

## **POPULATION DEMOGRAPHICS IN DOG RIVER WATERSHED OVER TIME**

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Over time, the Dog River Watershed has changed and so has the demographics of the people who live within it. Many of the changes that have taken place affected residents in the past, and very possibly will affect residents in the future. To show where Mobile residents live and have lived, I obtained census data from over a 60-year period. That data is then used in ARC GIS software to produce figures that show population density increase, decrease, and ethnic background, be it black or white. Identifying where residents have lived and currently do live can help in targeting educational activities about environmental practices and appreciation of the watershed around them.

Keyword: demographics, watershed, Mobile

### **Introduction**

The majority of Dog River lies within the city limits of Mobile. The tributaries that feed into it range from deep, wooded creeks to “concrete lined drainage ditches” from the city’s storm water sewers. Over time, the boundaries of Mobile have grown outward from the banks of Mobile Bay to its current location just annexed in 2007 (Murtaught, 2009). As the city has grown, so has its population. Along the banks of the river and its tributaries are many businesses and homes. "Conversion of land use...can affect stream ecosystems via multiple pathways, including altered hydrology, water chemistry, channel geomorphology, and trophic resources" (Chadwick et al., 2006). Although the water from Dog River and its tributaries is not used for drinking, it is widely used for recreational boating and fishing. Problems with the water chemistry from biological contaminants such as fecal coliform bacterial can cause illness and even death through physical contact or consumption of fish and other aquatic life (Mallin et al, 2000).

Along with the change in population growth, there have been changes in the

location of where people of the same ethnic background live. It is theorized that social class contributes to the lack of environmental education. Despite the very public environmental movement over the past few decades it would seem that the general environmental knowledge of the public is still very low (Pooley et al, 2000). Through education, residents can become more aware of the watershed and how they can protect it.

### **Research Question**

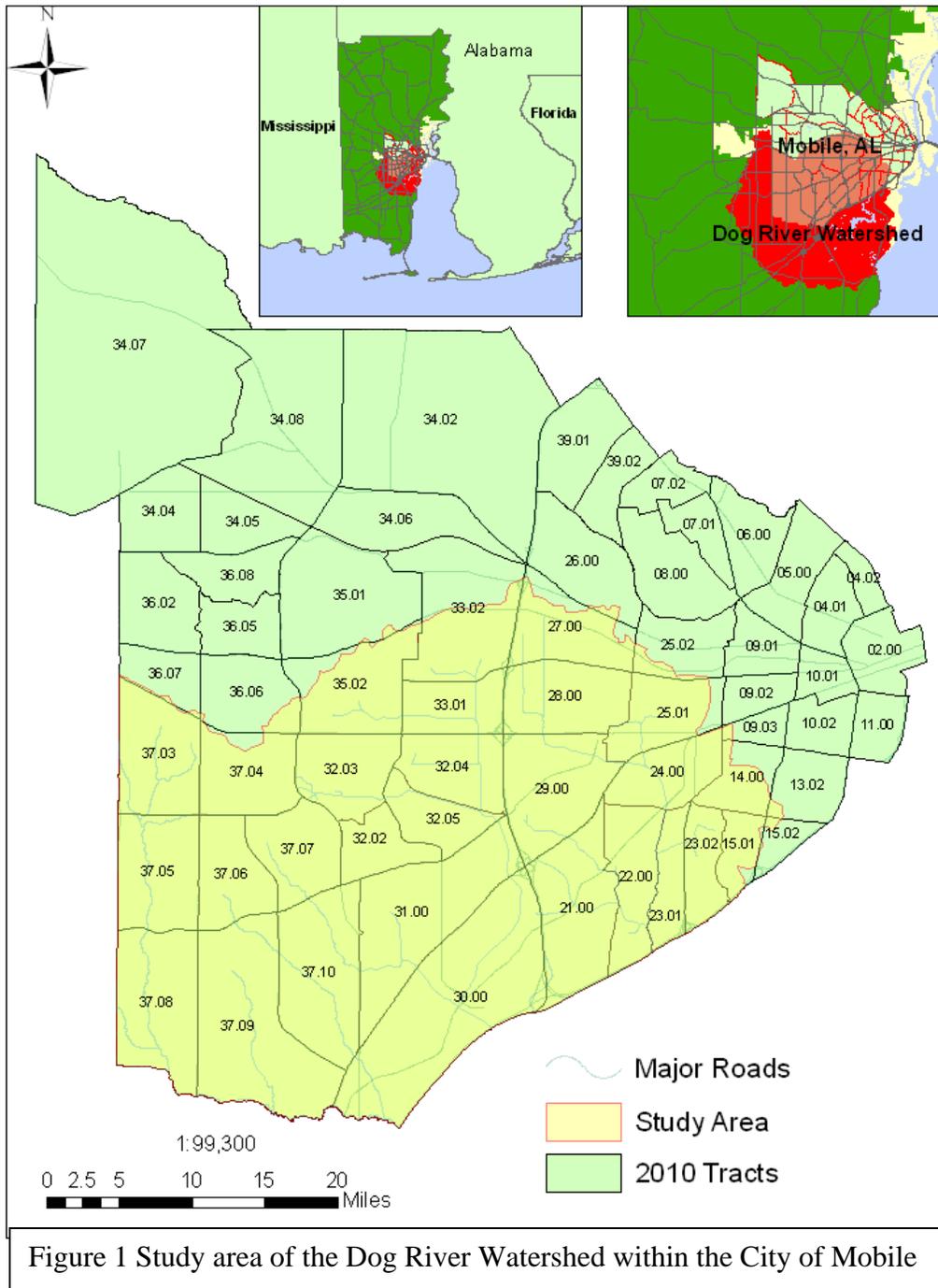
Where have people lived in Mobile within the Dog River Watershed over time? How has the population density changed in the area? What has been the Black and White ethnic distribution? How can this information be used to target groups to educate?

### **Methods**

To show the changes in Mobile's demographics population and ethnic data had to be located from as early as possible. I decided to use 1960 as the early date after learning that the state of Alabama began recording census data of census tracts that year. Census tract data was chosen over census block data because tracts show a "relatively homogeneous area with respect to population characteristics, economic status, and living conditions" (U.S. Census Bureau). The data was located in the University of South Alabama's main library in the government documents section, and from the U.S. Census Bureau's (USCB) online website. The most recent data was taken in 2010.

The maps from 1960 to 1980 census books had to be scanned and saved as tagged image files (tif). The numerical data was inputted in to excel spreadsheets with three fields: one for the total population of each tract, one for the white population, and the last for the

black population, so that they could be analyzed with ArcGIS software. The maps and data from 1990 to 2010 were downloaded from the USCB website; the files were already compatible with ArcGIS.



Using ArcGIS, the scanned map images were then spatially joined/rectified to match the Mobile area using current streets and city boundary points. Once the images were matched the data for each year was joined from the excel spreadsheets to the years from which they were collected. From that point, rasters were made for each year's total population, black population, and white population, totaling 18 images. To show the changes for analysis the rasters were combined two at a time using the raster calculator feature, 1970 minus 1960, 1990 minus 1980, and 2010 minus 2000. The combining of the rasters produced results to be analyzed for the demographic changes.

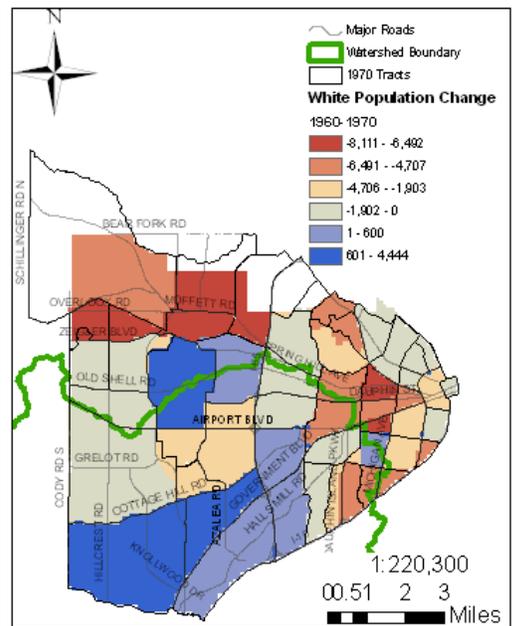
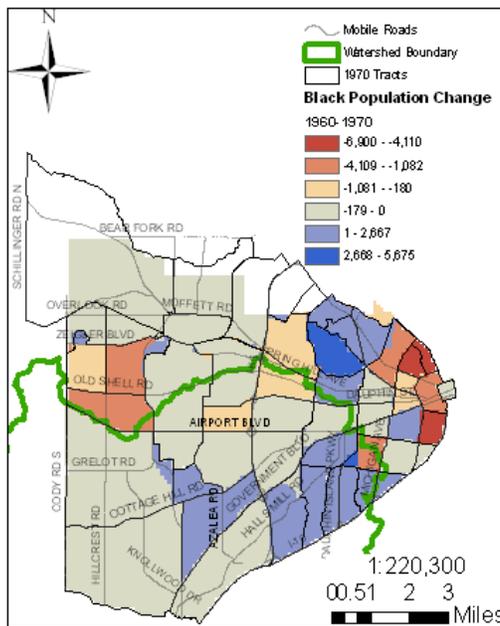
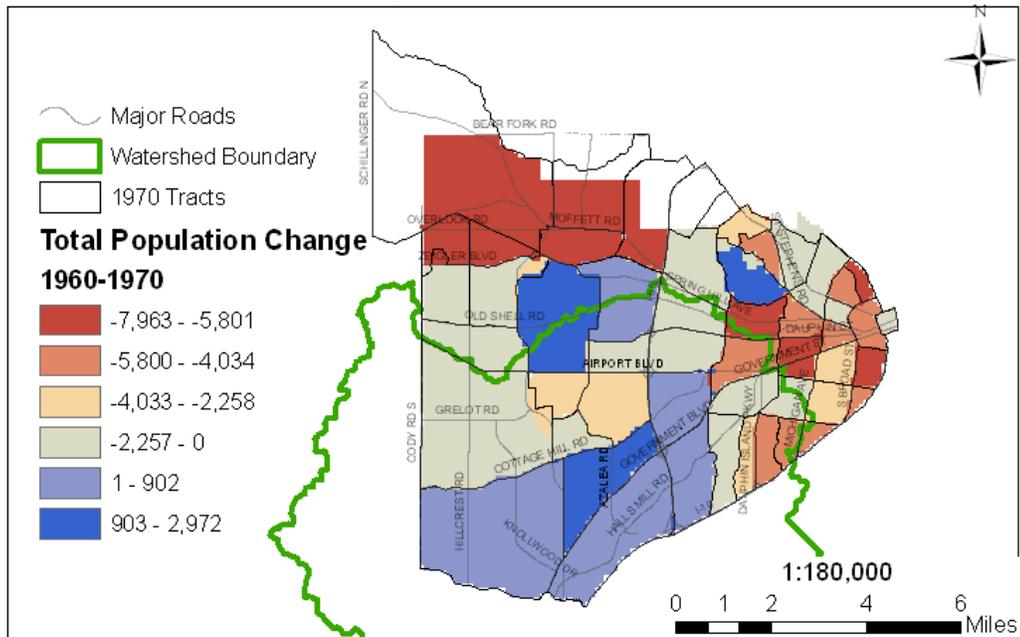
## **Results**

The total population from 1960 to 1970 showed a reasonable increase within the watershed, it could be attributed to an increase from the white population in those tracts (light and dark blue). The black population showed a very small decrease in population, but the decrease covered a wide area (gray). (Figure 2)

Over all the population changes from 1980 to 1990 showed a very significant decrease (red and pink) in just under half of the city within the watershed. The white population change reflects almost exactly the areas that showed decreases for the total population. The black population however showed reasonable increases for just over half the area of the city within the watershed. (Figure 3)

Between 2000 and 2010, the total population showed major changes in the upper half within the watershed, showing a slight decrease in population. There was a significant increase of the black population within the watershed but the white population significantly decreased. (Figure 4)

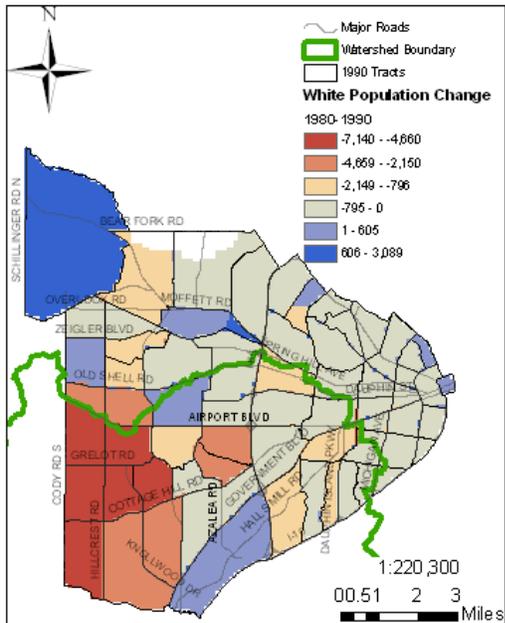
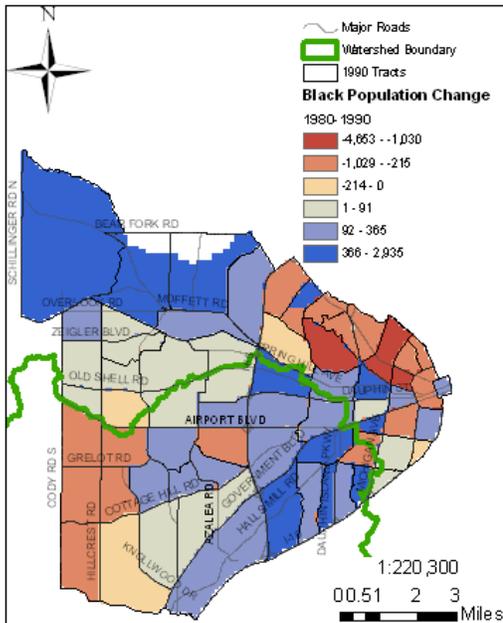
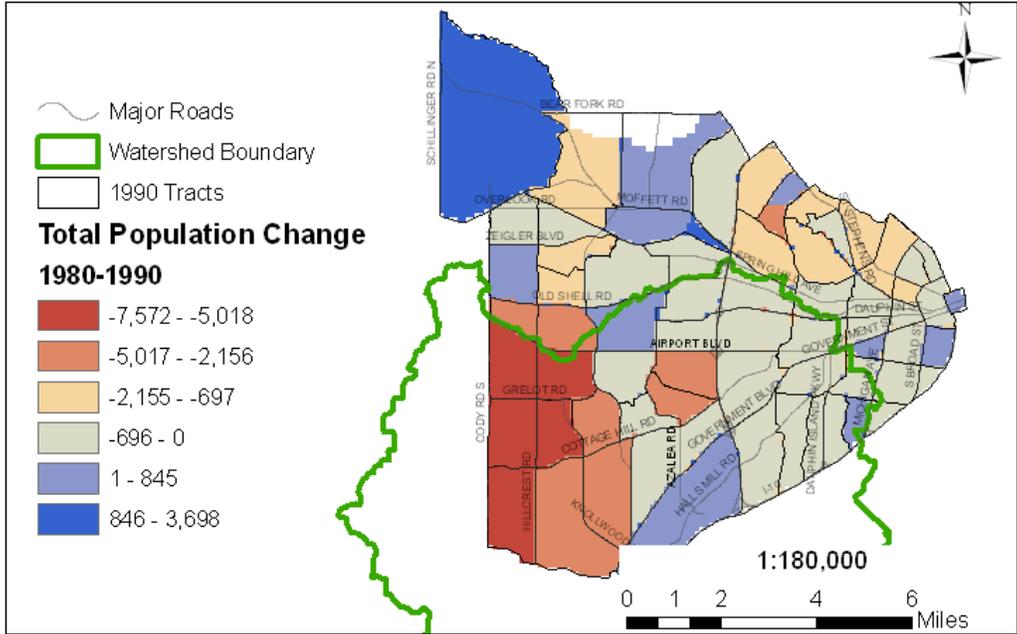
# Demographic Change from 1960 to 1970 Mobile, AL



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Figure 2 Demographics from 1960 to 1970

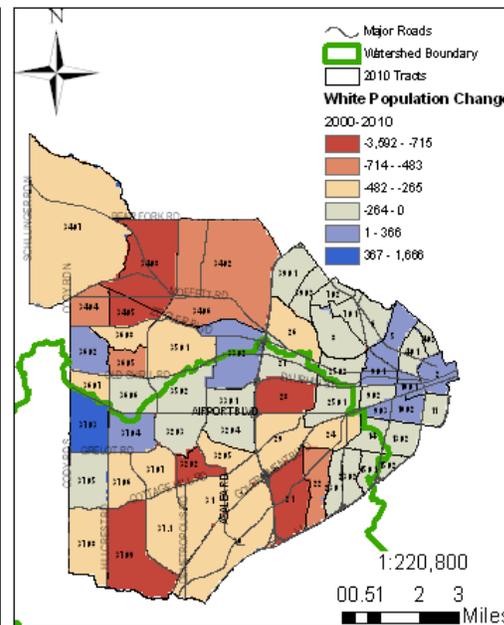
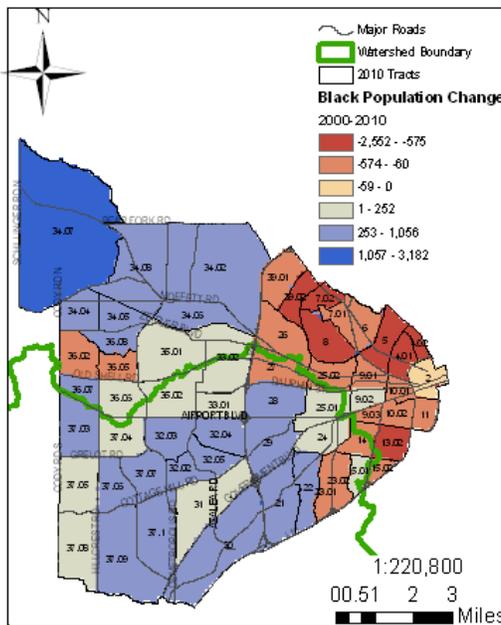
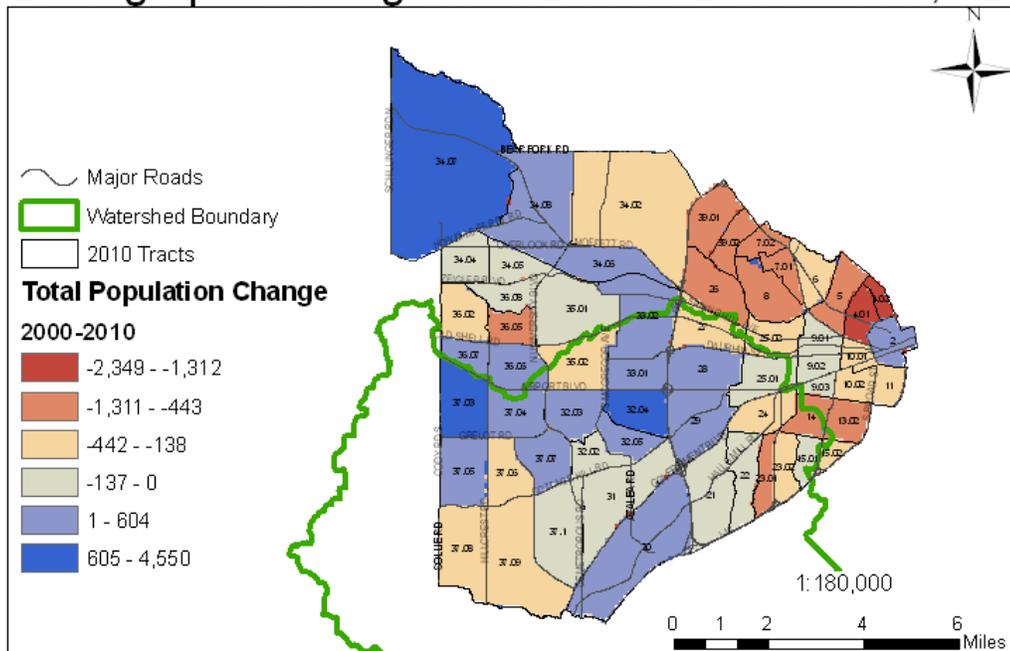
# Demographic Change from 1980 to 1990 Mobile, AL



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Figure 3 Demographics from 1980 to 1990

# Demographic Change from 2000 to 2010 Mobile, AL



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Figure 4 Demographics from 2000 to 2010

## Conclusion

From my analysis, I have determined that the areas of Mobile, AL, which are parts of the Dog River Watershed’s total population, have risen dramatically for over half

of the area. This increase can be attributed to Mobile's urban sprawl and annexation of many communities over time.

With the increase of urbanization and population, the Dog River Watershed has experienced much change. The demographics of residents have changed from one ethnic group to another and possible environmental issues may be attributed to such change. If the public was made aware of this knowledge, it could keep the water from being polluted or causing other problem due to channeling and such. It is very possible that the public is not aware of these things because of the lack of education in the area specifically due to their low income and race. If these people were made aware of these things than they could learn to protect it and therefore make the area and water more environmentally friendly.

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[http://www.census.gov/geo/www/2010census/gtc/gtc\\_ct.html](http://www.census.gov/geo/www/2010census/gtc/gtc_ct.html) Figuer 1