

MS-GIST Projects Fall 2023

Wednesday, December 06

** 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
12/06/23 09:00 - 09:25 AM	Precision Agriculture through Local Raster Spatial Analysis for Crop Scouting	Jeffrey Reiff
12/06/23 12:00 - 12:25 PM	Insights into Pedestrian Fatalities: Geospatial Analysis of Racial Disparities in Pedestrian Fatalities in Tucson, Arizona	Eddie Latham-Jones

Precision Agriculture through Local Raster Spatial Analysis for Crop Scouting

Jeffrey Reiff
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12/06/23, 09:00 - 09:25 AM

Abstract:

Stage and lifecycle crop monitoring and assessment are pivotal in agriculture and farming. The increase in global populations, food demand, tighter regulations, and the overall cost of doing business have increased the burden on farmers to meet these challenges while sustaining their businesses and the environment. Farmers must adapt their growing and harvest operations to increase yields that meet the global market and adhere to sustainable farming standards that combat environmental impacts. All while reducing their operating costs. Crop management is often a fieldwork and labor-intensive data collection process. This work will highlight how modern technology in the areas of remote sensing, raster analytics, Geographic Information Systems (GIS), and WebGIS can be applied to analyze and process raster data and environmental information that can be used to calculate vegetation indices. If properly applied, these derived datasets and analyses can be transformed into web services for modern farm equipment and native mobile or web applications for field work, informing precision agriculture practices to tackle the problems mentioned above that today's local farmers and agronomists encounter.

Keywords: Precision Agriculture, Crop Scouting, Spatial Analysis, GIS, Remote Sensing

Insights into Pedestrian Fatalities: Geospatial Analysis of Racial Disparities in Pedestrian Fatalities in Tucson, Arizona

Eddie Latham-Jones
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12/06/23, 12:00 - 12:25 PM

Abstract:

In recent years, a surge in pedestrian fatalities has necessitated a close examination of their causes. This study, based on five years of data from the Fatality Analysis Reporting System (FARS) and the American Community Survey (ACS) in Tucson, Arizona, aims to determine the impact of the racial composition of census blocks on these fatalities. Between 2017 and 2021, 142 pedestrians lost their lives in Tucson, Arizona. Furthermore, annual pedestrian fatalities during this five-year period increased by 57 percent. The primary objective of this study was to investigate the presence of a discernible geographic pattern in pedestrian fatalities, shedding light on the relationship between demographics, the built environment, and pedestrian fatalities. This study examined the potential influence of age, income, and race on pedestrian fatalities. Of those categories, race proved to be the most statistically significant. Analysis of FARS data revealed a significant bias toward fatalities involving non-white and Hispanic individuals during this five-year period. A comparison of FARS and ACS data during this period displayed a higher incidence of pedestrian fatalities in census blocks with high percentages of non-white and Hispanic populations. Furthermore, analysis of the FARS data indicated a non-random distribution of pedestrian fatalities. Subsequent regression analysis quantified the link between the racial composition of neighborhoods and pedestrian fatalities in Tucson. While this study revealed a statistically significant association between the racial composition of census blocks and pedestrian fatalities, it by no means provided a comprehensive explanation for pedestrian fatalities and their increased frequency.

Keywords: Pedestrian Fatalities, Race, Tucson, AZ, Regression Analysis, ACS