

# EFFECTS OF CLIMATE CHANGE ON HEALTH IN DISTRICT 4

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*Prepared by:*

Madeline Meiser - Intern

Miranda Helms - Senior Manager Accreditation & Quality Improvement

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# Introduction

## District 4 Public Health

The state of Georgia employs both a state public health department (DPH) and separate county Boards of Health, which are organized into eighteen health districts. District 4's work is connected to the DPH through their Interim District Health Director, Dr. Beverly A. Townsend, who was appointed by the DPH commissioner to serve as the CEO of District 4's county Boards of Health. District 4 is comprised of 12 counties in the western region of Georgia, which include Butts, Carroll, Coweta, Fayette, Heard, Henry, Lamar, Meriwether, Pike, Spalding, Troup, and Upson (Figure 1). District 4 strives to protect

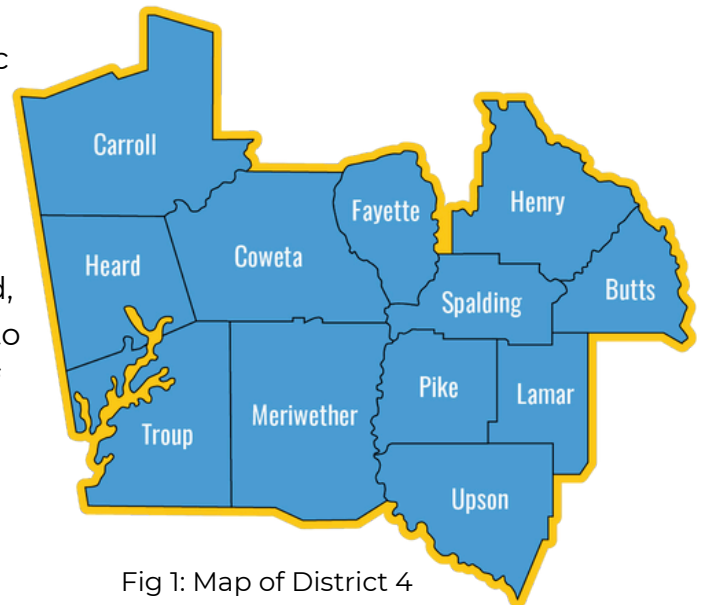


Fig 1: Map of District 4

and improve the health and safety of the communities it serves by coordinating with the public, healthcare providers, community partners, and local, state, and federal agencies. Additionally, District 4 works to promote health through education and counseling, health screenings and targeted health care services, performing inspections of public facilities, disease surveillance, and immunization programs.

## Mission

Improve, maintain, and protect the health of our communities.

## Vision

Through guidance, collaboration, and consistency, lead the way for our communities to live healthier and safer lives.

Public health represents a society's collective effort and action to support conditions for people to be healthy. Public health uses many of the same people and tools as the healthcare industry, including doctors, nurses, dentist, exam rooms, testing laboratories, and medicines. However, public health seeks to protect and promote the health of groups of people, whether it is the customers of a single restaurant or the residents of an entire county. District 4 Public Health aims to address different health and social issues through promoting collaboration and community partner engagement, embracing change and flexibility to adapt to the current environment, increasing health equity, and ensuring quality and consistency of all programs and services provided.

# Background

## Climate Change

Climate change refers to a long-term change in the typical weather patterns that define Earth's local, regional, and global climates. Since the mid-20th century, changes in the Earth's climate have been attributed to human activities, particularly fossil fuel burning. The burning of fossil fuels increases the levels of greenhouse gases in the Earth's atmosphere, which results in an increase in the Earth's temperature, known as global warming. These changes are resulting in other climate changes, such as the emergence of more severe weather, extreme heat, the emergence of new and more infectious diseases, impacts to water quality, impacts to water and food supply, air pollution, and an increase in allergens (NASA, 2023).

The changing climate poses a serious threat to human health. The Earth's temperature increase is resulting in many environmental hazards, which threaten human health and wellbeing. These events include extreme weather, such as flooding, heat waves, and storms, which negatively impacts water and food quality, air quality, increases rates of infectious disease, and has negative implications on mental health. (Fig. 2)

The World Health Organization estimates that around 3.6 billion people worldwide live in areas that are highly susceptible to climate change impacts. Climate change is degrading the environmental and social determinants of health. All aspects of human health are impacted by climate change, with issues ranging from clean air and water to access to healthcare services and socioeconomic status. These climate-related issues disproportionately burden vulnerable and disadvantaged populations, including children, minorities, poor communities, migrants, older persons, etc (EPA, 2023).

## Top Climate Change Health Impacts



**Extreme weather:** As temperatures increase, extreme weather events are becoming more frequent and more intense, which poses serious risks to people's health and safety. Storms and floods can cause injuries, damage homes, and cause infections from contaminated water. Extreme weather events can also disrupt healthcare services, which is a particular risk for those who require regular medical care.



**Threats to Water & Food Quality:** Increased rainfall and storms can contaminate water resources with viruses and bacteria. Changes in temperatures can cause droughts and impact crop growth, which limits the amount and types of food that can be produced. Additionally, a warmer climate can lead to the presence of more pests, which negatively impacts food production.



**Air Quality Impacts:** Poor air quality in the Southeast can result from vehicle emissions, wildfires, dust from drought, and airborne allergens. Air pollution, such as fine particulate matter causes adverse health effects. The Southeast has more days with stagnant air masses than other regions in the country and higher levels of fine particulate matter, which cause heart and lung disease.



**Increased Infectious Disease Rates:** Milder winters, warmer summers, and fewer days of frost are allowing infectious diseases like Lyme disease and Valley fever to rise and spread to new areas of the United States. Climate change has also forced some animal species into new habitats as their habitats disappear. This has forced wild animals to live in closer contact with humans, which increases risk of disease.



**Threats to Mental Health:** Immediate and long-term climate change effects can contribute to mental health challenges. Climate-related natural disasters can be traumatic since they can lead to loss of stability, community, and even property. Studies have shown that natural disasters lead to more alcohol and tobacco use, as well as increased domestic violence rates.

Fig. 2: Top climate change-related health impacts in the Southeast United States (EPA, 2023).

# Background

## Climate Change & the Social Determinants of Health

Climate change impacts the physical environment and all aspects of natural and human systems, including socioeconomic conditions and the functioning capacity of health systems (WHO, 2023). While climate change impacts all human systems, it does not impact all individuals equally, and this makes certain populations more vulnerable to the effects of climate change than others. Socially vulnerable groups in the United States include communities of color, low-income groups, certain immigrant groups, those with disabilities, and those with limited English proficiency.

Two of the critical aspects of climate vulnerability include living conditions and pre-existing health status. In the United States these aspects are often predetermined by the social determinants of health, which include factors like socioeconomic status, education access and quality, healthcare access, and quality of housing. These factors can exacerbate the effects of climate change, making some groups negatively impacted more than others. The social determinants of health and can affect a person's health and their ability to prepare for and cope with climate hazards (EPA, 2023).

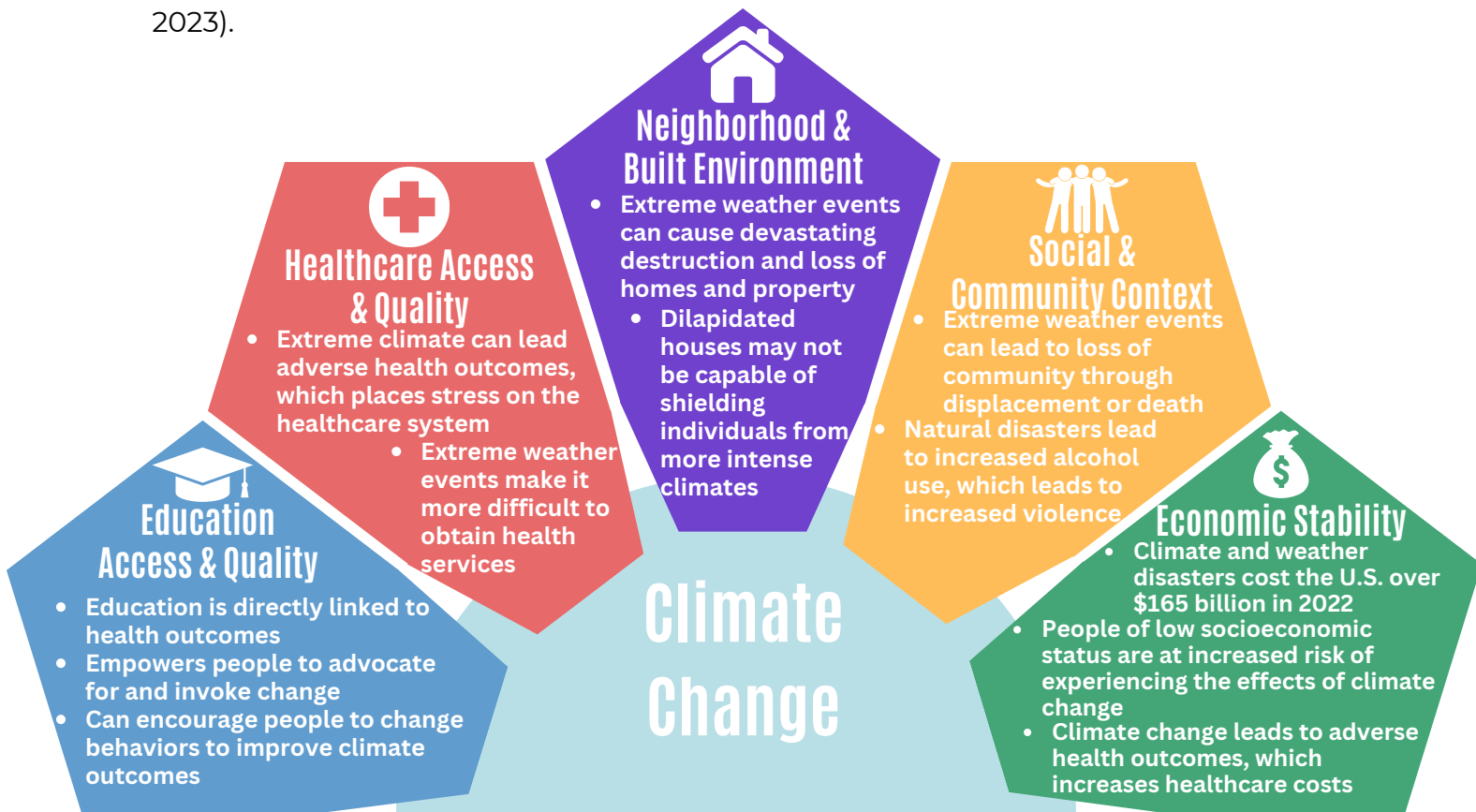


Fig. 3: Examples of how climate change impacts the social determinants of health to negatively impact health (CDC, 2023).

# Climate Change & Vulnerable Populations

## SOCIALLY VULNERABLE GROUPS



Socially vulnerable groups in the U.S. include communities of color, low-income groups, some immigrant groups, and those with limited proficiency in English. Climate change leads to more outdoor air pollutants, which disproportionately impacts socially vulnerable groups because they tend to have more exposure and higher rates of underlying medical conditions. Additionally, a study found that Black and African American individuals are 40% more likely to live in areas with the highest projected increases in extreme temperature-related deaths. (Kimmerling, 2023).

## OLDER ADULTS



Older adults are more likely to have health conditions that make them more sensitive to climate hazards like extreme heat and air pollution. Aging, along with certain medications can change the body's ability to respond to heat, which places older adults at higher risk for heat-related illnesses and death. Many older adults have compromised immune systems, which increases their risk of severe illness from insect- and water-related diseases due to climate change.

## CHILDREN



Since children are still physically developing, they are more vulnerable to climate hazards than adults. Children are impacted most by dangerous air pollutants, like particulate matter because they breathe at a faster rate than adults, which increases their exposure. Additionally, children tend to spend more time outside than adults, which increases their exposure to extreme heat and outdoor air pollution (EPA, 2023)

## UNHOUSED INDIVIDUALS



For people experiencing homelessness, especially those who are unsheltered, winter storms and extreme heat because of climate change can quickly lead to death. Exposure to these weather conditions leads to chronic medical concerns, a higher risk of hypothermia or heat stroke, and a higher mortality rate. Living outdoors exposes individuals to more environmental hazards than other groups, and leads to adverse health outcomes (Mello, 2023)

## PEOPLE LIVING BELOW THE POVERTY LEVEL



Studies have shown that the most severe impacts of climate change disproportionately impact those living in poverty because these individuals are less able to prepare for and recover from climate change hazards. Additionally, climate change is associated with more frequent and severe weather events that can result in devastating damage to homes and property, which is very difficult for those living in poverty to recover from and can even push people into poverty (U.S. Department of the Treasury, 2023).

## WORKERS



Individuals who work outdoors, in fields like agriculture, construction, or transportation are more exposed to environmental hazards like extreme temperatures, poor air quality, and disease-carrying pests than other jobs. People who work in hot indoor environments that lack adequate air conditioning, like manufacturing plants and warehouses, are also at increased risk of temperature-related illnesses due to the rising temperatures (EPA, 2023).

# Analysis Approach

The analyses in this report rely primarily on existing research that establishes how the effects of climate change negatively impact the public's health, along with how different environmental and social factors make some individuals more vulnerable to the effects of climate change. Additionally, a qualitative survey to assess the impacts of climate change and current efforts was sent to District 4 partners in each county. Results describe how the effects of climate change are negatively impacting the health of people in each of the twelve counties in District 4. Each detailed county climate change impact assessment follows three main steps:

## 1 Determine contributors to vulnerability:

Existing data was used to determine specific factors of social vulnerability that cause the effects of climate change to disproportionately impact certain populations.

## 2 Establish current risks to population:

Existing literature and data, along with a qualitative survey conducted by District 4 Public Health were used to model environmental hazards related to climate change in each county.

## 3 Create recommendations from the analyses:

Existing literature and evidence-based practices and interventions to address and mitigate the effects of climate change were analyzed and used to draw conclusions for specific interventions or policy recommendations for each county in District 4.

Risks are documented for all people living within the twelve counties in district 4, with additional consideration for effects at local and regional scales. The analyses also discuss five different factors that contribute to the effects of climate change that disproportionately impact vulnerable populations (i.e., racial/ethnic minorities, low income, children, older adults, individuals who work outdoors, etc.).

This report also highlights the ways in which five different environmental factors caused by climate change may negatively affect the health of residents of each county. Additionally, social impacts of climate change are analyzed and include measures of levels of social vulnerability, poverty, severe housing problems, rural residence, and levels of environmental hazard community resilience were analyzed to determine strengths and weaknesses within each county to cope with and recover from the effects of climate change.

## Five Factors of Climate Change Analyzed:



### Air Quality Respiratory Hazard Index:

The Air Quality Respiratory Hazard Index considers the ambient concentration, exposure concentration, and risk estimates of different respiratory hazards in the air. This measures the risk of experiencing cancer adverse effects from air quality over a lifetime (Environmental Protection Agency, 2018).



### Particulate Matter Environmental

**Justice Index:** The Particulate Matter Environmental Justice Index measures the level of particulate matter in the air ( $\mu\text{g}/\text{m}^3$ ) weighted by the proportion of the population impacted that identifies as low-income or belonging to a racial/ethnic minority group (Environmental Protection Agency, 2021).



### Heat Wave Hazard Exposure:

A heat wave is "a period of abnormally and uncomfortably hot and unusually humid weather typically lasting two or more days with temperatures outside the historical averages for a given area". The data used calculated heat wave events using 2005-2017 data from the National Weather Service to determine the number of people in each county at risk of suffering from heat waves (Federal Emergency Management Agency, 2021).



### Ice Storm Hazard Exposure:

An ice storm is "a freezing rain situation (rain that freezes on surface contact) with significant ice accumulations of 0.25 inches or greater". The data used calculated ice storm events using 1946-2014 data from the U.S. Army Corps of Engineers, Damaging Ice Storm GIS to identify the number of people in each county who are at risk of suffering from ice storms (Federal Emergency Management Agency, 2021).



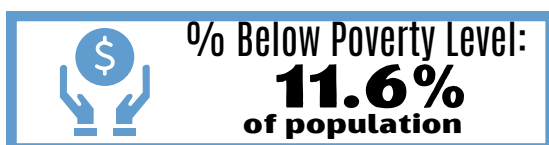
### Riverine Flooding Hazard Exposure:

Riverine flooding is "when streams and rivers exceed the capacity of their natural natural or constructed channels to accommodate water flow and water overflows the banks, spilling out into adjacent low-lying, dry land". The data used calculated riverine flooding events using 1996-2019 data from FEMA to determine the number of people in each county at risk of suffering from riverine flooding events (Federal Emergency Management Agency, 2021).

# District 4

## Demographics

District 4 has a total population of 887,712 people, with the majority of those individuals (57.2%) being White. Approximately 31% of the population identifies as Black or African American, and about 6.5% identify as Hispanic (U.S. Census Bureau, 2023). Overall, approximately 11.6% of people in District 4 are living below the poverty level, which is the same as the United States poverty rate (U.S. Census Bureau, 2023).



District 4 is made up of 12 counties, and there is a wide range of differences between those counties. Some counties are more urban, like Fayette, Coweta, and Henry, and some are more rural like Butts, Heard, and Lamar. On the other hand, some counties have a higher

average socioeconomic status, like Coweta and Fayette, while some have high percentages of people living below the poverty level like Meriwether, Spalding and Upson (U.S. Census Bureau, 2023).

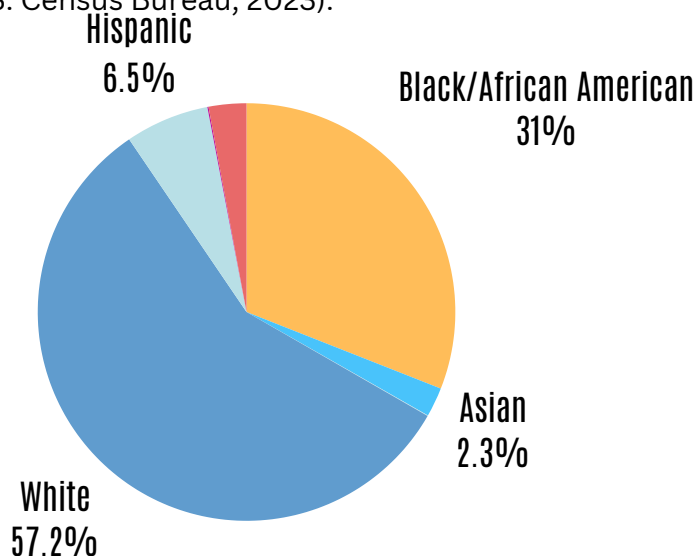


Fig. 4: District 4 Racial Make-up

## Climate Change Impact Assessment

Due to the vast differences between the counties in District 4, some experience different or more severe climate change-related hazards than others. In the district, almost half of counties are exposed to heat wave hazard events, which can lead to negative health events including heat exhaustion and heat stroke. Additionally, majority of the population in district 4 is exposed to ice storm hazards, which include increased risk of vehicle collisions and slips and falls (FEMA, 2021).

The Chattahoochee River runs through many of the counties in District 4. With an increase in precipitation and severe thunderstorms due to climate change, areas surrounding rivers and other bodies of water are at an increased risk of experiencing flooding events. Riverine flooding is when the water in rivers and streams exceeds the capacity of their channels, and water overflows onto the banks and other adjacent land. Floods are very dangerous to health, as they can destroy homes and even result in fatalities (FEMA, 2021).

District 4 has an Environmental Hazard Community Resilience Score of 55, meaning that this region has a moderate level of community resilience against climate change-related hazards (FEMA, 2021). This score indicates that new policies and interventions to enhance hazard mitigation plans, encourage community-level risk communication and engagement, and supporting the development or enhancement of codes may be necessary to increase community resilience.



# Butts County

## Demographics

Butts County is located in the central portion of the state of Georgia. This county has a total population of 25,522 people, with the majority of those individuals (65.5%) being White. Approximately 28% of Butts County residents are Black or African American, followed by Hispanic individuals (3.7%), and then people who are 2 or more races (2.8%) (U.S. Census Bureau, 2023).

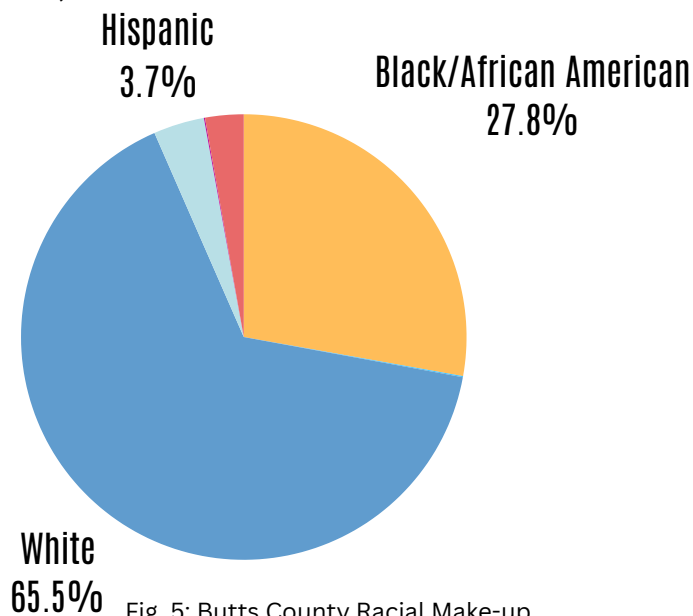
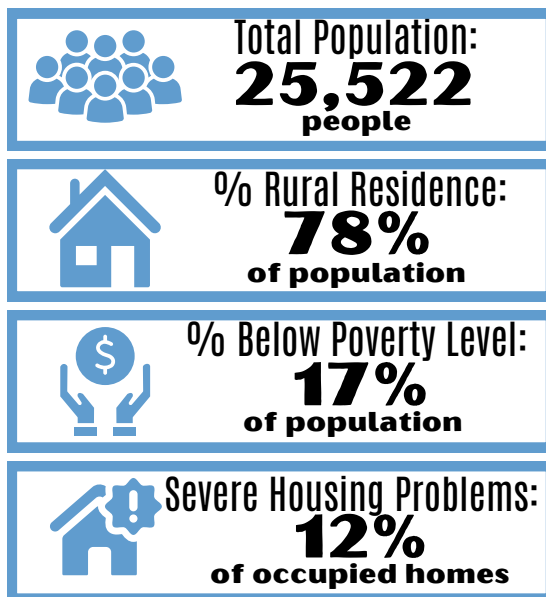


Fig. 5: Butts County Racial Make-up



Butts County classifies as a primarily rural area. Close to 78% of residents live in a low population density area (500 or fewer people per square mile and less than 2,500 people), classifying most residents as living in a rural area. In Butts County, 14% of residents are living below the poverty level, which is higher than the national average of 11.6% of people. Around 17% of residents are uninsured, compared to the U.S. average of 10%.

Severe housing problems include issues like a lack of complete kitchen or plumbing utilities, overcrowding, and high housing costs. Approximately 12% of occupied housing units in Butts County are deemed to have at least one of those severe housing problems, which can place those individuals at an increased risk of suffering from climate-related health issues (County Health Rankings, 2024).

Factors including poverty, lack of access to transportation, and overcrowded houses, are known as social vulnerability and may hinder a community's ability to prevent human suffering and monetary loss in an environmental disaster. Butts County has a Social Vulnerability Index score of 0.7237, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Butts County has a medium to high level of social vulnerability (CDC, 2020).

### Georgia County Health Ranking:

# #84/159

Butts County is ranked #84 out of 159 counties in the state of Georgia, which places it in the lower 25%-50% of counties in the state for both health outcomes and health factors.

# Climate Change Impacts: Butts County

## Climate Change Impact Assessment

Butts County ranks #3 out of the 12 counties in District 4 on the Air Quality Respiratory Hazard Index (EPA, 2018). The County also ranks #5 out of 12 on the Particulate Matter Environmental Hazard Index, meaning that it has more particulate matter in the air where populations that are low-income or racial/ethnic minorities primarily live (EPA, 2021).

A heat wave is “a period of abnormally and uncomfortably hot and unusually humid weather typically lasting 2 or more days with temperatures outside of the historical averages for a given area” (FEMA, 2021). On average, Butts County experiences one heat wave event per year, which increases the risk of residents suffering from heat-related illnesses like heat stroke and heat exhaustion (FEMA, 2021).

Butts County does not experience the same level of riverine flooding as many other counties, but there is still a risk. On average, Butts County experiences 5 instances of riverine flooding annually. Riverine flooding places those living near rivers and streams at increased risk of suffering from flood-related

at increased risk of suffering from flood-related hazards including damage to or loss of property, erosion, landslides, and even loss of life. With the increase in severe thunderstorms and rainfall, the prevalence of riverine flooding is expected to increase (FEMA, 2021).

## Community Resilience

Butts County has an Environmental Hazard Community Resilience score of 54, meaning that the county has a moderate level of community resilience against the hazards associated with climate change. A score of 54 ranks Butts County at #10 of 12 counties in the District for community resilience against climate change hazards (FEMA, 2021). This indicates that new policies and interventions, such as enhancing hazard mitigation plans, encouraging community-level risk communication and engagement, and supporting the development or enhancement of codes and standards may be necessary to increase community resilience against climate change-related hazards in Butts County.

## Recommendations

### Create/Promote Extreme Heat Safety Plans and Measures

Butts County is particularly susceptible to extreme heat, which can lead to heat-related illnesses and even death. To prevent heat-related morbidity and mortality, it is recommended that Butts County DPH create, promote, and educate the community about extreme heat safety plans and measures that follow the [CDC's recommendations](#). These recommendations include wearing lightweight, loose-fitting clothing, scheduling outdoor activities carefully, not leaving children/pets in cars, drinking plenty of fluids, etc.

# Carroll County

## Demographics

Carroll County is located in the northwestern portion of the state of Georgia. This county has a total population of 120,060 people, with the majority of those individuals (69.3%) being White. Approximately 20.2% of Carroll County residents are Black or African American, followed by Hispanic individuals (7.6%) (U.S. Census Bureau, 2023).

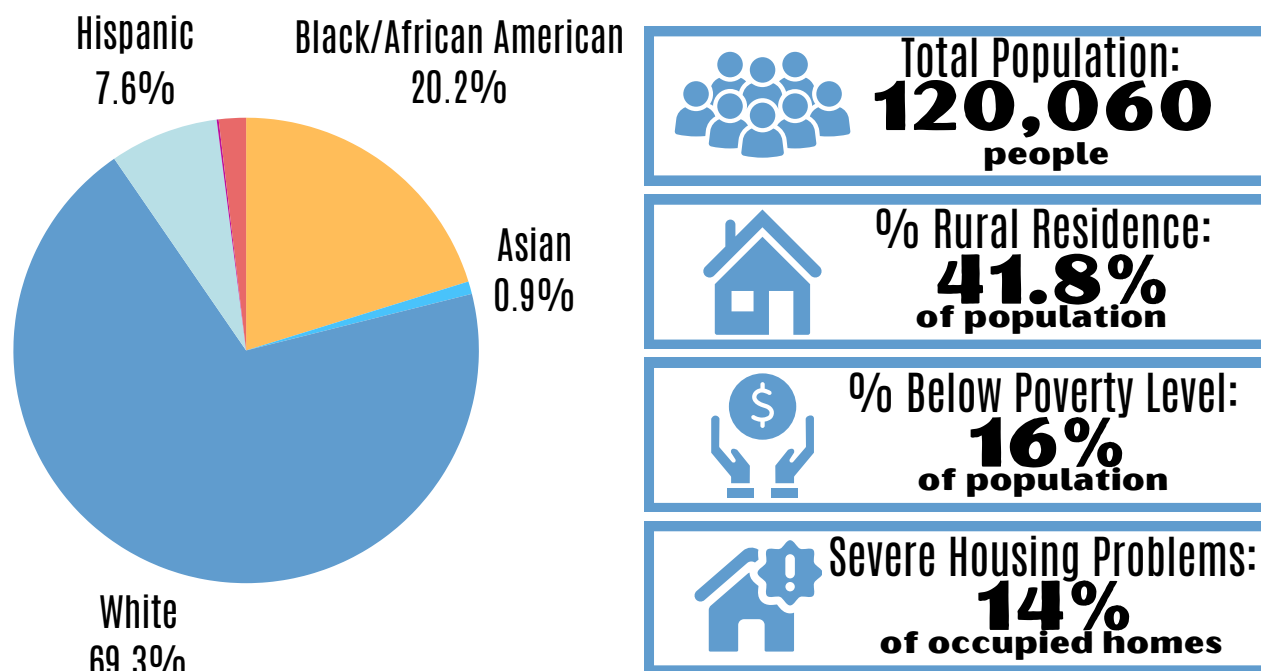


Fig. 6: Carroll County Racial Make-up

Carroll County is a somewhat metropolitan area, since only 42% of residents live in a low population density area (500 or fewer people per square mile and less than 2,500 people), while the other 58% live in an urban setting. In Carroll County, 16% of residents are living below the poverty level, which is higher than the national average of 11.6% of people. Around 17% of residents are uninsured, compared to the U.S. average of 10% and the Georgia average of 15%.

Severe housing problems include issues like a lack of complete kitchen or plumbing utilities, overcrowding, and high housing costs. Approximately 14% of occupied housing units in Carroll County are deemed to have at least one of those severe housing problems, which can place those individuals at risk of suffering from climate-related health issues (County Health Rankings, 2024).

Factors including poverty, lack of access to transportation, and overcrowded houses, are known as social vulnerability and may hinder a community's ability to prevent human suffering and monetary loss in an environmental disaster. Carroll County has a Social Vulnerability Index score of 0.768, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Carroll County has a high level of social vulnerability (CDC, 2020).

Georgia County Health Ranking:  
**#52/159**

Carroll County is ranked #52 out of 159 counties in the state of Georgia, which places it in the higher middle 50%-75% of counties in the state for both health outcomes and health factors.

# Climate Change Impacts: Carroll County

## Major Climate Change-Related Concerns

Carroll County ranks #12 out of the 12 counties in District 4 on the Air Quality Respiratory Hazard Index, with 9.7 micrograms per cubic meter of fine particulate matter in the air (EPA, 2018). The presence of fine particulate matter in the air can increase the risk of heart disease and premature death, along with aggravating asthma symptoms and increasing respiratory symptoms such as coughing and difficulty breathing (EPA, 2021).

This county is not burdened by heat waves like others in the district, but on average, Carroll County experiences around 50 ice storm hazard events. Ice can be dangerous because it can disrupt power and communications services for days, which can place people with underlying medical conditions at risk. Additionally, the presence of ice on the roads increases the risk of injury from falls and motor vehicle accidents (National Weather Service, 2023).

Carroll County experiences many riverine flooding events compared to other counties in the district. On average, Carroll County experiences 23 instances of riverine flooding per year, which places residents of this county at increased risk

of experiencing flood-related hazards. Riverine flooding can be dangerous for those living near rivers and streams, as it can cause damage to or loss of property, landslides, and even loss of life (FEMA, 2021).

### Community Resilience

Carroll County has an Environmental Hazard Community Resilience score of 54, meaning that the county has a moderate level of community resilience against the hazards associated with climate change. A score of 54 ranks Carroll County at #9 of 12 counties in the district for community resilience against climate change hazards (FEMA, 2021). This indicates that new policies and interventions, such as enhancing hazard mitigation plans, encouraging education among community members about preparing for climate hazards, and supporting the development or enhancement of codes and standards may be necessary to increase community resilience against climate change-related hazards in Carroll County.

## Recommendations: Carroll County

### Support Policy to Address Air Pollution

Carroll County residents are disproportionately impacted by air pollution, which can lead to adverse health outcomes. Some recommendations to address the level of particulate matter in the air are to replace coal with renewable sources of energy for power production, eliminating uncontrolled emissions, and preventing crop burning (Hayward, 2020).

### Create/Promote Emergency Flood Plans and Mitigation Measures

Carroll County is heavily impacted by riverine flooding, which can be dangerous and result in damage to homes. It is recommended that Carroll County build green infrastructure to reduce stormwater runoff such as rain gardens, bioswales, and permeable pavements in addition to educating the community about emergency flood plans and what they can do to protect themselves from flooding hazard events (EPA, 2024).

# Coweta County

## Demographics

Coweta County is located in the west central region of the state of Georgia. This county has a total population of 147,449 people, with most of those individuals being White (69.5%), followed by Black/African American individuals at 17.8% of the population, then Hispanic individuals at 7.6% (U.S. Census Bureau, 2023).

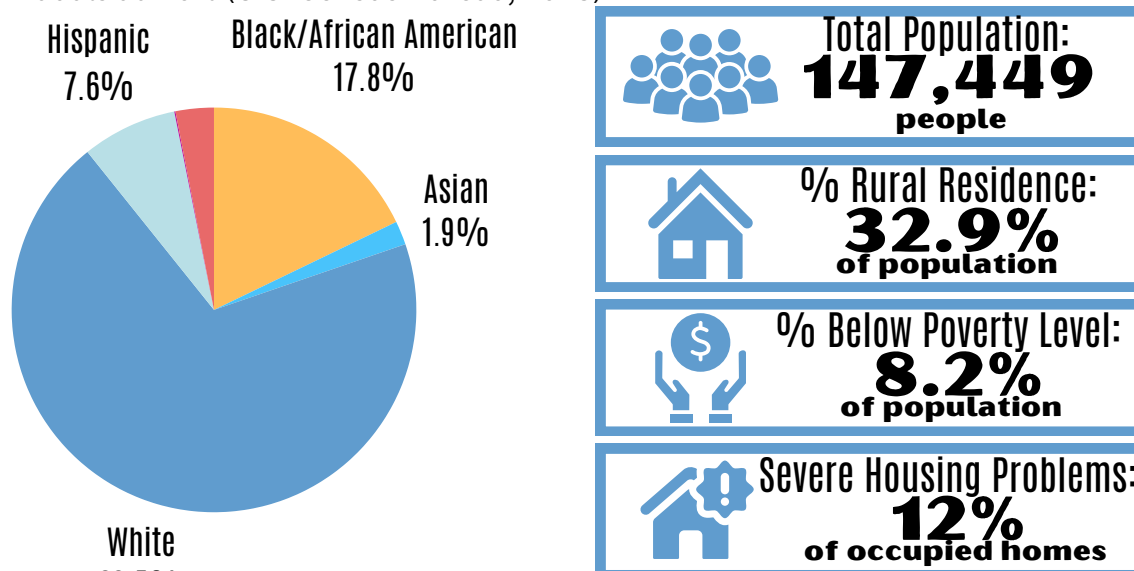


Fig. 7: Coweta County Racial Make-up

This county is a metropolitan area with only 32.9% of residents classifying as living in a rural area. In Coweta County, 8.2% of residents are living below the poverty level, which is lower than the national average of 11.6% of people. Overall, Coweta County is ranked highly for health outcomes in Georgia and is among the healthiest counties in District 4.

Severe housing problems include issues like a lack of complete kitchen or plumbing utilities, overcrowding, and high housing costs. Approximately 12% of occupied housing units in Coweta County are considered to have at least one of those severe housing problems, which can place those individuals at risk of suffering from climate-related health issues (County Health Rankings, 2024).

Factors including poverty, lack of access to transportation, and overcrowded houses, are known as social vulnerability and may hinder a community's ability to prevent human suffering and monetary loss in an environmental disaster. Coweta County has a Social Vulnerability Index score of 0.2963, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Coweta County has a low to medium level of social vulnerability (CDC, 2020).

## Georgia County Health Ranking:

# #11/159

Coweta County is ranked #11 out of 159 counties in the state of Georgia, which places it in the higher 75%-100% of counties in the state for both health outcomes and health factors.

# Climate Change Impacts: Coweta County

## Climate Change Impact Assessment

Coweta County ranks #5 out of the 12 counties in District 4 on the Air Quality Respiratory Hazard Index (EPA, 2018). The county also ranks #10 out of 12 counties on the Particulate Matter Environmental Justice Index, which means that this county has a more even distribution of particulate matter among all populations in the county than others in the district (EPA, 2021).

This county is not burdened by heat waves like some other counties in the district, but Coweta County experiences around 62 ice storm hazard events on average, which places residents of this county at risk of suffering from ice-related injuries (FEMA, 2021). Ice can be dangerous because it can disrupt power and communications services for days, which can place people with underlying medical conditions at risk. Also, ice on the roads increases the risk of injury from falls and motor vehicle accidents (National Weather Service, 2023).

Coweta County has the highest number of

annual riverine flooding events in District 4. On average, Coweta County experiences 25 riverine flooding events per year, which places residents of this county at the highest risk of experiencing adverse health effects from floods. Riverine flooding can cause devastating damage to property, landslides, and even loss of life (FEMA, 2021).

## Community Resilience

Coweta County has an Environmental Hazard Community Resilience Score of 56, meaning that this county has a relatively high level of community resilience against the hazards associated with climate change. A score of 56 places Coweta County at #1 of 12 counties in the district for community resilience against environmental hazards (FEMA, 2021). While Coweta County has the highest level of community resilience in the district, new policies and interventions could be implemented into the county to further increase community resilience against climate change.

## Recommendations:

### Create/Promote Emergency Flood Plans and Mitigation Measures

Coweta County has the highest rate of riverine flooding in the district, which places residents at increased risk of suffering from flood-related hazards. It is recommended that Coweta County build green infrastructure to reduce stormwater runoff such as rain gardens, bioswales, and permeable pavements in addition to educating the community about emergency flood plans and what they can do to protect themselves from flooding hazard events (EPA, 2024).

# Fayette County

## Demographics

Fayette County is located in the north central part of the state of Georgia. This county has a total population of 119,259, with the majority of those individuals (59.2%) being White. Approximately 25% of Fayette County residents are Black/African American, followed by Hispanic individuals (7.8%), then Asian individuals (4.7%) (U.S. Census Bureau, 2023).

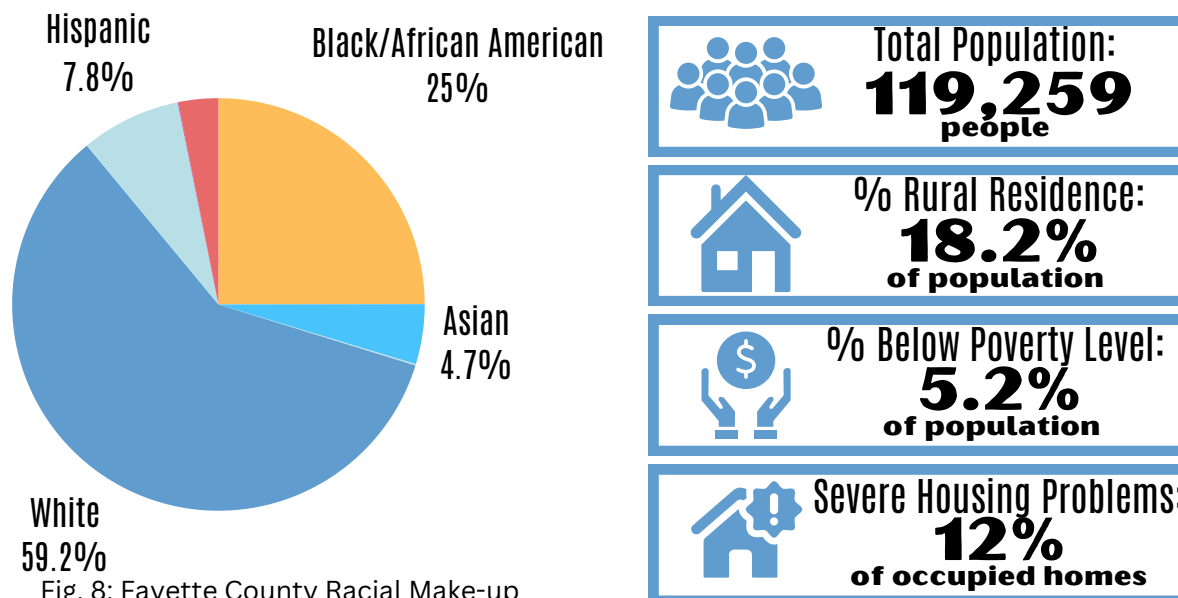


Fig. 8: Fayette County Racial Make-up

This county is a metropolitan area with only 18.2% of the population living in a rural area (500 or fewer people per square mile and less than 2,500 people). In this county, 5.2% of the population is living below the poverty level, which is much lower than the national average of 11.6% of people. Overall, Fayette County is ranked highly for health outcomes in Georgia and is among the healthiest counties in District 4 (U.S. Census Bureau, 2021).

Severe housing problems include issues like a lack of complete kitchen or plumbing utilities, overcrowding, and high housing costs. Approximately 12% of occupied housing units in Fayette County are considered to have at least one of those severe housing problems, which can place those individuals at risk of suffering from climate-related health issues (County Health Rankings, 2024).

Factors including poverty, lack of access to transportation, and overcrowded houses, are known as social vulnerability and may hinder a community's ability to prevent human suffering and monetary loss in an environmental disaster. Fayette County has a Social Vulnerability Index score of 0.1397, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Fayette County has a low level of social vulnerability (CDC, 2020).

**Georgia County Health Ranking:** Fayette County is ranked #5 out of 159 counties in the state of Georgia, which places it in the higher 75%-100% of counties in the state for both health outcomes and health factors.

# #5/159

# Climate Change Impacts: Fayette County

## Climate Change Impact Assessment

Fayette County ranks #9 out of 12 counties in District 4 on the Air Quality Respiratory Hazard Index (EPA, 2018). Additionally, the county ranks #9 out of the 12 counties on the Particulate Matter Environmental Hazard Index, meaning that the distribution of particulate air matter is distributed more evenly across the county than others in the district (EPA, 2021).

This county is not burdened by heat waves like other counties in the district, but Fayette County experiences about 90 ice storm hazard events on average (FEMA, 2021). Ice can be dangerous because it can disrupt power and communications services for days, which can place people with underlying medical conditions at risk. Also, ice on the roads increases the risk of injury from falls and motor vehicle accidents (National Weather Service, 2023).

Fayette County experiences many riverine flooding events compared to other counties in the district. On average, Fayette County has 20

instances of riverine flooding per year, which places residents living near rivers and streams at increased risk of adverse health effects from floods. Riverine flooding can be dangerous since it can cause devastating damage to homes and property and even morbidity and mortality (FEMA, 2021).

### Community Resilience

Fayette County has an Environmental Hazard Community Resilience score of 54, meaning that the county has a moderate level of community resilience against the hazards associated with climate change. A score of 54 ranks Fayette County at #7 of 12 counties in the district for community resilience against climate change hazards (FEMA, 2021). This indicates that new policies and interventions, such as enhancing hazard mitigation plans, encouraging education among community members about preparing for climate hazards, and supporting the development or enhancement of codes and standards may be necessary to increase community resilience against climate-related hazards in Fayette County.

## Recommendations

### Create/Promote Emergency Flood Plans and Mitigation Measures

Fayette County has a high rate of riverine flooding, which places residents at increased risk of experiencing flooding-related hazards. It is recommended that Fayette County build green infrastructure to reduce stormwater runoff such as rain gardens, bioswales, and permeable pavements in addition to educating the community about emergency flood plans and what they can do to protect themselves from flooding hazard events (EPA, 2024).

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

Fayette County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Fayette County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).



# Heard County

## Demographics

Heard County is located in the west central part of the state of Georgia. This county has a total population of 11,489 people, with the majority of those individuals (84.3%) being White, followed by Black/African American individuals at 8.5% of the population (U.S. Census Bureau, 2023).

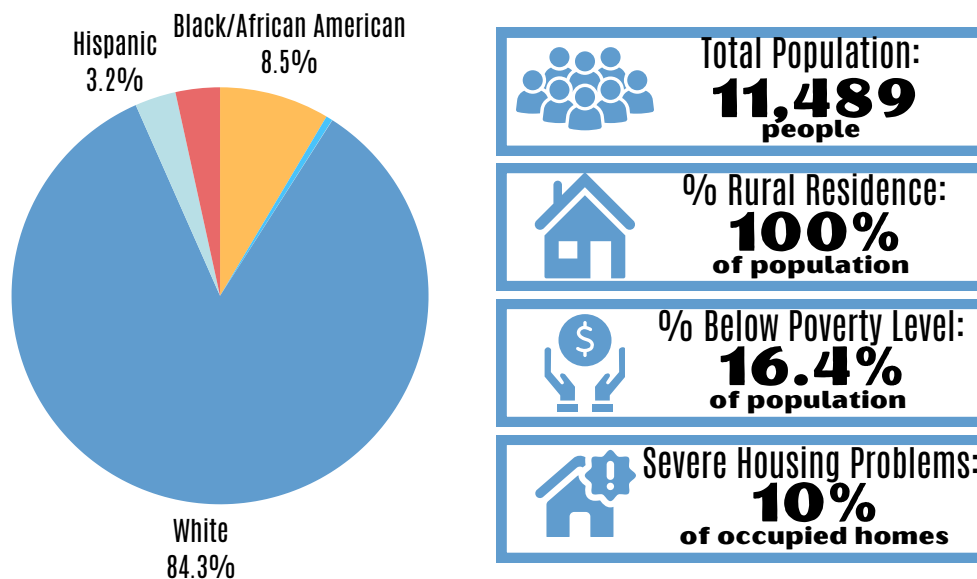


Fig. 9: Heard County Racial Make-up

Heard County is a fully rural area, with 100% of the population living in a low population density area (500 or fewer people per square mile and less than 2,500 people). This makes Heard County the most rural county in District 4, which may place it at a higher risk of facing some climate-related hazards than other counties. In this county, 16.4% of residents are living below the poverty level, which is higher than the national average of 11.6% of people (U.S. Census Bureau, 2023).

Severe housing problems include issues like a lack of complete kitchen or plumbing utilities, overcrowding, and high housing costs. Approximately 10% of occupied housing units in Heard County are considered to have at least one of those severe housing problems, which can place those individuals at risk of suffering from climate-related health issues (County Health Rankings, 2024).

Factors including poverty, lack of access to transportation, and overcrowded houses, are known as social vulnerability and may hinder a community's ability to prevent human suffering and monetary loss in an environmental disaster. Heard County has a Social Vulnerability Index score of 0.8103, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Heard County has a high level of social vulnerability (CDC, 2020).

**Georgia County Health Ranking:** Heard County is ranked #92 out of 159 counties in the state of Georgia, which places it in the lower 25%-50% of counties in the state for both health outcomes and health factors.

**#92/159**

# Climate Change Impacts: Heard County

## Climate Change Impact Assessment

Heard County ranks #7 out of the 12 counties in District 4 on the Air Quality Respiratory Hazard Index (EPA, 2018). The county also ranks #11 out of 12 counties on the Particulate Matter Environmental Justice Index, which means that this county has a more even distribution of particulate matter among all populations in the county than others in the district (EPA, 2021).

This county is not burdened by heat waves like other counties in the district, but on average Heard County experiences around 32 ice storm hazard events annually (FEMA, 2021). Ice can be dangerous because it can disrupt power and communications services for days, which can place people with underlying medical conditions at risk. Also, ice on the roads increases the risk of injury from falls and motor vehicle accidents (National Weather Service, 2023).

Riverine flooding can be very dangerous for those living near rivers and streams. Heard County experiences 9 riverine flooding incidents on average per year, which places

residents living near rivers and streams at increased risk of suffering from flood-related hazards like loss of property, injuries, and mortality. Although Heard County does not experience as many riverine flooding events as other counties, the increase in severe weather due to climate change is increasing the frequency of riverine flooding (FEMA, 2021).

## Community Resilience

Heard County has an Environmental Hazard Community Resilience Score of 51, meaning that this county has a relatively low level of community resilience against the hazards associated with climate change. A score of 51 places Heard County at #12 of 12 counties in the district for community resilience against environmental hazards (FEMA, 2021). This indicates that new policies and interventions, such as enhancing hazard mitigation plans, encouraging community-level risk communication and engagement, and supporting the development or enhancement of codes and standards may be necessary to increase community resilience against climate change-related hazards in Heard County.

## Recommendations

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

Heard County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Heard County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).

# Henry County

## Demographics

Henry County is located in the north central portion of the state of Georgia. This county has a total population of 240,853 people with the majority of those individuals (48.1%) being Black/African American, followed by White individuals (37.2%), and then Hispanic individuals at 7.6% of the population (U.S. Census Bureau, 2023).

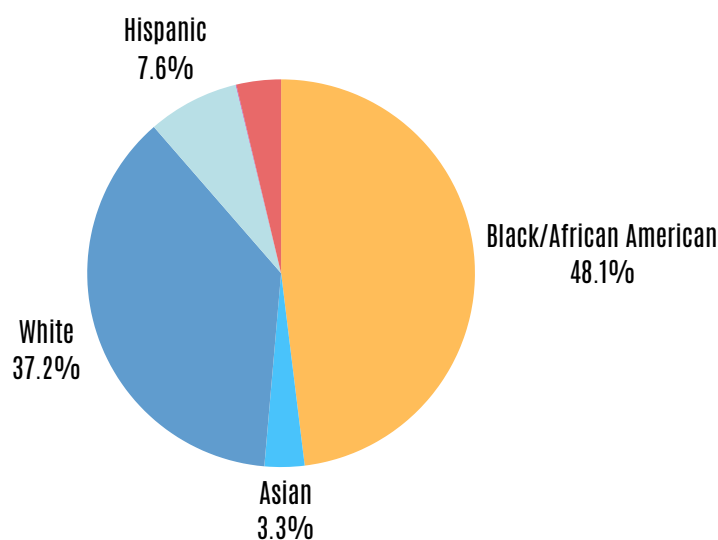
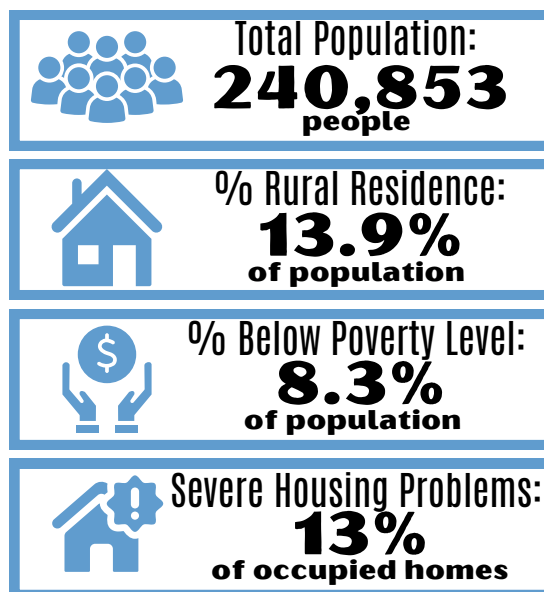


Fig. 10: Henry County Racial Make-up



This county is a primarily metropolitan area, with only 13.9% of the population living in a low population density area (500 or fewer people per square mile and less than 2,500 people). In Henry County, 8.3% of residents are living below the poverty level, which is lower than the national average of 11.6%. Overall, Henry County is ranked as one of the healthiest counties in District 4 for both health outcomes and health factors (U.S. Census Bureau, 2023).

Severe housing problems include issues like a lack of complete kitchen or plumbing utilities, overcrowding, and high housing costs. Approximately 13% of occupied housing units in Henry County are considered to have at least one of those severe housing problems, which can place those individuals at risk of suffering from climate-related health issues (County Health Rankings, 2024).

Factors including poverty, lack of access to transportation, and overcrowded houses, are known as social vulnerability and may hinder a community's ability to prevent human suffering and monetary loss in an environmental disaster. Heard County has a Social Vulnerability Index score of 0.4001, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Henry County has a low to medium level of social vulnerability (CDC, 2020).

**Georgia County Health Ranking:** Henry County is ranked #35 out of 159 counties in the state of Georgia, which places it in the higher 75%-100% of counties in the state for both health outcomes and health factors.

# #35/159

# Climate Change Impacts: Henry County

## Climate Change Impact Assessment

Henry County ranks #2 out of the 12 counties in District 4 on the Air Quality Respiratory Hazard Index (EPA, 2018). However, this county ranks lowest in the district on the Particulate Matter Environmental Justice Index, which means that it has more particulate matter in the air where populations that are low-income or racial/ethnic minorities primarily live than in other areas (EPA, 2021).

A heat wave is “a period of abnormally and uncomfortably hot and unusually humid weather typically lasting 2 or more days with temperatures outside of the historical averages for a given area” (FEMA, 2021). On average, Henry County experiences one heat wave hazard event per year, which increases the risk of suffering from heat-related illnesses like heat stroke (FEMA, 2021). Additionally, on average this county experiences 96 ice storm hazard events, which can disrupt power and communications services and increase the risk of injuries from falls and motor vehicle accidents.

On average, Henry County experiences 8 instances

of riverine flooding, which can place those living near rivers and streams at increased risk of suffering from flood-related hazards. With the rise of severe weather due to climate change, the frequency and severity of riverine flooding events are expected to rise, which can lead to many adverse health effects (FEMA, 2021).

### Community Resilience

Henry County has an Environmental Hazard Community Resilience Score of 55, meaning it has a moderate level of community resilience against the hazards associated with climate change. A score of 55 places Henry County at #2 of 12 counties in the district for community resilience against environmental hazards (FEMA, 2021). This indicates that new policies and interventions, such as enhancing hazard mitigation plans, encouraging community-level risk communication and engagement, and supporting the development or enhancement of codes and standards may be necessary to increase community resilience against climate change-related hazards in

Henry County.

## Recommendations

### Create/Promote Extreme Heat Safety Plans and Measures

Henry County is particularly susceptible to extreme heat, which can lead to heat-related illnesses and even death. To prevent heat-related morbidity and mortality, it is recommended that Henry County create, promote, and educate the community about extreme heat safety plans and measures that follow the [CDC’s recommendations](#). These recommendations include wearing lightweight, loose-fitting clothing, scheduling outdoor activities carefully, not leaving children/pets in cars, drinking plenty of fluids, etc. (CDC, 2022).

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

Henry County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Henry County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).

# Lamar County

## Demographics

Lamar County is located in the west central portion of the state of Georgia. This county has a total population of 18,676 people, with the majority of those individuals being White (67.5%), followed by Black/African American individuals (27.6%), and then Hispanic individuals making up 3% of the population.

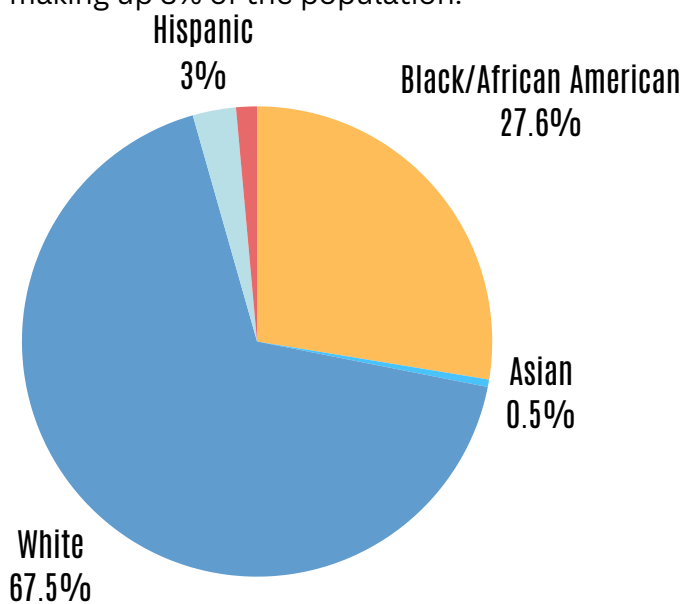
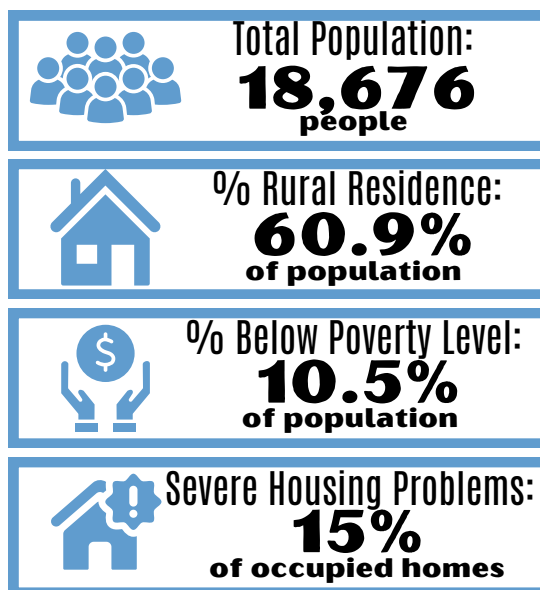


Fig. 11: Lamar County Racial Make-up



This county is primarily rural, with 60.9% of the population living in a rural area (500 or fewer people per square mile). Due to the large amount of Lamar County residents living in a rural area, some residents may be more at risk of suffering from climate change-related hazards. In Lamar County, 10.5% of people are living below the poverty level, which is near to the national average of 11.6%.

Severe housing problems can negatively impact an individual's or family's ability to withstand more intense climates, including hotter summers, colder winters, and more frequent and intense storms. In Lamar County, approximately 13% of occupied homes have at least one severe housing problem. Having these severe housing problems place people at higher risk of suffering from climate-related hazards (County Health Rankings, 2024).

Factors including poverty, lack of access to transportation, and overcrowded houses contribute to social vulnerability, which can hinder a community's ability to prevent human suffering and monetary loss in an environmental disaster. Lamar County has a social vulnerability index of 0.5837, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Lamar County has a medium-to-high level of social vulnerability, which indicates that this county needs policy implementation or changes, as well as interventions and programs to help lower the level of social vulnerability (CDC, 2020).

**Georgia County Health Ranking:** Lamar County is ranked #110 out of 159 counties in the state of Georgia, which places it in the lower 25%-50% of counties in the state for both health outcomes and health factors.

# #110/159

# Climate Change Impacts: Lamar County

## Climate Change Impact Assessment

Lamar County ranks #10 out of the 12 counties in the district on the Air Quality Respiratory Hazard Index, meaning that there is a high level of respiratory hazards in the air compared to the other counties (EPA, 2018). This county also ranks #7 out of the 12 counties on the Particulate Matter Environmental Justice Index, which indicates the level of disparities in the presence of particulate air matter in areas where primarily disadvantaged communities live (EPA, 2021).

All Lamar County residents are at risk of experiencing heat wave and ice storm hazard events. This county experiences one heat wave hazard per year, which can increase the risk of heat stroke and other heat-related hazards. Additionally, this county experiences around 36 ice storm hazard events, which can disrupt power and communications services for days, which can place people with underlying medical conditions at risk. Also, the presence of ice increases the risk for vehicle collisions and injuries from falls (FEMA, 2021).

While Lamar County is not at as high of risk as other counties in the district for riverine flooding, this county does have some risk of experiencing riverine flooding, which will only increase with the presence of climate change. On average, Lamar County has experienced 7 riverine flooding incidents per year, which places those living near rivers and streams at increased risk of adverse effects from flooding (FEMA, 2021).

### Community Resilience

Lamar County has an Environmental Hazard Community Resilience Score of 55, which indicates a moderate level of community resilience to environmental hazards associated with climate change. This score ranks Lamar County as #4 out of the 12 counties in District 4 (FEMA, 2021). A moderate level of resilience indicates that implementing new or updated policies, interventions, and resources are necessary to increase community resilience in Lamar County and the district as a whole.

## Recommendations: Lamar County

### Create/Promote Extreme Heat Safety Plans and Measures

Lamar County is particularly susceptible to extreme heat, which can lead to heat-related illnesses and even death. To prevent heat-related morbidity and mortality, it is recommended that Lamar County create, promote, and educate the community about extreme heat safety plans and measures that follow the [CDC's recommendations](#). These recommendations include wearing lightweight, loose-fitting clothing, scheduling outdoor activities carefully, not leaving children/pets in cars, drinking plenty of fluids, etc. (CDC, 2022).

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

Lamar County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Lamar County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).

### Support Policy to Address Air Pollution

Lamar County residents are disproportionately impacted by air pollution, which can lead to adverse health outcomes. Some recommendations to address the level of particulate matter in the air are to replace coal with renewable sources of energy for power production, eliminating uncontrolled emissions, and preventing crop burning (Hayward, 2020).

# Meriwether County

## Demographics

Meriwether County is located in the west central portion of the state of Georgia. This county has a total population of 20,679 people. Over half of the population (56.8%) of the population is White, followed by Black and African American individuals, making up 38.3% of the population, then Hispanic individuals making up 2.7% of the population (U.S. Census Bureau, 2023).

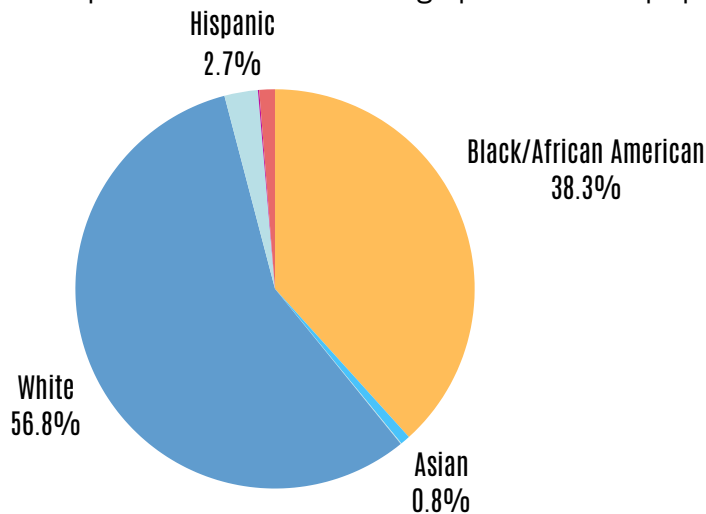
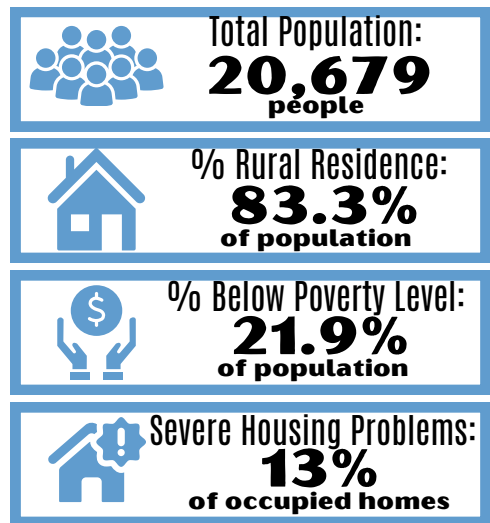


Fig. 12: Meriwether County Racial Make-up



Meriwether County classifies as a primarily rural county, with 83.3% of the population living in places that are considered to be rural areas. Due to the high number of residents living in rural areas, those individuals may be more at risk of suffering from climate change-related hazards, due to the increased vulnerability of rural areas. In Lamar County, 21.9% of individuals are living below the poverty level, which is almost double the national average. The effects of poverty can place individuals at higher risk of suffering from climate-related hazards (County Health Rankings, 2024).

Severe housing problems can negatively impact people’s abilities to withstand the effects of climate change, such as hotter summers, colder winters, and more frequent and more severe thunderstorms. These climate conditions are worsening with the continuing development of the climate change crisis, in which resilience against these conditions may be exceptionally challenging for those with severe housing problems. Overall, 13% of occupied homes in Meriwether County have at least one severe problem, that may place the occupants at increased risk of suffering from hazards due to climate change (County Health Rankings, 2024).

Factors like poverty, lack of access to transportation, and overcrowded housing contribute to a community’s level of social vulnerability. Social vulnerability can hinder a community’s ability to prevent human suffering and financial loss in an environmental disaster. Meriwether County has a social vulnerability index of 0.8943, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). Meriwether County has a high level of social vulnerability, which indicates that there is a need for policy implementation or changes, as well as interventions and programs to help lower the level of social vulnerability in the county (CDC, 2020).

**Georgia County Health Ranking:** Meriwether County is ranked #147 out of 159 counties in the state of Georgia, which places it in the lowest 0%-25% of counties in the state for both health outcomes and health factors.

# #147/159

# Climate Change Impacts: Meriwether County

## Climate Change Impact Assessment

Meriwether County ranks #8 out of the 12 counties in the district on the Air Quality Respiratory Hazard Index, meaning that the county has a higher level of respiratory hazards in the air than over half of the other counties in District 4. However, this county ranks #3 out of the 12 counties on the Particulate Matter Environmental Justice Index, which indicates a higher level of disparity in the presence of particulate matter in the air where disadvantaged populations primarily reside (EPA, 2021).

Meriwether County is not at increased risk of experiencing heat wave hazard, compared to other counties. However, on average Meriwether County experiences 34 ice storm hazard events per year. Ice storms can be dangerous because they can disrupt power and communication services, which can place those needing frequent medical care at risk. Additionally, the presence of ice on the ground increases the risk of injuries from vehicle collisions and falls (FEMA, 2021).

While Meriwether County does not experience as many instances of riverine flooding annually as other counties, the county is still at risk of experiencing riverine flooding. Meriwether County experiences approximately 7 riverine flooding events per year, which places those living near rivers and streams at risk of suffering from floods (FEMA, 2021).

### Community Resilience

Meriwether County has an Environmental Hazard Community Resilience Score of 52, which indicates a relatively low level of community resilience against climate change-related hazards. This score ranks Meriwether County as #11 out of the 12 counties in the district based on their ability to prepare for natural hazards and to withstand and recover quickly from these conditions (FEMA, 2021). This score indicates that there is a need for the implementation of new or updated policies, interventions, and resources to increase community resilience against climate change in Meriwether County and ultimately District 4 as a whole.

## Recommendations: Meriwether County

### Support Policy to Address Air Pollution

Meriwether County residents are disproportionately impacted by air pollution, which can lead to adverse health outcomes. Some recommendations to address the level of particulate matter in the air are to replace coal with renewable sources of energy for power production, eliminating uncontrolled emissions, and preventing crop burning (Hayward, 2020).

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

Meriwether County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Meriwether County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).



# Pike County

## Demographics

Pike County is in the west central portion of the state of Georgia. This county has a total population of 19,145 people, with most of the population (87%) being White, followed by Black and African individuals at 8.6% of the population (U.S. Census Bureau, 2023).

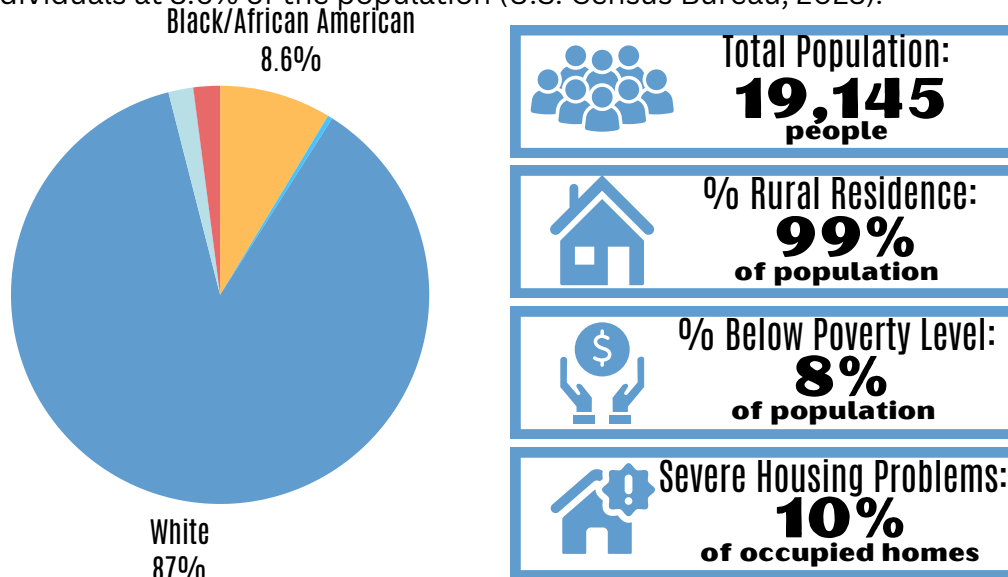


Fig. 13: Pike County Racial Make-up

Pike County classifies as a rural area with 99% of the population living in what is considered to be a rural area. Overall, rural areas tend to be less resilient against natural disasters due to a variety of reasons, which places them at increased risk of suffering from climate change-related hazards and decreases their ability to quickly recover from natural disasters. Approximately 8% of Pike County residents are living below the poverty level, which is lower than the national average of 11.6% (County Health Rankings, 2024).

Severe housing problems can negatively impact people’s abilities to withstand the effects of climate change, including warmer summers, colder winters, and more frequent and severe thunderstorms. With the severity of these extreme weather events increasing, those living in homes with severe problems are at increased risk of suffering from climate-related hazards. In Pike County, approximately 10% of occupied homes have at least one severe housing problem, which may place the occupants at increased risk of suffering from climate change-related hazards.

Factors like poverty, lack of access to transportation, and overcrowded housing contribute to a community’s level of social vulnerability. Social vulnerability can deter a community’s ability to prevent human suffering and financial loss in an environmental disaster. Pike County has a social vulnerability index of 0.0913, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates a low level of social vulnerability, meaning that Pike County has a stronger ability to withstand and quickly recover from natural disasters than other counties in the district (CDC, 2020).

**Georgia County Health Ranking:** Pike County is ranked #54 out of 159 counties in the state of Georgia, which places it in the higher 50%-75% of counties in the state for both health outcomes and health factors.

# #54/159

# Climate Change Impacts: Pike County

## Climate Change Impact Assessment

Pike County ranks #11 out of the 12 counties on the Air Quality Respiratory Hazard Index, meaning that it has more hazards in the air than most other counties in the district. However, Pike County ranks #12 out of the 12 counties on the Particulate Matter Environmental Justice Index, which means that this county has the lowest level of disparity in the distribution of particulate air matter in the community among all populations, including historically disadvantaged populations (EPA, 2021).

Residents of Pike County are at risk of experiencing both heat wave hazard events (one event per year) and ice storm hazard events (38 events per year). These hazardous events can have negative impacts on health. For example, heat waves can lead to adverse health events like heat stroke and other heat-related illnesses. Additionally, ice storms can interrupt power and communications services, which can place those in need of frequent medical care at increased risk. Also, the presence of ice on the ground increases the risk of vehicle collisions and injuries from falls (FEMA, 2021).

On average, Pike County experiences 14 riverine flooding events per year, which can have a negative effect on the community. Riverine flooding can cause serious damage to and loss of property, erosion, landslides, and even loss of life (FEMA, 2021).

### Community Resilience

Pike County has an Environmental Hazard Community Resilience Score of 54, which indicates a moderate level of community resilience against climate change-related hazards. This score ranks Pike County as #8 out of the 12 counties in the district based on their ability to prepare for and withstand environmental hazards and to quickly recover from disruptions (FEMA, 2021). This score indicates that there is room for improvement in Pike County to increase community resilience. The implementation of new or updated policies, interventions, and resources could help increase community resilience in Pike County and the district.

## Recommendations: Pike County

### Support Policy to Address Air Pollution

Pike County residents are disproportionately impacted by air pollution, which can lead to adverse health outcomes. Some recommendations to address the level of particulate matter in the air are to replace coal with renewable sources of energy for power production, eliminating uncontrolled emissions, and preventing crop burning (Hayward, 2020).

### Create/Promote Extreme Heat Safety Plans and Measures

Pike County is particularly susceptible to extreme heat, which can lead to heat-related illnesses and even death. To prevent heat-related morbidity and mortality, it is recommended that Pike County create, promote, and educate the community about extreme heat safety plans and measures that follow the [CDC's recommendations](#). These recommendations include wearing lightweight, loose-fitting clothing, scheduling outdoor activities carefully, not leaving children/pets in cars, drinking plenty of fluids, etc. (CDC, 2022).

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

Pike County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Pike County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).

# Spalding County

## Demographics

Spalding County is located in the west central portion of the state of Georgia. This county has a total population of 67,415 people, with over half of the population (56.3%), followed by Black and African American individuals, at 34.6%, and then Hispanic individuals making up 5.1% of the population (U.S. Census Bureau, 2023).

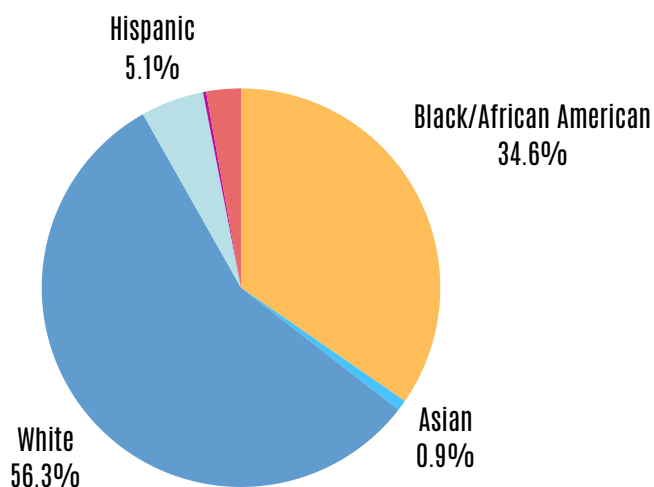
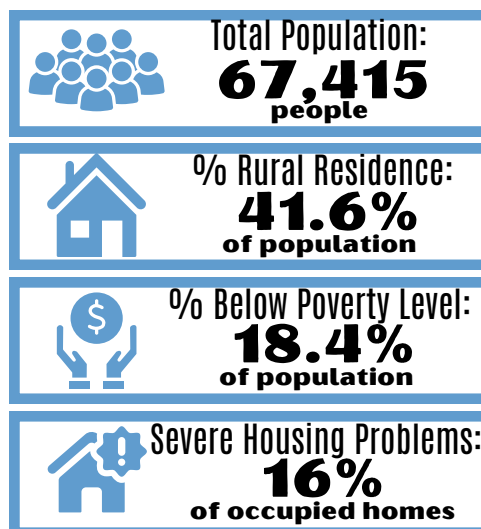


Fig. 14: Spalding County Racial Make-up



Spalding County is a mixture of rural and urban areas, with about 41.6% of the population residing in an area that is considered to be rural. Approximately 18.4% of the population is living below the poverty level, which is much higher than the national average of 11.6% (County Health Rankings, 2024). Overall, vulnerable groups including those living below the poverty level, are disproportionately impacted by climate change because they tend to be the least able to prepare for and recover from severe climate events (EPA, 2021).

Severe housing problems can deter people's abilities to withstand and recover from the effects of climate change, including hotter summers, colder winters, and more frequent and severe thunderstorms. Those living in homes with severe housing problems may have a more difficult time withstanding severe weather events. In Spalding County, approximately 16% of occupied homes have at least one severe housing problem, which is a much higher rate than most other counties in the district and may place some Spalding County residents at higher risk of suffering from climate-related hazards (County Health Rankings, 2024).

Factors including poverty, lack of access to transportation, and overcrowded housing contribute to a community's level of social vulnerability. Social vulnerability negatively impacts a community's ability to prevent human morbidity and mortality along with financial loss in an environmental disaster. Spalding County has a social vulnerability index of 0.7731, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Spalding County has a high level of social vulnerability, meaning that there is a need for new or updated policy, along with interventions and programs to help lower the level of social vulnerability in the county (CDC, 2020).

**Georgia County Health Ranking:** Spalding County is ranked #116 out of 159 counties in the state of Georgia, which places it in the lower 25%-50% of counties in the state for both health outcomes and health factors.

# #116/159

# Climate Change Impacts: Spalding County

## Climate Change Impact Assessment

Spalding County ranks #6 out of the 12 counties on the Air Quality Respiratory Hazard Index, meaning that it has about the average amount of respiratory hazards in the air in District 4. However, this county ranks #2 out of the 12 counties on the Particulate Matter Environmental Justice Index, which means that this county has a high level of disparity in the distribution of particulate air matter in the community, where it primarily is impacting socially disadvantaged groups (EPA, 2021).

Residents of Spalding County are at risk of experiencing both heat wave hazard events (one event per year) and ice storm hazard events (46 events per year). Heat waves and ice storm hazards can have negative impacts on people's health. Exposure to heat waves can lead to adverse health events like heat stroke and other heat-related illnesses. Additionally, ice storms can interrupt power and communications services, which can place those in need of frequent medical care at increased risk of adverse health impacts. Also, the presence of ice on the roads and ground can cause an increase in vehicle

collisions and injuries from falling (FEMA, 2021). On average, Spalding County experiences 10 riverine flooding events per year, which places those living or working near rivers and streams at increased risk of suffering from flooding. Floods can cause devastating damage to property, erosion, landslides, and even loss of life (FEMA, 2021).

### Community Resilience

Spalding County has an Environmental Hazard Community Resilience Score of 55, which indicates a moderate level of community resilience against climate-related hazards. This score ranks Spalding County as #3 out of the 12 counties based on its ability to prepare for and withstand environmental hazards and to quickly recover from these situations (FEMA, 2021). This score indicates a need for new or updated policies, interventions, and resources that could help increase community resilience in Spalding County.

## Recommendations: Spalding County

### Create/Promote Extreme Heat Safety Plans and Measures

Spalding County is particularly susceptible to extreme heat, which can lead to heat-related illnesses and even death. To prevent heat-related morbidity and mortality, it is recommended that Spalding County create, promote, and educate the community about extreme heat safety plans and measures that follow the [CDC's recommendations](#). These recommendations include wearing lightweight, loose-fitting clothing, scheduling outdoor activities carefully, not leaving children/pets in cars, drinking plenty of fluids, etc. (CDC, 2022).

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

Spalding County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Spalding County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).

# Troup County

## Demographics

Troup County is located in the west central portion of the state of Georgia. This county has a total population of 69,527 people, with over half of them being White (55.3%), followed by Black and African American individuals (36.2%), and then Hispanic individuals (3.9%) (U.S. Census Bureau, 2023).

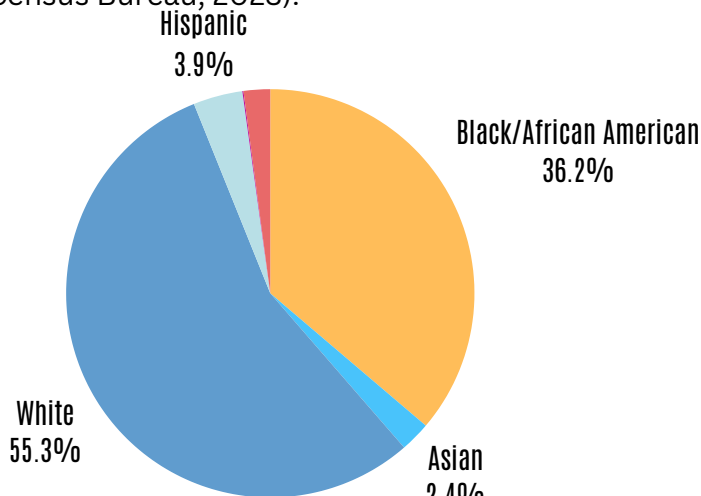
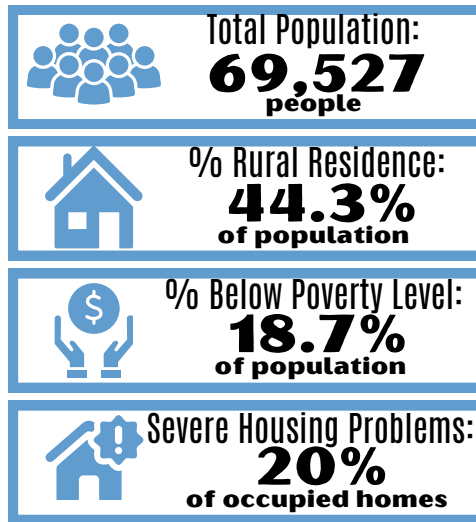


Fig. 15: Troup County Racial Make-up



Troup County is made up of both urban and rural areas, with approximately 44.3% of the population living in an area that is classified as rural. Approximately 18.7% of the population is living below the poverty level, which is much higher than the national average (County Health Rankings, 2024). People living below the poverty level are disproportionately impacted by climate change due to challenges with preparation and recovery from climate change-related hazards (EPA, 2021).

Severe housing problems can negatively affect people’s abilities to withstand and recover from the effects of climate change, which include hotter summers, colder winters, and more frequent and severe thunderstorms. In Troup County, approximately 20% of occupied homes have at least one severe housing problem, which is the highest rate in the district. A high level of severe housing problems may lead to an increased risk of suffering due to climate change-related hazards in Troup County (County Health Rankings, 2024).

Factors like poverty, lack of access to transportation, and overcrowded housing contribute to a community’s level of social vulnerability. Social vulnerability deters a community’s ability to prevent human suffering and financial loss in the event of an environmental disaster. Troup County has a social vulnerability index of 0.9383, with possible scores ranging from 0 (no vulnerability) to 1 (highest vulnerability). This score indicates that Troup County has a high level of social vulnerability, and it is the highest score in the district. A high level of social vulnerability indicates a need for new or updated policy, along with interventions and programs to help lower the level of social vulnerability in Troup County (CDC, 2020).

**Georgia County Health Ranking:** Troup County is ranked #82 out of 159 counties in the state of Georgia, which places it in the lower 25%-50% of counties in the state for both health outcomes and health factors.

# #82/159

# Climate Change Impacts: Troup County

## Climate Change Impact Assessment

Troup County ranks #1 out of the 12 counties in the district on the Air Quality Respiratory Hazard Index, meaning that it has the least amount of respiratory hazard in the air in District 4. However, Troup County ranks #4 out of the 12 counties on the Particulate Matter Environmental Justice Index, meaning that there is a disparity in the amount of particulate matter in the air in areas where primarily socially vulnerable populations live (EPA, 2021).

The location of Troup County does not make it especially susceptible to heat wave hazards, however almost the entire population is at risk of ice storm hazards. On average, this county experiences around 32 ice storm hazard events per year. Ice storms can disrupt power and communication services, which can place those in need of frequent medical care or assistance at risk. Additionally, the presence of ice on the ground and roads can increase the risk of injuries from falls and vehicle collisions (FEMA, 2021).

Riverine flooding can be very dangerous to those living or working near rivers and streams. With the

increase in rainfall and severe thunderstorms due to climate change, riverine flooding is becoming more common and severe. Overall, Troup County has about 9 instances of riverine flooding per year, which may place those living and working near rivers and streams at increased risk of experiencing flood-related hazards including damage to or loss of property, erosion, landslides, and even mortality (FEMA, 2021).

### Community Resilience

Troup County has an Environmental Hazard Community Resilience Score of 55, which indicates a moderate level of community resilience against climate change-related hazards. This score ranks Troup County as #5 out of the 12 counties based upon their ability to prepare for and withstand environmental hazards and to quickly recover from these conditions (FEMA, 2021). This score indicates there is need for new or updated policies along with resources and interventions that could help increase community resilience against climate change in Troup County.

## Recommendations: Troup County

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

Troup County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Troup County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).

# Upson County

## Demographics

Upson County is located in the west central portion of the state of Georgia. This county has a total population of 27,638 people, with most of those individuals being White (66.7%), followed by Black and African American individuals (27.1%), and then Hispanic individuals making up 2.4% of the population. (U.S. Census Bureau, 2023).

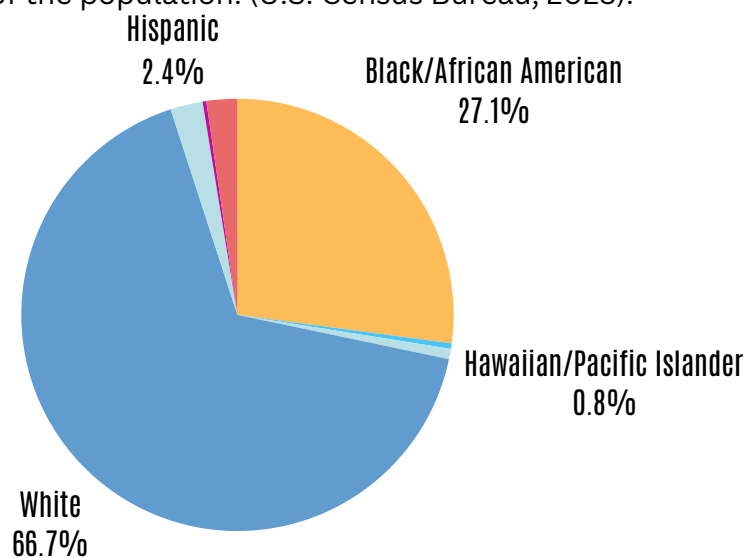
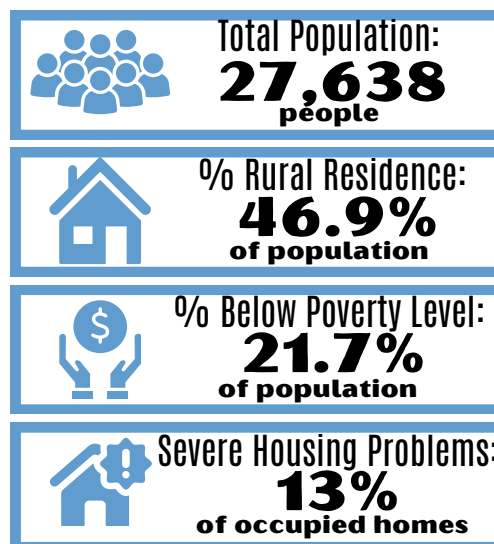


Fig. 16: Upson County Racial Make-up



Upson County is comprised of both urban and rural areas, with approximately 46.9% of the population living in a rural area (500 or fewer people per square mile and less than 2,500 people). Approximately 21.7% of the population is living below the poverty level, which is almost double the national average. Climate change disproportionately affects those living in poverty due to lack of resources and challenges with preparation for and recovery from environmental hazards (County Health Rankings, 2024).

Severe housing problems can negatively affect people's abilities to withstand and recover from the effects of climate change which include extreme temperatures and more frequent and severe thunderstorms. In Upson County, approximately 13% of occupied homes have at least one severe housing problem, which may negatively impact people's ability to withstand climate change-related hazards.

Factors including poverty, lack of access to transportation, and housing problems contribute to a community's level of social vulnerability. Social vulnerability negatively impacts a community's ability to prevent human suffering and financial loss in the event of an environmental disaster. Upson County has a social vulnerability index of 0.7078, which indicates a medium to high level of social vulnerability. This score indicates a need for new or updated policy along with interventions and programs to help lower the level of social vulnerability in Upson County (CDC, 2020).

**Georgia County Health Ranking:** Upson County is ranked #141 out of 159 counties in the state of Georgia, which places it in the lowest 0%-25% of counties in the state for both health outcomes and health factors.

# #141/159

# Climate Change Impacts: Upson County

## Climate Change Impact Assessment

Upson County ranks #4 out of the 12 counties in District 4 on the Air Quality Respiratory Hazard Index (EPA, 2018). Additionally, Upson County ranks #6 out of the 12 counties on the particulate matter environmental justice index, meaning that they rank in the middle for the level of disparity in the distribution of particulate matter around where low income or racial/ethnic minorities primarily live (EPA, 2021).

Upson County is at risk of experiencing both heat wave hazard events (2 events per year) and ice storm hazards (35 events per year), which can have negative effects on people's health. Exposure to heat waves can lead to adverse health events like heat stroke and other heat-related illnesses. Additionally, ice storms can disrupt power and communications services, which can place those in need of frequent medical care at risk. Also, the presence of ice on the roads and ground can increase the risk of vehicle collisions and injuries from falling (FEMA, 2021).

On average, Upson County experiences twenty-two

instances of riverine flooding per year, which makes this county the third most at risk of flood-related hazards in the district. Riverine flooding can be very dangerous for those living and working in flood zones. Floods can result in devastating damage to property, erosion, landslides, and even loss of life (FEMA, 2021).

### Community Resilience

Upson County has an Environmental Hazard Community Resilience Score of 54. Which indicates a moderate level of community resilience against climate change-related hazards. This score ranks Upson County #6 out of the 12 counties based on their ability to prepare for and withstand environmental hazards and to quickly recover from these disruptions (FEMA, 2021). This score indicates that there is room for improvement through new or updated policies, along with resources and interventions that could help increase Upson County's community resilience against climate change.

## Recommendations: Upson County

### Create/Promote Emergency Flood Plans and Mitigation Measures

Fayette County has a high rate of riverine flooding, which places residents at increased risk of experiencing flooding-related hazards. It is recommended that Fayette County build green infrastructure to reduce stormwater runoff such as rain gardens, bioswales, and permeable pavements in addition to educating the community about emergency flood plans and what they can do to protect themselves from flooding hazard events (EPA, 2024).

### Create/Promote Extreme Heat Safety Plans and Measures

Spalding County is particularly susceptible to extreme heat, which can lead to heat-related illnesses and even death. To prevent heat-related morbidity and mortality, it is recommended that Spalding County create, promote, and educate the community about extreme heat safety plans and measures that follow the [CDC's recommendations](#). These recommendations include wearing lightweight, loose-fitting clothing, scheduling outdoor activities carefully, not leaving children/pets in cars, drinking plenty of fluids, etc. (CDC, 2022).

### Create/Promote Ice Storm Hazard Preparation and Mitigation Plans

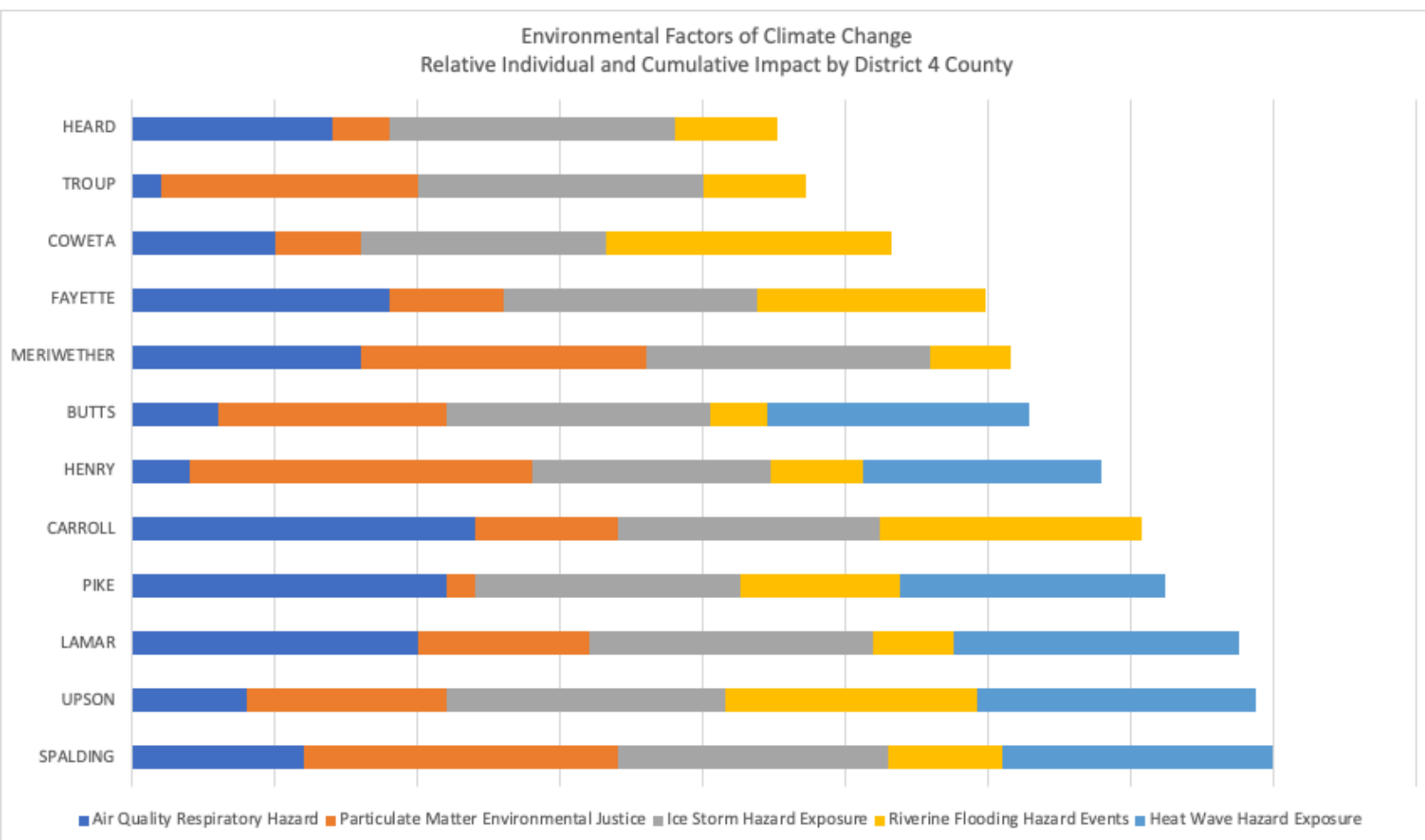
Troup County residents are at risk of suffering from ice storm hazards, which include hypothermia, icy roads, power failures, and loss of communication services. Troup County should work to educate residents about preparation and mitigation plans and how to stay safe in ice storms. The CDC has [recommendations](#) including how to safely heat homes, how to safely use generators, to conserve heat, keeping a water supply, and how to keep babies and older adults safe in cold temperatures (CDC, 2023).



# Results: District 4 Overall

## Environmental Factors of Climate Change in District 4

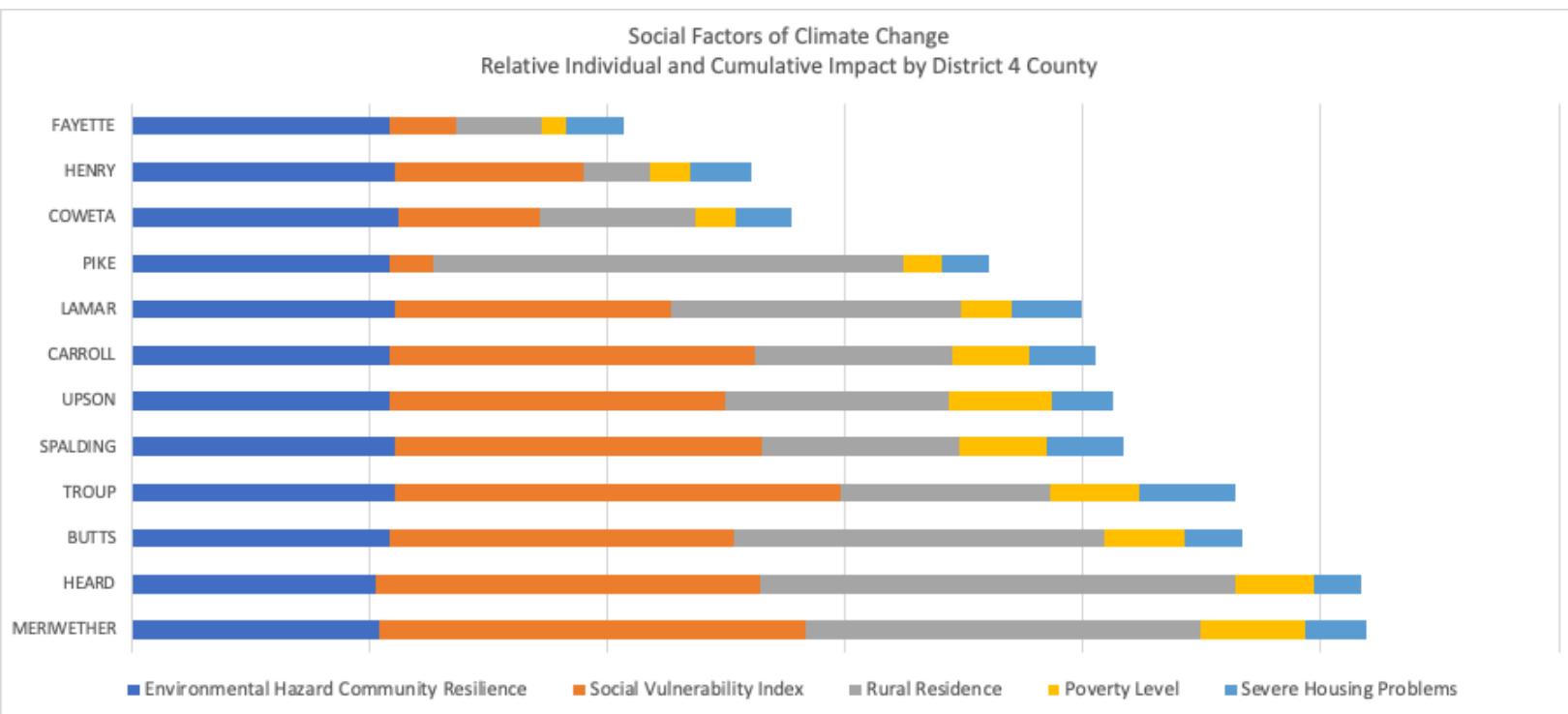
Figure 17 outlines the cumulative impact of the environmental factors of climate change impacting District 4 counties. All data has been indexed and scaled from 0-1 relative to individual and cumulative impact by county. This graph shows the level of impact each county experiences from each environmental hazard outlined in the report. The data indicates that Spalding, Upson, and Lamar Counties are the most impacted by climate change hazards in the district. This means these counties would greatly benefit from targeted interventions and programs that will help alleviate environmental hazards due to climate change in these areas. Meanwhile, the data indicates that Heard, Troup, and Coweta Counties are the least impacted by environmental hazards. However, while these counties are least impacted, they could still benefit greatly from interventions and programs to alleviate these impacts.



# Results: District 4 Overall

## Social Factors of Climate Change in District 4

Figure 18 outlines the cumulative level of impact by social factors of climate change in each of the District 4 counties. All data has been indexed and scaled from 0-1 relative to individual and cumulative impacts by county. The graph shows the levels of impact each county experiences from each of the social factors of climate change indicated in this report. The data indicates that Meriwether, Heard, Butts, and Troup Counties are the most negatively impacted by the social factors of climate change. This shows that these counties would greatly benefit from targeted interventions, policies, and programs to address the negative social impacts of climate change on these counties. Meanwhile, Fayette, Henry, and Coweta Counties are the least impacted by the social impacts of climate change. However, these counties could still benefit from interventions, policies, and programs to address the negative social impacts of climate change.



# Recommendations for District 4

## CREATE SUSTAINABILITY COMMISSIONS WITH REPORTING RESPONSIBILITIES

Other cities and states in the United States have established sustainability commissions who are responsible for advising the city council on issues related to the current climate emergency, provide the city council with specific objectives, targets, and guidance on sustainability priorities, recommend specific programs and policies, and plan and undertake education events to engage the community. These commissions have been proven to decrease an area's carbon footprint, along with improving a community's level of community resilience against climate hazards (City of Sausalito, 2024). Implementing a commission like this in District 4 would help improve health outcomes impacted by climate change.

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## IMPLEMENT AND PROMOTE NATURAL HAZARD SAFETY PLANS

Community education is very important for mitigating natural disasters and other environmental hazards resulting from climate change. While there is no way to completely prevent negative health outcomes resulting from natural hazards, proper planning and education can reduce suffering. Emergency preparedness, risk awareness and preparation, and environmental health promotion are proven to make it easier to recover from environmental hazard events and to ensure losses are not catastrophic. It is recommended that District 4 make efforts to promote environmental health and environmental hazard education to help the community understand the dangers associated, to prepare for, and withstand the effects environmental hazard events (Walden University, 2024).

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## PROMOTE RECYCLING

Recycling has many benefits to the environment and helps to combat the climate crisis by limiting the use of raw materials and reducing the amount of waste going into landfills. Plastic waste produces greenhouse gas emissions during every stage of its lifecycle, which contributes to global warming. When an item is recycled it is processed and turned into something new rather than using new materials which uses less energy and emits fewer greenhouse gases. Studies estimate that between 2020 and 2050, recycling will reduce greenhouse gas emissions by 5.5 to 6.02 gigatons of carbon dioxide, which is equivalent to taking over one billion cars off the streets for one year (Robinson & Huun, 2023). District 4 should promote and increase recycling efforts to decrease waste in landfills and greenhouse gases emitted by waste.

# Recommendations for District 4

## IMPLEMENT TRANSPORTATION POLICIES & PROGRAMS

Air pollution is an issue in many of the counties in District 4, which can contribute to adverse health outcomes and climate change. While industrial and commercial operations contribute to air pollution, a significant amount of pollution is produced by gasoline-powered cars and trucks. Many other urban and metropolitan areas in Georgia require annual EPA vehicle emissions inspections to improve air quality issues and decrease greenhouse gas emissions. Studies have revealed that vehicle emission testing results in air quality benefits (Georgia's Clean Air Force, 2024). It is recommended that District 4 consider implementing emissions testing regulations in the metropolitan counties that have not done so already. Additionally, many of these areas also offer public transportation options, which are a good way to tackle climate change by reducing the number of vehicles on the roads emitting air pollutants. It would be helpful to residents of District 4 to have access to public transportation to increase access to services and to decrease the amount of air pollution from vehicles in the area.

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## PROMOTE CLEAN ENERGY USE

Clean energy has many benefits including increased human health and safety, less air and water pollution, and less harmful carbon dioxide emissions. Burning fossil fuels releases carbon dioxide into the atmosphere, which gets trapped and contributes to global warming. Additionally, fossil fuel burning releases pollutants into the air which can contaminate water and soil. Clean energy sources including solar, wind, water, geothermal, bioenergy, and nuclear do not contribute to air pollution, which makes the air safer to breathe, and leads to better health outcomes (Office of Energy Efficiency & Renewable Energy, 2024). District 4 has many areas that experience low levels of environmental justice when it comes to air pollution, and a transition to more clean energy sources in District 4 would help to improve environmental justice.

# Conclusion

## District 4 Climate Change Report

This report summarizes how the effects of climate change, which include changes in temperature, precipitation, and extreme weather negatively affect human health in each county in District 4. Climate change can cause an increased frequency in extreme weather events like heat waves, ice storms, riverine flooding, and severe storms, which can be dangerous to health. Additionally, climate change can negatively impact health outcomes and lead to conditions such as asthma. This report analyzes how these events and factors are negatively impacting each county and how some vulnerable groups may be disproportionately impacted by these events.

Overall, District 4 houses twelve counties which vary greatly in population size, demographics, health outcomes, poverty level, population density, and number of resources available. These differences contribute greatly to how each county can prepare for and withstand climate change. Additionally, the data indicates that more vulnerable groups like those living in poverty, older adults, racial/ethnic minorities, and children are more susceptible to the effects of climate change. Primarily low-income areas and those where primarily racial/ethnic minorities reside have higher levels of air pollution and lower levels of environmental justice, which disproportionately impacts these individuals and contributes to high rates of poor health outcomes.

Further research and action are needed to fully understand the impact of climate change on health in District 4. Additionally, interventions and programs such as climate change and health education, natural hazard safety plans, and interventions to target specific issues within the counties will help to decrease the negative effects of climate change on health in District 4.

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