INTRODUCTION
In 1992, the small European country of Albania became free from communist rule. As an independent country and a new democracy filled area, the immigration of people and travelers filled the once quiet streets and tranquil beaches. After the boom from immigration, the countries that were once being fled out of were regaining their economic standards. Following this boom, the population increased at twice the rate it usually does. With the rising rate of people coming into the country and the uplift of the ban on cars from the communist era, the pollution rate in the country started to soar.

According to a study done by the World Health Organization states that the Tirana pollution and air quality levels are too far beyond the average in other European countries. The capital of Albania, Tirana, is experiencing one of the most highest pollution rates in Europe. Along with air pollution, trash and waste produce by community members and travelers pollute the streets and cause an influx of problems from diseases to harming the marine life of the popular beaches. The toxicity of the trash and human pollution can also add to the air pollution rates and increase the greenhouse effect on the climate.

Understanding the possible direct correlation between growing pollution rates from the increasing population in post-communism Albania can help show the problem many growing third world countries face. By acknowledging the problem with growing population and tourism in low poverty and highly population dense cities, we can learn how to try and combat the areas that need the most help, usually the most populated areas like Tirana. O3, or ozone pollutants, are one of the most common issues faced with a highly dense population. So, is there a direct correlation between growing pollution rates from the fall of communism to now, and the increase in population size?

DATA COLLECTION
The data collected for the purpose of this research was mainly collected for comparing the population rates to the pollution rates in big cities. EarthData by Nasa was used in the three population density maps. The research was conducted to show the world population density, as counted by the UN Census Data and the National World Population Prospect, to show the amount of people per square kilometer in each country. For the pollution rates data, collected by the European Environmental Agency was used. The data was collected by several Airbase monitoring systems to help show the areas in each continent, in this case Europe, that has the most output of O3. This is a chemical in the ozone layer that is especially toxic to humans and can cause harm and even death to populations that are exposed.

METHODS
The analysis was conducted using ArcMap 10.7.1. The Albanian shapefiles and places were downloaded and projected into the Albanian_1987_GK_Zone_4 data frame to ensure it was projected around the country being analyzed. The raster layer was then changed to show 4 different natural breaks for new values showing the intensity of the population density and pollution near the different cities. After the buffers were placed at a 10 mile radius around each city to help show where the highest population and highest polluted areas are in relation to each city. Specially for the 2020 pollution raster layer, data was changed to show the predicted projection for the year 2020. It was calculated by taking the air pollution change between 2006 and 2012. However, the population increased greatly between 2012 and 2020, so the air pollution change calculated was then doubled and projected onto the map by changing the values.

RESULTS
As can be seen from the population maps, in the increasing years from 2000-2020, the population not only began to grow in the country, but became much more dense in areas like the capital of Tirana and bigger cities such as Lushnja and Durres. In Figure 2, more dark red is seen near the coast and the capitol, but in figure 3 and 4, people became more prone to live in the center of the country in Tirana and other larger cities as the trend of living in urban environments began to become a bigger trend. Correlating this to air pollution, Figure 6 shows 2012, 2 years after figure 3. It shows an increase of air pollution from 2006 in the country itself and not just the surrounding areas. The areas of high pollution in figures 5-7 in the buffers are very similar, if not identical, to the areas of high population density in figures 2-4. The projected pollution rates (Figure 7) in Albania for the year 2020 and the projected population density (Figure 4) show the largest cities, including the capital, having the darkest color red in the country. The buffer zones were analyzed and the two corresponding largest changes in pollution and population were Tirana and Durres. The population growth also showed that there was an increase in O3 emissions.

CONCLUSION
The pollution and population rates in Albania can be directly linked to each other. As the population in certain areas grows, like in Tirana, the pollution rate of ozone emissions also skyrockets due to the fact that the country cannot financially support the resources needed to combat the increase emissions. Being the poorest country in all of Europe, Albania can be used as the prime example of how population increase can cause a country to become harmful to its community members. As seen in the World Health Organization survey, the boom in population from post-communism countries create a larger economy. In the Albanian example, the maps show that the boost in population also has an increase effect on pollutant rates. It will help scientists and researchers all over the world try and understand the issues with humans and their environmental impacts. The limitations for the data was that there was no corresponding data to each other. Therefore, the years did not align directly, but it can be seen that there is an increase in each year after population boom. There was also no direct 2020 pollution, so it had to be predicted based on other years.

Figure 1. Shown where Albania is located in relation to the rest of Europe.
Figure 2. The 2010 population density calculations based on the European Census data.
Figure 3. The 2000 population density calculations based on the European Census data.
Figure 4. The 2020 population density calculations based on the European Census data.
Figure 5. The 2006 air pollution levels based on O3 emissions.
Figure 6. The 2012 air pollution levels based on O3 emissions.
Figure 7. The 2020 projected air pollution levels based on O3 emissions.