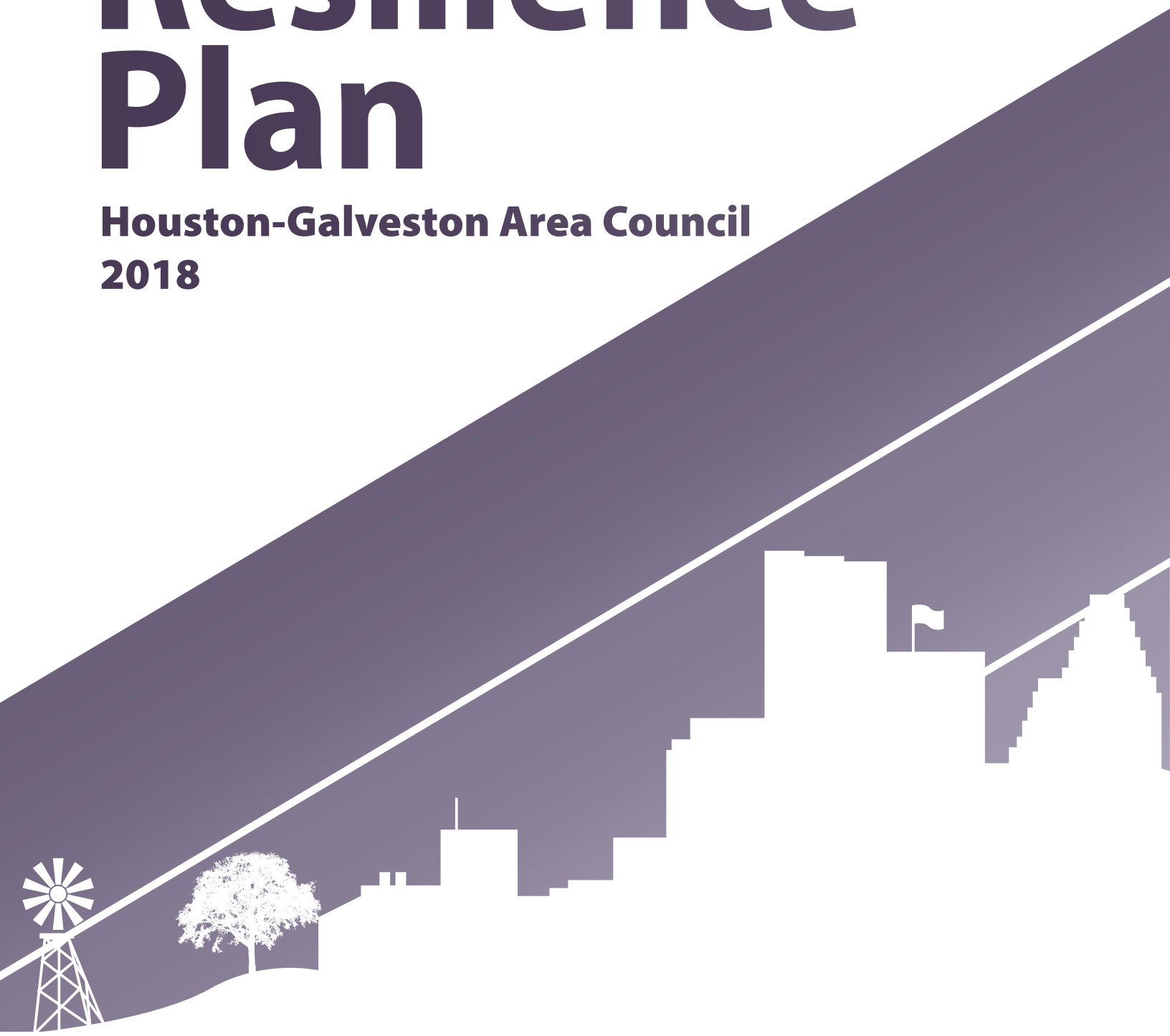
Regional Economic Resilience Plan

Houston-Galveston Area Council
2018



REGIONAL ECONOMIC RESILIENCE PLAN

What is economic resilience?

Economic resilience is the ability to prevent, withstand, and quickly recover from disruptions to the economy. The most common types of disruptions include downturns in economy or in a key industry; the closure or exit of a major employer; and natural or manmade disasters. Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and building the capacity respond to disruptions.

Why do we need this plan?

The Houston-Galveston region has one of the most robust economies in the nation with major economic assets including the energy, agriculture and medical industries; international ports; and new plant expansions. The region is also vulnerable to wide range of natural hazards, including flooding, droughts, tropical storms and hurricanes; as well as potential man-made disasters such as terrorist attacks. Local economies throughout the region can be impacted by a downturn in major industries or the loss of an important employers. This plan was created to identify economic challenges in the region, assist authorities in planning for economic disruptions, create the means to enhance economic resilience, and create a vision for resilient regional economy.

Hurricane Harvey

Hurricane Harvey stalled over the region for four days in late August of 2017; parts of the region received over fifty inches of rain, causing widespread flooding and damage to homes and businesses. All thirteen counties of the Houston-Galveston Region have been designated as a disaster area due to Harvey.

The damage totals approximately $125 billion dollars, and $16 billion in economic loss in the Houston-Galveston region. Harvey damaged or destroyed more than 178,400 Texas homes and inflicted an estimated $669 million in damage to public property. Harvey caused more than $200 million in Texas crop and livestock losses; the manufacturing, energy, chemical production, and retail sales sectors experienced costly downtime, and many experienced damage to equipment and structures from the flooding.

The hardest hit economic sectors in entertainment and telecommunications, while the health services, rental housings, motor vehicles, furniture and clothing sectors increased output due to the storm. The region lost 11,200 jobs due to Hurricane Harvey, but the job market quickly recovered, and the region's economy added 43,200 jobs in October as the region's economic activity increased as recovery efforts intensified.

How was this plan created?

The U.S. Economic Development Administration (EDA) makes investments in economic resilience to enhance the ability of economies to bounce back from a disruption, preserving jobs and economic well-being. The EDA provided funding for this economic resilience plan in the wake of the destruction caused by the Tax Day floods of 2015 (DR-4223). This plan is a result of a review of the economic resilience literature (see Appendix A), a survey of economic development and planning in the region, an analysis of vulnerabilities in the region, and economic resilience workshops in each of the 13 counties in the Gulf Coast Economic Development District.

What's in the plan?

H-GAC conducted analysis and hosted workshops where both regional and county-specific vulnerabilities and solutions emerged. The plan is organized into three central recommendations (overarching recommendations all areas of the region should consider); a transect (overview of challenges faced by different land use intensities in the region) and county profiles (county-specific analysis and recommendations); and resources (local, regional, state and national plans and tools addressing economic resilience.)

KEY RECOMMENDATIONS

Through the development of this document, H-GAC identified the following three central recommendations for enhancing the region's economic resilience: Keeping Water Where it Belongs, Defending Great Places, and Future Proofing.

Keeping Water Where It Belongs

The Houston-Galveston region's geography makes it particularly vulnerable to flooding, drought, hurricanes, and tropical storms. The 2015 Memorial Day floods, 2016 Tax Day floods, and the 2017 Hurricane Harvey floods created enormous economic losses for the region. These floods occurred while the region was still recovering from the impacts of the 2010-2012 droughts and Hurricane Ike (2008). While impact from these disasters could not be completely avoided, the costs of recovery could have been significantly reduced given sufficient infrastructure. Enhancing the region's ability to manage water will enhance the resilience of the region's economy.

Defending Great Places

The Houston-Galveston region is home to great places to live, work, and play. Re-investing in existing communities while enhancing the quality of new growth strengthens the economic competitiveness of the region. A community's economic resilience is dependent on essential physical and demographic components. Communities need sufficient transportation, telecommunication, educational, housing, utility, recreational, and drainage infrastructure to be successful.

Future Proofing

Future-proofing is enhancing adaptability by planning and designing to anticipate upcoming changes. Demographic shifts, increased storm events, transformations in retail, transportation, and emerging technologies will impact the way residents live, work, and play in the future. Planning and building for the future, both the anticipated and unknown, enhances adaptability and resilience.

KEEPING WATER WHERE IT BELONGS

The greatest risk to the region's vibrant economy is continued vulnerability to repeated flooding. Flooding costs the region billions of dollars, and unless the region invests more resources in preparing for future floods, costs will continue to rise. While Hurricane Harvey demonstrated the strength of the region's people and its community spirit, the repeated flooding has damaged the region's business recruitment and retention efforts. For example, as a direct result of Hurricane Harvey's flooding, Houston is losing 290 high-tech manufacturing jobs from just one employer.[1]

The region's landscape and waterways have limited capacity to absorb floodwaters; the location on the Gulf Coast, its flat topography, and its geology of dense clay soils contribute to its propensity to flood.

The region does not have sufficient drainage infrastructure in place to prevent losses of residences, property, and businesses during the increasingly frequent floods. As the region continues to grow and develop upstream, increased flooding of existing downstream properties occurs. Limited regulation of development, especially in the unincorporated areas where the majority of growth is taking place, allows development in low-lying areas that repeatedly flood. Buying out structures that are repeatedly flooded is more expensive than preventing development in low-lying areas.

Hurricane-related storm surge damages the economy and environment, as evidenced by the destruction on Bolivar Peninsula by Hurricane Ike, where a 22-foot wall of water rolled over the peninsula, wiping away entire communities.

View from the Federal Emergency Management Agency's (FEMA) Urban Search and Rescue Virginia Task Force Two in a Houston neighborhood during Hurricane Harvey flooding.

Photo by FEMA News Photo - Aug 31, 2017

Best Practices
for Flood Prevention

- **Intergovernmental regulation, coordination, and planning**
- **Sufficient infrastructure to prevent flooding**
- **Maintain strong institutions to prevent flooding**

KEEPING WATER WHERE IT BELONGS: BEST PRACTICES

Keeping water where it belongs also necessitates sufficient water capacity to meet the needs of a growing population, even during drought conditions. Between 2010 and 2012 the region experienced the second worst drought in southeast Texas history, causing $5.2 billion in losses statewide.[2, 3] Having sufficient water supply to meet the needs of agriculture and industry would reduce drought damage to the region's economy.

Best Practices
for Drought Prevention

- **Create sufficient reservoir capacity to ensure surface water needs are met**
- **Invest in water conservation measures**
- **Promote voluntary adoption of water conservation technologies by residents and the private sector**
- **Investigate the potential for further development of non-potable water systems (water that has been treated to a standard below that fit for human consumption)**

Water conservation measures, such as low impact development , and help reduce the strain, and expense associated with stormwater management and potential drought.

KEEPING WATER WHERE IT BELONGS: BEST PRACTICES

Intergovernmental Coordination and Planning:
Chambers County Long-Term Recovery Plan

In 2008, Hurricane Ike devastated Chambers County, destroying basic infrastructure including utilities, fire protection, and healthcare facilities. Saltwater contaminated wells as far as 10 miles inland.[4] In response, Chambers Recovery Team developed a community driven Long-Term Recovery Plan to identify and prioritize projects with participation from the County and the Cities of Anahuac, Cove, Mont Belvieu, Beach City, and Old River Winfree. The plan identified the need for building codes and land use regulations that "ensure housing is more resilient and sustainable, offers protection from future storms, and is safe and sustainable."[5] It also included several projects to improve the infrastructure needed in the county to enhance its resilience to flooding, including expanding levees, creating a drainage plan, and repairing saltwater gates. As a result of the planning efforts, Chamber County and the City of Anahuac have invested in infrastructure to prevent saltwater intrusion into the Lake Anahuac, the City of Anahuac's water source.

Develop Sufficient Infrastructure to Prevent Flooding:
Structural Solutions to Prevent Storm Surge

Galveston Bay is vulnerable to hurricanes coming in off the Gulf of Mexico, as demonstrated by Hurricane Ike's two-story storm surge. Storm surge from a Category 5 hurricane has the potential to destroy the massive petrochemical complexes in Texas City, Baytown, Pasadena, and the Houston Ship Channel. Such an event would have an incalculable effect on the regional, national, and global economy, and the potential toll on communities and the environment is beyond comprehension. Many possible structural solutions are being investigated. Texas A&M Galveston, Rice University's SSPEED Center, the Gulf Coast Community Protection and Recovery District, and the Galveston District of the Army Corps of Engineers produced concepts for massive coastal infrastructure to prevent storm surge. Taking inspiration from the Dutch, who have centuries of experience in coastal storm protection infrastructure, the concepts recommend a system to create a series of barriers, levees, gates, and pump stations sufficient to protect the Galveston Bay from the destructive forces of a storm surge. The Corps of Engineers is scheduled to release a recommendation from their storm-surge protection study in 2018. Federal funding for any project depends on the results of the Corps study. Remaining questions of the final design, funding, and implementation need to be quickly resolved to protect communities, businesses, and industry from the potential devastation of storm surge.

Maintain Strong Institutions to Prevent Flooding:
Velasco Drainage District

The Velasco Drainage District enhances resilience by providing physical flood protection in the Brazosport area, in the southern part of Brazoria County, by maintaining 50 miles of levees and pump stations. Brazosport is a major industrial and petrochemical complex and an engine of the regional economy. The Velasco Drainage District, established in 1908, creates a strong institution by investing in and retaining staff members who can anticipate issues and understand the workings of the system; coordinating closely and building trust with other entities (such as Brazoria County's Office of Emergency Management, the Galveston District of the Army Corps of Engineers, industry partners), gaining access to outside resources for effective management; and taking full responsibility for the operations and maintenance of their system, leading to a sense of ownership and avoiding pitfalls that can occur with overlapping jurisdictions.

DEFENDING GREAT PLACES

The region will be more resilient to economic downturns and natural disasters by creating and maintaining great places.

The region was largely developed after the advent of the automobile, and much of the built environment was developed with a focus on convenience for automobile users. Strip centers, tract housing, and low-density development are common. Often these places lack a sense of identity, and while affordable to develop, these communities can decline in value over time.

A community's economic resilience is enhanced when thoughtful investments are made in a concerted and coordinated manner. Creating the drainage infrastructure or levees needed to defend communities from flooding are more affordable when communities are compact rather than sprawling. Low-density development can have a lower taxable value per-square-foot and can prove costly over time as the costs to maintain a more extensive system become burdensome as the infrastructure ages.

Great places are those that are safe, convenient, and attractive and are more economically resilient, attracting and retaining residents and employers.

Great places are vibrant, walkable, mixed-use places with recreational opportunities and open space; their physical fabric reflects the community's unique history and identity.

Great places have attractive streetscapes with pedestrian improvements, landscaping, lighting, street furniture, and public art. They are comfortable and foster a sense of place.

Great places merit ongoing investment and improvements and have a concentration of employment, residences, and activities.

Great places demonstrate economic vitality, attract skilled workers and new businesses, and provide a competitive advantage through the differentiation in the quality of their environment.

Great places have sufficient infrastructure not only to prevent extensive damage from flooding but also have sufficient infrastructure to support business development and a livable environment.

Great places can be defended through implementing the following Best Practices:

Best Practices
for Defending Great Places

- **Create an actionable plan to coordinate development**
- **Invest in the infrastructure needed to spur development**
- **Attract employers through creating a vision for a community**

DEFENDING GREAT PLACES: BEST PRACTICES

Create an Actionable Plan to Coordinate Development:
Bay City North Downtown Plan

Bay City, the county seat of Matagorda County, is a rural community on the Texas Gulf Coast between Houston and Victoria. Bay City has attracted several large industrial facilities and is seeking to enhance its livability to attract those employees to live in town, instead of losing them to other counties where there is a greater availability of newer housing stock and retail amenities. In 2013, the City of Bay City developed the Bay City North Downtown Plan to serve as a catalyst to stimulate public and private investment in the 12-block area immediately north of downtown Bay City. A market analysis, as part of the Bay City North planning process, indicated that there is demand for single-family housing, infill small lot housing, and apartments. The plan outlined strategies to transform the area into a high-quality, mixed-use district; generate interest from developers and prospective residents; assess the phasing of infrastructure improvements; and identify funding mechanisms to implement the plan. Since the completion of the plan, Bay City has developed and adopted a form-based code for the district, established a Tax Increment Reinvestment Zone (TIRZ, a mechanism that finances redevelopment without directly raising taxes), and created a 380 agreement (an authorization allowing districts to offer development incentives) to allow private development of multifamily and townhome projects in the area on formerly publicly held land. Three speculative homes are currently under construction in the district.

As part of the development of the Regional Plan for Sustainable Development (Our Great Region) , the Houston-Galveston Area Council worked with local sponsors and consultants to development Bay City North Downtown Plan to set forth a specific vision for North Downtown - a high quality, mixed-use housing district that complements the commercial and civic activity of Downtown

DEFENDING GREAT PLACES: BEST PRACTICES

The Greater East End Management District study investigated how the neighborhood could enhance parks and amenities along the Buffalo Bayou to enhance the neighborhood's character while keeping critical facilities out of the floodway. The study identified the need for pedestrian linkages and connections to the bayou.

Invest in the Infrastructure Needed to Spur Development:

East End

Houston's East End is one of the oldest residential neighborhoods in the city, immediately to the east of downtown. The neighborhood faces the challenges of aging infrastructure, a low-income and declining population, a lack of pedestrian and bicyclist infrastructure, and a jobs-housing imbalance in which over 90% of East End residents work outside of the area. The Greater East End Management District (GEEMD), with support from H-GAC, funded a series of planning studies to identify the extent of these challenges and offer solutions through capital improvements. Following-through on its study recommendations, the GEEMD secured over $31 million in infrastructure investments, leveraging local, state, and federal partnerships to bring in $5 for every $1 of GEEMD money spent. To guide its ambitious investment goals and build local economic resiliency, the GEEMD Board of Directors embraces a clear vision of place-based improvements for the East End to create more walkable and mixed-use spaces with local destinations for residents and visitors. Its $31 million of improvements funded 35 miles of sidewalk, nearly 800 trees, four parks, almost 400 pedestrian lights, 90 benches, 14 bike racks, and an iconic urban street market that pays homage to the neighborhood's Latino heritage. Intentional investments in walkability and quality of life create a more resilient East End by building upon its strengths while answering multiple local challenges.

Attract Employers through Creating a Vision for a Community:

Waller Livable Center Study & Daikin Plant

Waller, population 2,767, is a small town located on the border of northwest Harris County and northeast Waller County, on the U.S. 290 corridor and metropolitan Houston's fringe. In 2009, Waller participated in the Houston-Galveston Area Council's Livable Centers initiative and created a plan to address future development, preserve the community's identity and sense of place, and enhance economic development. The plan forges a common vison of the town's intentions and desires for the future though the coordination of public infrastructure investments and private development and led to $1,600,000 in public investments.[6] The City of Waller created the plan to make the community a more appealing place to live, work, and play. Waller's efforts paid off by attracting the $417-million-dollar Daikin H-VAC manufacturing facility. The 4.1 million square-foot manufacturing facility (second in size only to Boeing as the nation's largest industrial building) employs 6,000 workers and is expected to generate $3.9 billion in annual economic impact for the Houston region.[7] Daikin's investment has spurred the development of a master-planned community and a multifamily community in the Waller area and has attracted manufacturers that seek to supply Daikin, such as Broad-Ocean Motor Company.

FUTURE PROOFING

Future proofing is the process of anticipating potential effects of future events, specifically changes in technology and demographics, and designing systems that are flexible and adaptable to change without the need for major upgrading. Technological innovation is difficult to plan for and raises questions for economic development professional planners and policy makers to investigate. The region's economy is based in the energy industry, which recently experienced an unanticipated upsurge in domestic oil and natural gas production and refining due to development of fracking technology. A major component of the regional energy industry is refining oil into gasoline, the majority of which is used in transportation. How the oil and gas sector, and the region's larger economy, will be affected by the coming electrification of automobiles is a question that needs to be considered by business leaders and policy makers.

Mobility technology is rapidly changing, with the trends of driverless cars, ridesharing, and electrification converging to transform the transportation landscape.[8] The region's development and physical form has been dominated by the automobile; currently, when developing offices, nearly half of the developed space is dedicated to vehicle parking.[9] Architects are designing parking structures that can easily be transformed into other building types, in anticipation that we will no longer have automobiles sitting idle in the garages all day. Policy makers and governments will need to coordinate with technology developers to deploy the infrastructure needed for automation of vehicles.

There is an ongoing political debate on whether climate change is caused by human activities. What is undisputed is that there is an increasing number of extreme weather events in the United States including heat waves, droughts, heavy downpours, floods, and hurricanes.[10] If this trend continues, we can anticipate that droughts, hurricanes, and floods will be more frequent occurrences in the region. This necessitates an increase in the number of droughts and storms the region needs to be prepared for.

Best Practices
for Future Proofing

- **Workforce Development and Demographic Change**
- **Smart Mobility Technology**
- **Utility Hardening**

FUTURE PROOFING: BEST PRACTICES

As the region grows, demographics continue to change, which will in turn shape the region's economy. The Baby Boom generation is beginning to age out of the workplace, while the Millennial generation's (the largest in the nation's history) economic prospects have diminished in comparison with prior generations. Millennial net wealth is half as much as Baby Boomers when they were young adults; wages have also declined 20 percent for today's young workers.[11] While the population has shifted to a slightly older makeup, the region has the largest percentage of population under 18 years of age of any metropolitan area.[12] The region has grown significantly more diverse since 1990, with increases in the Asian and Hispanic proportions of the population. Responding to these demographic shifts is crucial in preparing for the economy of the future and key to responding to downturns in the economy.

The region needs to improve its rate of educational attainment if it is to retain a competitive workforce. Among the 20 largest metropolitan areas in the U.S., Houston ranks 19th in educational attainment.[13] The fastest-growing segment of the workforce is also the least educated. As the *The Kinder Houston Area Survey* notes:

"In today's high-tech, knowledge-based, global economy, some form of post-secondary education—a minimum of one or two years in a community college after high school—is virtually a prerequisite for landing a decent job. Given these new realities, it is sobering to realize, as a recent study has found, that of all the eighth graders in Houston area schools in the year 2004, only 68% actually graduated from high school and just 21% had obtained any kind of post-secondary certificate or degree by 2015, 11 years later."[14]

If the region is to be economically resilient, it needs to change these trends to respond to the increasing demand for skilled blue-collar labor.

Brazosport College provides training for students and partner industry through a variety of programs and classes. The campus is also home to a full-scale PET (Polyethylene terephthalate, a general-purpose plastic) Plant training facility for hands-on instruction and continuing education.

Photo by Brazosport College

FUTURE PROOFING: BEST PRACTICES

Workforce Development and Demographic Change:
Brazosport College

Brazoria County is a nexus for chemical production, largely centered in the southern portion of the county, known as Brazosport. Brazosport's petrochemical industry has experienced rapid growth in the past decade, with $28 billion in capital investments and 3,500 new permanent jobs.[15] In addition to the demand for new employees, the industry is expecting a 50% turnover in the next 10 years as the Baby Boom generation begins to retire from the workforce.[16] Brazosport College is proactively meeting the demand for a skilled workforce through Brazosport College's Center for Business and Industry. Brazosport College has a traditional student population of 4,000, but serves 20,000-25,000 students per year, largely through Center for Business and Industry. The Center offers courses specifically tailored industry needs in terms of timing and outcomes. In addition to training, the Center provides consulting, meeting facilitation,and grant resources to help industries meet their needs. The Center offers practical knowledge using its own Process Equipment Trainer; allowing new recruits to train on the same equipment they will be using in the field, without the high risk. The Center remains responsive to industry needs through industry involvement of its advisory council, composed of petrochemical industry professionals, that assists with career talks, curriculum development, and high school recruitment.

Smart Mobility Technology:
The City of Frisco

Transportation technology and infrastructure is undergoing a significant transformation with the innovations in electrification, shared transportation, and automation. Frisco, in the Dallas-Fort Worth metropolitan area, was awarded a $300,000 grant from the Texas Department of Transportation to implement an adaptive signal control pilot program. The technology allows signal controllers to adjust intersection signal timing instantaneously based on traffic volume and other parameters put in place by city staff. The program is expected to improve the overall signal control network by reacting to traffic conditions immediately. The system is expected to be installed at several signaled intersections by the end of the year and will be tested for 12 months. The technology will provide a wealth of data on the current usage of the city's transportation network. This technology is a sign of the future of automotive and transportation technology. Frisco is building the initial infrastructure needed for automated transportation, allowing automobiles and a network of active sensors embedded in the transportation infrastructure to communicate. What the future holds for automated vehicles is still undetermined, but as the technology continues to develop, the region will need to be prepared if it is to remain competitive.

Utility Hardening:
The City of Liberty

The vulnerability of the City of Liberty's municipal utility grid was exposed after the windstorms experienced during Hurricane Ike in 2008. The City of Liberty's electrical grid was not unique in the damage it experienced; Hurricane Ike knocked out power in pockets throughout the region for weeks at a time. A major electrical user in Liberty is a pipe fabricator, which uses approximately the same amount of electricity as all the city's residential customers. Liberty continued to experience brownouts affecting the fabricator's operations. Liberty invested $4 million to harden its electrical grid to enhance its resilience. The City surveyed the grid for vulnerabilities, identifying faulty poles and insulators, and switches that needed to be raised, and has been systematically addressing its weaknesses. This has enhanced the City's ability to provide consistent service and made Liberty more resilient to future extreme weather events, as well as more attractive as a location for manufactures interested in relocating to Liberty.

ECONOMIC RESILIENCE ACROSS THE TRANSECT

The Houston-Galveston region has a mix of urban, suburban, and rural areas, each face their own challenges to enhance their economic resilience. The following is an analysis of economic resilience the based intensities of land use.

Transect

A transect is a concept borrowed from the field of ecology; an ecologists walk along a path and record the occurrences of species they are studying, a transect. A transect in planning is an examination of the types of landuse along a determined path, usually starting in the middle of a central business district and radiating out through the suburbs and rural areas to wilderness. This transect is to help identify common economic resilience strategies among similar land use intensities from urban to rural uses.

Urban

The urban core faces competition from lower cost outlying suburban office markets and needs to be innovative to ensure their vitality. Urban areas have been the primary areas served by the expansion of high-capacity/frequency transit, be it street cars in Galveston, Bus Rapid Transit Uptown, or the light rail connecting downtown with the medical center.

Urban areas need to take steps to continually upgrade their infrastructure and streetscapes to enhance the pedestrian experience. Known as the last mile, the pedestrian experience between the transit stop and the destination often determines a transit systems' success. Creating opportunities for residents to live in the urban core through public-private partnerships has helped revitalize downtown Houston, while rural communities in the region have benefited by from additional residents in their Main Street Districts. Downtowns need to foster agglomeration economies (people living near jobs and industry) based around innovation.

ECONOMIC RESILIENCE ACROSS THE TRANSECT

Suburban

Development is a significant consumer of raw land in metropolitan Houston, especially in the unincorporated areas outside of Beltway 8 and the area peripheral to the Grand Parkway (State Highway 99) corridor. Local governments can work with suburban developers to enhance the quality of development in their jurisdictions through voluntary design criteria and development standards.

As the suburban areas continue to develop, most typically in formerly agricultural areas, it is incumbent upon them to develop sufficient drainage infrastructure to keep water out of homes and businesses. Municipal Utility Districts in the region have allowed for the expansion of water and wastewater demands in region without the need for public funds. MUDs have historically done little in terms of developing stormwater and parks infrastructure, two critical factors for livability in the region and have been criticized for the fragmentation in authority, making coordination difficult.

Residential development in suburban areas can be highly segregated in terms of income, with one subdivision selling homes from $225,000-275,000 and the neighboring subdivision selling homes from $290,000-375,000. This spatial segregation by income can make neighborhoods and communities less resilient during a downturn, and without continual investment and upgrading to maintain the neighborhoods home values, suburban neighborhoods can face blight as the uniform housing stock ages and becomes obsolete as consumers seek new construction with the latest amenities.

Traditional retail in suburban areas has faced decline as consumers increasingly shop online. Several older malls in the region have been largely abandoned as the market for brick and mortar shopping continues to shrink.[17] The online retail environment is continuing to evolve with the automation of distribution centers and possibilities of automated delivery.

The proliferation of national retail chains has proven dependable to retail developers, but can stifle the place-making qualities of local businesses. It is much more reliable to lease to a national chain restaurant, rather than risking income on the prospects of a new local establishment. This has a chilling effect on the ability of local entrepreneurs to lease retail space at a competitive rate.

Rural

Several rural counties in the region do not have a countywide office of economic development. Those counties lacking an economic development professional or volunteer to lead and coordinate efforts to enhance the jurisdiction's economic prospects are not as competitive as those counties that are actively seeking to recruit new employers. These counties should seek to create a centralized contact to coordinate economic development in their jurisdictions and identify grants and other incentives to attract possible employers. Often, rural communities lack sites with sufficient infrastructure to service a large manufacturing or distribution operation, which will seek out established industrial parks with the utilities in place. Identifying suitable infill sites within rural communities that are already served by sufficient utilities could attract these businesses.

Rural areas in the region often experience a lack of modern housing stock, which can limit the companies willing to relocate to the area. Public-private partnerships can help these areas develop new housing stock to meet the demand and increase the population in small cities in rural areas. (See Bay City North Case Study on page XX). Rural residents want to have the same access to the high-capacity internet infrastructure that urban residents have. Internet access is an important factor in economic development in rural areas. Businesses with an online component cannot locate in areas without sufficient internet access to meet their needs. Rural jurisdictions should work with service providers and seek federal and state grants to expand internet access in their communities.

The rural areas of the region have the oldest population profile. As the Baby Boomers transition into retirement, many will choose to relocate to more bucolic environments in rural areas of the region. Ensuring that seniors have access to public services, such as healthcare or the library can be challenging as the population loses physical mobility and the ability to operate an automobile. Shared ride and automated mobility technologies will become increasingly important for this demographic in rural areas in the future.

COUNTY RECOMMENDATIONS

In addition to the key recommendations, this plan examines specific interventions that can make each of the 13 county in the region more economically resilient. Those recommendations include the following:

Austin County

- Engage with the Texas Department of Transportation to enhance communication and understanding of upcoming IH-10 expansion. Coordinate with businesses to enhance their ability to respond to the negative impacts of construction.
- Identify undeveloped parcels currently served by, or that may be easily connected to, the utilities needed for light manufacturing or distribution.
- Investigate potential strategies for better coordinated county-wide flood control strategies.
- Seek to expand the emerging cluster of outdoor lighting related manufacturing located in Austin County.

Brazoria County

- Recruit manufacturers that could benefit by relocating closer to the source of their materials.
- Continue to improve Brazoria County's air-quality though voluntary actions and participation in regional air quality efforts
- Investigate potential strategies for better coordinated county-wide flood control.
- Work with the real estate development community to ensure the quality of residential and commercial development.
- Continue to coordinate with the Brazoria-Fort Bend Rail District to enhance freight mobility in the region.

Chambers County

- Develop a business park in eastern Chambers County to enhance economic opportunities.
- Improve Chambers County's air-quality though voluntary actions and participation in regional air quality efforts.
- Investigate strategies for better coordinated county-wide flood control strategies.
- Enhance broadband connectivity in eastern Chambers County.

Colorado County

- Develop a marketing plan to highlight tourist and outdoor recreation opportunities in Colorado County.
- Form a countywide office of Economic Development to enhance opportunities for employment diversification.
- Collaborate with the Lower Colorado River Authority, Texas Colorado River Floodplain Coalition, and the Texas Water Development Board to investigate opportunities to enhance water storage for agricultural irrigation during drought conditions.
- Investigate potential strategies for better coordinated county-wide flood control.
- Enhance broadband connectivity in Colorado County.

COUNTY RECOMMENDATIONS

Fort Bend County

- Continue to attract jobs and commercial development to Fort Bend County through targeted industry recruitment.
- Coordinate with master-planned community developers to enhance stormwater drainage and retention, and work with the developers to reduce the impacts of flooding through strategies such as adopting low impact development regulations.
- Assess the impacts of emerging transportation technologies and how Fort Bend County can expand transportation options for residents to maintain mobility to employment centers.
- Continue and expand initiatives to enhance livability in Fort Bend County.
- Investigate potential strategies for better coordinated county-wide flood control.
- Continue coordination with Brazoria-Fort Bend Rail District on a rail connection to the Port of Freeport to enhance freight movement.

Galveston County

- Explore the potential funding mechanisms for creating a structural solution to provide protection from storm surge in Galveston County.
- Implement the Corps of Engineers study of the Texas City Hurricane Flood Protection Project to improve the current levee system to provide protection from a Category 5 hurricane. Create a standing committee to address issues to enhance the resilience of the petrochemical complexes in Galveston County.
- Investigate strategies for better coordinated countywide flood control strategies.

Harris County

- Participate in the creation of a regional flood control management organization
- Develop comprehensive flood control plans for every watershed in Harris County
- Revisit development standards and clarify the Municipal Utility District's responsibilities in drainage and flood control
- Develop a report to explore the potential funding mechanisms for creating a structural solution to provide protection from storm surge in Harris County.
- Investigate the costs and benefits of emerging mobility technologies including electrification, rideshare, and automated vehicles along with high capacity transit.

Liberty County

- Develop a county-level flood protection and drainage plan for Liberty County.
- Create an infrastructure development plan for industrial development along the State Highway 146 corridor.
- Coordinate with the Texas Department of Transportation (TxDOT), local municipalities, and railroads to create a plan to address traffic caused by street level (at grade) railroad crossings
- Enhance the standards of the County's fire service to meet an Insurance Service Office (ISO) Public Protection Classification rating of 3 or 4.
- Coordinate with TxDOT and local municipalities to create a sidewalk plan for Liberty County.

COUNTY RECOMMENDATIONS

Matagorda County

- Investigate strategies for better coordinated countywide flood control.
- Continue and expand efforts to enhance the amenities of Matagorda's cities.
- Conduct a cost benefit study on the creation of an industrial park in Matagorda County.
- Encourage research and investment in the aquaculture sector.
- Create a tourism development task force to increase the number of visitors to Matagorda County.

Montgomery County

- Investigate structures for better coordinated countywide flood control strategies.
- Develop comprehensive flood control plans for every watershed in the county.
- Revisit development standard and clarify the Municipal Utility District's responsibilities in drainage and flood control.
- Continue to support business diversification and small business development efforts.
- Investigate the costs and benefits of emerging mobility technologies including electrification, rideshare, and automated vehicles along with high capacity transit.

Walker County

- Create an economic development corporation to harness Walker County's economic potential and enhance private sector opportunities.
- Investigate strategies for better coordinated countywide flood control.
- Create a master drainage plan for the county.
- Develop a business retention and promotion strategy.

Waller County

- Investigate structures for better coordinated countywide flood control strategies.
- Create and implement a county-level flooding, drainage, and stormwater management plan to improve drainage during floods and other weather events.
- Review development codes to prepare for upcoming influx of residential development.
- Continue efforts to create an agglomeration economy around air-conditioning manufacturing.

Wharton County

- Investigate structural solutions to prevent flooding in developed areas.
- Investigate structures for better coordinated countywide flood control strategies
- Develop a strategy to expand broadband access for county residents.
- Review development standards in the county with regards to flood control.

Data Sources

Keeping Water Where it Belongs

1. Houston Business Journal
2. Harris County Flood Control District
3. Reuters
4. Chambers County Long-Term Community Recovery Plan
5. Chambers County Long-Term Community Recovery Plan

Defending Great Places

6. Livable Centers Implementation Report
7. Houston Chronicle

Future Proofing

8. Three Revolutions in Urban Transportation, UC Davis Institute of Transportation Studies
9. Graphing Parking
10. National Climate Assessment
11. Financial Health of Young America: Measuring Generational Declines between Baby Boomers & Millennials
12. Overview: The Growth of the Houston-Galveston Region
13. University of Houston
14. The Kinder Houston Area Survey
15. The Economic Development Alliance for Brazoria County
16. Brazosport College

Transect

17. Cowen and Company

AUSTIN COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Austin County and it's economy by providing key data points on the economy, demographics, and other useful information.

Austin County Boundaries

Austin County
Other counties
Top 3 cities
Major roads

County Seat: Bellville
Largest City: Sealy

Austin Overview

Austin is a largely rural county with approximately 29,000 residents, 35 miles west of Houston, and 110 miles south east of Austin[1,2]. Its landscape varies from rolling hills to coastal prairie in the south. The county's population centers include the Sealy area, a growing community on the Interstate 10 corridor actively seeking business development, and the county seat, Bellville, on State Highway 36 which seeks to maintain its bucolic character. State Highway 36 runs through the center of the county, connecting Austin County to I-10. Austin County is defined by the Brazos River to the east and the San Bernard River to the west. Austin County is predicted to grew by 67% from 1980 to 2015, and is expected to reach 50,000 residents by 2040[3]. The county is immediately west of the fast-growing Katy area. With the ongoing growth along the Interstate 10 corridor, residential growth in the Katy area will continue its westward trajectory with master-planned communities crossing the Brazos river into Austin County in the foreseeable future.

Austin County's economy includes agriculture (with an annual market value of $43.5 million)[4], varied manufacturing, distribution, and oil and gas services[5]. Sixty percent of Austin County's agricultural output is in livestock and forty percent is in crop sales[6]. It ranks third in the State of Texas for nursery, greenhouse, floriculture, and sod production[7]. Austin County has strong traded clusters in distribution, lighting and electrical equipment, biopharma, leather goods, and oil and gas. (Traded clusters are groups of related industries that serve markets beyond the region in which they are located[8].) Its strongest clusters are in construction and distribution[9].

Agriculture in Austin County includes forty percent livestock output.

Recent Disruptions to the Economy

Hurricane Harvey caused flooding and destruction across Austin County, washing out roads, culverts, damaging bridges, and flooding subdivisions. Parts of the county were evacuated as the Brazos and San Bernard rivers and Mill and Allen's creeks left their banks. The total damages from Harvey are still being assessed, unfortunately, this is not Austin County's only recent flood event. Austin County was affected by three major floods in thirteen months (2015-2016). These floods washed out bridges, damaged and destroyed homes, closed the state park, destroyed a golf course, and nearly destroyed Sealy's sewage treatment plant. Farmers and ranchers lost fences, equipment, and livestock; businesses were forced to close and several were damaged by flood waters. Flooding is the most serious natural hazard faced by Austin County.

In 2008, Hurricane Ike caused flood and windstorm damage in Austin County, this was followed closely by the Great Recession. It is hard to isolate the effects of each of these two major events on Austin County. The effects of the downturn in the economy caused unemployment to climb from 3.3% in April of 2008 to 8.9% in July of 2011[10]. In 2011-2012 Texas experienced a significant drought; many cattle producers were forced to reduce their herds as fodder crops failed. The county maintenance costs increased as the drought caused roadbeds to shift and pipes to crack. In 2010, BAE Systems, a major employer, began shuttering its doors leaving more than seven hundred Austin County residents without employment. Losing a major employer was a shock to the county's economy, and many residents were forced to seek employment outside of the county.

Economic Resilience Strategies

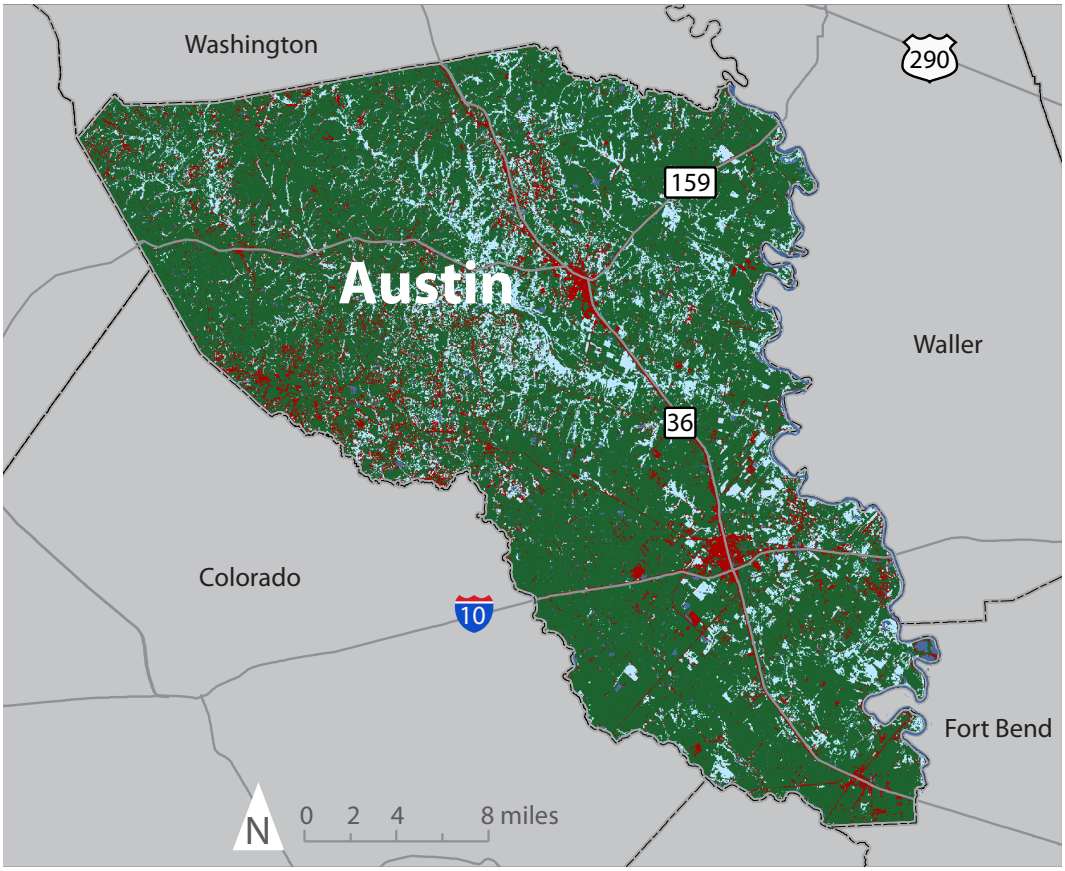
To enhance economic resilience, Austin County needs to improve its drainage. This need was identified in the 2002-2012 Austin County Economic Development Plan, the 2007 Austin County Vision and Strategic Plan, and in the 2017 economic resilience workshop. The City of Sealy and Austin County are seeking an expansion of I-10 to three lanes in each direction, extending to Highway 71 in Columbus. The Texas Department of Transportation has plans to begin expansion of I-10 in Austin county in 2020; but the traffic is impacting residents and businesses now. The I-10 corridor routinely experiences traffic jams, often caused by Houston residents returning from weekend trips to points west. The expansion of I-10 will begin in 2018 from the Brazos to FM3538. To promote industrial expansion and job growth, Austin County needs to increase prepared development sites that manufactures are looking for when locating their facilities by providing utilities to sites along the I-10 corridor. Austin County has two outdoor lighting manufacturers, this could be the beginning of an economic cluster, Austin County should work to attract complimentary businesses.

Recommendations

Austin County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Engage with TxDOT to enhance communication and understanding of upcoming I-10 expansion. Coordinate with businesses to enhance their ability to respond to the negative impacts of construction.
- Identify undeveloped parcels currently served by, or that may be easily connected to, the utilities need for light manufacturing or distribution.
- Investigate potential strategies for better coordinated county-wide flood control strategies.
- Seek to expand emerging cluster of outdoor lighting related manufacturing located in Austin County.

Land Use and Demographics



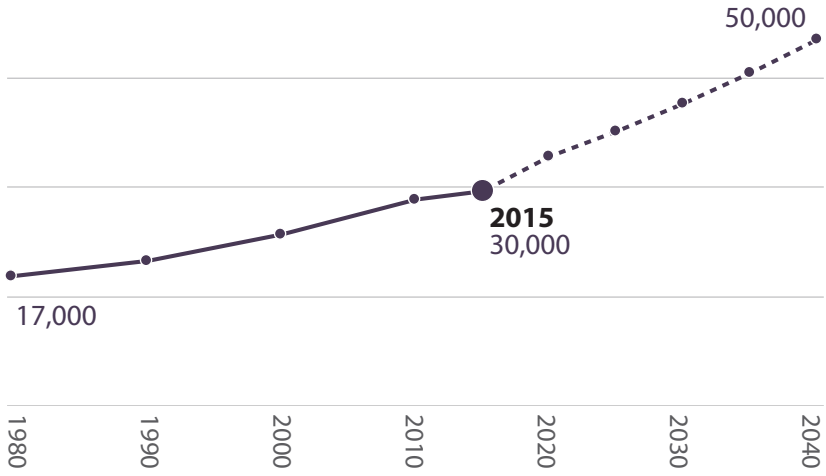
Austin County Land Use

	Other counties
1%	Open water
8%	Developed Land
14%	Wetlands
78%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

In the above map, the predominance of pasture land can be seen, the Brazos River forms the eastern edge of the county, and San Bernard River to the west.

Population Growth Forecast

Austin County grew by 67% from 1980 to 2015 and is expected to reach 50,000 residents by 2040.



Municipal Populations

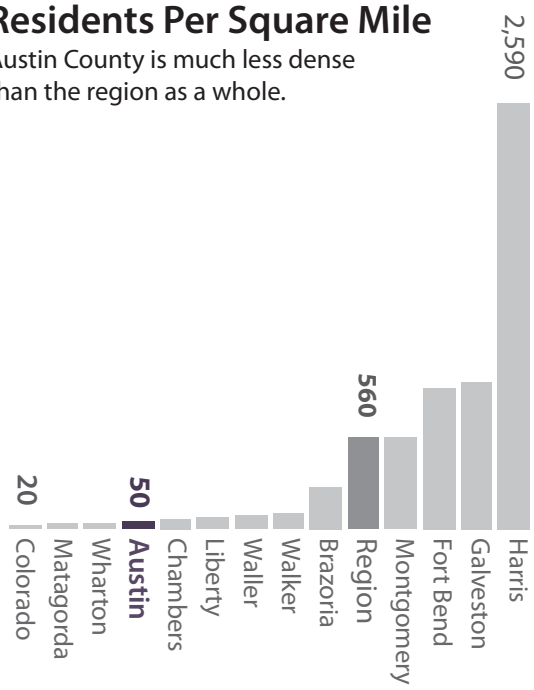
The City of Sealy is Austin County's largest incorporated municipality.

6,490	Sealy
4,274	Bellville
1,298	Wallis
808	San Felipe
486	Brazos Country
325	Industry
16,077	Unincorporated

Land Use and Demographics

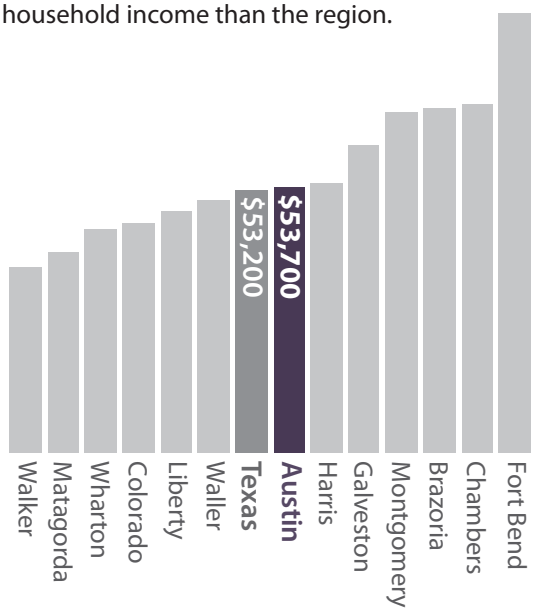
Residents Per Square Mile

Austin County is much less dense than the region as a whole.



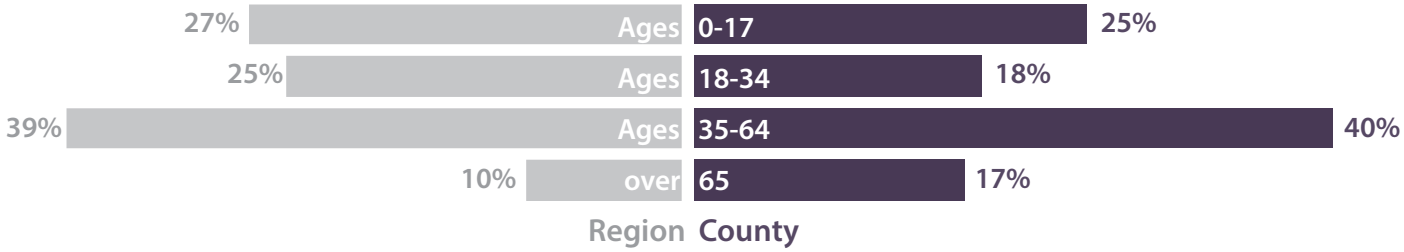
Median Household Income

Austin County has a slightly higher median household income than the region.



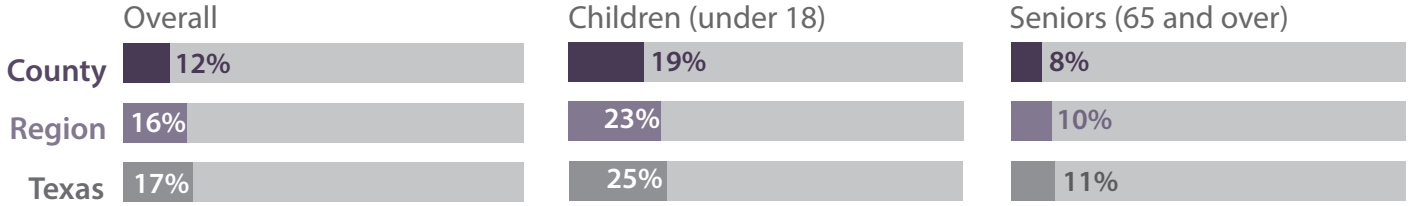
Age

Austin County has a larger portion of residents over 65 than the region.



Poverty Rate

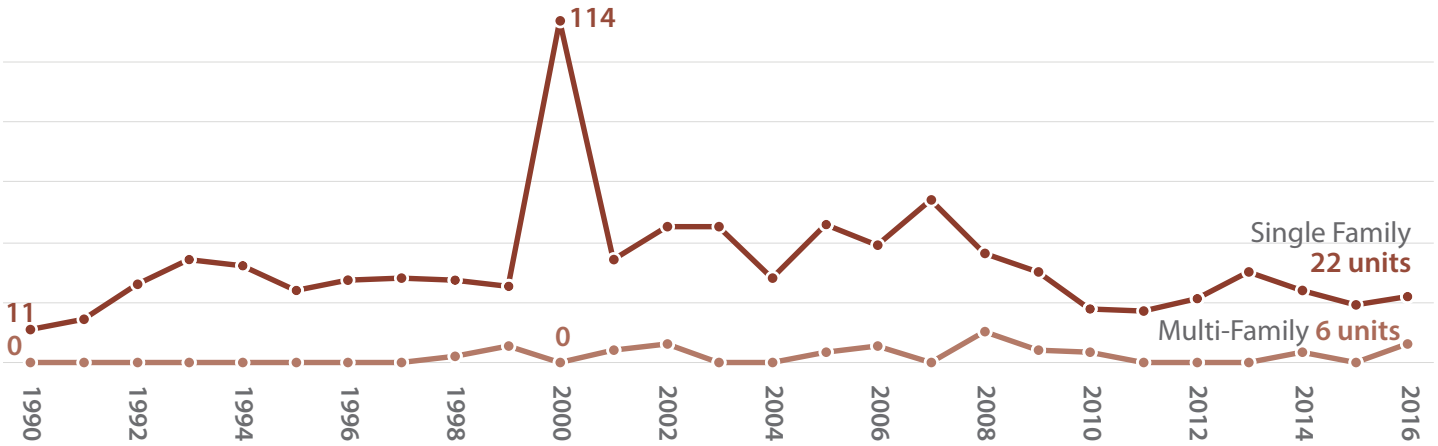
Austin County has a lower rate of poverty than the region, particularly for children.



Housing

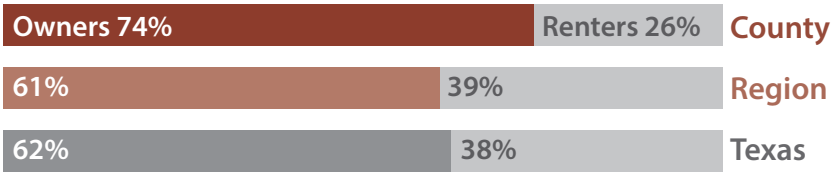
Building Permits Issued (units)

Single-family construction remains stable after a post-2007 drop while multi-family permits remain low.



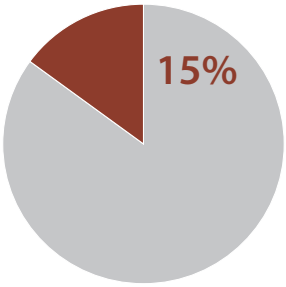
Housing Tenure

Austin County has a higher rate of homeownership than the region or the state.



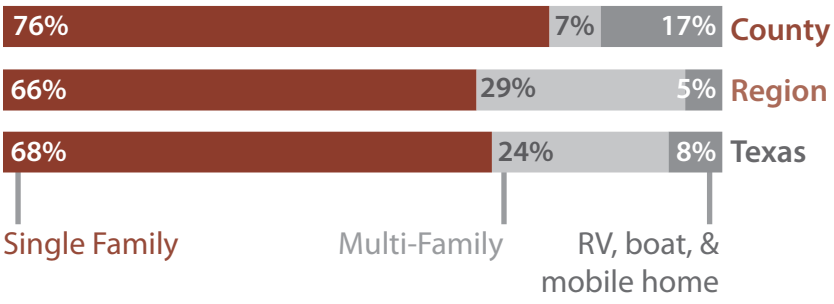
Vacant Housing Units

Around 15% of Austin County's housing units are vacant.



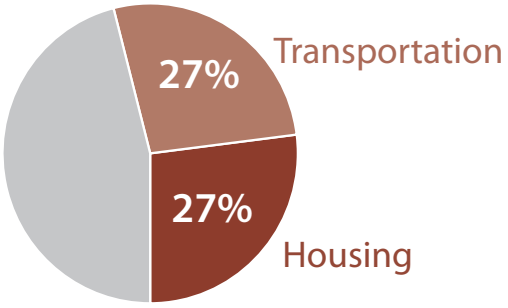
Housing Type

Austin County's homes are mostly single-family residences.



Living Costs

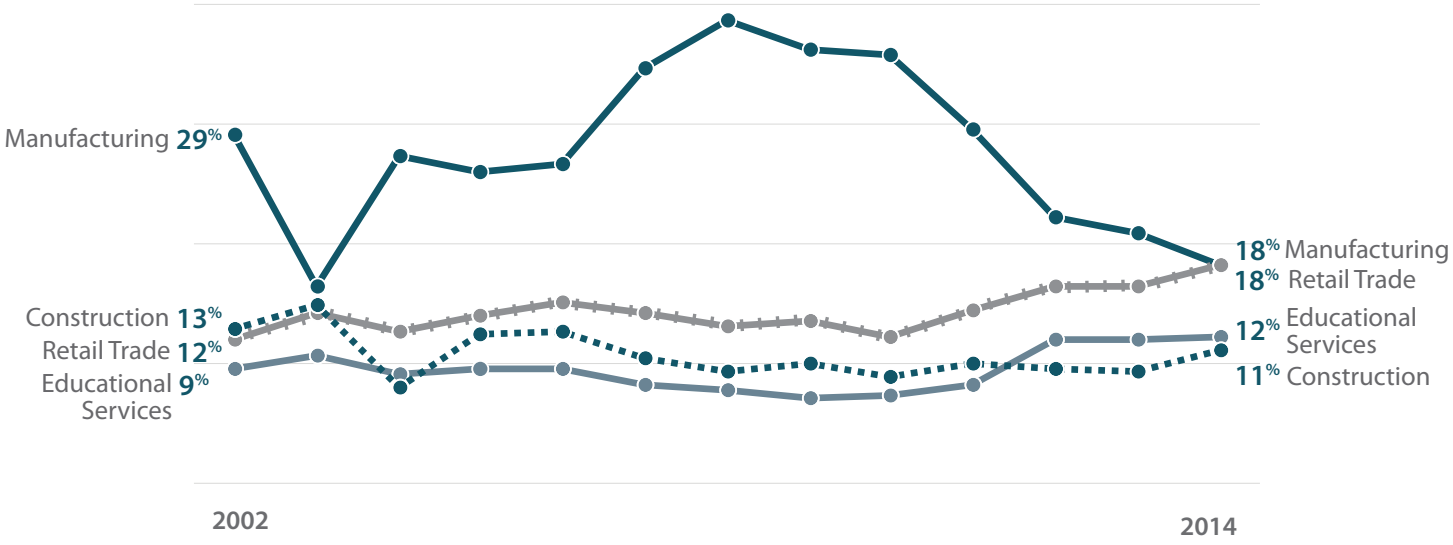
Austin County households spend 54% of their income on transportation and housing.



Economy

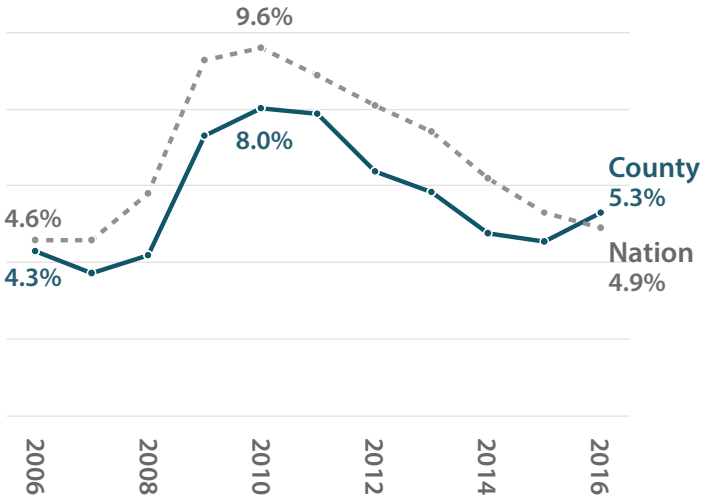
Top Industries by Percent of Overall Jobs

Austin County's workforce is not as reliant upon the Manufacturing industry as it was in 2002, and employment in industries like Retail Trade and Educational Services make up an increasing portion of county workers.



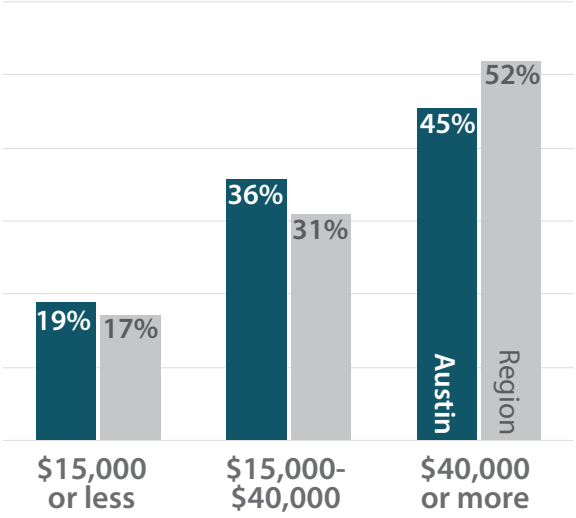
Unemployment Rate

Austin County's unemployment remained below the national average for a decade, but was higher in 2016.



Earnings of Residents

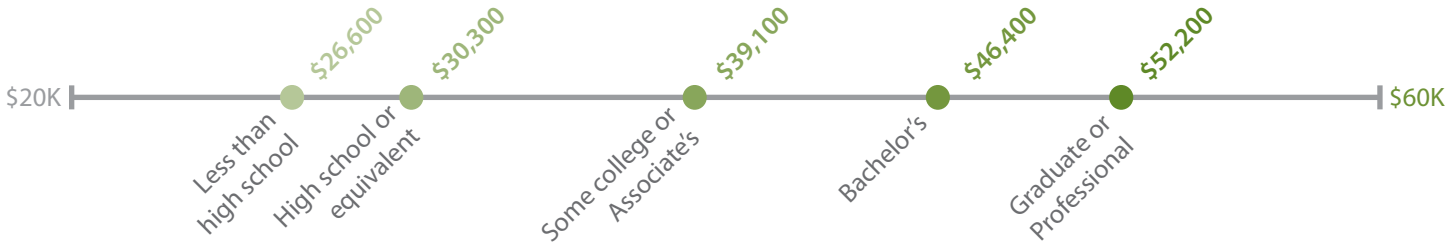
Around 45% of Austin County residents earn more than $40,000 annually, a lower percentage than the region.



Education, Hazard Risks, and Commute

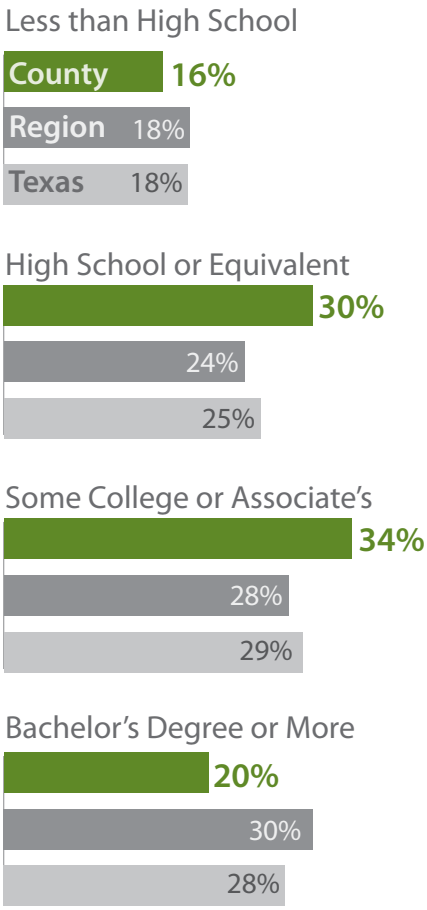
Median Earnings by Educational Attainment

An Austin County resident with a graduate or professional degree makes, on average, $25,600 more than a resident with less than a high school education annually.



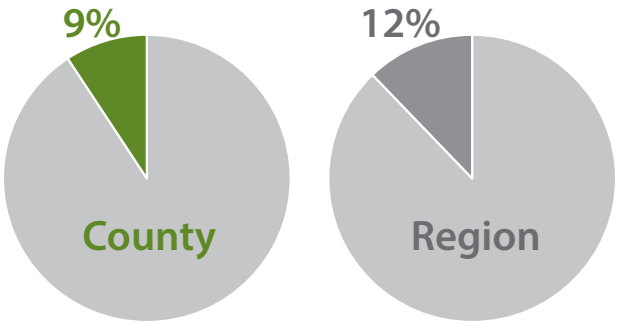
Educational Attainment

About 20% of Austin County residents have completed a bachelor's degree or higher, fewer than the region and state.



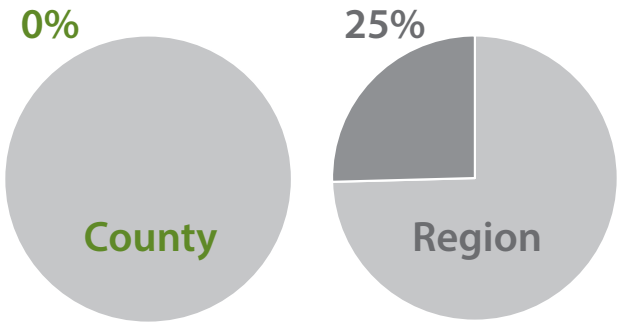
Residents in 100-year Floodplain

A smaller percentage of Austin County residents live in a 100-year floodplain than the region.



Residents in Hurricane Evacuation Zone

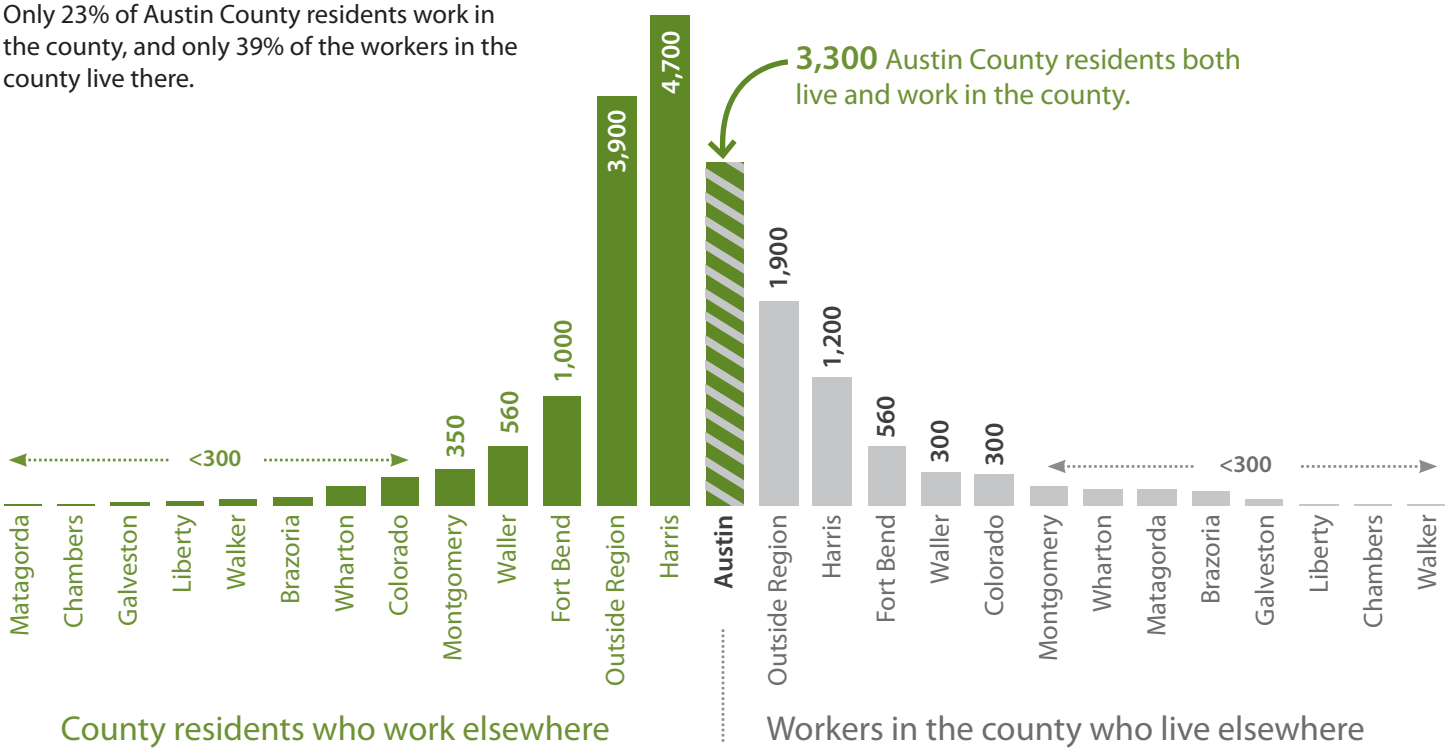
No Austin County residents live in a hurricane evacuation zone, as opposed to 25% of the region's residents.



Education, Hazard Risks, and Commute

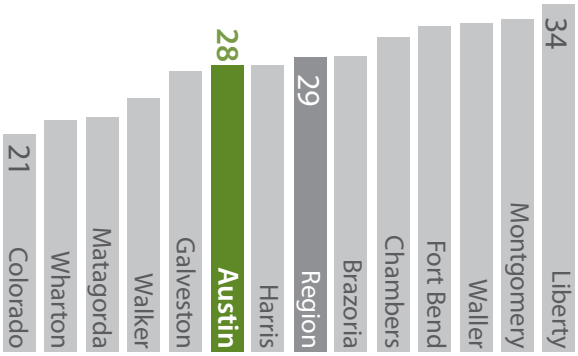
Workers' Job & Home Destinations

Only 23% of Austin County residents work in the county, and only 39% of the workers in the county live there.



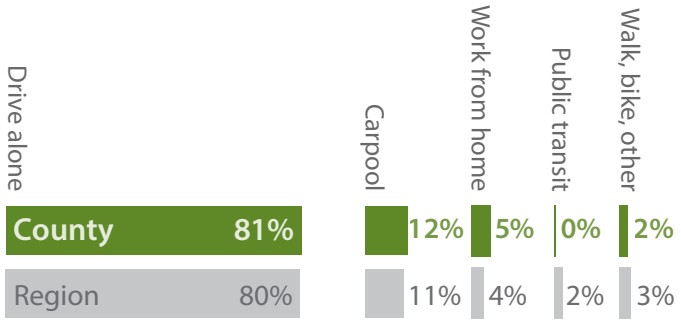
Mean Commute to Work (minutes)

Austin County workers commute for about the same amount of time as the region as a whole.



Commute Mode to Work

Austin County's workers have a similar commute split as the region as a whole.



Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

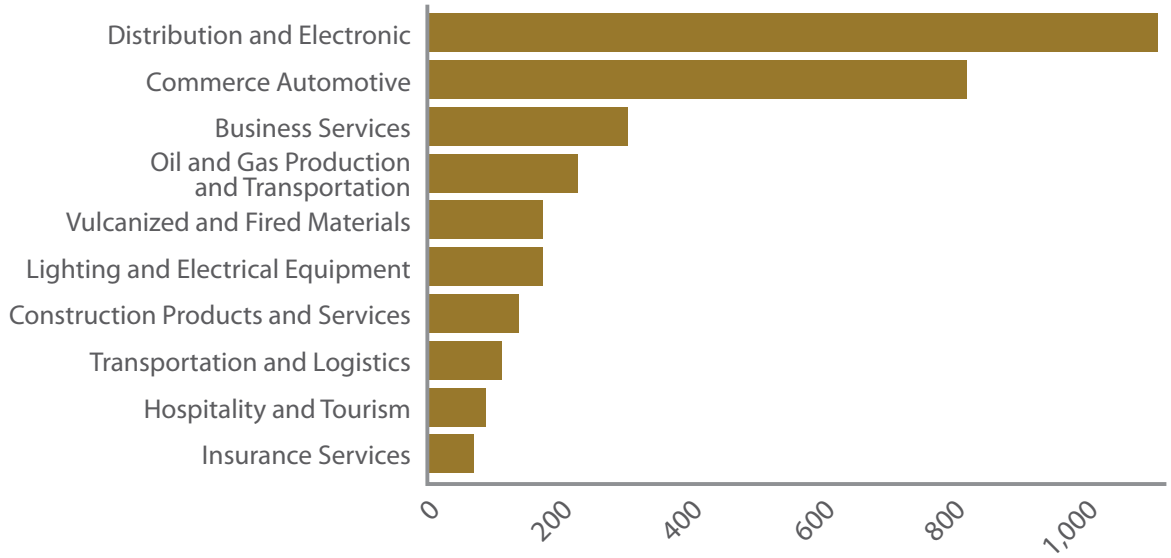
Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.

Employment by Cluster

This bar graph demonstrates Austin County's employment by each cluster. It is based on 2014 data from the U.S. Census, and does not reflect the closing of BAE Systems and its impacts on the local economy.



Local Planning

These plans highlight efforts in Austin County to plan for disaster recovery and economic resiliency.

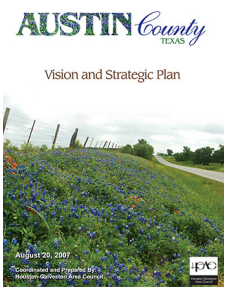
Austin County Hazard Mitigation Plan

Austin County is developing a Hazard Mitigation Plan for release in 2019. Austin County participated in the 2011 Update of the *Regional Hazard Mitigation Plan*. The Regional Hazard Mitigation plan was created in 2006 by the Houston-Galveston Area Council, the Texas Division of Emergency Management, and 85 local governments. The comprehensive plan identifies regional hazards and vulnerabilities, and includes over 300 mitigation projects that could be implemented within the region.

The plan identified five mitigation actions for Austin County:

- Create wildfire breaks and defensible corridors and remove hazardous fuels to protect historic areas and roadways.
- Update commodity flow study for increased rail and truck traffic.
- Conduct wildfire outreach and education campaign.
- Expand evacuation and alert system to accommodate population growth.
- Improve subdivision regulations in Extra Territorial Jurisdiction (ETJ) to protect mobile homes against wind and tornadoes. Recommendation for mobile homes will ensure protection against straight line winds high velocity winds.

Austin County Vision and Strategic Plan



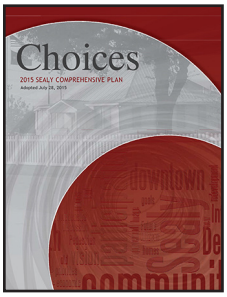
In a 2007 visioning workshop, Austin County began gathering input for community priorities for future growth. More than 150 participants provided insights though discussions, surveys, and a mapping exercise.

The outgrowth of this workshop is the Austin County Vision and Strategic Plan. This plan lays out an economic development goal of attracting and retaining a talented workforce. Action steps for achieving this goal include implementing a countywide economic development strategy and promoting eco-tourism and heritage tourism opportunities. The plan also identifies enhancing municipal facilities as a goal for drainage with an action step to create a Floodplain Management Plan.

Bellville Revitalization Master Plan

The *Bellville Revitalization Master Plan* was created by Texas A&M to examine how Bellville can improve its downtown and drive economic development. The plan examines Bellville's urban design elements and recommends best practices from similar communities. Downtowns represent crucial physical and social infrastructure that need planning. This plan examines the flood plain, but focuses on improving downtown.

City of Sealy's Comprehensive Plan



Choices 2015 is the City of Sealy's comprehensive plan. The plan seeks consensus on how best to accomplish the continuing vision of a well-planned and highly attractive community, while balancing private and public interests. It lays out the community's vision, mission, core values and goals.

The following community and economic development goals were identified:

- Continue to enhance the community character of Sealy
- Expand opportunities for redevelopment and economic growth in the Downtown Development District while respecting the existing historic character
- Improve urban design and aesthetics along major corridors and city gateways
- Establish a plan to identify available land for purchase to provide an economic development incentive;
- Provide a city that allows citizens to live, shop, work, play, learn and worship
- Attract businesses that create primary jobs and career opportunities in Sealy
- Encourage investment in infrastructure to enhance economic development

The comprehensive plan includes the *2014 Sealy Strategic Plan*, which set the vision, mission, and core values for the comprehensive plan.

Data Sources for the Austin County Profile

Austin County Overview

1. U.S. Census
2. Texas State Historical Association
3. Houston-Galveston Area Council
4. USDA 2012 Census of Agriculture
5. U.S. Cluster Mapping
6. USDA 2012 Census of Agriculture
7. USDA 2012 Census of Agriculture
8. U.S. Cluster Mapping
9. U.S. Cluster Mapping

Recent Disruptions to the Economy

10. Federal Reserve Bank of Saint Louis, U.S. Bureau of Labor Statistics

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

BRAZORIA COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

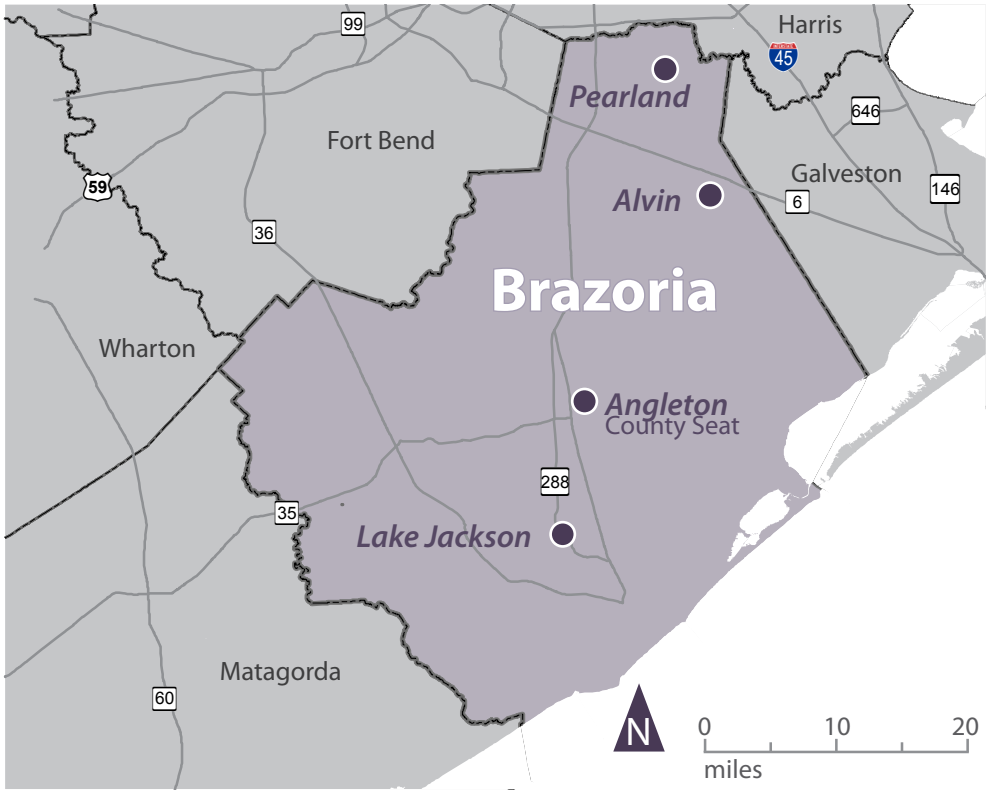
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Brazoria County and it's economy by providing key data points on the economy, demographics, and other useful information.

Brazoria County Boundaries

- Brazoria County
- Other counties
- Top 4 cities
- Major roads

County Seat: Angleton
Largest City: Pearland



Brazoria County Overview

Brazoria County's robust economy is geographically divided between petrochemical production in the Brazosport area in the southern portion of the county; public services and banking in the mid-county/Angleton area; and burgeoning residential construction, retail, and medical services sectors in the suburban northern portion of the county, including Pearland, part of the Houston metropolitan area. Brazoria County is on Texas' coastal plain, stretching from the City of Houston to the north to the Gulf of Mexico to the South; drained by the Brazos and San Bernard rivers.

Brazoria County is growing rapidly. According to U.S. Census estimates, the population has increased by 46% since 2000. The majority of this growth occurred in the northern portion of the county, with Pearland's population nearly tripling since 2000. The Brazosport area has experienced a construction boom since the 2008.

The expansion of the Dow Chemical Plant spurred over $28 billion in capital investments and the creation of over 3,500 permanent jobs. The deepwater Port Freeport is undergoing an expansion and will be the only terminal capable of receiving Panamax ships on the Texas Coast (Panamax ships are the largest sized ships that are able to pass through the Panama Canal). Brazoria County's agricultural sector produces cattle, hay, rice, soybeans, and other products with an annual output of $118.2 million; crops represent sixty one percent of the output and livestock thirty-nine percent. Brazoria County ranks fourth in the State of Texas for rice production and fifth in the state for aquaculture.

Recent Disruptions to the Economy

Brazoria County experienced severe flooding in 2015 (Memorial Day Flood), 2016 (Tax Day Flood), and 2017 (Hurricane Harvey) while still undergoing recovery from 2008's Hurricane Ike. Ike made landfall months before Great Recession (2008-2012).

The regional economy performed better than the national economy during the Great Recession but unemployment spiked from 4.1% in April of 2008 to 9.2% in July of 2009. The collapse in the price of a barrel of oil from over $100 in 2014 to below $30 in 2016 did not impact Brazoria County as much as other areas of the region, as Brazoria's economy is concentrated on chemical manufacturing rather than extraction of oil and gas. Brazoria County weathered both downturns through residential construction and medical industry expansion in the northern portion of the county, and industrial construction and petrochemical industry in the Brazosport area.

Economic Resilience Strategies

Brazoria County's petrochemical industry is a major driver of the regional economy. The industry's expansion is constrained by Brazoria County's non-attainment status under the Clean Air Act. Some businesses and industries find it difficult to compete with the wages offered by the petrochemical industry; making diversification of the economy challenging. The petrochemical industry is well suited to provide the feedstock (raw materials) for manufacturers, especially in plastics.

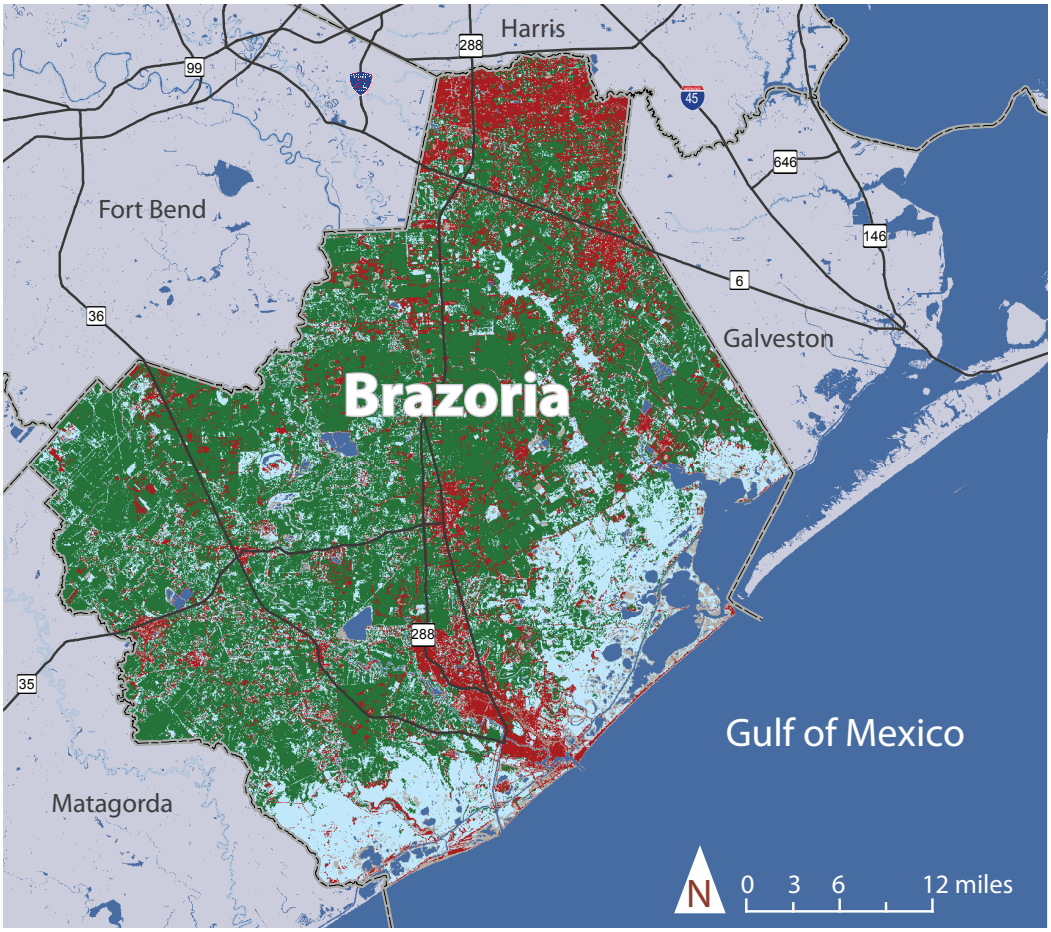
The county's coastal location makes it particularly vulnerable to the effects of hurricanes, 100% of the county is in the hurricane evacuation zone. It is also vulnerable to flooding, 20% of county residents live in a 100-year floodplain. Enhancing drainage is key to continued growth. The rapid development in the north part of the county presents opportunities to create places that emphasize livability by working with jurisdictions to enhance the quality of the built environment.

Recommendations

Brazoria County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Recruit manufacturers that could benefit by relocating closer to the source of their materials.
- Continue to improve Brazoria County's air-quality though voluntary actions and participation in regional air quality efforts
- Investigate potential strategies for better coordinated countywide flood control.
- Work with the real estate development community to enhance the quality of residential and commercial development.
- Continue to coordinate with the Brazoria-Fort Bend Rail District to enhance freight mobility in the region.

Land Use and Demographics



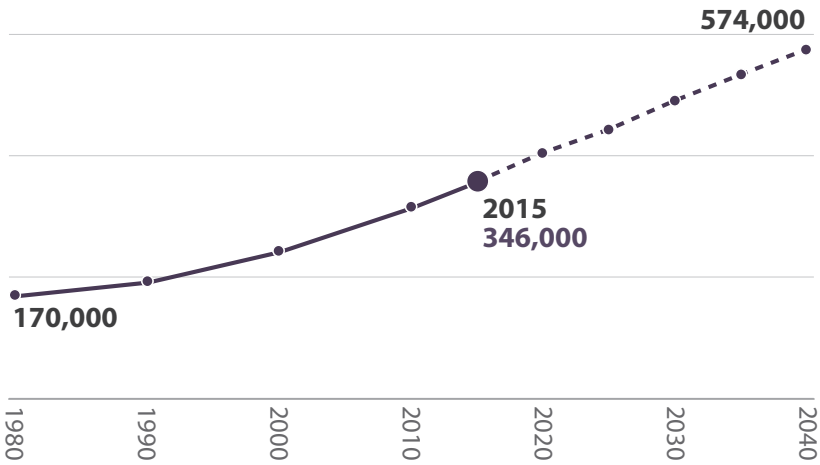
Brazoria County Land Use

	Other counties
5%	Open water
16%	Developed Land
30%	Wetlands
49%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

Brazoria County is located on the Gulf of Mexico, and has a large percentage of wetlands along the coast. Urbanized areas include Pearland in the north, Alvin and Angleton in the center of the county, and the Brazosport area in the south.

Population Growth Forecast

Brazoria County grew by 104% from 1980 to 2015 and is expected to reach 574,000 residents by 2040.



Top 10 City Populations

The City of Pearland is Brazoria County's largest incorporated municipality.

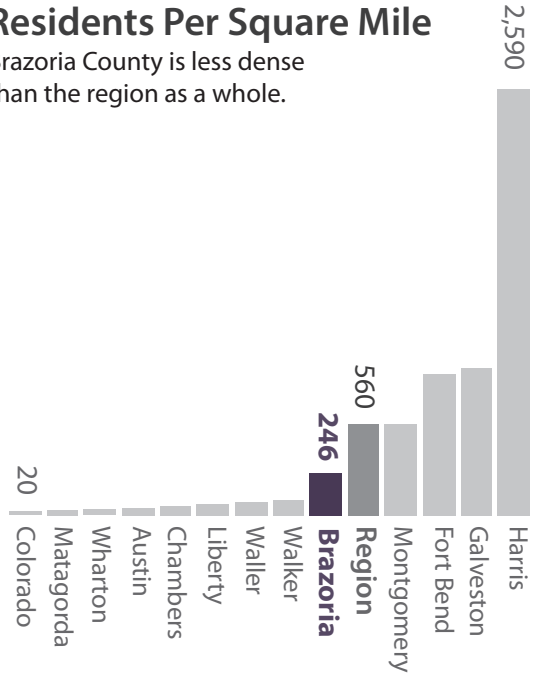
107,574	Pearland*
27,529	Lake Jackson
26,164	Alvin
19,491	Angleton
12,153	Freeport
11,586	Clute
8,939	Manvel
3,933	West Columbia
3,898	Richwood
3,766	Sweeny
113,857	Unincorporated

*The municipality spans multiple counties. Only the population residing in Brazoria County is shown here.

Land Use and Demographics

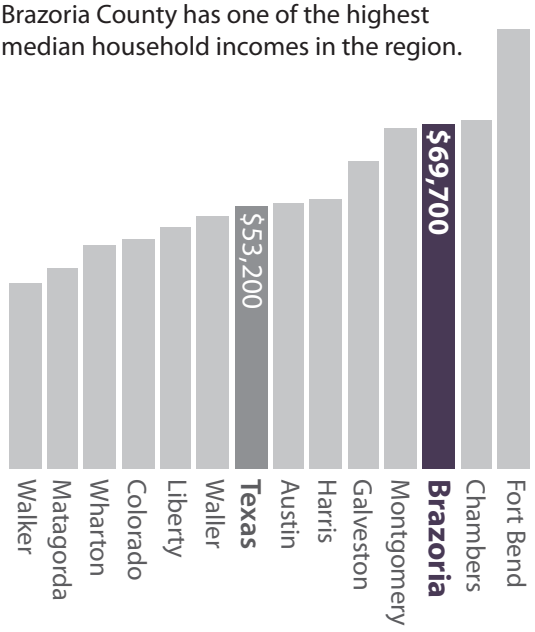
Residents Per Square Mile

Brazoria County is less dense than the region as a whole.



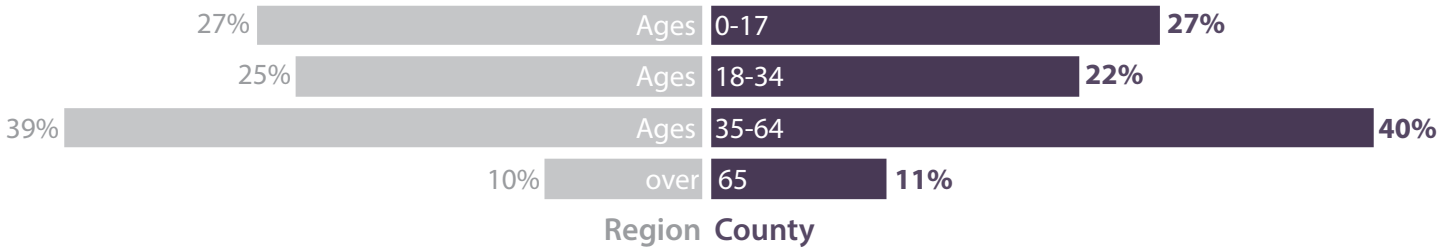
Median Household In-

Brazoria County has one of the highest median household incomes in the region.



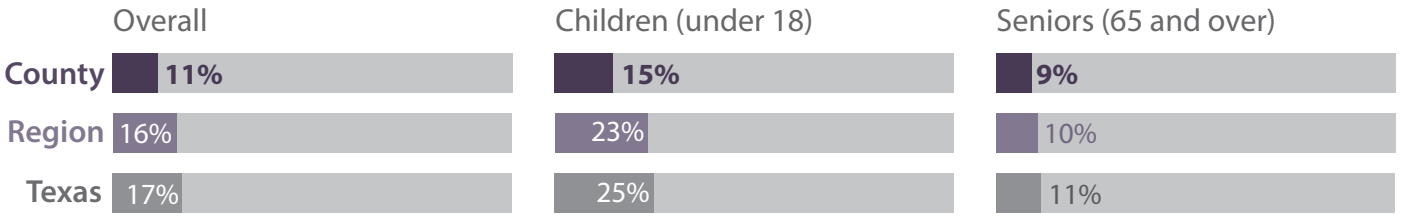
Age

Brazoria County has a similar age profile as the region.



Poverty Rate

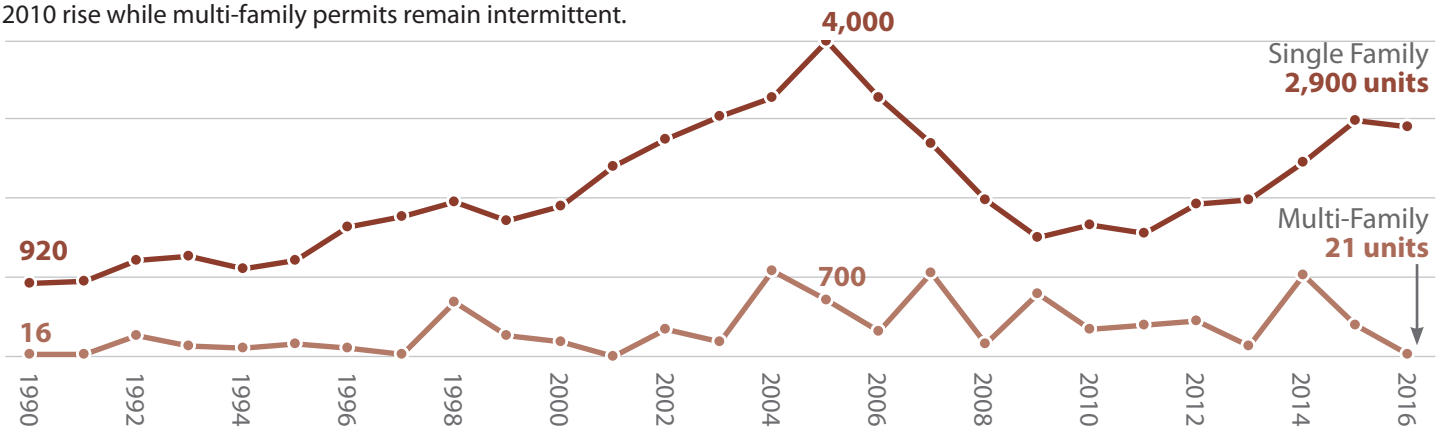
Brazoria County has a lower rate of poverty than the region, particularly for children.



Housing

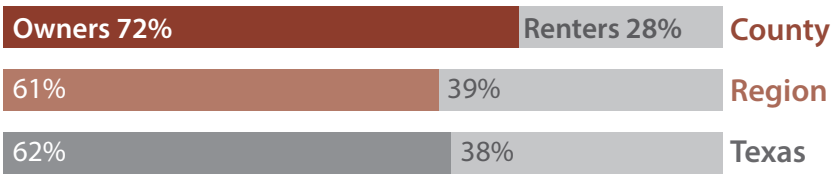
Building Permits Issued

Single-family construction is staying steady after a post-2010 rise while multi-family permits remain intermittent.



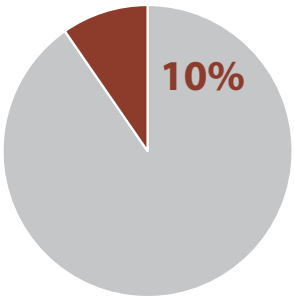
Housing Tenure

Brazoria County has a higher rate of homeownership than the region or the state.



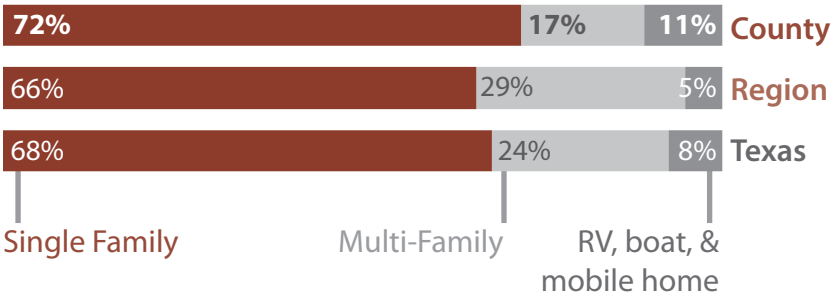
Vacant Housing Units

Around 10% of Brazoria County's housing units are vacant.



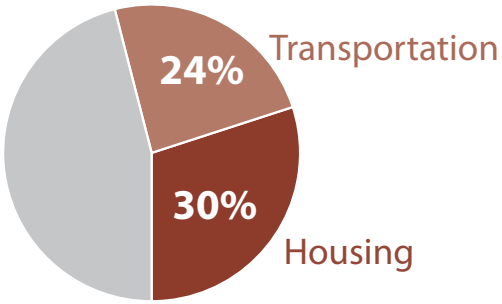
Housing Type

Brazoria County's homes are mostly single-family residences.



Living Costs

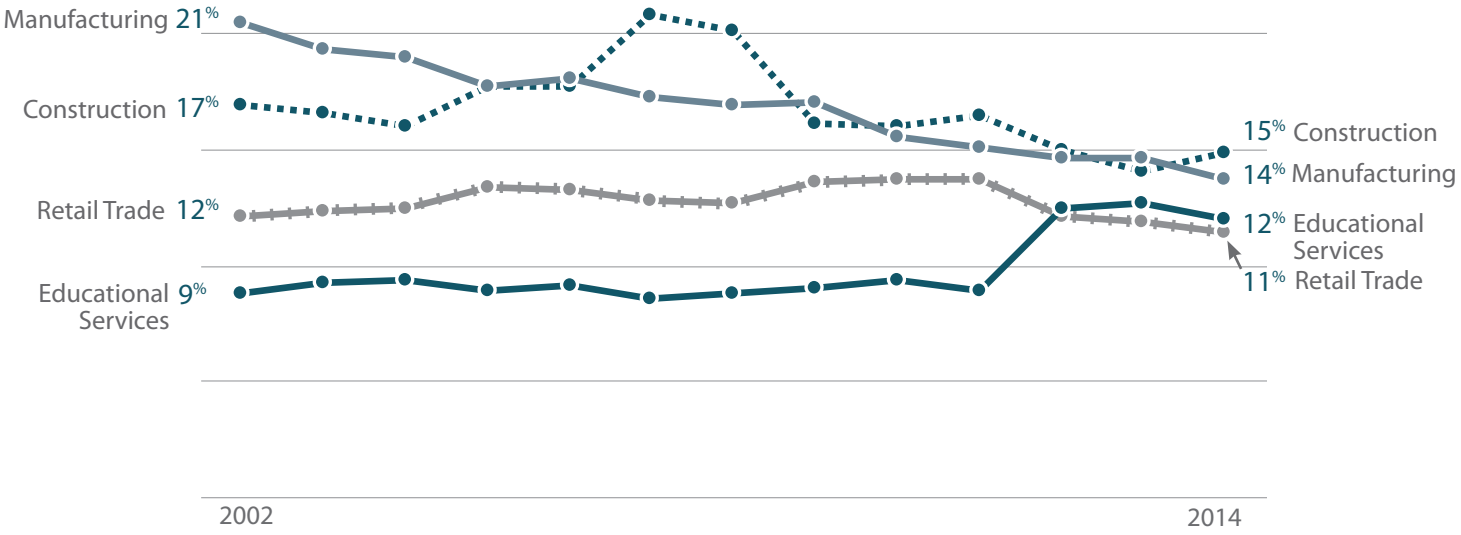
Brazoria County households spend 54% of their income on transportation and housing.



Economy

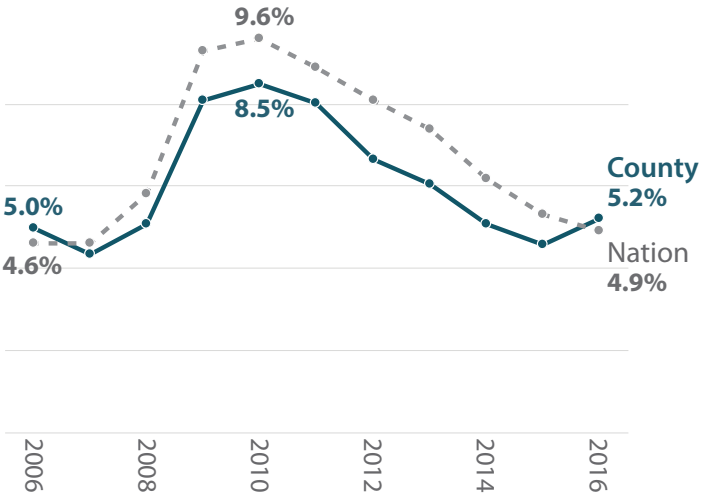
Top Industries by Percent of Overall Jobs

Employment in Brazoria County diversified between 2002 and 2014. While the Manufacturing and Construction industries declined as a percentage of overall jobs over that period, they still employed about the same number of workers.



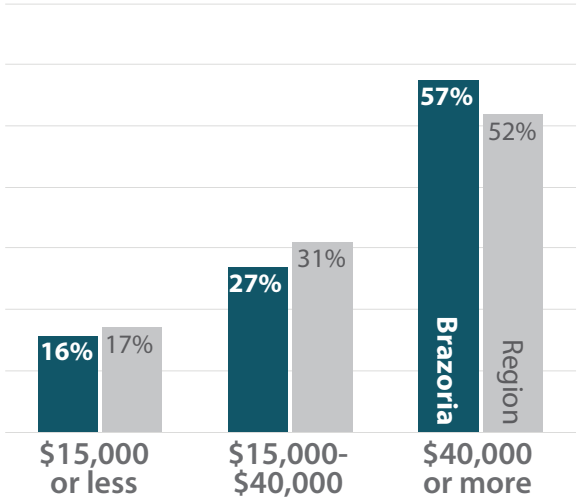
Unemployment Rate

Brazoria County's unemployment mirrors national trends, and was higher than the nation in 2016.



Earnings of Residents

Nearly 60% of Brazoria County residents earn more than $40,000 annually, a higher percentage than the region.



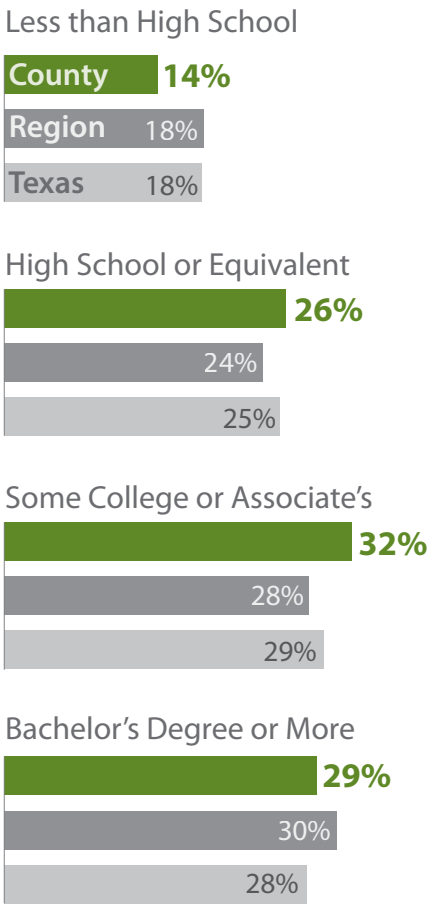
Education, Hazard Risks, and Commute

Median Earnings by Educational Attainment

A Brazoria County resident with a graduate or professional degree makes, on average, $54,700 more than a resident with less than a high school education annually.

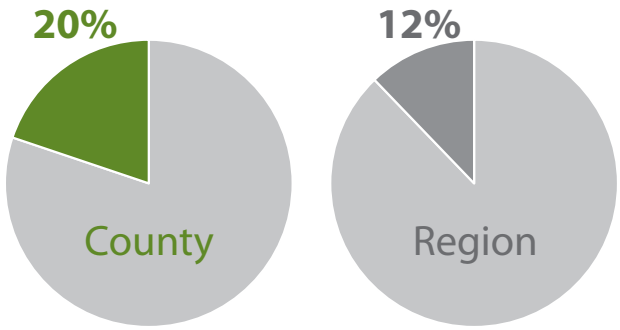
Educational Attainment

A higher percentage of Brazoria County residents have completed high school than the region and state.



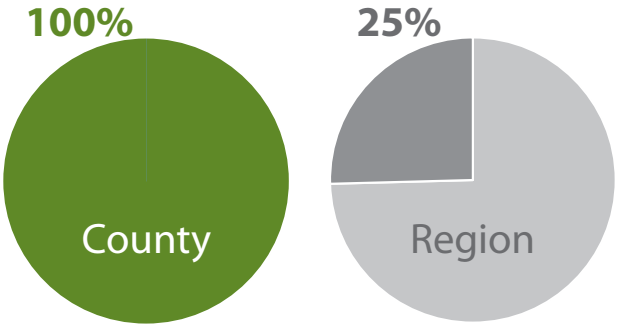
Residents in 100-year Floodplain

A larger percentage of Brazoria County residents live in a 100-year floodplain than the region.



Residents in Hurricane Evacuation Zone

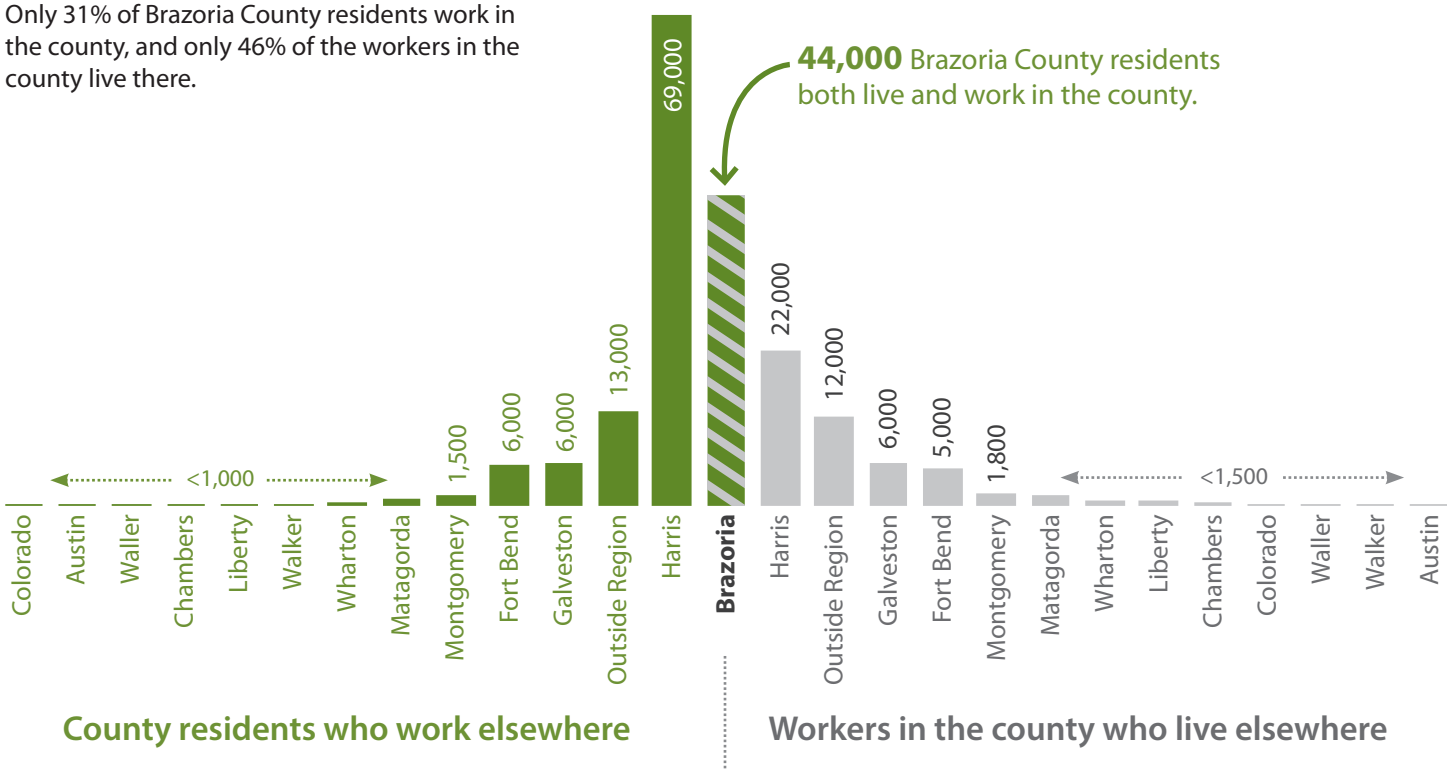
All Brazoria County residents live in a hurricane evacuation zone, as opposed to 25% of the region's residents.



Education, Hazard Risks, and Commute

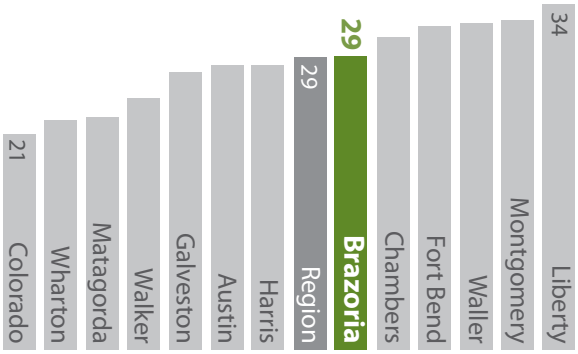
Workers' Job & Home Destinations

Only 31% of Brazoria County residents work in the county, and only 46% of the workers in the county live there.



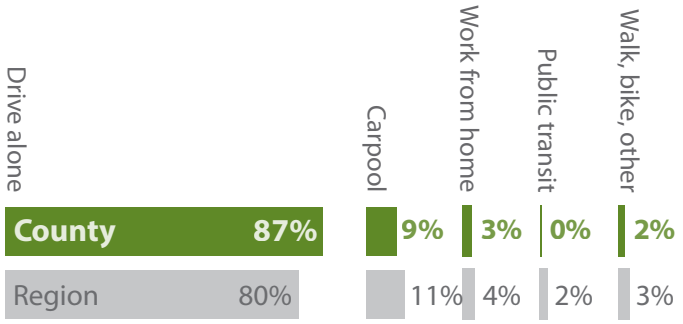
Mean Commute to Work (minutes)

Brazoria County workers commute for about the same amount of time as the region as a whole.



Commute Mode to Work

A higher percentage of Brazoria County workers drive to work compared to the region as a whole.



Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

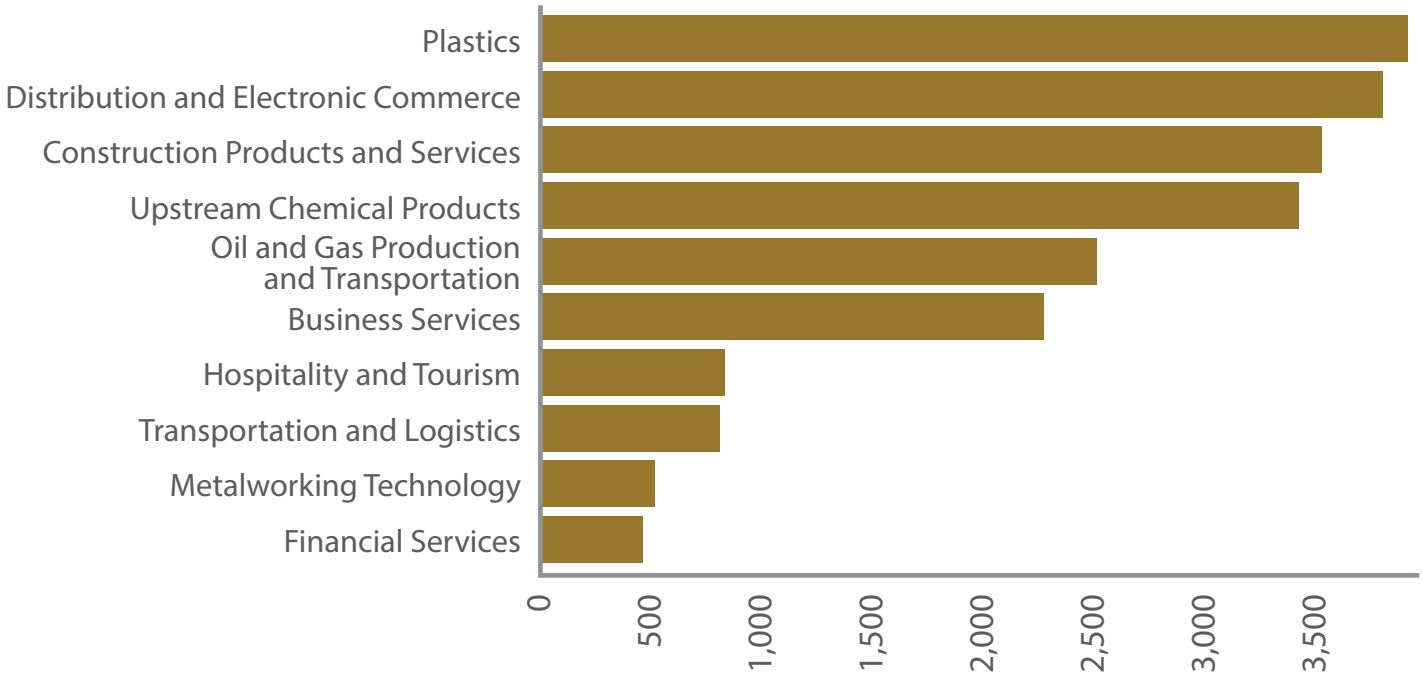
Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.

Employment by Cluster

This bar graph demonstrates Brazoria County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

These plans highlight efforts in Brazoria County to plan for disaster recovery and economic resiliency.

Brazoria County Hazard Mitigation Plan

Brazoria County is currently developing a Hazard Mitigation Plan for release in 2019. Brazoria County participated in the 2011 Update of the Regional Hazard Mitigation Plan. The Regional Hazard Mitigation plan was created in 2006 by the Houston-Galveston Area Council, the Texas Division of Emergency Management, and 85 local governments. The comprehensive plan identifies regional hazards and vulnerabilities, and includes over 300 mitigation projects that could be implemented within the region.

The plan identified nine mitigation actions for Brazoria County:

- Acquire and demolish severe repetitive loss properties along 14 miles of the Brazoria County coastline.
- Create a feeder beach for Follett's Island to slow the current erosion rate and protect wetlands in southeast Brazoria County.
- Construct a berm along 14 miles of the Bluewater Highway (CR 257) to reduce impacts from storm surges.
- Implement Treasure Island Revetment project focusing on developing alternatives for a beach nourishment project in the vicinity of the revetment and fishing pier area to widen the beach and provide a buffer to reduce storm impacts to the existing vicinity of the revetment and fishing pier area to widen the beach and provide a buffer to reduce storm impacts to the existing shoreline.
- Evaluate existing gauging stations and flood gates and obtain updated software and hardware.
- Purchase 500 magnetic Burn Ban signs to be displayed on all county vehicles.
- Purchase three years of use of an automated public information system to reach out to county residents prior to and during an emergency.
- Conduct wildfire outreach and education campaign.
- Install sprinkler systems at County's critical facilities constructed on slab foundations to reduce differential shrinking of underlying soils during drought.

Brazoria County Regional Plan for Public Parks and Sustainable Development: A Case Study

Brazoria County's coastal ecosystem contains some of the highest quality natural areas in the region. Its bottomland forests, rivers, bayous, bays, and coastline provide wildlife habitat and recreational opportunities for residents and visitors alike. Brazoria County Regional Plan for Public Parks and Sustainable Development: A Case Study lays out a coastal master plan for the Brazoria County Parks Department that contains a new set of management practices to protect the county's coastal natural resources, along with strategies for accommodating new growth in ways that take advantage of the natural landscape. Major recommendations include phased expansion of the public parks system and other public lands and improving access and providing amenities such as trails, kayak launches, and educational displays. Conservation design techniques, such as preserving wildlife habitat within new developments, using native plants in landscape, and using natural systems to help buffer storm surges and store flood waters, are also detailed.

This case study examines the parks in terms of the potential to enhance Brazoria County as a place to live and the potential that these parks have for tourism. One of the goals of the Brazoria County Parks Department is to "enhance recreational and economic health through environmental conservation," The plan also acknowledges the role of open/green space in flood control.

Data Sources

Brazoria County Overview

1. U.S. Census Bureau
2. U.S. Census Bureau
3. Economic Development Alliance for Brazoria County
4. USDA Census of Agriculture
5. USDA Census of Agriculture

Recent Disruptions to the Economy

6. Federal Reserve Bank of Saint Louis, Bureau of Labor Statistics

Economic Development Strategies

7. Houston-Galveston Area Council
8. Houston-Galveston Area Council

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

CHAMBERS COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

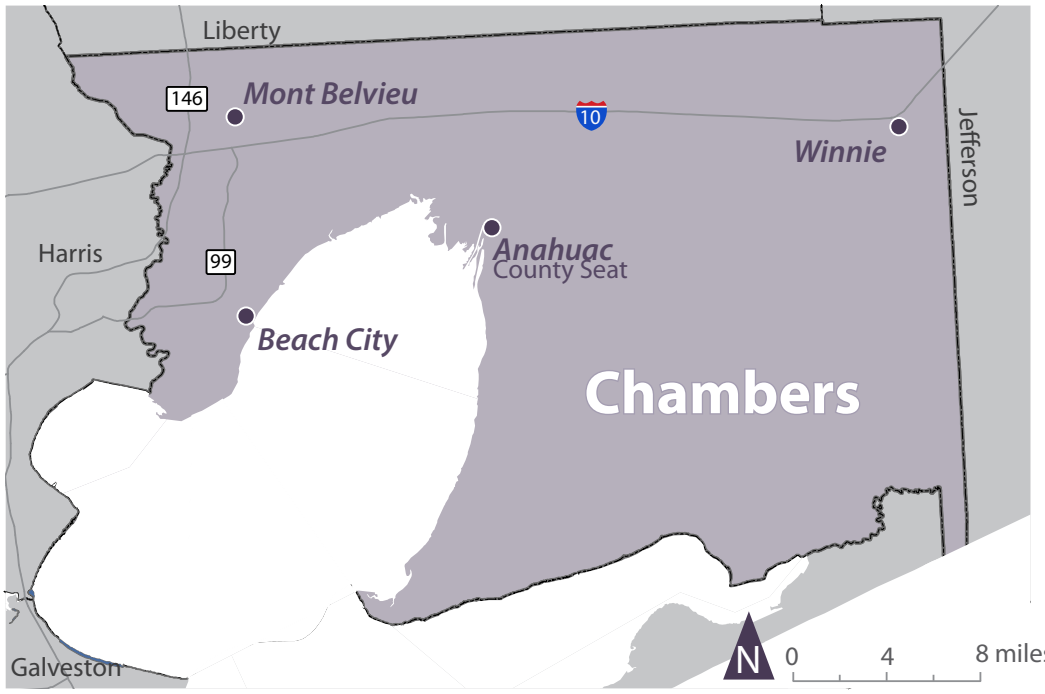
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Chambers County and it's economy by providing key data points on the economy, demographics, and other useful information.

Chambers County Boundaries

- Chambers County
- Other counties
- Top 4 cities
- Major roads

County Seat: Anahuac
Largest City: Mont Belvieu



Chambers County Overview

Chamber County's is separated from Harris County to the west by the Cedar Bayou, the county lies on the Galveston and Trinity bays. Chambers County is economically divided between the communities and petrochemical complexes west of the Trinity River that are part of the Houston metropolitan region and the largely rural areas east of the Trinity River. West of the Trinity River are the communities of Baytown (4,138), Beach City (2,614), Cove (510), Mont Belvieu (5,584), and Old-River Winfree (1,190)[1]. Anahuac with a population of 2,339, is the county seat; Anahuac is the only incorporated community east of the Trinity River, although Winnie (3,254)/Stowell (1,756) area is an important population center. Chambers County is crossed by IH 10, which provides the only major crossing of the Trinity River. Other major highways include State Highways 61, 65, 99, and 146. Union Pacific provides rail service to the county. According to U.S. Census estimates, Chambers County's population has nearly doubled since 1990 to nearly 40,000, and most of that economic and population growth has occurred in western portion of the county.

Liquefied petroleum gas production and ancillary businesses are the primary economic drivers for the county. Baytown is home to a 3,400- acre ExxonMobile campus. CheveronPhillips has the world's largest polyethylene plant on more than 1,200 acres in Baytown, and Covestro has a 1,650-acre facility that employs over 2,000 workers. (While Baytown is largely in Harris County, the economic cluster extends into Chambers County.) The Cedar Crossing Industrial Park is the fifth largest industrial park in the world, at 15,000 acres. It is home large distribution centers for retailers including Walmart, Home Depot, and IKEA. The western portion of Chambers County has seen an increase in residential construction and retail establishments as the number of jobs continues to rise.

The economy in the eastern portion of Chambers County is largely agricultural, along with a regionally significant fishery. The agricultural economy contributes $25.6 million annually; of that 59% was in crop sales and 41% in livestock sales. Chambers County is the fifth largest rice producer in the State of Texas. Many landowners are enrolled in the Conservation Reserve Program, which compensates farmers for taking their land out of production, government payments totaled $3,018,000 in 2012. Hunting and outdoor recreation are also economically important to eastern Chambers County.

Hunting, outdoor recreation, and eco-tourism are important economic drivers in Eastern Chambers County.

Recent Disruptions to the

The storm surge and winds generated by Hurricane Ike (2008) caused severe flooding and wind damage across the county; a 17-foot storm surge covered 25% of the county in water. Much of the infrastructure in Chambers County sustained significant damage, including utilities, fire protection, and healthcare facilities. Saltwater contaminated water wells as far as 10 miles inland; severely impacting agricultural production and fisheries.

Chambers County's fisheries were impacted by the Texas drought of 2010-2012 which caused salinity in Galveston Bay to spike. The drought also increased the wildfires (much of the County's marsh and pastureland was especially susceptible to the drought conditions) and reduced the price for cattle. The 2014-2016 downturn in oil prices did not impact the economy in Chambers County as much as it did elsewhere in the region, as the petrochemical refining industry continued to expand to accommodate the increased production of domestic shale gas generated through fracking technology.

Hurricane Harvey demonstrated Chambers County's ongoing vulnerability to flooding. The impacts of the devastation it created are still being assessed, hundreds of homes and businesses were flooded throughout the county. Addressing how to prevent widespread damage from future events, and how to prevent this type of flooding in future developments will be critical to enhancing the county's resilience.

Economic Resilience Strategies

Chambers County underwent a visioning and planning process as part of Hurricane Ike recovery and created its *Long Term Community Recovery Plan* (2009). The work focused on Trinity Bay restoration, community development, infrastructure, economics and industry, education, and health care and emergency services. The plan identified drainage projects needed to enhance the county's resilience to storms and the need for workforce training for the petrochemical industry.

The petrochemical complexes in western Chambers County are not protected by a levee system, but rely on the reduced impacts of the inland location, structural solutions to storm surge and flooding would enhance the resilience of these complexes. Western Chamber County's growth is constrained by its non-attainment status under the Clean Air Act.

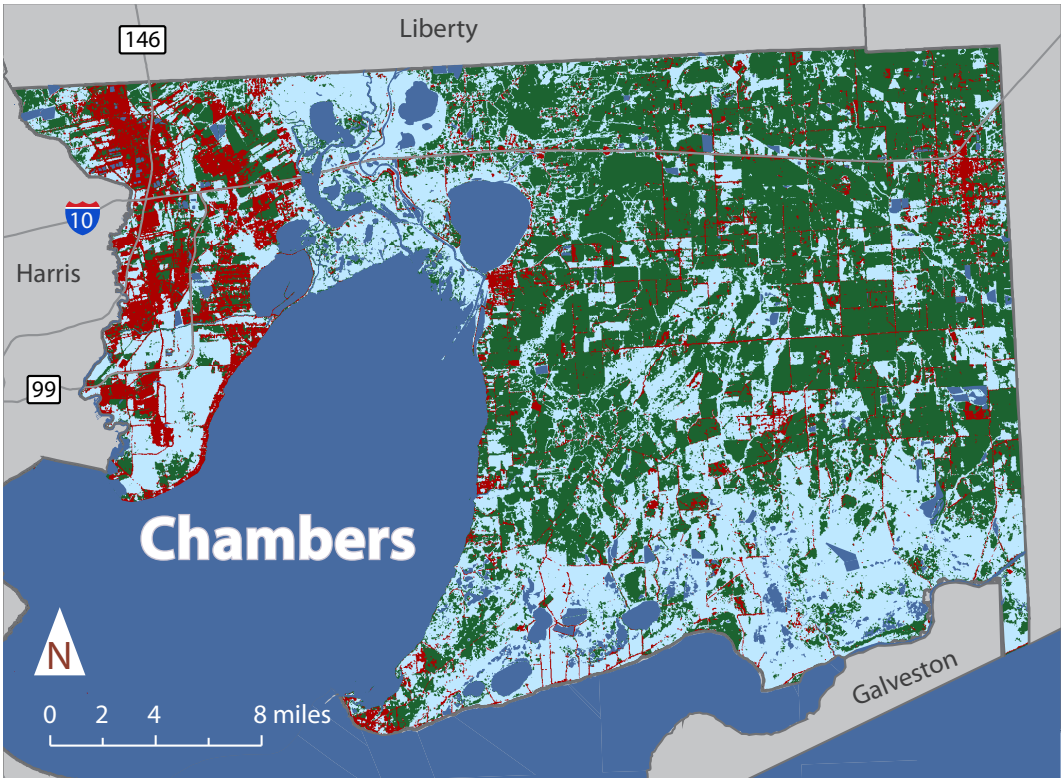
Eastern Chambers County does not have sites available with sufficient infrastructure to attract industry. Small businesses and residents are hampered by low access to high-speed internet in eastern Chambers County.

Recommendations

Chambers County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Develop a business park in eastern Chambers County to enhance economic opportunities.
- Improve Chambers County's air-quality though voluntary actions and participation in regional air quality efforts.
- Investigate strategies for better coordinated county-wide flood control strategies.
- Enhance broadband connectivity in eastern Chambers County.

Land Use and Demographics



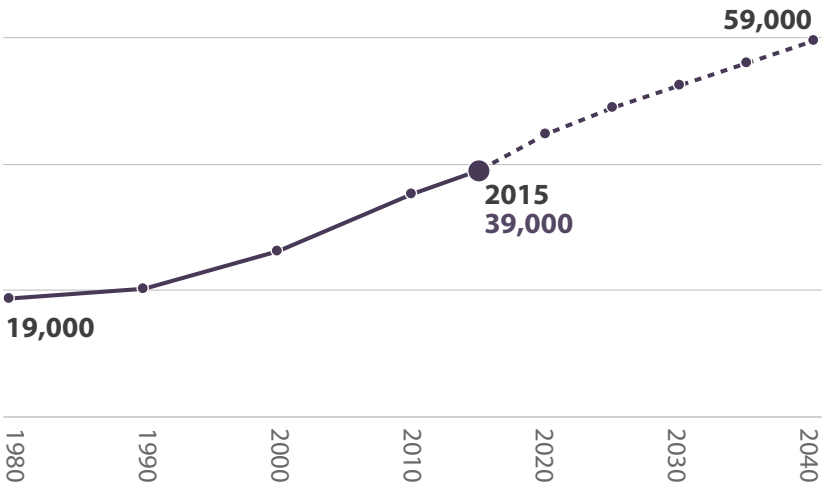
Chambers County Land Use

	Other counties
6%	Open water
11%	Developed Land
39%	Wetlands
44%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

In the above map, the predominance of wetlands in Chambers County is demonstrated, along with the predominance of urbanized areas to the west of the Trinity River.

Population Growth Forecast

Chambers County grew by 110% from 1980 to 2015 and is expected to reach 59,000 residents by 2040.



Municipal Populations

The City of Mont Belvieu is Chambers County's largest incorporated municipality.

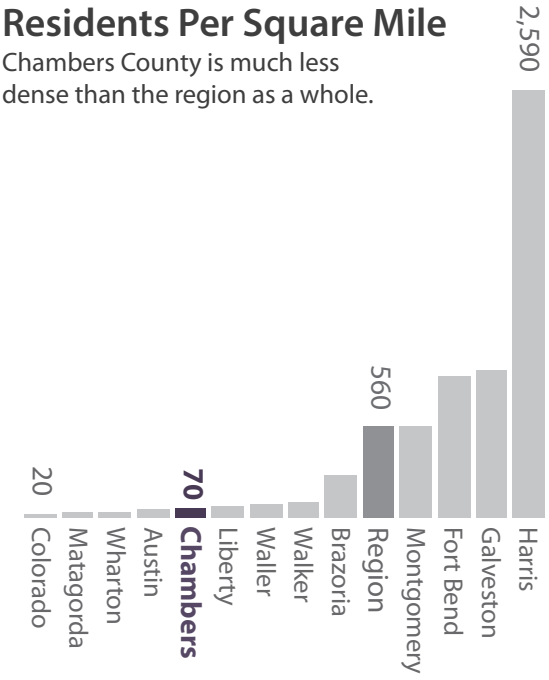
5,584	Mont Belvieu
4,138	Baytown*
2,614	Beach City
2,339	Anahuac
1,190	Old River-Winfree*
510	Cove
23,524	Unincorporated

*The municipality spans multiple counties. Only the population residing in Chambers County is shown here.

Land Use and Demographics

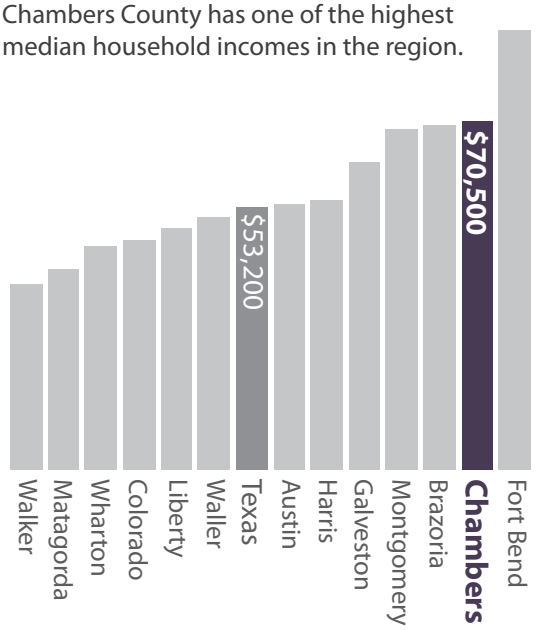
Residents Per Square Mile

Chambers County is much less dense than the region as a whole.



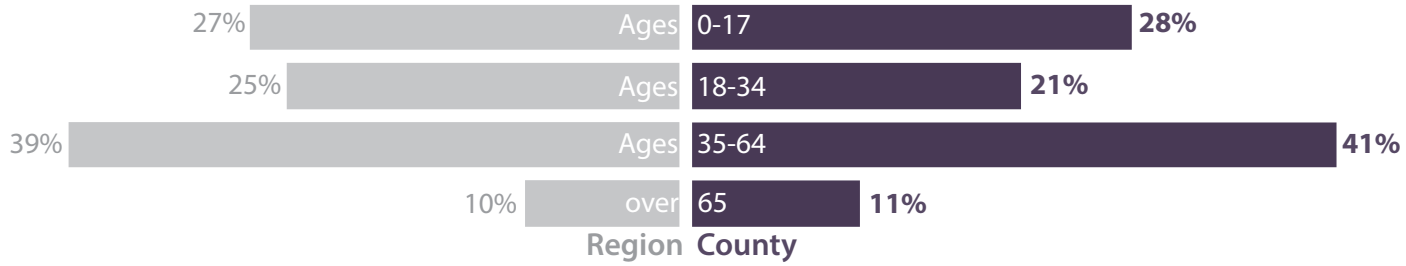
Median Household Income

Chambers County has one of the highest median household incomes in the region.



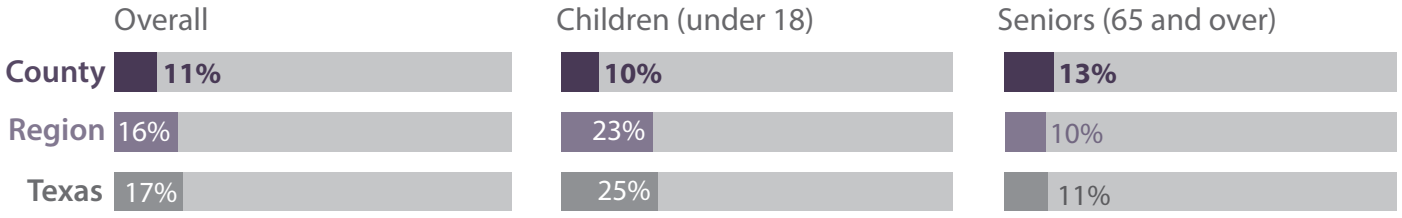
Age

Chambers County has a similar age profile as the region.



Poverty Rate

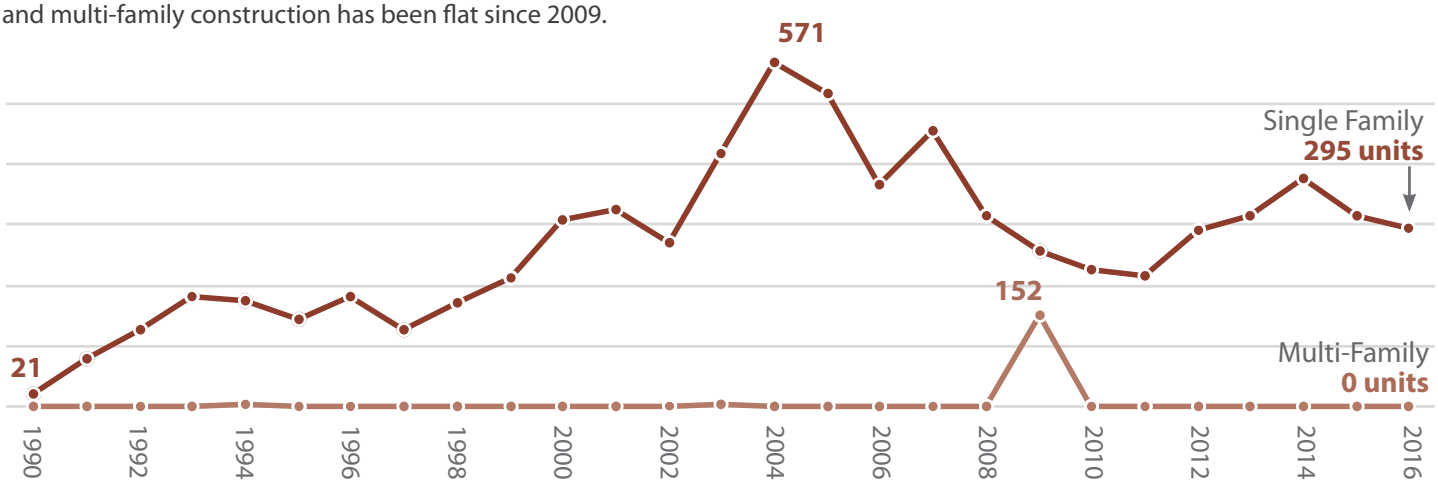
Chambers County has a lower rate of poverty for the general population and for children, but a higher rate for seniors.



Housing

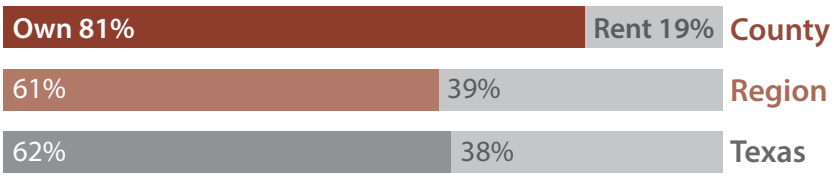
Building Permits Issued (units)

Single-family construction has not returned to its 2004 high and multi-family construction has been flat since 2009.



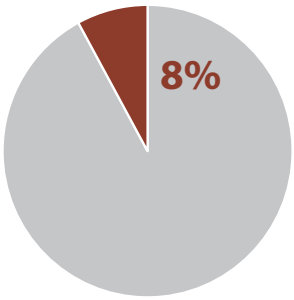
Housing Tenure

Chambers County has a far higher rate of homeownership than the region or the state.



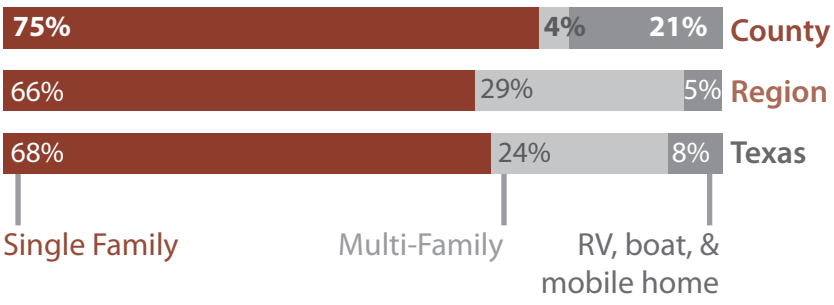
Vacant Housing Units

Around 10% of Chambers County's housing units are vacant.



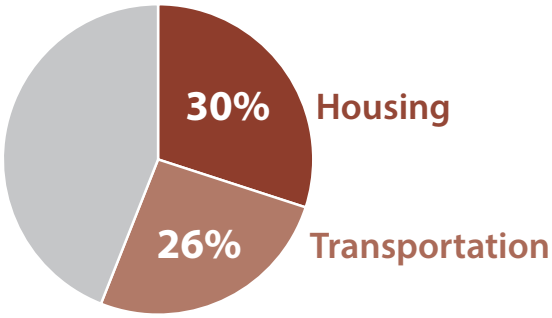
Housing Type

Chambers County has a low portion of multi-family homes and a high portion of RV, boat, and mobile homes.



Living Costs

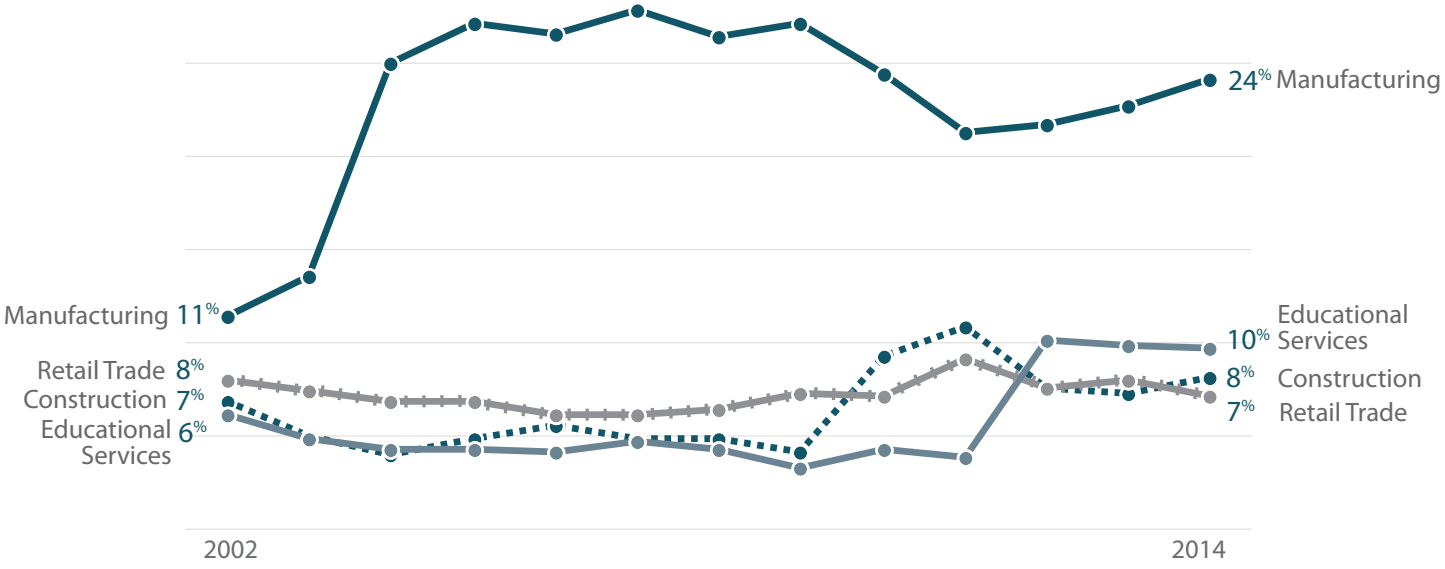
Chambers County households spend 56% of their income on transportation and housing.



Economy

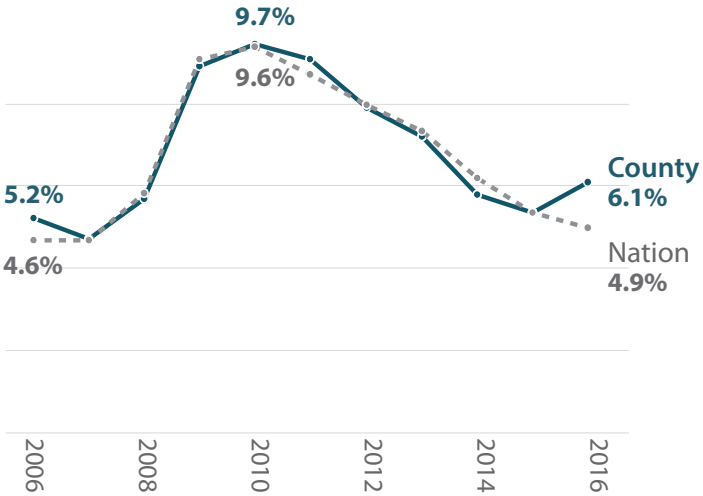
Top Industries by Percent of Overall Jobs

The Manufacturing industry employs a much larger portion of Chambers County workers than any other industry, at nearly one quarter of all county employment, up from 11% in 2002.



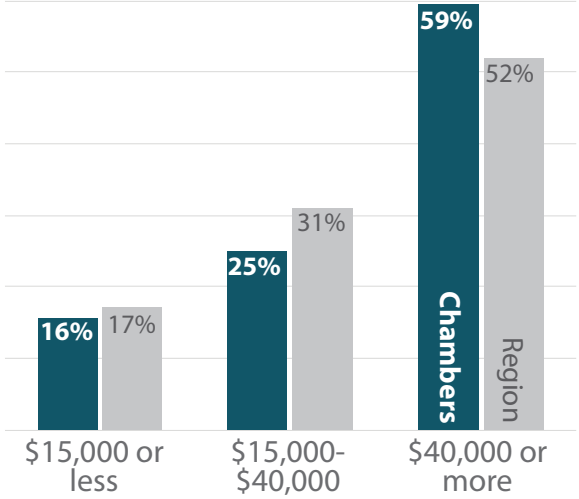
Unemployment Rate

Chambers County's unemployment mirrors national trends, but was higher than the nation in 2016.



Earnings of Residents

Nearly 60% of Chambers County residents earn more than $40,000 annually, a higher percentage than the region.



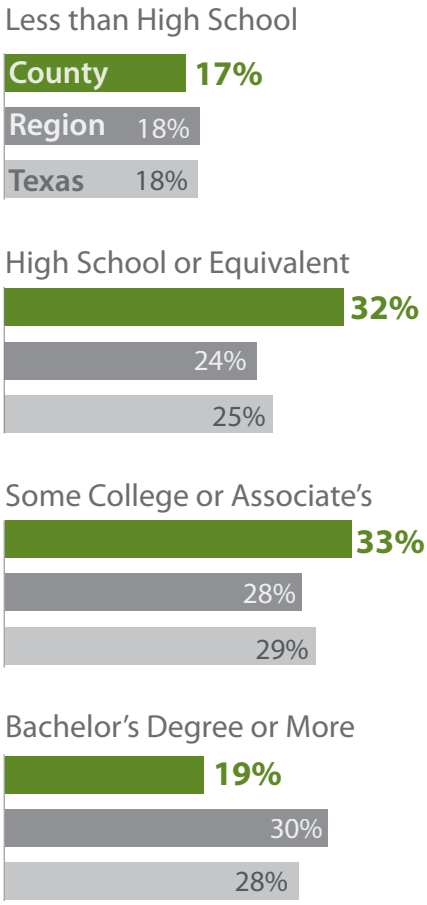
Education, Hazard Risks, and Commute

Median Earnings by Educational Attainment

A Chambers County resident with a graduate or professional degree makes, on average, $40,500 more than a resident with less than a high school education annually.

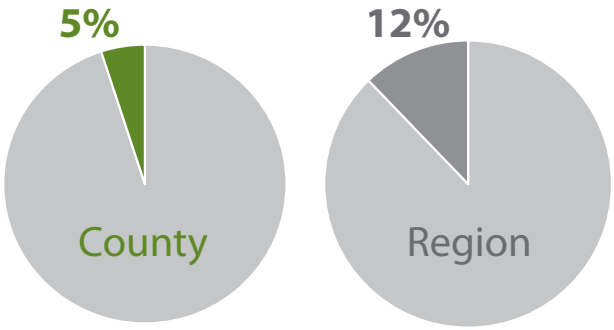
Educational Attainment

A lower percentage of Chambers County residents have completed a bachelor's degree the region and state.



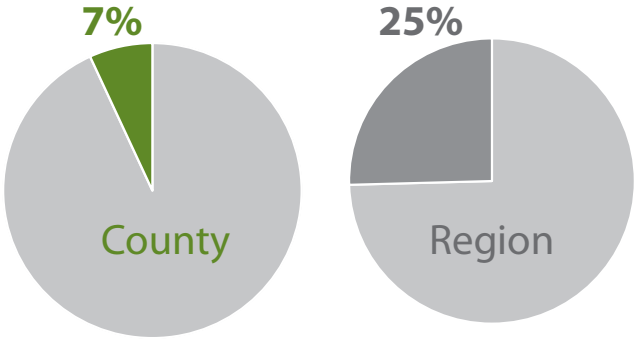
Residents in 100-year Floodplain

A smaller percentage of Chambers County residents live in a 100-year floodplain than the region.



Residents in Hurricane Evacuation Zone

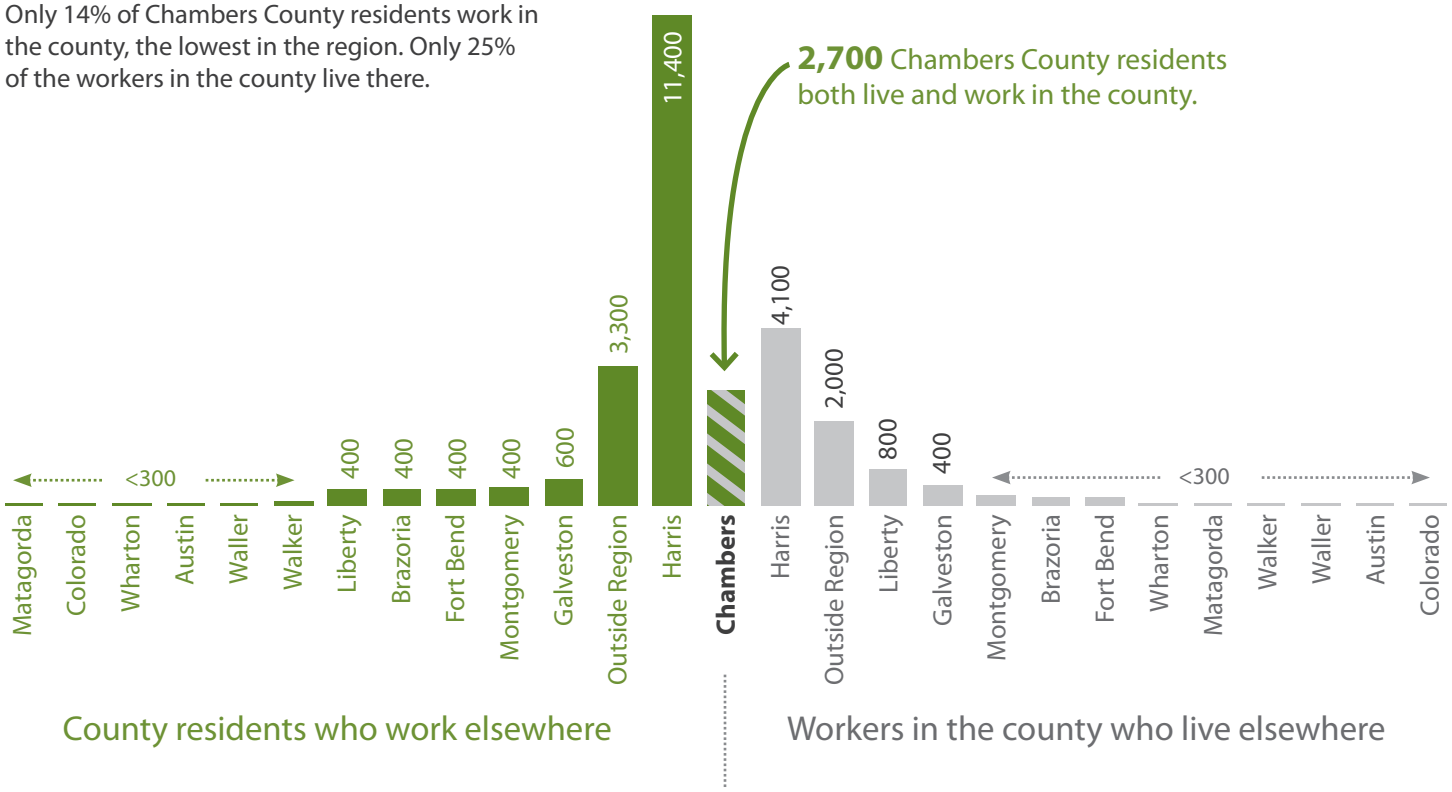
Fewer than 10% of Chambers County residents live in a hurricane evacuation zone, as opposed to 25% of the region.



Education, Hazard Risks, and Commute

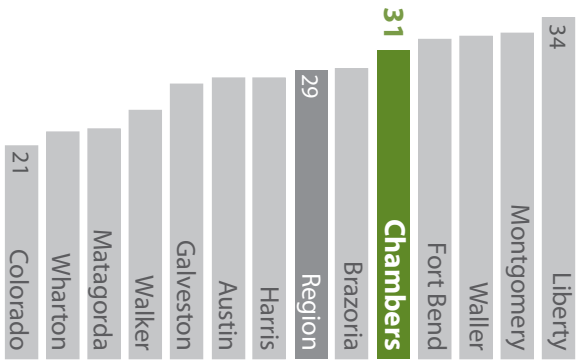
Workers' Job & Home Destinations

Only 14% of Chambers County residents work in the county, the lowest in the region. Only 25% of the workers in the county live there.



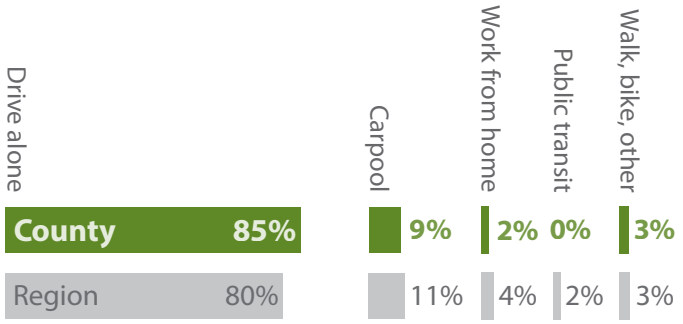
Mean Commute to Work (minutes)

Chambers County workers commute for more time than the region as a whole.



Commute Mode to Work

A higher percentage of Chambers County workers drive to work compared to the region as a whole.



Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

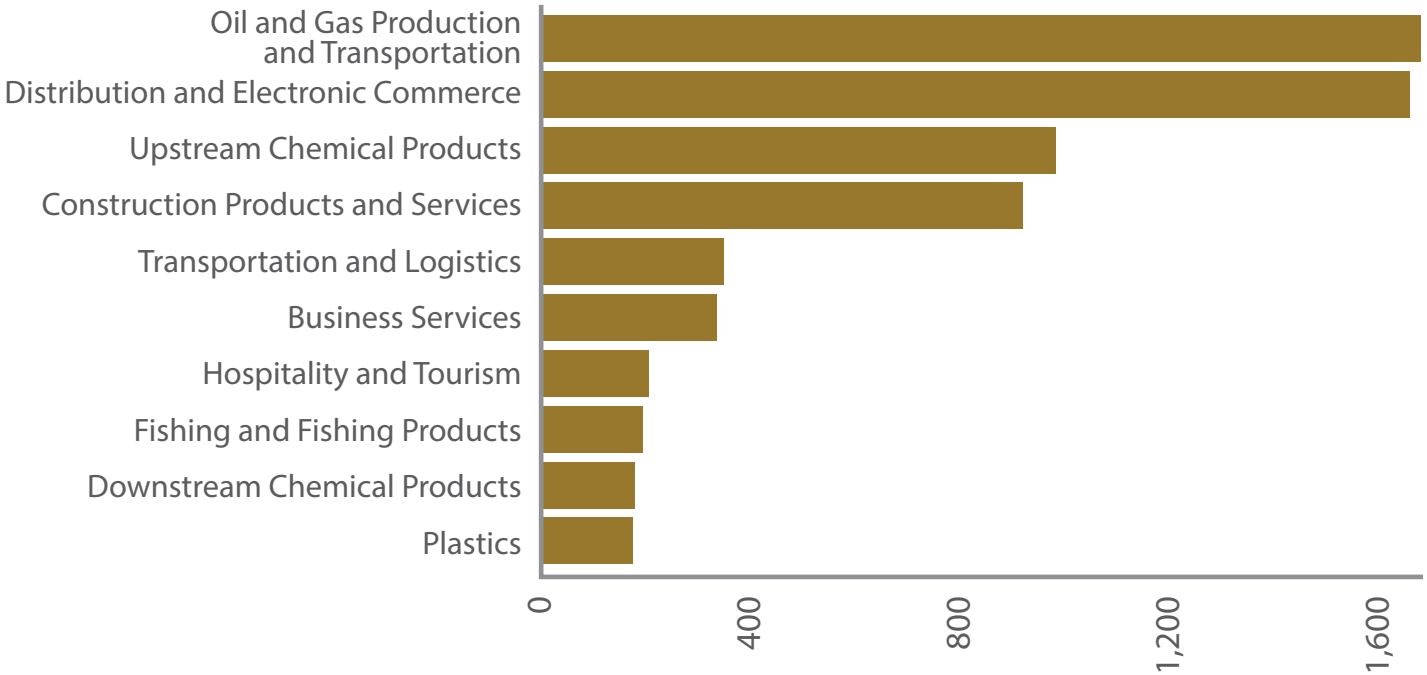
Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.

Employment by Cluster

This bar graph demonstrates Chambers County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

This plan highlights efforts in Chambers County to plan for disaster recovery and economic resiliency. The economic elements of the plans are identified.

Chambers County Hazard Mitigation Plan

Chambers County is currently developing a Hazard Mitigation Plan for release in 2019. Chambers County participated in the 2011 Update of the Regional Hazard Mitigation Plan. The Regional Hazard Mitigation plan was created in 2006 by the Houston-Galveston Area Council, the Texas Division of Emergency Management, and 85 local governments. The comprehensive plan identifies regional hazards and vulnerabilities, and includes over 300 mitigation projects that could be implemented within the region.

The plan identified two mitigation actions for Chambers County:

- Install siren system countywide to inform the public of imminent hazards.
- Retrofit windows in EOC to protect against severe winds.

Data Sources

Chambers County Overview

1. U.S. Census
2. U.S. Census
3. Houston-Galveston Area Council
4. U.S. Census
5. Baytown-West Chambers County Economic Development Foundation
6. Baytown-West Chambers County Economic Development Foundation
7. Baytown-West Chambers County Economic Development Foundation
8. USDA Census of Agriculture
9. USDA Census of Agriculture

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

COLORADO COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

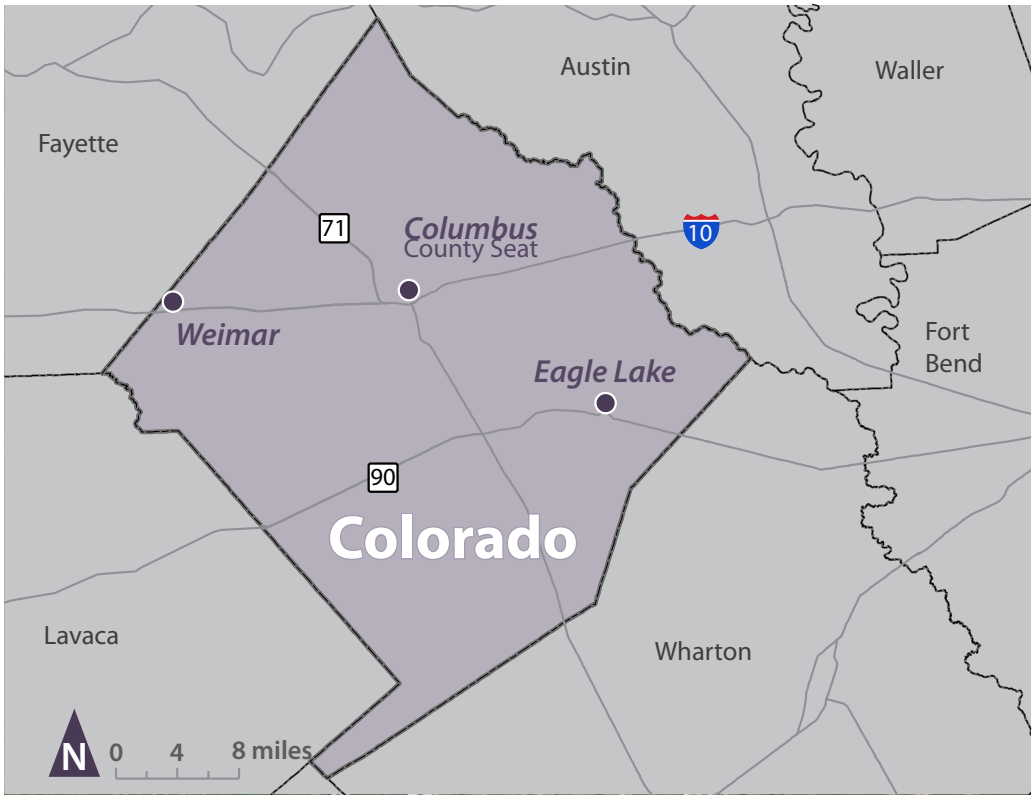
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Colorado County and it's economy by providing key data points on the economy, demographics, and other useful information.

Colorado County Boundaries

- Colorado County
- Other counties
- Top 3 cities
- Major roads

County Seat: Columbus
Largest City: Columbus



Colorado County Overview

Colorado County, is home to three incorporated cities, Columbus, Eagle Lake, and Weimar. Columbus, the county seat, is roughly in the center of the county, where IH-10 and State Highway 71 intersect, 87 miles west of Houston; it has a population of 3,625. Eagle Lake, is in southeast Colorado County on U.S. 90, it has a population of 3,710. Weimar is in the far western portion of the County, with a population of 2,170. In addition to Interstate 10 and U.S. Highway 90, the county is served by State Highway 71 and the Union Pacific Railroad. Named for the Colorado River which bisects it northwest to southeast, Colorado County is mostly rural. The County's population has been generally stable for decades and is estimated to be 21,019, of which 11,514 live in unincorporated areas. Colorado County's economy is largely agricultural, the total value of products sold in 2012 was $67,980,000 It is the third the largest producers of rice in the State, and is therefore highly dependent on irrigation from the Colorado River. Crop sales accounted for 65% of the total, and livestock sales for 35%. Other production includes cattle, corn, cotton, soybeans, sesame, and hay. Oil field services, oil and gas production, and sand and gravel mining companies have operations in Colorado County.

Recent Disruptions to the Economy

Hurricane Harvey caused historic flooding in Colorado County. The river crested at 50.2 feet; slightly below the 1913 crest of 51.6 feet. The Lower Colorado River Authority manages the level of the Colorado River with extensive infrastructure to control flooding. However, Hurricane Harvey's unprecedented rainfall caused water to back up into Columbus and nearly into Eagle Lake; damaging homes and businesses. The flooding destabilized the bank of the Colorado river, and endangered the City of Columbus' wastewater treatment plant. The 2010-2011 drought also had a significant impact on Colorado County, rice production fell dramatically, and many cattle producers were forced to take their stock to market and sell their herds off at low drought prices. Colorado County's oil field services firms were affected when the price of a barrel of oil fell from over $100 in 2014 to below $30 in 2016; shutting down much of the oil and gas exploration in the County. The Great Recession caused unemployment in the county to spike from 3.1% in April of 2008 to 8.6% in January of 2010. Colorado largely escaped the worst impacts of 2008's Hurricane Ike, which was so damaging to other parts of the region.

Downtown Columbus has a historic Main Street populated by local businesses

Economic Resilience Strategies

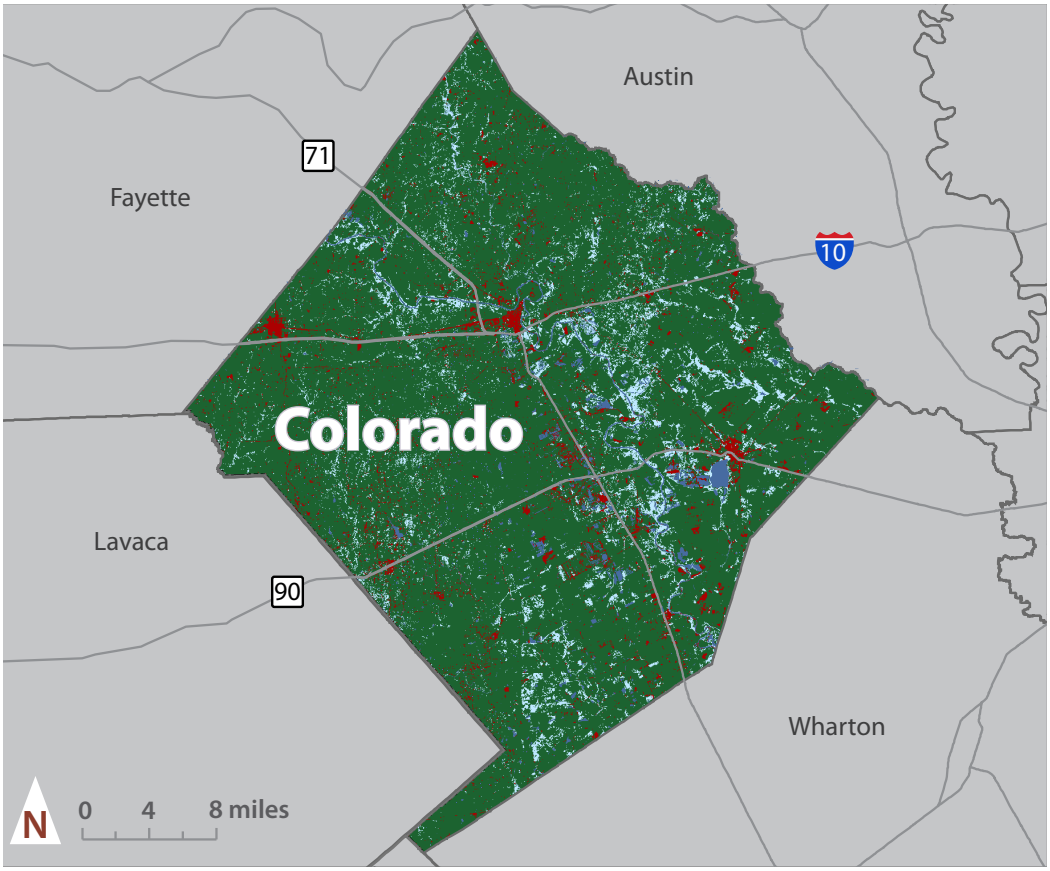
Colorado County is in a prime location for light manufacturing and distribution due to its highway and rail infrastructure and central location between Austin, Houston, and San Antonio. In 1995, the City of Columbus created the Columbus Community Industrial Development Corporation (CCIDC) that administers half-cent 4-B sales tax revenues (4B sales tax is a provision under Texas law allowing for voter approved sales tax for economic and job creation projects). The CCIDC developed the Texas Crossroads Business Park, which is home to two businesses: Great Southern Wood Preserving and KW International (an oil and gas fabrication company). While the CCIDC serves the City of Columbus, the County does not have the economic development infrastructure or political support needed to attract new employers to other areas. Rice production is dependent on irrigation, and sufficient water supply from the Colorado River is crucial to maintaining production. Oil production and oil field services are subject to the volatility of the international energy market. Eagle Lake is working to attract tourists with enhancements to its historic downtown and by building infrastructure to give the public access to the Eagle Lake, the largest private lake in Texas. Colorado County has limited access to high speed internet of sufficient quality to run an online business; hampering entrepreneurship and the establishment of start-up businesses.

Recommendations

Colorado County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Develop a marketing plan to highlight tourist and outdoor recreation opportunities in Colorado County.
- Form a countywide office of Economic Development to enhance opportunities for employment diversification.
- Collaborate with the Lower Colorado River Authority, Texas Colorado River Floodplain Coalition, and the Texas Water Development Board to investigate opportunities to enhance water storage for agricultural irrigation during drought conditions
- Investigate strategies for better coordinated countywide flood control.
- Enhance broadband connectivity.

Land Use and Demographics



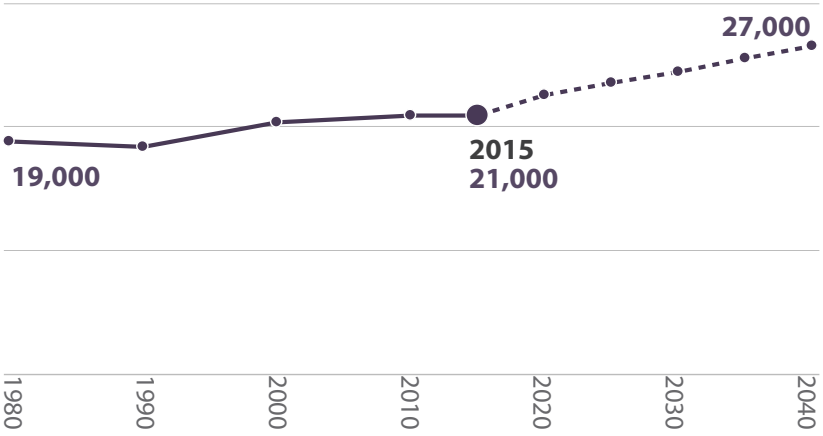
Colorado County Land Use

	Other counties
1%	Open water
4%	Developed Land
7%	Wetlands
88%	Forest, shrubs, pasture, grasslands, barren lands, and cultivated crops

In the above map, the predominance of agricultural land can be seen, the Colorado River runs through the center of the county.

Population Growth Forecast

Colorado County grew by 11% from 1980 to 2015 and is expected to reach 27,000 residents by 2040.



Municipal Populations

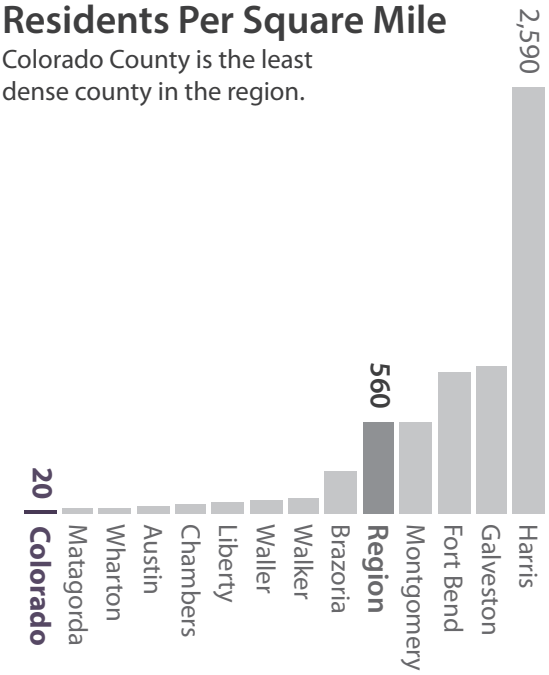
The City of Eagle Lake is Colorado County's largest incorporated municipality.

3,710	Eagle Lake
3,625	Columbus
2,170	Weimar
11,514	Unincorporated

Land Use and Demographics

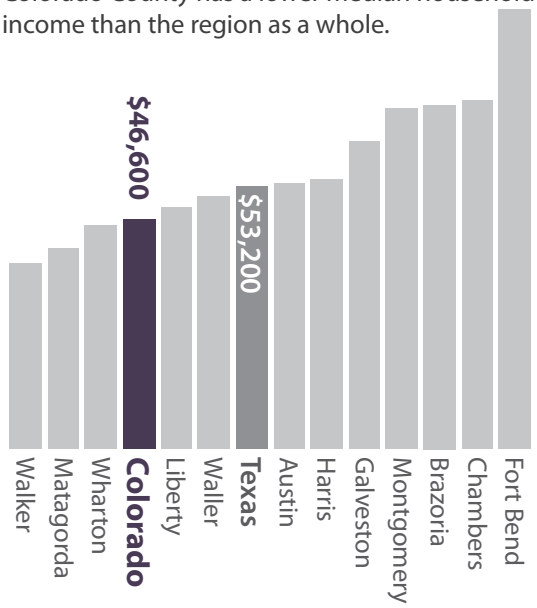
Residents Per Square Mile

Colorado County is the least dense county in the region.



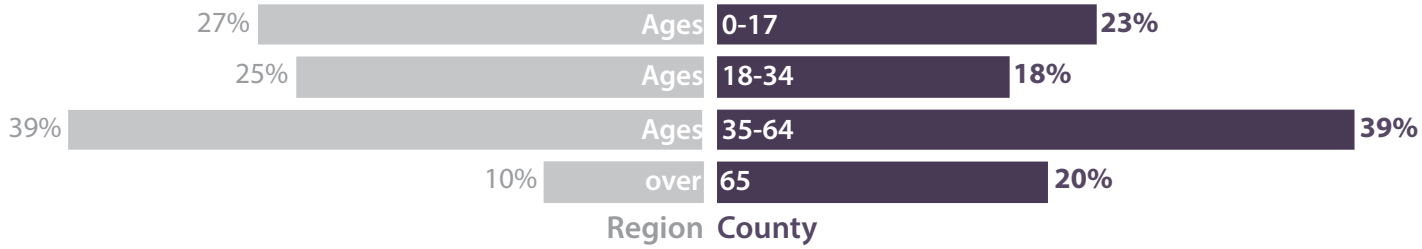
Median Household Income

Colorado County has a lower median household income than the region as a whole.



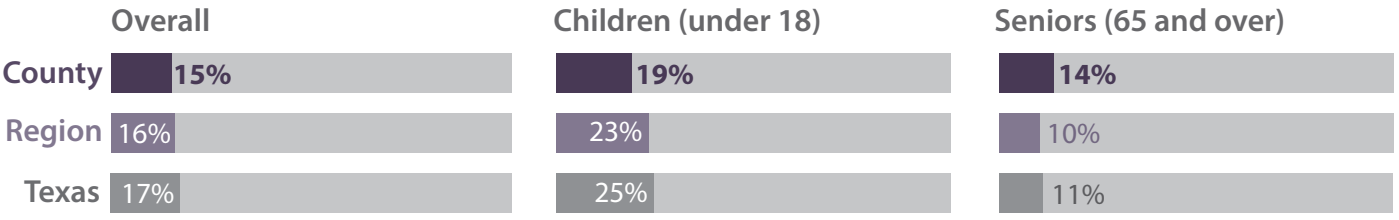
Age

Colorado County has an older population than the region as a whole.



Poverty Rate

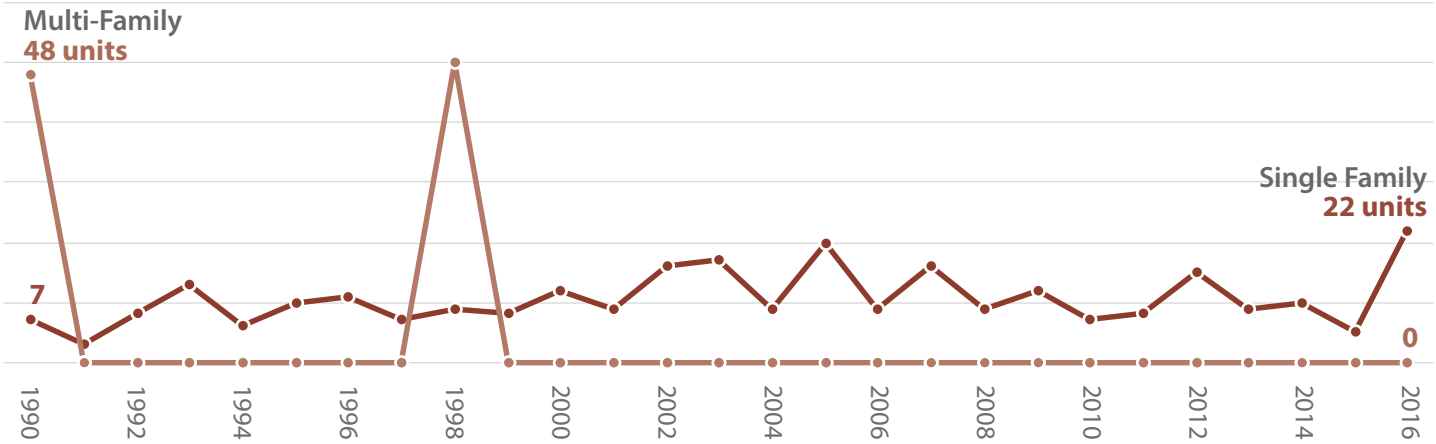
Colorado County has a lower rate of poverty than the region, except for seniors.



Housing

Building Permits Issued

Single-family construction remains intermittent, while multi-family development permits have not been issued since the late 1990s.



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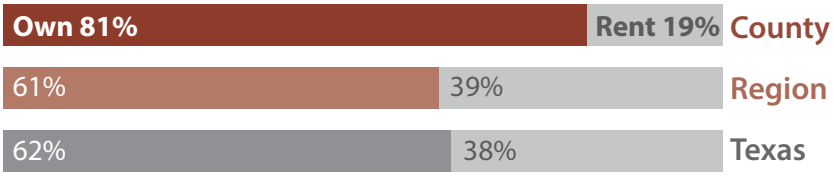
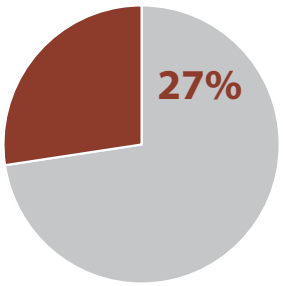


Vacant Housing Units

Over one-quarter of Colorado County's housing units are vacant.



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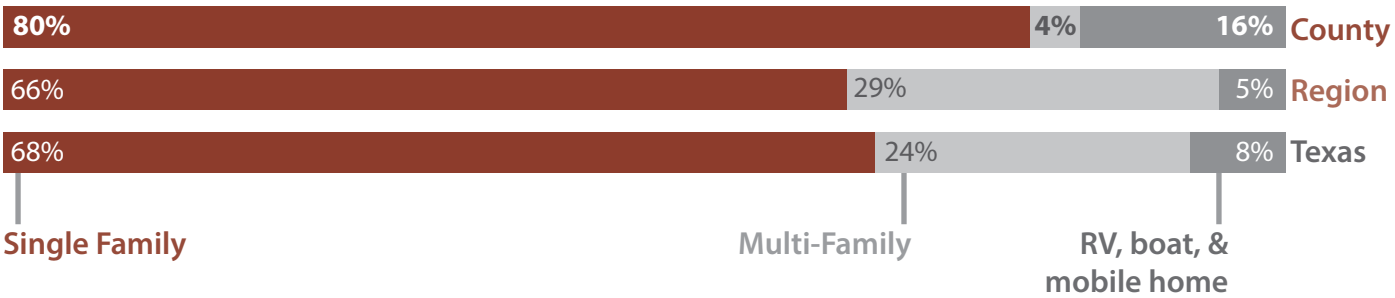
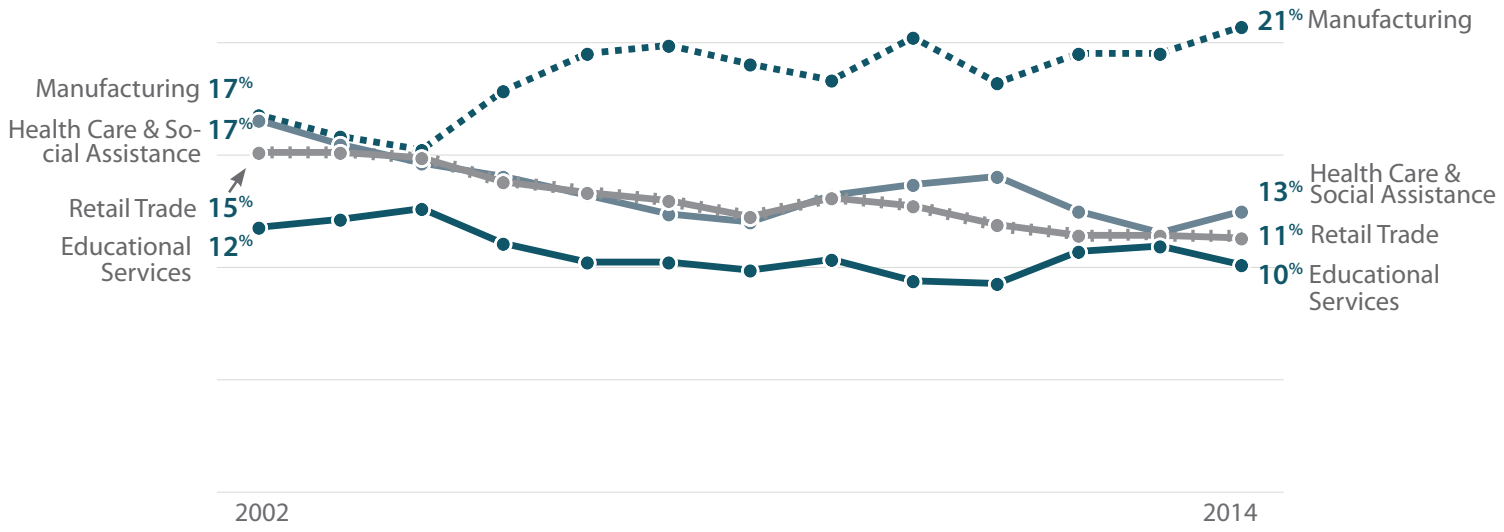


Economy

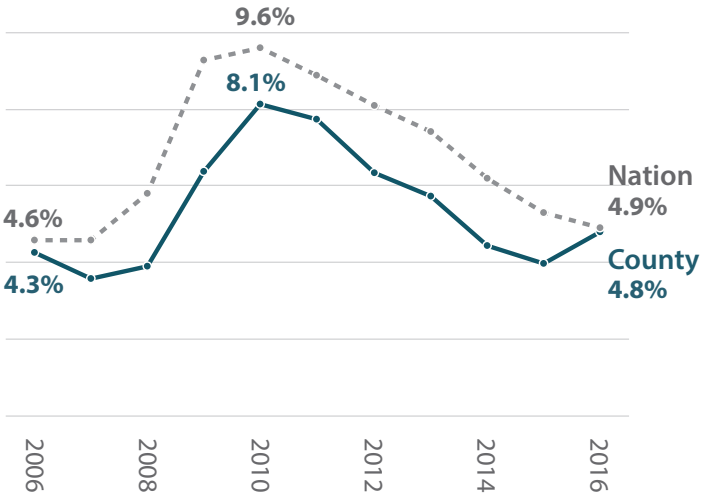
Top Industries by Percent of Overall Jobs

Employment in the Manufacturing industry in Colorado County has increased as a portion of the county's workforce between 2002 and 2014 while other top industries have declined in their portion of the workforce.



Unemployment Rate

Colorado County's unemployment remained lower than the national average between 2006 and 2016.



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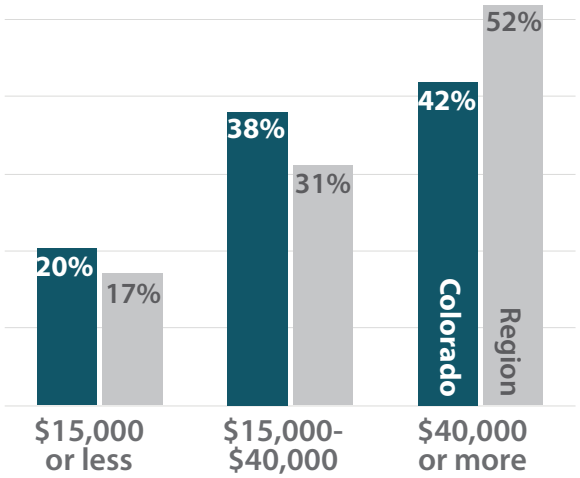

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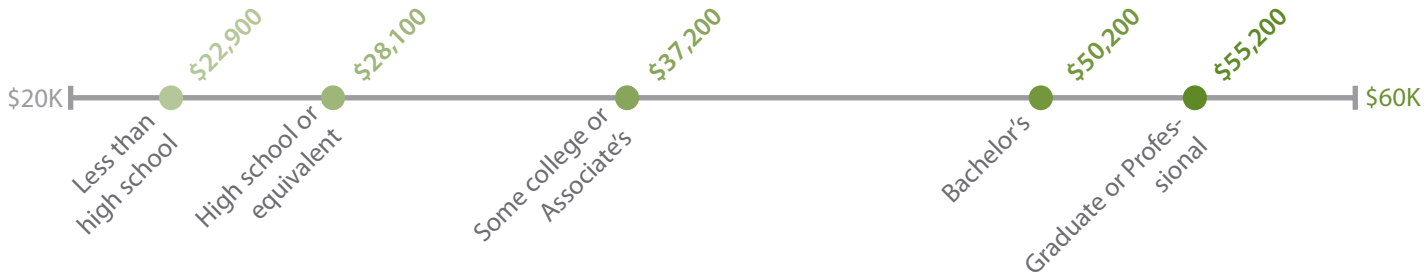
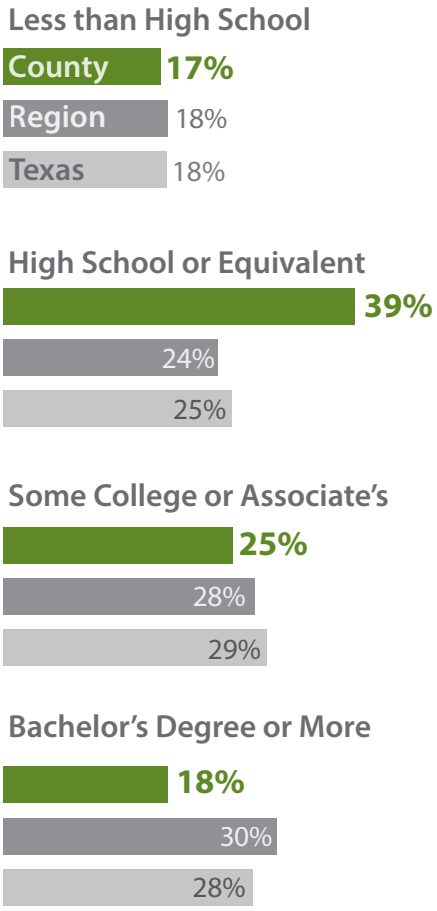


Educational Attainment

A lower percentage of Colorado County residents have obtained education after high school than the region and state.



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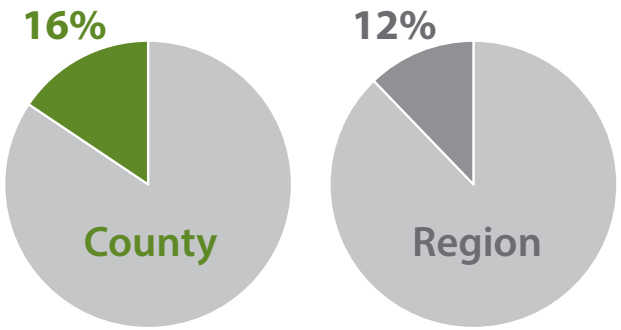

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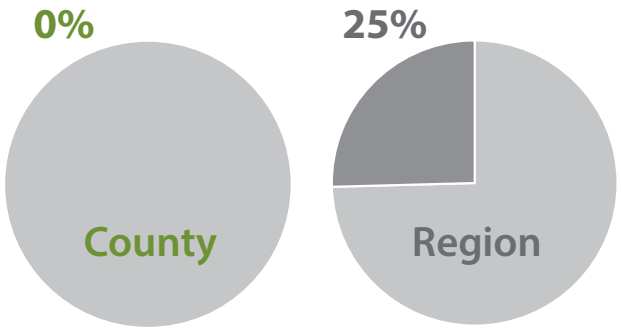

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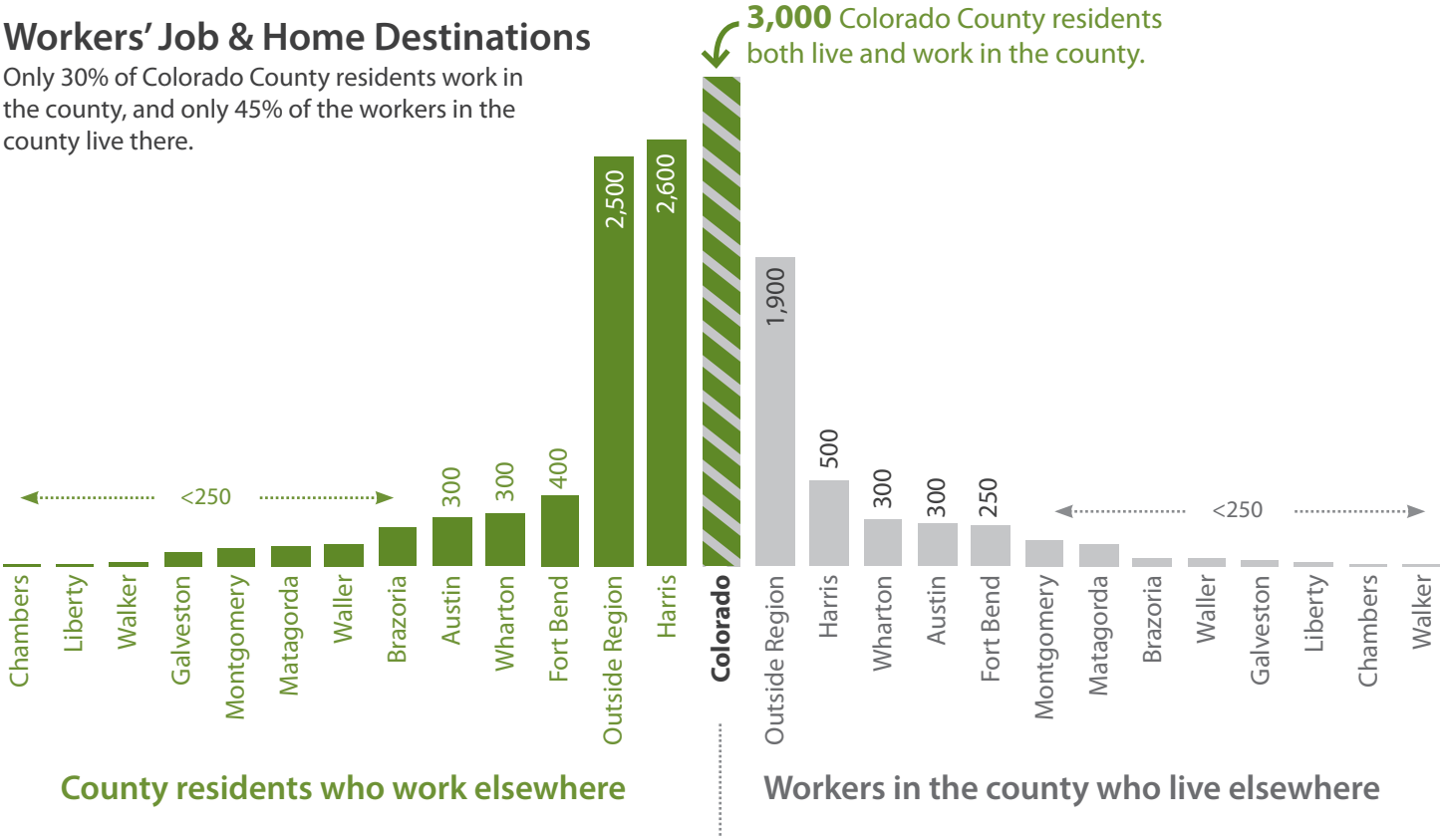
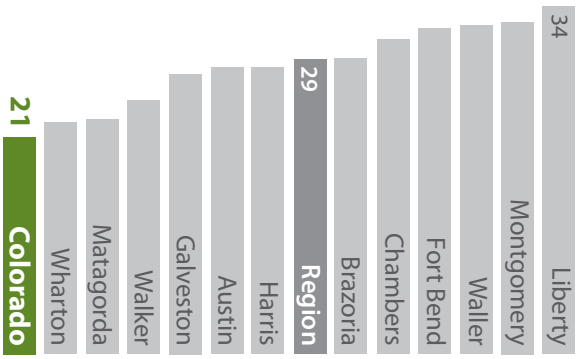


Mean Commute to Work (minutes)

Colorado County workers have the shortest commute time to work in the region.



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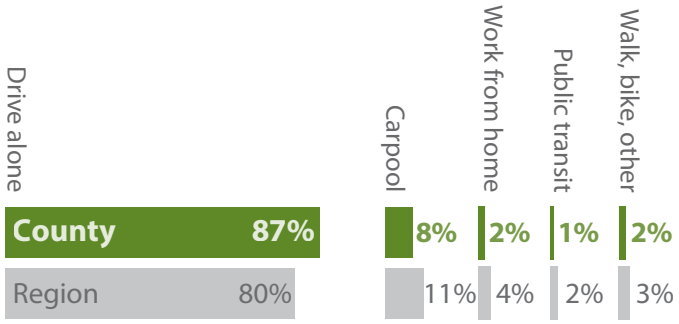

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Traded v. Local Clusters

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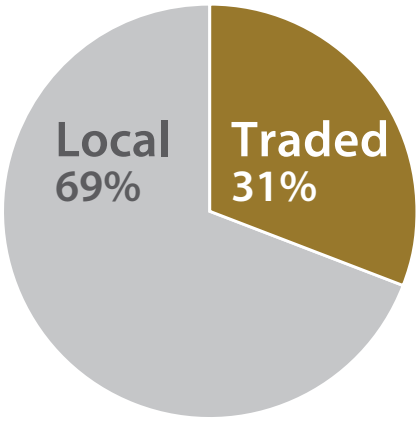
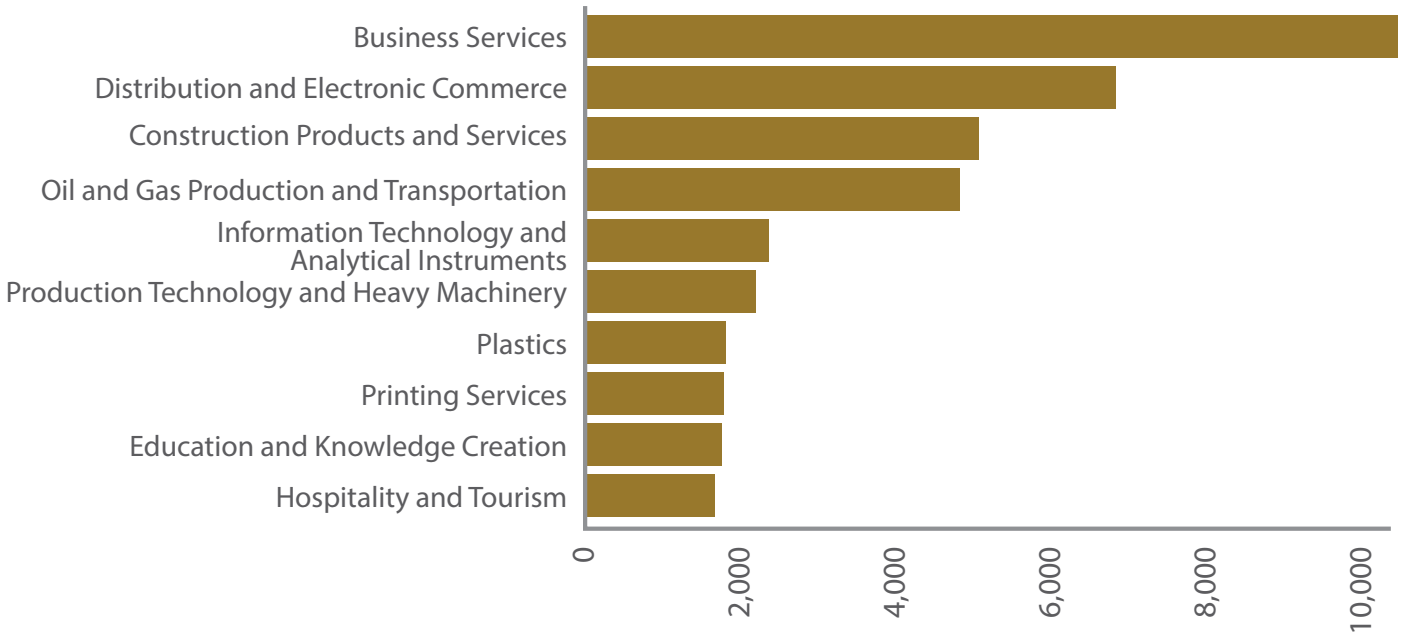


Employment by Cluster

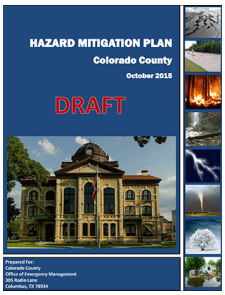
This bar graph demonstrates Colorado County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

This plan highlights efforts in Colorado County to plan for disaster recovery and economic resiliency. The economic elements of the plans are identified.

Colorado County Hazard Mitigation Plan Update



Colorado County and its communities participated in previous hazard mitigation plans as part of the Texas Colorado River Floodplain Coalition. The guiding principle for the Colorado County Hazard Mitigation Plan Update is to reduce or eliminate the long-term risks to loss of life and property damage in Colorado County from the full range of natural disasters. The Regional Hazard Mitigation Plan is crucial in determining the vulnerabilities faced by each of the jurisdictions in Colorado County. examines the urban design elements of the town and recommends best practices from similar communities. Downtowns represent crucial physical and social infrastructure that need planning. This plan examines the flood plain, but is focused on how to improve the downtown.

Data Sources

Colorado County Overview

1. U.S. Census
2. U.S. Census
3. U.S. Census
4. Houston-Galveston Area Council
5. U.S. Census
6. USDA Census of Agriculture
7. USDA Census of Agriculture
8. USDA Census of Agriculture

Recent Disruptions to the Economy

9. US Geological Survey
10. Federal Reserve Bank of Saint Louis, U.S. Bureau of Labor Statistics

Economic Development Strategies

11. City of Columbus
12. City of Columbus
13. Texas State Historical Association

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

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Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

FORT BEND COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

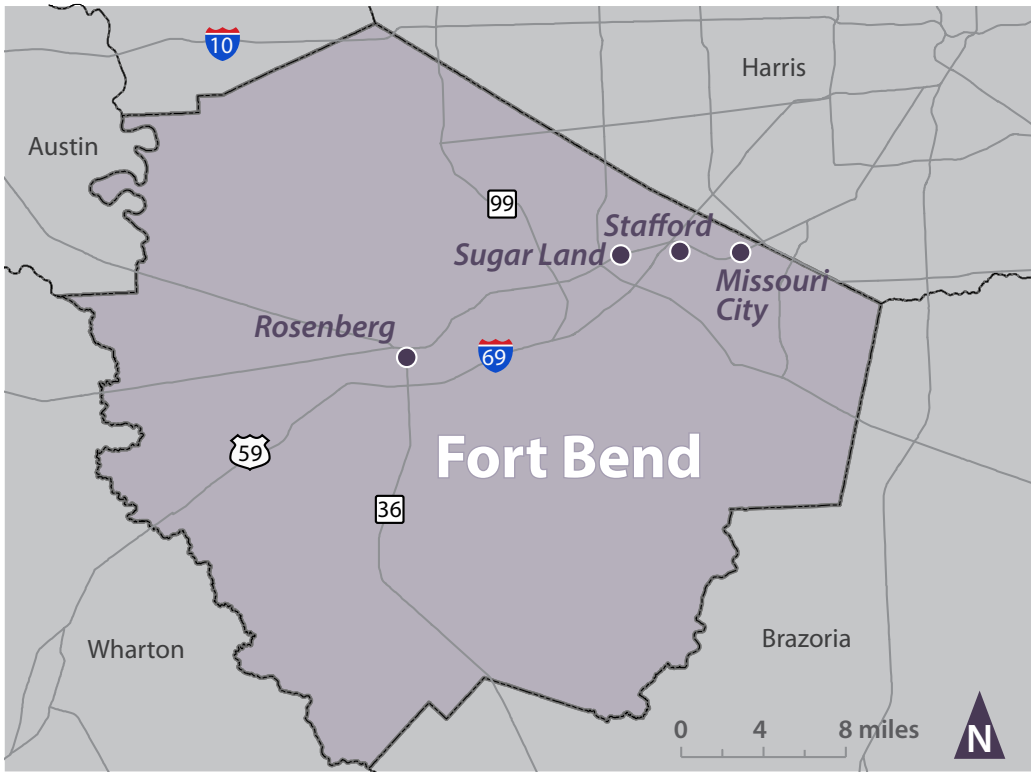
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Fort Bend County and it's economy by providing key data points on the economy, demographics, and other useful information.

Fort Bend County Boundaries

- Fort Bend County
- Other counties
- Top 4 cities
- Major roads

County Seat: Richmond
Largest City: Sugar Land



Fort Bend County Overview

Fort Bend County was the tenth fastest growing county in the United States in 2016. Between 1980 and 2015, the population grew by a remarkable 447%. It is anticipated that Fort Bend County's population will grow from 741,237 in 2016 to 1,271,000 residents by 2040. Fort Bend County is the 10th most populous county in Texas, and, with a median household income of $89,200, it's among the wealthiest counties in the state. Fort Bend County is known as the most diverse county in America, having nearly equal division among the nation's four major ethnic communities: Asian, black, Latino, and white residents.

Fort Bend County is southwest of Harris County on the Texas Gulf Coastal Plain. The county seat of Richmond, which his nearly in the center of the county, is 30 miles southwest of downtown Houston; its population is estimated to be 12,092. Other cities with populations over ten thousand include Houston (with 42,645 residents in Fort Bend County), Missouri City (68,362), Rosenberg (36,937), Stafford (18,113), and Sugar Land (88,177). Nearly two-thirds (445,389) of Fort Bend County residents live in unincorporated areas. Fort Bend County has many bedroom communities and master planned communities, sixty-five percent of Fort Bend County residents commute to Harris County for work. Major transportation corridors include Interstates 10 and 69, U.S. Highway 90, and State Highways 6, 36, and 99. The county has three toll roads the Fort Bend Parkway, Grand Parkway, and Westpark Tollway. The county is served by the Union Pacific and BNSF railroads.

The Brazos River flows northwest to southeast through Fort Bend County for approximately 90 miles and drains the county's broad central floodplain. The San Bernard River, which forms the county's western boundary, drains the western quarter of the county. The north-eastern half of the county is largely suburban, with major master-planned communities along the U.S. 59 corridor. The south-western half remains largely rural, but is rapidly urbanizing. Agriculture is still a significant force in the county's economy, annual agricultural production accounted for $103.8 million, including nursery corps, cotton, corn, hay, and cattle production. Nearly 90% of the value was from crop sales, while 11% was livestock sales. Fort Bend County has a diverse economy, with residential construction, engineering services, healthcare, and the energy sectors as major employers and economic drivers. It has sis private sector employers with over one thousand employees. The Fort Bend Economic Development Council is actively seeking to recruit companies in the medical devices, food processing, and pharmaceuticals industries to continue to diversify and attract new employers.

Sugar Land Town Square provides a mix of restaurants, shops, offices, hotel rooms, and condominiums.

Recent Disruptions to the Economy

Fort Bend County was impacted by several severe flooding events in recent years; including Hurricanes Ike (2008) and Harvey (2017), and the Tax Day (2015) and Memorial Day (2016) floods. At their peak, the floodwaters from Hurricane Harvey covered approximately 22% of the county, and the overall impact to the county's economy is still being assessed. The collapse in the price of a barrel from $110 in 2014 to $30 in 2016 of oil impacted the energy sector, forcing some companies to lay-off workers; although no major employers closed their doors. The downturn negatively affected home sales and retail in the county. The droughts of 2010-2013 caused significant damages to agricultural producers, including many cattle ranchers who were forced to reduce their herds. The drought also caused public maintenance costs to rise with shifting roadbeds and broken pipes. The Great Recession caused unemployment to spike in the county from 3.6% in April of 2008 to 8.1% in January of 2010.

Economic Resilience Strategies

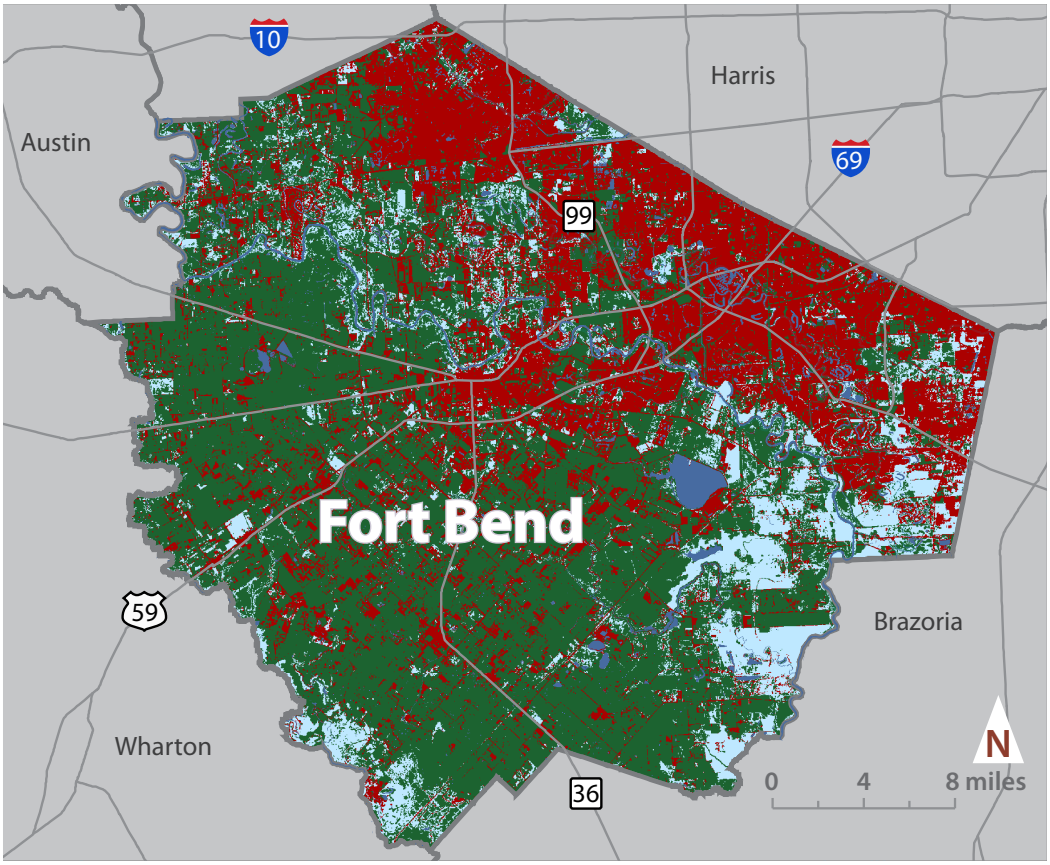
Fort Bend County's economic growth continues at an enviable pace. Fort Bend County made strides to diversify its economic base and attract employers from targeted industries. Drainage and stormwater management continues to be an issue for the county. Fort Bend County is a largely residential and would benefit from the development of a central business district to serve as an employment node. Unless there are enhancements to transportation infrastructure, commute times to Harris County will continue to increase as the population of both counties continues to grow.

Recommendations

Fort Bend County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Continue to attract jobs and commercial development to Fort Bend County through targeted industry recruitment.
- Coordinate with master-planned community developers to enhance stormwater drainage and retention, and work with the developers to reduce the impacts of flooding through strategies such as adopting low impact development regulations.
- Assess the impacts of emerging transportation technologies and how Fort Bend County can expand transportation options for residents to maintain mobility to employment centers.
- Continue and expand initiatives to enhance livability in Fort Bend County.
- Investigate potential strategies for better coordinated county-wide flood control.
- Continue coordination with Brazoria-Fort Bend Rail District on a rail connection to the Port of Freeport to enhance freight movement.

Land Use and Demographics



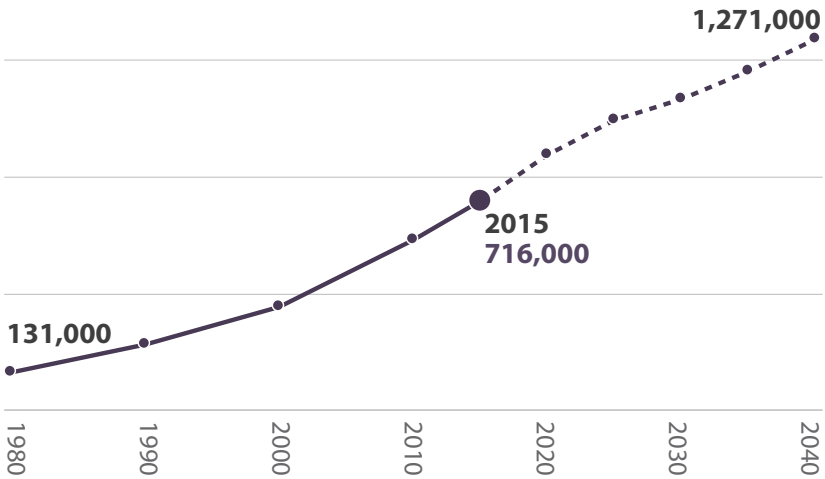
Fort Bend County Land Use

		Other counties
2%		Open water
31%		Developed Land
12%		Wetlands
55%		Forest, shrubs, pasture, grasslands, barren lands, and cultivated crops

Fort Bend County has experienced significant urbanization in the north, in the areas adjacent to Harris County, while the south of the County currently retains its rural character.

Population Growth Forecast

Fort Bend County grew by 447% from 1980 to 2015 and is expected to reach 1,271,000 residents by 2040.



Top 10 City Populations

The City of Sugar Land is Fort Bend County's largest incorporated municipality.

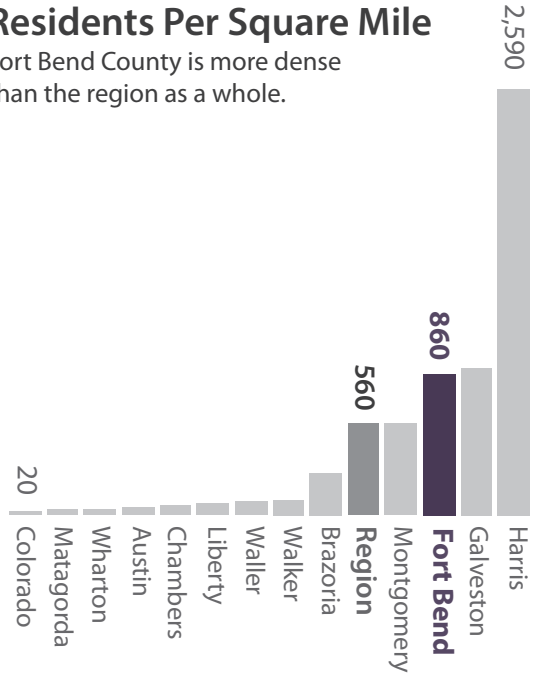
88,177	Sugar Land
68,362	Missouri City*
42,645	Houston*
36,937	Rosenberg
18,113	Stafford*
12,092	Richmond
7,925	Fulshear
4,731	Meadows Place
3,410	Weston Lakes
3,078	Needville

*The municipality spans multiple counties. Only the population residing in Fort Bend County is shown here.

Land Use and Demographics

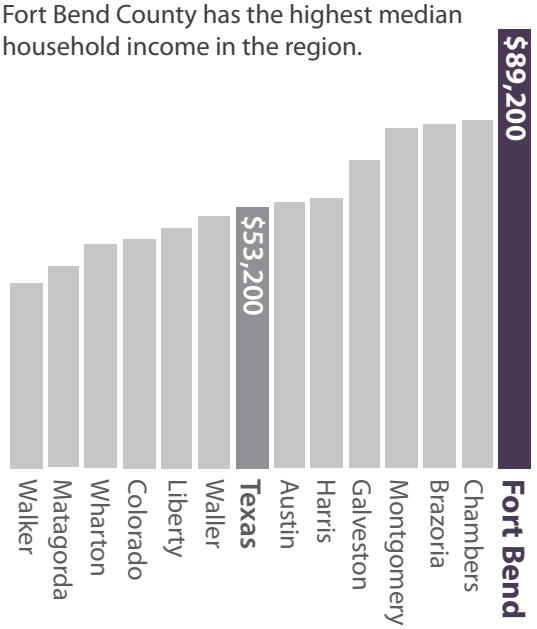
Residents Per Square Mile

Fort Bend County is more dense than the region as a whole.



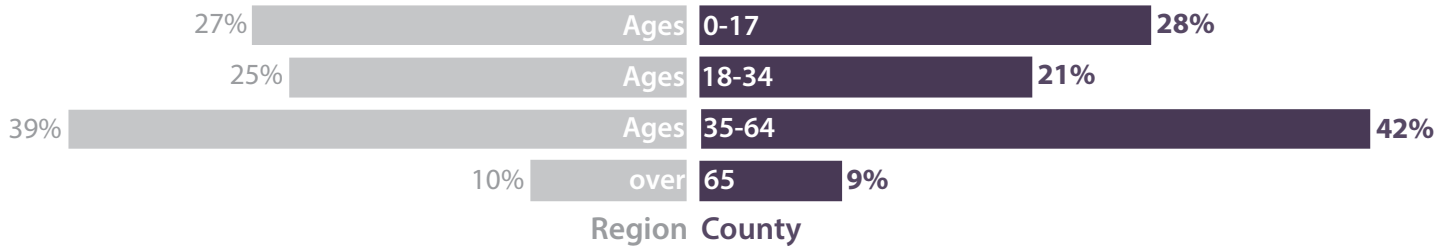
Median Household Income

Fort Bend County has the highest median household income in the region.



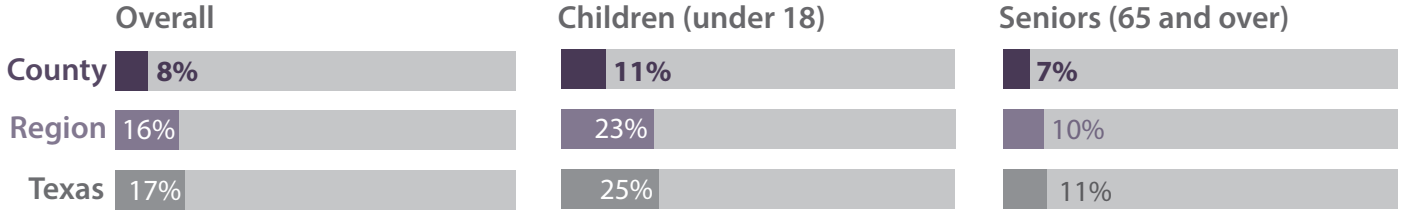
Age

Fort Bend County has a similar age profile as the region.



Poverty Rate

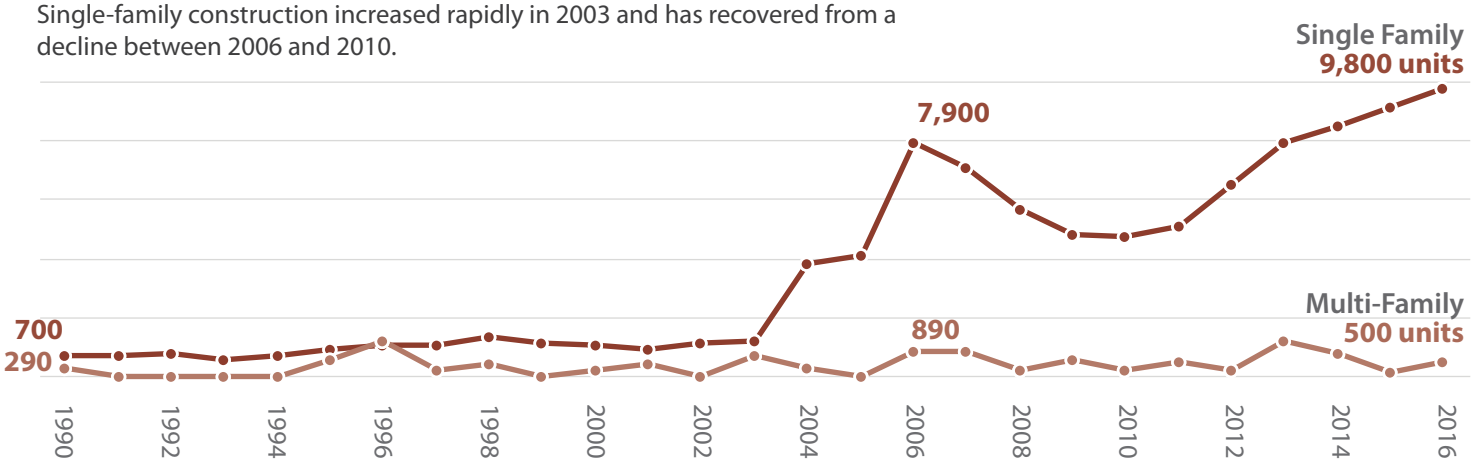
Fort Bend County has a lower rate of poverty than the region, particularly for children.



Housing

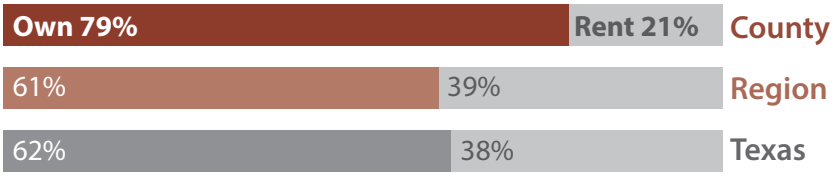
Building Permits Issued

Single-family construction increased rapidly in 2003 and has recovered from a decline between 2006 and 2010.



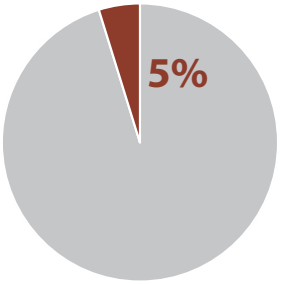
Housing Tenure

Fort Bend County has a higher rate of homeownership than the region or the state.



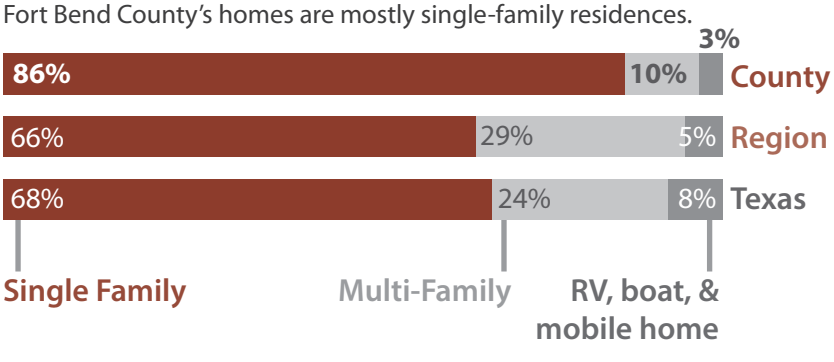
Vacant Housing Units

Fort Bend County has the lowest rate of vacant housing in the region.



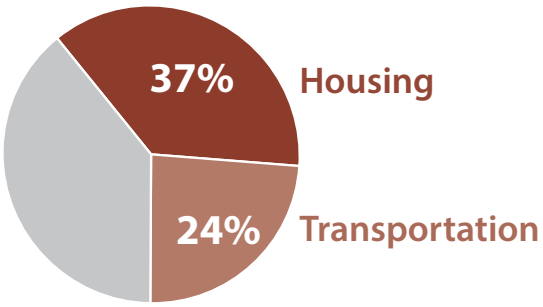
Housing Type

Fort Bend County's homes are mostly single-family residences.



Living Costs

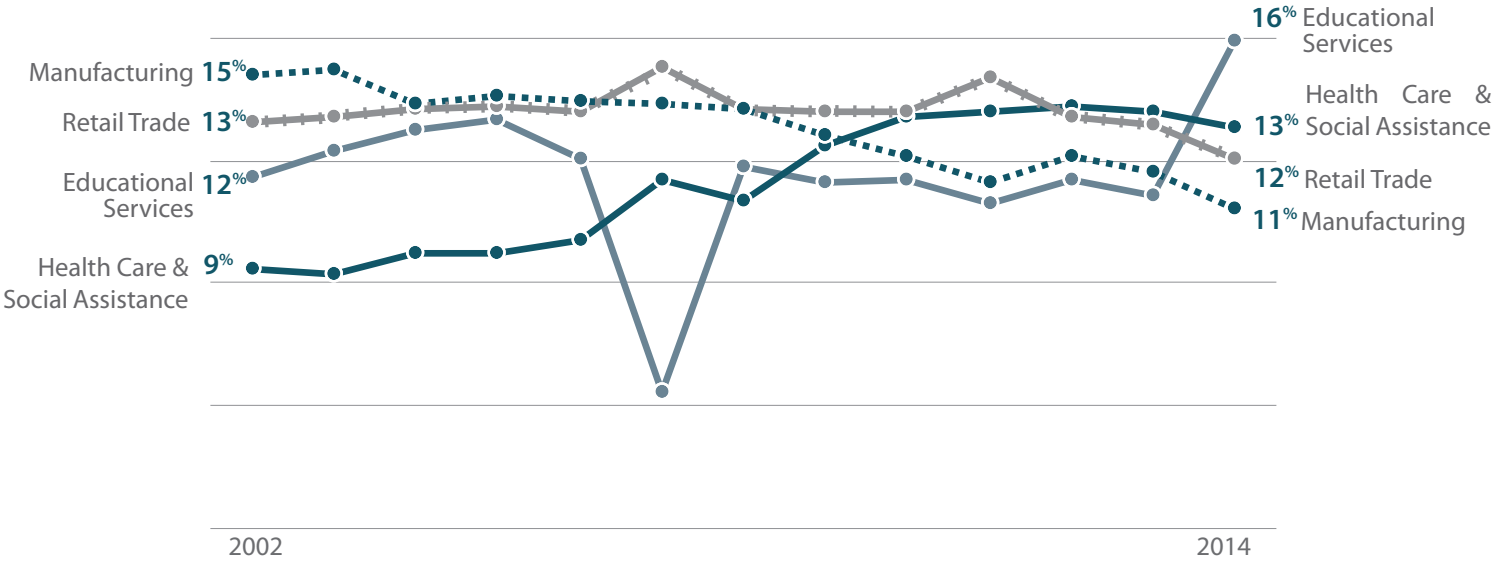
Fort Bend County households spend 61% of their income on transportation and housing.



Economy

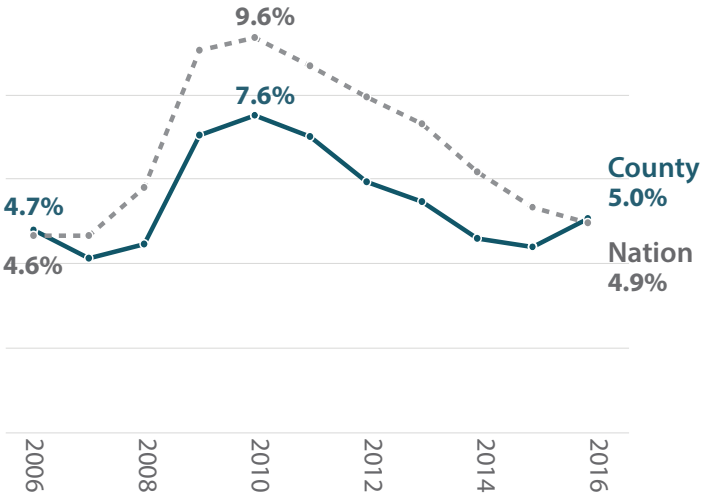
Top Industries by Percent of Overall Jobs

Employment in Fort Bend County remained diverse between 2002 and 2014, with each of the top four industries employing more people in 2014 than in 2002.



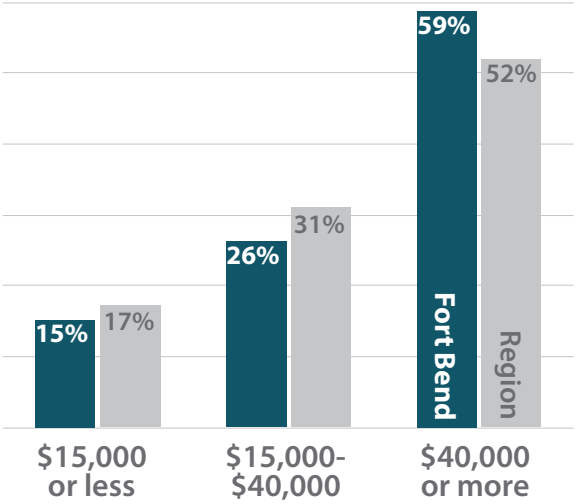
Unemployment Rate

Fort Bend County's unemployment was lower than the nation from 2006 to 2015, but surpassed it in 2016.



Earnings of Residents

Nearly 60% of Fort Bend County residents earn over $40,000 annually, a higher percentage than the region.



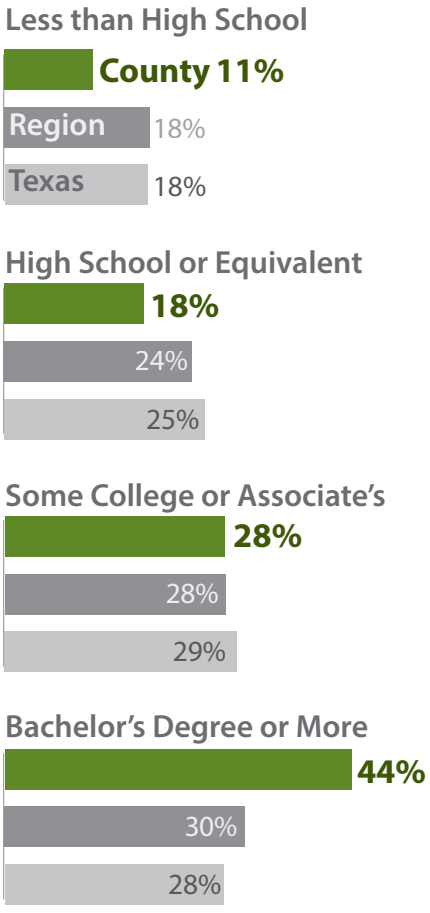
Education, Hazard Risks, and Commute

Median Earnings by Educational Attainment

A Fort Bend County resident with a graduate or professional degree makes, on average, $60,900 more than a resident with less than a high school education annually.

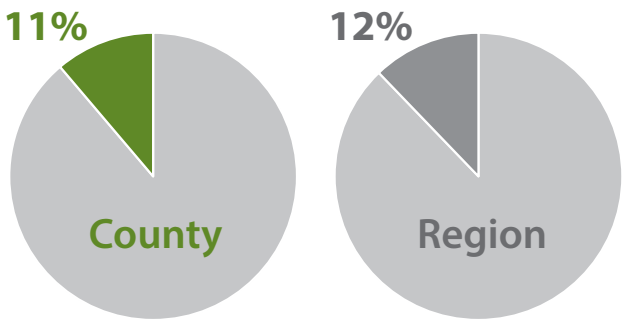
Educational Attainment

A high percentage of Fort Bend County residents have completed a bachelor's degree or more.



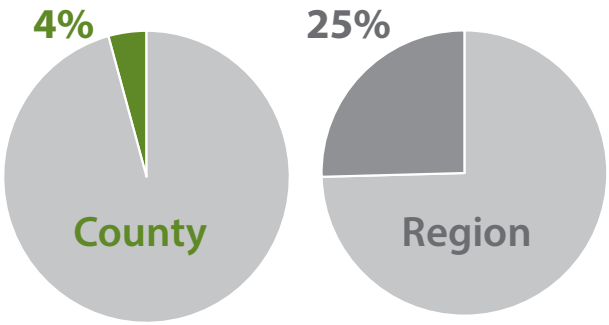
Residents in 100-year Floodplain

About the same portion of Fort Bend County residents live in a 100-year floodplain as the region.



Residents in Hurricane Evacuation Zone

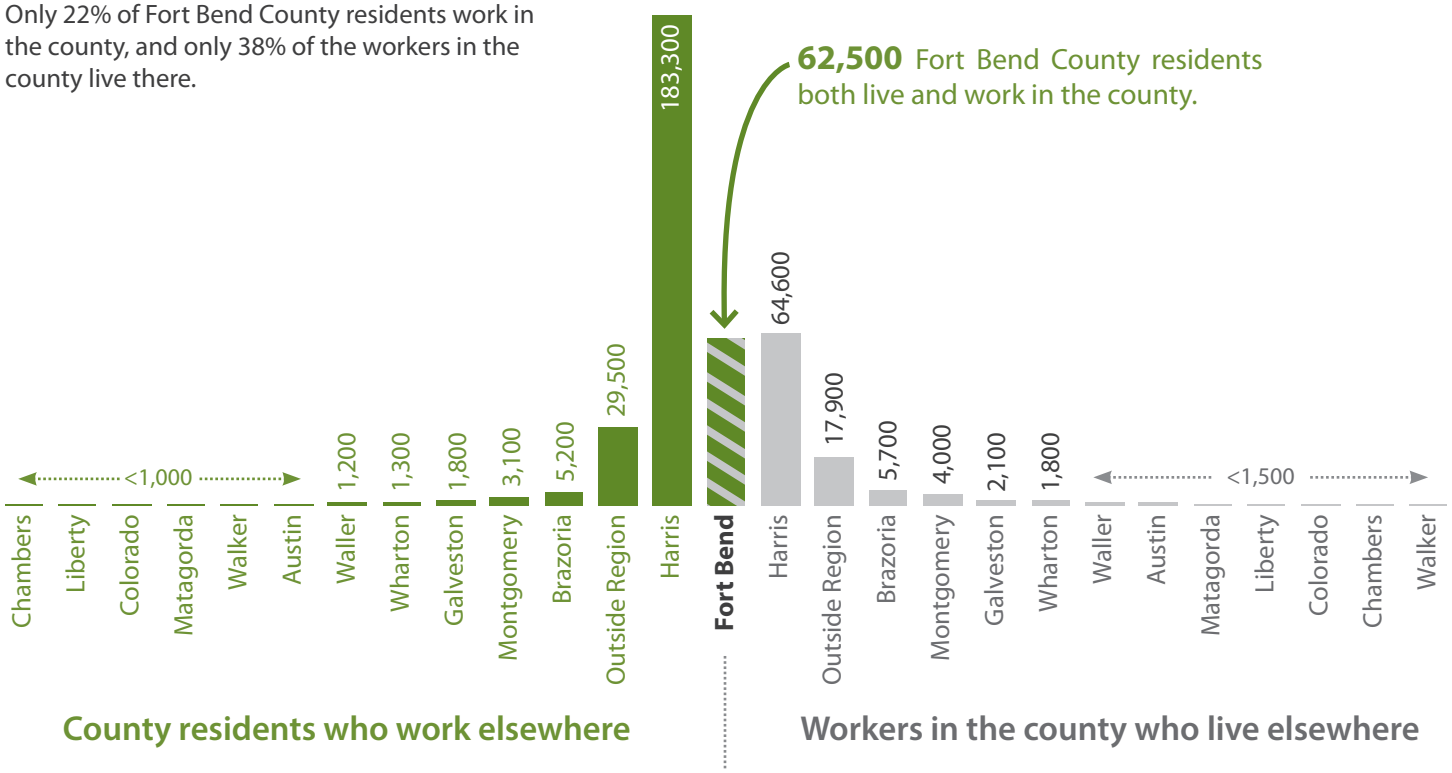
Fewer than 4% of Fort Bend County residents live in a hurricane evacuation zone, as opposed to 25% in the region.



Education, Hazard Risks, and Commute

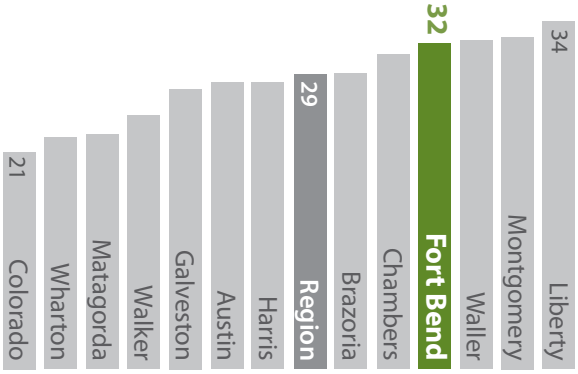
Workers' Job & Home Destinations

Only 22% of Fort Bend County residents work in the county, and only 38% of the workers in the county live there.



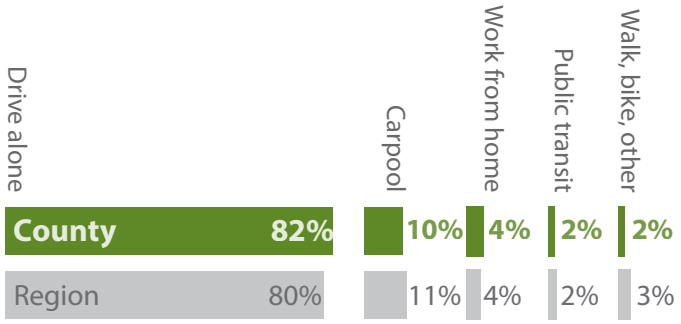
Mean Commute to Work (minutes)

Fort Bend County workers commute for a longer amount of time than the region as a whole.



Commute Mode to Work

Fort Bend County workers have similar commute patterns as the regional workforce.



Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

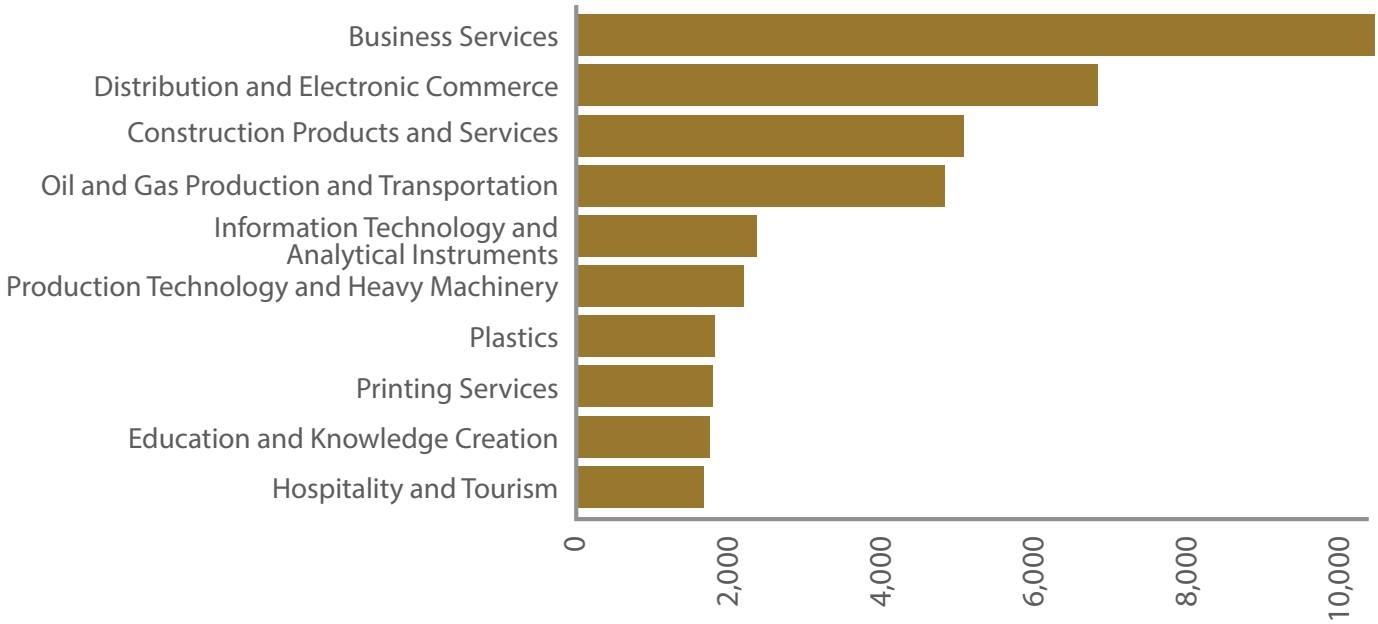
Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.

Employment by Cluster

This bar graph demonstrates Fort Bend County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

These plans highlight efforts in Fort Bend County to plan for disaster recovery and economic resiliency. The economic elements of the plans are identified.

Fort Bend County Hazard Mitigation Plan

Fort Bend County developed its first Hazard Mitigation Plan in 2005 because of increasing awareness that natural and man-made hazards, especially flood hazards, had the potential to affect the County and its citizens. Fort Bend County has experienced multiple hazard events between 1965 and 2010. Since 1965, Fort Bend County has received nine major Presidential Disaster Declarations. Of the nine Presidential Disaster Declarations that Fort Bend County received between 1965 and 2010, four of these events were floods, three were hurricanes and two were tropical storms. The original Hazard Mitigation Plan set the stage for long-term disaster resistance through identification of actions that will reduce the exposure of people and property to natural hazards.

Data Sources

Fort Bend County Overview

1. U.S. Census
2. U.S. Census
3. U.S. Census
4. Kinder Houston Area Survey
5. U.S. Census
6. U.S. Census
7. U.S. Census
8. Houston-Galveston Area Council
9. USDA Census of Agriculture
10. USDA Census of Agriculture
11. Fort Bend Economic Development Council

Recent Disruptions to the Economy

12. Community Impact Newspaper, Fort Bend County Office of Emergency Management
13. Saint Louis Federal Reserve, Bureau of Labor Statistics

Graphics

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GALVESTON COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

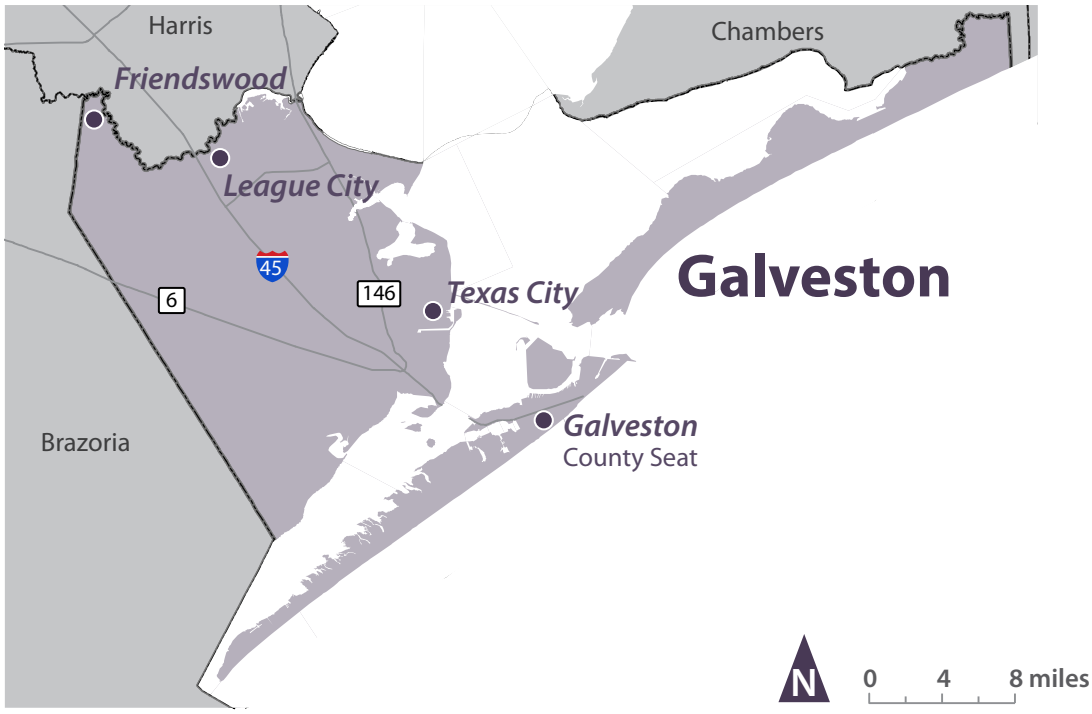
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Galveston County and its economy by providing key data points on the economy, demographics, and other useful information.

Galveston County Boundaries

- Galveston County
- Other counties
- Top 4 cities
- Major roads

County Seat: Galveston
Largest City: League City



Galveston County Overview

Galveston County, on the Texas Gulf Coastal Plain; includes Galveston Island, Galveston Bay, the mainland, Pelican Island, and the Bolivar Peninsula. Fifty-seven percent of the county is water (including Galveston Bay) , and its waterways are a crucial factor in its economic development. Home to the Port of Galveston and the Port of Texas City, Galveston County's economy rests on the twin pillars of maritime-related activities and the petrochemical industry. The Port of Galveston has an annual economic impact of slightly more than $3 billion and provides more than 3,330 jobs. It is served by two railroads: Union Pacific and Burlington Northern Santa Fe. The Port of Texas City has a direct business revenue of $6.4 billion and provides more than 6,758 direct jobs. The county's petrochemical complexes include two petroleum refineries, five organic chemical plants, and two plastics materials and resin manufacturing companies. The agricultural sector is relatively small, producing $8.25 million annually, with 89,554 acres under cultivation.

Tourism (over six million visitors per year), retail sales (over $4 billion annually), healthcare (home of the University of Texas Medical Branch with over 11,000 employees), and educational services are also important sectors of the economy. Galveston County has become increasingly more developed and urbanized, with 93.9 % of the population living in urban areas as of the 2010 U.S. Census. The 2016 U.S. Census estimates Galveston County's population at 329,431, and the population is projected to grow to 475,000 residents by 2040. Galveston County includes the cities of Bayou Vista (1,612), Clear Lake Shores (1,194), Dickinson (20,074), Friendswood (28,065), Galveston (50,550), Hitchcock (7,805), Jamaica Beach (1,065), Kemah (2,000), La Marque (16,457), League City (100,117), Santa Fe (13,205), and Texas City (48,262); along with the village of Tiki Islands (1,049). Its major transportation corridors include Interstate 45, State Highway 3, State Highway 6, State Highway 87, and State Highway 146.

Residents enjoy a farmers' market in Seabrook.

Recent Disruptions to the Economy

With sustained winds of 110 miles per hour and a 22-foot storm surge, 2008's Hurricane Ike devastated Galveston County. The City of Galveston was declared uninhabitable following the storm. The Bolivar Peninsula was submerged by the storm surge, and entire communities were swept away. The communities of Bayou Vista and Jamaica Beach were also nearly destroyed (FEMA's 2008 Hurricane Ike Impact Report contains a more detailed accounting of the destruction). Hurricane Ike occurred months before 2008's Great Recession, and the twin blows caused unemployment to spike by 2% from August to October of 2008.

In 2017, Hurricane Harvey caused significant damage across the county due to flooding. The effects from Harvey are still being assessed, and economic impacts are being tallied. The damages caused by Harvey are still being assessed. Initial FEMA estimates indicate nearly all of the homes in Hitchcock were reported as destroyed or damaged. The cities of Bayou Vista, Dickinson, Hitchcock, and Jamaica Beach, the Village of Tiki Island, and unincorporated communities along the Bolivar and San Leon peninsulas reported significant damage. Galveston's petrochemical industry largely avoided negative effects in the collapse in the price of a barrel of oil in 2014-2016, when prices plummeted from over $100 dollars a barrel to less than $30. The industry is largely based in refining crude oil and natural gas into other industrial products and fuels and remains profitable even during a downturn in price.

Economic Resilience Strategies

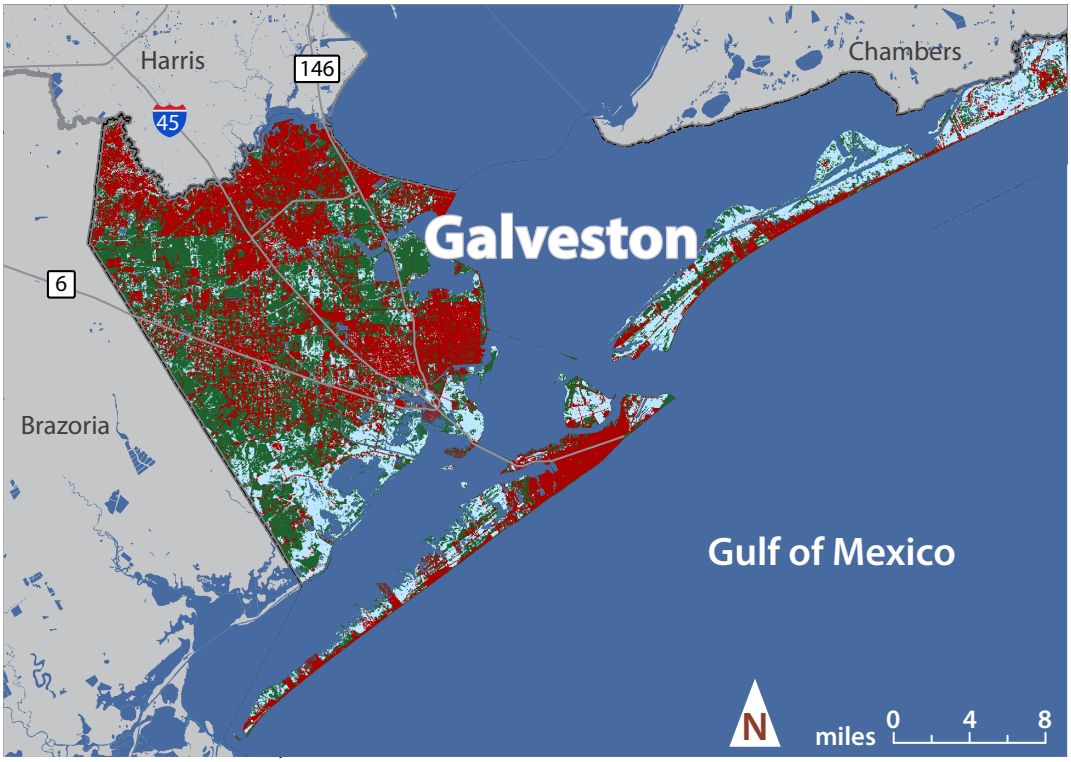
Galveston County's location along the Gulf of Mexico is both its economic strength (the basis for its petrochemical and maritime industries) and a source of vulnerability from storms. Implementing an effective barrier to storm surges could protect residents, businesses, and properties against much of the negative consequences of a hurricane. Hurricanes Ike and Harvey impacted petrochemical production, causing major plants to cease operations following the storm. Galveston's petrochemical complexes need a constant source of energy to maintain production; some of the plants generate their own power, while others are tied to the electrical grid.

Recommendations

Galveston County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Explore the potential funding mechanisms for creating a structural solution to provide protection from storm surge in Galveston County.
- Implement the Corps of Engineers study of the Texas City Hurricane Flood Protection Project to improve the current levee system to provide protection from a Category 5 hurricane.
- Create a standing committee to address issues to enhance the resilience of the petrochemical complexes in Galveston County.
- Investigate strategies for better coordinated countywide flood control strategies.

Land Use and Demographics



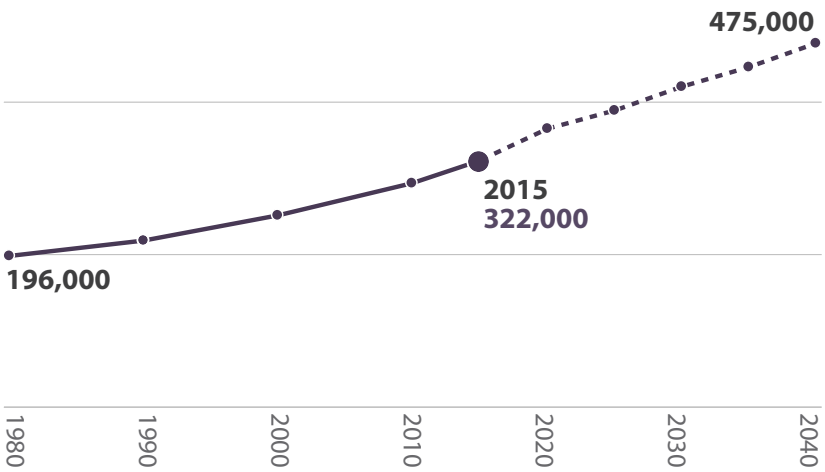
Galveston County Land Use

	Other counties
19%	Open water
31%	Developed Land
18%	Wetlands
32%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

The county's location on the Galveston Bay and the Gulf of Mexico are crucial to it's economy; this increases its vulnerability to storm events. Galveston and Galveston County has been largely urbanized, and has significant wetlands along the coast.

Population Growth Forecast

Galveston County grew by 65% from 1980 to 2015 and is expected to reach 475,000 residents by 2040.



Top 10 City Populations

The City of League City is Galveston County's largest incorporated municipality.

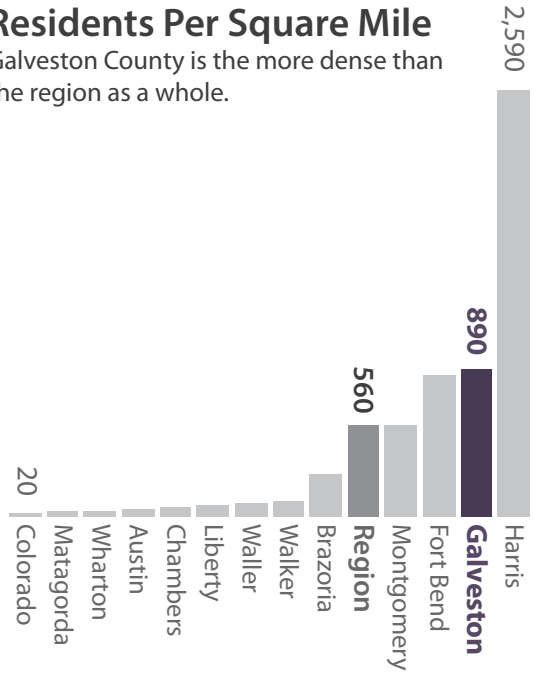
100,117	League City*
50,550	Galveston
48,262	Texas City
28,065	Friendswood*
20,074	Dickinson
16,457	La Marque
13,025	Santa Fe
7,805	Hitchcock
2,000	Kemah
1,612	Bayou Vista

*The municipality spans multiple counties. Only the population residing in Galveston County is shown here.

Land Use and Demographics

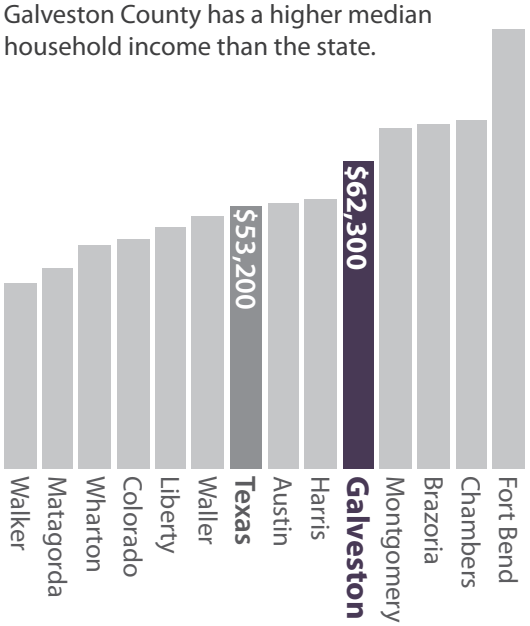
Residents Per Square Mile

Galveston County is the more dense than the region as a whole.



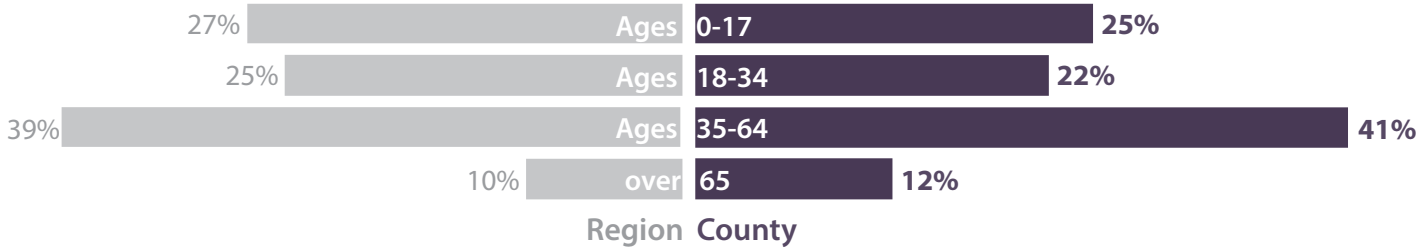
Median Household Income

Galveston County has a higher median household income than the state.



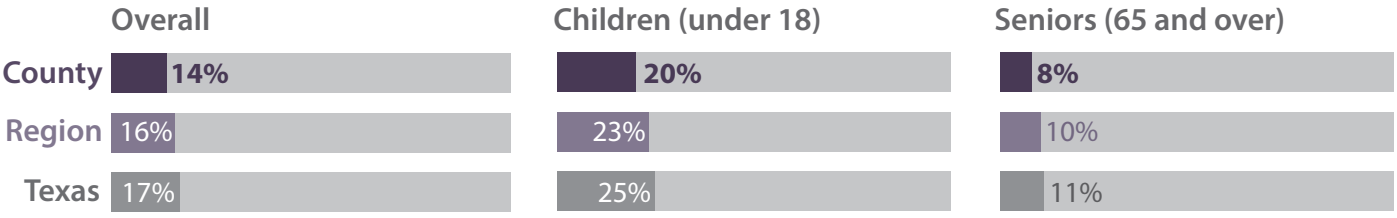
Age

Galveston County has a similar age profile as the region as a whole.



Poverty Rate

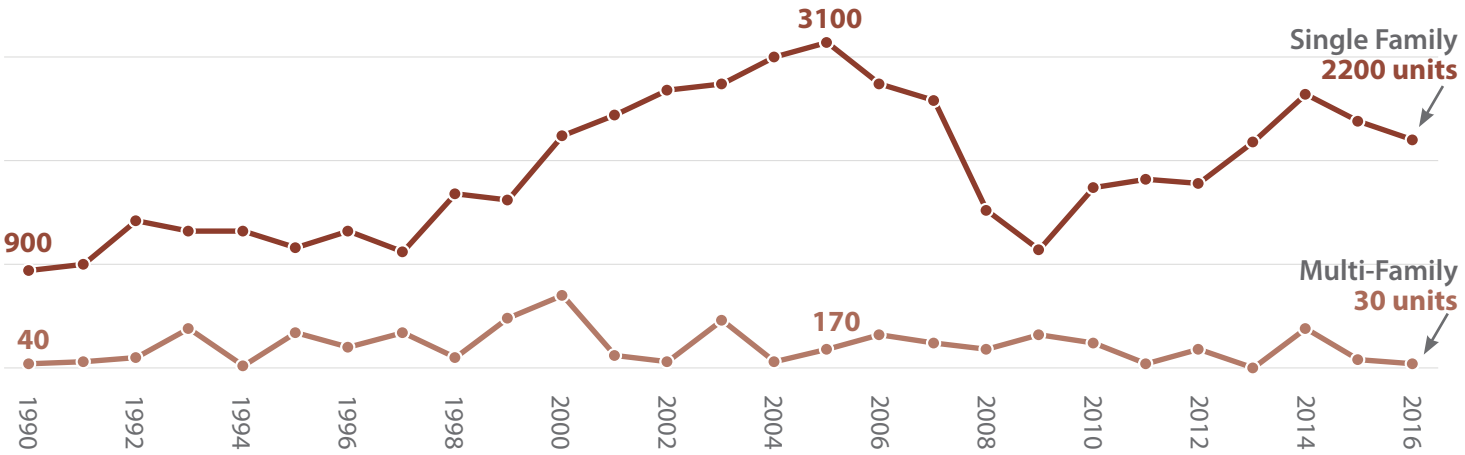
Galveston County has a lower rate of poverty than the region and state.



Housing

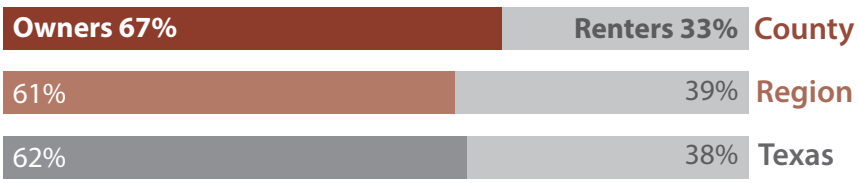
Building Permits Issued

Single-family construction is declining in the past few years while multi-family permits remain intermittent.



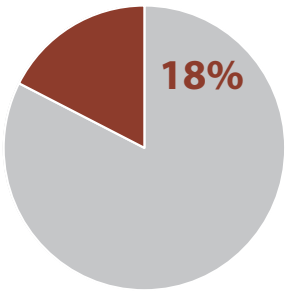
Housing Tenure

Galveston County has a higher rate of homeownership than the region or the state.



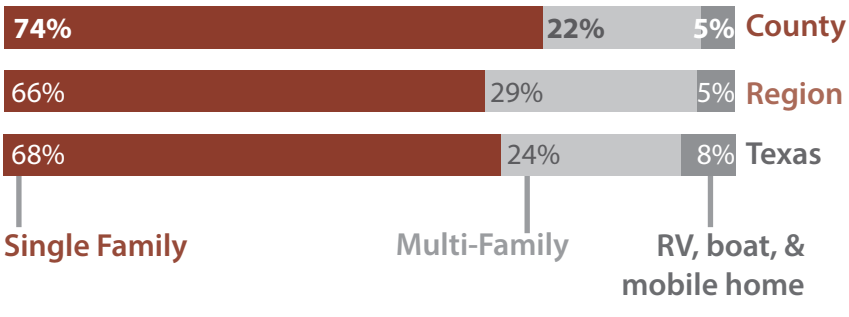
Vacant Housing Units

Around 18% of Galveston County's housing units are vacant.



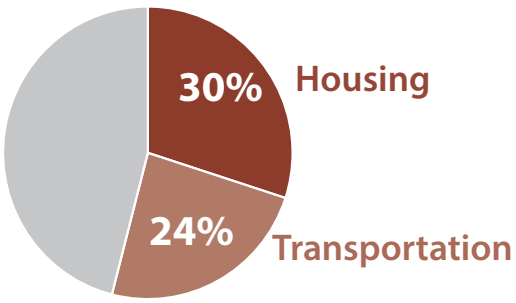
Housing Type

Galveston County's homes are mostly single-family residences.



Living Costs

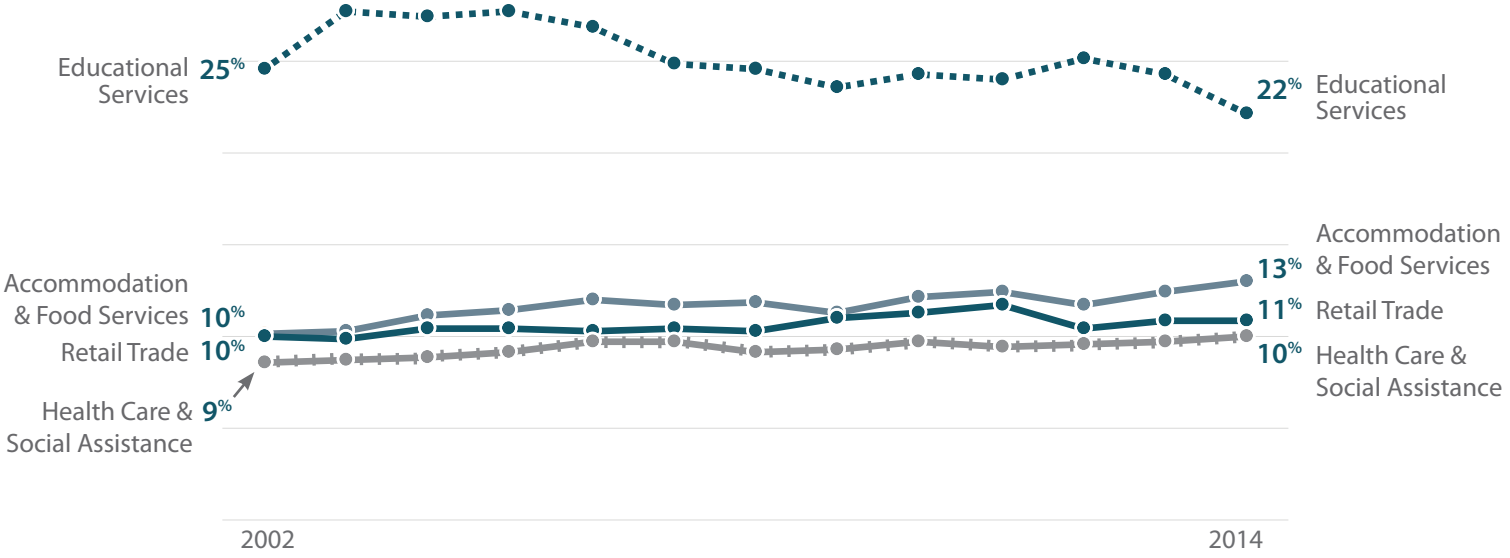
Galveston County households spend 54% of their income on transportation and housing.



Economy

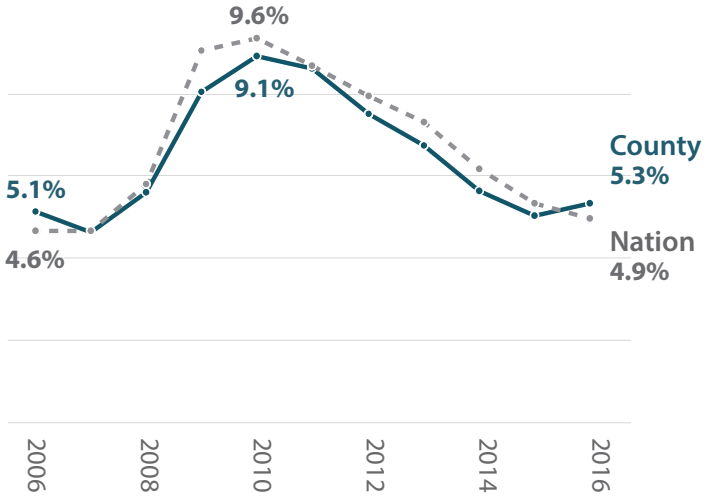
Top Industries by Percent of Overall Jobs

The Educational Services industry employs a much larger portion of Galveston County workers than any other industry, at nearly one quarter of all county employment in both 2002 and 2014.



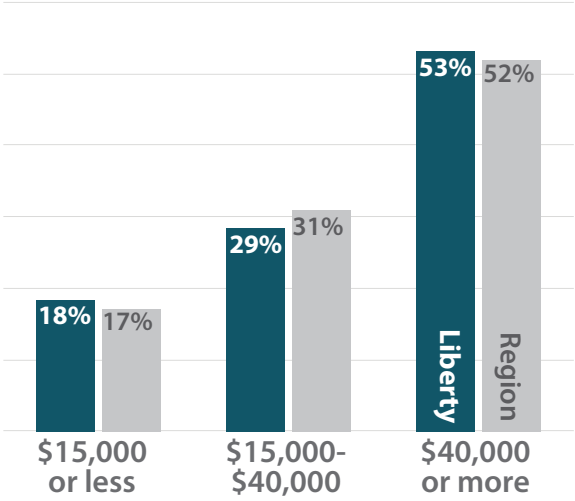
Unemployment Rate

Galveston County's unemployment mirrors national trends, and was higher than the nation in 2016.



Earnings of Residents

Around 53% of Galveston County residents earn more than $40,000 annually, a similar percentage to the region.



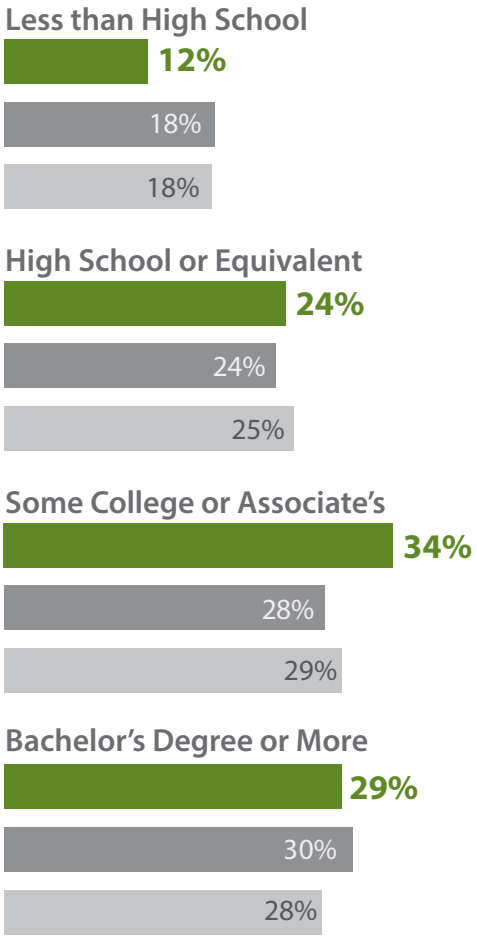
Education, Hazard Risks, and Commute

Median Earnings by Educational Attainment

A Galveston County resident with a graduate or professional degree makes, on average, $52,400 more than a resident with less than a high school education annually.

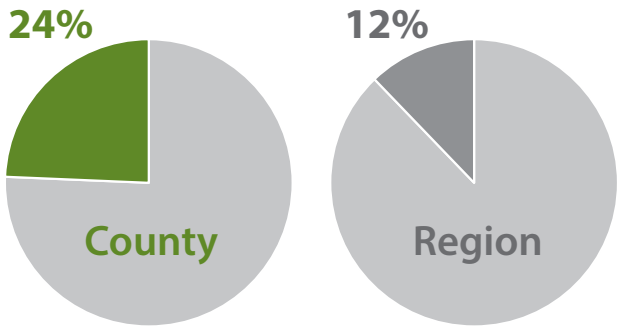
Educational Attainment

A lower percentage of Galveston County residents have completed a bachelor's degree or higher than the region and state.



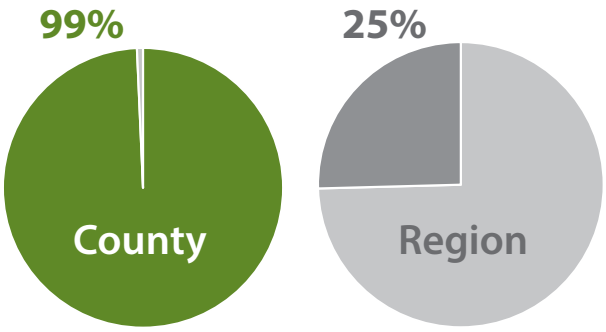
Residents in 100-year Floodplain

A larger percentage of Galveston County residents live in a 100-year floodplain than the region.



Residents in Hurricane Evacuation Zone

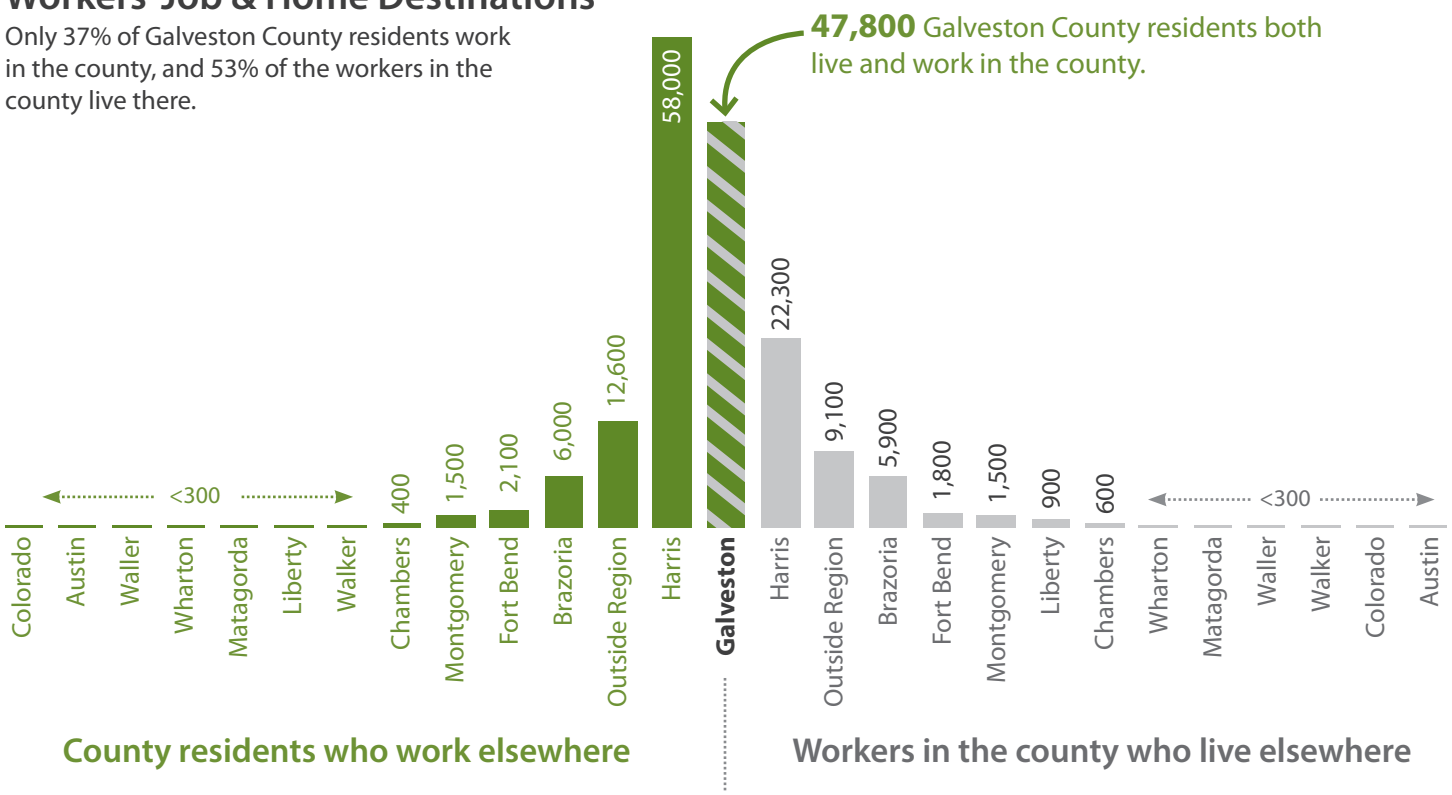
Nearly all Galveston County residents live in a hurricane evacuation zone, as opposed to 25% of the region's residents.



Education, Hazard Risks, and Commute

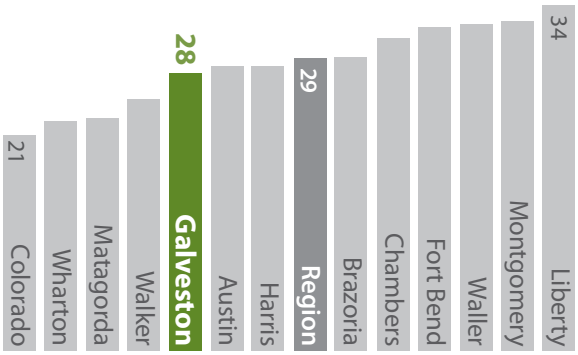
Workers' Job & Home Destinations

Only 37% of Galveston County residents work in the county, and 53% of the workers in the county live there.



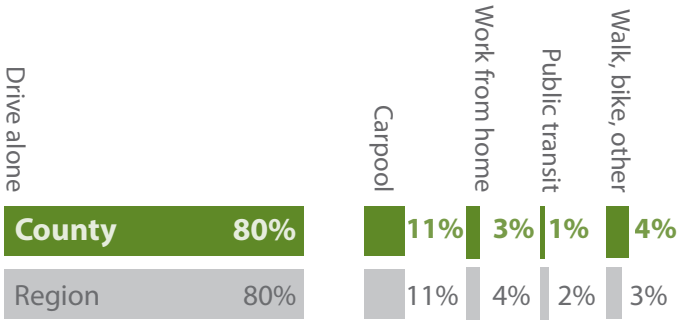
Mean Commute to Work (minutes)

Galveston County workers commute for about the same amount of time as the region as a whole.



Commute Mode to Work

Galveston County workers have a similar commute mode split as the region.



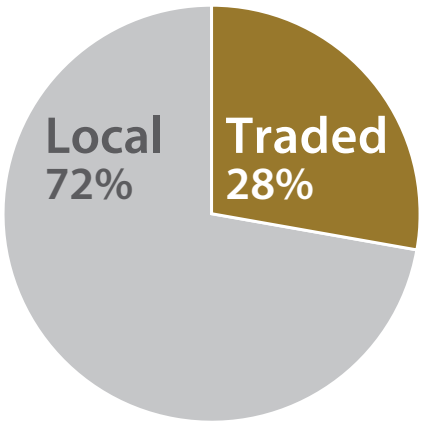
Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

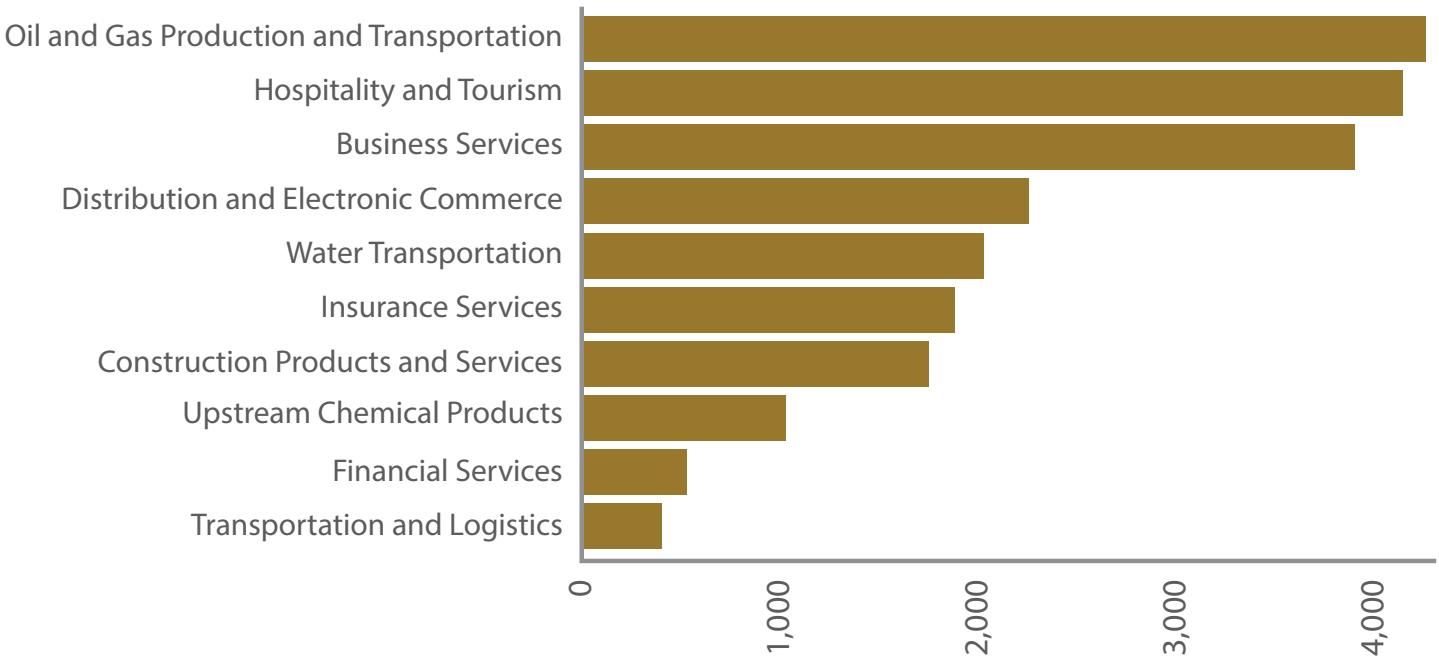
Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.



Employment by Cluster

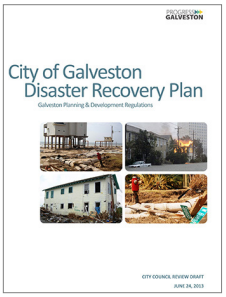
This bar graph demonstrates Galveston County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

These plans highlight efforts in Galveston County to plan for disaster recovery and economic resiliency. The economic elements of the plans are identified.

Galveston Disaster Recovery Plan



The City of Galveston Disaster Recovery Plan focuses on actions Galveston will take to accelerate the pace of rebuilding following a disaster event. The plan is designed to build on rather than repeat preparedness, mitigation, and emergency response recommendations in plans and reports prepared by the City and local stakeholder groups. This plan identifies steps necessary for reestablish economic activities after a disaster. This plan focuses on recovery after a disaster. Economic resilience elements focus on pre-disaster planning and mitigation & preparation as well. The document outlines several best practices for Economic Resilience, including a comprehensive disaster communication plan.

Other local plans that include economic development and economic resilience elements include:

- Clear Lake Shores Strategic Plan
- Dickinson Comprehensive Plan
- Friendswood FM528 Strategy
- Friendswood Hazard Mitigation Plan
- Friendswood Parks and Open Space Plan
- Friendswood Vision 2020
- Galveston Comprehensive Plan
- Galveston County Hazard Mitigation Plan
- Galveston Design Guidelines
- Galveston Erosion Response Plan
- Galveston Historic Sites
- Galveston Livable Centers Study
- Galveston Parks, Recreation, and Open Space Plan
- Galveston San Jacinto Plan
- Galveston Thoroughfare Plan
- Galveston Sustainable Return on Investment Case Study
- League City Growth and Development Report
- League City Local Mitigation Plan
- League City Main Street Implementation Plan
- Santa Fe Master Plan 2002
- Texas City Goals 100 Strategic Plan
- Texas City Strategic Plan 2012-2017
- Texas City Vision 2020 Comprehensive Plan

Data Sources

Galveston County Overview

1. U.S. Census Gazetteer Files
2. TxDOT's 2014 Texas Port Report
3. Ibid.
4. USDA 2012 Census of Agriculture
5. The Economic Impact of Tourism on Galveston Island, Texas, 2015 Analysis
6. Texas Almanac
7. UTMB Health Data Reference Card
8. Houston-Galveston Area Council Projection

Recent Disruptions to the Economy

9. Hurricane Ike Impact Report
10. Bureau of Labor Statistics
11. FEMA
12. FEMA

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

HARRIS COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

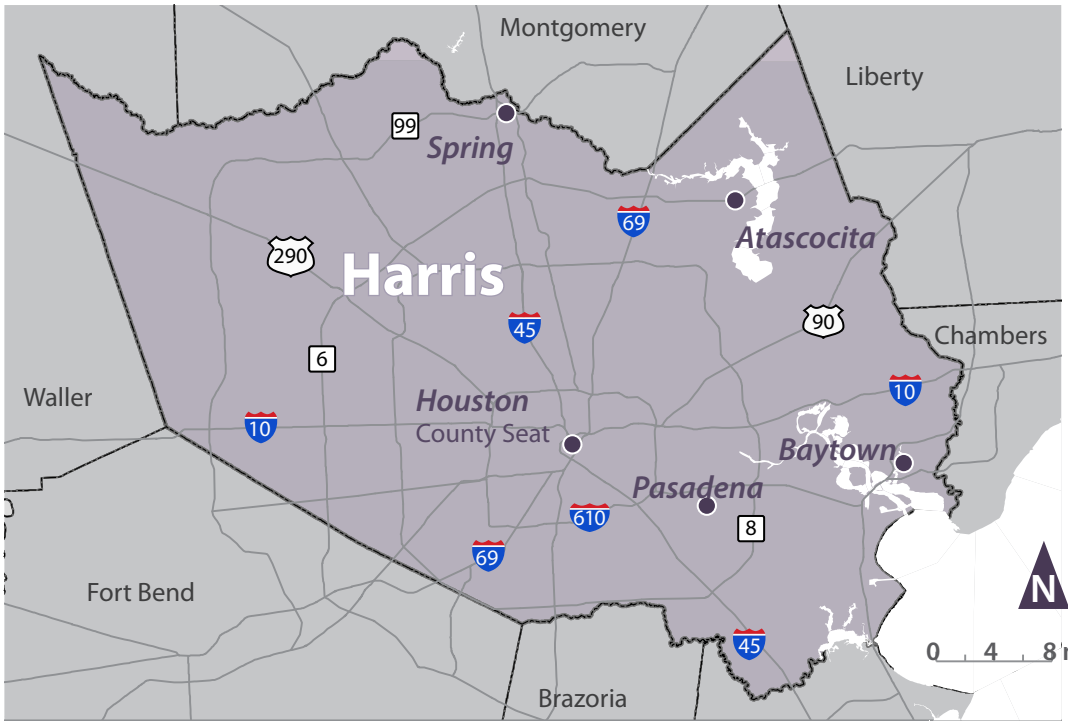
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Harris County and it's economy by providing key data points on the economy, demographics, and other useful information.

Harris County Boundaries

- Harris County
- Other counties
- Top 5 cities
- Major roads

County Seat: Houston
Largest City: Houston



Harris County Overview

Harris County is the most populous county in Texas and the third most populous county in the nation, its estimated the population will grow from today's 4.5 million to 6.3 million by 2040. The population has grown by 67 percent since 1990, twice as fast as the national rate. Harris County has a greater population than all but 24 U.S. states. The City of Houston is the county seat of Harris County. It is the largest city in Texas and the fourth largest city in the nation with an estimated population of 2.3 million. Baytown and Pasadena have estimated populations of 67,000 and 150,000, respectively. Other Harris County cities with populations above 10,000 include Bellaire, Deer Park, Friendswood, Galena Park, Humble, Jacinto City, Katy, La Porte, Seabrook, South Houston, Tomball, Webster, and West University Place. Harris County is on the Texas Gulf Coast Plain, with Piney Woods extending in from the north. Harris County is bounded to the south-east by Galveston Bay. The main waterways are the San Jacinto River in the east (which is dammed to create Lake Houston reservoir), Spring Creek in the north, Clear Creek in the south, and Buffalo Bayou in the center.

Energy is the basis of nearly 30% of Harris County's economic output; which is a significant structural shift over the past thirty years, from when the energy sector's base employment exceeded seventy five percent. Harris County is home to the Texas Medical Center, the largest medical complex in the world; hosting 10 million patients a year, employing over 100,000 employees, and generating a GDP of $25 billion dollars. In addition to patient care, the Texas Medical Center is an internationally significant hub for biomedical research. NASA's Johnson Space Center in the southeastern Bay Area of Harris County provides 3,000 direct jobs and nearly 7,500 contract positions with an estimated economic impact of $2.47 billion in Texas. The Port of Houston is one of the world's busiest ports, creating 56,113 direct jobs and generating an estimated $264.9 billion in statewide impact.

Harris County is home to 20 Fortune 500 companies. Business services is the largest economic cluster by employment in Harris County; there are over a quarter million workers employed in this sector. There are nearly 100,000 employers in the county. Harris County's population growth has supported an ongoing expansion in the retail, construction, and services sectors. The value of annual retail sales in Harris County is $61.7 billion. Harris County added 179,000 single family homes from 2006-2016; over 82 percent of this growth was in unincorporated Harris County. The un-urbanized far west and east areas of Harris County has an estimated agricultural production of over $65 million annually; 73% of the production was in crop sales and 27% was in livestock sales.

Buffalo Bayou and Downtown Houston

Recent Disruptions to the Economy

Harris County's location and topography make it vulnerable to storms coming in from the Gulf of Mexico. Hurricane Harvey dropped over 50 inches of rain in areas of Harris County, and inundated 25 to 30 percent the county. The economic impacts of Hurricane Harvey are still being calculated. Initial estimates indicate that 120,000 structures flooded in Harris County and $23 billion dollars in damage occurred Harris and Galveston counties. Harris County's economy was also affected by the Memorial Day (2015) and Tax Day (2016) floods. Flooding also occurred during Hurricane Ike in 2008. During that storm, a 10-12-foot surge flooded the southeastern portion of the county. Hurricane Ike is estimated to have had $103.8 billion dollars in economic impact to Harris County. The largest losses were in the wholesale sector, totaling $38.8 billion. Winds knocked out power lines to some areas for months afterwards.

Harris County's dependence on the energy industry was evident in wake of the collapse in the price of a barrel of oil. Prices dropped from over $100 a barrel in 2014 to under $30 in 2016. The industry lost an estimated 70,000 jobs; with knock on effect felt in retail and construction. Given the strong prices for oil during the Great Recession (2008-2012), Harris County's economy was somewhat shielded from the national downturn, although the unemployment rates peaked at 8.6 percent in July of 2009. The Texas drought of 2010-2011 caused losses for the agricultural sector, and increased infrastructure maintenance costs in developed areas from cracked pipes and shifting roadbeds.

Economic Resilience Strategies

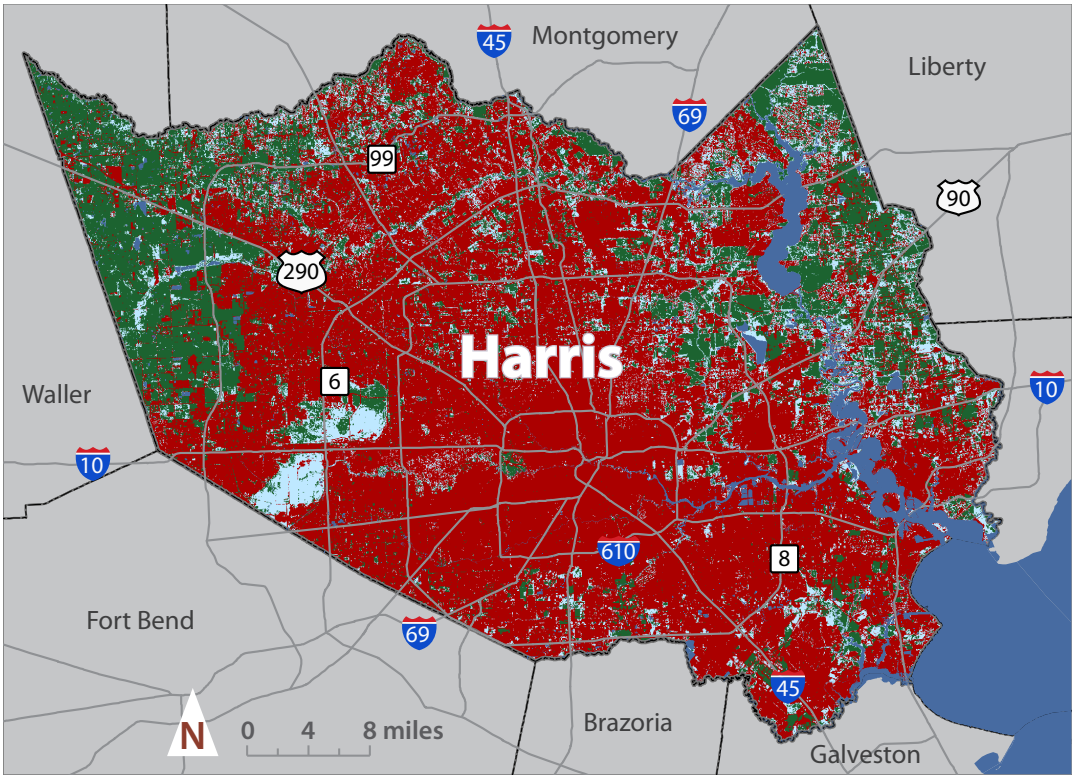
After Harvey, Harris County is increasing efforts to enhance its resilience to flooding. Harris County has extensive flood control infrastructure which has proven to be insufficient to protect developed areas from the types of storm events the county is experiencing. The county remains vulnerable to a large windstorm/storm surge event. A direct hit by a category five hurricane to the petrochemical complexes in southeastern Harris County would be an environmental catastrophe and would have notable economic consequences to both the national and international economy. Harris County's transportation infrastructure has not been able to keep pace with its population growth, and there is little available space to increase highway capacity in the urban core. Vehicular and freight mobility are vital to the economic well-being of Harris County. As nodes of commercial, residential, and industrial development continue to grow outside of the core employment centers of Harris County, their connectivity to each other and the core needs to increase to maintain quality of life and economic competitiveness.

Recommendations

Harris County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Participate in the creation of a regional flood control management organization.
- Develop comprehensive flood control plans for every watershed in Harris County.
- Revisit development standards and clarify the Municipal Utility District's responsibilities in drainage and flood control.
- Develop a report to explore the potential funding mechanisms for creating a structural solution to provide protection from storm surge in Harris County.
- Investigate the costs and benefits of emerging mobility technologies including electrification, rideshare, and automated vehicles along with high capacity transit.

Land Use and Demographics



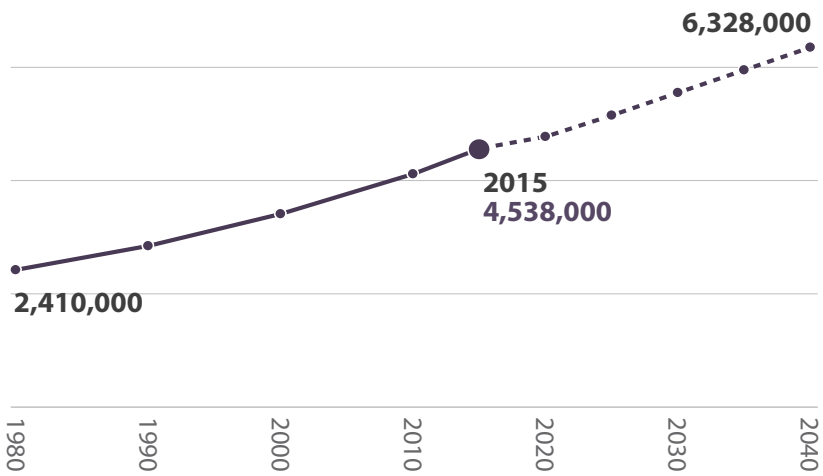
Harris County Land Use

	Other counties
3%	Open water
63%	Developed Land
12%	Wetlands
23%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

Harris County is largely urbanized but maintains agricultural production and the far west of the county.

Population Growth Forecast

Harris County grew by 88% from 1980 to 2015 and is expected to reach 6,328,000 residents by 2040.



Top 10 City Populations

The City of Houston is Harris County's largest incorporated municipality.

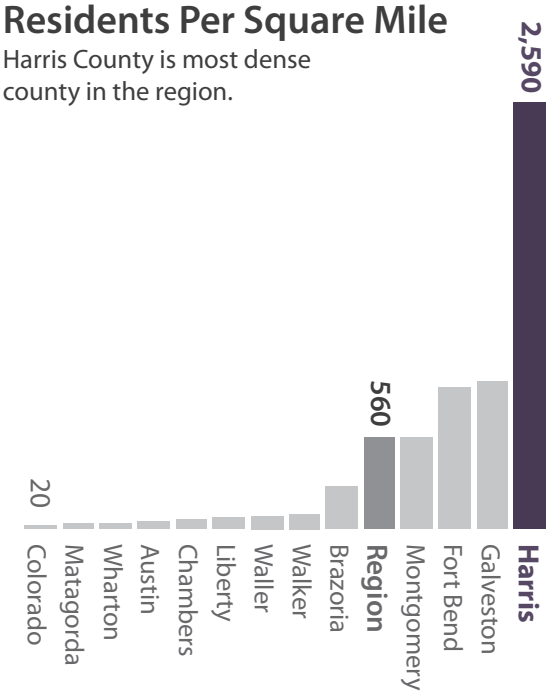
2,254,546	Houston*
153,351	Pasadena
71,854	Baytown*
35,086	La Porte
33,782	Deer Park
18,593	Bellaire
17,463	South Houston
15,561	Humble
15,516	West University Place
13,552	Seabrook

*The municipality spans multiple counties. Only the population residing in Harris County is shown here.

Land Use and Demographics

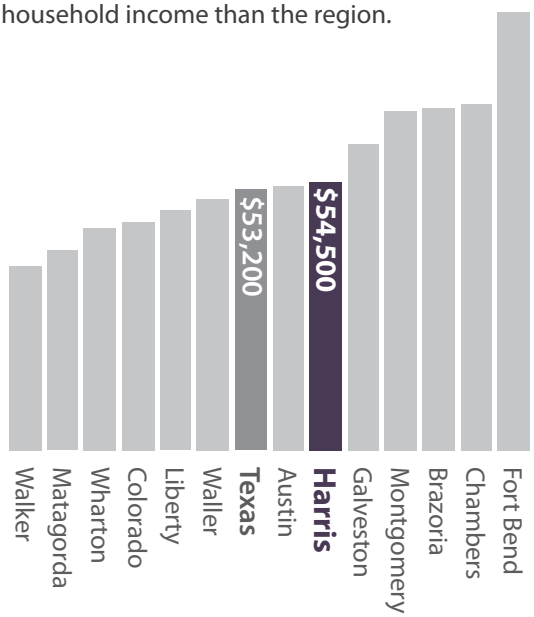
Residents Per Square Mile

Harris County is most dense county in the region.



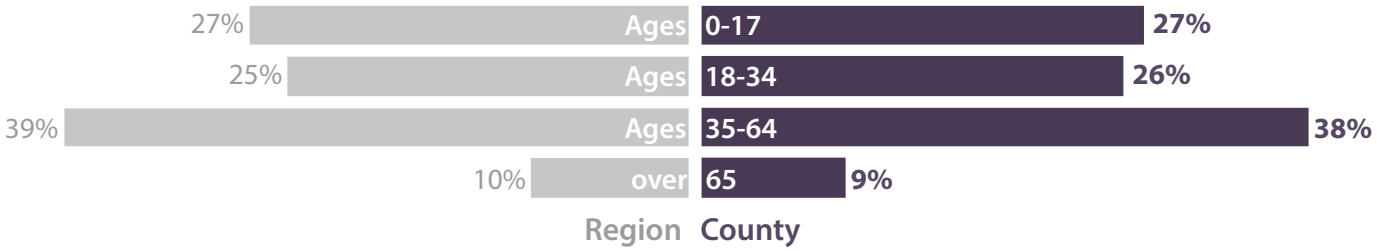
Median Household Income

Harris County has a slightly higher median household income than the region.



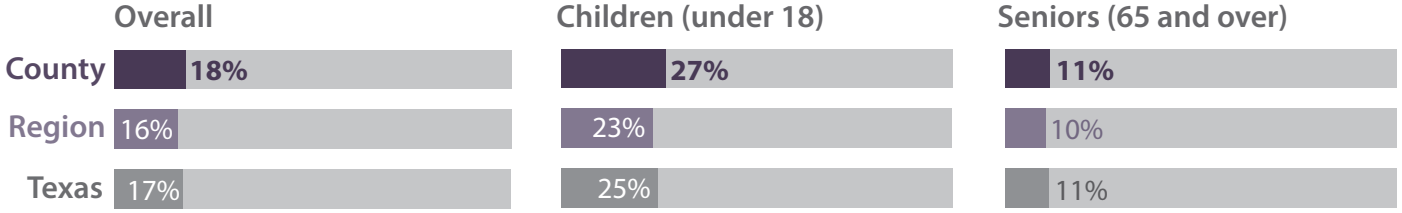
Age

Harris County has a similar age profile as the region.



Poverty Rate

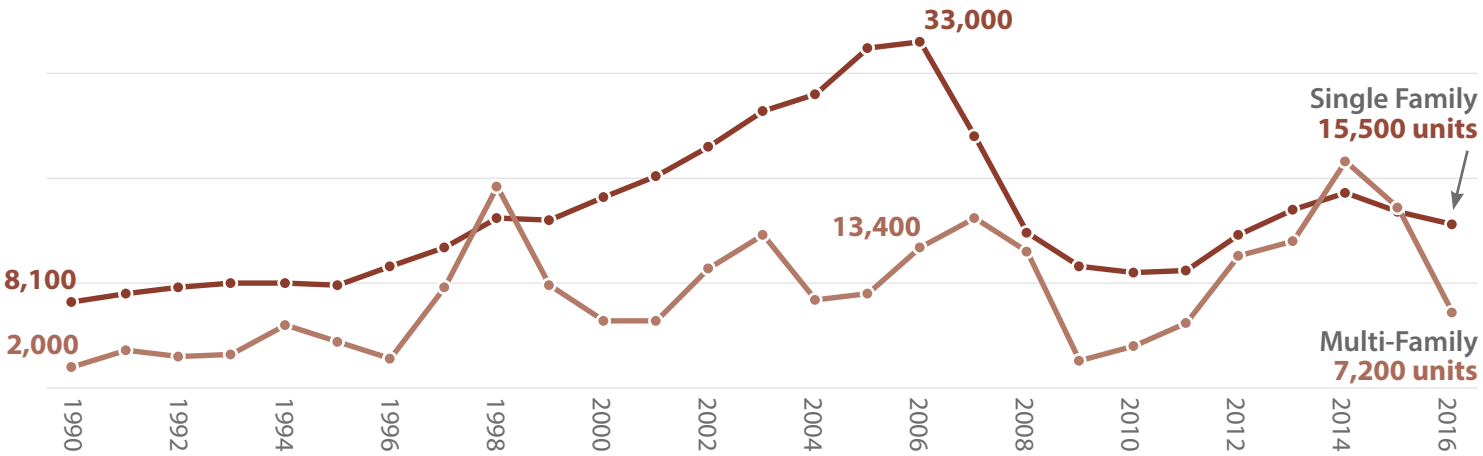
Harris County has a higher rate of poverty than the region and state.



Housing

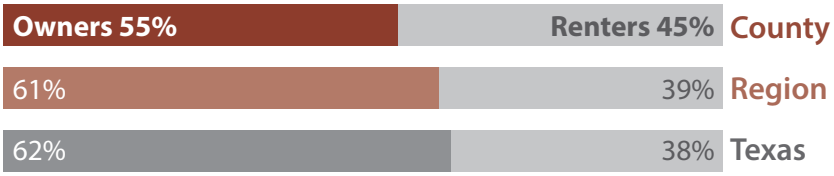
Building Permits Issued

Single-family construction has not recovered from a peak in 2006 while multi-family permits have dropped sharply between 2014 and 2016.



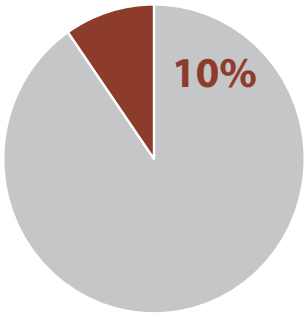
Housing Tenure

Harris County has a lower rate of homeownership than the region or the state.



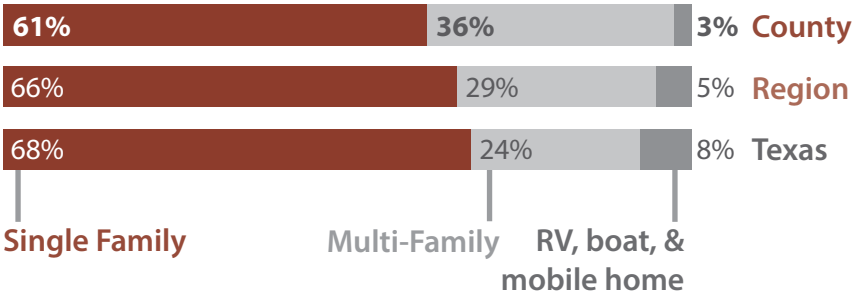
Vacant Housing Units

Around 10% of Harris County's housing units are vacant.



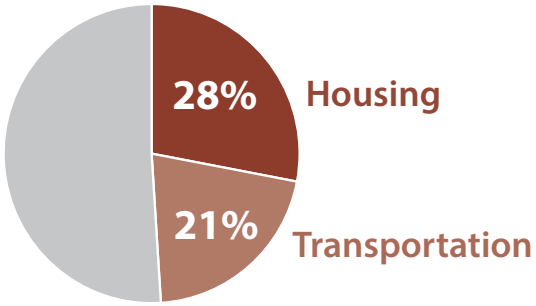
Housing Type

Harris County has a lower portion of single family homes than the region.



Living Costs

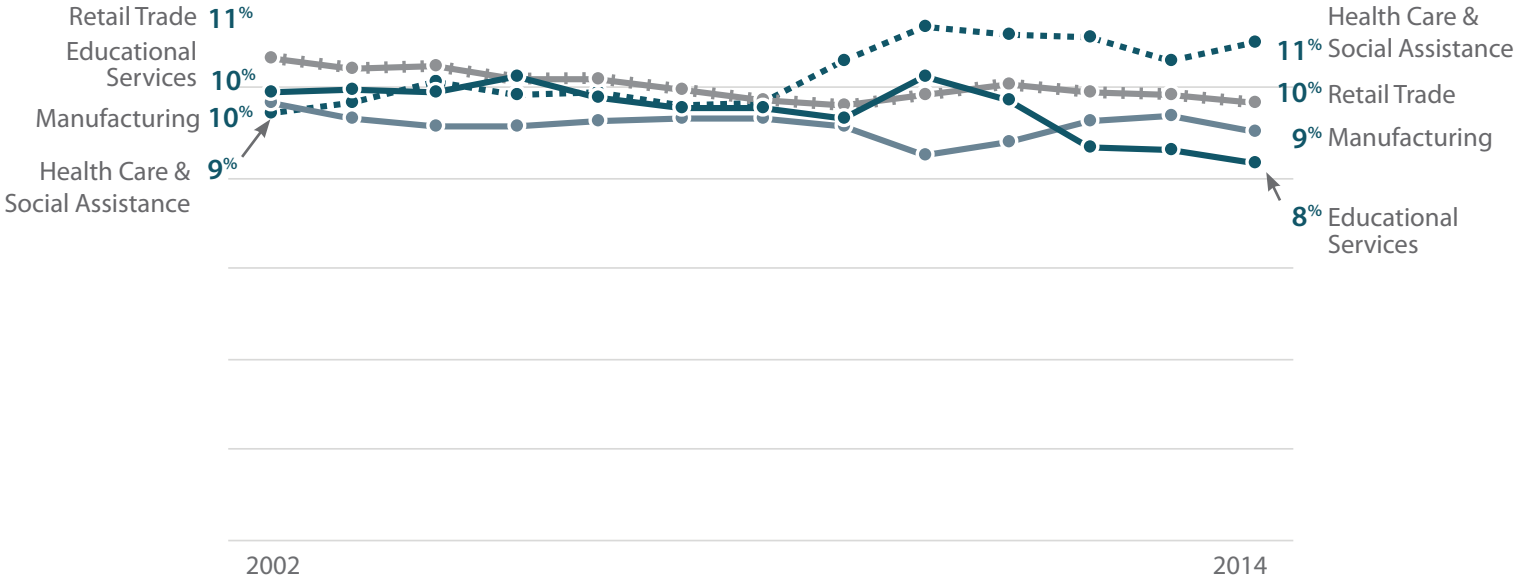
Harris County households spend 49% of their income on transportation and housing.



Economy

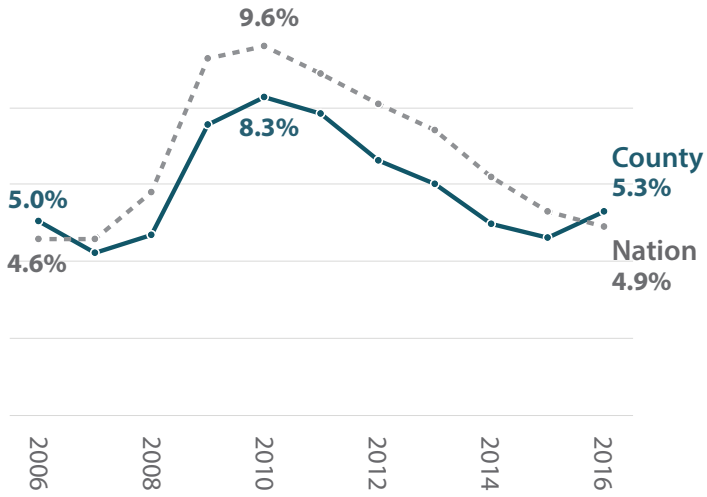
Top Industries by Percent of Overall Jobs

Employment in Harris County remained diverse between 2002 and 2014, with each of the top four industries employing more people in 2014 than in 2002.



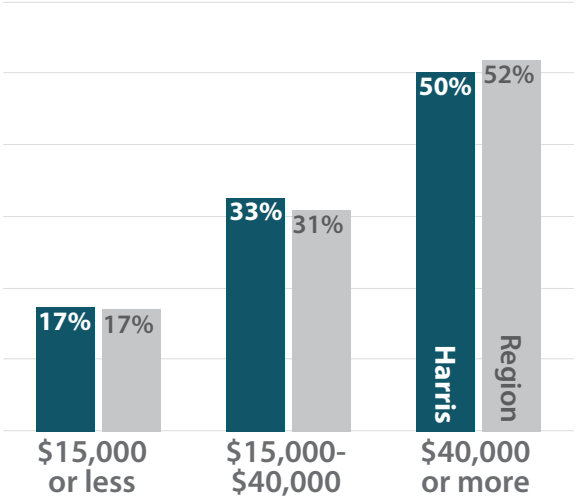
Unemployment Rate

Harris County's unemployment mirrors national trends, and was higher than the nation in 2016.



Earnings of Residents

Half of Harris County residents earn more than $40,000 annually, a lower percentage than the region.



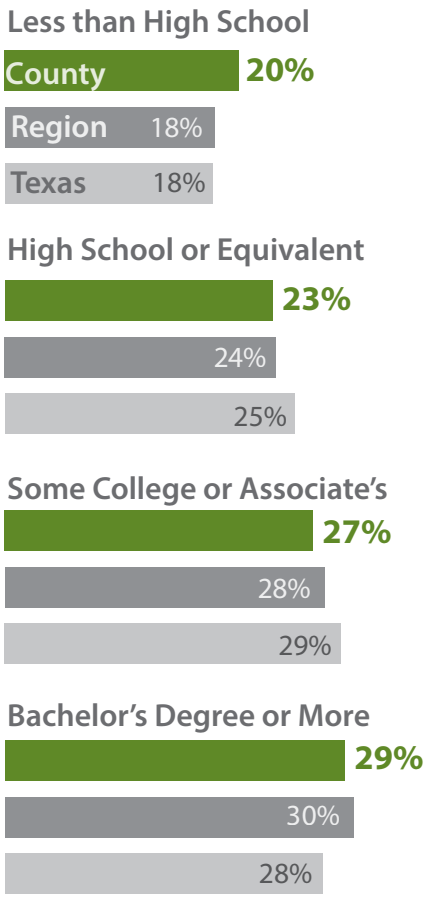
Education, Hazard Risks, and Commute

Median Earnings by Educational Attainment

A Harris County resident with a graduate or professional degree makes, on average, $54,400 more than a resident with less than a high school education annually.

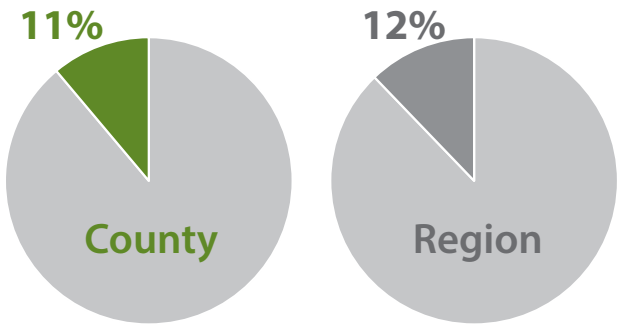
Educational Attainment

Harris County has a similar educational attainment split as the region and state.



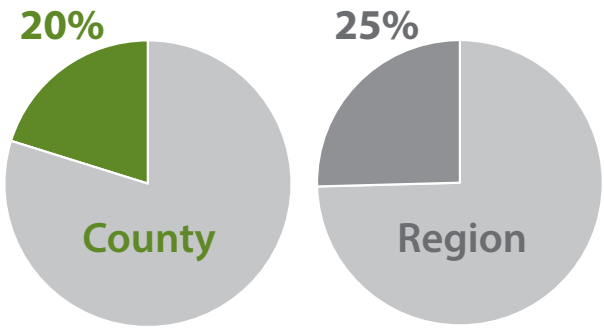
Residents in 100-year Floodplain

About the same percentage of Harris County residents live in a 100-year floodplain as the region.



Residents in Hurricane Evacuation Zone

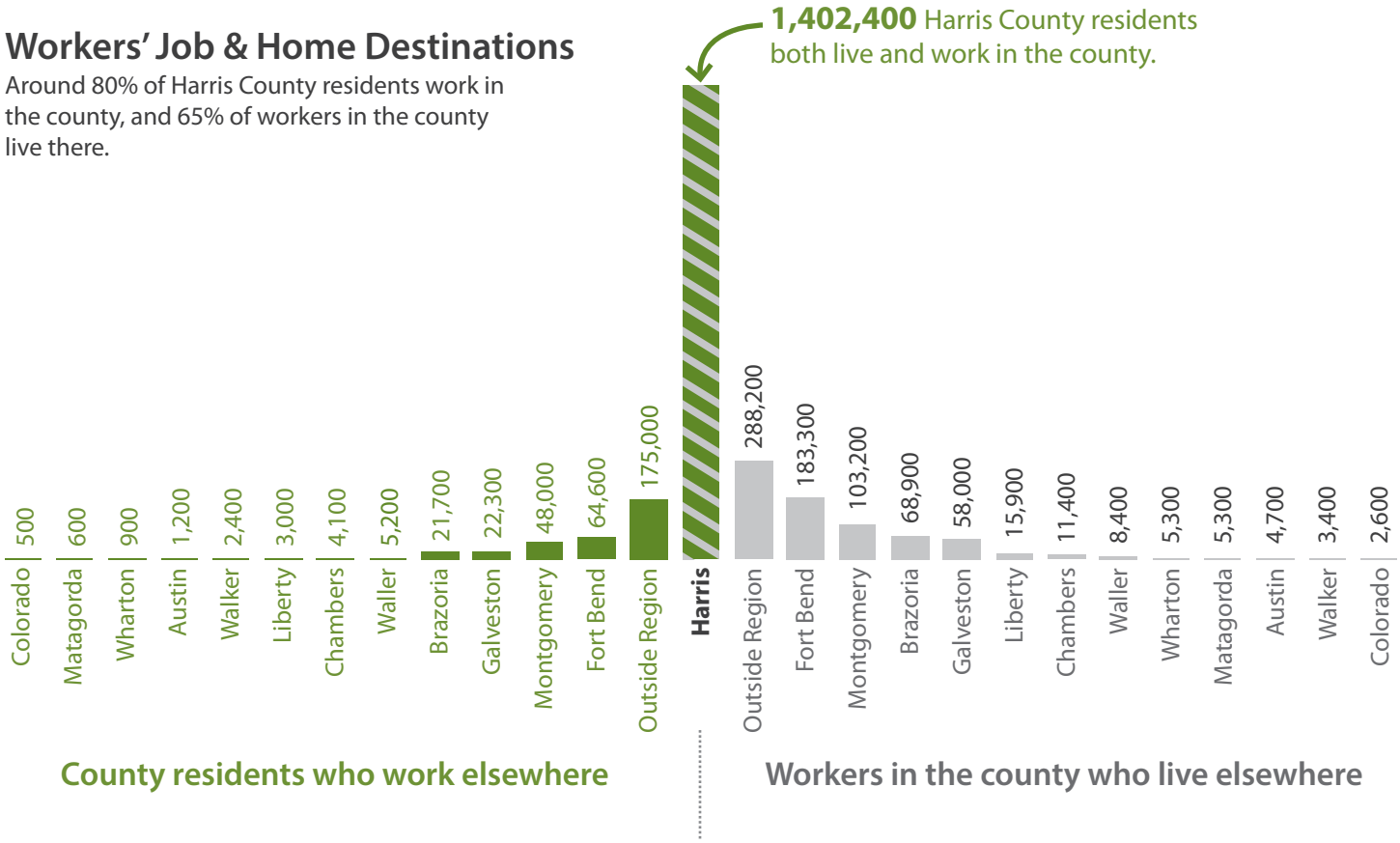
Only 20% of Harris County residents live in a hurricane evacuation zone, as opposed to 25% of the region.



Education, Hazard Risks, and Commute

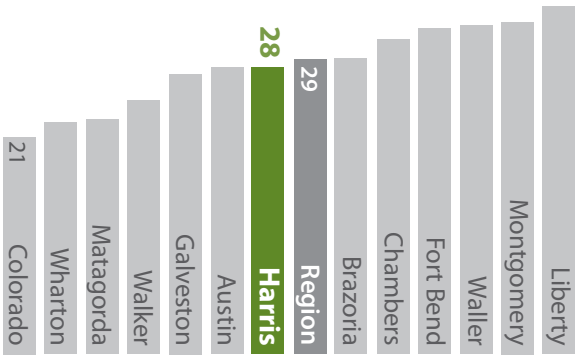
Workers' Job & Home Destinations

Around 80% of Harris County residents work in the county, and 65% of workers in the county live there.



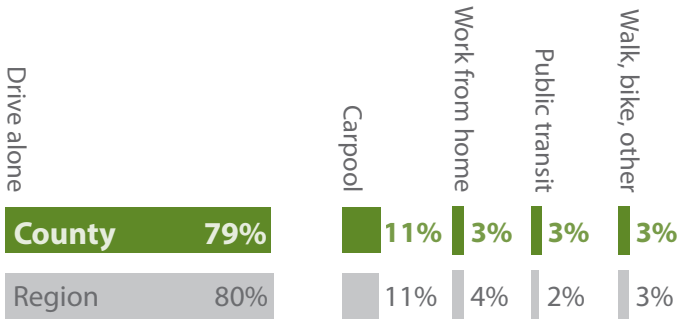
Mean Commute to Work (minutes)

Harris County workers commute for about the same amount of time as the region as a whole.



Commute Mode to Work

A lower percentage of Harris County workers drive to work compared to the region as a whole.



Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

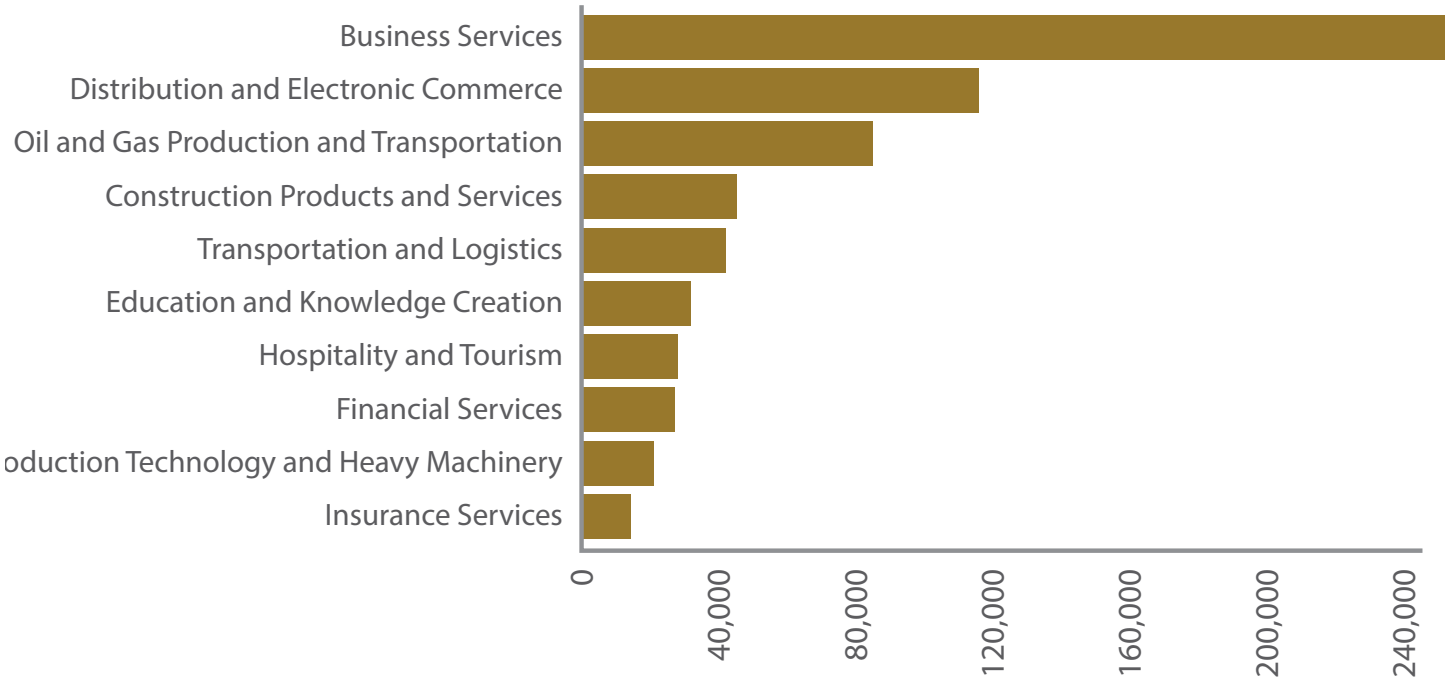
Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.

Employment by Cluster

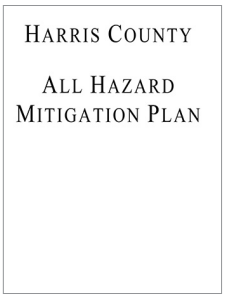
This bar graph demonstrates Harris County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

This plan highlights the efforts in Harris County to plan for disaster recovery and economic resiliency.

Harris County All Hazard Mitigation Plan



Harris County is vulnerable to a wide range of natural hazards, including flooding, tornadoes, tropical storms and hurricanes. These hazards threaten the safety of residents and have the potential to damage or destroy both public and private property, disrupt the local economy and impact the overall quality of life of individuals who live, work and play in the county. The Harris County All Hazard Mitigation Plan is a logical first step toward incorporating hazard mitigation principles and practices into the routine government activities and functions of the county planning area. The mitigation actions noted in this Plan go beyond recommending structural solutions to reduce existing vulnerability. Local policies addressing community growth, incentives to protect natural resources, and public awareness and outreach campaigns are examples of other measures that can be used to reduce the future vulnerability of Harris County to identified hazards.

Data Sources

Harris County Overview

1. Houston-Galveston Area Council Projection
2. U.S. Census
3. U.S. Census
4. Federal Reserve Bank of Dallas Houston Branch
5. Greater Houston Partnership
6. NASA Estimated Economic Impact Report
7. 2014 Port of Houston Economic Impact Results
8. American Association of Port Authorities
9. US Cluster Mapping
10. US Census
11. Harris County
12. USDA Census of Agriculture

Recent Disruptions to the Economy

13. Harris County Flood Control District
14. Harris County Flood Control District
15. Reuters
16. Hurricane Ike Impact Report
17. Hurricane Ike Impact Report
18. Institute for Regional Forecasting
19. St. Louis Federal Reserve
20. U.S. Bureau of Labor Statistics

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

LIBERTY COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

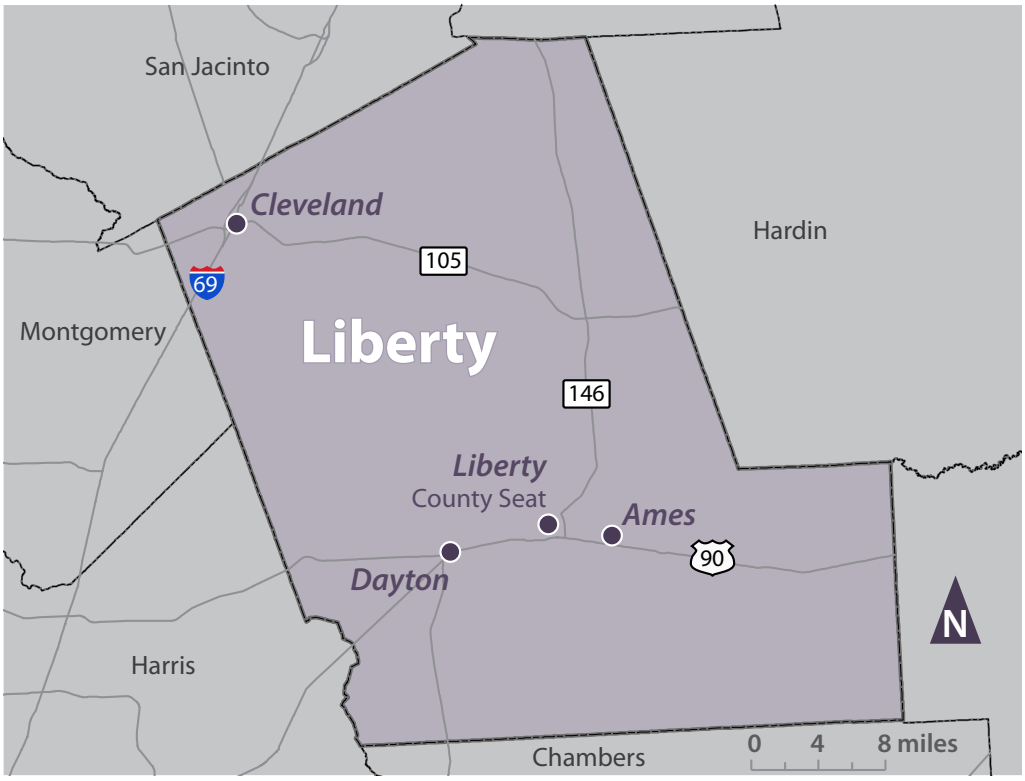
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Liberty County and it's economy by providing key data points on the economy, demographics, and other useful information.

Liberty County Boundaries

- Liberty County
- Other counties
- Top 4 cities
- Major roads

County Seat: Liberty
Largest City: Liberty



Liberty County Overview

Liberty County is in the northeastern portion of the Houston metropolitan area, in the transition zone between the Texas' Gulf Coastal Plain and Piney Woods. Liberty County is divided approximately in half from north to south by the Trinity River, the primary waterway in the county, just downstream from the Lake Livingston dam. The east fork of the San Jacinto River flows through the northeast part of the county, just to the west of the City of Cleveland. Cleveland, Dayton, and Liberty (the county seat) are the three largest communities in the county. Liberty County is also home to the communities of Ames, Daisetta, Dayton Lakes, Devers, Hardin, North Cleveland, and Plum Grove. A small portion of the City of Old River-Winfree, extends into Liberty County from Chambers County.

The county's transportation corridors include U.S. Highway 90 and U.S. Highway 69 (which crosses the county in the far northwest). State Highways 146, 321, 1008, and 770, generally running north to south, are important to mobility in the county. These routes provide connections with other parts of the Houston metropolitan area. Liberty County is served by Union Pacific and the Burlington Northern Santa Fe railroads. Only 17 percent of Liberty County residents work in the county, and 15,900 Liberty County residents work in Harris County. The largest sector of the county's economy is retail; manufacturing is also a key sector. Between 41-50 percent of the land is considered prime farmland. Liberty County's rice production has decreased from more than 100 farmers in the 1970s to four producers today. The annual market value of agricultural production in 2012 was $34.9 million; cattle and lumber, along with rice, are the principal agricultural products. In the 1990s four major corrections facilities began operations Liberty County, providing over 1,000 jobs.

The Liberty Economic Development Corporation has worked to pro-actively provide adequate fire protection service for industries in the county through the purchase of a tanker truck.

Recent Disruptions to the Economy

Hurricane Harvey, the fifth federally declared flood disaster in Liberty County in 27 months, caused extensive flooding the county. Mandatory evacuations were ordered for more than 7,000 homes. The Trinity River overflowed its banks and backed up into the City of Liberty. The Trinity River Authority released a record 110,600 cubic feet of water per second from the Lake Livingston Dam. Flooding in the county has historically impacted residential areas more than businesses.

The 2014-2016 drop in the price of a barrel of oil negatively affected the oil field services companies in the county; there were few businesses that closed, but many companies were forced to lay off workers. The City of Cleveland lost over 650 jobs between 2008 and 2010 with the closure of the Georgia-Pacific paper plant and the closure of their hospital, which negatively impacted the county as a whole.

Economic Resilience Strategies

Liberty County is expecting an influx of residents and retail development as the Houston-Galveston metropolitan area's population continues to grow. Liberty County serves as a bedroom community for workers in the petrochemical complexes for both the east Harris/west Chambers County area, and in the Beaumont-Port Arthur area. With the construction of State Highway 99, several major master planned communities have been announced west of the Trinity River.

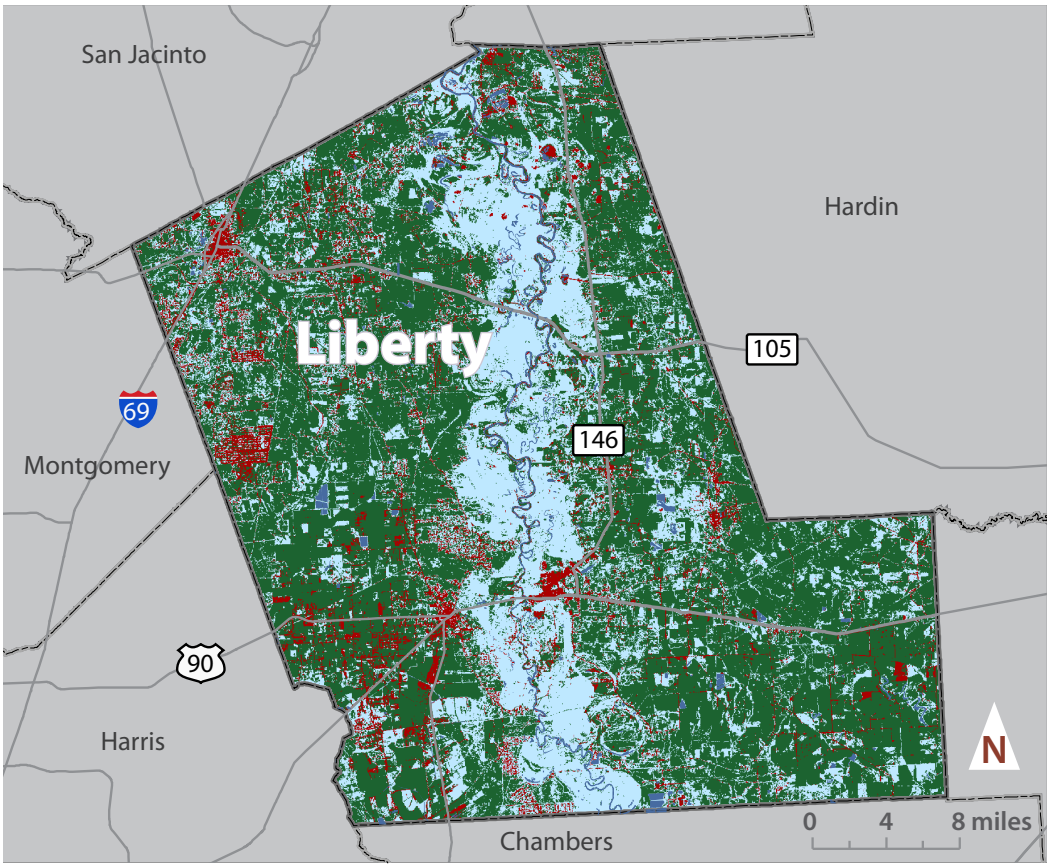
Petrochemical manufacturers and industrial services businesses are locating in the southern portion of Liberty County along State Highway 146, just north of the City of Mont Belvieu (the majority of Mont Belvieu is in Chambers County). Constraints for additional industrial manufacturing facilities include the Liberty County's status as a non-attainment area for federal air quality standards, the volume of water resources needed for manufacturing, and the need for Insurance Service Office (ISO)-rated fire service. While railroads are a critical part of the county's economy and infrastructure, extensive traffic delays are common at the street level railroad crossings, impacting the quality of life for residents. The lack of continuous sidewalks in the county's urbanized areas is an additional quality of life/ infrastructure issue. Addressing the county's flooding and drainage issues are key concerns facing Liberty County's future growth and development.

Recommendations

Liberty County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Develop a county-level flood protection and drainage plan for Liberty County.
- Create an infrastructure development plan for industrial development along the State Highway 146 corridor.
- Coordinate with the Texas Department of Transportation (TxDOT), local municipalities, and railroads to create a plan to address traffic caused by street level (at grade) railroad crossings
- Enhance the standards of the County's fire service to meet an Insurance Service Office (ISO) Public Protection Classification rating of 3 or 4.
- Coordinate with TxDOT and local municipalities to create a sidewalk plan for Liberty County.

Land Use and Demographics



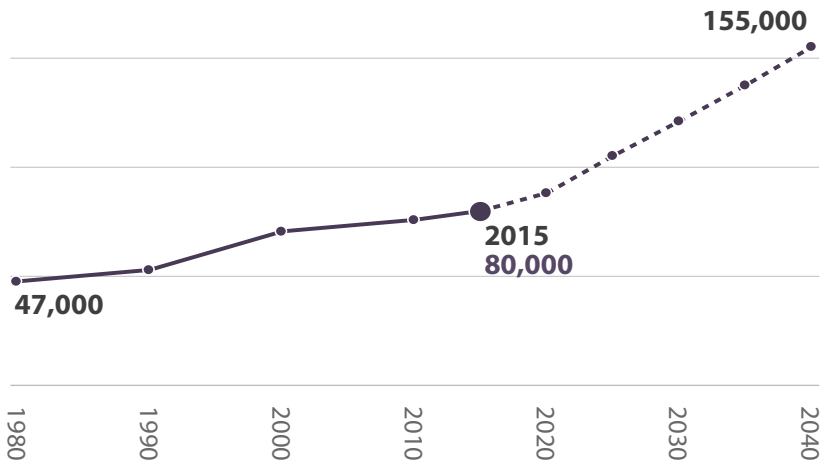
Liberty County Land Use

	Other counties
1%	Open water
8%	Developed Land
32%	Wetlands
60%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

Liberty County is bisected by the Trinity river, and the western half of the county is experiencing increased residential development.

Population Growth Forecast

Liberty County grew by 69% from 1980 to 2015 and is expected to reach 155,000 residents by 2040.



Municipal Populations

The City of Liberty is Liberty County's largest incorporated municipality.

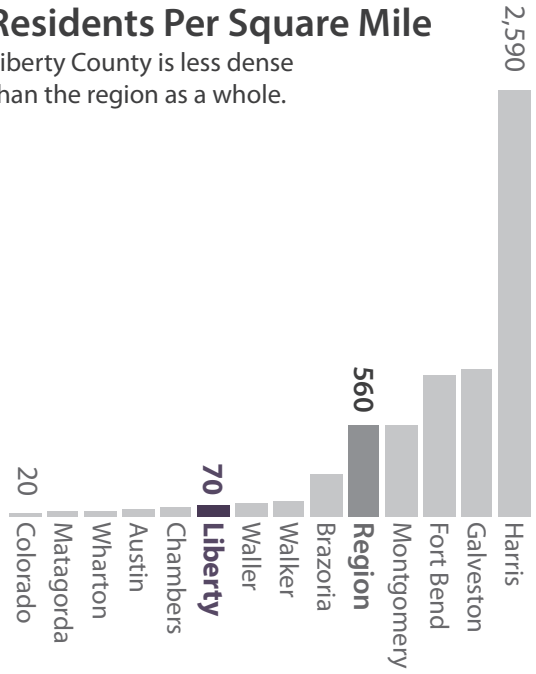
9,175	Liberty
8,095	Cleveland*
7,734	Dayton
1,093	Ames
1,054	Daisetta
885	Hardin
654	Plum Grove
615	Kenefick
486	Devers
267	North Cleveland
157	Old River-Winfree*
100	Dayton Lakes
51,389	Unincorporated

*The municipality spans multiple counties. Only the population residing in Liberty County is shown here.

Land Use and Demographics

Residents Per Square Mile

Liberty County is less dense than the region as a whole.



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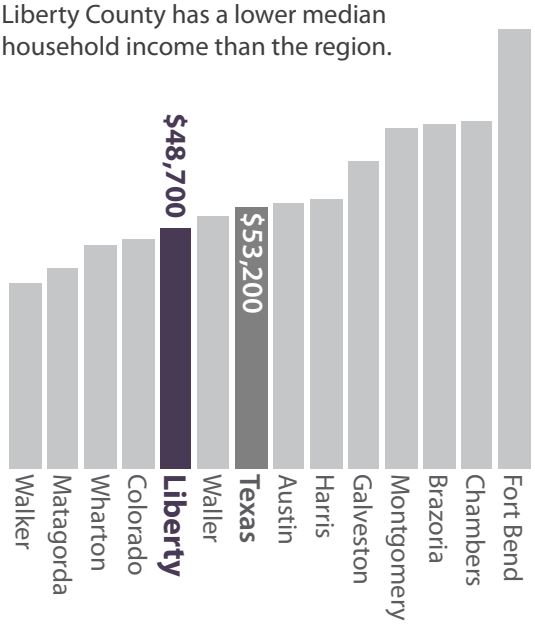
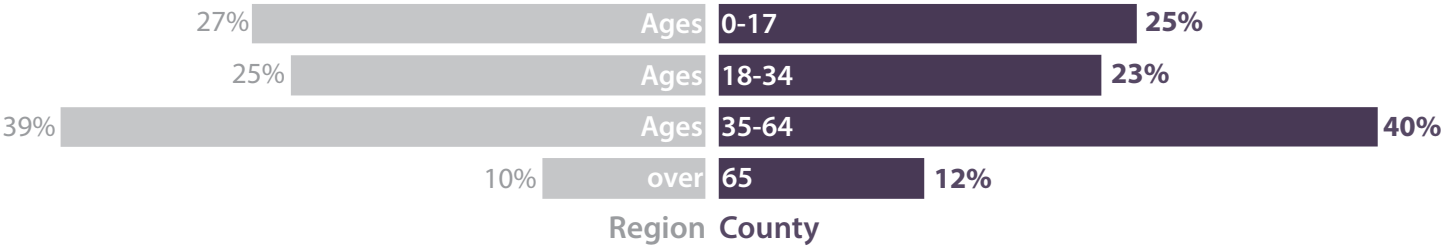


Age

Liberty County has a similar age profile as the region.



Poverty Rate

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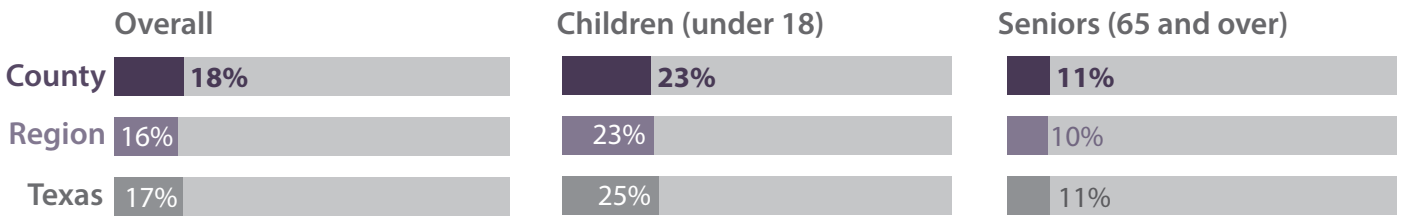
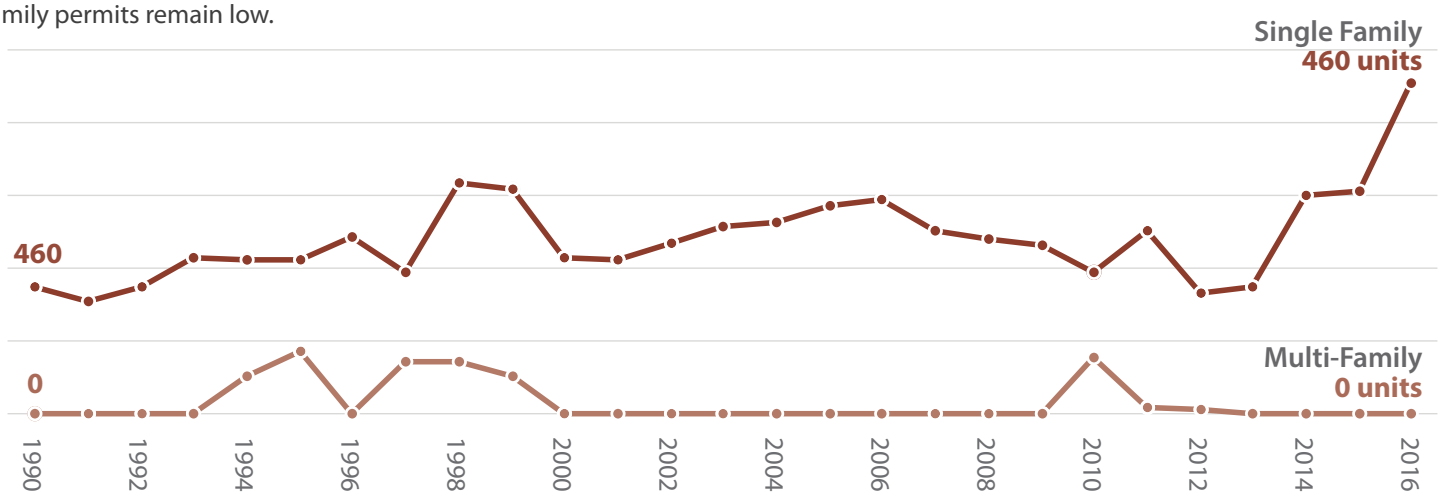


Housing

Building Permits Issued

Single-family construction is rising rapidly, while multi-family permits remain low.



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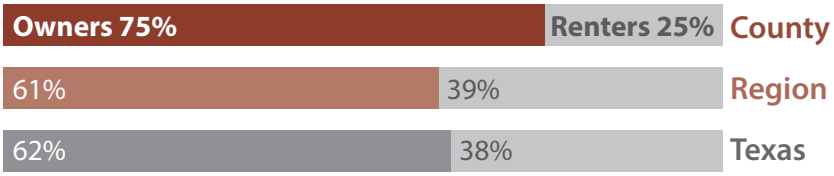
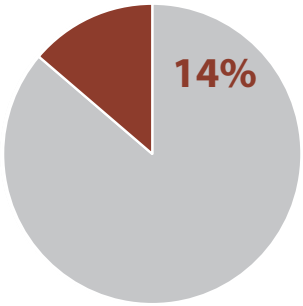


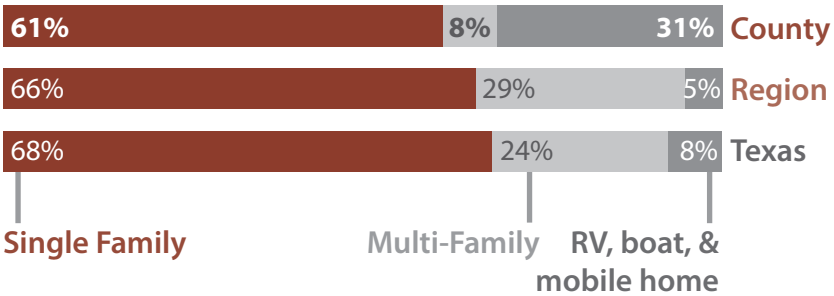
Vacant Housing Units

Around 14% of Liberty County's housing units are vacant.



Housing Type

Liberty County has a high rate of RV, boat and mobile homes.



Living Costs

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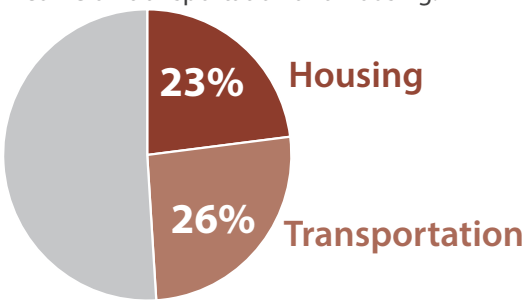
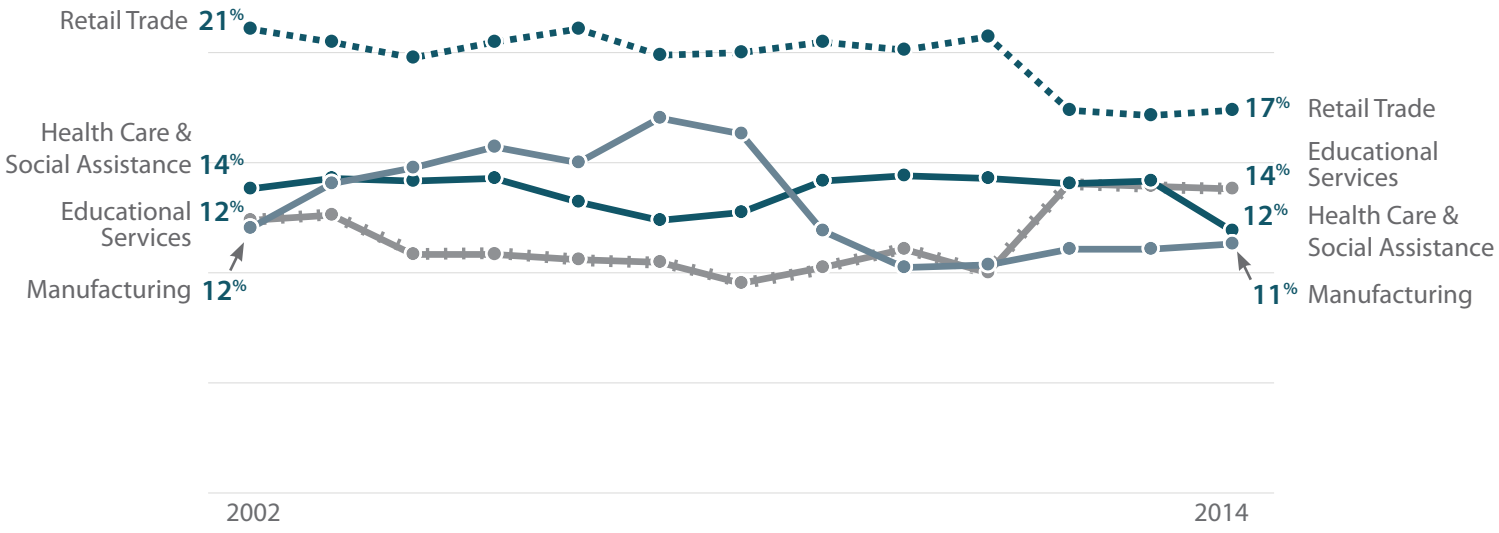


Economy

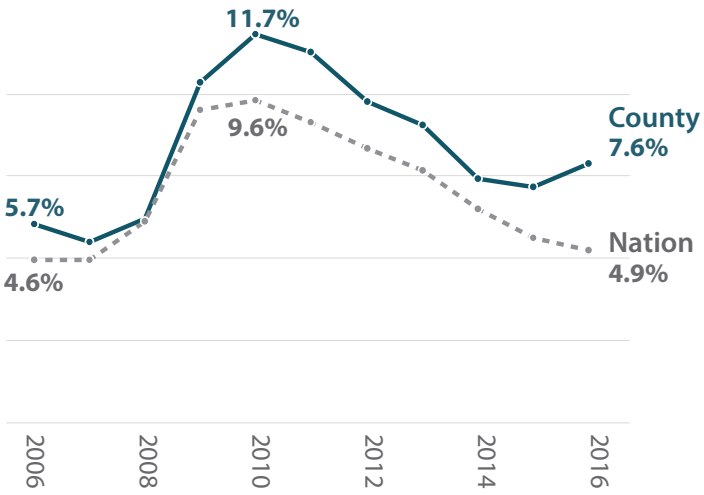
Top Industries by Percent of Overall Jobs

Retail Trade has declined as a percent of overall jobs in Liberty County while other top industries retained a similar portion of employment in the county.



Unemployment Rate

Liberty County's unemployment typically mirrors national trends, but is much higher in recent years.



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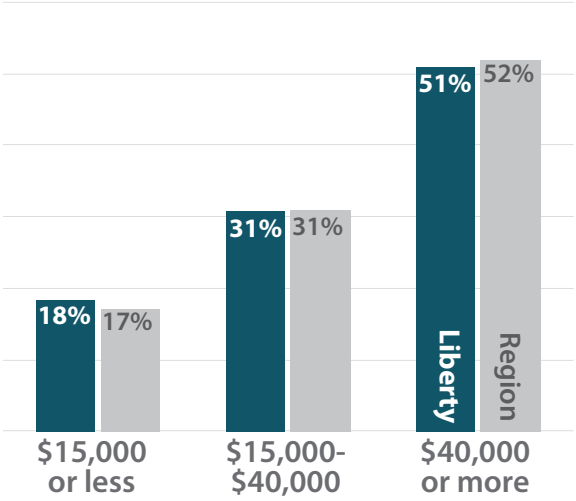
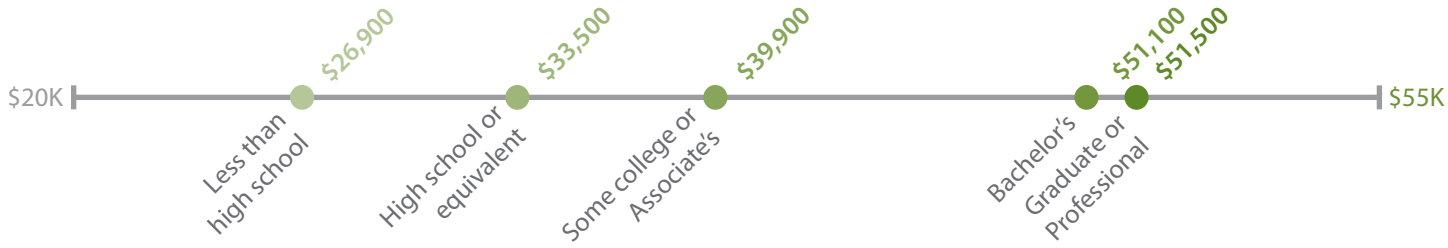


Education, Hazard Risks, and Commute

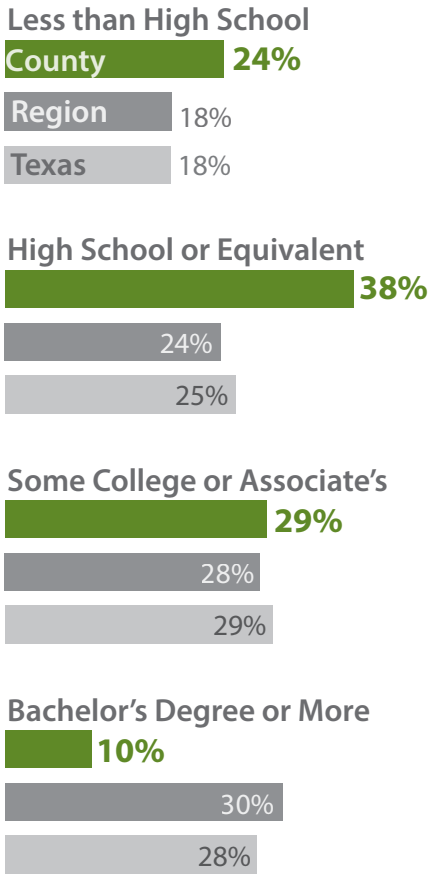
Median Earnings by Educational Attainment

A Liberty County resident with a graduate or professional degree makes, on average, $24,600 more than a resident with less than a high school education annually.



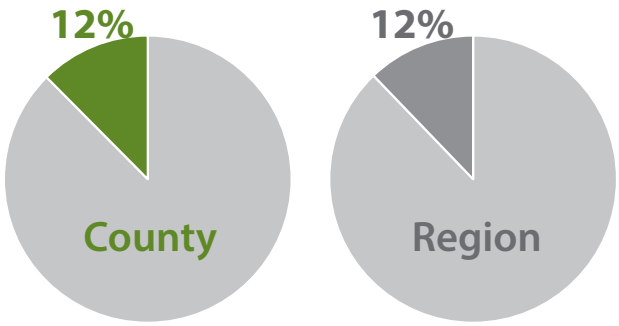
Educational Attainment

A lower percentage of Liberty County residents have completed a bachelor's degree or more than the region and state.



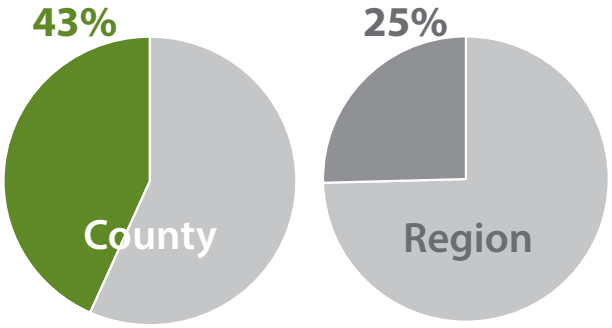
Residents in 100-year Floodplain

A similar percentage of Liberty County residents live in a 100-year floodplain as the region.



Residents in Hurricane Evacuation Zone

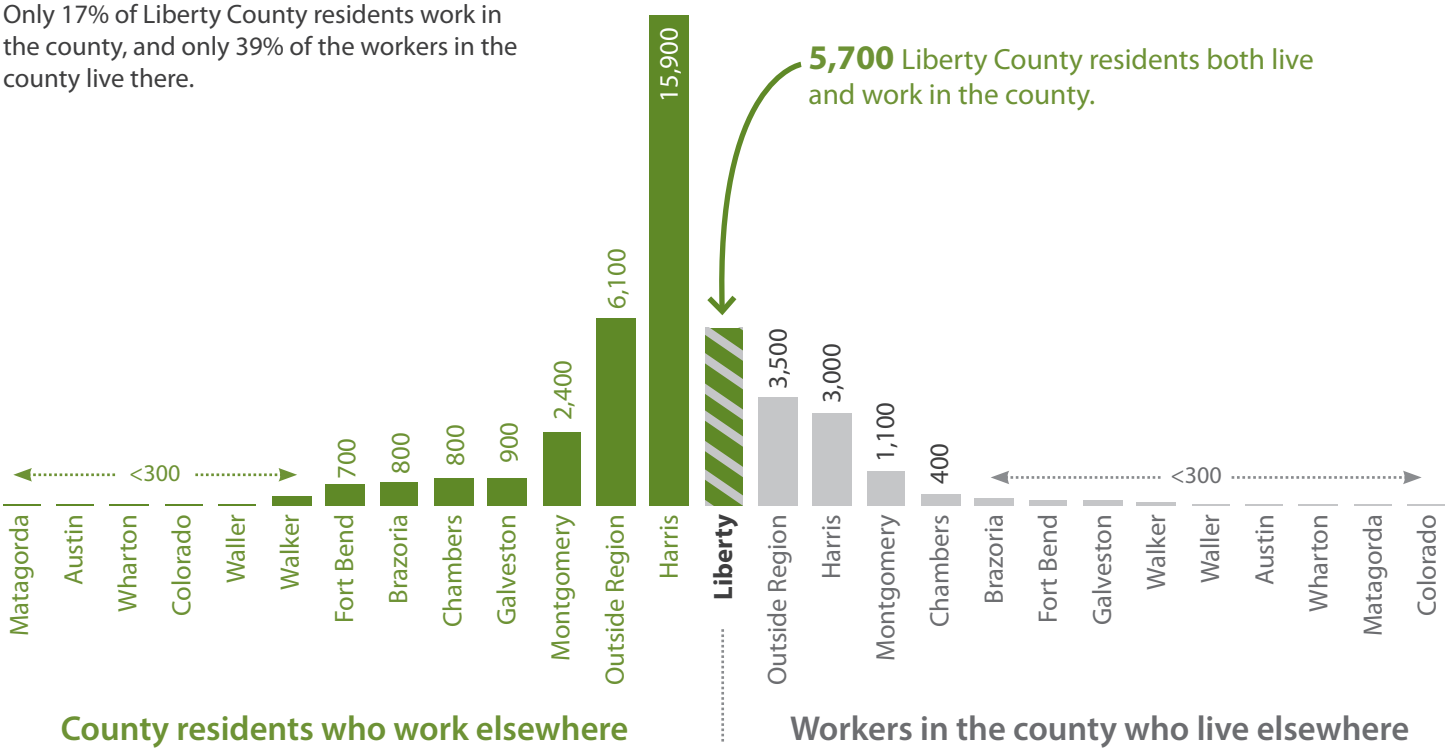
Over 40% of Liberty County residents live in a hurricane evacuation zone, as opposed to 25% of the region.



Education, Hazard Risks, and Commute

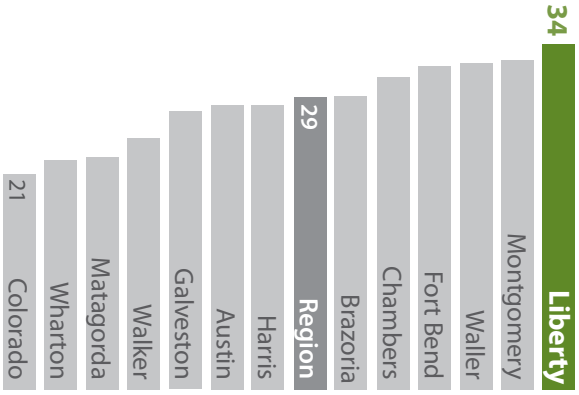
Workers' Job & Home Destinations

Only 17% of Liberty County residents work in the county, and only 39% of the workers in the county live there.



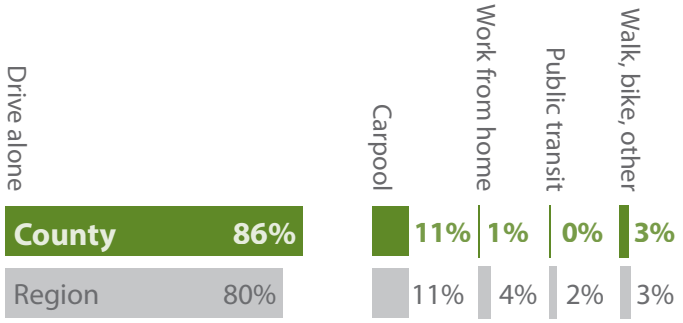
Mean Commute to Work (minutes)

Liberty County workers have the longest average commute than any other county in the region.



Commute Mode to Work

A higher percentage of Liberty County workers drive to work compared to the region as a whole.



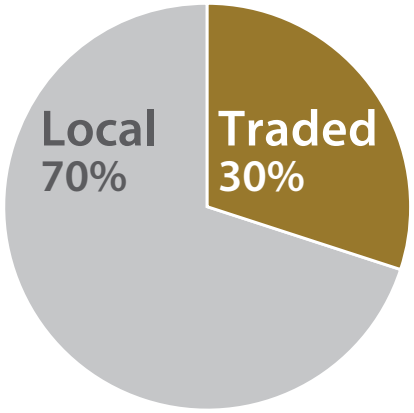
Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

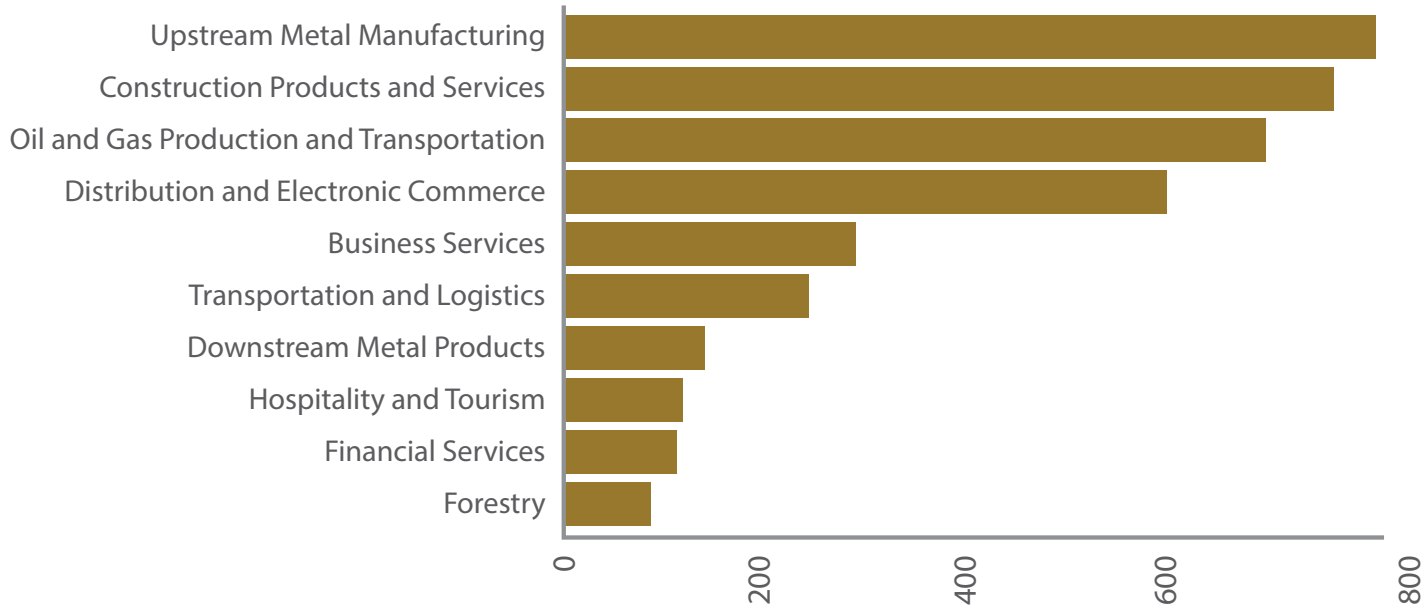
Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.



Employment by Cluster

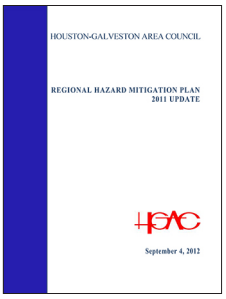
This bar graph demonstrates Liberty County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

These plans highlight efforts in Liberty County to plan for disaster recovery and economic resiliency.

Liberty County Hazard Mitigation Plan

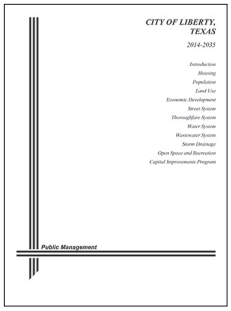


Liberty County is currently developing a Hazard Mitigation Plan for release in 2019. Liberty County participated in the 2011 Update of the Regional Hazard Mitigation Plan. The Regional Hazard Mitigation plan was created in 2006 by the Houston-Galveston Area Council, the Texas Division of Emergency Management, and 85 local governments. The comprehensive plan identifies regional hazards and vulnerabilities, and includes over 300 mitigation projects that could be implemented within the region.

The plan identified six mitigation actions for Liberty County:

- Construct FEMA-approved tornado/hurricane-proof structure.
- Conduct structural engineering study on all public buildings.
- Complete a master drainage study on all watersheds.
- Rechannelize existing feeder creeks that flow from north to south and improve drainage for stormwater runoff.
- Establish a countywide drainage plan.
- Harden bridge, dam and spillway in Winter Valley Subdivision under TCEQ permit No. 366.

Liberty Comprehensive Plan



The Liberty Comprehensive Plan is a planning document that will assist the City of Liberty in improving the living conditions of its residents. Information, analysis, and recommendations are given in the areas of base mapping, housing, population, land use, streets, thoroughfares, water, wastewater, parks and recreation, economic development, capital improvements, and storm drainage. This plan is intended to give the residents of Liberty a guide for making decisions in the development of the community.

The plan analyzes the economic development of Liberty County, the plan analyzes the economic base, and provides goals for economic development. These goals include the following: assemble and maintain a marketing package that emphasizes the quality of life for residents of Liberty; seek to retain and expand existing businesses/employers and visit all new businesses/employers; actively recruit potential businesses to be located in the local area; expand water and sewer service into un-served areas; develop a Heritage Tourism Program; and identify public funding options and private investment opportunities in order to implement the objectives set forth in this plan.

Data Sources

Liberty County Overview

1. U.S. Census Bureau, 2014
2. OnTheMap Application
3. Longitudinal-Employer Household Dynamics Program
4. The Vindicator, June 30, 2016.
5. USDA Census of Agriculture

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

MATAGORDA COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

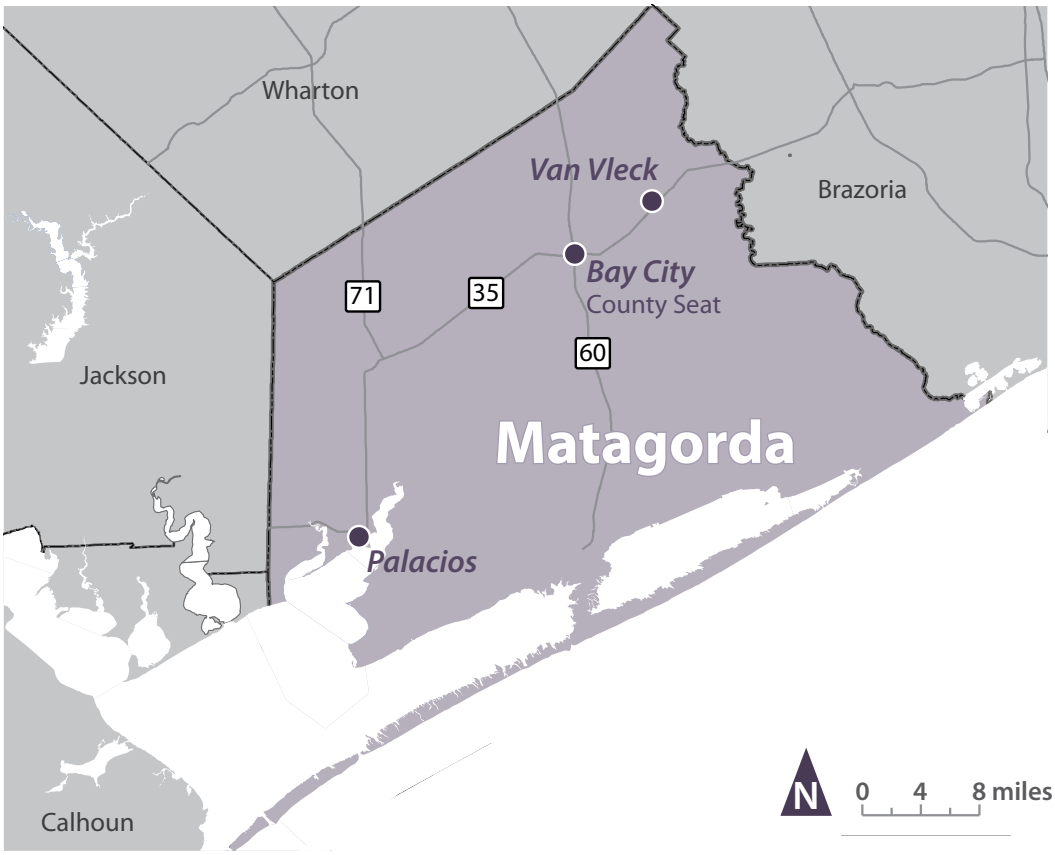
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Matagorda County and it's economy by providing key data points on the economy, demographics, and other useful information.

Matagorda County Boundaries

- Matagorda County
- Other counties
- Top 3 cities
- Major roads

County Seat: Bay City
Largest City: Bay City



Matagorda County Overview

Matagorda County is a largely rural county on the Gulf of Mexico, with 32 percent of its total area of 1,613 square miles composed of East Matagorda Bay and Matagorda Bay. Its major watershed is the Colorado River. Matagorda County's estimated 2016 population of 37,187 has remained largely stable since 1980. Matagorda County has two cities, Bay City and Palacios. Bay City, the county seat, has a 2016 estimated population of 17,809. Palacios is a coastal city on Matagorda Bay with an estimated 4,682 residents. Other unincorporated communities include Blessing, Midfield, Markham, Wadsworth, Matagorda, Sargent, Pledger, and Van Vleck. Major transportation corridors include State Highways 35, 60, 71, and 111. The Gulf Intracoastal Waterway, a major maritime freight corridor, passes through the county, providing access to the Port of Palacios and the Port of Bay City on the Colorado River. Freight also passes through the county on the Burlington Northern Santa Fe and Union Pacific railroads.

Matagorda County's economy is based on power generation, chemical production, tourism, and agriculture; the county's labor force is 16,984 workers. Matagorda's South Texas Nuclear Project Electric Generating Station, a power station on the Colorado River, was until recently, the largest set of nuclear reactors in the nation. Comprising nearly 20 square miles, the two reactors have a gross capacity of 2708 megawatts; two additional reactors were permitted in 2016. , The South Texas Nuclear Project employs 2,230 professionals. Matagorda County is home to two major chemical production facilities, employing approximately 150 employees each. The county is crossed by pipelines that deliver feedstock directly to potential industrial sites. Matagorda's coastal location brings in an array of tourism, from bird watching to fishing and hunting. Matagorda County is agriculturally productive. The annual value of agricultural production exceeded $129,700,000, 41 percent of the total is from livestock sales and 59 crop sales. Rice and turf grass production make up a large portion of the total crop output. The County is the leader in the State of Texas for aquaculture (commonly known as fish or shrimp farming). The fisheries of the Matagorda Bay are economically significant; the Port of Palacios is home to over 300 commercial shrimping boats.

Matagorda's fisheries provide important employment opportunities.

Recent Disruptions to the Economy

Matagorda County's location makes it vulnerable to storms coming in off the Gulf of Mexico. Hurricane Harvey caused the Colorado River to top its banks, flooding parts of the county. At one point during the storm, a tornado touched down near the community of Sargent. A mandatory evacuation was issued for the entire county, and a curfew was put in place to prevent looting. Hurricane Harvey's impacts on the county are still being calculated. Fortunately, the Colorado River did not crest its levee and flood Bay City as forecasts had predicted.

The 2010-2012 Texas drought negatively affected cattle production, rice production, and fisheries. Matagorda Bay is more biologically productive when it has sufficient freshwater inflow, and drought can cause the fishery to lose productivity for several years. The 2014-2016 drop in the price of a barrel of oil did not affect the economy of the county to the same extent as the region; the one oil field services business in the county had to lay off workers, but did not close. Matagorda County also avoided the damages caused by the 2015 Memorial Day and 2016 Tax Day floods that other parts of the region experienced. Hurricane Ike in 2008 led to flooding and storm surge issues along the coast, especially in Palacios. Hurricane Ike could have been much more damaging, but the storm made landfall well to the east. The national downturn in the economy during the Great Recession caused a knock-on effect in unemployment, which peaked in the county at 12.7 percent in January of 2011.

Economic Resilience Strategies

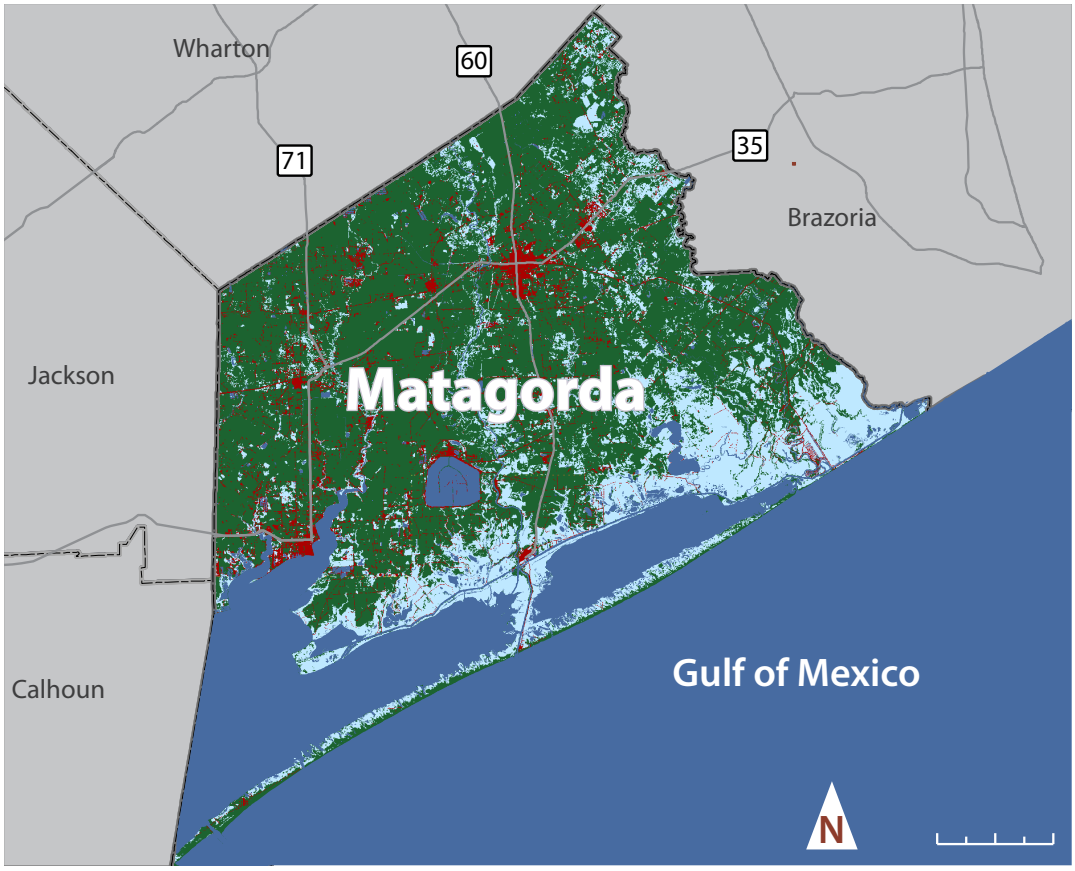
Had the Colorado River topped its levees during Hurricane Harvey, it is estimated that a 10-foot wall of water would have surged through Bay City. Fortunately, the Colorado River Authority worked to prevent that from happening. Matagorda County needs to investigate what it could do to create capacity to prevent future flooding events, in coordination with the upstream counties. There are no shovel-ready development sites available in the county, and sewer capacity is limited, which makes industrial developers responsible for treating their own waste outside of Bay City and Palacios. Bay City has made strides in enhancing the community's livability (see page XX for a case study on their efforts); Palacios is also undertaking efforts to enhance their community. Matagorda County is taking steps to enhance tourism, as the county has a largely undeveloped coastal area and ample opportunities for outdoor recreation. Matagorda County is the leader in aquaculture in Texas, and with the proper investments, could grow as an industry.

Recommendations

Matagorda County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Investigate structures for better coordinated countywide flood control strategies.
- Continue and expand efforts to enhance the amenities of Matagorda's cities.
- Conduct a cost benefit study on the creation of an industrial park in Matagorda County.
- Encourage research and investment in the aquaculture sector.
- Create a tourism development task force to increase the number of visitors to Matagorda County.

Land Use and Demographics



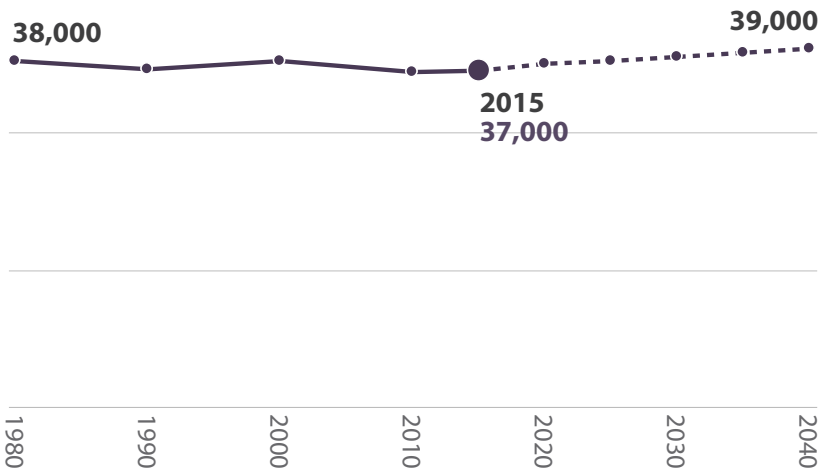
Matagorda County Land Use

	Other counties
9%	Open water
6%	Developed Land
22%	Wetlands
63%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

Matagorda County has significant coastal resources, and plentiful farmland.

Population Growth Forecast

Matagorda County declined by 3% from 1980 to 2015 and is expected to reach 39,000 residents by 2040.



Municipal Populations

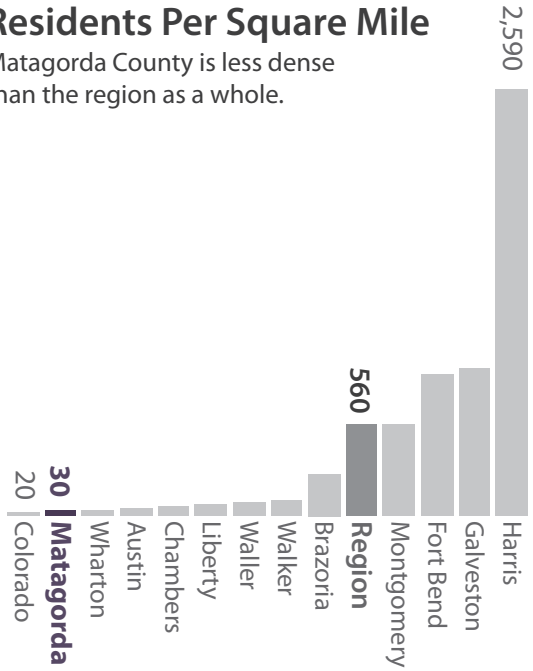
The City of Bay City is Matagorda County's largest incorporated municipality.

17,809	Bay City
4,682	Palacios
14,696	Unincorporated

Land Use and Demographics

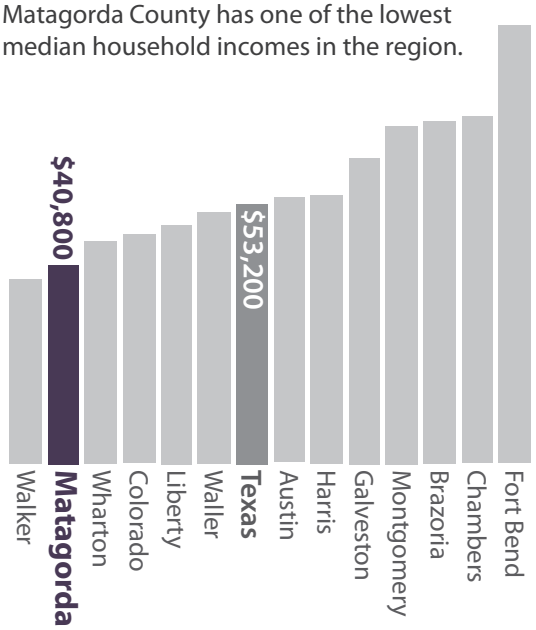
Residents Per Square Mile

Matagorda County is less dense than the region as a whole.



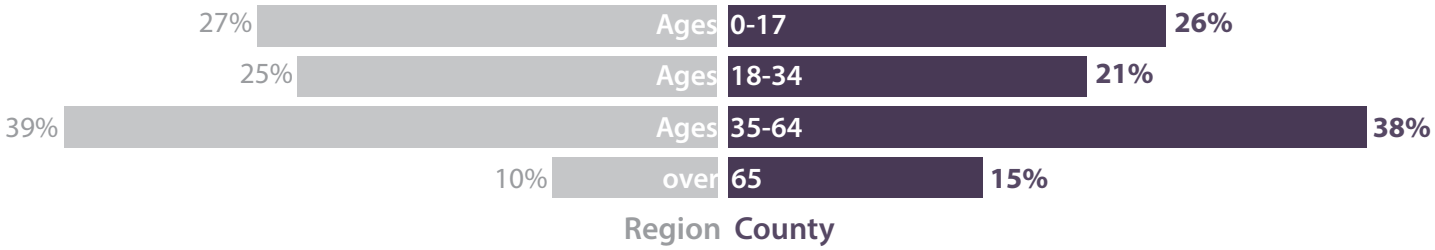
Median Household Income

Matagorda County has one of the lowest median household incomes in the region.



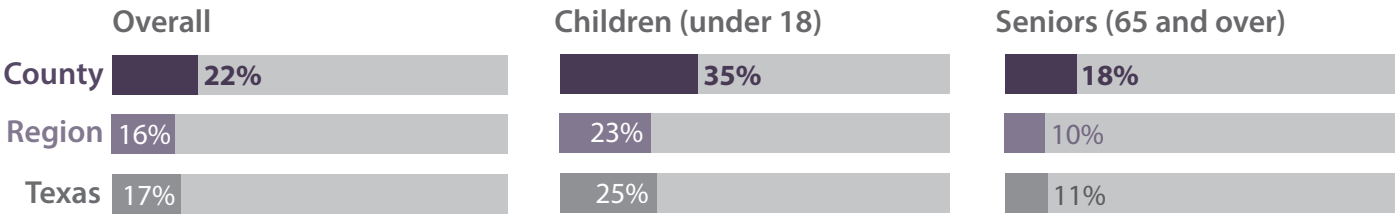
Age

Matagorda County is older than the region, with a higher portion of residents over 65.



Poverty Rate

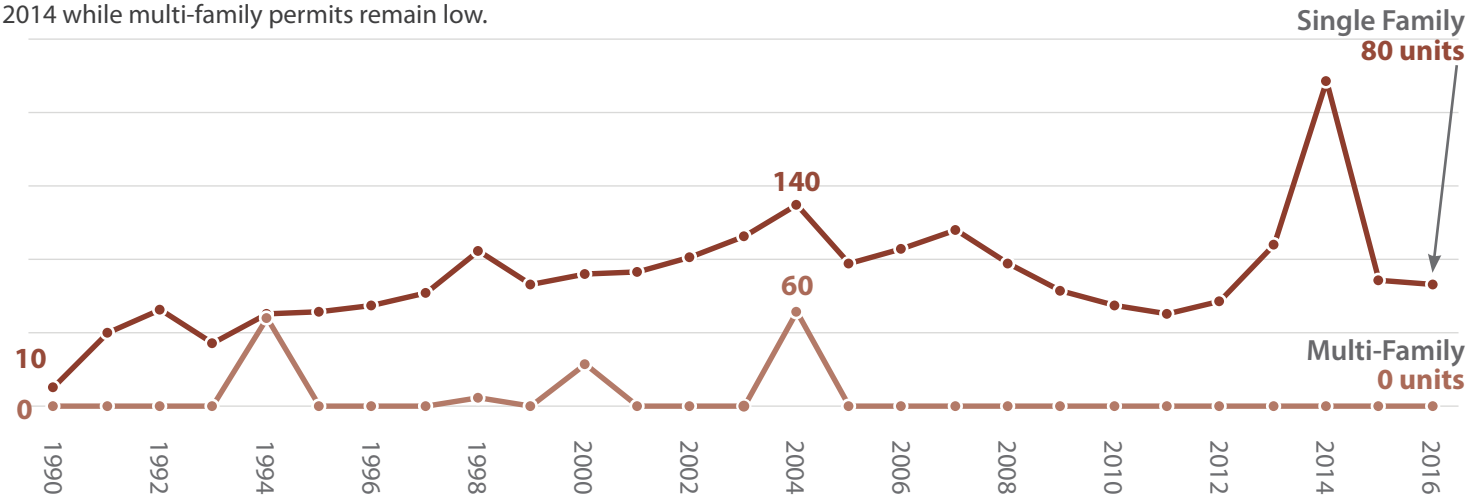
Matagorda County has a higher rate of poverty than the region, particularly for children.



Housing

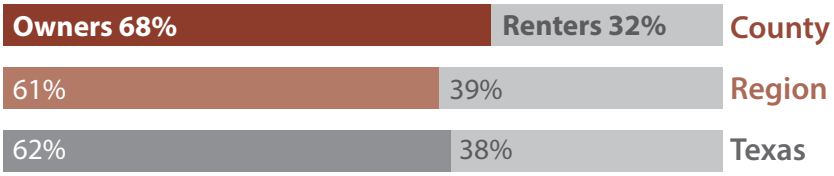
Building Permits Issued

Single-family construction has dropped from a spike in 2014 while multi-family permits remain low.



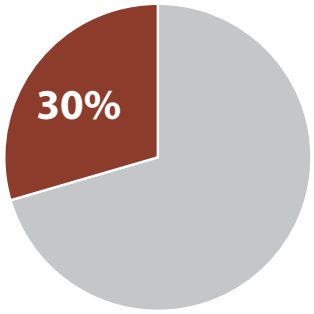
Housing Tenure

Matagorda County has a higher rate of homeownership than the region or the state.



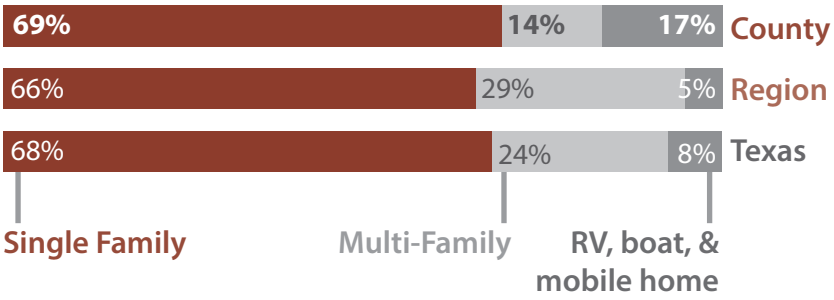
Vacant Housing Units

Around 30% of Matagorda County's housing units are vacant.



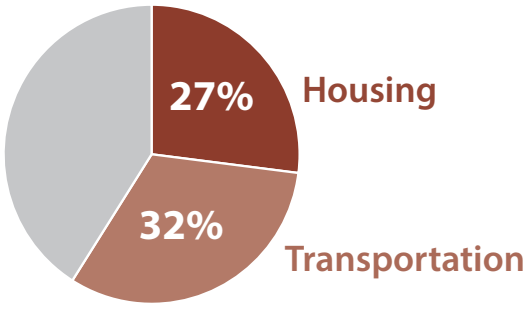
Housing Type

Matagorda County has a lower rate of multi-family homes and a higher rate of RV, boat and mobile homes than the region and state.



Living Costs

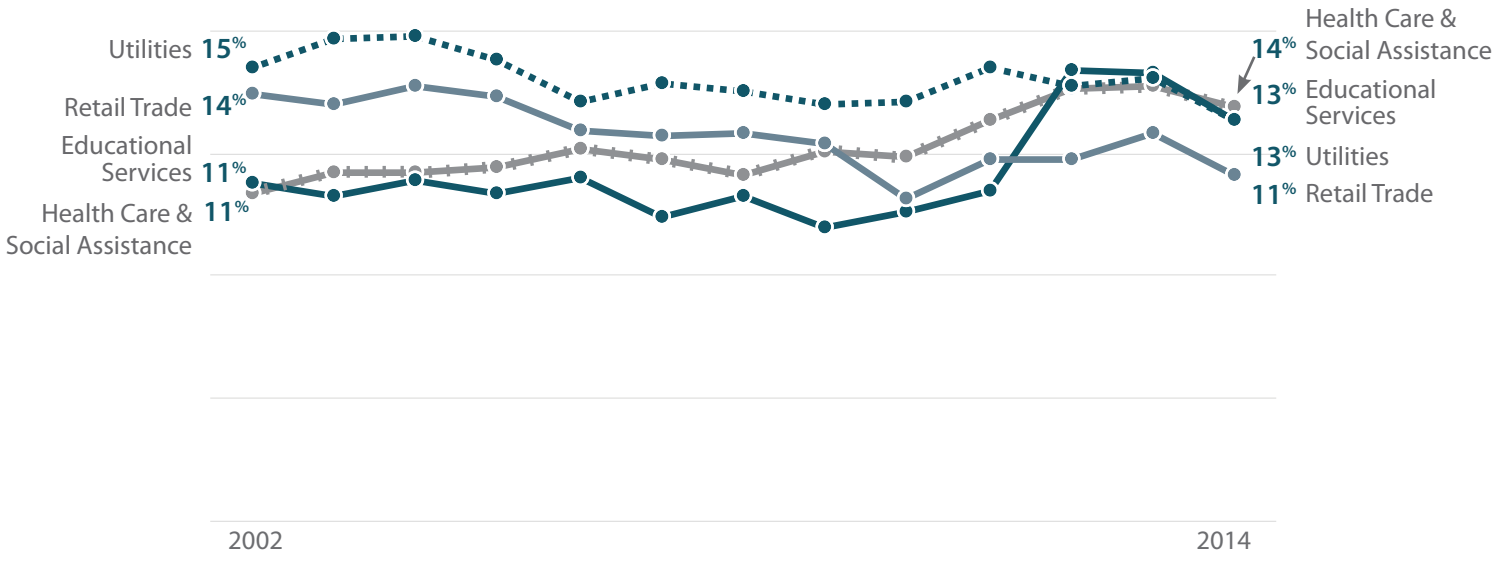
Matagorda County households spend 59% of their income on transportation and housing.



Economy

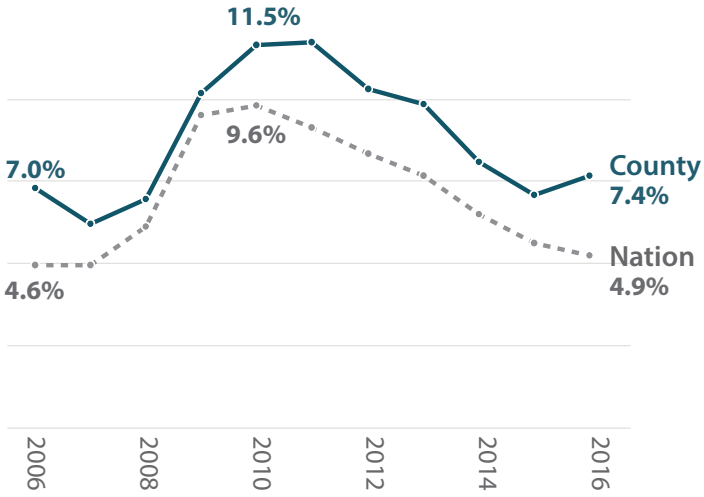
Top Industries by Percent of Overall Jobs

The industries in Matagorda County with the largest portion of employees remained consistent from 2002 to 2014 with a small jump for Health Care & Social Assistance employment.



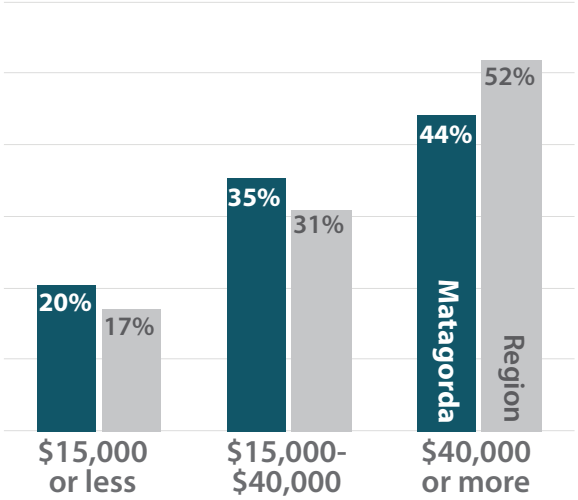
Unemployment Rate

Matagorda County's unemployment was higher than the national average between 2006 and 2016.



Earnings of Residents

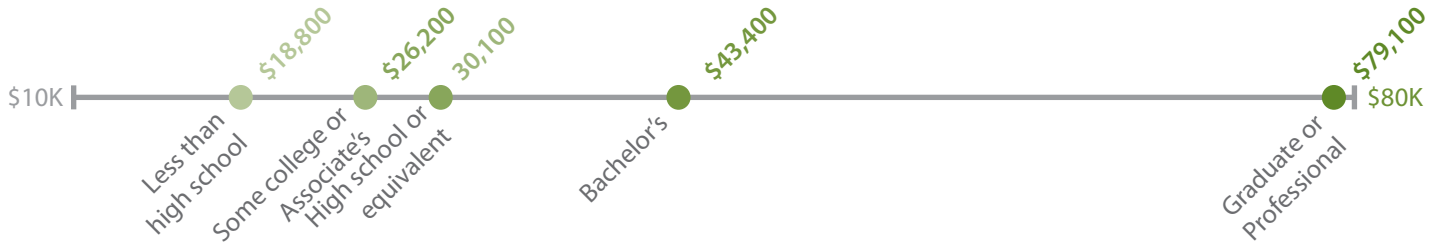
Around 44% of Matagorda County residents earn more than $40,000 annually, a lower percentage than the region.



Education, Hazard Risks, and Commute

Median Earnings by Educational Attainment

A Matagorda County resident with a graduate or professional degree makes, on average, $60,300 more than a resident with less than a high school education annually.



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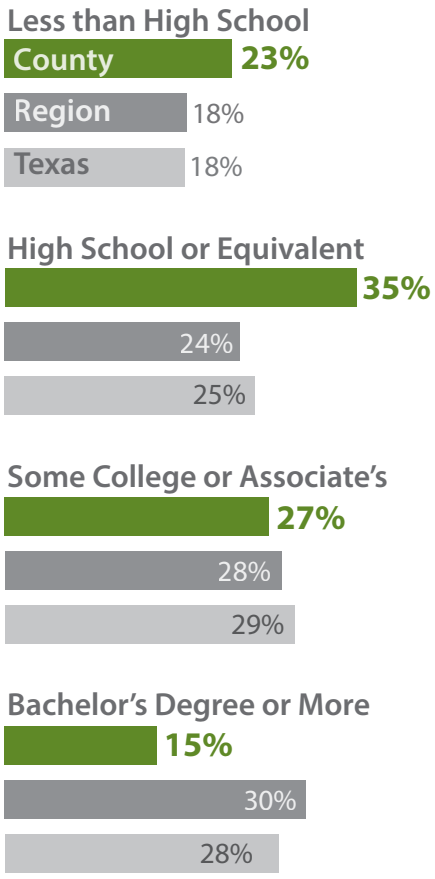
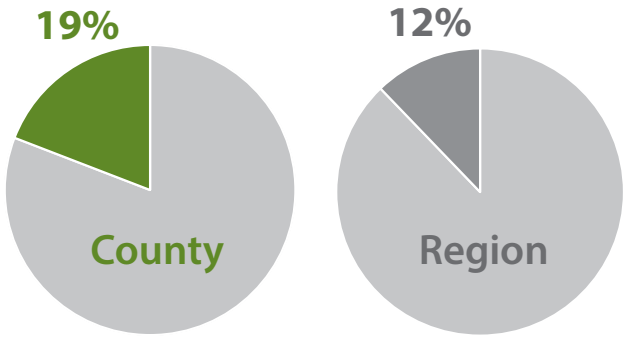


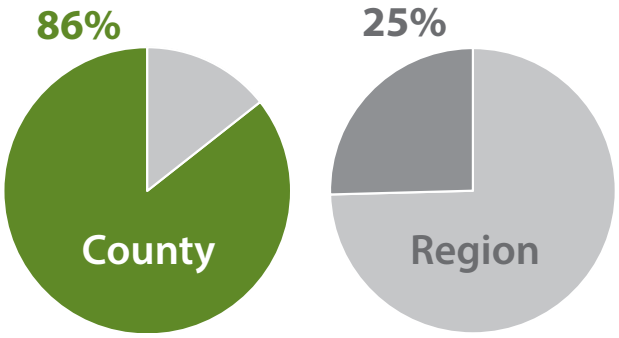
Residents in 100-year Floodplain

A larger percentage of Matagorda County residents live in a 100-year floodplain than the region.



Residents in Hurricane Evacuation Zone

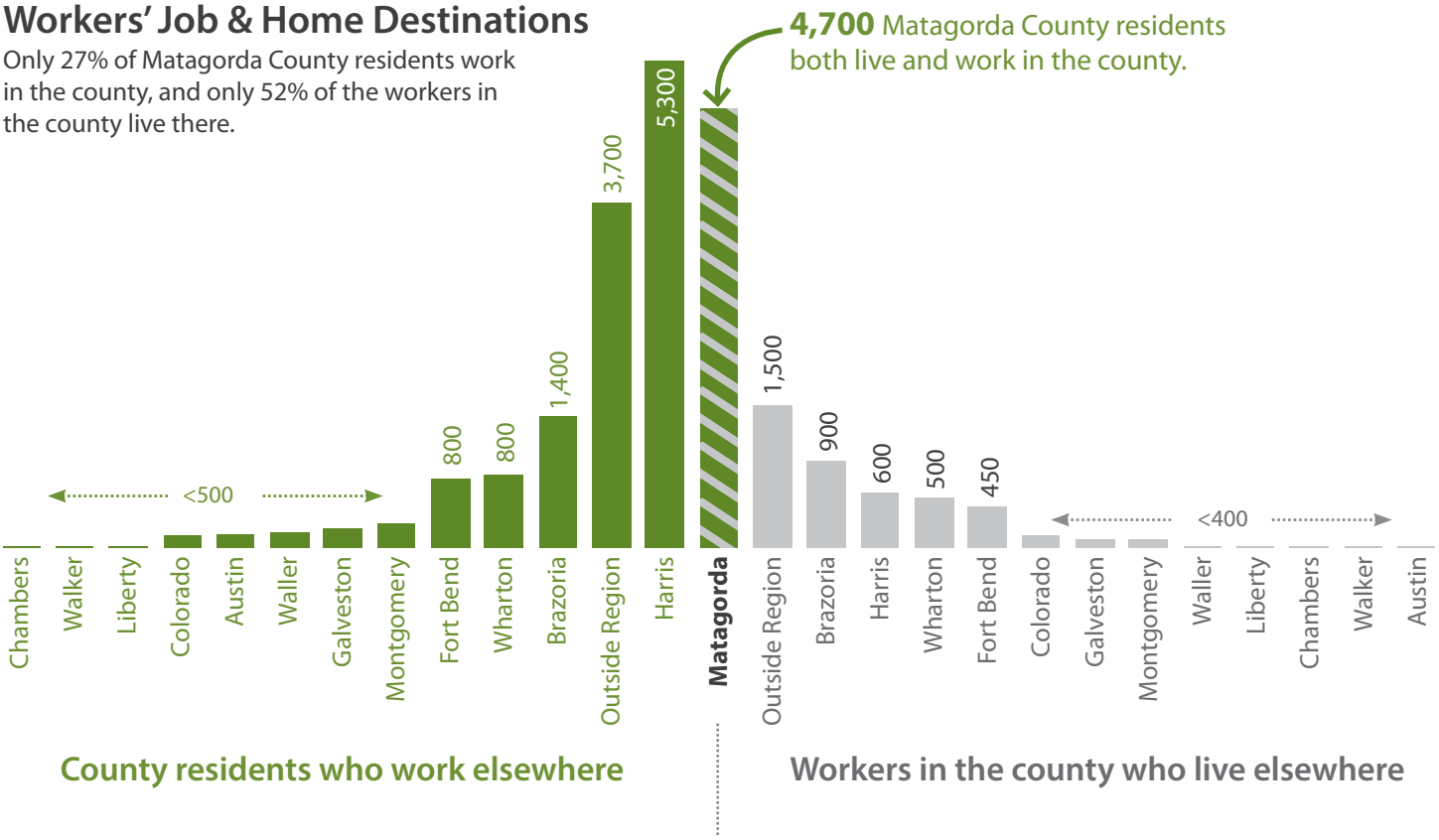
Around 86% of Matagorda County residents live in a hurricane evacuation zone, as opposed to 25% of the region.



Education, Hazard Risks, and Commute

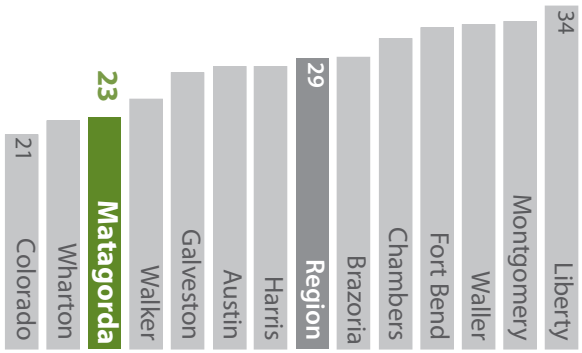
Workers' Job & Home Destinations

Only 27% of Matagorda County residents work in the county, and only 52% of the workers in the county live there.



Mean Commute to Work (minutes)

Matagorda County workers have a shorter commute time than the region as a whole.



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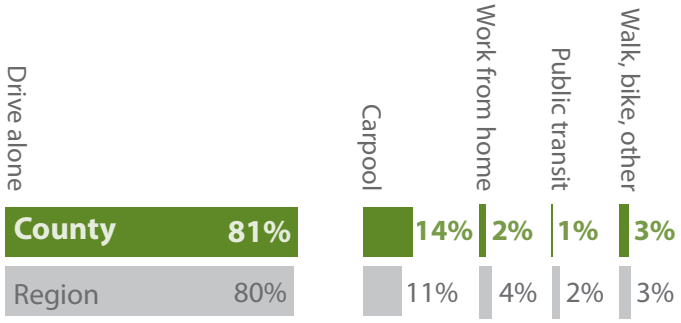

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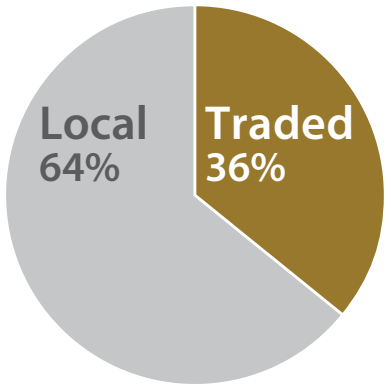


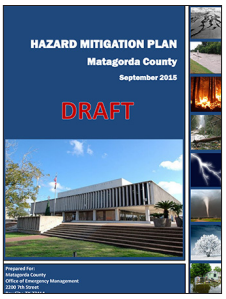
Employment by Cluster

This bar graph demonstrates Matagorda County's employment by each cluster. It is based on 2014 data from the U.S. Census.

Local Planning

These plans highlight efforts in Matagorda County to plan for disaster recovery and economic resiliency.

Matagorda County Hazard Mitigation Plan



Matagorda County and its communities participated in previous hazard mitigation plans as part of the Texas Colorado River Floodplain Coalition (TCRFC). In 2004, the TCRFC developed a Hazard Mitigation Action Plan titled Creating a Disaster Resistant Lower Colorado River Basin. TCRFC completed the *TCRFC Multi-Jurisdictional Hazard Mitigation Plan Update 2011-2016* as a regional partnership of 15 counties (including Matagorda County) and 63 jurisdictions. This current plan is specific to Matagorda County and the City of Bay City and the City of Palacios. The plan identifies the top five mitigation actions for Matagorda County as the following:

- Install automated Flood Warning Systems
- Proper design criteria and promote tornado and hurricane safe rooms
- Waterproofing
- Install roofing material of stronger quality, enforce codes, engage in public education
- Build water reservoirs for water supply

Hazard mitigation is defined to alleviate the loss of life, personal injury, and property damage that can result from a disaster through long- and short-term strategies. Hazard mitigation involves strategies such as planning, policy changes, programs, projects, and other activities that can mitigate the impacts of hazards. The responsibility for hazard mitigation lies with many, including private property owners; business and industry; and local, state, and federal government.

Bay City North Downtown Plan

The *Bay City North Downtown Plan* presents a master plan for a 40-acre, primarily vacant area, north of Bay City's historic downtown. This area represents a potential site for a quality mixed-use development, offering a range of housing choices that can respond to the emerging market demand and add to the city's tax base. The study recommends a phased approach to redeveloping this area, funded by a combination of public and private investments. The four-year plan includes projects such as building demolition and site clearing on city-owned properties; infrastructure upgrades; enhancements to waterways, parks, and trails; and streetscape updates, including sidewalks and plazas.

Vision Bay City 2040 Plan

In early 2014, the City of Bay City decided to move forward with the development of a Comprehensive Plan to identify a vision and develop a strategy to implement that vision. The result is the *Vision Bay City 2040 Plan*. This plan is based on extensive public input and reflects the priorities of Bay City residents. It identifies key challenges facing the community and strategies to address those challenges. The plan is intended as a guide for city wide action, not just city government. This plan has a section focused on economic development. The plan recommends the design and implementation of a business retention and expansion program, a buy local campaign, and foster a strong environment for entrepreneurial development.

Data Sources

Brazoria County Overview

1. U.S. Census
2. U.S. Census
3. U.S. Census
4. Matagorda County Economic Development Corporation
5. Texas Energy Assurance Plan
6. International Atomic Energy Agency
7. U.S. Nuclear Regulatory Commission
8. Nuclear Energy Institute
9. USDA Census of Agriculture
10. USDA Census of Agriculture
11. USDA Census of Agriculture
12. Matagorda County Economic Development Corporation

Recent Disruptions to the Economy

13. Federal Reserve Bank of Saint Louis
14. Bureau of Labor Statistics

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

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Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

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Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

MONTGOMERY COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

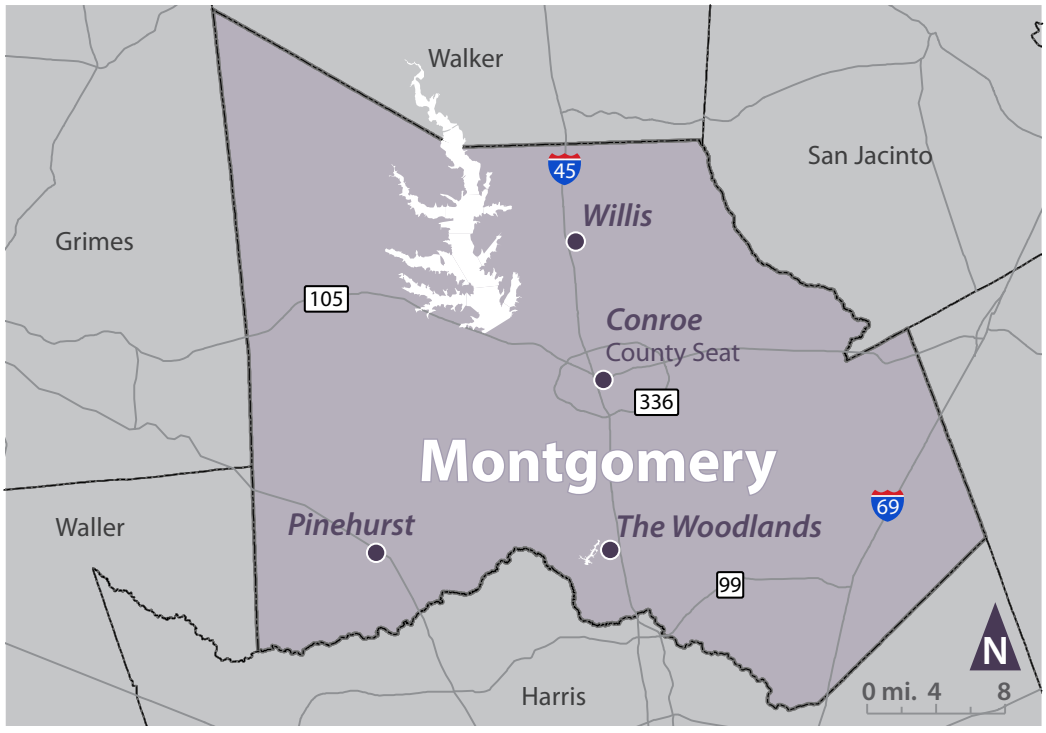
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Montgomery County and it's economy by providing key data points on the economy, demographics, and other useful information.

Montgomery County Boundaries

- Montgomery County
- Other counties
- Top 4 cities
- Major roads

County Seat: Conroe
Largest City: The Woodlands



Montgomery County Overview

Montgomery County's population grew 323 percent from 127,000 in 2006 to 538,000 residents in 2015. Population is expected to more than double, to 1,183,000 by 2040. The county seat, Conroe, was the United States' fastest growing city in 2016 with a population of 82,286 and a 7.8 percent annual population increase. The story of the county's urbanization began in the mid-1970s with the creation of The Woodlands, a master planned community, that grew from a population of 8,443 in 1980 to an estimated 109,679 in 2010. It is now the largest community in the county. Other communities in Montgomery County with populations over 1,000 include Cut and Shoot, Magnolia, New Caney, Oak Ridge North, Panorama Village, Patton Village, Pinehurst, Porter, Roman Forest, Shenandoah, Splendora, Willis, and Woodbranch. The Woodlands, Pinehurst, Porter, and New Caney are unincorporated; 81 percent of residents live in unincorporated Montgomery County. Montgomery County is on the southern range of the east Texas piney woods. Its major watersheds include Spring Creek to the south, the west fork of the San Jacinto and its impoundment Lake Conroe in the center, and Caney/Peach Creek watersheds to the east.

Although Montgomery County is largely residential (the majority of Montgomery County residents work in neighboring Harris County), Montgomery County's economy has grown in pace with its residential development. The Woodlands area has become an employment center and home to two Fortune 500 company headquarters. Business services are the largest employment cluster, with approximately 18,000 employees. Many of these jobs are related to the support activities for oil and gas operations. Retail, healthcare, distribution, and manufacturing are important private sector employers. Retail trade comprised 12 percent of employment in 2014, and retail sales totaled $6.3 billion in 2012. Several major national retailers have distribution centers in Montgomery County. Healthcare is a growing sector of the economy as many of the institutions based in the Texas Medical Center have opened or are planning to open hospitals in Montgomery County. Many of the county's estimated 24,000 manufacturing jobs are related to oil field services, comprising 9 percent of the county's employment. The county's annual agricultural production was estimated to be $23.8 million in 2012, with half of the market value in livestock sales and half in crop sales.

The City of Conroe developed the Lone Star Monument and Historical Flag Park to promote historical knowledge that Montgomery County is considered the birthplace of the Texas flag.

Recent Disruptions to the Economy

Montgomery County's inland location shields it from the worst ravages of hurricanes in the Gulf of Mexico; but Hurricane Harvey caused flooding in the county and dropped over 30 inches of rain in three days. The storm displaced 1,200 Montgomery County residents. The total damage from the storm is still being calculated. Hurricane Harvey was the third significant flooding event in three years; Montgomery County homes and businesses flooded during the 2015 Tax Day and 2016 Memorial Day floods. Hurricane Ike in 2008 had winds that gusted to 80 miles-per-hour, downing powerlines across the county, especially in the south and east.

The price of a barrel of oil dropped from over $100 in 2014 to under $30 in 2016. This negatively affected employment in the sector, with The Woodlands losing approximately 1,000 jobs. Office vacancy grew from .5 percent in 2012 to 11 percent in 2017. The negative effects were greatly reduced by the growth of healthcare jobs, which have doubled with the opening and expansion of acute care hospitals. Total employment in 2014 was estimated to be 153,042 and was estimated to be 166,508 in 2016 which increased since the downturn in oil. The Great Recession (2008-2012) caused unemployment to spike at 8 percent in January 2010, but high oil prices protected the county's economy from some of the worst impacts. Conversely, the Texas drought of 2010-2012 caused damage to tourism and recreation as the water level of Lake Conroe fell. Wildfires became a risk, and the drought caused ranchers to sell livestock at low prices due to the high price of feed. Municipalities experienced increased maintenance costs from cracked pipes and shifting roadbeds.

Economic Resilience Strategies

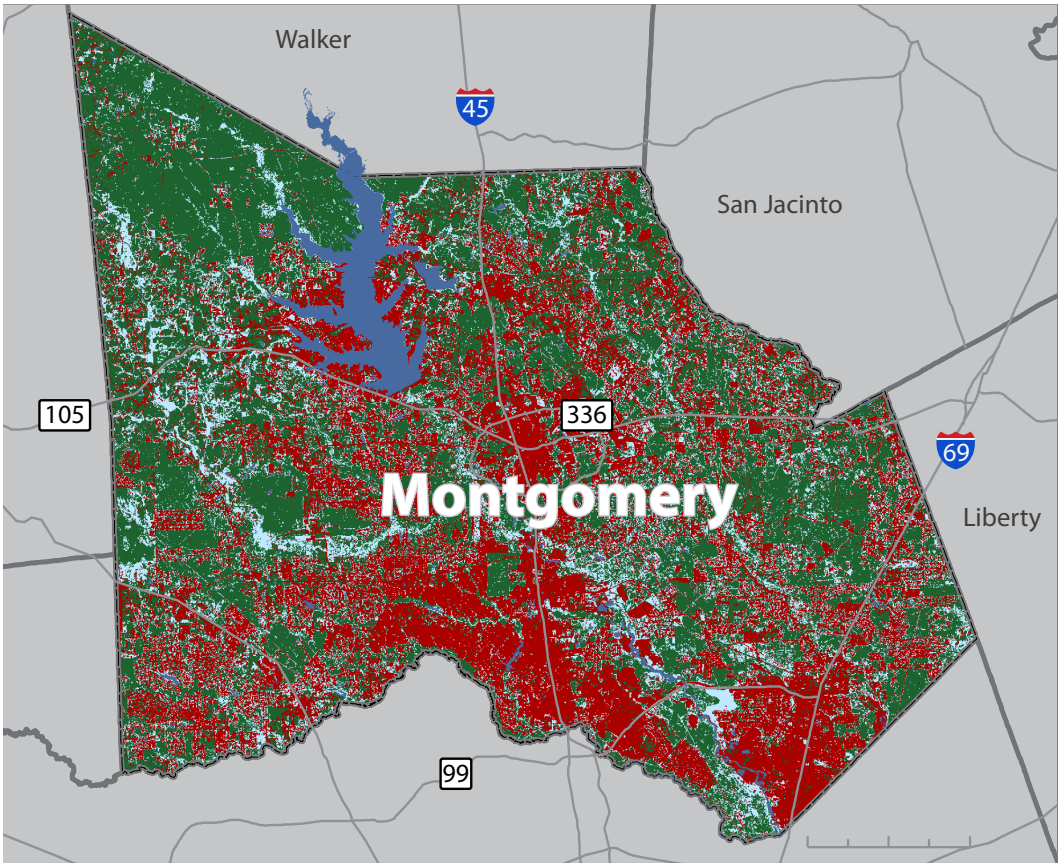
The flooding caused by Hurricane Harvey, which followed two other significant flooding events, caused Montgomery County officials to consider its drainage infrastructure and the potential impacts of flooding on the county. As the county's population continues to grow, mobility issues are becoming more pressing; average commute times are higher than the state and region.

Recommendations

Montgomery County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Investigate structures for better coordinated countywide flood control strategies.
- Develop comprehensive flood control plans for every watershed in the county.
- Revisit development standard and clarify the Municipal Utility District's responsibilities in drainage and flood control.
- Continue to support business diversification and small business development efforts.
- Investigate the costs and benefits of emerging mobility technologies including electrification, rideshare, and automated vehicles along with high capacity transit.

Land Use and Demographics



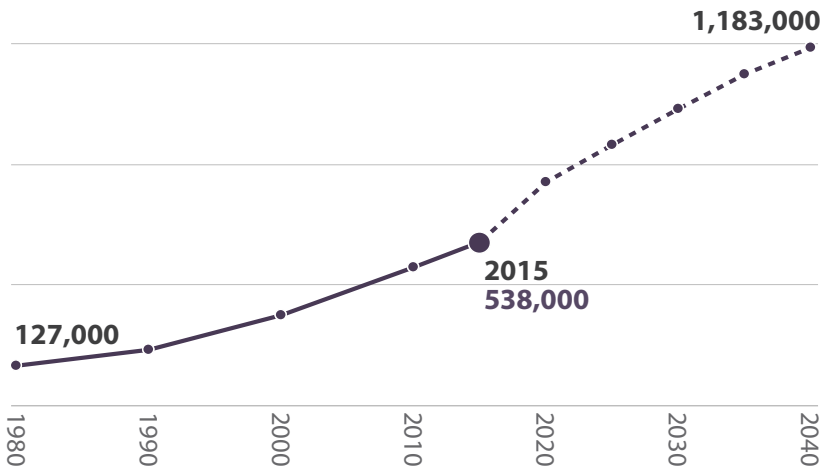
Montgomery County Land Use

	Other counties
3%	Open water
34%	Developed Land
17%	Wetlands
47%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

The south of Montgomery County has urbanized rapidly over the past three decades.

Population Growth Forecast

Montgomery County grew by 323% from 1980 to 2015 and is expected to reach 1,183,000 residents by 2040.



Top 10 City Populations

The City of Conroe is Montgomery County's largest incorporated municipality.

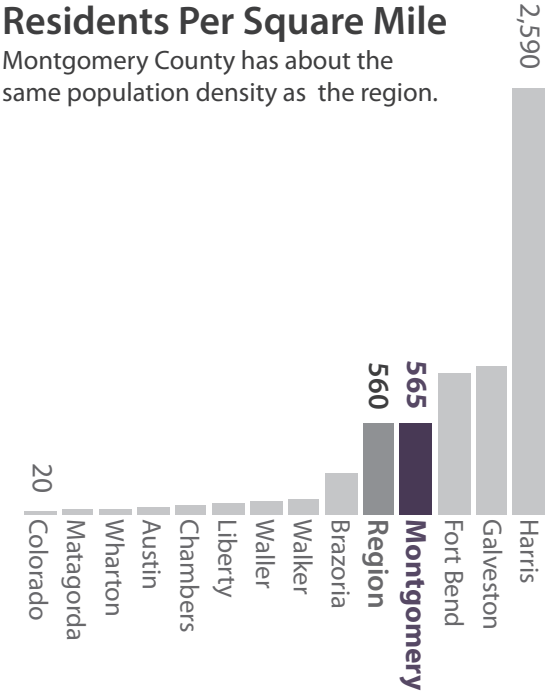
82,286	Conroe
6,370	Willis
6,291	Houston*
3,167	Oak Ridge North
2,876	Shenandoah
2,333	Panorama Village
1,985	Magnolia
1,964	Splendora
1,893	Patton Village
1,870	Roman Forest

*The municipality spans multiple counties. Only the population residing in Montgomery County is shown here.

Land Use and Demographics

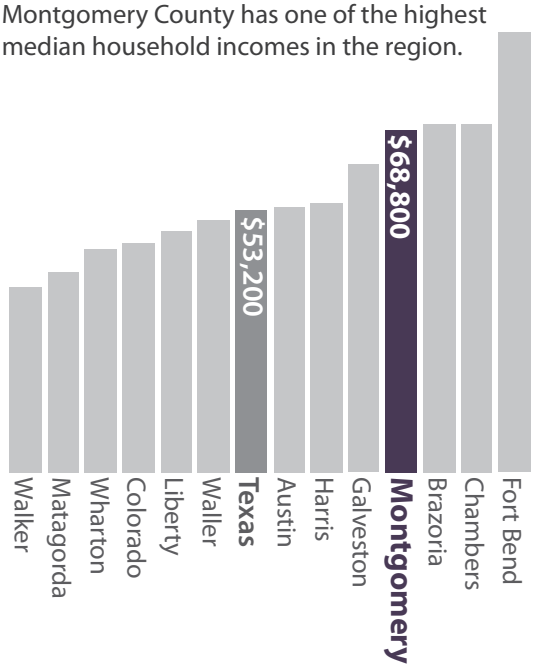
Residents Per Square Mile

Montgomery County has about the same population density as the region.



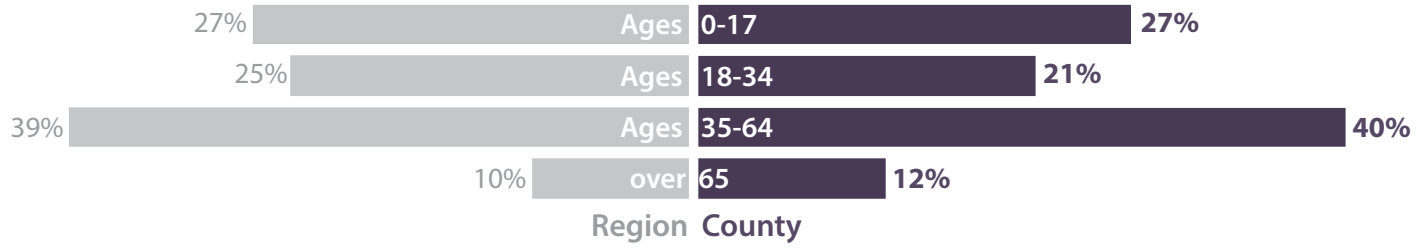
Median Household Income

Montgomery County has one of the highest median household incomes in the region.



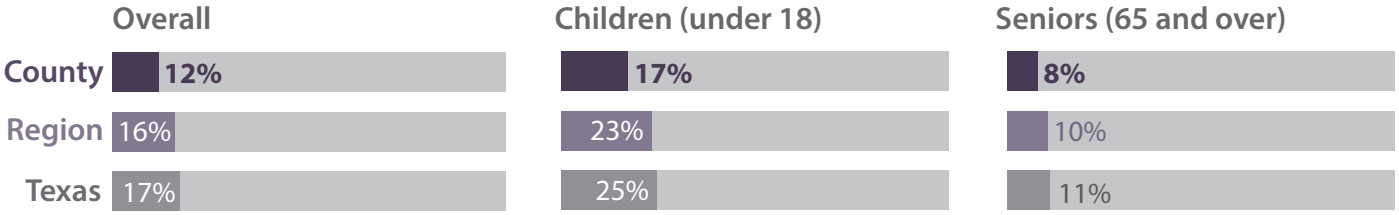
Age

Montgomery County has a similar age profile as the region.



Poverty Rate

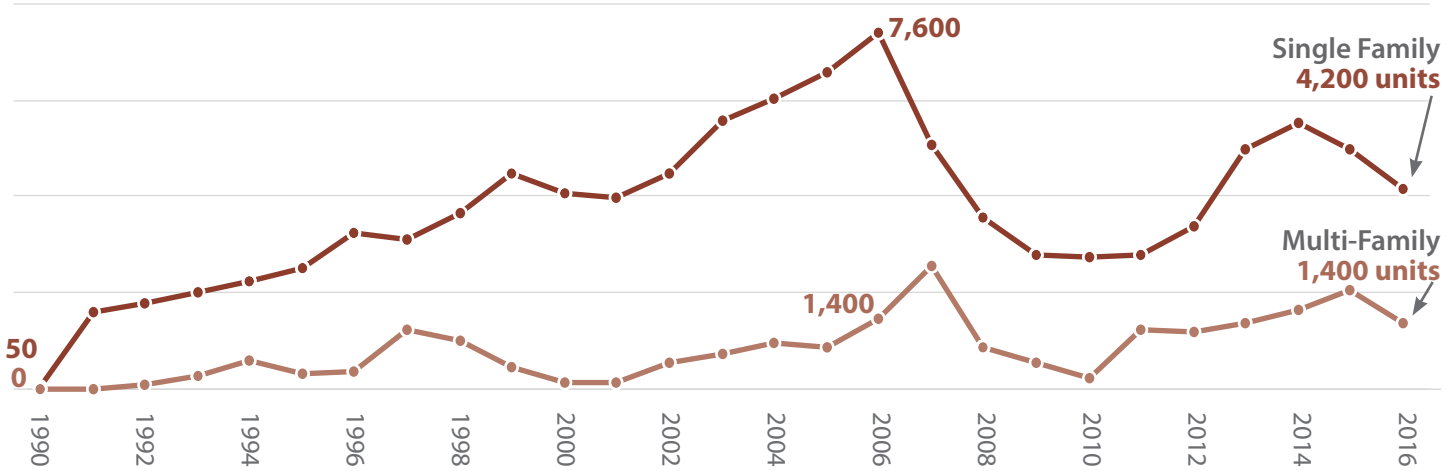
Montgomery County has a lower rate of poverty than the region, particularly for children.



Housing

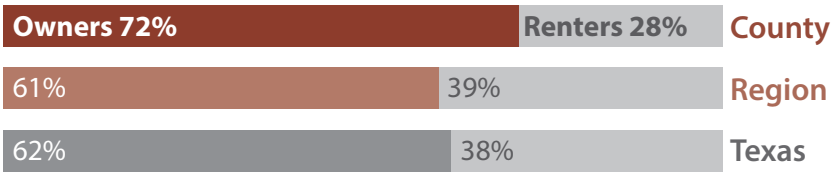
Building Permits Issued

Single-family construction started declining in 2014 after a rise since 2010. Multi-family permits followed a similar pattern.



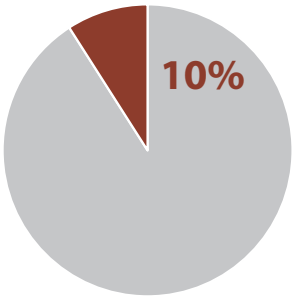
Housing Tenure

Montgomery County has a higher rate of homeownership than the region or the state.



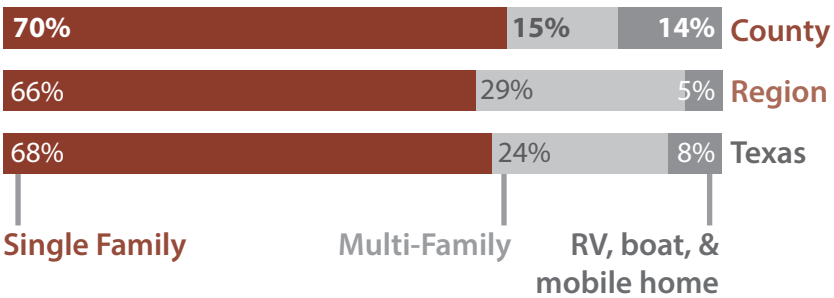
Vacant Housing Units

Around 10% of Montgomery County's housing units are vacant.



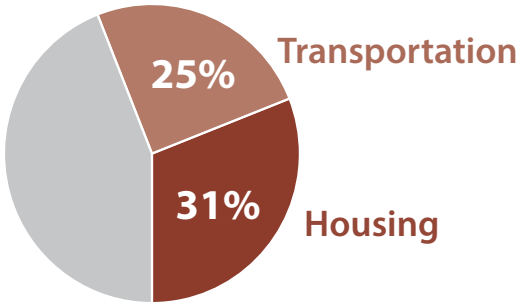
Housing Type

Montgomery County's homes are mostly single-family residences.



Living Costs

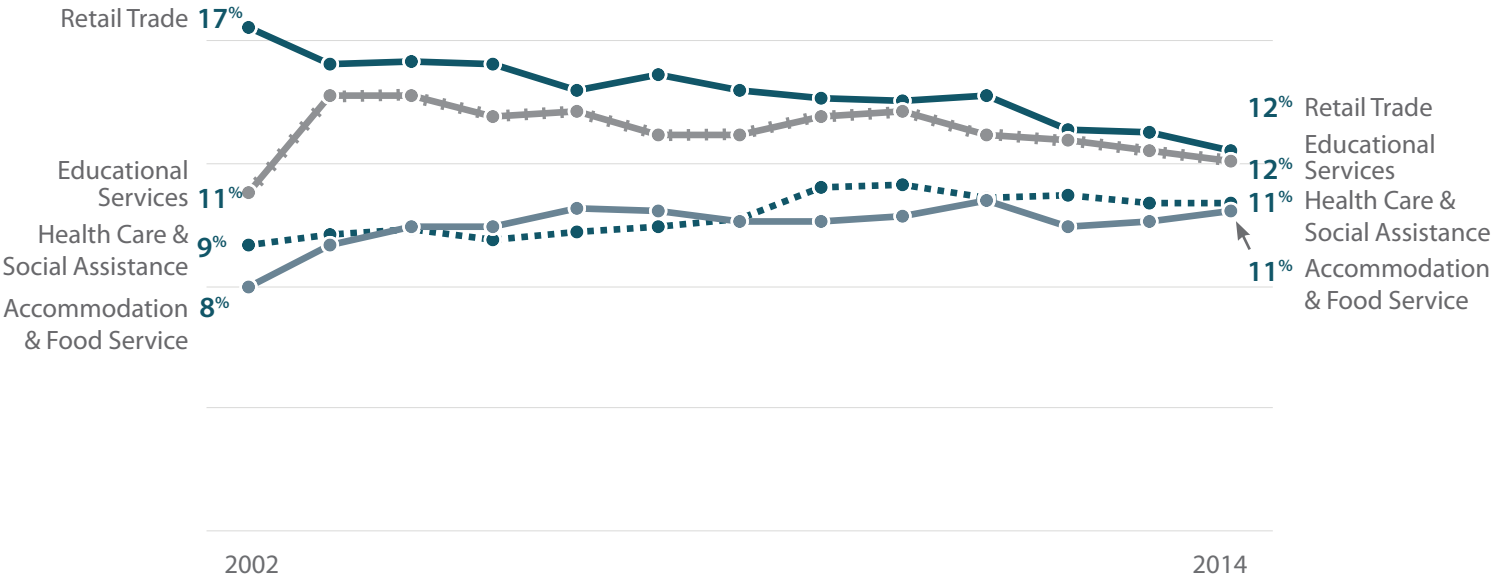
Montgomery County households spend 56% of their income on transportation and housing.



Economy

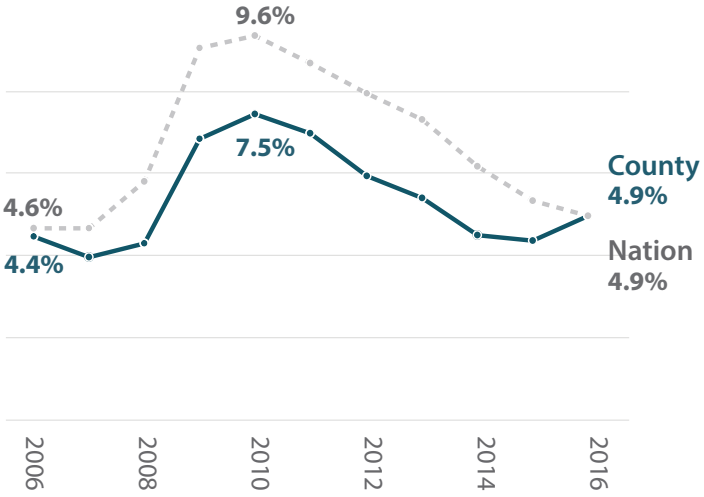
Top Industries by Percent of Overall Jobs

Employment in Montgomery County diversified between 2002 and 2014. While the Manufacturing and Construction industries declined as a percentage of overall jobs, they still employed about the same number of workers.



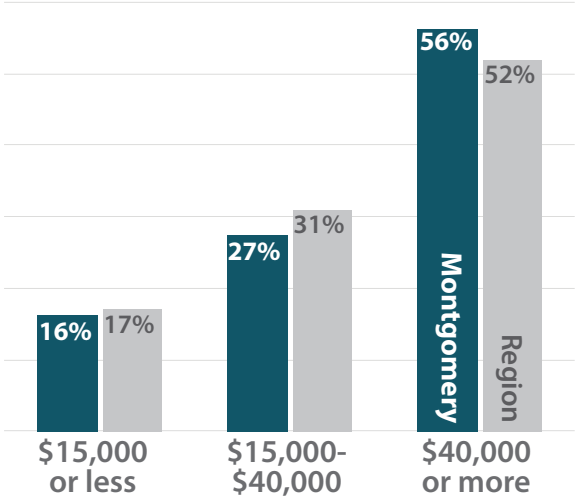
Unemployment Rate

Montgomery County's unemployment has recently been lower than the national average, until 2016.



Earnings of Residents

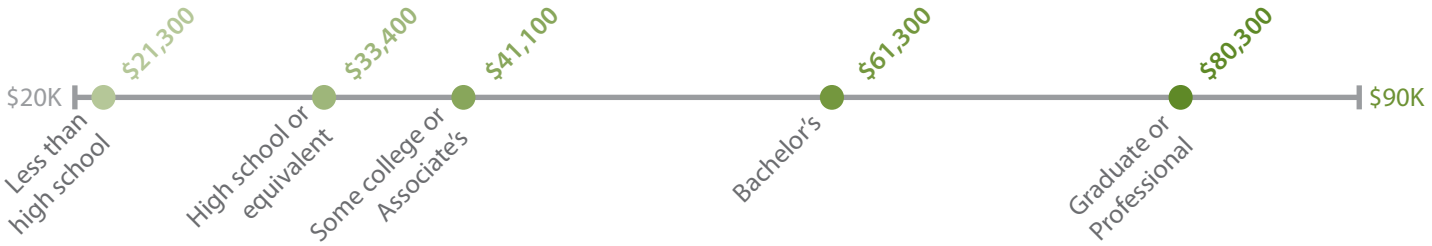
Nearly 60% of Montgomery County residents earn more than $40,000 annually, a higher percentage than the region.



Education, Hazard Risks, and Commute

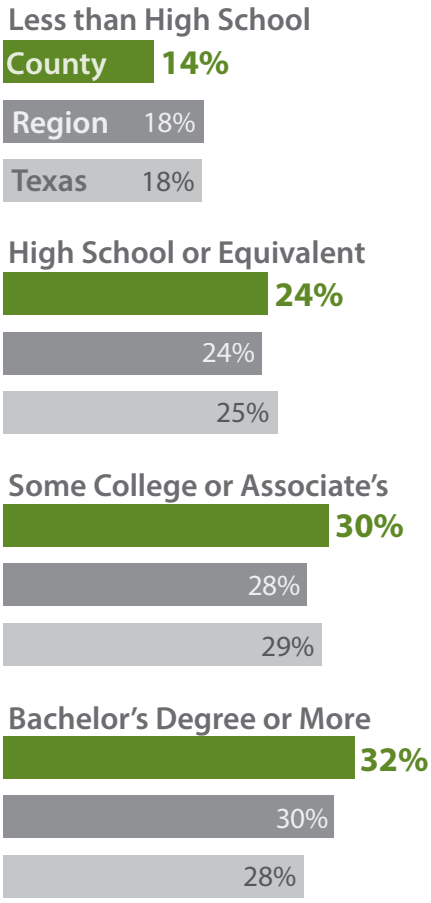
Median Earnings by Educational Attainment

A Montgomery County resident with a graduate or professional degree makes, on average, $59,000 more than a resident with less than a high school education annually.



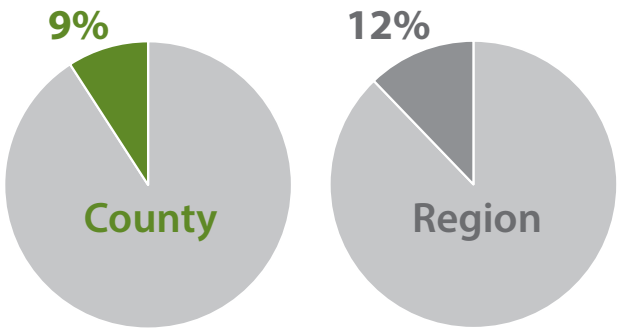
Educational Attainment

A higher percentage of Montgomery County residents have a bachelor's degree or higher than the region and state.



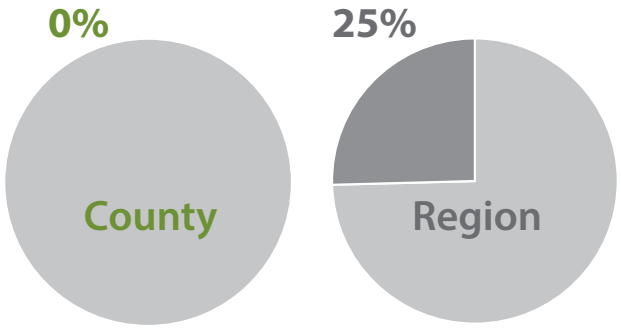
Residents in 100-year Floodplain

A lower percentage of Montgomery County residents live in a 100-year floodplain than tahe region.



Residents in Hurricane Evacuation Zone

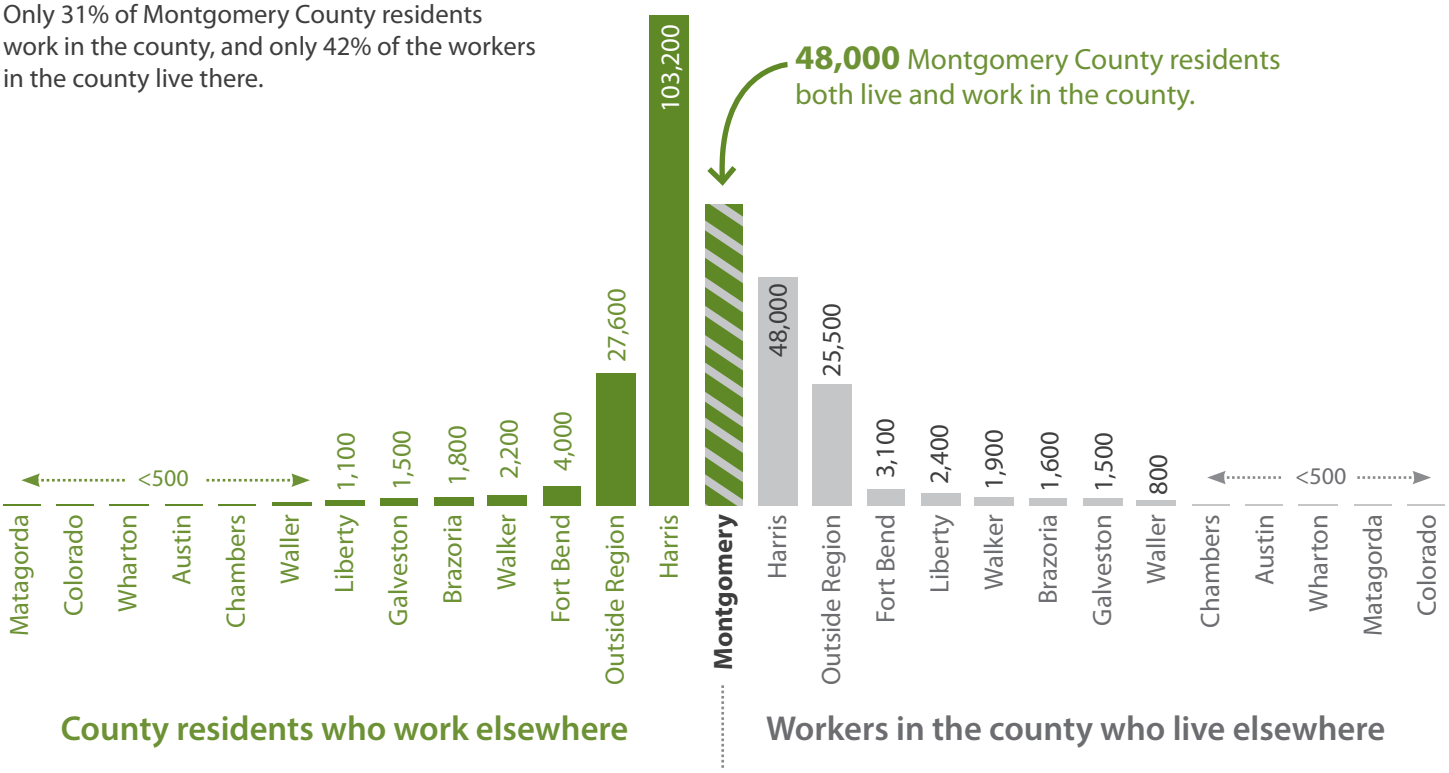
No Montgomery County residents live in a hurricane evacuation zone, as opposed to 25% of the region.



Education, Hazard Risks, and Commute

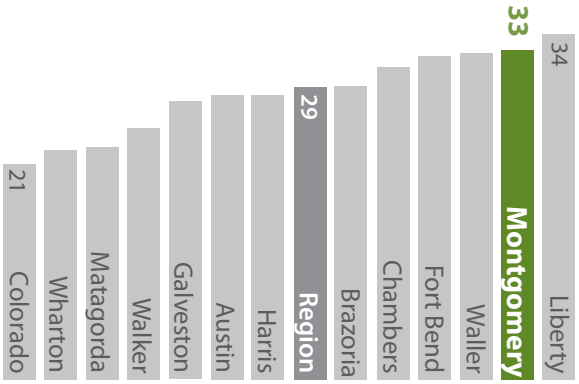
Workers' Job & Home Destinations

Only 31% of Montgomery County residents work in the county, and only 42% of the workers in the county live there.



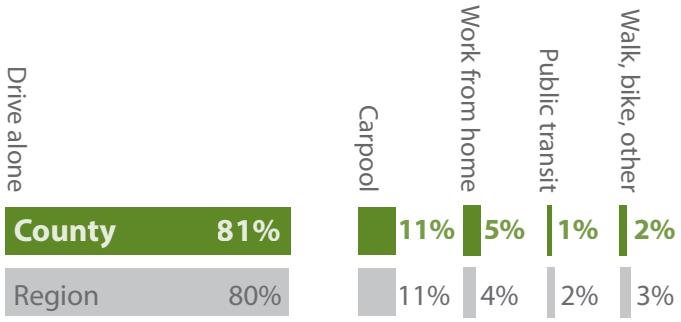
Mean Commute to Work (minutes)

Montgomery County workers have a longer average commute than the region as a whole.



Commute Mode to Work

Montgomery County workers have a similar commute split as the rest of the region.



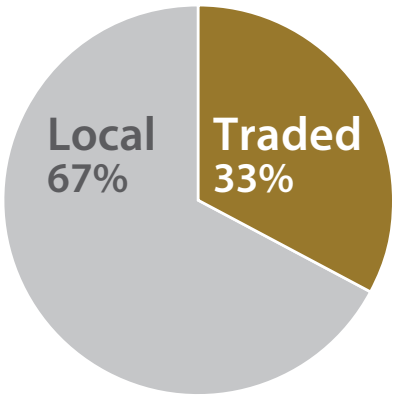
Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

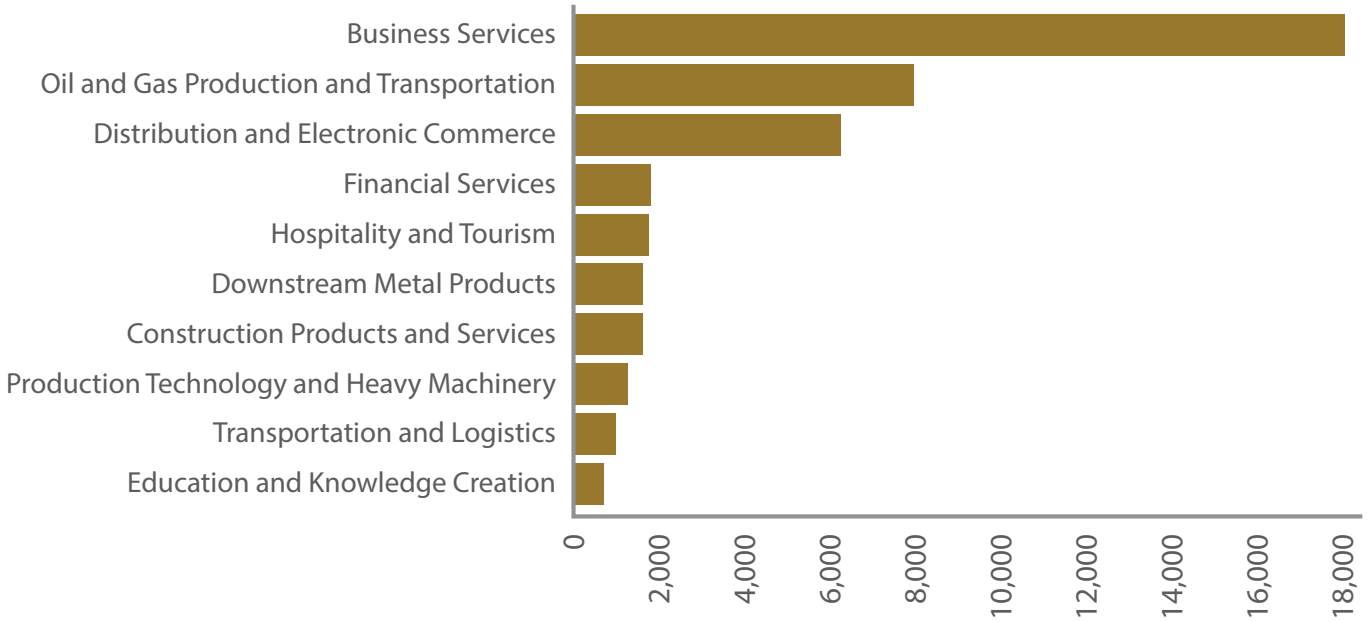
Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.



Employment by Cluster

This bar graph demonstrates Montgomery County's employment by each cluster. It is based on 2014 data from the U.S. Census, and does not reflect the closing of BAE Systems and its impacts on the local economy.



Local Planning

This plan highlights efforts in Montgomery County to plan for disaster recovery and economic resiliency.

Montgomery County Hazard Mitigation Plan

Montgomery County is currently developing a Hazard Mitigation Plan for release in 2019. Montgomery County participated in the 2011 Update of the Regional Hazard Mitigation Plan. The Regional Hazard Mitigation plan was created in 2006 by the Houston-Galveston Area Council, the Texas Division of Emergency Management, and 85 local governments. The comprehensive plan identifies regional hazards and vulnerabilities, and includes over 300 mitigation projects that could be implemented within the region.

The plan identified four mitigation actions for Montgomery County:

- Maintain mobile alternate care sites and associated resources necessary for deployment.
- Implement Ready Set Go Educational Program Implement Ready, Set, Go Educational Program.
- Participate in CRS workshop hosted by H-GAC.
- Reduce hazardous fuels in ditches in county right of way to lessen the threats and impacts from wildfires, droughts and floods.

Data Sources

Brazoria County Overview

1. Houston-Galveston Area Council
2. U.S. Census Bureau
3. Texas Association of Counties
4. U.S. Census Bureau
5. U.S. Cluster Mapping
6. U.S. Census
7. DATA USA
8. Workforce Solutions
9. USDA Census of Agriculture

Recent Disruptions to the Economy

10. Community Impact Newspaper
11. National Weather Service
12. Workforce Solutions
13. Federal Reserve Bank of Saint Louis

Economic Development Strategies

14. Data USA
15. The Cynthia & George Mitchell Foundation

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Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

WALKER COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Walker County and it's economy by providing key data points on the economy, demographics, and other useful information.

Walker County Boundaries

- Walker County
- Other counties
- Top 3 cities
- Major roads

County Seat: Huntsville
Largest City: Huntsville

Walker County Overview

Walker County is in the east Texas Piney Woods. Around 70% of the county is blanketed in pine forest, while a portion in the far west of the county is in Texas Gulf Coastal plain[1]. The major watershed is the San Jacinto River and the lower Trinity River. Walker County has shoreline on both Lake Conroe and Lake Livingston. Walker County's population in 2016 was estimated to be 71,484 and is expected to grow to 118,000 by 2040[2,3]. Walker County has three cities. Huntsville, the county seat, is the most populous with an estimated 41,208 residents. New Waverly (1,018) and Riverside (527) are the other incorporated communities[4]. Major transportation corridors include Interstate 45, U.S. Highway 190, State Highways 19, 20, and 75. The county is served by the Union Pacific Railroad.

Walker County's economy is dependent on the public sector. Approximately 40% of the county's employment is in public administration[5]. The Texas Department of Criminal Justice is headquartered in Huntsville, and more prisons are in Walker County than any county in Texas. Another major public employer in Walker County is Sam Houston State University. The university serves over 20,000 undergraduate, graduate, and doctoral students and is nationally renowned for its criminal justice program[6]. The retail sector continues to grow as the county continues to add residents. The construction sector expansion should track with the county's population growth, new master planned communities have been announced in the southern portion of the county, where residents have closer access to employment centers in Montgomery County. Walker County is home to Sam Houston National Forest, occupying 54,153 acres; it is estimated forestry generated $7,146,000 in 2009[8]. Walker County has 280,512 acres in agricultural production. The market value of agricultural production in the county is $34,513,000 annually; with 54% of revenues from crops, and 46% of revenue from livestock production[9].

Downtown Huntsville has a historical courthouse square.

Recent Disruptions to the Economy

Hurricane Harvey caused flooding throughout Walker County, forcing evacuations across the county. The damages caused by Harvey are still being calculated. Unfortunately, Hurricane Harvey was not an isolated incident. Walker County has been part of six federally declared disasters since Memorial Day of 2015, all of which involved flooding incidents[10]. Only 9% of the county residents live in the 100-year floodplain. However, homes built in low lying areas have flooded multiple times. FEMA has not offered to buy these residences, known as multiple loss structures, which are often owned by low-income individuals without flood insurance. Fortunately, most of the businesses in the county have avoided the worst of flood damage. Walker County's dependence on the public sector shielded it somewhat from the Great Recession, although unemployment in the county peaked at 9% in June 2011. Walker County's economy is not as closely tied to the energy industry as the rest of the region, and did not experience the same negative impacts during the 2014-2016 collapse in the price of oil. The 2010-2012 Texas drought negatively affected crops and cattle production and put the county at risk for wildfires. It also increased maintenance costs as pipes cracked and roadbeds shifted.

Economic Resilience Strategies

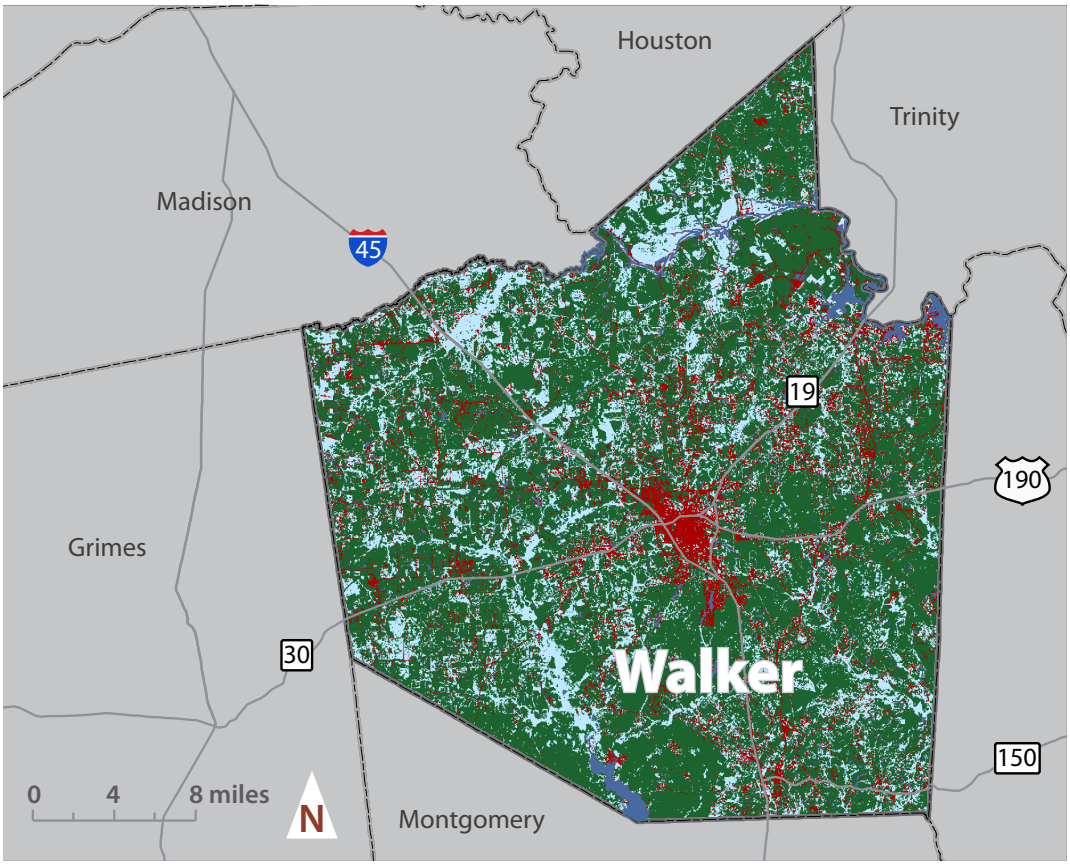
Walker County's dependence on the public sector as an economic base has proven to be a reliable source of employment for residents. However, state and federal institutions do not pay property taxes, reducing the tax base for government. Walker County does not have an economic development corporation which would be able to take advantage of emerging opportunities and provide support for existing businesses. An economic development corporation could partner with Sam Houston State University to harness the commercial potential of the research and innovation the university is creating. Walker County's repeated flood incidences affirms the need for a comprehensive drainage plan for the county.

Recommendations

Walker County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Create a robust economic development corporation to harness economic potential and enhance private sector opportunities
- Investigate strategies for better coordinated countywide flood control.
- Create a master drainage plan for the county
- Develop a business retention and promotion strategy

Land Use and Demographics



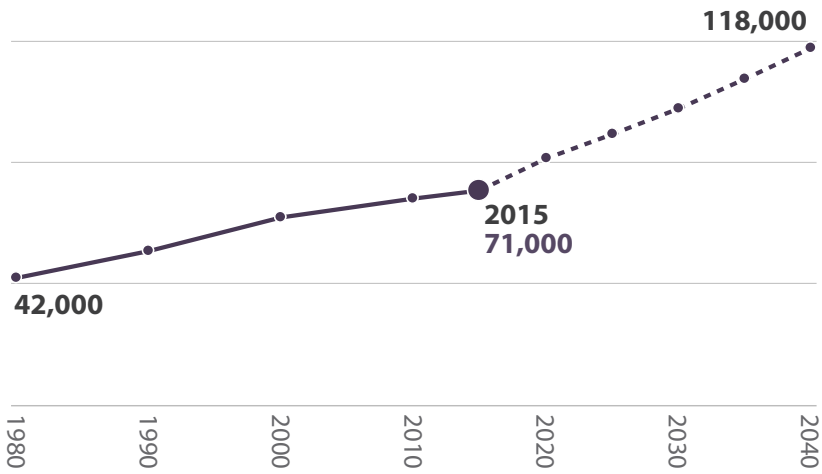
Walker County Land Use

	Other counties
1%	Open water
11%	Developed Land
22%	Wetlands
66%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

Much of Walker County land area is owned by the State and Federal government.

Population Growth Forecast

Walker County grew by 69% from 1980 to 2015 and is expected to reach 118,000 residents by 2040.



Municipal Populations

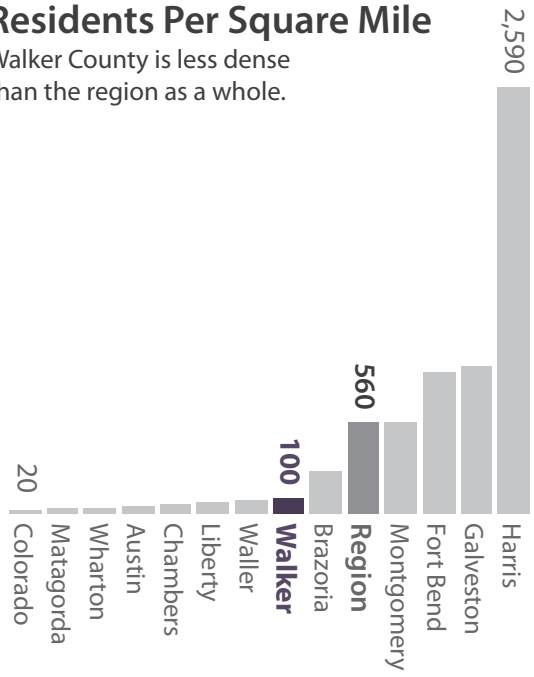
The City of Huntsville is Walker County's largest incorporated municipality.

41,208	Huntsville
1,081	New Waverly
527	Riverside
28,668	Unincorporated

Land Use and Demographics

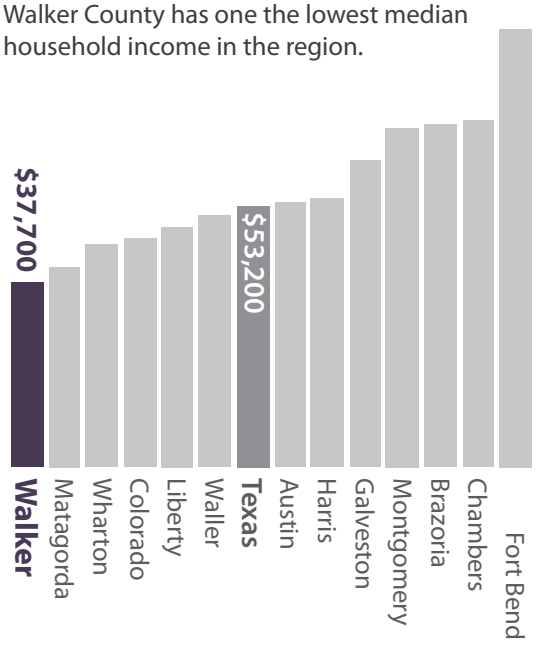
Residents Per Square Mile

Walker County is less dense than the region as a whole.



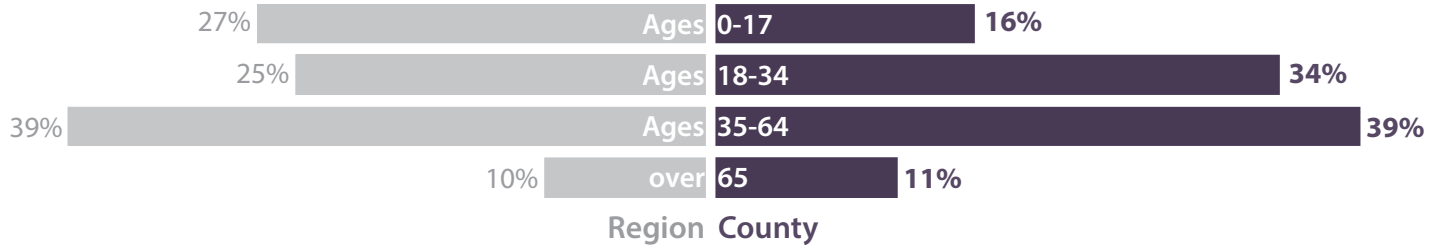
Median Household Income

Walker County has one the lowest median household income in the region.



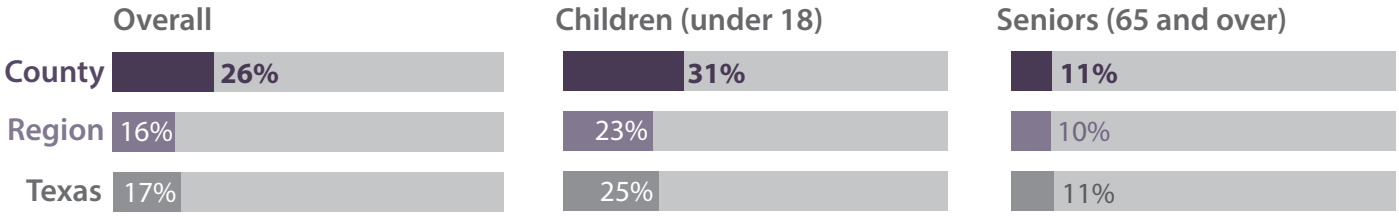
Age

Walker County has a much larger portion of 18-34 year olds than the region.



Poverty Rate

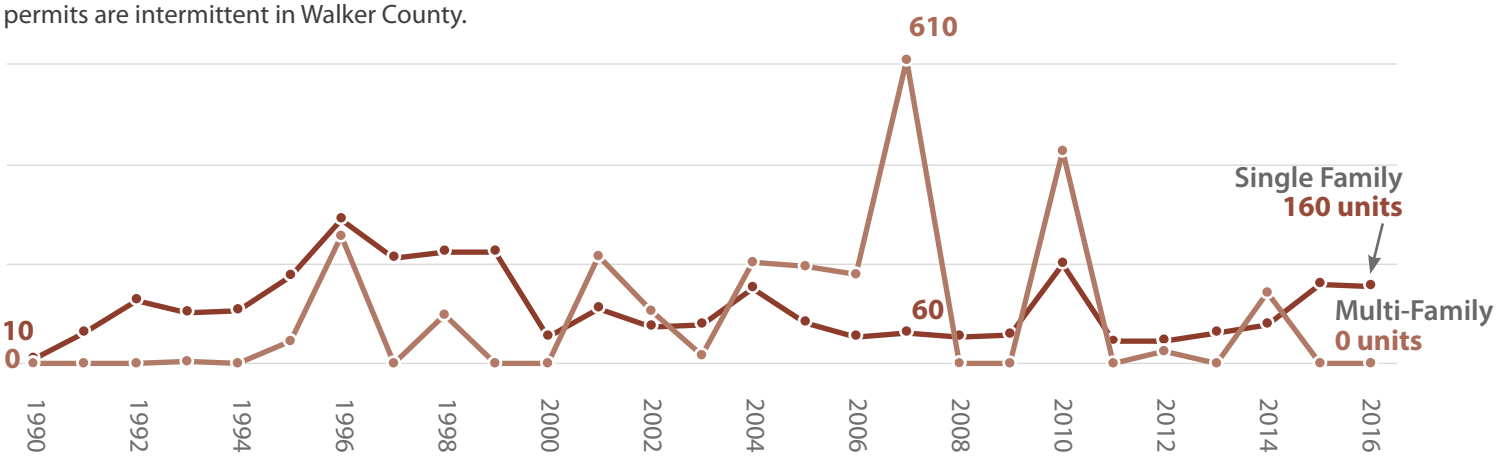
Walker County has a higher poverty rate than the region.



Housing

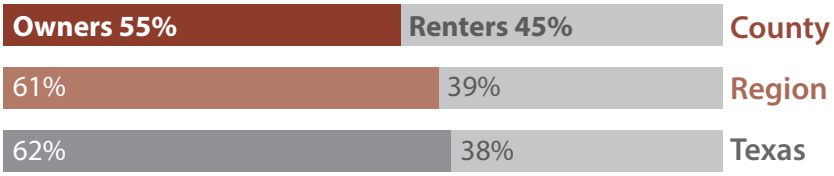
Building Permits Issued

Both single-family and multi-family construction permits are intermittent in Walker County.



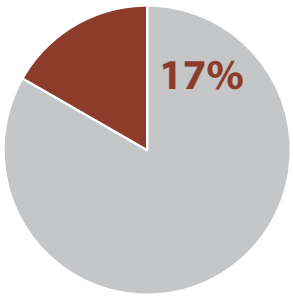
Housing Tenure

Walker County has a lower rate of homeownership than the region or the state.



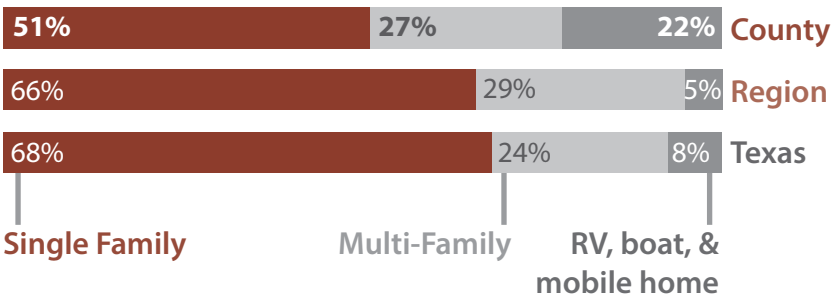
Vacant Housing Units

Around 17% of Walker County's housing units are vacant.



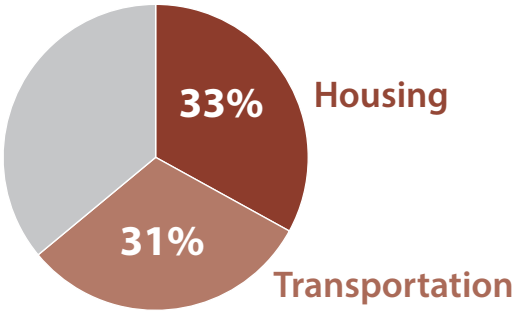
Housing Type

Walker County has a higher rate of multi-family and RV, boat and mobile homes than the region or state.



Living Costs

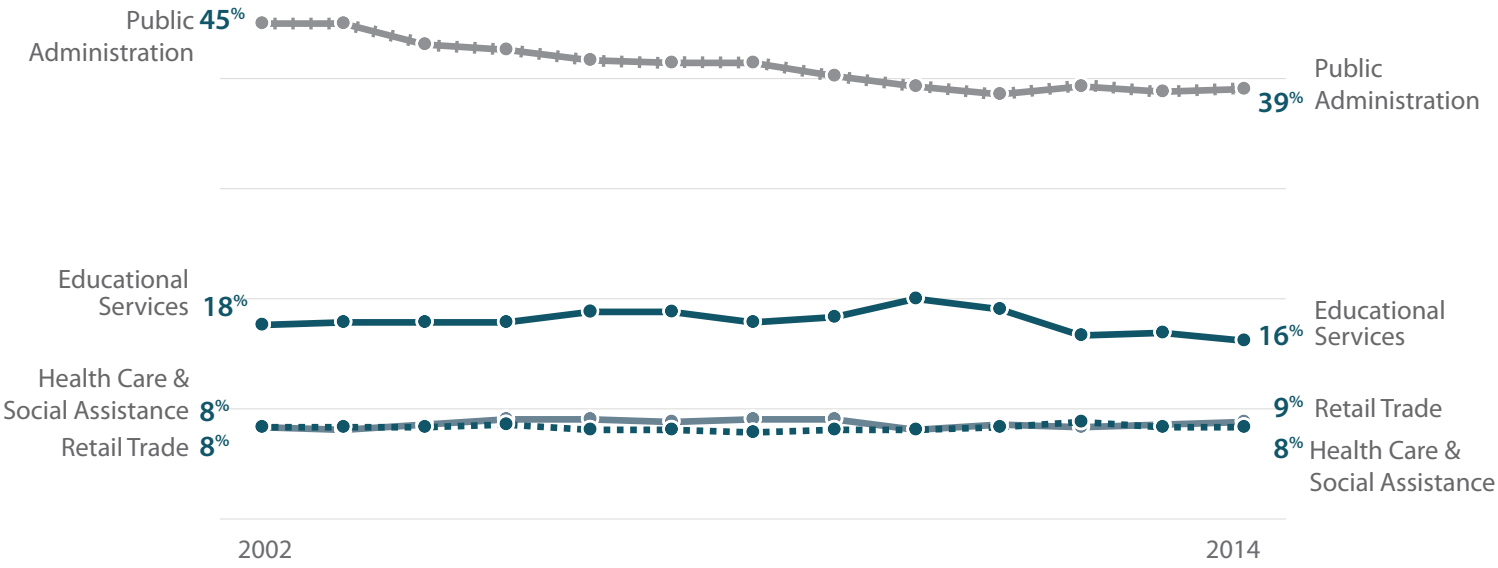
Walker County households spend 64% of their income on transportation and housing.



Economy

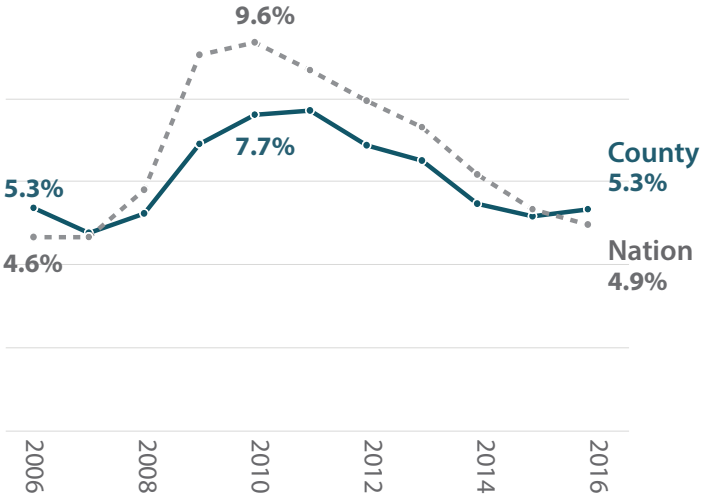
Top Industries by Percent of Overall Jobs

The Public Administration industry employs a much larger portion of Walker County workers than any other industry, at nearly 40% of all county employment, down from 45% in 2002.



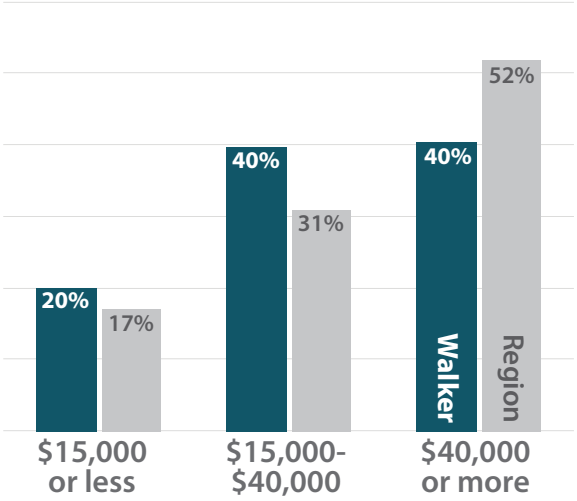
Unemployment Rate

Walker County's unemployment has been lower than the national average until 2016.



Earnings of Residents

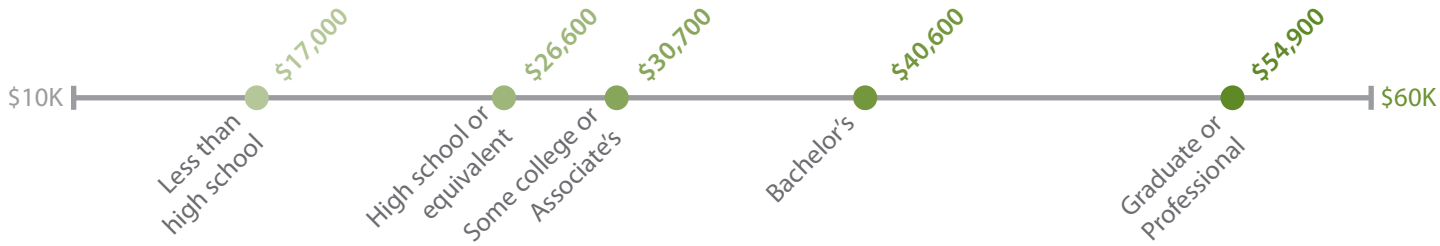
Only 40% of Walker County residents earn more than $40,000 annually, a lower percentage than the region.



Education, Hazard Risks, and Commute

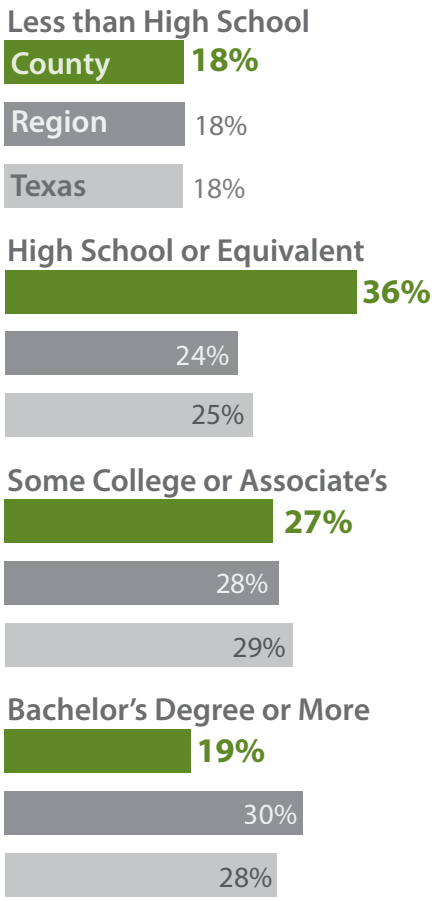
Median Earnings by Educational Attainment

A Walker County resident with a graduate or professional degree makes, on average, $37,900 more than a resident with less than a high school education annually.



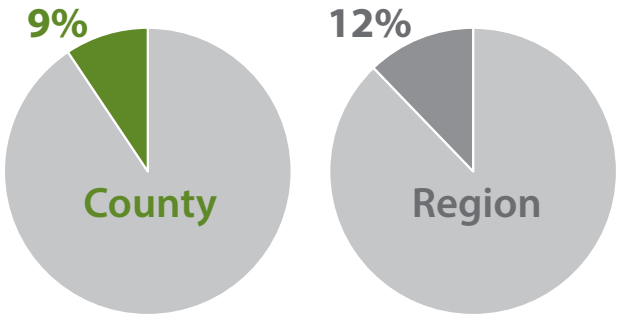
Educational Attainment

A lower percentage of Walker County residents have a bachelor's degree or higher than the region and state.



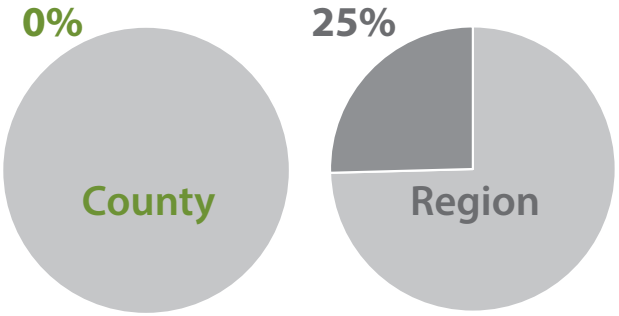
Residents in 100-year Floodplain

A smaller percentage of Walker County residents live in a 100-year floodplain than the region.



Residents in Hurricane Evacuation Zone

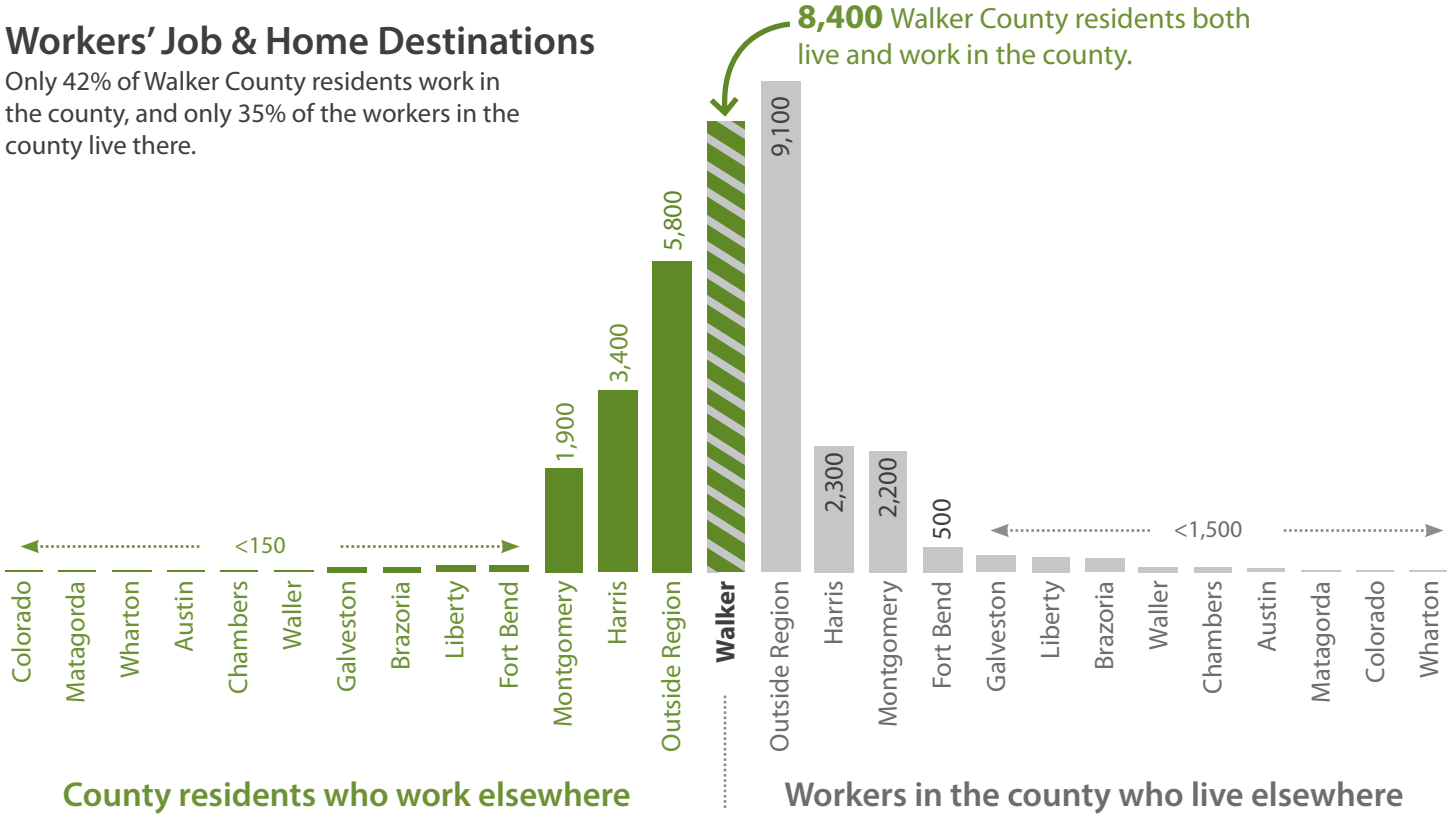
No Walker County residents live in a hurricane evacuation zone, as opposed to 25% of the region's residents.



Education, Hazard Risks, and Commute

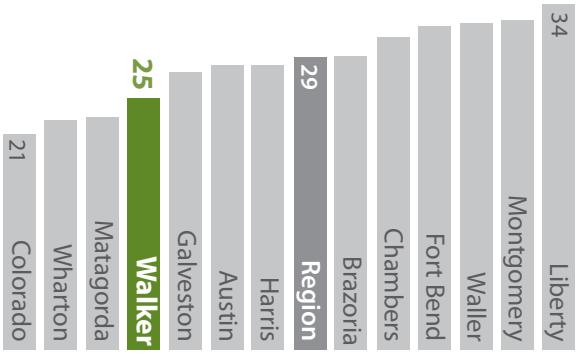
Workers' Job & Home Destinations

Only 42% of Walker County residents work in the county, and only 35% of the workers in the county live there.



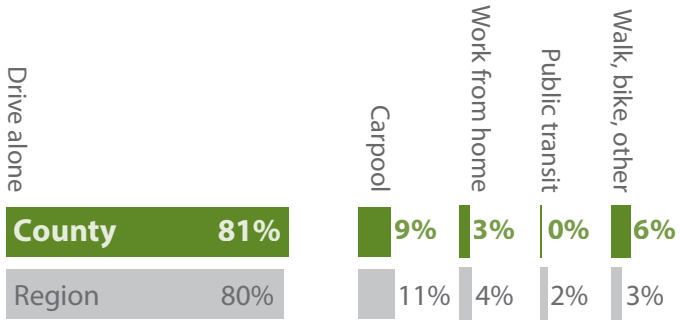
Mean Commute to Work (minutes)

Walker County workers have a shorter average commute than the region as a whole.



Commute Mode to Work

Walker County workers have a similar commute split as the region, but with more walkers and cyclists.



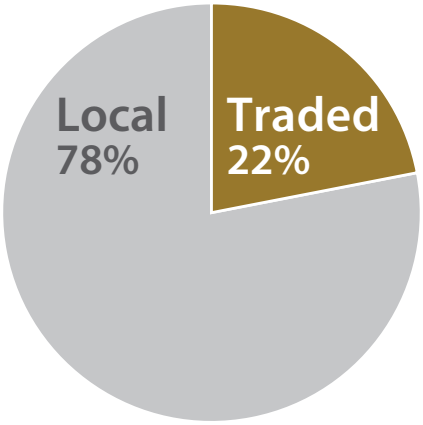
Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

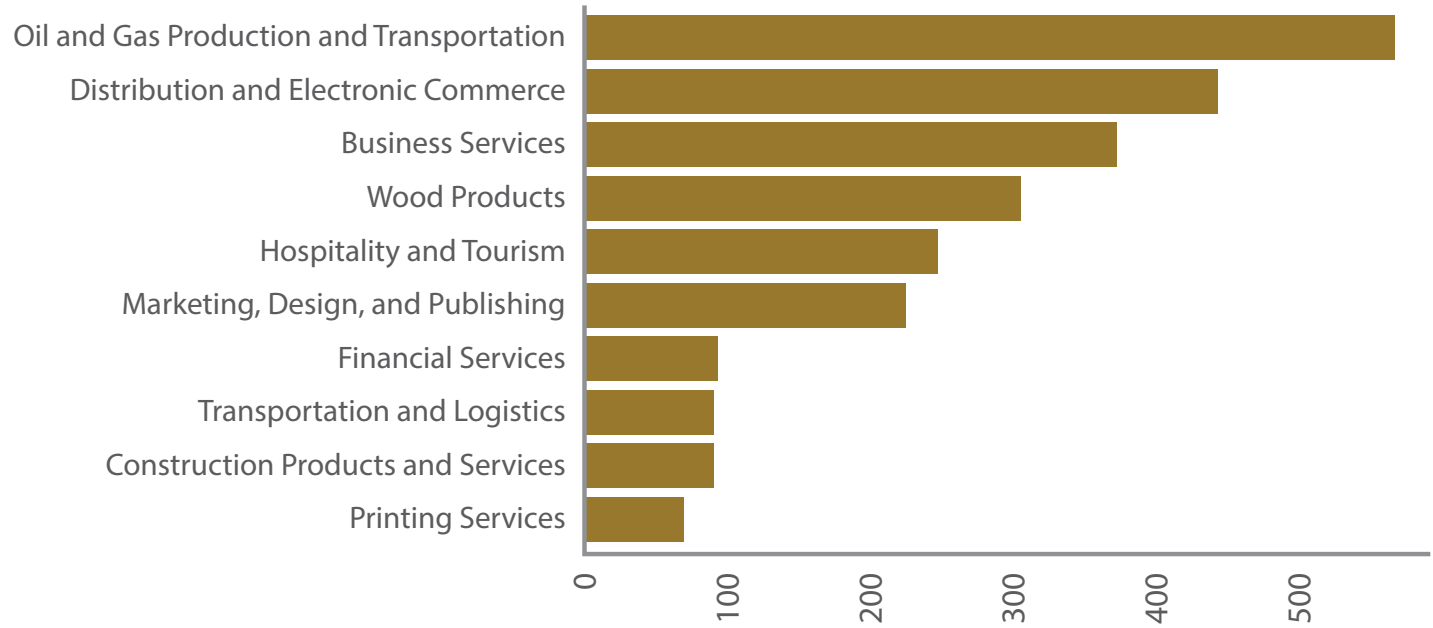
Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.



Employment by Cluster

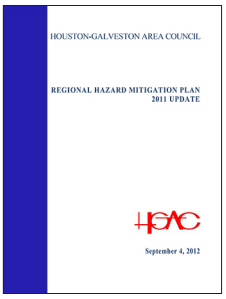
This bar graph demonstrates Walker County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

These plans highlight efforts in Walker County to plan for disaster recovery and economic resiliency.

Walker County Hazard Mitigation Plan



Walker County is currently developing a Hazard Mitigation Plan for release in 2019. Walker County participated in the 2011 Update of the Regional Hazard Mitigation Plan. The Regional Hazard Mitigation plan was created in 2006 by the Houston-Galveston Area Council, the Texas Division of Emergency Management, and 85 local governments. The comprehensive plan identifies regional hazards and vulnerabilities, and includes over 300 mitigation projects that could be implemented within the region.

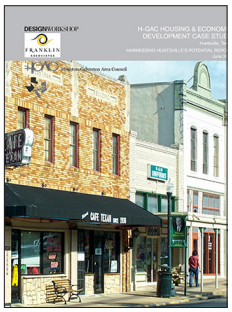
The plan identified 17 mitigation actions for Walker County:

- Install permanently mounted 60 KW generator on a concrete pad at KSAM Radio Station to provide continuous broadcast services to the County.
- Install permanently mounted 600 KW generator on a concrete pad to ensure continuity of critical services at Walker County Courthouse.
- Install permanently mounted 100 KW generator on a concrete pad at offices of Courthouse Annex Building #3 to provide continuous critical services to County.
- Install permanently mounted 50 KW generator, three phase, on a concrete pad at the offices of the Walker County District Attorney's Office to provide continuous Critical services to the County.
- Install Outdoor Early Warning System for New Waverly and Riverside to provide early warning of an impending disaster or an event that would affect life and/or property.
- Structural retrofitting - harden facility at the Walker County Criminal Justice Center.
- Create defensible space per Walker County County-Wide Wildland Protection Plan around buildings in Elkins Lake, Lost Meadows, Smith Hill/Gospel Hill Community, Forgotten Forest, Sunset Lake, and Club Lake Watson Lake Subdivision.
- Mobile hospital.
- Mobile command post.
- Obtain contingency fuel source to refuel generators and equipment to maintain continuity of government, emergency response and critical services.
- Multi-purpose high water rescue/dive team/patrol boat.
- Finish fiber optic communications project.
- Implement flood/weather warning systems (5).
- Construct an animal shelter that will house animals of all kinds and size for use during events where sheltering will be needed.
- Construct two new 7,000-square-foot self-sufficient, self-contained storm shelters as we are a State Storm Shelter Hub.
- Purchase automatic high water (flood) indicators to notify public that flash floods are imminent.
- Construct safe room with generator at KSAM radio station.

An Economic Development Strategic Plan for Huntsville, Texas

The purpose of An Economic Development Strategic Plan for Huntsville, Texas, is to provide the City of Huntsville and area economic development partners with guidance for pursuing opportunities to achieve long-term growth and economic vitality in the community. This plan offers a host of goals, objectives, and actions to support Huntsville's long-term economic development. While these recommendations are valuable for Huntsville, these recommendations are not focused on resilience.

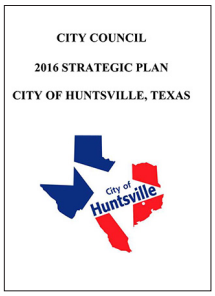
Huntsville Housing and Economic Development Case Study



The Huntsville Housing & Economic Development Case Study was developed to provide local officials and citizens with a clear framework for implementing strategic projects that build upon and strengthen Huntsville's excellent quality of life to create jobs, spur high quality and diverse residential development, and expand retail options. The City of Huntsville and Walker County as a whole, have a job/housing imbalance. A large portion of the new housing development in Huntsville is geared towards students, which are a transient population. This exacerbates the issue

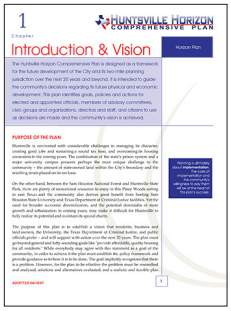
of developing strong and stable neighborhoods that are affordable for

Huntsville Strategic Plan



Strategic planning is the process an organization follows to articulate a vision for the future and establish a direction in making decisions and allocating resources to achieve the desired outcomes. The Huntsville Strategic Plan is meant to provide a road map for success that will lead families and new businesses to Huntsville to join an outstanding community where good governance and sound management provide the best that life has to offer. The strategic plan articulates Huntsville's vision, mission, and values.

Huntsville Horizon Comprehensive Plan



The Huntsville Horizon Comprehensive Plan is designed as a framework for the future development of the City and its two-mile planning jurisdiction over the next 20 years and beyond. It is intended to guide the community's decisions regarding its future physical and economic development. This plan identifies goals, policies and actions for elected and appointed officials, members of advisory committees, civic groups and organizations, directors and staff, and citizens to use as decisions are made and the community's vision is achieved.

Data Sources

Walker County Overview

1. Texas A&M Agrilife Extension
2. U.S. Census
3. Houston-Galveston Area Council
4. U.S. Census
5. Texas State Historical Association
6. U.S. Census
7. Sam Houston State University
8. Texas Forest Service
9. USDA Census of Agriculture

Recent Disruptions to the Economy

10. FEMA

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

WALLER COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

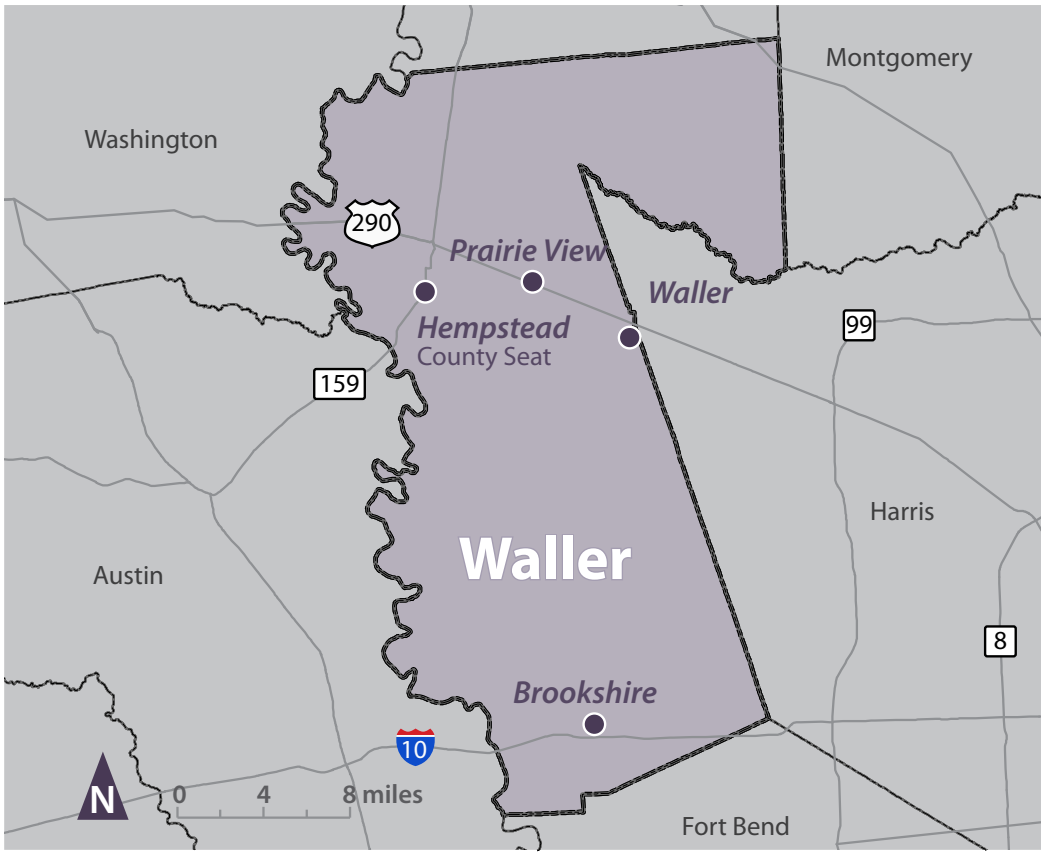
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Waller County and it's economy by providing key data points on the economy, demographics, and other useful information.

Waller County Boundaries

- Waller County
- Other counties
- Top 4 cities
- Major roads

County Seat: Hempstead
Largest City: Hempstead



Waller County Overview

The majority of Waller County is in the Texas Gulf Coastal Plain, and the northern 20% is a rolling timberland[1]. The Brazos River defines the county's western boundary, and its landscape is typified by hardwood bottomland forest. The Spring Creek-Buffalo Bayou watersheds provide drainage for the eastern portion of the county, and the Austin-Oyster Creek watersheds provide drainage to the southern portion of the county. Waller County's 2016 estimated population of 50,115 represents a growth rate for 146% between 1980 and 2015[2]. The population is expected to grow to 120,000 by 2040[3]. Hempstead is the county seat and largest community with an estimated population of 5,770, which is followed closely in population size by Prairie View, with an estimated population of 5,576[4]. Other communities in the county include Brookshire (4,702), Katy (1,156), Pattison (472), Pine Island (988), and Waller (1,880). Nearly half of the population of Waller County (22,661) resides in unincorporated areas. Major transportation corridors in the county include Interstate 10 and U.S. Highway 90 in the southern end. State Highways 290 and 6 cross in Hempstead, in the north-central portion of the county. The county is served by the Union Pacific Railroad[5].

Waller County's economy has transitioned from an agricultural economy to manufacturing and distribution sectors as primary employers. Nearly one quarter of the population is employed in the manufacturing sector[6]. Educational services are the second largest employment sector. The City of Prairie View is home the Prairie View A&M, a land-grant, Historically Black University that is part of the Texas A&M system. Prairie View A&M had an enrollment of 8,762 in 2016, making it the largest population center in the county when in session[7]. Available land along the Interstate 10 corridor has made Waller County a growing center of distribution and food processing for the Houston metropolitan area. Waller County has a strong cluster (a geographic concentration of interconnected businesses) in the oil and gas sector[8]. The agricultural sector remains significant. The market values of agricultural products sold in 2012 was $91,677,000; of that 77% was crop sales and 23% is livestock sales[9]. Cattle, rice, nursery crops, aquaculture, corn, hogs, poultry, hay, and watermelons are the chief agricultural products of Waller County[10].

The City of Waller has taken steps to enhance its identity and amenities.

Recent Disruptions to the Economy

Hurricane Harvey caused flooding across Waller County, where it was especially damaging to the southern half of the county. Interstate 10 acted as a barrier to the natural drainage patterns, causing flood waters to back up in the areas north of the freeway. The flooding from Harvey primarily affected residential areas. Many homes in the portion of the City of Katy that is in Waller County flooded, along with other repetitive loss structures in the county. The total damages to Waller County from Hurricane Harvey are still being assessed. The 2015 Memorial Day Flood and the 2016 Tax Day Flood also caused damage in Waller County. Typically, Waller County is more affected by riverine flooding than sheet flooding. Rainfall upriver from Waller County can cause the Brazos River to break its banks and flood properties. Given the prominence of the oil and gas services sector, the county's economy did unexpectedly well during 2014-2016's collapse in the prices of a barrel of oil. The businesses in this sector have grown accustomed to the boom and bust nature of the industry, and although some were forced to lay-off employees, only a few smaller enterprises closed their doors. The Great Recession caused unemployment to spike to 9.6% in 2009, equal to the national rate of unemployment at the time.

Economic Resilience Strategies

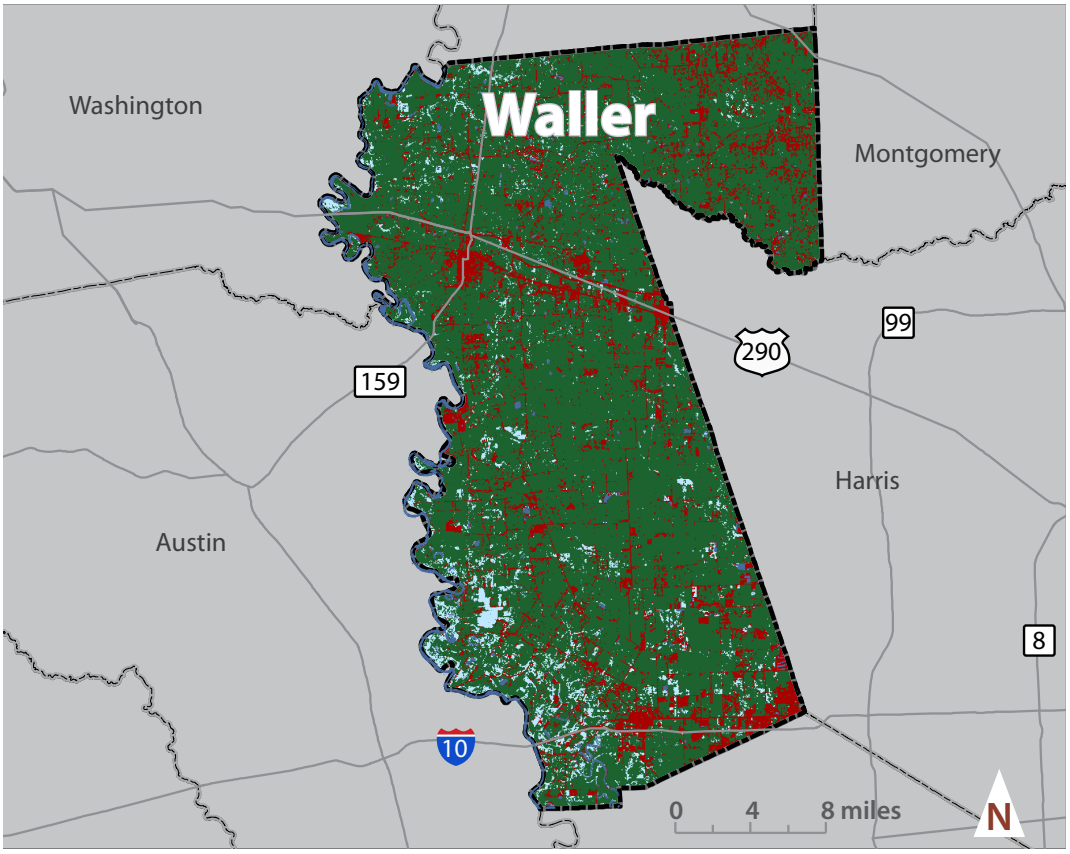
Waller County's multiple flood events over the past few years, along with the growth that is forecast for the county, is causing the county to consider how it wants to develop in the future. The majority of recent residential development in the region has been largely to the north and west of Harris County, and large master-planned residential communities are anticipated to crossover into Waller County in the future. Waller County needs to plan for the eventuality of both flooding events and future development. Waller County is developing a reservoir, and opportunities to use this facility for flood control should be examined.

Recommendations

Waller County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Investigate structures for better coordinated countywide flood control strategies.
- Create and implement a county-level flooding, drainage, and stormwater management plan to improve drainage during floods and other weather events.
- Review development codes to prepare for upcoming influx of residential development.
- Continue efforts to create an agglomeration economy around air-conditioning manufacturing.

Land Use and Demographics



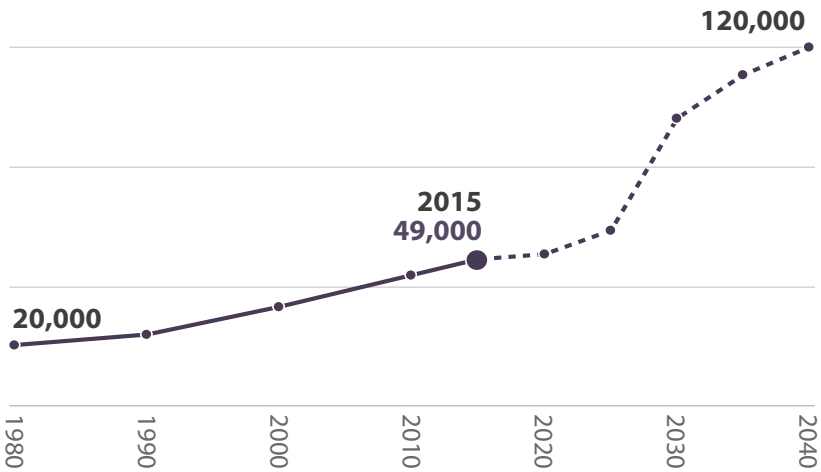
Waller County Land Use

	Other counties
1%	Open water
14%	Developed Land
5%	Wetlands
80%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

Waller County is largely rural but has a growing population and is experience development along I-10 and SH 290.

Population Growth Forecast

Waller County grew by 146% from 1980 to 2015 and is expected to reach 120,000 residents by 2040.



Municipal Populations

The City of Hempstead is Waller County's largest incorporated municipality.

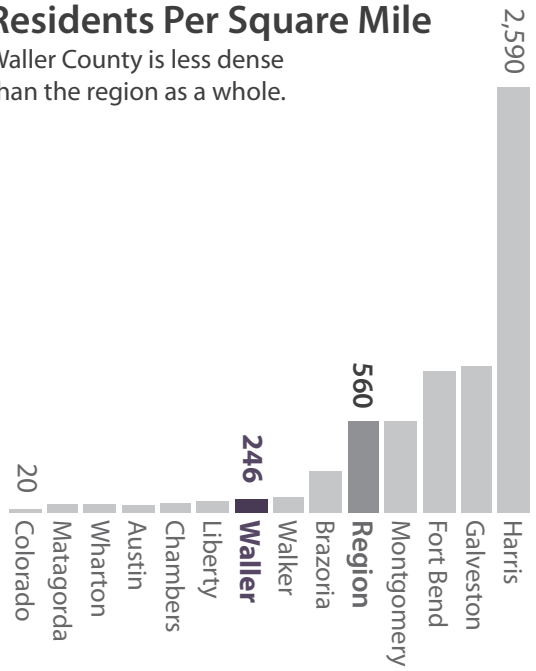
7,457	Hempstead
6,442	Prairie View
5,233	Brookshire
2,278	Waller*
1,100	Pine Island
560	Pattison
1,507	Katy*
25,538	Unincorporated

*The municipality spans multiple counties. Only the population residing in Waller County is shown here.

Land Use and Demographics

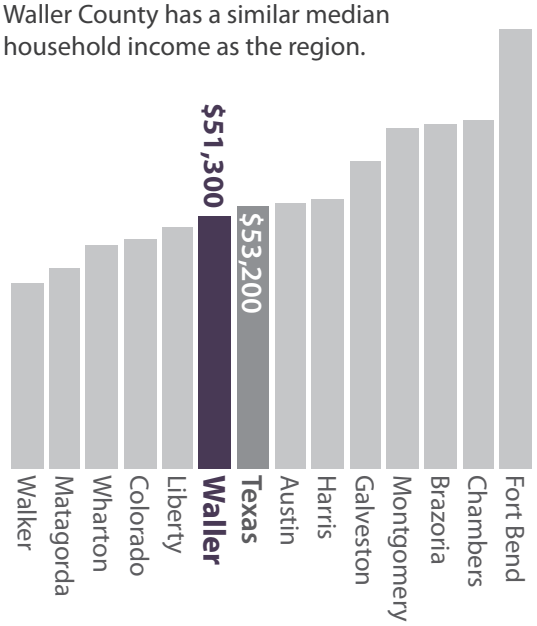
Residents Per Square Mile

Waller County is less dense than the region as a whole.



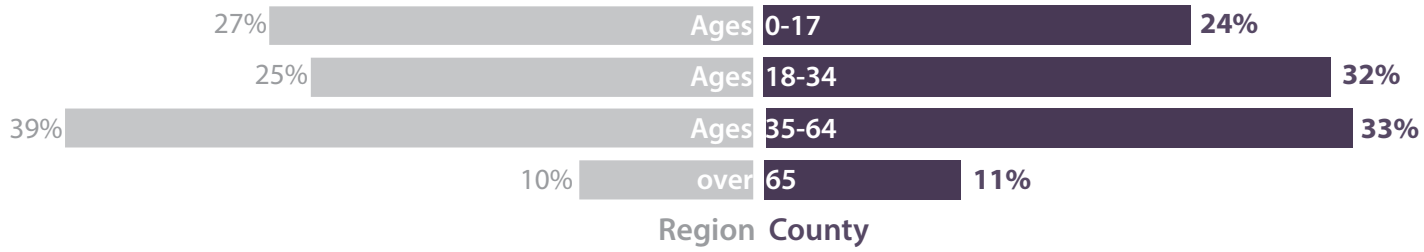
Median Household Income

Waller County has a similar median household income as the region.



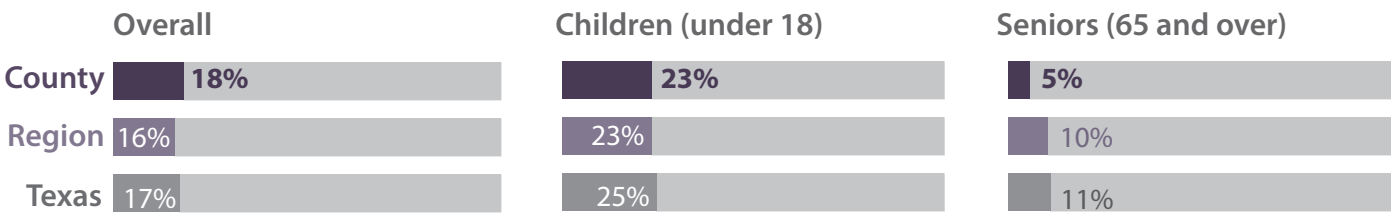
Age

Waller County has a higher portion of 18-34 year olds than the region.



Poverty Rate

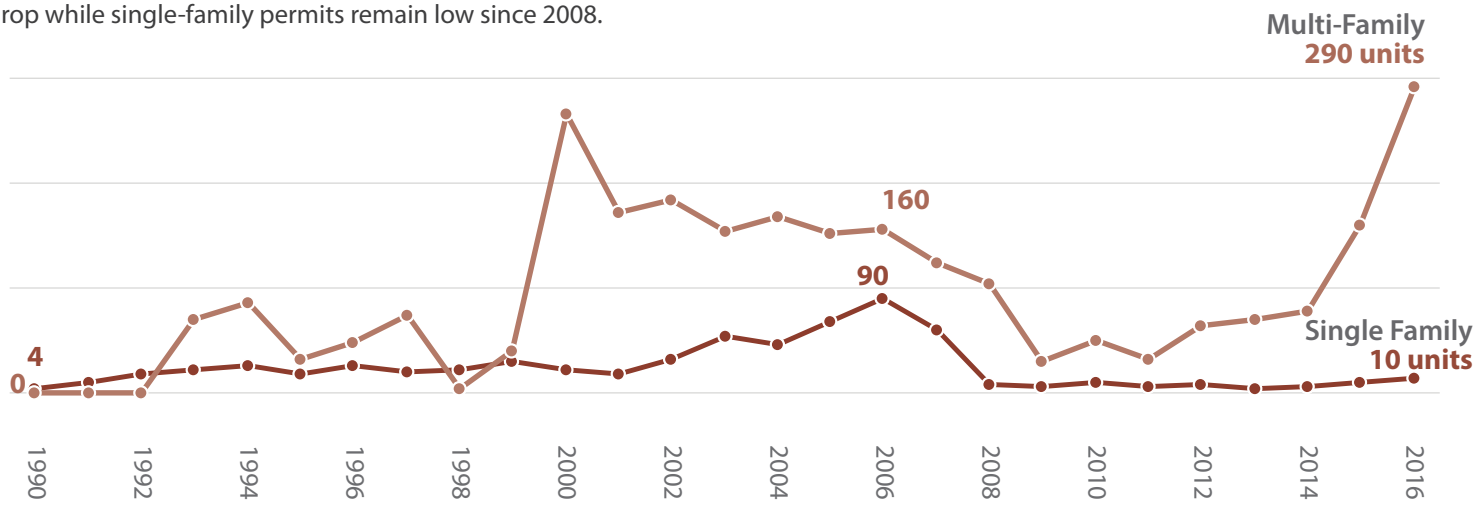
Waller County has a higher rate of poverty than the region, but a lower rate for seniors.



Housing

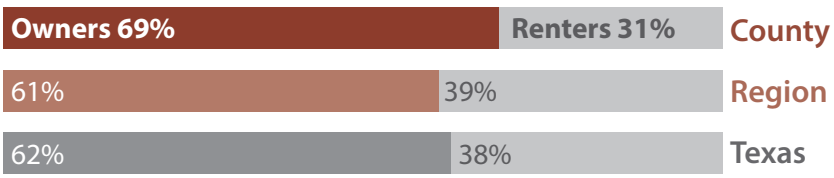
Building Permits Issued

Multi-family construction is rapidly rising after a post-2000 drop while single-family permits remain low since 2008.



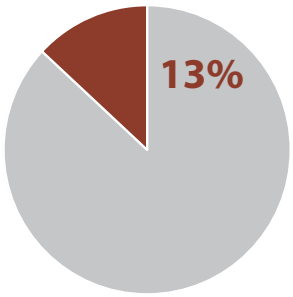
Housing Tenure

Waller County has a higher rate of homeownership than the region or the state.



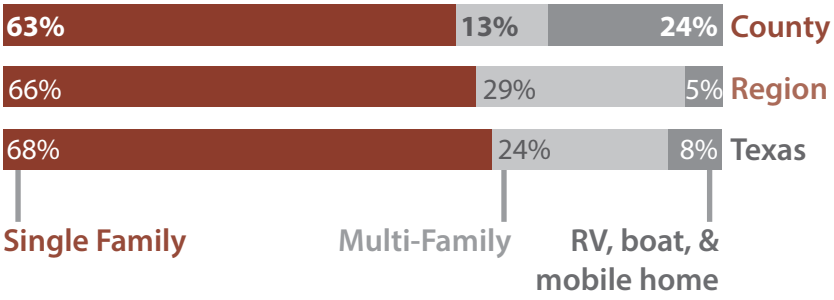
Vacant Housing Units

Around 13% of Waller County's housing units are vacant.



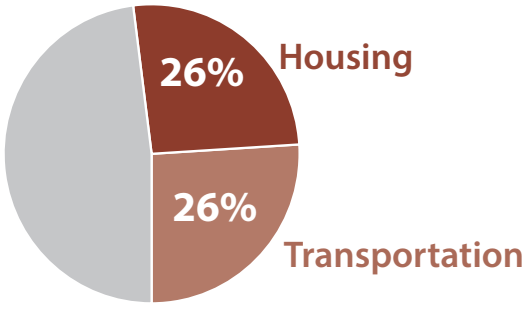
Housing Type

Waller County has a higher rate of RV, boat and mobile homes than the region.



Living Costs

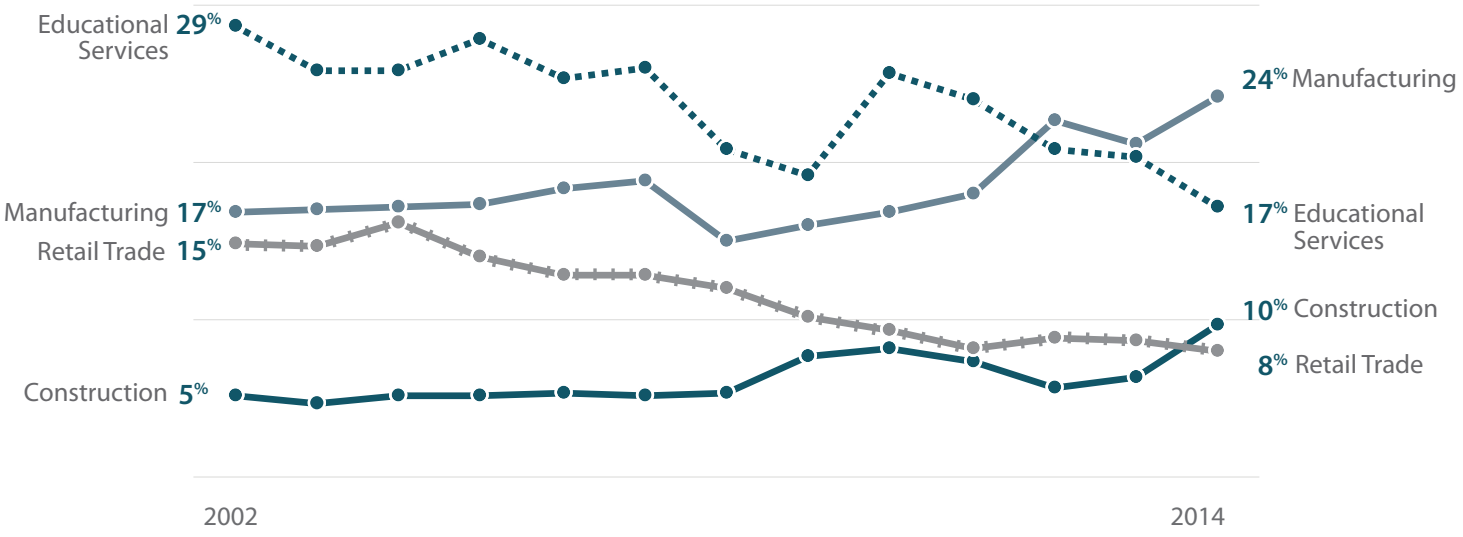
Waller County households spend 52% of their income on transportation and housing.



Economy

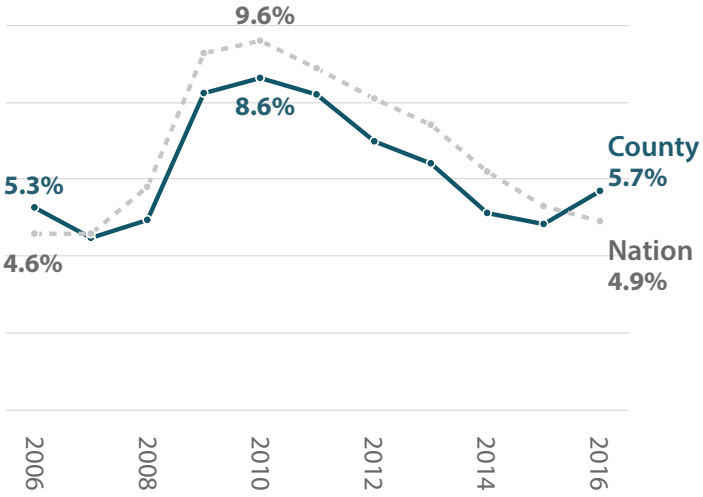
Top Industries by Percent of Overall Jobs

Manufacturing has replaced Educational Services as the industry with the highest employment in Waller County. The Manufacturing industry employed one-quarter of Waller County's workers in 2014, up from 17% in 2002.



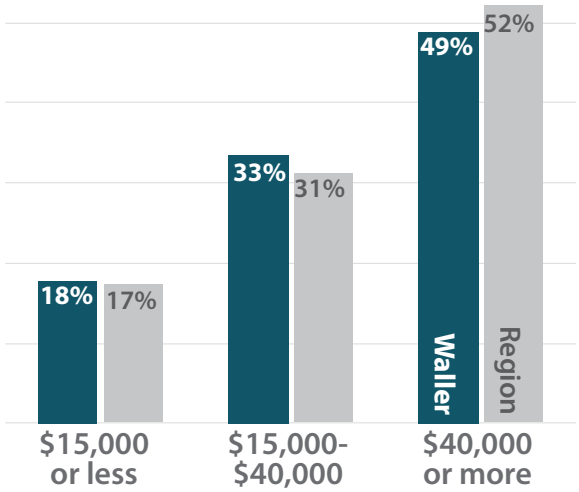
Unemployment Rate

Waller County's unemployment mirrors national trends, and was higher than the nation in 2016.



Earnings of Residents

Nearly 50% of Waller County residents earn more than $40,000 annually, a lower percentage than the region.



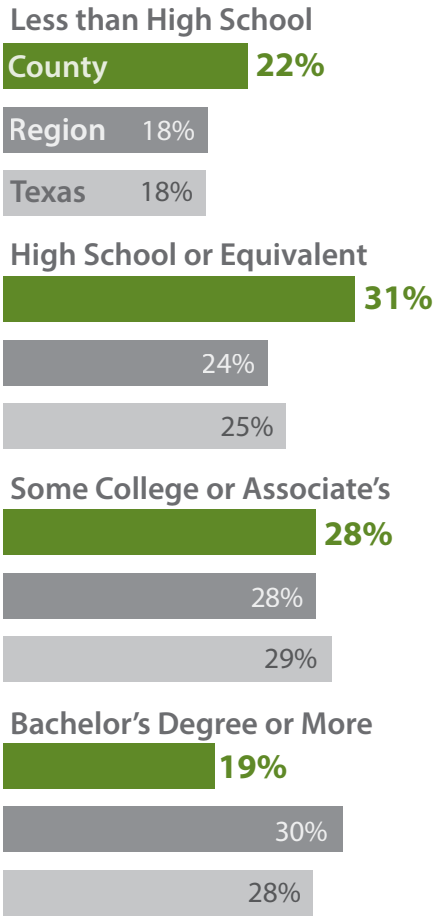
Education, Hazard Risks, and Commute

Median Earnings by Educational Attainment

A Waller County resident with a graduate or professional degree makes, on average, $32,100 more than a resident with less than a high school education annually.

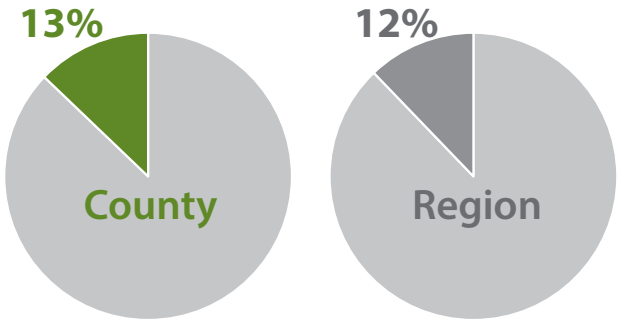
Educational Attainment

A lower percentage of Waller County residents have a bachelor's degree or more than the region and state.



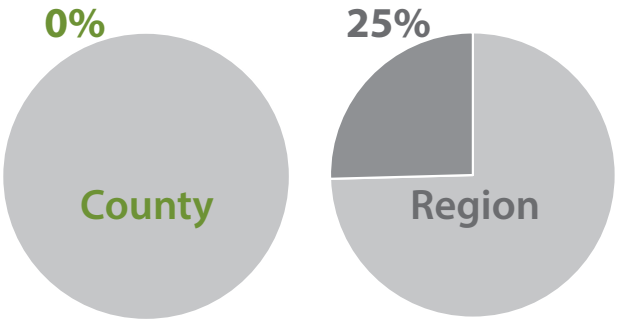
Residents in 100-year Floodplain

A similar percentage of Waller County residents live in a 100-year floodplain as the region.



Residents in Hurricane Evacuation Zone

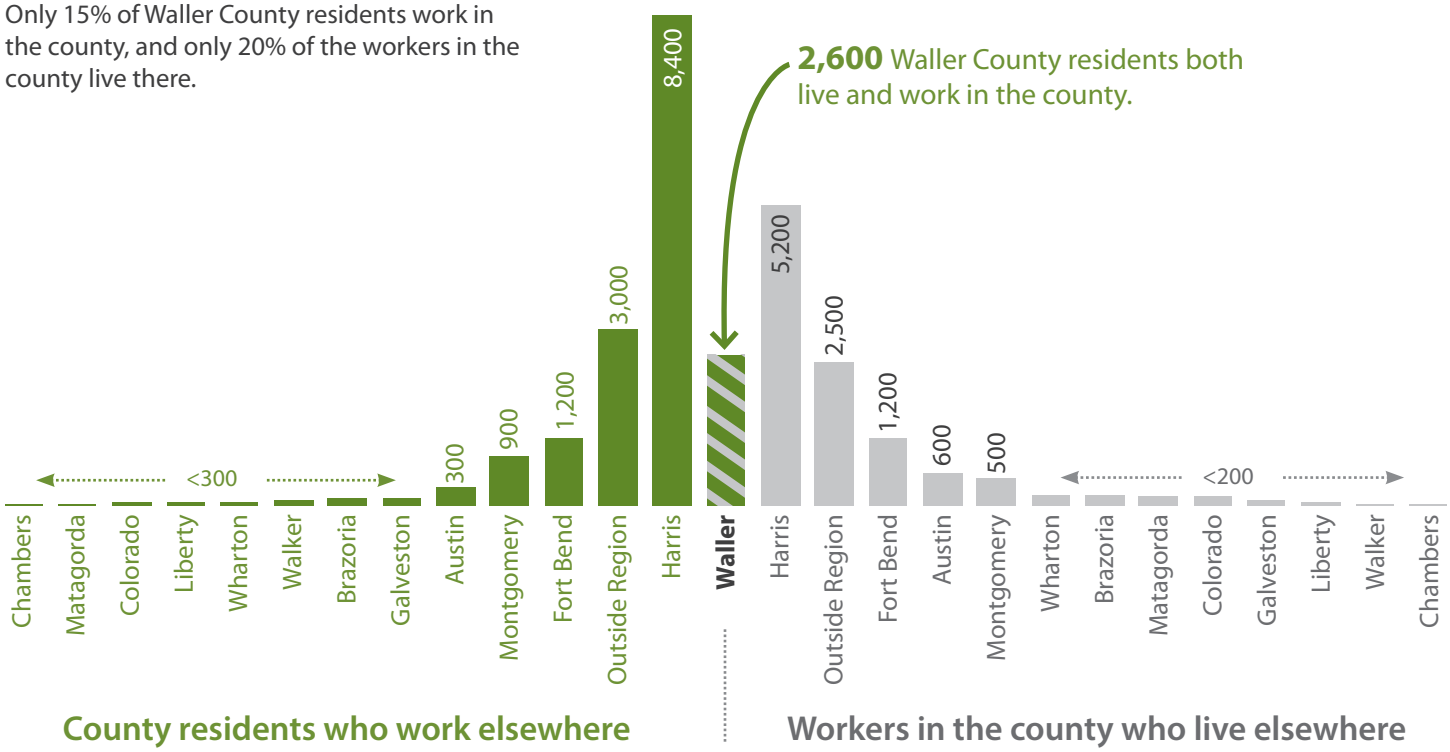
No Waller County residents live in a hurricane evacuation zone, as opposed to 25% of the region's residents.



Education, Hazard Risks, and Commute

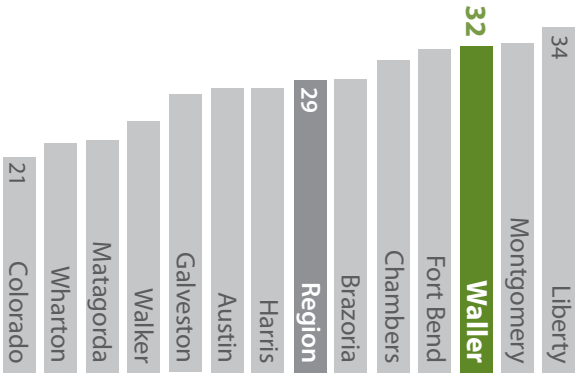
Workers' Job & Home Destinations

Only 15% of Waller County residents work in the county, and only 20% of the workers in the county live there.



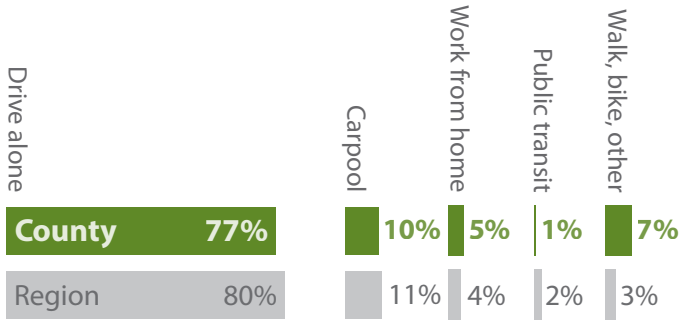
Mean Commute to Work (minutes)

Waller County workers have a longer average commute than the region as a whole.



Commute Mode to Work

A lower percentage of Waller County workers drive to work compared to the region as a whole.



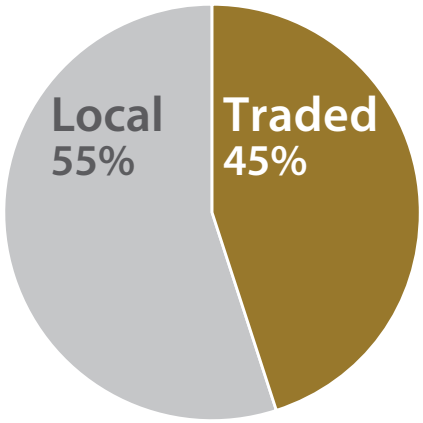
Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

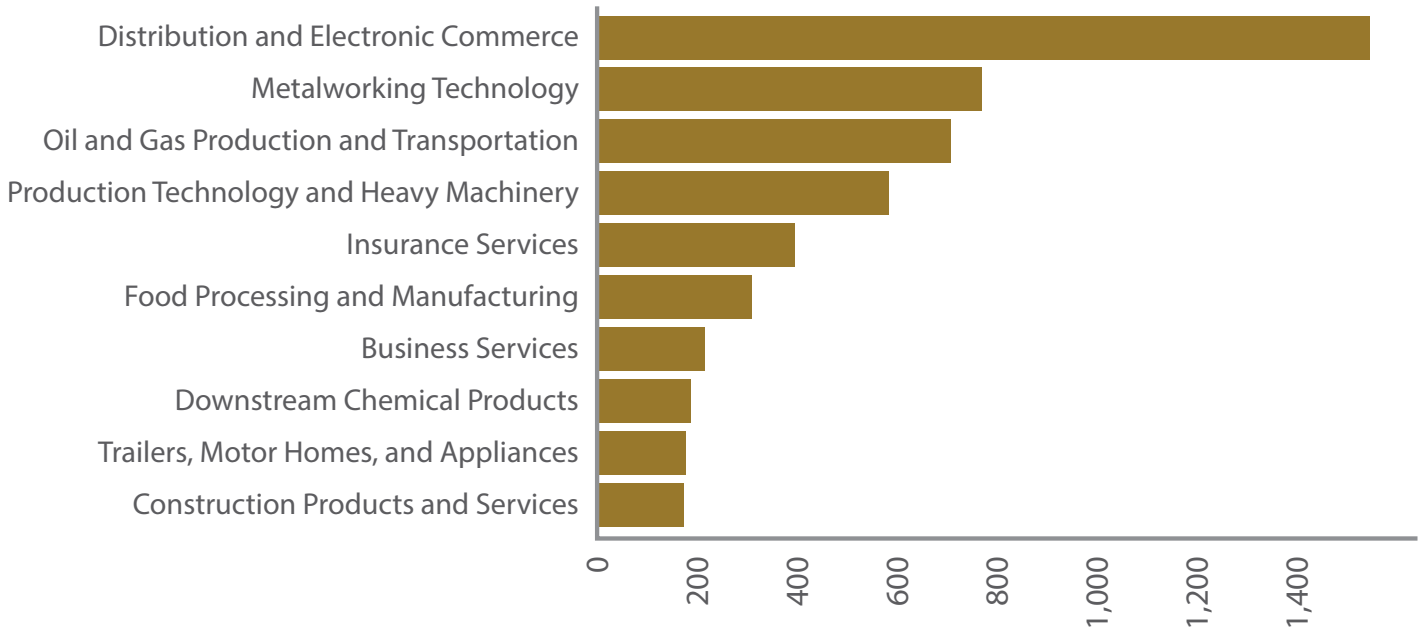
Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.



Employment by Cluster

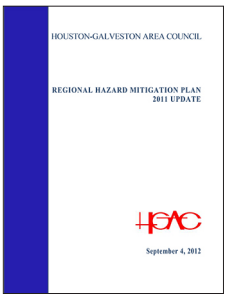
This bar graph demonstrates Waller County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

These plans highlight efforts in Waller County to plan for disaster recovery and economic resiliency.

Waller County Hazard Mitigation Plan

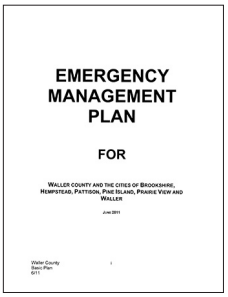


Waller County is currently developing a Hazard Mitigation Plan for release in 2019. Waller County participated in the 2011 Update of the Regional Hazard Mitigation Plan. The Regional Hazard Mitigation plan was created in 2006 by the Houston-Galveston Area Council, the Texas Division of Emergency Management, and 85 local governments. The comprehensive plan identifies regional hazards and vulnerabilities, and includes over 300 mitigation projects that could be implemented within the region.

The plan identified six mitigation actions for Waller County:

- Implement water smart awareness/education program.
- Purchase emergency generators for groundwater wells and drainage pumps in City of Waller.
- Implement Ready, Set, Go program in wildfire urban interface areas and increase education with Emergency Service Districts to promote better public wildfire awareness.
- Coordinate with local fire departments to assist in acquiring grants for specialized portable wildfire fighting equipment and portable storage tankage.
- Construct safe room for EOC with emergency generator to maintain services at critical facility.
- Conduct flood outreach and education campaign by distributing information at public buildings, townhall meetings, and other speaking engagements

Waller County Emergency Plan



The Waller County Emergency Plan outlines Waller County's approach to emergency operations in the county and the cities of Prairie View, Waller, Pine Island, Pattison, and Brookshire. It provides guidance for emergency management activities and an overview of methods of mitigation, preparedness, response, and recovery. The plan includes an examination of hazard occurrences. It examines vulnerabilities but is not focused on the economy and how to recover after a disruption.

Hempstead Livable Centers Study

The Hempstead Livable Centers Study provides recommendations for the Downtown Hempstead area in the City of Hempstead. This study should be used by community leaders to better understand new concepts and strategies to increase social, physical, and cultural opportunities for its residents, business owners, visitors, and other stakeholders. The framework for new development creates destinations that are accessible by walking, bicycling, and using public transportation. The plan contains economic development goals identified as part of the planning process, including the following: identify role of downtown and projects that complement economic development happening in other key nodes and locations in Hempstead; and create a balanced and diverse funding strategy for CIP projects and investments. The plan also contains numerous recommendations to help implement the goals. The plan does not examine how the town can be resilient to an economic shock.

Waller Livable Centers Study

This plan for the City of Waller is part of the Livable Centers initiative, designed to forge a new growth strategy in light of the expected growth of the region. The plan has a number of intended outcomes including the following: reconciling regional mobility goals and local planning objectives; community identity and place-making, promoting a proactive approach to growth; and promoting economic development. The plan examines Waller's economic conditions, including occupied and vacant commercial real estate. The plan acknowledges draining and flooding as a problem within the study area. The city contains approximately 545 acres of floodplain. The plan acknowledges creating an urban center will increase the imperviousness, thereby creating additional stormwater runoff.

Data Sources

Waller County Overview

1. Texas State Historical Association
2. U.S. Census
3. Houston-Galveston Area Council
4. U.S. Census
5. Houston-Galveston Area Council
6. U.S. Census
7. Prairie View A&M
8. US Cluster Mapping
9. USDA Census of Agriculture
10. Texas State Historical Association

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.

WHARTON COUNTY ECONOMIC RESILIENCE PROFILE

Contents

Introduction

Economic resilience is the ability to withstand and prevent disruptions to the economy. The most common types of disruptions include downturns in the economy or in a key industry; the exit of a major employer; and natural or man made disasters.

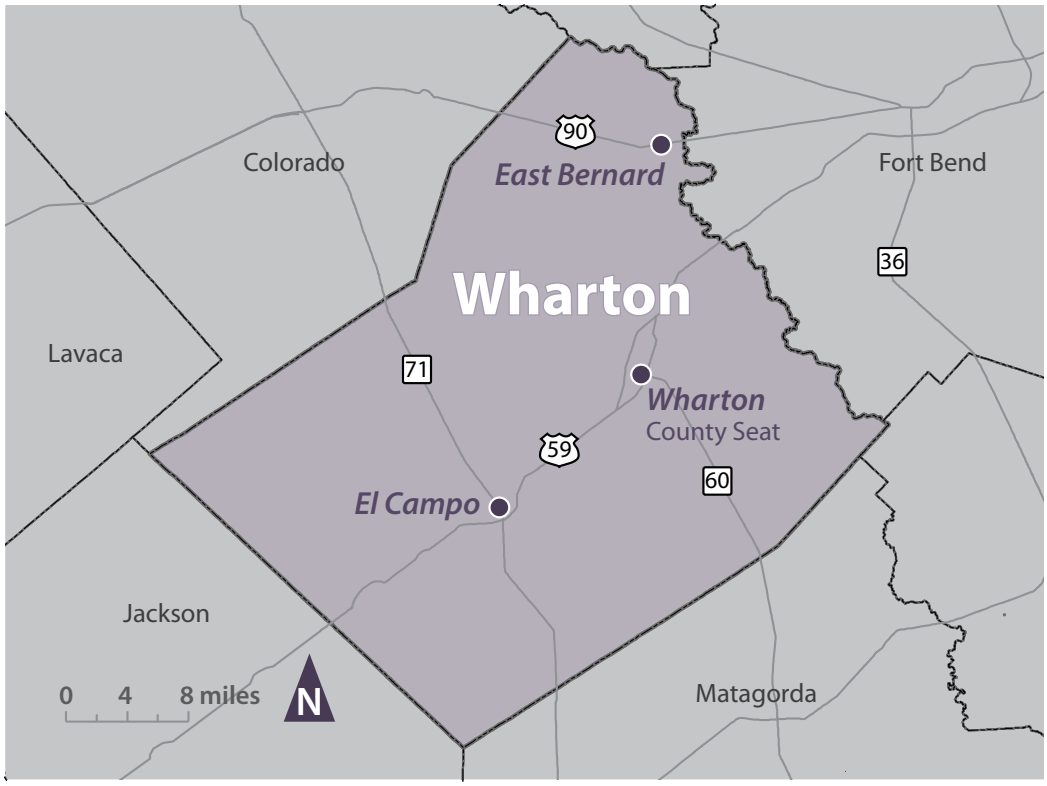
Creating a resilient economy requires the ability to anticipate risk, evaluate how risk can impact economic assets, and build the capacity to respond to disruptions.

This profile is intended to provide an overview of the factors affecting the future growth, development and resilience of Wharton County and it's economy by providing key data points on the economy, demographics, and other useful information.

Wharton County Boundaries

- Wharton County
- Other counties
- Top 4 cities
- Major roads

County Seat: Wharton
Largest City: El Campo



Wharton Overview

Wharton County is on the Texas Gulf Coastal Plain, with hardwood bottomland timber along the Colorado River. The Colorado River is the primary watershed in the county, traversing from the northwest to the southeast and providing drainage in the center of the county[1]. The far western portion of the county is drained by Mustang Creek, and the San Bernard River and West Bernard Creek provide drainage in the eastern part of the county[2]. Wharton County has three cities, El Campo with a population of 11,766, East Bernard with a population of 2,321, and the county seat of Wharton, with a population of 8,785. The unincorporated areas' population is 18,863 (based on 2016 U.S. Census estimates)[3]. Major transportation corridors include Interstate 69, U.S. Highway 90, State Highway 60, and State Highway 71. Tex Mex and Kansas City Southern railroads own a railroad right-of-way, and Wharton County is working to reconstruct the line to connect Victoria with the Houston-Galveston area, bypassing San Antonio, saving several hundred miles of detour[4].

Wharton County's employment is nearly equally divided between healthcare, educational services, retail, and manufacturing[5]. The healthcare sector recently took a hit when the hospital in Wharton closed. The community is working with the new owners to reopen it. Wharton is home to Wharton County Junior College, a two-year college that provides a variety of associate degree options and provides customized training for business and industry. More than 6,900 students were enrolled in Wharton County Junior College (as of 2011), which has multiple campuses in the region[6]. The retail sector is expanding, between 2015-2016 approximately 20 retail businesses opened or expanded[7]. Wharton County manufactures include companies manufacturing plastics products, energy generation technology, and oil field technology[8]. Agriculture remains an important component of Wharton County's economy. The county produced $373,637,000 in annual sales; 72% ($270,754,000) of the value of products sold was in crop sales, and 28% ($102,882,000) was in livestock sales[9]. Wharton County leads the state in nursery, greenhouse, floriculture, and sod production, and also leads the state in acreage for rice production[12].

Wharton County Courthouse is the historic heart of the county.

Recent Disruptions to the Economy

Flooding from Hurricane Harvey caused serious damage to Wharton County. Both the Colorado and San Bernard rivers left their banks and flooded structures throughout the county. Flood stage on the Colorado River in the City of Wharton is 39 feet, and the flood crested at 50.5 feet[11]. Wharton County's topography is flat, and the flooding was extensive; Hurricane Harvey was Wharton County's most damaging disaster in recent history. The extent of the damage Hurricane Harvey caused in Wharton County is still being assessed. Hurricane Harvey flooded areas of the county that had not flooded in decades, while the 2015 Memorial Day and 2016 Tax Day floods damaged developed areas that had seen repeated losses due to flooding. These areas flooded during Hurricane Ike, and nearly a quarter of the population lost power. Many of these areas that have seen repeated flood damage are inhabited by low-income households that have limited financial ability to relocate, and often lack flood insurance. Nearly 30 percent of Wharton County residents live in a 100-year floodplain, while the regional average is only 12 percent. A tornado touched down on February 14, 2017, destroying a business in the City of Wharton; and another tornado touched down in East Bernard during Hurricane Harvey. The 2011-2012 drought impacted agricultural production in Wharton County; rice farmers did not have sufficient access to irrigation water, and cattle producers did not have access to sufficient hay to feed their livestock, causing many to sell their herds. The drought also caused increased maintenance costs for the county, as roadbeds shifted and pipes broke. The Great Recession caused unemployment to spike to 9.2% in February 2010[12]. The impact of the Great Recession did not have the same impact as the recession in 1985, which caused 70% of businesses in downtown Wharton to closed. The 2014-2016 collapse in the price of a barrel of oil has impacted local oil field services firms, causing many to lay-off employees.

Economic Resilience Strategies

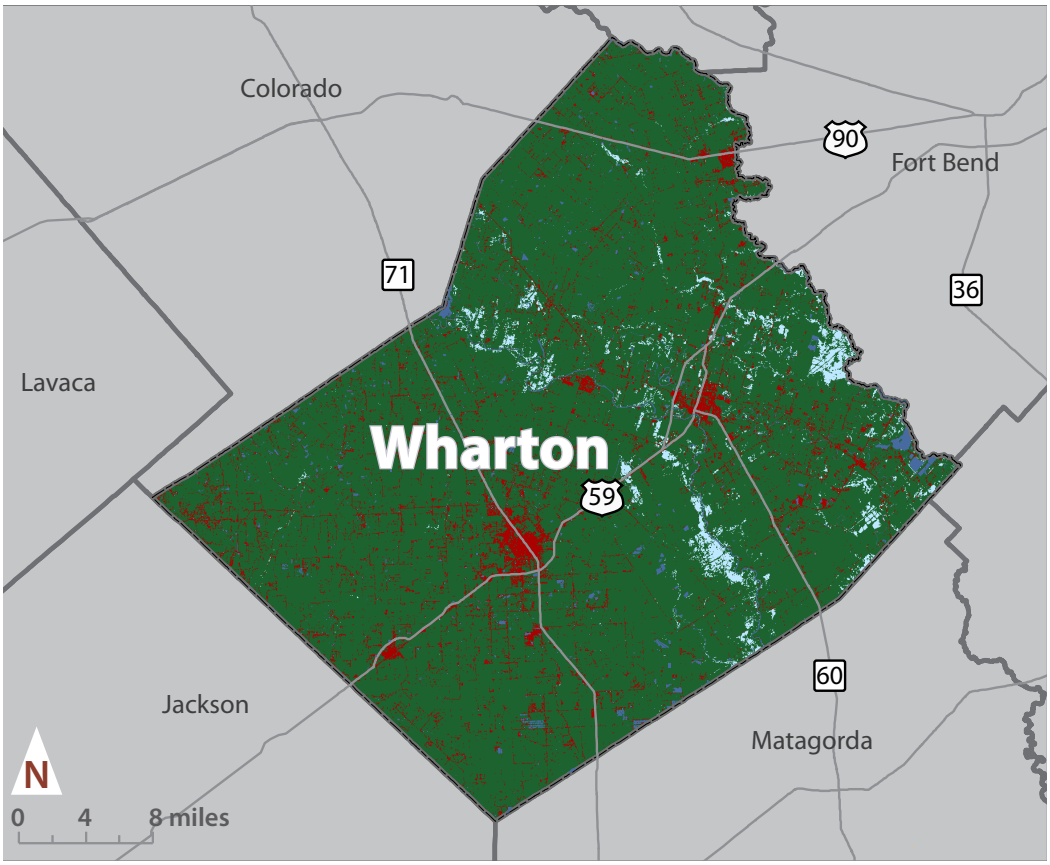
Wharton County is just beginning to recover from the flooding caused by Hurricane Harvey. Wharton County's major rivers and low-lying topography prone to flooding make the county vulnerable to future storm events, especially in those areas known to flood. The county needs to investigate structural solutions to prevent flooding in developed areas. Wharton County has not yet experienced the development of major master-planned residential communities that neighboring Fort Bend county has. Wharton County needs to be prepared for the ongoing expansion of metropolitan Houston with the development standards sufficient to protect residents from future floods. Wharton County lacks sufficient broadband infrastructure to serve businesses and residents, and the economy would benefit from expanded Internet access. There is a lack of housing choice in Wharton County, creating a housing imbalance. Wharton would benefit from attracting infill developers to build residential units in incorporated areas.

Recommendations

Wharton County's economy will be better able to withstand, avoid, and recover from disruptions if it is able to:

- Investigate structural solutions to prevent flooding in developed areas
- Investigate structures for better coordinated countywide flood control strategies
- Develop a strategy to expand broadband access for county residents
- Review development standards in the county with regards to flood control

Land Use and Demographics



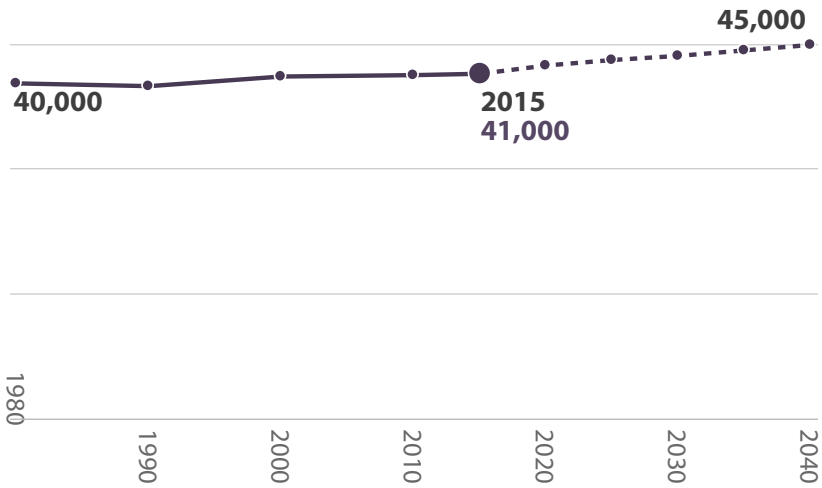
Wharton County Land Use

	Other counties
1%	Open water
7%	Developed Land
3%	Wetlands
90%	Forest, shrubs, pasture, grasslands, barren lands and cultivated crops

Wharton is largely rural, and is a significant hub for agriculture in the region.

Population Growth Forecast

Wharton County grew by 3% from 1980 to 2015 and is expected to reach 45,000 residents by 2040.



Municipal Populations

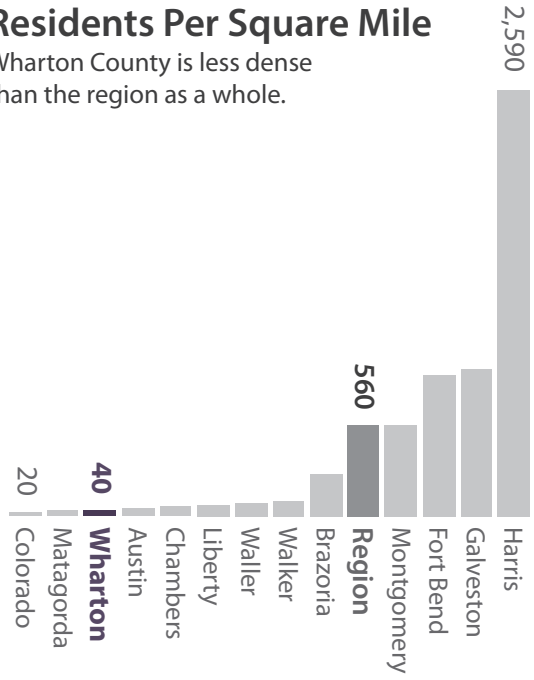
The City of El Campo is Wharton County's largest incorporated municipality.

11,766	El Campo
8,785	Wharton
2,321	East Bernard
18,863	Unincorporated

Land Use and Demographics

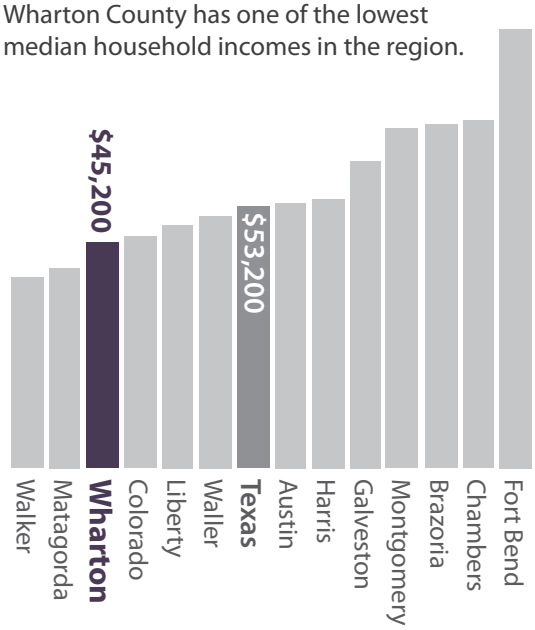
Residents Per Square Mile

Wharton County is less dense than the region as a whole.



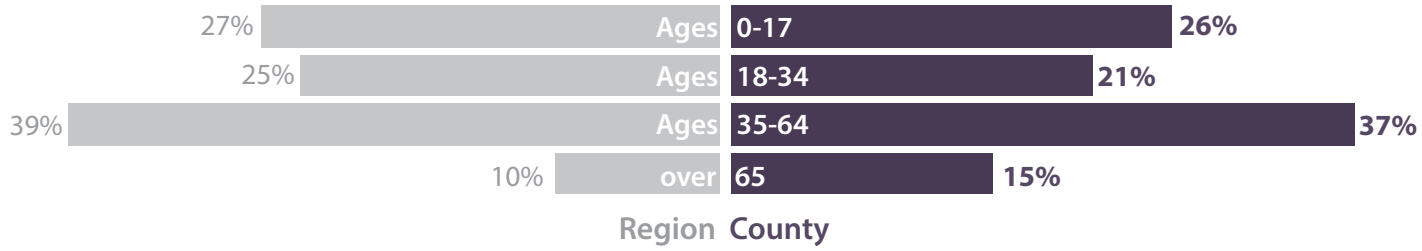
Median Household Income

Wharton County has one of the lowest median household incomes in the region.



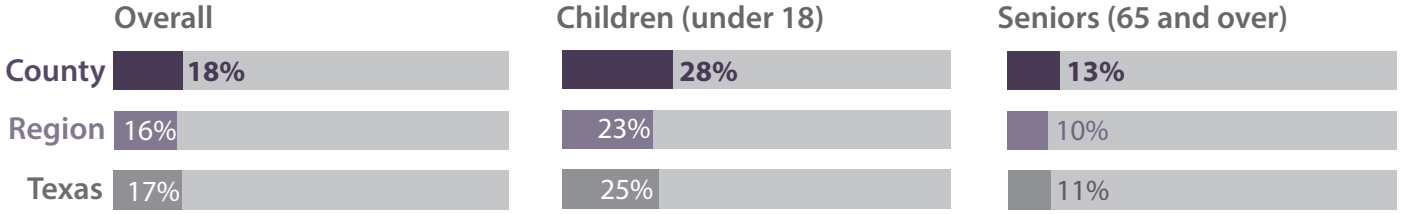
Age

Wharton County has a higher portion of residents over 65 than the region.



Poverty Rate

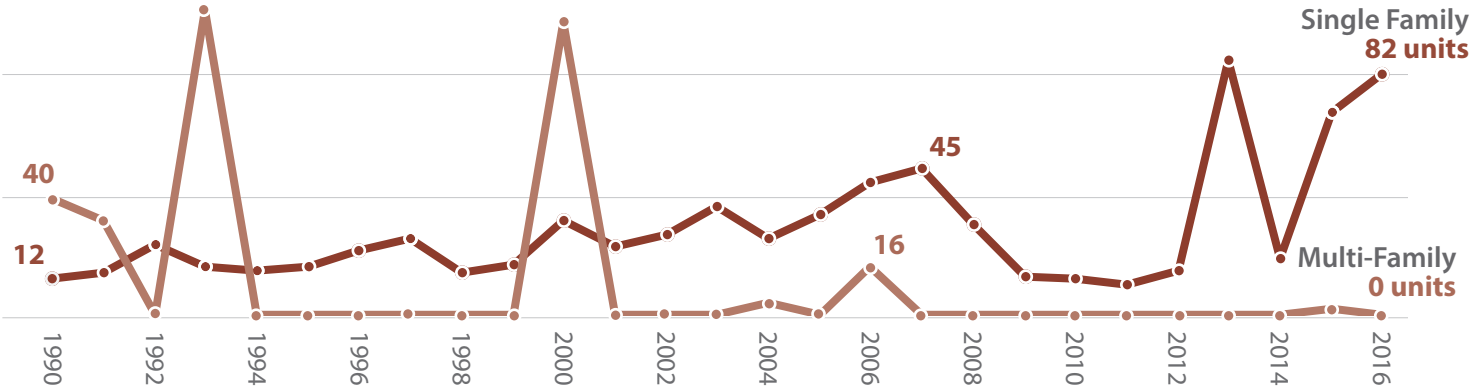
Wharton County has a higher rate of poverty than the region, particularly for children.



Housing

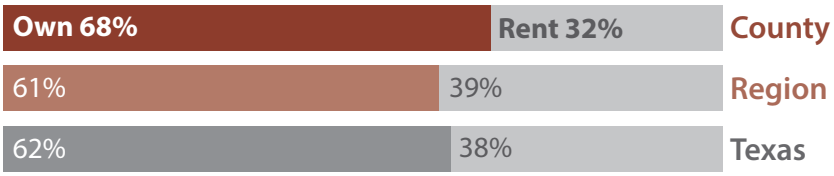
Building Permits Issued

Single-family construction is high, but volatile in comparison with previous years, while multi-family permits remain low.



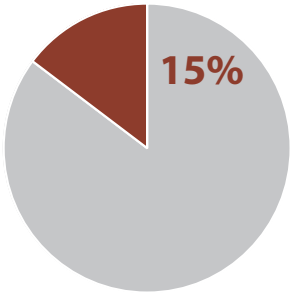
Housing Tenure

Wharton County has a higher rate of homeownership than the region or the state.



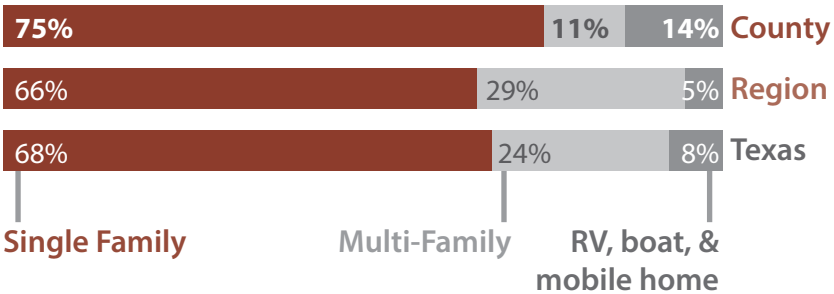
Vacant Housing Units

Around 15% of Wharton County's housing units are vacant.



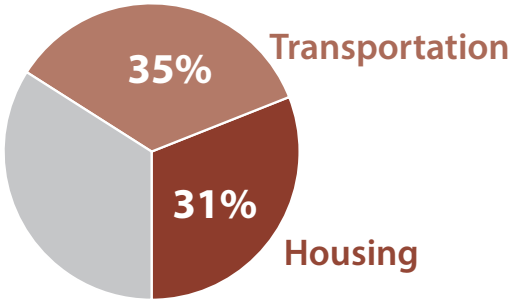
Housing Type

Wharton County's homes are mostly single-family residences.



Living Costs

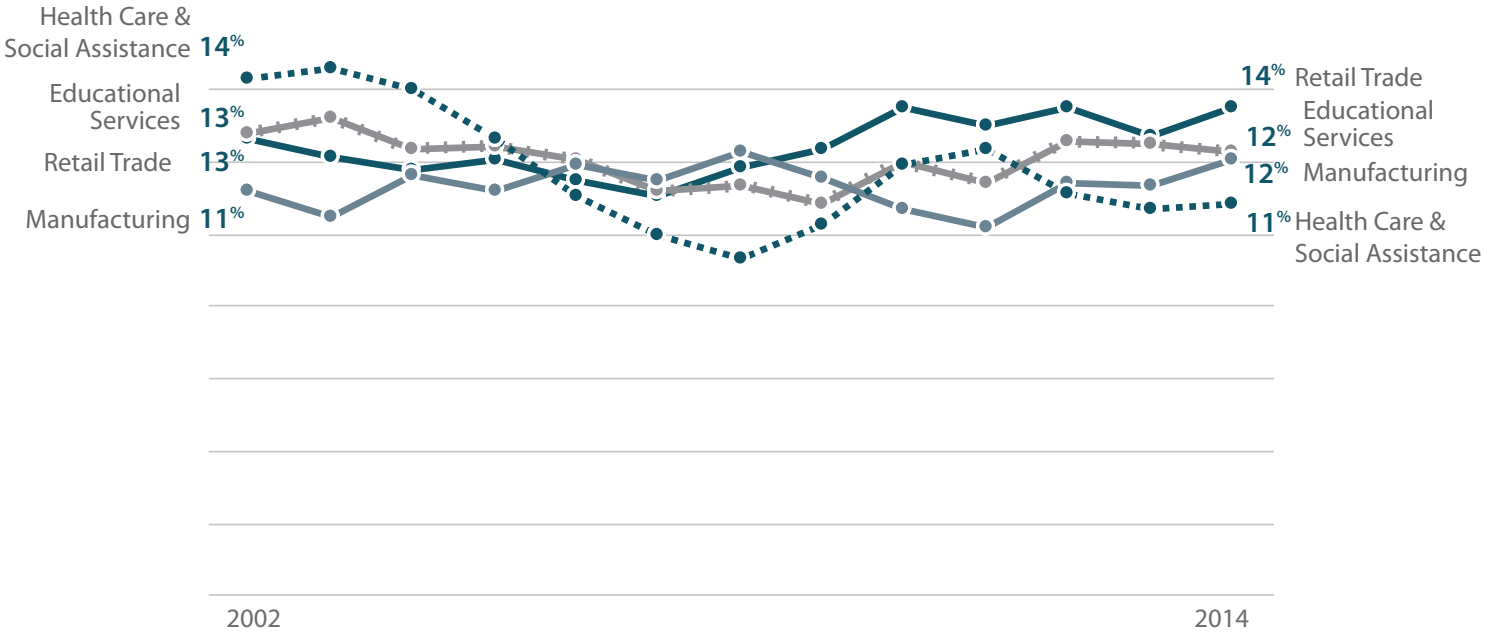
Wharton County households spend 66% of their income on transportation and housing.



Economy

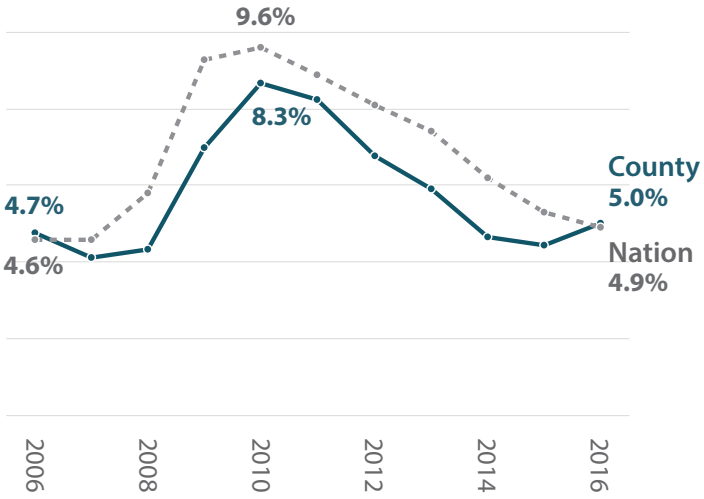
Top Industries by Percent of Overall Jobs

Employment in Wharton County between 2002 and 2014 stayed largely in four major industries: Health Care & Social Assistance, Educational Services, Retail Trade, and Manufacturing.



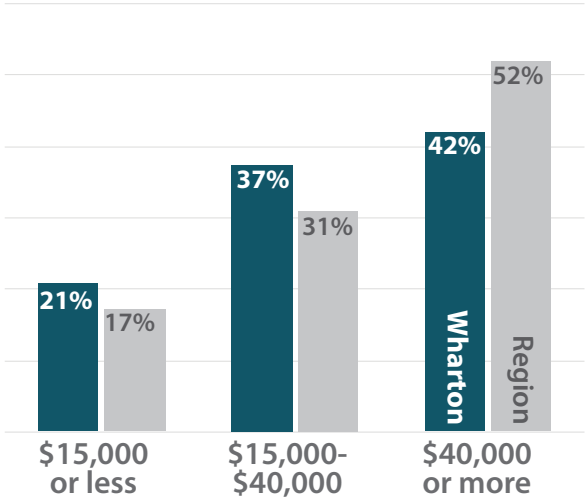
Unemployment Rate

Wharton County's unemployment mirrors national trends, and was higher than the nation in 2016.



Earnings of Residents

Around 40% of Wharton County residents earn more than $40,000 annually, a lower percentage than the region.



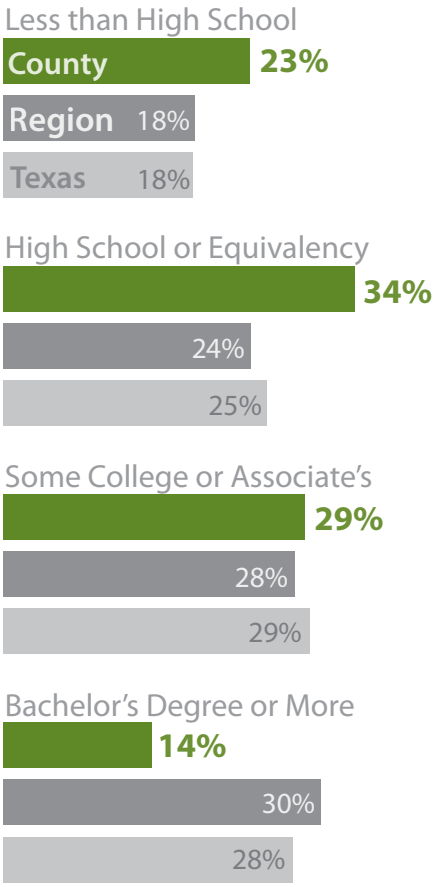
Education, Hazard Risks, and Commute

Median Earnings by Educational Attainment

A Wharton County resident with a graduate or professional degree makes, on average, $34,400 more than a resident with less than a high school education annually.

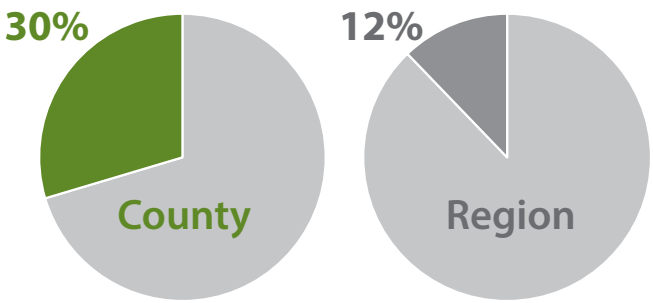
Educational Attainment

A lower percentage of Wharton County residents have completed a bachelor's degree or more than the region and state.



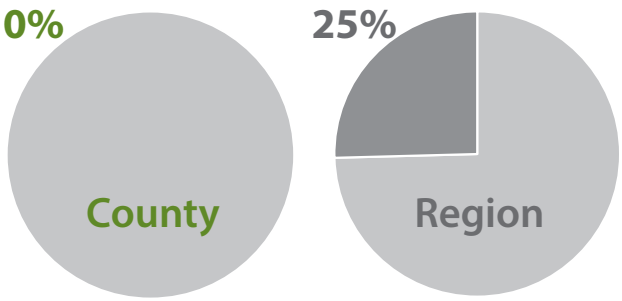
Residents in 100-year Floodplain

A larger percentage of Wharton County residents live in a 100-year floodplain than the region.



Residents in Hurricane Evacuation Zone

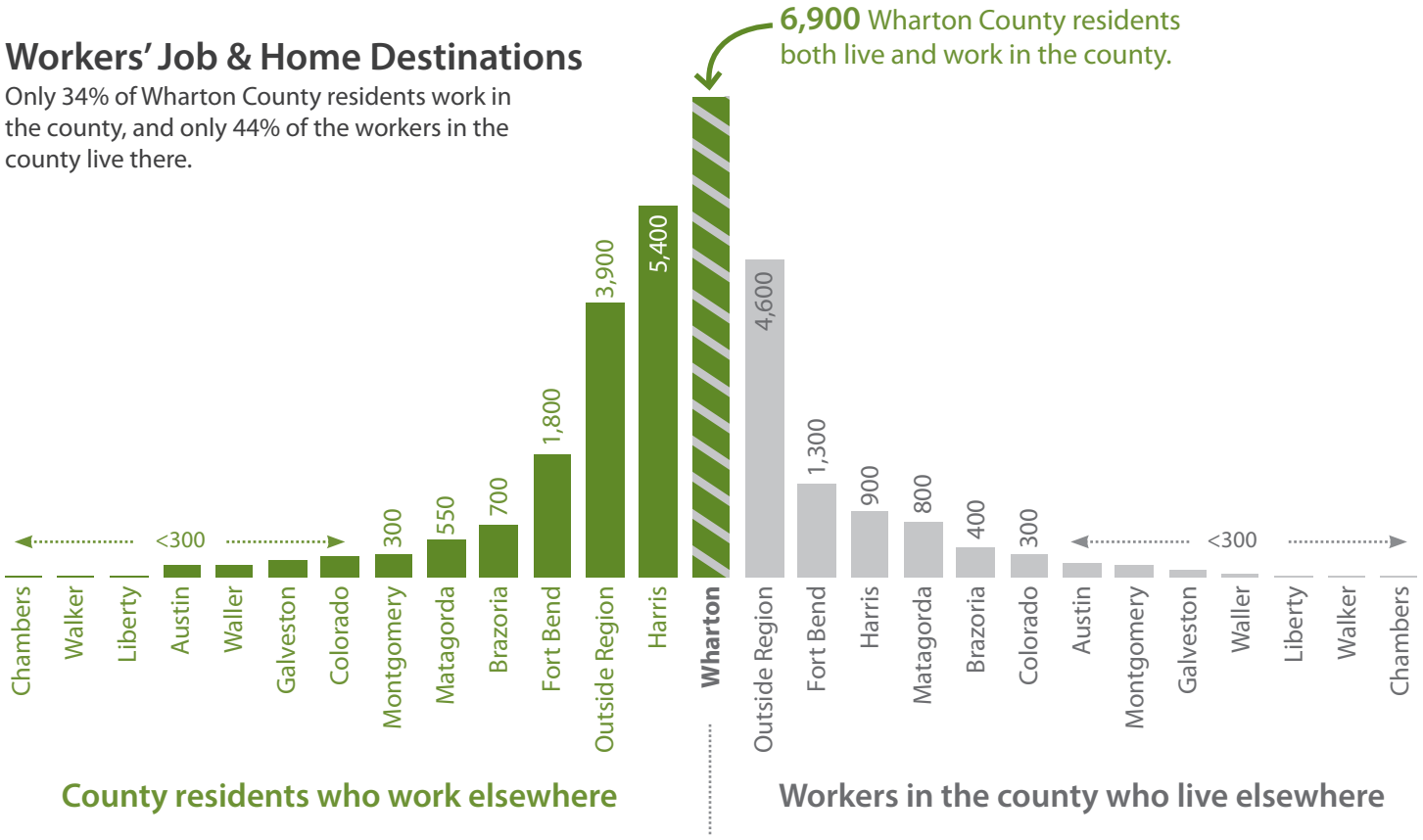
No Wharton County residents live in a hurricane evacuation zone, as opposed to 25% of the region's residents.



Education, Hazard Risks, and Commute

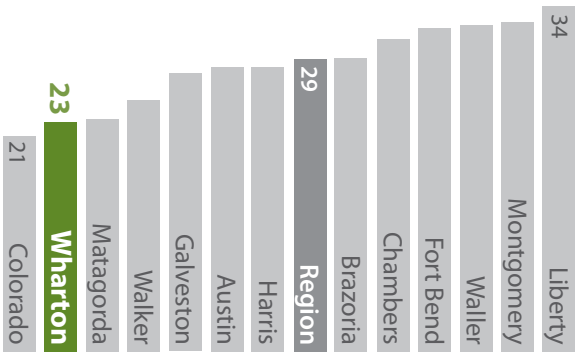
Workers' Job & Home Destinations

Only 34% of Wharton County residents work in the county, and only 44% of the workers in the county live there.



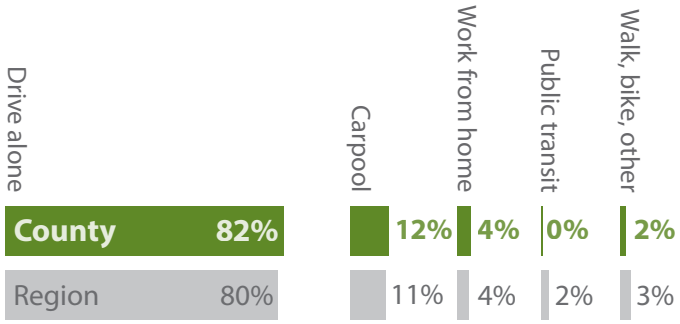
Mean Commute to Work (minutes)

Wharton County workers have a shorter average commute than the region as a whole.



Commute Mode to Work

A higher percentage of Wharton County workers drive to work compared to the region as a whole.



Economic Clusters

A cluster is a concentration of related businesses that make the area more competitive in those industries. Clusters exist where a set of related industries in a given location reach critical mass. Clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institution, and other organizations.

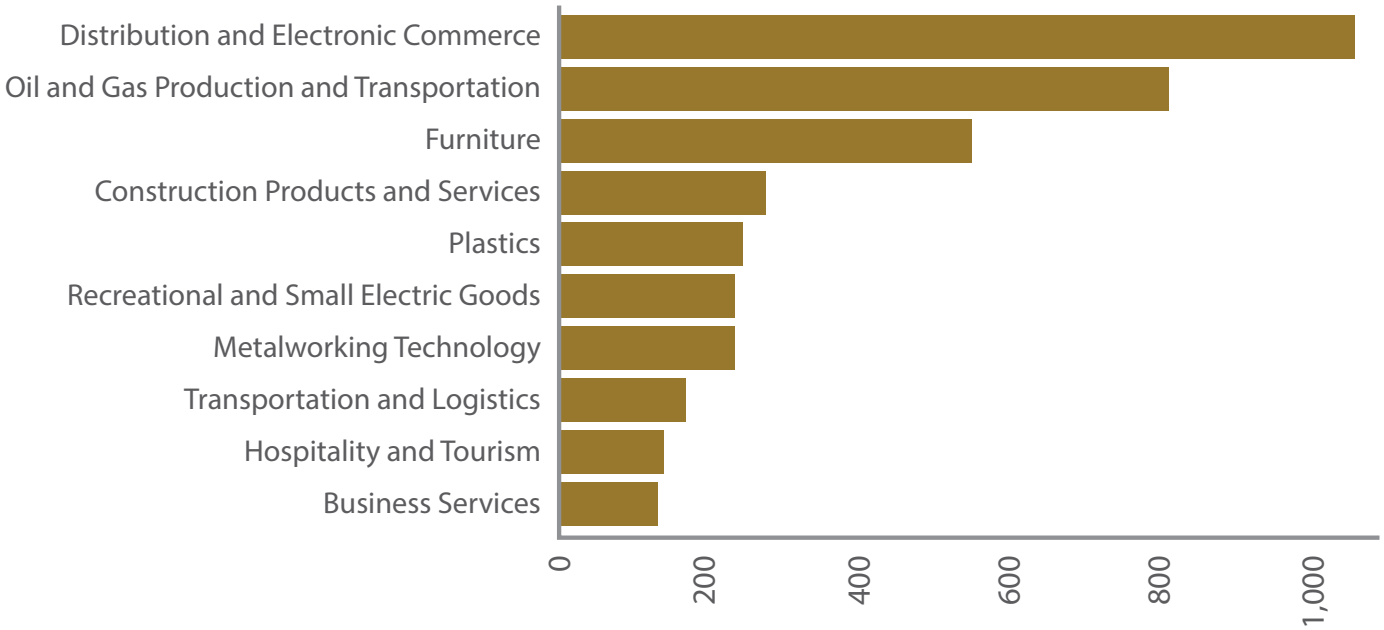
Traded clusters are groups of related industries that serve markets beyond the region in which they are located. Local clusters, in contrast, consist of industries that serve the local market. They are prevalent in every region of the country, regardless of the competitive advantages of a location.

Traded v. Local Clusters

This diagram demonstrates the county's split between the traded and local sectors of the economy, based on 2014 data from the U.S. Census.

Employment by Cluster

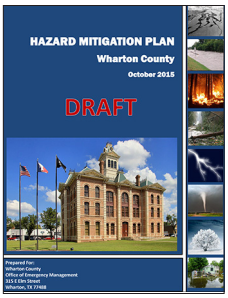
This bar graph demonstrates Wharton County's employment by each cluster. It is based on 2014 data from the U.S. Census.



Local Planning

This plan highlights efforts in Wharton County to plan for disaster recovery and economic resiliency.

Wharton County Hazard Mitigation Plan



Wharton County and a partnership of local governments within the county have developed and maintained the Wharton County Hazard Mitigation Plan to reduce risks from natural disasters. Hazard mitigation is the use of long- and short-term strategies to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster. It involves strategies such as planning, policy changes, programs, projects, and other activities that can mitigate the impacts of hazards. It is impossible to predict exactly when and where disasters will occur or the extent to which they will impact an area. However, with careful planning and collaboration among public agencies, stakeholders, and citizens, it is possible to minimize losses that disasters can cause. The responsibility for hazard mitigation lies with many, including private property owners; business and industry; and local, state, and federal government.

The top five mitigation actions from the plan are:

- Undertake bridge and culvert drainage improvements throughout the county.
- Update the Wharton County Flood Insurance Study and FIRMs to include detail floodplain information for all streams in Wharton County.
- Adopt "Higher Standard" Riverine Flood Damage Prevention Ordinances and Standards.
- Provide training for community floodplain managers (CFMs) and community emergency
- managers (CEMs).
- Subdivision ordinance requires developers to establish a permanent survey monument in each new subdivision.

Data Sources

Wharton County Overview

1. Texas State Historical Association
2. Texas State Historical Association
3. U.S. Census
4. City of Wharton
5. U.S. Census
6. Wharton County Junior College
7. Wharton County Economic Development Corporation
8. Wharton County Economic Development Corporation
9. USDA Census of Agriculture
10. USDA Census of Agriculture

Recent Disruptions to the Economy

11. National Weather Service
12. Federal Reserve Bank of Saint Louis, U.S. Bureau of Labor Statistics

Graphics

County Boundaries Map. Houston-Galveston Area Council, 2017.

County Land Use Map. Houston-Galveston Area Council, 2017.

Population Growth Forecast. Houston-Galveston Area Council, 2017.

Residents Per Square Mile. Houston-Galveston Area Council, 2017.

Age. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B01001.

Median Household Income. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S2503.

Poverty Rate. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1701.

Building Permits Issued. U.S. Census Bureau, Building Permits Survey, 1990-2015.

Housing Tenure. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Vacant Housing Units. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Housing Type. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table DP04.

Living Costs. Center for Neighborhood Technology 2013 H+T® Index.

Top Industries by Percent of Overall Jobs. U.S. Census Bureau, 2002-2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Unemployment Rate. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2006-2016.

Earnings of Residents. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Median Earnings by Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table B20004.

Educational Attainment. U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S1501.

Residents in 100-year Floodplain. Houston-Galveston Area Council, 2017.

Residents in Hurricane Evacuation Zone. Houston-Galveston Area Council, 2017.

Workers' Job & Home Destinations. U.S. Census Bureau, 2014, OnTheMap Application, Longitudinal-Employer Household Dynamics Program.

Mean Commute to Work (minutes). U.S. Census Bureau, 2011-2015 American Community Survey, 5-Year Estimates, Table S0802.