

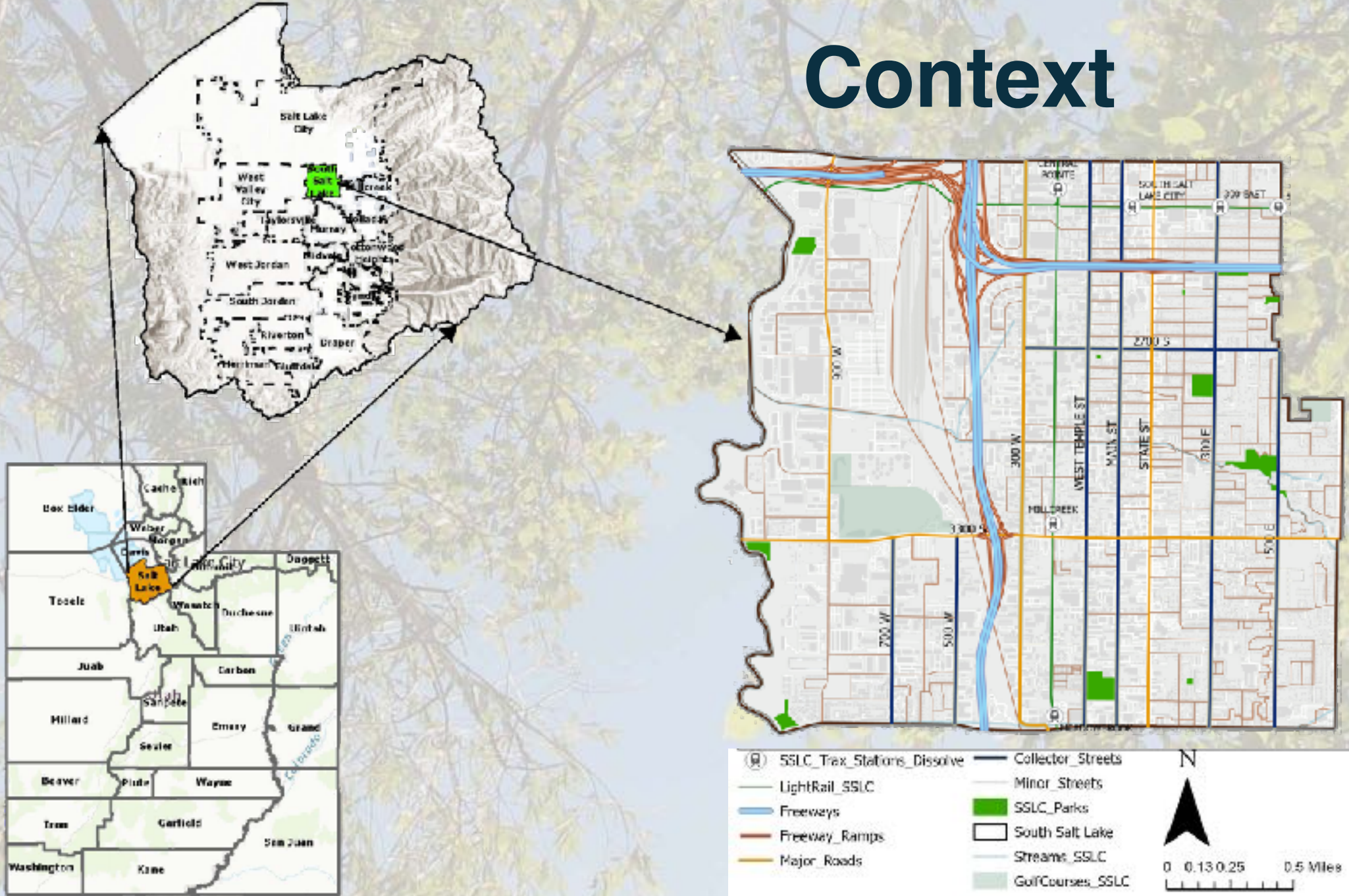


# **Optimal Places for Trees in South Salt Lake City**

Benjaman Chandler, Kawsar Uddin, & Nathan Shumway

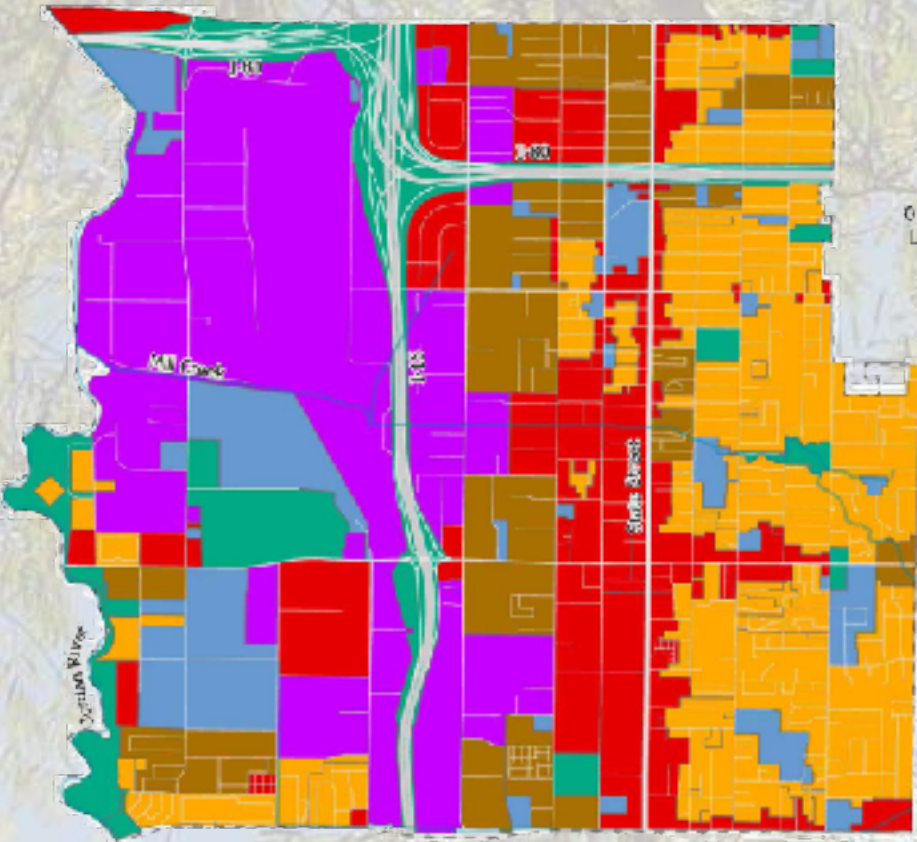


# Context





# South Salt Lake zoning and demographics



- Legend**
- Land use
- Commercial
  - Institution
  - Industrial
  - Mixed Use
  - No Build
  - Residential



26,312  
PEOPLE  
(2020)



3,857  
PEOPLE  
PER SQ MILE

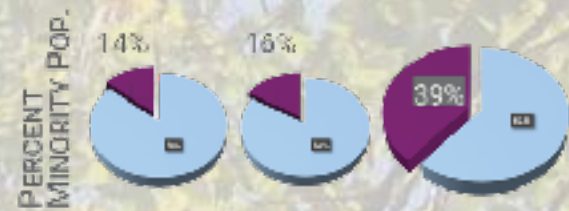
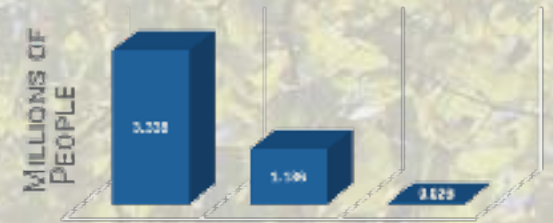


\$57,294  
MEDIAN HOUSING  
INCOME (MHI)



39%  
MINORITY  
POPULATION

STATE | COUNTY | SSL CITY





A scenic view of a river flowing through a residential area. The river is in the foreground, with a metal guardrail on the left. In the background, there are houses, trees, and mountains under a clear blue sky.

# Importance of Urban Trees

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1. Improved ecological services
  - a) Air quality improvement
  - b) Shade
  - c) Wildlife habitat
2. Enhance human well being
  - a) Improved mental health
  - b) Improved community cohesion
3. Minimizes local effects of climate change
  - a) Assist stormwater runoff management
  - b) And urban heat mitigation



# Bioregional Management and Policy Class

- The class is part of the Landscape Architecture and Environmental Planning Department at Utah State University.
- Course focused on real-world applications of urban planning principles.





# Objectives of the Project

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- Assess the impact of trees on the city
- Identify optimal tree planting areas in South Salt Lake City
- Initiate implementation of our tree planting plans!



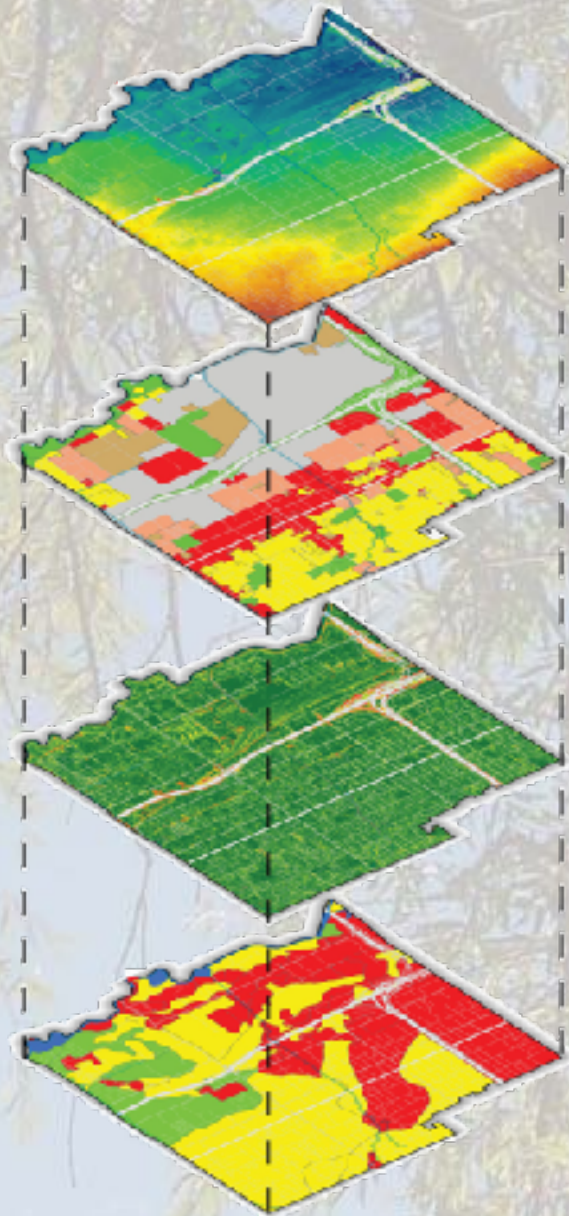


# Strategic Impact Areas





# Urban Hydrological Analysis

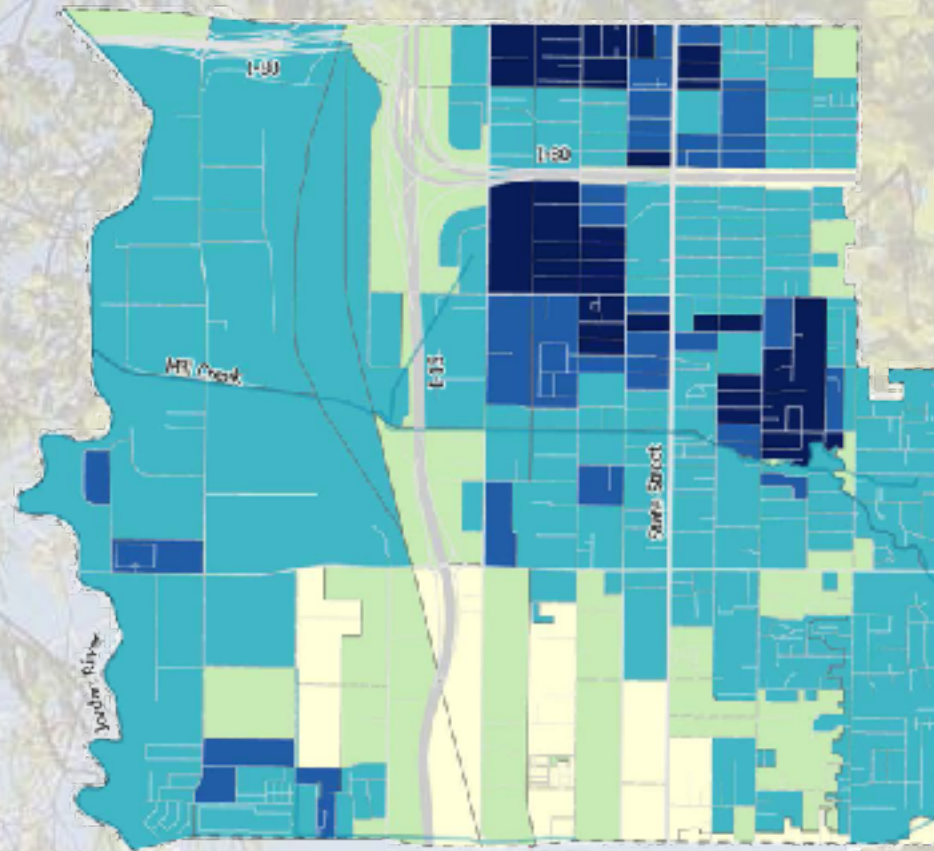


DEM (m)  
1,912.08  
1,288.02

Land Use  
Commercial  
Public, Government & Education  
Industrial  
Mixed Use  
Park, Open Space, & Recreational  
Residential

Slope (%)  
0 - 2  
2 - 4  
4 - 12  
12 - 18  
18 - 25  
25 - 35  
35 - 35

Hydrological Soil Groups  
A: High Infiltration  
B: Moderate Infiltration  
C: Low Infiltration  
D: Very Slow Infiltration



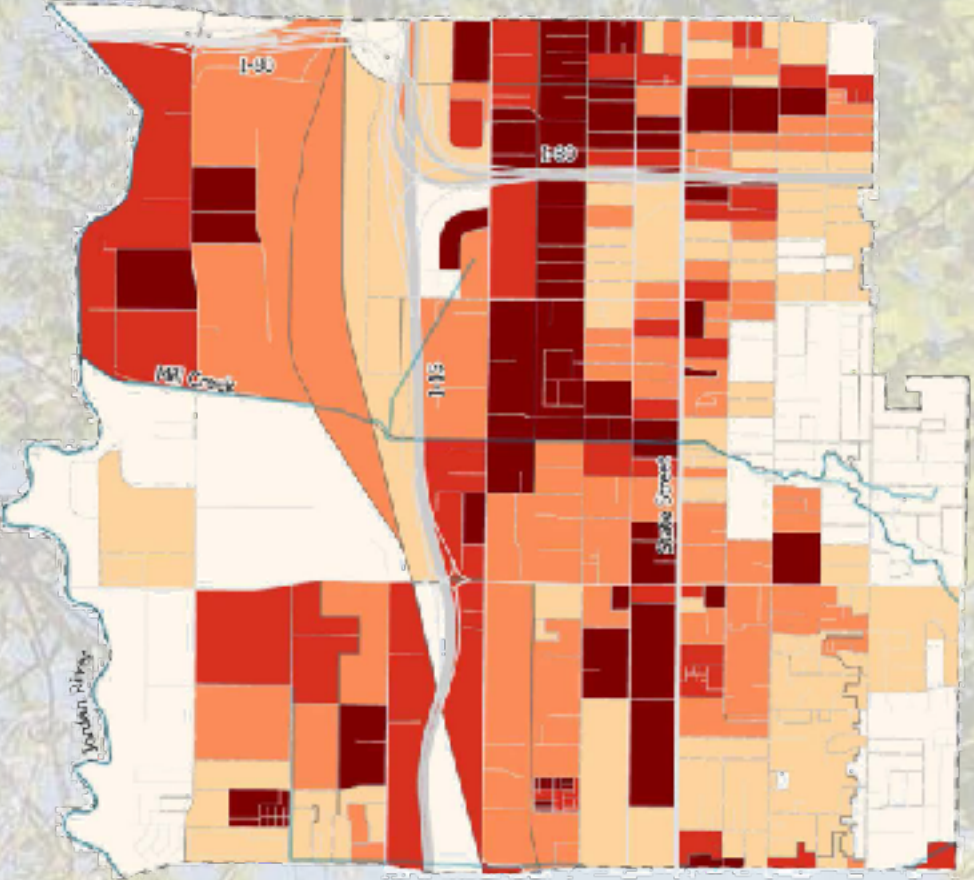
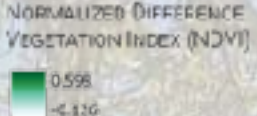
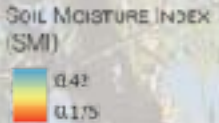
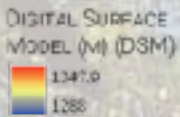
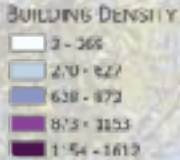
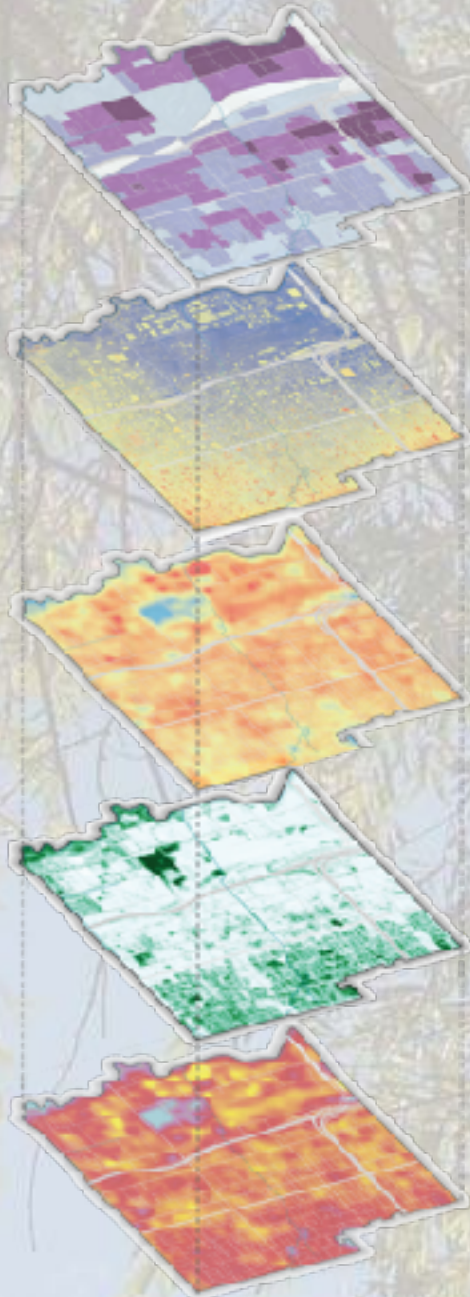
## Legend

### Priority

Very Low  
Low  
Moderate  
High  
Very High



# Urban Heat Island Analysis



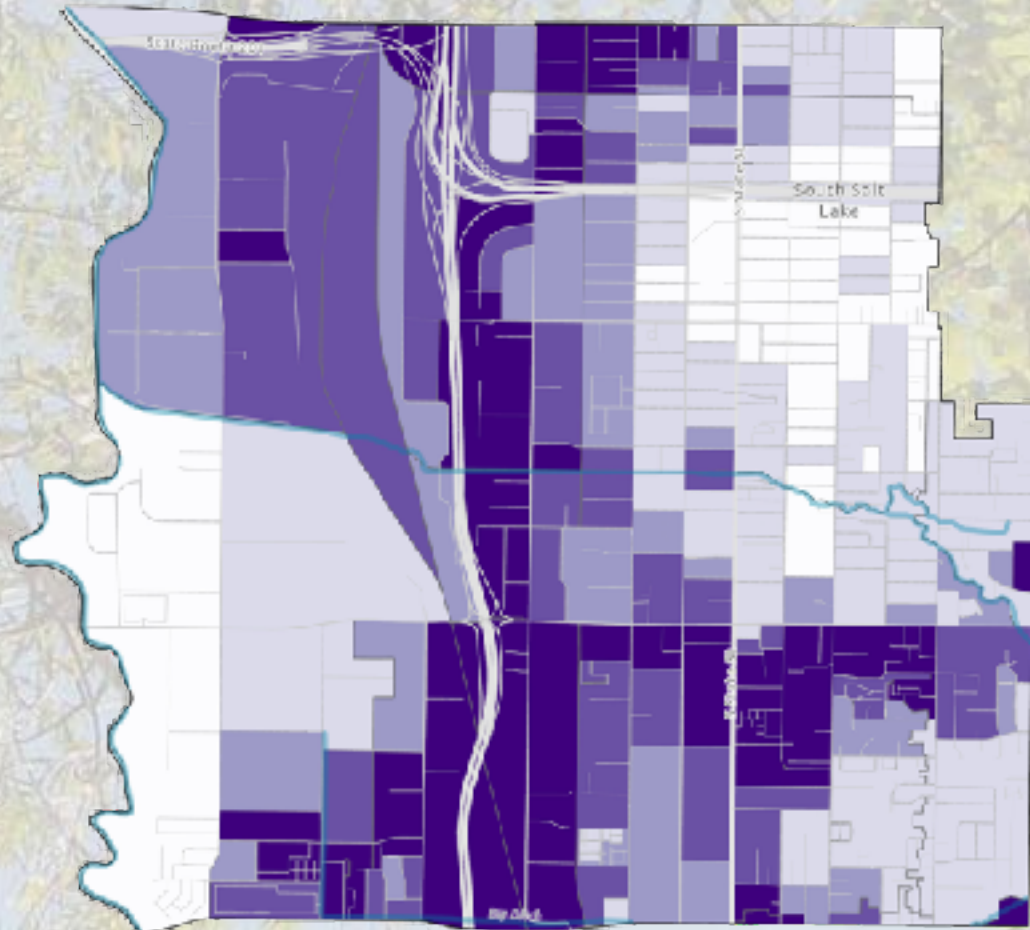
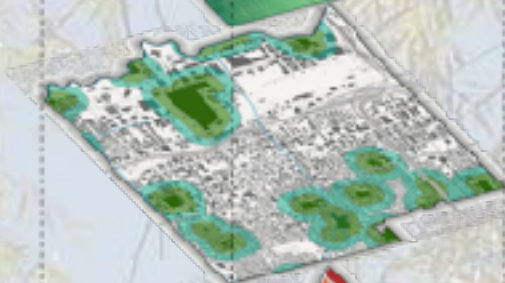
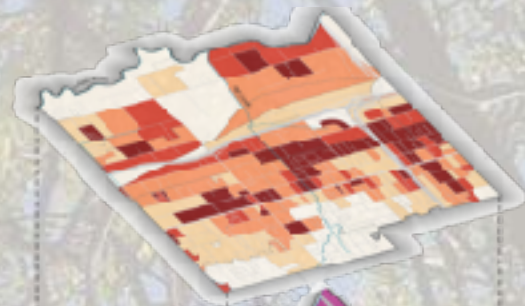
## Legend

### Priority





# Health Outcomes Analysis





# Social Equity Analysis



**MEDIAN HOUSEHOLD INCOME (\$)**



**NUMBER OF RENTERS**



**DECADE OF BIRTH POPULATION (%)**



**MINORITY POPULATION (%)**



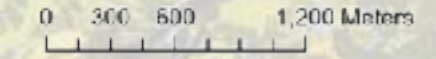
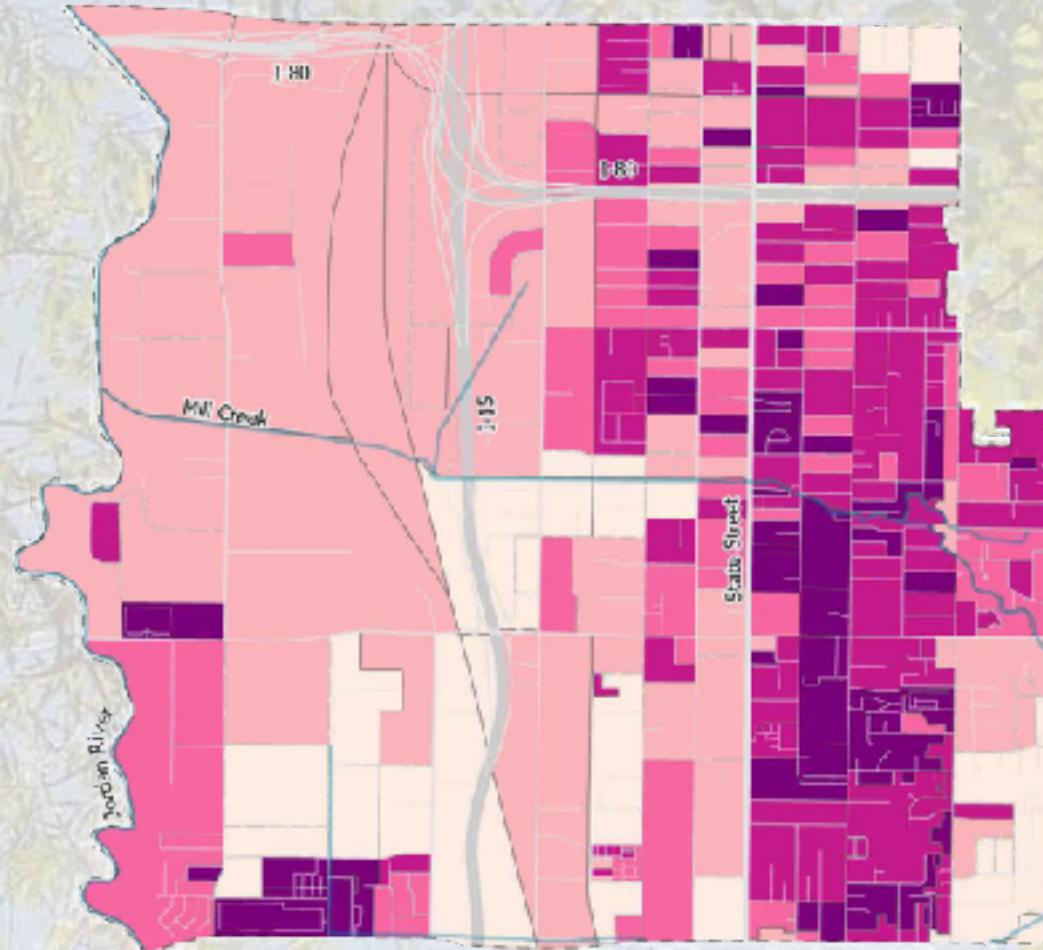
**POPULATION OVER 65 YEARS OLD (PPA)**



**POPULATION UNDER 5 YEARS OLD (PPA)**



**POPULATION DENSITY (PPA)**



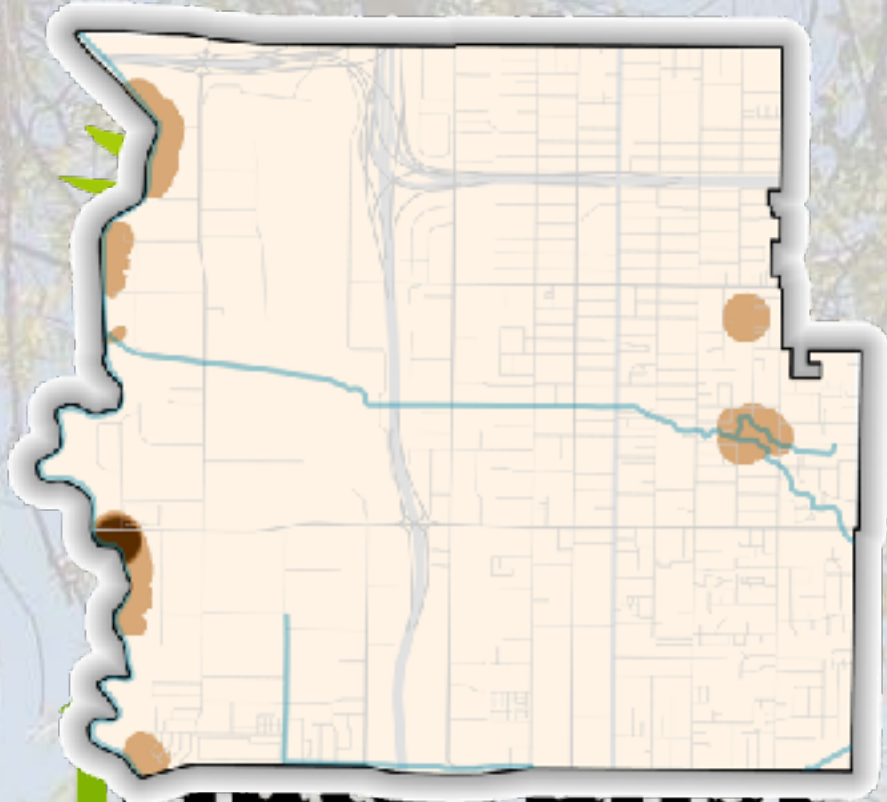
## Legend

Priority

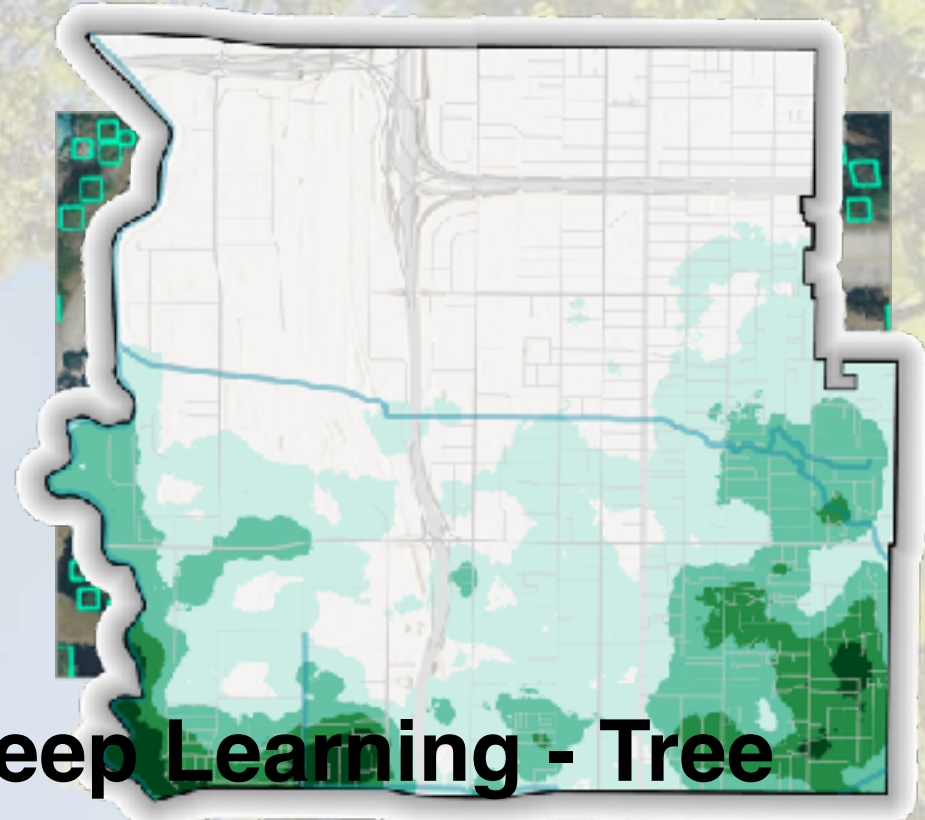




# Biodiversity and Ecosystem Health



iNaturalist Species Identified



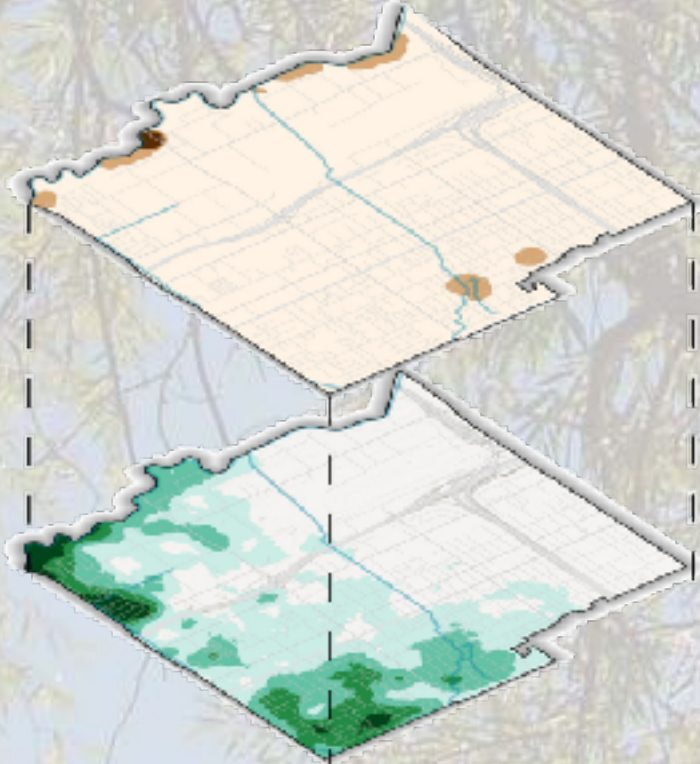
## Deep Learning - Tree Detection

Tree Detection





# Biodiversity in South Salt Lake City

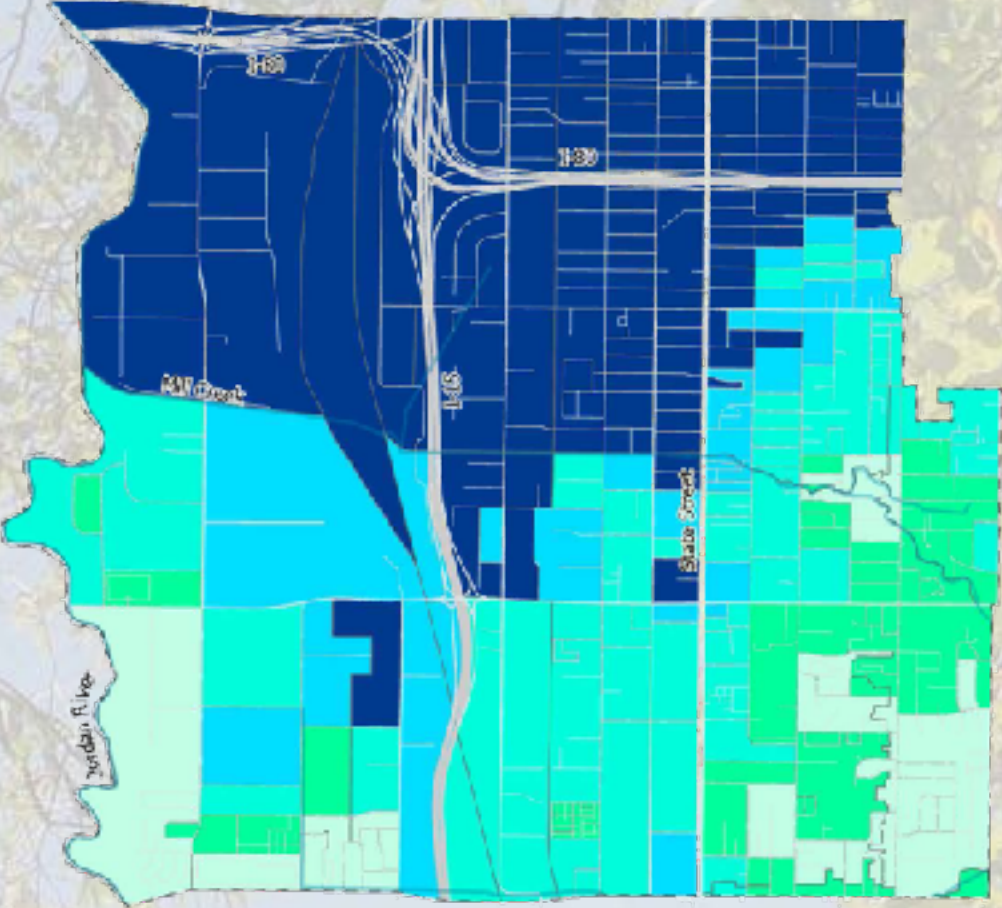


Naturalist Species Identified

- Very Low
- Low
- Moderate
- High
- Very High

Tree Detection

- Very Low
- Low
- Moderate
- High
- Very High



0 300 600 1,200 Meters



**Legend**

Priority

- Very High
- High
- Moderate
- Low
- Very Low



# Project Outcomes



## HYDROLOGIC ANALYSIS

- Very Low Priority
- Low Priority
- Moderate Priority
- High Priority
- Very High Priority

## URBAN HEAT ANALYSIS

- Very Low Priority
- Low Priority
- Moderate Priority
- High Priority
- Very High Priority

## HUMAN HEALTH ANALYSIS

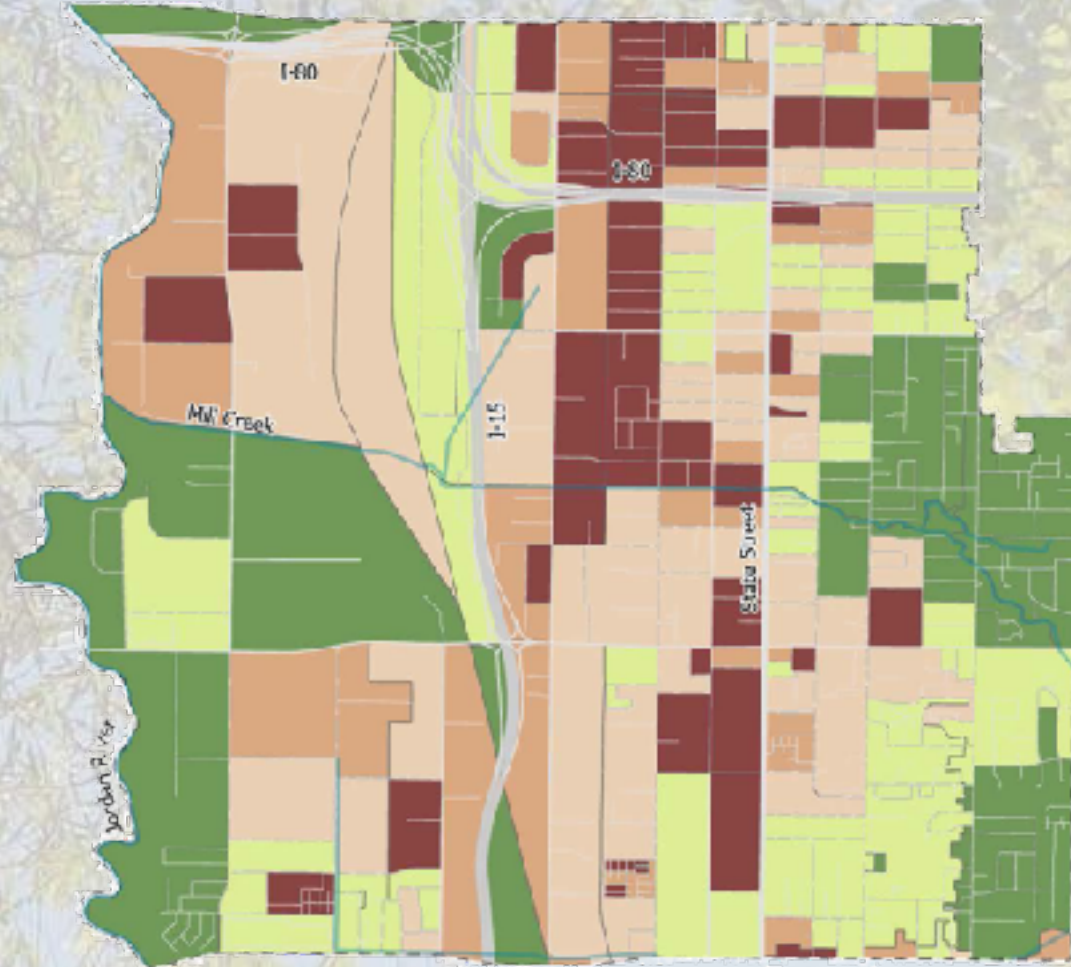
- Very Low Priority
- Low Priority
- Moderate Priority
- High Priority
- Very High Priority

## EQUITY SOCIAL ANALYSIS

- Very Low Priority
- Low Priority
- Moderate Priority
- High Priority
- Very High Priority

## BIODIVERSITY ANALYSIS

- Very Low Priority
- Low Priority
- Moderate Priority
- High Priority
- Very High Priority



0 300 600 1,200 Meters

## Legend

### Priority

- Very Low
- Low
- Moderate
- High
- Very High



# Creation of Informative Website



**Optimal Tree Planting Locations to Benefit the City of South Salt Lake**

*Optimizing Tree Planting in SSLC through analysis of Climate, Hydrology, Urban Heat, Human Health, Equity & Biogeography, and Biodiversity Perspectives*

**PURPOSE**

This project aims to identify optimal tree planting locations in South Salt Lake (SSLC) by analyzing hydrology, urban heat, equity factors, human health, and biodiversity. Integrating these perspectives identifies areas with the highest potential for multivalued benefits from tree planting in SSLC. Our collaboration with the City of South Salt Lake through public engagement exercises has enriched our understanding and ensured that our findings align with community needs and aspirations.

**Analysis Topics**

Click on the topic to view more information on each analysis.



- <https://sites.google.com/view/laep6120-tree-planting-in-sslc>



# Community Engagement Results

- The Completed a tree planting project with TreeUtah
- Multiple trees planted in the city and shrubs for riverbank stabilization





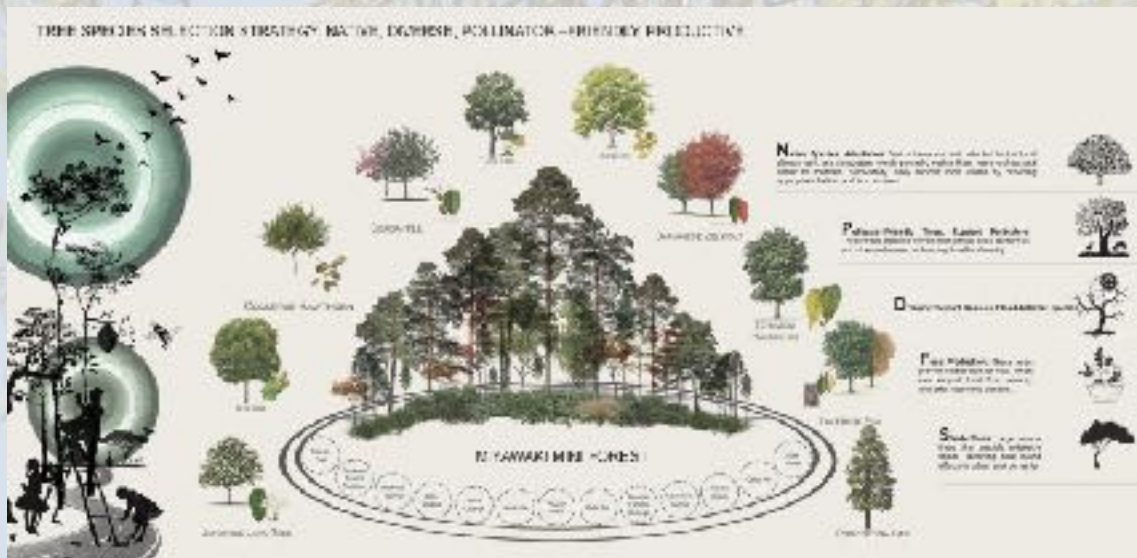
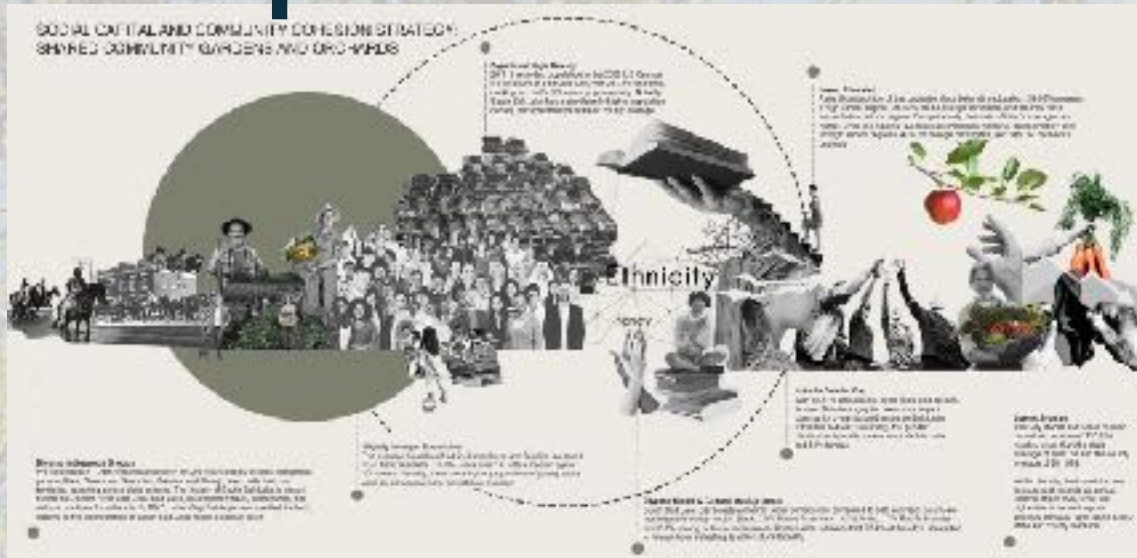
# Submission to USU Community Engagement Conference

- Presented key findings at the USU Community Engagement Conference.
- Shared the project's objectives and the importance of tree planting in urban environments.

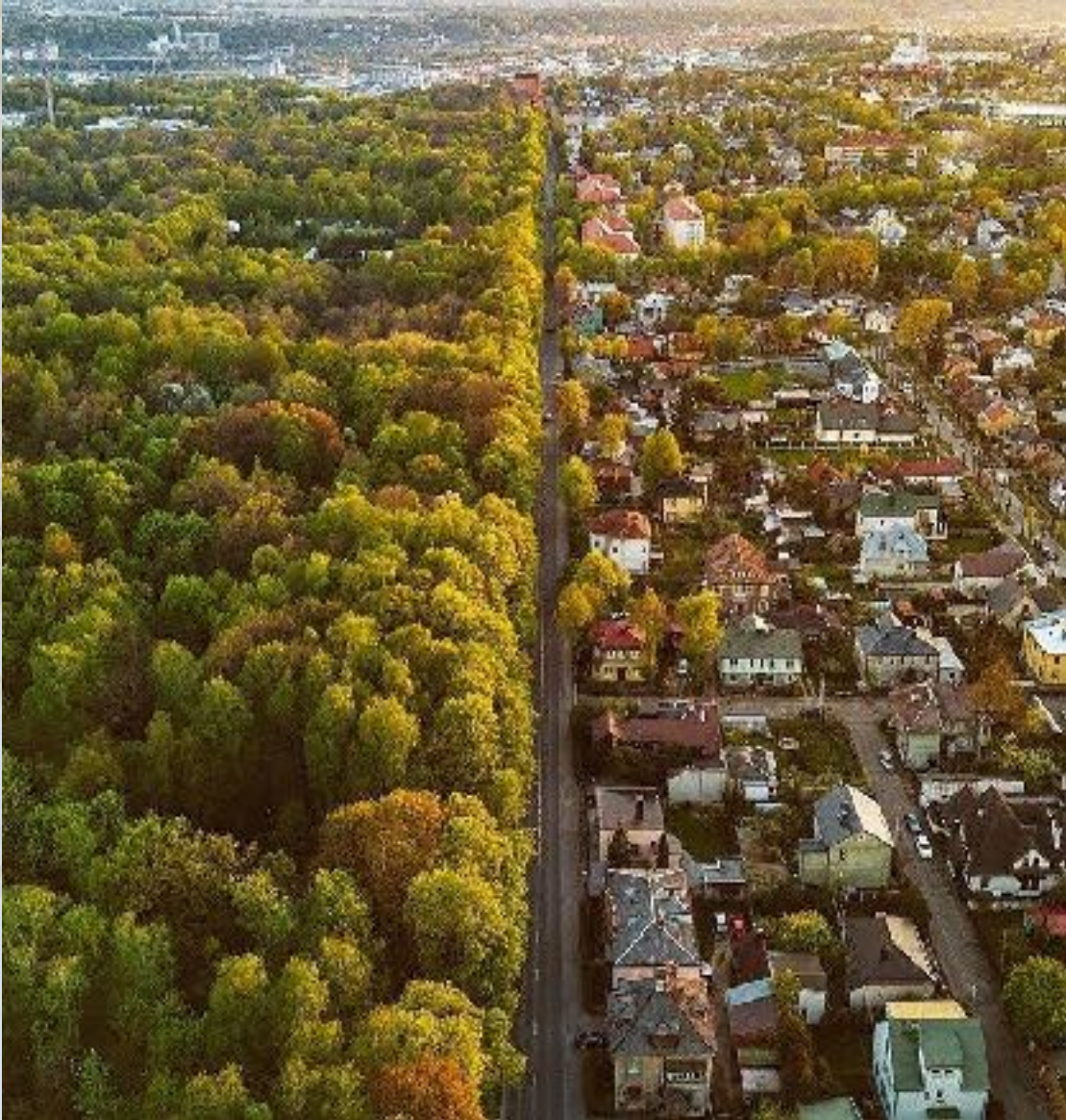




# Entry into UT ASLA Student Poster Competition







## In Closing

- The urban forest can be tool for adapting cities to a changing climate
- Tree planting plans can assist cities with making the most impactful decisions with their resources





**THANK  
YOU**

Benjaman Chandler, Kawsar Uddin, & Nathan Shumway