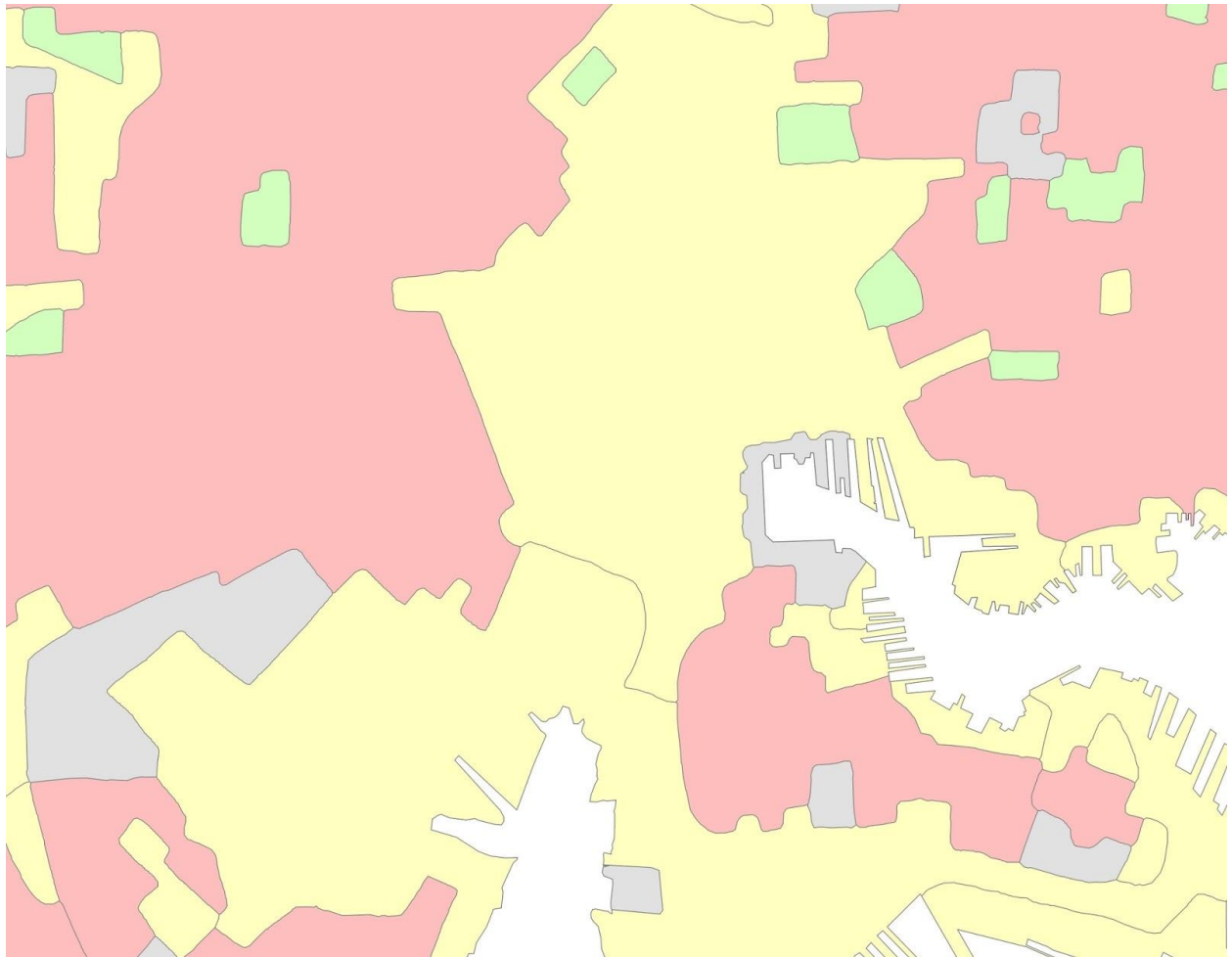
# Land Use of Historic Baltimore



# 1860 Land Use

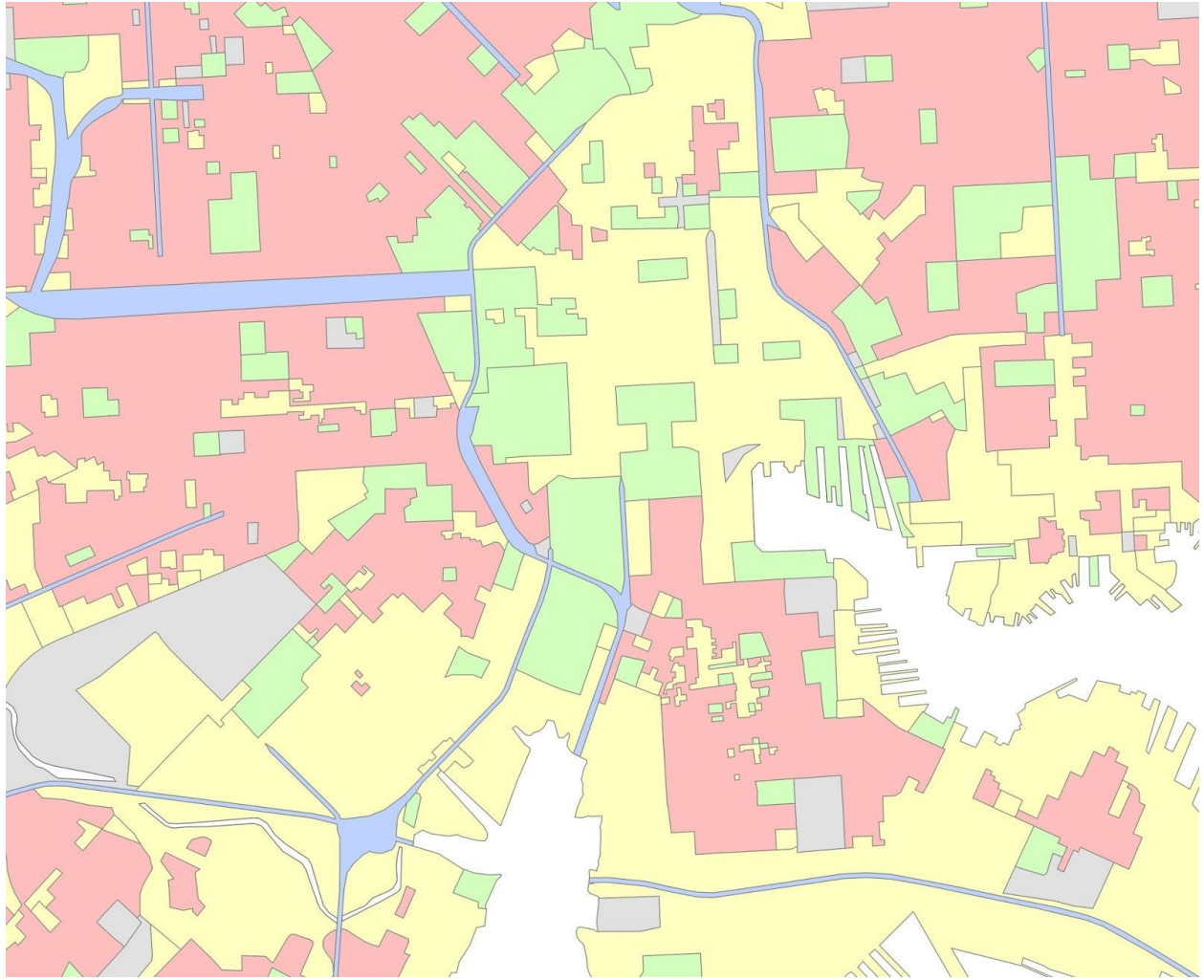


### 1970 Land Use

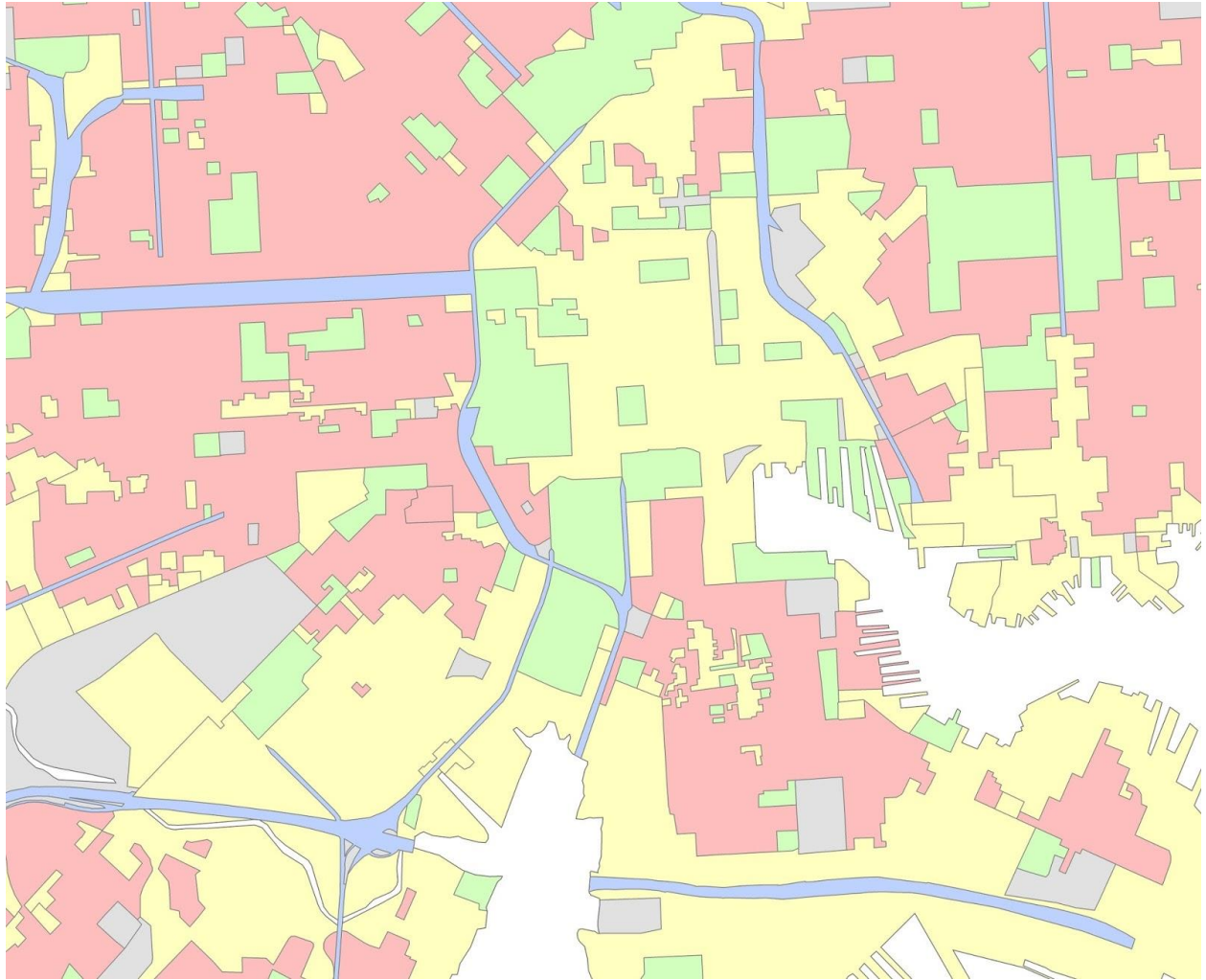




### 2002 Land Use



### 2010 Land Use



## Conclusion

Our completed final project studies the progression of Baltimore throughout history and highlights the many changes that the city has undergone from as far back as 1860. Though there have been many developments made in the city we can still see certain parts of Inner Harbor that have remained the same. Several conclusions can be made by analyzing the differences and similarities of the four maps and further backed up by looking at the history of Baltimore, especially pertaining to the specific decades of 1860, 1970, 2000, and 2010.

The first and clearest thing to note about the maps is the steady increase in lands used for institutional purposes from 1860 to 2010. Of the five-land use categories observed institutional has undergone the most dramatic change. Being nearly non-existent in 1860 and dominant by the year 2010. It was originally theorized that the increase in institutional land use was a result of a consistent increase in the city's population. It makes sense that the government would produce more institutional agencies to keep up with the growing population and therefore the demand for more services (ie health facilities and schools) but according to census data this is not necessarily the case. While Baltimore's population increased greatly from 1860 to 1970 the population of the city has steadily declined since then. Since many of the leaps made in institutional land use were made in the more recent era (2000 and 2010) it becomes puzzling why exactly all these developments are being made for a shrinking number of people. This leaves an interesting area for further research and possibly another GIS study. Another project could look into whether or not Baltimore is wasting its resources by pouring money into governmental agencies that there isn't any demand for, or there could be another legitimate reason for this land use phenomenon.

Another alteration that the maps highlight is the transformation of many of Inner-Harbor's seaports from having mainly transportation purposes to almost strictly commercial use. By the 1860s the Inner Harbor served as a hub for the shipping industry with the harbor being used widely for trade or passenger transportation purposes. During this time wharfs, warehouses, and piers filled the Inner Harbor's vast coastline. By the 1950s economic changes led to the decline of this industry in Baltimore and much of the area has since been redeveloped. The shipping headquarters were transformed into award winning parks and plazas with surrounding high-rise office buildings and plazas. This explains why by the 1970s much of the harbors coastal land use was commercial and still is today. Interestingly, economic upheaval was responsible for ending the Harbor's transportation use. The city was able to successfully adapt to these changes and repurpose the land for more efficient use.

While several aspects of Inner Harbor have changed one major facet of downtown Baltimore has stood the test of time. The area is consistently dominated by yellow coloring, or land used for commercial purposes. Intuitively this makes sense as it is and always has been a bustling center of commerce and trade. In the 1860s this commerce took the form of trade. Today it is in the form of tourist attractions like the Inner Harbor.

One changing aspect of Baltimore's land usage can be found if one examines the areas highlighted in red signifying residential areas. In the earliest map there are definite blocks of red within the city. By 1973 however the red areas have moved away from the city signifying a shift toward the suburbs. This would make sense due to inflated crime rates in the city of Baltimore. In recent years as the city has improved in safety, developed as a commercial center, and with the advent of more governmental buildings, residential areas have sprung up within the

city of Baltimore especially in the downtown region. This evolution is logical as it reflects the changing perceptions of Baltimore throughout the years.

The city of Baltimore has gone through many changes over the years. The residential population in the downtown area has fluctuated. Government agencies have moved in. The ports have changed their uses. All in all there are still constants that make Baltimore what it is. Whether it is the ports of 1865 or the tourist attractions of today, Baltimore has always changed with the times while still contributing in unique ways to the economy of the United States. Perhaps these changing land uses are the true character of Baltimore, a city of evolution.

## Data Sources

Appler, Melissa. "Land Use Land Cover (1973)." Maryland Department of Planning. N.p., n.d. Web. 12 Dec. 2014. <<http://planning.maryland.gov/OurProducts/downloadFiles.shtml>>.

Appler, Melissa. "Land Use Land Cover (2010)." Maryland Department of Planning. N.p., n.d. Web. 12 Dec. 2014. <<http://planning.maryland.gov/OurProducts/downloadFiles.shtml>>.

Appler, Melissa. "Land Use Land Cover (2013)." Maryland Department of Planning. N.p., n.d. Web. 12 Dec. 2014. <<http://planning.maryland.gov/OurProducts/downloadFiles.shtml>>.

"Historical & Architectural Preservation / Historic Districts / Maps of Historic Districts." Baltimore City Archive. City of Baltimore, 2010. Web. 18 Dec. 2014. <<http://archive.baltimorecity.gov/Government/BoardsandCommissions/HistoricalArchitecturalPreservation/HistoricDistricts/MapsofHistoricDistricts.aspx>>.

Mitchell, S. Augustus, Jr. "Plan of Baltimore." New General Atlas. Philadelphia: S. Augustus Mitchell Jr., 1861. N. pag. JScholarship. Web. 12 Dec. 2014. <<http://jhir.library.jhu.edu/handle/1774.2/32596>>.

Sheridian Libraries GIS Database

## Appendix

In order to successfully present the to-be digitized layer of 1860's Baltimore Land Use feature class overlaid to the imported Plan of Baltimore image file, we took a few seemingly insignificant steps. First, in order to facilitate the process of overlaying, we imported a Baltimore streets polyline feature class. Through comparing intersections of major streets that both exist now and have existed in the 1860's, overlaying the two classes was made easier. Since the Plan of Baltimore image file was a foreign element with no projection or coordinate system, we "fit [it]

to display" under georeferencing menu. Then we added control points so that the two maps would correctly lay over. Five control points were made: intersections of Broadway and Lancaster, intersection of Gay Street (then Belle Air Road) and Broadway, intersection of Gay Street and Oliver Street, intersection of Freemont and Winchester (adjacent to map displayed Western Market), and intersection of Carroll and Bush. The

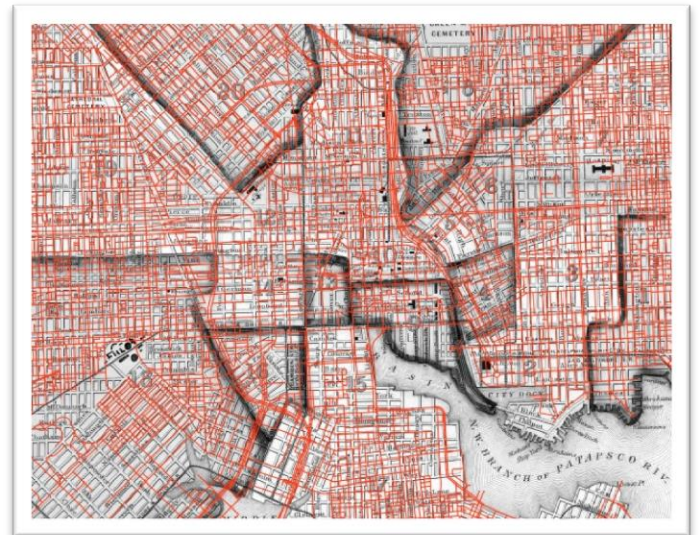


Image: result of overlay using control points

result was a fairly accurate overlay of present Baltimore and Baltimore of the 1860's. Then, in order to be able to digitize new polygon features, we had to import a polygon feature class. We imported water, and digitized new polygon features. After digitizing each of them through create feature function under editor menu, we assigned each polygon's land use class using attributes function. After assigning each land use classes their respective colors, the outcome is what we have in the 1860 Land Use subsection under Result section.