MS-GIST Projects Spring 2022
Wednesday, May 04

**** There will be 5 minute breaks between each back-to-back presentation to facilitate transitions in Zoom.***
***** Zoom links are available on request. Please contact Andrew Grogan - atgrogan@arizona.edu***

Date/Time	Presentation Title	Student Name
05/04/22 08:30 - 08:55 AM	Spatial Relationship between Demographics and Brownfields in Philadelphia County, Pennsylvania	Meredith Lowden
05/04/22 10:00 - 10:25 AM	Analyzing the Agricultural Demand of H-2A Farm Workers in Labor-Intensive Specialty Crops	Nicholas Camacho
05/04/22 01:00 - 01:25 PM	Siting Nuclear Power Plants in the Western United States	Anastiaza Wiens

Spatial Relationship between Demographics and Brownfields in Philadelphia County, Pennsylvania

Meredith Lowden
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05/04/22, 08:30 - 08:55 AM

Abstract:

The city of Philadelphia, Pennsylvania is the sixth largest city in the United States and resides within Philadelphia County. There is a large population within a small area, which can make environmental contamination more impactful to the population. Environmental contamination sites known as brownfields, are common throughout Philadelphia County, which many residents may not realize exist. This project focused on analyzing the spatial relationships between environmental contaminated sites and demographics at the county level. Bivariate and choropleth analysis were used as a way to understand the relationships. Three demographics were used including race, poverty percentage, and median household income. The African American or Black population is greatest in Philadelphia, and is also the population with the highest percentage of poverty. In addition, median household income became important as the county has a below average income per household compared to the United States average. When looking at the distribution of brownfields throughout the county it appears that there are an abundance of locations, but when looking at the locations within each census tract, there are only a few tracts with more than 20 locations per area. Both bivariate maps that show the relationship of brownfields versus poverty status and median household income show similar results. African American population and brownfields showed a different relationship, but all three relationships showed at least one census tract where both variables were high. Understanding environmental injustice will help bring awareness and force policy members to address change in communities.

Keywords: Brownfields, Philadelphia County, Environmental Injustice, Bivariate Maps

Analyzing the Agricultural Demand of H-2A Farm Workers in Labor-Intensive Specialty Crops

Nicholas Camacho
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05/04/22, 10:00 - 10:25 AM

Abstract:

The United States has a long history of relying on foreign farm labor to sustain and support its agricultural industry. In 1942, the first agricultural guest worker program was initiated and named the Bracero Program, which implemented the means of temporarily importing workers from Mexico to fill labor shortages in the United States during World War II. In 1952, the Immigration and Nationality Act established the H-2 Non-Immigrant Visa Program, which allowed foreign workers to be admitted into the United States to fill seasonal and temporary employment. The H-2A agricultural worker visa is a guest program that allows employers in the agricultural sector to bring foreign nationals to the United States to fill temporary agricultural jobs. Today, the H-2A program continues to be in high demand and is the best source for legal and reliable farm labor in the United States. This project uses bivariate analysis to explore agricultural demand of H-2A farm workers in vegetables, fruits and tree nut commodities throughout the United States. Bivariate analysis identified Monterey County, California as the largest producer of vegetables and had the second highest demand of H-2A workers in the United States. Maps also revealed, Moore County, North Carolina as both the number one requestor and employer of H-2A workers in the United States with over ten thousand by North Carolina Grower's Association, Inc. This project contributes and further strengthens the reality there is an increasing demand of H-2A workers in agriculture, especially those sectors producing vegetables, fruits and tree nut commodities.

Keywords: H-2A, agriculture, farm, labor, visa, guest worker, seasonal, specialty crop

Siting Nuclear Power Plants in the Western United States

Anastiaza Wiens
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05/04/22, 01:00 - 01:25 PM

Abstract:

As the United States shifts to a greener mindset, going away from fossil fuel power has been an increasingly popular choice to cut down on greenhouse gas emissions. One method that provides more power and efficiency on a larger scale is nuclear. As technology has evolved and improved nuclear power, these power plants can be built smaller and are more efficient than the nuclear power plants built 20-40 years ago. In this study, GIS analyses were used to find suitable areas in the Western U.S. for siting a new nuclear power plant. This will produce a map including rankings of most suitable, suitable, and not suitable sites. The most suitable areas will contain no geological hazards, population density of less than 500 persons per square mile, and within a mile of perennial bodies of water. The ranking of suitable will include areas that contain everything in the most suitable ranking except no bodies of water. The not suitable areas contain geohazards, a population density of more than 500 person per square mile and have no water. The resulting percentages are the most suitable areas account for 0.04% of the study area, the suitable areas account for 27.12% of the study area, and the not suitable areas make up 72.84% of the study area.

Keywords: siting power plants, nuclear, climate change, greenhouse gas emissions, Western United States