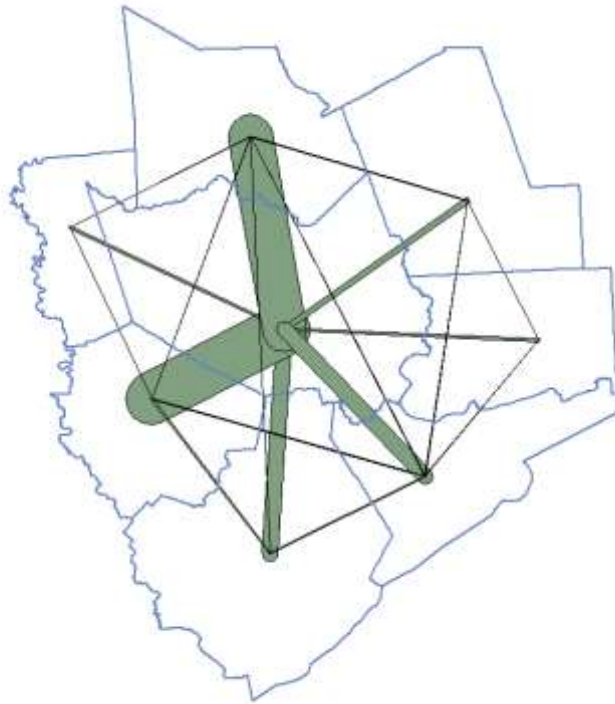


GULF COAST REGIONALLY COORDINATED TRANSPORTATION PLAN UPDATE



TRAVEL PATTERNS

July 2016

DISCLAIMER: Funding for the development of this planning document was provided by a grant from the Federal Transit Administration through the Texas Department of Transportation- Public Transportation Division (TxDOT-PTN). The contents of this document reflect the views of the authors who are responsible for the opinions, findings and conclusions presented herein, and do not necessarily reflect the views or policies of the Federal Transit Administration or the Texas Department of Transportation.

Cover image: Forecast of 2025 home based work commuter trips between counties in the H-GAC Transportation Management Area ((H-GAC Travel Demand Modeling).



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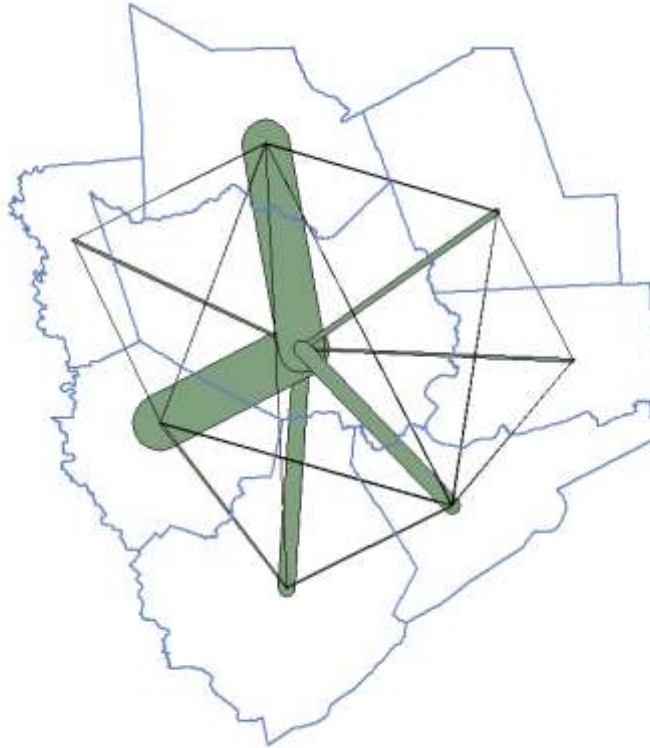
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Introduction

There have been several recent mentions of the need to provide public transportation services that cross county lines or other jurisdictional boundaries that are considered as barriers to regional transportation coordination. As shown in **Figure 1** regional travel patterns are forecasted to be most significant between the neighboring counties of Harris, Fort Bend and Montgomery compared to others in the greater Houston Region.

Figure 1-Inter-County HBW Commuter Trips 2025



This summary of travel patterns in the Gulf Coast region is intended to inform the reader about the dominant travel patterns in the 13 county region and within each county. This information is intentionally brief and has been summarized to highlight only the key patterns. Those patterns could be relevant for new or expanded public transportation services in some areas to address unmet transportation related needs for non-traditional or emerging travel patterns. The analyses of the travel patterns also identify potential corridors for future reverse commute services or non-traditional transit services.

Highway related transportation planning activities have traditionally focused on commuter related travel patterns during the morning and evening peak periods which are significant in most of the freeway corridors that connect to downtown Houston, see **Figure 2**.

Figure 2 Evening Rush Hour Traffic in Houston



(Source www.houstontranstar.com)

The typical travel patterns for medical related trips for seniors and persons with disabilities may not fit the traditional commuter trip patterns. In addition, off-peak or second shift employment opportunities for low-income persons would likely require some non-traditional travel. It could be helpful to better understand the order of magnitude of the dominant travel patterns within and between counties. That understanding could help to identify potential travel corridors for future investments and to also describe the most significant and emerging travel patterns for non-traditional, non-single occupant vehicle (SOV) travel.

Regional Travel Patterns

One of the dynamics in the fast growing greater Houston region is the shift in the locations of people and jobs over an extended period of time. Those shifting patterns of housing and job locations has resulted in some new and emerging travel patterns that require different types of transportation system solutions or components to address those changing patterns. For example, the dominant centralized urban growth pattern in Houston and many other cities has been focused on a hub and spoke type of roadway system. That radial roadway

system with a central hub or central business district typically has a larger downtown area as the primary destination for many daily activities. Over time in many cities and particularly in Houston, a multi-nucleated urban growth pattern has evolved which is characterized by more travel to and from suburban locations in Harris County and between adjacent counties.

One impact of those changing travel patterns led to the recent reimagining of the local bus network in Houston by the Metropolitan Transit Authority of Harris County. Those changing location patterns also highlight areas of potentially higher travel demands that may not be considered for improved travel options for non SOV modes of travel.

Figure 3 shows graphically the complexity of the current regional travel patterns between counties. **Tables 1 and 2** include the associated data and highlight the highest volume county-to-county trip flows for daily work and non-work trips.

Figure 3. Regional HBW Travel Patterns (2010)

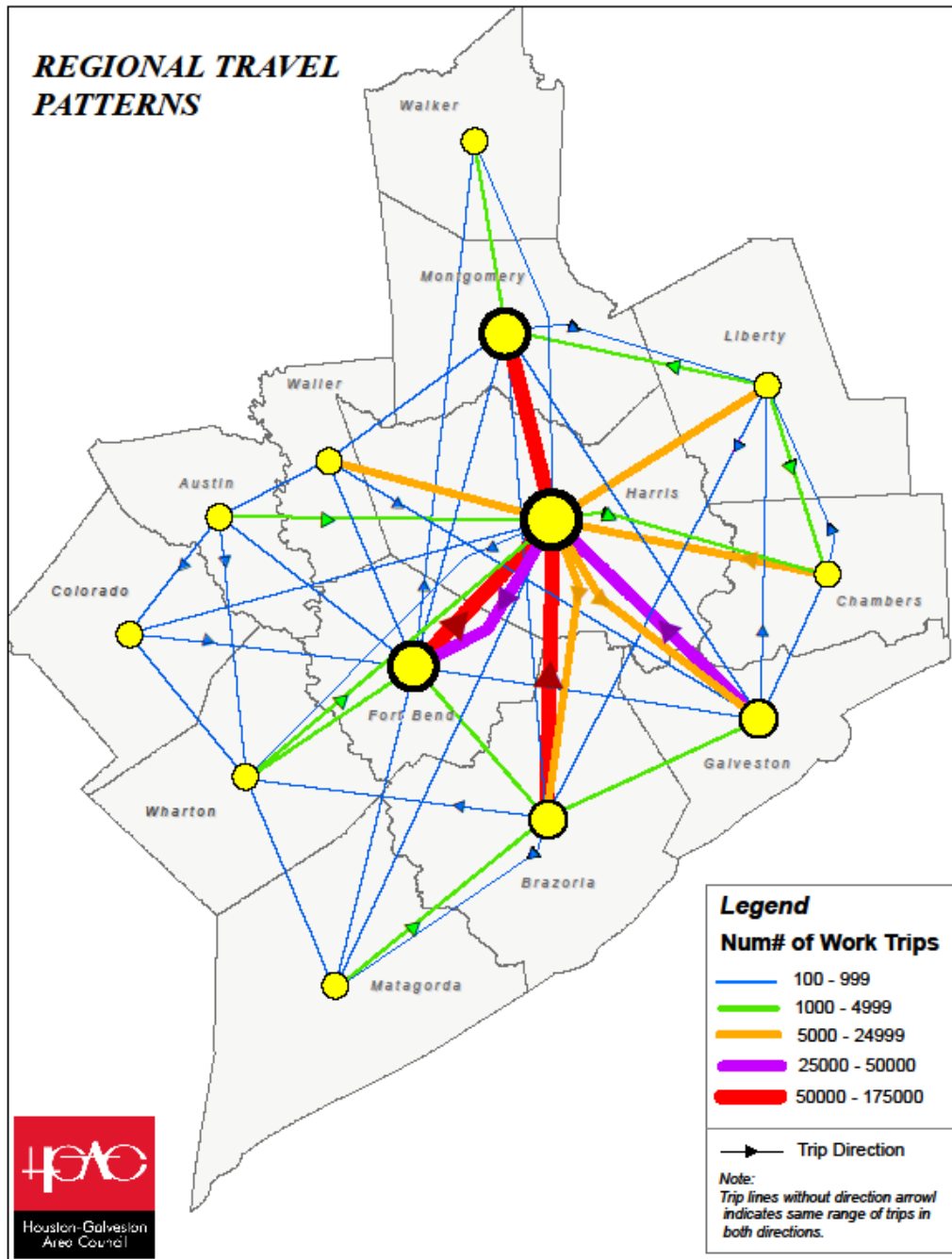


Table 1. Gulf Coast Highest Volume Inter-County HBW Travel Patterns

From Origin County	To Destination County	One Way Trips	Comments
Fort Bend	Harris	154,555	
Montgomery	Harris	78,345	
Brazoria	Harris	52,785	
Galveston	Harris	48,080	
Harris	Fort Bend	35,095	Reverse Commutes
Harris	Montgomery	31,675	Reverse Commutes
Harris	Galveston	16,850	Reverse Commutes
Harris	Brazoria	10,835	Reverse Commutes

Table 2. Gulf Coast Highest Volume Inter-County Non-Work Travel Patterns

From Origins	To Destinations	One Way Trips	Comments
Fort Bend	Harris	342,768	
Harris	Fort Bend	113,075	Reverse Commutes
Harris	Montgomery	80,358	Reverse Commutes
Montgomery	Harris	70,864	
Galveston	Harris	61,787	
Harris	Galveston	53,164	Reverse Commutes
Fort Bend	Brazoria	25,327	Cross County
Harris	Waller	22,298	Reverse Commutes

As shown in **Figure 4** the primary transit destinations were concentrated in the south and southwestern quadrants of Houston based on data from the 2007 Transit Onboard Survey. The inset shows the higher concentration (in red) of transit trips destined to the Texas Medical Center area.

Figure 4. Transit Destinations 2007

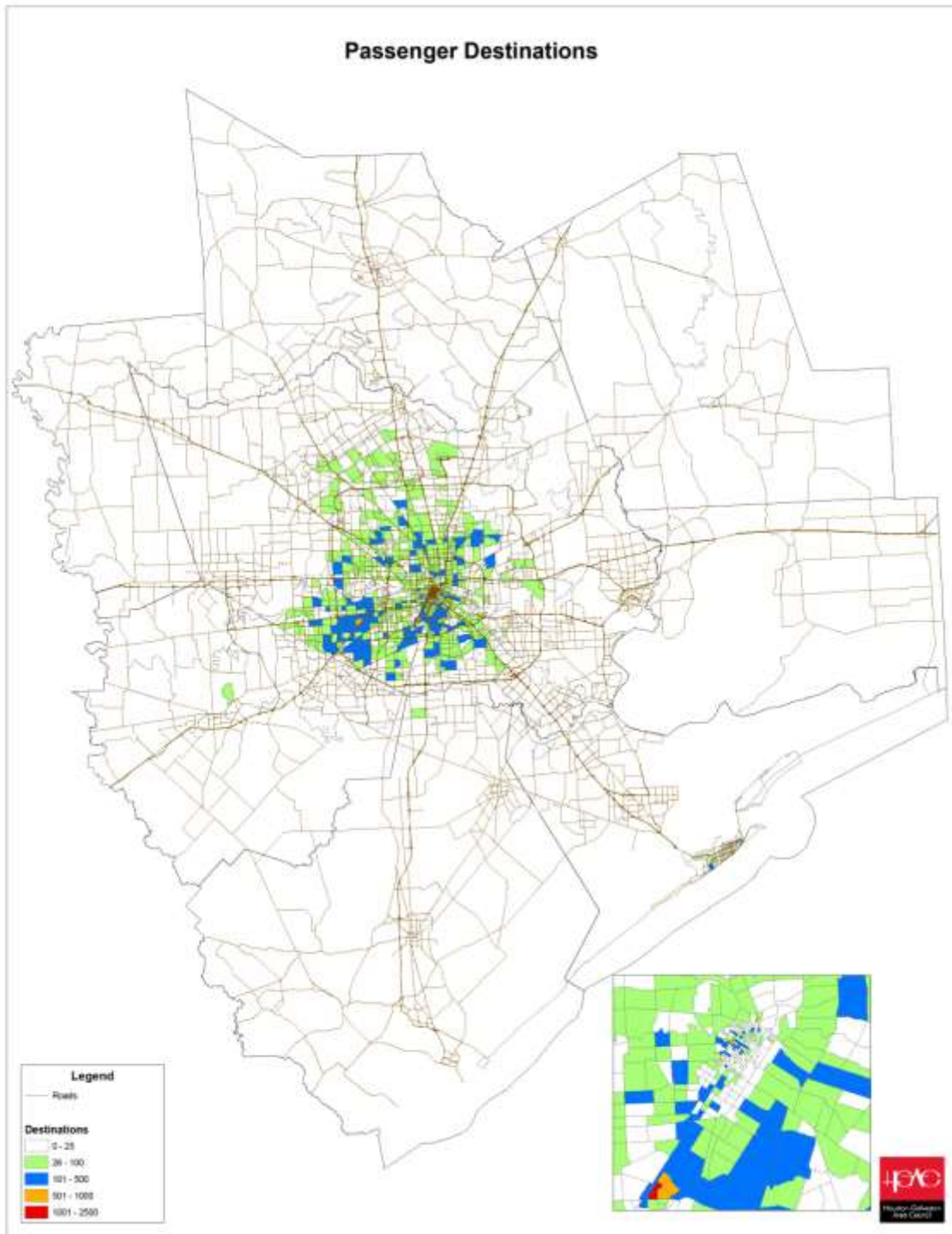
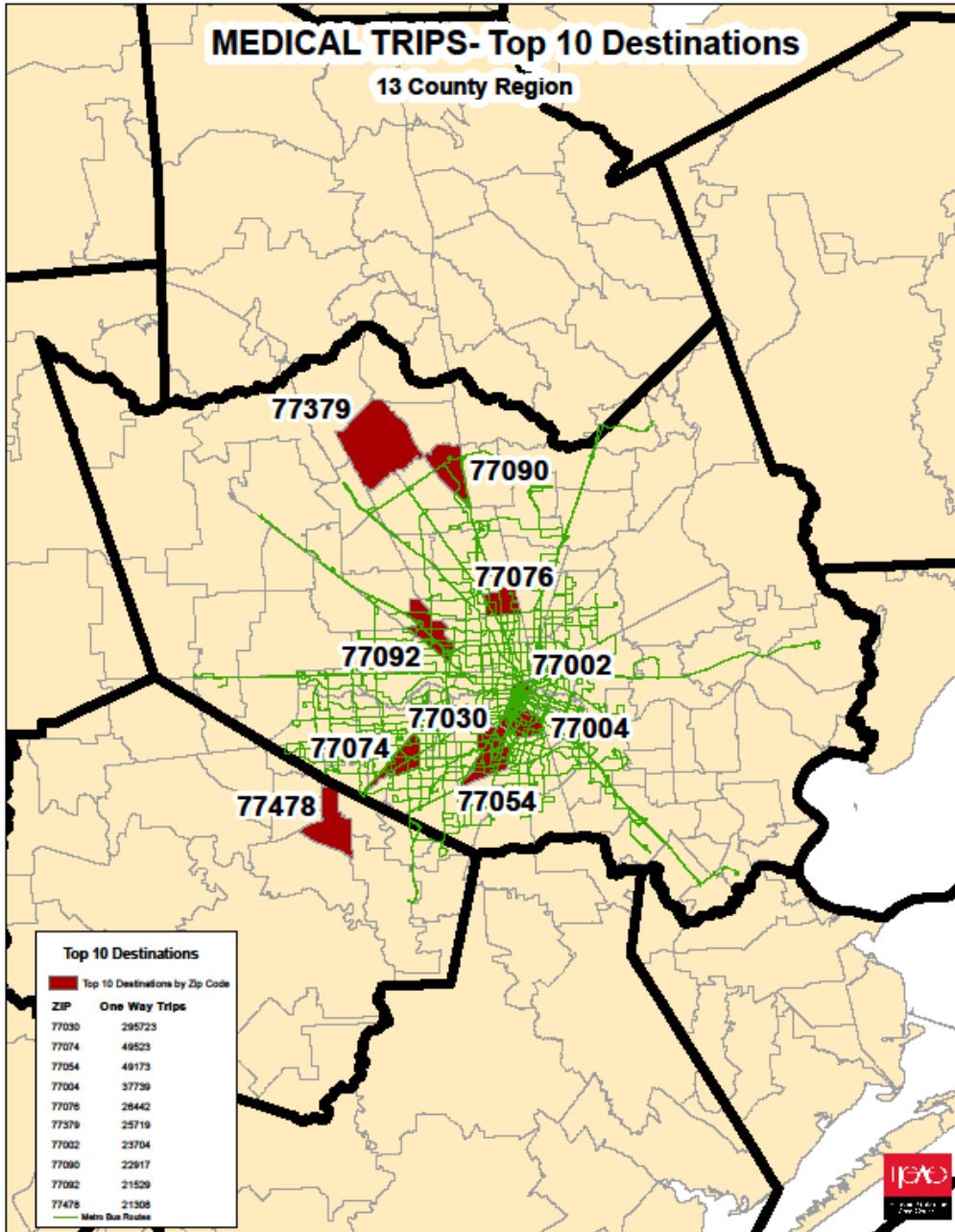


Figure 5 displays the top ten highest volume destinations for medical trips through the Medical Transportation Program (MTP) in 2011. As shown those trips are scattered throughout the region with the highest volume destinations in the vicinity of the Texas Medical Center.

Figure 5. Medical Transportation Program Destinations



Transit Accessibility Analysis

The following images display transit travel time contour maps indicating transit access to major employment centers before-and-after the implementation of the reimagined METRO local bus system. As shown in **Figure 6** (in red) the most favorable transit travel times, less than 30 minutes, were in the western and southwestern quadrants of Harris County.

Figure 6. Transit Travel Times 2015 -Pre-Reimagining

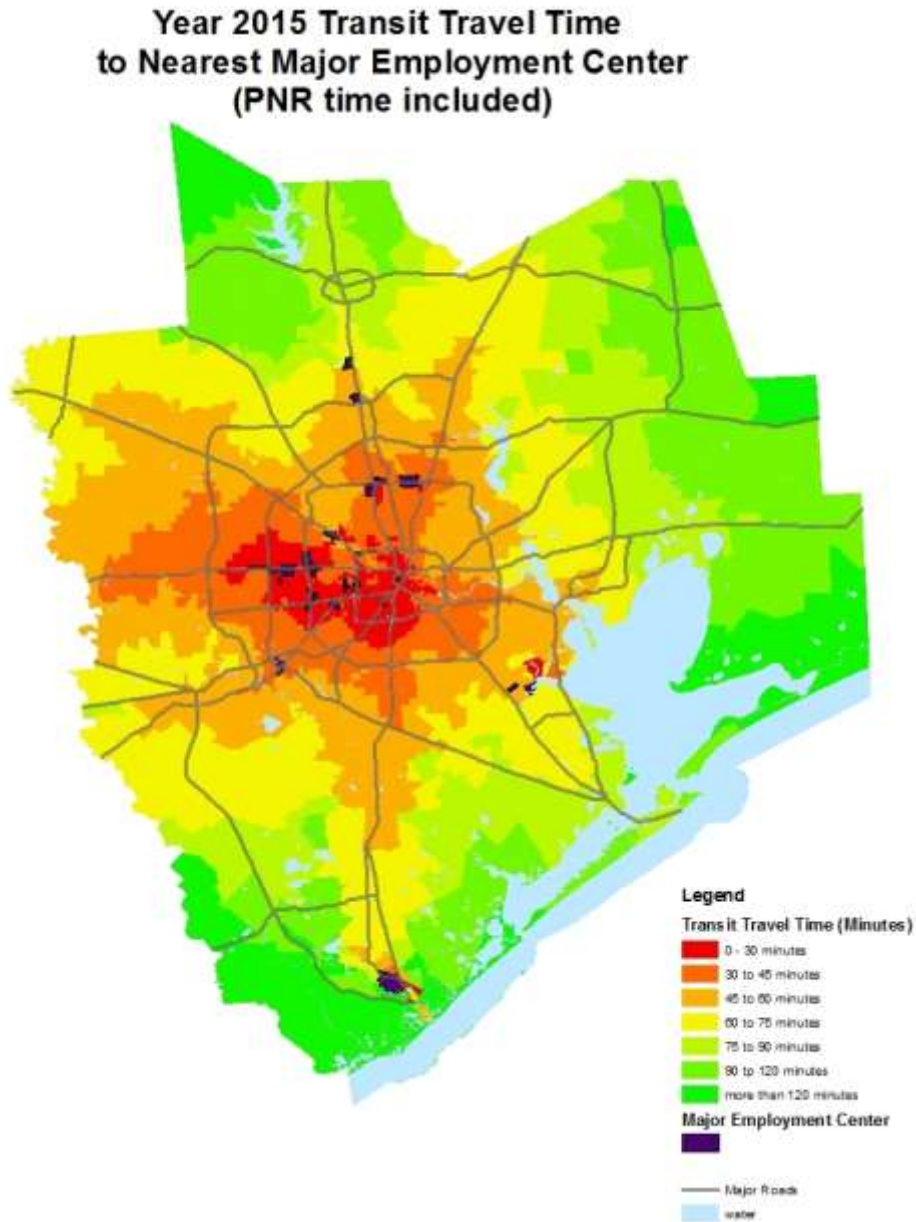
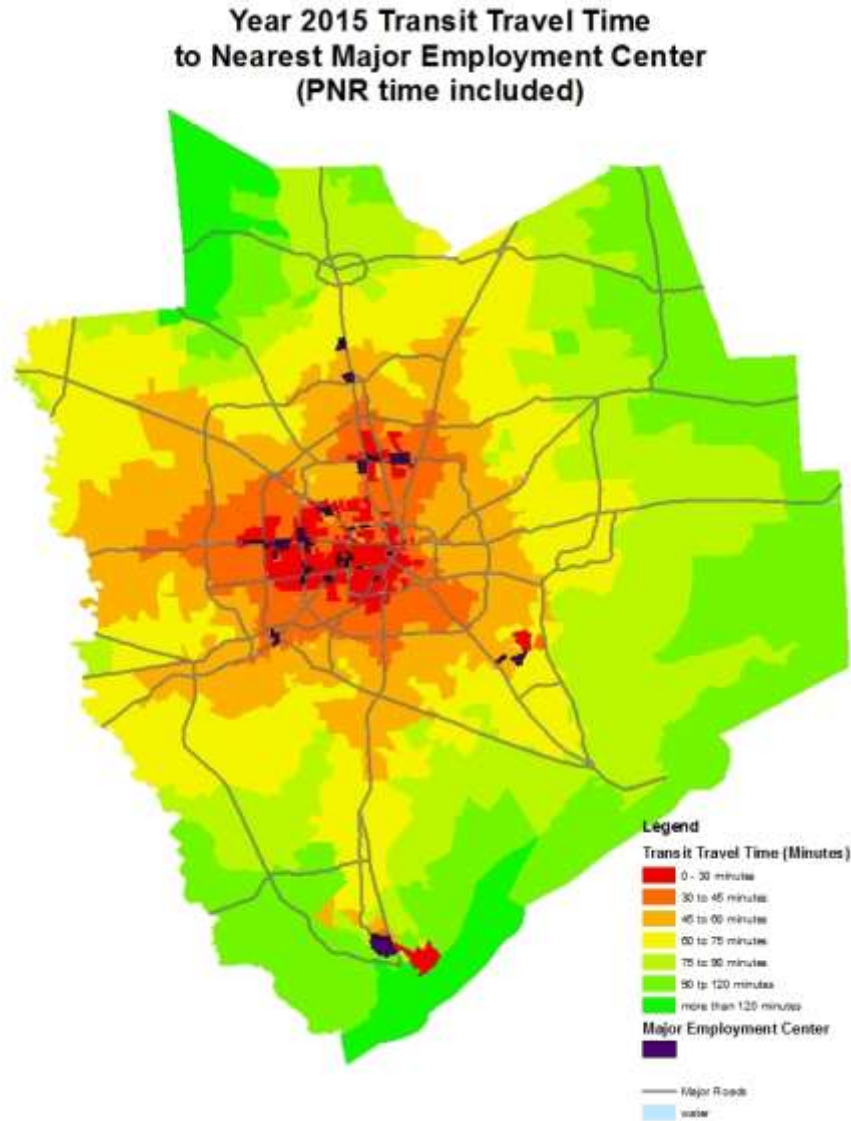
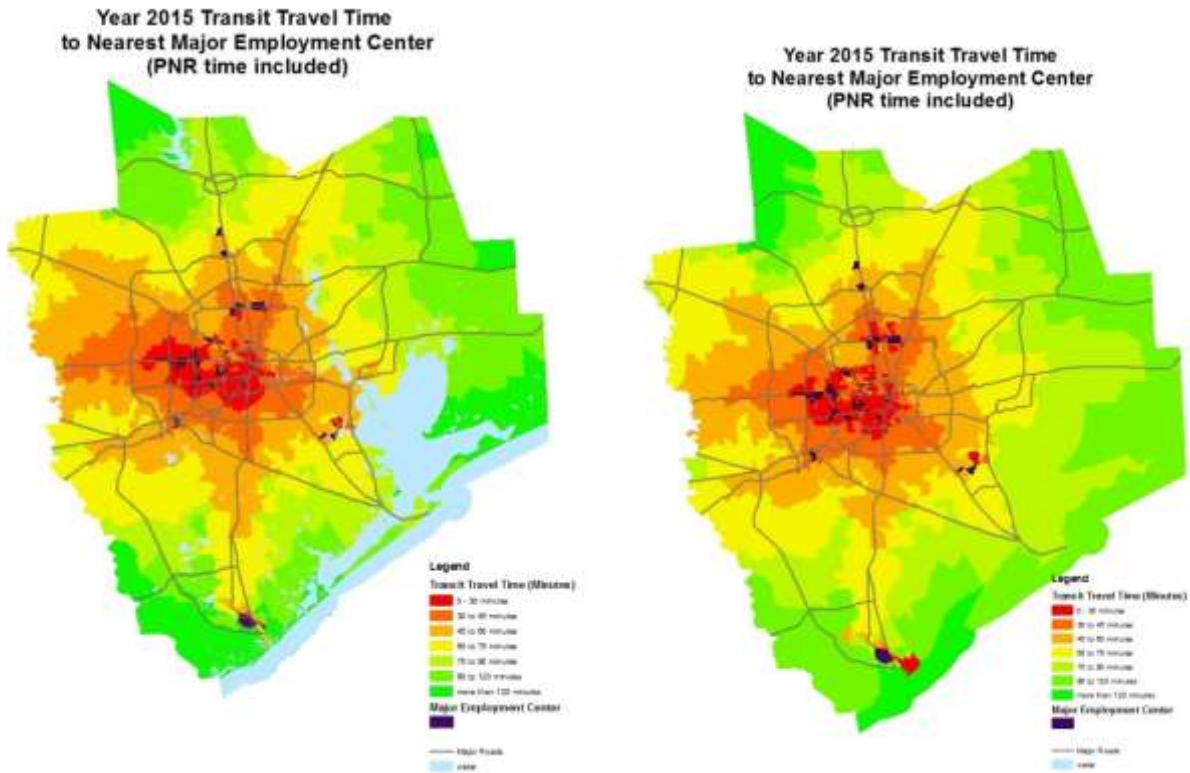


Figure 7. Transit Travel Times --After Reimagining



To facilitate the before-and-after comparisons the images are show side-by-side in **Figure 8.**

Figure 8. Side-by-Side Comparison (Before and After)



Areas showing significantly improved transit access (within 30 minutes) are primarily near the Greenspoint Mall (North Belt near IH-45 N).

Areas showing decreased transit access are east and southeast of downtown and also near I-10 West and FM 1960. More detailed analyses will be needed to clarify those apparent changes in transit accessibility.

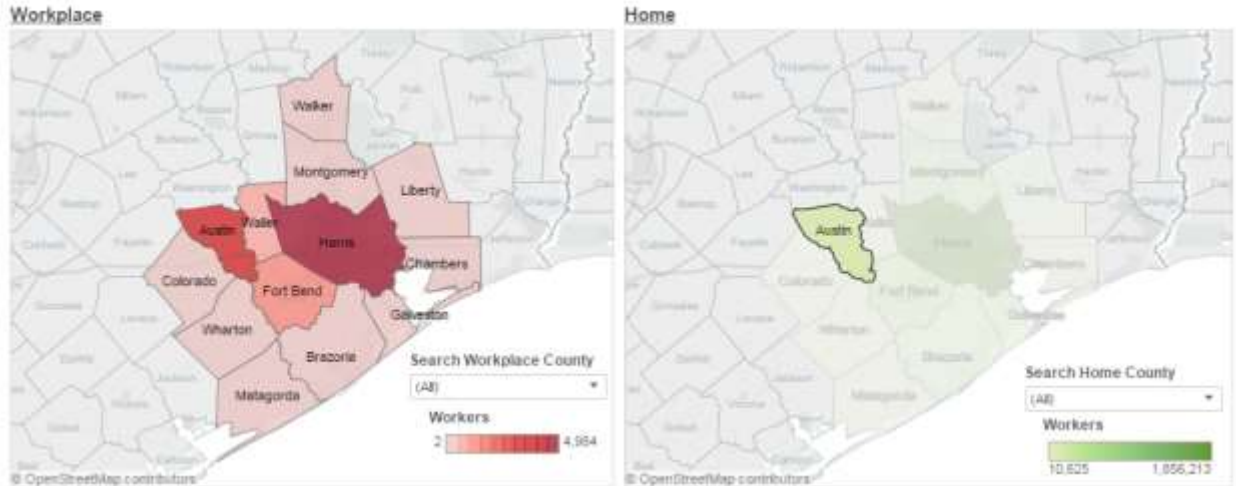
County Level Travel Patterns

The following summaries display the number of home based origins and their workplace locations for each county in the region based on 2014 Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics. The LEHD travel pattern information is derived from IRS records for the home location and from unemployment insurance records for the workplace locations. The three highest volume travel patterns are noted briefly for each county in alphabetical order. Out-of-Region stats do not actually indicate that workers are commuting out-of-region for work. It is based on the address reported by the employer in the Unemployment Insurance Records, which would be different than the actual workplace location. For example, a staffing company may be located in Dallas but have employees in Houston working from home or someplace in Houston (Primary Client Location). In this particular case, the workplace is “Out-Of-Region” (Dallas) and area of residence is Harris County. Same is the case with construction and consultant jobs.¹

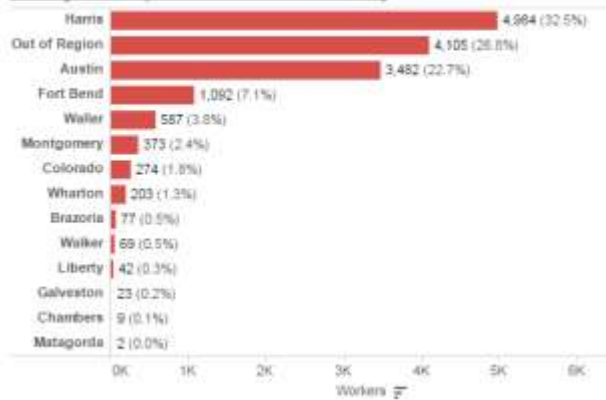
¹ The source data is available for multiple types of geographies at <http://www.h-gac.com/go/commute-patterns/>.

Austin County

Of the 15,322 home origins in Austin County, 4,984 (32.5%) of them worked in Harris County, 4,105 (26.8%) worked out of the region and 3,482 (22.7%) worked within Austin County.



County Details (Where Most Workers Work)



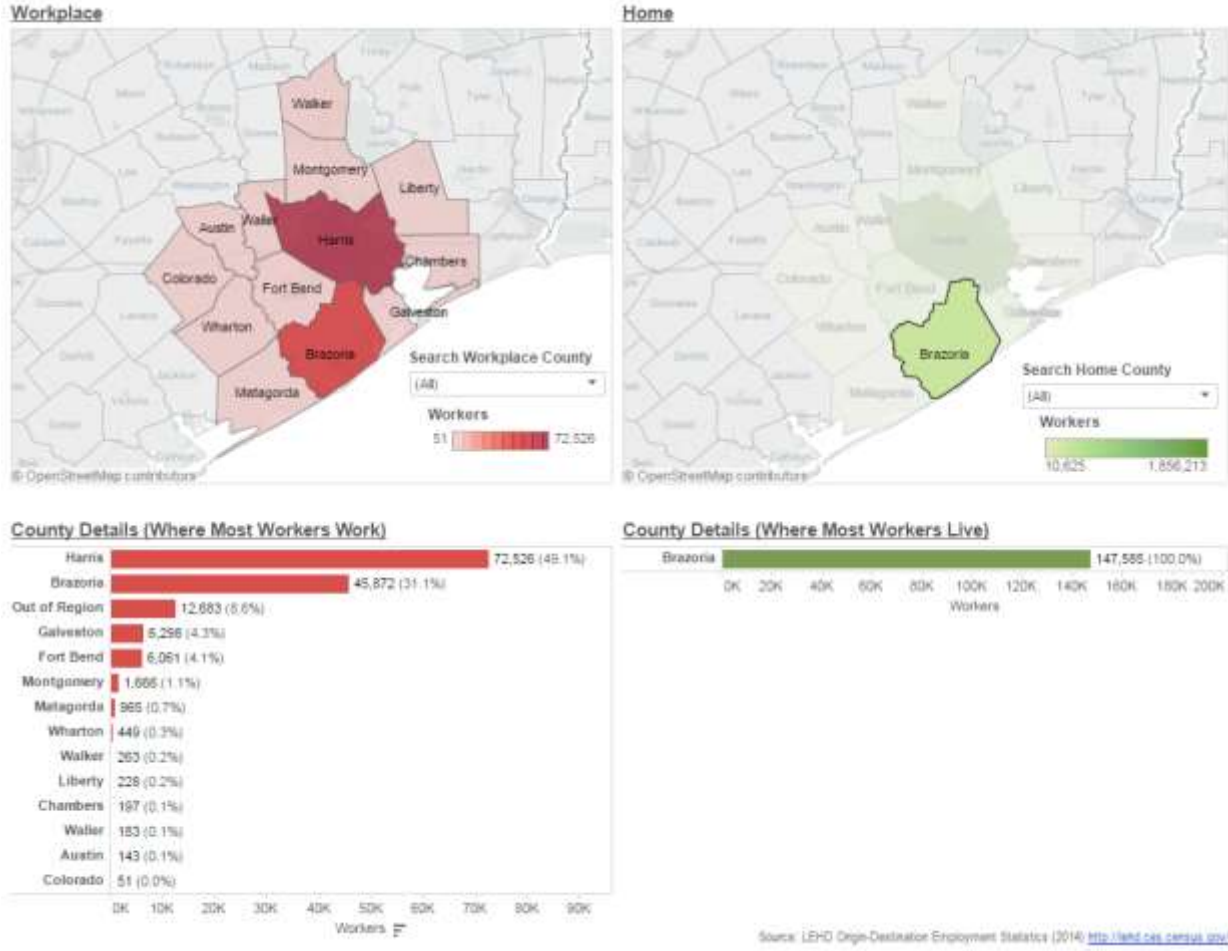
County Details (Where Most Workers Live)



Source: LEHD Origin-Destination Employment Statistics (2014) <http://lehd.ces.census.gov/>

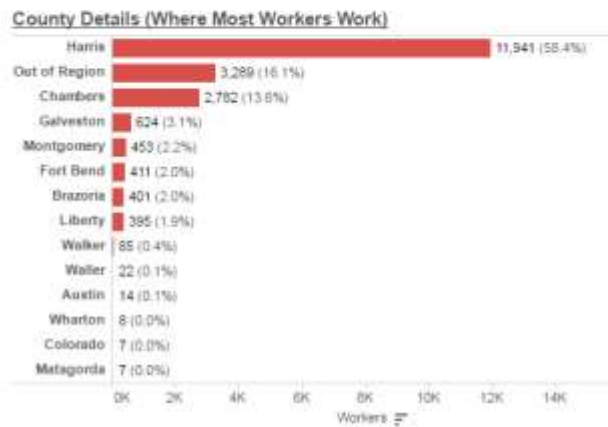
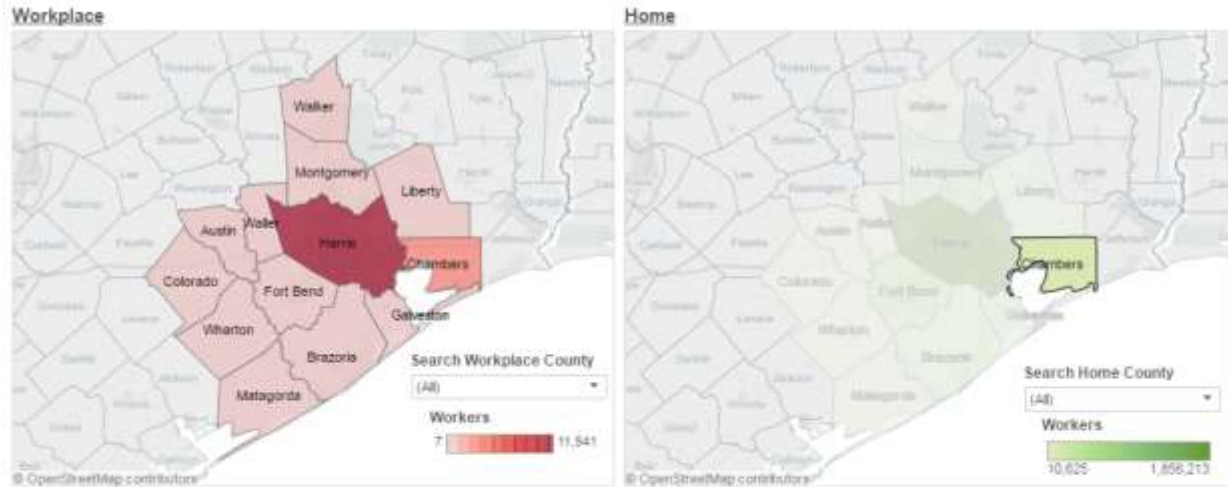
Brazoria County

Of the 147,585 home origins in Brazoria County, 72,526 (49.1%) of them worked in Harris County, 45,872 (31.1%) worked in Brazoria County and 12,683 (8.6%) worked out of the region.



Chambers County

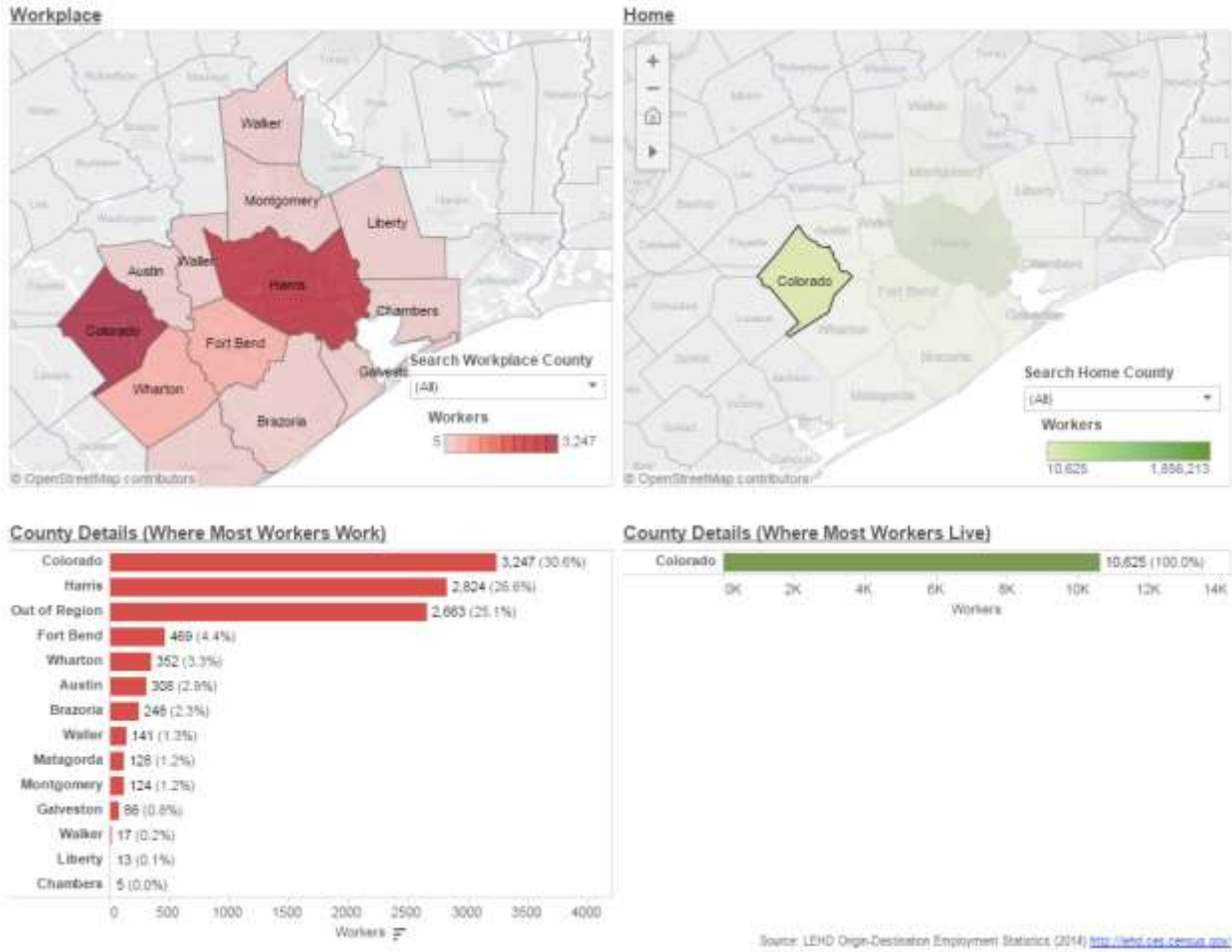
Of the 20,439 home origins in Chambers County, 11,941 (58.4%) of them worked in Harris County, 3,289 (16.1%) worked out of the region and 2,782 (13.6%) worked in Chambers County.



Source: LEHD Origin-Destination Employment Statistics (2014) <http://data.ces.census.gov/>

Colorado County

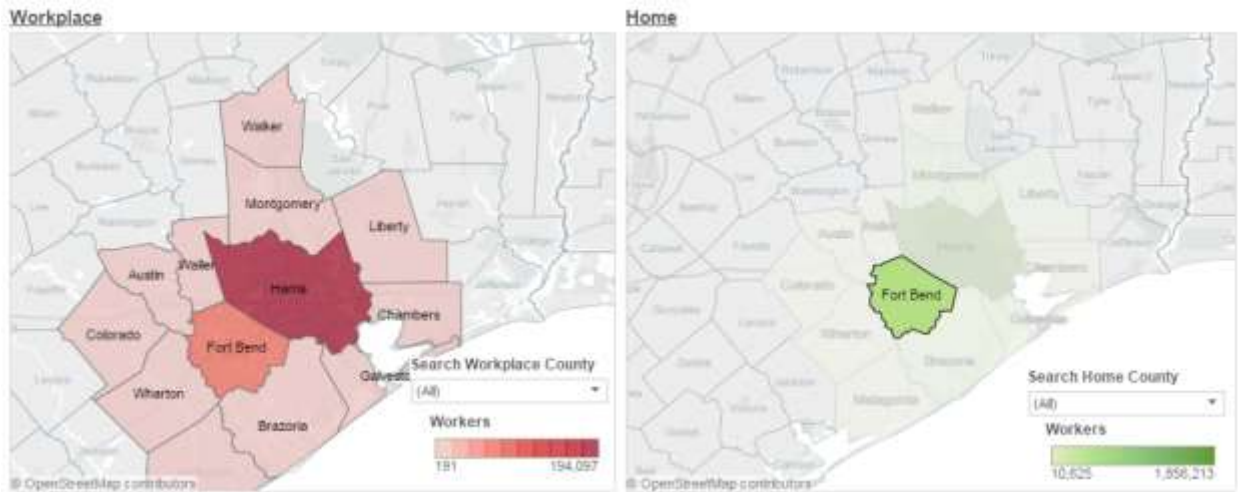
Of the 10,625 home origins in Colorado County, 3,247 (30.6%) of them worked in Colorado County, 2,824 (26.6%) worked in Harris County and 2,663 (25.1%) worked out of the region.



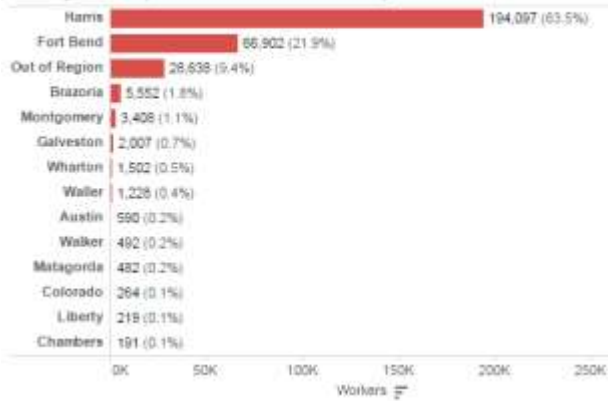
Source: LEHD Origin-Destination Employment Statistics (2014) <http://lehd.ces.census.gov/>

Fort Bend County

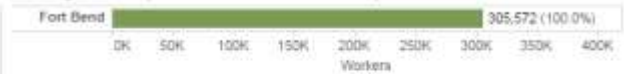
Of the 305,572 home origins in Fort Bend County, 194,097 (63.5%) of them worked in Harris County, 66,902 (21.9%) worked in Fort Bend County and 28,638 (9.4%) worked out of the region.



County Details (Where Most Workers Work)



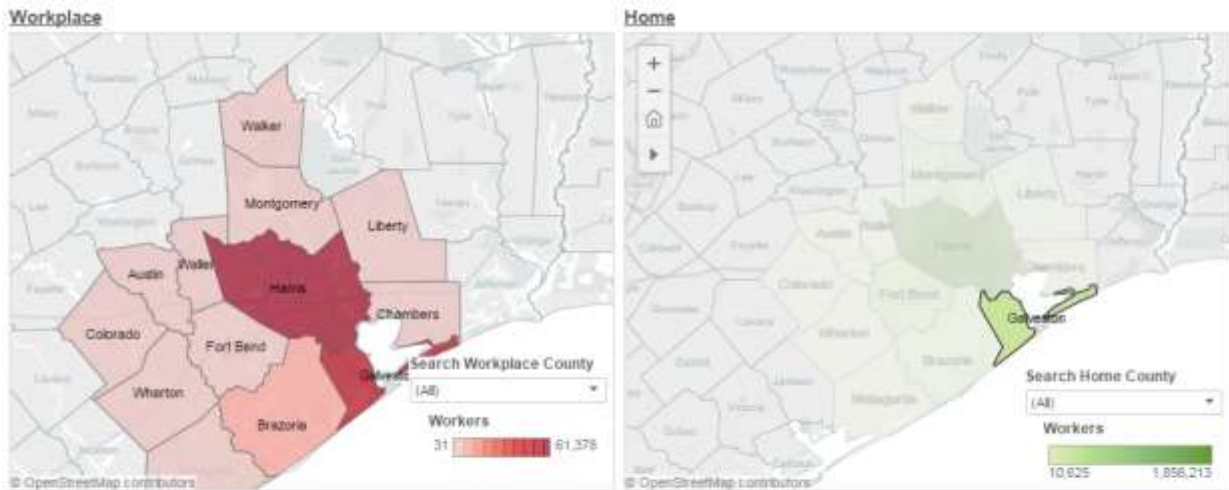
County Details (Where Most Workers Live)



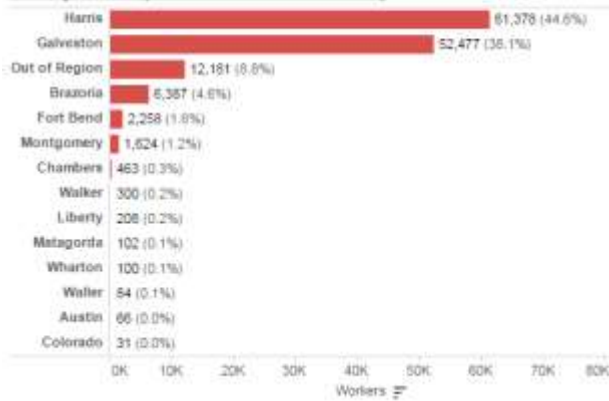
Source: LEHD Origin-Destination Employment Statistics (2014) <http://lehd.ces.census.gov/>

Galveston County

Of the 137,659 home origins in Galveston County, 61,378 (44.6%) of them worked in Harris County, 52,477 (38.1%) worked in Galveston County and 12,181 (8.8%) worked out of the region.



County Details (Where Most Workers Work)



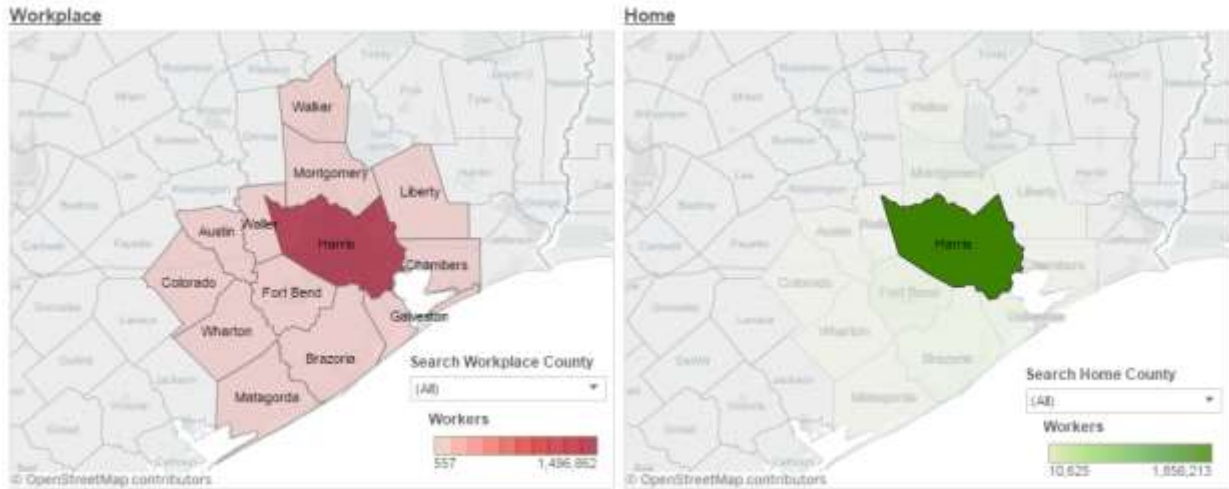
County Details (Where Most Workers Live)



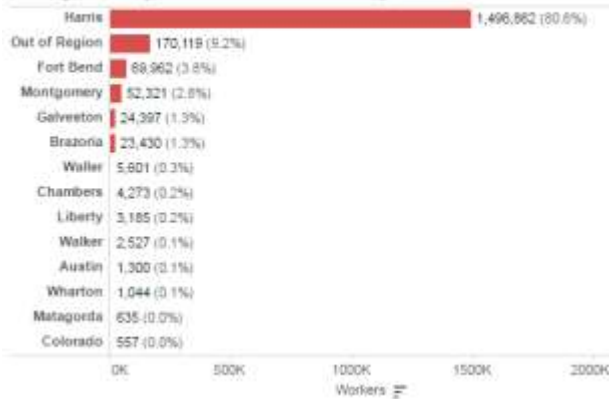
Source: LEND Origin-Destination Employment Statistics (2014) <http://lend.csl.umd.edu/>

Harris County

Of the 1,856,213 home origins in Harris County, 1,496,862 (80.6%) of them worked in Harris County, 170,119 (9.2%) worked out of the region and 69,962 (3.8%) worked in Fort Bend County.



County Details (Where Most Workers Work)



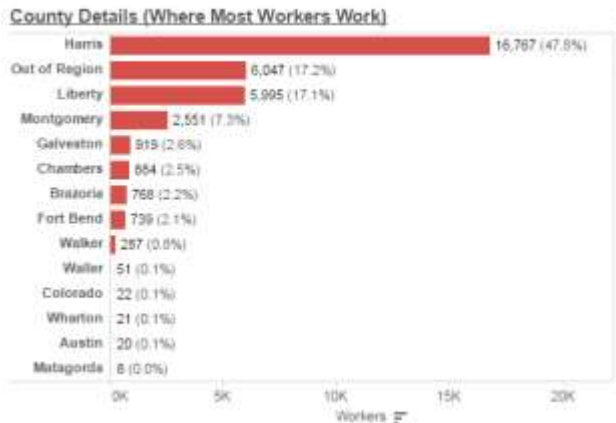
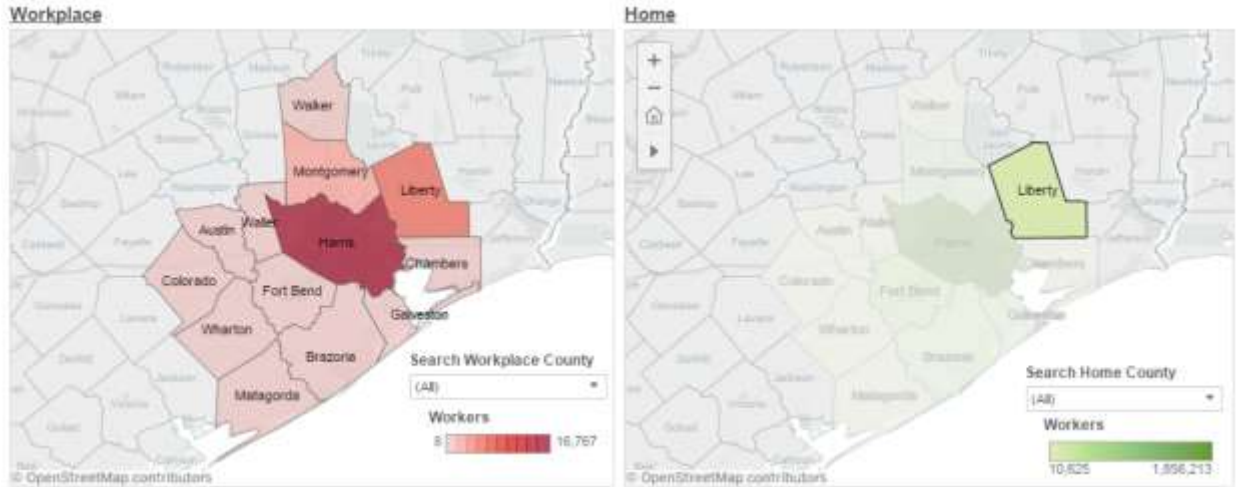
County Details (Where Most Workers Live)



Source: LEHD Origin-Destination Employment Statistics (2014) <http://and.ces.cornell.edu/>

Liberty County

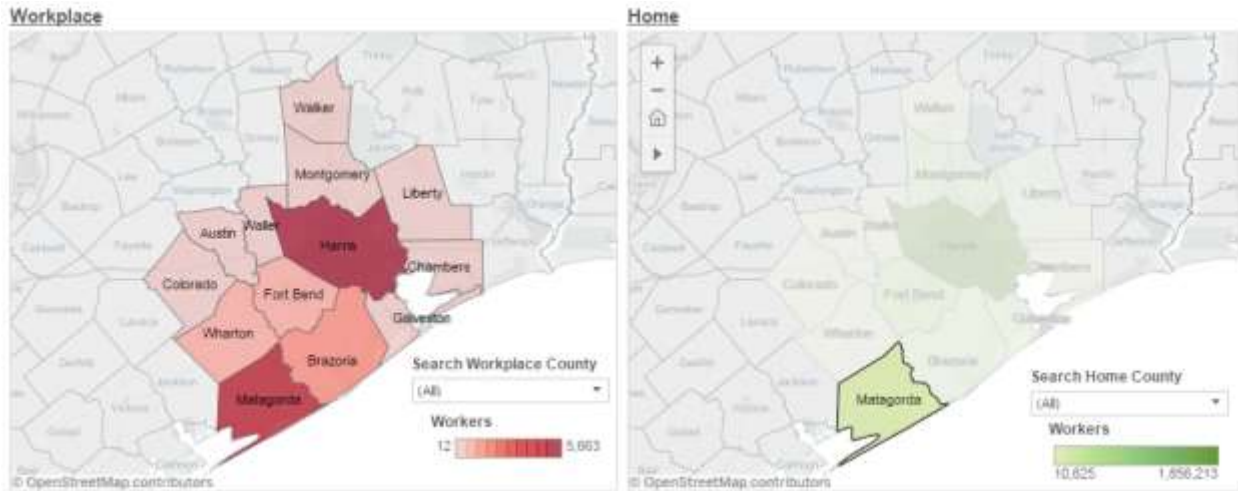
Of the 35,079 home origins in Liberty County, 16,767 (47.8%) of them worked in Harris County, 6,047 (17.2%) worked out of the region and 5,995 (17.1%) worked in Liberty County.



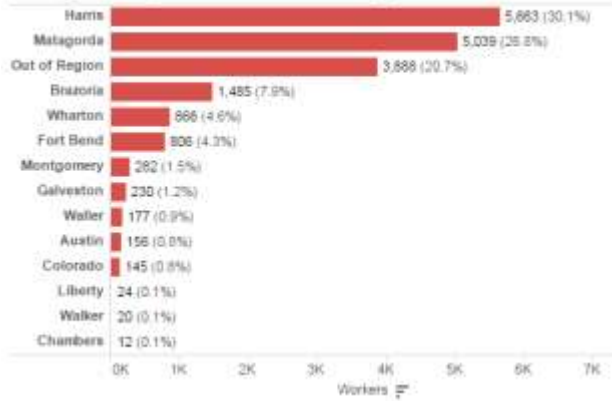
Source: LDHD Origin-Destination Employment Statistics (2014) <http://ldhd.dps.texas.gov/>

Matagorda County

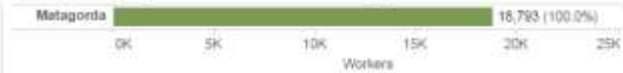
Of the 18,793 home origins in Matagorda County, 5,663 (30.1%) of them worked in Harris County, 5,039 (26.8%) worked in Matagorda County and 3,888 (20.7%) worked out of the region.



County Details (Where Most Workers Work)



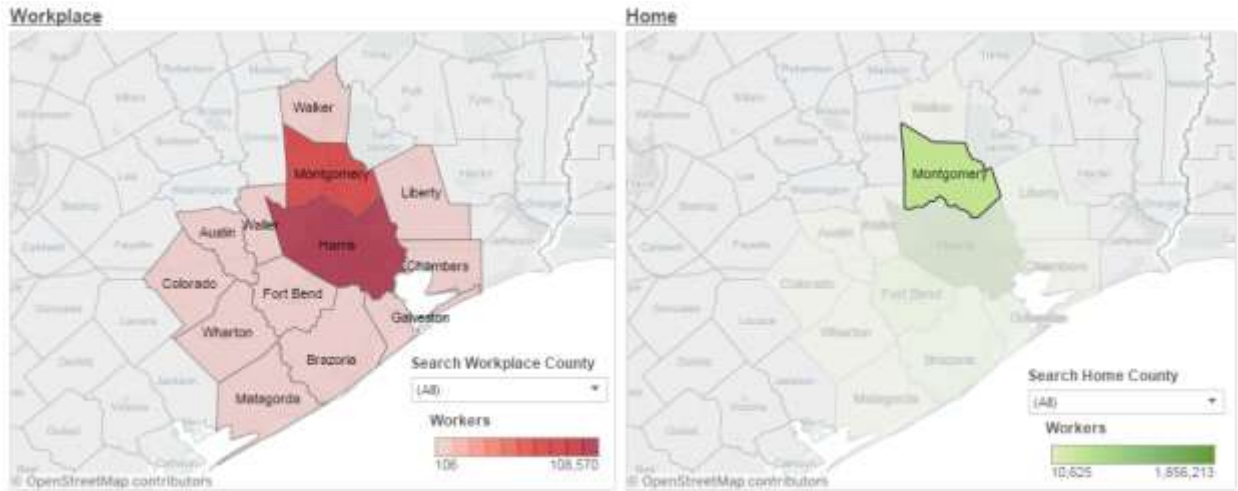
County Details (Where Most Workers Live)



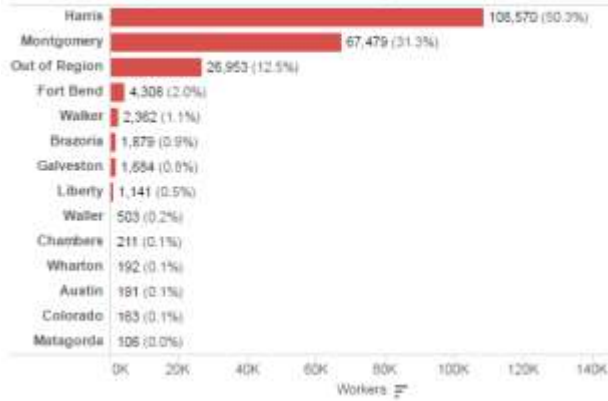
Source: LEHD Origin-Destination Employment Statistics (2014) <http://lehd.ces.census.gov/>

Montgomery County

Of the 215,742 home origins in Montgomery County, 108,570 (50.3%) of them worked in Harris County, 67,479 (31.3%) worked in Montgomery County and 26,953 (12.5%) worked out of the region.



County Details (Where Most Workers Work)



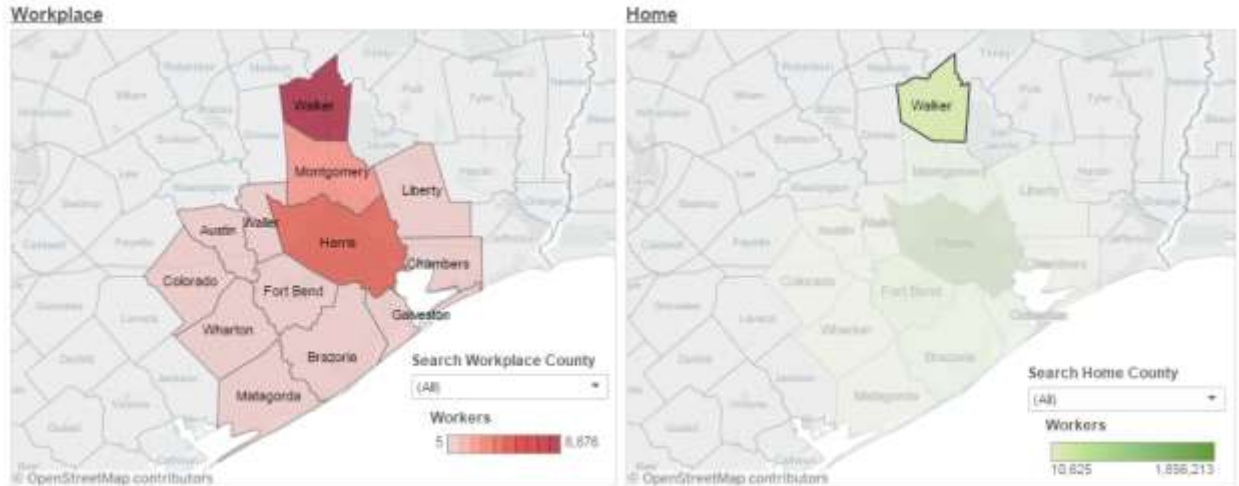
County Details (Where Most Workers Live)



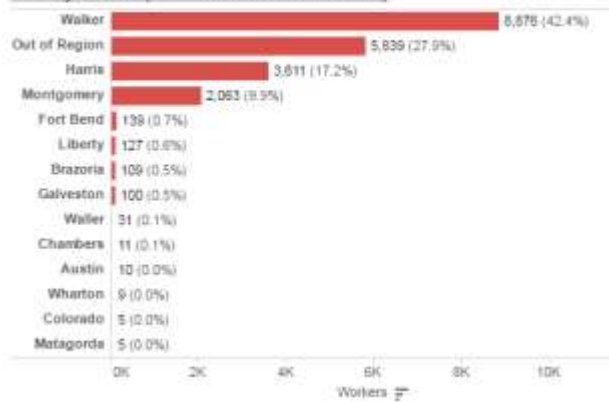
Source: LEHD Origin-Destination Employment Statistics (2014) <http://lehd.ces.census.gov/>

Walker County

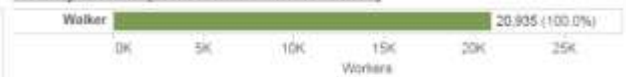
Of the 20,935 home origins in Walker County, 8,876 (42.4%) of them worked in Walker County, 5,839 (27.9%) worked out of the region and 3,611 (17.2%) worked in Harris County.



County Details (Where Most Workers Work)



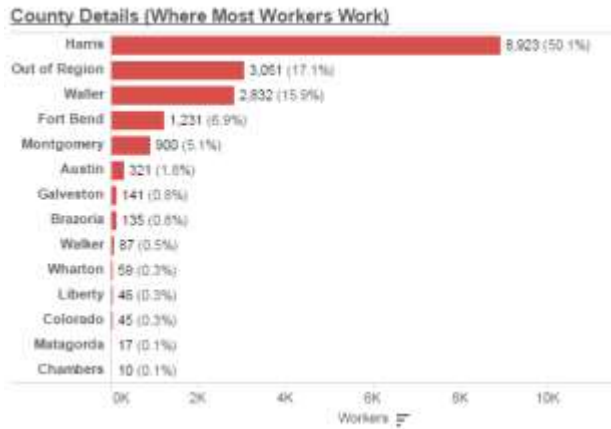
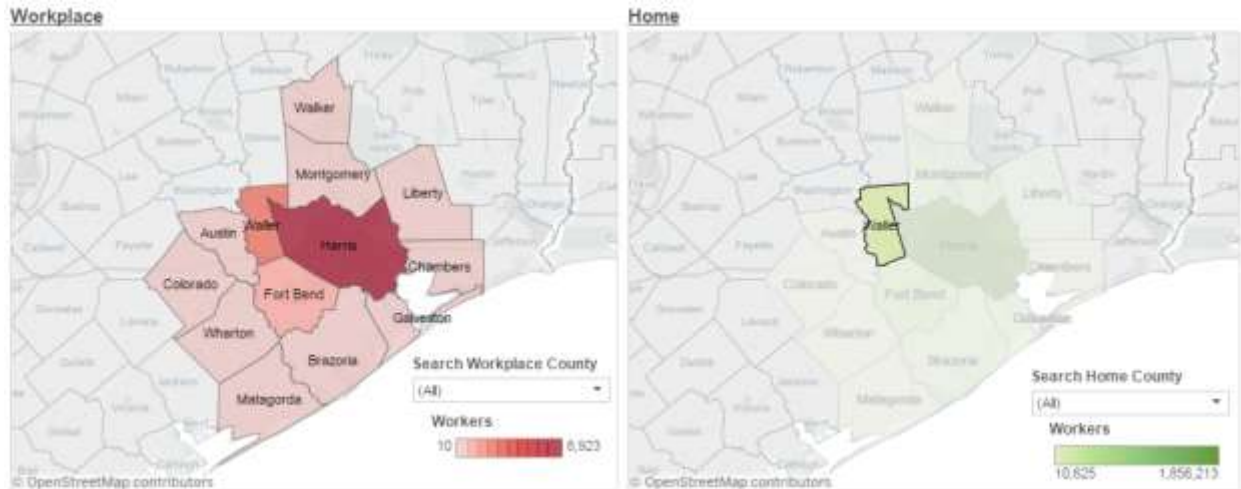
County Details (Where Most Workers Live)



Source: LEHD Origin-Destination Employment Statistics (2014) <http://lmi.dhs.gov>

Waller County

Of the 17,798 home origins in Waller County, 8,923 (50.1%) of them worked in Harris County, 3,051 (17.1%) worked out of the region and 2,832 (15.9%) worked in Waller County.

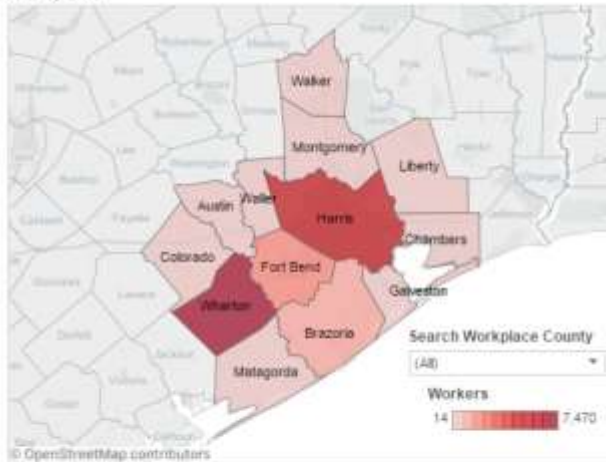


Source: LEHD Origin-Destination Employment Statistics (2014) <http://lehd.ces.census.gov/>

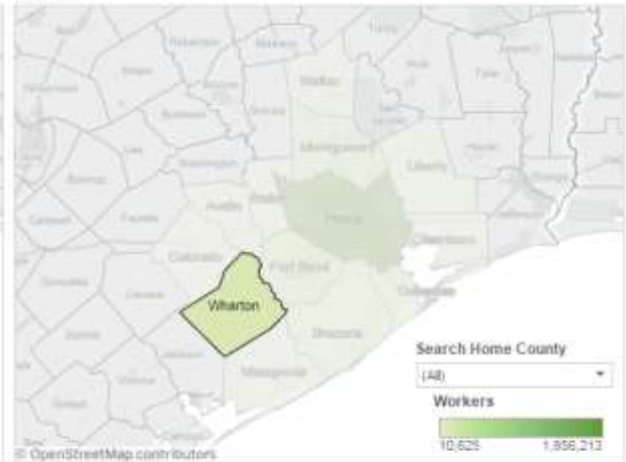
Wharton County

Of the 21,893 home origins in Wharton County, 7,470 (34.1%) of them worked in Wharton County, 5,738 (26.2%) worked in Harris County and 4,083 (18.6%) worked out of the region.

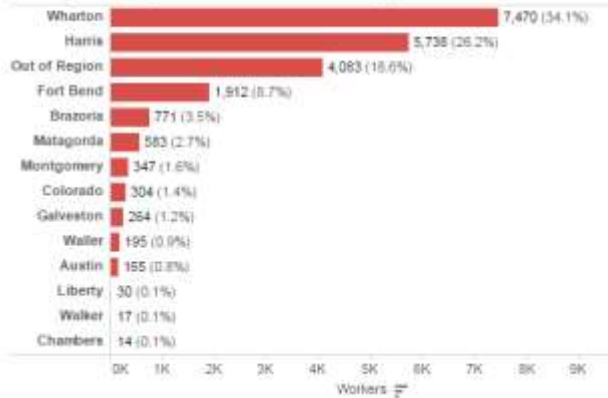
Workplace



Home



County Details (Where Most Workers Work)



County Details (Where Most Workers Live)



Source: LEHD Origin-Destination Employment Statistics (2014) <http://lehd.ces.dhs.gov/>