



RICE UNIVERSITY
**Shell Center for
Sustainability**



**SUSTAINABLE DEVELOPMENT OF
HOUSTON DISTRICTS:**

**ECONOMIC
DEVELOPMENT**

The Health of the City

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RICE







Sustainable Development of Houston Districts:

The Health of the City

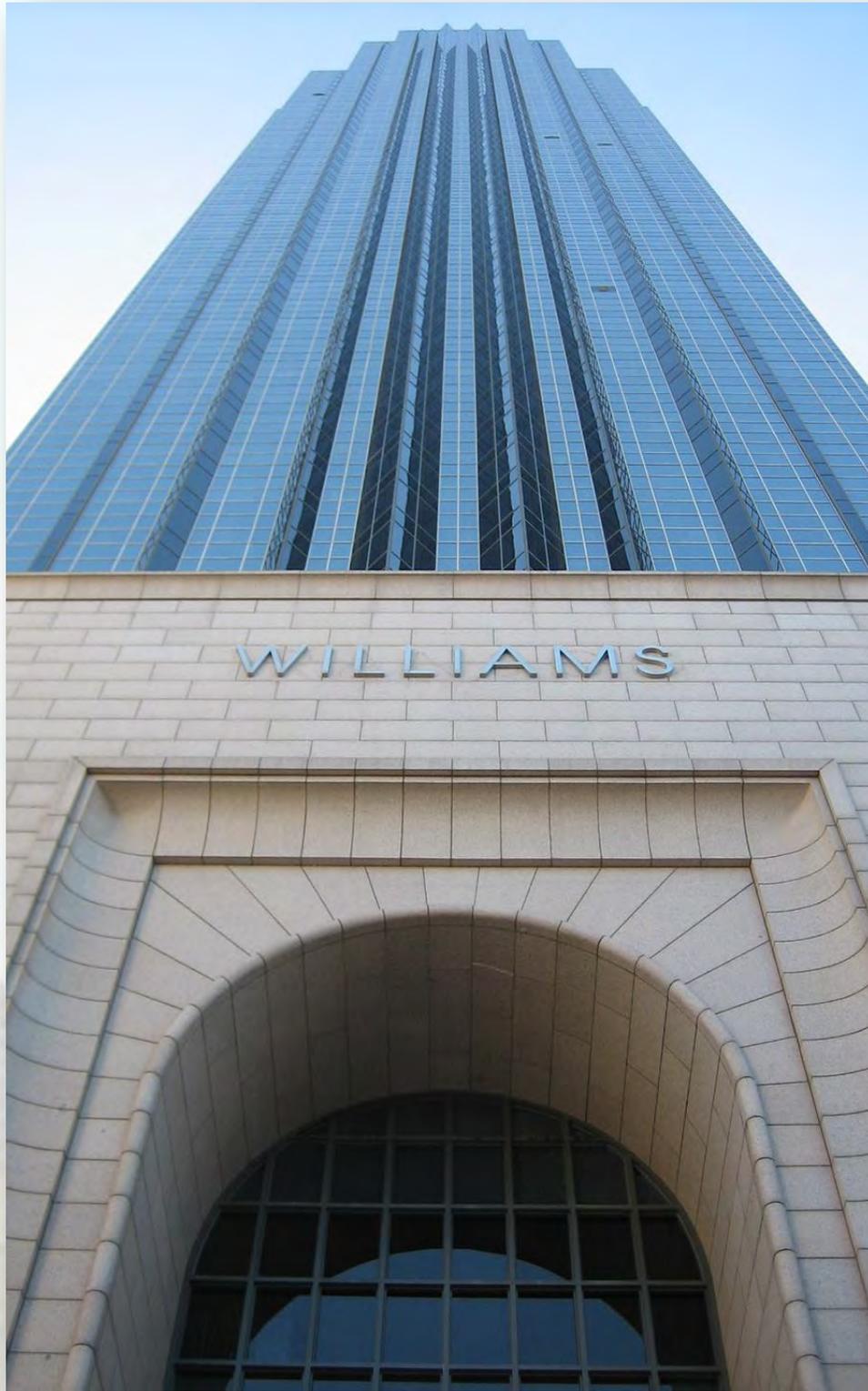
by

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Economic Development Pillar of Sustainability

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Theme - Economic Development

Sub Theme - Employment

Indicator - Employment Status

In a 2010 survey of area residents, 38% of respondents stated that the biggest problem facing Houston was unemployment, poverty and the cost of living (Klineberg, 2010). Employment is essential to gain access to health care, quality shelter, good communities, and quality of life among others (King, 2012). In comparison to the 63 largest cities in the country, Houston had the 18th highest unemployment rate in 2010 (U.S. Census Bureau, 2011). Houston is projected to add 404,007 jobs between 2010 and 2015 based on the projected performance trend developed over the 20-year period between 1990 and 2010 (King, 2012). It is hoped that this increase in job numbers will significantly reduce the unemployment rate despite the premise that many of the new jobs advertised will be filled by new people moving into the city. Educational training to meet the specialized need for Houston based job mix is essential to reducing the unemployment rate in the city (King, 2012). The Houston Metropolitan Region had the largest increase in jobs in the country between the last quarter of 2011 and the first quarter of 2013 (The Economist, 2013).

Sustainability Benefit: The unemployment rate for Hispanics, which are the fastest growing segment of the population, has not increased significantly between 1990 and 2010.

Sustainability Issue: African-Americans in Houston have a disproportionately high unemployment rate.

The following metrics are used to measure the indicator *Employment Status*.

Figure 24: Unemployment Rate

Figure 25: Districts Unemployment Rate



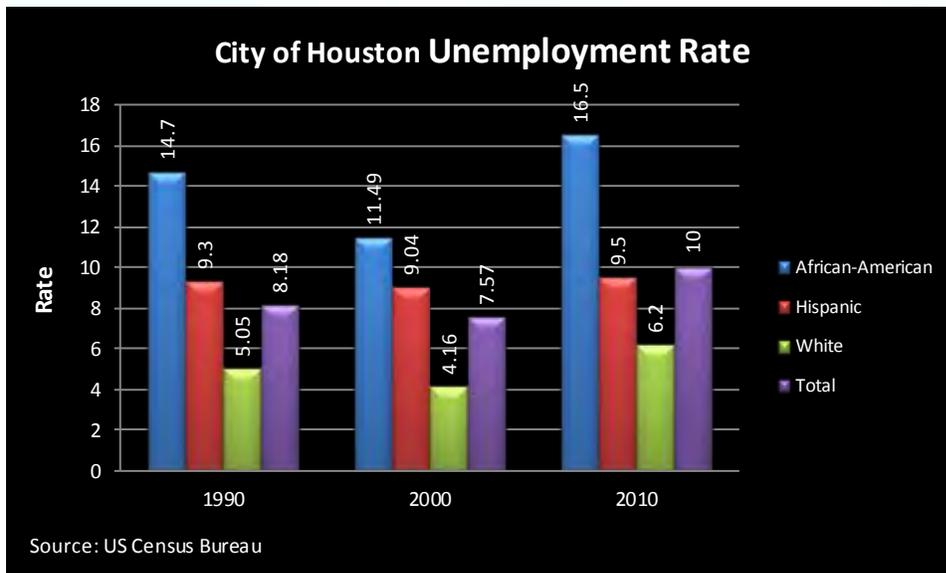


Figure 24: Unemployment Rate

- African Americans had a 16.5% unemployment rate in 2010. This is the highest rate of any racial or ethnic group and hence it demonstrates that African Americans are at a disadvantage when it comes to employment and job security in Houston.
- The unemployment rate among Hispanics remained stable at around 9.5%. This suggests the majority of jobs occupied by Hispanics are in sectors, which are less volatile to the type of economic downturn we experienced.
- All groups show a reduction in unemployment percentage in 2000 and then an increase in unemployment in 2010. African Americans are the most adversely affected group in terms of unemployment.

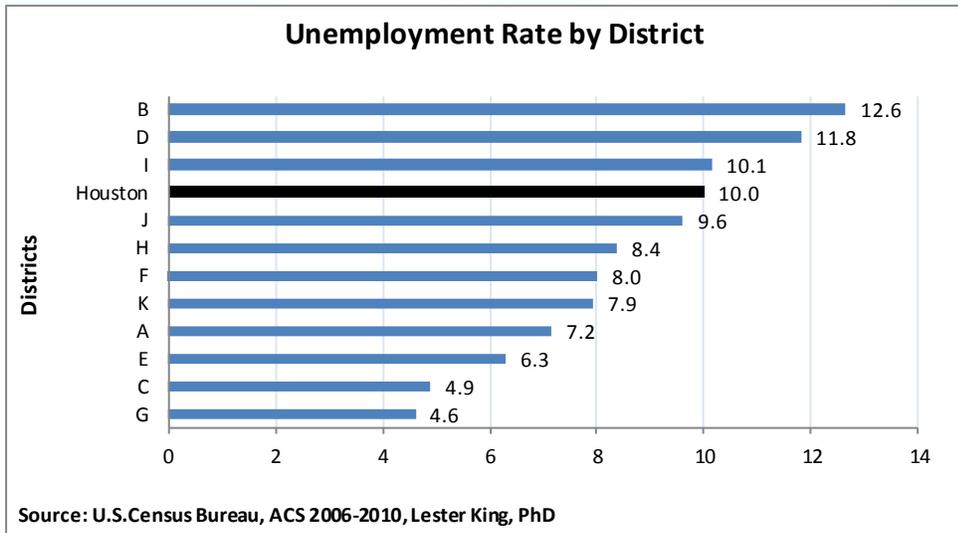


Figure 25: Districts Unemployment Rate

- The Unemployment Rate in Districts B, D and I were above the city average.
- Council Districts J, H, F, A, E, C and G were below the city average.
- Districts B and G had the highest and lowest unemployment rates respectively.
- These results show very large variance in unemployment rates between districts in the city.



Theme - Economic Development
Sub Theme - Macroeconomic Performance

Indicator - Primary Jobs

Traditionally **primary jobs** (manufacturing) were considered the anchors of local economies and essential for reporting economic success (King, 2012). The city of Houston ranked 23rd among the largest 63 cities in the country in terms of the percentage of manufacturing jobs (U.S. Census Bureau, 2011). For this indicator primary jobs are defined as manufacturing jobs plus health sector jobs, since the health sector in Houston attracts patients nationally and internationally.

Sustainability Benefit: Decentralization of the core business areas in Houston means that jobs are spread out across the city. Research shows that there are 17 qualified business centers including the central business district in the City of Houston (King, 2012).

Sustainability Issue: Even with gains in medical jobs, medical added to manufacturing jobs, constitute less than one quarter of all jobs.

The following metrics are used to measure the indicator *Primary Jobs*:

- Figure 26: Primary Jobs by District
- Figure 27: Jobs by Monthly Salary by District
- Figure 28: Percentages of jobs by race and ethnicity

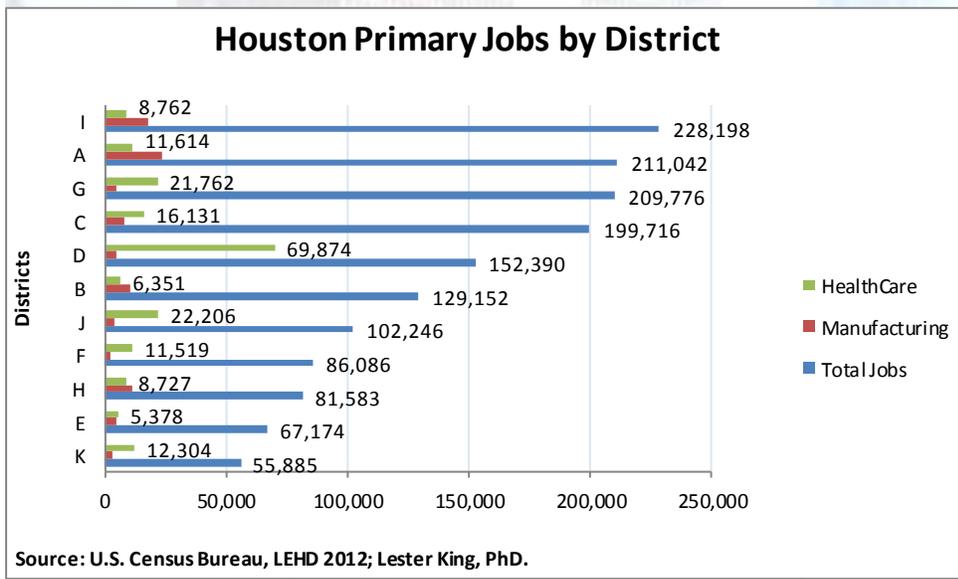


Figure 26: Primary Jobs by District

- The range of job numbers by District stretches from 55,885 jobs in District K to 228,198 jobs in District I.

- Manufacturing jobs and Health Care jobs are the primary jobs in Houston and still constitute a very small percentage of all jobs.
- District D has the highest percentage of Health Care jobs relative to Total jobs with 46%. District D is home of the Texas Medical Center.

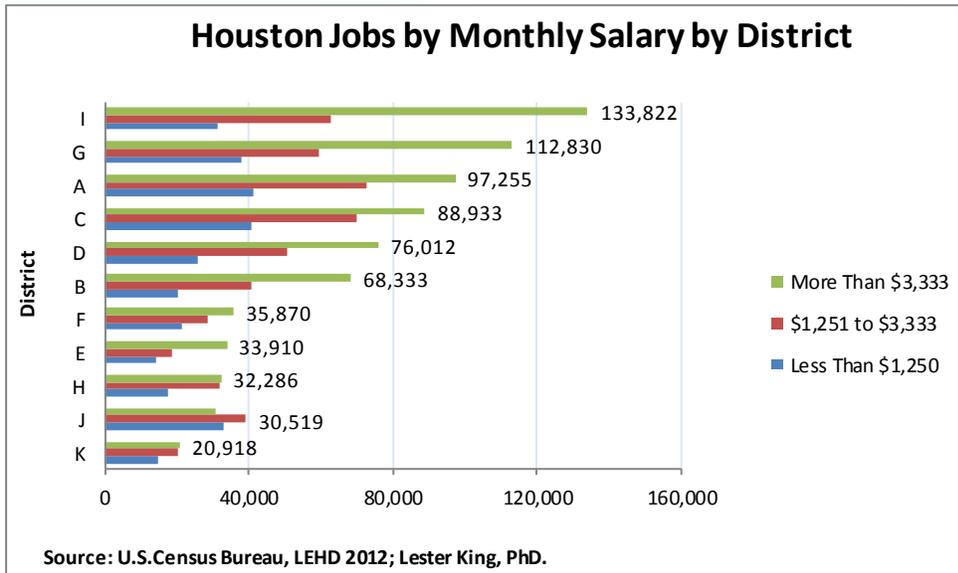


Figure 27: Jobs by Monthly Salary by District

- The figure above shows numbers of jobs in each district divided into three monthly income categories: Jobs that pay under \$1,250 per month; Jobs that pay between \$1,251 and \$3,333 per month and Jobs that pay over \$3,333 per month.
- District I has the highest number of jobs which pay over \$3,333 per month.
- District K had the lowest numbers of jobs which pay over \$3,333 per month.
- Districts A and C had the highest number of low paying jobs, with over 40,000 such jobs each.

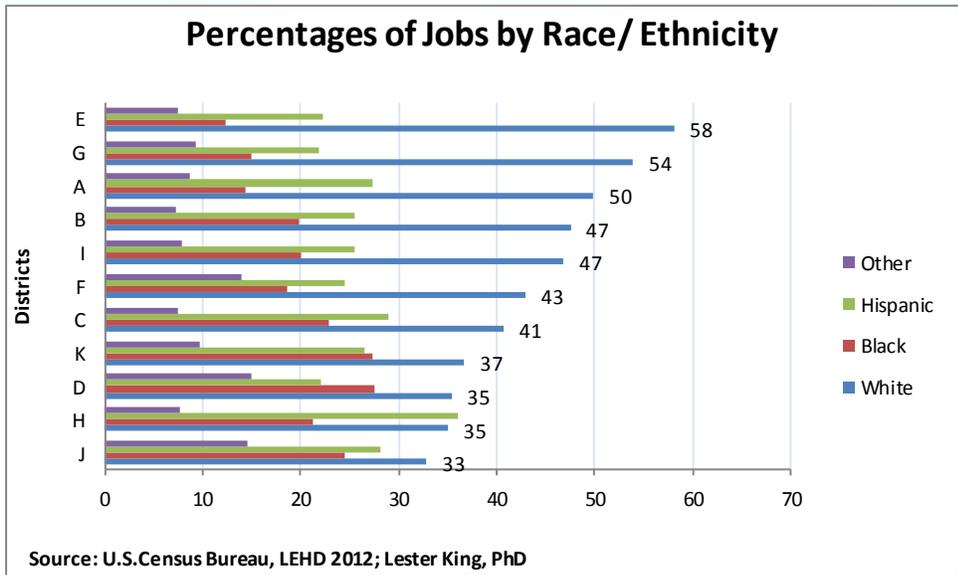


Figure 28: Percentages of jobs by race and ethnicity

- The above figure shows the percentage of jobs in each district held by various race/ ethnic groups.
- The ‘Other’ cohort, which constitutes 7% of the total population, is well represented in jobs across all of the districts commensurate with the proportion of the population (U.S. Census Bureau, 2011). Eight districts have persons from the ‘Other’ cohort occupying 7-10% of the jobs. The ‘Other’ cohort is over-sampled in Districts F,D and J with close to 15% of the jobs in each of those districts. District D is the Texas Medical Center, which employs many diverse persons. Districts F and J are in the West and Southwest areas of the city. These districts have high numbers of persons from other races living and working in these areas such as in Chinatown.
- The Hispanic cohort constitutes 44% of the population, but does not occupy similar percentages of jobs (U.S. Census Bureau, 2011). District H has the highest percentage of jobs occupied by the Hispanic cohort with 35% of Jobs. The Hispanic cohort occupy between 20% and 30% of all jobs in all other districts.
- The Black cohort constitutes 23% of the population in Houston (U.S. Census Bureau, 2011). This group is represented in similar proportions of around 23% in the jobs in Districts C,K,D,H and J. All other districts have an under-representation of the Black cohort in the workforce commensurate with the city level percentage. District E has the lowest proportion with 12% of jobs occupied by the Black Cohort.
- The White cohort constitutes 26% of the Houston population but is represented by a range of 33% to 58% of all jobs in all districts across the city.
- The District with the lowest percentage of jobs in the White cohort is District J. District E has the highest percentage of persons in the workforce from the White cohort.



Theme - Economic Development

Sub Theme - Earnings

Indicator – Income

Growth in income is an important summary indicator that shows the rate at which private gains increase over time. This is especially important in an environment where municipalities compete for population and economic growth, as well as more basic things such as keeping up with the rate of inflation. The City of Houston ranked 45th out of the largest 63 cities in the country in terms of median household income in 2010. The median household income in Houston was \$42,962 in 2010. New York City ranked 16th highest in terms of median household income and California had 9 cities in the top 20 highest household income ranking, with San Jose City as the highest in the country with a median household income of \$79,405 (U.S. Census Bureau, 2011).

Sustainability Benefit: The Houston region grew to surpass the Boston, Philadelphia, and San Francisco regions by 2006 and has maintained those gains. The Houston region is now the sixth largest metro region in the country in terms of Personal Income.

Sustainability Issue: The 2008 economic crises affected Houston MSA more adversely than the Dallas MSA. By 2010, the Dallas MSA reported the highest total personal income in Texas.

The metric **Median Household Income 2010** is used to measure the indicator **Income**:

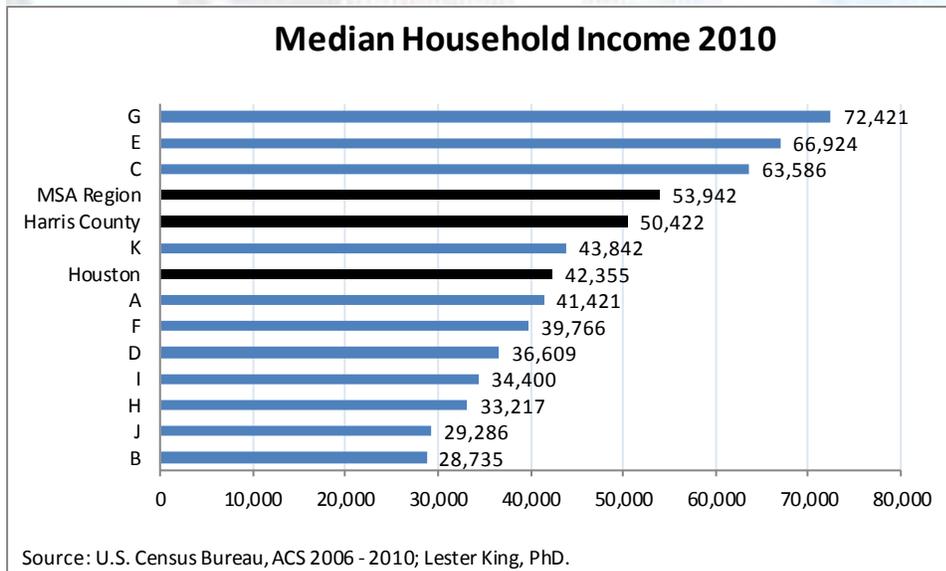


Figure 29: Median Household Income

- The median household income in Houston of \$42,355 is below that for Harris County, which is \$50,422 and the MSA Region (\$53,942) (U.S. Census Bureau, 2011).

- Districts G, E and C are all above the median incomes for the Houston MSA and Harris County, with District G having the highest median income at \$72,421. District K had higher than the median income for the city of Houston but lower than the median income for Harris County and the Houston MSA.
- Districts A, F, D, I, H, J, and B, all had below the median income for the city, county and region. District B has the lowest median income recorded at \$28,735.



Theme – Economic Development

Sub Theme – Business Location

Indicator - Jobs/ Housing Balance

Sprawl can be described as the separated spread-out development practice that has dominated suburban development over the last 60 years. The **Jobs/ Housing balance** is a focus on the supply of housing in proximity to jobs. The ideal Jobs/Housing balance is one that offers access to many and various types of housing such as single family, duplexes, and multifamily housing within walking distance to jobs. The Jobs/Housing balance alludes to the importance of mixed-use developments where pedestrian access to schools, services, entertainment, jobs and housing is made possible (Burchell, Downs, McCann, & Mukherji, 2005). For sustainable development, should local governments actively encourage companies to locate in existing business centers or should we let the market decide? In a survey of Harris County residents in 2010, 80% called for redevelopment of older urban areas for mixed use development (Klineberg, 2010). However, in a 2005 survey, Anglos preferred neighborhoods that do not have high percentages of African American or Hispanic people (Klineberg, 2005). This cultural practice, complicates the rational location choice theory of maximizing income to find housing close to jobs. It also explains why some inner city neighborhoods, such as the Houston Third Ward and parts of the Fifth Ward, have large supplies of vacant and underused property, despite their close proximity to the central business district.

Sustainability Benefit: Houston has a very efficient freeway system which connects most areas of the city to employment centers very efficiently.

Sustainability Issue: Less than 25% of Houstonians live within a quarter mile of high density business centers.

The following metrics were used to measure Job / Housing Balance:

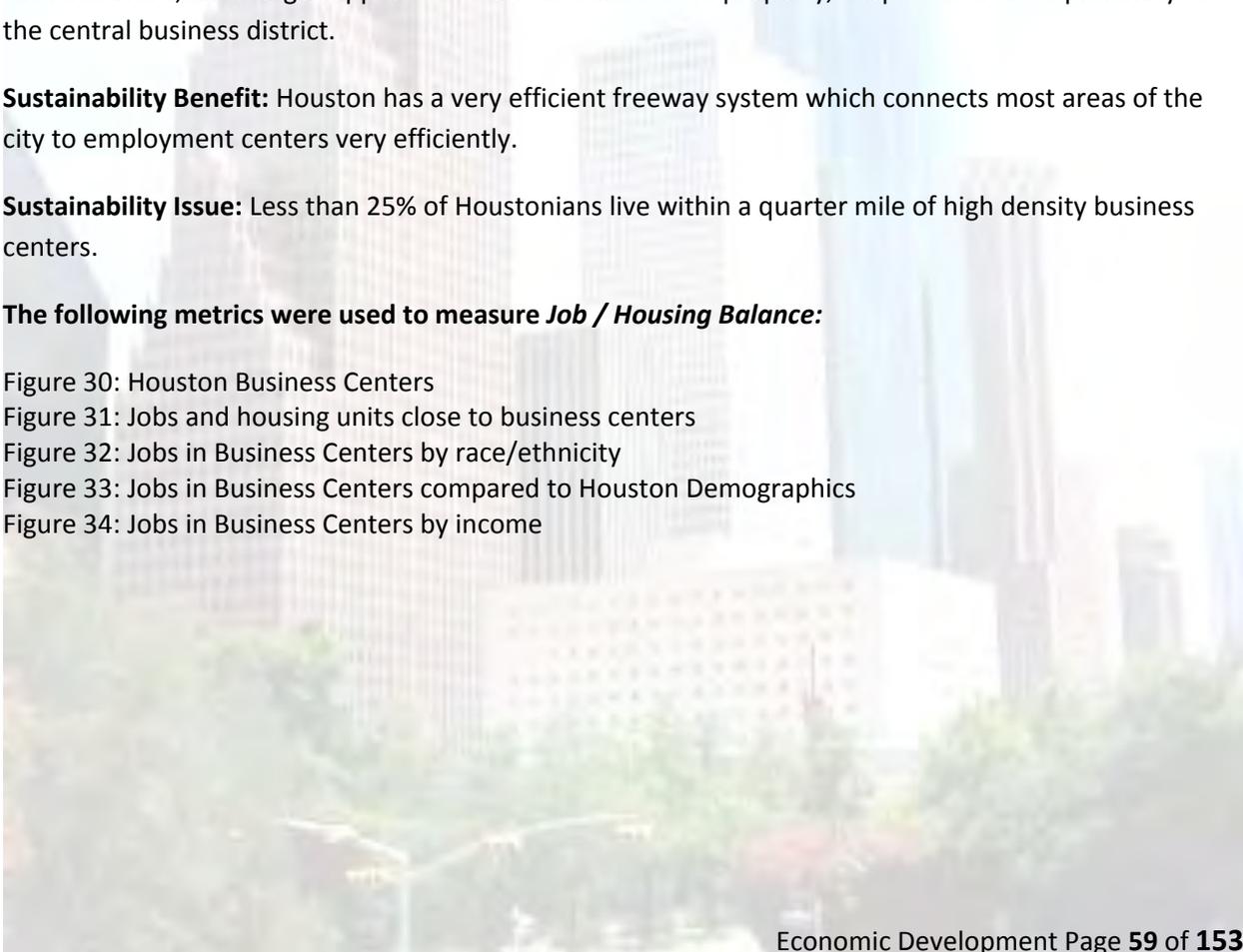
Figure 30: Houston Business Centers

Figure 31: Jobs and housing units close to business centers

Figure 32: Jobs in Business Centers by race/ethnicity

Figure 33: Jobs in Business Centers compared to Houston Demographics

Figure 34: Jobs in Business Centers by income



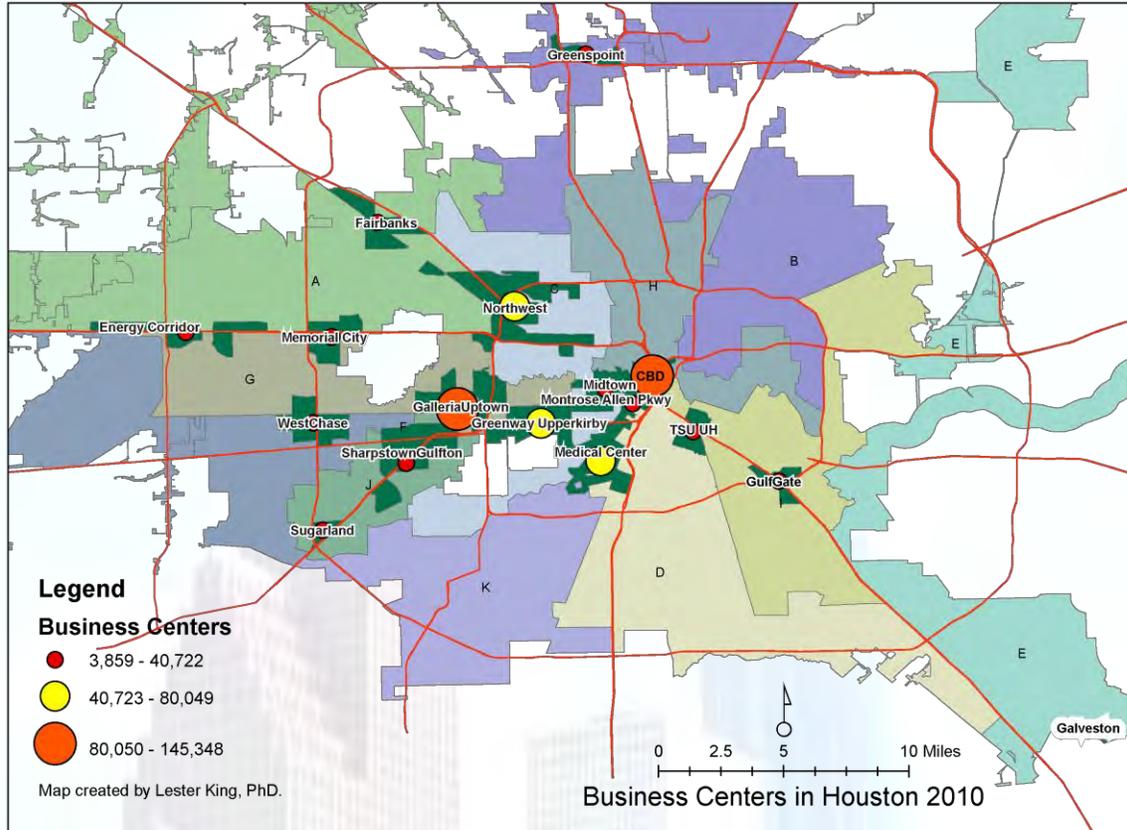


Figure 30: Houston Business Centers

- This map shows the location of business centers in Houston in 2010. These business centers are defined primarily as places with a high density of jobs (greater than 10 per acre within transit analysis zones or TAZs and clusters of such high density TAZs with more than 10,000 jobs).
- In 2010 there were 17 business centers in the City of Houston.
- Downtown, the Galleria, and the Medical Center show the highest concentration of jobs in the City of Houston with more than 75,000 jobs each.
- Although less than 25% of Houstonians on average live within a quarter mile of business centers, about a third of the White cohort live within a quarter mile of the business centers (31.33%). The comparable figures for other races/ ethnicities are: Black – 13%, Hispanic 20%, other races 27%. This suggests that in comparison to other races and ethnicities in Houston, the White cohort prefers and can afford to live close to business centers.

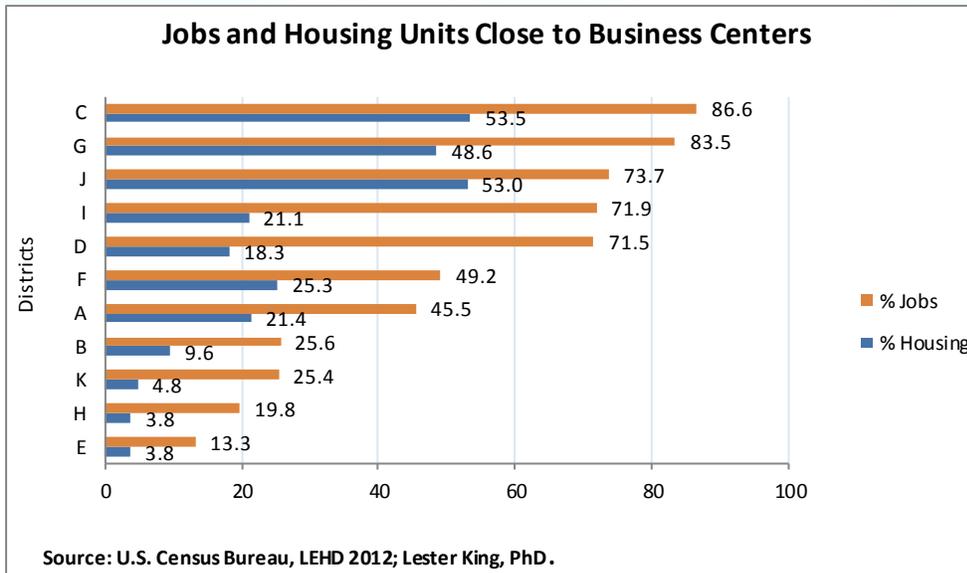


Figure 31: Jobs and housing units close to business centers

- The above figure shows the percentage of jobs and housing units within a quarter of a mile from the business districts in Houston.
- Districts C, G, J, I, and D each have over 70% of the jobs in those districts respectively, within a quarter of a mile to business centers. These 5 districts are also the only ones with a majority of jobs within the business centers. All other districts have a majority of the jobs within in each district respectively, outside of the business centers.
- Districts B, K, H, and E each have less than one third of the jobs in those districts respectively, within a quarter of a mile to a business center.
- Districts C, G, and J are the only ones with the majority of housing units within a quarter mile of business centers. All other districts have the majority of housing units located farther than walking distance to the business centers in Houston.
- Districts B, K, H, and E all have less than 10% of housing units within walking distance of business centers.

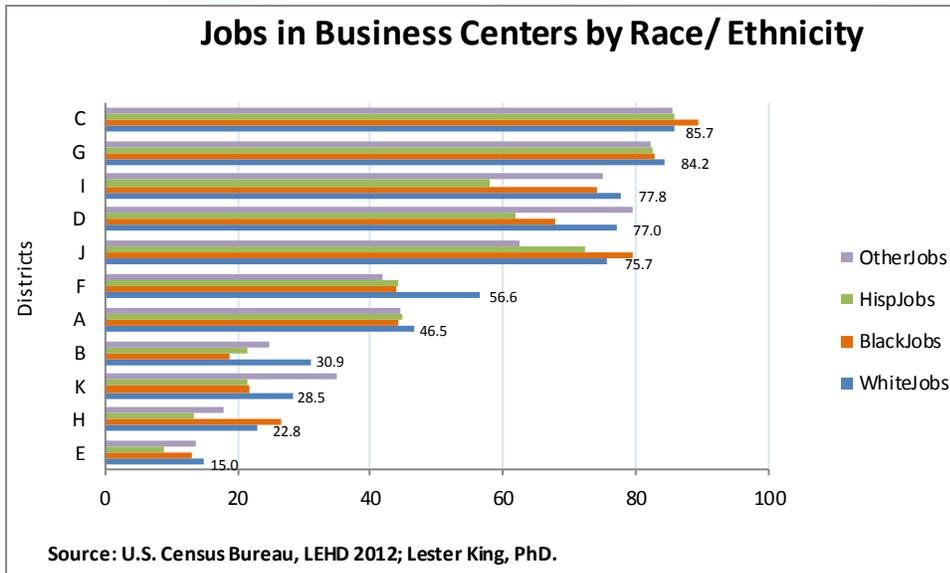


Figure 32: Jobs in Business Centers by race/ethnicity

- The above figure shows the percentage of jobs in each district held by the major racial and ethnic groups.
- Districts C, G, I, D, J, and F each have most of the jobs by the White cohort within a quarter of a mile to business centers. District A comes close to this group with 46.5% of the jobs close to business centers held by the White cohort.
- Most of the jobs in and within a quarter of a mile to business centers in Houston are held by the White cohort.

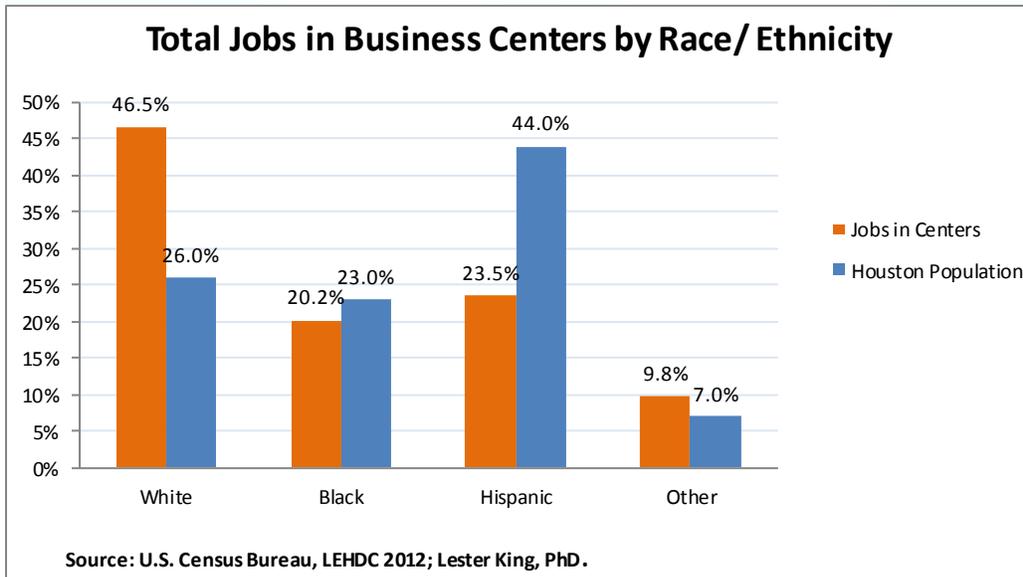


Figure 33: Jobs in Business Centers compared to Houston Demographics

- The above figure compares percentages of racial ethnic groups in Houston, in terms of holding jobs in business centers in 2012 and city wide population distribution in 2010.
- It shows that African Americans and all other racial groups hold jobs in the business centers relatively commensurate with their population distribution in the city as a whole.
- However, the White cohort is overly represented with holding almost twice as many jobs in the business center as their citywide percentage. At the same time, the Hispanic cohort is under-represented in terms of holding jobs in the business centers with almost exactly the opposite trend as the White cohort.

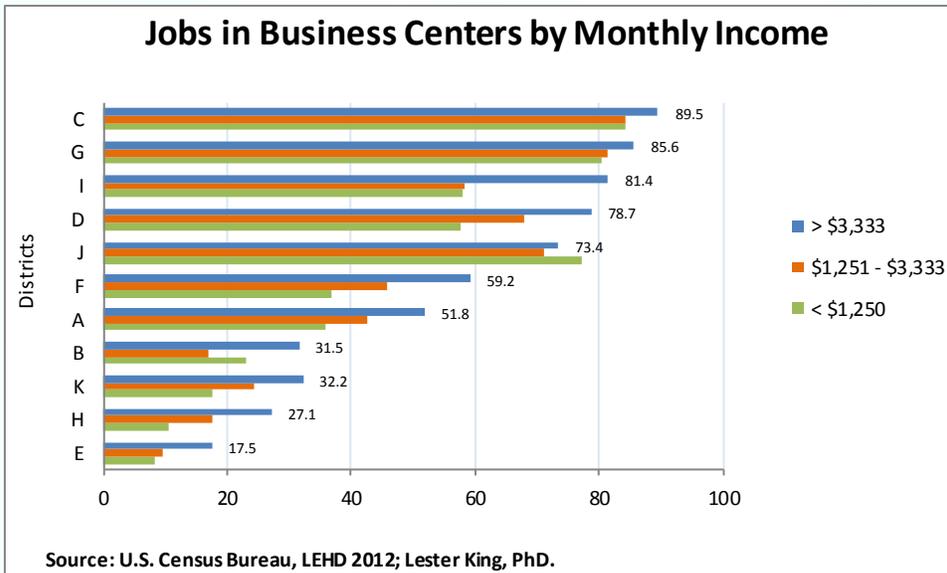


Figure 34: Jobs in Business Centers by income

- The above figure shows the distribution of jobs in business centers within each district according to 3 levels of income.
- Within Districts C, G, I, D, J, F, and A most of the Jobs earning greater than \$3,333 per month are located within a quarter of a mile to business centers.

Theme - Consumption and Production

Sub Theme – Capital Improvements

Indicator – Capital Improvements Investment

Capital Investments in a municipality are a key indicator for sustainability in that investments drive the social, economic and environmental fabric of a city. Carefully targeted investment can enhance the social fabric in a visible sense, through such investments as park improvements or public art projects. The economic fabric can be enhanced through efficiencies such as arterial network improvements, and hazard mitigation improvements such as laying subsurface utility arterials. The environmental fabric is enhanced through such efforts as surface runoff improvements to prevent flooding. For the first time ever, there is a General Fund line item of \$2.5 million in the proposed City of Houston 2014 budget. This represents approximately 2% of the average annual Capital Improvement Plan for Public Improvement Programs for infrastructure maintenance, renewal and replacement and will be applied to improvements of city facilities (CitizensNet, 2013).

Sustainability Benefit: Houston recently passed an ordinance for a dedicated fund to further improve infrastructure to prevent flooding.

Sustainability Issue: Capital Improvement spending in Houston for stormwater, streets, wastewater, and water infrastructure are not guided by a forward thinking comprehensive plan and as such are more responsive to reactive and extant problems, such as potholes and sidewalk repair.

The following metrics are used to measure the indicator Capital Improvements Investment:

Figure 35: Total CIP Spending for 2006-2010

Figure 36: Per Capita CIP Spending

Figure 37: CIP Spending by Infrastructure

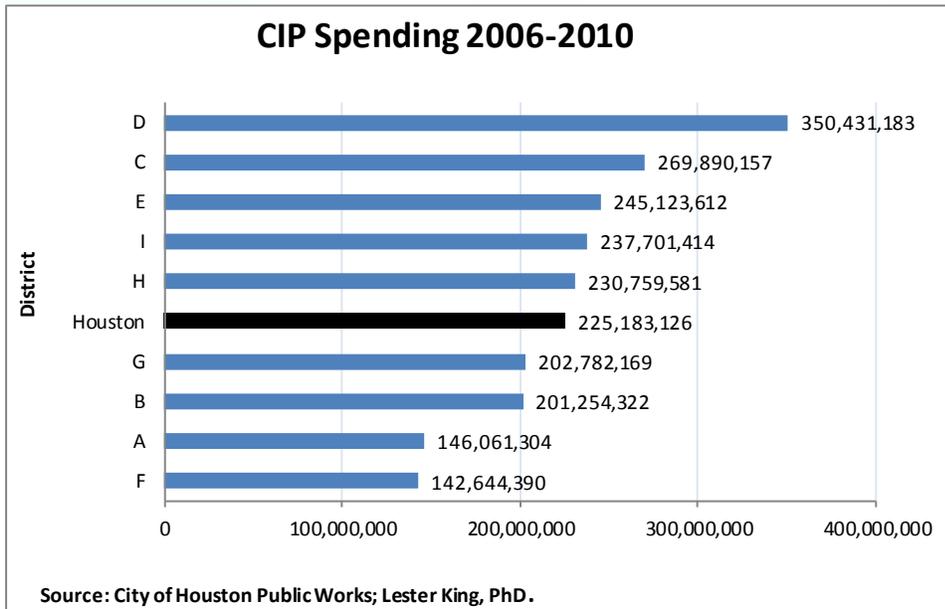


Figure 35: Total CIP Spending for 2006-2010

- For the years 2006 – 2010, \$2, 021, 342, 182 was spent in Houston for stormwater, wastewater, potable water delivery and street projects.
- Districts D,C,E,I and H recorded the highest investments of CIP funding, above the average for districts across the city. District D had the highest investment with \$350,431,183 between 2006 and 2010.
- Districts G,B,A and F had the lowest investment of total CIP spending. District F was the lowest to be funded with \$142,644,390 between 2006 – 2010.

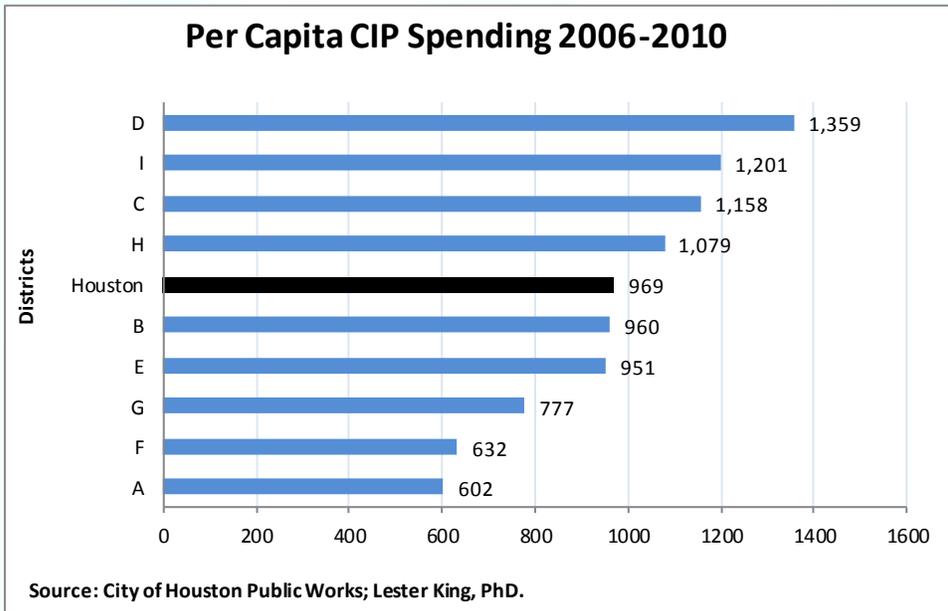


Figure 36: Per Capita CIP Spending

- When viewed on a per-capita basis, CIP spending for districts D, I, C and H remained the highest in the city, while District E was among the below average districts on per-capita spending investment.
- Districts F and A received less than half of the CIP spending compared to Districts D and I, when per-capita funding is calculated.

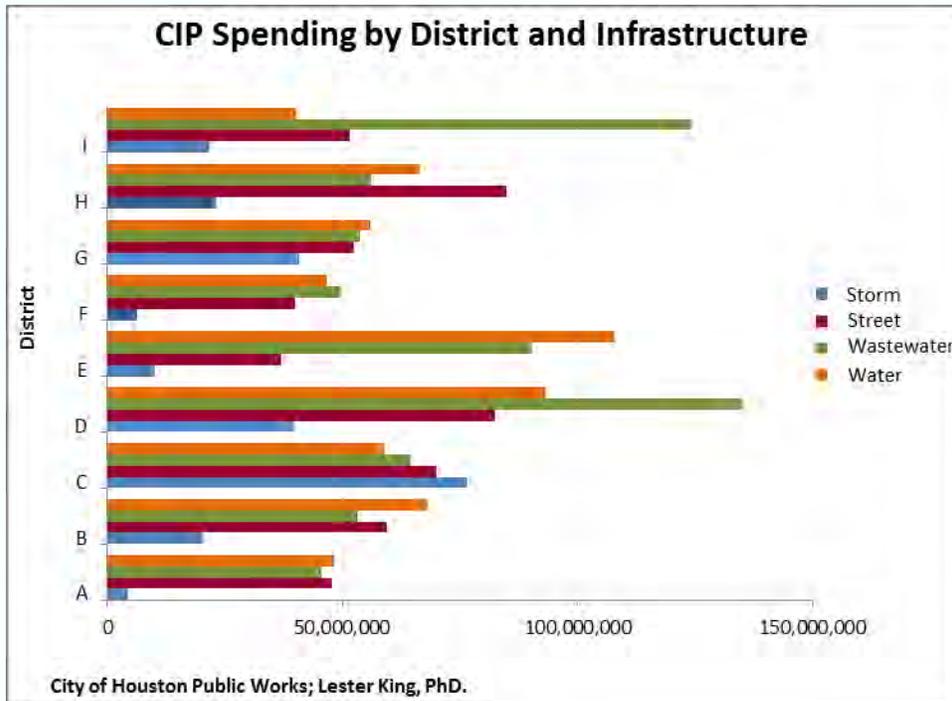


Figure 37: CIP Spending by Infrastructure

- The above figure shows that of the four (4) infrastructure investments, wastewater constituted the highest total spending and Districts D and I received many more funds for wastewater spending compared to other infrastructure investments.
- Total wastewater spending was \$672,340,426. Total water spending was \$586,162,286. Total street spending was \$525,231,991. Total stormwater spending was \$242,913,426.
- District D had the highest wastewater spending. District E had the highest water infrastructure spending. District H had the highest Street infrastructure spending. District C had the highest stormwater spending.

Theme - Transportation

Sub Theme - Access

Indicator - Access to Public Transportation

Dr. Martin Luther King, Jr. commented on the failure of public transit to overcome disparities in access to jobs among racial minorities. Several historical studies in the country have pointed to the need to connect central city residents with jobs using transit (Sanchez, 1999). **Access to Transit** in this study is measured by Euclidean (straight line) proximity to bus stops, however other accessibility measures such as frequency of bus routes; proximity to destinations; and congestion time also contribute to accessibility issues.

Sustainability Benefit: Houstonians have moderate access to transit stops that are within walking distance for most areas in the city.

Sustainability Issue: Houston has poor street connectivity and neighborhoods tend to be separated from places of work and school. As a result, even though accessibility to bus stops is good, trip times are long.

The following metrics, are used to measure the indicator *Access to Public Transportation*.

Figure 38: Percent of population with access to Bus Stops

Figure 39: Intersections by District

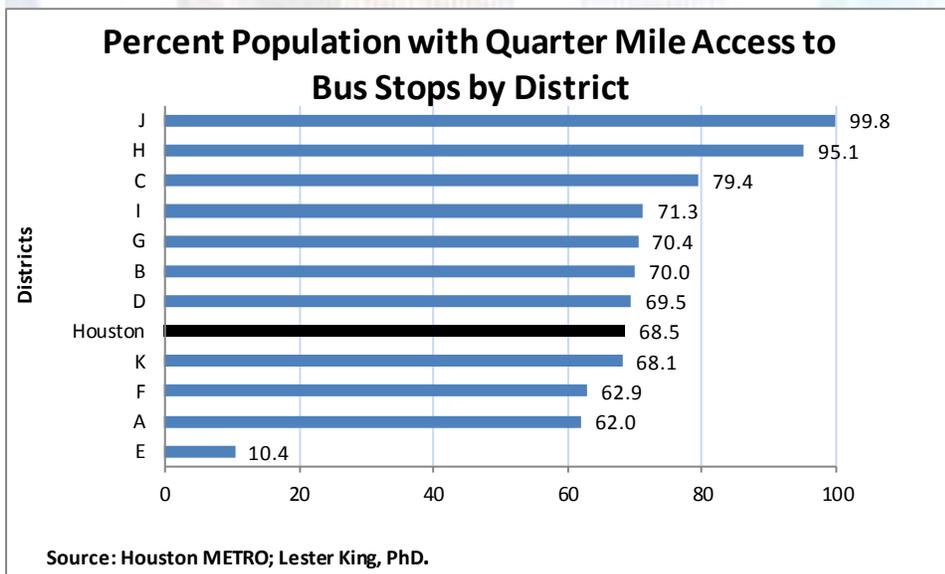


Figure 38: Percent of population with access to Bus Stops

- The percentage of total population within a quarter mile from a bus stop was 68.5% in 2010.
- The percentage of total housing units within a quarter mile of a bus stop was 71.3% in 2010.

- Districts J, H, C, I, G, B and D all had above average rates of access to bus stops. Districts J and H both have greater than 95% of the populations within those districts living within a quarter mile to bus stops.
- Districts K, F, A and E all have below average access to bus stops in 2010. District E has very low access with only 10% of the population located within a quarter mile to bus stops.

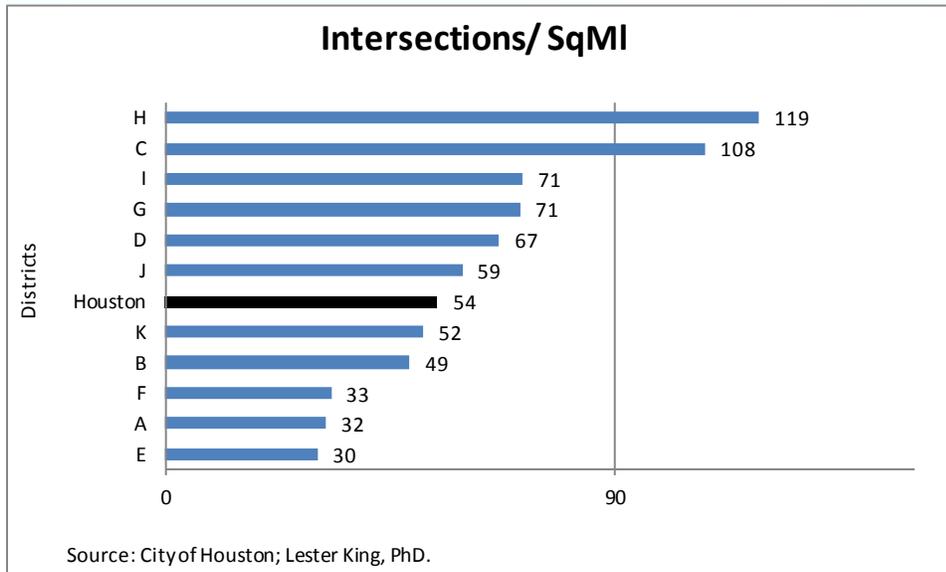


Figure 39: Intersections by District

- Increased street connectivity is related to efficient commuting in getting from origins to destinations such as from home to work or other discretionary stops. The more intersections there are signifies that more options are available for alternative routes, which eases congestion and reduces trip times.
- The above figure shows the average number of intersections per square mile within each of the 11 Districts in Houston. The U.S. Green Building Council (USGBC) developed a rating system for Green Neighborhood Development called LEED ND. This rating system has a pre-requisite of 90 intersections per square mile for any project interested in considering applying for the rating (**U.S. Green Building Council, 2009**).
- Districts H and C are the only Districts in the City of Houston with average intersections per square mile greater than the LEED ND pre-requisite.
- Districts F, A, and E have very low intersections per square mile and hence have very poor connectivity.

Theme - Transportation

Sub Theme - Demand

Indicator – Travel Time

Travel time from home to work is directly related to reduced emission levels; increased quality of life; economic production and land pricing. In a representative sample of Harris County residents, 48% thought that traffic was the biggest problem in 2005, while in 1990 9% thought that traffic was the biggest problem (Klineberg, 2005). In 2007 the City of Houston reported the highest auto sales of any city in the country, with 379 auto dealers reporting \$9.4 billion dollars of sales (U.S. Census Bureau, 2011). Most contemporary urban planners agree that locating jobs and services close to homes would aid in reducing travel time (Cervero & Duncan, 2006).

Sustainability Benefit: Travel times to work for Houstonians are slightly higher than the national average.

Sustainability Issue: Houston roads are heavily utilized by persons living in suburban areas.

The following metric, Travel time to work by District, is used to measure the indicator *Vehicle Miles Travelled*.

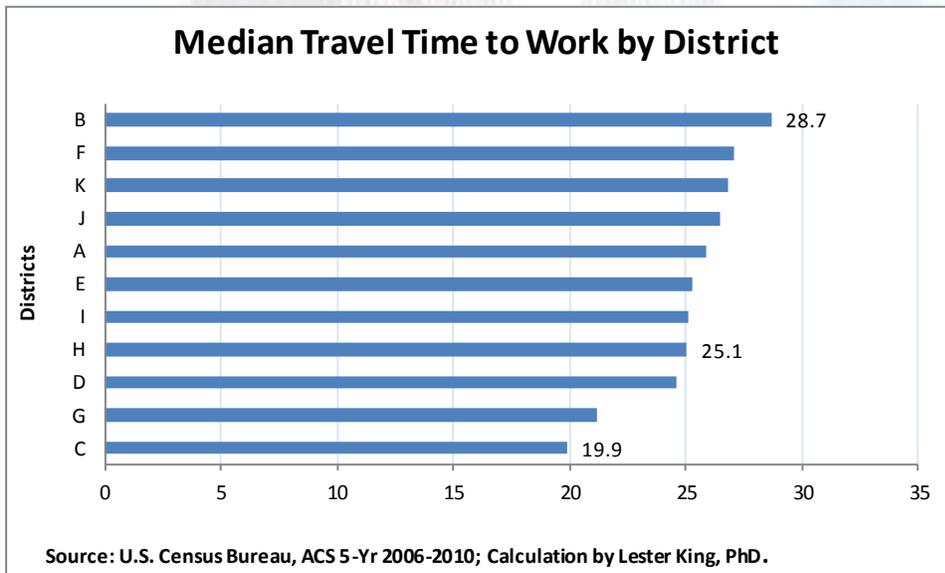


Figure 40: Travel time to work by District

- The average travel time to work in Houston was 25.5 minutes in 2010 (U.S. Census Bureau, 2011).
- Travel times to work in Houston across districts range from 20 minutes to 29 minutes.

- District B has the highest travel time of 28.7 minutes from home to work.
- Districts D, G, and C have lower travel times to work. District C has the lowest average travel time to work at 19.9 minutes.



Theme - Transportation
Sub Theme - Mode

Indicator - Travel Choice

The private automobile has long been the preferred method of travel for most Houstonians (Klineberg, 2010). Is the percentage of persons traveling in private automobile a sign of decreasing community standards, an indicator that population growth is occurring in areas not serviced by public transit, or an indicator that the current transit system, which relies heavily on buses, is not efficient?

Sustainability Benefit: No benefit identified for low use of transit in Houston.

Sustainability Issue: The percentage of persons using transit varies widely by District in Houston.

The following metric, Alternate Means of Travel, is used to measure the indicator *Travel Choice*.

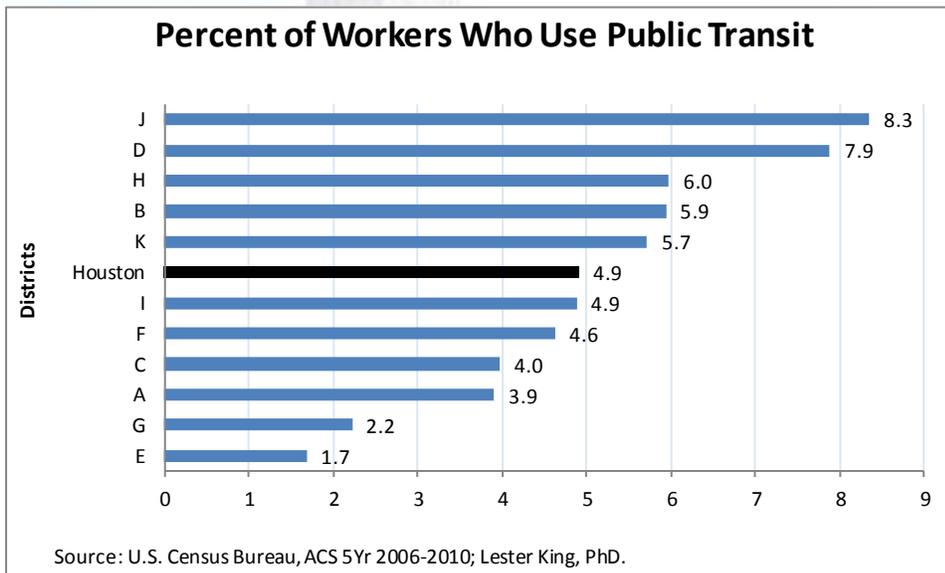


Figure 41: Alternate Means of Travel

- Districts J, D, H, B and K have above average transit use in Houston. District J has the highest level of transit use with 8.3% of workers using transit to get to work.
- Districts I, F, C, A, G and E have at or below average transit use. Districts G and E have the lowest numbers with 2.2% and 1.7% respectively.
- Transit use in the City of Houston is projected to further decline (King, 2012).



Economic Development Policy Recommendations

THEME – Economic Development

Sub Theme – Employment: **Indicator – Employment Status**



- Need to match skills training from community colleges with demand from employers. Collaboration between community colleges, school districts, and major employers, with support from the city, is necessary. Apprenticeship programs is one type of solution.
- Utilize Science, Technology, Engineering, Math (STEM) training programs more effectively.
 - Citizens can support the following:
 - Support career day opportunities at schools and become more involved at schools.
 - Local government and school districts can support the following:
 - Incentives for companies to provide internships/ apprenticeships.
 - Start stem programs by 5th grade.
 - School district and city partnership
 - Businesses can support the following:
 - Be clear on needs.
 - Provide opportunities for internships/ apprenticeships.

Sub Theme – Macroeconomic Performance: **Indicator – Primary Jobs/Green Jobs**



- Develop alternative energy industry to attract high end jobs in that sector.
- Develop IT/ Advanced Technologies skills and knowledge labor force.
- Need to improve quality of life to attract professionals and jobs (eg. Arts, eco-tourism, attractions).
- Need to foster and grow Life Science and Bio-Technology industries in Houston.
 - Citizens can support the following:
 - Advocate for improved quality of life.
 - Purchase green products and services.
 - Local governments can support the following:
 - Campaign to raise visibility.
 - Incentives to develop manufacturing and green industries.
 - Market studies.
 - Land planning for enhanced quality of life.
 - Develop workforce to meet industrial needs.
 - Non-profit groups can support the following:
 - Assist businesses to clarify needs.
 - Talent attraction.

Sub Theme – Earnings: **Indicator – Income**



- Foster development of energy trading (collaboration between Greater Houston Partnership, banks, and universities).
- Develop our opportunity to increase international trade based on large diversity.
 - Local government can contribute in the following ways:
 - Offer incentives to companies to raise level of pay.
 - Facilitate improved education and training for workforce.
 - Address minimum wages.
 - Businesses can contribute in the following ways:
 - Talent retention.
 - Develop non-monetary perks
 - Non-profit groups can contribute in the following ways:
 - Assessment of international trade benefits to local economy.
 - Wage surveys.
 - Identify factors to attract higher paying jobs.

THEME – Economic Development

Sub Theme – Waste Generation and Management: **Indicator – Waste Generation**



- Reporting requirement for waste haulers to report sources of waste collected.
- We need to be more conscious about decreasing land fill space to work towards a green and sustainable region.
- City of Houston needs to expand the household recycling program to all households.
- Charging a fee for regular stream waste disposal will offset the cost of this important program.
 - Local government can support the following:
 - Education to the general public on waste reduction and management.

Sub Theme – Energy: **Indicator – Energy Consumption**



- We need to utilize energy efficient building technology such as smart energy meters.
- Educate and incentivize residents on weatherization and energy conservation.
- Need to develop real time pricing policy since we have smart meter capability.
- Need energy disclosure policies and required audits for large users.
 - Non-profit groups can contribute in the following ways:
 - Develop study on real-time pricing policies.

THEME – Economic Development

Sub Theme – Access: Indicator – Access to Transit



- Transit service improvements - Frequency, circulation services/linkages within strategic areas such as the job centers, and travel time need to be improved to circumvent congestion and long travel time.
- Transit accessibility improvements - Infrastructure such as ramps, sidewalks, bridges over ditches, and sufficient amount of shelters need to be addressed as part of a complete trips package to make public transportation safe, feasible, and desirable.
- Transit coordination - We need coordination of public agencies to plan for improving transit (METRO, Houston Planning Department, Houston Public Works, HGAC, HISD).
- Transit Planning - Transit corridor ordinance has not been utilized effectively in Houston.

Sub Theme – Demand: Indicator – Vehicle Miles Traveled (VMT)



- Incentivize housing development near employment areas.
- Flex Work program is not being effectively promoted and utilized.
 - Local government can contribute in the following ways:
 - Develop vision and goals.
 - Speed up developer permitting processes.

Sub Theme – Mode: Indicator – Travel Choice



- The pedestrian and bicycle network should be developed to complement the bus and rail network as the rail network cannot be as effective without the other modes.
- Develop technologies such as apps to coordinate transit options such as bus, rail, and ride share programs.
 - Local government can contribute in the following ways:
 - Make apps available for citizens to plan trips more efficiently.
 - Land use planning
 - Businesses can contribute by:
 - Offering alternative travel and telecommuting options.
 - Providing facilities for bike and walking.
 - Citizens and non-profits can advocate









**Sustainable Development
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**A Sustainability
Indicators Study**

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