TALLAHASSEE
COMMUNITY RESILIENCE PLAN

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CHAPTER 1

INTRODUCTION

INTRODUCTION

EXECUTIVE SUMMARY

Tallahassee, a community that is rich in diversity and natural resources, is the region's economic and cultural hub. Home to two major universities and several colleges, the Florida Legislature, and regional healthcare facilities, Tallahassee has a growing and dynamic population. The rolling Red Hills, southern live oaks, and dense urban tree canopy further showcase the qualities that make Tallahassee different from much of the rest of the state. These traits also put enormous pressure on our community, especially during times of adversity. Tallahassee has recently experienced unprecedented exposure to extreme weather events, from hurricanes and tornadoes to the first snow event in the last 30 years. With one of the largest networks of public utilities and infrastructure in the region, the impact of extreme events on our infrastructure and services affect hundreds of thousands of people in our city and surrounding region.

ALABAMA

GEORGIA

Dothan

Pensacola

Valdosta

FLORIDA

Panama City

Tallahassee

TALLAHASSEE, FL
191,049

VALDOSTA, GA
56,085

DOTHAN, AL
68,202

PANAMA CITY, FL
36,986

PENSACOLA, FL
52,590

Tallahassee Regional Comparison

Resilience is about making a city stronger, in both good times and bad, for the benefit of all its citizens, beginning with the most vulnerable. We embarked on the journey to develop the City's resilience plan after Tallahassee was affected by a series of storms, beginning with Hurricane Hermine in 2016. That storm marked the first time in more than three decades that Tallahassee was heavily impacted by a hurricane. Much has changed since those days, from the look and shape of our urban core to the community's socioeconomic makeup. These changes demand new ways to address complex challenges.

Hurricane Irma
City was better prepared after implementing measures following Hurricane Hermine

Active Shooter
Mass shooting at local yoga studio

Hurricane Hermine
First major storm to impact our community in almost 30 years

Snow Day
First snow day in Tallahassee in 30 years

Hurricane Michael
Strongest hurricane to hit the United States

| 2016 | 2017 | 2018 | 2019 |

Community Input
Community identified a need for the City to do better in the face of natural disasters

Chief Resilience Officer and Resilience Plan
City Commission approve the Chief Resilience Officer position and move forward with developing a Community Resilience Plan

Community Resilience Plan
Began data analysis and outreach for the development of our first Community Resilience Plan

Community Resilience Plan
Finalized and adopted Community Resilience Plan

Timeline of recent Shock/ Stressors affecting the Tallahassee Community

Two more hurricanes would impact the City in the two years that followed Hurricane Hermine, each with increasing strength and damage. Between the recent hurricane impacts and the socioeconomic stresses that have been growing over the past three decades, it became clear that we needed to develop a comprehensive approach to prepare the City and its residents for a future that will continue to bring challenges and opportunities.

The Tallahassee Community Resilience Plan is an ambitious plan, the first of its kind for our community, and places Tallahassee at the forefront of innovation and inclusiveness as we proactively address the various pressures that threaten our quality of life. Through the Plan, we address underlying chronic stresses that affect our community, such as job, food, and housing insecurity, as well as acute shocks that include flooding, extreme temperatures, and significant storm events, especially as they intensify with our changing climate. The Community Resilience Plan takes a bold step towards our collective sustainable future, guided by the ideal that everyone in our community can have the opportunity to thrive, even as we face new challenges.

The development of this plan followed the process identified in the US Climate Resilience Toolkit, which integrates community engagement with a data driven approach to assessing and addressing vulnerabilities. Beginning with meetings between internal stakeholders and continuing with dozens of community workshops and listening sessions, the engagement process was extensive. Stakeholder input played a critical role in the development of everything from the assessment tools and metrics to the goals, strategies, and action items in the plan. In addition, a robust vulnerability and risk assessment for critical assets was conducted and is summarized in the plan with supporting materials included in the Appendix.
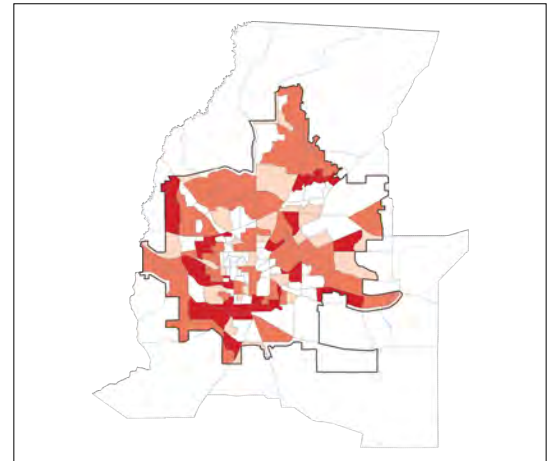
1 Explore Threats

2 Assess Vulnerability and Risks

3 Investigate Options

4 Prioritize and Plan

5 Take Action

GOAL 1

Public Safety and Preparedness

Empower households and organizations to be safe, secure, and self-sufficient.

GOAL 2

Hazard Mitigation and Climate Adaptation

Protect people and our environment while also adapting to the future.

GOAL 3

Equity and Social Cohesion

Connect people with each other and with opportunities to thrive.

GOAL 4

Planning and Integration

Make resilience ideals part of our everyday business and our long-term strategy.

The Community Resilience Plan is a call for our entire community to partner together to make our city stronger for the benefit of all residents, so we can be better equipped to respond during times of crisis and bounce back from any number of challenges. With the input of thousands of stakeholders, the plan proposes four goals that are the pillars of a more resilient Tallahassee, each with six strategies that point towards intentional ways to solve complex problems. Each strategy connects our specific urban challenges with unique opportunities to strengthen our community and offers initial actions that are achievable, measurable, and impact-driven.

With this forward-looking plan, we can better adapt to a changing climate and bounce back quickly from disruptions by strengthening our infrastructure, empowering residents to be self-sufficient, and creating an environment where everyone has the opportunity to prosper.

TALLAHASSEE'S RESILIENCY STORY

The story of Tallahassee is a one of resilience through nearly two centuries. In many ways, the capital city represents a microcosm of how the region and nation have progressed over this same time period. Tallahassee's establishment as the capital of Florida in 1824 was, like many cities in this country, predated by the invasion and removal of Native American settlements. In the almost two hundred years that followed, there have been waves of economic growth and decline. The City has witnessed advancements in education, social justice, and technology. These advancements have shaped our City and the broader community, and they have a significant impact on how we will individually and collectively bounce back from the many challenges we are likely to face. How we have responded and how we will continue to respond to issues such as civil and women's rights, health epidemics, and natural disasters will further shape our story.

The following timeline highlights Tallahassee's resilience story through the decades. It includes major shocks, stresses, and milestone achievements in the City, identified as having either a 'positive overall impact' in the top portion of the timeline or 'negative overall impact' in the lower portion of the timeline. The overall impact for each milestone is based on a qualitative evaluation of the economic, social, governmental, and environmental impacts of each event. The timeline begins in 1818 with a military invasion and ends with Hurricane Michael in 2018.
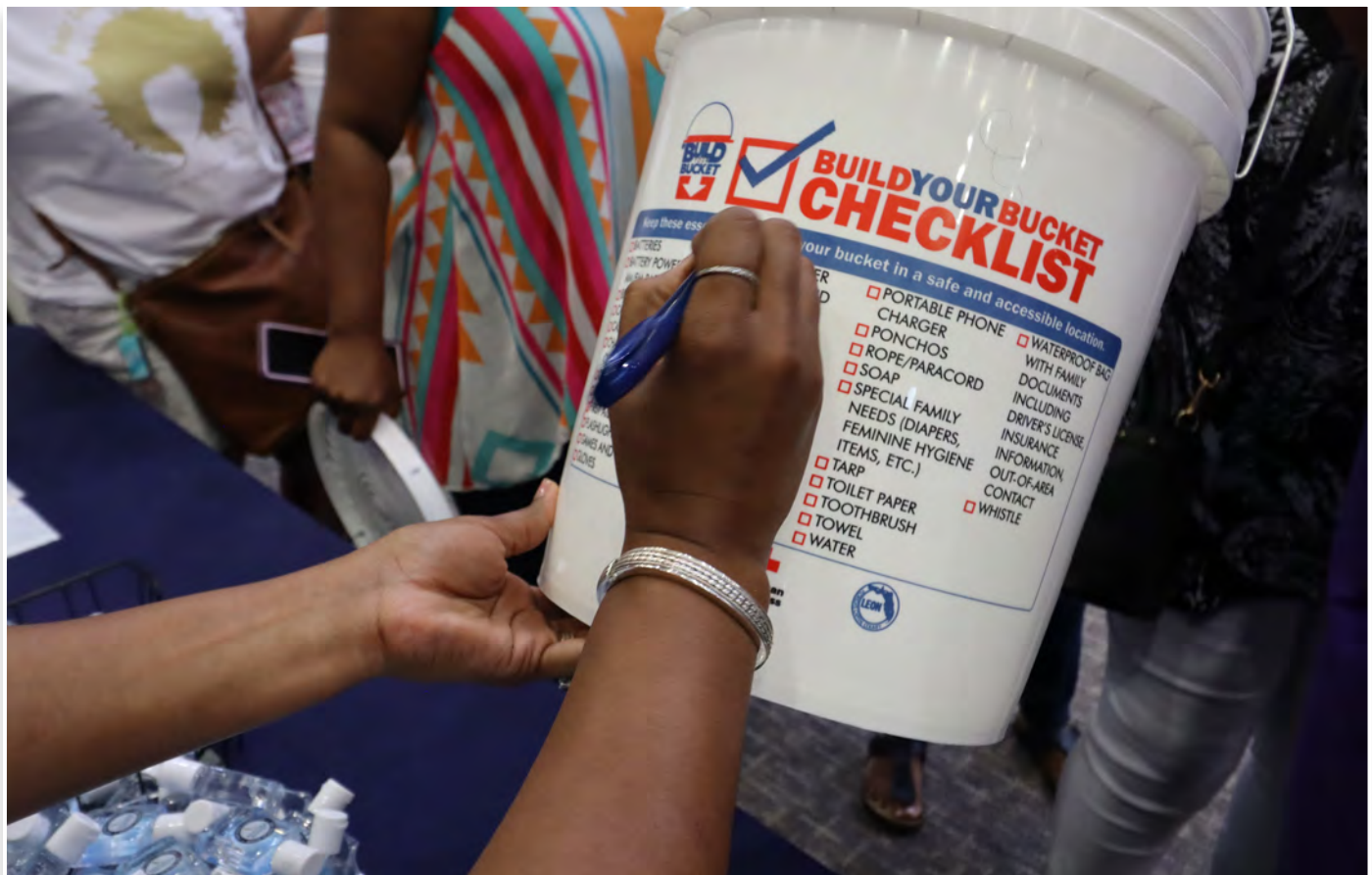
Actions of Resilience

+ Capital City established (1824)

+ First Tallahassee Bank, Union Bank (1830)

+ First Florida State Election (1845)

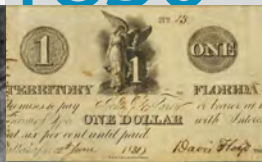+ Tallahassee St. Marks railroad constructed (1837)

+ Fire District Created: Brick Building Ordinance (1843)
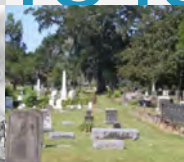
1820   1830   1840

Gen. Jackson invades Florida

First Capitol Building

1830 Florida Territory One Dollar Bill

Second Seminole War

Yellow Fever Deaths, Tallahassee Old City Cemetery

Great Fire Start: Hotel Dixie

Shocks and Stressors

− The Great Fire (1843)

− The Second Seminole War (1835-1842)

− Yellow Fever Epidemic (1840-1843)

− Military Invasion (1818)

Actions of Resilience

+ ------------------------ + Population growth from cotton & tobacco
industry (1850-60)

+ Florida State University
established (1851)

+ Chief of Fire established (1868)

+ Frenchtown established for
newly freed slaves (1867)

1850 1860 1870

College Hall

Cotton
Crop

Dried
Tobacco
Leaves

West Florida Seminary
Cadet Corps, Civil War

First City
Fire Station

Post Civil War Document:
Allowed Florida Confederate Soldier
Private a Peaceful Passage Home

Shocks and Stressors

– Leon County has most slaves in Florida
(73% of population) (1860)

– ------------------------ – Reconstruction Era
after Civil War
(1865-77)

– The Battle of Natural Bridge (1865)

State Normal College for Colored
Students (FAMU)'s First Facility

Carrabelle, Tallahassee,
Georgia Railroad

Capital City Bank

Tallahassee's
Coldest Day

Florida State College
For Women (FSU)

1880

1890

1900

+ Public Safety Commision
established (1887)

+ First city-wide fire alarm
created (1896)

+ Florida A&M University
established (1887)

+ FSU becomes
women's college,
renamed Florida State
College for Women
(1905, 1909)

– FAMU
Duval Hall
Fire (1909)

– The coldest day in Florida history, −2°F,
in Tallahassee (1899)

+ Tallahassee's first airport (1929)

+ Lively Vocational Technical School established (1931)

+ Floridan Hotel built Downtown (1927)

+ Additions, repairs to Capitol Building for state growth (1891-1910)

1910 1920 1930

FAMU Duval Hall Florida Capitol building FSU East Hall Fire The Floridan Hotel Tallahassee's First Airport Tallahassee Heat Wave
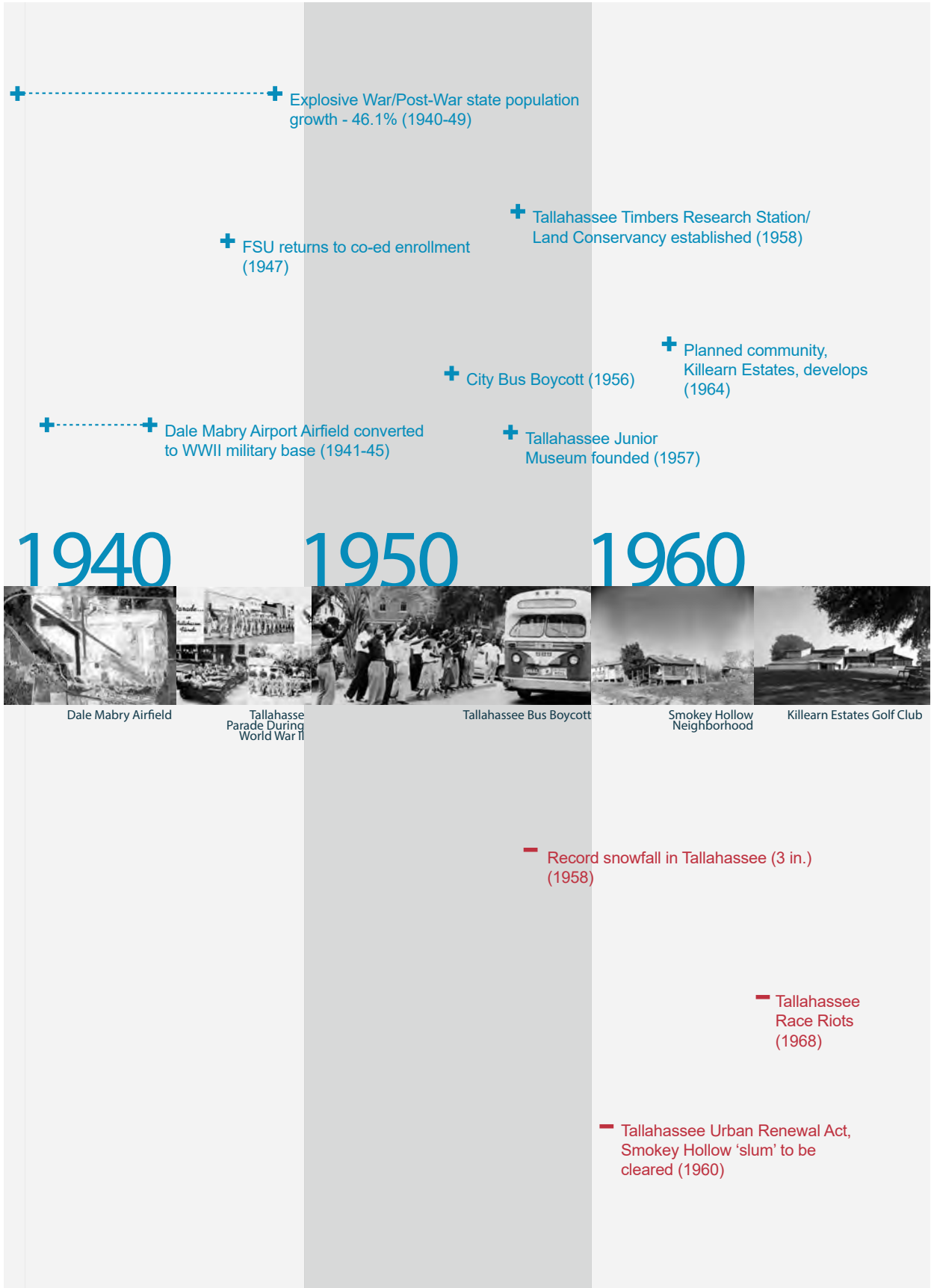
– FSU East Hall Fire (1920)

– Florida's hottest temperature, 109 °F near Tallahassee (1931)

The Great Depression (1929-1939)

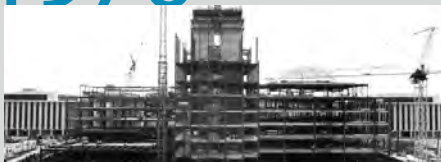Explosive War/Post-War state population growth - 46.1% (1940-49)

Tallahassee Timbers Research Station/ Land Conservancy established (1958)

FSU returns to co-ed enrollment (1947)

Planned community, Killearn Estates, develops (1964)

City Bus Boycott (1956)

Dale Mabry Airport Airfield converted to WWII military base (1941-45)

Tallahassee Junior Museum founded (1957)

1940 1950 1960

Dale Mabry Airfield

Tallahasse Parade During World War II

Tallahassee Bus Boycott

Smokey Hollow Neighborhood

Killearn Estates Golf Club

Record snowfall in Tallahassee (3 in.) (1958)

Tallahassee Race Riots (1968)

Tallahassee Urban Renewal Act, Smokey Hollow 'slum' to be cleared (1960)

Actions of Resilience

+ Knott House Museum established (1992)

+ Riley Museum of African American History & Culture established (1996)

+ FAMU/FSU College of Engineering founded (1982)

+ Mission San Luis de Apalachee Archaeological & Historic Site established (1983)

+ First directly elected mayor since 1919, Scott Mattox (1997)

+ Tallahassee Regional Airport begins operations (1989)

+ Construction begins on new Capitol Facility (1970)

+ FSU Football National Champions (1993, 1999)

1970 1980 1990

New Capitol Facility Construction

Vietnam War Protest

Hurricane Kate Damage

Tallahassee City Hall Facility

Shocks and Stressors

− Ted Bundy Murders (1978)

− Students protest the Vietnam War (1970)

− Hurricane Kate (1985)

+ Cascades Park opens (2013)

+ Franklin Blvd. Redevelopment (2014)

+ Leon County named Hurricane Strong Community (2018)

+ Southside Initiative (2015)

+ First "Build Your Bucket" event (2015)

+ Tallahassee Resilience Office established (2018)

+ Public Safety Complex opens (2013)

+ Gun Control Protest Rally (2018)

+ Ambulance service moved from private to Leon County (2004)

+ Kearney Center opens (2015)

+ FSU Football National Champions (2013)

2000   2010   2018+

'Hanging Chads', 2000 Presidential Election Vote Recount

Hurricane Hermine

Cascades Park

Hurricane Michael

– Florida State Presidential Recount in Tallahassee (2000)

– FSU Campus Shooting (2013)

– Two tornado landings (2009)

– Tropical Storm Fay (2008)

– Hurricane Michael (2018)

– The Great Recession (2007-2009)

– Opioid Epidemic (2017)

– Hurricane Irma (2017)

– Hurricane Hermine (2016)

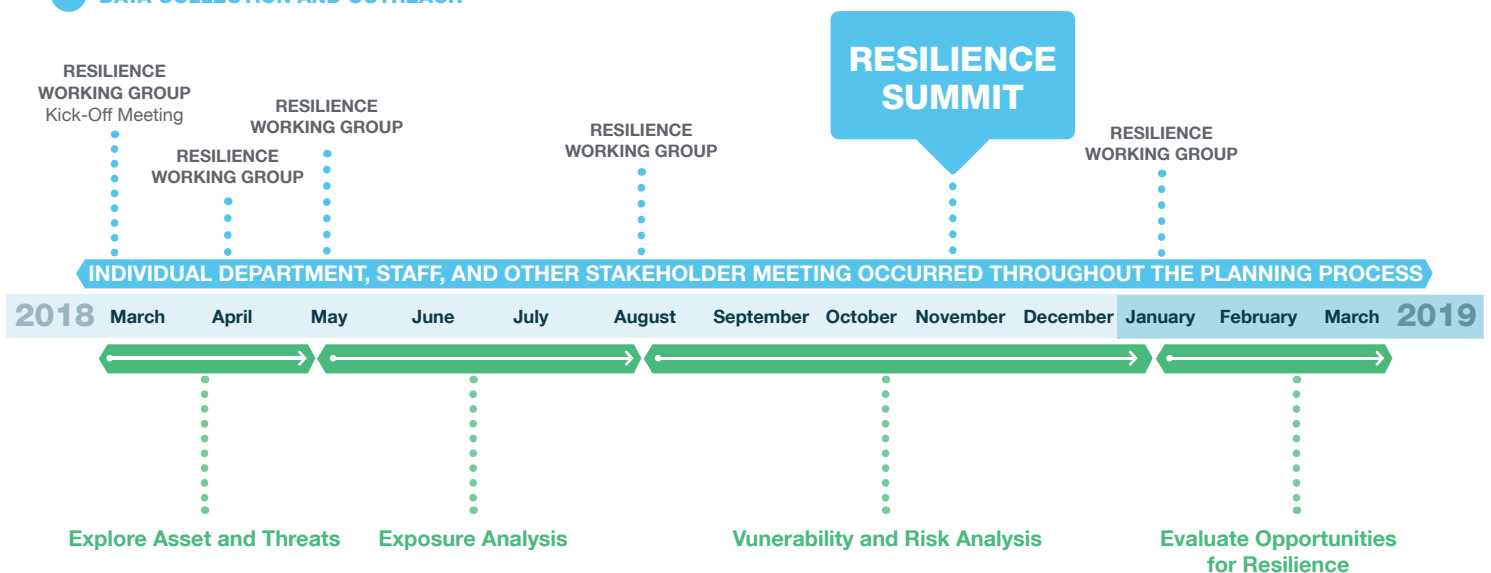# PLAN DEVELOPMENT PROCESS

Planning Timeline

In 2017, the City commissioned the Community Resilience Plan, hired its first ever chief resilience officer, and solicited technical consultation to develop a plan. In January 2018, the resilience planning project formally kicked off with the convening of key stakeholders and technical experts. The development of this plan followed the process identified in the US Climate Resilience Toolkit, which integrates community engagement with a data driven approach to assessing and addressing vulnerabilities.

Through an extensive public and stakeholder engagement process, we identified physical assets (buildings and spaces) that provide critical services and that the community values as part of the fabric of Tallahassee. The process also identified and prioritized various threats to the quality of life in the City, such as extreme weather events, crime, and affordability. The assessment framework then mapped out how each asset was exposed and vulnerable to each threat in order to paint a better picture of our community risk profile. Following a year of broad stakeholder engagement, extensive risk and vulnerability analysis, and focused working group sessions, the plan has identified immediate and long-term strategies to secure a safer and more resilient future for Tallahassee.

● **GEOSPATIAL ANALYSIS**

● **DATA COLLECTION AND OUTREACH**

RESILIENCE WORKING GROUP Kick-Off Meeting

RESILIENCE WORKING GROUP

RESILIENCE WORKING GROUP

RESILIENCE WORKING GROUP

RESILIENCE SUMMIT

RESILIENCE WORKING GROUP

INDIVIDUAL DEPARTMENT, STAFF, AND OTHER STAKEHOLDER MEETING OCCURRED THROUGHOUT THE PLANNING PROCESS

| 2018 | March | April | May | June | July | August | September | October | November | December | January | February | March | 2019 |

Explore Asset and Threats

Exposure Analysis

Vunerability and Risk Analysis

Evaluate Opportunities for Resilience

Stakeholder Engagement

The Community Resilience Plan was developed with extensive stakeholder engagement and community outreach. The planning team set out with a goal of getting input from a broad range of people. As such, engagement involved interacting with residents and visitors at a variety of community events, ranging from neighborhood meetings to nonprofit roundtables. This outreach strategy leveraged previously planned activities while also incorporating new, targeted meetings, workshops, and events. Those who were engaged included business and public agency leaders, college students and professors, youth at a summer camp, neighborhood associations, City employees, and many others.

The Resilience Working Group was another critical part of the stakeholder input process. The workgroup included representatives from a variety of City departments who met consistently throughout the plan development process. Their input included identifying the community assets and threats considered in the vulnerability analysis, reviewing existing initiatives, and refining the recommendations. The group also served as resilience ambassadors, sharing information back to their respective teams and identifying ways to incorporate resilience into their everyday operations. It is recommended that this working group remain involved during the implementation of the Community Resilience Plan.

Over 300 City staff across nearly every department and operational level responded to the employee survey, sharing what they believe to be the most pressing community threat and what type of actions to prioritize. Live polls were conducted at employee training sessions, a business emergency preparedness workshop, and the Build-Your-Bucket Community Preparedness Expo, reaching an additional 1,500 people who live and work in Tallahassee.

To gather additional input from community practitioners and experts, a Community Resilience Planning Summit was held in November 2018. This event brought together a focused group of over 70 agency representatives, including City staff and leadership, county and state departments, nonprofit organizations, regional partners, and local university representatives. Attendees reviewed data about Tallahassee's changing climate conditions and vulnerability analysis, and developed preliminary ideas through an interdisciplinary table-top exercise. Feedback from the summit highlighted the incredible diversity of the Tallahassee stakeholder community and the desire to participate in more cross-discipline, cross-agency coordination.

Finally, updates on the plan, with an invitation to provide input were provided online through the talgov.com/resplan webpage. Through the overall engagement process, stakeholders helped identify the different types of threats that the community is concerned about while also identifying approaches to move Tallahassee toward greater resiliency. A common theme across all stakeholder groups was the recommendation to strengthen households and neighborhoods to be self-sufficient. While the plan includes opportunities for infrastructure and policy action, many residents expressed that community resilience requires a bottom-up, grassroots approach to reflect the value our community places on its people and neighborhoods.

3,202

PRESENTATION/ WORKSHOP
656

INTERVIEW/ LISTENING SESSION
224

EVENT
2394

POLLING
687

Engagement Tracking

Plan Alignment Matrix

Building community resilience touches on nearly every aspect of civic life, sound public policy, and good governance. Having cohesive plans and policies improves the likelihood of successful implementation and ensures that resilience ideals can be effectively integrated into our operations and long-term aspirations. The following matrix summarizes how the Community Resilience Plan aligns with existing strategic documents that guide the City's efforts.

EXISTING PLANS	Goal 1: Public Safety and Preparedness	Goal 2: Hazard Mitigation and Climate Adaptation	Goal 3: Equity and Social Cohesion	Goal 4: Planning and Integration
Blueprint 2020		●		●
Canopy Roads Management Plan		●		●
Economic Development Strategy			●	●
Electric Utilities Ten-Year Site Plan		●		●
Frenchtown/Southside Community Redevelopment Plan			●	●
Greenways Master Plan		●		●
Greenprint Sustainability Strategy		●	●	●
Housing Consolidated Plan			●	●
Local Housing Assistance Plan			●	●
Office of Economic Vitality Strategic Plan			●	●
Regional Mobility Plan	●		●	●
Tallahassee-Leon County Bicycle and Pedestrian Master Plan	●		●	●
Tallahassee-Leon County Comprehensive Plan		●	●	●
Tallahassee-Leon County Local Mitigation Plan	●	●		●
Tallahassee-Leon County Post Disaster Redevelopment Plan	●	●		●
Transit Development Plan			●	●
Urban Forest Master Plan		●	●	●

CHAPTER 2

OUR RESILIENCE CHALLENGES

OUR RESILIENCE CHALLENGES

TALLAHASSEE'S URBAN CONTEXT

As a full-service municipality, the City of Tallahassee provides a wide array of services within the city limits and into the surrounding area. With one of the largest networks of public utilities and infrastructure in the state, as well as being an economic hub for North Florida, Tallahassee has a tremendous opportunity to champion resilience in the region. The Community Resilience Plan examines a broad range of issues and conditions that have significant implications for the panhandle. The risk and vulnerability assessment that was conducted identified the top threats and insecurities that Tallahassee faces, including:

- **Hurricane/Severe Storms-**Vulnerability is based on regional exposure to hurricanes and tropical storms at an increasing rate and severity, along with Tallahassee's dense urban forest canopy.
- **Flooding-**Vulnerability is based on property exposure to 100-yr and 500-yr FEMA designated flood zones, as well as building elevation.
- **Wildfire-**Vulnerability is based on the City's proximity to vast forest land (Urban-Wildland Interface), increased amount of storm debris from recent hurricanes, building age and construction, and proximity to fire suppression service.
- **Poverty-**Vulnerability is based on the geographic concentration of residents identified as low income paired with a relatively high poverty rate in the broader community.

Beyond these top threats and insecurities, there are a multitude of shocks and stressors that contribute to our city and region's overall vulnerability and risk. The next section of this plan describes the different types of impacts that weaken our community.
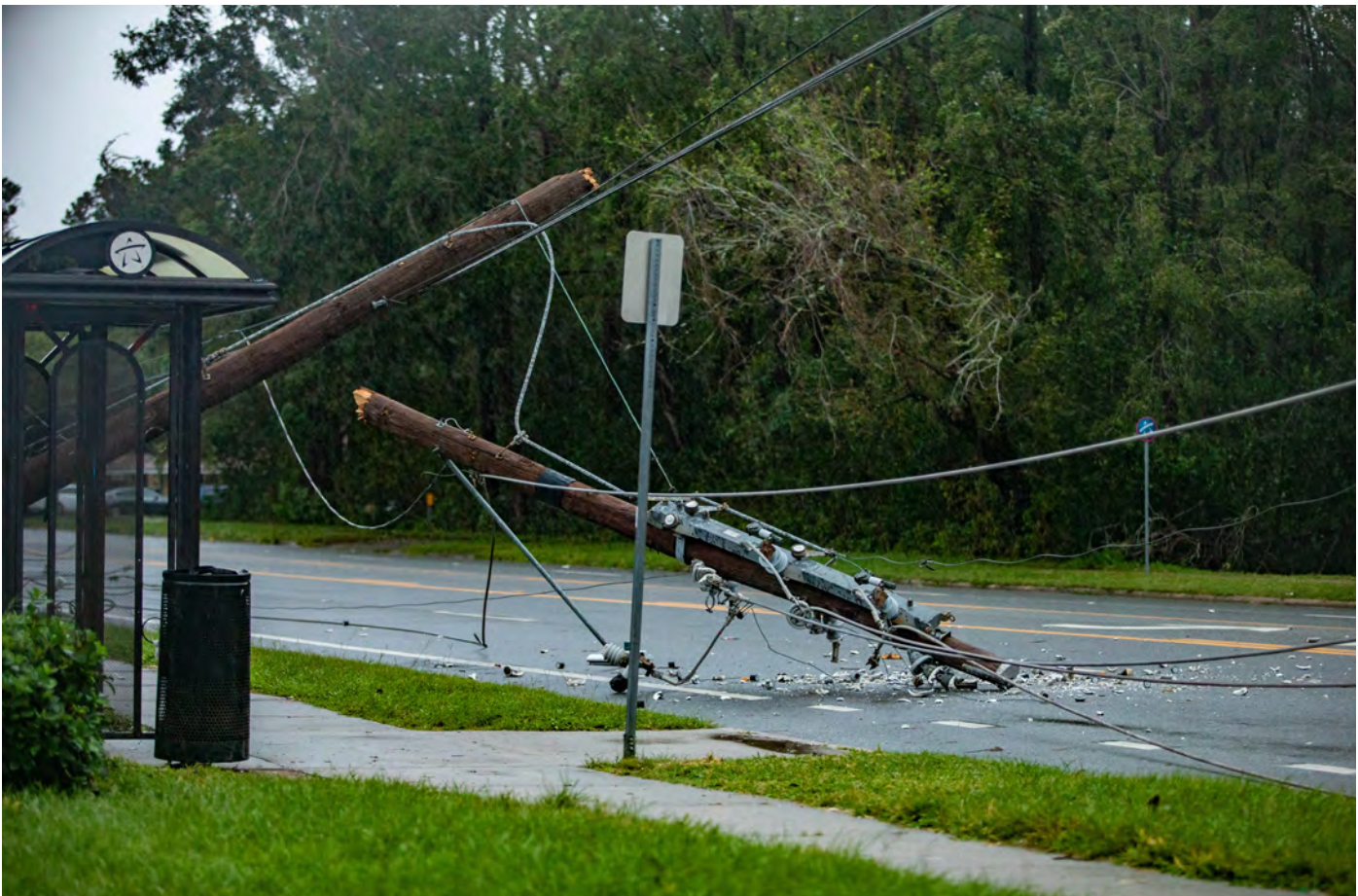
LOCAL SHOCKS AND STRESSORS

A **shock** is a sudden event, such as a hurricane, that has immediate effects on a system and how it operates.

A **stressor** is a condition, such as housing insecurity, that progresses over time and continually weakens a system.

FLOODING: *An overabundance of water due to heavy precipitation or storm events that impacts normally dry land. The Federal Emergency Management Agency (FEMA) manages the National Flood Insurance Program (NFIP) which offers insurance to properties located within the Special Flood Hazard Area (100-year floodplain). More frequent storm events can also cause minor or nuisance flooding. For the vulnerability and risk assessment, the City considered both the 100-year and 500-yr FEMA floodplains.*

Tallahassee has a long history of flooding in certain areas such as near the Orange Avenue and Springhill Road corridors, impacting neighborhoods, roads, and daily life for residents. Many flood prone areas in the City are associated with the network of sloughs, streams, marshes and lake systems. In recent years, the City and County have addressed flooding issues through capital projects such as Capital Cascades Park. The City continues to collect data and update flood modeling.

WILDFIRE: *Unplanned and uncontrolled fires usually located where vegetation is abundant and fuels the spread of fire. Wildfire threat can be determined using the Southern Group of State Foresters Wildland Urban Interface (WUI) risk index, which takes into consideration the following factors: presence of development, people, assets in the WUI, and vegetation and surface fuels favorable to wildfire, especially in drought conditions.*

Tallahassee sits within a region and natural landscape that has a history and presence of prescribed burning and wildfire. Through the vulnerability and risk assessment, wildfires were the greatest exposure (potential for being in harm's way) for our community, though we have been fortunate in past years to have not experienced significant wildfire events. Tallahassee is surrounded by state and federally protected land, including the Tall Timbers preserved lands to the north and the Apalachicola National Forest to the south. With this, Leon County has among the highest prescribed fire activity anywhere in the Southeast. Prescribed burning helps to mitigate the risk of wildfire but can also create intermittent poor air quality that affects sensitive populations. Storm events, such as Hurricane Michael in 2018, can increase the risk of wildfires for our community by increasing the volume of debris on the ground which could fuel wildfires.

STORM SURGE: *Abnormally high-water levels in coastal areas generated by hurricanes and tropical storms. A surge forms when strong winds over the ocean combine with low pressure to drive water on shore. Storm surges can temporarily produce sea levels much higher than normal high tide, resulting in extreme coastal and inland flooding.*

Tallahassee's southern boundary is approximately 20 miles from the Gulf of Mexico making storm surge a threat for our most southern residents and some critical infrastructure during Category 5 hurricanes. As sea levels continue to rise, Tallahassee and our neighbors to the south may experience an increased threat of storm surge.

HIGH WIND: *Air in motion that can range in speeds and vary in direction, which may cause adverse impacts to natural features and man-made structures.*

One of our community's most treasured assets is our trees; but during wind events, such as hurricanes, trees cause significant damage to our overhead utility system, private property, and public assets. Every area of our community has high exposure to high wind or may be directly impacted by damage from high winds nearby. During the storms that impacted our community from 2016-2018, much of the damage experienced was wind related, making it difficult to get our community back up and running.

- **EXTREME HEAT:** *Temperatures that are significantly above (10 degrees or greater) the average high temperature for the region and last for an extended period of time. Extreme heat can also be defined as days above 96 degrees. Duration of heat, maximum temperatures, and amount of nighttime cooling should also be considered. Extreme heat is often accompanied by humidity in our region and for the U.S. is considered the deadliest weather-related hazard.*

Extreme heat is a public health risk, especially for low-income, elderly communities, and other socially vulnerable populations. Health impacts are of particular concern with extreme heat events that occur for multiple days with limited relief in terms of nighttime cooling.

Tallahassee experiences high temperatures in addition to high humidity during summer months making our community one that regularly experiences heat advisories and high heat indexes. Unlike many other Florida cities, Tallahassee is not a coastal community, depriving us of any ocean breeze during these times of extreme heat and resulting in hot, humid, and stagnant air.

- **EXTREME COLD:** *In Florida, extreme cold is considered freezing temperatures that cause a need for immediate protection to crops, people, and animals.*

Tallahassee is unique to Florida in that we experience temperature variations between seasons across the year. Having experienced frost and freezing temperatures a couple times during winter months, and the occasional snowfall, our community understands the need to take care of our vulnerable community during times of extreme cold. Extreme cold can also impact utility and transit operations.

- **DROUGHT:** *Periods of limited rainfall, which can lead to water shortages. Often times, droughts are more regional in nature and can last for long periods of time affecting vegetation and increasing our risk of wildfire.*

Historically, Tallahassee experiences drought conditions several times throughout the year or entire years where rainfall totals are well below the annual average, ranging from abnormally dry to extreme drought based on current conditions. When droughts occur during our warmer months, it increases temperatures greater than usual which may cause greater impacts to our more sensitive populations.

- **INFRASTRUCTURE FAILURE:** *Failure in the operations or network of structures, utilities, and facilities that provide basic needs to a community.*

Our community has experienced infrastructure failure during strong thunderstorms due to our abundance of trees and overhead utilities. Infrastructure failures impact our sensitive populations who may not be able to adequately prepare for days or weeks without our basic services.

- **CIVIL UNREST:** *A mass act of civil disobedience including strikes or demonstrations.*

With the State Capital located in the heart of Tallahassee, our community is prone to experiencing civil unrest. During the most recent time of political campaigns and elections, Tallahassee was the location of several organized and civil demonstrations, therefore our community needs to be prepared if these acts were to ever turn hostile.

- **TERRORISM/CYBERCRIME:** *The use of violence or the threat of violence in the pursuit of political, religious, ideological or social objectives.*

Tallahassee has experienced terrorism in the form of mass shootings with two having occurred in the last five years. Being home to several universities and the state capital, we have increased exposure to the possibility of terrorism. Cybercrime uses internet tactics to manipulate, coerce, or threaten the entity at hand. Many local governments and businesses, including Tallahassee, have experienced some level of cybercrime from domestic or foreign terrorists. This type of attack is one that we know will happen again to Tallahassee and preparation to address and respond to these attacks is critical to maintaining business operations.

- **CONTAMINATION/HAZARDOUS MATERIALS:** *Contamination is the act of poisoning or polluting something to make it impure. Hazardous materials are objects or agents that can cause harm to living things.*

Tallahassee has experienced few widespread hazardous material contamination outbreaks, yet we must remain diligent due to our regional significance and location along the path of an important freight rail transport. The Tallahassee Fire Department is charged with response in the 13 county area across North Florida (from the Apalachicola River, east to Lake City, and south to the Dixie County coast). In the case of chemical exposures, the Tallahassee Fire Department has implemented the only pre-hospital chemical exposure treatment program in our region.

- **CRIME/VIOLENCE:** *Illegal or wrongful activities that impact individuals and a community.*

Since 2014, Leon County has held one of the highest crime rates in Florida despite a decline in the percentage and types of crime committed in most recent years according to the Florida Department of Law Enforcement's Uniform Crime Report. Violence shocks households and the entire community and can also pose a persistent stress to our quality of life.

- **POVERTY:** *Poverty is measured in the United States by comparing a person's or family's income to a set threshold or minimum amount of income needed to cover basic needs.*

According to the US Census Bureau, approximately 20% of Leon County's population is living in poverty. The United Way of Big Bend further identifies about 41% of our population as being Asset Limited, Income Constrained, Employed (ALICE), or "working poor." These households are typically one emergency away from a total crisis. While poverty is often defined in financial terms at the individual level, persistent and generational poverty can be caused by community conditions, exploitation, political structures, and individual actions that result in a lack of financial, emotional, physical, and social capital to meet needs.

- **FOOD INSECURITY:** *Lack of accessibility to healthy, affordable, and nutritious food.*

In 2017, Leon County's food insecurity rate was 19.7% of the County's population. Leon County has the fourth highest food insecurity rate in the State according to Feeding America: Map the Meal Gap 2019. Food insecurity and poverty go hand in hand where resource constraints limit access, quantity and quality of food options.

- **HOUSING INSECURITY:** *Uncertainty about existing and future housing situation.*

The 2019 County Health Rankings determined Leon County to be sixth in our state with a severe housing problem. The 2018 Point-in-Time count identified over 900 homeless individuals, roughly .3% of the populations and steadily increasing over the recent years. Nearly 43% of households in Leon County paid more than 30% of their income for housing, which is considered cost-burdened.

- **CLIMATE CHANGE:** *New weather patterns that continue for decades or longer caused by changes to the Earth's climate system. Climate change will impact people, wildlife, agriculture, and economies as more areas are exposed to increasingly severe weather events, as well as changes in temperature, rainfall, and other climate factors. Climate change will be experienced all over the world, with weather and climate events impacting different regions uniquely. According to the National Climate Assessment, in the Southeast, climate change will cause sea level rise threats, increased temperature, and decreased water availability.*

It is important for our community to take actions toward reducing human contribution to climate change such as reducing greenhouse gas emissions and making more environmentally sustainable investments. Our community also needs to prepare for the possibility of experiencing some of the weather-related events identified in the National Climate Assessment for the southeastern region.

VULNERABILITY AND RISK ASSESSMENT

A GIS spatial vulnerability and risk assessment was completed for the City's identified assets and threats. Through this City-specific assessment, we now have a living tool to help guide policy, development, outreach, and decision making that will best address our most vulnerable populations and properties. The analysis is summarized below with details included in the **Vulnerability and Risk Assessment Appendix**.

City of Tallahassee Resilience Assessment: Area Considerations

The GIS based spatial risk and vulnerability assessment provides a way to visualize the extent of threat exposure within the physical footprint of the City of Tallahassee. Different scales of data and information are made available through the tool, including citywide statistics, census block group summary maps, and parcel-level land and development data. Using the GIS assessment, key issues and areas were identified based on the vulnerability and risk information for each threat. It is important to note that these areas were identified based on preliminary insights. The analysis does not represent a complete assessment of all vulnerabilities or vulnerable areas and the areas included here are not listed in order of priority.

Flooding

One of the interesting and perhaps challenging aspects of flooding in Tallahassee is the broad extent to which areas of the City are prone to flooding. Most areas of the City have some potential for flooding due to the network of slough marshes and lake systems. While areas throughout the City are prone to flooding, some areas have a greater number of vulnerable assets and additional layers of risk. The factors influencing flooding vulnerability and risk are:

- [Adaptive Capacity] Elevation of buildings in floodplain (based on development requirements and year structures were built)
- [Potential Impact] Types of assets (i.e. historical, multi vs. single residence)
- [Probability] Likelihood of flooding (floodway, 100-yr, 500-yr)
- [Consequence] Cost to replace asset

High or Medium Combined Vulnerability and Risk

Residential Property	Commercial and Industrial Property	Government-Owned Property	Cultural and Human Service Property	Energy and Utilities
3,398	363	71	48	46
4.7% $525.17M	8.5% $258.48M	13.4% $287.56M	7.1% $486.66M	13.8% $207.86M

Natural Areas, Parks, and Greenways	Educational Property	Emergency Facilities	Transportation Facilities	Food Infrastructure
24	14	12	7	39
15.7% $44.18M	11.3% $847.21M	4.3% $33.25M	17.1% $16.63M	9.9% $337.08M

AccelAdapt summary of medium to high vulnerability and risk with the total number, percent, and value at risk for each asset

## Flooding Area 1: Orange Avenue Corridor

This corridor just south of downtown is a key area due to the range and number of vulnerable assets. This is a heavily residential area with Orange Avenue also serving as a commercial corridor with food, human services and governmental assets.

FLOODING AREA 1 SUMMARY	
KEY ISSUES	**BRIEF DESCRIPTION**
Residential (793 parcels)	Includes some multi-family, but most are single-family residences built before 1976 (low adaptive capacity) with relatively high risk probability to flooding. Also includes some areas with high social vulnerability.
Commercial and Industrial (30 parcels)	Most of these are located along or near the intersection of Orange Ave and Monroe St. Most properties have structures built before 1976 and are relatively high-value vulnerable properties, although generally not highest in risk probability (many in 500-yr floodplain). These include a shopping center and several restaurants.
Government-Owned (14 parcels)	Includes post office and some housing (Orange Avenue apartments).
Food Infrastructure (6 parcels)	While not a high total, this number is among the highest for the City census block groups and could reflect a large proportion of the food resources serving the area.
Cultural and Human Services	Several churches/religious properties, and human service facilities (including Capital Area Community Action Agency).
Transportation and Road Access	Area has the highest percentage of roads in the floodway (both major and minor) and among the highest for number of properties with potential loss of road access.
Social Vulnerability	Area has some social vulnerability, especially related to households living below poverty line, food SNAP participation, unemployment, and reliance on public transportation
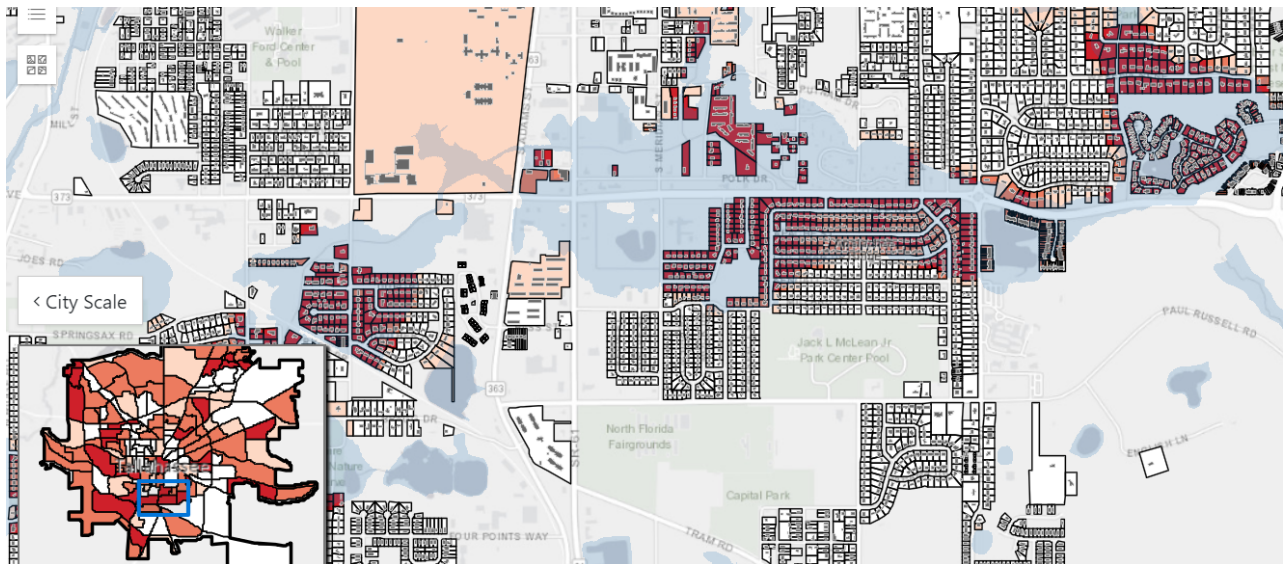
AccelAdapt map of residential properties in the Orange Ave. area with levels of vulnerability and risk to flooding
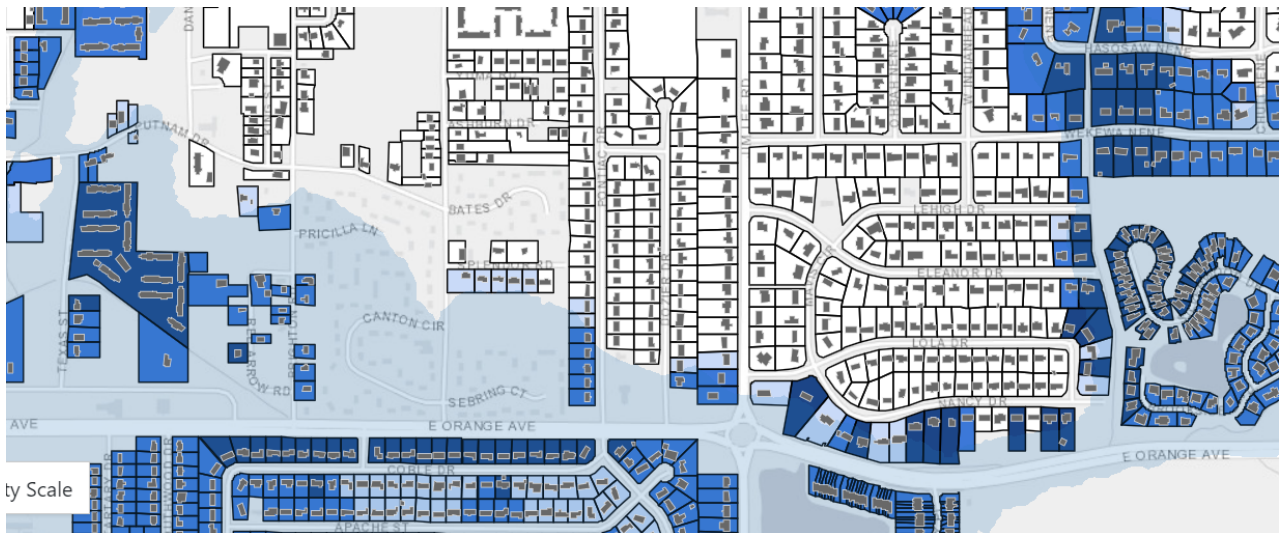
AccelAdapt map of residential properties near Orange Ave. with levels of flood probability (higher prob. in darker blue)

AccelAdapt map of roads along Orange Ave. with potential flood inundation and that have potential for loss of access (in red)

Flooding Area 2: Southwest/Munson Slough

This area includes locations in proximity to Munson Slough that are prone to flooding. The area also has a broad range of vulnerable assets and has among the highest social vulnerability in the City.
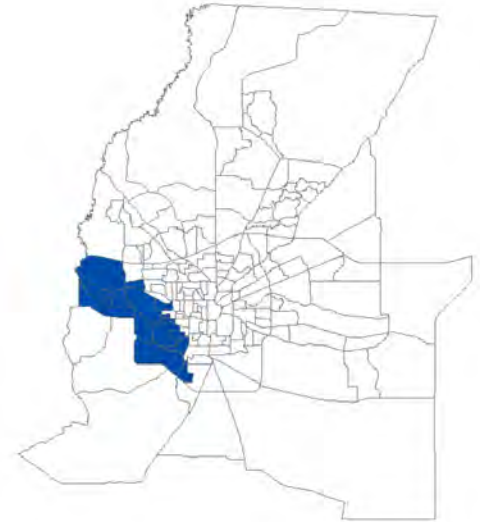
FLOODING AREA 2 SUMMARY	
KEY ISSUES	**BRIEF DESCRIPTION**
Residential (376 parcels- includes many multi-family)	Many apartments, condos, and multi-family residences. Some built before 1976 (low adaptive capacity) but vulnerability is driven by the multi-residential aspect (high potential impact). Some high risk probability to flooding, but most is moderate (100-yr). This area also has highly vulnerable mobile home properties and mobile home parks (see Commercial as well). This area also has more social vulnerability.
Commercial and Industrial (49 parcels)	Includes several mobile home parks (classified as commercial in parcel data), shopping centers, dealerships, and storage facilities.
Food Infrastructure (7 parcels)	While not a high total, this number is among the highest for the City census block groups and could reflect a large proportion of the food resources serving the area.
Government-Owned (18 parcels)	Includes several university and multi-unit government properties.
Educational (7 parcels)	Includes Tallahassee Community College facilities.
Energy and Utilities	Includes several wastewater lift stations and electric facilities.
Transportation and Road Access	Area has a high percentage of roads in the floodway (mostly minor) and also has a high number of properties with potential loss of road access (more for 500-year flood).
Social Vulnerability	Area has among highest levels of social vulnerability, especially related to households living below poverty line (several are high student population areas), minority populations, household income, food SNAP participation, unemployment, and reliance on public transportation
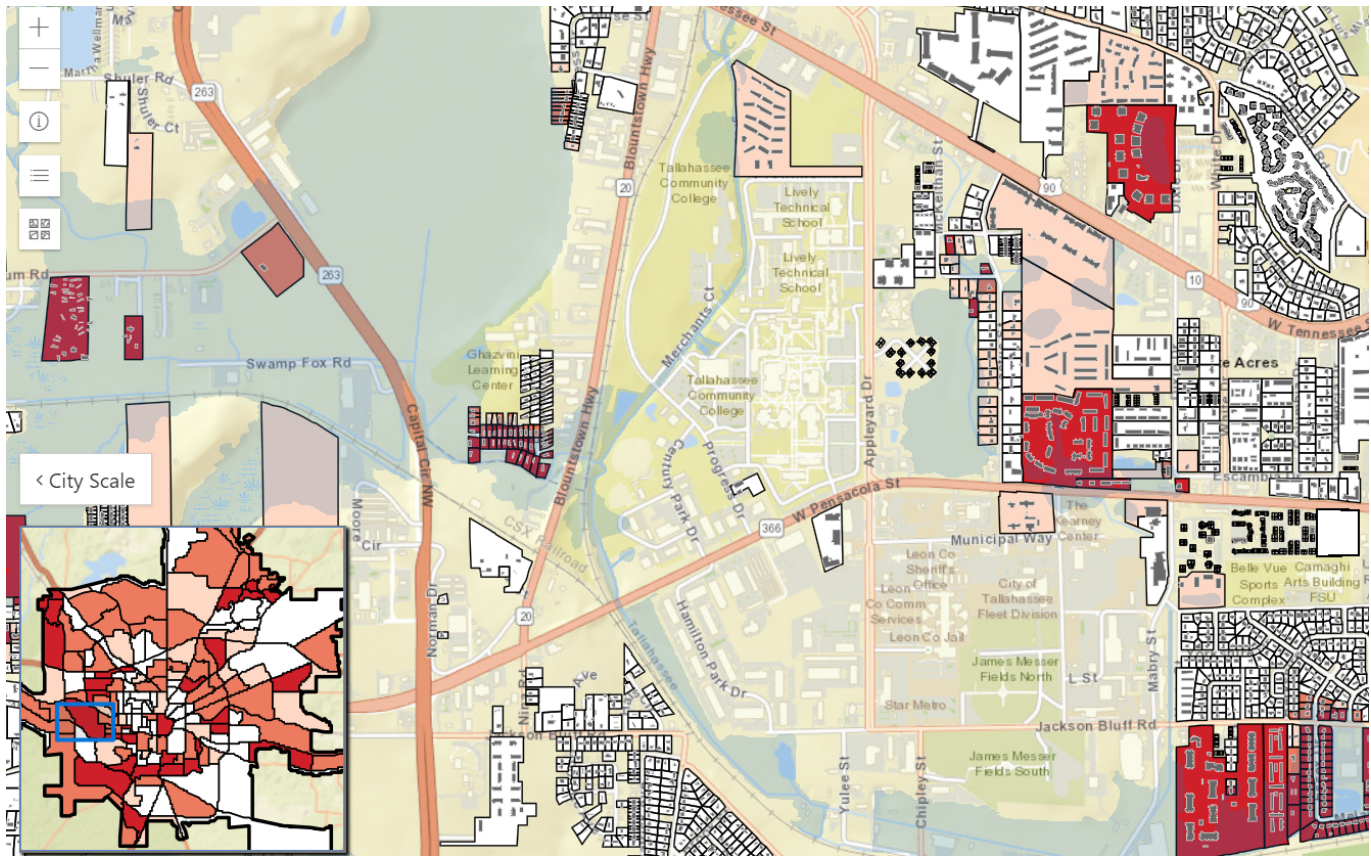
AccelAdapt map showing a portion of the Munson Slough and residential properties with levels of vulnerability and risk to flooding:

Other areas vulnerable to flooding and key issues worth noting:

- San Luis Preserve/Park (Central)
  - » Residential (313)
- Lake Alberta Park/FAMU Way/Cascades Park (Central)
  - » Residential (228)
  - » Commercial and Industrial (94)
- Eastgate/Woodgate/Meadowbrook (East)
  - » Residential (287)
  - » Commercial and Industrial (127)
- The Lakes (Kinsale/Killarney/Kanturk) (Northeast)
  - » Residential (430)
- Northwest between I-10 and N. Monroe St. (Northwest)
  - » Residential (235)

Wildfire

Wildfire is a complex issue, especially for the Tallahassee area. As the Tallahassee-Leon County LMS states, wildfire is a threat to people, homes and development in the Wildland Urban Interface- the areas adjacent to fuels for wildfire. Also recognized by the LMS is the role that prescribed fire plays in the area. With the Tall Timbers Research Station to the North and the Apalachicola National Forest to the south, Leon County has among the most prescribed fire activity anywhere in the Southeast.

Prescribed fire is conducted for multiple benefits, such as ecosystem enhancements and reduction of the risk to wildfire. The City of Tallahassee and Leon County have also made additional investments in response capacity (in both fire station response time and fire hydrants) in areas that are susceptible to wildfire.

The following factors were used to assess vulnerability and risk:

- [Adaptive Capacity] Five-minute response drive-time (from nearest fire station)
- [Adaptive Capacity] Presence of fire hydrants (within 500 ft)
- [Potential Impact] Type of assets (i.e. multi vs. single residence)
- WUI Risk Index (Southern Group of State Foresters)

Wildfire Area 1: Southeast

This is a residential area with a large amount of WUI development and includes the areas of Southwood and the community to the east of Woodville Highway.

WILDFIRE AREA 1 SUMMARY	
KEY ISSUES	**BRIEF DESCRIPTION**
Residential (449 parcels)	Mostly single-family residences. Most properties are within a 500 ft distance to fire hydrants (most are COT hydrants and some are private). Some properties in the Southwood area are outside of a 5-minute drive time from the nearest fire station.

Wildfire Area 2: East

This is a residential area with a large amount of WUI development and includes the areas outside of Capital Circle and between I-10 and Apalachee Parkway

WILDFIRE AREA 2 SUMMARY	
KEY ISSUES	**BRIEF DESCRIPTION**
Residential (1,035 parcels)	Mostly single-family residences. This area has among the highest number of properties that are both outside of a 5-minute drive time and not within a 500 ft distance to fire hydrants.

Wildfire Area 3: North

Another largely residential area with a large amount of WUI development and includes the Killearn Lakes, Lake McBride and Alfred Maclay Park area.
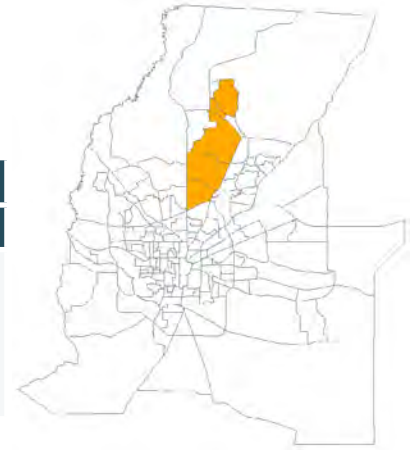
WILDFIRE AREA 3 SUMMARY	
KEY ISSUES	**BRIEF DESCRIPTION**
Residential (674 parcels)	Mostly single-family residences. Most properties are within a 5-minute drive time and 500 ft from fire hydrants with the exception of the Lake McBride area.

Map from AccelAdapt showing residential properties near Woodville Hwy and their WUI Risk levels (higher risk in darker purple)

Extreme Heat

Citywide, Tallahassee has a relatively high amount of tree canopy that provides mitigation of the urban heat island. Areas with high levels of both impervious surfaces and sensitive populations (age, health, income) are the most vulnerable to extreme heat.

Extreme Heat Area 1 and 2: Downtown and Southeast

EXTREME HEAT AREA 1 AND 2 SUMMARY	
KEY ISSUES	**BRIEF DESCRIPTION**
Residents	Vulnerability is largely driven by the high percentage of households living below the poverty line (most with more than 40%). These are also the areas with some of the lowest amount of tree canopy in the City.
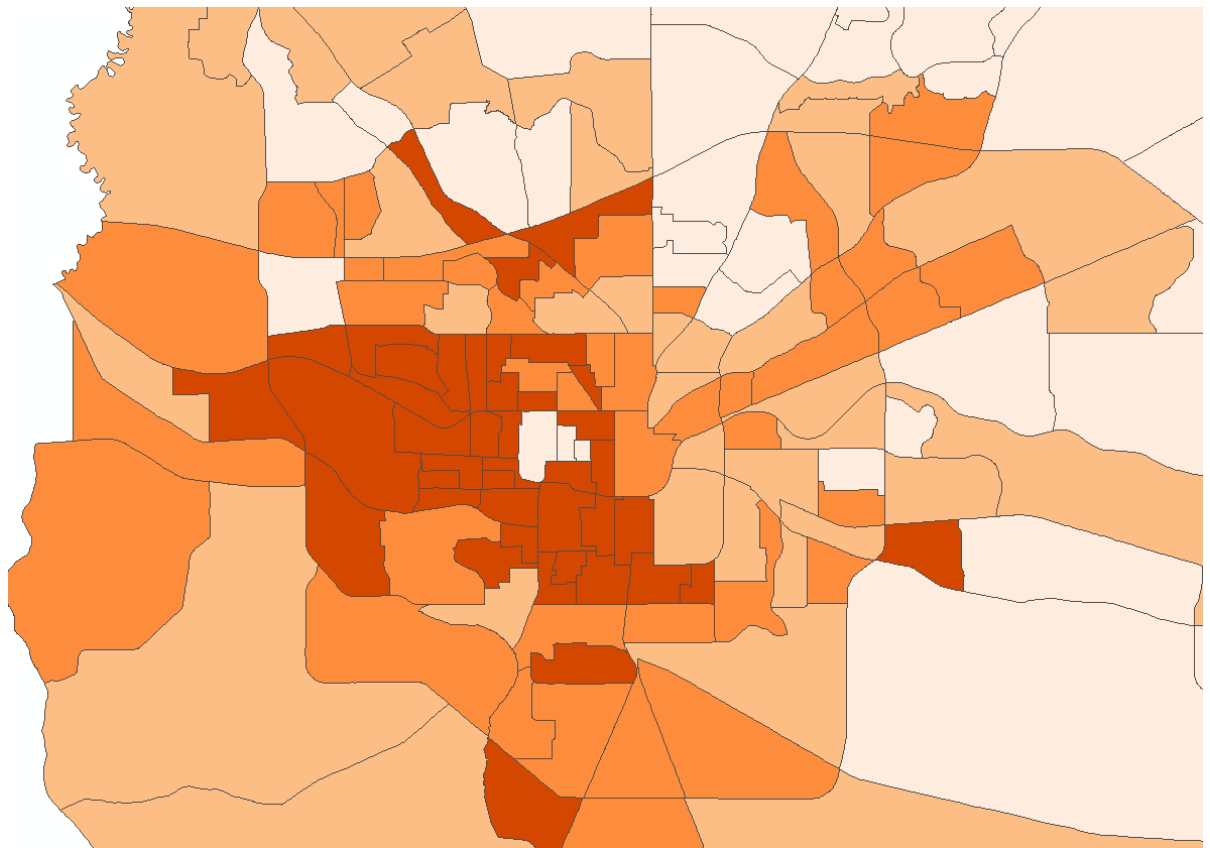
Map from AccelAdapt showing percent of households living below the poverty line (darkest orange have more than 37%)

Storm Surge

Despite being about 20 miles from the coast, the southern end of Tallahassee (mostly in the area around Lake Munson) is vulnerable to storm surge. Several critical utility assets are within the exposed region, including south of the Leon County border (not mapped). Most of the vulnerability is to a Category 5 storm surge event.

Storm Surge Area 1: South/Lake Munson

STORM SURGE AREA 1 SUMMARY	
KEY ISSUES	**BRIEF DESCRIPTION**
Residential (124 parcels)	Mostly single residence properties. Even though some properties are also in flood-prone areas and may have built-in adaptive capacity for flooding, it may not be sufficient for dealing with storm surge inundation.
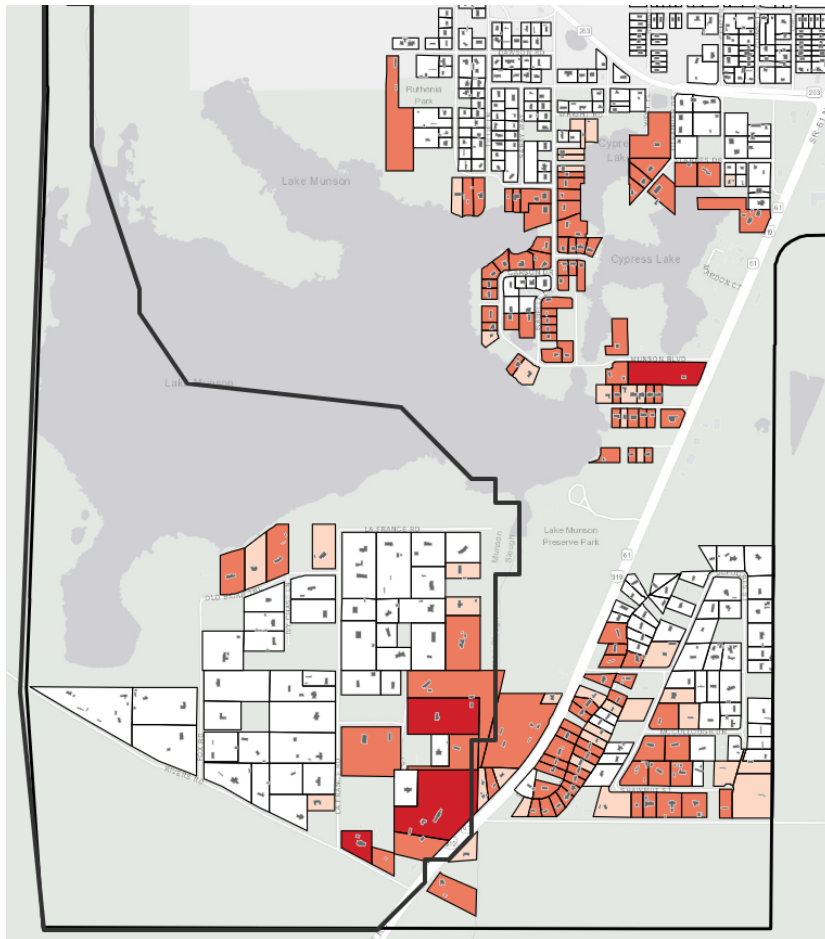
AccelAdapt map of residential properties with levels of vulnerability and risk to storm surge:

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CHAPTER 3

RECOMMENDATIONS

RECOMMENDATIONS

GUIDE TO THE RECOMMENDATIONS

The Community Resilience Plan is a call for our entire community to partner together to make our city stronger for the benefit of all residents, so we can be better equipped to address current and future challenges. Four overarching goals represent the pillars of a resilient Tallahassee, each with six strategies that point toward intentional ways to solve complex problems. Each strategy connects our specific urban challenges with unique opportunities to strengthen our community and offers initial actions that are achievable, measurable, and impact-driven. All the strategies will require collaboration among different stakeholders and some example partners are identified but not limited to those listed. Icons and related spatial maps identify how each strategy can reduce vulnerability to specific threats in our community.

GOAL 1

Public Safety and Preparedness

Empower households and organizations to be safe, secure, and self-sufficient.

GOAL 2

Hazard Mitigation and Climate Adaptation

Protect people and our environment while also adapting to the future.

GOAL 3

Equity and Social Cohesion

Connect people with each other and with opportunities to thrive.

GOAL 4

Planning and Integration

Make resilience ideals part of our everyday business and our long-term strategy.

ICON LEGEND

Flooding		Extreme Heat		Civil Unrest		Poverty	
Wildfire		Extreme Cold		Terrorism/Cybercrime		Food Insecurity	
Storm Surge		Drought		Contamination/ Hazardous Materials		Housing Insecurity	
Wind		Infrastructure Failure		Crime/Violence		Climate Change	

GOAL 1: PUBLIC SAFETY AND PREPAREDNESS

Empower households and organizations to be safe, secure, and self-sufficient.

In an increasingly complex urban environment, major disruptions can arrive in unexpected forms, from a public health crisis to a hurricane to violence in the public space. As a capital city with one of the largest networks of public infrastructure, Tallahassee's residents and organizations must be prepared to not only withstand major disruptions but must also build up the capacity to recover and return to normalcy as quickly as possible. Now more than ever, it is crucial to strengthen the work of first responders while also making public safety everyone's business. When households and businesses are equipped and prepared to withstand disruptions, the City's response and recovery will be significantly improved and the entire community can bounce back faster. The strategies outlined under Goal 1 seek to build up the City's capacity to provide essential services before, during, and after emergency events while also training up individuals and organizations to be better prepared to minimize disruption to the economy. Beyond natural hazards, the Resilience Plan also considers other man-made threats, and because issues like crime can often have deeper, underlining causes, this goal also includes strategies that invest 'upstream' and 'downstream' to reduce public safety vulnerabilities, such as mental health services and environmental design.

GOAL 1 STRATEGIES

1.1: Prioritize human services that address root causes of public health and safety risks.

1.2: Create places and spaces that foster community safety.

1.3: Build capacity for households and neighborhoods to be safe and self-sufficient.

1.4: Strengthen the capacity of the public and private sector to recover quickly from shocks.

1.5: Invest in training, inter-agency coordination, and resources for first responders and disaster volunteers.

1.6: Secure cyber networks from attacks through robust technology investments and user education.

Strategy 1.1: Prioritize human services that address root causes of public health and safety risks.

The underlying cause of many public health and safety risks can be traced back to adverse childhood/community experiences (ACEs). These shocks and stresses are traumatic for everyone involved and send ripple effects that impact schools, the workplace, and eventually the broader community. Mental illness, chronic disease, and violence often stem from ACEs and can create burdensome public safety vulnerabilities and costs that stretch well beyond the initial victims. To better address ACEs and other root causes of public health and safety risks, this strategy includes actions that focus on trauma-informed training for first responders and human resource efforts to address individual, mental health burdens. Other actions expand educational opportunities and leverage partnerships aimed at awareness and mitigation. Proactively reducing public health and safety vulnerabilities can reduce costs associated with addressing 'downstream' issues that weaken the entire community.

Related Spatial Analysis:
- Social Vulnerability Index
- Housing Cost Burdened Owners
- Residential Risk Vulnerabilities

Initial Actions:
- Prioritize community partnerships that mitigate Adverse Childhood/Community Experiences (ACEs).
- Increase trauma-informed training and mental health resources for first responders and public service agencies.
- Match public and private sector funding to address 100% of the unmet human services needs as identified in the 2019 needs assessment.
- Evaluate human resource policies and employee benefits to identify opportunities to alleviate mental health burdens.
- Partner with educational institutions and nonprofits to educate the community about adverse childhood and community experiences and its long-term implication on public health and safety.
- Become nationally recognized as a trauma-informed city by 2024.

Potential Partners:
- United Way of Big Bend
- United Partners for Human Services
- Leon County School District
- Florida State University College of Social Work
- Ounce of Prevention-FL
- Department of Health
- Local health centers
- Local hospitals
- Boys and Girls Club
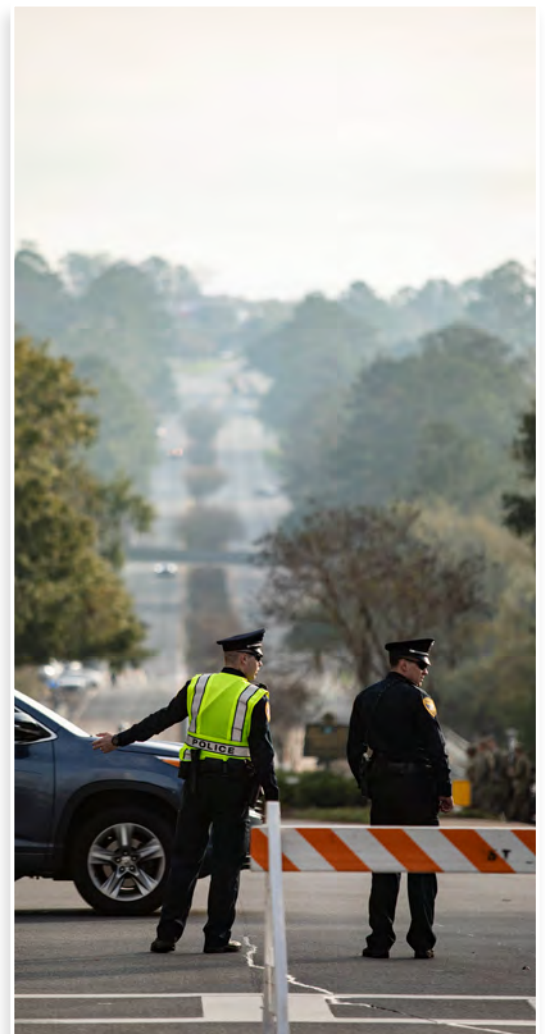
Strategy 1.2: Create places and spaces that foster community safety.

Most residents spend a majority of their time in shared spaces, whether public or private, inside and outdoors. Thus, the built environment, and public spaces in particular, play a significant role in the community's safety and wellbeing. Vulnerable populations who bear the disproportionate burden of climate change impacts, such as extreme heat and flooding, often lack access to the information and resources that they need to prepare for these impacts. Where natural hazards exist and may be unavoidable, it is even more critical to improve access to essential resources and services. By intentionally creating places that support shared resource use and advance community safety, we can strengthen neighborhoods and the City as a whole. Innovative use of City buildings, such as leveraging community centers to also serve as resilience hubs, provide greater operational efficiency, bolster community preparedness and enhance the overall quality of life. The initial actions in this strategy foster a sense of shared responsibility for our public spaces and create places that look, feel, and indeed are safe.

Related Spatial Analysis:

- Social Vulnerability Index
- Flooding Risk
- Wildfire Risk
- Government-Owned Assets

Initial Actions:

- Create 'Resilience Hubs' by augmenting existing City facilities with infrastructure hardening, co-located social services, and emergency preparedness programming.
- Convert vacant lots in blighted areas into temporary community amenities such as pocket parks and other green infrastructure.
- Replace frequently tagged graffiti walls with murals that celebrate the community history and culture.
- Increase staff training for Crime Prevention Through Environmental Design (CPTED) and incentivize its implementation in new design and development.
- Enhance the design and space programming of upcoming new constructions and major renovations such as the police station, senior center, and StarMetro transit centers to capture resilience benefits.

Potential Partners:

- Blueprint
- Office of Economic Vitality
- Community Redevelopment Agency
- Council on Culture and Arts
- Private developers
- Tallahassee-Leon County Planning Department
- Boys and Girls Club

Strategy 1.3: Build capacity for households and neighborhoods to be safe and self-sufficient.

Safety is an important component of quality of life. By creating safe, self-sufficient households and neighborhoods, we will support greater social capital while fostering communities where people want to work and live. Establishing a sense of safety and security can also be a first step in neighborhood revitalization. Successful community engagement within this strategy incorporates awareness campaigns and programming that seek to create a culture of vigilance and preparedness. For example, the City's PREP program provides emergency preparedness education at the household and neighborhood level and is an excellent resource for improving self-sufficiency. The Neighborhood Public Safety Initiative is a City partnership that focuses on building a neighborhood's capacity to better address public safety at a grassroots level. These programs, along with partnerships that educate youth and seniors about risks and vulnerabilities, will help pave the way toward neighborhood, household, and individual empowerment.

Related Spatial Analysis:

- Social Vulnerability Index
- Residential Risk Vulnerabilities
- Wildfire Risk
- Flooding Risk
- Storm Surge Risk

Initial Actions:

- Create a culture of preparedness through awareness campaigns and engaging programming.
- Increase the Neighborhood and Personal PREP (Plan for Readiness and Emergency Preparedness) training to reach more residents.
- Enhance the Neighborhood REACH program by integrating it with more service providers.
- Continue the Neighborhood Public Safety Initiative and facilitate a Neighborhood First planning process for vulnerable neighborhoods.
- Partner with educational institutions to teach young people about risks and vulnerability and to empower them to support community preparedness.

Potential Partners:

- Public Safety Collective
- Neighborhood associations
- Leon County School District
- Universities and colleges

Strategy 1.4: Strengthen the capacity of the public and private sectors to recover quickly from shocks.

In Tallahassee, the local government provides many essential services to the community, from police and fire to electric and water. Therefore, it is incumbent upon the City to be able to quickly recover from shocks to ensure continuity of these critical services. Additionally, when the private sector can also recover quickly from shocks, they can avoid some of the financial disruptions associated with those shocks and help reduce the amount of resources that they might otherwise need from local government. Successful implementation of this strategy includes actions that ensure that every City department completes Continuity of Operations Planning (COOP) and that every City employee is prepared to assist with emergency response and damage assessment. Other actions in this strategy focus on external agencies and private-sector partnerships aimed at emergency preparedness and business continuity training. While disruptions are inevitable, by strengthening the capacity of the public and private sector to recover quickly from shocks, we can protect residents and the local economy from such events.

Related Spatial Analysis:

- Flooding Risk
- Wildfire Risk
- Storm Surge Risk
- Extreme Heat
- Emergency Facilities Assets

Initial Actions:

- Achieve 100% compliance of Continuity of Operations Planning (COOP) for every City department.
- Designate every City employee as Essential for emergency response and provide adequate training and compensation.
- Pre-designate and train staff for quick-response damage assessment and integrate formally into code enforcement and emergency management operations.
- Evaluate fiscal reserve policy to sustain working capital, rate stabilization, fuel risk management and operational emergencies.
- Coordinate with external agencies to integrate emergency staging and mutual aid needs into standard facility operations at the airport and fairgrounds.
- Support facility hardening for nonprofit agencies that provide critical services in disaster events.
- Partner with other agencies to provide emergency preparedness and business continuity training for nonprofits and small businesses.

Potential Partners:

- Greater Tallahassee Chamber of Commerce
- Big Bend Minority Chamber of Commerce
- Capital City Chamber of Commerce
- Office of Economic Vitality
- United Way of Big Bend
- United Partners for Human Services
- Local universities

Strategy 1.5: Invest in training, inter-agency coordination, and resources for first responders and disaster-response volunteers.

Volunteers are an important asset in every community, often filling vital needs that government and the private sector do not meet. This is especially true after a disaster. Investing in training and resources for first responders and disaster volunteers helps ensure that they are prepared for a variety of potential shocks while also placing their wellbeing at the forefront. Through this strategy, connections that are fostered with volunteer groups would continue long after the disaster has passed. Actions in this strategy aim to better integrate 9-1-1 emergency services and 2-1-1 human services, promote the use of paid time off for City employee who volunteer, and expand training for City employees and volunteers that are active in disasters. Through proper training for first responders, public officials, and disaster volunteers, we will be better prepared as a community to respond effectively and efficiently when disaster strikes.

Related Spatial Analysis:
- Flooding Risk
- Wildfire Risk
- Storm Surge Risk
- Extreme Heat

Initial Actions:
- Provide advanced training for firefighters, police officers and 9-1-1 dispatchers to better respond to increasingly complex crisis situations.
- Create a seamless integration between 9-1-1 emergency calls, 2-1-1 crisis hotline, and non-emergency service line.
- Promote the use of the City's Paid Time Off for employee volunteering.
- Expand preparedness training to City employees so they can be secured and available to assist others.
- Partner with Volunteer Leon to recruit and train more volunteers for organizations active in disasters.

Potential Partners:
- Consolidated Dispatch Agency
- Leon County Emergency Management Volunteer Leon
- 2-1-1 Big Bend
- American Red Cross
- Florida Division of Emergency Management
- Federal Emergency Management Agency

Strategy 1.6: Secure cyber networks from attacks through robust technology investments and user education.

Everyday, individuals and organizations face cyber attacks from those seeking to steal critical data, collect a ransom, or simply wanting to cause disruption. To protect citizens and the City from cyber terrorism that can disrupt critical services and cause significant economic damage, this strategy recommends a number of preventative measures. Actions range from implementing specific training that helps mitigate phishing activity to investing in network and security measures that provide the necessary level of system redundancy and protect customer data. By implementing these actions, we will help decrease our vulnerability to cyberterrorism and reduce cyber attackers' abilities to disrupt critical services.

Related Spatial Analysis:

- N/A

Initial Actions:

- Increase training for detecting and mitigating phishing electronic communication.
- Invest in secondary and tertiary networks for system redundancy.
- Implement enhanced security measures to protect customer data.

Potential Partners:

- Private developers
- Local universities
- Local software and network companies

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GOAL 2: HAZARD MITIGATION AND CLIMATE ADAPTATIONS

Protect people and our environment while also adapting to the future.

The City of Tallahassee provides a wide array of services across the Urban Service Area as well as to surrounding areas through mutual aid and service agreements. With one of the largest networks of public utilities and infrastructure in the region, as well as serving as an economic hub for North Florida, Tallahassee has a tremendous opportunity to drive resilience in our region. Tallahassee has many opportunities to reduce the damaging impact of natural and man-made threats by investing in sustainable and resilient design and construction. Global research efforts have now confirmed, and the Federal Emergency Management Agency (FEMA) has formally acknowledged, that every dollar invested in better design and preventative measures will save six times as much money in recovery in the event of a disaster. The strategies outlined for Goal 2 identify ways to prevent or lessen the impacts associated with shocks and stresses and help the City to rebound faster. Goal 2 strategies also seek to address activities that negatively impact the environment and increase the frequency and intensity of climate events.

GOAL 2 STRATEGIES

2.1: Enhance the protective features of the natural ecosystem.

2.2: Mitigate the increasing threat of wildfire along the Wildland Urban Interface.

2.3: Upgrade public assets to minimize service disruptions during acute shocks.

2.4: Strengthen the utility network through strategic undergrounding, smart technology, and distributed systems.

2.5: Future-proof our built environment by elevating risk considerations and sustainable design standards.

2.6: Reduce energy use and achieve net zero local greenhouse gas emissions.

Strategy 2.1: Enhance the protective features of the natural ecosystem.

Natural areas, such as wetlands, play an important role in filtering stormwater, controlling erosion, and protecting us from flooding. Urban forests sequester carbon and protect against the extreme heat while also providing opportunities for recreation. The economic and societal benefits that natural ecosystems provide cannot be overstated. Actions in this strategy address our tree canopy through a focus on tree maintenance, proper plantings, and the gradual elimination of unsuitable non-native species. Other actions look at ways that green infrastructure and incentives can bolster stormwater management and improve conservation. Through proper natural resource management, we can help ensure that these ecosystems continue to maintain their protective properties while we also expand connected, green spaces and parks for all to enjoy.

Related Spatial Analysis:
- Wind
- Storm Surge
- Infrastructure Failure
- Extreme Heat
- Extreme Cold
- Flooding
- Climate Change

Initial Actions:
- Maintain tree canopy coverage levels and gradually eliminate unsuitable non-native species.
- Increase the population of wind resistant tree species and the diversity of suitable native tree species in urban forest.
- Continue tree trimming program along all overhead utility corridors and mitigate trees that cause damage to existing rights-of way.
- Increase linkages between existing green infrastructure wherever feasible.
- Acquire repeatedly flooded parcels as appropriate and convert into green infrastructure.
- Incentivize development projects that exceed conservation and preservation requirements and provide connectivity to other existing greenspaces.
- Codify resilient design by adopting high-performance building criteria for all new construction.
- Incentivize sustainable building design and construction.
- Educate and provide resources for citizens to care for trees and mitigate hazardous tree conditions on private property.

Potential Partners:
- Tallahassee-Leon County Planning Department
- Blueprint
- Florida Department of Environmental Protection
- Northwest Florida Water Management District
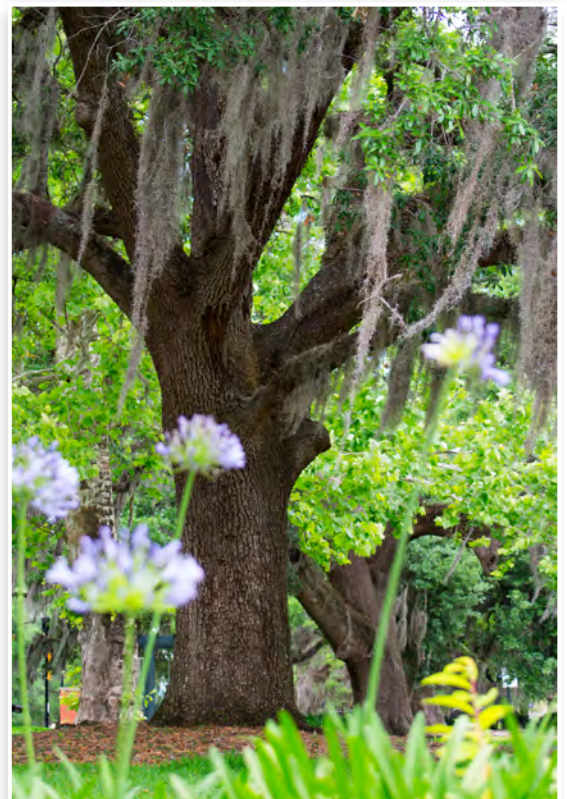
Strategy 2.2: Mitigate the increasing threat of wildfire along the Wildland Urban Interface.

Tallahassee is adjacent to the Apalachicola National Forest, which boasts over 620,000 acres southwest of the City. Additionally, many other parts of the City interface with heavily wooded areas, including a significant segment of the City that is part of the Red Hills region. Our expansive wildland urban interface exposes the City to significant, potential wildfire hazards. Furthermore, recent hurricane events have left massive amounts of debris that would provide additional fuel for a wildfire to rapidly spread to nearby areas. Due to the infrequency of this hazard, many lack awareness and preparedness. Actions in this strategy include the addition of a new fire station, advanced wildfire training for first responders, and community education on how to reduce wildfire risks. As we implement these actions, the community will be better protected from physical harm, economic disruptions, and losses.

Related Spatial Analysis:

- Wildfire Risk

Initial Actions:

- Add a new fire station in the southwest corridor.
- Modernize and harden the rural fire stations to withstand climate hazards.
- Increase advanced wildfire training for first responders.
- Implement debris management processes that reduce the risk of wildfire, particularly in the aftermath of storm events.
- Educate residents about landscape and construction methods to reduce wildfire risks.
- Encourage densification of the urban core and restrict growth in the wildland urban interface.

Potential Partners:

- Leon County Solid Waste Management
- Council of Neighborhood Associations
- Tallahassee-Leon County Planning Department
- Homeowner associations

Strategy 2.3: Upgrade public assets to minimize service disruptions during acute shocks.

The City owns and manages thousands of assets, from maintenance equipment and small neighborhood parks to multi-story buildings and power plants. These assets are integral to providing word class services for the community. This strategy focuses on upgrading these assets, where warranted, so that they are best able to withstand potential shocks that might otherwise lead to significant service disruptions. Actions in this strategy address the need to harden critical assets that are within certain flood zones, install backup power generation at essential City facilities, and a focus on securing our cyber infrastructure. Through these actions, we can improve the level of service provided by our infrastructure, reduce damage to property and public infrastructure, and save the public money by avoiding repeat losses.

Related Spatial Analysis:

- Flooding Risk
- Wildfire Risk
- Storm Surge Risk
- Emergency Facilities Assets

Initial Actions:

- Harden existing critical assets within 100-yr and 500-yr flood zones or relocate wherever feasible.
- Exceed the minimum requirements of the National Flood Insurance Program and secure community savings on flood insurance premiums.
- Attain 100% Level of Service objectives for critical public Rights-of-Way.
- Install backup power generation at essential City facilities (City Hall, Gemini, Renaissance) by 2024.
- Secure the airport physical and cyber infrastructure and operations as a critical regional gateway and hub.
- Assess the impact of renewable energy integration on mutual aid agreements, particularly during storm recovery.

Potential Partners:

- Talquin Electric
- Blueprint
- Local developers
- Cell providers
- Florida Department of Transportation

Strategy 2.4: Strengthen the utility network through strategic undergrounding, smart technology, and distributed systems.

Nearly every aspect of our public safety and quality of life relies on energy and water. How these utility services are generated and distributed impacts the sustainability and resiliency of our community, which is why it is important to invest in smart and robust utility systems. Actions in this strategy include strengthening the electric grid by prioritizing undergrounding for critical corridors, leveraging opportunities to enhance utilities during implementation of capital projects and new developments, and investing in system redundancy at critical facilities. By strategically undergrounding utilities and implementing redundancy measures, we will improve the reliability and recovery of our utilities during major shocks while also creating more aesthetically pleasing infrastructure.

Related Spatial Analysis:

- Government-Owned Assets
- Extreme Heat
- Flooding Risk
- Wildfire Risk
- Storm Surge Risk

Initial Actions:

- Prioritize utility undergrounding at critical community assets such as the airport, healthcare facilities, and schools.
- Continue requirement for all new property developments to underground utilities.
- Leverage additional undergrounding opportunities during implementation of major capital projects.
- Invest in system redundancy at utility nodes, the airport, and critical communications facilities.
- Educate neighborhoods and private developers about financial incentives for undergrounding utilities during new development.

Potential Partners:

- Talquin Electric Cooperative
- Blueprint
- Local developers
- Florida Department of Transportation

Strategy 2.5: Future-proof our built environment by elevating risk considerations and sustainable design standards.

By incorporating sustainable and resilient design standards into new buildings, we can reduce our vulnerability to future climate-related threats. Buildings that incorporate these design features are better protected from natural hazards like wind, fire, and flooding; and yield a better return on our investment dollars. They help reduce the assistance needed after disasters and reduce burdens placed on individuals and households. They also help reduce environmental impacts associated with traditional construction and development while helping to conserve resources and provide safer, healthier, and more productive environments. Beyond future benefits, this strategy also supports stronger social and cultural resilience through initiatives aimed at preserving existing buildings and assisting low-income households with hazard mitigation.

Related Spatial Analysis:
- Social Vulnerability Index
- Residential Risk Vulnerabilities
- Wildfire Risk
- Flooding Risk
- Storm Surge Risk
- Extreme Heat

Initial Actions:
- Protect existing buildings through proactive code enforcement and achieve 90% building code compliance on public health and safety violations.
- Expand and promote home hazard mitigation grant program for low income households.
- Update City asset records with risk and vulnerability information to inform property maintenance plans.
- Prioritize Capital Improvement Projects that mitigate climate threats.
- Enhance the development review processes with updated community risk profile and resilience data.
- Prevent new building developments in high risk areas such as land within 25-year flood zone.
- Codify resilient design by adopting high-performance building criteria for all new construction.
- Design and construct more 'Complete Streets' that encourage walking, cycling, and transit use.
- Incentivize sustainable building design and construction.

Potential Partners:
- Sustainable Tallahassee
- Private developers

Strategy 2.6: Reduce energy use and achieve net zero local greenhouse gas emissions.

Traditional approaches to meeting the increasing demand of energy is costly to our community and negatively impacts the environment through pollution and greenhouse gas emissions. These emissions contribute to climate change, which increases our risks of extreme weather events. As the capital city of Florida, we have the opportunity to lead by example with how our community generates and uses energy. Action items in this strategy continue the path of energy conservation, reductions in energy use at City facilities, incentives for energy efficiency for utility customers, as well as transitioning to clean fuels as soon as feasible. The implementation of these actions will help support global resilience, improve air and water quality, and create new opportunities to strengthen our local economy and our social capital.

Related Spatial Analysis:

- Government-Owned Assets

Initial Actions:

- Continue to reduce energy consumption at city operated facilities and achieve 50% reduction in energy use intensity by 2024.
- Incentivize and promote energy efficiency for private customers through loans, grants and free audits.
- Develop a Clean Energy Plan to transition energy utilities to 100% net renewable sources by 2050.
- Transition 100% of City owned light duty vehicles and bus transit fleet to clean fuels by 2035.
- Invest in public infrastructure that supports community adoption of clean fuels and incentivizes lower energy use.

Potential Partners:

- Talquin Electric Cooperative
- Electric car charging station locations
- Developers

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GOAL 3: EQUITY AND SOCIAL COHESION

Connect people with each other and with opportunities to thrive.

Tallahassee is a city of neighborhoods, each with unique histories and distinct flavors. At their best, they create a beautiful tapestry of unique experiences in every part of the City. Residents span all ages, with seniors and the elderly making up on of the fastest growing demographics. Despite our increasing diversity, parts of Tallahassee remain divided along racial and socioeconomic lines. Recent data show that Tallahassee has the fastest growing economy per capita in the state. Still, there are gaps in equal access to opportunities and economic hardship is experienced disproportionately. Our public bus transit continues to improve with a focus on safety, clean fuels and system efficiency, we must continue to expand mobility options, so more residents can equitably access economic, educational, and recreational opportunities. Furthermore, because many of our most vulnerable neighbors, such as the elderly and the poor, live in locations that have a higher exposure to climate hazards, the risks create a heightened burden on households and City operations during times of shocks and stresses. These strategies help build up the capacity of individuals and their households to be secure and adaptable to change. Policies that address pre-existing vulnerabilities and reduce economic inequalities will also equip households to handle future shocks and stresses. At the same time, programming that brings people together will build greater social cohesion. When neighbors work together and share more experiences together, they can later support each other better during times of crisis.

GOAL 3 STRATEGIES

3.1: Provide safe shelter for all and increase pathways to secure affordable housing.

3.2: Support financial security and connect vulnerable individuals to safety net services.

3.3: Invest in neighborhood-level programs that deepen relationships and improve social equity.

3.4: Grow the local food ecosystem and advance food security through diversified and equitable access to healthful food.

3.5: Expand safe, affordable, and environmentally friendly alternatives for people to travel between where they live, learn, and work.

3.6: Reduce the digital divide among residents by expanding public Wi-Fi and equal access to critical information.

Strategy 3.1: Provide safe shelter for all and increase pathways to secure affordable housing.

When people have safe and stable housing, they are better protected from climate hazards, they are less likely to enter into poverty when they experience a crisis, and in the long term, their physical and mental health improves. This strategy places an emphasis on stronger support of neighborhoods before, during, and after they experience shocks and stresses. Initiatives in this strategy seek to reduce the disaster risks, climate vulnerabilities, and public health and safety issues associated with housing insecurity while also reducing public spending on the extensive service needs of the chronically homeless.

Related Spatial Analysis:
- Social Vulnerability Index
- Housing Cost Burdened Owners
- Residential Risk Vulnerabilities

Initial Actions:
- Evaluate land use and zoning codes to mitigate development patterns that concentrate poverty.
- Strengthen the Inclusionary Housing Ordinance to be applicable for more types and sizes of developments.
- Preserve existing housing stock and pursue rehabilitation that mitigates hazards.
- Evaluate a locally appropriate rent control program that protects vulnerable renters along major development corridors.
- Scale up emergency shelter and permanent supportive housing to achieve a 'functional zero' homelessness by 2024.
- Increase low-barrier housing options for high risk individuals.
- Support the integration of Accessory Dwelling Units as an affordable option within established neighborhoods.
- Plan for the long-term housing needs of regional migrants impacted by climate hazards.

Potential Partners:
- Housing Leadership Council
- Connecting Everyone with Second Chances (CESC) - Kearney Center
- Big Bend Homeless Coalition
- Tallahassee Lenders' Consortium

Strategy 3.2: Support financial security and connect vulnerable individuals to safety net services.

The creation of a more resilient Tallahassee must include actions at the individual and household level. When individuals are more financially secure, they are not only better able to withstand economic disruptions, they are better positioned to bounce back from disasters. This strategy aims to improve individual and household financial security through efforts that expand payment options before and after extreme weather events, and also looks at ways to partner with organizations to increase household emergency savings accounts. These efforts will improve household financial security and resilience, and they will allow human service organizations to focus resources on those who are most vulnerable.

Related Spatial Analysis:

- Social Vulnerability Index
- Housing Cost Burdened Owners
- Residential Risk Vulnerabilities
- Wildfire Risk
- Flooding Risk
- Storm Surge Risk

Initial Actions:

- Provide budget billing and deferred payment plans for families impacted by extreme weather events.
- Expand employer catastrophic leave benefits to accommodate disaster recovery.
- Promote hazard mitigation and emergency repair grants and loans for low-income property owner.
- Explore an alternative household savings program through utility billing structure.
- Partner with banks to increase household emergency savings accounts.
- Advocate and support policies to pay a living wage for full time employees.

Potential Partners:

- Talquin Electric Cooperative
- Local businesses
- Non-profit organizations

Strategy 3.3: Invest in neighborhood-level programs that deepen relationships and improve social equity.

Shocks and stressors are often felt deepest at the neighborhood level. Empowering neighborhoods to be self-sufficient can help foster social cohesion and build a support system that is woven throughout our community. Actions in this strategy include expanding the City's capacity to deliver neighborhood-focused services, funding arts and culture programming in revitalizing neighborhoods, and continuing to host public meetings in neighborhoods. Fostering empowered neighborhoods creates a more self-sufficient community that is also more resilient and better able to address its own vulnerabilities.

Related Spatial Analysis:

- Social Vulnerability Index

Initial Actions:

- Increase the City's capacity to deliver neighborhood-focused services and to expand the reach of recreational programming.
- Hold public meetings outside of City Hall and rotate locations among different parts of the City, as feasible.
- Scale up programs like TEMPO that fill educational and opportunity gaps in vulnerable neighborhoods.
- Sustain funding for arts and culture programming in special districts and encourage implementation in revitalizing neighborhoods.
- Partner with agencies to host civic dinners that creatively engage diverse stakeholders and elevates civil discourse about chronic stresses.

Potential Partners:

- Tallahassee-Leon County Planning Department
- Community Redevelopment Agency
- Council of Neighborhood Associations
- Housing Leadership Council
- The Village Square
- Homeowners associations

Strategy 3.4: Grow the local food ecosystem and advance food security through diversified and equitable access to healthful food.

A community cannot be truly resilient if its residents do not have access to fresh, healthy foods simply because of where they live. There are several areas in our community where access to fresh, healthy foods is a significant challenge for residents. This strategy seeks to limit these challenges by identifying the gaps that lead to food accessibility issues and filling them filling them with local solutions like urban farms, food markets, community gardens, and empowering people to grow their own food. These activities will not only help provide access to healthier foods, they can help reduce isolation and encourage healthier activities and lifestyles.

Related Spatial Analysis:
- Social Vulnerability Index
- Food Infrastructure

Initial Actions:
- Assess local food assets and identify gaps.
- Map and promote urban farms, food markets, and food banks in vulnerable locations.
- Update ordinances and zoning codes to empower households to grow their own food.
- Expand the Community Garden program and include urban farm enterprises to scale up local food production.
- Pilot a composting program to divert food waste and enhance productivity of urban plots.
- Partner with grocers to establish grocery stores in underserved areas.

Potential Partners:
- Office of Economic Vitality
- Second Harvest of the Big Bend
- Tallahassee-Leon County Planning Department
- Council of Neighborhood Associations

Expand safe,

Strategy 3.5: Expand safe, affordable, and environmentally friendly alternatives for people to travel between where they live, learn, and work.

In a resilient community, residents have multiple options to meet their daily travel needs. Alternatives to the traditional automobile, such as public transit, walking, and biking can be healthier, more affordable and sustainable options for people to connect to work, school, and beyond. Actions in this strategy include efforts to update bus routes, build up sidewalk infrastructure, and support alternative fuel vehicles. These and other transportation-related efforts will help expand mobility options, reduce mobility gaps, and provide better connections to essential services, all of which help reduce vulnerabilities during times of shock.

Related Spatial Analysis:
- Transportation Facilities
- Road Inundation
- Social Vulnerability Index

Initial Actions:
- Implement safe and accessible shared micro-mobility options.
- Update bus routes to better serve transit-dependent residents and expand to low access areas.
- Build up sidewalk infrastructure and complete streets to make walking and biking safer.
- Transition the City's fixed bus routes and light duty fleet to clean fuels.
- Add supporting infrastructure for vehicles that use alternative fuel.

Potential Partners:
- Tallahassee-Leon County Planning Department
- Blueprint
- Capital Region Transportation Planning Agency
- Leon County Public Works
- Florida Department of Transportation

Strategy 3.6: Reduce the digital divide among residents by expanding public Wi-Fi and equal access to critical information.

Quick access to information, such as public safety alerts and updates, can be critical for residents during significant storm events and other shocks. This is especially true for vulnerable populations who may also lack the technology to stay connected. This strategy includes efforts that will expand the City's digital canopy and Wi-Fi hotspots, and further promote DigiTally. As the digital divide closes, more people in our community will have access to important information and opportunities, such as health and employment resources, which will help reduce social and economic vulnerabilities and move us toward greater resiliency.

Related Spatial Analysis:

- Social Vulnerability Index

Initial Actions:

- Increase Wi-Fi Hotspots at City Facilities and on StarMetro buses.
- Promote and increase subscription to Digitally.
- Implement a streamlined, one-stop customer service information line for all City services.
- Expand the Digital Canopy though public and private partnerships.

Potential Partners:

- Tallahassee-Leon County Planning Department
- Local businesses
- Greater Tallahassee Chamber of Commerce
- Big Bend Minority Chamber of Commerce
- Capital City Chamber of Commerce

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GOAL 4: PLANNING AND INTEGRATION

Make resilience ideals part of our everyday business and our long-term strategy.

The City has several plans that guide our efforts in how we operate, how we provide services, and how we want future growth and development to look. Additional policies and programs further these efforts. Mainstreaming resilience ideals into our everyday business will help ensure that these plans, policies, and programs also prepare us to be a more resilient community. Strategies in Goal 4 focus on innovation, partnerships, and the need for a diversified regional economy. They also include opportunities to leverage resources in areas of higher vulnerability and risk, which will help build adaptive capacity and strengthen neighborhoods. These strategies will ensure that our efforts are cohesive and mutually beneficial so that Tallahassee is well positioned for a rapidly changing future.

GOAL 4 STRATEGIES

4.1: Track and share dynamic risk, climate, and social vulnerability data to support multi-sector resilience decision making.

4.2: Mainstream vulnerability assessments and resilience adaptation into the City's guiding strategies, plans, and policies.

4.3: Identify priority zones and leverage existing funding sources to achieve resilience dividends in planned and future projects.

4.4: Drive innovation and creative use of City data through research and entrepreneurial partnerships.

4.5: Diversify regional economy and develop targeted programs to attract and retain talent for future-proof jobs.

4.6: Partner with agencies across the Big Bend and North Florida to build capacity and self-sufficiency in neighboring counties.

Strategy 4.1: Track and share dynamic risk, climate, and social vulnerability data to support multi-sector resilience decision making.

Through the resilience planning effort, new data about our community assets, risk exposure climate conditions, and social vulnerability has been gathered. By tracking and sharing this data, we can better plan for a more resilient future. This strategy includes efforts that will continue to build upon the data gathering that has started and will develop a robust risk profile detailed at every parcel in the Tallahassee Urban Service Area. Initial actions in this strategy will also ensure that the data is readily available to decision makers and shared in a meaningful and insightful way to guide targeted community investment.

Related Spatial Analysis:
- Social Vulnerability Index
- Wildfire Risk
- Flooding Risk
- Storm Surge Risk
- Extreme Heat

Initial Actions:
- Complete a comprehensive, parcel-level threat exposure and vulnerability assessment for community assets.
- Build and launch a GIS-based resilience dashboard that is linked to and updated by multi-sector datasets.
- Incorporate resilience outcomes in performance metrics.

Potential Partners:
- Tallahassee-Leon County GIS
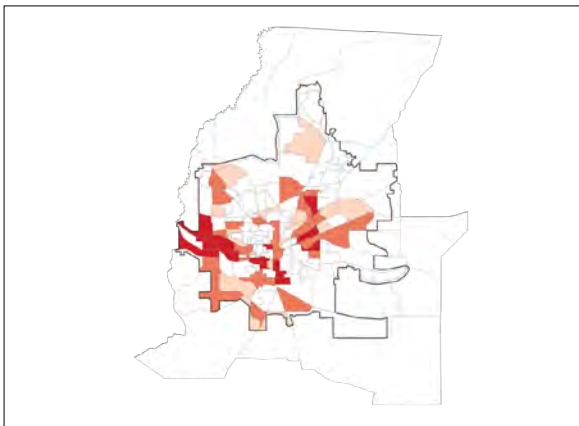
Strategy 4.2: Mainstream vulnerability assessments and resilience adaptation into the City's guiding strategies, plans, and policies.

The City has over 40 long- and short-range plans, and an even greater number of formalized policies and procedures. As our community moves toward greater resiliency, it is imperative that we continue to elevate risk considerations in a cohesive way across our strategic planning efforts and policy decisions. This strategy includes actions to incorporate hazard mitigation and full life cycle costing into budget planning activities, deepen our sustainability actions, and update the Local Mitigation Strategy and the Post Disaster Redevelopment Plan with climate science research and adaptation strategies. These and other efforts identified in the plan will help synchronize program development with community priorities while ensuring that our strategic plans are cohesive.

Related Spatial Analysis:
- Social Vulnerability Index
- Wildfire Risk
- Flooding Risk
- Storm Surge Risk
- Extreme Heat

Initial Actions:
- Incorporate hazard mitigation and full life cycle costing in budget planning and account for climate change indicators in performance metrics.
- Add a resilience element to the Comprehensive Plan and integrate it within related elements.
- Update the GreenPrint Sustainability strategy with robust greenhouse gas emission reduction actions and initiatives.
- Update the Local Mitigation Strategy, Post Disaster Redevelopment Plan, and Comprehensive Emergency Management Plans with climate change vulnerability assessment and adaption strategies.
- Incorporate resilience recommendations in the Community Redevelopment Agency's strategic plan update.
- Integrate hazard mitigation and resilience strategies into Airport master plan.

Potential Partners:
- Tallahassee-Leon County Planning Department
- Tallahassee-Leon County GIS
- Community Redevelopment Agency
- Blueprint

Strategy 4.3: Identify priority zones and leverage existing funding sources to achieve resilience dividends in planned and future projects.

Through our community risk assessment, we have identified the community's critical facilities that are most vulnerable to future shocks. By categorizing the areas surrounding these facilities as priority zones and guiding traditional and nontraditional funding sources toward resilience projects that are focused in these zones, we can help ensure that these resources are best protected. Among several other actions, this strategy includes the integration of resilience data into economic vitality tracking, the use of Community Development Block Grant funding to support community center hardening, and capitalizing on unique opportunities through Blueprint and Community Redevelopment Agency projects. Through strategic leveraging we can ensure that planned and future projects maximize resilience dividends.

Related Spatial Analysis:
- Social Vulnerability Index
- Wildfire Risk
- Flooding Risk
- Storm Surge Risk
- Extreme Heat

Initial Actions:
- Integrate resilience data into Office of Economic Vitality dashboards to encourage business investments in priority areas and track progress.
- Pursue FEMA Hazard Mitigation Grant Program to advance resilience capital projects.
- Utilize Community Development Block Grant funding to support community center hardening in high risk areas.
- Design and build Blueprint projects to maximize resilience outcomes.
- Prioritize Community Redevelopment Agency projects that reduce vulnerability to hazards and increase resilience.
- Explore 'Resilience Bonds' and 'Green bonds' for non-traditional services and capital projects.

Potential Partners:
- Blueprint
- Office of Economic Vitality
- Community Redevelopment Agency
- Business partners
- Non-profit partners
- Universities and colleges
- Homeowner associations

Strategy 4.4: Drive innovation and creative use of City data through research and entrepreneurial partnerships.

Tallahassee is home to two major universities and several colleges. With a focus on resilience research, we can further expand the strong relationship that the City has with these schools and improve upon the town and gown relationships that helps many university towns thrive. This strategy focuses on creative ways that the City can partner with universities and colleges, including working together on new research and exploring the creation of a multidisciplinary resilience institute. While these efforts can help increase the competitiveness of universities and colleges, they also help the broader community reach its resilience goals.

Related Spatial Analysis:
- Social Vulnerability Index
- Wildfire Risk
- Flooding Risk
- Storm Surge Risk
- Extreme Heat

Initial Actions:
- Establish a streamlined process to connect academic institutions to City resources that supports research and learning collaborations.
- Increase grant submissions with City and university investigators as partners.
- Partner with universities and colleges to explore the creation of a multidisciplinary resilience research institute.
- Utilize crowdsourcing, competitive challenges, and hackathons to develop more solutions to resilience challenges.

Potential Partners:
- Universities and colleges
- Domi Station

Strategy 4.5: Diversify regional economy and develop targeted programs to attract and retain talent for future-proof jobs.

As our local and regional economy becomes more diversified, the City of Tallahassee and the broader community will be in a better position to withstand economic downturns and crises. With higher education being a significant part of our local economy, retaining recent graduates while attracting new talent to the area will further bolster our economic outlook. Initiatives in this strategy seek to advance the Office of Economic Vitality's Strategic Plan while also investing in opportunities to increase importing and exporting at the Tallahassee International Airport. Having a diversified economy can help put Tallahassee in the position to retain the best talent, while keeping that talent in the area can help lead to a more diversified and resilient economy.

Related Spatial Analysis:
- Social Vulnerability Index

Initial Actions:
- Invest in areas that can assist with economic diversification as outlined by the Office of Economic Vitality's Strategic Plan.
- Invest in the International Passenger Processing Facility and Foreign Trade Zone to increase International imports and exports.
- Commit to employ locally for permanent and seasonal jobs through procurement and contracting mandates.

Potential Partners:
- Surrounding counties and cities
- Universities and colleges
- Office of Economic Vitality

Strategy 4.6: Partner with agencies across the Big Bend and North Florida to build capacity and self-sufficiency in neighboring counties.

The Tallahassee Metropolitan Statistical Area is comprised of Leon, Gadsden, Jefferson, and Wakulla counties. A stronger, more resilient metropolitan area means a stronger, more resilient Tallahassee. As the region is strengthened, our community will be better positioned to withstand shocks and stresses, especially those that impact the four-county metro. This strategy includes efforts to expand training of volunteers who specifically assist with disasters in the Big Bend area and foster greater volunteerism for agencies that provide regional services. With a greater capacity to be self-sufficient during times of crises, each surrounding county will be better able to withstand shocks and stresses; and the burdens that they might otherwise pass on to their neighbors in the region will be reduced.

Related Spatial Analysis:

- Social Vulnerability Index

Initial Actions:

- Promote participation of nonprofits in the Big Bend Community Organizations Active in Disaster (COAD) and expand training opportunities for members.
- Engage more volunteers in agencies that provide regional services.
- Invest in airport infrastructure and security to improve regional accessibility.
- Support expansion of local businesses to outside of the Capital region.

Potential Partners:

- Neighboring communities and counties
- Business partners
- Greater Tallahassee Chamber of Commerce
- Big Bend Minority Chamber of Commerce
- Capital City Chamber of Commerce
- Health providers (private and public)

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CHAPTER 4

LOOKING AHEAD

LOOKING AHEAD

IMPLEMENTATION

The Community Resilience Plan is a call for our entire community to partner together to make our city stronger for all. We are stronger when we prepare together and when we respond together in a cohesive manner. Extensive stakeholder engagement and achievable action items have positioned the Community Resilience Plan for success. While the City takes the lead in shepherding the plan, successful implementation will require leadership and collaboration from multiple agencies.

▶ Resilience Office

To develop this first ever Community Resilience Plan, the City hired a Chief Resilience Officer and established the Resilience Office. With the plan completed, the Resilience Office will continue to engage various City departments and external stakeholders to build our community's capacity to thrive as we face increasing climate events that are also complicated by chronic social and economic stresses. Dedicated personnel and adequate resources will be essential to ensuring that the City is able to leverage strategic opportunities and make meaningful progress on the Resilience Plan.

▶ Resilience Working Group

The members of the Resilience Working Group are envisioned to be the champions in their respective departments. Though the group was created for the planning process, they should continue to be utilized during the implementation phase. The working group should examine the work being done by their colleagues, make recommendations according to the strategic priorities in the Resilience Plan, and support their teams to take appropriate action. The City may expand this internal group by including key representatives from local universities, non-profit organizations, and the business community. This group should meet quarterly or twice a year with the following proposed outline of action items:

Initial Actions
» Develop a tracking mechanism to document plan performance and progress.
» Identify quick wins that can be implemented immediately and assign a champion for it.
» Outline the steps required to begin implementing the "game-changer" strategies which are identified as high-impact opportunities.
» Start formalizing partnership agreements with community stakeholders for specific strategies.

Intermediate Actions
» Provide input into budgeting exercises to align resources with resilience opportunities.
» Submit grants and other external funding sources to support implementation.
» Implement actions as resources become available.

End of First Year Actions
» Prepare a progress update to the City Commission.
» Prioritize actions for following year implementation.

Public Engagement

It is important to continue public engagement during the implementation phase. Proactive and diverse communication platforms will inform, educate, and empower partners to take ownership of the Resilience Plan and to act in their respective spheres. A "Resilient Tallahassee" narrative should be curated across all media platforms to promote a cohesive message and to celebrate wins across our community. As projects are implemented, it will be important to highlight how we are advancing community priorities and fulfilling expectations that the public has entrusted to the City. Transparency and constant contact will build trust and foster more collaboration. And as we face inevitable moments of crisis, capturing our recovery stories and documenting resilience in action will help our community to see the return on their investment.

Community Resilience Summit

The resilience summit conducted during the planning process was successful in bringing together various stakeholders and decision makers to chart a path forward. During the implementation phase, a biennial summit can continue to bring together staff and local partners. The summit should focus on providing educational information and training opportunities to continue to build capacity to lead in resilience. Speakers from within the City government, as well as regional and national experts would highlight promising initiatives and share best practices. It would be particularly useful to include neighboring counties to build regional resilience. The summit is an opportunity to foster new ideas for our community, educate the public to build up their own capacities, and celebrate our successes.

FUTURE UPDATES

The Community Resilience Plan is a living document and is designed to adapt to the changing needs of our community while keeping an eye on the long-term horizon. Utilizing state of the art technology and software, the City should update the results of the vulnerability and risk analysis as new data becomes available and as projects are implemented. As progress is reported, the City may identify a need to revise strategies or focus attention on new threats and hazards. It is recommended that a comprehensive review and update be completed 5 years after the initial adoption, and every five years afterwards. Though many of the strategies and action items will be evaluated, altered, and implemented consistently over time, the City should go through the process of formalizing new strategies and actions, supported by a concerted public and stakeholder engagement, and adopted by the City Commission.

CHAPTER 5
APPENDICES

ACKNOWLEDGMENTS

Tallahassee's Community Resilience Plan is a culmination of over 18 months of extensive planning, discussions, assessments, reviews and feedback. It would not be possible without the insight and lived experiences of countless individuals in our community and beyond. The following individuals and groups contributed immensely to capture the community challenges and opportunities.

City of Tallahassee

City Commission:
Mayor John Dailey, Commissioner Elaine Bryant, Commissioner Jeremy Matlow, Commissioner Curtis Richardson, Commissioner Diane Williams-Cox

City Leadership Team:
City Manager Reese Goad, Deputy City Manager Cynthia Barber, City Attorney Cassandra Jackson, Treasurer-Clerk Jim Cooke, Assistant City Manager Raoul Lavin, Assistant City Manager Wayne Tedder, Jane Auger (Golf Courses), Angela Baldwin (StarMetro), James Barnes (Chief Customer Operations), Ellen Blair (Human Resources), Cherie Bryant (Planning), Autumn Calder (Blueprint), Michael DeLeo (Police), Judy Donahoe (Real Estate), Christian Doolin (Strategic Innovation), Jonathan Kilpatrick (Technology and Innovation), Ashley Edwards (Parks-Recreation-Neighborhood Affairs), Alison Faris (Communications), Jerome Gaines (Fire), Steve Harrelson (Consolidated Dispatch Agency), Karen Jumonville (Growth Management), Raynetta Marshall (Underground Utilities and Public Infrastructure), Rob McGarrah (Electric and Gas), Reginald Ofuani (Community Beautification and Waste Management), Cristina Paredes (Economic Vitality), Michael Parker (Community Housing and Human Services), Ben Pingree (PLACE), David Pollard (Aviation), Jennifer Porter (Underground Utilities and Public Infrastructure), John Powell (Environmental Services and Facilities), Jeff Shepard (Fleet), Greg Slay (Capital Region Transportation Planning Agency), Kimball Thomas (Community Services), Patrick Twyman (Financial Services), Robert Wigen (Resource Management)

Resilience Office:
Abena Ojetayo (Chief Resilience Officer), Adam Jacobs (Sustainability and Resilience Manager), Daphne Green (Resilience Fellow), Nicole Johnson (Resilience Fellow)

Resilience Working Group:
Michael Alfano, John Baker, Edwin Cake, Tyrone Crawford, Megan Doherty, Christian Doolin, Richard Fetchick, Allie Fleming, David Henry, Jennifer Hill, Stephen Hodges, Richard Jones, Lizzy Kelley, Alissa Meyers, Dana Morgan, Michael Ohlsen, John Powell, Robert Seaton, Eugene Sherman, Sara Thomas, Kimball Thomas, Scott Weisman, Alisha Wetherell, Artie White, Charles Ziegmont
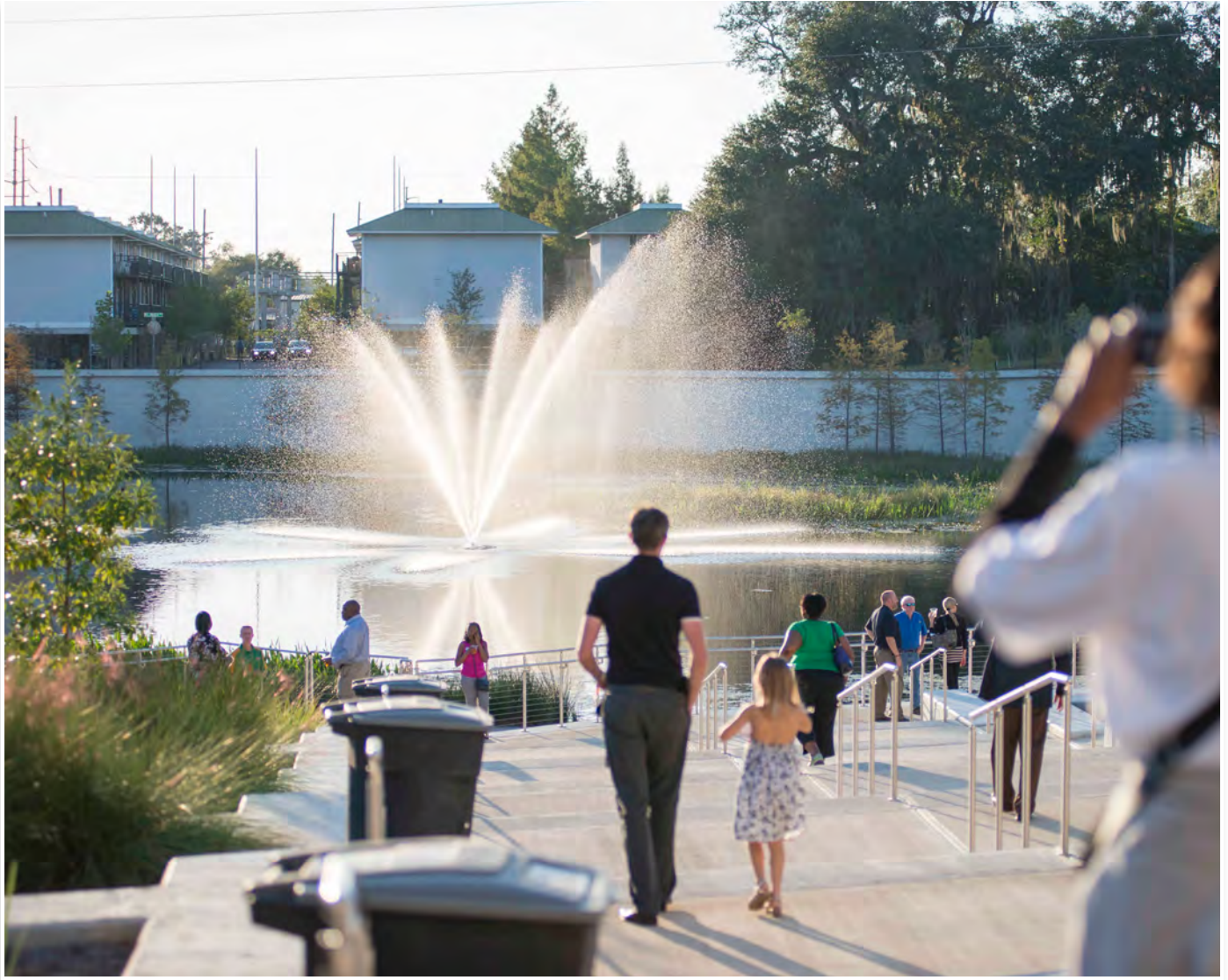
Community Partners

Community Organizations and Nonprofits: Apalachee Regional Planning Council, Big Bend Community Organizations Active in Disasters, Big Bend Homeless Coalition, Capital Area Neighborhood Network, CESC Inc., Institute for Nonprofit Innovation and Excellence, Local Mitigation Strategy Steering Committee, Public Safety Collective, ReThink Energy, Sustainable Tallahassee, United Partners for Human Services

Leon County Government: Community Relations, Emergency Management, Human Services and Community Partnerships, Resource Stewardship, VolunteerLeon

Universities: Florida AandM University Sustainability Institute and Facilities Services, Florida State University College of Social Work, Department of Urban and Regional Planning, and Askew School of Public Administration and Policy

Planning Consultants

Kimley-Horn: Kate Widness, Cameron Snipes, and Ryan Wetherell

NEMAC+FernLeaf: Jim Fox, Jeff Hicks, and Matt Hutchins

Fitzgerald Collective: Donald Gray, Kelvin Hall

STAKEHOLDER SUMMARY TABLE

STAKEHOLDER/GROUP	DATE	EST. # ATTENDEES	ACTIVITY			
			Presentation/ Workshop	Interview/ Listening Session	Event	Polling
TOTAL ENGAGED TO DATE		**3,302**	**18**	**35**	**14**	**5**
Treasurer-Clerk	10/26/2017	5		●		
FL DEM-Mitigation	11/7/2017	1		●		
Leon County Communications and Resilience/EM	11/8/2017	2		●		
Plannng and Economic Development Leadership	11/29/2017	6		●		
Volunteer Leon	12/7/2017	1	●			
Electric Utilities Leadership	12/14/2017	8		●		
Leon County Human Services	12/19/2017	1		●		
TPD Chief	12/26/2017	1		●	●	
Apalachee Regional Planning Council	1/3/2018	3		●		
Waste Management/ Beautification	1/12/2018	2		●		
Linene Woods Neighborhood Association	1/18/2018	25		●	●	
Capital Area Neighborhood Network	1/20/2018	25	●			
Underground Utilities Leadership	1/24/2018	15	●	●		
Big Bend Continuum of Care	1/25/2018	5			●	
Sustainable Tallahassee	1/29/2018	50	●			
Oasis Center for Women and Girls	1/29/2018	1		●		
Office of Economic Vitality	2/6/2018	6	●	●		
Customer Operations Leadership	2/8/2018	12	●	●		
Community Housing and Human Services	2/13/2018	1		●		
FSU College of Social Work	2/13/2018	80	●		●	
FL DEP - Coastal Resilience	3/1/2018	1		●		
TFD Station 3 First Responders	3/23/2018	12		●		
Mental Health / Public Safety Agencies	4/3/2018	15		●	●	
United Partners for Human Services	4/5/2018	45	●			
Leon County Business Ready Workshop	4/26/2018	75			●	●
2-1-1 Big Bend	5/1/2018	4		●		

STAKEHOLDER SUMMARY TABLE

STAKEHOLDER/GROUP	DATE	EST. # ATTENDEES	ACTIVITY			
			Presentation/ Workshop	Interview/ Listening Session	Event	Polling
TOTAL ENGAGED TO DATE		**3,302**	**18**	**35**	**14**	**5**
Neighborhood PREP Workshops	5/1/2018	50	●			
FL DEO Resilience Planning	5/23/2018	22	●	●		
2018 Build-a-Bucket Disaster Preparedness Expo	6/2/2018	1200			●	
FSU CSW Summer Youth Camp	6/4/2018	25	●			
TLH Airport Leadership	6/25/2018	3		●		
COT Employee Survey	7/1/2018	317				●
Ounce of Prevention / Governor's Office of Adoption and Child Protection	7/10/2018	70			●	●
Customer Operations Employee Connections Meeting	7/14/2018	200	●			●
COT Resource Management	8/6/2018	10		●		
Resilience Planning Summit	11/29/2018	90			●	
Habitat for Humanity	2/28/2019	2		●		
Big Bend Homeless Coalition	2/28/2019	1		●		
CESC (Homeless/Emergency Shelter)	3/4/2019	3		●		
Property Appraiser	3/11/2019	5		●		
2019 Build-a-Bucket Disaster Preparedness Expo	6/1/2019	800			●	
TLC-GIS	12/20/2107	3		●		
TFD Command Staff	Monthly	6	●	●	●	
Resilience Plan Working Group	Various	25	●		●	●
COT Executive Team	Various	4	●	●		
Parks, Rec and Neighborhood Affairs	Various	5	●	●	●	
TEMPO	Various	1		●		
Planning Department	Various	5		●	●	
Leon County Resource Stewardship/Sustainability	Various	3		●	●	
Big Bend Community Organizations Active in Disasters	Various	15		●	●	
Florida A&M University	Various	5		●		
FSU Dept. of Urban and Regional Planning	Various	30	●	●		

VULNERABILITY AND RISK ASSESSMENT

▶ Technical Summary

The information below provides an overview of the vulnerability and risk assessment methodology used in the City of Tallahassee Resilience Assessment. The purpose of assessing assets and threats is to provide a foundation of information for building resilience. The project team incorporated a myriad of datapoints that were pulled from dozens of resources The types and sources of data used varied significantly based on available information and the team's needs. For example, the team assessed residential, commercial and industrial properties at the individual parcel and building level; roads were assessed using street centerlines, and people were assessed using U.S. Census Bureau data at the census block group scale.

The project team applied an assessment framework based on the "Steps to Resilience" that are outlined in the U.S. Climate Resilience Toolkit.[1] This framework was applied to each asset-threat pair that resulted in levels of vulnerability and risk that are relative to each asset-threat assessment. The assessment framework used multi-criteria decision analysis as well as spatial analysis in a data-driven pipeline.[2]

The assessment was conducted in four main stages:

    1. Asset data normalization and categorization;

    2. Spatial relation of individual assets to each hazard layer;

    3. Application of vulnerability and risk rule-sets; and

    4. Aggregation of vulnerability and risk to census block groups.

▶ Asset Data Normalization and Categorization

Asset data was first normalized into a general shape by removing superfluous fields and duplicate geometries to help ensure that the spatial data is complete. The team then categorized the data records according to the asset's use. For this assessment, parcel data for property-based assets were categorized according to the parcel use codes attached to each parcel record.

▶ Spatial Relation of Individual Assets to Hazard Layers

For each asset-threat pair, we performed a spatial intersection of the asset with the hazard. Refer to Data Sources for definitions of asset types described below.

- For assets of Property Parcels and Structure types, if any part of the hazard extent fell within the boundaries of a given parcel then it was marked as exposed. Only the intersection of parcels to the hazard data was considered; structures were not considered for properties in the exposure assessment.

- For assets of Linear Feature type, if any part of a line segment of the feature intersected with the hazard extent, that part of the line segment was marked as exposed.

- For assets of Structure type, if any part of that structure intersected with the hazard extent, that structure was marked as exposed.

▶ Application of Vulnerability and Risk Rule-Sets

Application of vulnerability and risk rule-sets involved the development of criteria, or rules, that the team used to assign to assets specific ordinal classifications of *high*, *medium*, and *low* for each of the variables described below (see rule-sets in separate document). The classifications were then combined using a matrix approach to determine levels of vulnerability, risk, and combined vulnerability and risk.[3]

Potential Impact

Potential impact is the degree to which an exposed asset (asset that is in harm's way) is potentially negatively affected by a climate-related threat. The level at which an exposed asset is negatively affected is also referred to as the asset's sensitivity. Assets that are not exposed have no potential to be impacted; thus, they are not vulnerable or at risk. Exposed assets were evaluated for levels of *sensitivity*, which were used in determining levels of potential impact.

Factors used to determine levels of potential impact were based on the asset's characteristics or on the level of impact due to service loss if the asset were to be affected.4 For example, a property with a building structure in a flood hazard area has a higher potential impact than does a property that does not have a building in a flood hazard area.

Adaptive Capacity

Adaptive capacity considers how an asset is able to cope with a threat event or impact. An asset with adaptive capacity is able to withstand an impact with minimal disruption or loss. Measures of adaptive capacity can include physical elements, conditions, or designs in place that help an asset absorb an impact. Exposed assets were evaluated for indicators of adaptive capacity and classified accordingly.

For example, a commercial building that has flood-proofed its foundation and raised its ground floor above flood levels has more adaptive capacity than a commercial building that has not done so. As another example, a park with facilities designed to withstand flood waters without damaging its infrastructure has adaptive capacity.

Vulnerability

Vulnerability describes the susceptibility of exposed assets based on the two core concepts described above: (1) potential impact—the degree to which an asset is affected; and (2) adaptive capacity—the ability the asset has to handle a potential impact. The matrix shown here illustrates how assets that have low potential to be impacted and high adaptive capacity are the least vulnerable. Assets with high potential impact and low adaptive capacity are the most vulnerable. For example, a business-related structure in the flood hazard zone has a "high" level of potential impact and, if it was built before 1977, it is classified as having "low" adaptive capacity. Together, they result in a "high" vulnerability classification.

VULNERABILITY
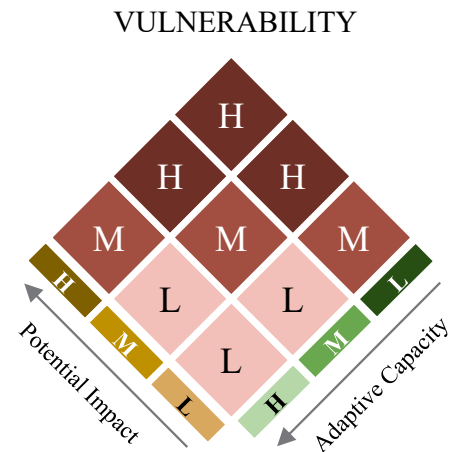
Risk Probability

Probabilities were determined for each threat using annualized likelihoods of threat occurrence or relative levels based on known risk factors. For example, for Flooding, the 10-year, 100-year, and 500-year flood hazard zones were used to evaluate different probabilities of flooding for each asset.

Risk Consequence

Risk consequence refers to negative outcomes or critical thresholds that indicate varying levels of significance if a threat were to occur. For example, assets with affected structures or a higher monetary value may have a greater negative consequence than assets with no affected structures or that have a lower monetary value.

RISK

Risk

Just as potential impact and adaptive capacity combine to determine vulnerability, risk probability and risk consequence combine to give us an assessment of risk. For example, a parcel with an exposed high-value building in the 10-year flood hazard zone would have a high risk classification, while a parcel in the 100-year flood hazard zone without an exposed building would have a low risk classification.
It is important to note that this step is referred to as risk scoping, as no loss estimates were quantified.
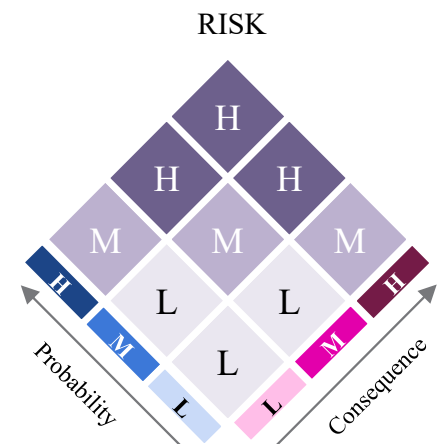
Combined Vulnerability and Risk

Vulnerability considers how an asset might be impacted and its ability to cope if a given threat event were to occur, and risk considers the probability of the threat occurring and the general consequence of the threat (without considering factors that make it susceptible). Combining these concepts allows decision makers to evaluate which assets are most susceptible and most likely to be impacted, and also to consider options according to different levels of risk threshold.

The matrix shown here features the combination of vulnerability and risk. High-vulnerability and high-risk parcels are in the top-most cell. Those that have low vulnerability and low risk are in the bottom-most cell. The cells with either high or medium combined vulnerability and risk are included within a darker border outline. The assets that fall into the classifications within the darker border outline are those considered "most affected" and are included in the assessment maps.

COMBINED VULNERABILITY & RISK

High Vulnerability-High Risk

VULNERABILITY

RISK

Low Vulnerability-Low Risk
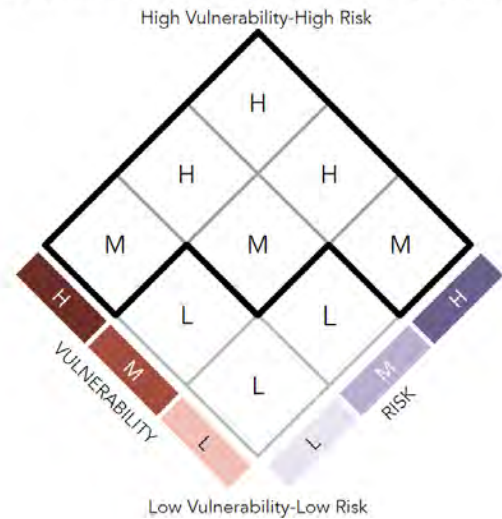
Threat-Specific Assessment Methodology Notes

Flooding

For purposes of this assessment, the threat of flooding was defined by the flood hazard areas as determined by FEMA. Assets within any of these flood hazard zones were determined to be exposed to flooding.

Levels of vulnerability were based on:

- Elevation of buildings in floodplain, development requirements and year structures were built (adaptive capacity)
- Types of assets (i.e. historical, multi vs. single residence) and whether structures are exposed (sensitivity and potential impact)

Levels of risk scoping were based on:

- Likelihood of flooding based on the floodway and 100-yr and 500-yr flood zones (probability)
- Improvement values (consequence)

Wildfire

The estimation of wildfire risk in the assessment is based on the Southern Group of State Foresters WUI Risk Index. This index estimates wildfire risk by accounting for the presence of development, people, and assets in the Wildland Urban Interface and the presence of surface fuels favorable to wildfire, especially in drought conditions.

Levels of vulnerability were based on:

- Five-minute response drive-time from nearest fire station (adaptive capacity)
- Presence of fire hydrants within 500 ft of property (adaptive capacity)
- Type of assets (i.e. multi vs. single residence) (sensitivity and potential impact)

Levels of risk scoping were based on:

- WUI Risk Index (Southern Group of State Foresters) mean value

Storm Surge

Storm surges are abnormally high-water levels generated by hurricanes and tropical storms. A surge forms when strong winds over the ocean combine with low pressure to drive water on shore. Storm surges can produce sea levels much higher than normal high tide, resulting in extreme coastal and inland flooding.

The storm surge map used for Tallahassee was generated using Sea, Lake, and Overland Surge from Hurricanes (SLOSH) models from the National Oceanic and Atmospheric Administration (NOAA) based on a Category 5 Hurricane. Assets within any of these flood hazard zones are exposed to flooding.

Levels of vulnerability were based on:

- Elevation of buildings in floodplain, development requirements and year structures were built (adaptive capacity)
- Type of assets (i.e. multi vs. single residence) (sensitivity and potential impact)

Levels of risk scoping were based on:

- Storm Category level (1-5)
- Improvement values (consequence)

Aggregation of Vulnerability and Risk to Census Block Groups

The smallest geographic unit for which the U.S. Census Bureau publishes socioeconomic data is the census block group ("CBG").5 This is a cluster of blocks and typically contains between 600–3,000 people. In the assessment, CBGs are used to aggregate and summarize the t analyses, which allows overlay and comparison at the same scale as the socioeconomic variables published by the U.S. Census Bureau. Using a common spatial unit for aggregation also allows comparison across asset categories for a given hazard and across hazards for a given asset.

One drawback to using CBGs is that they do not always conform to city boundaries. Therefore, statistical socioeconomic data—for example, proportion of households below the poverty line—may be based on households that are not all within the city limits. The Residents-Extreme Heat analysis in this assessment also used CBGs outside of the city limits.

For all other asset classes, CBGs are used as aggregation groups for assets such as parcels, point and linear features, or raster data. As such, the CBGs that overlap the edge of the city boundary have been clipped to only the area within the city limits.

Data Sources

Table 1: *Threat Data Sources*

HAZARD	SOURCE	DATA FORMAT
Flooding	FEMA Floodplains (Study Effective 8/2009)	Vector extent features
Wildfire	Southern Group of State Foresters, Southern Wildfire Risk Assessment- WUI Risk Index	Raster grid
Storm Surge	NOAA SLOSH (Model Categories 1–5)	Raster grid

Table 2: *Asset and Socioeconomic Data Sources*

ASSET GROUP	SOURCE	ASSET TYPE
Energy and Utilities	Tallahassee-Leon County GIS	Property Parcels and Structures
Transportation (facilities and roads)	Tallahassee-Leon County GIS	Property Parcels and Structures, Linear Features
Emergency Facilities	City of Tallahassee Inventory, Tallahassee-Leon County GIS	Property Parcels and Structures
Government-Owned Property	City of Tallahassee Inventory, Tallahassee-Leon County GIS	Property Parcels and Structures
Residential Property	Tallahassee-Leon County GIS	Property Parcels and Structures
Natural	Tallahassee-Leon County GIS	Property Parcels and Structures
Commercial and Industrial Property	Tallahassee-Leon County GIS	Property Parcels and Structures

	USDA Food and Nutrition Service, Tallahassee-Leon County GIS	Property Parcels and Structures
Food Infrastructure		
Cultural and Human Service Property	City of Tallahassee Inventory, Tallahassee-Leon County GIS	Property Parcels and Structures
Educational Property	Tallahassee-Leon County GIS	Property Parcels and Structures
Socioeconomic Data	2011–2015 American Community Survey, 5-yr Estimates	Census block group data

Asset Group Classification

Parcel-Based Asset Groups

All property parcels were extracted from the Leon County Property Appraiser (https://www.leonpa.org/_dnn/Downloads/Downloads-Page, accessed June, 2018). Specific use types and building information were determined by values found in the Certified Tax Roll data. The tax roll data was joined to the property parcels. Additionally, a GIS inventory of city-owned facilities (Facilities_Polygon_Asset_Classification.shp) was provided by the City of Tallahassee with records flagged according to asset groups and property uses types. Property use types for each asset group are indicated below.

ASSET GROUP	PROPERTY_USE CODES
Energy and Utilities	• '9100 - Utilities' • '9600 - Sewage Disposal, Solid Waste' • flagged: electric-facility, electric-substations, power-plant, communications-tower, wastewater-plant, wastewater-sprayfield, wastewater-pump, water-pump, water-well, water-tank, waste-solid, water-plant
Transportation (facilities and roads)	• '9800 - Centrally Assessed/Railroads' • '2000 - Airports, Terminals, Piers' • flagged: airport, trans-starmetro, fueling
Emergency Facilities	• "7300 - Privately Owned Hospitals" • "1900 - Professional Service and Medical" • "8500 - Hospitals" • flagged: clinic, fire-station, fire-training, police-station, public_safety_complex, memorial_healthcare
Government-Owned Property	• '8900 - Municipal' • '8600 - County' • '8700 - State' • '8800 - Federal' • flagged: city_owned_park

Residential Property	• '0200 - Mobile Homes' • '0100 - Single Family Residential' • '0101 - Townhouse' • '0700 - Miscellaneous Residential' • '0300 - Multi-Family(10 or More Units)' • '0900 - Residential Common Areas/Elements' • '0400 - Condominia Improved' • '0600 - Retirement Homes Not Eligible' • '0800 - MFR < 10 Units' • '7500 - Orphanages, Other Services' • '7400 - Homes for the Aged' • flagged: university-housing, elder-care, homeless-shelter, transitional-housing
Natural	• '8200 - Forest, Parks, Recreation Area' • '9700 - Outdoor Recreational' • flagged: community garden, park
Commercial and Industrial Property	• '1100 - Stores, One Story' • '1200 - Mixed Use, Store/Office/Resi' • '1300 - Department Store' • '1400 - Supermarkets' • '1500 - Regional Shopping Centers' • '1600 - Community Shopping Centers' • '1700 - Office Buildings/Nonprof/One' • '1800 - Office Buildings/Nonprof/Multi' • '2100 - Restaurants, Cafeterias' • '2200 - Drive In Restaurants' • '2300 - Financial Institutions' • '2500 - Repair Service Shops' • '2600 - Service Stations' • '2700 - Auto Sales, Repair and Related' • '2800 - Parking Lots, Commercial' • '3200 - Enclosed Theatres/Auditoriums' • '3300 - Night Clubs, Lounges, Bars' • '3400 - Bowling, Skating, Pool Enclose' • '3500 - Tourist Attraction, Exhibits' • '3800 - Golf Courses, Driving Ranges' • '3900 - Hotels, Motels' • '4100 - Light Industrial' • '4200 - Heavy Industrial' • '4300 - Lumber Yd/Mill' • '4800 - Warehousing, Distribution' • '4900 - Open Storage, Supply/Junkyards' • '9200 - Mining, Petrolium/Gas'

Food Infrastructure	• 1400 - Supermarkets • 2100 - Restaurants, Cafeterias • flagged: food locations, food pantry, regional_farm, farmers_market, community_garden
Cultural and Human Service Property	• '0600 - Retirement Homes Not Eligible' • '7400 - Homes for the Aged' • '7500 - Orphanages, Other Services' • '7600 - Mortuaries, Cemetaries' • '7700 - Clubs, Lodges, Union Halls' • '7900 - Cultural Organization Facil' • '7100 - Churches' • flagged: senior-center, animal-services, homeless-service, housing-service, crisis-support, clinic, elder-care, disaster-relief, church, daycare, community-center
Educational Property	• '8300 - Public County School' • '8400 - Colleges' • '7200 - Private Schools/Colleges' • flagged: educational

NON-PARCEL FEATURE ASSET GROUPS

ASSET GROUP	DATASOURCE
Roads	**Tallahassee-Leon County GIS street centerlines**

References

1. U.S. Federal Government, 2014: U.S. Climate Resilience Toolkit. [toolkit.climate.gov]

2. Malczewski, Jacek, and Claus Rinner. *Multicriteria Decision Analysis in Geographic Information Science*. Springer-Verlag, 2015.

3. EPA Office of Water, Climate Ready Estuaries. *Being Prepared for Climate Change: A Workbook for Developing Risk-Based Adaptation Plans.* U.S. Environmental Protection Agency, 2014. [https://www.epa.gov/sites/production/files/2014-09/documents/being_prepared_workbook_508.pdf]

4. Glick, P., B. A. Stein, and N.A. Edelson, editors. *Scanning the Conservation Horizon: A Guide to Climate Change Vulnerability Assessment.* National Wildlife Federation, 2011. [https://www.fs.fed.us/rm/pubs_other/rmrs_2011_glick_p001.pdf]

5. U.S. Census Bureau. "Geography: Geographic Terms and Concepts - Block Groups." Last modified 6 December 2012.

Maps

Asset-Threat Profile Guide

This guide points out the key features of each spatially-distinct asset-threat pair vulnerability and risk assessment map.

Asset-Threat Pair →

| Commercial and Industrial Property & Flooding

Vulnerability & Risk Assessment

Exposure →
Number and percentage of assets citywide in harm's way of the threat.

EXPOSED:
611 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
363 parcels
8.5% of Commercial and Industrial Property

Count of assets most affected
Number of assets citywide with medium or high combined vulnerability and risk.

Number of parcels with medium -high combined vulnerability and risk per census block group

High (8-47)   —— Urban Service Area

Medium (2-7)   —— Census Block Group

Low (1)   ---- Census Block Group
                         outside analysis
                         boundary

1

Assets most affected in each census block group
The high and medium vulnerability and risk parcels are aggregated within each census block group to identify the most vulnerable neighborhoods in the assessment area.

Note that the legend ranges are *per census block group*, which will vary from the "medium or high vulnerability and risk" total

Commercial and Industrial Property & Flooding

Vulnerability & Risk Assessment

EXPOSED:
611 parcels exposed

MEDIUM OR HIGH VULNERABILITY AND RISK:

363 parcels
8.5% of Commercial and Industrial Property
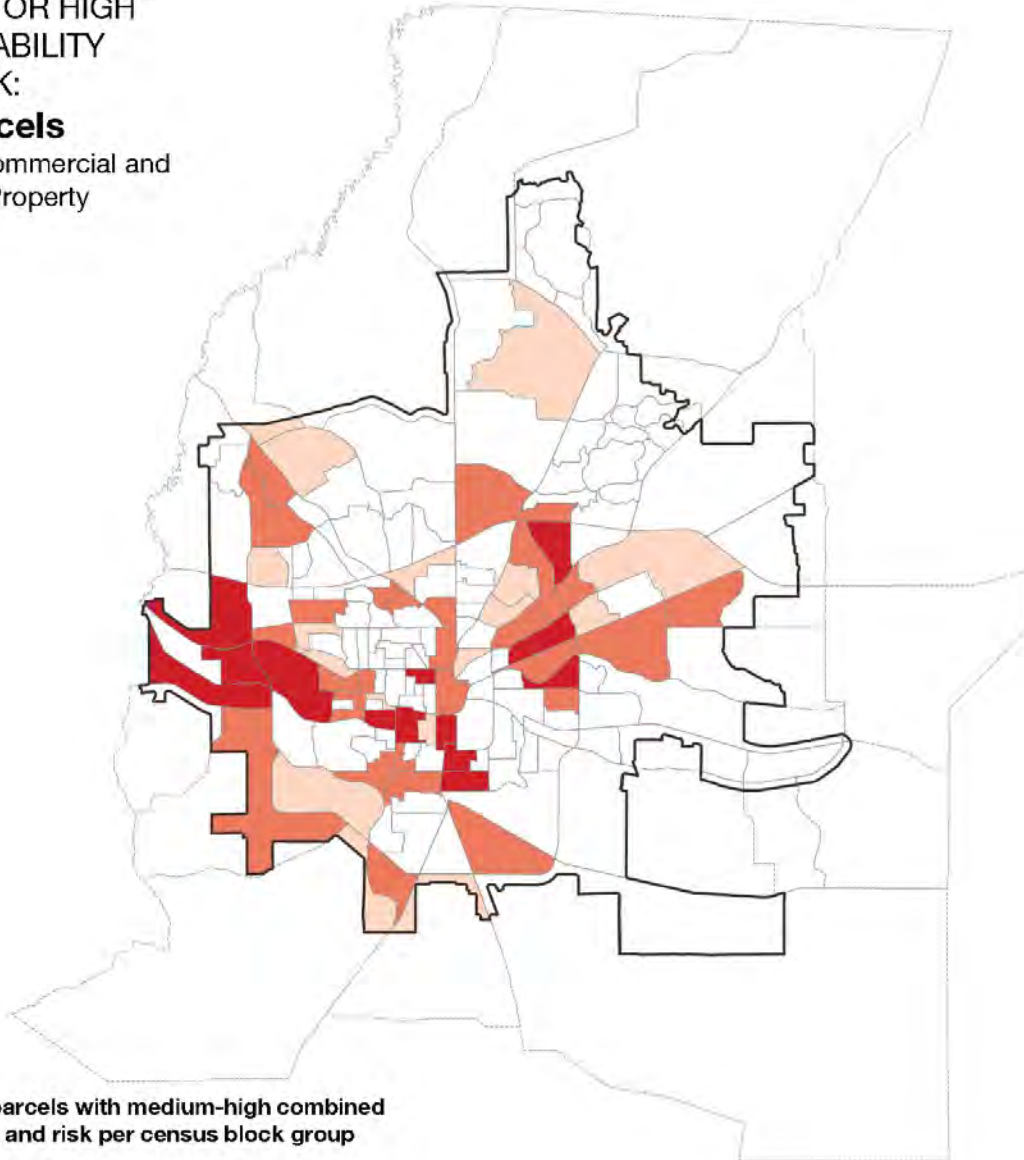
Number of parcels with medium-high combined vulnerability and risk per census block group

■ High (8-47)	——	Urban Service Area
■ Medium (2-7)	——	Census Block Group
■ Low (1)	- - -	Census Block Group outside analysis boundary

Residential Property & Flooding

Vulnerability & Risk Assessment

EXPOSED:
7166 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
3398 parcels
4.7% of Residential Property
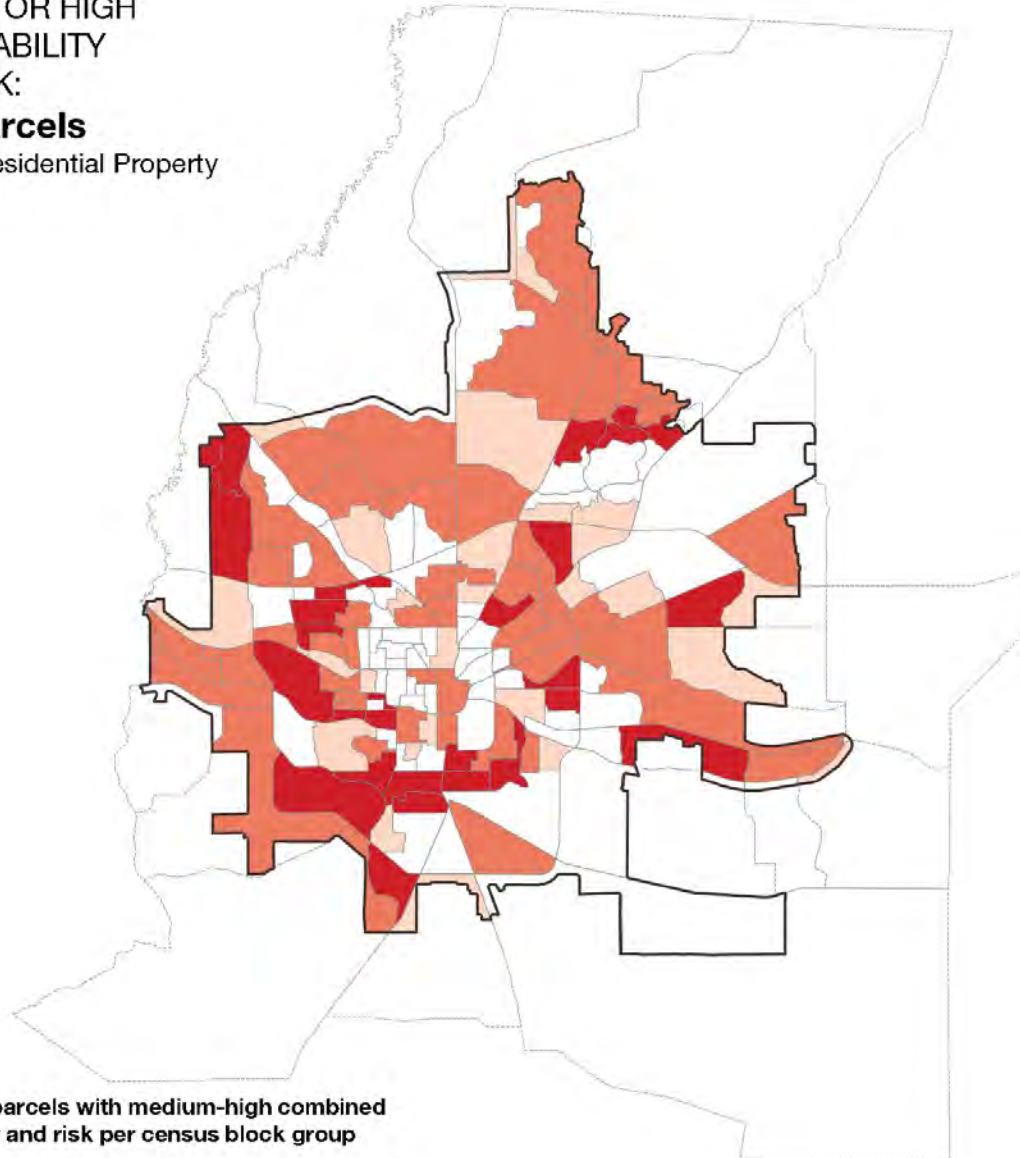
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (35-289)	—— Urban Service Area
Medium (5-34)	—— Census Block Group
Low (1-4)	---- Census Block Group outside analysis boundary
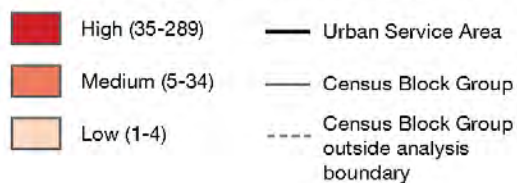
Transportation Facilities & Flooding

Vulnerability & Risk Assessment

EXPOSED:
30 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
7 parcels
17.1% of Transportation
Facilities
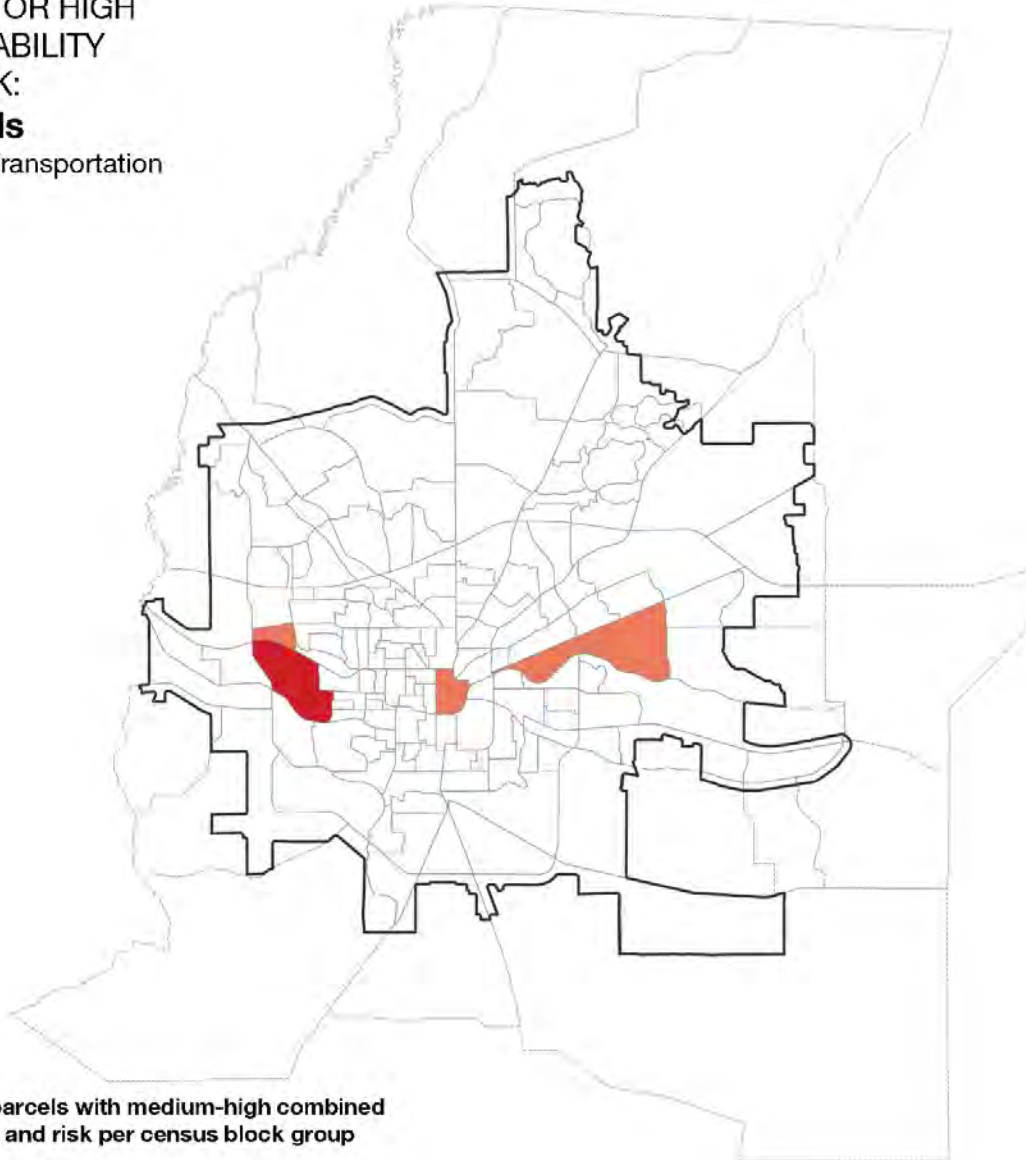
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (2-3)

Medium (1)

Urban Service Area

Census Block Group

Census Block Group
outside analysis
boundary

Energy and Utilities & Flooding

Vulnerability & Risk Assessment

EXPOSED:
154 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
46 parcels
13.7% of Energy and Utilities

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

■ High (3-7)	▬	Urban Service Area
■ Medium (2)	—	Census Block Group
■ Low (1)	- - -	Census Block Group outside analysis boundary

Emergency Facilities & Flooding
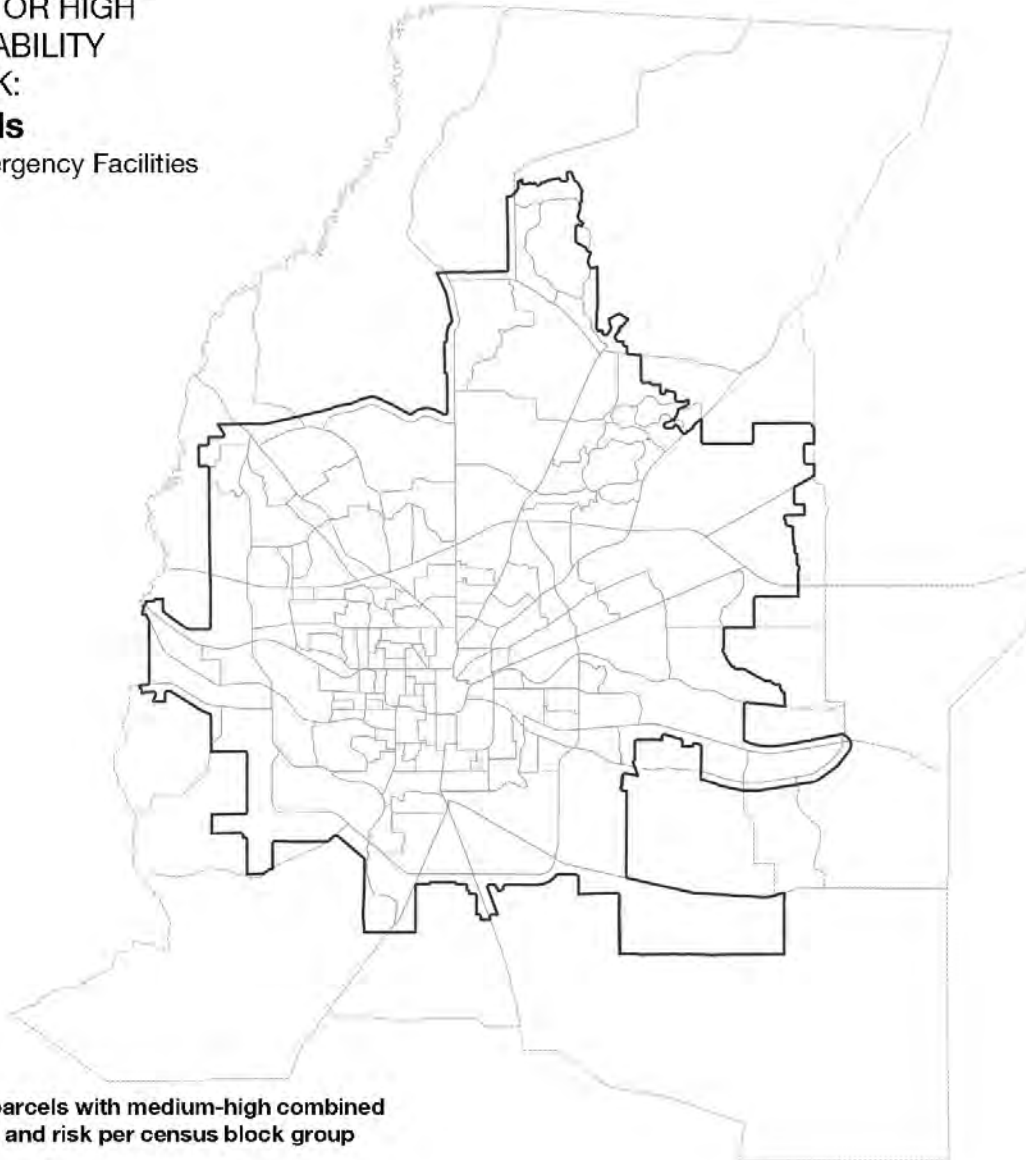
Vulnerability & Risk Assessment

EXPOSED:
31 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
12 parcels
4.3% of Emergency Facilities
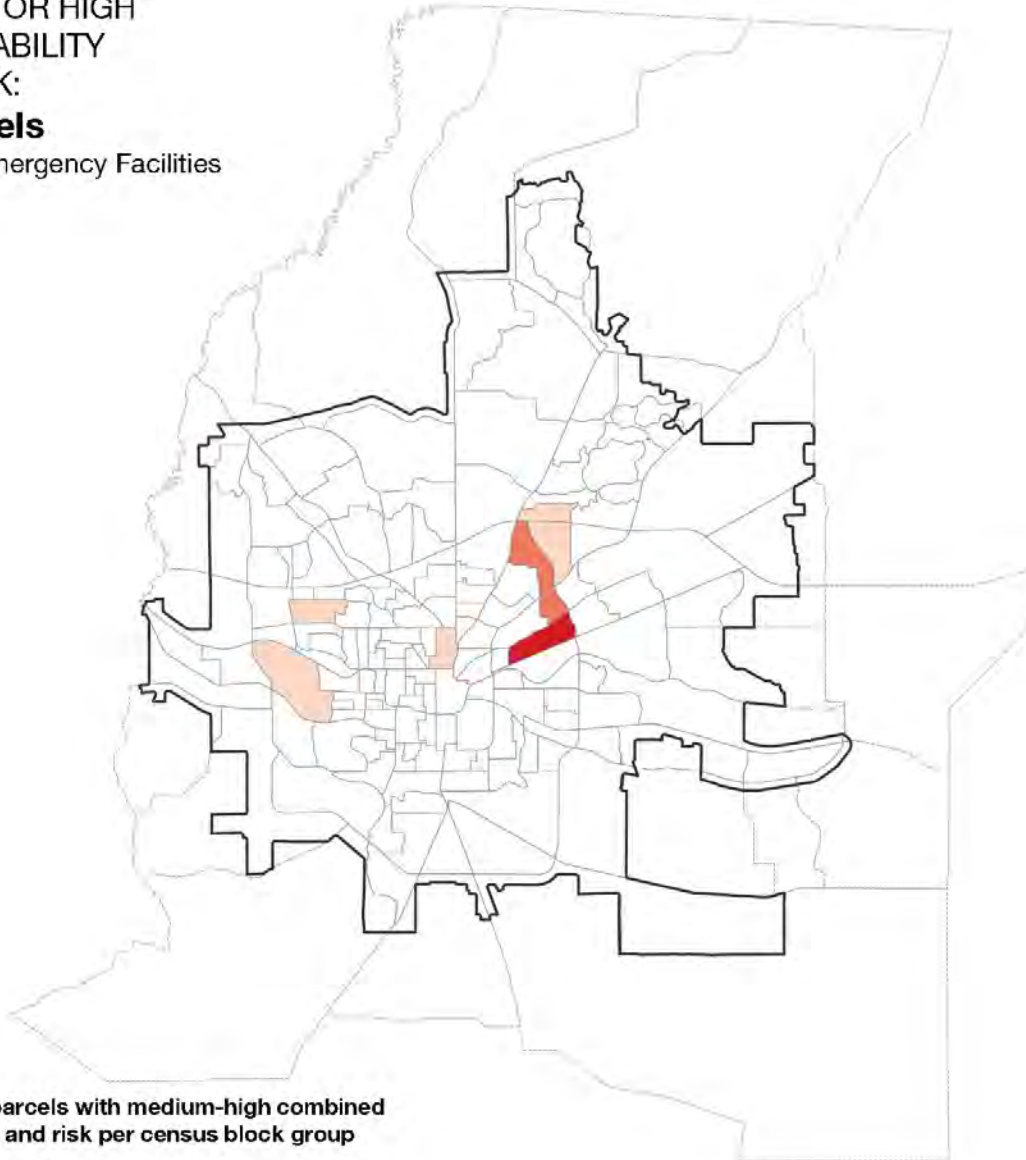
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

- High (3)
- Medium (2)
- Low (1)

- Urban Service Area
- Census Block Group
- Census Block Group outside analysis boundary

Natural Areas, Parks, and Greenways & Flooding

Vulnerability & Risk Assessment

EXPOSED:
84 parcels exposed

MEDIUM OR HIGH VULNERABILITY AND RISK:
24 parcels
15.7% of Natural Areas, Parks, and Greenways

Number of parcels with medium-high combined vulnerability and risk per census block group

High (3)	—— Urban Service Area
Medium (2)	—— Census Block Group
Low (1)	---- Census Block Group outside analysis boundary

Food Infrastructure & Flooding
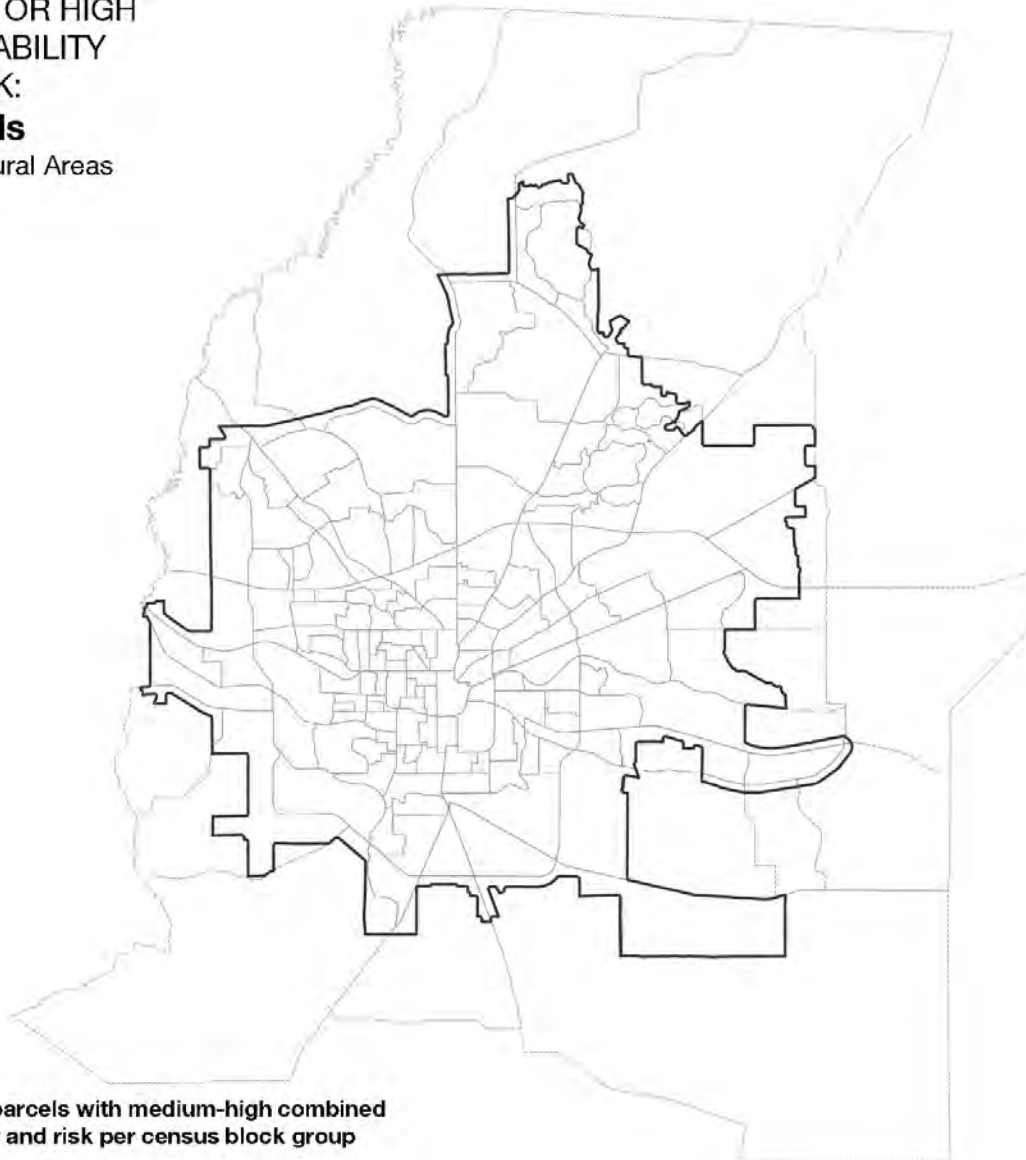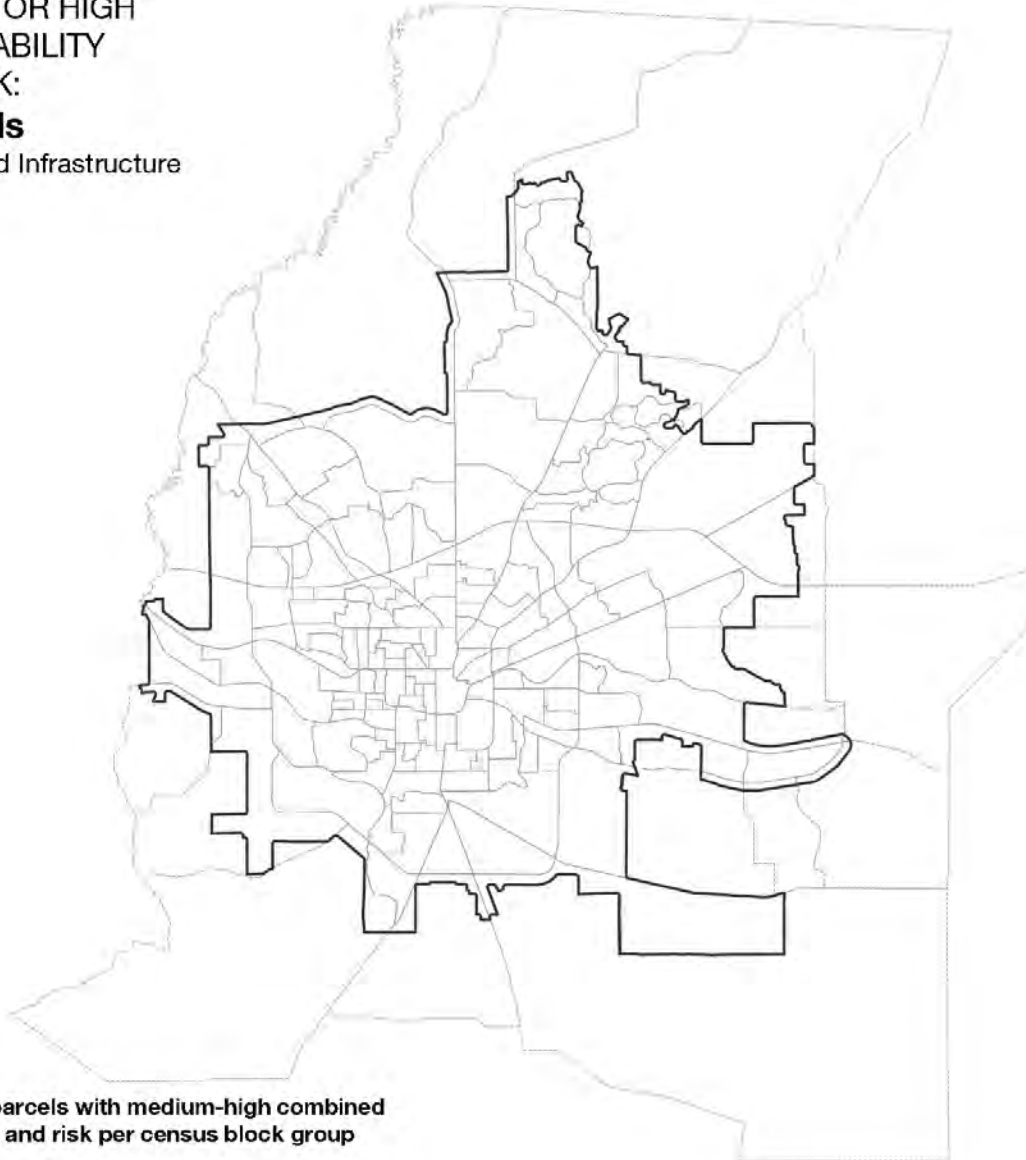
Vulnerability & Risk Assessment

EXPOSED:
75 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
39 parcels
10% of Food Infrastructure
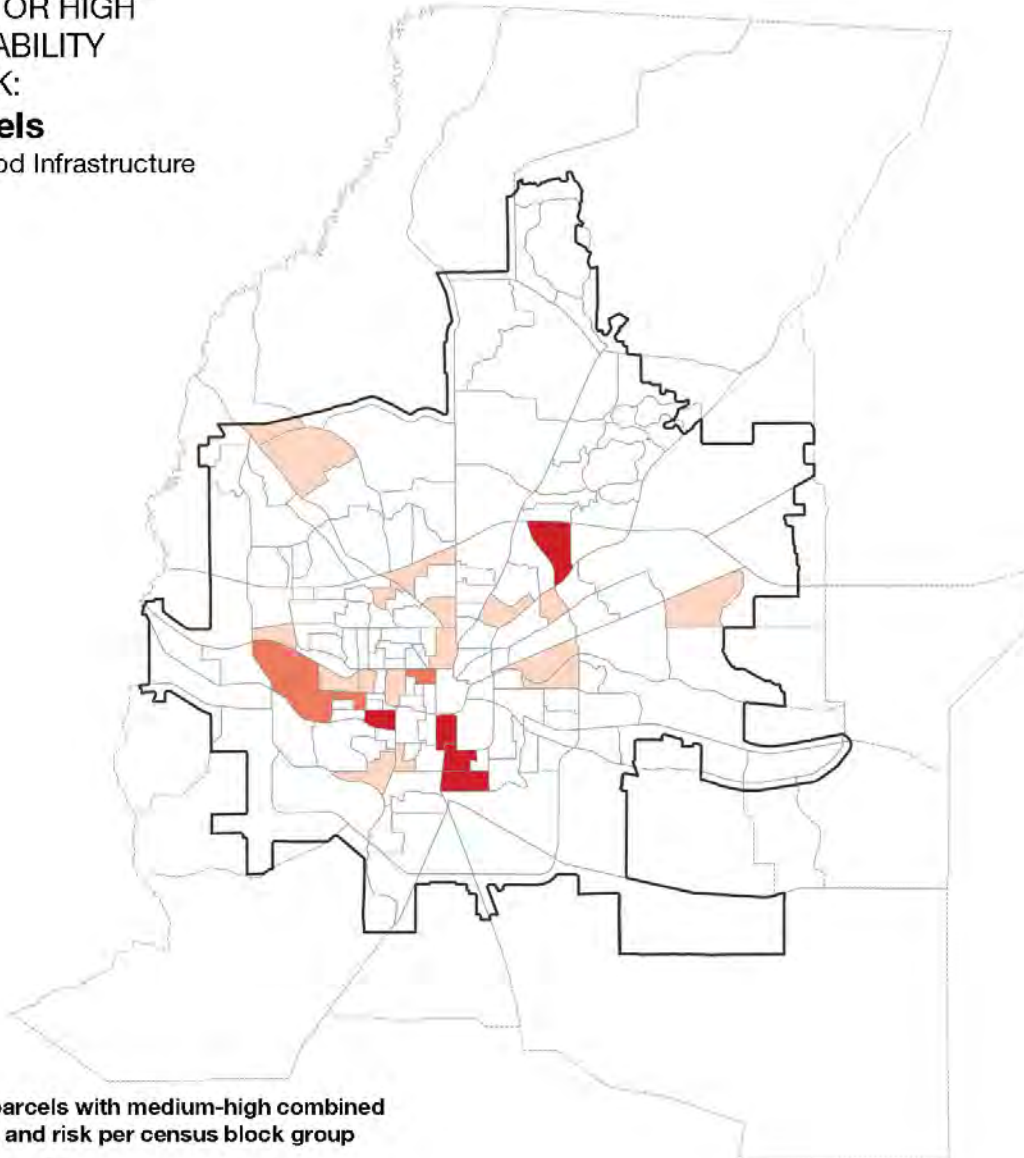
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (3-4)	Urban Service Area
Medium (2)	Census Block Group
Low (1)	Census Block Group outside analysis boundary

Government-Owned Property & Flooding

Vulnerability & Risk Assessment

EXPOSED:
196 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:

71 parcels

13.4% of Government-Owned
Property

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

■ High (3-5)	——	Urban Service Area
■ Medium (2)	——	Census Block Group
■ Low (1)	- - - -	Census Block Group outside analysis boundary
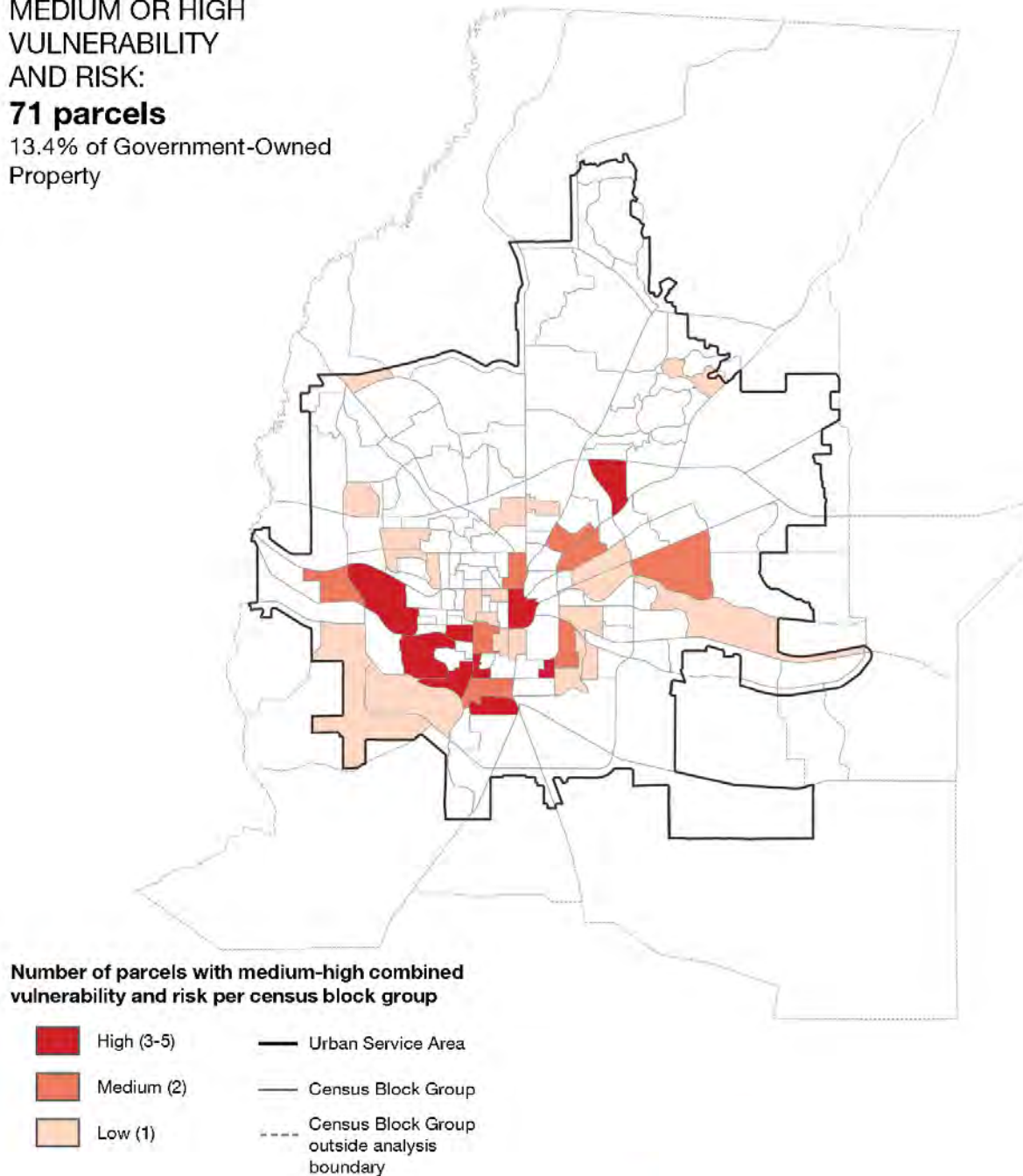
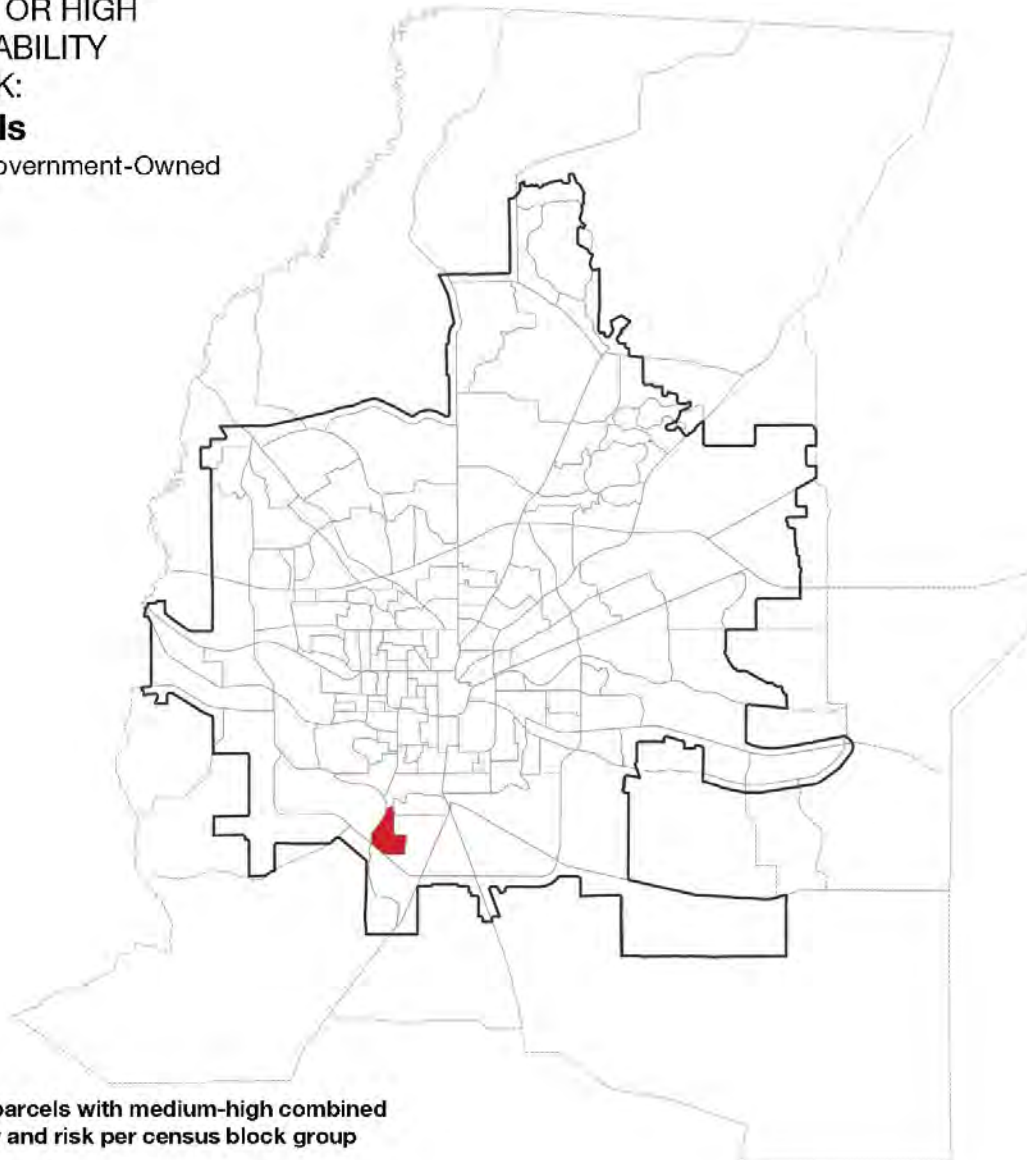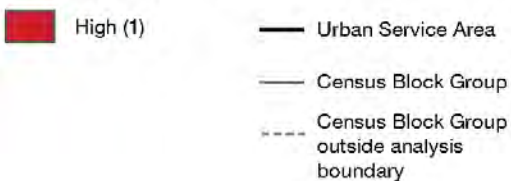# Educational Property & Flooding

Vulnerability & Risk Assessment

EXPOSED:
41 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
14 parcels
11.3% of Educational Property

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

- High (3-4)
- Medium (2)
- Low (1)

- Urban Service Area
- Census Block Group
- Census Block Group outside analysis boundary

Cultural and Human Service Property & Flooding

Vulnerability & Risk Assessment

EXPOSED:
121 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**

48 parcels
7.2% of Cultural and Human
Service Property
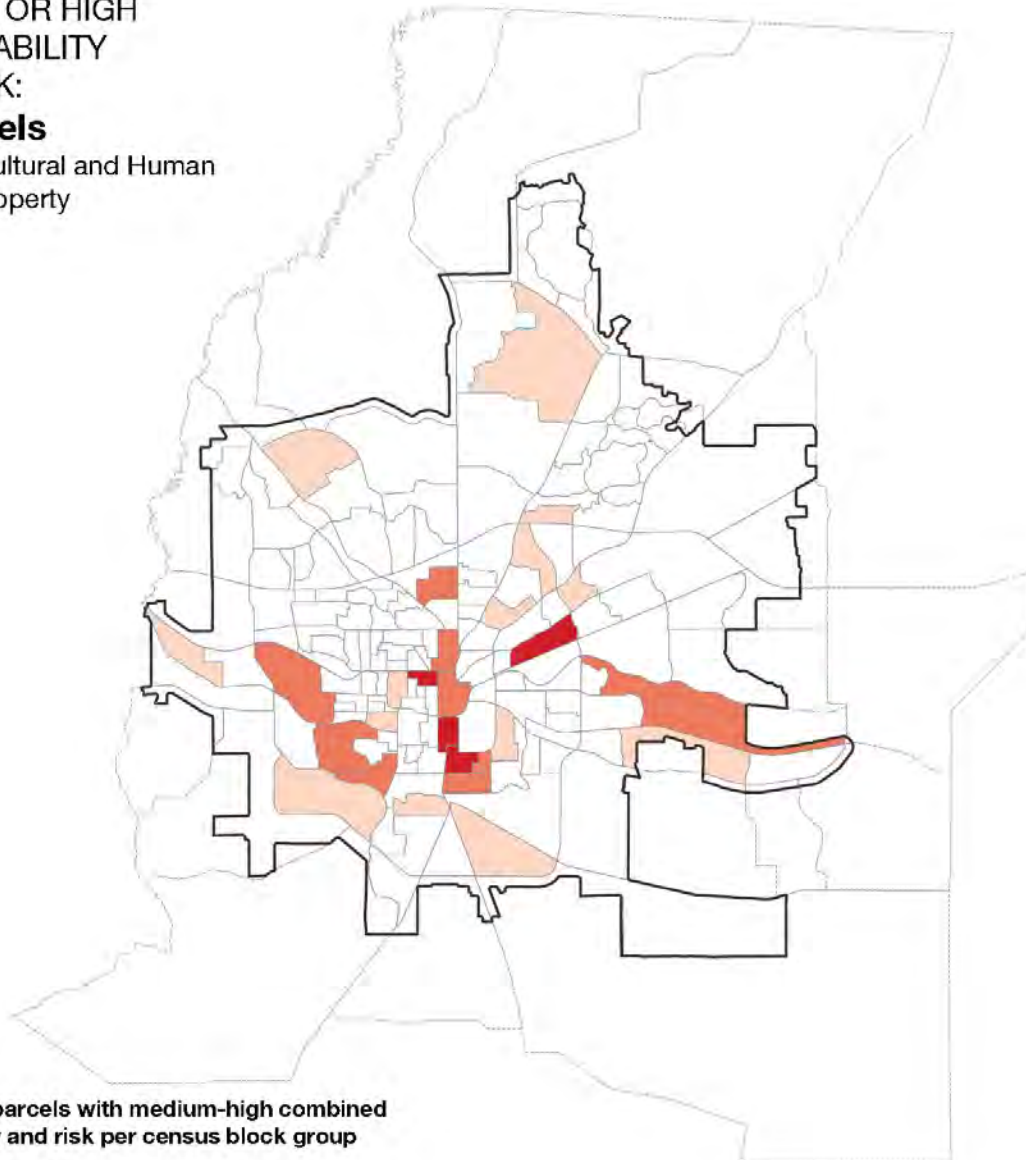
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (3-5)	——— Urban Service Area
Medium (2)	——— Census Block Group
Low (1)	---- Census Block Group outside analysis boundary
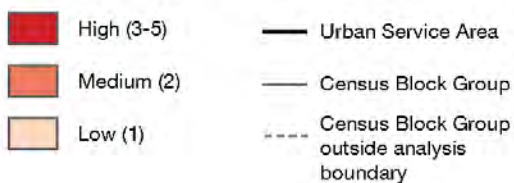
Commercial and Industrial Property & Storm Surge

Vulnerability & Risk Assessment
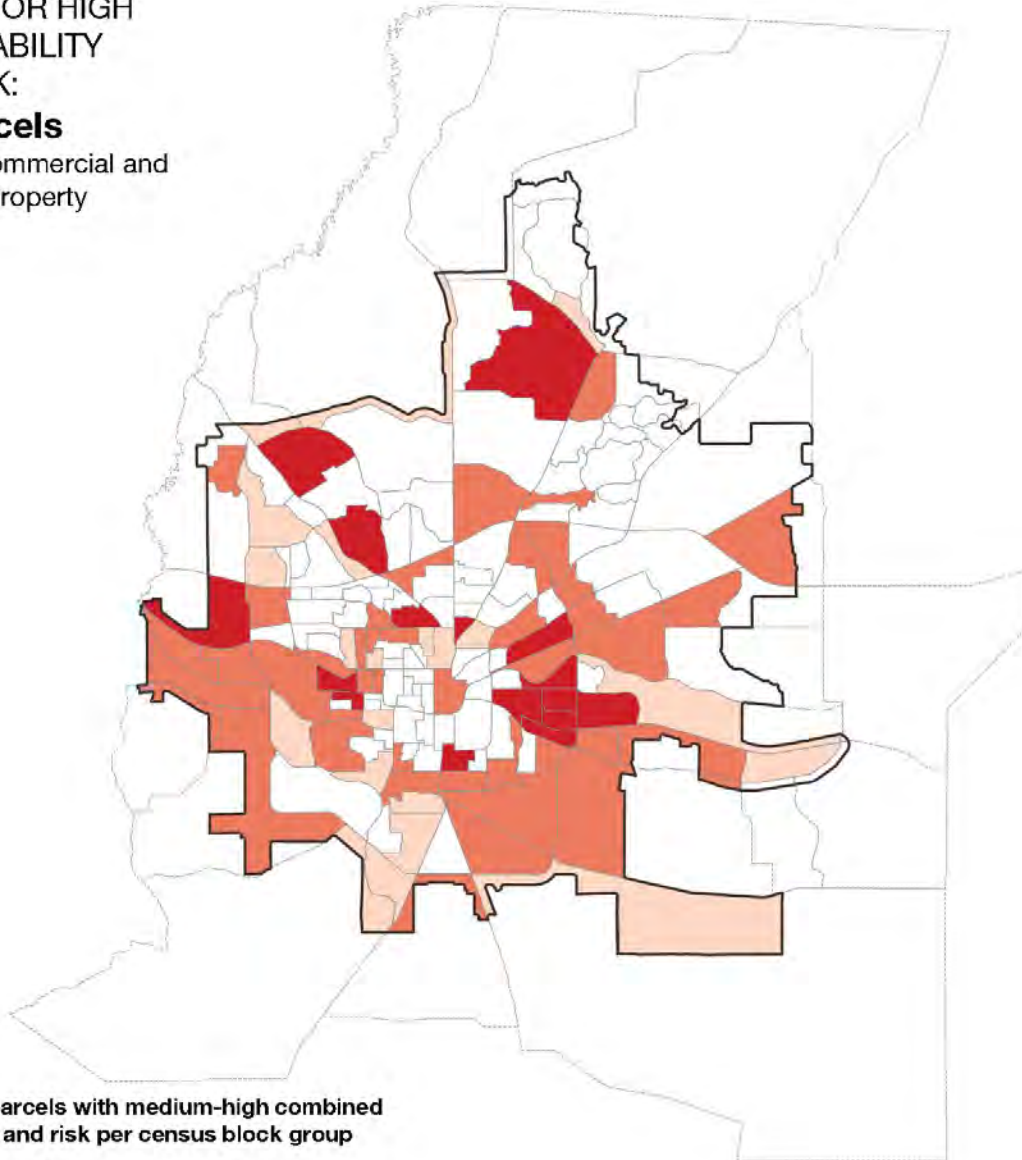
EXPOSED:
17 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
7 parcels
0.2% of Commercial and
Industrial Property
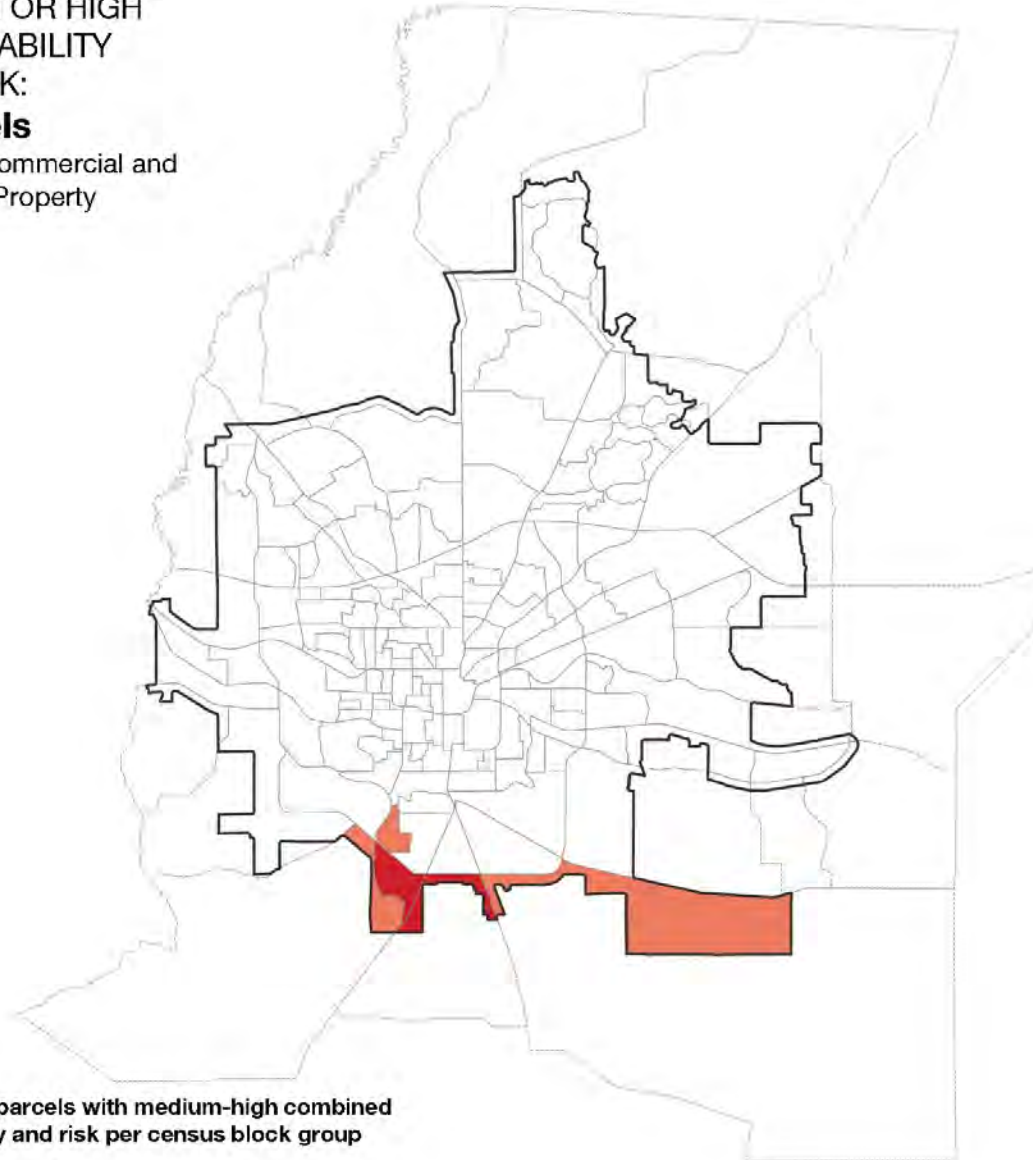
**Number of parcels with medium-high combined
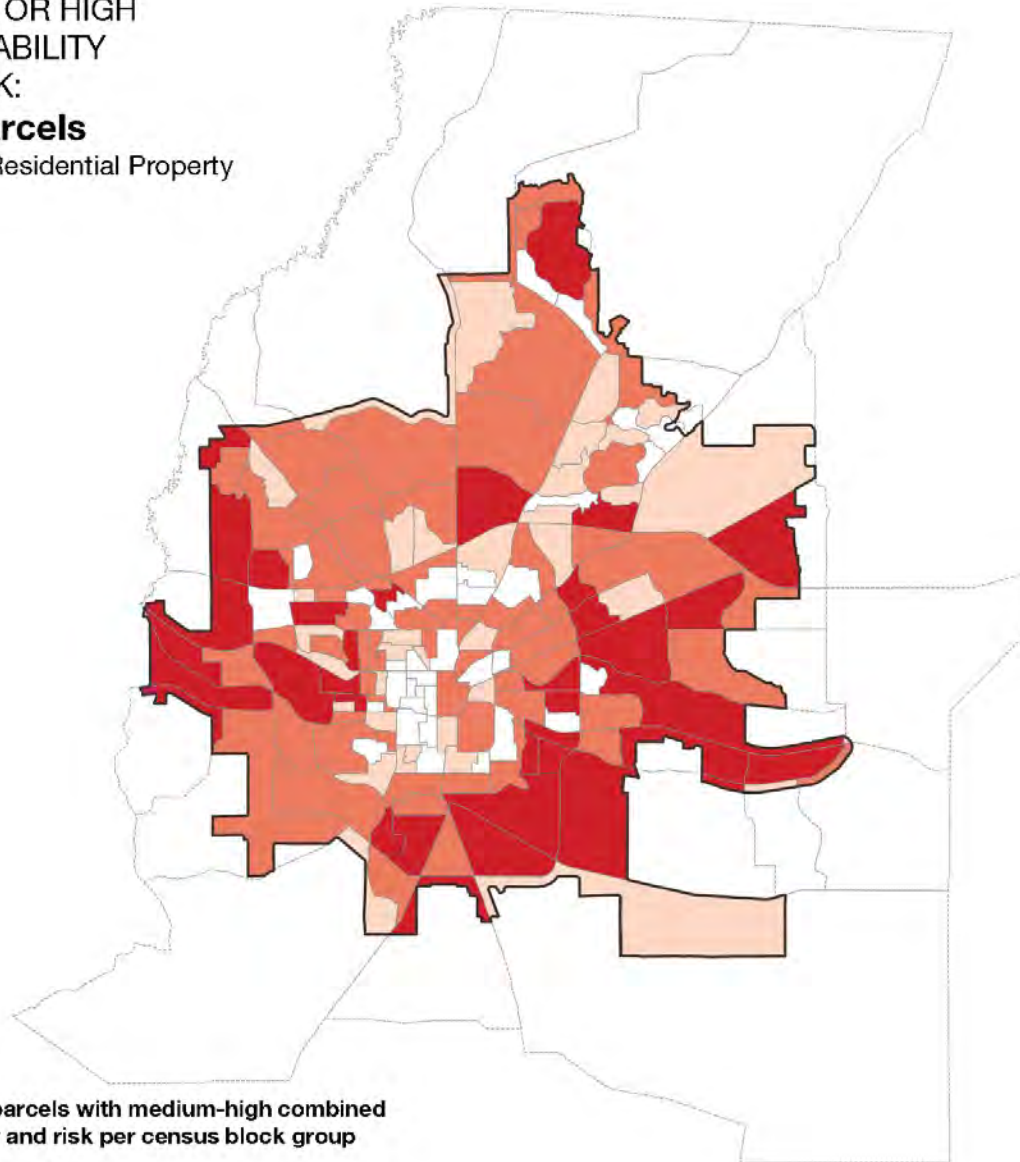vulnerability and risk per census block group**

High (2)

Medium (1)

—— Urban Service Area

—— Census Block Group

- - - Census Block Group
outside analysis
boundary

Residential Property & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
184 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
123 parcels
0.2% of Residential Property
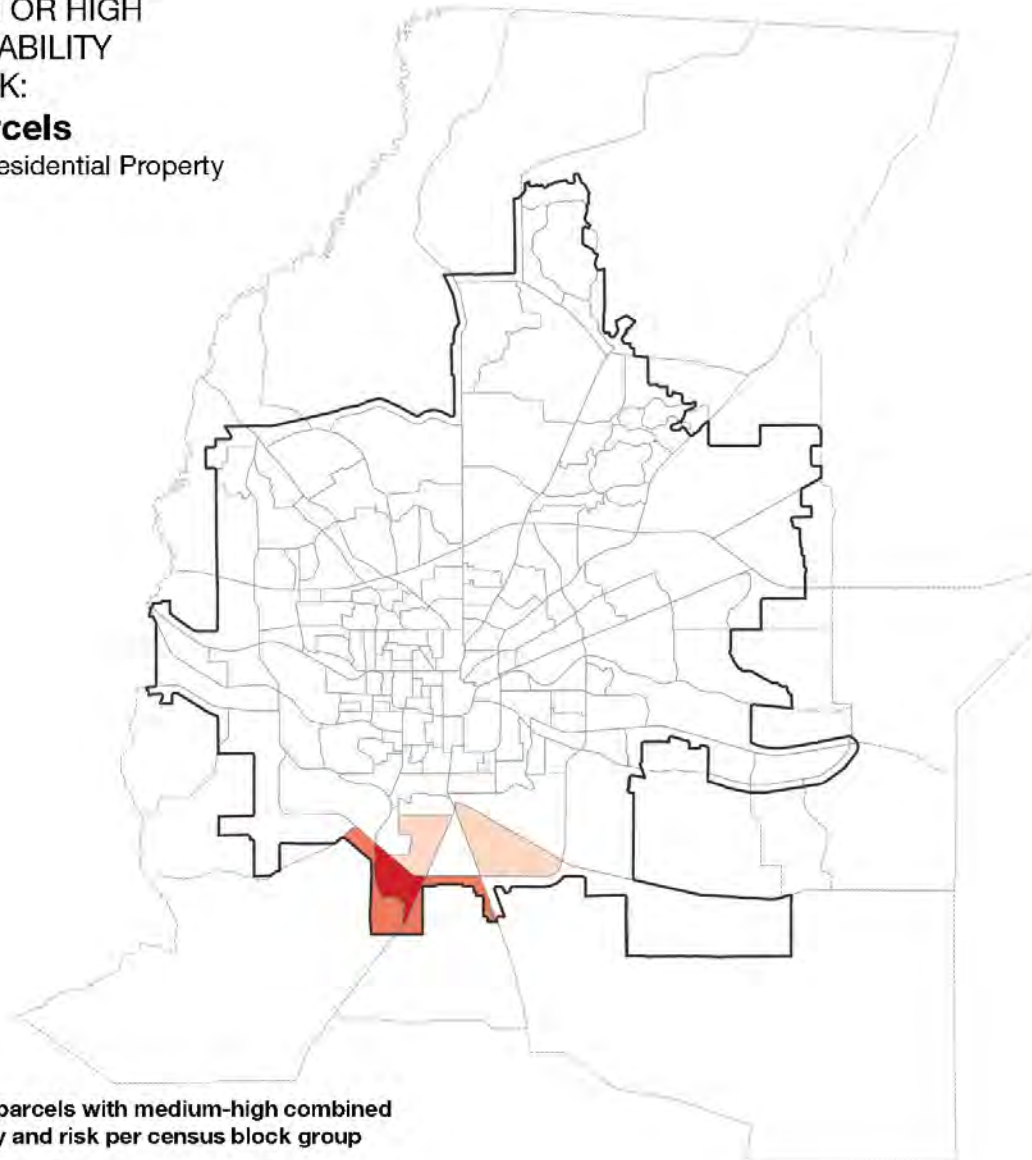
**Number of parcels with medium-high combined
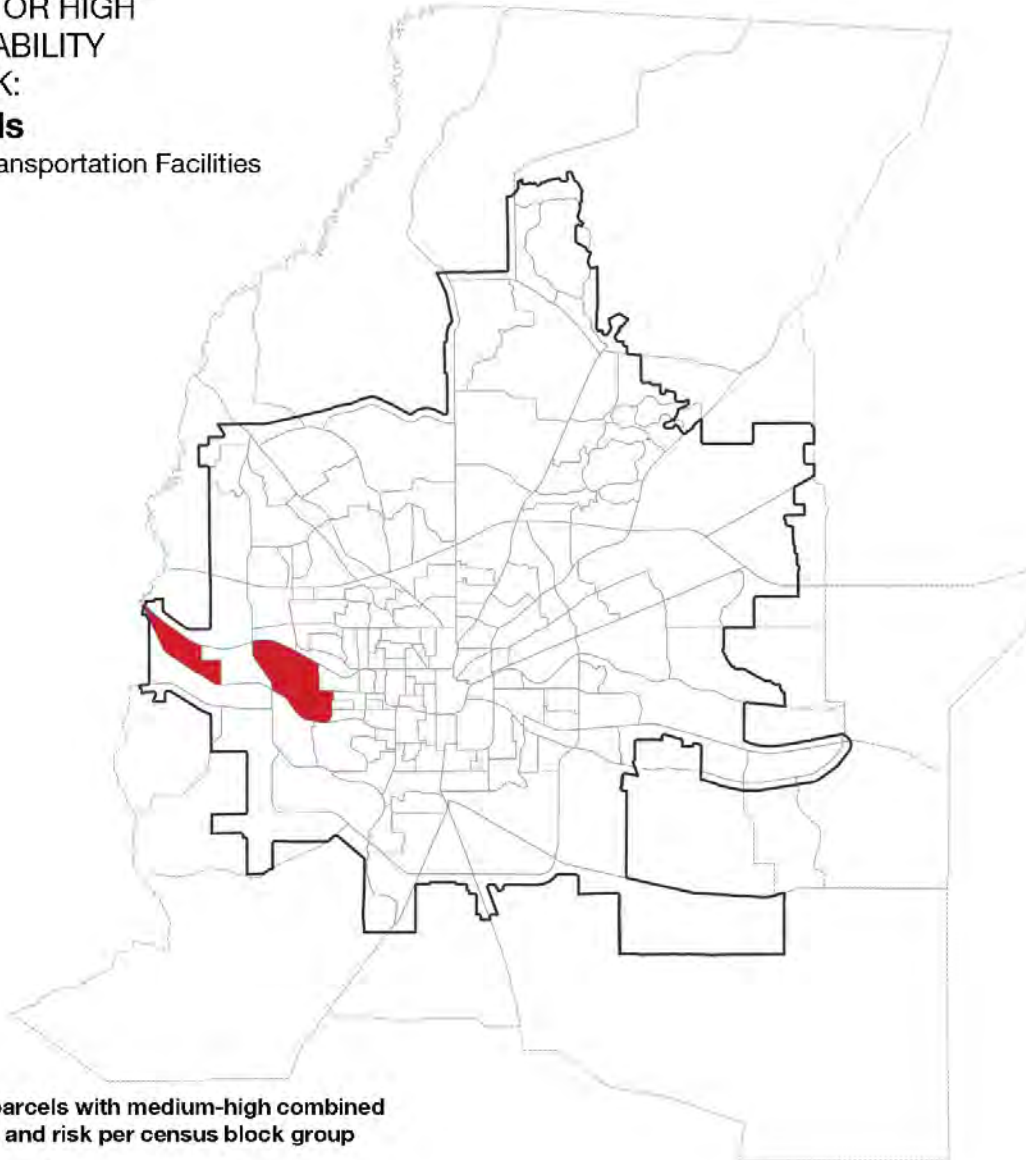vulnerability and risk per census block group**

■ High (37-67)	——	Urban Service Area
■ Medium (9-36)	——	Census Block Group
■ Low (1-8)	- - - -	Census Block Group outside analysis boundary
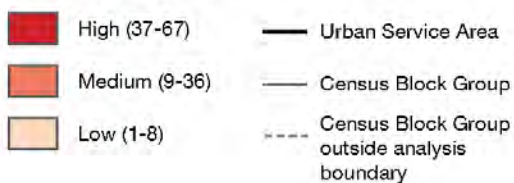
Transportation Facilities & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
1 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
0 parcels
0% of Transportation Facilities
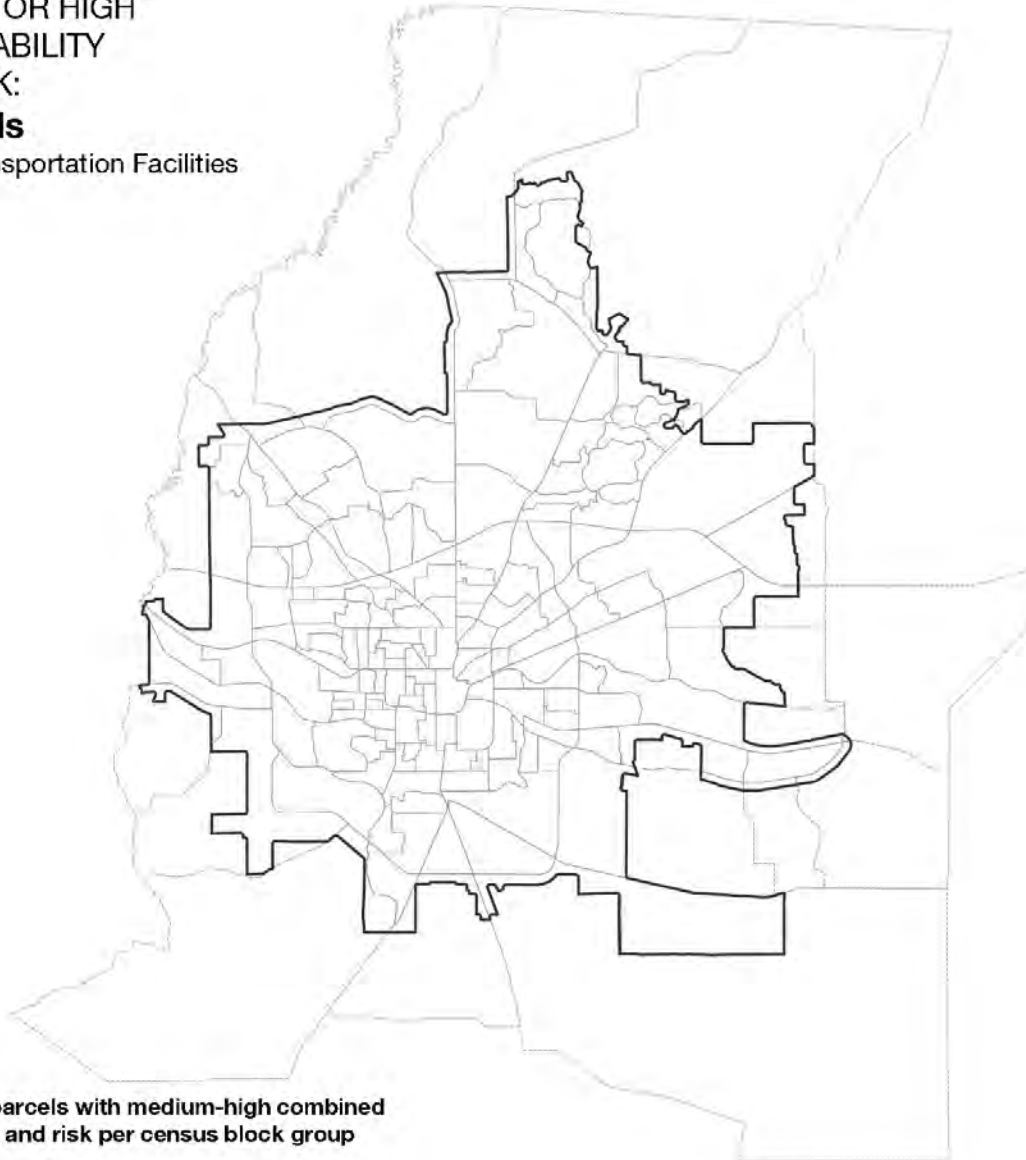
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

—— Urban Service Area

—— Census Block Group

- - - Census Block Group
outside analysis
boundary

Energy and Utilities & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
15 parcels exposed

MEDIUM OR HIGH VULNERABILITY AND RISK:
1 parcels
0.3% of Energy and Utilities
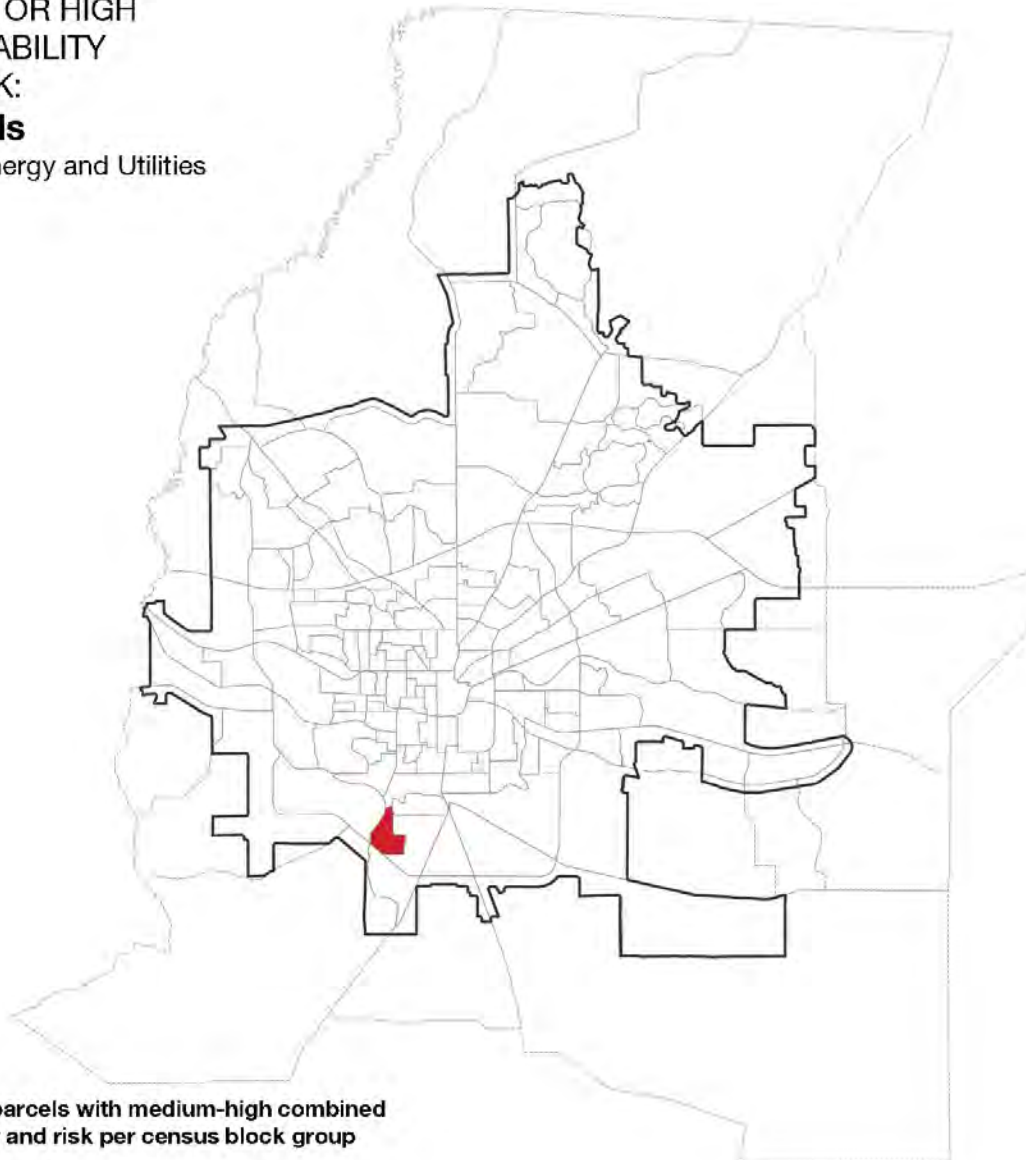
Number of parcels with medium-high combined vulnerability and risk per census block group

High (1)	——	Urban Service Area
	——	Census Block Group
	----	Census Block Group outside analysis boundary
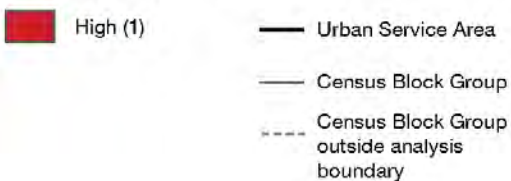
Educational Property & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
0 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
0 parcels
0% of Educational Property
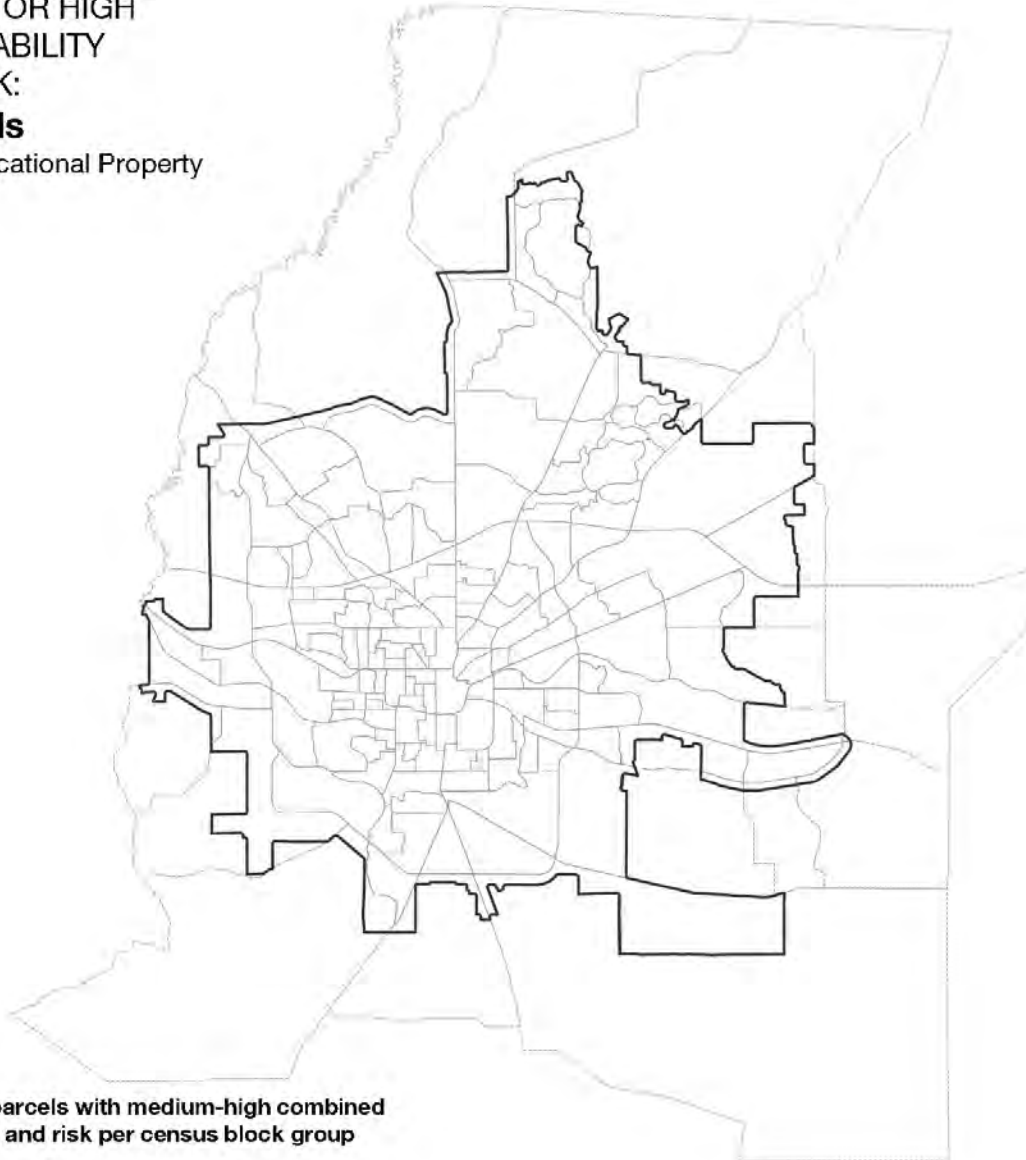
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

—— Urban Service Area

—— Census Block Group

- - - Census Block Group
outside analysis
boundary

Cultural and Human Service Property & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
1 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
0 parcels
0% of Cultural and Human
Service Property
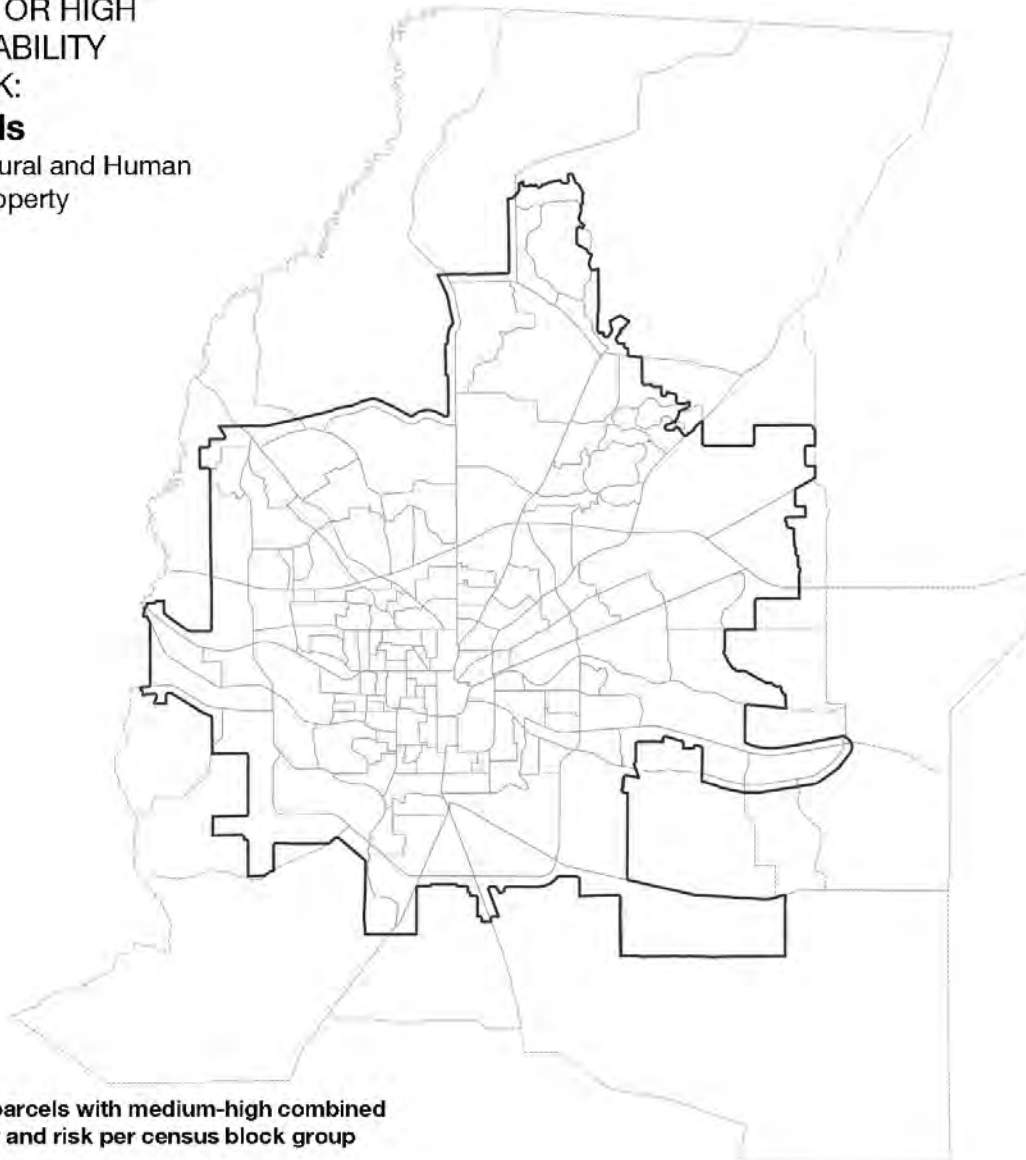
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

—— Urban Service Area

—— Census Block Group

----- Census Block Group
outside analysis
boundary

Emergency Facilities & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
1 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
0 parcels
0% of Emergency Facilities

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

——— Urban Service Area

——— Census Block Group
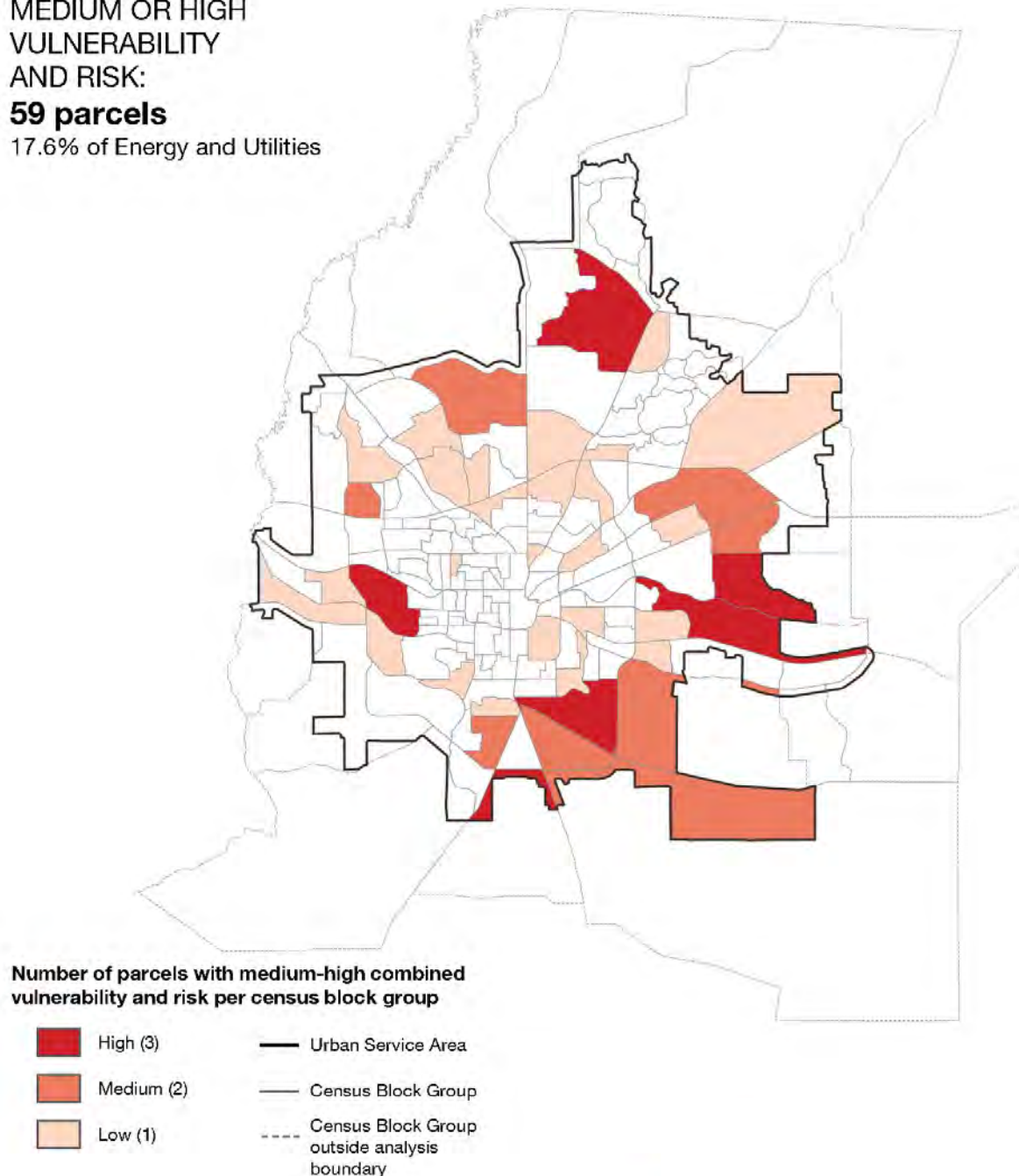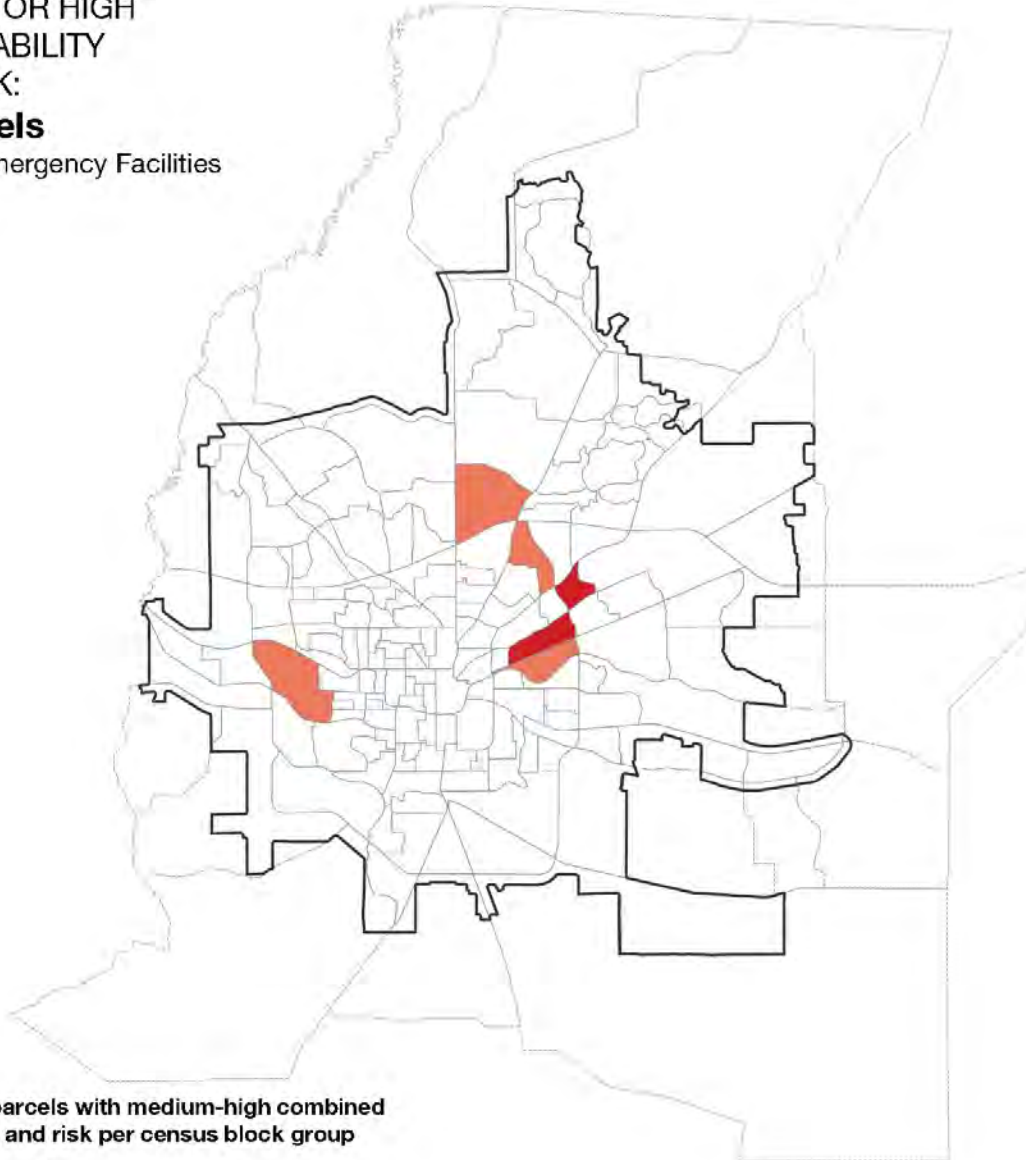
- - - - Census Block Group
outside analysis
boundary

Natural Areas & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
4 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
0 parcels
0% of Natural Areas

Number of parcels with medium-high combined vulnerability and risk per census block group

——	Urban Service Area
——	Census Block Group
----	Census Block Group outside analysis boundary

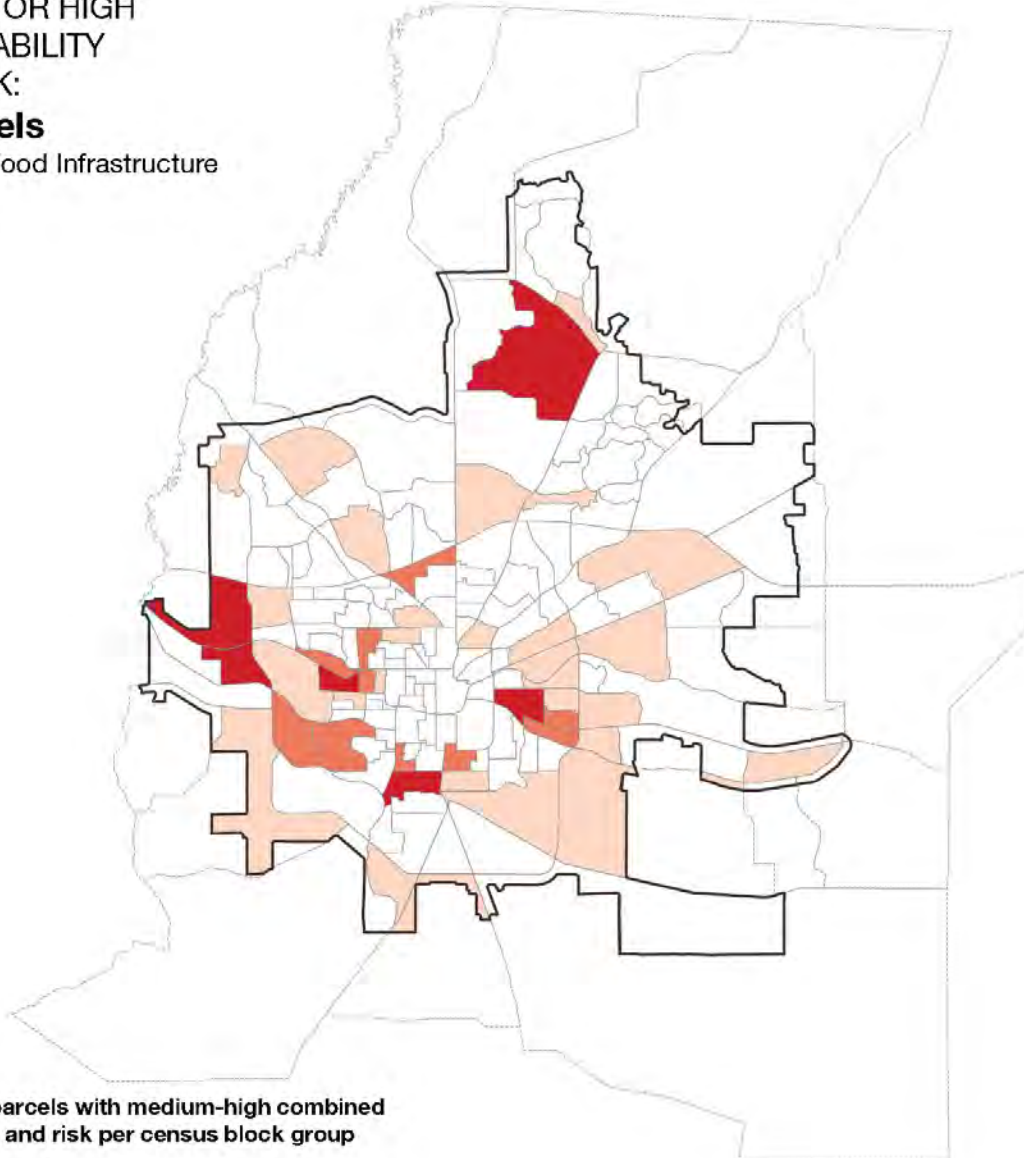# Food Infrastructure & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
1 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
0 parcels
0% of Food Infrastructure

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

—— Urban Service Area

—— Census Block Group

- - - Census Block Group
outside analysis
boundary

Government-Owned Property & Storm Surge

Vulnerability & Risk Assessment

EXPOSED:
11 parcels exposed

MEDIUM OR HIGH VULNERABILITY AND RISK:

1 parcels
0.2% of Government-Owned Property

Number of parcels with medium-high combined vulnerability and risk per census block group

- High (1)
- ——— Urban Service Area
- ——— Census Block Group
- - - - Census Block Group outside analysis boundary

Commercial and Industrial Property & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
3176 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
389 parcels
9.1% of Commercial and
Industrial Property

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (7-28)	——	Urban Service Area
Medium (2-6)	——	Census Block Group
Low (1)	- - -	Census Block Group outside analysis boundary

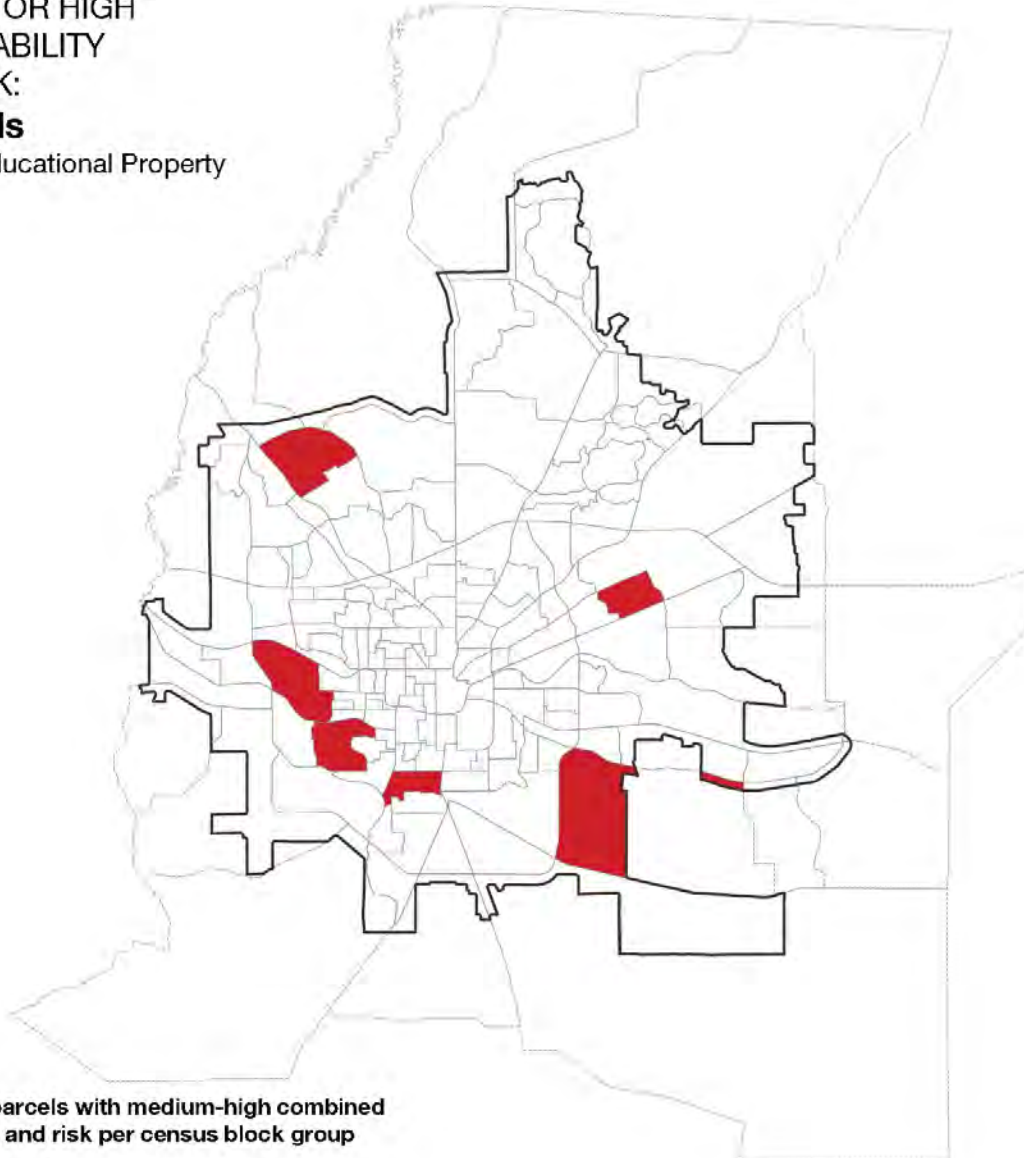## Residential Property & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
66175 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
7777 parcels
10.9% of Residential Property

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (70-362)   ——— Urban Service Area

Medium (13-69)   ——— Census Block Group

Low (1-12)   - - - Census Block Group
                           outside analysis
                           boundary

Transportation Facilities & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
36 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
2 parcels
4.9% of Transportation Facilities

Number of parcels with medium-high combined vulnerability and risk per census block group

High (1)

Urban Service Area

Census Block Group

Census Block Group outside analysis boundary

# Energy and Utilities & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
308 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
59 parcels
17.6% of Energy and Utilities

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

■ High (3)	—— Urban Service Area
■ Medium (2)	—— Census Block Group
■ Low (1)	---- Census Block Group outside analysis boundary

Emergency Facilities & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
218 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
18 parcels
6.4% of Emergency Facilities

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (2-7)	Urban Service Area
Medium (1)	Census Block Group
	Census Block Group outside analysis boundary

Natural Areas, Parks, and Greenways & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
136 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
19 parcels
12.4% of Natural Areas, Parks,
and Greenways
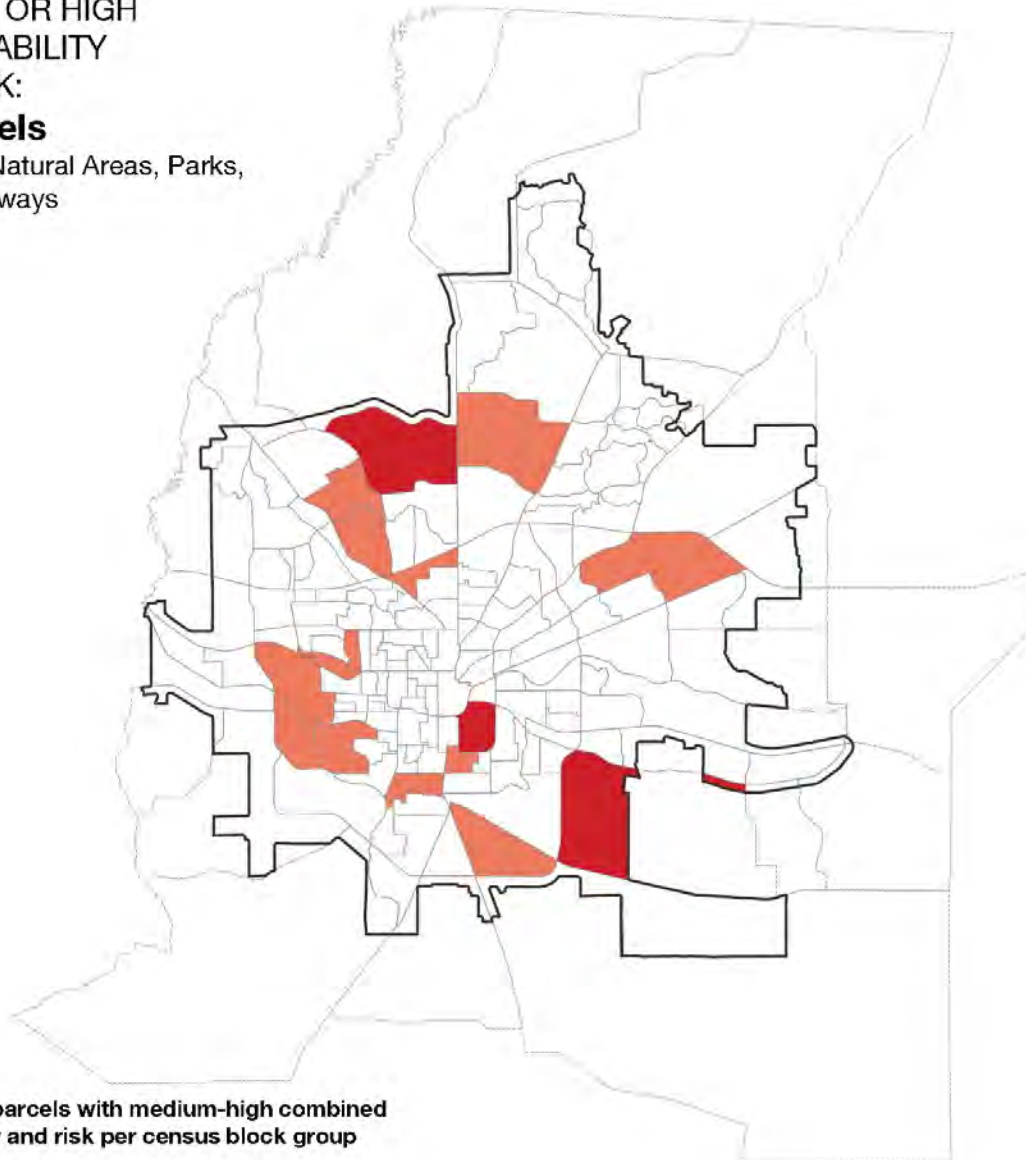
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (2)

Medium (1)

Urban Service Area

Census Block Group

Census Block Group
outside analysis
boundary

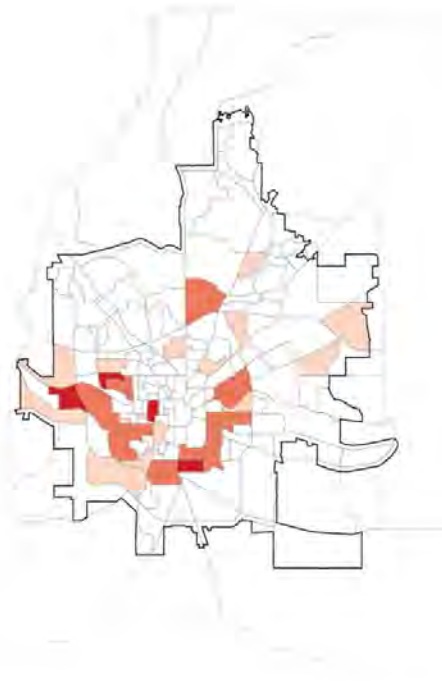# Food Infrastructure & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
294 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
68 parcels
17.4% of Food Infrastructure

Number of parcels with medium-high combined vulnerability and risk per census block group

High (3)

Medium (2)

Low (1)

Urban Service Area

Census Block Group

Census Block Group outside analysis boundary

Government-Owned Property & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
418 parcels exposed

MEDIUM OR HIGH VULNERABILITY AND RISK:
63 parcels
11.9% of Government-Owned Property

Number of parcels with medium-high combined vulnerability and risk per census block group

- High (3-4)
- Medium (2)
- Low (1)

- Urban Service Area
- Census Block Group
- Census Block Group outside analysis boundary
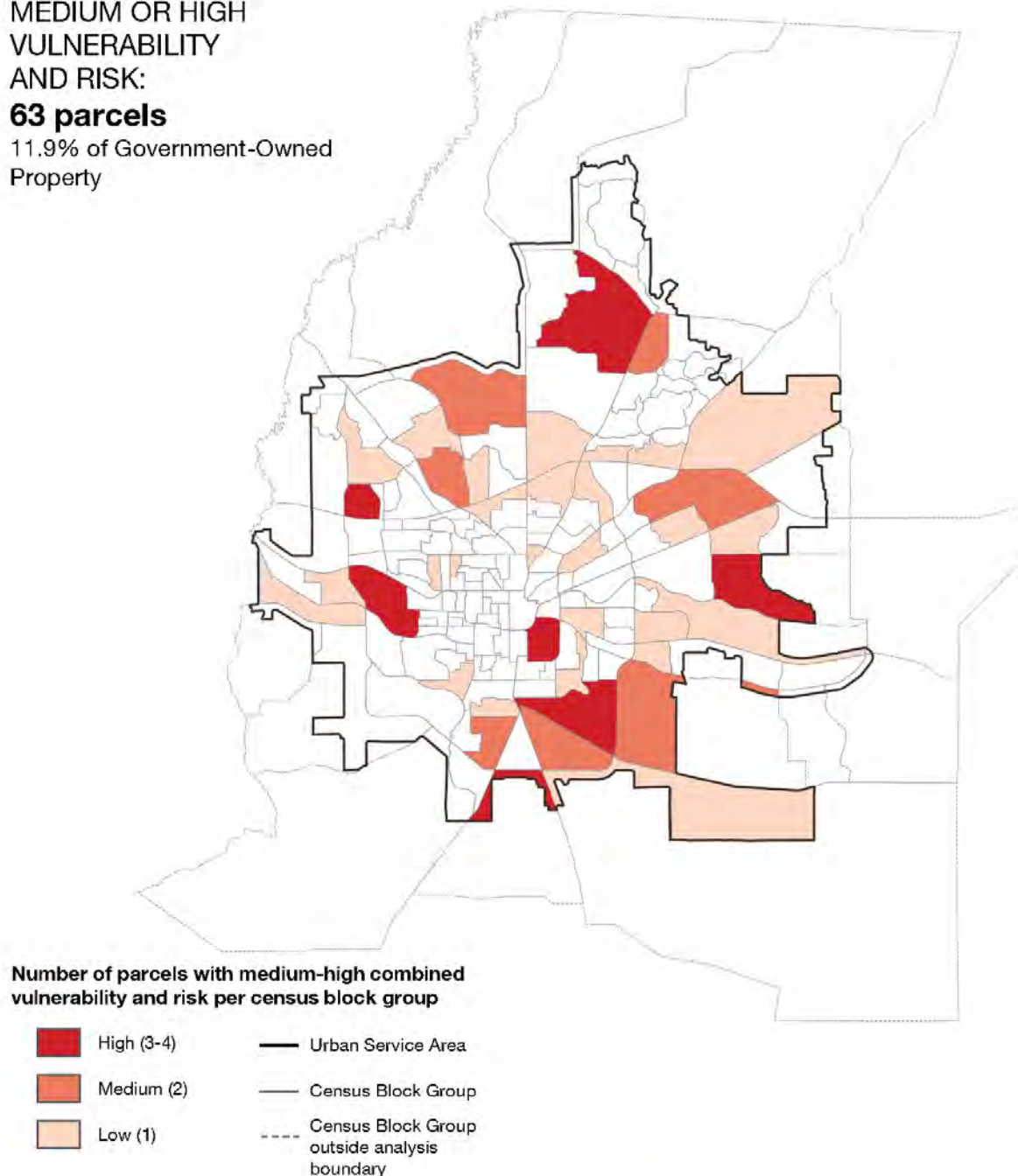
Educational Property & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
89 parcels exposed

MEDIUM OR HIGH
VULNERABILITY
AND RISK:
6 parcels
4.8% of Educational Property

**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (1)

—— Urban Service Area

—— Census Block Group

- - - - Census Block Group
outside analysis
boundary

Cultural Property & Wildfire

Vulnerability & Risk Assessment

EXPOSED:
499 parcels exposed

**MEDIUM OR HIGH
VULNERABILITY
AND RISK:**
49 parcels
7.3% of Cultural Property
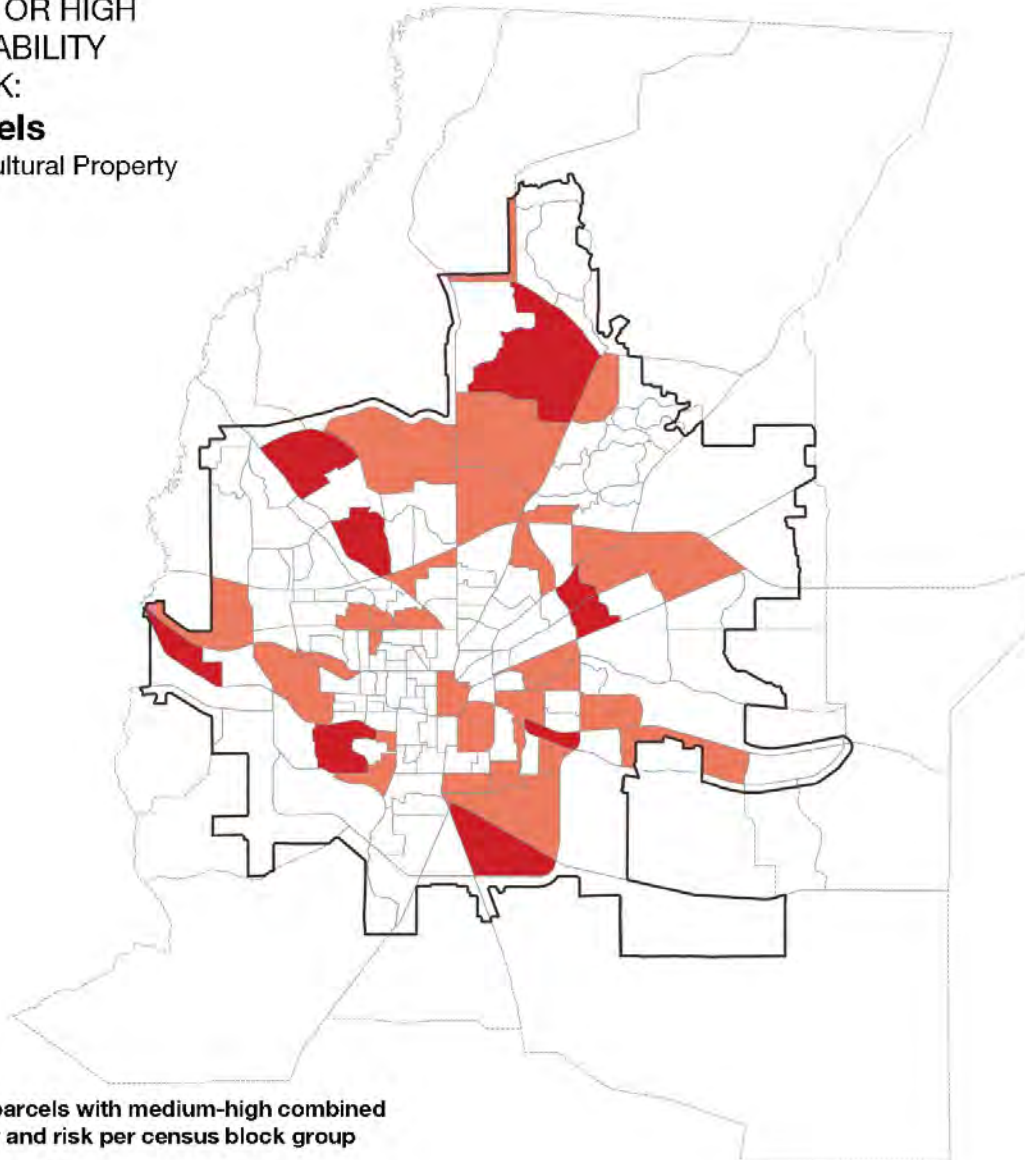
**Number of parcels with medium-high combined
vulnerability and risk per census block group**

High (2-3)	Urban Service Area
Medium (1)	Census Block Group
	Census Block Group outside analysis boundary
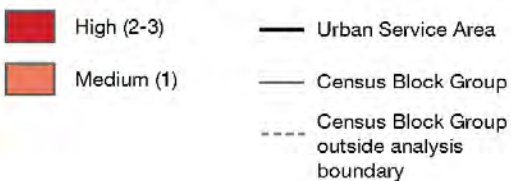
Residents & Extreme Heat

Vulnerability Assessment
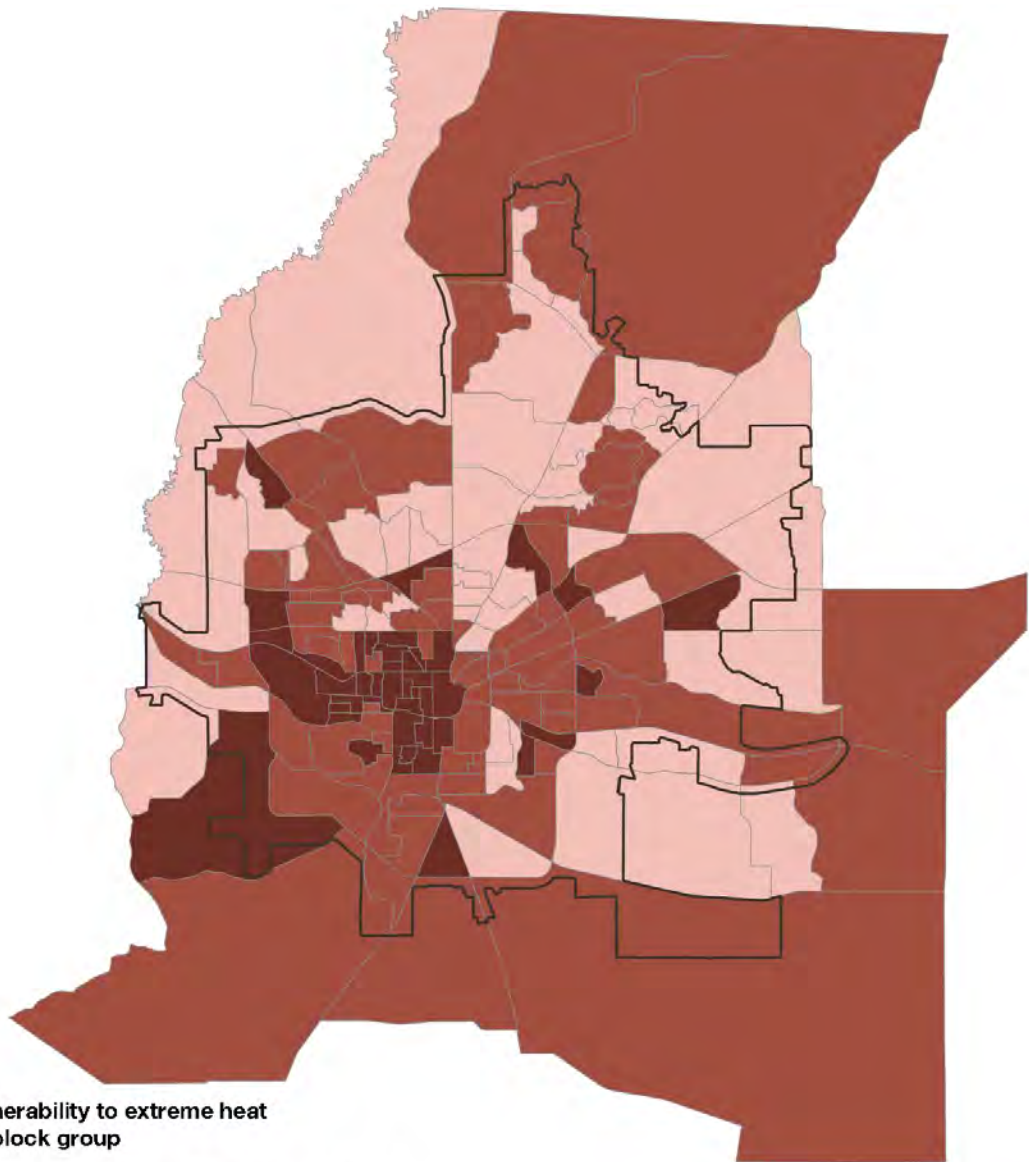
Relative vulnerability to extreme heat
per census block group

High	Urban Service Area	
Medium	Census Block Group	
Low	Census Block Group outside analysis boundary	

Road Inundation & Flooding

Inundated road infrastructure can cause temporary loss of transportation service, or floodwaters can erode and damage roads resulting in more significant impacts. Floodwaters generally are deepest and swiftest in the floodway, and anything in this area, including road infrastructure, is in the greatest danger during a flood.

Major Roads in the Floodway
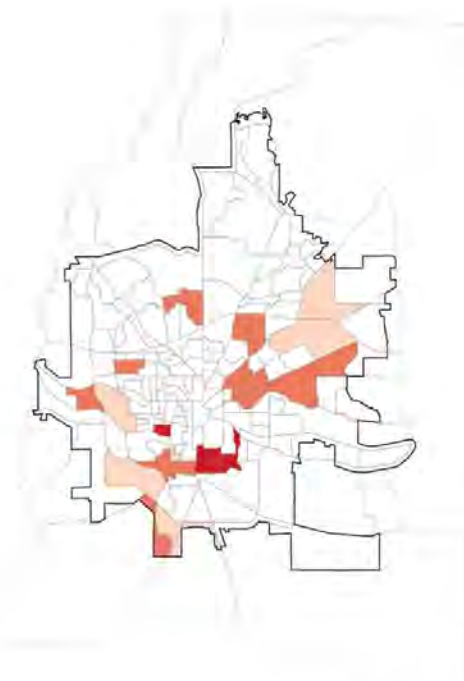
Minor Roads in the Floodway

Percent of Roads in Floodway

- > 5%
- 1-5
- < 1%
- None

— Urban Service Area Boundary
— Census Block Group
-- Census Block Group outside analysis boundary
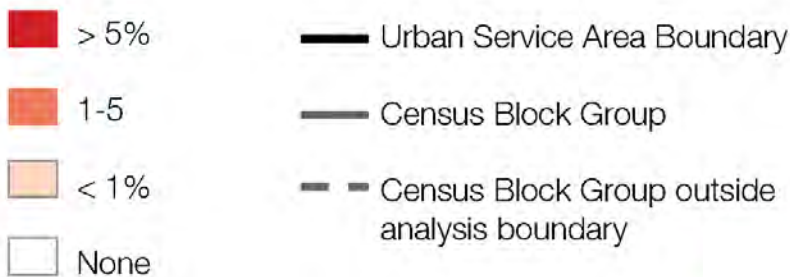
Road Access & Flooding

Flooding events could result in loss of road access and properties being inaccessible from fire stations due to inundated roads. Some of these areas have single points of access that are prone to flooding.

All Properties and 500-year Flood Extent (10,000 properties)
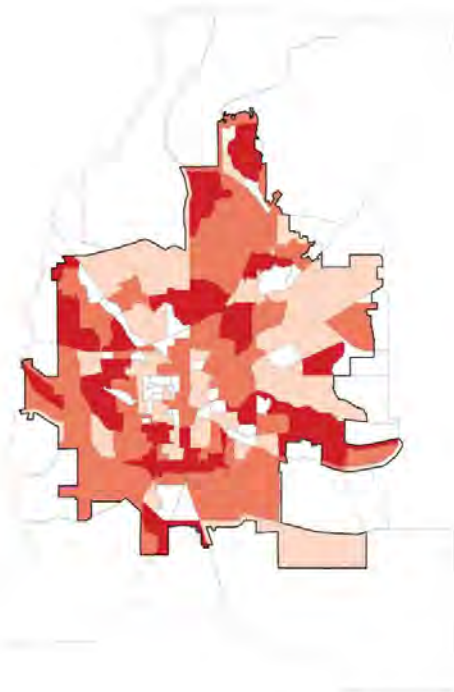
Residential Properties and 100-year Flood Extent (6,700 properties)
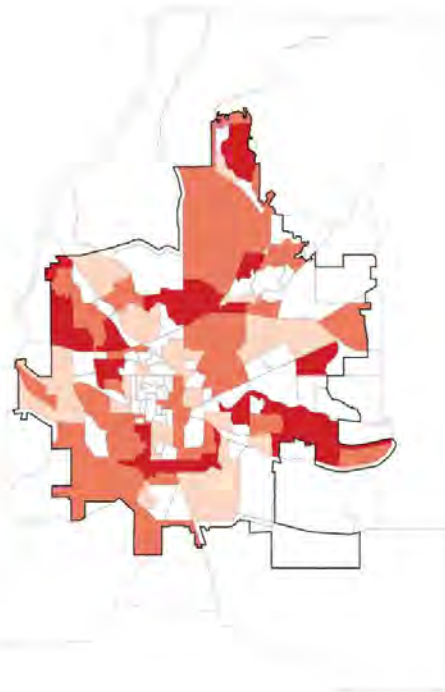
Estimated Number of Properties with Potential Loss of Road Access

- 100-400
- 10-100
- 1-10
- None

— Urban Service Area Boundary
— Census Block Group
- - Census Block Group outside analysis boundary
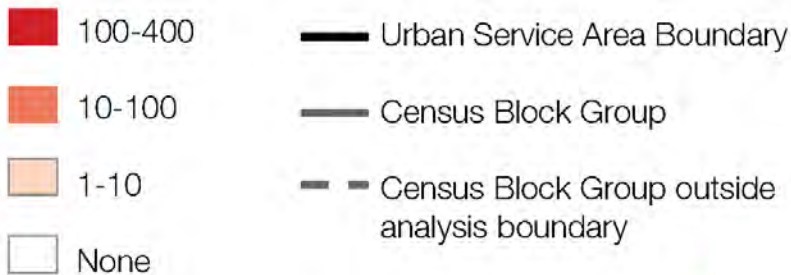
Population Density

Socioeconomics
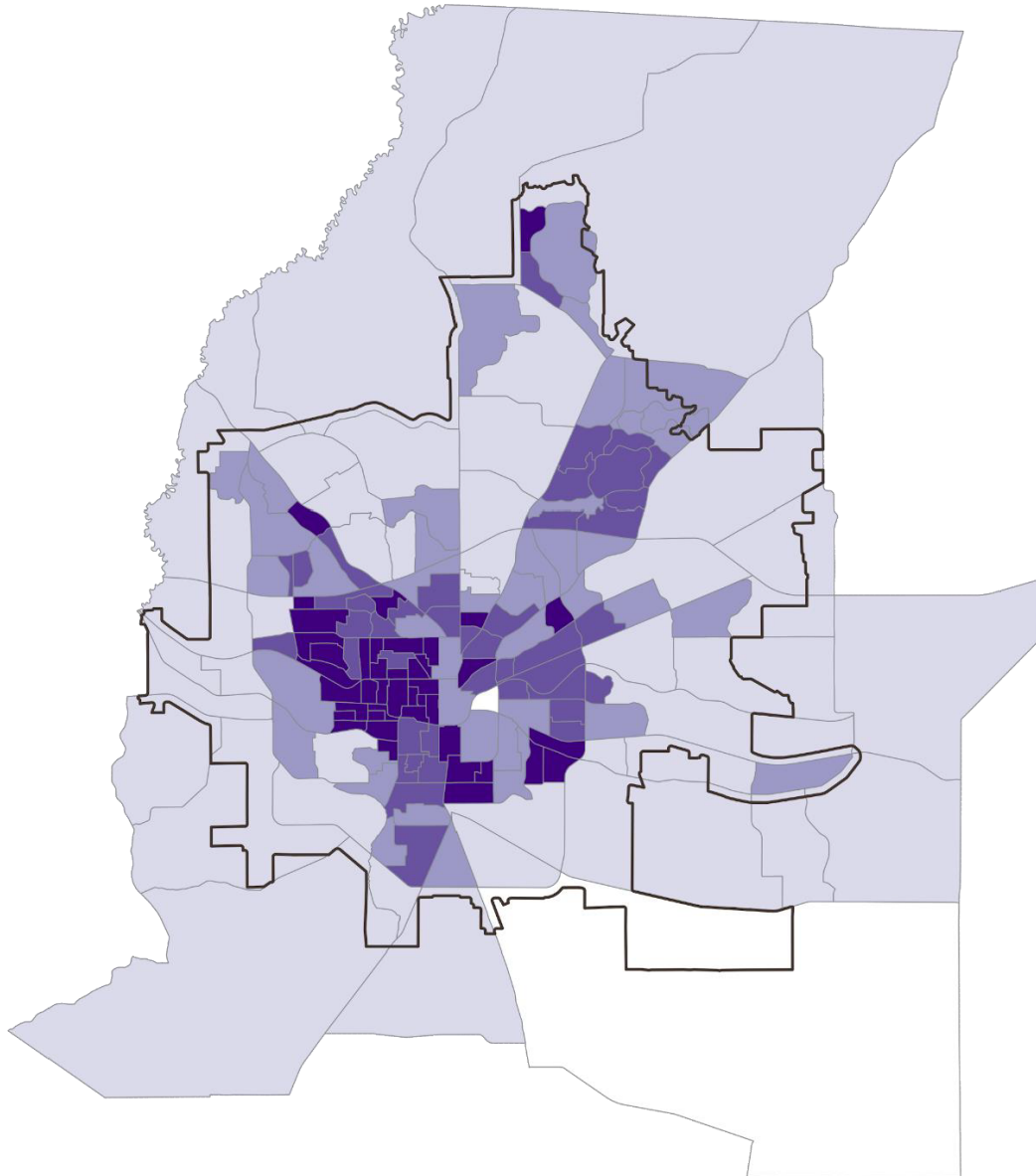
People per square mile
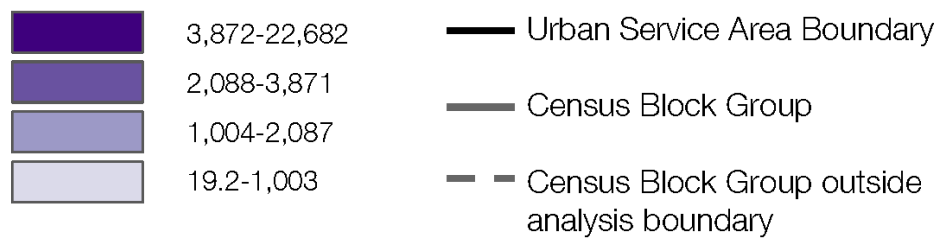
■	3,872-22,682
■	2,088-3,871
■	1,004-2,087
■	19.2-1,003

▬	Urban Service Area Boundary
▬	Census Block Group
▬ ▬	Census Block Group outside analysis boundary

Data Sources: US Census Bureau, American Community Survey 5-year 2015

Percent of Population Age 16+ Unemployment
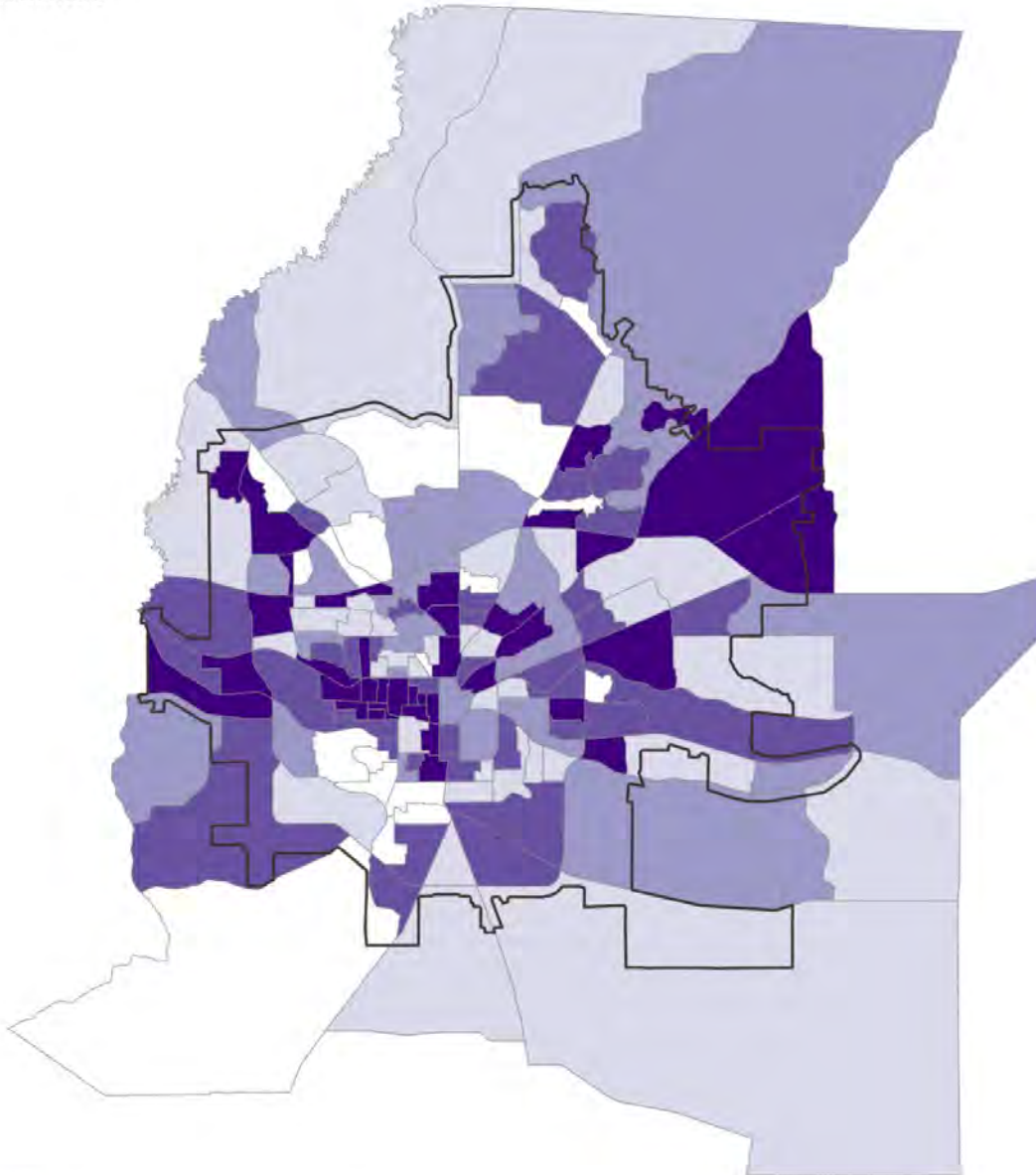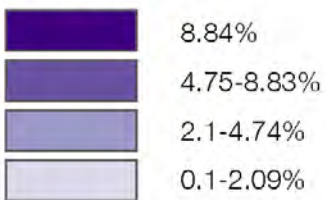
Socioeconomics
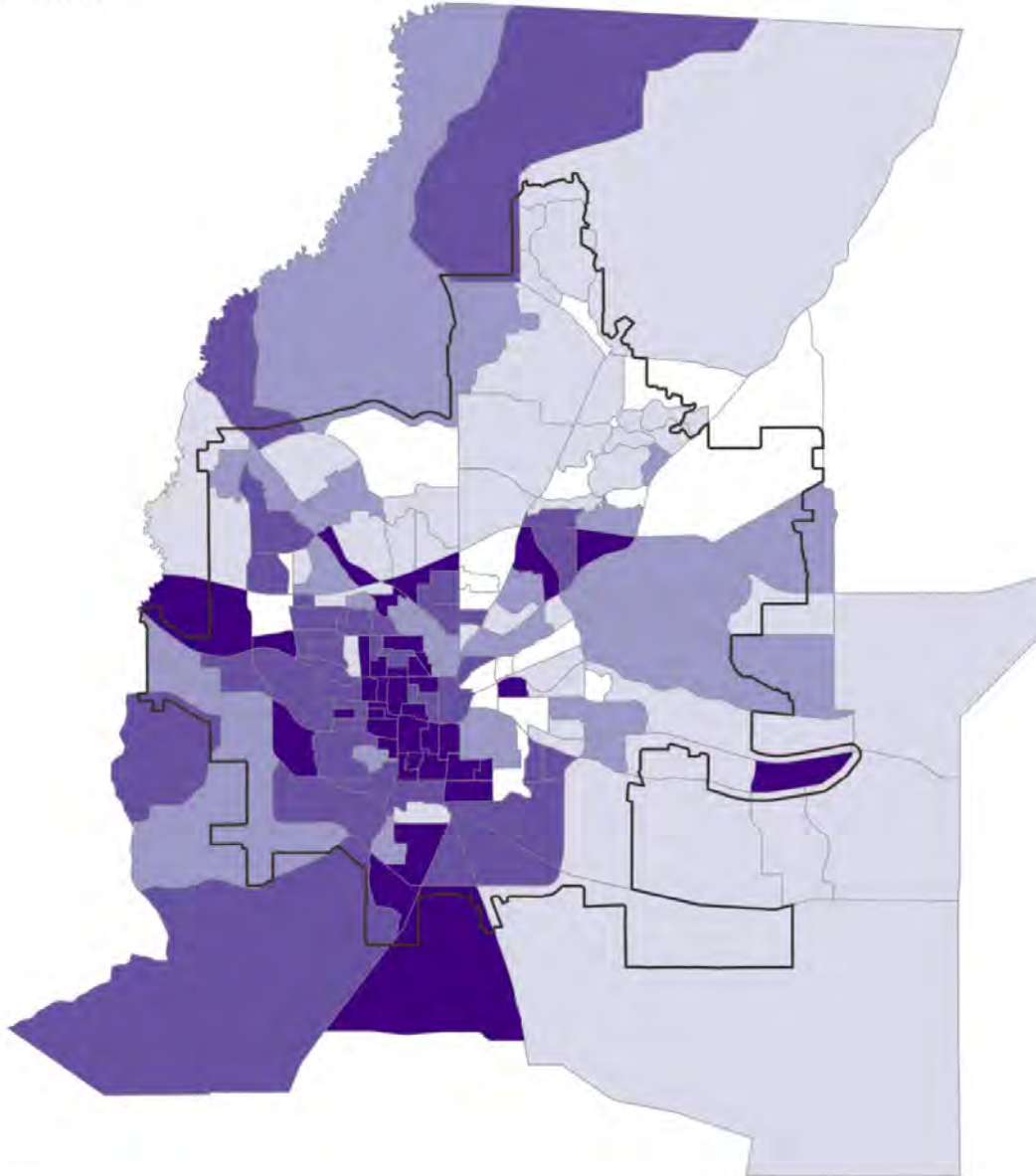
Percent
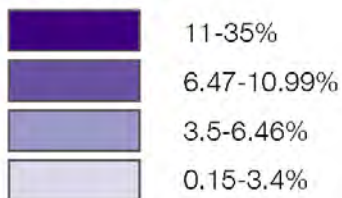
■ (dark purple)	11-35%
■ (medium purple)	6.47-10.99%
■ (light purple)	3.5-6.46%
■ (pale lavender)	0.15-3.4%

— Urban Service Area Boundary

— Census Block Group

- - Census Block Group outside analysis boundary

Data Sources: US Census Bureau, American Community Survey 5-year 2015

Percent of Population with Less Than a High School Diploma

Socioeconomics
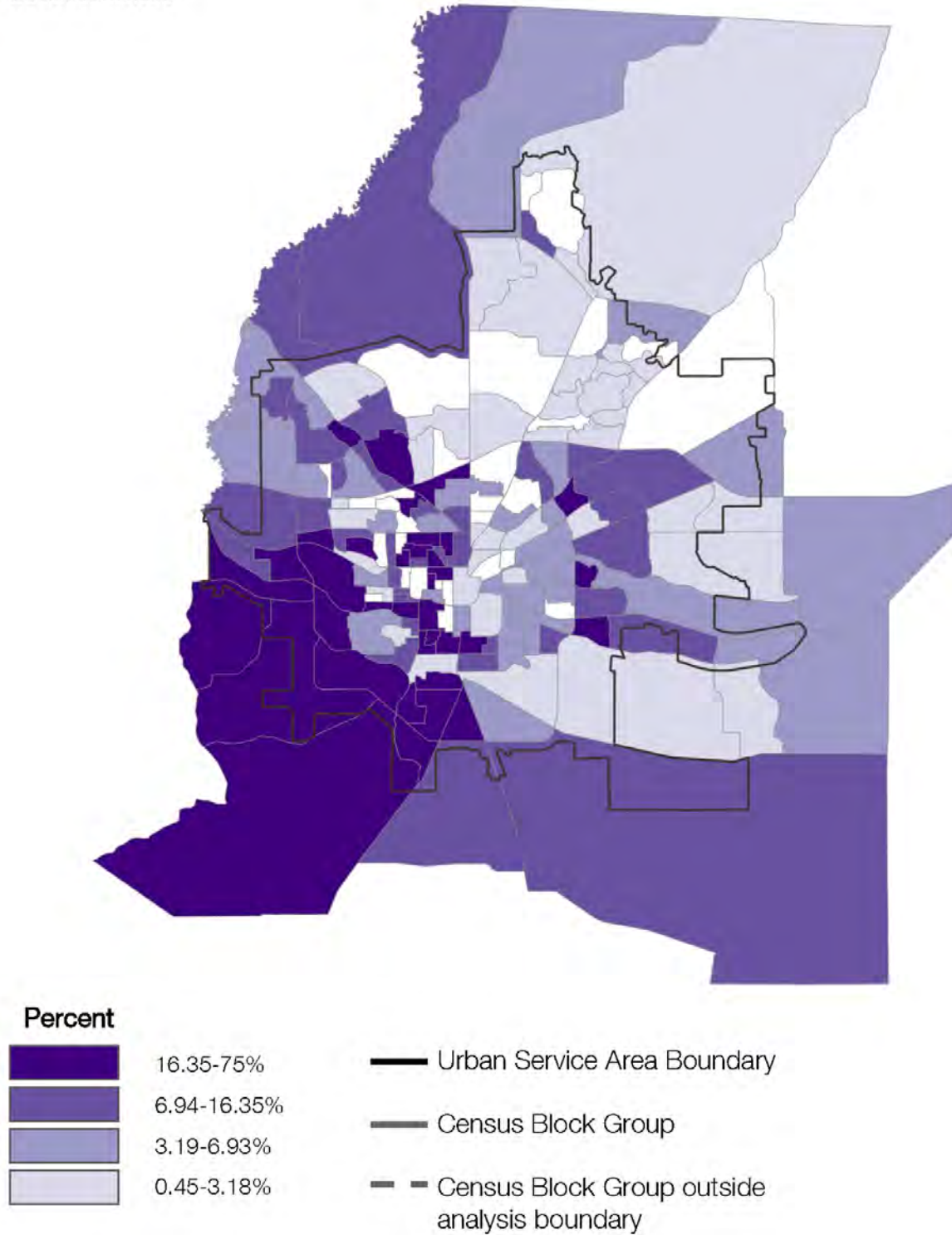
Percent

■ (darkest)	16.35-75%
■	6.94-16.35%
■	3.19-6.93%
■ (lightest)	0.45-3.18%

— Urban Service Area Boundary

— Census Block Group

- - Census Block Group outside analysis boundary

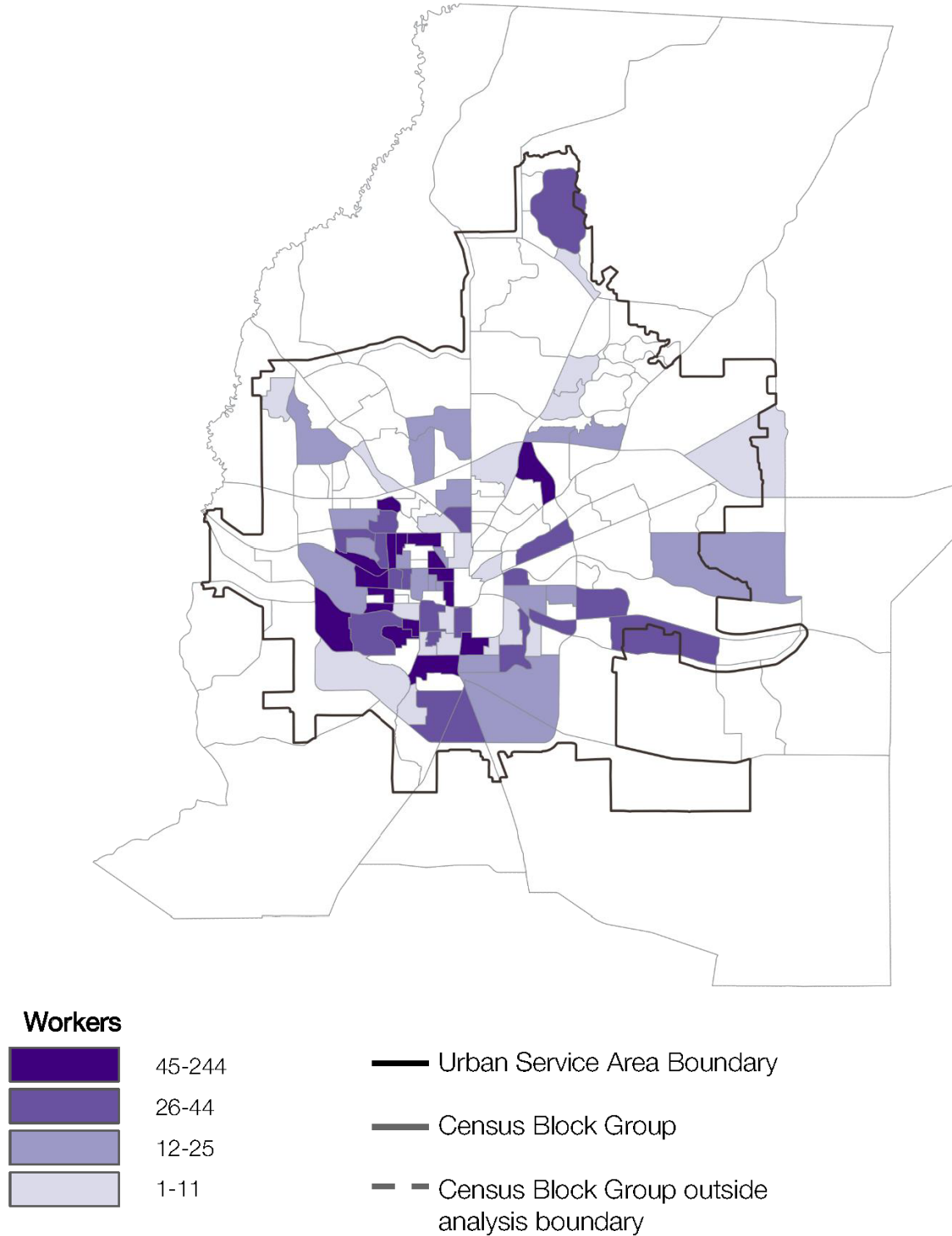Data Sources: US Census Bureau, American Community Survey 5-year 2015

Percent of Population Younger than 18 Older Than 64

Socioeconomics
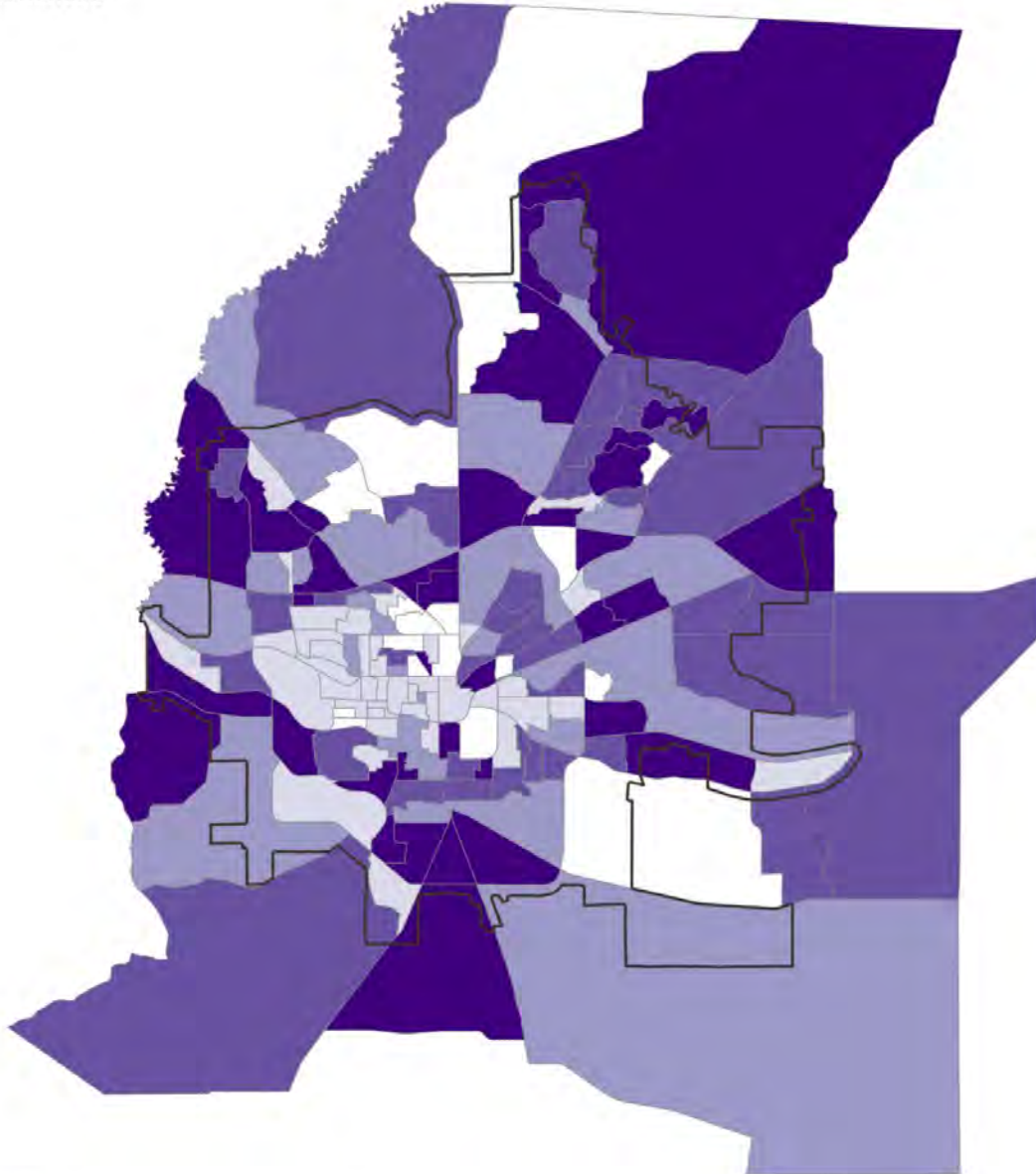
Percent

■	77-98%
■	70-76%
■	61-69%
■	28-60%

— Urban Service Area Boundary

— Census Block Group

-- Census Block Group outside analysis boundary

Data Sources: US Census Bureau, American Community Survey 5-year 2015

Percent African American Population

Socioeconomics

Percent

■ (dark purple)	50-98%
■ (medium purple)	24-49%
■ (light purple)	14.25-26%
■ (very light)	1.6-14.24%

——— Urban Service Area Boundary

——— Census Block Group

— — Census Block Group outside analysis boundary
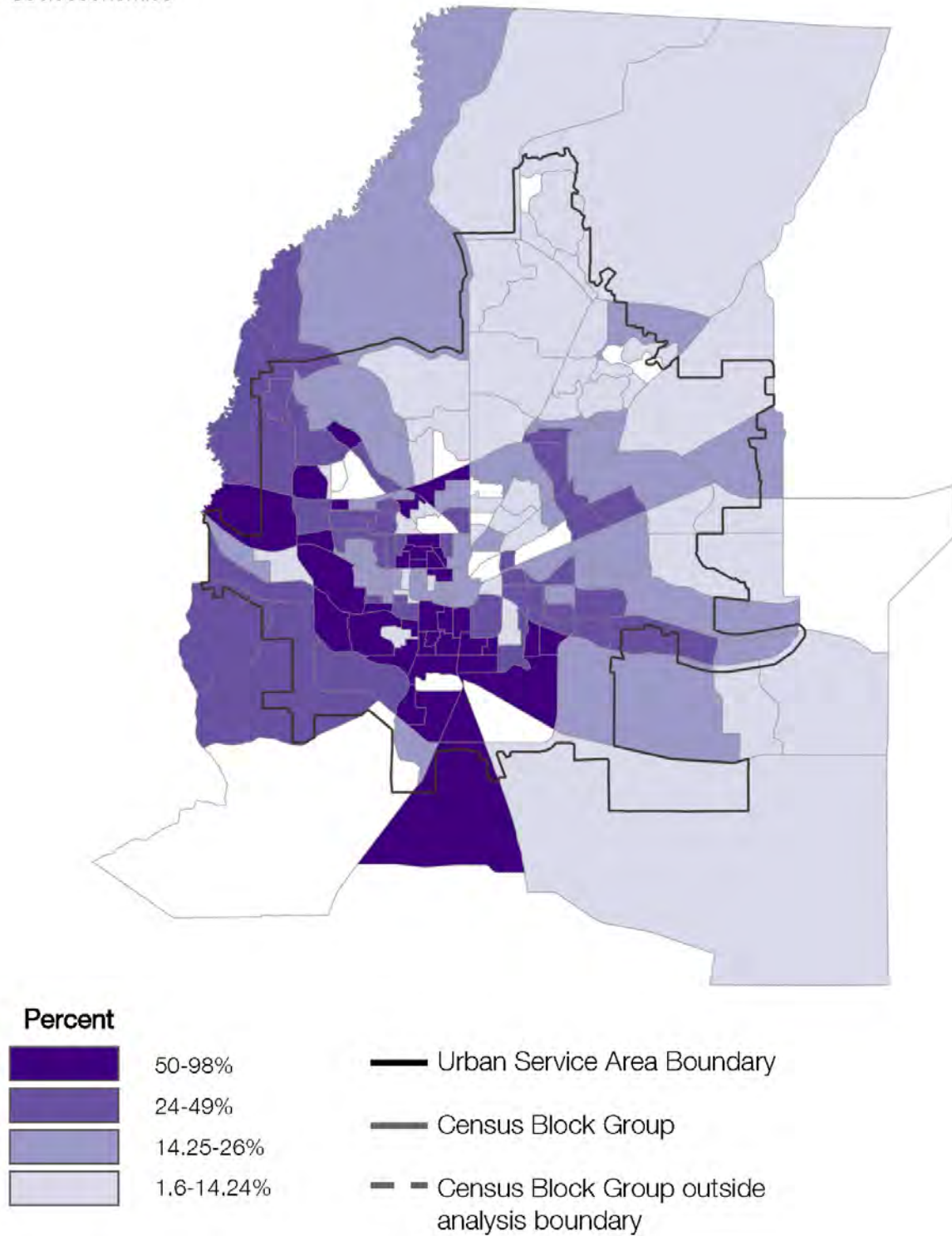
Data Sources: US Census Bureau, American Community Survey 5-year 2015

Percent Hispanic or Latino Origin Population

Socioeconomics

Percent

�	8.84%
	4.75-8.83%
	2.1-4.74%
	0.1-2.09%

——— Urban Service Area Boundary

——— Census Block Group

— — Census Block Group outside analysis boundary

Data Sources: US Census Bureau, American Community Survey 5-year 2015

## Workers Relying on Public Transportation

Socioeconomics

Workers

■	45-244
■	26-44
■	12-25
■	1-11

—— Urban Service Area Boundary

—— Census Block Group

– – Census Block Group outside analysis boundary

Data Sources: US Census Bureau, American Community Survey 5-year 2015
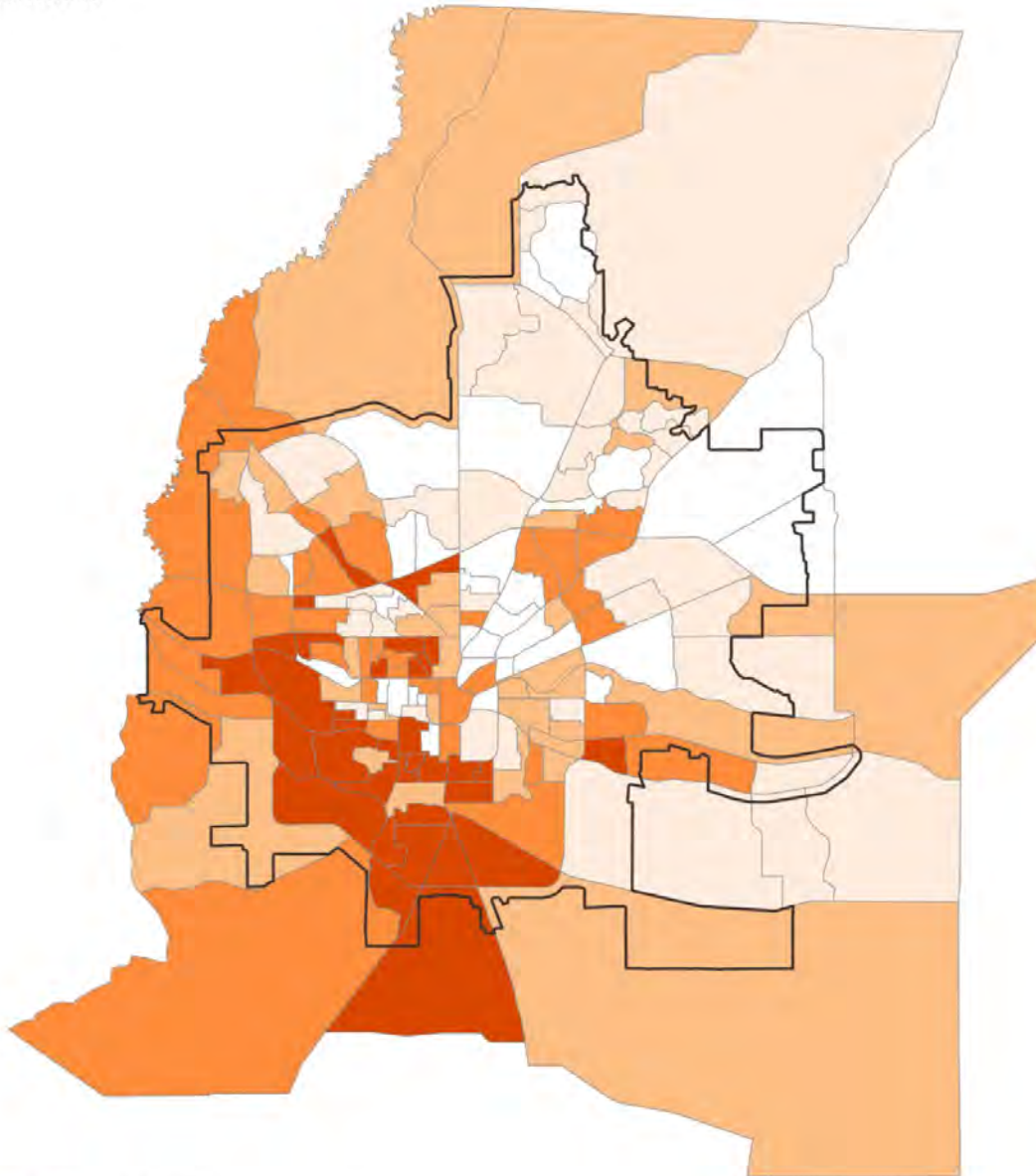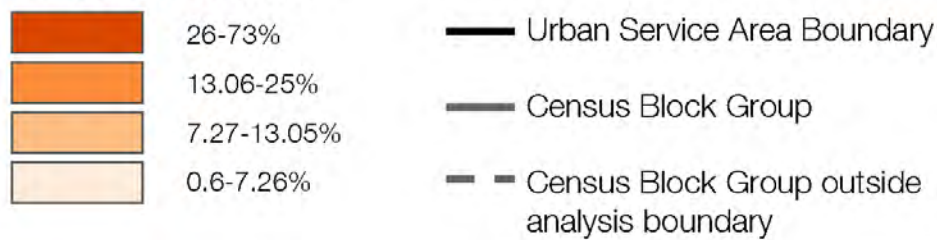
Median Household Income

Socioeconomics

Dollars

■ (dark orange)	$73,386-135,257
■ (orange)	$44,067-73,385
■ (light orange)	$31,251-44,066
■ (cream)	$8,066-31,250

— Urban Service Area Boundary

— Census Block Group

- - Census Block Group outside analysis boundary
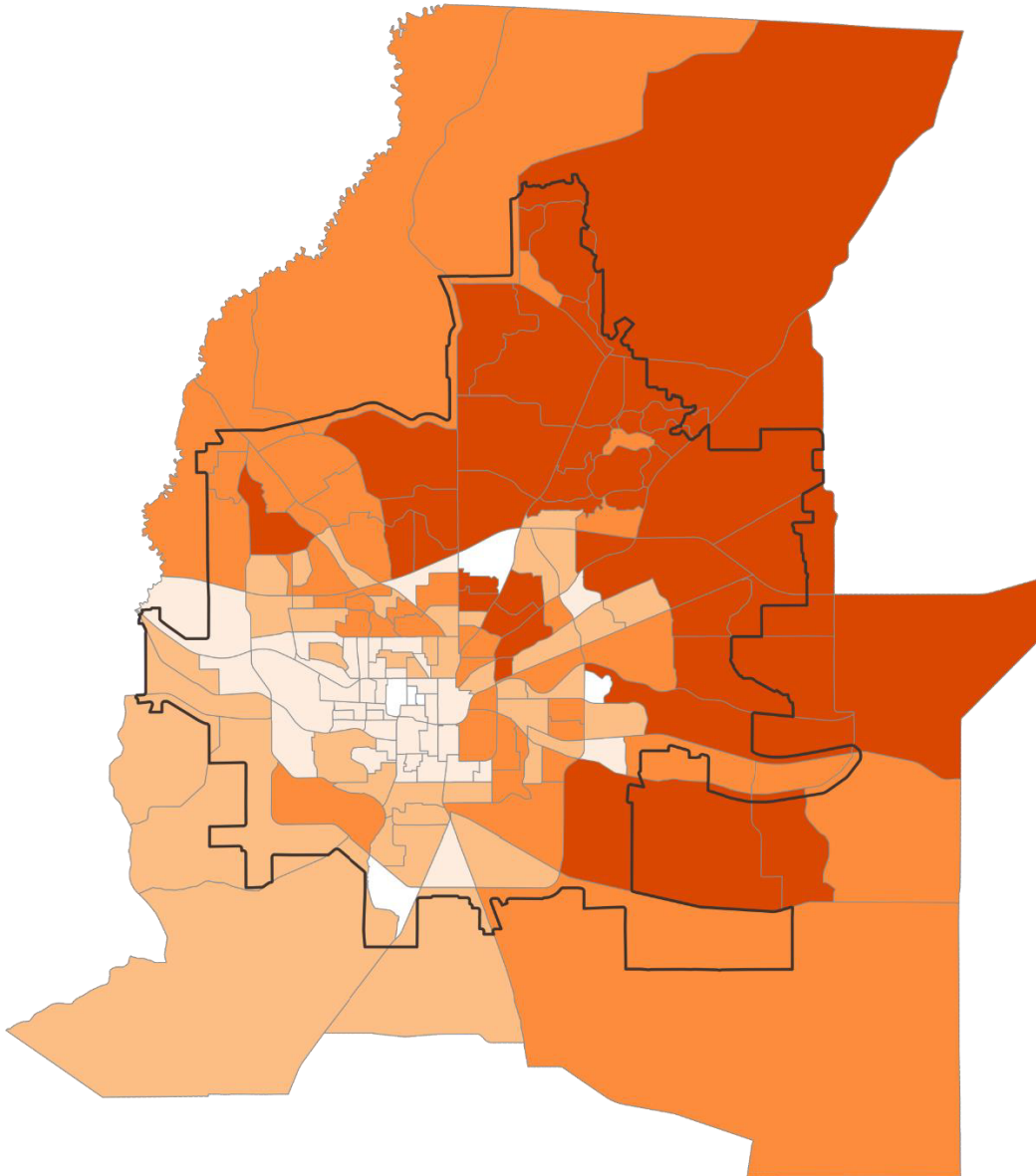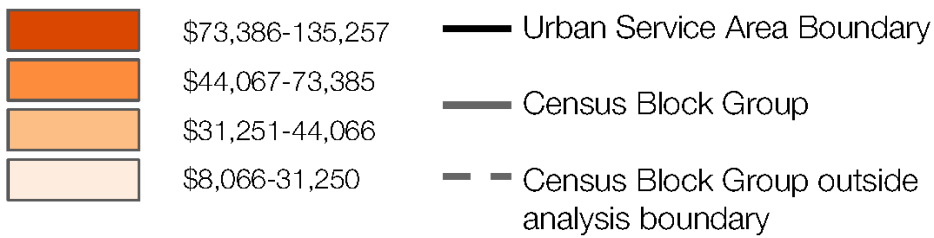
Data Sources: US Census Bureau, American Community Survey 5-year 2015
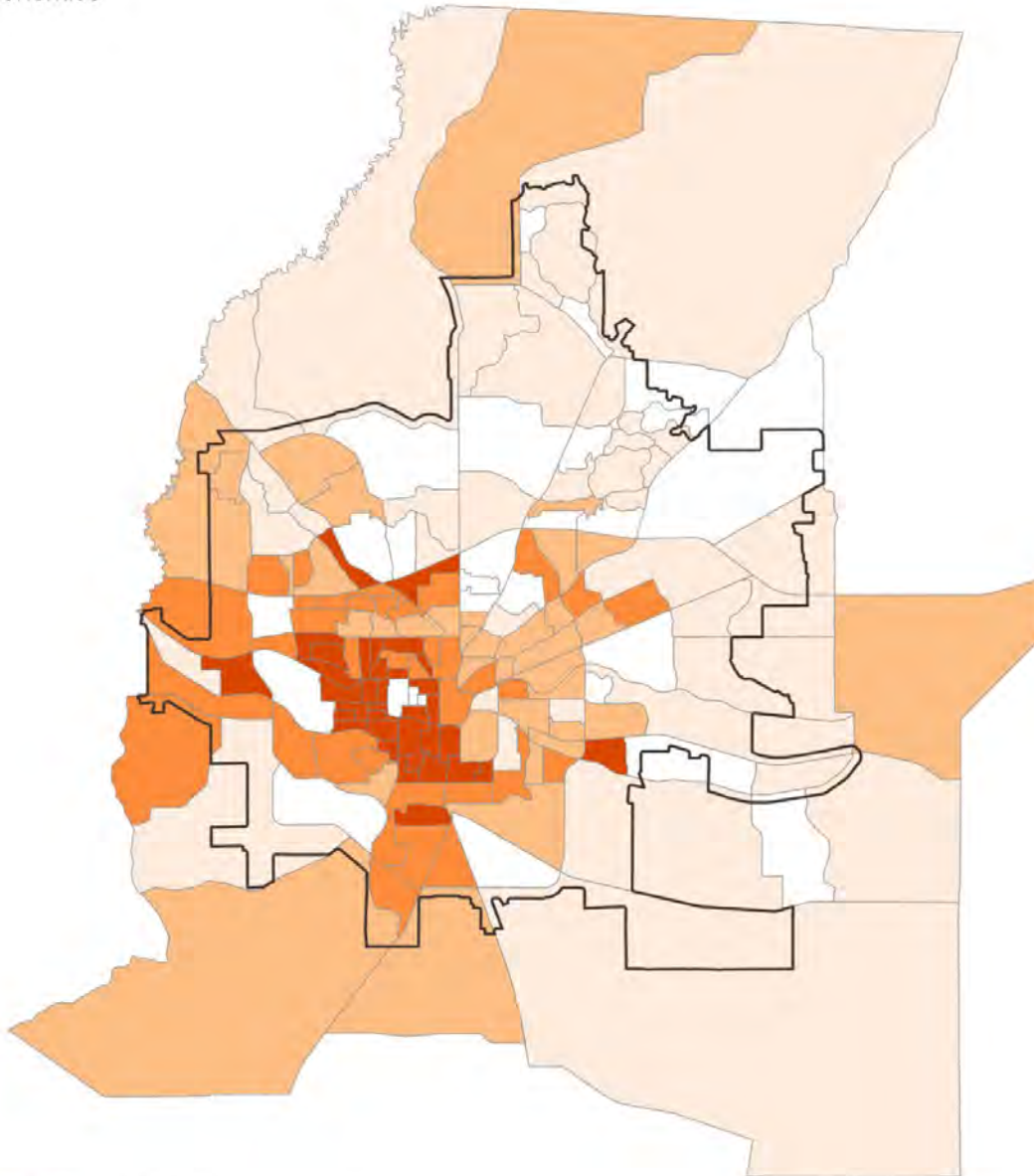
# Households Receiving SNAP Benefits

Socioeconomics

Percent Households

Color	Range
▨	26-73%
▨	13.06-25%
▨	7.27-13.05%
▨	0.6-7.26%

— Urban Service Area Boundary

— Census Block Group

- - Census Block Group outside analysis boundary

Data Sources: US Census Bureau, American Community Survey 5-year 2015

Households Below the Poverty Line

Socioeconomics

Percent Households

- 40-100%
- 21-39%
- 6.7-20%
- 0.65-6.6%

——— Urban Service Area Boundary

——— Census Block Group
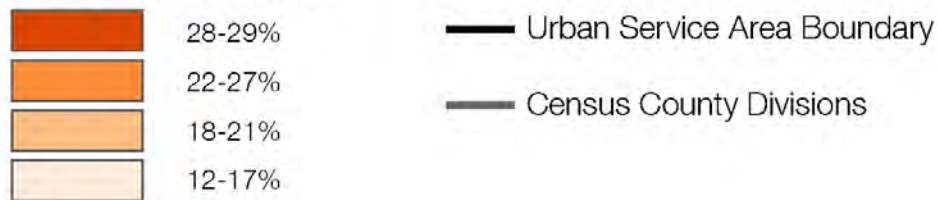
– – Census Block Group outside analysis boundary
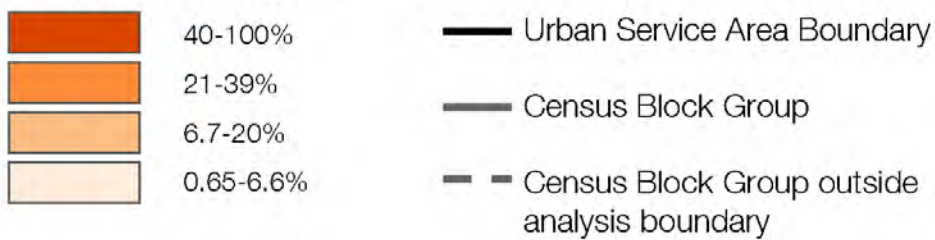
Data Sources: US Census Bureau, American Community Survey 5-year 2015

Households Below the ALICE Threshold

Socioeconomics

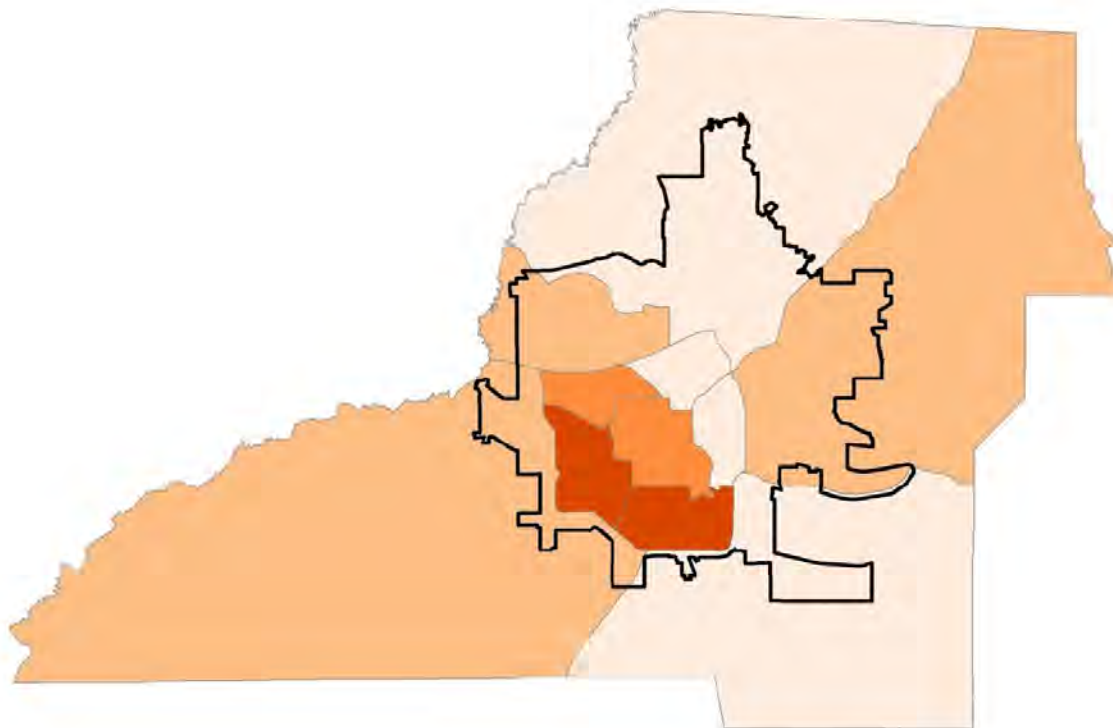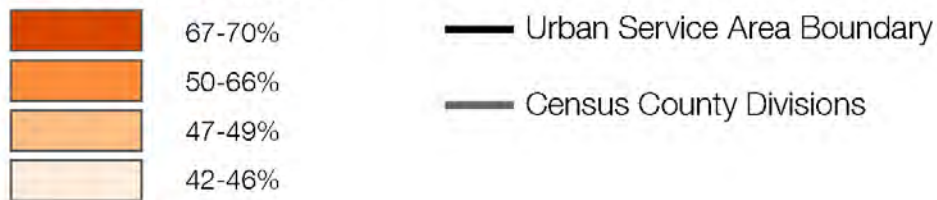**Percent Households**

- 28-29%
- 22-27%
- 18-21%
- 12-17%

—— Urban Service Area Boundary

—— Census County Divisions
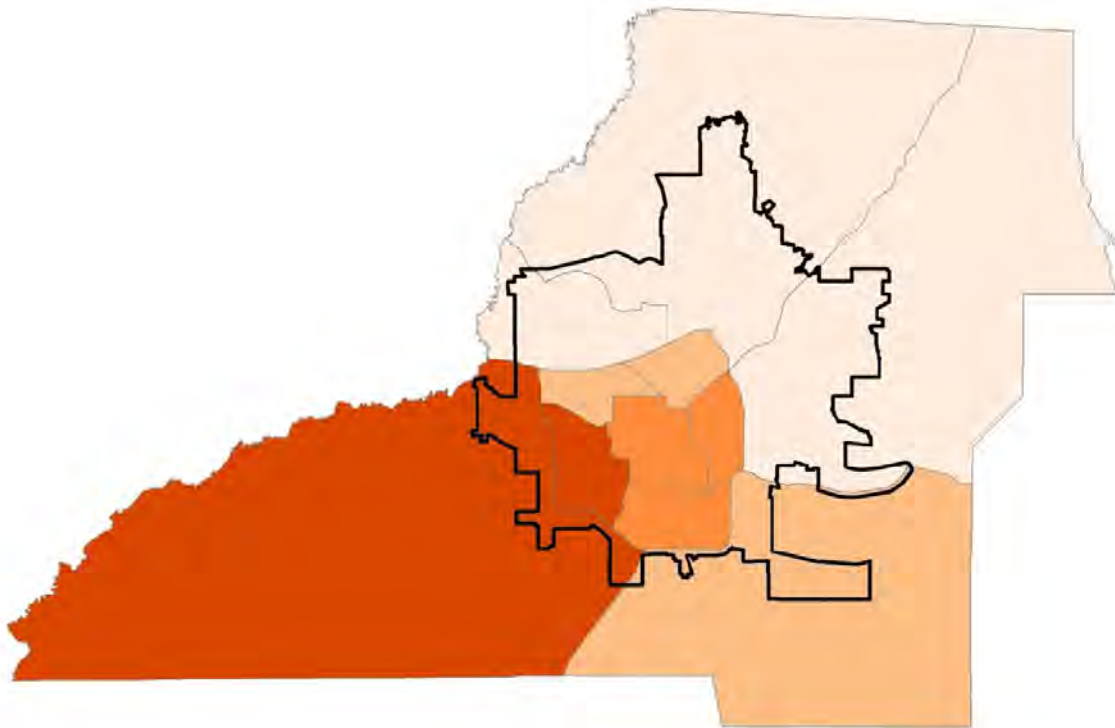
Data Sources: The United Way ALICE Project

Housing Cost-Burdened Renters

Socioeconomics

Percent Households

- 67-70%
- 50-66%
- 47-49%
- 42-46%

— Urban Service Area Boundary

— Census County Divisions

Data Sources: The United Way ALICE Project

Housing Cost-Burdened Owners

Socioeconomics

Percent Households

- 30-35%
- 26-29%
- 22-25%
- 18-21%

—— Urban Service Area Boundary

—— Census County Divisions
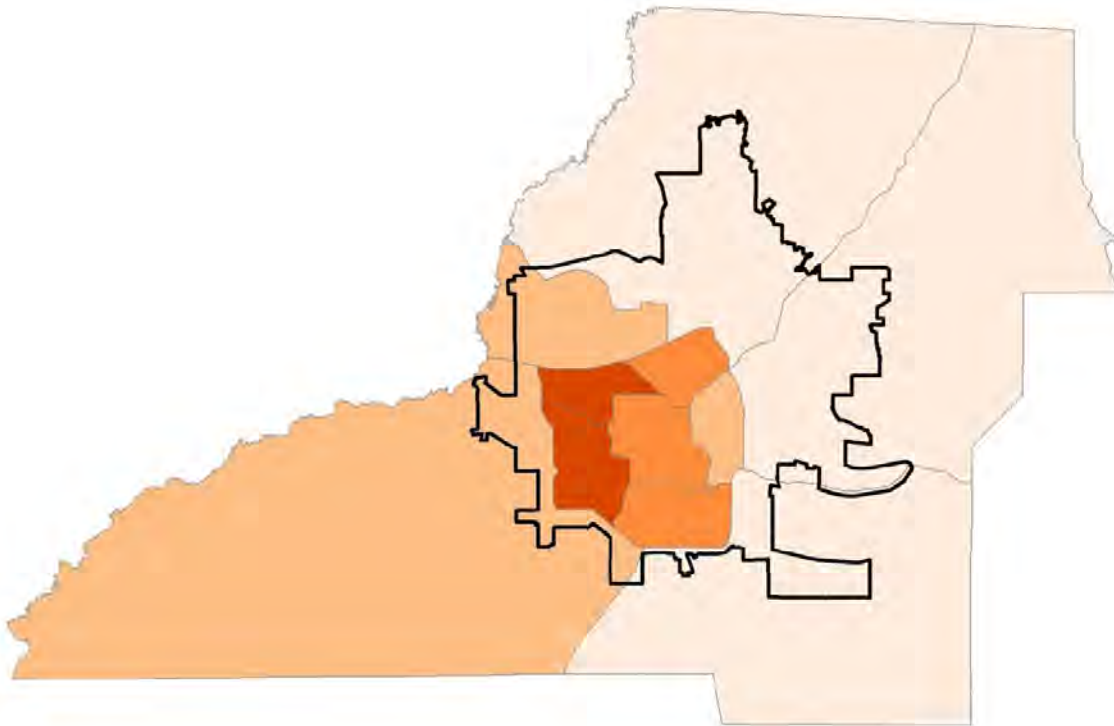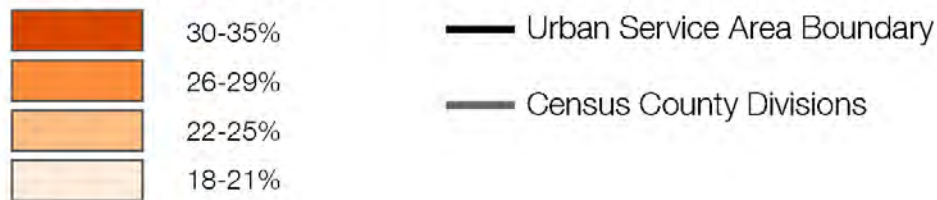
Data Sources: The United Way ALICE Project

www.talgov.com/resilience