Housing Opportunity in Central Texas

Prepared for the 5-County Austin-Round Rock MSA
Funded by the FY2010 HUD Sustainable Communities Regional Planning Grant

Table of Contents

The work that provided the basis for this publication was supported by funding under an award with the U.S. Department of Housing and Urban Development. The substance and findings of the work are dedicated to the public. The author and publisher are solely responsible for the accuracy of the statements and interpretations contained in this publication. Such interpretations do not necessarily reflect the views of the Government.

CHAPTER 1: BACKGROUND

Housing Opportunity in Central Texas is a summary report of the regional effort to promote equitable growth through the Sustainable Places Project, an ambitious regional planning initiative. The report summarizes key findings of data analysis, deliberation, and the many related products built by the project that will impact future policy decisions.

The Capital Area Texas Sustainability (CATS) Consortium, a network of regional planning agencies, community development organizations, and local governments, led by the Capital Area Council of Governments (CAPCOG), was awarded a Sustainable Communities Regional Planning Grant by the US Department of Housing and Urban Development (HUD). The regional planning grant is part of the Federal Partnership for Sustainable Communities, a collaboration of multiple federal agencies – including HUD, the Environmental Protection Agency, the Department of Transportation and others – to integrate planning at the regional level rather than operate in silos. The Partnership developed six livability principles to guide the development of sustainable communities. For application to Central Texas, the CATS Consortium refined these principles as follows:

1. Housing choices*: All kinds of housing for all kinds of people*
2. Mobility options: *Multiple ways of getting around….not just by car.*
3. Economic prosperity: *Jobs and services for area residents.*
4. Healthy communities: *Recreation, health, food and civic connections.*
5. Concentrated and balanced growth: *Pedestrian-friendly mixed-use districts.*
6. Environment and natural resources: *Protection of natural areas and resources.*

The consortium developed a suite of tools to address the livability principles in a participatory way and help analyze complex planning decisions. The tools were used to better align housing, jobs, and transportation options and improve access to opportunity in demonstration sites across Central Texas.

From an outside perspective, access to opportunity may not appear to be a critical issue. During the past decade, the Austin metropolitan region has consistently ranked among the country's fastest growing regions. Since 2000, the region's population has increased by approximately 40 percent, more than four times the national rate of growth. This population growth has fueled increased demand for housing within the urban core, driving real estate prices significantly upward; the average price of a home in the metropolitan area has jumped 40 percent during the past ten years.

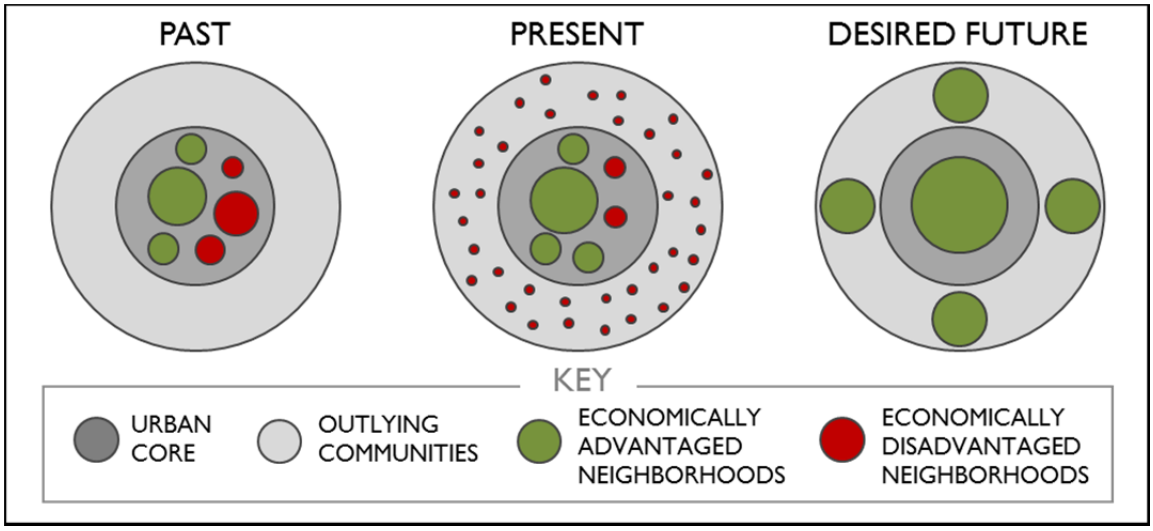
With affordability continually falling within the urban core of Austin, disadvantaged residents of the region are increasingly forced to move outward, first to the suburban ring, then to exurban fringes. While such internal migration helps alleviate housing costs for many economically disadvantaged residents, displaced residents soon encounter a host of obstacles associated with geographic isolation, such as marked declines in accessibility to employment and educational opportunities.

Given these economic and demographic realities, a study of regional housing must go beyond housing accessibility. While the provision of housing is a necessary component of providing individual economic opportunity, it is insufficient to achieve this goal. As a result, we must examine

existing housing accessibility as well as explore current deficiencies in mobility and location of affordable housing.

Achieving true equity must involve strategies that address broader obstacles facing many disadvantaged residents. In Central Texas, the most pressing problems facing disadvantaged residents arise from geographic isolation, including lack of mobility and the lack of access to post-secondary education and training opportunities. Whereas the urban core provides a variety of transportation choices, including mass transit and walking, residents located in outlying areas of Central Texas are almost entirely dependent on an automobile. Forced to obtain and maintain a personal automobile, these residents face significant increases in transportation costs. Additionally, with most educational and social service facilities located in the urban core, displaced residents also find themselves without the resources to fully participate in the region's economy.

As a result of the growing imbalance of location and opportunity, all too often disadvantaged residents lack the necessary tools to participate in the region's comparatively vibrant economy. While the U.S. unemployment rate hovers around seven percent, the unemployment rate in the Austin metropolitan region is approaching four percent. Despite such regional economic resiliency, more than 265,000 residents live in poverty, an increase of nearly 75,000 individuals in just the past five years.



CAPCOG's HUD-funded Sustainable Places Project seeks to address the twin challenges of employment and educational inaccessibility associated when much of the workforce is priced out of central neighborhoods. Approximately one-third of designated activity centers, for example, lack access to essential job opportunities. By improving local decisions about planning and investment, CAPCOG will help facilitate the development of sustainable activity centers throughout the region that improve the balance between housing and economic opportunity while also increase mobility places and affordability. The long-term result will be diverse, mixed use, mixed income activity centers offering greater equality of opportunity and access, while mitigating current pressures leading to gentrification and displacement.

CHAPTER 2: ECONOMIC & DEMOGRAPHIC SNAPSHOT

With decades of sustained population increases punctuated by even faster growth in recent years, rampant growth is the dominant theme of Central Texas' story. Since 1980, the population of the Austin metropolitan region has grown five times faster than the US. During the past decade, the Austin metropolitan has added more than a half a million residents; only Raleigh, North Carolina and Las Vegas, Nevada have experienced greater rates of growth during this period. Population growth has further accelerated since 2005. Today, the population of Central Texas increases by approximately 1,000 individuals every week.

The rise of the Hispanic community and external migration are the primary drivers of population growth in Central Texas. Although Hispanics represent just 31 percent of the population in Central Texas, they have been responsible for 45 percent of the region's growth since 2000. New residents—both Hispanic and non-Hispanic—have also contributed heavily to Central Texas' growth. During the past decade, migrants to the region have been responsible for approximately two-thirds of all population growth.

Central Texas has attracted tens of thousands of new residents each year largely due to a remarkably resilient economy. Since 2000, employment in the Austin metropolitan region has jumped 17.5 percent. US job growth during this period was non-existent. Unfortunately, enviable increases in employment have not been accompanied by robust income growth. During the past ten years, salary growth in Central Texas has trailed the US average. Lagging wage growth in Central Texas is largely a result of the composition of job growth within the region. While the region is creating high-skill, high-wage positions in areas such as Business & Professional Services and Financial Activities, growth has been even stronger in industries such as Leisure & Hospitality and Retail Trade that are dominated by low-skill, low-wage workers. The average annual wage of the Leisure & Hospitality sector, which has grown nearly 50 percent sine 2000, is less than $20,000. During this same period, employment in sectors such Information and Manufacturing, both of which have average annual salaries in excess of $65,000, has declined.

Modest income growth has corresponded with an era of significant increases in home prices, making the region less affordable to a growing number of Central Texas residents. Unlike most other major metropolitan region the US, there was virtually no housing bubble in Central Texas. Today the median price of a home in the Austin metropolitan region is 40 percent higher than in 2000. During this same period, median household income has increased just 20 percent. The imbalance between income and housing prices has produced a record number of 'cost burdened' households, defined as those spending more than 30 percent of income on housing cost. Today, nearly one in three homeowners in Central Texas with a mortgage is cost burdened. Non-homeowners are even more likely to be financially squeezed, with nearly one in two renters considered cost burdened.

Black and Hispanic residents are even more likely to be cost-burdened than their White and Asian counterparts. Median income for both Asian and White households in Central Texas is nearly

$70,000. Median income for Hispanic households, however, is just $43,500. The median household income of Central Texas' Black residents is even lower, at less than $40,000. Unsurprisingly, lower median household income corresponds to higher rates of poverty. While less than 10 percent of all families in Central Texas are in poverty, 17 percent of Black families and 20 percent of Hispanic families live in poverty.

Differences in income among various racial and ethnic groups are largely the result of differences in educational outcomes. In Central Texas, nearly one in three individuals without a high school diploma live in poverty. The figure for college graduates is four percent. In Central Texas, like much of the US, there are profound differences in educational attainment among racial and ethnic groups. Two-thirds of Asian residents and more than 40 percent of White residents possess Bachelor's degree or higher level of educational attainment. In contrast, less than one in four Black residents and fewer than 17 percent of Hispanics have a four-year college degree.

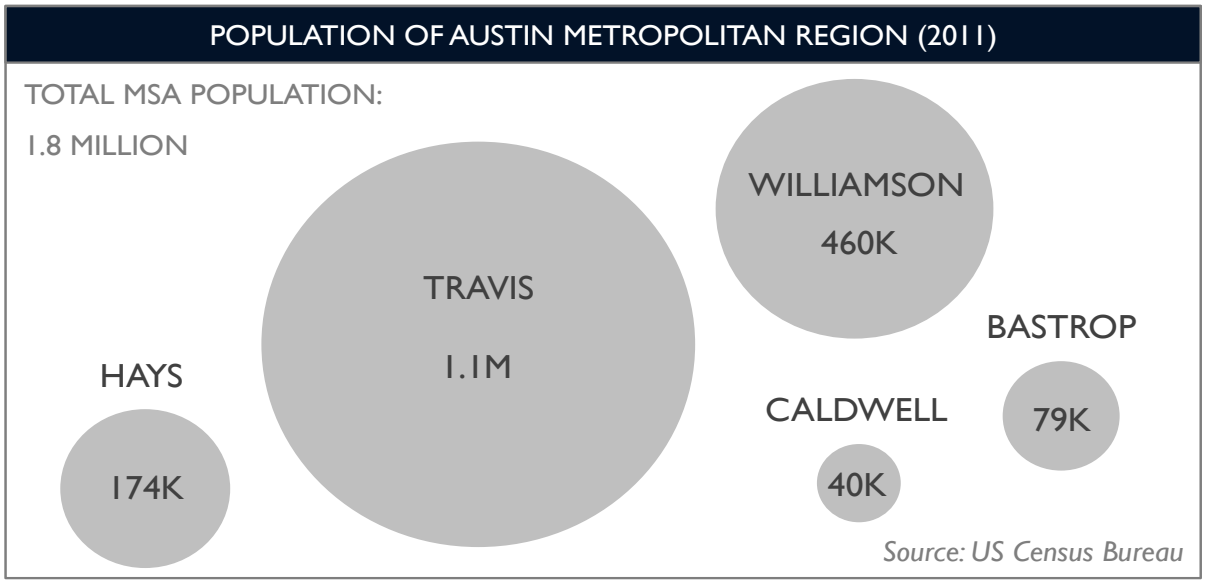
Low-income, minority residents of Central Texas's urban core face particularly difficult economic circumstances. In Travis County, where nearly two-thirds of the region's Black and Hispanic population lives, home price increases have been particularly pronounced. As a result, there is a growing recognition that many low-income, minority residents in Central Texas are at risk of being displaced from central city communities and forced to relocate to the suburban fringes. In exchange for cheaper housing, such internal migrants soon face a host of new challenges.

Perhaps most importantly, employment in the outlying areas of Central Texas is largely dependent on ownership of a private automobile. Most jobs—especially high-skill, high-wage positions—are located in Travis and Williamson Counties. In 2011, these two counties accounted for more than 90 percent of all jobs. Furthermore, mass transit options are largely non-existent outside of these two counties. The imbalance of population and employment in Central Texas, compounded by lack of accessibility, affects workers rich and poor alike; nearly half of *all* workers in Central Texas cross a county line to reach their place of employment and more than 85 percent of all workers drive alone to work. While existing commuting patterns are a burden for affluent employees, they often represent an insurmountable barrier in obtaining work for low-income residents.

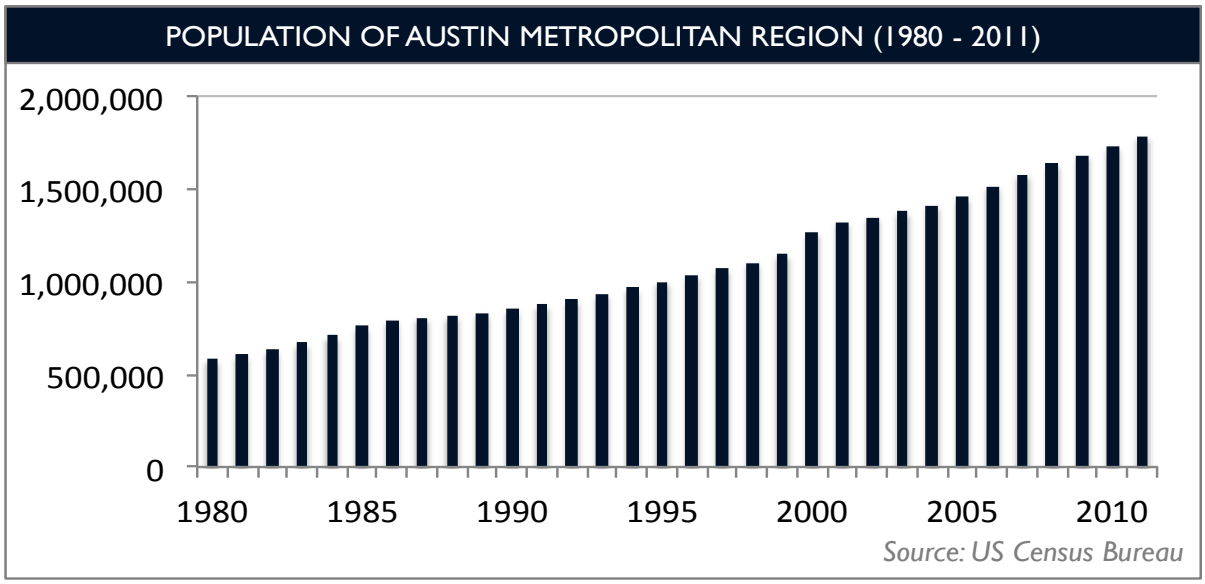
If Central Texas is to prosper in the years ahead, the region must successfully address a multitude of intertwined issues. The region must improve its ability to generate high-skill, high-wage jobs. Only by increasing its available human capital can the region attain such a goal. Doing so will require better leveraging the talent of all its residents, especially among minority populations. Central Texas must also achieve a better balance between the geographic distribution of people and the distribution of jobs. Such a strategy must be complimented by greater choice in transit options. Finally, the region must not simply provide quality, affordable housing, but also ensure that such housing is integrated with educational and employment opportunity. By linking commercial and residential development with increased accessibility to the region's education and transit assets—all within physically concentrated demonstration sites—the Sustainable Places Project is uniquely positioned to provide holistic solutions to these challenges.

POPULATION

The population of the 5-county Austin metropolitan region is 1.8 million. The bulk of this population is located in Travis County, home to 1.1 million residents. The second most populous county in Central Texas, Williamson County, has a population of 460,000. The remaining counties in Central Texas have significantly smaller populations, including Hays County (174,000 residents), Bastrop County (79,000 residents), and Caldwell County (40,000 residents).

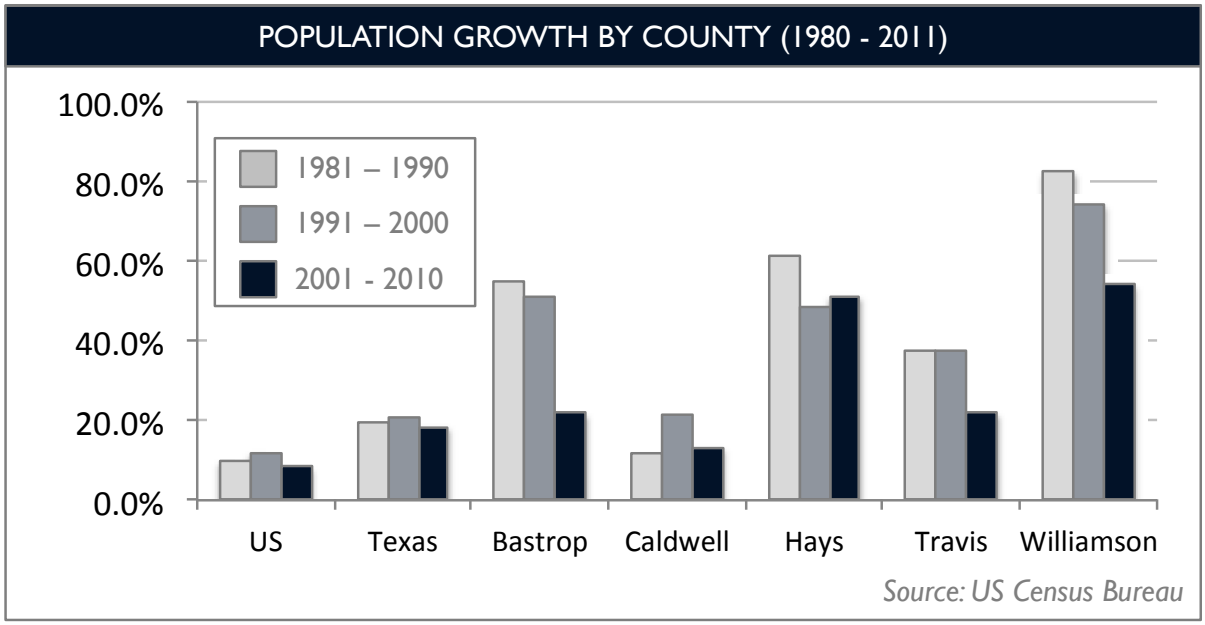


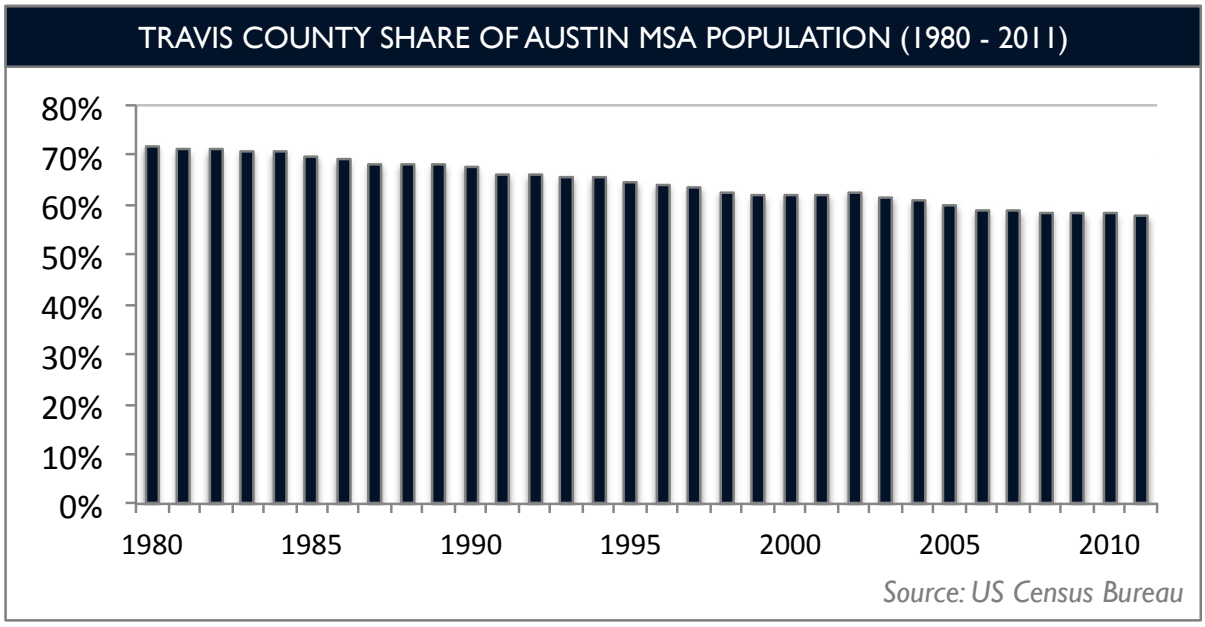
During the past thirty years, the population of the Austin MSA has exploded. In 1980, the Austin MSA's population totaled 585,000. Since then, the number of people living in Central Texas has tripled. Today, Central Texas is one of the country's fastest growing regions.



Since 1980, the US population has increased by approximately 38 percent. The number of people living in Texas during this period has jumped 80 percent. And in Central Texas, the population has increased 205 percent, a phenomenal increase for a major metropolitan area.

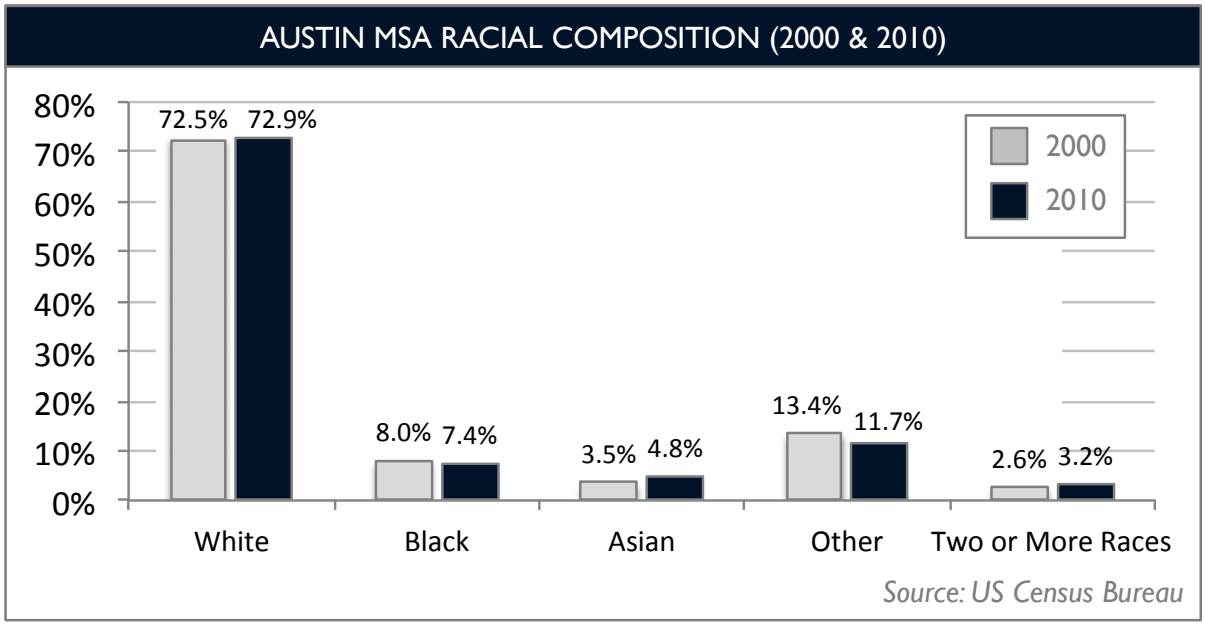
Within the Austin metropolitan region, Travis County has added the greatest number of new residents during the past thirty years. On a percentage basis, however, outlying counties have experienced the greatest levels of growth. As a result, the proportion of residents in Central Texas residing in Travis County continues to fall. In 1980, Travis County represented more than 70 percent of all people living in Central Texas. Today, this figure is less than 60 percent.



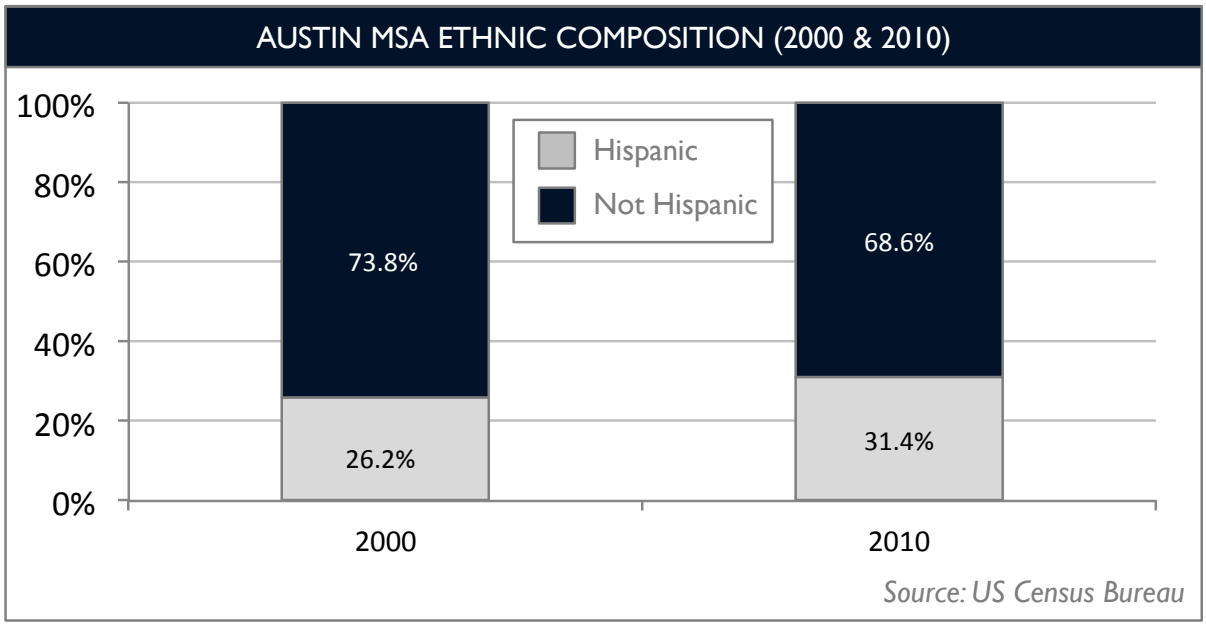


RACE / ETHNICITY

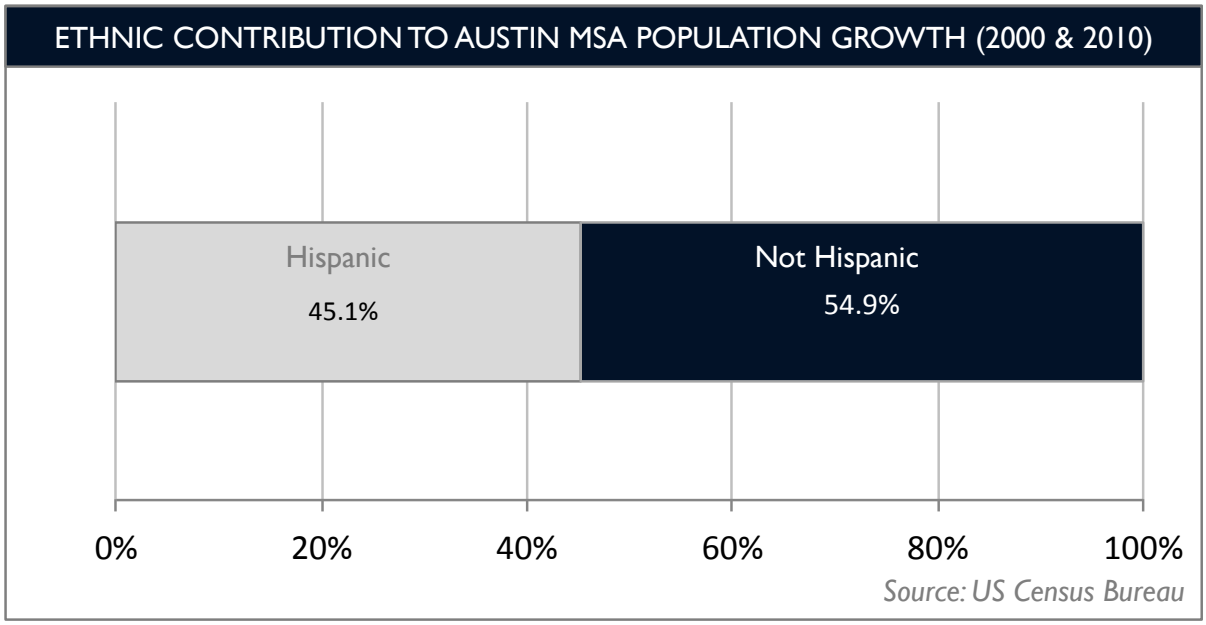
The racial composition of the Austin metropolitan region has remained relatively stable during the past decade. The proportion of White residents in Central Texas is 73 percent, virtually unchanged since 2000. The proportion of Black residents in the Austin metropolitan region is 7.4 percent, similar to levels observed in 2000. There has been a small increase in the proportion of Asian residents in Central Texas, rising from 3.5 percent in 2000 to 4.8 percent in 2010. Other racial groups, including Pacific Islanders, American Indian, and self-identified 'other' residents, has dipped slightly from 13.4 percent in 2000 to 11.7 percent in 2010. The proportion of residents representing two or more racial groups has increased from 2.6 to 3.2 percent during the past decade.



In addition to the sheer growth of the Austin metropolitan region in recent years, the rapid increase in the Hispanic population is one of the primary regional demographic trends. Hispanics represent more than 31 percent of residents in Central Texas. In 2000, this figure was just 26 percent.

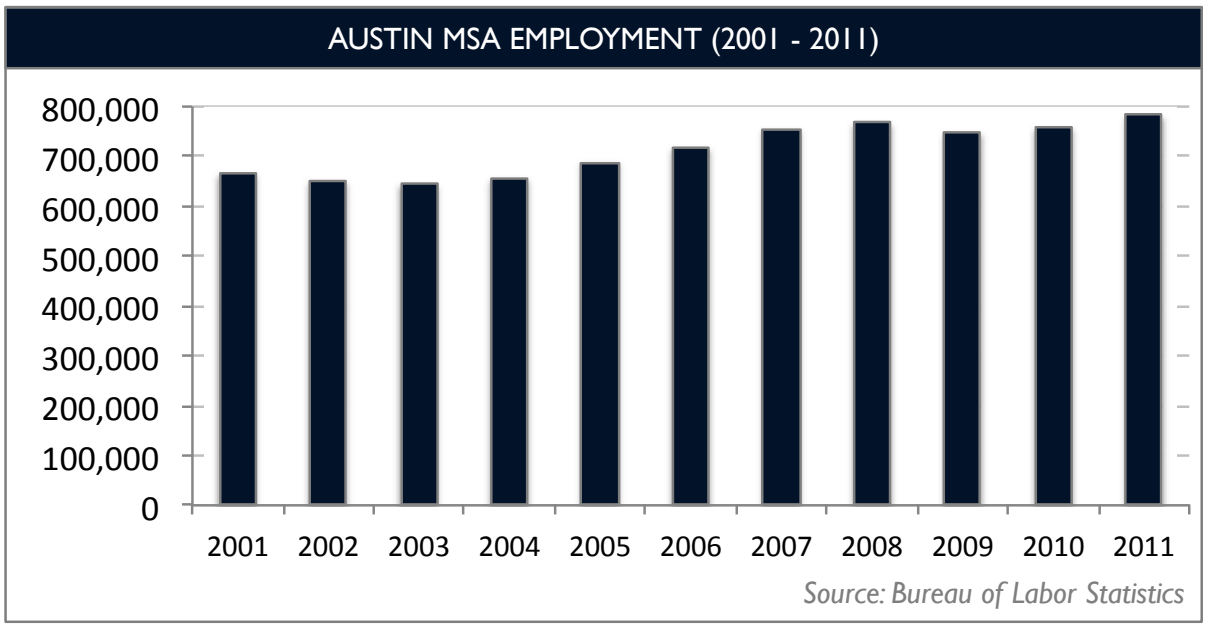


The increase in the Hispanic population in Central Texas has been a significant driver in the region's population growth during the past decade. In 2000, Hispanics represented slightly more than one in four residents in the Austin metropolitan region. During the past ten years, however, the growth of the Hispanic population has been responsible for more than 45 percent of all population growth in Central Texas.



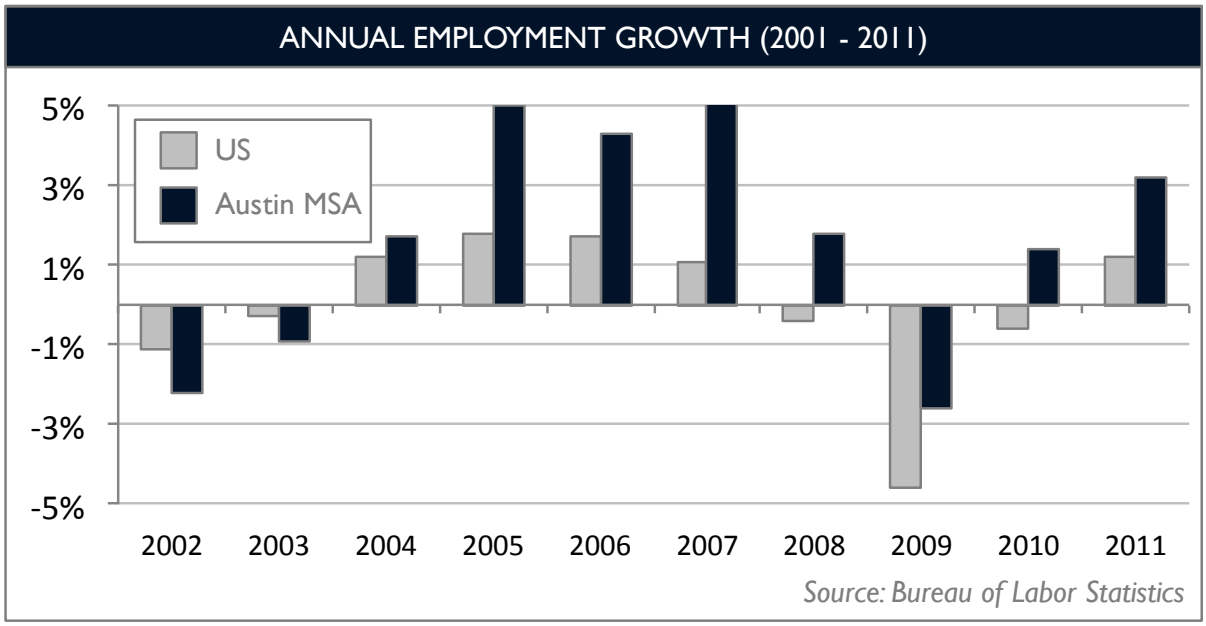
EMPLOYMENT

Despite the recession and subsequent economic downturn, the Austin metropolitan region experienced significant economic expansion during the past decade. From 2001 through 2011, Central Texas employment increased 17.5 percent. During this same period, overall employment in the US experienced no net increase in employment.

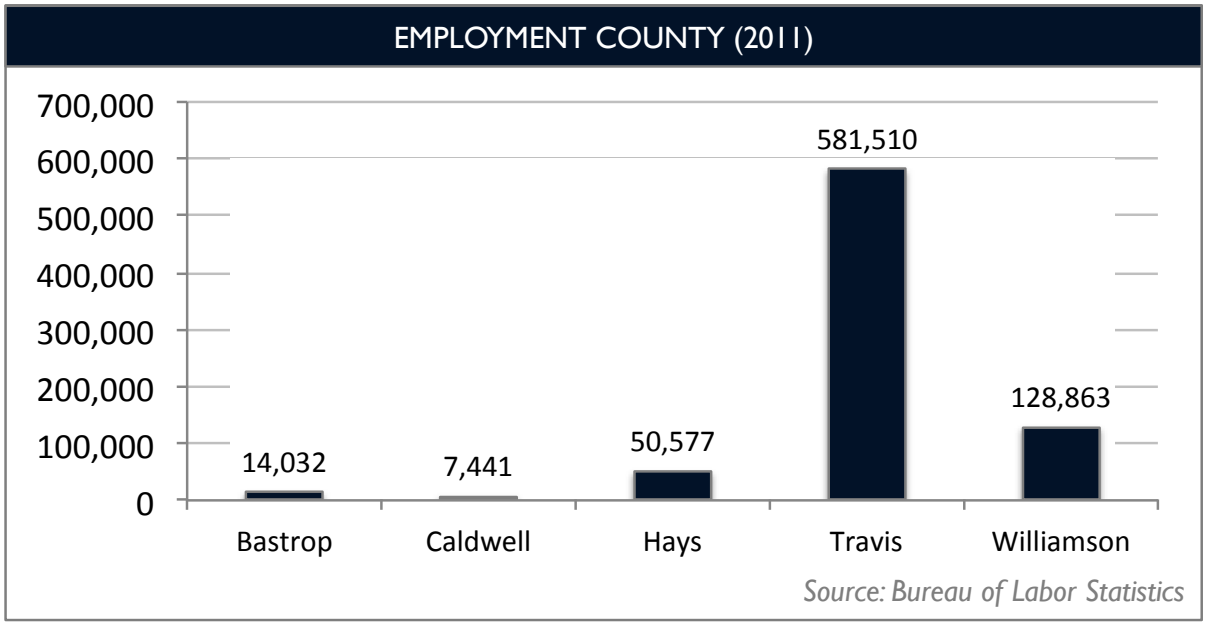


Regardless of the prevailing business cycle, employment in the Austin metropolitan region has consistently outperformed the US average during the past decade. In good times, Central Texas has increased employment at a greater clip than the country at large. And during periods of contraction, the Austin metropolitan region's employment losses were proportionately smaller.

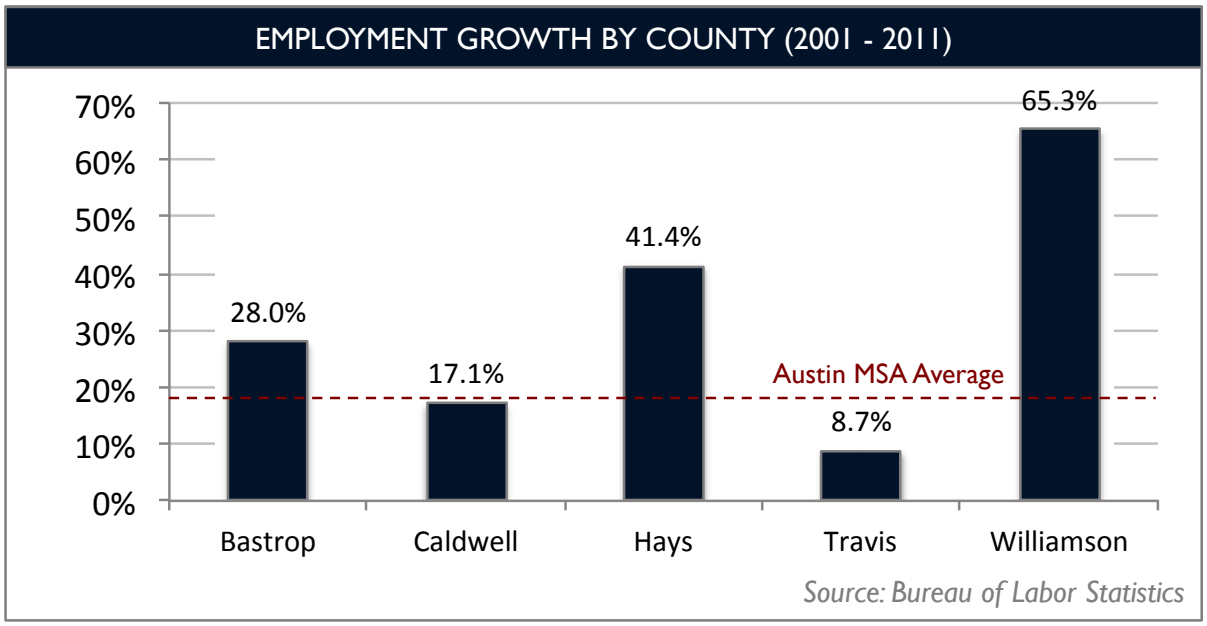
When US employment declined in 2002 and 2003, the declines in Central Texas were less severe. As the economy recovered and employment expanded in the US between 2004 and 2007, job growth in the Austin metropolitan region outpaced the rest of the country. When the US fell into recession in 2008, Central Texas was still creating jobs. And during the past two years, as a modest economic recovery has slowly taken hold, the Austin metropolitan region is adding jobs at twice the national rate.



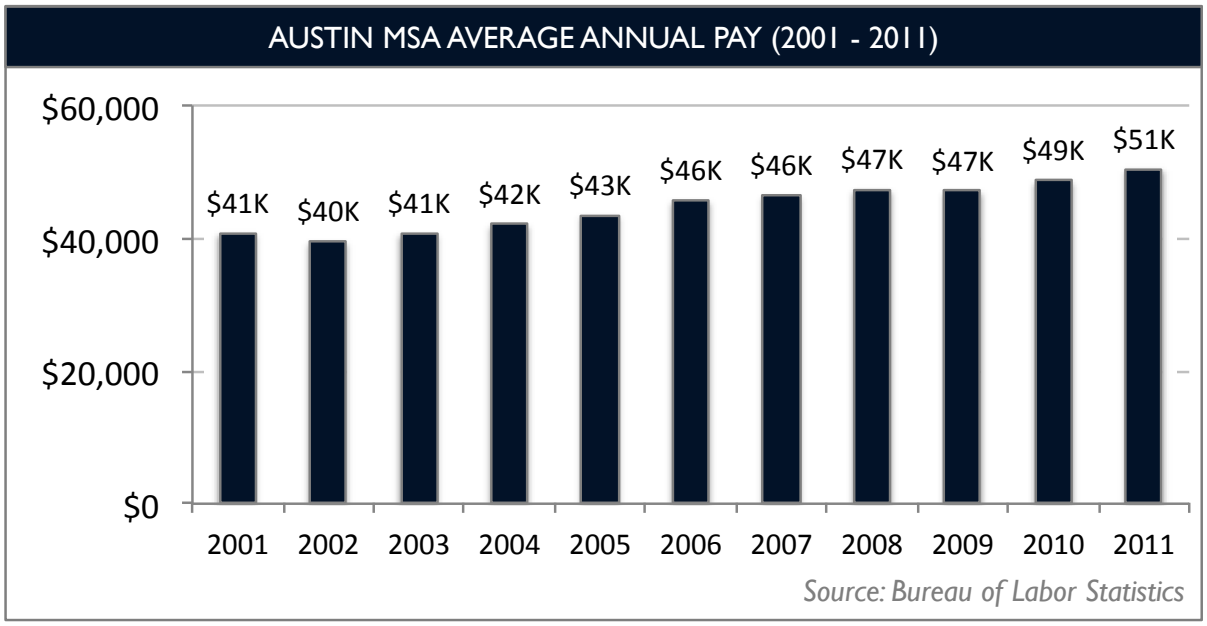
Although the constituent parts of the Austin metropolitan region are economically integrated, there exist vast differences in employment totals among the counties. With more than 580,000 jobs, Travis County is home to the lion's share of employment in Central Texas. Williamson County, with 128,000 jobs, possesses the second highest number of jobs in Central Texas. The combined employment of Bastrop, Caldwell, and Hays Counties is less than 75,000.



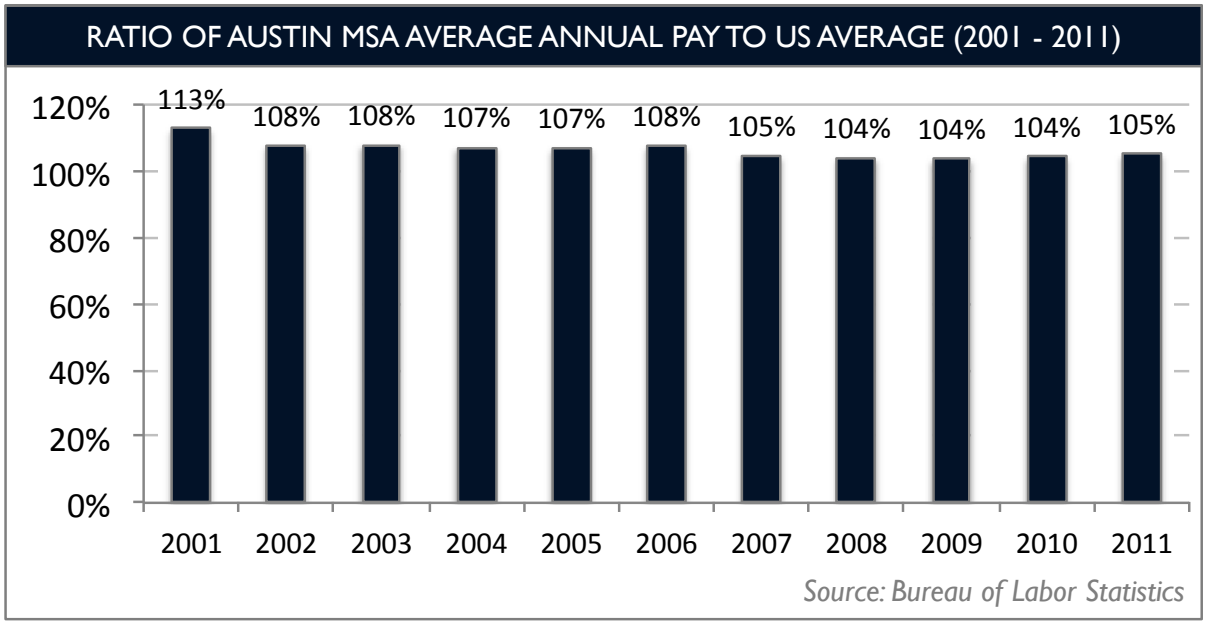
Much like population growth, employment growth in Central Texas during the past decade has been strongest in outlying counties. Since 2001, Travis County employment has increased by nine percent. During this period, all other counties in Central Texas have posted proportionately larger growth. In Williamson County, for example, employment increased by 65 percent. In Hays County, employment jumped 41 percent. Bastrop and Caldwell Counties also experienced strong job growth during the past decade, at 28 percent and 17 percent respectively.



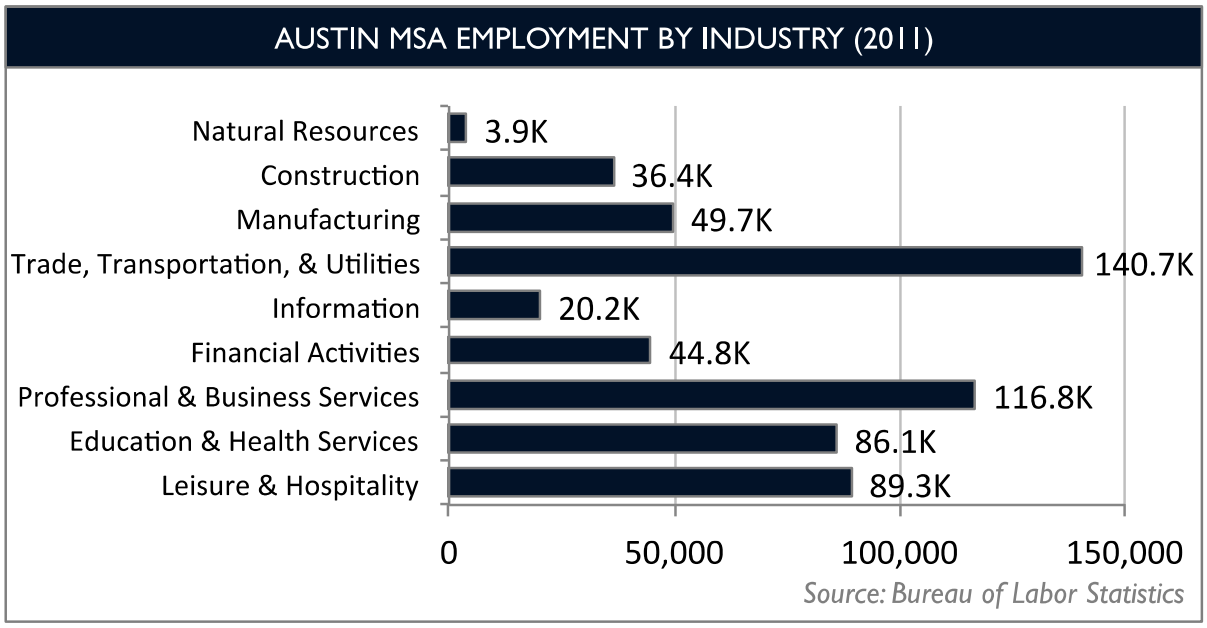
Despite a decade of solid employment growth, wages have remained relatively flat in Central Texas. Between 2001 and 2011, average annual pay in the Austin metropolitan region rose from approximately $41,000 to $51,000, an increase of 24 percent (on a non-inflation adjusted basis). During this same period, average annual pay in the US increased by 33 percent.



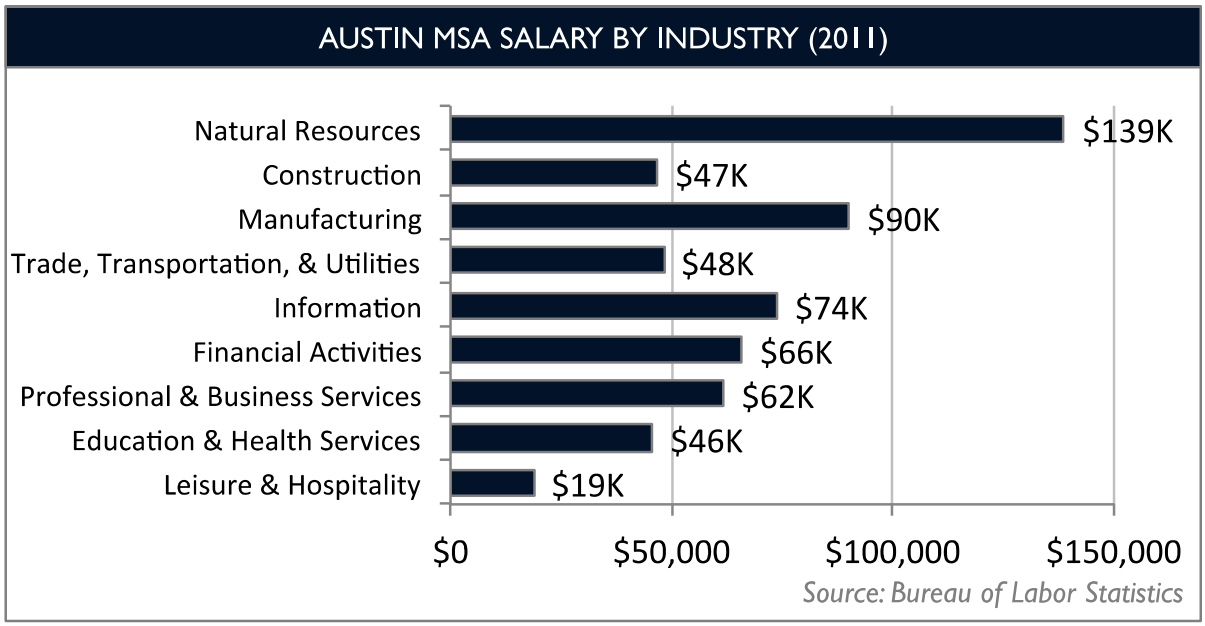
As a result of slowing wage growth in the Austin metropolitan area, the region's compensation advantage relative to the US continues to decline. In 2001, the average worker in Central Texas earned wages 13 percent higher than the national average. Today, the average worker in the Austin region makes just 5 percent more than the US average. Importantly, the decline in relative wages in Central Texas has occurred during a period of rising costs of living throughout the region.



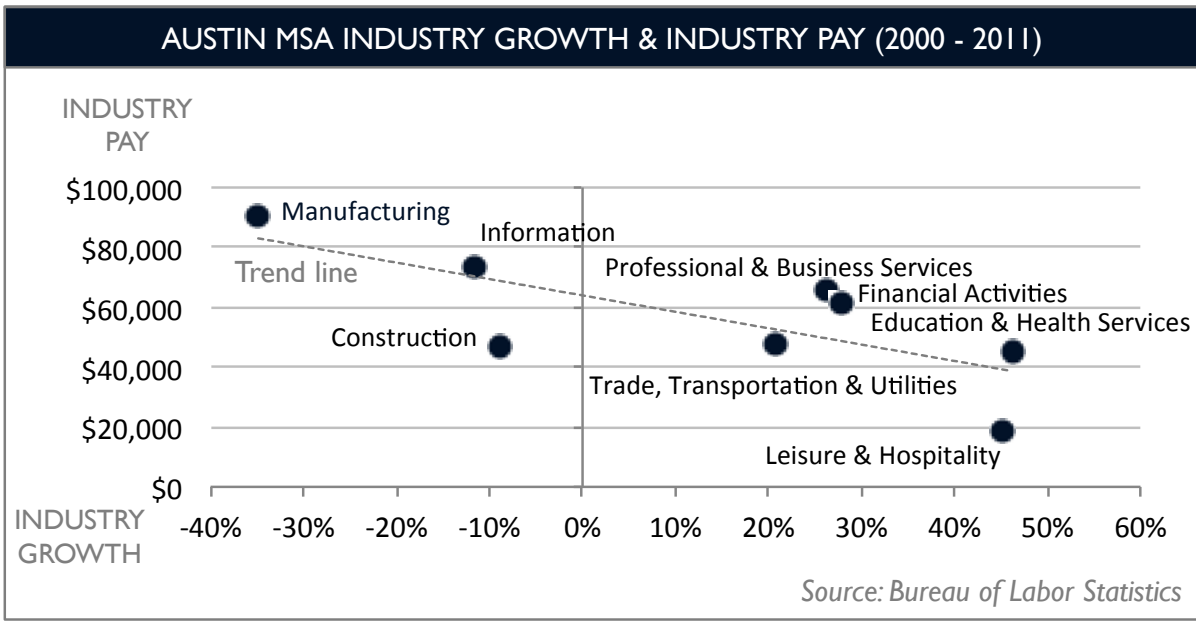
With more than 140,000 workers, Trade, Transportation, and Utilities is the largest private employment sector in Central Texas. Professional Services, with nearly 117,000 workers, is the second largest private employment sector. Other leading industries in the Austin metropolitan region include Leisure & Hospitality (89,000 workers); Education & Health Services (86,000 workers); Manufacturing (49,000 workers); and Financial Activities (44,000 workers).



Within the Austin metropolitan area, there are large differences in average annual salaries among individual industries. At $139,000, Natural Resources has the highest average annual salary of all industries in Central Texas. Manufacturing, at $90,000, has the second highest average annual salary, following by Information at $74,000. With an average annual salary of less than $20,000, Leisure & Hospitality has the lowest average annual salary of any industry in the region.

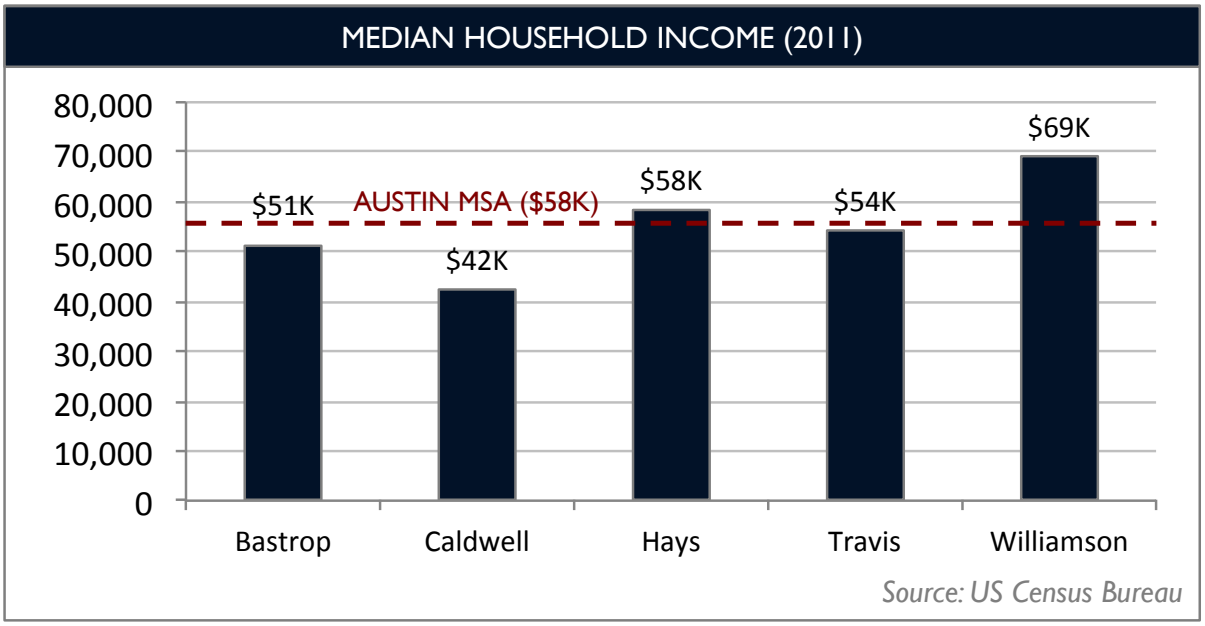


As highlighted earlier, since 2000 wages in Central Texas have increased at a slower pace than the national average. This dynamic reflects the fact that lower wage industries have typically grown at a faster rate than higher wage industries in Central Texas. The Leisure & Hospitality industry, for example, has grown by nearly 50 percent since 2000. In contrast, Manufacturing has fallen more than 30 percent during this period.

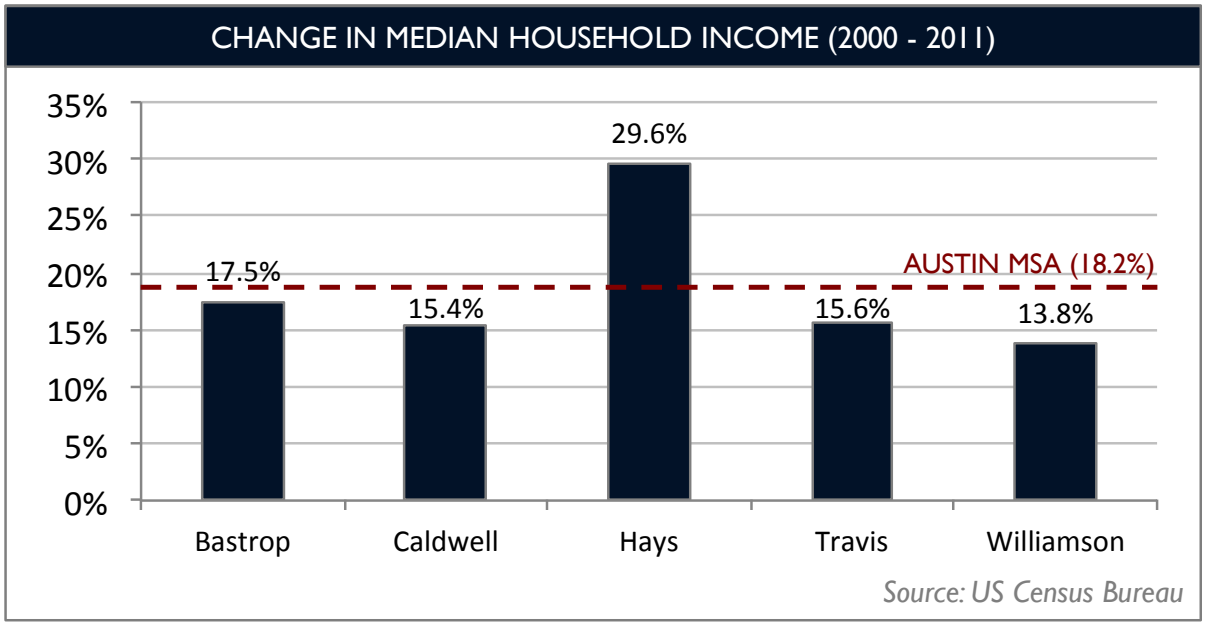


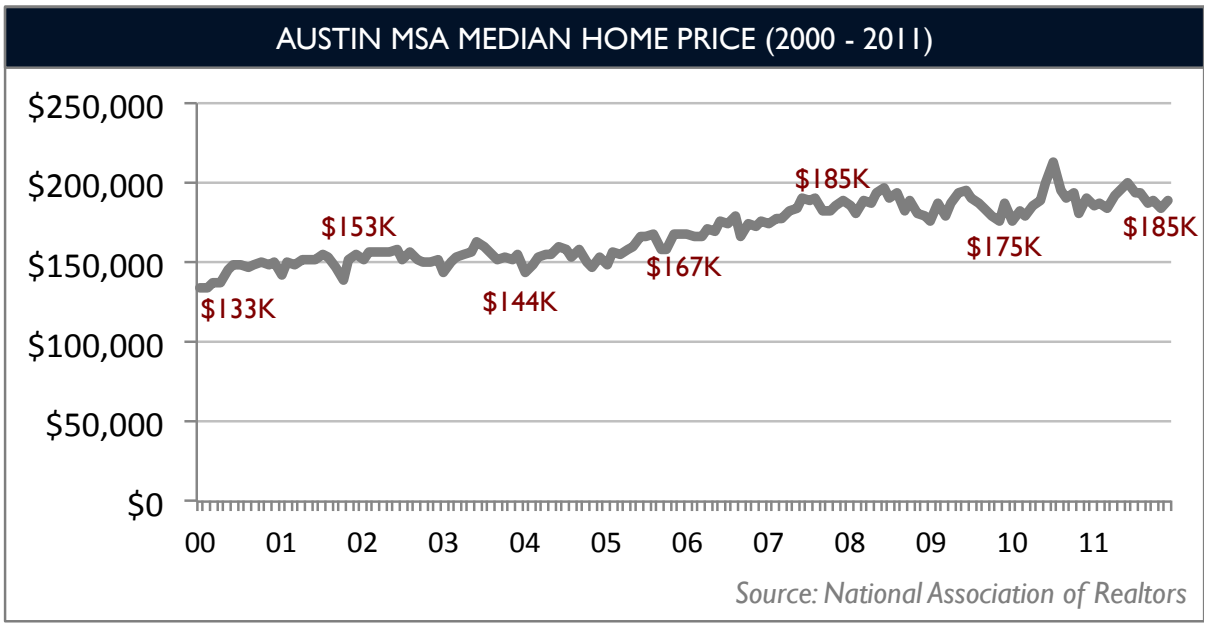
INCOME & HOUSING COSTS

Median household income in the Austin metropolitan region is approximately $58,000. Within the region, however, there are vast differences in median household income. In Williamson County, for example, median household income is $69,000—$15,000 higher than in Travis County, which has the second highest median household income in Texas. At $42,000, Caldwell County has the lowest median household income in the Austin metropolitan region.

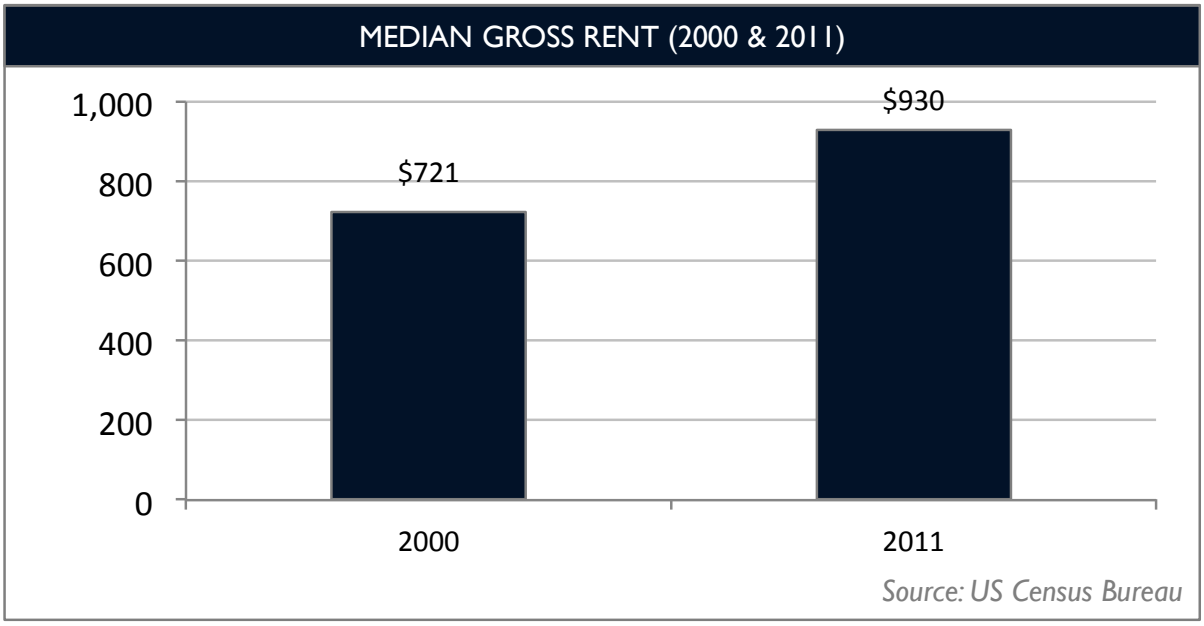


During the past decade, there have also been significant differences in the growth of median household income among various counties in Central Texas. Since 2000, median household income jumped nearly 30 percent in Hays County. All other counties in the Austin metropolitan region experienced median household grow of less than 20 percent during the same period.

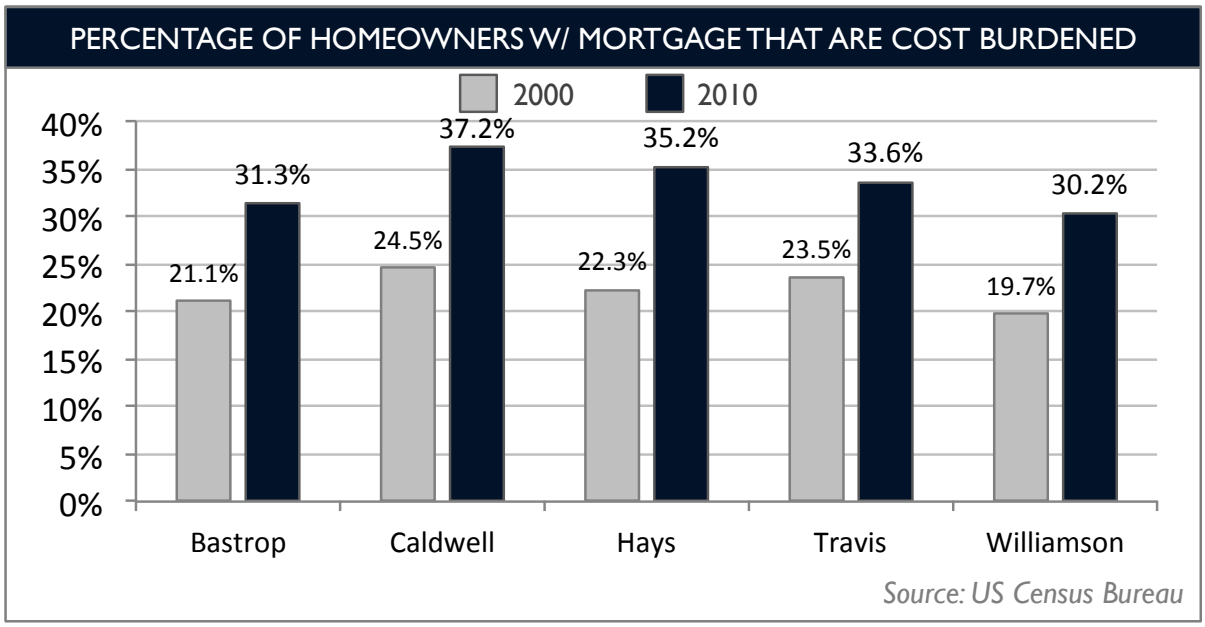




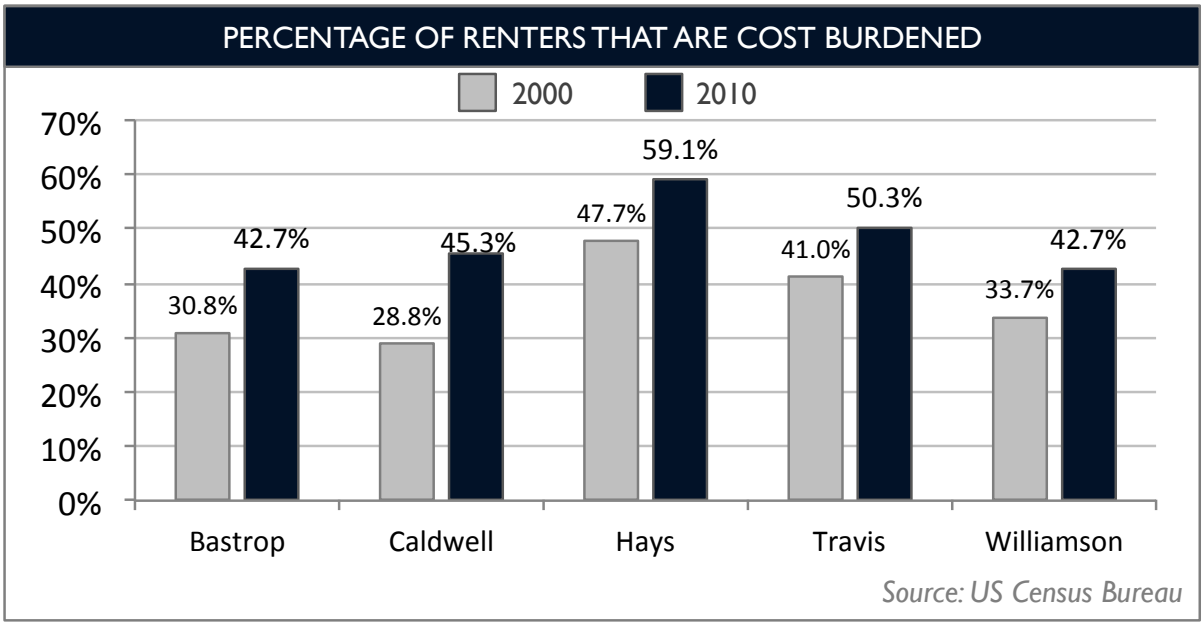
Although home prices in the Austin metropolitan region have fluctuated from year to year, the long-term trend has been a significant upswing in prices. Since 2000, the median price of a home in Central Texas has risen from $133,000 to $185,000. The 40 percent increase in the median price of a home in the Austin metropolitan region since 2000 is more than twice the corresponding increase in median household incomes during this period.



Median gross rents in Central Texas have also increased during the past decade. Between 2000 and 2011, median gross rent in the Austin metropolitan region rose from $721 to $930—an increase of 29 percent. Although gross rent has risen at a slower rate than median home prices since 2000, trends during the preceding decade obscure more recent price dynamics. During the past couple of years, rises in rent have outpaced increases in home prices.



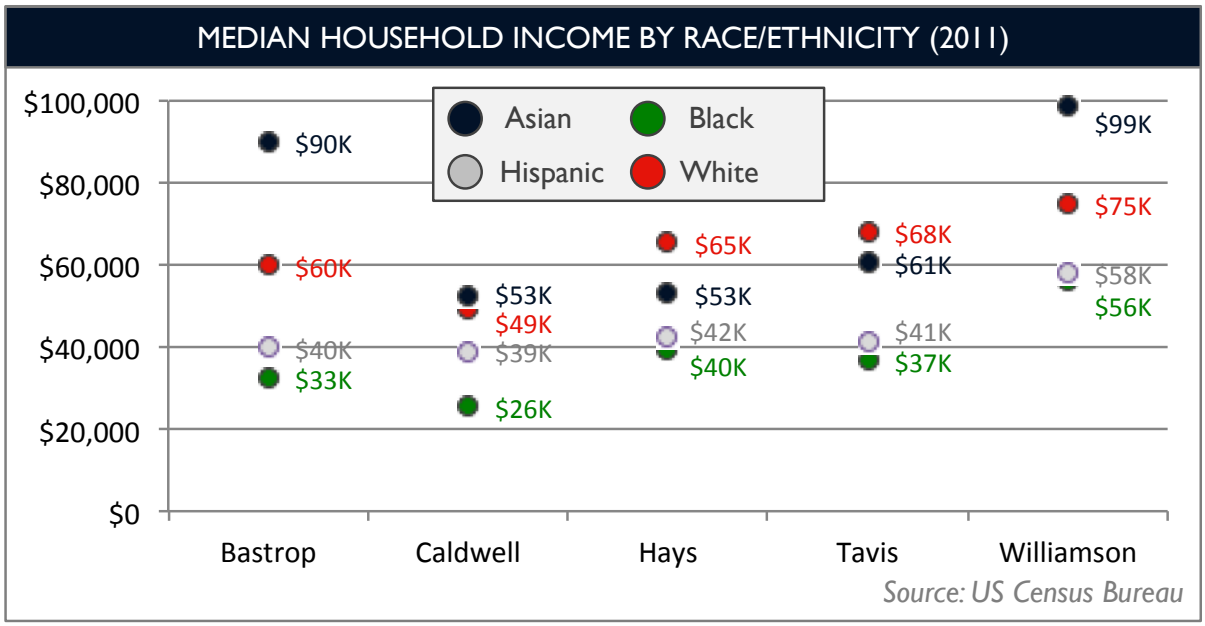
With home prices rising faster than incomes, it should come as no surprise that a growing number of residents in Central Texas are 'cost burdened.' Such households spend more than 30 percent of their annual income on housing. In 2000, approximately one in five homeowners with a mortgage in the Austin metropolitan region were considered cost burdened. Today, nearly one in three homeowners with a mortgage are cost burdened. The rise in cost burdened homeowners has occurred in every county in Central Texas.



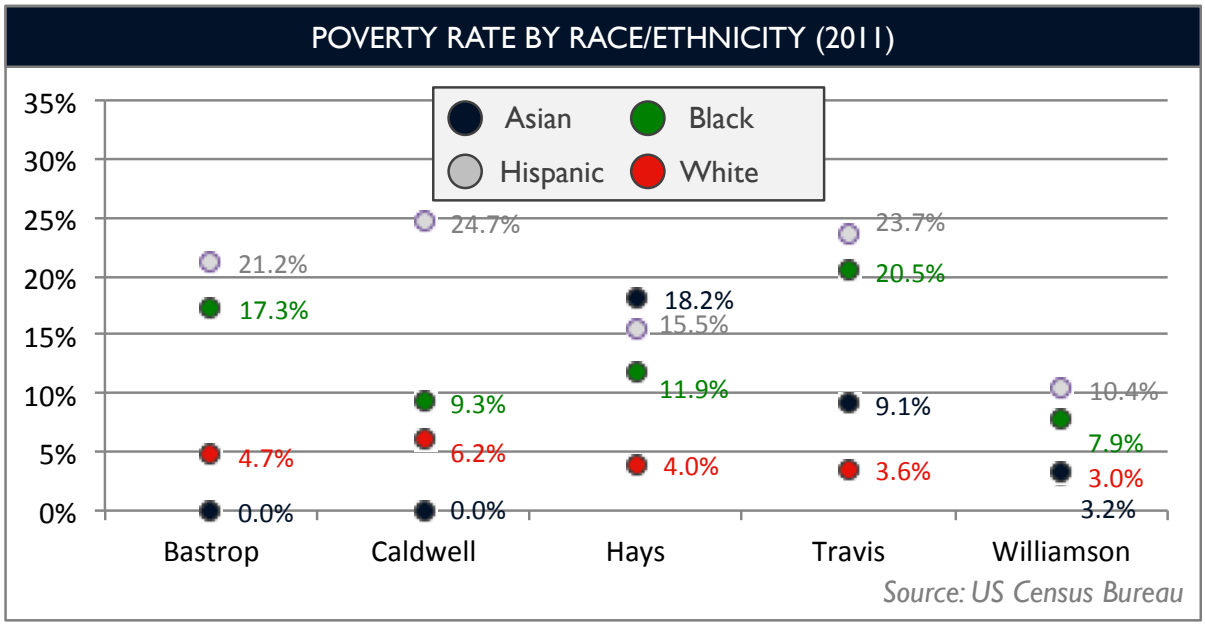
Renters in Central Texas are even more likely to be cost burdened, with nearly one in two renters in the region spending more than 30 percent of their incomes on housing costs. The rise in cost burdened renters left virtually no community in Central Texas unscathed. During the past decade, the proportion of cost burdened renters has risen in every county in Central Texas.

INCOME & RACE/ETHNICITY

Median household income varies greatly among individual racial and ethnic groups in Central Texas. The median income for White and Asian households, for example, is nearly $70,000 in the Austin metropolitan region. In counties such as Williamson, this figure soars to $99,000. In contrast, the median income for Black households in the Austin metropolitan region is less than $40,000. At $44,000, median incomes for Hispanic households fall in between this broad range.

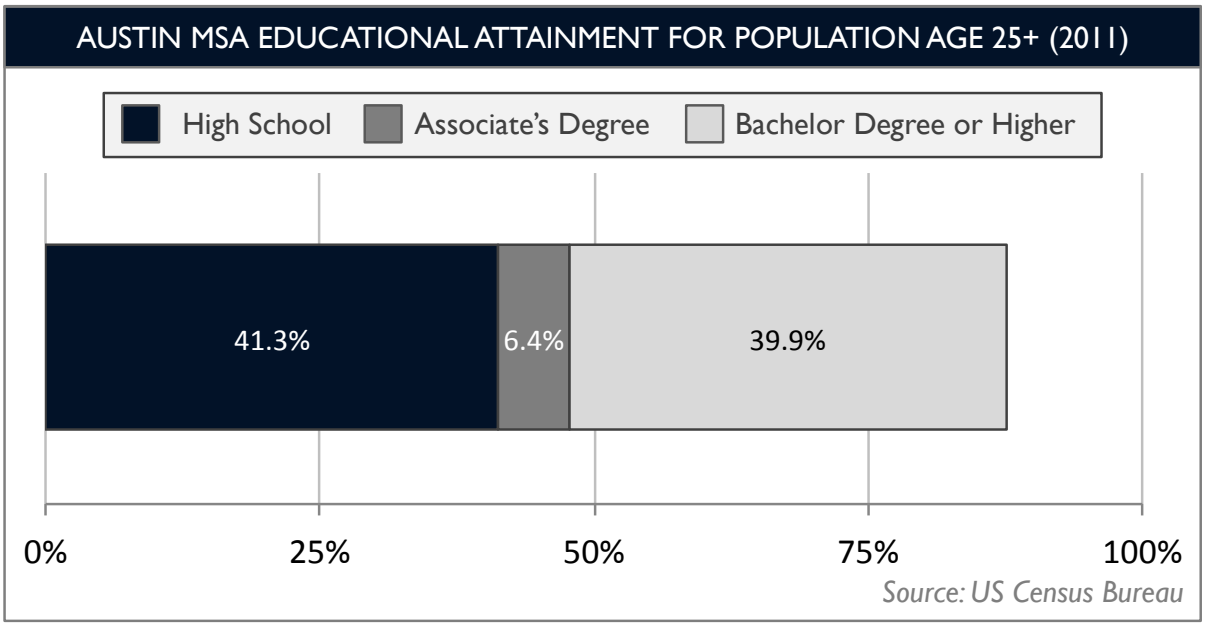


Poverty rates within Central Texas reveal similar differences among various racial and ethic groups. Less than 4 percent of White residents in the Austin metropolitan area live in poverty. Among Hispanic and Black residents, the poverty rate is 20 and 17 percent respectively. The poverty rate for Asians living in Central Texas is 8 percent.

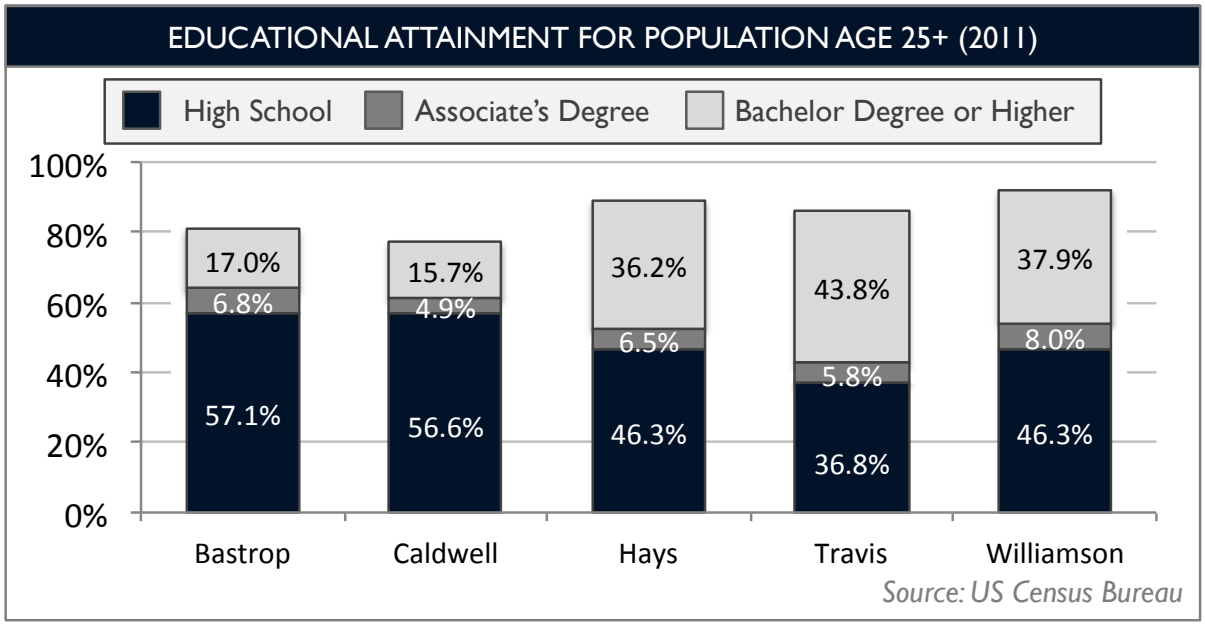


EDUCATIONAL ATTAINMENT

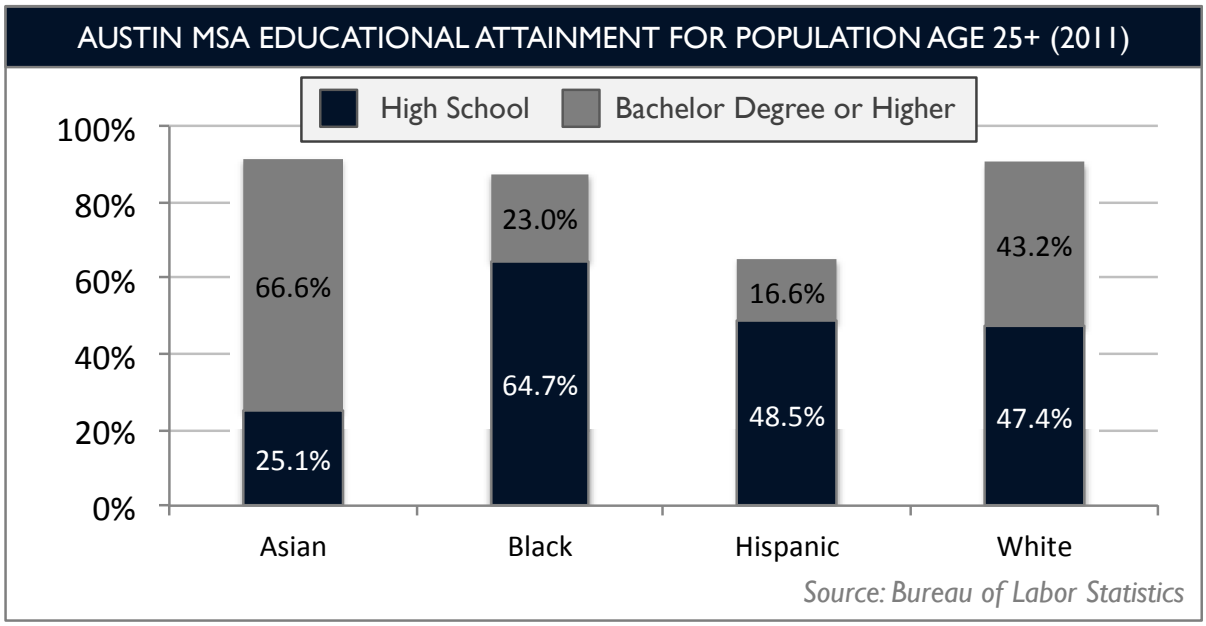
Central Texas is one of the most educated regions in the US. Nearly 40 percent of residents age 25 and older in the Austin metropolitan region have a Bachelor's degree or higher level of educational attainment. An additional 6.4 percent of residents have an Associate's degree and another 41.3 percent have a high school degree or equivalent diploma.



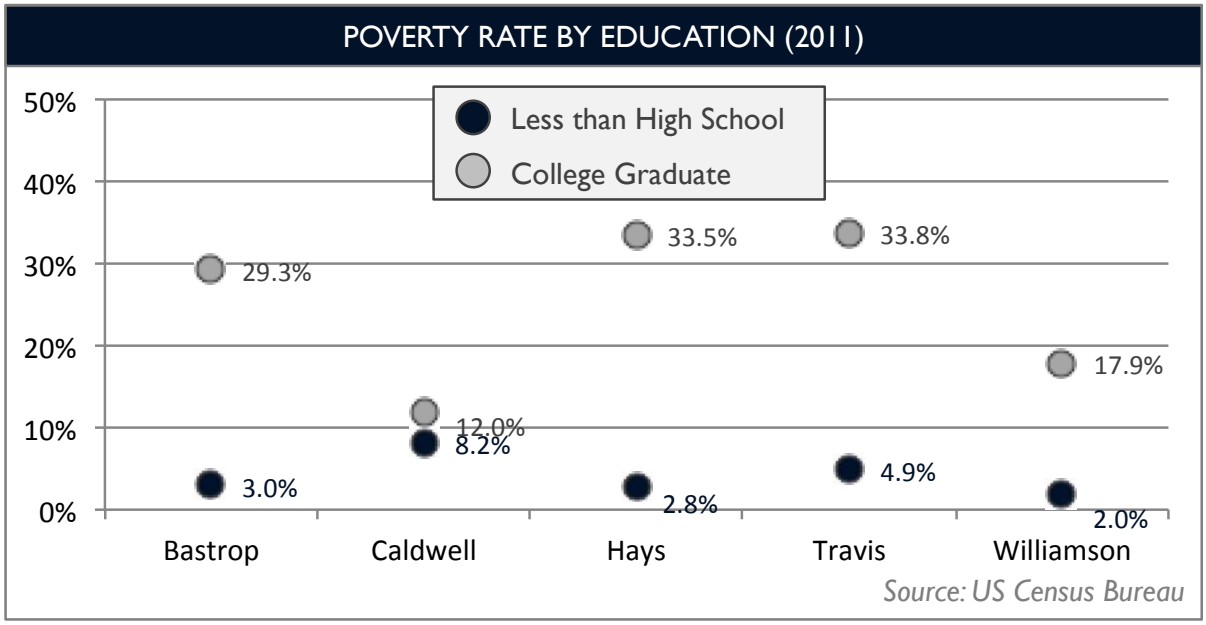
Although the region is highly educated as a whole, there are marked differences among individual counties. In Travis County, for example, nearly 44 percent of residents age 25 and older have a Bachelor's degree or higher level of educational attainment. In Hays and Williamson Counties, the figure is 36 and 28 percent respectively. Levels of educational attainment are much lower in Bastrop and Caldwell County, where less than 20 percent of residents have a bachelor's degree.



There are also significant differences in educational attainment among various racial and ethnic groups in Central Texas. More than 66 percent of Asian residents in the Austin metropolitan area, for example, have a Bachelor's degree. The figure for White residents is 43 percent. Black and Hispanic residents, on the other hand, are much less likely to be college graduates. 23 percent of Black residents have a Bachelor's degree, compared to less than 17 percent of Hispanic residents.



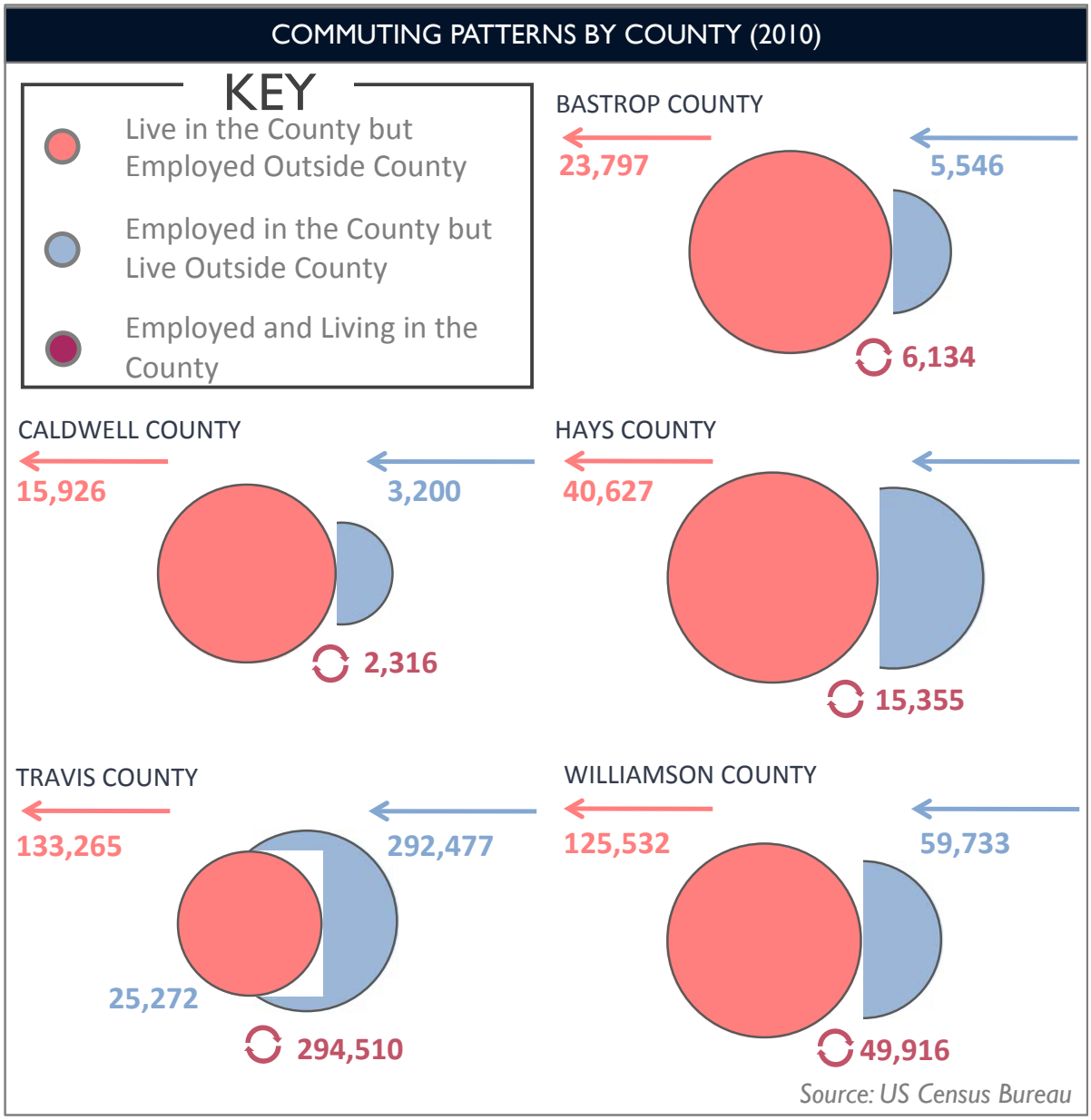
The economic value of education is vividly illustrated in Central Texas' poverty rates. Regionally, more than 30 percent of residents in the Austin metropolitan region without a high school degree live in poverty. The corresponding figure for college graduates in Central Texas is just 4 percent. In individual counties, these differences are even more pronounced.



EMPLOYMENT & POPULATION DISTRIBUTION

Within Central Texas, there is an imbalance between where people live and where they work, with a disproportionally large share of employment in the urban core. Travis County, for example, is home to approximately 60 percent of the region's population but has 75 percent of the region's employment.

As a result of this imbalance, a large proportion of employed residents in the adjacent counties regularly commute into Travis County. With the exception of Travis County, a majority of workers in every county in the Austin metropolitan area are employed outside of their home county. Caldwell County residents, for example, are nearly 7 times more likely to work outside of Caldwell County than within the county. Even in Williamson County, which has a less severe balance of workers and jobs than most counties in Central Texas, there are more than two residents employed outside of the county for every one resident working in the county.



CHAPTER 3: TOOLS AND RESEARCH

The Sustainable Places Project and partners with other HUD-funded regional planning grants are at the forefront of the next generation of planning tools and research that can help address the issues presented in the previous chapters. Chapter 3 outlines a few of the tools that advance the understanding of fair housing issues and assist fair housing decision making in Central Texas.

3.1 Workforce Housing Report (Coming Home)

A primary data collection effort was made to better understand commuting and housing choices and inform the development of scenario planning indicators. A survey of low-income employees of Central Austin major employers was designed to generate information useful in:

1) understanding how low-income families make decisions about where to live within the region;
2) understanding commuting preferences of these households, particularly views of various commuting modes;
3) building equity indicators that match the unique conditions of the region and that connect to other indicators being developed; and,
4) supporting the work being done in the region's other HUD-funded Sustainable Communities project, focused on designing a sustainable community in Austin's Colony Park neighborhood.

To understand how low income families—including families with children—make decisions about where they live in relation to where they work, the survey included questions about their current housing costs and also about the importance of proximity to such things as grocery stores, daycare, and family support systems, and parks and recreation. In addition, questions were included about how low-income workers commute and their preferences for various transportation modes for commuting.

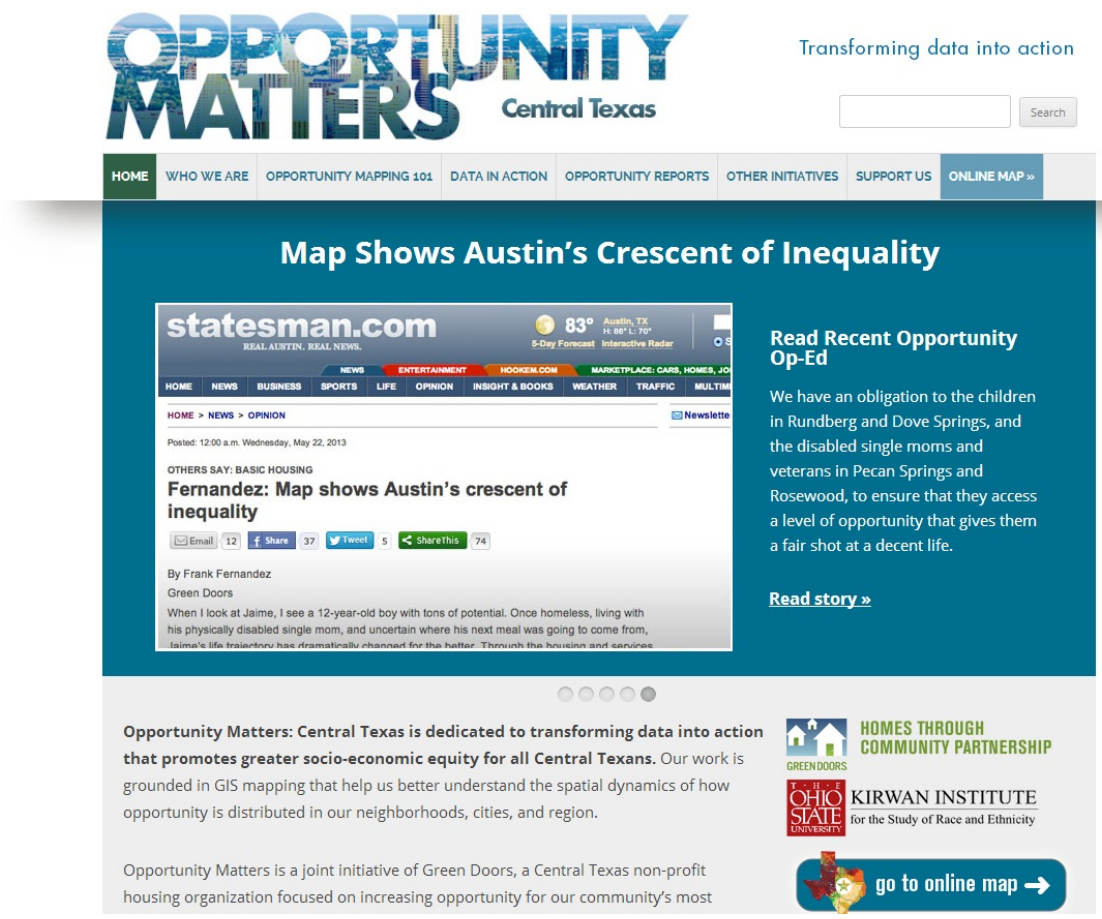
In addition to documenting the issues that shape households' decisions about where to live, the information about such preferences, combined with current commuting information, was used to estimate the benefits to households and the larger community of providing more housing choices closer to work. The survey also generated information about the types of goods and services residents routinely use that are currently lacking in the region.

The report had somewhat of a dual role: while many are trying to learn what it would take to keep families from moving out of Austin the second question more pertinent to this regional study is whether the cost of housing is the driving factor for those moving to the outer ring and rural areas.

Those survey confirmed that, despite many other factors related to schools, commute times, proximity to services, and the potential appeal of urban living, they were unwilling to give up a single-family detached home. While expanding this type of housing affordably inside Austin may be a significant challenge, the region's activity centers are ideally positioned to offer the mix of housing with services, schools, and eventually, expanded mobility.

The report, survey questions, and data are attached as Appendix B. Recommendations are also listed in Chapter 7.

3.2 Central Texas Opportunity Maps 2013



The 2013 update to the Central Texas Opportunity Maps, "The Geography of Opportunity in Austin and How it is Changing," was funded by HUD through CAPCOG's regional planning grant and the capacity building grant program. The Opportunity Maps project fully addresses many key fair housing issues and is considered a significant part of the consortium effort. The full report and links to an innovative, publicly available mapping system can be found in Appendix A and at opportunitymatterscentraltexas.org; specific issues are also discussed in Chapter 4 of this report.

3.3 Market Trends, Preferences and Opportunities 2010 To 2035

As part of the regional outreach and fair housing goals, the SPP commissioned a study of demographic trends by Dr. Chris Nelson and the Metropolitan Research Center. The report was used to set the stage for demonstration scenario planning in our suburban corridors and activity centers. Dr. Nelson spoke at an SPP public forum on December 11, 2012 to present his findings.

The report cites demographic shifts (aging population, fewer households with children, changing consumer preference for urban living) and several financial realities to make the case that demand for walkable urban villages will increase in market share. This change should encourage transit-supported housing policy changes, providing confidence to financiers and stakeholders. The paper outlines possible implications:

"We estimate conservatively that by 2035 at least a third of households will want the option to live in walkable communities with mixed residential and mixed-use development, urban amenities (such as shops, restaurants, and services within walking distance), and transit options. By 2035, CAMPO will have about 1.3 million households, 400,000 of whom may demand those options. Unfortunately, only about 10% of current households enjoy these options now. Put differently, two-thirds or more of all new housing units built between 2010 and 2035 would need to be in locations providing those options to meet demand, and this may not be enough.
There are many ways in which to accommodate emerging market demands. One is to facilitate the development of mixed-use new communities with walk/bike opportunities in greenfield and larger urban infill/redevelopment sites. Another is to take advantage of redevelopment that will occur along commercial corridors and nodes, especially in suburban areas. Much of the demand can be met by converting transit-ready corridors from very low intensity land uses to ones that provide mixed-use options, especially when transit becomes available. The challenge is creating public-private-civil collaborations that can facilitate both approaches to meeting future housing needs."

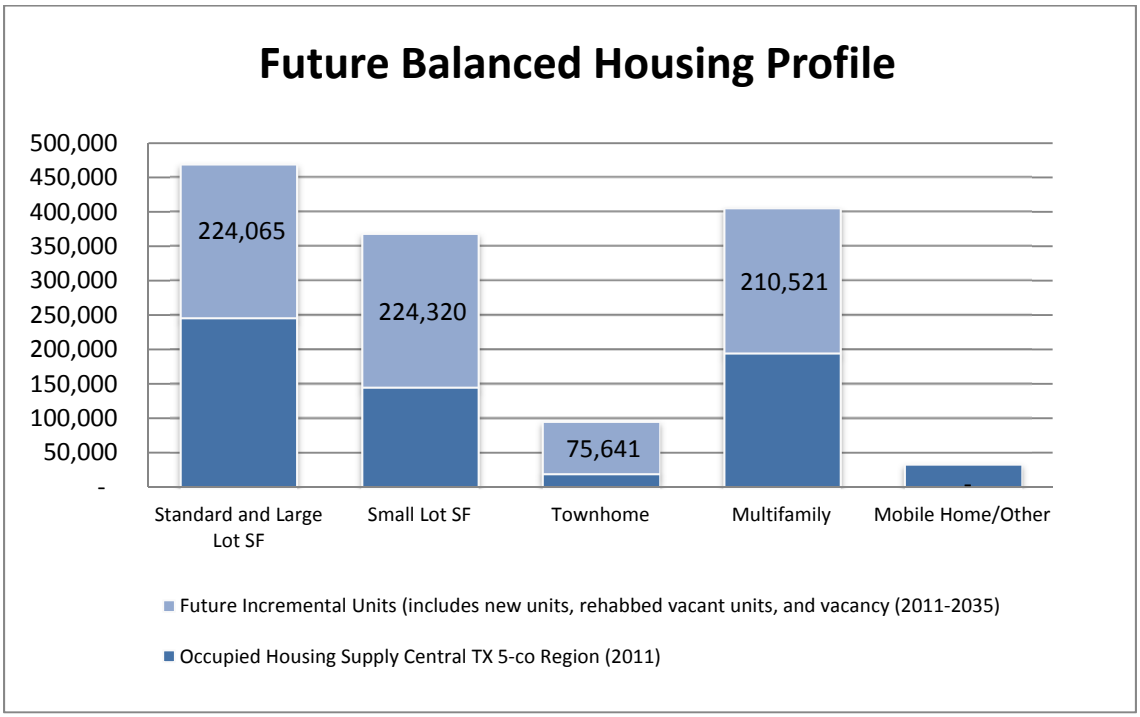
The full report can be accessed in Appendix C.

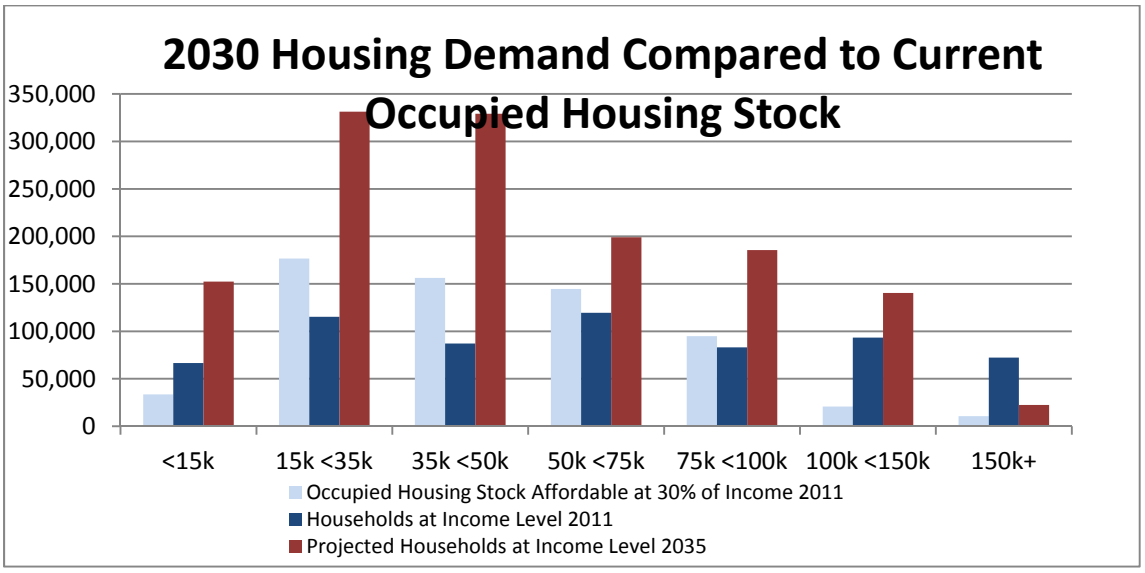
3.3 Other Tools developed through the SCI grant

Several applications for the analytic tools software suite were built through the grant. Three tools in particular helped inform analysis found in Chapter 4 of this report.

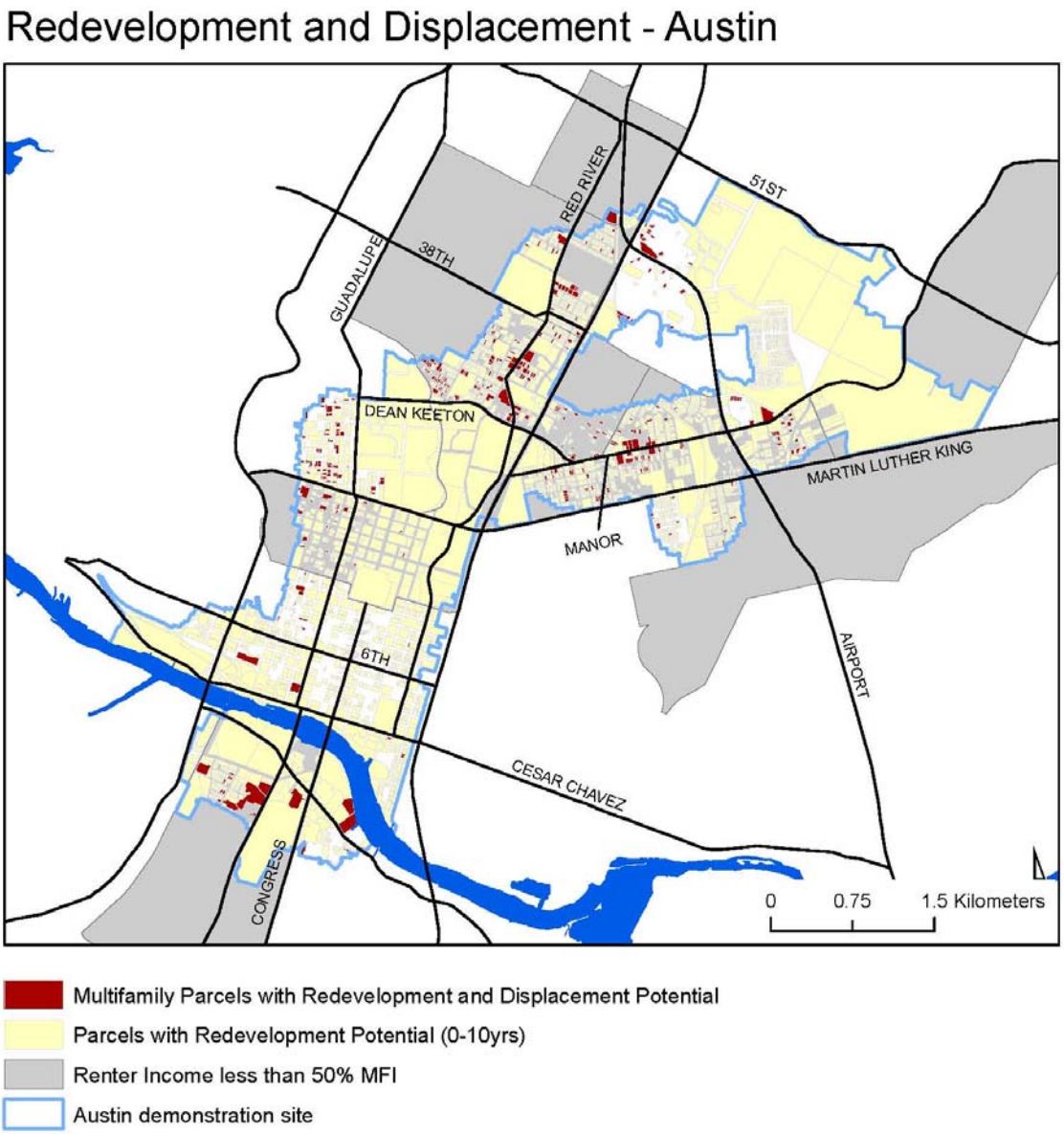
- The **Balanced Housing Model** is used to analyze a community's existing housing supply, including the matches and mismatches by age, household income and tenure (rental or owner-occupied). It is also used to conduct a capacity analysis of development potential and a forecast of future age and income cohorts. Using this information, the app is used to create a series of policy and strategic recommendations for a balanced, sustainable future housing supply along with targeted goals that can be used to determine a community's future progress in implementing the plan.
  The charts below were created using the Balanced Housing Model. They display some of the changes forecasted in the market trends study: small lot single-family and town house

developments will be in greater demand going forward to match demographic and economic changes.





- **Redevelopment and Displacement App**. Scenario planning tools are designed to measure how new buildings, streets, parks, and infrastructure affect the public. Social changes are often harder to assess. One tool that the University of Texas designed can help isolate specific impacts of gentrification. The app identifies existing, affordable multifamily units that are likely to redevelop during a given timeframe.



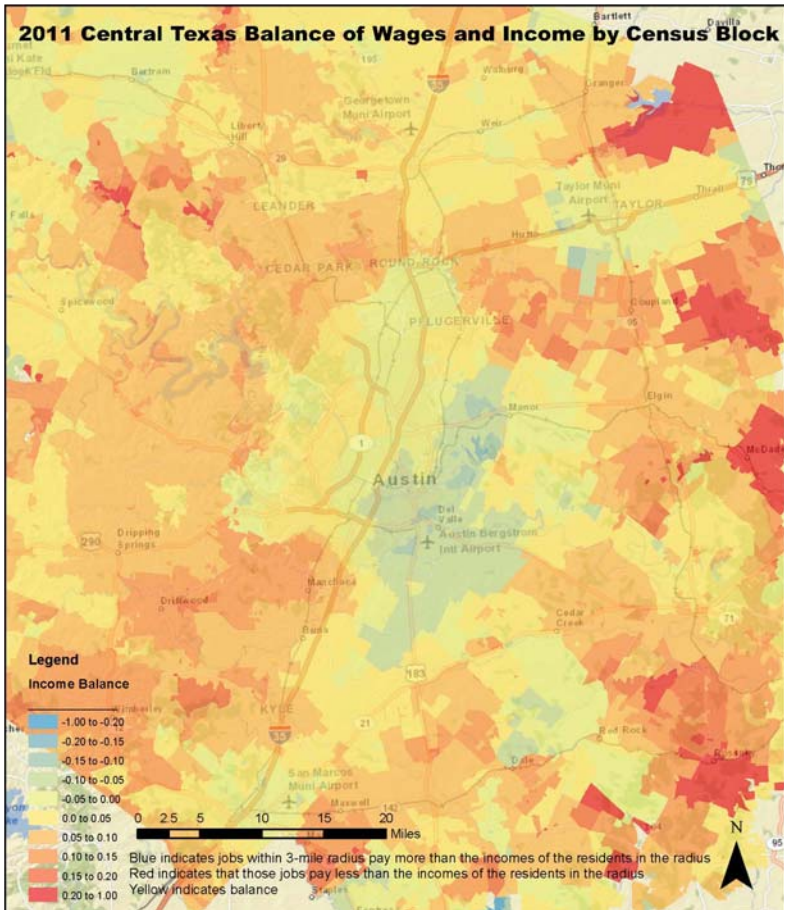
The above map identifies multifamily units in the Austin demonstration site likely to redevelop within the next 10 years that are currently home to low income renters. Parcels likely to redevelop were identified using the Redevelopment Candidate App and matched with data from the American Community Survey showing areas where median renter income falls below half of regional median family income. Renter occupied units form 49 percent of the housing units in Travis County, and median renter household income was $35,460 in 2012. Within Austin, renters account for 54.5%. From Austin's total housing, 46.7% are 1 unit detached, 18.7% are 20 or more units, and 13.2% are 10-19 units.

The City of Austin has adopted several policies in the last 6 years to preserve affordability and assist those that may be displaced as the East Austin housing market changes.
The city's Fiscal Year 2012-13 Action Plan
http://www.austintexas.gov/edims/document.cfm?id=173498 provides a summary and is referenced below.

The S.M.A.R.T.™ (Safe, Mixed-Income, Accessible, Reasonably-priced, Transit-Oriented) Housing Policy Initiative is designed to stimulate the production of housing for low and moderate income residents of Austin. The housing meets the City's Green Building standards and is located in neighborhoods throughout the City of Austin. The Acquisition and Relocation Standards state that Federal regulations establish the basis for fair treatment of residents who may be displaced or relocated when a property is bought, sold, or rehabilitated with federal funds. These standards supplement the City of Austin policies that may govern these activities if city funds are used in this activity as well. In addition, the city's Neighborhood Housing and Community Development Department (NHCD) works closely with the following organizations to overcome gaps and enhance coordination efforts: African American Resource Advisory Commission, Community Development Commission, Community Advancement Network, Community Housing Development Organizations, Ending Community Homelessness Coalition, Housing Authority of the City of Austin, Housing Authority of Travis County, HousingWorks, the Urban Renewal Agency, as well as other key stakeholders and organizations. NHCD also remains engaged with housing finance agencies, the National Association of Local Housing Finance Agencies, and the Texas Association of Local Housing Finance Agency to connect with other agencies whose missions address critical housing needs. NHCD also participated as a stakeholder in the Opportunity Mapping project. As NHCD moves forward in implementing a geographic dispersion/siting policy ensuring affordable housing in all parts of Austin, staff anticipates utilizing the Kirwan Opportunity Map to further the City's housing and community development goals.

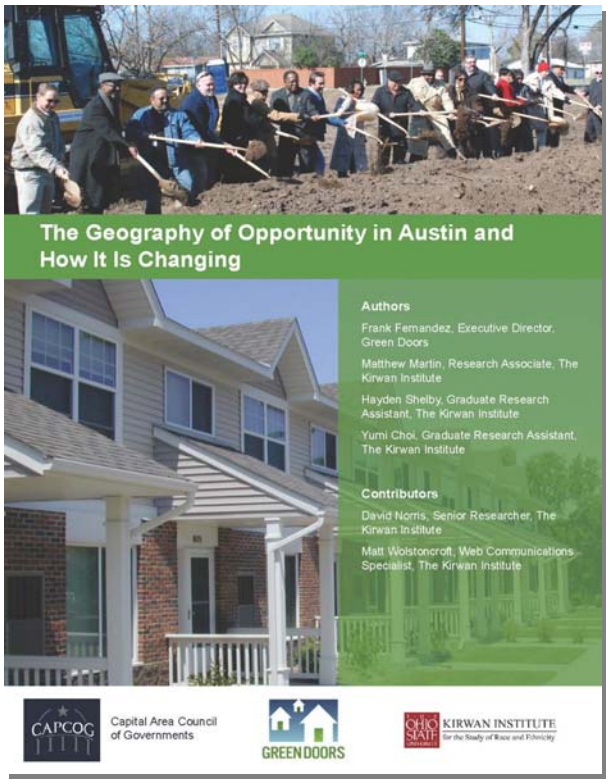
The East 11thand 12th Streets Revitalization Project is one example of displacement assistance near the Austin demonstration site. The City of Austin and the Urban Renewal Agency have entered into a long-term agreement that identifies the roles and responsibilities of the two parties. This revitalization combines federal, local, and private resources to improve the economic well-being and quality of life in the neighborhood. Public and private partnerships with businesses, financial, and non-profit entities are key to spurring quality investment, commercial development, and job creation throughout the East 11th and 12th Street Corridors. The City achieves this revitalization through activities including, but not limited to, land acquisition, demolition of dilapidated structures, relocation of displaced individuals/businesses, preservation of historic structures, redevelopment of abandoned and/or substandard structures, improvement of infrastructure, construction of new mixed-used facilities, and new community parking facilities to assist the businesses in the area. The City along with the Urban Renewal Agency are considering the strategy recommendations in which a workplan will be developed.

- The **Workforce Housing App** is used to identify areas with an imbalance between housing and jobs, and between household income and worker wage. It will also show the impact of this spatial jobs-housing imbalance on trip generation. Scenarios can be compared in terms of how many people have the opportunity to live close to work and whether available jobs match the skill level of the local workforce. The accompanying white paper by Dr. Reid Ewing and Philip Stoker finds that, in general, a 1% increase in income balance leads to a 2.64% increase in internal trip capture, reducing vehicle miles traveled and improving several socio-economic indicators. The map to the left reveals that many people living in east Austin (areas in blue) have lower incomes than the typical jobs found in the area. Conversely, many suburbs (red areas) have higher incomes but lack jobs that provide that level of income. The result is increased vehicle miles traveled to get to work, along with associated cost burdens and time lost in traffic. The SPP addresses these imbalances by encouraging sustainable growth in regional nodes.



CHAPTER 4: HOUSING ISSUES

The challenge of increasing equity and opportunity for all in a rapidly growing region is a focus of the SPP. Chapter 4 builds off of the regional demographic snapshot included in chapter 2. The report accompanying the Central Texas Opportunity Mapping project addresses regional issues and key neighborhoods experiencing gentrification and poverty. In addition, this chapter studies the opportunity challenges faced by the SPP demonstration site communities.



Section 4.1 Regional Analysis

The Central Texas Opportunity Mapping project, introduced in the previous chapter, was commissioned as part of this grant to assist in the challenge of increasing opportunity through planning and public policy. Appendix A contains a thorough data analysis of regional trends in housing affordability, the environment, gentrification, transportation, and other indicators. The report discusses changes in opportunity and focuses on racially concentrated areas of poverty where the biggest challenges are found.

Section 4.2 Demonstration Site Analysis

The Sustainable Places Project planning team focused on the improvement of four activity centers outside of Austin that would serve as demonstrations of best practices for our other jurisdictions. The Opportunity Maps reporting from the above section analyzed regional fair housing and opportunity issues and focused on low income populations and racially concentrated areas of poverty. Outside of the formal Opportunity Maps report, the data was also analyzed in the context of the demonstration sites in order to feed the development of the city plans. The Opportunity Maps analysis for each city is included below.

Elgin

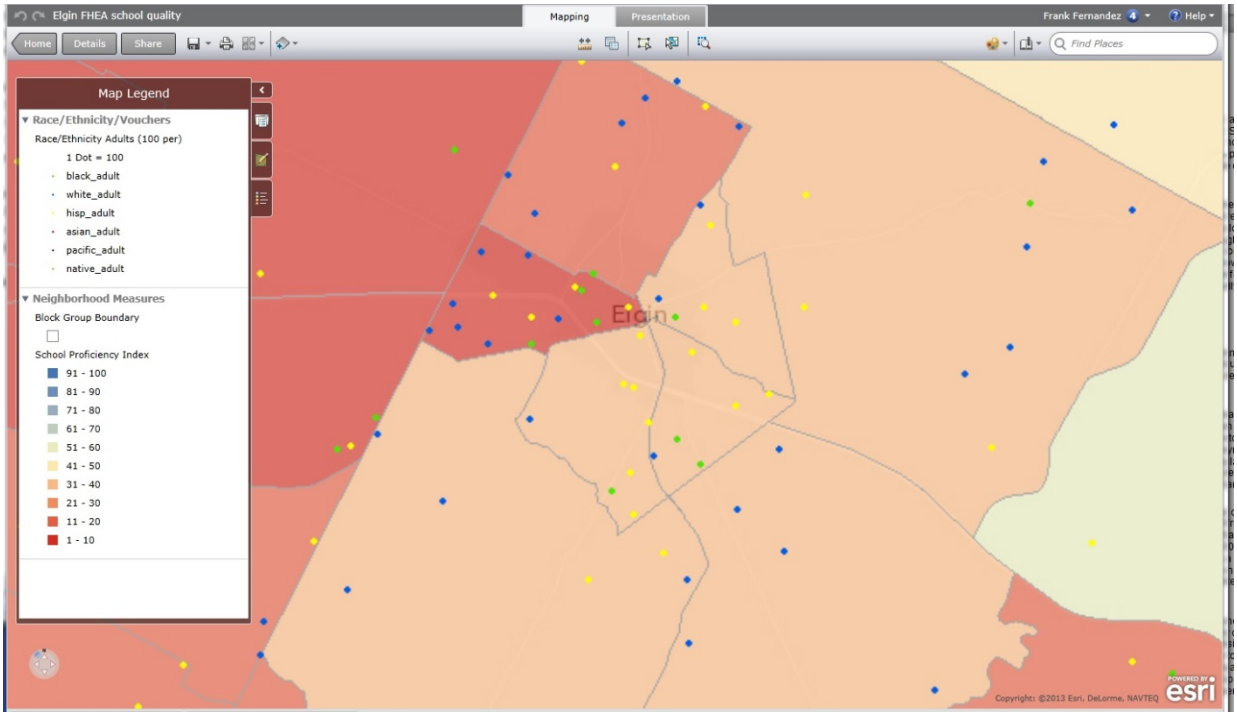
The Comprehensive Opportunity Index ranks Elgin within the Low to Very Low designation with comprehensive scores ranging between 2 and 1 in the city's census tracts. The change in opportunity in the Elgin area from 2000 to 2010 has improved in some areas but not in others. While segregation is relatively low and the overall poverty rate decreased over this period, residential occupancy rates decreased in portions of the city near South Main Street and Highway 290 and median household income decreased in some areas. However, it is important to note that the 2000 Census was taken during an economic upswing, while the 2010 Census reflected outcomes of a recession. Furthermore, these changes were not uniformly distributed throughout the city and surrounding areas.

On the Housing and Environment Index, Elgin received a score of between -.17 in the eastern portion of the city and .08 or Moderate designation in the areas west of Hwy 109. Housing indicators in Elgin are characterized by a low presence of subsidized housing. Currently, it has neither deep-subsidy housing (e.g., Public Housing, HOPE VI, Section 8 voucher units) nor private market-driven shallow subsidy housing (e.g., Low-Income Housing Tax Credit properties). Median home values are appraised between $180,000 in areas east of Hwy 109 and $130,000 west of Hwy 109. Vacancy rates follow a similar pattern, with a 14% rate east of the highway and a 7% rate west of the highway. Median household income is $82,604 for a family of three, with homeownership rates at 38% city-wide. As such, the cost of homeownership to income is not as burdensome as many other municipalities in the region.

In terms of environmental and land use factors, Elgin does not host any EPA-designated brownfields sites. However, Hanson Brick is a toxic waste facility west of the city in Elm city according to the EPA. Currently, there is one city park area just north of the Elgin demonstration site.

Elgin scored Very Low on The Economic and Mobility Index citywide. In other words, it shows no variability in the category of opportunity under which it falls. The area median income for a single individual ranges between $27,000 per year to $51,000. In terms of specific mobility indicators, there are no dedicated public transit lines in the city, and the average commute time for residents is roughly 35 minutes by automobile. Its bicycle compatibility index is Moderately Low at the center of the demonstration site but becomes designated as Extremely Low in non-central areas of the city.

Demographically, Elgin is characterized by higher rates of Hispanic/Latino residents in the city center area, at 72%, with relatively lower rates both west and north of the city at 32%. African American populations tend to be lower west of Hwy 109 and higher in southeast Elgin. On the segregation index, Elgin scores very low, with z-scores between .01 and .15. However, with a poverty rate at 17% in some parts of the city and with nearly 25% of city residents receiving some sort of social assistance, Elgin still exhibits a significant amount of income disparity.



On the Educational Index, Elgin has a Moderate to Low index range. The main driver of this trend in the area is its relatively low adult educational attainment, with between 37% and 51% of residents receiving post-secondary degrees.

In terms of comprehensive change between 2000 and 2010, Elgin has improved in some areas and declined in others. During this period the owned residential property occupancy rate of one census tract in the Main Street area dropped by 24.2% and the total home ownership decreased slightly, by 35 units. Despite the decrease both in home occupancy and in housing stock, the median value of single family homes in Elgin increased by $95,538. This was complemented by an increase in median gross rent by $181 per month. During this same period the annual median income of residents in another census tract connected to downtown decreased by $19,195, the percent of nonwhite residents increased by 6.4% as well as the poverty rate; by 15.4%. When these last two factors are taken out of consideration, the change in the city's comprehensive index score between 2000 and 2010 is significantly less.

Taken together, this suggests that Elgin has experienced an influx of new lower-income residents. Given what the components of the comprehensive index demonstrate, both within the demonstration area and in the city as a whole, this may pose a difficulty particularly for the economic and mobility index, the component indicators of which have shown lower outcomes in 2010 than for component indictors of the other two indexes overall.

Lockhart

The Lockhart Sustainable Places demonstration site is the single largest outside of Austin of the all of the project demonstration sites. Therefore, there tends to be much diversity within the footprint of the site itself in terms of housing, economic, mobility, and health-based equity. Using the comprehensive opportunity index, the Lockhart site shows one block group to be considered Very Low (Group ID 480559603002), driven by its low economic and mobility index score. All other block groups in the demonstration site are classified as Low on the comprehensive index.

Housing indicators in Lockhart show a range of scores from -.08 (Moderate) to -.16 (Low). These values are driven by both relatively high poverty rates throughout the site (10-24% of residents) as well as relatively high vacancy rates (15-34%), on a block group by block group basis. Homeownership rates hover between 38 to 53%, but foreclosures represent 2.3 to 2.6% of all mortgage starts. Among all housing stock in Lockhart, the range of home values is between $57,500 and $162,500. While there are no significant toxic waste or Brownfields sites in the immediate area, access to grocery stores is limited. In addition to areas that are classified as Low to Moderate there are two block groups south of Old Luling Rd. in southern Lockhart that are classified as High.

Unlike other cities in the Sustainable Places initiative (with the exception of Austin), Lockhart has three public housing developments, with two in the footprint of its demonstration site. Southpark Village apartments and Southpark Village II are located on the southern portion of the demonstration site and house 72 residents at full occupancy each. The city also hosts one other public housing development, Springfield Villas, which is to the east of the demonstration site, and contains 32 units at full occupancy.

The demographic profile of Lockhart shows Farm to Market Road 20 to be a pivotal geographical marker for the city. The African American population in the area is highest southeast of FM 20 (at 24%), though this falls largely east of incorporated Lockhart. The proportion in the rest of the city and in the demonstration site area is between 12 and 15%. The Hispanic/Latino population is highest near Toll Rd. 130, at the northernmost extent of the demonstration site (68%), and lowest at the southern portion of the site near Lockhart Municipal Airport (43%).

Access to green space in the area is moderate. No single public green space falls within the boundaries of the demonstration site. However, three public use spaces exist in the immediate metropolitan area. The Lockhart City Park, just east of Hwy. 183, is the largest city park in the area, while Lockhart State Park, west of Farm to Market Road 20, is the largest park space overall in the area.

Economic and Mobility indicators show Lockhart to be on the Very Low range, with the exception of one block group north of Farm to Market Rd. 20 which is classified as Low. Low z-scores in the Lockhart MSA are driven by low median household incomes ($31,826) more than commute times. While some block groups have higher median incomes ($63,454) these areas tend to have higher unemployment rates as well (7 to 8%). The nearest Moderate opportunity area is south of Lockhart, in the block group located just north of the City of Luling. Other characteristics of the city's mobility index show that while there is no public transportation program in the city, the road infrastructure within the city is characterized as Moderately Low, especially along side streets near US- 183 and east of Farm to Market Rd. 20.

The educational profile of Lockhart ranges from Low throughout most of the city to Moderate in areas west of Farm to Market Rd. 1322. As with Elgin, the adult educational attainment profile in the Lockhart area is relatively low, ranging between 15 and 28% of adults with post-secondary degrees, which underlies the educational index values.

The comprehensive index values between the 2000 and 2010 census show several general trends throughout the Lockhart area. For instance, vacancy rates throughout the city increased over the 10-year period. However, this was most noted in the block group east of US-183, where building vacancy rates jumped from 9% to 34% over the ten year period. However, this alone should not be interpreted as an indicator of housing decline in this particular block group. Median home values rose for all block groups in Lockhart from 2000 to 2010, with the greatest increase seen in the block group in the eastern-central portion of Lockhart, east of US 183 and north of Farm to Market 20. As with home values, median land rent across all census block groups increased during this period by roughly $50 per month. Throughout the central business district, median income dropped over the ten year period. This trend was most evident in the block group south FM 20 and east of US 183, where median household income fell by $16,273 over the ten-year period. The racial and ethnic profile of the area has not changed substantially in the area over the ten year period with the exception of two block groups, one of which is north of the train tracks and the other which is north of FM 20 and east of US 183, where the percent of non-white residents actually decreased over the period, from 22% and 13%, respectively. The poverty rate city-wide did not substantially change over the ten year period, except for residents in the city's central business district, where the poverty rate increased by 24 percentage points.

Dripping Springs

As with the Elgin site, there are no public housing or Section 8 voucher multifamily properties in the Dripping Springs area. Home foreclosure rates are significantly lower across the Dripping Springs area (around 1% across all block groups) and only between 2 and 9% of residents in the area receive any form of public assistance, depending on the block group.

The Housing and Environmental Index outcome measures show a similar assessment, with most block groups characterized as "Very High" opportunity areas. All areas within the demonstration site are characterized by high median household values of between $240,000 and $397,300 and high homeownership rates of between 75 and 97%. The poverty rate per block group is the only

indicator that varies significantly among all block groups in the area, moving between 1 and 19%. However, even in areas with high poverty rates, median home values are still high and crime rates low. Therefore, poverty rates don't affect overall housing and environmental opportunity indicators.

Dripping Springs is a majority White municipality with a white population, including Hispanics, of 81.5% as of the 2010 Census. Hispanic-Latino ethnicity comprises 29% of the area, while African American and Asian residents make up less than one percent of the city's population.

The local economy of Dripping Springs is designated as "Moderate" in most block groups throughout the city. While income-based indicators such as median income ($106,000 in 2010) and unemployment (roughly 1%) are very high, the region's mobility indicators are lower. For instance, mean commute times for Dripping Springs residents are between 20 and 30 minutes and there is not a public transit system currently in place. Despite these lower mobility indicators, Dripping Springs ranks "Moderately High" in terms of bike compatibility. In particular, the highest compatibility scores are in a portion of US 290 east of the high school and west of Mercer Street, and a portion of Ranch Road 12, North of Hwy 290 and south of Butler Ranch Rd.

The educational opportunity index of Dripping Springs is classified as "High" to "Very High." This is driven primarily by very high rates of adult post-secondary educational attainment, with 83 to 97% of adults in Dripping Springs over the age of 25 receiving a college degree.

The current geography of opportunity in Dripping Springs reflects a marginal improvement across two block groups in the area over the course of 10 years. Areas north of Hwy 290 showed an almost 4% decrease in vacancy rates, a roughly 10% increase in homeownership rates, and an almost $7,000 increase in income. The only two indicators on the comprehensive change index that did not improve were the poverty rate (with an increase of 2.71%) and college attainment rate (with a decrease of 6.29%). For the block group east of RR 12, the trends were similar, though vacancy rates actually increased by 3.2% and the college attainment rate dramatically improved by almost 18%. The block south of Hwy 290 and west of RR 12 showed a slight drop in comprehensive change indicators. This was primarily due to a decrease in median household income of roughly $36,000 over the ten-year period and an increase in poverty rate of 5.4%.

Hutto

As with Dripping Springs and Elgin, Hutto does not currently hold public housing properties within its city limits, as the nearest subsidized housing lies west in Round Rock and south in Travis County. Hutto is a non-entitlement community as Community Development Block Grants are concerned. Foreclosure rates citywide, as of 2010, were relatively low, at 1.7% of all mortgage starts, while only 0.14% of residents

receive any form of public social assistance.

On the Housing and Environmental Index component of the Opportunity Index, most block groups in Hutto rank low on negative outcome indicators, such as poverty rate (between 2 and 11%), and vacancy rate (between virtually 0% and 4% of parcels). Median home values range from $125,000 to $196,000, with homeownership rates between 54 and 70%. For environmental indicators, though every block group in Hutto is far from a brownfields or toxic dump site, there are relatively few civic parks listed within the city's borders.

The racial and ethnic profile of Hutto is marginally majority White Non-Hispanic, with this population comprising 51% of Hutto residents. 48% of residents are Non-White, with just under 30% Hispanic, 16% African American, and 2% Asian. Given this demographic profile within a city of its size, Hutto does not exhibit any racially concentrated areas of poverty. As well, there are no linguistically isolated communities within the city's borders.

The Economic and Mobility Index shows a stark contrast between the northern and southern portion of Hutto, with Hwy 79 as the dividing line, with block groups north of the highway rated "High Opportunity" and those south of the highway, "Very Low Opportunity." This contrast is driven less by differences in income and more by unemployment rate and access to jobs. Average commute times are roughly 30 minutes for both High as well as Very Low opportunity areas, reflecting a trend of workers commuting outside of the city for employment, likely to cities such as Austin.

All block groups for Hutto exhibit Moderate scores on the Education Index. The majority of residents (roughly 60%) have attained post-secondary education, student-teacher ratios are relatively low (18 students per teacher) and student graduation rates are relatively high, at 90%.

While the unemployment rates, as part of the Economic and Mobility Index, indicate greater economic opportunity for residents north of Hwy 79, the Change Index from 2000 to 2010 actually indicates that block groups north of the highway have exhibited a slight decrease in comprehensive opportunity over the 10-year period, while areas south of the highway have either remained stagnant or slightly improved. For areas north of the highway, the two main drivers in this change have been a lowering of median income over the this time period of almost $7,000 per year as well as an increase in overall vacancy rates and a concomitant downward shift in owner-based occupancy rates. While median household income has decreased slightly for block groups south of Hwy 79, building vacancy rates have decreased for these areas between 2000 and 2010.

Section 4.3 Best practices to address impediments to fair housing choice

The SPP provided public visioning, scenario design efforts, and planning consultant support for the demonstration cities discussed above. The subsequent plans were designed to meet the preferred visions and address impediments to fair housing by promoting a diversity of housing types for different incomes, in part through code changes. The state of Texas prepared a Statewide Analysis of Impediments to Fair Housing Choice (State AI) concurrently and cooperatively with this report. More details of the SPP consortiums participation with the State AI is included in Chapter 6 of this report. The

state AI outlines a list of common impediments, goals to address them, and best practice recommendations for our local governments. Below are the best practices included in the report, followed by a brief description of how the demonstration site cities strive to meet the challenges.

> *Best Practices in Local Zoning and Land Use,* STATE OF TEXAS PLAN FOR FAIR HOUSING CHOICE—PHASE 2 SECTION V, PAGE 57
>
> Because the character, development patterns, and future plans of each community are different, their zoning, subdivision, and development controls will also differ. However, there are several land use practices that can help reduce barriers to housing affordability and choice; the more of these practices are included in local codes, the more likely that fair housing options will be provided.
>
> **Purpose statement.** The zoning and subdivision regulations should include a purpose to provide housing choice for its residents and to comply with applicable federal and state law regarding housing choice.
>
> **Family definition.** Definitions of family should generally allow any number of related persons and at least six, eight or more unrelated persons, to correspond with case holdings addressing the numbers of unrelated persons who can live together while maintaining the household character of residential districts. Better yet, definitions should be recast to address "households" rather than family situations, since the variety and number of non-family household living situations will continue to increase, and family-based definitions may soon become difficult to apply.
>
> **Small lots.** At least one zone district (or overlay district, or permit system) that allows small lots for single family detached housing in some locations should be included in local code. While the appropriate minimum lot size will vary with the character of the community, a zone allowing minimum lot sizes in the 3,000-4,000 square foot range would be appropriate for more urbanized areas. In addition, lot width requirements should be reasonable and consistent with minimum lot sizes; while some codes require minimum lot widths of 70 feet or more, small homes can be constructed on lots as narrow as 25feet (or even less). Minimum lot size requirements are the type of regulation most responsible for increasing housing costs.
>
> **Multifamily parcels.** A selection of zone districts (or overlay districts, or permit systems) that allows the construction of multifamily housing by right, as well as enough land mapped into this district to allow a significant amount of multifamily housing to be developed should be included in local code. Maximum heights should be reasonable and consistent with the maximum density permitted. Failure to provide opportunities for multifamily development has been identified as one of the four leading regulatory causes of increased housing costs, which can have a significant impact on fair housing options. Regulations that impose limits on the number of bedrooms in multifamily units should be avoided so that the market can provide units best suited to the needs of anticipated residents. Often a perceived shortage of multifamily housing turns out to be a shortage of units with enough bedrooms to accommodate demand.
>
> **Manufactured homes.** Manufactured housing meeting HUD safety standards should be allowed in at least one residential zone district (per the federal Manufactured Housing Act of 1974) and more if possible. While restricting these homes to manufactured home parks is common, the better practice is to allow them in at least one residential zone where the size and configuration matches the scale and character of the area. In addition, adopting standards for the construction of new mobile home parks (not just the legalization of existing ones) significantly increases the likelihood that this form of relatively inexpensive housing will be developed.

Minimum house sizes. The zoning and subdivision regulations should not establish minimum house or dwelling unit sizes beyond those in the building code. Minimum house size requirements have also been identified as a significant cause of increased housing price in those communities where they are in place.

Group housing. The code should clarify that housing for groups protected by the Fair Housing Act Amendments of 1988 are treated as residential uses, and should generally allow those group housing uses in a broad range of zone districts. While some communities require a special permit for these uses, they can generally be allowed by right provided that they comply with standards limiting scale, character, and parking. Failure to provide for these uses in the code could subject the county to a developer's request for "reasonable accommodation" under the Act, and failure to provide "reasonable accommodation" could be a violation of federal law. In light of the aging of the American population, the code should also provide a similar range of zone districts where congregate care, nursing home, and assisted living facilities may be constructed. Avoid regulations that recast these uses (some of which are required to be categorized as residential uses by federal law) as commercial uses simply because they offer support services (such as counseling or shopping assistance) on site.

Accessory Dwelling Units. The code should allow accessory dwelling units in at least one zone district and if possible several zone districts, either as an additional unit within an existing home structure or in an accessory building on the same lot. While some communities require a special permit for these uses, they can generally be allowed by right provided that they comply with standards limiting size, character, entrances, and parking.

Mixed use. In order to promote affordability, housing should be allowed near businesses that employ workers, particularly moderate and lower-income employees. To do that, the code should permit residential units in at least one commercial zone district, and if possible, several zone districts, and should map some lands for multifamily development in close proximity to commercial districts. When commercial or residential zone districts are revised to allow mixed-use development, ensure that the building dimensional standards of the new types of structures can accommodate those uses efficiently.

Lower parking standards. Although the traditional standard of two parking spaces per dwelling unit may be reasonable for some areas of a community, an increasing number of cities have adopted lower standards for small-lot developments, multifamily developments, affordable housing, multifamily housing, group housing, and special needs housing. Some cities now require no on-site parking in downtown areas (letting the market control supply and demand), while others have adopted parking ratios of 1 space per unit or lower.

Flexibility on nonconforming structures. Although zoning codes generally require that nonconforming structures damaged or destroyed through fire or natural causes can only be rebuilt in compliance with the zoning code, an increasing number of codes are exempting affordable housing from this requirement. Often the most affordable housing in a community is located on lots that are too small or narrow for the district where they are located, or in multifamily buildings that have too many units for the district where they are located. If forced to replat with larger lots or to reduce density following a disaster, those affordable units may be lost, and allowing rebuilding with the same number of units as before may be the most efficient way to preserve this these units in the housing stock.

Incentives for affordable housing. In order to encourage the development of affordable housing, the code should recognize the difficult economics involved and should offer incentives. Common incentives include smaller lots, increased density in multifamily areas, reduced parking requirements, or waivers or reductions of application fees or development impact fees. Some communities provide additional incentives for housing that is restricted for occupancy at lower percentages of the Area Median Income (AMI). For example, developments restricted for households earning less than 50% of AMI could receive more generous incentives than those for

households earning less than 80% of AMI. While zoning and subdivision incentives alone are often not enough to make development for lower levels of AMI economically feasible, they can be part of a broader package of incentives (e.g. including financial incentives or land contributions) that make those project feasible. Any incentives offered should be updated as new housing studies are completed and new information about specific affordable housing needs is obtained.

Local Government Goals in the State AI

The plans for our demonstration sites address many of the best practices above – providing flexibility on conformity, parking standards, land available for multifamily, etc. The state AI also lists a variety of goals to address impediments to fair housing choice. Included in the goals are action items that local governments should take. Action item 2.2 declares that the state should include information about group home requirements as part of the promotion of best practices in fair housing. Group housing for protected classes should be treated as residential uses and such homes should be allowed in a broad range of zone districts. Regulations that cast group homes as commercial use and/or require special permits or public disclosure that the homes will serve persons with disabilities should be avoided. The AI recommends that local governments review zoning and land use ordinances for language that treats small group homes as commercial and industrial use. The AI also states that many local jurisdictions have zoning codes, land use controls, and administrative practices that may impede free housing choice and fail to affirmatively further fair housing. These include minimum square footage requirements, minimum lot sizes, maximum occupancy not tied to square footage, and special features like attached garages or significant code requirements above the IRC.

SECTION 4.4: Demonstration sites address best practices and goals

The state AI focus groups identified city codes across the state and region that need improvement. As part of the Sustainable Places Project planning effort, city codes in demonstration sites were studied to identify what changes would be needed for the land to develop along the vision of the community. Below is a summary of the findings with an emphasis on fair housing considerations and the recommended changes that the respective city councils have resolved to change.

DRIPPING SPRINGS

The zoning ordinance for Dripping Springs is a conventional use-based code adopted in 2007. Within the demonstration site there are seven zoning districts that legislate land uses, height, lot size, and density. These single-use districts do not reflect the Comprehensive Plan's goals for promoting mixed-use and infill development, including provision for additional housing options beyond the single-family home. Furthermore, much of the demonstration site, including the Davidson and Baird tracts, remain unzoned. The current code defines group homes as a nonresidential use; they must conform to Local Retail District standards and require site plan

approval. They are can receive conditional approval in SF-5 (attached and garden homes) and multifamily zones.

The SPP recommends that the City adopt a Central City Overlay Zoning District for the demonstration site, with form-based development standards to help guide the thoughtful creation of infill development and new compact and pedestrian friendly neighborhoods. Five development districts are recommended and detailed in the city plans. In general, these districts encourage a full mix of commercial and residential uses, including group homes. Drive-through and automotive uses are prohibited in the areas designed for more density, where buildings are one and two stories in height and spaced apart with active uses oriented to the street.

Compact and pedestrian-oriented mixed-use neighborhoods are promoted by the code on the large tracts of land within walking distance of the downtown. This district provides for a full range of housing types from single-family detached homes to townhouses and apartments, as well as local-serving commercial uses. The standards provide for a pattern of neighborhood development that reduces the dominance of the automobile with alley-loaded garages and street-oriented porches and stoops, making walking and biking a more viable option.

ELGIN

The current zoning ordinance for Elgin is a conventional use-based code. Within the demonstration site there are four zoning districts (C-2 General Commercial, A Multi-Family, R-2 Single Family/Duplex, and I General Industrial) that legislate land uses, height, lot size and density, etc. These single use districts in their current application do not reflect clearly the Elgin Comprehensive Plan's goals for promoting mixed-use development within the demonstration site; they do not allow small-scale artisanal production (e.g., metal or fabric production, food processing, etc.) within the Downtown, they limit ground level residential in much of the area, and lack provisions that would encourage a more diverse array of housing options. The ordinance defines "Rooming House" as lodging for 3 or more, but not exceeding 20, but no restrictions on rooming houses or group homes are included in the code.

It is recommended that the City adopt a series of Overlay Districts for the Demonstration Site, with form-based development standards to help guide the thoughtful creation of infill development and new compact and pedestrian-friendly neighborhoods. Four development districts, each with a set of form-based development standards, are described in the appendix of the Elgin SPP plan.

The Elgin Subdivision Ordinance mandates wide streets with wide rights-of-way for new subdivisions, typical of many codes, but the SPP recommends narrower road sections that are more consistent with Elgin's small town character and that can calm traffic and create a more hospitable environment for pedestrians and cyclists. Continuous sidewalks should be provided on both sides of the street, preferably with street trees located along the curb. On-street parking should be allowed and encouraged as a way of slowing traffic in neighborhoods and in creating a buffer to the

sidewalk area. Amendments to minimum block lengths to encourage, or at least allow, more pedestrian friendly, “walkable” blocks would support that same theme.

LOCKHART

Lockhart’s conventional use-based zoning code needs to be altered or replaced in order to implement the SPP public vision and further fair housing. The single- use districts in their current application do not clearly reflect the Comprehensive Plan’s goals for promoting mixed-use and infill development, and lack the flexibility to include provisions for a variety of permitted housing options. Group homes are allowed "by-right" in the Public & Institutional District; there is no other mention in the code.

The Sustainable Places Project recommends that the City adopt a series of Overlay Districts or a complete new code. Five development districts, each with a set of form- based development standards would augment the existing districts. The code changes should also clarify group home regulations and allow them in residential areas according to federal law.

The code changes will reinforce Downtown Lockhart as a vibrant and walkable mixed-use district, maintaining its historic scale and character, and enhancing it as an attractive destination for visitors and residents. A full mix of urban uses permitted under current CCB zoning should be allowed. Drive- through and automotive uses should remain prohibited. Buildings are limited to 60’ or five floors to maintain the current character of downtown.

HUTTO

Beyond the SmartCode, which governs the Downtown and Co-op Sites with form-based standards, the remainder of the Demonstration Site is currently regulated by a conventional use-based code. In these areas, seven zoning districts legislate land uses, height, lot size and density. These single-use districts, while well-developed and more up to date than many comparable codes for cities of a similar size, do not explicitly require the Comprehensive Plan’s goals for promoting mixed-use and infill development. Regarding group homes, the existing code requires allows them in most districts if they have 6 or fewer residents and comply with State of Texas licensing requirements. They are allowed in Multifamily zones for up to 15 residents. These regulations appear to comply with federal law.

The SPP recommends that the City adopt a zoning overlay for the portions of the Demonstration Site not regulated by the SmartCode, with form-based development standards that encourage infill development and new compact and pedestrian-friendly neighborhoods. Two distinct development districts, each with a set of form-based development standards, are recommended. They can be summarized as follows: Employment Mixed Use: This District, concentrated on properties along the US79 and SH130 corridors, allows for a pattern of commercial and mixed-use development that promotes the City’s scale and economic development objectives, as well as its commitment to a more walkable and sustainable urban environment with a better balance of jobs and housing. A wide range of urban uses including light industrial businesses set back from single-family residential neighborhoods is recommended. Housing within this area is permitted as part of a PUD

site plan to encourage well-designed and livable neighborhoods. Neighborhood Mixed Use: This District located on properties interior to the Demonstration Site and adjacent to existing single family neighborhoods is intended to promote compact, engaging and walkable neighborhoods with a diverse mix of housing choices.

Section 4.5 Scenario planning and future opportunity

The scenario planning feedback is a different lens for examining equity issues. The opportunity maps show the state of the region and the way it is has changed; the scenario planning equity indicators give a forecast of potential change. It is important to note that the scenario indicators can only measure what can be predicted from changes in the built environment. Many social indicators like school performance aren't readily predicted by changes in land development alone.

The scenario indicator results were reviewed in each demonstration site community. These reports are included in the grant final deliverables and a few key indicators are presented below. The overwhelming majority of participants selected a denser, town center-style pattern of growth during the charrette sessions. The results suggest that the preferred public vision of a connected, inclusive activity center will improve opportunity for existing and future residents by offering a diverse mix of housing and jobs for different incomes and by providing walkable options for shopping, jobs, and public services that reduce transportation expenses. Furthermore, development patterns of this type should decrease vacancies, yielding higher property tax revenues for each city. Public infrastructure investments and regulatory changes are needed for realization of the preferred scenario and the associated community benefits.

In the small-city demonstration plans, the preferred scenarios had projected housing costs that were 3% to 25% below what they would be in a predominantly single-family build-out scenario. Prices were kept down because the average unit was smaller. In addition, the preferred scenarios had more jobs and services within walking distance, more valuable street amenities and trees, and compared favorably to the trends in public fiscal impacts. The per-capita costs to provide infrastructure maintenance and public services are generally cheaper in a more urban environment because there are fewer square miles to cover for the same level of service. The models in the Sustainable Places Project were custom designed and calibrated using the demonstration city budgets.

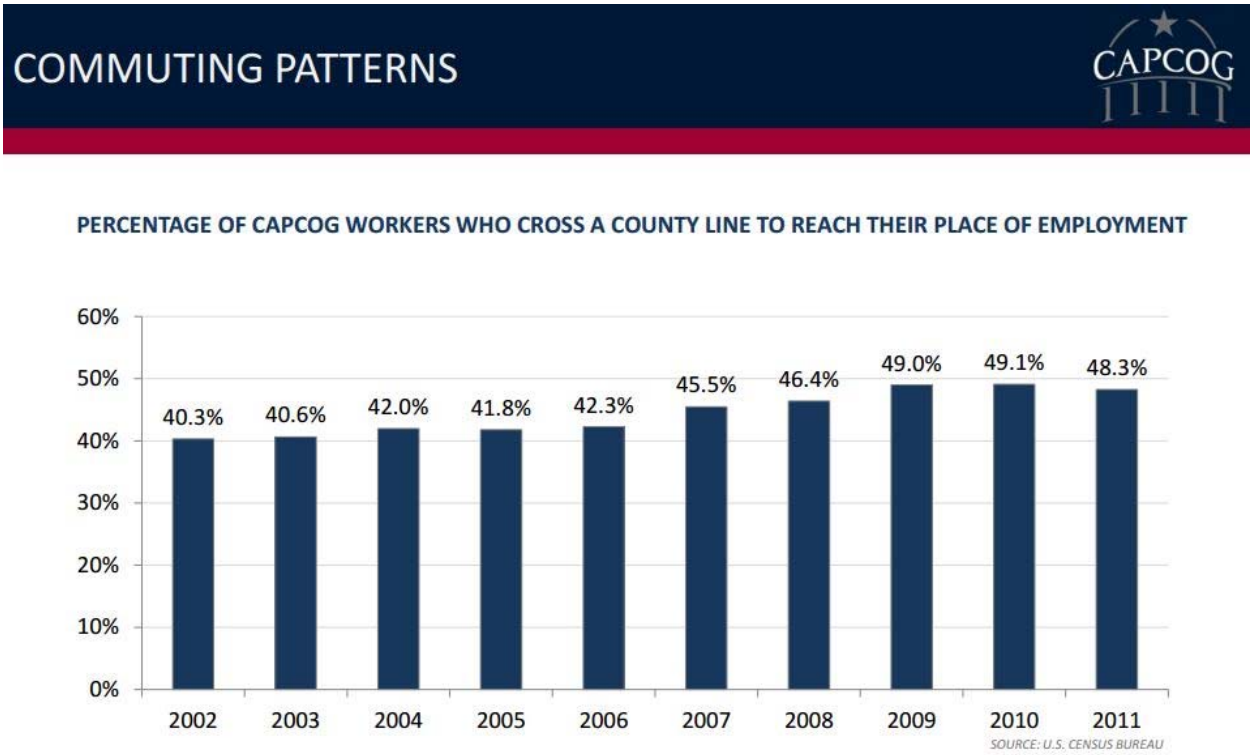
Communities that encourage fiscally responsible development will save money for future residents and/or have more funding for social services like affordable housing programs. The City of Austin examined growth scenarios in case study areas around a proposed downtown urban rail system. The case studies were in high-growth zones that would develop with or without rail. Even with similar growth patterns, the per-capita transportation cost savings and the value added to each property by the rail investment were large: 25,000 new transit trips a day could amount to $296,000,000 saved annually by residents in the case study area by 2030 through reductions in vehicle miles travelled. It could also mean up to $18,500,000 in affordable housing fee-in-lieu generated by downtown development. For more information, the City's full study is included as part of the grant final report.

CHAPTER 5: ADDING TRANSPORTATION TO THE JOBS/HOUSING MIX

Many regions have developed to be heavily car dependent with almost no integration of other transportation modes. Central Texas fits that description, although the City of Austin and regional transportation authorities have increasingly focused on the integration of pedestrian and bike friendly infrastructure as well as improved bus and rail systems. Austin Mayor Lee Leffingwell, in a February 2014 state of the city speech, declared that a larger investment in transit is required to meet the challenges of the booming population growth and maintain the region's economic competitiveness and high quality of life.

Commuter patterns

Despite the City's efforts and the Metropolitan Planning Organization's promotion of the activity center concept for increased connections of housing, jobs, and services, a spatial balance between housing and jobs is missing. About 48% of the region's workforce crosses a county line to get to work, up from 40% a decade ago.



Not unlike many regions, families have moved out of the core to find houses they can afford, or sometimes more house for their dollar. Even cheaper housing is available outside the core and outside the incorporated areas of the smaller cities, in part due to minimal authority to regulate

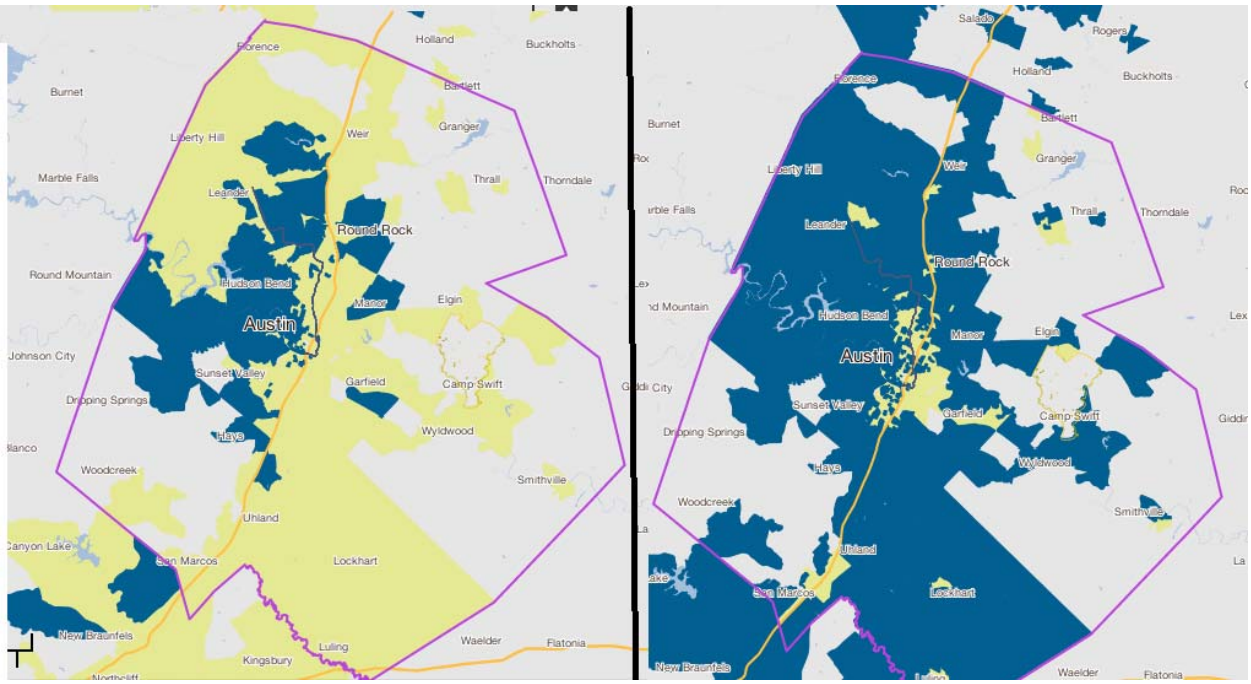
development outside of incorporated areas. These rural areas received 10% of the total regional population growth from 2000 to 2010.

The perception of less expensive living drives the decision for many to move farther away. The Center for Neighborhood Technology (CNT), the Center for Transit-Oriented Development (CTOD), and HUD developed a tool to assess the residential affordability of locating in specific neighborhoods when transportation costs were factored into the cost of housing alone (www.locationaffordability.info).

As depicted in the left side of the Housing + Transportation maps below, housing costs less in areas outside the metro core. Here, blue areas on the left map represent areas where the cost of housing (i.e., median rent and median assessed value) is higher, on an annual basis, than 30% of the residents' annual median income.

However, the median family income of most rural areas is challenged when transportation costs are factored into the housing decision. On the right map, blue areas represent block groups where the median rent and assessed value of a home *and* the cost of transportation are in excess of 45% of residents' annual median income.

Figure 1: Housing Cost (left) and Housing + Transportation Cost (right) as a percentage of income



In addition, for the people living in outer ring cities, and particularly those in the unincorporated areas, the proximity to other necessities of life become difficult. Access to healthy foods, healthcare, and job training becomes less affordable because of the transportations costs to get there. Even if a household has more than one vehicle, the cost to maintain and operate them can limit daily trips. Nevertheless, the cost of transportation is not usually perceived in the decision to

move to cheaper homes. Transportation costs are not purchased all at once like a mortgage and therefore don't often enter the home buying equation.

Since the region must continue to work at an alternative to the current "outer ring/rural" affordable housing trend, more focus on the activity center concept was appropriate for the Sustainable Places Project, with a focus on helping existing city centers identify strategies for bringing the housing, jobs, and necessary services in close proximity, with a heavy emphasis on goals for housing choices.

As the developers of the tool note, building patterns that are variously described as both dense and "location efficient," tend to have mixed uses and better access to jobs. Therefore, the cost of transportation is lower in these neighborhoods even if the cost of housing alone is high. In summary, the Housing + Transportation map demonstrates the hidden cost of transportation as residents choose to live further away from city centers.

Transportation Equity in the Region

The region's economic competitiveness currently relies on a multi-county commuter shed bringing employees into the core, largely by automobile, and recent studies are showing this is not a sustainable approach. Numerous studies of intelligent transportation data rank the region as one of the ten worst in America for hours lost in commuting. A Texas Transportation Institute congestion study indicates that commuting times from the south to the north end of the region will more than double by 2040, even with planned infrastructure changes. To keep traffic flowing, commuter behavior, such as the current predominance of single occupancy vehicles, and the spatial alignment of jobs, housing, and services, must change.

Cities within a region achieve equitable transportation goals to the extent that they provide a mix of options wherever possible. Gradually the region must look at a more holistic approach to mobility – some form of transit playing an increasingly important role as the population increases while the relative road capacity decreases. Public transit will be needed support focused growth in activity centers, empower those without access to an automobile, and improve the reliability of travel times.

Capital Area Regional Transportation Coordination Committee

The Capital Area Regional Transportation Coordination Committee (RTCC) is a membership-based committee composed of various regional transportation planning and public transportation interests in the region. Their mission is to provide a coordinated effort "to foster development of a seamless public transportation system that achieves efficiencies, eliminates duplication, increases coordination, and addresses service gaps." [1] RTCC membership includes the following entities:

<u>Regional Planning, Public Transit Organizations</u>

- CAPCOG
- Capital Metro

[1] http://www.capitalareartcc.org/

- Capital Area Metropolitan Planning Organization (CAMPO)
- Capital Area Rural Transit Service (CARTS)
- Hill Country Transit District

State, County, and City Departments

- Austin Parks and Recreation Department
- Department of Assistive and Rehabilitative Services (DARS)
- Texas Department of Transportation (TxDOT)
- Texas Health and Human Services Commission (HHSC)
- Travis County Health and Human Services Department

Institutions of Research and Higher Education

- Texas State University

Non-Profit Advocacy and Service Interests

- 2-1-1/United Way Capital Area
- Austin Groups for the Elderly
- Austin Resource Center for Independent Living (ARCIL)
- Austin-Travis County Integral Care (formerly Austin-Travis County MHMR)
- Community Action Network (CAN)
- Hill Country Community Mental Health/Mental Retardation (MHMR)
- St. David's Episcopal Church
- Texas Bus Association
- West Austin Caregivers
- Worksource

Elected Officials

- Burnet County Commissioner

Miscellaneous Members

- Austin Chamber of Commerce
- Austin Yellow Cab

In 2012, RTCC published its Capital Area Coordinated Plan. The purpose of the plan is two-fold: to update regional strategies to address gaps in transportation services in the area and to meet funding requirements that the RTCC receives from the Federal Transit Administration the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Relevant sections of the SAFETEA-LU funding that flow directly from regional plans such as the 2012 RTCC include the following:

- Section 5310--Capital and service support for elderly individuals and those with disabilities.
- Section 5316—Job access and reverse commute (JARC) funding to connect low-income persons

As part of the regional plan, KFH Group[2], a Maryland-based regional transportation consulting firm, partnered with the Capital Area RTCC to produce a series of GIS maps that highlight both the demand for transportation in the area and the service gaps that existed. Figure 2 presents population density in the region as a base level analysis for examining areas in the region that may have a higher demand for transportation, all other factors being equal. Darker areas represent areas of higher population density, with most of the region (colored in white) being below the 1,000 residents per census block group threshold. Figures 3 and 4 provide a more nuanced picture of transportation demand based on the population of an area in addition to the relative need for more expansive public transit (due to demographic characteristics such as density of elderly, disabled, and low-income residents in a given area). Figure 3 presents relative need based on total population, while Figure 4 presents information based on population density, similar to Figure 2 but with the added need level taken into account. Finally, Figure 5 shows the service areas operated by CapMetro and CARTS as well as areas in the region that receive no coverage from either service. Notably, Round Rock, Cedar Park and Pflugerville, in the northern portion of the region, as well as Sunset Valley in the southern portion, do not receive service. As Figure 3 shows, these are areas that are characterized as "Medium" to "High" in their relative need for public transit.

Figure 2: Population Density (with CAPCOG region in White)

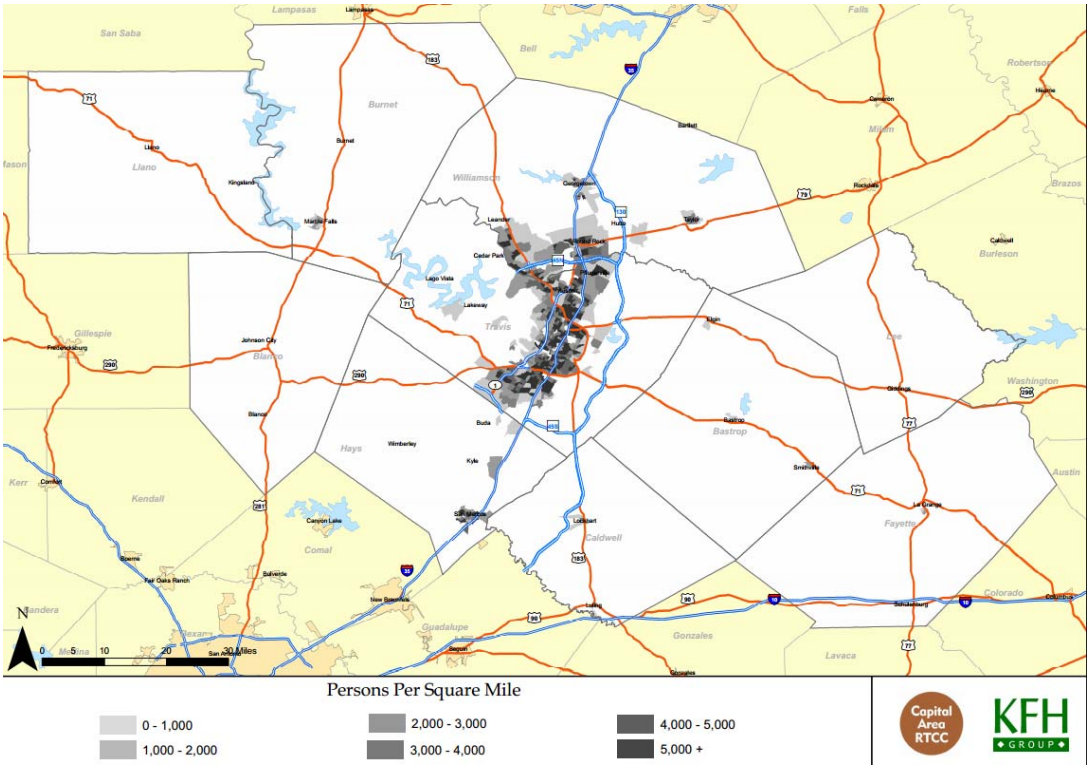


Figure 3: Relative Need (based on Total Population)

[2] http://www.kfhgroup.com/index.html

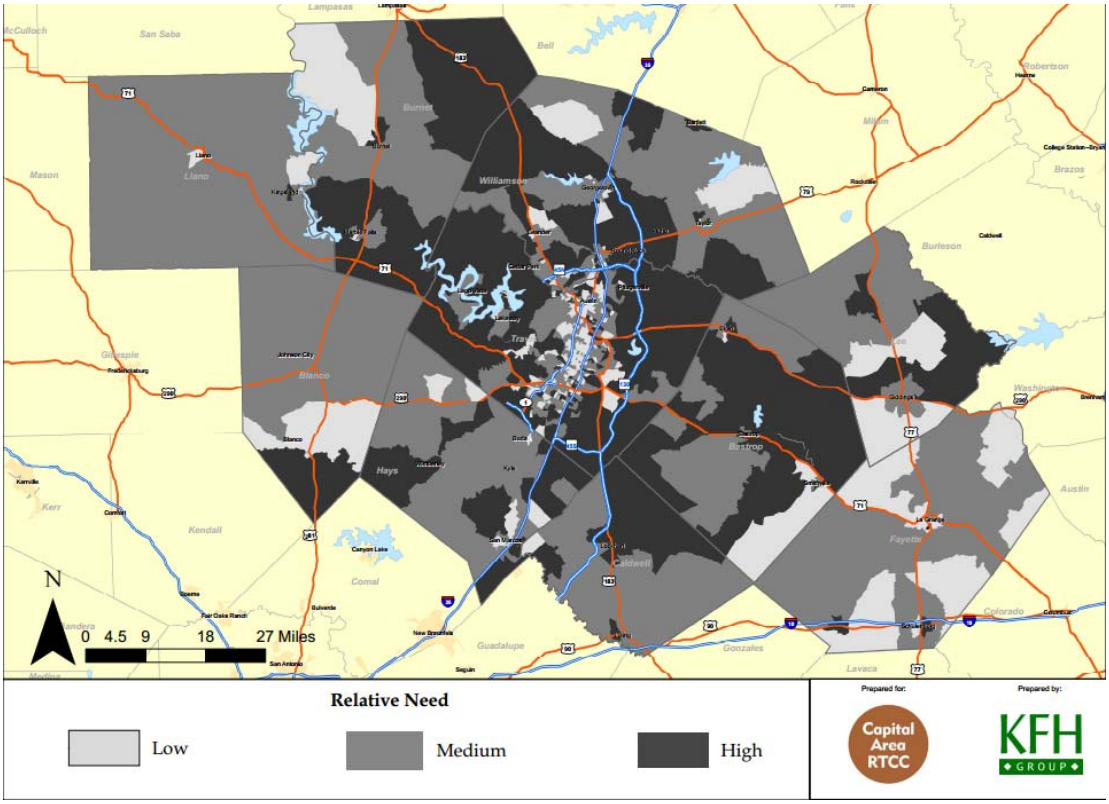


Figure 4: Relative Need (based on Population Density)

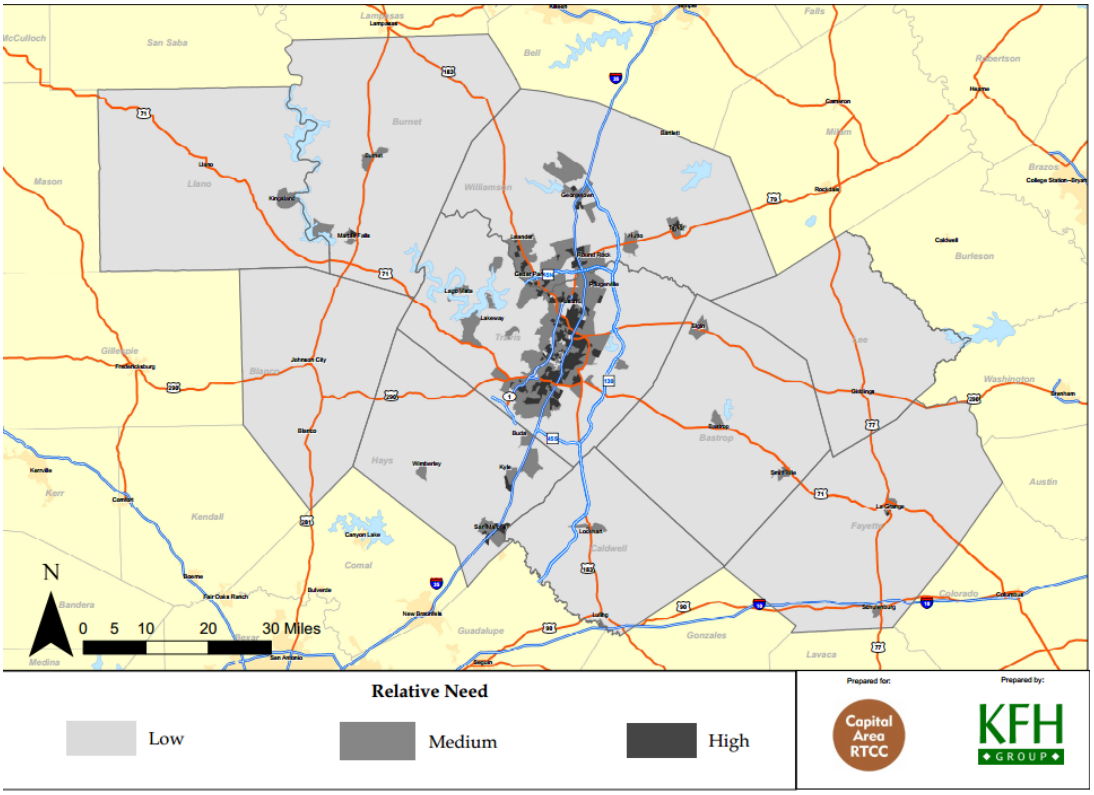
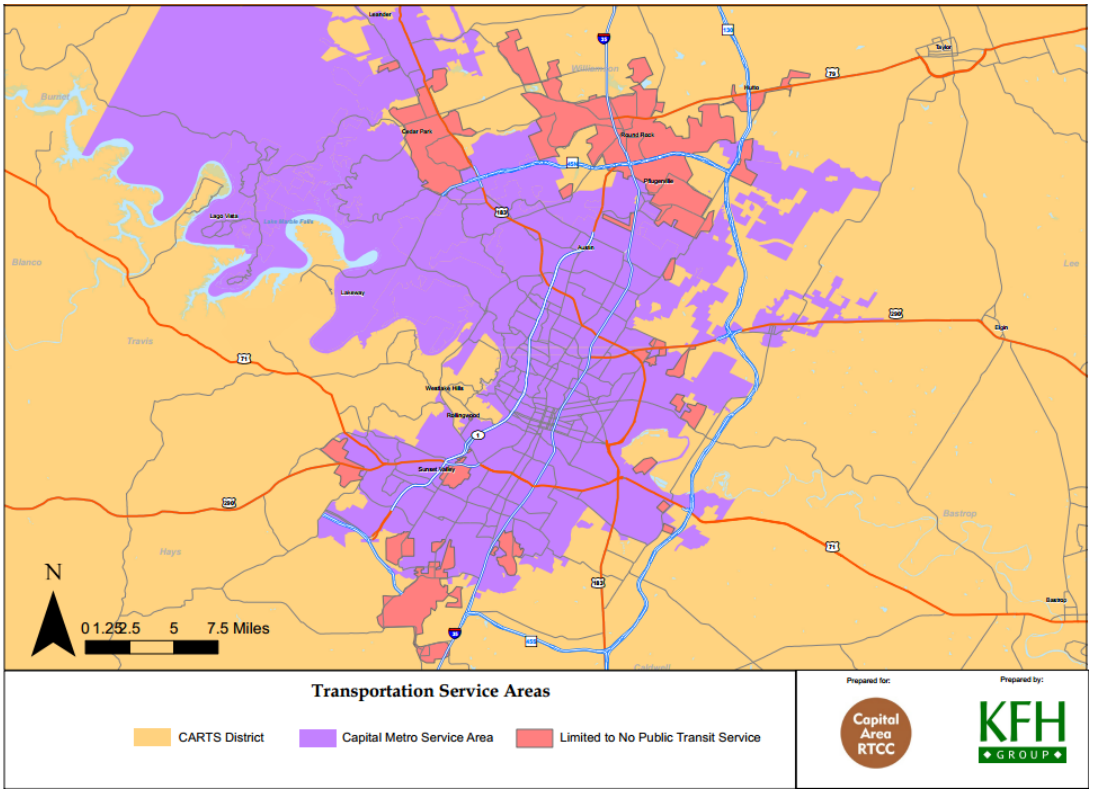


Figure 5: Public Transit Service Networks for Williamson, Travis, and Hays County



While the RTCC has had some success in improving the coordination among transit providers to support lower income and elderly needing access to services around the region, very little has been done to faciliate a more comprehensive approach to transit, not in any part due to a lack of interest by providers to fill gaps.

There is not a consensus in the region about what extent public transit should play in addressing gaps in transportation, although there is an increasing dialogue about what the components might be – a wide range of options including more local and commuter rail coupled with optimisim for the new BRT system have all been part of the conversation. Traditional bus service will always have a place and a few think it might be time to bring the Dillo trolley back to decrease traffic in the region's downtown.

CHAPTER 6: DELIBERATION AND DECISION MAKING

The SPP worked on a variety of fronts to build a stronger, more equitable Central Texas with a focus on linking jobs, housing and mobility in every aspect of the project. Work in all three areas will take a collective effort of all regional partners and particularly those active in the Consortium.

Consortium members contributed to the concurrent state AI effort, participated in their own jurisdictional AI programs, built tools to better understand challenges, engaged the public at the local and regional levels, and adopted plans that will change policy for the better.

Section 6.1 Activity Center Outreach

The demonstration site plans are a focus of our grant and were crafted upon a foundation of public input. Section 6.1 describes the planning process and the deliberations that took place on multiple levels through public discourse and scenario planning. It also describes how this deliberation led to decision making on the local level and acts as a "demonstration" of how this can work elsewhere in Central Texas.

The Sustainable Places Project employed a software package of indicators and models that allowed residents to "paint" development types on a local map and instantly view the effect of their land use and development choices on a range of factors, including equity indicators such as access to public services, housing affordability, public fiscal impact, and potential displacement. Different growth scenarios can be created quickly to compare impacts. Iterative feedback during scenario creation allowed residents to more fully understand how their communities could change and what the changes could mean to the economy, equity, and environment.

Following selection for the Sustainable Places Project in November 2011, the city councils of Dripping Springs, Elgin, Hutto, and Lockhart appointed independent stakeholder committees, between 15 to 30 individuals, to represent the diverse interests of their communities and to work with the consultant team for the duration of the two-year planning process. The committees had representatives from the city councils, area business leaders, community colleges, school districts, social service providers, churches, and real estate experts. The planning team conducted several initial meetings with the committee to discuss existing conditions and to explore key issues and opportunities, and continued to meet with the group throughout the process.

Each city's stakeholder committee was conceived to include representation reflective of community diversity, including of its traditionally marginalized populations. This of course varies from city to city depending on its demographics. The stakeholders themselves, along with the city staffs, served as the primary front-line outreach to the public. They were equipped them with information, tools, and support to get the word out and invite participation among their networks, including those traditionally underrepresented.

Notably, the two cities with the most diversity, and the largest potentially marginalized populations — Elgin and Lockhart — also have the largest and most diverse stakeholder networks. Lockhart's committee included representation from an African American City Council member, the Hispanic

chair of the Planning and Zoning Commission, a Hispanic member of the Caldwell County Commissioners' Court, the Hispanic Chamber of Commerce, a local real estate developer, and several citizen representatives of the Imagine Lockhart Committee. Interest in serving on the committee was so high in that a pseudo-committee, the "stakeholder-plus" group, was invited to all stakeholder meetings.

In addition to this, two specific channels were used to reach out to diverse and traditionally marginalized constituencies: public schools and the faith community. Representatives of the school districts, including the superintendent of Dripping Springs, were active members of the stakeholder groups. Hutto used the school information network most broadly -- invites to the public events went out to every family in Hutto ISD. Hutto also had active support from two colleges that are developing within the demonstration site.

Hutto, which has the smallest stakeholder group, included faith representation on the stakeholder committee as well as active participation from the leader of the area's basic needs-serving nonprofit. In Elgin, the SPP team worked with the mayor to invite a number of the town's major pastors and their congregations and distribute flyers and invitations at those churches, including those serving the African-American and Hispanic communities.

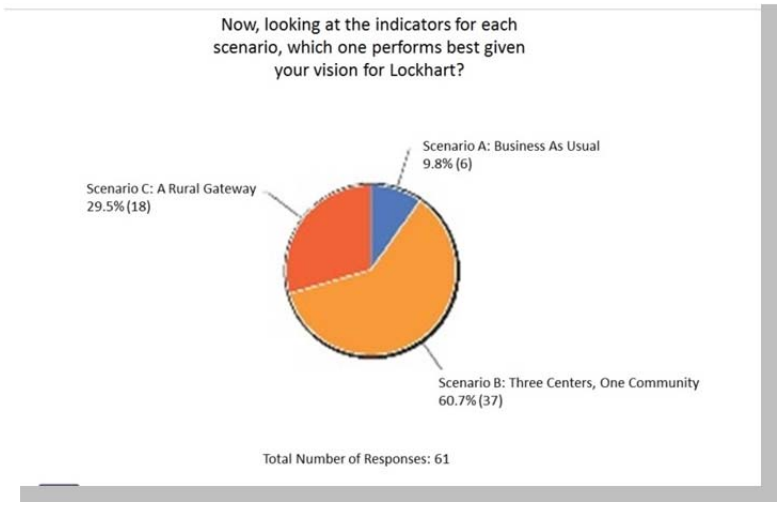
In the later stages of the planning process, the SPP team consulted with the stakeholder committees and city staffs to identify additional ways to encourage participation among under-represented groups during the final stages of the project. Stakeholders used social media, church bulletins, and several other means to increase awareness in their networks. City staff advertised the visioning and charrette workshops during their city festivals; Elgin had a large display during their annual Hogeye Festival that attracted over 20,000 people. It should also be noted here the significant amount of public outreach to low income employees working with the City of Austin demonstration site. An overview of that outreach is contained in Chapter 4 of this report.

One important deliberation that the consortium had concerned the concept of city plans being overly influenced by those outside the city. The SPP approach was sensitive to this by ensuring that stakeholders, and especially property owners, were involved in the planning. The consortium and our city leaders also realized that the activity center objective was to plan for vibrant centers of growth, and the input of all those interested in the development of these centers was welcomed and proved very valuable.

Section 6.2 Activity center public planning process

Summary of the Visioning Workshop approach: With some of the identified opportunities and constraints in identified during the initial stakeholder meetings, the planning convened the public for a Visioning Workshops to describe the kind of place their communities should become for the next generation. The public was asked how they would address each of the livability principles, first by responding to a series of survey questions and then through a small group mapping exercise, where ideas for "what should happen where" were recorded with "Post-It" notes placed directly upon a large aerial map of the Demonstration Site. The evening's questions were duplicated in an online survey that encouraged anonymous comments. The cities averaged over 100 participants.

The next public meeting in each city was a charrette that allowed people to translate their visions into more specific development scenarios for the Demonstration Site. The charrette activity was based on residents' visions of where specific development types should be located. The participants formed groups and each one had a menu of types with jobs and housing details along with example images. The participants formed groups and arranged "chips" that corresponded to the development types on a map of the Demonstration Site. Each group's map was digitized in real time using the analytic software, allowing participants to understand the effect of their decisions on various indicators.



The "Open House":
In February 2013, an open house was conducted to present three scenarios based upon the charrette results. Two of the scenarios were designed to "bracket" the range of ideas expressed by the community at the charrette, while the third was developed as a "baseline" example of "business as usual", reflecting current, dominant development. In addition, specific ideas for the enhancement of public properties were included for consideration by the community. Through a survey conducted at the meeting and subsequently on-line, the public stated preferences and offered further suggestions for the refinement of the planning concepts.

City Council presentations and action:
After the open houses, the planning team worked with city staff, individual property owners, and met twice with the stakeholder committees to make sure the plans reflected the public vision and the needs of the land owners. TxDOT and county governments were also consulted to ensure future implementation ideas were grounded in reality.

Section 6.3 Consortium deliberation
CAPCOG rallied a consortium of local governments, regional planning entities, and community supportive non-profits to guide the Sustainable Places Project. A group of 18 organizations signed memorandums of understanding that committed to the effort. Several consortium partners represented key housing interests: Housing Works, Workforce Solutions, Community Action Network, Capital Area Housing Finance Corporation, University of Texas – School of Architecture. Green Doors, a local non-profit organized to prevent and help end homelessness and poverty housing, worked with the Kirwan Institute and chaired the Opportunity Maps stakeholder committee, which included several of the aforementioned SPP consortium members. The Opportunity Maps committee met five times in 2012 and helped launch the new maps and report to the public. SPP partners not involved in the Opportunity Maps stakeholder group received a preview at a consortium event in January 2013.

The broader SPP consortium discussed Central Texas housing issues regularly during monthly consortium partner meetings held a CAPCOG. The tools and study results were discussed in an effort to expand access to information and affect decision making in our region. The Opportunity Maps are being used as a decision-making tool already. Both Travis County and the Housing Authority of the City of Austin use the indicators as part of their site evaluation process.

Since 2007, opportunity maps have been used in Central Texas to help inform community dialogue about how to best improve access to opportunity and de-concentrate poverty in lower income neighborhoods. A few of the current and proposed uses of the new Central Texas opportunity maps are provided below.

Austin
In 2007, the City of Austin adopted three core values related to affordable housing. These are: deep affordability, long-term affordability, and geographic dispersion. The City had no quantifiable basis for articulating an approach to geographic dispersion. The Central Texas opportunity maps provided the Neighborhood Housing and Community Development department with a quantitative basis for promoting geographic dispersion.

As a consequence, the City of Austin is using the maps as primary scoring criteria for its affordable housing investments. To date, over $56.6M of City of Austin funds have been invested using the opportunity maps to inform the investment process.

Additionally, the City is planning to use the opportunity mapping platform to help guide its work at Colony Park, a 300 acre mixed-income, mixed-use project in far East Austin.

HACA
Many communities across the country have used the opportunity maps to help inform how local public housing authorities operate their housing programs. The Housing Authority of the City of Austin (HACA) is planning to use the opportunity maps in two critical ways: first, share the opportunity maps with their Housing Choice voucher-holders so that these clients are better informed about the differential access to opportunity in the various neighborhoods in which they looking to live; and second, use the opportunity maps to inform their planning process as they begin redevelopment of their over 2,000 public housing apartments.

Travis County
Similar to the City of Austin, Travis County has begun using the opportunity maps to inform their planning process in terms of where and how to invest their social service and affordable housing funds, as well as to inform their analysis of impediments.

CAMPO
CAMPO, as the region's MPO and primary planner of transportation infrastructure investments, is assessing how the opportunity maps can be used to inform their CAMPO 2040 Plan, which is the long term strategic planning document that guides transportation infrastructure investments for the Central Texas region. Their focus is on the nexus of transportation investments and land use and how that affects high and low opportunity neighborhoods.

Stakeholders in the State Analysis of Impediments
A third important function of SPP Consortium Partners was participation as stakeholders in the State of Texas Analysis of Impediments. Stakeholder focus groups included many people from our consortium and helped shape the findings. The state AI has direct influence on all the non-entitlement areas of Central Texas and contained a wealth of public outreach to our communities and housing leaders.

Section 6.4 Decision Making in the Demonstration Sites
The Consortium required communities to pass city council resolutions to plan for the livability principals and enact codes and ordinances in support of the public vision prior to selection as a demonstration site. The plans that were developed include actions that will further fair housing as described in the previous chapters.

Section 6.5 Concurrent Analysis of Impediments in Central Texas
Many of the Sustainable Places Project Consortium Partners participated in concurrent fair housing analysis studies across the region. All five of the Central Texas entitlement communities worked on a jurisdictional AI during the grant period. Along with the TDHCA's effort on the Statewide AI that serves non-entitlement areas, the entire region will be represented by newly developed research, reports, and newly adopted policy.

Section 6.6 Texas Plan for Fair Housing Choice Stakeholder and Public Participation
The Texas Plan for Fair Housing Choice provided stakeholders and residents of all types an extensive opportunity for involvement in the study. Central Texas was well represented in the

feedback, and several sections of the plan were devoted to the Capital Area 10-county region. Public input and resulting recommendations from the state plan informed the analysis of this report, as discussed in section 4.3. The Executive summary of the state plan outlines the outreach conducted:

Residents

- Attending one of the more than 10 community meetings held throughout Texas to discuss barriers to housing choice—193 individuals attended.
- Participating in a statistically significant telephone survey or online or paper survey about housing preferences and choice and experience with housing discrimination—1,179 residents participated. The demographics of the residents who participated in the telephone survey were representative of residents in the state overall.

Other stakeholders

- Participating in an online focus group relevant to their areas of expertise (e.g., affordable housing development, barriers to persons with disabilities)—more than 1,400 comments were received.
- Attending one of the more than 10 community meetings held throughout Texas to discuss barriers to housing choice—193 individuals attended.
- Completing a paper or online stakeholder survey about housing barriers in Texas—593 stakeholders participated. These stakeholders represented a diverse set of industries and interests.
- Every effort was made to accommodate persons with limited English proficiency and special needs. For example, the surveys were available in Spanish and English and in a format accessible to persons with disabilities. Translators were provided at the community meetings when requested, and the meeting locations were accessible.

CHAPTER 7: CONCLUSIONS

Deliberation on multiple levels was a critical component to the success of the SPP. Stakeholder and public buy-in led to the adoption of plans that have great potential for implementation. The SPP market research points to changing trends toward more equitable, walkable development patterns, and the public, city council, and developer support for a new way of planning has been remarkable. Other cities in the region have lined up with an interest in replicating the demonstration efforts.

Beyond the demonstration sites, the vast array of tools produced by the SPP will continue to support sustainable, equitable development and smart planning decisions. The City of Austin, Travis County, and the Housing Authority are leading the effort to incorporate these tools into housing policy decisions. In addition, the City of Austin's Urban Rail planning, which is expected to be up for a bond election in November 2014, was buoyed by the economic and equity analysis derived from the grant's scenario planning tools. Below is a summary of findings and implementation steps from this report and the associated appendices.

Activity Centers and Higher Education

Chapter one identifies educational inaccessibility as one of the twin challenges of the SPP. The encouragement of activity center development, where live-work-play-and learn is possible, should improve education and economic outcomes. The SPP makes a case for regional policy and funding to support activity centers, and demonstrates how local governments can better plan for activity center growth.

The importance of siting affordable housing near transit has become accepted policy in the City of Austin over the last few years. The city council adopted several initiatives in 2007 and 2008, included density bonuses in several districts and the SMART (Safe, Mixed-Income, Accessible, Reasonably-priced, Transit-Oriented) Housing program, which offers fee waivers and fast tracking of developments with reasonable priced residential units. While density and affordability near transit improves accessibility to places of higher education, the direct nexus between education, the local economy, and housing has not frequently entered the public conversation. The SPP report brings the issue to the forefront. The Opportunity Maps Education Index is one tool to help assess and plan for access to education. In addition, Austin Community College has shown leadership on this front. In the last five years, the community college system has purchased property for campus expansion in three sites that are served or are planned for commuter rail service: Highland Mall, Leander, and Elgin, one of the SPP demonstration sites. The Elgin campus opened in August 2013, and a representative of the college served on the Elgin SPP stakeholder committee.

Next Steps Drawn from the Workforce Housing Survey

Integrating planning for land use, housing and transportation

While city plans around the country now routinely call for land use and zoning practices that will enable people to carry out their daily tasks with less driving, planning, housing and transportation functions are typically housed in separate departments within cities with their own cultures and

goals. Increasing housing choices will require integrating land use planning with transportation and housing planning. Specifically, it would mean ensuring that housing for current low income residents is preserved, while new opportunities are also created.

The creation of cross-department teams to implement Imagine Austin's priority programs is a positive step toward more integrated planning. Next steps should include more detailed discussion of how goals of different departments can be better aligned and what processes are required to ensure that conflicts between goals are identified and addressed. For example, preservation of existing rental housing may be seen as a priority for the achievement of housing goals, but as an impediment to urban design goals for transit corridors. Joint planning can identify ways to better integrate preserved buildings into district or corridor plans.

At the regional level, linking the CAMPO planning process to land use planning in member jurisdictions will be an important step in integrating goals. The Sustainable Places Project has recently developed a scenario planning process that can be linked to broader regional goals and could provide a basis for regional conversations about fostering better balance between jobs and housing, and connections to transportation systems.

Align budget processes to leverage benefits

It will also require coordinating the various processes governing the funds for each domain, including capital budgets, federal transportation budget requests, federal housing block grants and the use of development incentives. Planning and budgeting for these areas have historically been disconnected. Subsidies for affordable housing have historically been primarily federally funded, and have followed planning and compliance processes aimed at federal compliance. Federal transportation funds are governed by regional bodies with sometimes competing goals. Nonetheless, some regions have been successful in integrating land use and transportation planning.

Increasingly, competitive federal awards for housing and transportation projects require coordination between transportation and housing. For example, in the competition for federal transportation funding under the "new starts" program, communities that can demonstrate that they are prioritizing transit investment in areas with low income, transit dependent populations, and also have a plan in place and a record of progress toward preservation and development of affordable housing near transit will score best. Current discussions between Austin's Project Connect and Neighborhood Housing and Community Development office are highlighting the need for a housing preservation plan that can be linked to transit goals.

Revise development rules and review processes

Austin is in the process of identifying aspects of its land development code that must be revised in order to achieve the goals of its newly adopted comprehensive plan, Imagine Austin. A key aspect of this revision should be to ensure that rules are designed to integrate goals and that review processes used to implement them should anticipate any conflicts between goals and have clear procedures for working through them in a coordinated way.

In particular, the new land development code will need to facilitate the addition of more types of housing in the areas of town designated for growth, and that are well served by transit. In addition to mixed use multifamily buildings, these might include small lot single family homes, and attached homes like the row houses or "Mueller houses" found in the Mueller neighborhood. It can also facilitate the addition of small, secondary units or "alley flats" behind single family homes, throughout the city. The addition of these housing types was recommended as a strategy for improving access to homeownership in the 2009 study of Austin's housing market commissioned by the City of Austin's Neighborhood Housing and Community Development Office.

Develop metrics to judge proposals and reward progress toward integrated goals—both locally and regionally

Finally, success will be more likely if we agree upon measures of success toward goals and are accountable for our progress toward them. Our region has developed several sets of metrics for benchmarking progress toward city or regional goals, including the Community Action Network's Dashboard, the Central Texas Sustainability Indicators Project and the Opportunity Indices developed as part of the Opportunity Mapping project.

At the project level, the Sustainable Places Project has developed a scenario planning tool useful in understanding some of the consequences of different development decisions. All of these provide useful data to draw upon for development of metrics linking progress on housing, transportation and land use. What is lacking is a conversation about metrics linked to integrated planning processes.

Encourage private sector role in developing solutions

Public resources are limited and creative solutions will require partnerships with private sector actors. For example, employers concerned about the ability of their workers to live near work in other regions have developed initiatives to enable their employees to live closer to work. For example, the University of Chicago's Employer Assisted Housing program enabled many employees to lie within walking distance of work, increasing employee satisfaction and the strength and stability of the neighborhoods surrounding campus. The range of activities employers can pursue can range from small grants to enable employees to purchase a home, to development of rental housing for employees.

Opportunity Mapping Conclusions

The Opportunity Map analysis highlighted four broad issues in the Austin metro area:

1. The Hispanic population is primarily located in low opportunity areas. Since this is the fastest-growing segment of the population, it is imperative to improve Hispanic people's access to opportunity—especially educational opportunity—if the region hopes to grow and maintain a productive workforce in the future.

2. Development in a few neighborhoods just east of Interstate 35 poses a threat to the African American and Hispanic populations currently living there. As wealthier inhabitants move in and home prices rise, the original residents may be forced to move to find more affordable housing. Thus, even if these areas become higher opportunity, the people who need access to that opportunity the most may not benefit.

It is important to note the region's history of segregation when considering the impacts of gentrification on the African American and Hispanic populations. Neighborhoods were segregated by deed restrictions and the official city comprehensive plan in the early 20th century. The effects are still apparent today when looking at the maps of low income and minority concentrated areas, divided by I-35 from more affluent neighborhoods. As rapid growth increases gentrification pressures, the cultural heritage of these neighborhoods must be considered in the displacement/relocation decisions that local governments may face.

3. Affordable housing must be expanded in higher opportunity areas. Currently the vast majority of affordable market rate and subsidized housing is located in low or very low opportunity neighborhoods. The current alignment is derived in part from the past segregation policies mentioned in the last paragraph. Lots with lower property values and segregated neighborhoods were the path of least resistance for the public housing siting decisions of the past. Affordable housing in low opportunity areas means the people who rely on affordable housing programs do not have access to the educational and economic resources they would need to eventually move to market-rate housing. Affordable housing is intended to be a ladder to the middle class, but it cannot work if the upper rungs of the ladder are cut off. The City of Austin and the Housing Authority have instituted several policies in the last decade to address this problem, including the new Imagine Austin Comprehensive Plan.

4. A number of Austin communities fall in the category of low opportunity and are also on the decline, according to the Change Index. Though moving people to opportunity through subsidized affordable housing in high opportunity areas must be part of the strategy for expanding opportunity, it is not sufficient. It is not enough to bring people to opportunity; the real solution is to bring opportunity to people. This can be achieved through place-based investments in low opportunity areas that seek to address the specific challenges of those communities. The static maps in this report in concert with the interactive online maps can serve as a lens through which to analyze future policy ideas. Decision makers can use this geographic information to see how proposed programs may differentially impact certain sectors of the population. Additionally, community organizations can upload their own data to the online maps to highlight resources and mold the maps to fit their needs. Ultimately, the online maps can be as dynamic as their users. The more information and thought that is put into them, the more useful a tool they become.

Beyond these general findings for the region, it is important to consider more specific strategies for individual areas. Neighborhoods are microcosms of complex regional ecosystems, with housing, transportation, employment, and social factors interacting to form the dynamics of opportunity. Each individual neighborhood must maintain its own balance of all of those factors, as well as connect with the wider region. The individual needs of different communities across the region may

require many different approaches to expanding opportunity for residents. The following typologies are based on the opportunity and trend analysis in the report and outline the variety of approaches needed to increase opportunity access in neighborhoods throughout the region. The broader goal of The Geography of Opportunity in Austin and How It Is Changing is to serve as a catalyst for action. Maps, even rich, nuanced maps that spatially describe the dynamics of opportunity, mean little if they are not used. Central Texans need to come together to help translate this data into action. The opportunity maps tell a very compelling story about the stark geographic and racial opportunity divide that exists in the region. This growing divide threatens Central Texas' economic and social vitality. This report needs to be a community call to action — a call to all members of the community who care about the opportunity divide to come together and advocate for an "opportunity agenda" that begins to address the more pernicious effects of this divide. This opportunity agenda needs to enable community development practitioners, businesses, and policy makers to offer products and services and to create policies that increase socio-economic equity for all Central Texans, especially the most vulnerable.

HIGH OPPORTUNITY TRENDING UPWARD

These neighborhoods already have high investment and rich opportunity. Creating housing mobility options in these neighborhoods should be part of the larger strategy to expand opportunity, as well as making critical transit connections into these areas from other parts of the region. Identifying ways to connect residents within and outside the neighborhood to the growing opportunity systems should also be important considerations.

HIGH OPPORTUNITY TRENDING DOWNWARD

In these neighborhoods, examining specific indicators within the opportunity and Change Indexes can help point to the causes of the trend. It may be that the area is simply becoming more diverse and affordable, but it could also be that the area is beginning to decline. Looking specifically within the housing or economic indexes, for example, may reveal that a large employer has moved or that the area has been hit hard by foreclosures. Housing mobility options might be discouraged in neighborhoods like these so that new residents in pursuit of opportunity are not left stranded in a declining area. Identifying what is and is not working in these areas and finding the root causes of struggle early on can stem a downward spiral that would be much harder to reverse in the future.

LOW OPPORTUNITY TRENDING UPWARD

In these neighborhoods, strategies should largely be based around preserving housing affordability as market rates rise. Lease-to-own for qualified income groups and maintaining a stock of affordable rental housing through various subsidy programs are examples of how this goal can be achieved. As opportunity structures develop in these areas, efforts should be made to ensure that

low income residents are able to connect to these opportunities in their effort to mobilize out of poverty.

LOW OPPORTUNITY TRENDING DOWNWARD

Strategic investments should mark the approach in these neighborhoods. Adding affordable housing should be done only after careful, calculated considerations about potential impact on other systems like education, transportation, workforce, environment, and public safety. Improving transit connections to other areas and providing mobility options for some residents are two other potential recommendations, but a collaborative approach should be developed to improving critical opportunity structures in these neighborhoods, such as education, employment assistance, and affordable childcare. Investments in these neighborhoods cannot happen in isolation, but must be coordinated with other strategic investments if they are to be successful.

For any neighborhood or the region as a whole, these maps can serve as a lens through which to analyze future policy ideas. Decision makers can use this geographic information to see how proposed programs may differentially impact certain sectors of the population. For example, if new transit lines are proposed, where will those lines be located relative to those who need transportation access most? Are they connecting populations who lack economic opportunity to major job centers? Or suppose funds are available to build a new school. Can this school be located in a place where it will allow for a student population from a variety of backgrounds and opportunity areas?

The above suggestions are only some of the ways that these maps can be used to facilitate collaboration and inform decision making in the Central Texas region. Ultimately, the online maps can be as dynamic as their users. The more information and thought that is put in to them, the more useful a tool they become.

The Geography of Opportunity in Austin and How It Is Changing

Authors

Frank Fernandez, Executive Director, Green Doors

Matthew Martin, Research Associate, The Kirwan Institute

Hayden Shelby, Graduate Research Assistant, The Kirwan Institute

Yumi Choi, Graduate Research Assistant, The Kirwan Institute

Contributors

David Norris, Senior Researcher, The Kirwan Institute

Matt Wolstoncroft, Web Communications Specialist, The Kirwan Institute

CAPCOG Capital Area Council of Governments

GREEN DOORS

THE OHIO STATE UNIVERSITY KIRWAN INSTITUTE for the Study of Race and Ethnicity

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report and the online mapping tool associated with this work are the product of a collaborative effort between Green Doors and the Kirwan Institute for the Study of Race and Ethnicity, with the help of many Austin area community partners. The current report is a follow-up to a 2007 opportunity mapping effort. In this context, opportunity is defined as a situation or condition that places individuals in a position to be more likely to succeed or excel. We map opportunity by creating indexes of different aspects of opportunity, such as education, economic mobility, and housing, and displaying them through static and online maps. While the earlier 2007 mapping initiative focused only the current levels of opportunity, this new effort incorporates a Change Index to measure how demographics and different indicators of opportunity have shifted over the last decade. By mapping the Opportunity Index, the Change Index, and overlay indicators such as race and affordable housing, it is possible to get fine-grained and nuanced view of the dynamics of multiple aspects of opportunity in the Central Texas region.

The maps in this analysis have highlighted four broad issues in the Austin metro area:

1. The Hispanic population is primarily located in low opportunity areas. Since this is the fastest-growing segment of the population, it is imperative to improve Hispanic people's access to opportunity—especially educational opportunity—if the region hopes to grow and maintain a productive workforce in the future.

2. Development in a few neighborhoods just east of Interstate 35 poses a threat to the African American and Hispanic populations currently living there. As wealthier inhabitants move in and home prices rise, the original residents may be forced to move to find more affordable housing. Thus, even if these areas become higher opportunity, the people who need access to that opportunity the most will not benefit.

3. Affordable housing must be expanded in higher opportunity areas. Currently the vast majority of affordable housing is located in low or very low opportunity neighborhoods, meaning the people who rely on affordable housing programs do not have access to the educational and economic resources they would need to eventually move to market-rate housing. Affordable housing is intended to be a ladder to the middle class, but it cannot work if the upper rungs of the ladder are cut off.

4. A number of Austin communities fall in the category of low opportunity and are also on the decline, according to the Change Index. Though moving people to opportunity through subsidized affordable housing in high opportunity areas must be part of the strategy for expanding opportunity, it is not sufficient. It is not enough to bring people to opportunity; *the real solution is to bring opportunity to people.* This can be achieved through place-based investments in low opportunity areas that seek to address the specific challenges of those communities.

The static maps in this report in concert with the interactive online maps can serve as a lens through which to analyze future policy ideas. Decision makers can use this geographic information to see how proposed programs may differentially impact certain sectors of the population. Additionally, community organizations can upload their own data to the online maps to highlight resources and mold the maps to fit their needs. Ultimately, the online maps can be as dynamic as their users. The more information and thought that is put into them, the more useful a tool they become.


Photo by Spencer Irvine

This report is a follow-up to the 2007 ***Geography of Opportunity: Austin Region***

Working with the non-profit housing organization, Green Doors in Austin, Texas, the Institute completed an opportunity mapping assessment of the Central Texas region. Since the completion of this work, advocates across Austin have utilized the opportunity maps to inform decisions. Recently, the City of Austin's affordable housing development programs utilized the Institute's opportunity maps to assess affordable housing investments in the city.

View report online:
http://kirwaninstitute.osu.edu/the-geography-of-opportunity-austin-texas/

Collaborating to Expand Opportunity in the Central Texas Region

The following report and the online mapping tool associated with this work are the product of a collaborative effort between Green Doors and the Kirwan Institute for the Study of Race and Ethnicity. Further, Green Doors brought the collaboration to critical community partners, including The City of Austin, Travis County, The Housing Authorities of the City of Austin and Travis County, Capital Area Metropolitan Planning Organization (CAMPO), Community Action Network (CAN), and The Capital Area Council of Governments (CAPCOG), whose participation as a Sustainable Communities Initiative (SCI) grantee is part of the development of a regional Fair Housing and Equity Assessment that will be completed using many of the data and findings from this report. The primary purpose of this project is to bring together a multitude of stakeholders to develop a better understanding of equity and neighborhood trends in the region, and to develop steps to expand opportunity for all communities, particularly for the region's most vulnerable populations.

A Regional Approach to Community Planning: Overview and Purpose

Because of the nature of job and housing markets, it is important to work together as a region to understand and plan for future housing and employment. As the economy continues to globalize and places realize the significance of competing as regions, collaborating to address regional challenges and inequities will become an essential part of building competitive advantages. Those regions that coordinate and act collectively in terms of investment and

stewardship of their economic, environmental, and human resources will be those that thrive in the 21st century.

In 2007 the Kirwan Institute partnered with Green Doors to produce the first report on opportunity in the Austin area, entitled *The Geography of Opportunity: Austin Region*. The current report is a follow-up to that work with a slightly different focus. Whereas the 2007 mapping project looked only at the current state of opportunity, this project also examines the dynamics of opportunity in the region by comparing how certain aspects of it have changed over the past several years. This change is analyzed using a number of housing and socioeconomic variables from 2000 to 2010.

The Change Index is a compilation of indicators such as housing vacancy rates, homeownership rates, median income, poverty, and race. While some of the indicators are the same, the Change Index is fundamentally different from the Opportunity Index because different levels of change cannot be easily categorized as good or bad. For example, a low opportunity tract may be represented by high development in the Change Index because it has decreasing vacancy rates, poverty rates and non-White population, while also having increasing educational attainment and median income. This combination of indicators could mean that the area is undergoing a period of revitalization; however, it also indicates that the cost of living in this area is increasing, and original residents may soon be pushed out. None of this means that the high rate of change is good or bad; it just means that local agencies may need to act to ensure that the neighborhood retains affordable housing and accessibility to other opportunities for residents.

Of course, the current mapping project also includes static opportunity maps similar to those done in 2007. By comparing the current state of opportunity in the region with the amounts of change indicated by the Change Index, Green Doors and its partners can get a full picture of where the city is and where it is likely headed. By knowing which parts of the city are thriving, which are struggling, and which are undergoing demographic changes, area leaders can anticipate the needs of the community and help expand access to opportunity for all people in the Austin metropolitan region.

Change and Opportunity: Why it Matters and What it Means for the Central Texas Region

How Opportunity is Defined in This Study

Opportunity, in the context of this project, is defined as a situation or condition that places individuals in a position to be more likely to succeed or excel. Opportunity has many dimensions, ranging from educational quality to social status to access to transportation. Because of the multi-faceted nature of opportunity, it is not enough to map a single indicator. By using an index that includes many indicators of opportunity, it is possible to identify places where many factors that can limit or expand a person's social mobility or potential are coinciding to compound positive or negative effects.

The Opportunity Index is calculated by normalizing different indicators to give each an equal weight. The result is a z-score for each indicator. A z-score of greater than zero means that the indicator is higher than the overall area mean for Austin, and a z-score of less than zero means it is lower. To get a category z-score—for educational opportunity, for example—the z-scores of all indicators in that category are averaged. The comprehensive opportunity score is an average of the category scores.

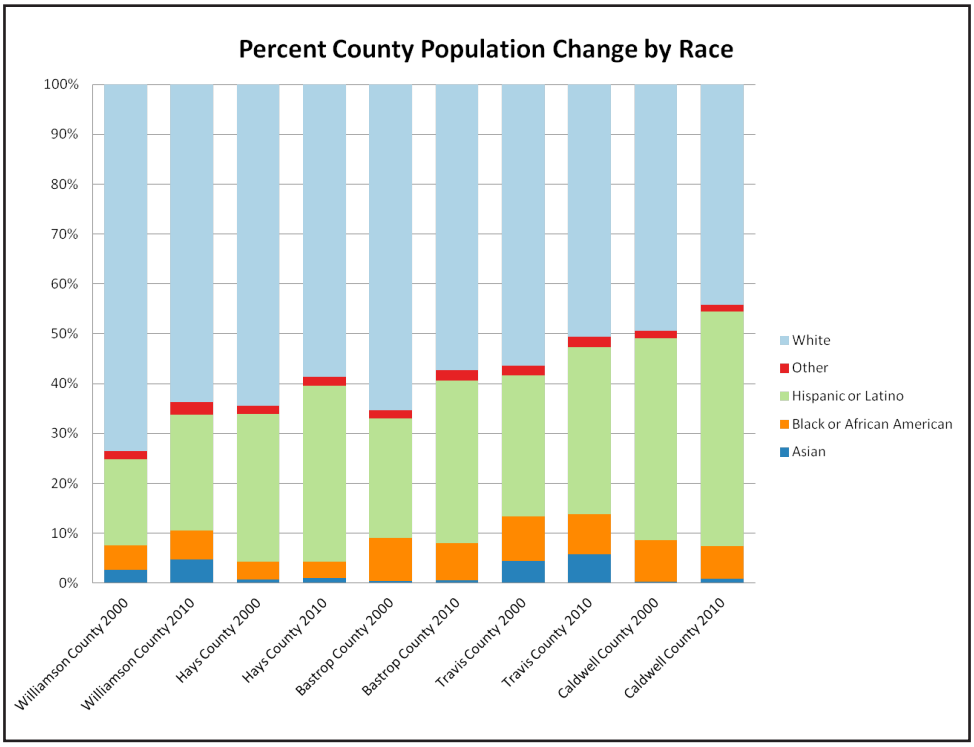
It is important to note that the Opportunity Index scores are a relative measure, and they compare neighborhoods only to other neighborhoods in the region. A low opportunity neighborhood in Austin could be considered moderate or even high opportunity in another region. Just because an area has a low z-score in the index, that does not mean the neighborhood has no assets; it just ranks low on the indicators compared to other places in the Austin metropolitan area. This is why it is important for local communities to interact with the maps and use additional layers of data to plan for people and places. Community members may be able to add valuable elements to the maps in order to highlight attributes of certain areas of the city, which can aid in development.

In addition to the comprehensive and category-specific opportunity mapping, this project also uses overlay maps to focus on the distribution of specific aspects of demographic or environmental factors throughout the metropolitan region. Examples include race, subsidized housing, and toxic facilities, among others. Using these additional overlays, we can see how features of the population or built environment coincide with high or low opportunity.

Why Opportunity Is Important for the Central Texas region

Like many regions in the South and Southwest, Austin has undergone a demographic shift in recent decades, with Hispanics now making up a large proportion of the population. From 2000 to 2010 the Hispanic population of the Austin metropolitan area grew from 26.2% to 31.4% of the

overall population. In the central city the numbers are even higher, going from 30.6% in 2000 to 35.1% in 2010. The growth of the Hispanic population is clearly illustrated in the chart below which shows the change in population proportions by race for each county in the Austin metropolitan area for both census years. As this report will show, this growing Hispanic population tends to be concentrated in low opportunity areas, both in the central city and in the suburbs. This shows a lack of equity with regard to access in the region, and that social inequity can have profound economic consequences. With a large percentage of the youth population living and growing up in low opportunity areas, it is imperative that the Central Texas region expand opportunity in order to create a healthy and educated workforce for the future. Having such skilled workers in the area is critical for central Texas in order to continue to pursue economic development and keep pace with the global economy in the years to come.



Other important demographic changes in Austin involve the migration of African Americans out of the central city and the movement of Whites in. From 2000 to 2010 the African American and White populations shrank as a percentage of the total metropolitan population; however, they grew in absolute terms. This is because of the disproportionate growth of the Hispanic population. What is interesting is where this growth of the African American and White populations is taking place in the region. Even though Whites shrank as a proportion of the total metropolitan population, they grew as a percentage of the central city, from 53.0% in 2000 to 54.7% in 2010. Over 20% of the White population growth in that ten year span occurred in the central city. By comparison, the African American central city population actually shrank in the same time period from 63,403 to 60,760, despite the fact that the overall metropolitan population grew by over 25,000. This means that African Americans are increasingly moving out to the suburbs while the White population is becoming more urban.

	Austin Metro 2000	Austin Metro 2010	Austin City 2000	Austin City 2010
Asian	43,222	80,980	30,960	49,159
Black or African American	95,078	120,510	63,403	60,760
Hispanic or Latino	327,760	538,313	201,040	277,707
Other	25,544	13,747	38,012	17,493
White	758,144	938,474	347,533	385,271

This trend could mean that African Americans new to the region are wealthier and are choosing to move to more affluent suburbs. However, the maps tell us that the African American population is moving out to low-opportunity suburbs. At the same time, many central city neighborhoods with a growing White population represent high development in the Change Index, suggesting that home values are rising, resulting in original residents moving further out to find affordable housing.

This is a prime example of how these maps can be used to identify patterns in the region. While the statistics tell the general trends in the area, with maps we can see exactly where and how the changes are taking place. With this information, local leaders can act to prevent the displacement of African Americans from central city neighborhoods and make efforts to expand education, health, and economic resources to the growing Hispanic population. Access to the detailed data of the online maps allows for a more nuanced analysis of the whole region.

The Changing Geography of Opportunity in Austin

Previous Austin Opportunity Mapping Initiative

The original mapping performed in 2007 revealed a striking division of opportunity along Interstate 35. Just to the west of the interstate lay the census block groups of the highest opportunity by nearly every category, whereas the area to the east contained the majority of the low opportunity neighborhoods in the region. These areas of low opportunity contained much higher concentrations of Hispanics and African Americans. Conversely, the high opportunity areas of the western portion of the central city and near suburbs had higher concentrations of Whites. This segregation was particularly pronounced among children; two-thirds of Hispanics and African American children were living in areas of low or very low opportunity, while less than twenty percent were living in high opportunity areas, half the rate of White children. At that time, there was also scarcely any subsidized housing in high opportunity tracts, providing little chance for people of low income to avail themselves of other amenities.

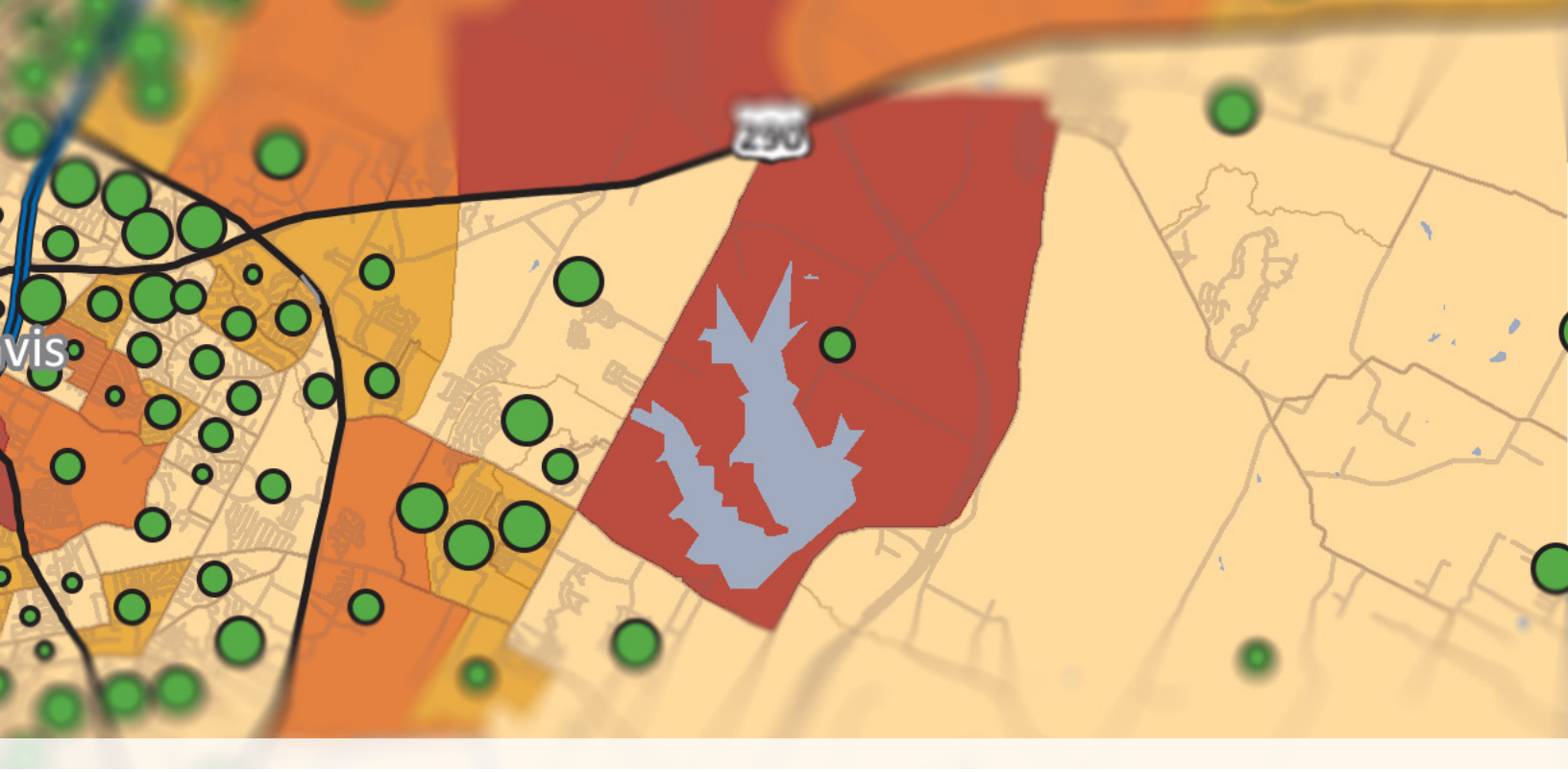
Comprehensive Opportunity Map

There continues to be an East-West divide in opportunity throughout the city and metro area. As of 2010, most of the highest opportunity areas are found west of Interstate 35. The western portion of Travis County has the largest amount of very high opportunity areas. Since 2000, the areas of very high opportunity have spread to the outer suburbs in Travis, Hays, and Williamson Counties. The western central city and inner-ring suburbs remain high or very high opportunity, except for a few large block groups at the very western edge of Travis County. In contrast to 2000, there are a few neighborhoods just east of Interstate 35 that have become high or very high opportunity. A notable outlier, the Mckinney Planning Area, part of the Southeast Combined NPA, is an island of high and very high opportunity in an eastern inner ring suburb between Interstates 35 and 183 in Travis County near Mckinney Falls State Park. This area has a few large IT employers driving up high scores in the economic category, though it still ranks low in education. Areas of low opportunity are predominantly in the eastern part of the city and metropolitan area, especially in eastern Travis County and the majority of Bastrop and Lockhart Counties.

Education Index

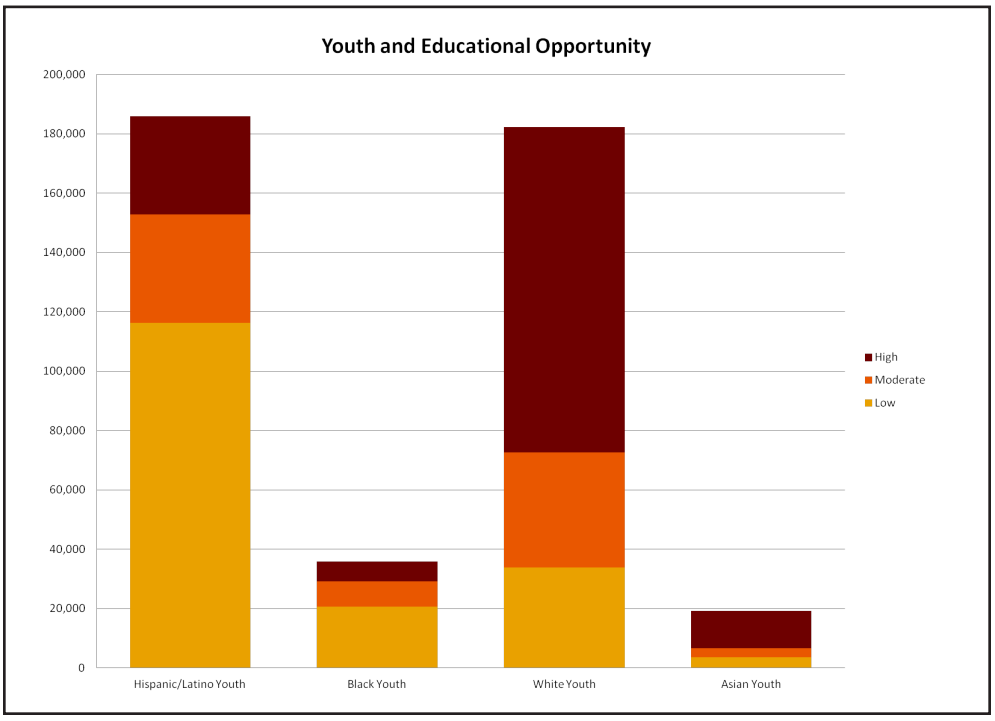
Education opportunity generally reflects the patterns of the comprehensive opportunity map, with a few notable exceptions. The island of high opportunity in the eastern inner-ring suburb between Interstate 35 and US 183 scores very low on education. In the eastern outer suburbs that are low opportunity, the education indicators show that these areas outperform in education relative to other measures of opportunity.

The majority of high or very high educational opportunity areas are located in the western portion of both the region and the city of Austin. In the city, educational opportunity overlaps with the comprehensive opportunity level of the area. Though nearly all areas of western Travis and Hays



Counties score high on the education index, the outer suburbs and more rural areas tend to rank slightly lower on adult educational attainment compared to those that are closer to the central city. The same holds true for the high or very high educational opportunity areas on the outer edges of Williamson County. Despite the fact that the adults in the area generally have lower levels of education than some of their urban peers, the school systems are performing well.

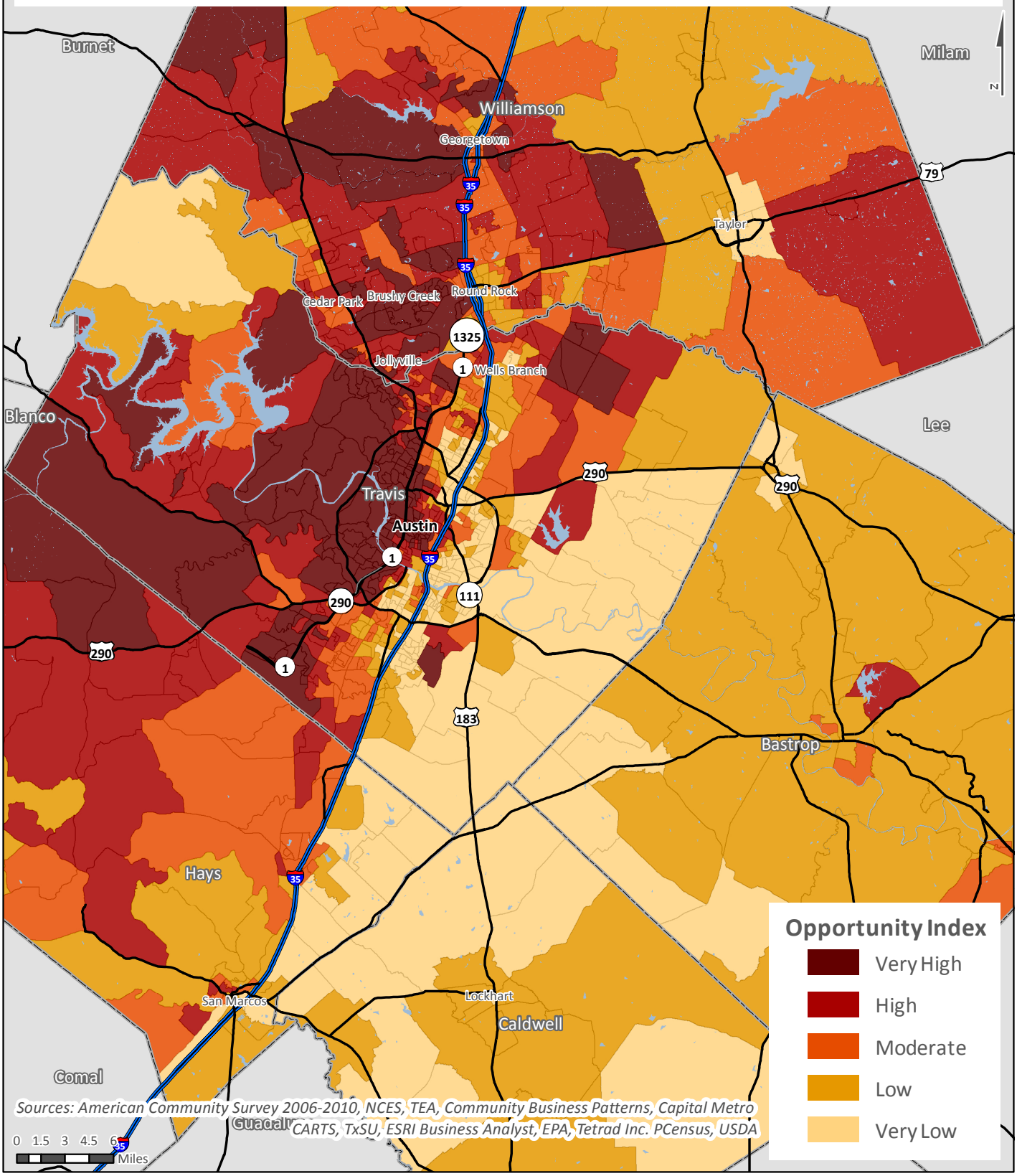
While the western portion of Travis County contains the bulk of the very high educational opportunity areas in the region, the eastern part of the county contains most of the very low block groups. It is notable that Travis County has very few areas of moderate educational opportunity; it is a county of extremes in this sense, and the highest areas are home to a mostly White population, while the lowest areas are inhabited by predominantly African American and Hispanic children. Map 2A illustrates the geographic relationship between children by race and educational opportunity.



Map 1: Austin Metro Opportunity Index

Kirwan Institute
Many Differences **One Destiny**

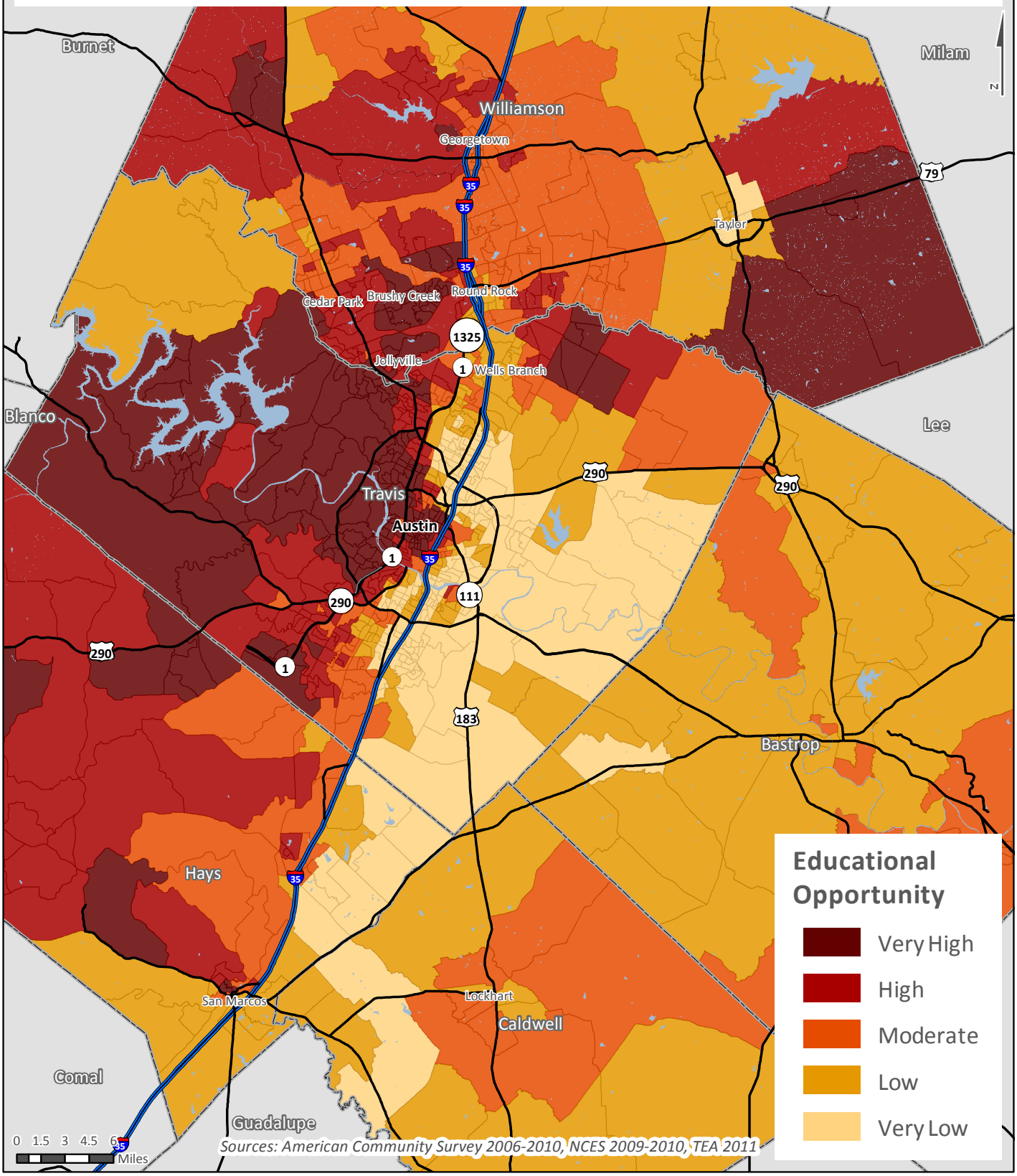
Description: This map represents opportunity environments in the region. The opportunity index is based on Education data, Economics and Mobility data, and Housing and Environment data. Together the data illustrate areas in the region that afford more or less opportunity for residents to lead successful lives.



Map 2: Austin Metro Education Index

Kirwan Institute
Many Differences **One Destiny**

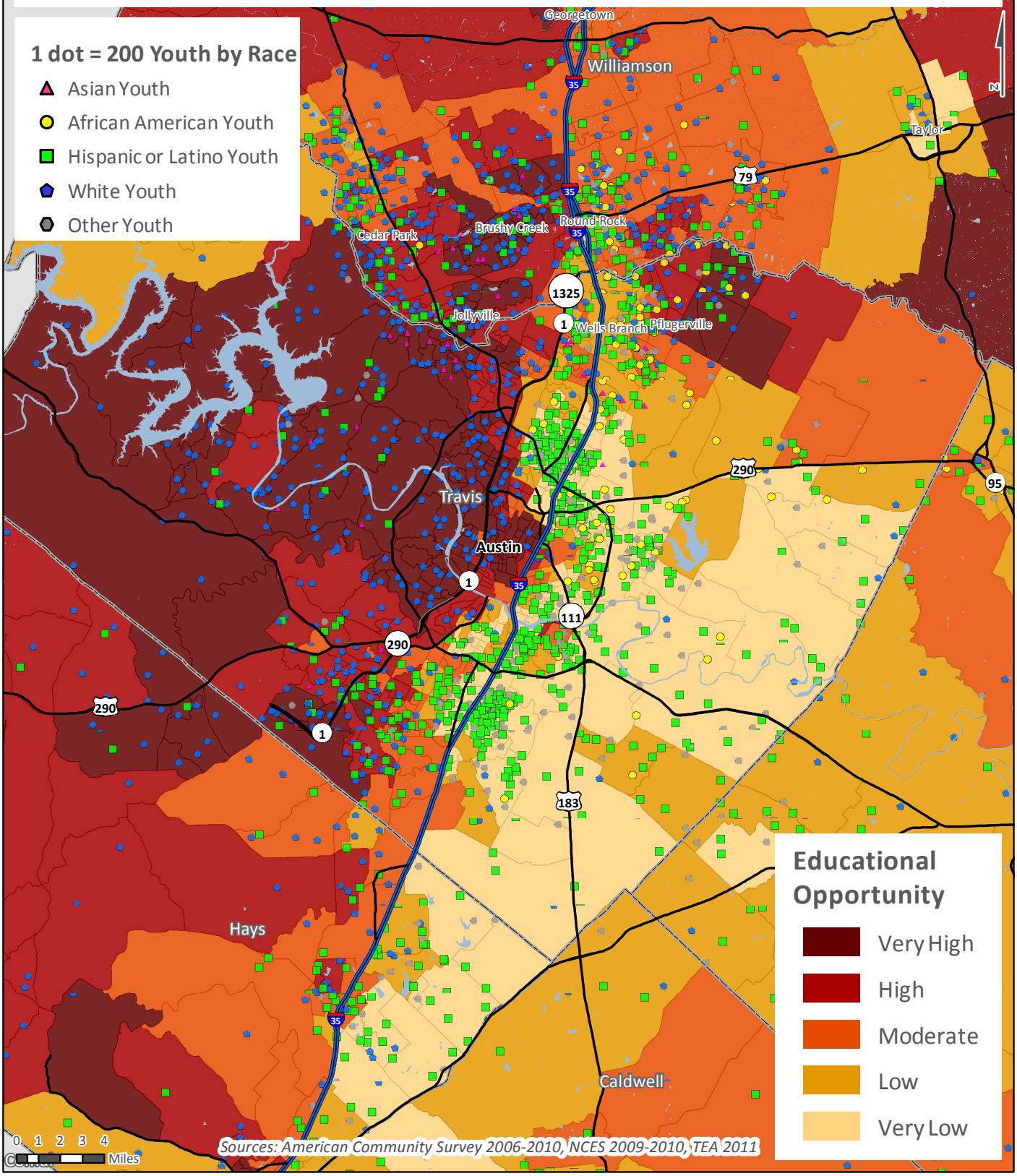
Description: This map represents educational opportunity in the region. The index is based on adult educational attainment, student poverty, student/teacher ratio, reading and math proficiency, graduation rate, and school enrollment rate. Together the data illustrate areas in the region that afford more or less educational opportunity.



Map 2a: Austin Metro Education Index and Youth

Kirwan Institute
Many Differences **One Destiny**

Description: This map represents educational opportunity in the region. The index is based on adult educational attainment, student poverty, student/teacher ratio, reading and math proficiency, graduation rate, and school enrollment rate. Together the data illustrate areas in the region that afford more or less educational opportunity.



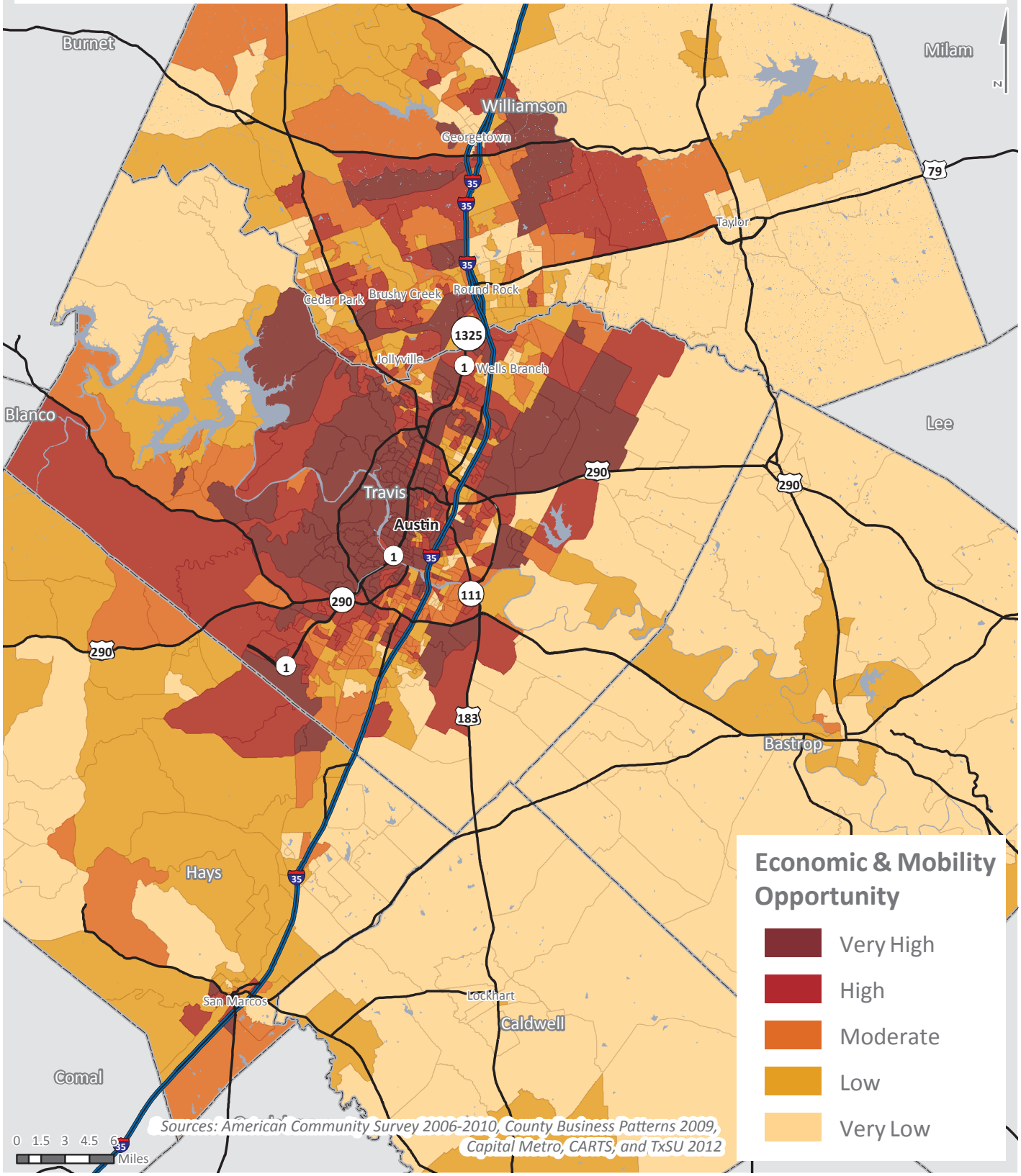
Austin Metro Economic and Mobility Index and Housing and Environment Opportunity

Housing and environment opportunity levels are nearly the inverse of economic and mobility opportunity in some parts of the region. This is because areas of high economic and mobility tend to be urban areas with high transit access, lower commute times, and more jobs. However, these same areas, being close to the urban core, also have higher home values, higher crime rates, and greater proximity to brownfield and toxic sites. The areas of central Austin that are low on economic and mobility opportunity are so because, despite having good transit access and relative proximity to jobs, they have very low median household incomes and very high unemployment rates. The majority of the outermost parts of the region score significantly higher on the Housing and Environment Index than they do on the Economic and Mobility Index because they have lower crime and vacancy rates and are farther from environmental hazards. On the other hand, they may also lack transit access and proximity to jobs.

Map 3: Austin Metro Economic & Mobility Index

Kirwan Institute
Many Differences **One Destiny**

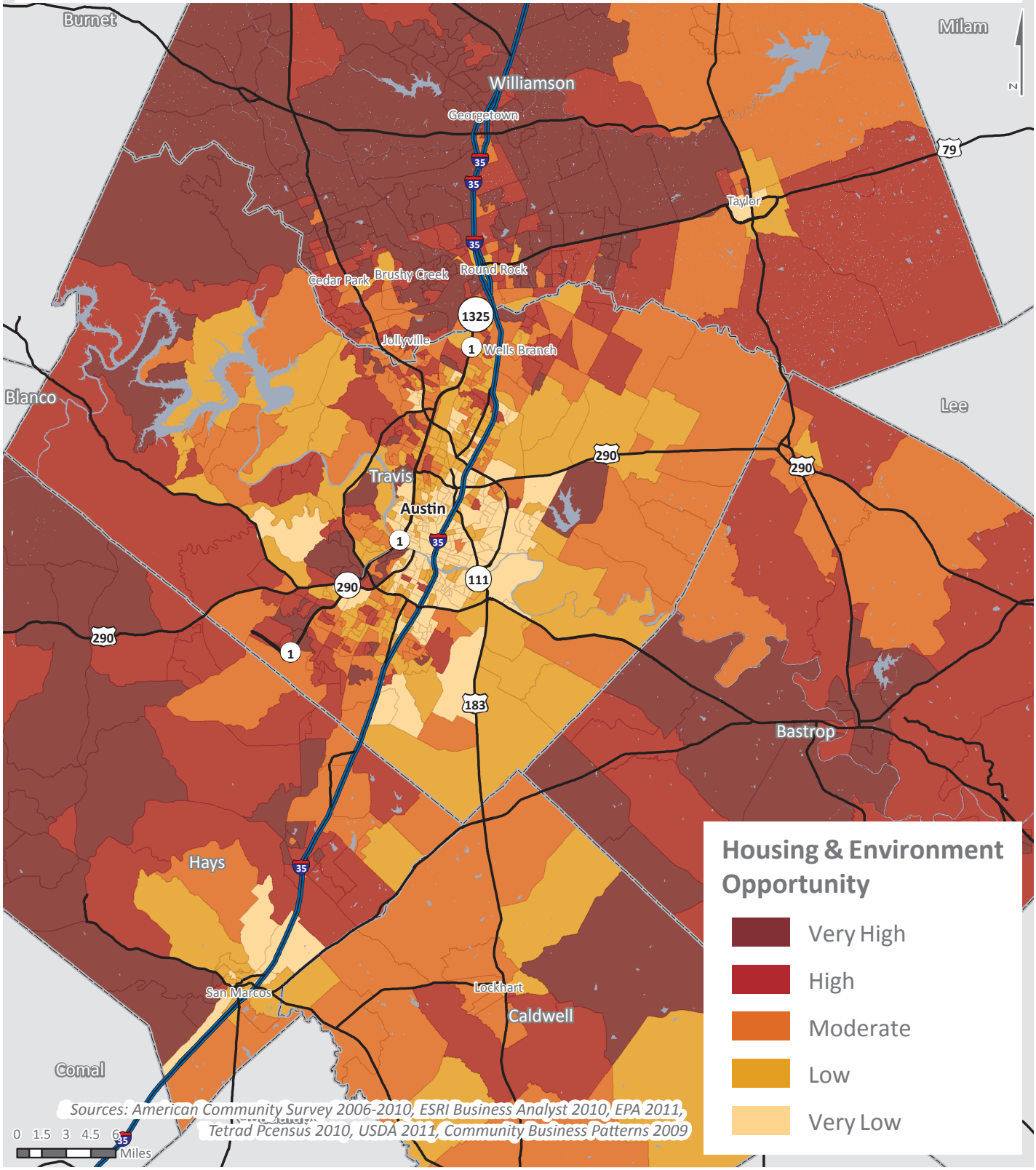
Description: This map represents economic and transportation opportunity in the region. The index is based on unemployment rate, proximity to jobs, mean commute time, transit access, and median household income. Together the data illustrate areas in the region that afford more or less economic and mobility opportunity.



Map 4: Austin Metro Housing and Environment Index

Kirwan Institute
Many Differences **One Destiny**

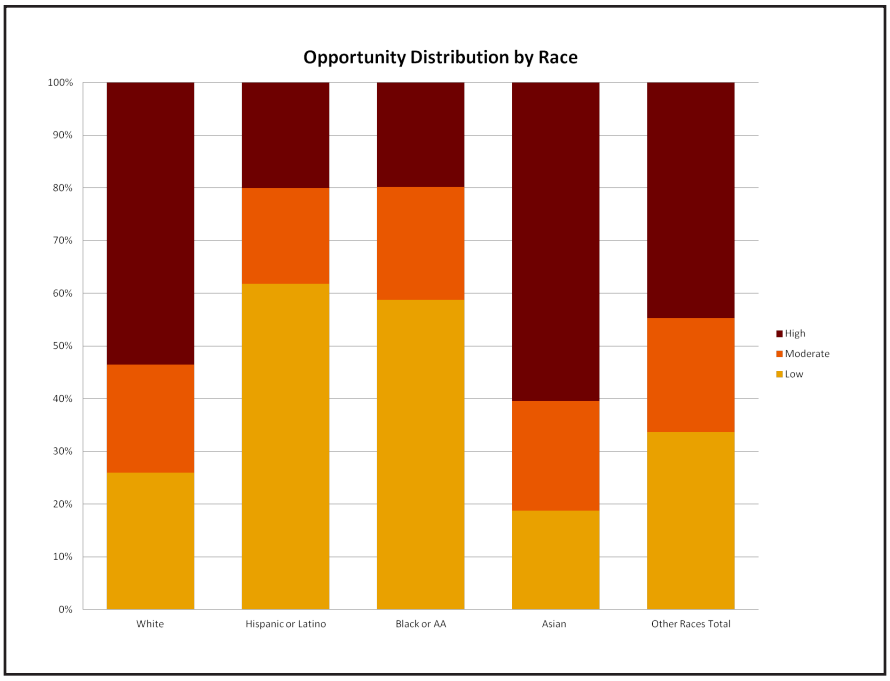
Description: This map represents housing and environment opportunity in the region. The index is based on poverty, vacancy, proximity to parks, toxic sites and brownfields, crime, food access, health care facility access, home ownership, and median home value. Together the data illustrate areas in the region that afford more or less housing and environmental opportunity.

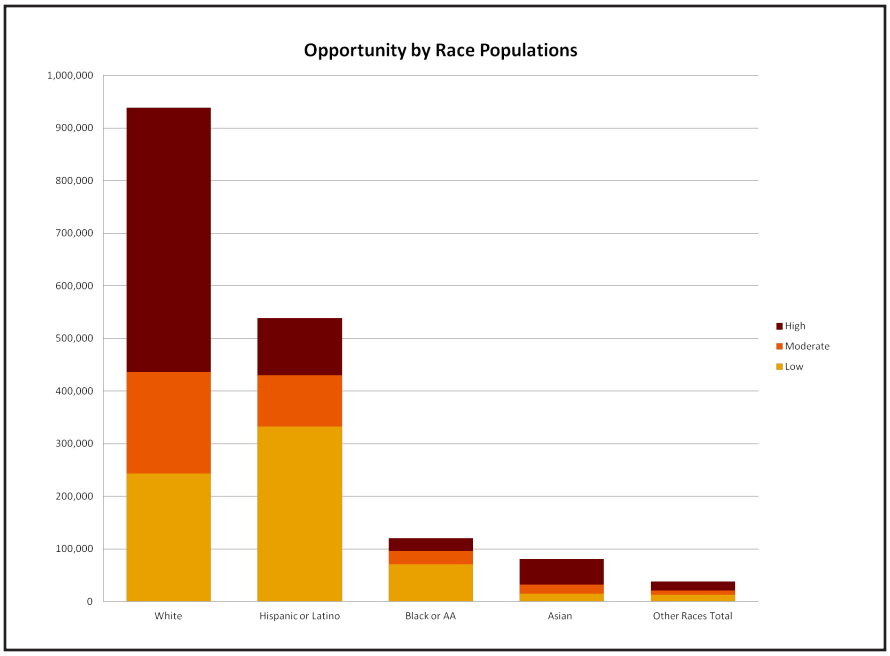


Opportunity and Race

The Central Texas region, and particularly the City of Austin, shows racial segregation along opportunity lines. While the bulk of the White and Asian populations live in high opportunity areas in the western portion of the city and inner suburbs, the majority of the Hispanic and African American populations inhabit the lower opportunity areas of the region.

Geographically, the White population dominates the western portion of Travis County and the outer edges of the entire region. The African American population, on the other hand, is highly concentrated in the eastern portion of the central city. The Hispanic population exists mostly in the eastern half of the region, with high concentrations along Interstate 35 and pockets of high density in Lockhart, Taylor, San Marcos, Kyle, and Leander. The following charts and maps illustrate the geographic relationship between population by race and comprehensive opportunity.

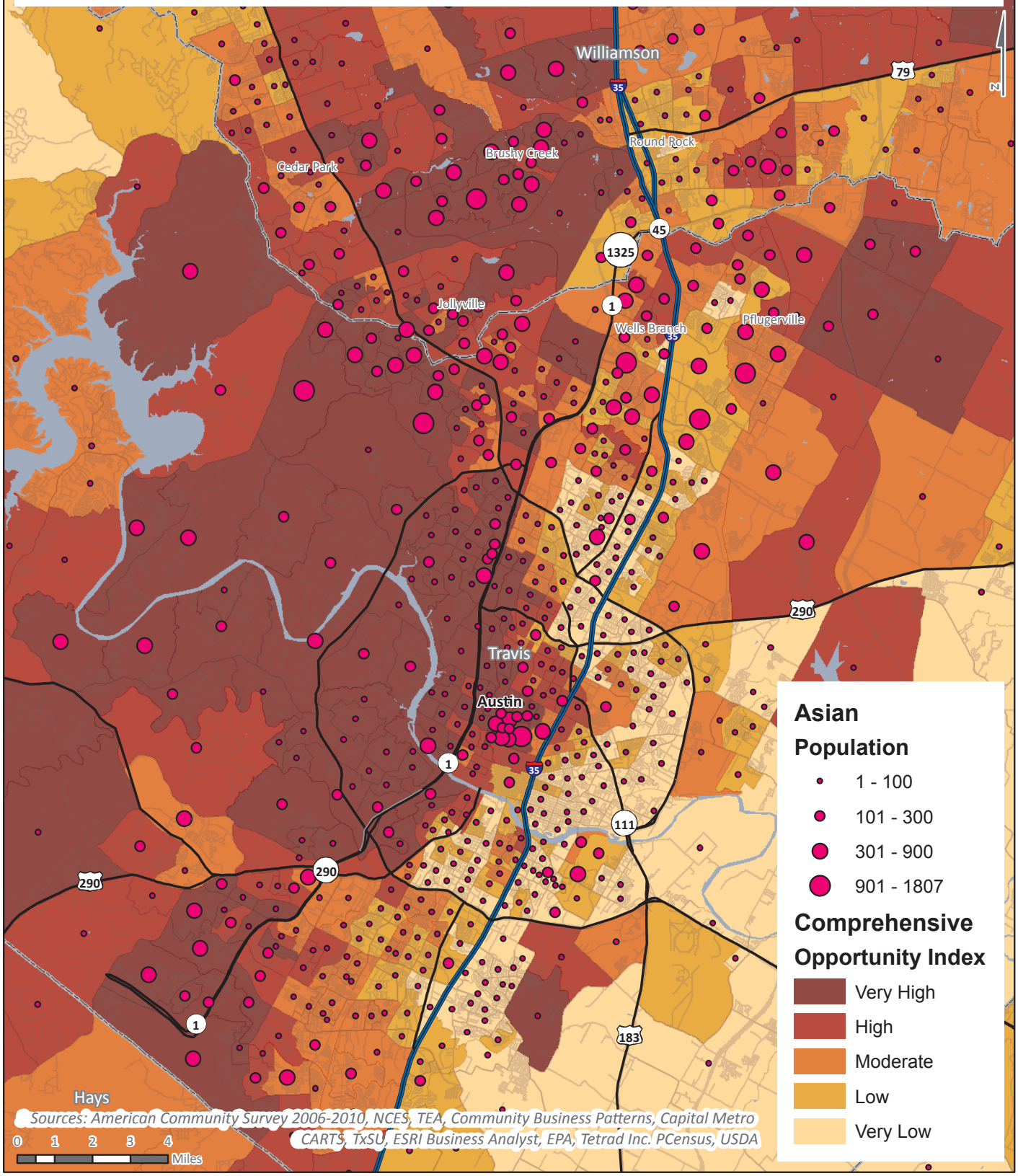




Map 5: Austin Metro Opportunity and Asians

Kirwan Institute
Many Differences **One Destiny**

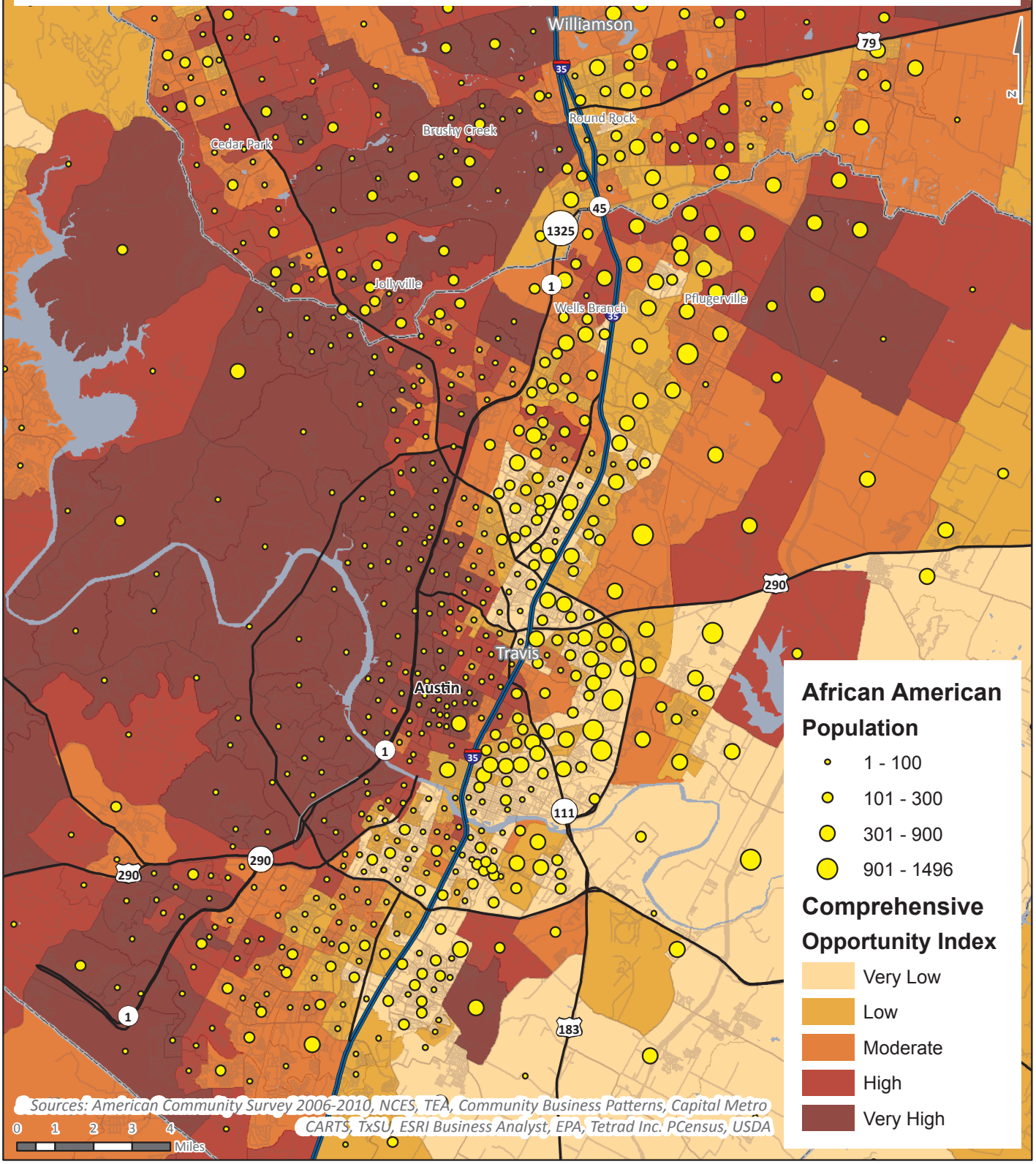
Description: This map represents opportunity environments and the Asian population in the region. The opportunity index is based on Education data, Economics and Mobility data, and Housing and Environment data. Together the data illustrate the geographic relationship between regional opportunity and the Asian population.



Map 6: Austin Metro Opportunity and African Americans

Kirwan Institute
Many Differences **One Destiny**

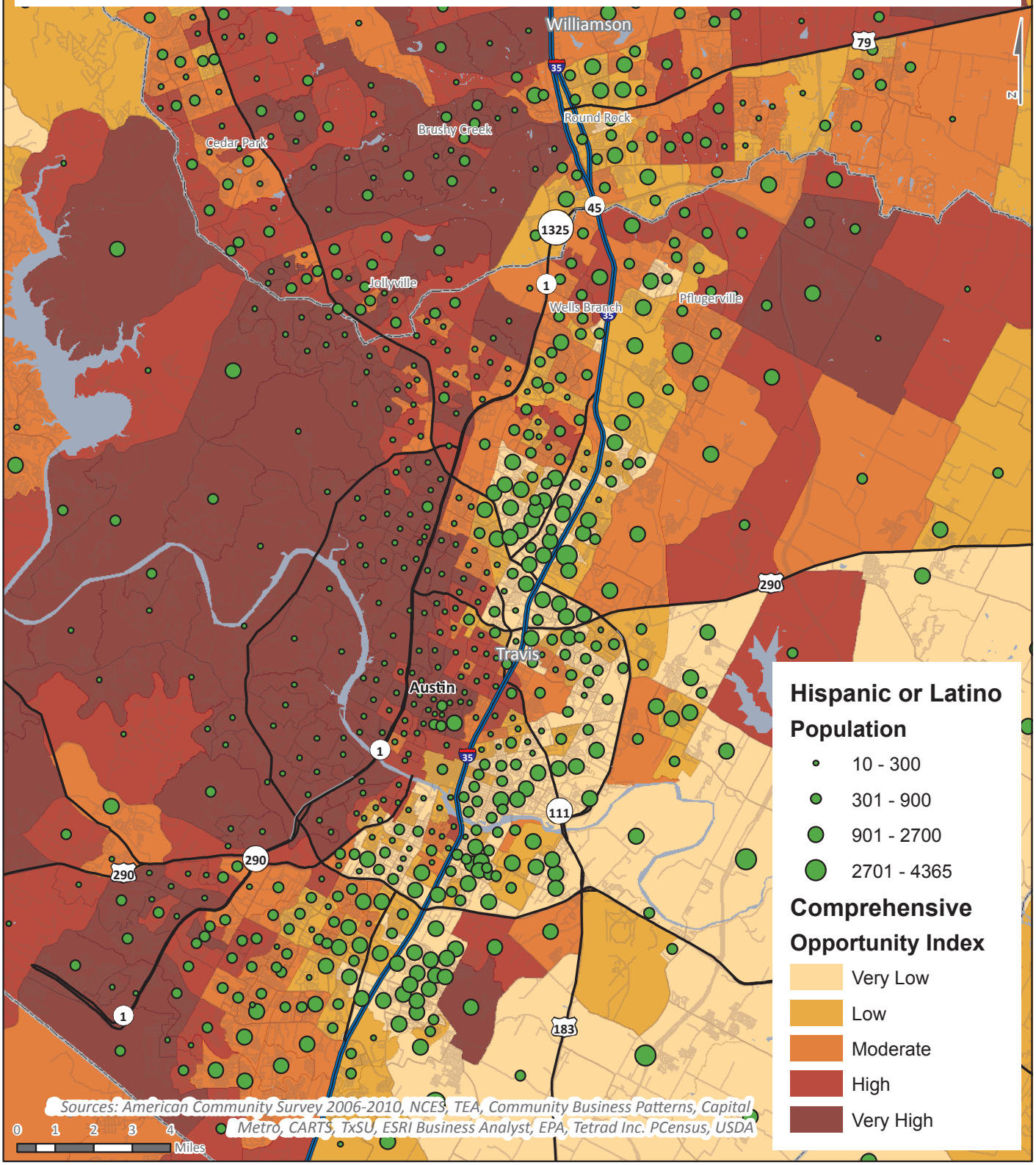
Description: This map represents opportunity environments and African Americans in the region. The opportunity index is based on Education data, Economics and Mobility data, and Housing and Environment data. Together the data illustrate the geographic relationship between regional opportunity and the African American population.



Map 7: Austin Metro Opportunity and Hispanics or Latinos

Kirwan Institute
Many Differences **One Destiny**

Description: This map represents opportunity environments and Hispanics or Latinos in the region. The index is based on Education data, Economics and Mobility data, and Housing and Environment data. Together the data illustrate the geographic relationship between regional opportunity and the Hispanic or Latino population.

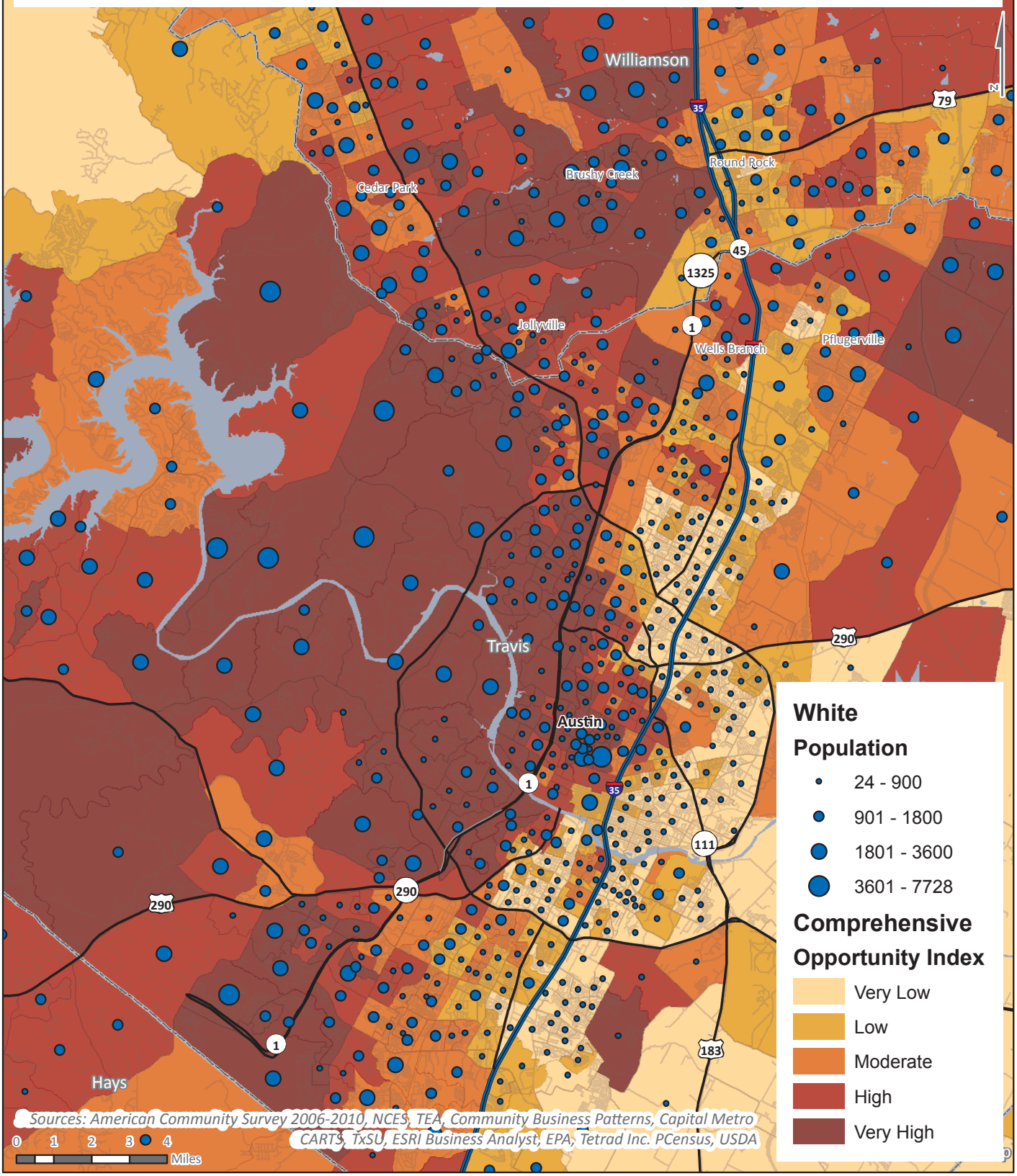


Sources: American Community Survey 2006-2010, NCES, TEA, Community Business Patterns, Capital Metro, CARTS, TxSU, ESRI Business Analyst, EPA, Tetrad Inc. PCensus, USDA

Map 8: Austin Metro Opportunity and Whites

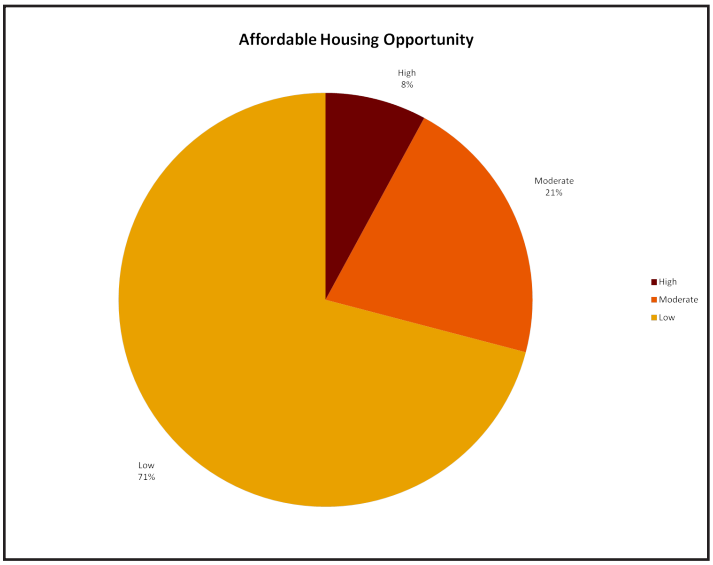
Kirwan Institute
Many Differences **One Destiny**

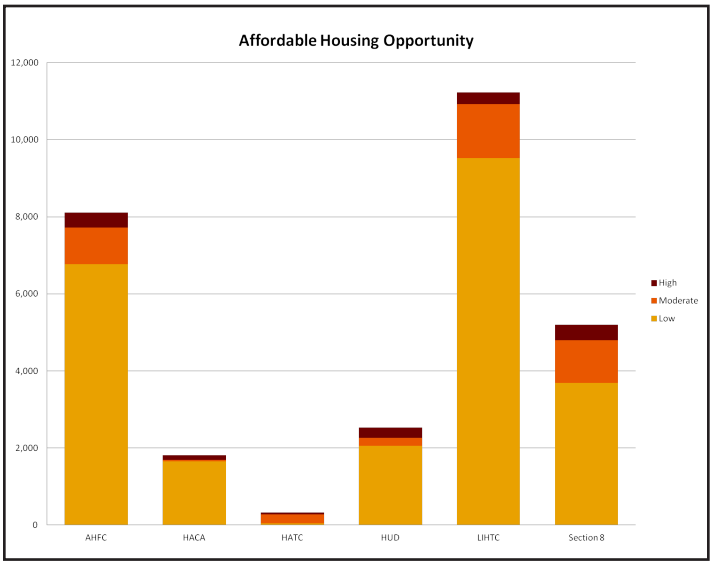
Description: This map represents opportunity environments and the White population in the region. The opportunity index is based on Education data, Economics and Mobility data, and Housing and Environment data. Together the data illustrate the geographic relationship between regional opportunity and the White population.

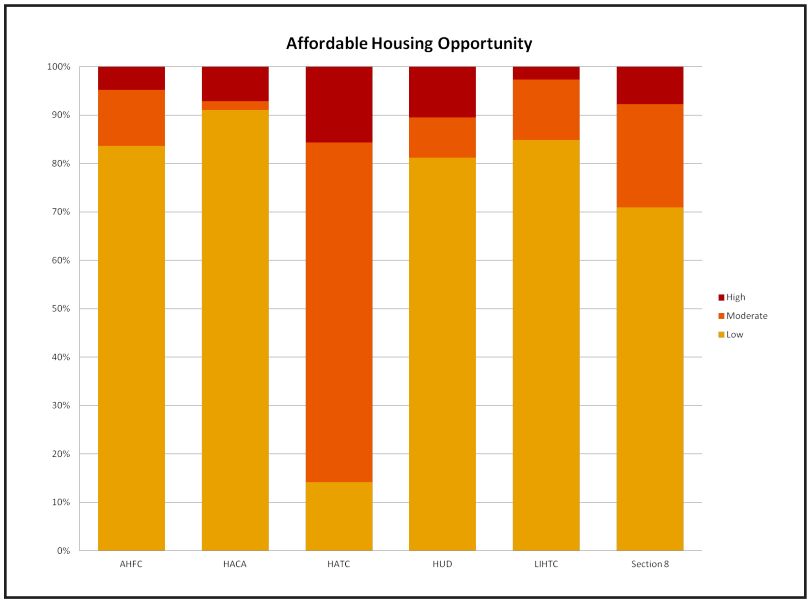


Opportunity and Affordable Housing

There are 23,437 units of subsidized affordable housing in the Central Texas region. The vast majority of these units (79%) are located in low or very low opportunity areas. By contrast, only 8% are located in high or very high opportunity areas. The largest source of funding for affordable housing in the region is the Low-Income Housing Tax Credit (LIHTC) program, which funds 11,225 units. Of these units, 85% are located in low or very low opportunity neighborhoods. HATC properties have the largest proportion located in moderate to very high opportunity areas; however, they also make up the smallest number of units, at just 325. The type with the next highest proportion located in moderate or high areas is Section 8 vouchers, demonstrating that when given a choice of location, residents choose to locate in higher opportunity areas, if possible. However, the total percentage of Section 8 vouchers used in low opportunity areas still outnumbers those in high opportunity areas by a factor of over nine to one, signifying a need for more locations accepting vouchers in high opportunity areas.



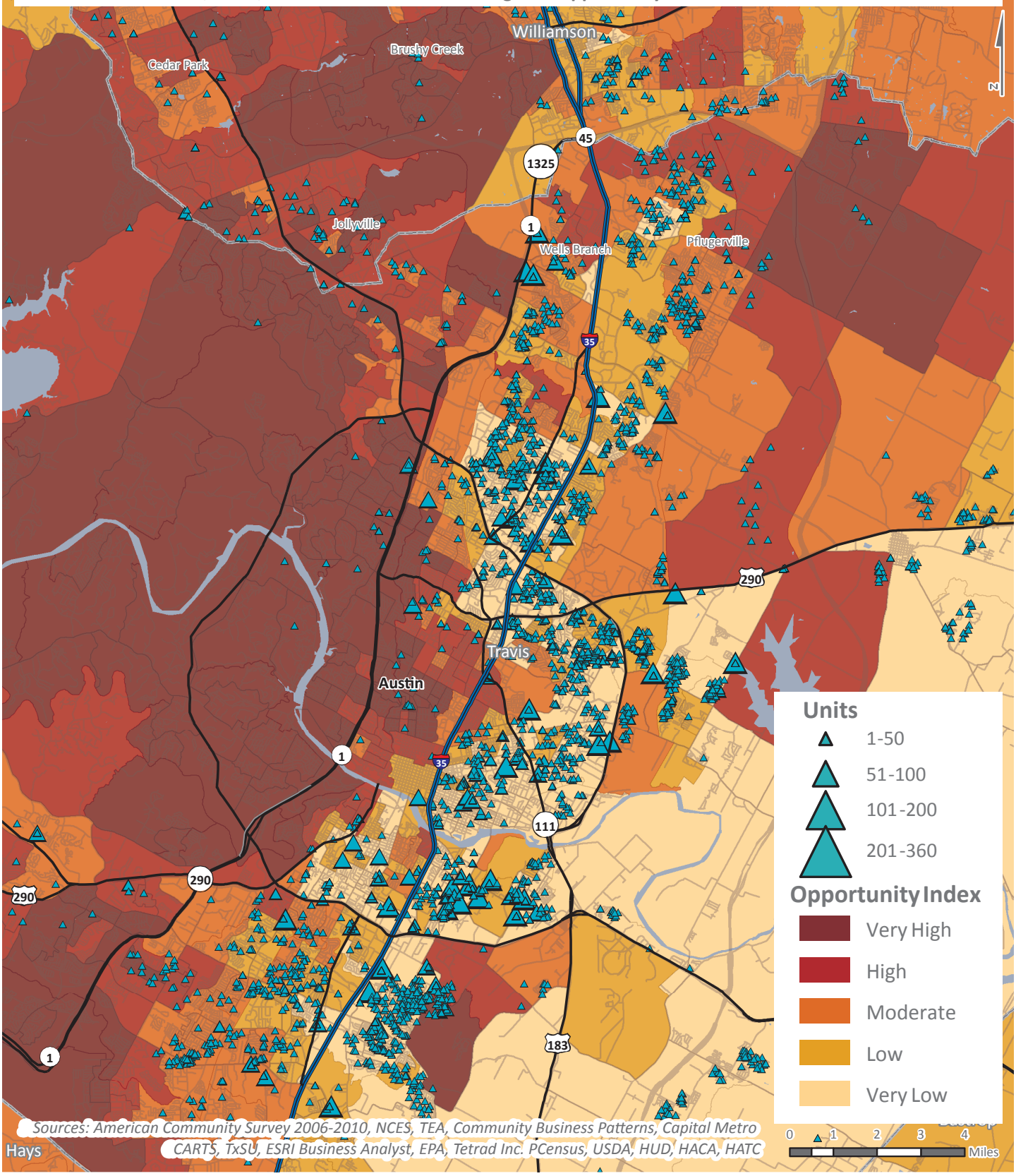




Map 9: Austin Metro Opportunity and Subsidized Housing

Kirwan Institute
Many Differences One Destiny

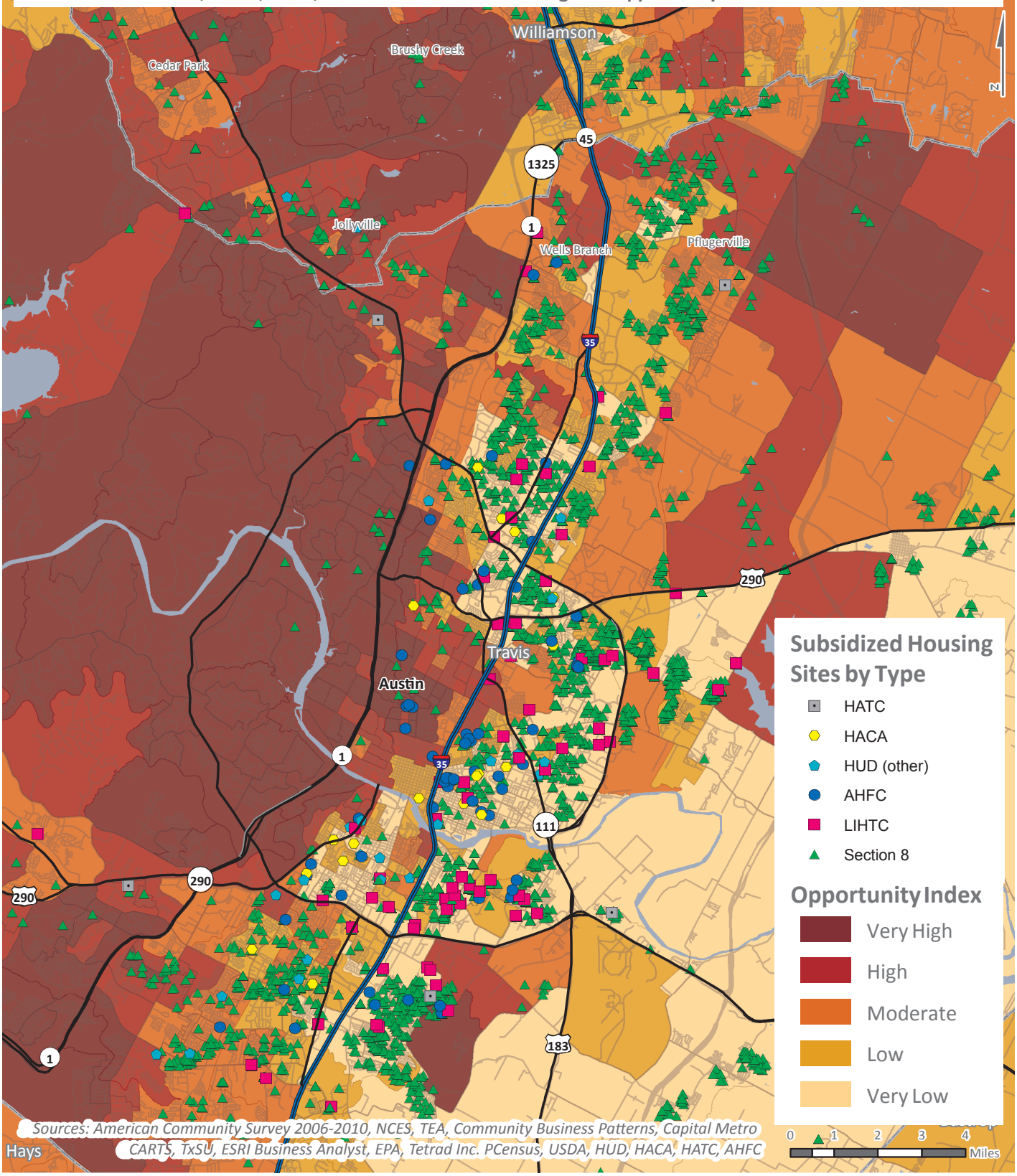
Description: This map illustrates opportunity and subsidized housing in the region. The map shows affordable and subsidized HACA, HATC, HUD locations relative to regional opportunity.



Map 10: Austin Metro Opportunity and Subsidized Housing by Type

Kirwan Institute
Many Differences **One Destiny**

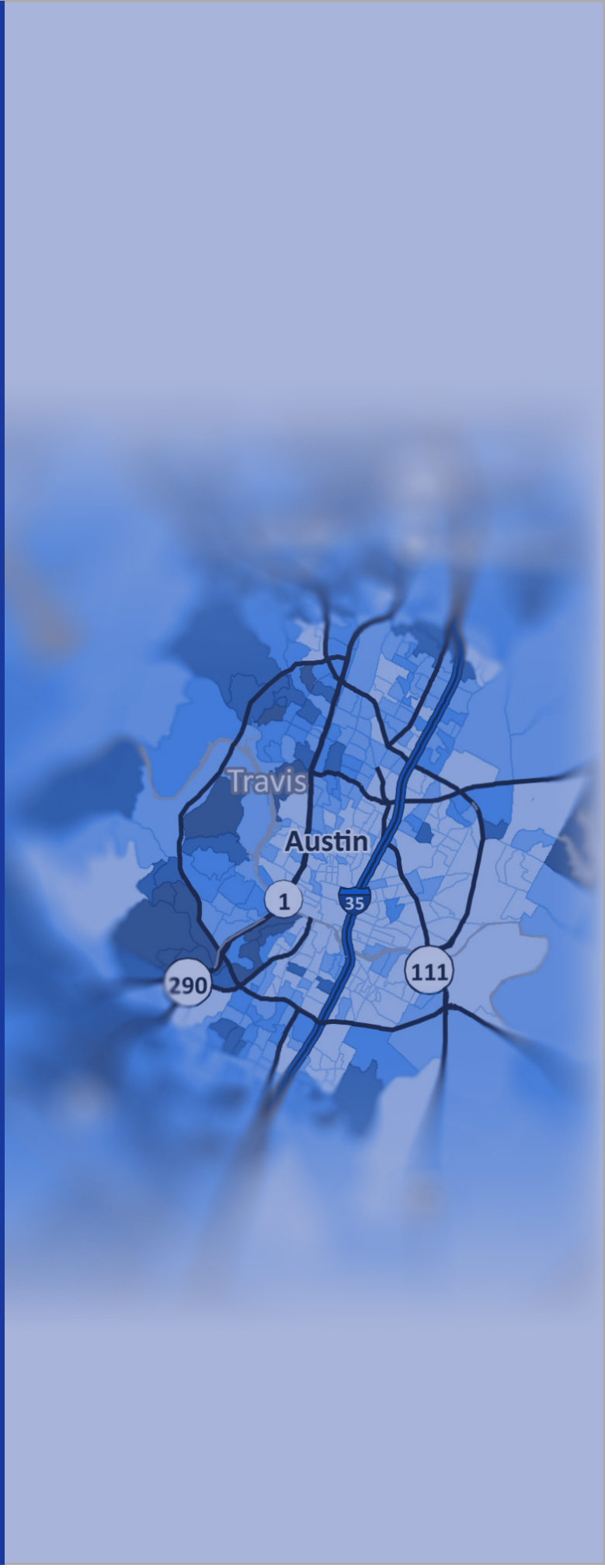
Description: This map illustrates opportunity and subsidized housing in the region. The map shows affordable and subsidized AHFC, HACA, HATC, HUD locations relative to regional opportunity.



Interpreting the Change Index

The Change Index, illustrated in the following maps, shows how Census block groups have changed over the past ten years. To calculate the index, the 2000 values of nine indicators such as housing vacancy, poverty rates, educational attainment, and non-White population are subtracted from the 2010 values to find the difference. This difference is then normalized to find a z-score for each indicator, just as is done with the standard opportunity indices. Indicators that are positively correlated with development are multiplied by +1, and those negatively associated with development are multiplied by -1. A positive z-score means the indicator falls above the average of the region, and a negative score means it falls below the average.

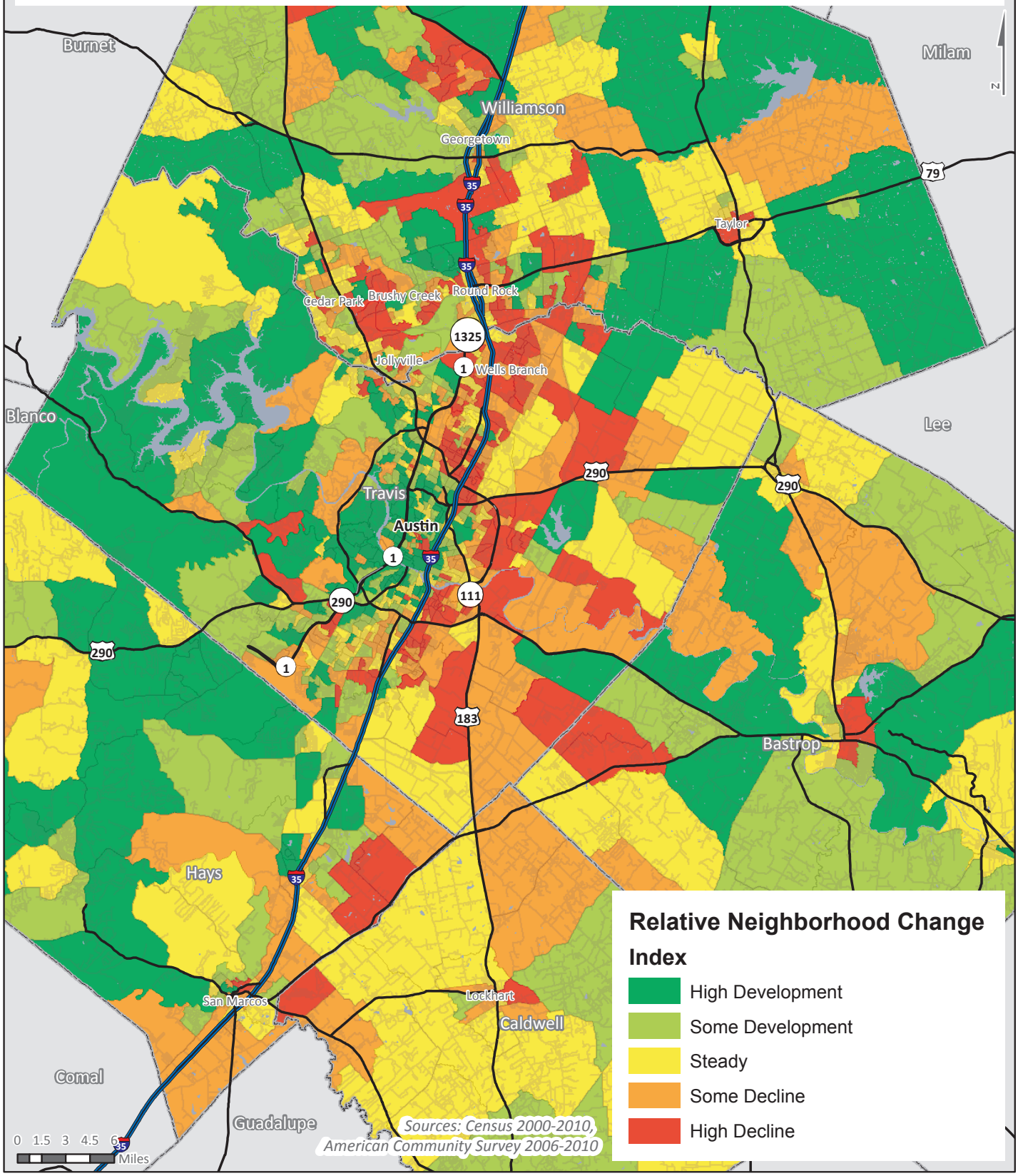
It is important to note that, unlike in the Opportunity Index, a positive measure on the Change Index does not necessarily indicate positive change for a neighborhood. It is simply a tool to describe what may be happening in a given neighborhood. The following map shows the results of the Change Index.



Map 11: Austin Metro Neighborhood Change Index

Kirwan Institute
Many Differences **One Destiny**

Description: This map represents relative neighborhood change between 2000-2010 in the region. The change indicators include vacancy, owner occupancy, median home value, median rent, housing units, poverty, racial composition, median household income, and college attainment.



Since the Change Index measures levels of change instead of nominal values of indicators, it is important to also look at where an area is starting in terms of opportunity. In the following map, the Change Index is overlaid on a comprehensive opportunity map. Positive change z-scores are symbolized with large green dots; negative change z-scores are shown with large red dots, and those in the middle are represented by yellow. Using the Opportunity Index as a base layer allows for better understanding of what the Change Index means in each particular area. Though a green dot indicates that there are, on average, increasing incomes, increasing property values, increasing education, decreasing poverty, and decreasing non-white population, that green dot may mean something completely different in the western portion of Travis County than it does in the low opportunity neighborhoods to the east of Interstate 35.

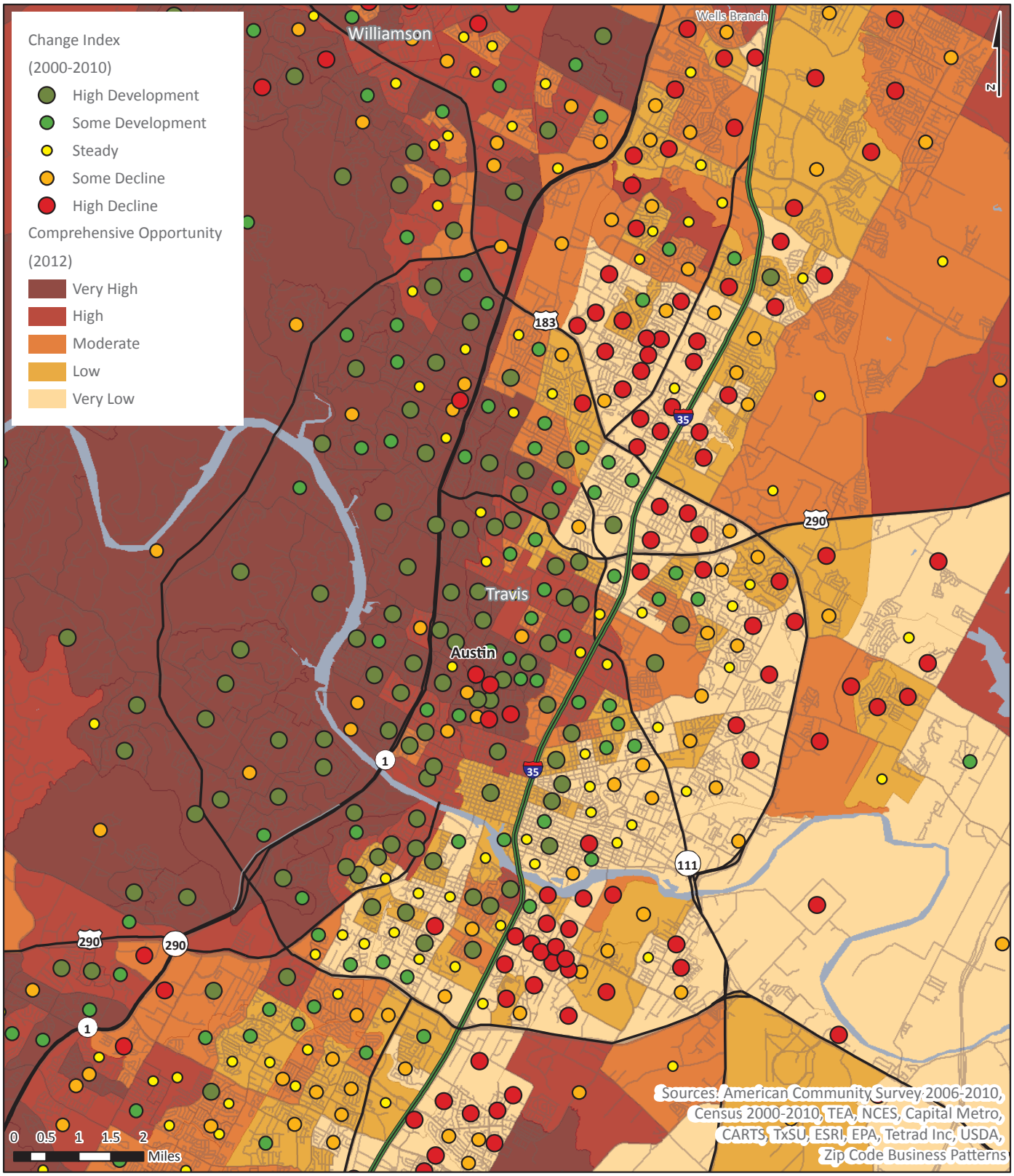
In an already high opportunity area, a green dot likely means that the area is, on average, becoming even more exclusive, with increasing property values and levels of educational attainment while the minority population remains constant or decreases. On the other hand, green dots located in the low opportunity areas just east of Interstate 35 and adjacent to high opportunity areas suggest that the area may be gentrifying, with property values, incomes, and education levels going from very low to moderate and populations moving from dominantly African American and Hispanic to more mixed. On the other hand, a red dot in a very high opportunity could mean a variety of things. It might indicate that the area is becoming more diverse and affordable for a variety of different residents, but it could also indicate that the area is in economic decline due to job losses and declining incomes. At the other end of the spectrum, a red dot in an already low opportunity area likely indicates further economic decline and increasing racial segregation.

It is important to note that the use of race in the Change Index is not meant to imply that the concentration of race in and of itself is indicative of decline. Rather, we include it because it is *one of many* factors that are generally related to multiple aspects of neighborhood change. For example, one of the hallmarks of gentrification is the displacement of minority (usually African American) populations with a new "gentry" of White urban settlers (Sanchez-Geraci, 2009). With regard to neighborhood decline, racial segregation and its relationship to concentrated poverty in urban areas have been well documented for decades (Wilson 1987) (Massey 1993). Both the 2007 and current opportunity mapping initiatives show that this holds true in the Austin metro area. So while changes in the populations of different races cannot be categorized as good or bad, race still plays an important role in the discussion of neighborhood change and opportunity, and that it why it has been included in the Change Index.

Map 12: Austin Opportunity and Change

Kirwan Institute
Many Differences **One Destiny**

Description: This map provides a snapshot of existing community opportunity, as well as an overlay of neighborhood trends from 2000 to 2010. The opportunity dataset is based on indicators of Education, Economics & Mobility, and Housing & Environment. The change index compares features such as housing vacancy and median home value across the decade.



What the results of the Change Index show

On a regional level, most of the tracts rating higher on the Change Index are located west of Interstate 35 or further out in the suburbs and rural areas of the eastern and northern parts of the region.

Within the central city there is an obvious east-west divide between areas scoring high on the Change Index and those scoring low, just as there is with the Opportunity Index. What is interesting is that placement of the divide is shifted slightly east in the Change Index. As noted earlier, a few tracts just east of Interstate 35 changed from low to high opportunity between the initial 2007 mapping and the current mapping. These tracts also score high on the Change Index, indicating that there has been gentrification occurring in the neighborhoods over the past decade. Additionally, tracts just to the east of those that are high opportunity and score high on the Change Index generally also have green dots, despite being low opportunity. This indicates that these areas are also on the path of gentrification. However, just east of these tracts are neighborhoods of low opportunity that also score low on the Change Index, which may suggest that some of the poorer residents of the more western neighborhoods surrounding Interstate 35 are gradually moving further out as wealthier residents move into the gentrifying areas.

The Change Index and race

Appendices maps 13-16 show Asian, African American, Hispanic, and White populations overlaid on the Change Index. These maps demonstrate, first and foremost, that Whites are primarily located in areas of development. Hispanics and African Americans, on the other hand, are largely located in areas of decline. A notable exception, however, is the cluster of neighborhoods directly to the east of Interstate 35. While these areas have decreasing non-White populations, they still have large African American populations, suggesting that many residents have been displaced by increasing home values.

Putting it together: What are these maps telling us, and how can we use them?

There are many ways in which these maps can be used to share information and inform future policy decisions. First, the online maps provide a forum for community members to share resources and collaborate. Users can upload new data layers to the map to call attention to demographic changes and the locations of community assets, such as schools, service locations, and initiatives or events.

Second, the Opportunity and Change Index maps can help policy makers to identify challenges for the region. To start, the maps in this analysis have highlighted four broad issues in the Austin metro area:

1. The Hispanic population is primarily located in low opportunity areas. Since this is the fastest-growing segment of the population, it is imperative to improve Hispanic people's access to opportunity—especially educational opportunity—if the region hopes to grow and maintain a productive workforce in the future.

2. Development in a few neighborhoods just east of Interstate 35 poses a threat to the African American and Hispanic populations currently living there. As wealthier inhabitants move in and home prices rise, the original residents may be forced to move to find more affordable housing. Thus, even if these areas become higher opportunity, the people who need access to that opportunity the most will not benefit.

3. Affordable housing must be expanded in higher opportunity areas. Currently the vast majority of affordable housing is located in low or very low opportunity neighborhoods, meaning the people who rely on affordable housing programs do not have access to the educational and economic resources they would need to eventually move to market-rate housing. Affordable housing is intended to be a ladder to the middle class, but it cannot work if the upper rungs of the ladder are cut off.

4. A number of Austin communities fall in the category of low opportunity and are also on the decline, according to the Change Index. Though moving people to opportunity through subsidized affordable housing in high opportunity areas must be part of the strategy for expanding opportunity, it is not sufficient. It is not enough to bring people to opportunity; *the real solution is to bring opportunity to people.* This can be achieved through place-based investments in low opportunity areas that seek to address the specific challenges of those communities.

MOVING FORWARD

Beyond these general findings for the region, it is important to consider more specific strategies for individual areas. Neighborhoods are microcosms of complex regional ecosystems, with housing, transportation, employment, and social factors interacting to form the dynamics of opportunity. Each individual neighborhood must maintain its own balance of all of those factors, as well as connect with the wider region.

The individual needs of different communities across the region may require many different approaches to expanding opportunity for residents. The following typologies are based on the opportunity and trend analysis in the report and outline the variety of approaches needed to increase opportunity access in neighborhoods throughout the region.

The broader goal of *The Geography of Opportunity in Austin and How It Is Changing* is to serve as a catalyst for action. Maps, even rich, nuanced maps that spatially describe the dynamics of opportunity, mean little if they are not used. Central Texans need to come together to help translate this data into action. The opportunity maps tell a very compelling story about the stark geographic and racial opportunity divide that exists in the region. This growing divide threatens Central Texas' economic and social vitality. This report needs to be a community call to action — a call to all members of the community who care about the opportunity divide to come together and advocate for an "opportunity agenda" that begins to address the more pernicious effects of this divide. This opportunity agenda needs to enable community development practitioners, businesses, and policy makers to offer products and services and to create policies that increase socio-economic equity for all Central Texans, especially the most vulnerable.

HIGH OPPORTUNITY TRENDING UPWARD

These neighborhoods already have high investment and rich opportunity. Creating housing mobility options in these neighborhoods should be part of the larger strategy to expand opportunity, as well as making critical transit connections into these areas from other parts of the region. Identifying ways to connect residents within and outside the neighborhood to the growing opportunity systems should also be important considerations.

HIGH OPPORTUNITY TRENDING DOWNWARD

In these neighborhoods, examining specific indicators within the opportunity and Change Indexes can help point to the causes of the trend. It may be that the area is simply becoming more diverse and affordable, but it could also be that the area is beginning to decline. Looking specifically within the housing or economic indexes, for example, may reveal that a large employer has moved or that the area has been hit hard by foreclosures. Housing mobility options might be discouraged in neighborhoods like these so that new residents in pursuit of opportunity are not left stranded in a declining area. Identifying what is and is not working in these areas and finding the root causes of struggle early on can stem a downward spiral that would be much harder to reverse in the future.

LOW OPPORTUNITY TRENDING UPWARD

In these neighborhoods, strategies should largely be based around preserving housing affordability as market rates rise. Lease-to-own for qualified income groups and maintaining a stock of affordable rental housing through various subsidy programs are examples of how this goal can be achieved. As opportunity structures develop in these areas, efforts should be made to ensure that low income residents are able to connect to these opportunities in their effort to mobilize out of poverty.

LOW OPPORTUNITY TRENDING DOWNWARD

Strategic investments should mark the approach in these neighborhoods. Adding affordable housing should be done only after careful, calculated considerations about potential impact on other systems like education, transportation, workforce, environment, and public safety. Improving transit connections to other areas and providing mobility options for some residents are two other potential recommendations, but a collaborative approach should be developed to improving critical opportunity structures in these neighborhoods, such as education, employment assistance, and affordable childcare. Investments in these neighborhoods cannot happen in isolation, but must be coordinated with other strategic investments if they are to be successful.

For any neighborhood or the region as a whole, these maps can serve as a lens through which to analyze future policy ideas. Decision makers can use this geographic information to see how proposed programs may differentially impact certain sectors of the population. For example, if new transit lines are proposed, where will those lines be located relative to those who need transportation access most? Are they connecting populations who lack economic opportunity to major job centers? Or suppose funds are available to build a new school. Can this school be located in a place where it will allow for a student population from a variety of backgrounds and opportunity areas?

The above suggestions are only some of the ways that these maps can be used to facilitate collaboration and inform decision making in the Central Texas region. Ultimately, the online maps can be as dynamic as their users. The more information and thought that is put in to them, the more useful a tool they become.

I. Education Indicators

1.1 Adult Education Attainment

J. C. Day & E. C. Newburger, The big payoff: Educational attainment and synthetic estimates of work-life earnings (2002) http://www.census.gov/prod/2002pubs/p23-210.pdf

Orfield, G., & Lee, C. (2004, January). "Brown at 50: King's dream or Plessy's nightmare?" Cambridge, MA: The Civil Rights Project. Harvard University. January 2004.)

Karen Chapple, "Overcoming mismatch: Beyond dispersal, mobility, and development strategies," Journal of the American Planning Association 72.3 (2006)

Crowder, K., & South, S. J. (2011). Spatial and temporal dimensions of neighborhood effects on high school graduation. Social Science Research, 40(1), 87-106

1.2 Student Poverty Rates

Orfield, G., & Lee, C. (2004, January). "Brown at 50: King's dream or Plessy's nightmare?" Cambridge, MA: The Civil Rights Project. Harvard University. January 2004.)

David R. Williams and Chiquita Collins, "Racial residential segregation: A fundamental cause of racial disparities in health," 116 Public Health Reports (Sept/Oct 2001)

Helen Epstein, "Enough to make you sick?," The New York Times Magazine (10/12/03)); (Youth and violence: A report of the Surgeon General (January 2001)

L. Darling-Hammond, "Recruiting teachers for the 21st century: The foundation for educational equity." Journal of Negro Education 68: 254, 279 (2000)

A. S. Wells, "The "consequences" of school desegregation: The mismatch between the research and the rationale," Hastings Const'l L.Q. 28: 771, 773 (2001)

1.3 Student Teacher Ratio

Education Indicators: An international perspective, National Center for Education Statistics, http://nces.ed.gov/pubs/eiip/eiipid39.aspNumber of students per teacher.

Krueger, A. B., & Whitmore, D. M. (2001, March). Would smaller classes help close the black-white achievement gap? Paper presented at Closing the gap: Promising approaches to reducing the achievement gap.

Zahorik, J. A. (1999). Reducing class size leads to individualized instruction. Educational Leadership, 57(1), 50-53

Nye, B., Hedges, L. V., & Konstantopoulos, S. (2001). The long-term effects of small classes in early grades: Lasting benefits in mathematics achievement at grade 9. Journal of Experimental Education, 69(3), 245-257

1.4-1.5 Reading and Math Proficiency

(Lee, J., Fox, J., & Brown, A. L. (2011). Content analysis of children's mathematics proficiency. Education and Urban Society, 43(5), 627-341. doi: 10.1177/0013124510380906

Rose, H., & Betts, J. R. (2004). The effect of high school courses on earnings. The Review of Economics and Statistics, 96(2), 497-513. doi: 10.1162/003465304323031076

Hock, M. F., & Deshler, D. D. (2003). "No Child" leaves behind teen reading proficiency. Educational Digest, 69(4), 27.

Nye, B., Hedges, L. V., & Konstantopoulos, S. (2001). The long-term effects of small classes in early grades: Lasting benefits in mathematics achievement at grade 9. Journal of Experimental Education, 69(3), 245-257

1.6 Graduation and Enrollment Rates

J. C. Day & E. C. Newburger, The big payoff: Educational attainment and synthetic estimates of work-life warnings (2002). http://www.census.gov/prod/2002pubs/p23-210.pdf

Gary Orfield and John T. Yun, Deepening segregation in American public schools (1997), Harvard Project on School Desegregation. Available on-line at http://www.civilrightsproject.harvard.edu/research/deseg/Resegregation_American_Schools99.pdf

Christenson, S. L., & Thurlow, M. L. (2004). School dropouts: Prevention considerations, interventions, and challenges. Current Directions in Psychological Science, 13(1), 36-39

II. Economic Indicators

2.1 Unemployment Rate

Turner, J. B. (1995). Economic context and the health effects of unemployment. Journal of Health and Social Behavior, 36(3), 213-229.

Yeung, W. J., & Hofferth, S. L. (1998). Family adaptations to income and job loss in the U.S. Journal of Family and Economic Issues, 19(3)

2.2 Job Access

Harry J. Holtzer, "The spatial mismatch hypothesis: What has the evidence shown?" Urb. Studies 28 (1991)

Mouw, T. (2000). Job relocation and the racial gap in unemployment in Detroit and Chicago, 1980 to 1990. American Sociological Association, 65(5), 730-753.

J.F. Kain, "The Spatial Mismatch Hypothesis: Three Decades Later," 3.2 Housing Pol'y Deb. 3.2 (1992)

K. Ihlanfeldt & D. Sjoquist, "The spatial mismatch hypothesis: A review of recent studies and their implications for welfare reform," Housing Policy Debate 9 (1998)

Karen Chapple, "Overcoming mismatch: Beyond dispersal, mobility, and development strategies," Journal of the American Planning Association 72.3 (2006)

Richard Price and Edwin S. Mills, "Race and residence in earnings determination," J. Urb. Econ. 17 (1985)

2.3 Mean Commute Time

Harry Holzer, Keith Ihlanfeldt, and David Sjoquist, "Work, search, and travel among white and black youth," Journal Of Urban Economics 35 (1994)

Karen Chapple, "Overcoming mismatch: Beyond dispersal, mobility, and development strategies," Journal of the American Planning Association 72.3 (2006)

2.2 Employment Competition (ratio of jobs to labor force within a certain miles)

Harry J. Holtzer, "The spatial mismatch hypothesis: What has the evidence shown?" Urb. Studies 28 (1991)

Michael Stoll, Harry Holtzer, and Keith Ihlanfeldt, WITHIN CITIES AND SUBURBS: RACIAL RESIDENTIAL CONCENTRATION AND THE SPATIAL DISTRIBUTION OF EMPLOYMENT OPPORTUNITIES ACROSS SUBMETROPOLITAN AREAS (1999), available on-line at: http://ideas.repec.org/PaperSeries.html.

Harry Holzer, Keith Ihlanfeldt, and David Sjoquist, "Work, search, and travel among white and black youth," Journal Of Urban Economics 35 (1994)

2.3 Transportation Cost

Lipman, B. J. Center for Housing Policy, (2006). A heavy load: The combined housing and transportation burdens of working families. Retrieved from website: http://www.cnt.org/repository/heavy_load_10_06.pdf

Bullard, D, Robert., Addressing urban transportation equity in the United States, 31FORDHAM URBAN LAW JOURNAL 1183 (October 2004)

Harry Holzer, Keith Ihlanfeldt, and David Sjoquist, "Work, search, and travel among white and black youth," Journal Of Urban Economics 35 (1994)

2.4 Transit Access

K. Ihlanfeldt & D. Sjoquist, "The spatial mismatch hypothesis: A review of recent studies and their implications for welfare reform," Housing Policy Debate 9 (1998)

Bullard, D, Robert., Addressing urban transportation equity in the United States, 31FORDHAM URBAN LAW JOURNAL 1183 (October 2004)

2.5 Median Household Income

Richard Price and Edwin S. Mills, "Race and residence in earnings determination," J. Urb. Econ. 17 (1985)

Karen Chapple, "Overcoming mismatch: Beyond dispersal, mobility, and development strategies," Journal of the American Planning Association 72.3 (2006)

2.4 Job Growth Trends

Karen Chapple, "Overcoming mismatch: Beyond dispersal, mobility, and development strategies," Journal of the American Planning Association 72.3 (2006)

David R. Williams and Chiquita Collins, Racial residential segregation: A fundamental cause of racial disparities in health, 116 PUBLIC HEALTH REPORTS 404, 405 (Sept.-Oct. 2001)

2.5 Population on Public Assistance

George Galster and Sean P. Killen, "The geography of metropolitan opportunity: A reconnaissance and conceptual framework" Housing Policy Debate

Fauth, R. C., Leventhal, T., & Brooks-Gunn, J. (2004). Short-term effects of moving from public housing in poor to middle-class neighborhoods on low-income, minority adults' outcomes. Social Science & Medicine, 59(11), 2271-2284.

Crowder, K., & South, S. J. (2011). Spatial and temporal dimensions of neighborhood effects on high school graduation. Social Science Research, 40(1), 87-106.

III. Housing and Environment Indicators

3.1 Poverty Rates

Browning. Christopher R., and Kathleen A. Cagney, Moving beyond poverty: Neighborhood structure, social processes and health, 44 JOURNAL OF HEALTH AND SOCIAL BEHAVIOR 552-571 (December 2003)

Orr, Feins, Jacob, and Beecroft (Abt Associates Inc.) and Sanbonmatsu, Katz, Liebman and Kling (NBER), U.S. Department of Housing and Urban Development Office of Policy Development and Research, Executive Summary of MOVING TO OPPORTUNITY INTERIM IMPACTS EVALUATION (September 2003)

Galster, G., Marcotte, D. E., Mandell, M., Wolman, H., & Augustine, N. (2007). The influence of neighborhood poverty during childhood on fertility, education, and earnings outcomes. Housing Studies, 22(5), 723-751.

M. A. Turner and D. Acevedo-Garcia, Why housing mobility? The research evidence today, 14 POVERTY & RACE RESEARCH ACTION COUNCIL NEWSLETTER (January/February 2005)

3.2 Vacancy Rate

Kobie, T. F., & Sugie, L. (2011). The spatial-temporal impact of residential foreclosures on single-family residential property values. Urban Affairs Review, 47(1), 3-30.

Spelman, W. (1993). Abandoned buildings: Magnets for crime?. Journal of Criminal Justice, 21(5), 481-495.

Millennial Housing Commission. MEETING OUR NATION'S HOUSING CHALLENGES (2002). Page 11

3.3 Proximity to Parks

Babey, S. H., Theresa, A. H., Hongjian, Y., & Brown, E. R. (2008). Physical activity among adolescents: When do parks matter?. American Journal of Preventative Medicine, 34(4), 345-348.

Abercrombie, L. C., Sallis, J. F., Conway, T. L., Frank, L. D., Saelens, B. E., & Chapman, J. E. (2008). Income and racial disparities in access to public parks and private recreation facilities. American Journal of Preventitive Medicine, 34(1), 9-15.

3.4-3.5 Proximity to Toxic Waste and Brownfields

Ho, C. S., & Hite, D. (2009). Toxic chemical releases, health effects, and productivity losses in the United States. Journal of Community Health, 34(6), 539-46.

3.6 Crime Rate

Youth and violence: A report of the Surgeon General (January 2001))

Neighborhood safety and the prevalence of physical inactivity -- selected states, 1996. (1999, February 26). Morbidity and Mortality Weekly Report, 48(7), 143. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA54068062&v=2.1&u=colu44332&it=r&p=AONE&sw=w

M. R. Greenberg, Improving neighborhood quality: A hierarchy of needs 10 (3) Housing Policy Debate 601-624 (1999)

3.7 Food Deserts

Christian, T. J. (2010). Grocery store access and the food insecurity-obesity paradox. Journal of Hunger & Environmental Nutrition, 5(3), 360-369.

Morland, K., Wing, S., Roux, A. D., & Poole, C. (2001). Neighborhood characteristics associated with the location of food stores and food service places. American Journal of Preventative Medicine, 2005(96), 325-331.

David R. Williams and Chiquita Collins, "Racial residential segregation: A fundamental cause of racial disparities in health," 116 Public Health Reports (Sept/Oct 2001)

3.8 Health Care Facility Access

Andersen, Ronald M. (1995), "Revisiting the Behavioral Model and Access to Medical Care: Does it Matter?" Journal of Health and Social Behavior , Vol. 36, No. 1 pp. 1-10

3.9 Home Ownership

David R. Williams and Chiquita Collins, "Racial residential segregation: A fundamental cause of racial

disparities in health," 116 Public Health Reports (Sept/Oct 2001)

George Galster, Dave E. Marcotte, Marvin B. Mandell, Hal Wolman & Nancy Augustine (2007): The impact of parental homeownership on children's outcomes during early adulthood, Housing Policy Debate, 18:4, 785-827

3.10 Median Home Value

David R. Williams and Chiquita Collins, "Racial residential segregation: A fundamental cause of racial disparities in health," 116 Public Health Reports (Sept/Oct 2001)

Chengri ,Ding and Gerrit-Jan Knaap, "Property values in inner-city neighborhoods: The effects of homeownership, housing investment, and economic development," Housing Policy Debate 13.4 (2003)

David R. Williams and Chiquita Collins, "Racial residential segregation: A fundamental cause of racial disparities in health," 116 Public Health Reports (Sept/Oct 2001)

Squires, G. (2007). Demobilization of the individualistic bias: Housing market discrimination as a contributor to labor market and economic inequality. The ANNALS of the American Academy of Political and Social Science, 609(1), 200-214

Woldoff, A., & Ovadia, S. (2008). Not getting their money's worth African-American disadvantages in converting income, wealth, and education into residential quality. Urban Affairs Review, 45(1), 66-91.

IV. Change Index Indicators

4.1 -4.9 Change Index Indicators

Chapple, K. (2009). Mapping Susceptibility to Genrification: The Early Warning Toolkit. Berkeley, CA: The Center for Community Innovation.

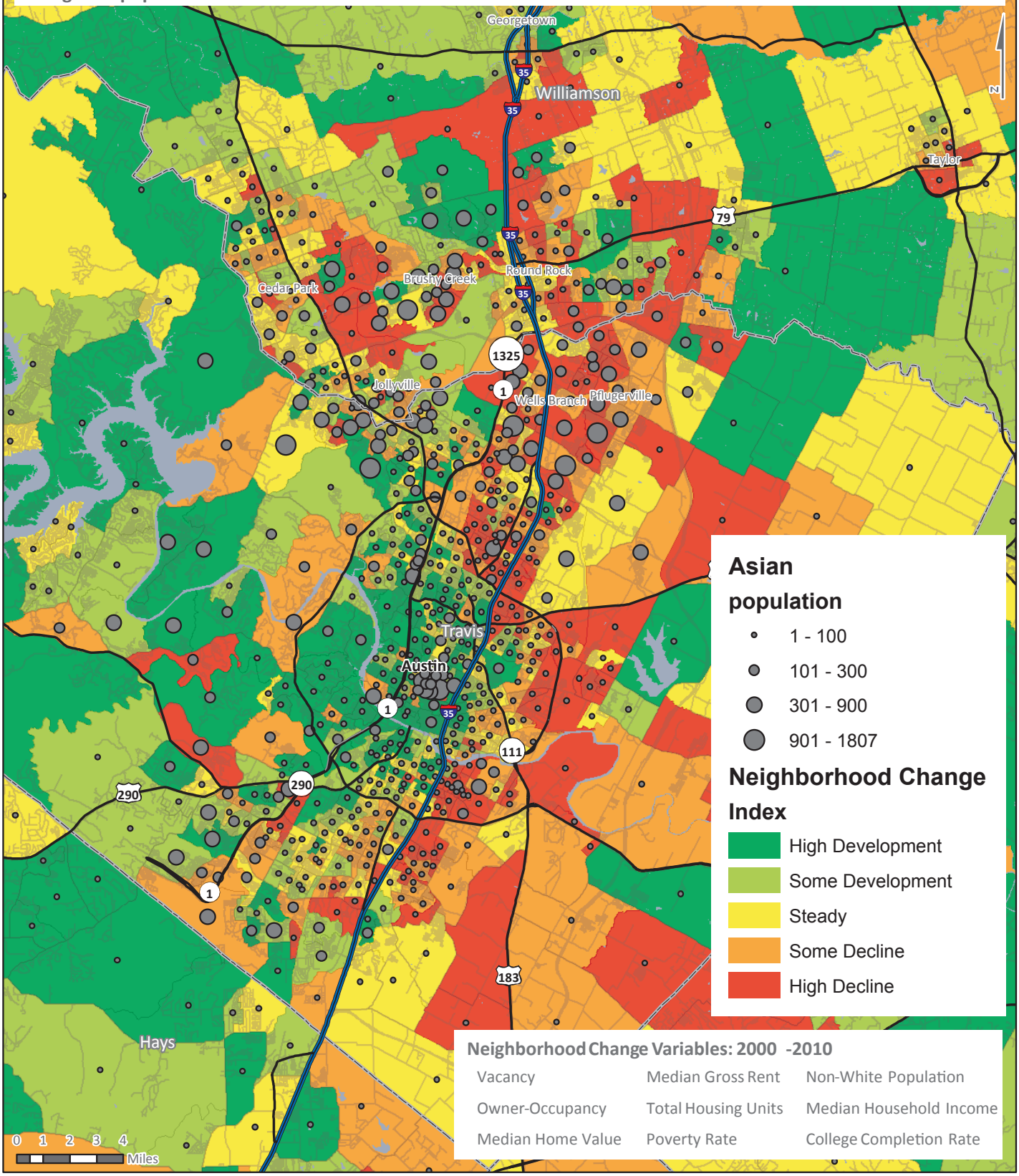
Sanchez-Geraci, D. A. (2009). The Extent and Nature of Gentrification in U.S. Metropolitan Areas. Columbus, OH: The Ohio State University.

Map 13: Austin Metro Neighborhood Change and Asians

Kirwan Institute
Many Differences **One Destiny**

Description: This map represents relative neighborhood change between 2000-2010 in the region, along with population distribution of Asians.

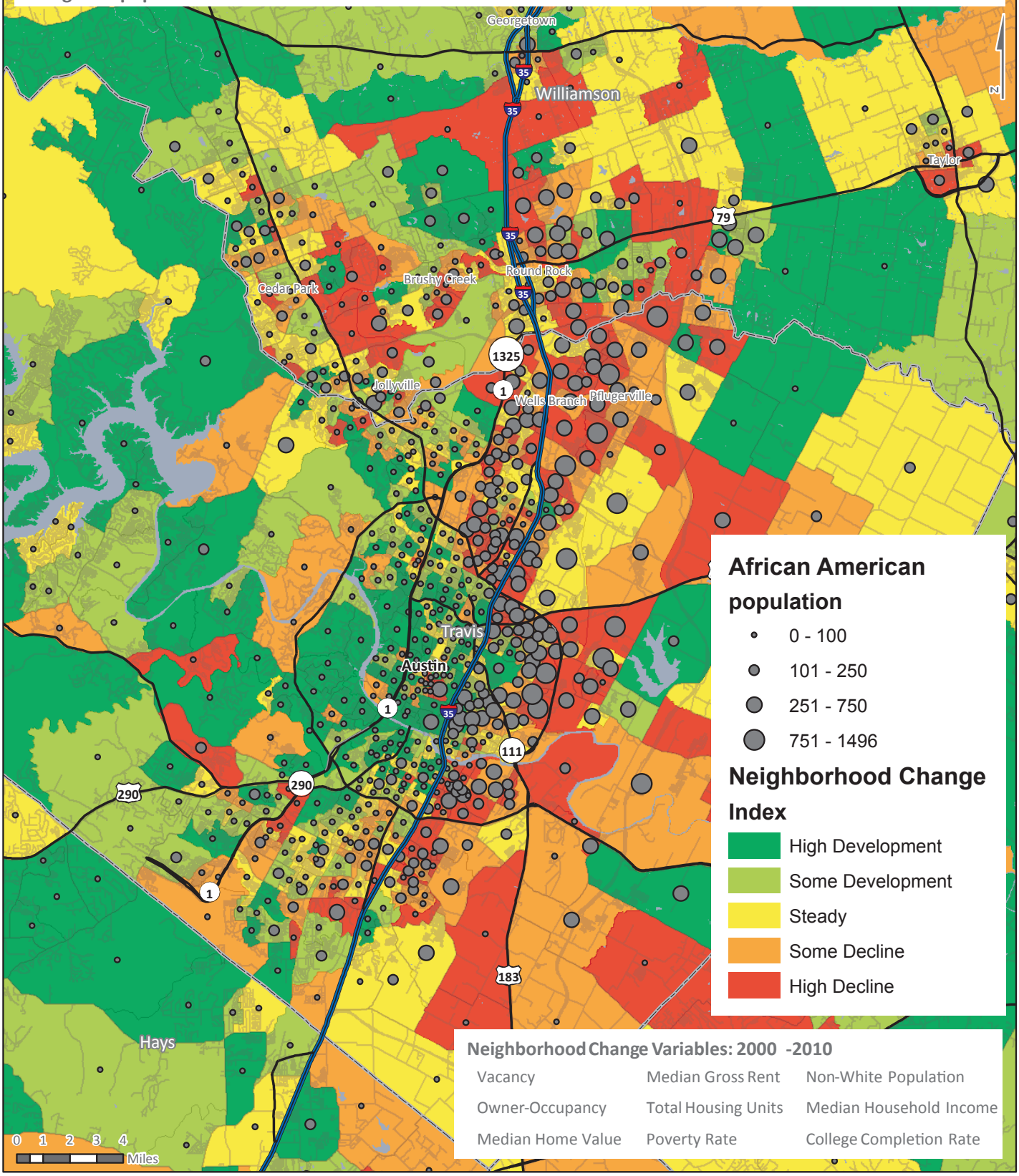
Sources: Census 2000-2010, American Community Survey 2006-2010



Map 14: Austin Metro Neighborhood Change and African Americans

Kirwan Institute
Many Differences **One Destiny**

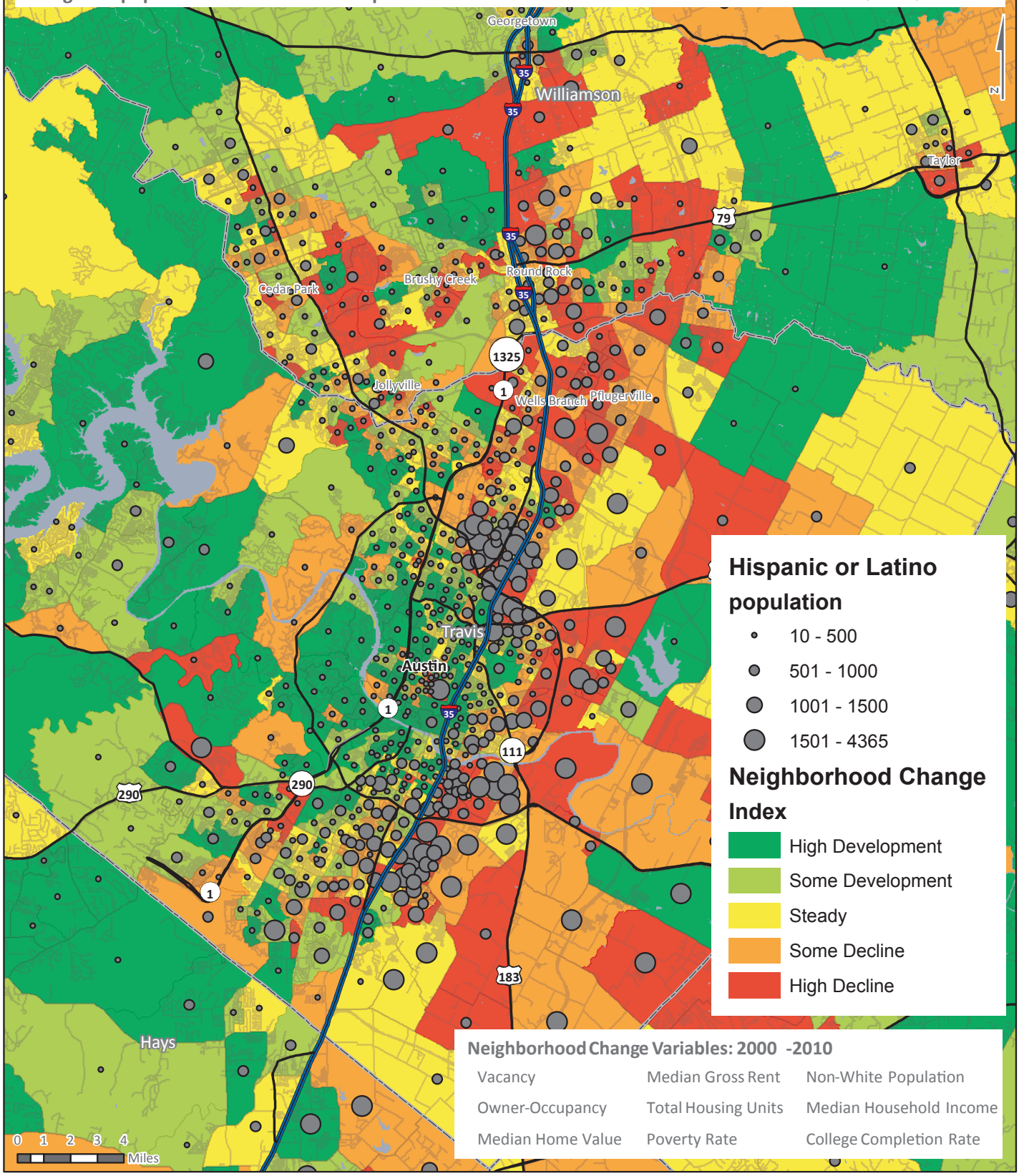
Description: This map represents relative neighborhood change between 2000-2010 in the region, along with population distribution of African Americans. *Sources: Census 2000-2010, American Community Survey 2006-2010*



Map 15: Austin Metro Neighborhood Change and Hispanics or Latinos

Kirwan Institute
Many Differences **One Destiny**

Description: This map represents relative neighborhood change between 2000-2010 in the region, along with population distribution of Hispanics or Latinos. *Sources: Census 2000-2010, American Community Survey 2006-2010*

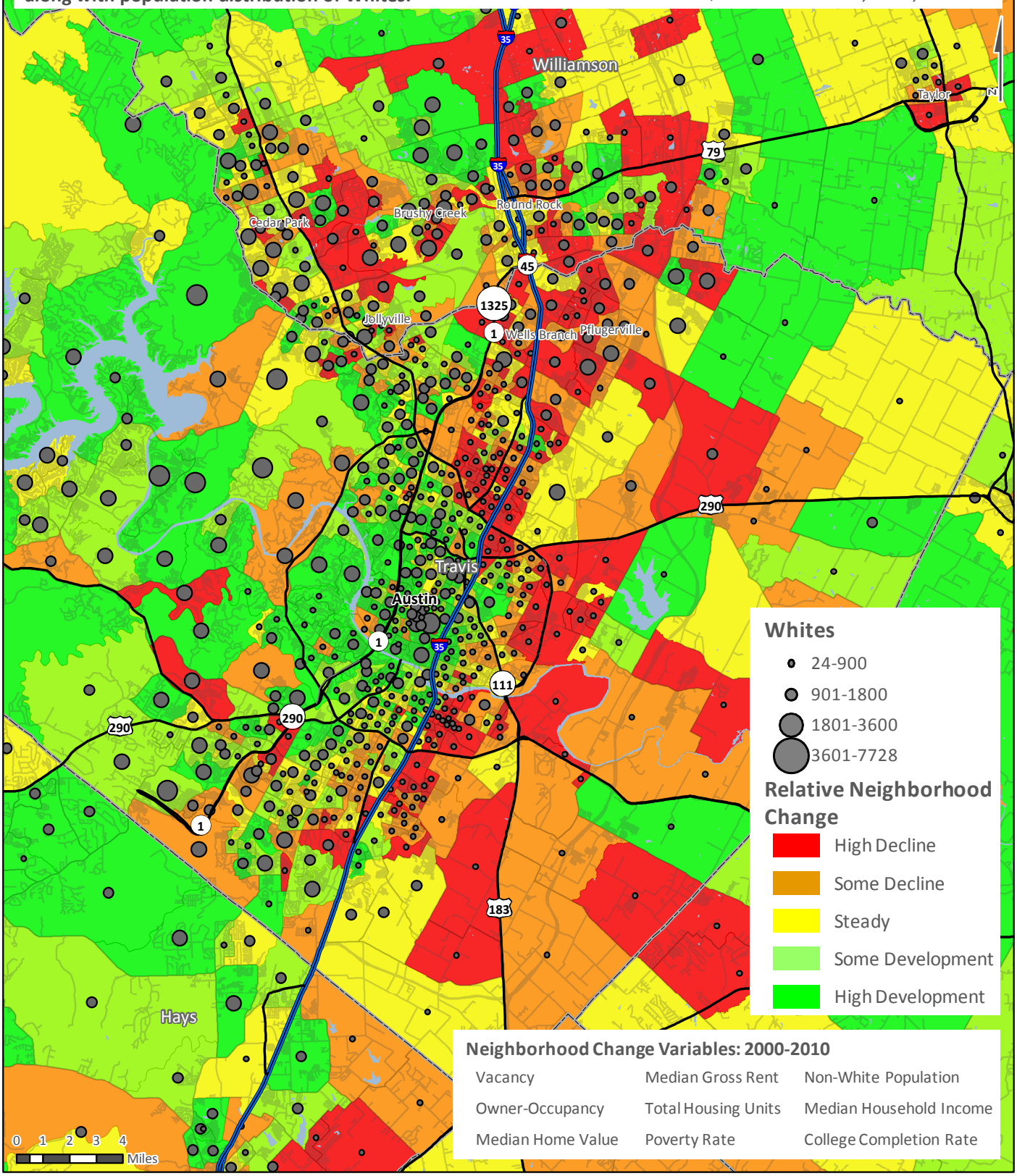


Map 16: Austin Metro Neighborhood Change and Whites

Kirwan Institute
Many Differences **One Destiny**

Description: This map represents relative neighborhood change between 2000-2010 in the region, along with population distribution of Whites.

Sources: Census 2000-2010, American Community Survey 2006-2010



Neighborhood Change Variables: 2000-2010

Vacancy	Median Gross Rent	Non-White Population
Owner-Occupancy	Total Housing Units	Median Household Income
Median Home Value	Poverty Rate	College Completion Rate

Opportunity Metadata Tables

Economic-1

Education-2

Housing-3

Change-4

Overlay-5

Education Indicators

Adult Educational Attainment

Description: The percentage of adults age 25+ with a college degree

Field Code: ED1

Data Source: American Community Survey

Geography: Census Block Group 10'

Date: 2006-2010

Methodology:

Student Poverty Rates

Description: The percentage of students receiving free or reduced price lunch

Field Code: ED2

Data Source: National Center for Education Statistics (NCES)

Geography: Point-based, School locations

Date: 2009-2010 school year

Methodology: Each block group was assigned the student poverty rate of the three elementary schools nearest the block group centroid. This process also considered school district boundaries, so as to assign data to block group only according to the district in which the block group resides.

Student/teacher ratio

Description: The ratio of students to teachers for the three nearest in-district schools

Field Code: ED3

Data Source: National Center for Education Statistics (NCES)

Geography: Point-based, School locations

Date: 2009-2010 school year

Methodology: Each block group was assigned the student-teacher ratio of the three elementary schools nearest the block group centroid. This process also considered school district boundaries, so as to assign data to block group only according to the district in which the block group resides.

Reading Proficiency

Description: School reading proficiency rates of three nearest in-district primary schools

Field Code: ED4

Data Source: Texas Education Agency

Geography: Point-based, School locations

Date: 2011

Methodology: Each block group was assigned the reading proficiency of the three elementary schools nearest the block group centroid. This process also considered school district boundaries, so as to assign data to block group only according to the district in which the block group resides.

Math Proficiency

Description: School math proficiency rates of three nearest in-district primary schools

Field Code: ED5

Data Source: Texas Education Agency

Geography: Point-based, School locations

Date: 2011

Methodology: Each block group was assigned the math proficiency of the three elementary schools nearest the block group centroid. This process also considered school district boundaries, so as to assign data to block group only according to the district in which the block group resides.

High School Graduation Rate

Description: Graduation rate of three nearest in-district high schools

Field Code: ED6

Data Source: Texas Education Agency

Geography: Point-based, School locations

Date: 2010-2011 school year

Methodology: Each block group was assigned the graduation rate of the three high schools nearest the block group centroid. This process also considered school district boundaries, so as to assign data to block group only according to the district in which the block group resides.

Enrollment Rate

Description: Percentage of children enrolled in school

Field Code: ED7

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join the ACS table to block group layer based on block group ID.

Economics & Mobility Indicators

Unemployment Rate

Description: Percentage of civilian labor force that is unemployed

Field Code: EM1

Data Source: American Community Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join the ACS table to block group layer based on block group ID.

Job Access

Description: Number of jobs within 5 miles of buffer from block group centroid

Field Code: EM2

Data Source: County Business Patterns

Geography: Zip Code

Date: 2009

Methodology: Create 5 mile buffer from block group centroid and spatial join the CBP layer (zip code) to block group (select "Average" box when you join them). Choose the average number of employee field for the indicator.

Mean Commute Time

Description: Average travel time to work for workers ages 16+

Field Code: EM3

Data Source: American Community Survey

Geography: Block Group

Date: 2006-2010

Methodology: Get the median minutes for each break down box (ex. 0 to 5 minutes category will be 3 minutes for the median). Multiply the median minutes and number of commuters and divide them with total commuters.

Transit Access

Description: Percentage of census tract within ½-mile of transit station/stop

Field Code: EM4

Data Source: Capital Metro, CARTS, TxSU

Geography: Block Group

Date: 2012

Methodology: Create 0.5 mile buffer from transit stop (point layer) and calculate the area size of buffer in each block group (use "Union" tool).

Median Household Income

Description: Median income of households

Field Code: EM5

Data Source: American Community Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group layer based on block group ID

Housing & Environment Indicators

Neighborhood Poverty

Description: Percentage of population living below the Federal poverty line

Field Code: HE1

Data Source: American Community Survey

Geography: Census Tract 10'

Date: 2006-2010

Methodology: Join ACS table to block group layer based on block group ID. Get total number of "people living in poverty" per each block group.

Vacancy Rate

Description: Percentage of residential housing units which are vacant

Field Code: HE2

Data Source: American Community Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group layer based on block group ID.

Proximity to Parks

Description: Distance to nearest park centroid from tract centroid

Field Code: HE3

Data Source: ESRI Business Analyst

Geography: Block Group

Date: 2010

Methodology: Measure the distance between block group centroid and the nearest park centroid using "Near" tool.

Proximity to Toxic Release Sites

Description: Distance to toxic release site from census tract centroid

Field Code: HE4

Data Source: Environmental Protection Agency (EPA)

Geography: Census Tract 10' (feet)

Date: 2011

Methodology: Measure the distance between block group centroid and the nearest toxic release site using "Near" tool.

Proximity to Brownfields

Description: Distance to brownfield centroid from census tract centroid

Field Code: HE5

Data Source: Environmental Protection Agency (EPA)

Geography: Census Tract 10' (feet)

Date: 2011

Methodology: Measure the distance between block group centroid and the nearest brown field centroid release site using "Near" tool.

Crime Rate

Description: Crime rate

Field Code: HE6

Data Source: Pcensus

Geography: Block Group

Date: 2010

Methodology: N/A

Food Desert

Description: Percentage of total population that is low-income and has low access to a supermarket or large grocery store

Field Code: HE7

Data Source: United State Department of Agriculture (USDA)

Geography: Census Tract 10'

Date: 2011

Methodology: N/A

Health Care Facility Access

Description: Health care facilities within 5 miles of a block group centroid

Field Code: HE8

Data Source: County Business Patterns

Geography: Block Group

Date: 2009

Methodology: Select the health care data using NAICS code. Create 5 mile buffer from block group centroid and spatial join the CBP layer (zip code) to block group (select "Average" box when you join them). Choose the average number of employee field for the indicator.

Home Ownership

Description: Percentage of owner occupied housing (Owner occupied housing/total housing)

Field Code: HE9

Data Source: American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Median Home Value

Description: Median home value

Field Code: HE10

Data Source: American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Change Data

* All change indicators are computed by subtracting 2010' value from 2000' value (change indicator = 2010' value – 2000' value).

Vacancy Rate

Description: Change in vacancy rate

Field Code: CHG1

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Owner-Occupied Units

Description: Change in owner-occupied rate

Field Code: CHG2

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Median Home Value

Description: Change in median home value

Field Code: CHG3

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Median Rent

Description: Change in gross median rent

Field Code: CHG4

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Housing Units

Description: Change in total housing units

Field Code: CHG5

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Poverty

Description: Change in poverty rate

Field Code: CHG6

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Race

Description: Change in non-White population

Field Code: CHG7

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table (non-white = total population – white only population) to block group boundary layer based on block group ID.

Median Household Income

Description: Change in median household income

Field Code: CHG8

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Educational Attainment

Description: Change in college attainment rate

Field Code: CHG9

Data Source: Census, American Community Survey

Geography: Block Group

Date: 2000, 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Overlay Data

Race

Description: The population of Asians, Blacks, Latinos, and Whites

Field Code: OV1

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Section 8 Vouchers

Description: The number of housing vouchers per census tract

Field Code: OV2

Data Source: HUD User

Geography: Census Tract

Date: 2009

Methodology: Join the voucher table to tract layer.

HUD Project Housing

Description: Location of HUD project housing

Field Code: OV3

Data Source: HUD User

Geography: Point

Date: 2008

Methodology: Geocode the addresses of project

Vulnerable Age Groups

Description: Children under 18 and seniors over 65 years of age

Field Code: OV4

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Linguistically Isolated Groups

Description: Number of people who cannot speak English at all

Field Code: OV5

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Senior Population

Description: Population over 65; Asian, Black, Latino, White

Field Code: OV6

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Rural Area

Description: Boundary of urban area

Field Code: OV7

Data Source: Census

Geography: N/A

Date: 2010

Methodology: N/A

Median Income of Households with Children under 18 years

Description: Median income of households with children under 18 years of age

Field Code: OV8

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Segregation Index

Description: This index measures the evenness with which two mutually exclusive groups are distributed across the geographic units that make up a larger geographic entity; for example, the distribution of blacks and whites across the census tracts that make up a metropolis. Its minimum value is zero and its maximum value is 100.

Field Code: OV9

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Segregation Index (0~100)=(1/2)×Sum ((b_*i*B)/(w_*i*W))

Percent of Veterans

Description: Percentage of population who are veterans

Field Code: OV10

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Percent of SNAP of SSI

Description: Percentage of population receiving food assistance (SNAP) or Social Security Insurance (SSI)

Field Code: OV11

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: Join ACS table to block group boundary layer based on block group ID.

Child Population

Description: Population under 18; Asian, Black, Latino, White

Field Code: OV12

Data Source: American Communities Survey

Geography: Block Group

Date: 2006-2010

Methodology: none

The Geography of Opportunity in Austin and How It Is Changing

Capital Area Council
of Governments

COMING HOME:

The benefits of housing choice for low-wage commuters in Austin, Texas

January 30, 2014

Elizabeth J. Mueller
Clifford Kaplan

Center for Sustainable Development

Report prepared with funding from the US Department of Housing and Urban Development, Office of Sustainable Housing and Communities.

THE UNIVERSITY OF TEXAS AT AUSTIN
SCHOOL OF ARCHITECTURE

csd
Center for Sustainable Development

Published by:
Center for Sustainable Development
The University of Texas at Austin
School of Architecture
310 Inner Campus Drive B7500
Austin, TX 78712-1009

Cover image:
Garden homes, Mueller neighborhood, Austin, courtesy of Mueller.

Executive summary

Austin, Texas has sustained a steady pace of growth for more than 70 years, and has seen its population double twice since 1970. It has gone from a small city whose workforce was dominated by moderate income state and university workers, to a diversified regional economy with greater extremes of wealth and poverty. Its low cost of living and large public university helped spawn a unique culture and music scene. Over time, the pressures of growth have caused the city to expand outward, pushing development into surrounding towns and natural areas. By 2014, Austin had transformed from one of the most affordable small cities in the country, to the 11th largest city in the nation, and the least affordable housing market in the state of Texas.[i] Its role in the region has also shifted, as the city's share of the five county region's population has fallen from 63% in 1970 to 46% in 2010.

These changes have reduced the housing choices available to low and moderate income households. Rents have risen dramatically, particularly in areas close to downtown Austin or the University of Texas. Property values—and taxes—have skyrocketed in Austin's historically affordable central neighborhoods in recent years. Census data reveal the ongoing demographic transformation of central east Austin neighborhoods, particularly the area historically designated as a "negro district" prior to court rulings outlawing racial discrimination in housing and public accommodations.

While the broad outlines of change are well documented, we know little about how low income workers view their housing choices and their commute to work. They may prefer suburban locations for their housing types and school districts. Does their current home location indicate such a decision? Or, are they unhappy with the time and money spent on long commutes? If given an affordable choice, would they prefer to live more centrally, closer to work? If so, would they prefer neighborhoods with better access to transit and services? With a mix of housing types? What impact could provision of housing affordable to low wage workers in central Austin have on the time and cost of their commute?

The answers to these questions also have significance for the broader community. Lack of housing affordable to low and moderate income households may reduce the attractiveness of the region to new employers, threatening ongoing economic growth. Long commutes, including time spent sitting in traffic, reduce the quality of life not only of commuters but of all who breathe the air in the region. Long commutes contribute to worsening air quality and the incidence of respiratory problems, such as asthma. Finally, ongoing decentralization of regional population draws people away from the network of social services and community institutions established to serve residents, compromising service delivery and informal social networks.

This report details the findings of a survey of central Austin workers working full time for modest salaries and commuting at least 10 miles to work in central Austin. We surveyed 928 people who live more than 10 miles from the city center, earn less than $60,000 per year and work for two of the city's largest local employers--The City of Austin and the University of Texas at Austin. Those surveyed were randomly selected from a list of over 5,000 employees meeting our wage and commute criteria. The response rate was 34.5 percent.

The purpose of the survey was to understand the extent to which respondents' residential locations were indicative of their preferences for suburban or rural living, and the factors that shape their thinking about where to live. We queried respondents about

their interest in moving closer to work and on the factors that would shape their thinking about the urban neighborhoods and homes they would prefer. We also calculated the potential cost and time savings to households of moving from their current home location to more centrally located areas targeted for mixed use development under the city's new comprehensive plan, *Imagine Austin*. Finally, we compared resulting commute distances, per capita, to regional goals.

Our analysis reveals several key findings:

Substantial interest in urban living. A substantial share of low wage workers commuting at least ten miles to work—48 percent--would move closer to work if they could. Of those not interested in moving, 88 percent listed the cost of housing as among their primary reasons for not moving.

Generational divide in attitudes. Consistent with national opinion polling, we found a generational divide in attitudes about urban living and commuting: 65 percent of those ages 18-34 were willing to move. Given the age profile of our region and the ongoing migration to the region, this is an especially important finding.

Children not a deterrent to urban living. At the same time, and contrary to these same national polls, attitudes toward moving did not vary significantly based on whether or not respondent households included school age children.

Lowest income households most interested in moving. Those with the lowest incomes were significantly more interested in living closer to work. Households with annual incomes below $60,000 (roughly 80% of regional median income for a family of four in 2012) were significantly more likely to be interested in moving than those with incomes above this level. Seventy percent of households with incomes below $40,000 were interested in moving closer to work.

We queried those interested in moving about the neighborhood and housing characteristics they would prefer if they moved. Key findings include:

Support for mixed use communities. Support for neighborhoods that include stores and services, nearby transit, sidewalks, and bike paths was strong, with between 77 and 94 of respondents saying such features would make them more likely or much more likely to move.

Support for mixed tenure communities. A majority of movers reported being more likely to move to neighborhoods with a mix of housing types and that included owners and renters.

Movers would prefer single family homes with private yards. While movers are interested in mixed use, mixed income neighborhoods, they envision living in single family homes.

We also calculated the benefits of moving, under three scenarios. Using residents' current home and work locations, as well as the make, model and year of the cars they use to commute, we were able to estimate the benefits to households and to the broader community of living closer to work. Those interested in moving were assigned a new home location, at one of five activity centers designated in *Imagine Austin.* Key findings include:

> *Scenario 1: A shorter car commute.* On average, movers continuing to commute by car would reduce annual commute miles by 7,736, reducing commute costs by

$4,370 per year, the equivalent of 7.3 percent of a $60,000 annual income.

Scenario 2: Commuting by transit. For movers electing to commute by bus from their new location, the net cost savings would increase to $5,631 per year, or 9.4 percent of a $60,000 annual income.

Scenario 3: Transit commute, one less car. For movers electing to commute by bus and to get rid of the commute car, net savings would rise to $9,231 per year, or 15.4 percent of a $60,000 annual income.

Reductions in environmental impacts associated were also estimated. All three scenarios would reduce daily commute distances to levels well below national averages and also local targets. This, in turn, would reduce tailpipe emissions of pollutants, which are linked to respiratory health problems, and also of greenhouse gas.

These findings have important implications for current planning discussions. Moving forward will require that we: 1) better integrate land use, housing and transportation planning, 2) align budget processes across these domains, 3) revise development rules and review processes, and 4) develop metrics to judge project proposals and reward progress toward integrated goals—both locally and regionally.

I. Introduction

The pace and spread of growth

Austin, Texas has sustained a steady pace of growth for more than 70 years, doubling its population twice since 1970. It has gone from a city whose workforce was dominated by moderate income state and university workers, to a diversified regional economy with greater extremes of wealth and poverty. Its low cost of living and large public university helped spawn a unique culture and music scene. Over time, the pressures of growth have caused the city to expand outward, pushing development into surrounding towns and natural areas (Figure 1). By 2014, Austin had transformed from one of the most affordable small cities in the country, to the 11th largest city in the nation, and the least affordable housing market in the state of Texas.[ii] Its role in the region had also shifted, as the city's share of the five county region's population fell from 63% in 1970 to 46% in 2010 and population growth outside of Austin was larger, in absolute terms, as well (Table 1, Figure 2). By 2011, the region was the fastest growing of the nation's largest metropolitan areas, with an annual growth rate of 3.9%. By 2016, the population of the region is expected to exceed 2.1 million.[iii]

Table 1. Population Growth in the Austin metropolitan area, 1970-2010

POPULATION	1970	1990	2010
City	251,808	465,622	790,390
Travis County	295,516	576,407	1,024,266
5 county Metropolitan Statistical Area (MSA)	398,938	846,227	1,716,289
City share of MSA	63%	55%	46%

Source: Ryan Robinson, City Demographer, Department of Planning, COA, January 2014. The 5 counties included in the MSA figures are Travis, Hays, Caldwell, Bastrop and Williamson.

By 2014, Austin had transformed from one of the most affordable small cities in the country, to the 11th largest city in the nation, and the least affordable housing market in the state of Texas.

Figure 1: Austin Urbanized Area, 1970-2004[iv]

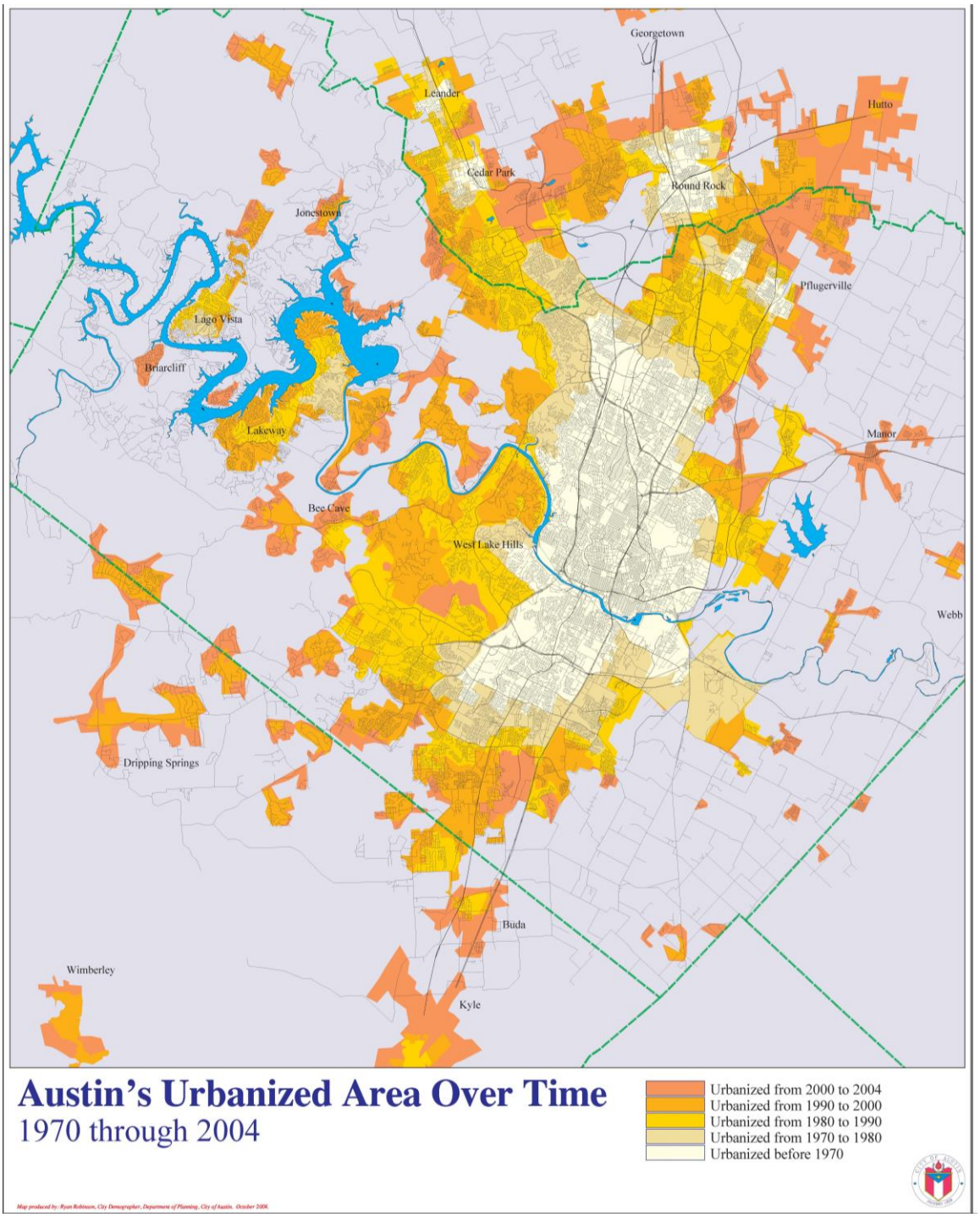
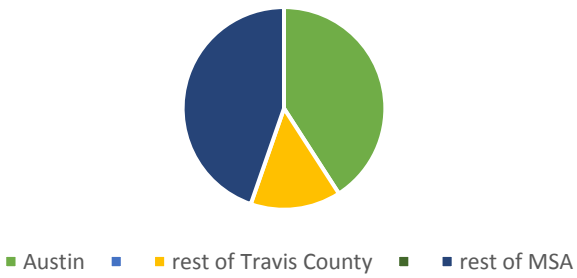


Figure 2.
Share of regional growth, 1970-2010
Austin, rest of Travis County, rest of MSA



By 2010, the Austin MSA was the tenth most unequal, in terms of income distribution, in the country.

Changes in the regional economy and wages

The region's rapid growth and shifting wage structure has been driven, in part, by the rise of new sectors in the regional economy and the reduced share of overall employment comprised by government workers. Between 1991 and 2011, the share of regional population employed by state and local government fell from 29 percent to 23 percent (Texas Workforce Commission 2011). Manufacturing employment fell from third to eleventh place between 2001 and 2011 (Table 2). These shifts brought with them changes in the share of households at both the upper and lower ends of the income distribution. While the rise of the technology industry has been much heralded as an engine of regional growth and wealth, there has been a parallel rise in service sector jobs with low average wages. Of the ten largest occupational categories in the MSA (accounting for 177,290 jobs), only 2 have annual incomes above $60,000 (Table 3).[v] By 2010, the Austin MSA was the tenth most unequal, in terms of income distribution, in the country.[vi]

Table 2.

Austin's Changing Economy

	JOBS RANK	
	2001	**2011**
Government	1	1
Retail	2	3
Manufacturing	**3**	**11**
Prof, Sci, Tech Services	4	2
Health Care, Social Asst	5	4
Finance, Insurance	10	7
Real Estate	12	10

Source: "Growing Pains of Austin, Brian Kelsey, Civic Analytics, Jan 2013. Data from US Bureau of Economic Analysis. Rank based on share of total jobs, GDP.

Table 3.

Largest Occupations, Austin-Round Rock-San Marcos MSA, 2012

Occupation	Jobs	Growth 2010-20	Annual Wage
Retail salespersons	27,780	17.8%	$ 25,500
Office clerks, general	24,160	17.0%	$ 29,700
Food Prep and service, including fast food	21,860	28.1%	$ 19,310
Customer Service Reps	17,640	22.5%	$ 31,490
Waiters	16,770	28.1%	$ 18,600
Cashiers	16,500	17.9%	$ 20,500
Sec and Admin Asst, expect legal, medical, executive	14,850	9.9%	$ 32,570
General and Oper Managers	13,970	10.2%	$114,680
Janitors, cleaners (except maids and housekeeping)	12,400	24.4%	$ 20,980
Registered nurses	11,360	32.1%	$ 63,420

Source: Bureau of Labor Statistics, Texas Workforce Commission, 2012.

Rising housing costs in central Austin

When combined with shifts in housing prices, there is evidence that these changes are reducing the housing choices of low and moderate income households, both in terms of where they can afford to live and whether or not they can buy—or continue to own—a home. By 2013, according to Austin Investor Interests, central city rents had reached record highs, averaging $1.15 per square foot, with new units coming online priced over 20% higher. Units downtown were priced even higher—between $1,275 and $1,875 for a 750 square foot apartment ($1.39-$2.50/square foot). At the same time lower-end rental property owners are upgrading their units to compete for higher income tenants, thus contributing to the shortage of apartments affordable to low income renters.[vii] The rate of increase has been building: on average, rents in the Austin area rose 6.5% in 2011, and 7.5% in 2012.[viii]

A 2009 study of the city's housing market quantified the gap between what low income households could afford and the rents prevailing in the market at that time. The authors found a 38,000 unit shortfall of rental housing affordable to households with incomes below $20,700. Compounding the pressures on the rental market was the shortage of homes affordable to first time homebuyers, which caused more people to stay in the rental market. The recent foreclosure crisis has added to this imbalance by pushing owners losing their homes to foreclosure back into the rental market.[ix]

Neighborhood and cultural change

A recent study of the largest 100 metropolitan areas in the nation found that Austin has the 9th highest level of economic segregation.[x] The city's historic pattern of racial and economic segregation is being reconfigured as centrally located, historically African-American and Hispanic neighborhoods are experiencing substantial redevelopment and are becoming increasingly home to affluent and white residents. Twenty percent of housing units in Austin's historically segregated central east neighborhoods (roughly equivalent to zip code 78702) were built after the year 2000. The value of taxable property in this area rose more than 200 percent between 2005 and 2012, and the white population rose from 11.2% to 33.5% during the 2000s.[xi] (See Figure 3).

As eastside neighborhoods change, minority residents of these neighborhoods are leaving and potential new low-income or minority in-migrants are going elsewhere. There is evidence of an outward migration of African-American households from eastside neighborhoods to northeastern suburbs.[xii] Low income settlements are emerging in unincorporated areas in the region. Such areas are often isolated from transit networks and social services.[xiii] A recent study found a 142% increase in the number of poor central Texans living in the suburbs between 1970 and 2011, along with increases in the share of the suburban poor that are immigrants.[xiv] At the same time, suburban areas offering homes affordable to first time homebuyers are locating increasingly farther from the city center (Figure 4).

A recent study found a 142% increase in the number of poor central Texans living in the suburbs between 1970 and 2011.

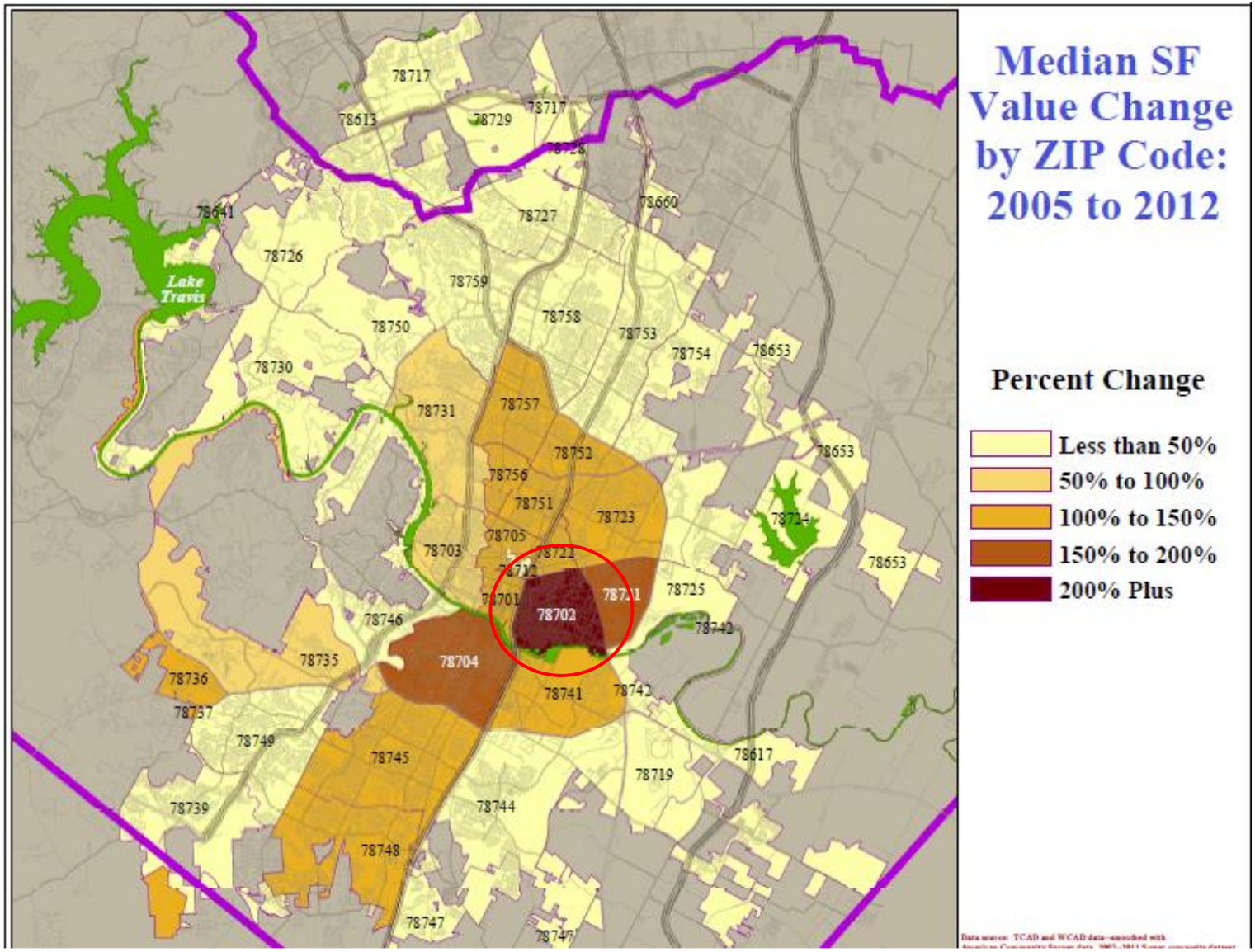
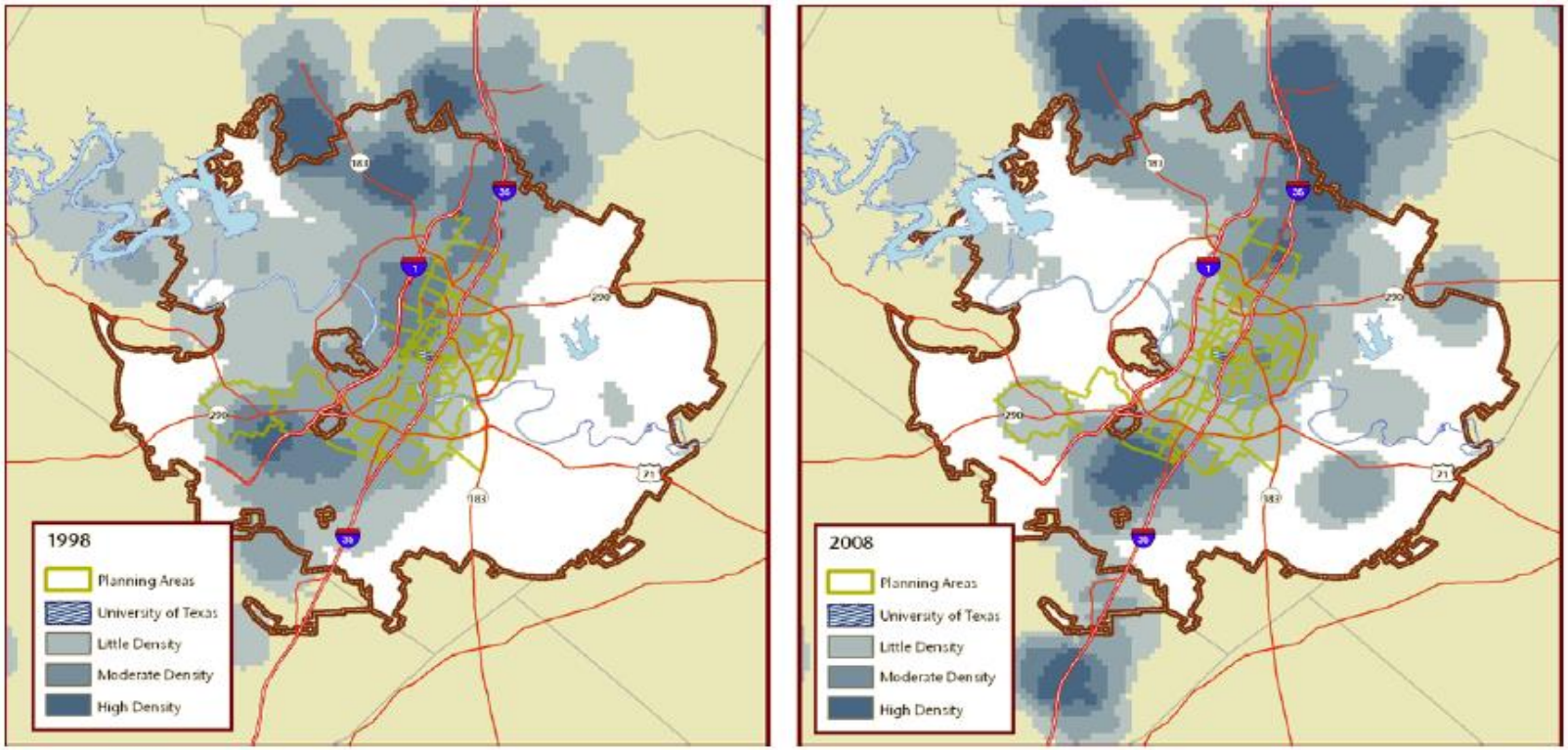


Figure 3. **Rapidly rising property values in central east Austin (Robinson, 2012)**

Figure 4. Location of Detached Single Family Units Affordable to 51% to 80% Median Family Income Housesholds Austin Region, 1998 and 2008



Note: 51-80% of MFI is the income range of $34,554 to $55,280. Assumes that households seek housing units near the top of their affordability threshold. Thus, units shown in these maps are priced between $111,874 and $178,165. "Density" as used in the maps means more units in a given geographic area. It does not imply density of land use.

Source: MLS and BBC Consulting. Exhibit ES-3 in City of Austin, Comprehensive Housing Market Study, Austin, Texas, 2009.

Employment and commuting

In contrast to the outward spread of residential subdivisions, the pattern of employment has remained more spatially concentrated within particular zones of the city—especially the central business district. The divergence in residential and employment patterns is seen in regional transportation patterns. Workers in central Texas tend to drive farther and spend more time commuting than workers in comparably sized metropolitan regions. Close to 48 percent of regional workers crossed a county line to commute to work in 2010.[xv] On average, Travis County workers drove 23.4 miles daily in 2012.[xvi] This is above the national figure of 21.6 miles for 2011. On measures of how congestion adds to commute time, Austin is well above the average for a city of its size and had a "travel time index" higher than Houston, Dallas and San Antonio in 2010. Austin's congestion travel time places it closer to the commutes of residents of much larger cities.[xvii]

Figure 5 highlights the commuting patterns into and out of Austin. Over sixty two percent of those employed within a ten mile radius of city hall (365,353) commute into it from suburban locations. Sixty percent of workers employed in this zone earning less than $40,000--for whom a long commute is a heavy financial burden—live outside of this ten mile boundary.

Yet the cost of remaining in the central city, for low income workers, is increasingly unaffordable. As shown in Table 3a, on average, households with low incomes face very high housing costs relative to the size of their incomes. For all but the highest income households, homeownership is unaffordable.

Figure 6 maps the location affordability of particular neighborhoods for a three person renter household with an annual income of $33,000. Only a few neighborhoods, in central east Austin, show average rents affordable to these households. This likely reflects the concentration of subsidized housing in this area.

On average, a renter household at this income level in the region would spend 56 percent of their monthly income on housing and transportation costs. Research on metropolitan areas around the country finds a growing disconnect between rising housing and transportation costs and stagnating incomes for households earning between 50 and 100 percent of regional median household income.[xviii]

There is a growing divergence between housing costs in and around central Austin and the prices that workers can afford. To cope with this, many workers have no choice but to move farther from central Austin and thus farther from many jobs. Though housing is more likely to be available at affordable prices farther from the city center, the price of commuting increases with distance and the increased time spent commuting is damaging to the quality of life of workers and their families. The housing and quality-of-life hurdles posed by long commutes may eventually undermine the region's other locational advantages. Such patterns highlight the importance of incorporating a broader range of housing types, at a range of prices, and near transit, in central Austin.

The housing and quality-of-life hurdles posed by long commutes may eventually undermine the region's other locational advantages.

Table 3a.

Location Affordability in the Austin-Round Rock MSA, by household type and tenure, 2010

Household composition and income	Tenure	Housing percent of household income	Transportation percent of household income	H + T percent of household income	Miles driven annually
Single, very low income ($11,139) national poverty line 1 person, 1 commuter	Renter	74%	44%	118%	9,626
	Owner	135%	44%	179%	
Low income ($33,250) 50% of regional median income 3 people, 1 commuter	Renter	32%	24%	56%	**15,912**
	Owner	52%	24%	76%	
Single worker ($22,485) 100% of regional median income 1 person, 1 commuter	Renter	40%	25%	65%	10,670
	Owner	74%	25%	99%	
Single professional ($44,970) 200% of regional income 1 person, 1 commuter	Renter	23%	15%	**38%**	11,699
	Owner	46%	15%	61%	
Retirees ($46,049) 80% of regional median income 2 people, 0 commuters	Renter	23%	13%	**36%**	10,429
	Owner	44%	13%	57%	
Dual income family ($86,342) 120% of regional median income 4 people, 2 commuters	Renter	17%	15%	**32%**	24,269
	Owner	26%	15%	**41%**	
Benchmark/goal		**30%**	**15%**	**45%**	

Source: US Department of HUD, Location Affordability Index. Average costs as a percent of income in Austin-Round Rock MSA.

Figure 5. Workers commuting into and out of central Austin, Texas.

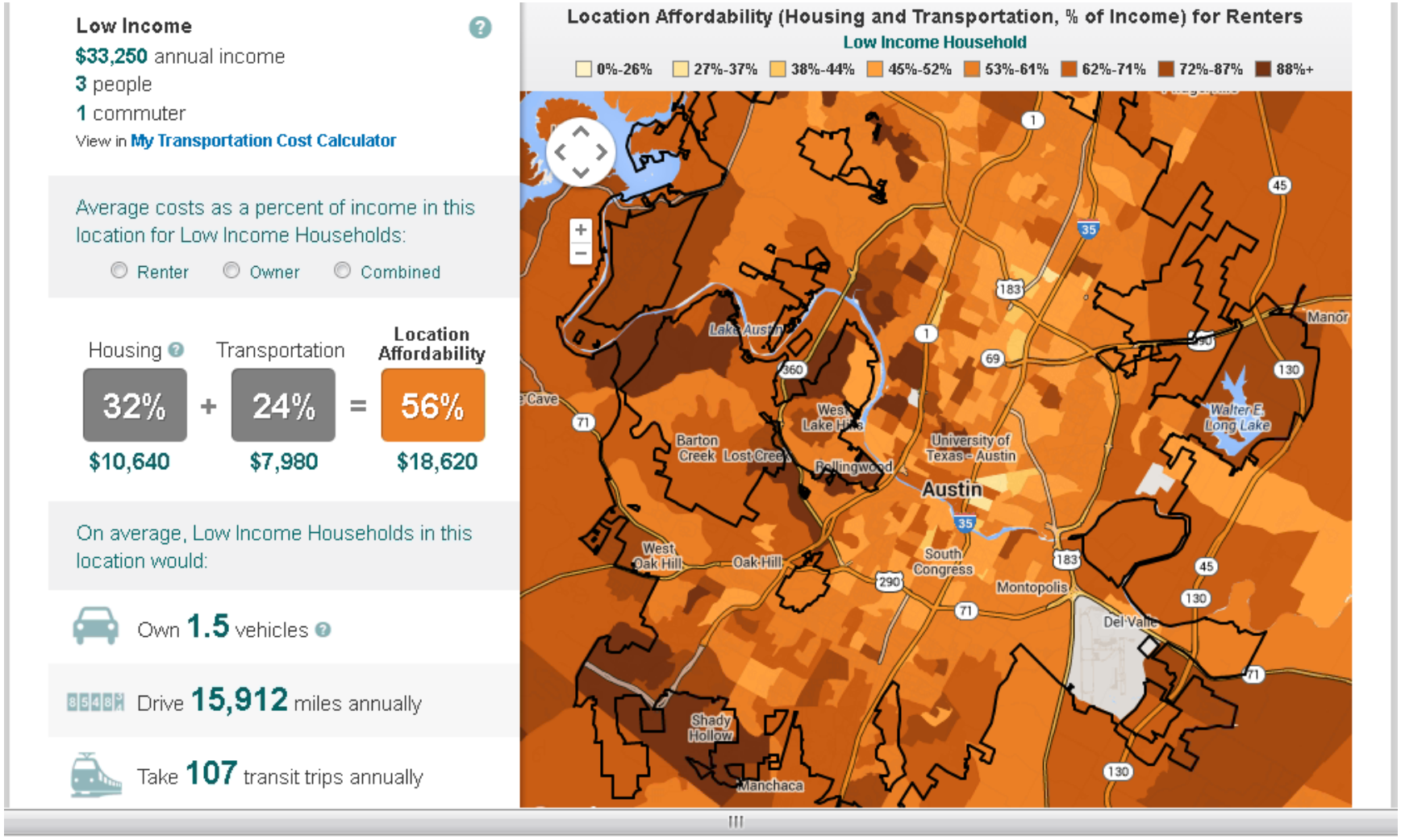


Figure 6. **Location Affordability for Low Income Renter Households, Austin, Texas, 2010.**

II. Do workers want to live closer to work? What shapes their decisions?

Demographic change and urban form

The desirability of particular types of housing, and of particular types of locations, is strong tied to the types of households found in a region, and their needs. Nationally, household demographics are shifting such that three-quarters of the demand for new housing by 2035 will be generated by households without children. In addition, the share of households headed by minorities, whose incomes are considerably lower than whites, on average, is rising. Together these two trends predict a sharp shift away from postwar patterns of suburban homeownership.[xix]

Nelson, in a recent analysis of the central Texas region prepared for the CAPCOG, finds some evidence of these shifts. More than 60% of regional growth between 2010 and 2035 will be attributable to seniors and minorities, and only 29% of household growth will be households with children. Thirty one percent of growth will be of single person households. The share of growth accounted for by heads of households in peak earning years (age 35-64) is projected to decline from 50% to 44%, while the share attributed to "starter households" (where householders are under age 35, and incomes are lower) is projected to comprise 24% of growth, while the share attributed to elderly households will also rise to 32%.[xx]

Attitudes toward homeownership and commuting

Given the likely decline in homeownership and rising concern about commuting costs, researchers have begun studying attitudes towards new forms of development. Several recent surveys have gathered evidence regarding how attitudes about housing and neighborhood characteristics vary by demographic characteristics.[xxi] Nelson reviewed data from these national surveys, focusing on the views of the demographic groups likely to comprise a large share of the market for new housing. He focused on attitudes toward neighborhoods much like Austin's Mueller neighborhood, where homes are developed in proximity to shops, transit, and other services, and streets are designed to accommodate cars, pedestrians, and bicyclists.

Nationally, about half of Americans would support such communities and would want to live in them. Strongest support was found among households whose heads were under 35 or over 70 and among lower income households (defined as below 80 percent of regional median income). In Texas, overall support for living in such communities mirrored the national survey. However, the demographics of groups most in support were somewhat different. It was single person households and younger households who were most interested in living in such communities, while householders over 55 and those with children were more likely to prefer conventional suburban communities. Interestingly, in Texas, there were no strong differences in preferences by household income (Table 4).

In Texas, single person and younger households were most interested in pedestrian oriented communities.

Table 4.
Willingness to Live in Smart Growth Communities, US and Texas

	WANT TO LIVE IN SMART GROWTH COMMUNITIES	
Group	**US**	**Texas**
All	**47%**	**48%**
Age		
18-34	51%	52%
35-54	45%	48%
55-69	47%	39%
70+	56%	40%
Income		
Low income	45%	48%
Mid income	41%	47%
High income	39%	47%
Household type		
Single HH	48%	54%
HH with children	46%	40%
No children in HH	46%	49%

Source: Porter Novelli, reported in CAPCOG, 2012. Percentages indicate sum of respondents who "would somewhat support" through "would definitely support"

The National Association of Realtors did a similar study, asking respondents to choose between housing options. While Texans were somewhat more likely to prefer conventional suburban neighborhoods than were U.S. residents as a whole, the majority supported new, "smart" neighborhoods (table 5). From American Housing Survey data, Nelson estimated that about 20 percent of Texans in the state's four largest metropolitan areas currently have the option of living in such neighborhoods.[xxii]

Table 5.
Community Preference Tradeoff

COMMUNITY TYPE	US	TEXAS
***Community A**:* Houses are built far apart on larger lots and you have to drive to get to schools, stores, restaurants, park/playground, recreation areas	43%	46%
Community B: Houses are built close together on smaller lots and it is easy to walk to schools, stores, restaurants, parks/playgrounds, recreation areas.	56%	54%

Source: Table 2.6 in CAPCOG, adapted from NAR 2011.

While residents were interested in communities that offered shorter commutes and easy access to services, they were not willing to give up their single family homes. In fact, Texans were especially resistant to apartment or townhouse living. (Table 6).

About 20 percent of Texans in the state's four largest metropolitan areas currently have the option of living in such neighborhoods.

Table 6.

Trading Off Housing Attributes

PREFERENCE TRADEOFF QUESTION	US	TEXAS
Please select the community where you would prefer to live:		
Smaller house/lot, shorter commute	**59%**	**56%**
Larger house/lot, longer commute	39%	42%
Please select the community where you would prefer to live:		
Mix of houses/businesses easy to walk	**58%**	**57%**
Houses only, drive to businesses	40%	42%
Please select the community where you would prefer to live:		
Apartment/townhouse, easy walk	38%	35%
Single family house, drive	**59%**	**63%**
Source: Table 2.8 in CAPCOG, from NAR 2011.		

How might these preferences translate to Central Texas, given our demographics and our housing and commuting costs? Given our younger demographic profile, as well as the increase in the share of minority households in our region, we can expect that fewer households will be able to afford to purchase a home, unless offerings change. But are our residents interested in different housing types? In more urban living? How do they view the trade-offs between commute costs and housing and neighborhood characteristics? How, in particular, do those most strongly affected by high commuting costs—low income households—view these choices? These are the questions that motivated us to carry out our own survey.

Survey of low income commuters working in central Austin

Austin has recently adopted a new comprehensive plan, *Imagine Austin.* The vision put forward in this plan mirrors many aspects of the new forms of development about which respondents were queried in the surveys described above. From the description of our current growth patterns and of our demographic make-up it seems likely that incorporating new housing choices into central corridors and activity centers, as envisioned in the plan, could have some appeal for those currently struggling with long and costly commutes. In order to understand the views of residents of our region, and to gauge the potential impact that living closer to work could have for both households and the larger region, we fielded a survey targeted at low income workers commuting from their homes on the outskirts of Austin to a central city workplace.

To identify the population to survey we contacted employers located in central Austin employing workers full time at wages below $60,000—roughly 80 percent of regional median income for a family of 4 in 2012. After reaching out to multiple employers, two of the largest city employers—the City of Austin and the University of Texas—agreed to participate in our survey. To construct our survey population, we compiled lists of all workers employed full time by both employers with wages below $60,000 and who live in zip codes roughly beyond a ten mile radius of downtown. Over 5,300 workers met our criteria. From these lists we randomly drew a sample of 945 workers. Our response rate was 34.5 percent, a reasonable response rate for a mail survey (see appendix).

Table 7.

Profile of Survey Respondents compared to city and region

GROUP	RESPONDENTS	AUSTIN	MSA
Age of Householder			
20-34	27%	37.4%	29.8
35-54	52%	38.2%	41.9
55-69	20%	24.4	28.3
70+	<1%		
Income			
Very Low income < $40,000	15%	38.8%	33.2
Low income $40-$60,000	29%	17%	17.0
Mid & High income > $60,000	56%	44.2%	49.7
Household type			
Single HH	12%	33.8%	27.6%
HH with children	39%	28.5%	34.7%
No children in HH	61%	71.5%	65.3%
Total responses	**267**		

Source/Notes Data for income and household type are from the American Community Survey for 2012. Data for age of householder and presence of children are from Census 2010. The final sample size reflects the exclusion of households found to live within ten miles of their workplace from the dataset as well as deletion of those no longer employed by UT or COA. While workers surveyed made less than $60,000, they often lived in households with other workers and thus incomes above $60,000. Survey missing values ranged between 7-12% on individual questions and were not used in the calculation of percentages.

The demographics of our survey population differ from the city and regional populations in certain ways that may bear on our findings. Several differences are driven by the fact that we were surveying workers rather than the general population, and also focusing on those known to have wages below 80 percent of regional median income. First, more of our respondents were of prime working age than city and regional household heads in general. Second, we found relatively few respondents with household income below $40,000 per year. The larger share of city and regional populations falling into this category likely reflects the inclusion of household heads not in the labor force due to disability or retirement. Our respondents are also more likely to have children and much less likely to live alone than are city or regional residents.

In short, the profile of our survey population—older, on average, and more likely to have children--would lead us to expect them to be less interested in moving closer to work than respondents to US and Texas surveys have been.

Yet, despite these factors, we found strong support for moving closer to work—which means into central Austin. First, when we asked residents "if you could live closer to your workplace in Austin, would you?" 48 percent answered "yes"—paralleling the support for living in more compact communities found in the surveys described earlier. We will explore whether the desire to move can be interpreted as a desire to live in more compact, walkable communities below.

In Central Texas, the majority of householders with children surveyed were interested in moving.

The profile of those interested in moving closer to work—young but not childless

Explanations for changing attitudes toward homeownership and driving have emphasized the youth and life stage of those less interested in suburban homeownership. The assumption is that once these households have children, they will move to the suburbs and buy a house with a yard, in a good school district. The findings of the national and Texas surveys are consistent with this narrative: support was strongest among young workers and lowest among householders with children, especially in Texas (see Table 8). Indeed, the generational divide between younger and older households is more pronounced in our survey: 65 percent of respondents ages 18-34 said they would be willing to move, while only 31% of those age 55 or older said so. This is consistent with other national surveys reporting changing attitudes toward homeownership and driving among Millenials.[xxiii] Similarly, single person householders, like their national and state counterparts, were highly likely to be willing to move.

On the other hand, assumptions about life stage and the presence of children are not borne out in our survey. In fact, the majority of householders with children surveyed *were* interested in moving—well above the percentages found in US and Texas surveys. We will explore this finding below.

Finally, we explored the relationship between income and the decision to move. The cost of housing was clearly a dominant factor in respondents' views. Both those willing to move and those not willing to move cited the cost of housing as highly important to their decision. For those interested in moving, it was the most important factor. Nelson speculated that minority households, because of their lower average incomes, would be less likely to be homebuyers.

But he had no information about their attitudes about where they would prefer to live. We found that the majority of both Black and Hispanic householders were interested in moving closer to work.

While all were concerned about the cost of housing, it was those with the lowest incomes who were most interested in moving. Seventy percent said they would move if they could. [xxiv]

We examined a number of additional factors to understand how those willing to move differed from those not willing to move. The strongest differences, in terms of statistical significance, were age related: Those under age 50 were significantly more likely to be willing to move, as were those who had lived in their home less than four years. Strong differences were found between those with low and very low incomes and those with household incomes above $60,000. Strong differences were also found based on the type and tenure of housing households currently lived in, with those renting or living in multifamily housing significantly more likely to want to move.

What kind of neighborhoods appeal to movers?

It is possible that our respondents are not interpreting the question about moving closer to work to mean living in a different type of neighborhood. To gauge whether this is true, we asked those willing to move about the specific neighborhood and housing characteristics that would matter to them in their decisions to move.

More detailed questions revealed that respondents were indeed interested in mixed use neighborhoods, with more pedestrian and child-friendly urban design features, and that were transit accessible (Table 9). In addition, 62 percent indicated that they would be more likely to move if a neighborhood included a good school.

At the same time, questions about the characteristics of the housing they would prefer revealed that respondents were still very attached to living in single family homes with private yards (Table 10). While a majority indicated that they were more likely to move if a neighborhood offered a mixed of housing types and included owners and renters, support for these features was much weaker.

It was those with the lowest incomes who were most interested in moving.

Table 8.

Attitudes toward Living in Mixed Use, Compact Communities

POPULATION	US	TEXAS	SURVEY
All	**47%**	**48%**	**48%**
AGE			
18-34	51%	52%	**65%**
35-54	45%	48%	44%
55-69	47%	39%	31%
70+	56%	40%	NA
INCOME			
Very low income (<$40k)	--	--	70%
Low income (<$60k)	45%	48%	56%
Mid income	41%	47%	43%
High income	39%	47%	43%
RACE/ETHNICITY			
Black	50%	--	--
Hispanic	47%	--	--
HOUSEHOLD TYPE			
Single HH	48%	54%	53%
HH with children	46%	40%	51%
No children in HH	46%	49%	48%

Source: US and Texas data from Porter Novelli, reported in Nelson. Percents indicate sum of respondents who "would somewhat support" through "would definitely support." Survey columns indicate percent who would move closer to their central Austin workplace if they could. N=267.

Table 9.

Neighborhood Features desired by Movers

WHAT IMPACT WOULD THE FOLLOWING FACTORS HAVE ON YOUR DECISION TO MOVE?	MORE LIKELY TO MOVE
If new neighborhood…	
Included stores and services that you use routinely (banks, grocery stores, pharmacies, neighborhood eateries).	94%
Was in walking distance to public transportation.	80%
(If you have children) Had bike paths or sidewalks safe for children.	77%
Included a good public school.	62%
Note: Includes "more likely" and "much more likely" responses.	

Table 10.

Housing characteristics desired by movers

WHAT IMPACT WOULD THE FOLLOWING FACTORS HAVE ON YOUR DECISION TO MOVE?	MORE LIKELY TO MOVE
If your new neighborhood…	
Allowed you to live in a single family home.	**94%**
Allowed you to have a private yard.	**91%**
Had a mix of types of housing.	**54%**
Included both owners and renters.	**50%**
Note: Includes "more likely" and "much more likely" responses.	

Reasons Not to Move

We also queried those who said they were not willing to move closer to work on the reasons for that decision. The reasons given are a mix of satisfaction with one's current home and neighborhood, concerns about the affordability of more centrally located neighborhoods, and concerns about safety and density (Tables 11 and 12). Interestingly, concerns related to children did not appear to be important factors in respondents' lack of interest in moving. Among the questions pertaining to the wellbeing of children, only the question on school quality elicited majority support. Since this question was asked of all respondents—whether they have children or not—this stronger response may be related to concerns about property resale values in areas they could afford. Finally, concerns about the impact of moving on the commute of another worker in the household or on one's commute in future jobs were not important factors, with only around one-third of respondents indicating it would be a factor in their decisions.

Table 11.

Reasons not to move--Neighborhood

I WOULD NOT CONSIDER MOVING CLOSER TO WORK BECAUSE…	AGREE OR STRONGLY AGREE
I like my neighborhood.	93%
I do not want to live in a more densely developed area.	83%
The neighborhood would not be as safe.	71%
I have friends and/or relatives living nearby.	68%
The stores and services I use routinely are close by.	67%

Table 12.

Reasons not to move--Cost

I WOULD NOT CONSIDER MOVING CLOSER TO WORK BECAUSE…	AGREE OR STRONGLY AGREE
The housing would be more expensive.	88%
I do not want to have to pay more taxes.	80%

Table 13.

Reasons not to move--Children

I WOULD NOT CONSIDER MOVING CLOSER TO WORK BECAUSE…	AGREE OR STRONGLY AGREE
The schools would not be as good.	61%
(*If you have children*) Moving would disrupt my children's friendships.	43%
(*If you have children*) My children would not be able to get around as independently.	37%

Summary

Forty-eight percent of survey respondents were willing to move closer to work. As in national and state surveys linking demographic characteristics to attitudes regarding neighborhood and housing preferences, we found that it was younger, single householders that were most interested in moving back to the city. However, unlike these other surveys, we found that the majority of householders with children living at home were also interested in moving. And we found that those with the lowest incomes had the strongest interest in moving closer to work.

More detailed questions revealed more about the features that movers would desire in their new neighborhoods and homes. There was strong support for mixed use neighborhoods, where residents could easily access transit and where their children could safely walk and play. At the same time, while the majority found the idea of living in an area with a mix of housing types and tenures appealing, almost all respondents hoped themselves to be the residents of single family homes, with private yards.

In addition to concerns about higher costs, those not interested in moving tended to be satisfied with their current situation, concerned about the safety and density of neighborhoods closer to work and, to a lesser extent, the quality of schools in those neighborhoods.

III. What are the potential benefits of housing low income commuters closer to work?

Now that we have established that there is interest on the part of low income households—including those with children—in living closer to work, we turn to a discussion of the benefits of providing greater housing choices for these households. In other words, why does it make sense for Austin to invest in providing homeownership or rental options to low income households in central locations? We will discuss these benefits in terms of both the benefits to the households themselves and also those to the broader community.

Benefits to low income households

As noted earlier, commutes in our region are lengthening. Longer commutes bring both higher costs in terms of gasoline and car maintenance and in terms of time spent commuting. Reducing commute costs for households whose budgets are already tight has the potential to help them to meet other essential costs, and to potentially reduce their need for other social supports. Perhaps they can now afford quality childcare, or enroll their child in a sports program. Or they can afford to take a course at Austin Community College or take a family vacation. They would have more money to spend on housing costs. Reducing the *time* spent commuting will improve the quality of life of commuters and their families, enabling them to spend time on things more important to them and to their families than commuting. Finally, considerable research documents the negative health effects of long commutes, including adverse effects on physical activity, cardiorespiratory fitness, obesity, and risk for high cholesterol and blood pressure.[xxv]

Benefits to the economy

The availability of housing affordable to the range of workers in the regional workforce, as well as the impact of commuting on quality of life, can act as deterrents to employers looking to locate in the region. A recent study discusses the economic advantages to businesses of providing locations with housing and transportation options. While much of the research emphasizes the importance of urban settings to educated workers[xxvi], there is also evidence of the impact of long commutes and congestion costs on labor availability and costs. Congestion can limit the geographical area from which workers are willing to commute and require that employers pay higher wages.[xxvii] Finally, researchers note that companies in central locations with multiple options for how employees and customers can reach them have a competitive advantage over more far flung locations.[xxviii]

Benefits to the environment

Finally, longer commutes and greater congestion produce harmful effects on the environment through increased emission of greenhouse and noxious gases that affect regional air quality. Reducing the aggregate number of “vehicles miles travelled” in a region can contribute to improvements in air quality, particularly in regions where automobiles are the major contributor to air pollution.

Estimating the impacts of moving closer to work

In order to estimate the benefits of moving, we asked our survey respondents to provide their home and work addresses, as well as information about how often they commute alone and the make and model of the car they use to commute. We used this information to estimate the time and cost of their current commute. On average, those willing to move reported spending 42 minutes driving in each direction of their commute, or 84 minutes per day. They drive, on average, 21.3 miles in each direction, or 42.6 miles per day.

To estimate the benefits of moving, we first needed to be able to estimate a new commute distance and time based on an actual route. To do this, we "moved" respondents to new locations in Austin. We assigned movers to new neighborhoods using five sites identified in the *Imagine Austin* plan as places that the city is currently developing or planning to develop mixed-use projects in over the next 15 years (see Map 1). We selected four medium-sized sites (planned capacity of 10,000-30,000 residents) and one large site (planned capacity of 25,000-45,000 residents). Having selected the five potential housing sites, we assigned respondents who currently live south of the Colorado River to the southernmost site, Riverside Station. Respondents living north of the river and east of I-35 were assigned to the easternmost site, Mueller Station. Respondents living north of the river and west of I-35 were assigned randomly to one of the three remaining sites located in north-central Austin: North Burnet/Gateway Station, Crestview Station, and Highland Mall Station (see Map 2).

Three commuting scenarios

Once we had assigned households to new home locations, we estimated how long it would take to commute to work from their new home by car. This enabled us to then estimate the time and cost savings associated with their shorter commutes. To be consistent, and to ensure that our estimates were conservative, we used a computer mapping application available through Google to re-estimate current commute times and then used the same process to estimate new potential commute times. Since the commute times calculated by Google were, on average, about 15 minutes shorter for a one-way commute than self-reported commute times, we may be *under*estimating the time savings associated with commutes.

We also estimated the reduction in gasoline consumption based on the age, make and model of car that respondents drive. We were also able to estimate reductions in tailpipe emissions that contribute to air pollution (carbon monoxide and nitrogen oxides) and to greenhouse gas production (carbon dioxide).

Finally, we estimated commuting costs, including fuel costs and the costs of insurance, maintenance and other costs of automobile ownership. For scenarios that include transit, we included the cost of a monthly bus pass. (See the appendix for a more detailed explanation of our methodology).

Scenario 1: a shorter commute by car

Living at one of these more central locations would reduce the miles workers would commute substantially. On average, workers would commute 7,736 fewer miles per year. This would in turn reduce

commute times by *at least* 172 hours over the course of a year, roughly cutting commute time in half.

The reduction in driving would result in an average driving distance of only 11.7 miles per day—well below the target average of 21 "vehicle miles travelled" per commuter adopted by the Community Action Network.[xxix]

On average, those continuing to commute by car would save $4,370 annually, or $364 per month. For a household earning $60,000, this would constitute 7.3% of annual income before taxes. For a household earning $40,000, this is equivalent to almost 11 percent of annual income. For a household earning $20,000, it would be 21.8 percent of annual income.

Scenario 2: commuting by bus

Since public transit lines serve all these central locations, we estimated the impact of commuting via transit, instead of by car, from respondents' homes to workplaces. This resulted in a reduction in miles driven to zero, bringing further reductions in tailpipe emissions and costs.

On average, those switching to the bus would save $5,631 compared to the costs of their current commute. This is the equivalent of 9.4 percent of a $60,000 income, or 14 percent of a $40,000 income. For a household earning $20,000 per year, it would be 28 percent of annual income.

The average duration of a commute by public transportation that respondents would experience is 29 minutes, as estimated by CapMetro's trip planner. Compared to our conservative estimate of current commute times, commuting by bus does not save time. However, compared to the time that respondents themselves report spending on their commutes today, moving closer to work and taking the bus would save them 22 minutes each way, every day, or more than 183 hours a year.

By switching to the bus, these commuters would reduce their daily "vehicle miles travelled" to zero.

Scenario 3: community by bus, owning one less car

Our final scenario considers the impact of commuting by bus and getting rid of one car. In this scenario, we add savings in costs associated with owning a car. The net savings to households rise to $9,231. This is equivalent to 15.4 percent of an annual income of $60,000, 23 percent of an annual income of $40,000 or a whopping 46.2 percent a $20,000 income.

Time and VMT savings would be the same as in the second scenario. Presumably, the sale of the commute car would also result in a reduction in non-work driving too, generating further reductions in tailpipe emissions.

Savings in commute costs could significantly reduce pressure on household budgets.

Summary

Were housing affordable to low income households to be available in central Austin, our survey suggests that the benefits to households choosing to move would be considerable. Based on our analysis of current commute costs and three scenarios for moving closer to work, we find that the savings in commute costs could be as high as $9,231. For households with annual income below $60,000, the savings would constitute a significant share of income, reducing the pressures on household budgets.

Estimates of time savings for movers ranged greatly, due to differences in commute times reported by respondents and those estimated by commuters themselves. Those continuing to commute by car would see a substantial drop in commute times, of at least 40 minutes per day, possibly more. Time spent commuting by transit would average around 29 minutes in each direction—an improvement compared to self-reported commute times but a slight increase compared to google's estimates of baseline commute times.

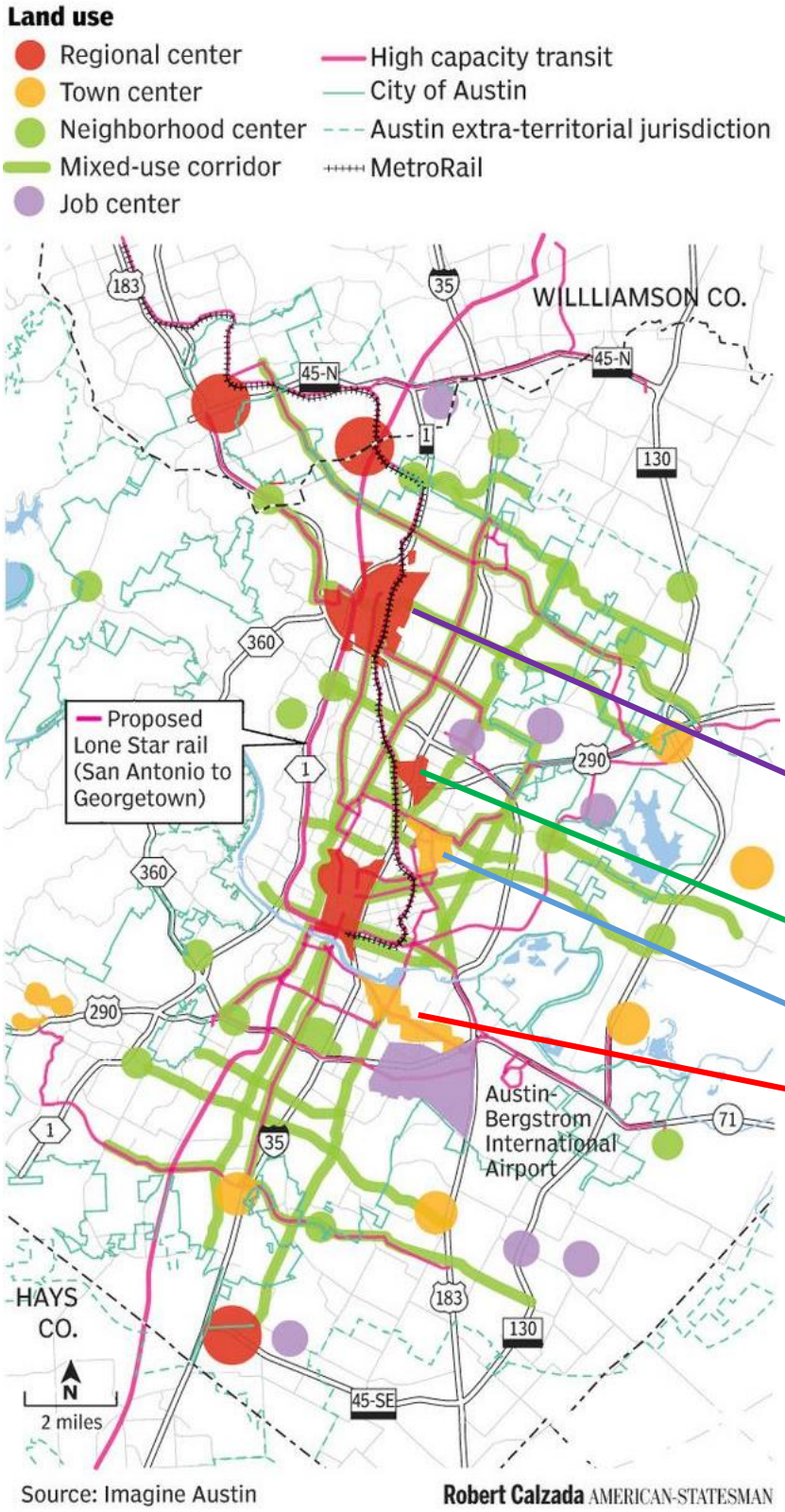
Finally, all three scenarios promise reductions in "vehicle miles travelled" and thus in tailpipe emissions, including gases that produce toxic pollutants and also greenhouse gas. All three scenarios would reduce daily driving well below the per capita goals established by the Community Action Network for regional commuters.

Table 14. Benefits of reduced commutes: three scenarios

Benefit	**Savings**		
	Scenario 1	**Scenario 2**	**Scenario 3**
Yearly reduction in miles driven (per commuter)	**7,736 miles**	**10,669 miles**	**10,669 miles**
Yearly commuting costs saved, including fuel costs (per commuter)	**$4,370**	+$6,027 -$ 396 (bus pass) **= $5,631**	$6,027 +$3,600 (car savings) -$ 396 (bus pass) **=$9,231**
Percent of $60,000 annual income	**7.3%**	**9.4%**	**15.4%**
Percent of $40,000 annual income	**11.0%**	**14.0%**	**23.0%**
Yearly tailpipe emissions saved (per 100 commuters)			
Nitrogen oxides (NOx)	103 Kg	142 Kg	142 Kg
Carbon monoxide (CO)	892 Kg	1,230 Kg	1,230 Kg
Carbon dioxide (CO2)	338 tons	473 tons	473 tons
Yearly travel time saved (per commuter)*	**172 hrs.**	**-6.25 hours**	**-6.25 hours**
Yearly gasoline saved (per commuter)	**352 gallons**	**487 gallons**	**487 gallons**

Note: Scenarios two and three don't include all Movers because some of them do not work in transit-accessible places. They were left out of this portion of the analysis, as they would have to continue commuting by car. Also, the $396 yearly bus fee covers only the regular bus. Some commuters would likely take the rail, which requires a more expensive pass. Finally, some employers--UT Austin and City of Austin included--provide transit fare for their employees; these would be added savings to the commuters.[xxx] ***Time savings are based on google generated estimates of commute times, which were much lower than times reported by commuters.

Map 1: Imagine Austin Activity Centers



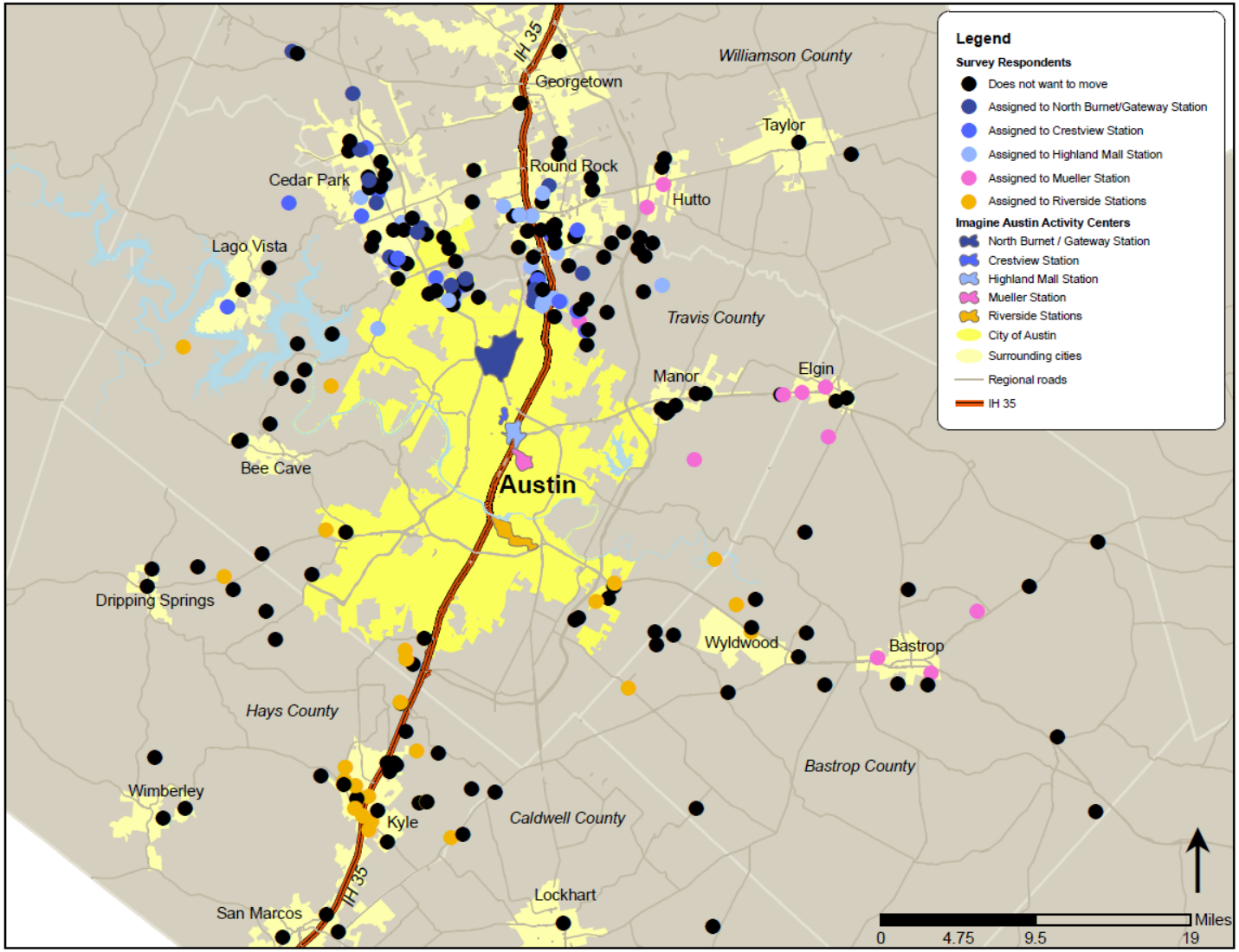
N. Burnet/Gateway Station (Regional Center)

Crestview Station (Town Center) + Highland Mall Station (Regional Center)

Mueller Station (Town Center)

Riverside Stations (Town Center)

Map 2: Survey respondents--Current and Assigned Locations



Source: Map created by Clifford Kaplan.

IV. Where do we go from here?

While there is currently great interest and understanding of the importance of created "mixed use" areas around transit stations and bus stops, there is less emphasis or understanding of the importance of ensuring that significant numbers of households with low to moderate incomes live in these areas. Our survey has established that many low wage commuters would prefer to live closer to work, and are interested in living in the types of communities envisioned by *Imagine Austin.* The potential benefit to these households and to the broader community is significant. For households, the reduction in commuting costs would be substantial, particularly for the lowest income households. An extra $364-$769 per month could help families meet other important expenses, such as health care, or child care, or go part way toward meeting the higher housing costs in central Austin. The reduced time spent commuting could yield health and quality of life benefits for these commuters. There would be benefits to the region in the form of reduced driving and tailpipe emissions, and in increased ridership for transit systems. Finally, making it possible for low and moderate income workers to live within easy access to key job centers would contribute to regional productivity and support our existing physical and institutional infrastructure.

We drew our random sample from a larger population of 5,230. If we generalize our results back to this population, we estimate that more than 2,500 low income workers at these two employers would be interested in living closer to work. To the extent that these workers represent the larger population of low income commuters, there are likely thousands more. What would it take to provide housing choices to these households—younger, low income households, many with children--in Austin?

Moving forward will require that we: 1) better integrate land use, housing and transportation planning; 2) align budget processes across these domains, and 3) revise development rules and review processes, and 4) develop metrics to judge project proposals and reward progress toward integrated goals—both locally and regionally.

Integrating planning for land use, housing and transportation

While city plans around the country now routinely call for land use and zoning practices that will enable people to carry out their daily tasks with less driving, planning, housing and transportation functions are typically housed in separate departments within cities with their own cultures and goals. Increasing housing choices will require integrating land use planning with transportation and housing planning. Specifically, it would mean ensuring that housing for current low income residents is preserved, while new opportunities are also created.

The creation of cross-department teams to implement *Imagine Austin's* priority programs is a positive step toward more integrated planning. Next steps should include more detailed discussion of how goals of different departments can be better aligned and what processes are required to ensure that conflicts between goals are identified and addressed. For example, preservation of existing rental housing may be seen as a priority for the achievement of housing goals, but as an impediment to urban design goals for transit corridors. Joint planning can identify ways to better integrate preserved buildings into district or corridor plans.

At the regional level, linking the CAMPO planning process to land use planning in member jurisdictions will be an important step in

integrating goals. The Sustainable Places Project has recently developed a scenario planning process that can be linked to broader regional goals and could provide a basis for regional conversations about fostering better balance between jobs and housing, and connections to transportation systems.

Align budget processes to leverage benefits

It will also require coordinating the various processes governing the funds for each domain, including capital budgets, federal transportation budget requests, federal housing block grants and the use of development incentives. Planning and budgeting for these areas have historically been disconnected. Subsidies for affordable housing have historically been primarily federally funded, and have followed planning and compliance processes aimed at federal compliance. Federal transportation funds are governed by regional bodies with sometimes competing goals. Nonetheless, some regions have been successful in integrating land use and transportation planning.[xxxi]

Increasingly, competitive federal awards for housing and transportation projects require coordination between transportation and housing. For example, in the competition for federal transportation funding under the "new starts" program, communities that can demonstrate that they are prioritizing transit investment in areas with low income, transit dependent populations, and also have a plan in place and a record of progress toward preservation and development of affordable housing near transit will score best. Current discussions between Austin's *Project Connect* and Neighborhood Housing and Community Development office are highlighting the need for a housing preservation plan that can be linked to transit goals.

Revise development rules and review processes

Austin is in the process of identifying aspects of its land development code that must be revised in order to achieve the goals of its newly adopted comprehensive plan, *Imagine Austin.* A key aspect of this revision should be to ensure that rules are designed to integrate goals and that review processes used to implement them should anticipate any conflicts between goals and have clear procedures for working through them in a coordinated way.

In particular, the new land development code will need to facilitate the addition of more types of housing in the areas of town designated for growth, and that are well served by transit. In addition to mixed use multifamily buildings, these might include small lot single family homes, and attached homes like the row houses or "Mueller houses" found in the Mueller neighborhood. It can also facilitate the addition of small, secondary units or "alley flats" behind single family homes, throughout the city. The addition of these housing types was recommended as a strategy for improving access to homeownership in the 2009 study of Austin's housing market commissioned by the City of Austin's Neighborhood Housing and Community Development Office.

Develop metrics to judge proposals and reward progress toward integrated goals—both locally and regionally

Finally, success will be more likely if we agree upon measures of success toward goals and are accountable for our progress toward

them. Our region has developed several sets of metrics for benchmarking progress toward city or regional goals, including the Community Action Network's Dashboard, the Central Texas Sustainability Indicators Project and the Opportunity Indices developed as part of the Opportunity Mapping project.[xxxii] At the project level, the Sustainable Places Project has developed a scenario planning tool useful in understanding some of the consequences of different development decisions.[xxxiii] All of these provide useful data to draw upon for development of metrics linking progress on housing, transportation and land use. What is lacking is a conversation about metrics linked to integrated planning processes.

Encourage private sector role in developing solutions

Public resources are limited and creative solutions will require partnerships with private sector actors. For example, employers concerned about the ability of their workers to live near work in other regions have developed initiatives to enable their employees to live closer to work. For example, the University of Chicago's Employer Assisted Housing program enabled many employees to lie within walking distance of work, increasing employee satisfaction and the strength and stability of the neighborhoods surrounding campus.[xxxiv] The range of activities employers can pursue can range from small grants to enable employees to purchase a home, to development of rental housing for employees.

Acknowledgements

The authors would like to thank the UT and City of Austin employees who took the time to answer the survey and whose comments helped us to improve the clarity of some of the survey questions. We also the staff members at the University of Texas and the City of Austin who made it possible for us to draw our sample and distribute the survey. In particular, we thank John Moore at the University of Texas, and Karen Sharp, Paul Lloyd and Rebecca Giello at the City of Austin. We thank City Manager Mark Ott for his support and his willingness to encourage city employees to respond. For research assistance, we thank Marla Torrado and Isabelle Headrick. We drew inspiration for the study from a study of similar issues conducted for the Asheville region by researchers at the University of North Carolina's Center for Urban and Regional Studies. We thank Bill Rohe, one of the research team, for discussing their work with us. Finally, we appreciate the support of Chad Coburn at the Capital Area Council of Governments. This project was part of the larger Sustainable Places Project that CAPCOG administered, with funding from the US Department of Housing and Urban Development's Office of Sustainable Housing and Communities.

Appendix

Methodology for conducting the survey

To determine the percentage of low- and medium-wage workers who would be willing to move to central Austin from the urban fringe and beyond, we conducted a survey of 928 workers who live more than 10 miles from the city center and earn less than $60 thousand per year working for either one of two large local employers, The City of Austin and the University of Texas at Austin. The University of Texas survey was conducted by campus mail, while the City of Austin survey was distributed via email and, for those without email addresses, via departmental mail. Those receiving hard copy surveys had the option of completing and submitting those or responding to an online version. Those contacted by email responded to an online survey. The response rate was 34.5 percent. Respondents were asked for their home and work addresses, and those who reported that they already live within 10 miles of their workplaces were not included in our analysis. The number of survey respondents included in our analysis was 267.

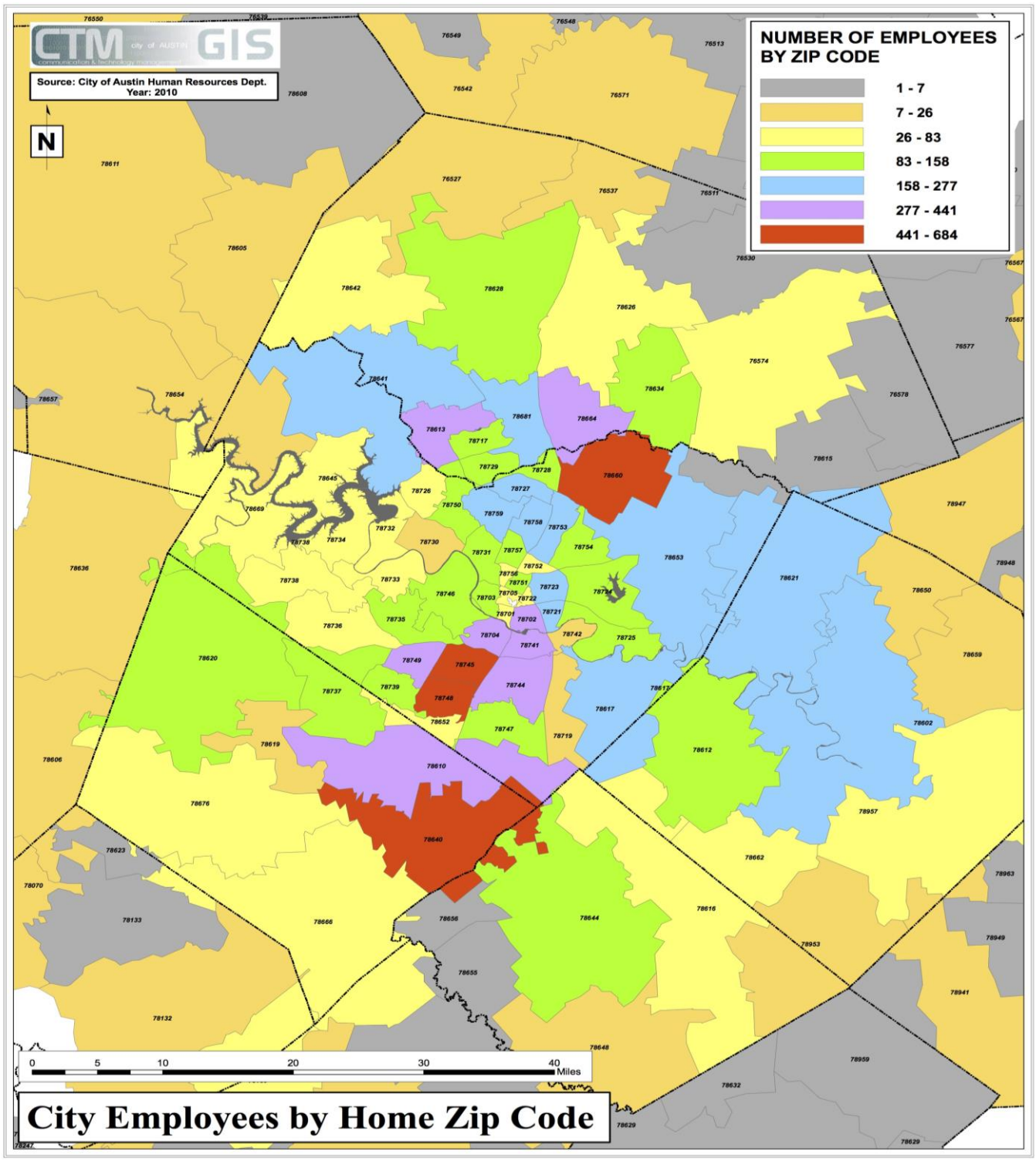
The survey asked respondents about their commuting habits (including how often they drive alone to work), the effects that their commute has on their quality of life and finances, their willingness to move closer to work, and the major factors they consider when considering a move closer to work. Demographic questions were also included in the survey.

Survey Sample

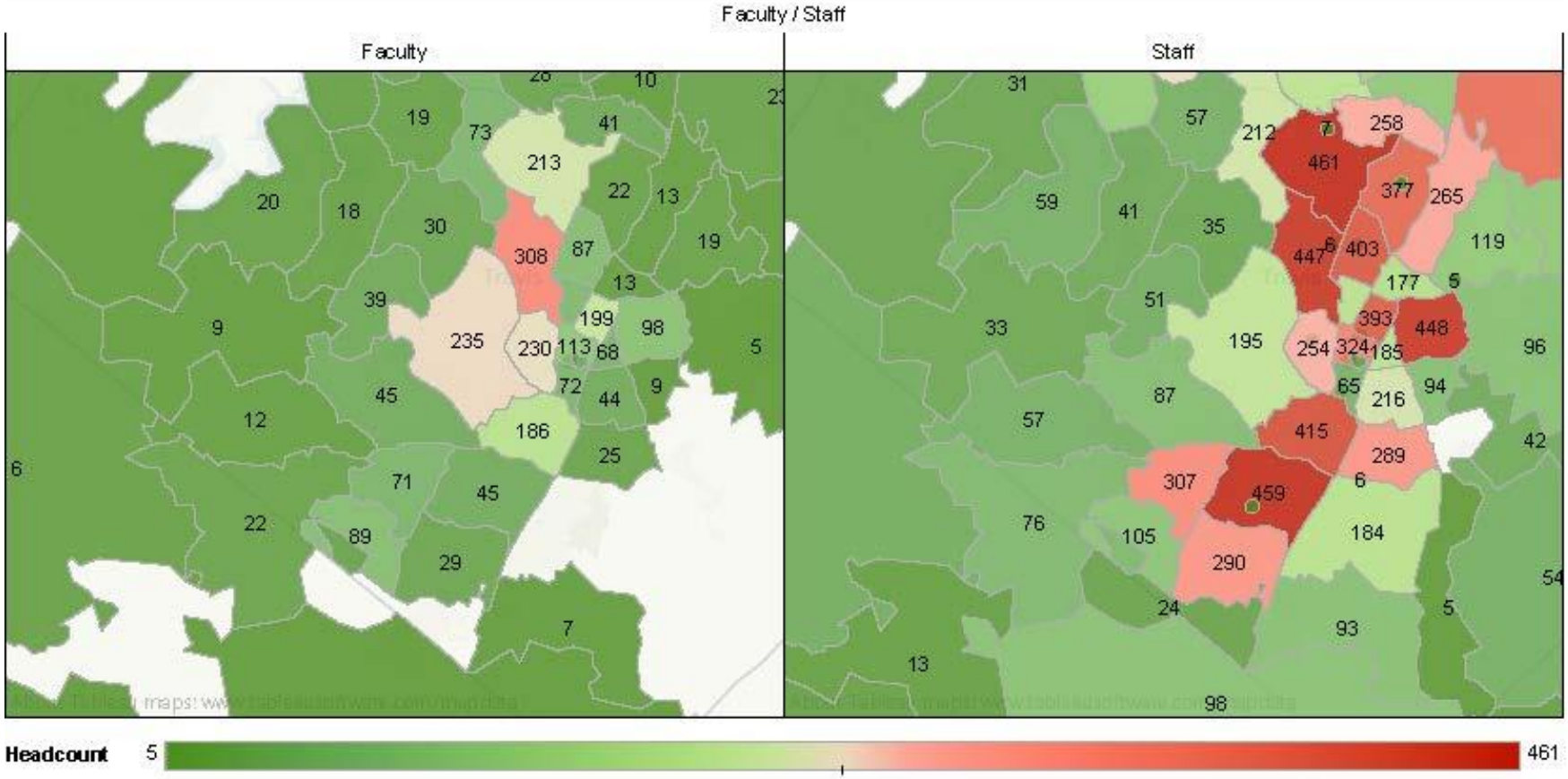
Work place	Met criteria	Sample drawn	Adjusted sample+	Responses	Response rate
UT	2181	446	437	208	47.6%
COA	3165	499	491	112	22.8%
Overall	**5346**	**945**	**928**	**320**	**34.5%**

Notes: + 13 surveys were removed from the sample because person was no longer an employee. In addition, 53 surveys were removed from our analysis because respondents indicated that they lived within 10 miles of their workplaces. The effective sample size was thus 267.

Map 3: This map shows the number of City of Austin employees that live in each Austin area zip code. The number of city employees living more than 10 miles from central Austin is in the thousands. *Source: City of Austin Human Resources Department, 2010.*



September 2013 Headcounts



Data Source: Historical Employee Data (1995, 2000, 2010) and Current Employee Data
Date Data Effective: September 25, 2013
Date Created: October 10, 2013

Notes: The headcounts in the trend data only include Benefits Eligible employees while the 2013 map includes all faculty and staff, regardless of benefits eligibility. Any zip code with less than 5 employees were excuded. Only zip codes in the following counties were included: Bastrop, Blanco, Burnet, Caldwell, Hays, Travis and Williamson. Zip Codes are self-reported by the individual employee.

Methodology for conducting the impact analysis

To calculate the potential savings (economic, environmental, and quality-of-life) of shorter commute distances, we used information attained in the survey and applied it to potential scenarios.

The survey asked respondents for their home and work addresses and for the make, model, and year of their cars. It also asked them how often they drive alone to work as opposed to carpooling or using other modes of transportation. With respondents' home and work addresses, we used an application programing interface (API) created by Google Inc. to access Google's trip calculator, which printed out commute distances for each survey respondent. We reviewed this printout and investigated the outlying results. In most cases, these outlying results were in fact errors due to an error in one of the addresses. In these cases, the address errors were corrected and the calculator was run again.

For the purposes of the impact analysis, each respondent who said they would chose to move closer to work if they could was assigned to one of five potential housing sites in central Austin. These five sites were selected from among the Activity Centers listed in Austin's 2011 comprehensive plan, Imagine Austin. These Activity Centers are places that the city is currently developing or planning to develop mixed-use developments in over the next 15 years. We selected four medium-sized sites (planned capacity of 10,000-30,000 residents) and one large site (planned capacity of 25,000-45,000 residents). Having selected the five potential housing sites, we assigned respondents who currently live south of the Colorado River to the southernmost site, Riverside Station. Respondents living north of the river and east of I-35 were assigned to the easternmost site, Mueller Station. Respondents living north of the river and west of I-35 were assigned randomly to one of the three remaining sites located in north-central Austin: North Burnet/Gateway Station, Crestview Station, and Highland Mall Station. These sites are located close enough to each other that distinguishing between them for the purposes of these assignments was not practical or necessary. The reason we made the potential housing site assignments geographically as described above is because we believe that people who move into central Austin are likely to seek housing options that are nearest to where they currently live and where they are most likely to have existing community ties.

Once we had made the housing assignments, we used the same Google trip calculator to estimate respondents' new driving commute distances under Scenario 1: Driving. By subtracting the new (scenario based) driving commute distances from their actual current commute distances, we calculated the savings in commuting VMT for each respondent. All of our subsequent impact calculations for Scenario 1 were made from this VMT savings number, and were done following the methodology used by Rohe *et al.* They are described in the subsequent sections, along with the methodologies for calculating savings in Scenario 2: Transit and Scenario 3: Transit + Car-drop.

Calculating Distance, Time, and Monetary Savings

Commuting distance savings were calculated by subtracting potential scenario-based commute distances from actual current commute distances. In accordance with Rohe *et al.*'s methodology,

time savings were calculated assuming a 45 mph driving rate. Because much rush-hour commuting takes place at rates less than 45 mph, this method results in a conservative estimate of time savings to each commuter.

As described above, driving distances for Scenario 1: Driving were calculated by Google trip calculator and subtracted from respondents' current commutes to calculate savings. By definition, Scenario 2: Transit and Scenario 3: Transit + Car-drop presuppose no driving commute, so the driving distance savings in these two scenarios are equal to respondents' current commutes. Commute times for these two scenarios were calculated by CapMetro's trip planner, which reports duration estimates for transit trips around Austin. In a few cases, respondents' work places are not accessible by public transit; these respondents were not included in the analysis for Scenario 2 or Scenario 3.

Financial savings associated with a reduction in miles driven were calculated using the Internal Revenue Service (IRS) standard mileage rate, which is generated each year to calculate the deductible costs of operating an automobile for business. In 2013, the rate was 56.5 cents per mile driven. (http://www.irs.gov/publications/p334/ch08.html#en_US_2013_publink1000313502). For Scenario 1: Driving, this rate was multiplied by the yearly savings in miles driven that would accrue to respondents by their moving to one of the Activity Centers. For Scenario 2: Transit, the 56.5 cents per minutes rate was multiplied by respondents' current yearly commute distance to calculate savings. The cost of 12 monthly bus passes (at $33 each) was subtracted from these savings to calculate net savings under this scenario. Net savings for Scenario 3: Transit + Car-drop, was calculated from the Scenario 2 savings plus additional savings of $3600, which the Victoria Transport Policy Institute estimates as the fixed yearly cost of owning a vehicle. (http://www.vtpi.org/tca/tca0501.pdf).

Environmental Pollutant Savings

The reductions in nitrogen oxide (NOx) and carbon monoxide (CO) emissions that would result from shorter commutes were calculated for each individual respondent, according to data provided by the EPA Office of Transportation and Air Quality for the specific cars (make, model, and year) that respondents reported driving (http://www.epa.gov/otaq/crttst.htm). Once again, Rohe *et al.*'s methodology was followed.

To calculate carbon dioxide (CO2) emissions reductions, we used Rohe *et al.*'s figure of 19.4 lbs of CO2 resulting from every gallon of gasoline combusted in a car. Fuel efficiency data for each respondent's car was gathered from the EPA and Department of Energy Efficiency and Renewable Energy's website (http://www.fueleconomy.gov/).

In each of the above cases, total emissions savings are a product of the emissions rate reported by the EPA and the driving miles saved under each scenario.

Key sources

Allard, Scott. *Access to Social Services: the Changing Urban Geography of Poverty and Service Provision.* Washington, DC: The Brookings Institution, 2004. This study looks at the spatial access to social services in three cities: Chicago, DC, and LA.

Bischoff, K., & Reardon, S.F. 2013. *Residential Segregation by Income, 1970-2009*. US2010 Project. http://www.s4.brown.edu/us2010/Projects/Reports.htm.

Brookings Metropolitan Center. *Confronting suburban poverty in America*. www.confrontingsuburbanpoverty.org.

Capital Area Council of Governments, Sustainable Places Project: *Market Trends, Preferences and Opportunities 2010 to 2035*, November 2012

Community Action Network. *Community Dashboard*, http://www.cancommunitydashboard.org/

Central Texas Sustainability Indicators Project, http://soa.utexas.edu/csd/research/sustainability-indicators

Center for Housing Policy and Center for Neighborhood Technology. *Losing Ground: The Struggle of Moderate-Income Households to Afford the Rising Costs of Housing and Transportation*. October 2012. http://www.nhc.org/media/files/LosingGround_10_2012.pdf

City of Austin, Neighborhood Housing and Community Development. *Comprehensive Housing Market Study*, 2009.

City of Austin, Demographer. Robinson, Ryan. *Top ten demographic trends in Austin, Texas*. http://www.austintexas.gov/page/top-ten-demographic-trends-austin-texas.

Handy, Susan. Transportation - *Land Use Coordination in the Austin Region: Keys to Making it Happen.* UTSOA/CSD. 2009. http://soa.utexas.edu/files/csd/HandyFinalOnlinePDF.pdf

MacArthur Foundation, *How Housing Matters*. Survey, April 2013. http://www.macfound.org/media/files/HHM_Hart_report_2013.pdf

Opportunity Mapping, http://www.greendoors.org/programs/docs/Geography-of-Opportunity-Austin-2013.pdf.

Rohe, William M., Spencer Cowan, Daniel A. Rodriguez & Peter Zambito. 2009. *A Long Way From Home: The Impacts of a Limited Supply of Workforce Housing in the Asheville Metropolitan Area.* Center for Urban and Regional Studies, University of North Carolina, Chapel Hill. December. http://curs.sites.unc.edu/files/2013/05/Buncombeexecsum.pdf

Sustainable Places Project: http://www.sustainableplacesproject.com/.

Texas A&M University, Real Estate Center. *2012 Texas Metro Market Overview: Austin-Round Rock-San Marcos,* http://recenter.tamu.edu/mreports/2012/AustinRRock.pdf

Tomer, Adie. *Where the Jobs Are: Employer Access to Labor by Transit*. Brookings. 2012. http://www.brookings.edu/research/papers/2012/07/11-transit-jobs-tomer

US PIRG. *Transportation and the New Generation: Why Young People Are Driving Less and What it Means for Transportation Policy*. Frontier Group, US PIRG Education Fund, April 2012. http://www.uspirg.org/sites/pirg/files/reports/Transportation%20%26%20the%20New%20Generation%20vUS_0.pdf

Endnotes

[i] US Census 2012.
[ii] US Census 2012.
[iii] US Census Bureau, Texas State Data Center, cited by CAPCOG, http://www.capcog.org/data-maps-and-reports/central-texas-regional-data/#ProjectedPopulationGrowth.
[iv] Map created by Ryan Robinson, City of Austin Demographer.
[v] US Bureau of Labor Statistics, OES. The two occupations above $60,000 were Registered Nurses, annual income $63,420, and General and Operations Managers, annual income $114,680. The other eight occupations on the list were service occupations and had wages between $18,600 and $32,570 per year.
[vi] Austin's gini coefficient was .46, based on 2010 ACS data. The Gini Index is a measure of income inequality, ranging from 0 (complete equality) to 100 (complete inequality). Higher values indicate that the metro area is more unequal in terms of how income is distributed among households. Lower values mean that income is more equally distributed. See www.diversitydata.org.
[vii] Robin Davis, Austin Investor Interests, quoted in story by Nathan Bernier, KUT, 7/24/13.
[viii] Hendricks and Partners, cited in TAMU 2012 Texas Metro Market Overview: Austin-Round Rock-San Marcos, http://recenter.tamu.edu/mreports/2012/AustinRRock.pdf.
[ix] City of Austin, Neighborhood Housing and Community Development. Comprehensive Housing Market Study, 2009.
[x] Bischoff and Reardon, *Residential Segregation by Income, 1970-2009.* 2013.
[xi] US census, 2000; ACS 2008-2010.
[xii] Ryan Robinson, Top ten demographic trends in Austin, Texas. http://www.austintexas.gov/page/top-ten-demographic-trends-austin-texas.
[xiii] Allard, Scott. *Access to Social Services: the Changing Urban Geography of Poverty and Service Provision.* Washington, DC: The Brookings Institution, 2004. This study looks at the spatial access to social services in three cities: Chicago, DC, and LA.
[xiv] Brookings Metropolitan Center, *Confronting suburban poverty in America*. Confrontingsuburbanpoverty.org.
[xv] US Census, cited by CAPCOG. http://www.capcog.org/data-maps-and-reports/central-texas-regional-data/#commutingpatterns .
[xvi] CAN Dashboard, Vehicle Miles Traveled, 2012.
[xvii] Texas Transportation Institute, cited by CTSIP, 2012.
[xviii] *Losing Ground: The Struggle of Moderate-Income Households to Afford the Rising Costs of Housing and Transportation*. Center for Housing Policy and Center for Neighborhood Technology, October 2012. Appendix 2. http://www.nhc.org/media/files/LosingGround_10_2012.pdf
[xix] CAPCOG, Sustainable Places Project: Market Trends, Preferences and Opportunities 2010 to 2035, November 2012, 10.
[xx] CAPCOG, November 2012.
[xxi] Porter and Novelli, cited in CAPCOG.
[xxii] CAPCOG, 29, footnote 28.
[xxiii] Federal Highway Administration 2007. MacArthur Foundation, *How Housing Matters.* Survey, April 2013. http://www.macfound.org/media/files/HHM_Hart_report_2013.pdf *Tranportation and the New Generation: Why Young People Are Driving Less and What it Means for Transportation Policy*. Frontier Group, US PIRG Education Fund, April 2012. http://www.uspirg.org/sites/pirg/files/reports/Transportation%20%26%20the%20New%20Generation%20vUS_0.pdf
[xxiv] We did not gather detailed information on income levels above $60,000.

[xxv] Hoehner, Christine M. Carolyn E. Barlow, Peg Allen and Mario Schootman. "Commuting distance, cardiorespiratory fitness, and metabolic risk," *American Journal of Preventive Medicine.* 42 (6): 571-578. 2012. Cited in US EPA, *SMART Growth and Economic Success: The Business Case.* Nov 2013; Crabtree, Steve. "Wellbeing Lower Among Workers With Long Commutes." Gallup, Inc. August 13, 2010. http://www.gallup.com/poll/142142/Wellbeing-Lower-Among-Workers-Long-Commutes.aspx; Wener, Richard E., and Gary W. Evans. "Comparing Stress of Car and Train Commuters." Transportation Research Part F: Traffic Psychology and Behaviour 14(2): 111-116. 2011 .

[xxvi] Sander, William, and William A. Testa. "Education and the Location of Work: A Continued Economic Role for Central Cities?" *The Annals of Regional Science*. 2012. Cited in US EPA, 2013.

[xxvii] Tomer, Adie. *Where the Jobs Are: Employer Access to Labor by Transit.* Brookings. 2012. http://www.brookings.edu/research/papers/2012/07/11-transit-jobs-tomer Cited in US EPA, 2013.

[xxviii] US EPA, 2013.

[xxix] CAN Dashboard, 2012. Vehicle Miles Travelled.

[xxx] Car value ($3600) comes from APTA, 2008, Table 5.1.5-1. http://www.apta.com/resources/reportsandpublications/Documents/greenhouse_brochure.pdf.

[xxxi] See Handy, Susan. Transportation - Land Use Coordination in the Austin Region: Keys to Making it Happen. UTSOA/CSD. 2009. http://soa.utexas.edu/files/csd/HandyFinalOnlinePDF.pdf

[xxxii] CAN Community Dashboard, http://www.cancommunitydashboard.org/ ; Central Texas Sustainability Indicators Project, http://soa.utexas.edu/csd/research/sustainability-indicators ; Opportunity Mapping, http://www.greendoors.org/programs/docs/Geography-of-Opportunity-Austin-2013.pdf .

[xxxiii] The Sustainable Places Project: http://www.sustainableplacesproject.com/.

[xxxiv] Employer Assisted Housing, University of Chicago. http://www.metroplanning.org/work/project/8/subpage/1

CAPITAL AREA COUNCIL OF GOVERNMENTS

SUSTAINABLE PLACES PROJECT:
MARKET TRENDS, PREFERENCES AND OPPORTUNITIES 2010 TO 2035

Metropolitan Research Center
University of Utah
Salt Lake City, Utah

November 2012

The work that provided the basis for this publication was supported by funding under an award with the U.S. Department of Housing and Urban Development. The substance and findings of the work are dedicated to the public. The author and publisher are solely responsible for the accuracy of the statements and interpretations contained in this publication. Such interpretations do not necessarily reflect the views of the Government.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The jurisdictions comprising the counties within the Capital Area Metropolitan Planning Organization (CAMPO – see Figure A) are growing at a rate substantially faster than the national average. Between 2010 and 2035, CAMPO jurisdictions will grow from 1.7 million residents to nearly 3.3 million. About 600,000 new households will be added, roughly double the number in 2010. Nearly 700,000 jobs will also be added needing nearly 400 million square feet of net new enclosed space. With more than 500 million square feet of space replaced there will be about 900 million square feet of nonresidential development representing more than two times the total enclosed nonresidential space supported in 2010. By many measures, CAMPO is a growing, dynamic, and changing metropolitan region.

Figure A Counties comprising the Capital Area Metropolitan Planning Organization

Change will be unprecedented. About a fifth of the growth to 2035 will be attributable to seniors and minorities will account for more than 60% of the growth. Between 2010 and 2035, households with children will comprise about 29% of the share of household growth while households without children will comprise the remaining 71%. Single-person households will account for 31% of the total change.

Heads of households in the peak earning years between 35 and 64 accounted for about half of the growth in housing demand between 1990 and 2010. That same group will account for about 44% of the growth in housing demand from 2010 to 2035. Starter households (where householders are under 35 years of age) will account for 24% of the household growth while senior households will comprise the remaining 32%. The reason for differences with the nation as a whole is CAMPO's relative youth combined with rapid growth associated with young people attracted to the area.

Demographic changes affect the kinds of homes, communities, and amenities the market wants. Our analysis of preference surveys show that:

> About half of Texans and more than half of those under 34 and single persons both support and would want to live in "smart growth" communities. We estimate that no more than one in five have this option now.

More than one-in-five Texans, more than a quarter of Texans who are under 35 and those who are low income, and more than a third who are single want to live within walking/biking distance of working and shopping/errands.

More than half of the residents want to able to walk to destinations in their communities but perhaps fewer than 10 percent live in communities where they can.

Nearly half of Texans want to be able to walk to fixed-guideway transit. Probably less than one percent of the population has this option now in CAMPO.

More than a third of Texans want the option to live in attached housing units but about a quarter have that option now.

We surmise that preferences of CAMPO residents are at least on par with Texans as a whole and perhaps more so.

We estimate conservatively that by 2035 at least a third of households will want the option to live in walkable communities with mixed residential and mixed-use development, urban amenities (such as shops, restaurants, and services within walking distance), and transit options. By 2035, CAMPO will have about 1.3 million households 400,000 of whom may demand those options. Unfortunately, only about 10% of current households enjoy these options now. Put differently, two-thirds or more of all new housing units built between 2010 and 2035 would need to be in locations providing those options to meet demand, and this may not be enough.

There are many ways in which to accommodate emerging market demands. One is to facilitate the development of mixed-use new communities with walk/bike opportunities in Greenfield and larger urban infill/redevelopment sites. Another is to take advantage of redevelopment that will occur along commercial corridors and nodes, especially in suburban areas. Much of the demand can be met by converting transit-ready corridors from very low intensity land uses to ones that provide mixed-use options especially when transit becomes available. The challenge is creating public-private-civil collaborations that can facilitate both approaches to meeting future housing needs.

INTRODUCTION

The Capital Area Metropolitan Planning Organization serves five counties in central Texas. The CAMPO jurisdictions will grow from 1.7 million in 2010 to about 3.3 million in 2035. In the fall of 2011, CAMPO was awarded a planning grant by HUD.

A key element of CAMPO's efforts will be to understand market trends, emerging housing preferences, and the opportunity presented by commercial land redevelopment in meeting future needs over the period 2010 to 2035. That is the purpose of this report. It is composed of four parts.

Part 1 explores emerging market trends that will influence market choices over the next several decades. One key trend is that fundamental changes will reduce the home ownership rate. Another is that demographic changes will reshape the demand for types of homes and their locations.

Part 2 synthesizes surveys to determine what Americans generally and CAMPO residents specifically want in their neighborhoods and communities, and for their homes.

Part 3 identifies the kinds of jobs that occupy space, estimates the total number of workers who will occupy built space, and estimates the space used by workers in 2010 and 2035. The analysis includes estimating the volume of workspace existing in 2010 that will be replaced and/or repurposed – we call recycled – to 2035.

Part 4 synthesizes research, analysis and findings of the first three parts to show that, at least in theory, two-thirds of the demand for new residential and nonresidential development between 2010 and 2035 can be met through the redevelopment of nonresidential spaces, especially along transit-ready commercial corridors.

The report includes appendices reporting demographic, housing, employment, and nonresidential space statistics for the period 2010-2035.

PART 1
MARKET TRENDS

Among the many changes to occur will be in the kind of housing and communities Americans will chose to live in. To about 90% of Americans, the American Dream[1] includes owning their own home.[2] Moreover, given a choice among types of homes, about 80% of Americans would prefer to live in a single family detached home.[3] But when confronted with changes that will sweep across America to 2030, millions of Americans may choose differently.

This Part has two themes. First, fundamental changes will occur in the economy that may reduce the home ownership rate. Second, demographic changes will reshape the demand for types of homes and their locations. In both cases, we will review broad national trends and, where data allow, trends facing the Capital Area Metropolitan Planning Organization (CAMPO). We will compare national and CAMPO trends to 2035, and will note some implications for planning and development.

CAMPO provides projections from 2010 to 2035 as shown in Table 1.1. Its 2010 projections are compared to actual figures for 2010 provided by the Census (for population and households) and Bureau of Economic Analysis (for employment). For purposes of this report, we will use federal agency figures for 2010 and CAMPO projections to 2035. We proportionally adjust detailed projections by Woods & Poole (2011) using CAMPO projections as the control.

Appendix A includes several detailed tables comparing CAMPO to the nation, the South census region and West South Central census division, and the state of Texas across numerous demographic, tenure, and housing dimensions. Appendix C provides similar comparisons for employment and nonresidential space consumption dimensions for the period 2010-2035.

---

[1] At its core, the "American Dream" is one in which "life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement" (Adams 1931: 214-15). Though never stated in early literature on what constitutes the American Dream, a key feature is owning one's home usually on a detached lot (Rohe and Watson 2007).

[2] See http://www.cbsnews.com/8301-503544_162-20075544-503544.html?tag=contentMain;contentBody.

[3] National Association of Realtors, Community Preference Survey 2011, http://www.realtor.org/wps/wcm/connect/a0806b00465fb7babfd0bfce195c5fb4/smart_growth_comm_survey_results_2011.pdf?MOD=AJPERES.

Table 1.1
Comparative Projections

Measure	2010	2035
CAMPO Population	1,725,260	3,250,531
Census Population	1,716,289	
CAMPO Households	657,619	1,227,558
Census Households	650,459	
CAMPO Employment	883,483	1,650,289
Bur. of Ec. Analysis Emp	1,063,080	

Sources: CAMPO, Census, Bureau of Economic Analysis.

Trends that will Reshape America's Change in Owner-Renter Patterns to 2035

While home ownership may be a key feature of the American Dream, it will probably become less attainable and perhaps even less desirable by 2035 than it has been in the past. There are six reasons for this: rising energy costs, falling incomes, lagging employment, shifting wealth, tighter home finance, and sweeping demographic changes. The overall effect may be lower homeownership rates in the future than in the past.

Rising Energy Costs

Since the end of World War II, home ownership in the U.S. has risen steadily, going from 55% in 1950[4] to 69% in 2004.[5] A key reason has been the vast supply of inexpensive land available for home building outside cities. Another reason is cheap gasoline: the cost of driving to work and other destinations was low. This has changed, as illustrated in Figure 1.1.

Since the early 1970s, energy prices have been rising steadily. Locations far away from work, shopping and other destinations are more expensive because of rising vehicle fuel costs. Especially between 2002 and late 2012 the national average price of a gallon of gasoline rose more than 10% per year, compounded; i.e. three to four times faster than inflation.[6] At this rate, gasoline prices may approach $8 per gallon by 2020 and $15 per gallon by 2030.[7] Higher gasoline prices might be offset by more fuel efficient vehicles but they are more expensive than conventional vehicles.

Steadily increasing gasoline prices may dampen the attractiveness of suburban fringe and exurban areas for home buying. On the other hand, homes closer in are usually more expensive to purchase. The overall effect of rising gasoline prices may be fewer households able to both buy homes and pay for gasoline.

---

[4] Historical Census of Housing Tables Ownership Rates, http://www.census.gov/hhes/www/housing/census/historic/ownrate.html.

[5] Housing Vacancies and Homeownership for 2005, http://www.census.gov/hhes/www/housing/hvs/annual05/ann05t13.html.

[6] The coefficient of determination (R^2) is 0.70; the t-ratio is 35.86; and $p > 0.01$.

[7] See also *Christopher Steiner* 2009 who predicts $20 per gallon gasoline by 2030.

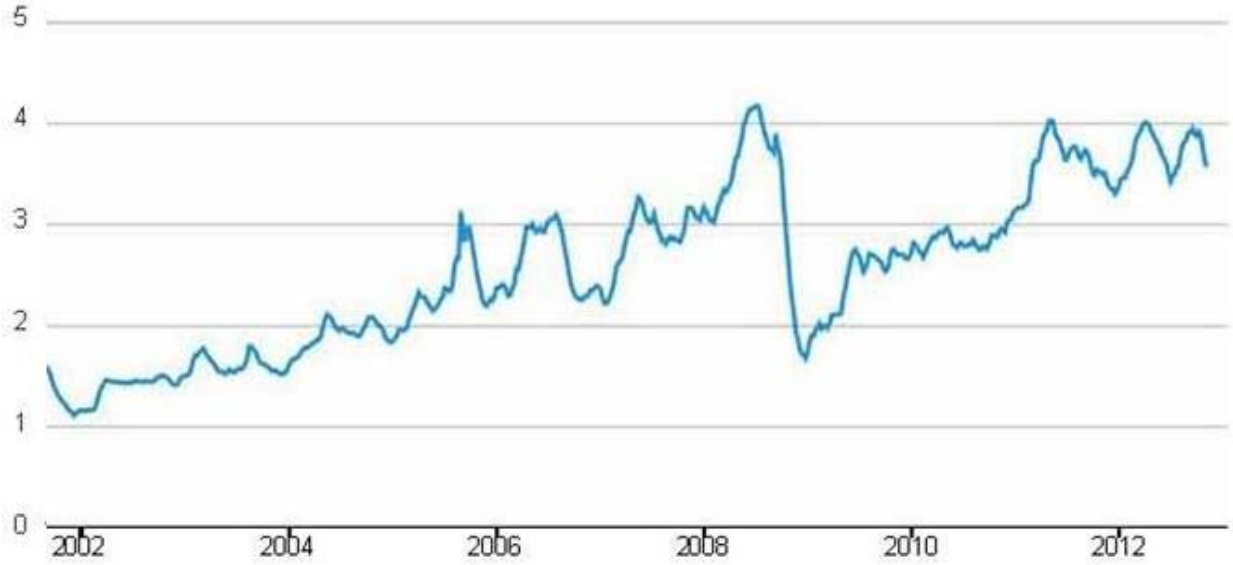


Figure 1.1 Historical and projected gasoline prices in the United States, 2002-2012
Source: Energy Information Administration.[8]
Note: Figures are not adjusted for inflation. Price includes taxes.

Falling incomes
A second factor is at work: incomes are falling in real terms. Median household incomes for all age groups in each income category ended the 2000s lower than in 2000 (Harvard Joint Center for Housing 2011: 15). Moreover, the poverty rate increased from 11.3% in 2000 (Dalaker 2001) to 15.1% in 2010 (DeNavas-Walt et al. 2011).The rate of increase appears to be fastest among the suburbs. Over the period 2000-2008, suburbs accounted for nearly half the increase in the population in poverty (Kneebone and Garr 2010). In contrast, primary cities accounted for just over 10% of the increase. Suburbs may be especially hard-hit because of rising gasoline prices (see above) and lagging employment (see below). Combined, those effects may further alter the demand for owner-occupied homes over the next several decades (McKeever 2011).

Lagging employment
Not only did the unemployment rate spike during the Great Recession and remain high well into the 2010s, but the current structure of the nation's labor force makes it prone to higher unemployment. A key feature of employment and income is preparedness based on education. Unfortunately, most minority students lag behind White non-Hispanic students in standardized reading and mathematics tests; indeed since the late 1990s the gap has not been narrowed.[9] As minorities increase their share of the nation's labor force the nation could be challenged with developing enough talent to compete in the global market. A further implication is that the ability of workers in the future to afford homes may be compromised. Indeed, during the 2010s, non-Hispanic Whites will comprise just 12% of the growth in the nation's labor force, followed in increasing order by Asians (16%), Blacks (18%), and Hispanics (54%). As the level of preparation of the nation's future labor force declines due to shortcomings in our education system, wages will fall and unemployment rates rise relative to historical standards. Unless home prices fall and

[8] See Energy Information Administration, Gasoline and Diesel Fuel Update, accessed October 14, 2012 from http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMM_EPM0_PTE_NUS_DPG&f=W

[9] See The Nation's Report Card produced by the National Assessment of Educational Progress of the U.S. Department of Education http://nces.ed.gov/nationsreportcard/pdf/main2008/2009479.pdf

mortgage underwriting becomes more flexible, the overall effect may be lower home ownership rates in 2035 than in 2010.

Shifting Wealth

There is another trend: the nation's wealth has been shifting steadily to more affluent households. In the 1980s, about 80% of the nation's wealth was held by the wealthiest fifth of America's households. By 2009, nearly 99% of America's wealth was held by the same quintile,[10] as illustrated in Figure 1.2. The Great Recession and its aftermath can be blamed for reducing much of the wealth of the middle and lower classes. Historically, a large share of American households' wealth has been the equity in their homes. This wealth is threatened, as homeowners lost a third of their equity during the recent recession. Indeed, homeowner equity has fallen steadily since 1945, from about 85% to about 40%.[11] This is illustrated in Figure 1.3. New, highly leveraged home purchase opportunities that became widely available in during the past generation have helped contribute to the loss of equity. Shifting wealth and loss of home equity have contributed to changing market dynamics:

1. Fewer people are able to buy homes.

2. Those who own homes may not be able to refinance to enable a down payment on a new home for their children.

3. Fewer home buyers may further drive down demand, reducing prices, and further eroding equity.

Tighter Home Financing

The "Great Recession" of 2008-09 was caused in large part by the bursting of the "housing bubble" of the middle 2000s. Banks and other financial institutions closed, millions of homes were foreclosed (or "sold short" to avoid foreclosure), and home equity saw its biggest decline since the start of the Great Depression. In the wake of this financial disaster, lending institutions increased their underwriting requirements, thereby reducing the number of people who could qualify to buy a home.

Since then, the financial market for mortgage underwriting has changed substantially. Home buyers who would formerly qualify for conventional mortgages now need higher credit scores, longer and more stable work histories, and higher down-payment requirements – reverting to the 20% down payment tradition. The move to make the 20% down-payment standard for conventional mortgages from lending institutions regulated by the federal government[12] draws this concern from the National Association of Home Builders:

> Requiring a high down payment would disproportionately harm first-time home buyers, who have limited wealth and on average account for 40% of home-buying activity. It would take an average family 12 years to scrape together a **20% down payment**. Borrowers who can't afford to put 20% down on a home and who are unable to obtain FHA financing will be expected to pay **a premium of two percentage points** for a loan in the private market **to offset the increased risk to lenders**, according to NAHB economists. This would **disqualify about 5 million**

[10] See http://www.stateofworkingamerica.org/charts/feature/1.

[11] Ibid.

[12] See http://www.slate.com/articles/business/moneybox/2011/02/the_abcs_of_qrm.html.

potential home buyers,[13] resulting in 250,000 fewer home sales and 50,000 fewer new homes being built per year.[14] [Emphases added.]

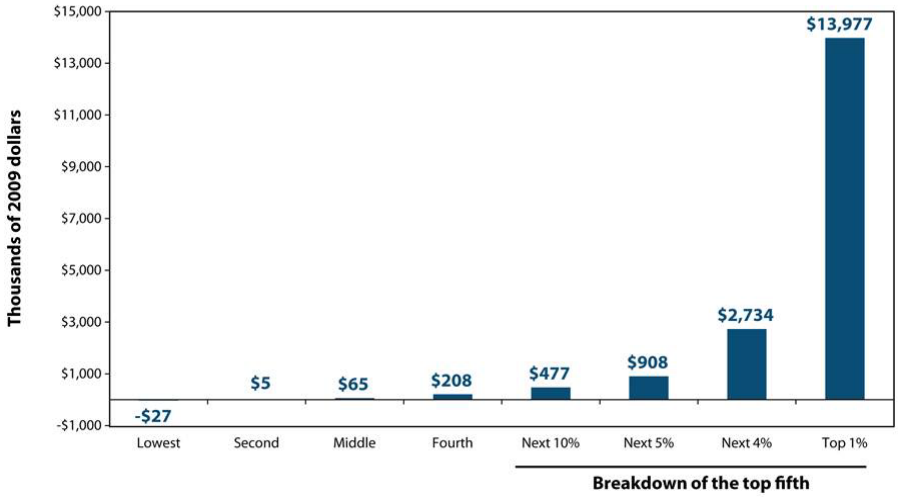


Figure 1.2 Share of wealth held by households, 2009
Source: Economic Policy Institute; Federal Reserve Board, Survey of Consumer Finances and Flow of Fund, http://www.stateofworkingamerica.org/files/images/orig/11Wealth_quintile_and_top_quintile_2.png.
Note: Wealth is determined by net worth, i.e. assets less liabilities. 2009 data are from Survey of Consumer Finances in 2007 with asset prices adjusted to reflect changes from 2007 to 2009 in Flow of Funds data.

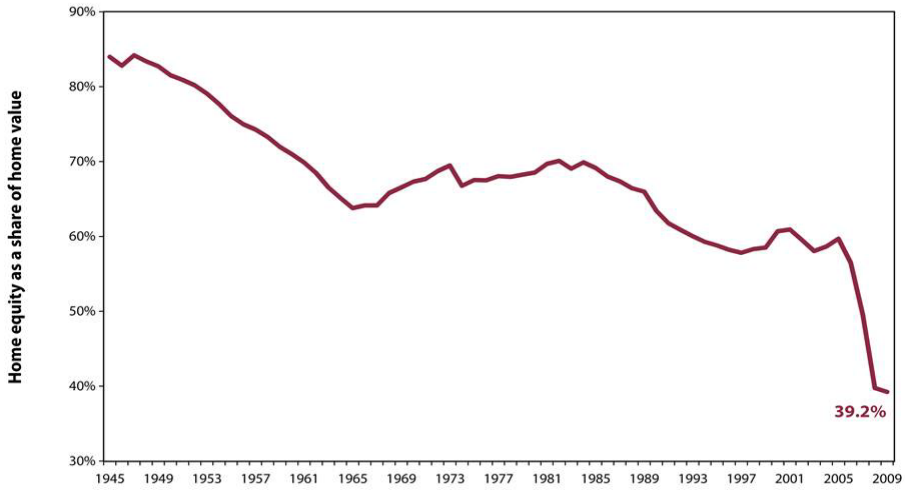


Figure 1.3 Homeowner Equity as Share of Home Value, 1945–2009

---

[13] Considering there were about 75 million home owners in 2010, losing 5 million would reduce the home ownership rate from above 66% to about 60% -- a rate not seen since 1960.

[14] See http://www.nahb.org/news_details.aspx?newsID=12403.

Source: Economic Policy Institute analysis of Federal Reserve Board, Flow of Funds data. http://www.stateofworkingamerica.org/files/images/Figure-O_Homeequirty_inhouse_2.png.

As seen in Figure 1.4, about two-thirds of all American households owning homes with mortgages in 2009 put less than 20% down for their home.[15] Clearly, higher down payment requirements will reduce the number of households that can afford to buy a home.

Percent of purchase price	Share	Cumulative
No down payment	14%	14%
Less than 3 percent	8%	22%
3-5 percent	12%	34%
6-10 percent	16%	50%
11-15 percent	6%	56%
16-20 percent	***13%***	***69%***
21-40 percent	13%	82%
41-99 percent	7%	90%
Bought outright	10%	100%

Figure 1.4 Down payment as share of house purchase
Source Author adaptation from U.S. Census Bureau (2010).
Note Highlighted range shows households with about 20% down payment.

Sweeping Demographic Changes
Sweeping demographic changes may further erode homeownership rates. The largest group of homeowners, the Baby Boomers, will reach retirement age by 2030. Non-Hispanic Whites will become less dominant; indeed, nearly all population growth to 2035 will be attributable to racial and ethnic minorities. Household composition will also change; the percentage of American households with children will have dropped from half during the Baby Boom years of 1946 to 1964 to a quarter by 2035.

Combined, these six trends will have important impact on America's built environment, especially owner-occupied housing demand. We pose a scenario on those impacts in the next section.

Unprecedented Changes to 2035
Since the end of the Baby Boom era, America has been composed mostly of households without children. In 2000, roughly a third of American households had children and in 2030 slightly more than a quarter will. Because people are living longer than ever before, America will also be composed of a few very large and roughly equally-sized age groups (generations), each with their own unique housing needs:

> **Eisenhowers**– People born before 1946. There will be about 7 million of them living in 2035, down from about 40 million in 2010. They will comprise about 5 million households. People in this generation will be more than eighty-five years old and live in downsized units, assisted living, nursing homes, with kith or kin, or in other forms of group housing.
>
> **Baby Boomers**– People born between 1946 and 1964. In 2010 there were about 82 million Boomers and in 2035 they will number about 70 million living in about 35 million households. The American Association of Retired Persons notes that about 90% of older adults would prefer to "age in place" and about 80% believe they can do so in their current residence (Keenan, 2010). If they are unable to age in place, they will be actively downsizing, with many millions moving

[15] See *American Housing Survey of the United States 2009*, Table 3-14, http://www.census.gov/housing/ahs/data/ahs2009.html.

into assisted living, nursing homes, living with kith or kin, or in other forms of group housing. Many millions who may want to move into homes more suitable to their life stage may not be able to. For them, aging in place will be a necessity for longer than they might have anticipated (see Cisneros, 2011).

Gen X– People born between 1965 and 1980. There will be about 67 million of them in 2035. Their households will number about 33 million. Being in their 50s to middle 60s in 2035, they will be at the peak of their earning power and likely choosing to live in the most expensive housing of all age groups, whether 'McMansions' in the suburbs or condominiums in downtowns and all the major forms of owner-occupied housing in between. But this age group will also consist substantially of empty-nesting households and they will begin to seek different types of housing than they have now in different locations.

Gen Y– People born between 1981 and 1995. They will number about 75 million and include about 35 million households. Being in the middle 30s to middle 50s in 2035 they will also be at the peak of child-rearing age and will also be the group most demanding of larger homes with good public school systems.

Millennials– People born between 1996 and 2010. They will number also, coincidentally, about 75 million living in about 40 million households, mostly as small families and singles. They will be just starting out in adult life and their housing needs will mostly be apartments and small starter homes. Many millions may remain with their parents until their late twenties or early thirties, or longer.

Change between 2010 and 2035 will be unprecedented. It will be led by the middle three groups – Boomers, Gen-X and Gen-Y – who will dominate the housing market changes. Only one group, Gen-Y, will seek housing principally for raising families and it will comprise about a quarter of the housing market. In contrast, Baby Boom households in the 1950s accounted for most of the housing demand. Roughly three quarters of the housing demand in 2035 will be for households without children because they have already raised children, have not yet raised children, or may never raise children. This will be discussed later.

In large part because of the aging Boomers, the number of households without children will dominate household growth nationally, although the situation will be different in the CAMPO area. Nationally, households headed by a single person will be the fastest growing market segment. One reason is that people are living longer, and as Boomers age they will dominate growth of the single-person segment. Another major change will be in the racial composition of households. Minority household growth will nearly triple that of White (non-Hispanic) households. These changes, combined with others, will have profound effects on America's future housing markets. Just how profound is open to speculation.

These trends are in contrast with historical patterns. Throughout the history of the U.S. (and much of the world), the distribution of the population was like a pyramid. Younger people comprise the largest share of the population, and thus the pyramid base, with successively older groups comprising smaller numbers until the very top comprises the oldest people and the smallest share of the population. This is changing. Between 2010 and 2035, the nation's population pyramid will shift decidedly from the traditional form to one that is more cylindrical (Figure 1.5). Indeed, those turning 65 between 2010 and 2035 will account for about 46% of the change in population distribution nationally (Table 1.2), though it will be just 21% for CAMPO (Table 1.3). On the other hand, CAMPO's growth among people between 45 and 64 will be considerably higher than for the nation as a whole, 31% compared to 8%.

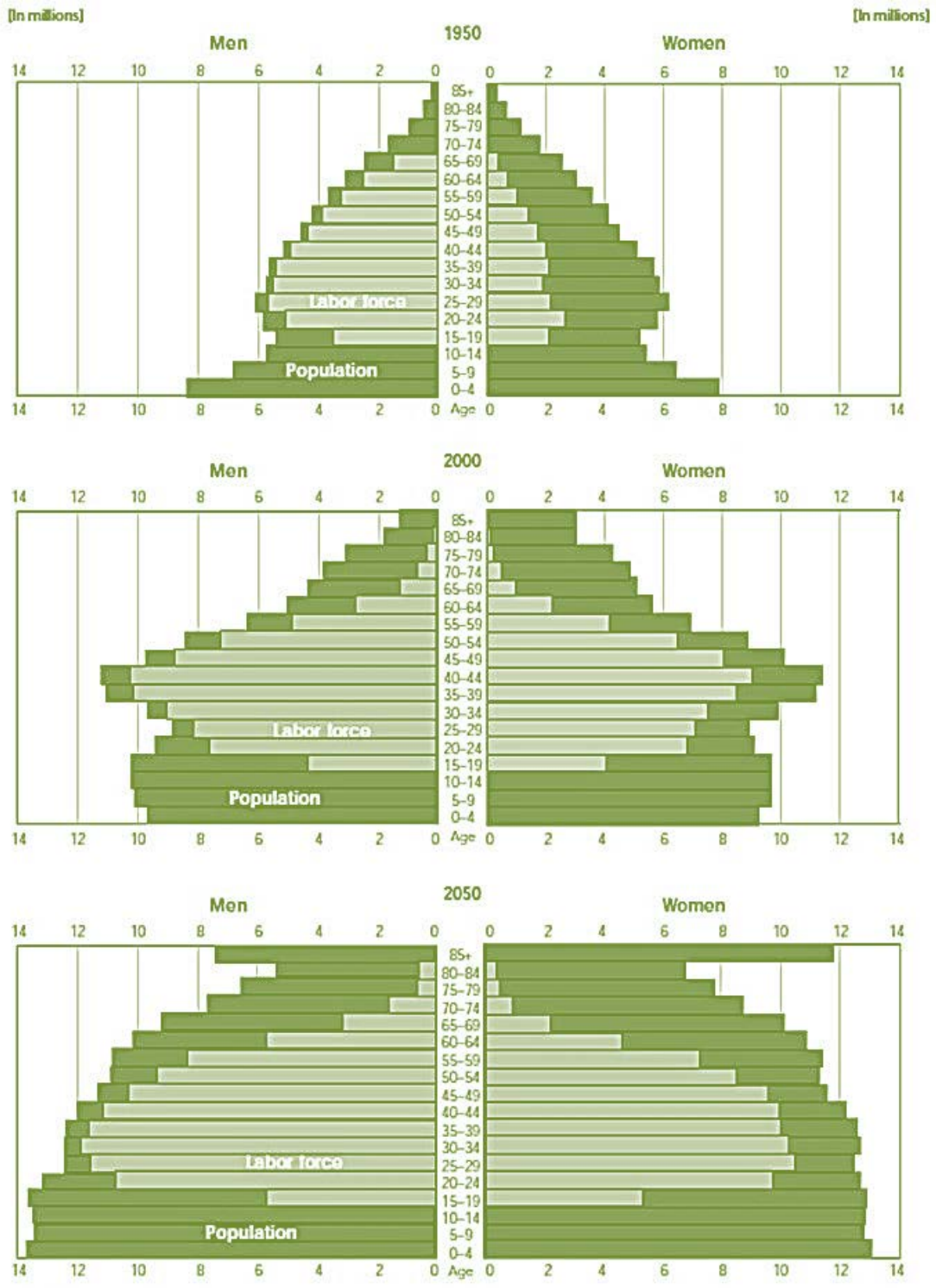


Figure 1.5 Population and labor force pyramid for the U.S., 1950 to 2050
Source: U.S. Department of Labor.

Table 1.2
U.S. Distribution of Population by Selected Age Groups, 2010-2035

Age Group	Population 2010 (000s)	Share of Population, 2010	Population 2035 (000s)	Share of Population, 2035	Population Change, 2010-2035 (000s)	Share of Population Change
Under 18	74,337	24%	90,027	23%	15,690	19%
18-24	30,735	10%	36,276	9%	5,541	7%
25-44	82,305	27%	97,830	25%	15,525	19%
45-64	81,642	26%	88,301	23%	6,659	8%
65+	40,331	13%	77,681	20%	37,350	46%
Total	309,350		390,114		80,764	

Source: U.S. Census Bureau http://www.census.gov/population/www/projections/projectionsagesex.html and Woods & Poole Economics (2011). Numbers may not sum due to rounding.

Table 1.3
CAMPO Distribution of Population by Selected Age Groups, 2010-2035

Age Group	Population 2010 (000s)	Share of Population, 2010	Population 2035 (000s)	Share of Population, 2035	Population Change, 2010-2035 (000s)	Share of Population Change
Under 18	438	25%	770	24%	332	22%
18-24	201	12%	368	11%	167	11%
25-44	702	41%	938	29%	236	15%
45-64	247	14%	713	22%	466	31%
65+	140	8%	462	14%	322	21%
Total	1,728		3,251		1,523	

Source: Adapted from Woods & Poole Economics (2011) based on CAMPO projections.

Just as the age composition of the American population is changing dramatically so is its racial and ethnic composition, as summarized in Table 1.4 for the nation and Table 1.5 for CAMPO over the period 2010-2035. In 2010 the White, non-Hispanic population was nearly two-thirds of the nation's population but moving to 2035 it is projected to account for just 11% of the nation's growth. In other words, 89% of America's growth over the period 2010 to 2035 will come from minority races and ethnicities. Minorities will also dominate population change in CAMPO though at the smaller rate of 62%.

Table 1.4
U.S. Distribution of Population by Race/Ethnicity, 2010-2035

Racial/Ethnicity	Population 2010 (000s)	Share of Population, 2010	Population 2035 (000s)	Share of Population, 2035	Population Change, 2010-2035 (000s)	Share of Population Change
White	201,912	65%	211,171	54%	9,259	11%
Hispanic, All Races	50,613	16%	98,302	25%	47,689	59%
Black	38,795	13%	48,963	13%	10,168	13%
Asian	15,701	5%	28,679	7%	12,978	16%
Native American	2,329	1%	2,999	1%	670	1%
Total	309,350		390,114		80,764	

Note: Hispanic means for all races; all other races noted are non-Hispanic. Year is for July 1.
Source: Figures for 2010 from Census; figures for 2030 from Woods & Poole Economics (2011).

Table 1.5
CAMPO Distribution of Population by Race/Ethnicity, 2010-2035

Racial/Ethnicity	Population 2010 (000s)	Share of Population, 2010	Population 2035 (000s)	Share of Population, 2035	Population Change, 2010-2035 (000s)	Share of Population Change
White	971	56%	1,556	48%	585	38%
Hispanic, All Races	542	31%	1,230	38%	688	45%
Black	125	7%	186	6%	61	4%
Asian	85	5%	273	8%	188	12%
Native American	5	0%	5	0%	(0)	0%
Total	1,728		3,251		1,523	

Note: Hispanic means for all races; all other races noted are non-Hispanic. Year is for July 1.
Source: Figures for 2010 from Census; figures for 2035 adapted from Woods & Poole Economics (2011) based on CAMPO population projections.

Let us also consider average household size and its effect on overall housing demand. For more than a century, the average household size in the United States has been falling, as shown in Figure 1.6. Starting at 4.60 persons per household in 1900, average household size fell steadily to 2.59 persons per household in 2000.[16] There are many reasons for declining household size: (a) women are delaying or forgoing marriage and are thus increasingly older when they have children, and they have fewer children; (b) more women are raising children outside of marriage; (c) extended families are weakened and possibly not needed as the population moves from rural to urban environments ; (d) the education of women leads to more women in the workforce, delaying marriage and reducing the birth rate; and (e) improved birth control since the 1960s (Downs 2003 and Goldin 2005).

[16] See http://www.census.gov/statab/hist/HS-12.pdf, "Households by Type and Size: 1900 to 2002".

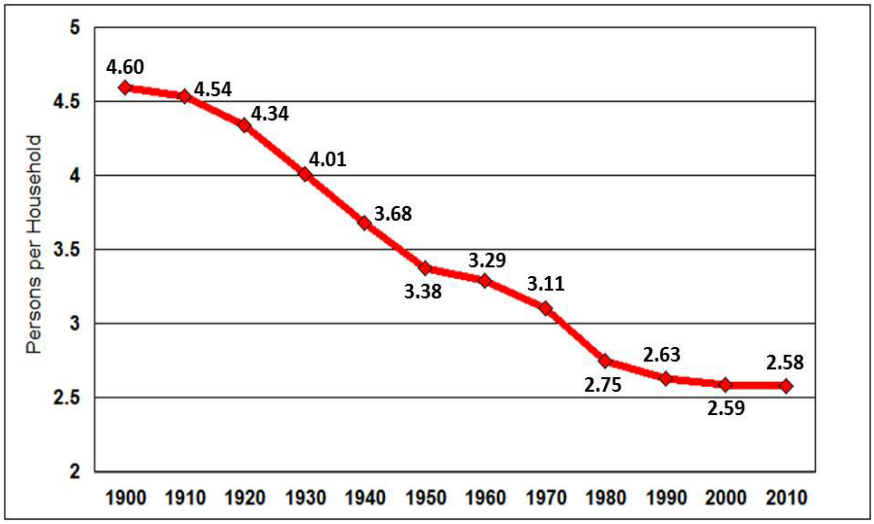


Figure 1.6
Household size trend, 1990-2010
Source: Census.

Declining household size means more homes are needed for the same population. For instance, the same one million people in 1900 occupied about 217,000 homes but in 2000 they would need about 386,000 homes. Between 1950 and 2000, the combination of population growth with declining household size made for a robust home-building industry. During this period, the population grew by 87 percent while the number of occupied housing units increased by 144 percent. Put differently, for every two new residents in the U.S. one new home needed to be built.

That has changed. Instead of falling to 2.53 persons per household in 2010 as many demographers projected (see Day 1996, e.g.), average household size was actually 2.58,[17] nearly the same as in 2000. As shown in Figure 1.6, the trend toward ever-declining household size seems to have stopped and might even be reversed in future years. In effect, during the 2000s, an excess of homes were built. During the 2000s, about 16.4 million residential units were permitted.[18] Even if average household size had declined from 2.59 persons to 2.53 as predicted, and given the nation's household population grew from about 278 million to about 303 million, fewer than 13 million new housing units would have been needed. As it is, given the decreased per-capita housing demand resulting from larger than expected household size, about four million more homes were built than were needed.

While the "Great Recession" of the later 2000s with its lingering effects into the middle 2010s could be blamed for stabilizing household size, in fact, other dynamics are at work. Principal reasons for increasing number of persons per household include rising fertility rates and households doubling up into larger units.

First, consider fertility rates. Demographers consider that a fertility rate of 2.1 sustains a population; a higher rate means the population is growing while a lower one means it is falling. Indeed, the nation's

[17] U.S. Census Bureau, Current Population Survey, 2010 Annual Social and Economic Supplement, Table AVG1 Average Number of People per Household, by Race and Hispanic Origin/1, Marital Status, Age, and Education of Householder: 2010, http://www.census.gov/population/www/socdemo/hh-fam/cps2010.html.

[18] See http://www.census.gov/const/www/C40/table1.html, New Privately Owned Housing Units Authorized by Building Permits in Permit-Issuing Places.

fertility hit an all-time low of 1.7 in 1976 but it has risen steadily since. By the late 2000s, the fertility rate had risen to 2.1.

The changing ethnic composition of America is increasing the nation's fertility rate, a trend that is especially influenced by the Hispanic population. In 2000, Hispanics accounted for about 12.5 percent of the U.S. population but their share rose to about 16 percent in 2010. Hispanics accounted for half of the nation's growth during the decade. One reason is the higher fertility rate among Hispanic women relative to women of other selected ethnicities (Martin et al. 2009).

Overall, more women are having children at later ages than earlier generations (Hamilton et al. 2009). In 1976, nearly all babies were born to women under 30. Controlling for age, the fertility rate of women under 30 years of age was a little less than 1.5, while for women over 30 it was about 0.3. By the end of the 2000s, the fertility rate of women less than 30 years of age had not changed since 1976, but for women over 30 is had increased to nearly 0.7. In other words, the entire increase of the fertility rate between 1976 and the end of the 2000s was attributable to women over 30.

Another important trend is the rise of multi-generational households (Taylor et al. 2010). These households take several forms: a) two generations with parents (or in-laws) and adult children ages 25 and older; b) three generations: parents (or in-laws), adult children (and spouse or children-in-law), grandchildren; c) "skipped" generation with grandparents and grandchildren, without parents (including step-generation); and d) more than three generations (Taylor et al. 2010: 2). Since 1980, the number and share of Americans living in multi-generational households rose to 49 million and 16 percent in 2008, respectively. Moreover, the trend since 1980 has affected adults of all ages, especially the elderly and the young. This is illustrated in Figure 1.7.

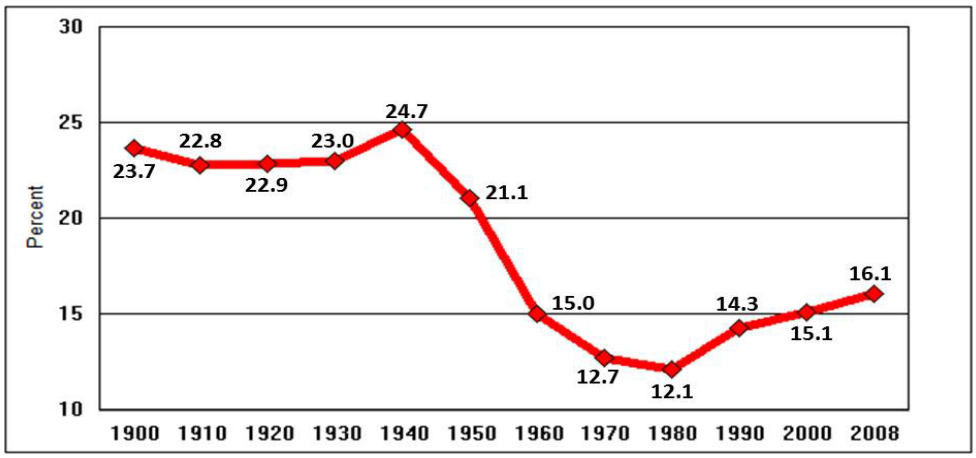


Figure 1.7 Percent multi-generational households, 1900-2008
Source: Pew Research Center (2010)

Taylor et al (2010) note that as Boomers enter retirement age in unprecedented numbers and our racial and ethnic minority populations contribute an increasing share of population growth, the number and share of multi-generational households seem destined to increase. But by how much has not been reported. Extrapolation of trends over the period 1980 to 2008 indicates that about 20% of Americans may be in multi-generational households by 2035. We have not made such an estimate for CAMPO, however. The real number might be closer to what was seen in 1900, about 24 percent.

These trends in fertility and multigenerational households lead to the most sweeping change of all. For its entire existence, the United States was a nation mostly of households with children. By 2035, slightly

more than a quarter of American households will have children. Even more remarkable is this: Between 2010 and 2035, households with children will account for only 16% of the total new housing demand; households without children will comprise 84% of the new housing demand. Indeed, single person households will demand about three times the number of new housing units as households with children: 52% compared to 16%, as shown in Table 1.6.

Table 1.6
U.S. Change in Households by Type, 2010-2035

Household Type	Households 2010 (000s)	Share of Households 2010	Households 2035 (000s)	Share of Households 2030	Change in Households, 2010-2035	Percent Change	Share of Change
All HHs	116,945		147,622		30,677	26%	
HHs with Children	34,744	30%	39,785	27%	5,041	15%	16%
HHs without Children	82,201	70%	107,837	73%	25,636	31%	84%
Single Person	*31,264*	*27%*	*47,304*	*32%*	*16,040*	*51%*	*52%*

Source: Figures for 2010 from Census; figures for 2030 from Arthur C. Nelson based on population data from Woods & Poole Economics (2011).

Trends are similar, though less dramatic, for CAMPO, as seen in Table 1.7. Households with children will account for about 29% of the growth in households, while those without children will account for about 71%. Single person households will account for about a third of the growth in households from 2010 to 2035.

Table 1.7
CAMPO Change in Households by Type, 2010-2035

Household Type	Households 2010 (000s)	Share of Households 2010	Households 2035 (000s)	Share of Households 2035	Change in Households, 2010-2035	Percent Change	Share of Change
All HHs	655		1,228		573	87%	
HHs with Children	207	32%	371	30%	164	79%	29%
HHs without Children	449	69%	856	70%	407	91%	71%
Single Person	*179*	*27%*	*372*	*30%*	*193*	*108%*	*34%*

Source: Figures for 2010 from Census; figures for 2030 from Arthur C. Nelson based on population data from Woods & Poole Economics (2011).

Trends and sweeping demographic changes may influence what it is Americans want for their housing and communities, as explored in the next section.

Declining Homeownership Rates

Emerging trends seem poised to push homeownership rates down, but by how far and by when is subject to speculation. National home ownership rates peaked in the middle 2000s and have declined since, and are expected to continue to fall. The only question is how far. For instance, the Urban Land Institute (McIlwain 2009) projected that the home ownership rate in 2020 would range between about 62 percent and 64 percent, illustrated in Figure 1.8.

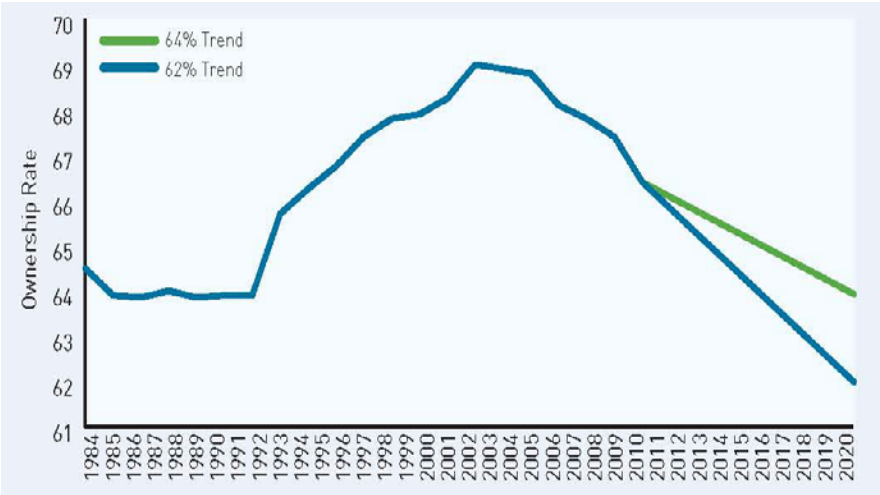


Figure 1.8 Actual and projected home ownership rates, 1984-2020
Source John McIllwain (2009).

The rate of homeownership is largely a function of household income and the ability to make a down payment. Homeownership was pushed to its limits in the mid-2000s at the 2004 all-time high of about 69%. Contributors included "subprime" loans with limited, non-traditional paperwork and easy qualifying, "Alternative-A" loans for people meeting marginal qualification standards, and "jumbo" loans for borrowing more than the Federal Housing Administration limits. Those modes of financing are either gone or highly restricted. Conventional home financing, reminiscent of the period from the 1960s into the middle 1990s, is now about the only way to buy a home, and this will likely be the case in the coming decades. The effect may be to push down homeownership rates and increase demand for rental housing. Demographic changes will likely add to lessening homeownership rates.

How far will the homeownership rate fall? Between 1965 and 1995, the median homeownership rate was about 64%. This rate reflected housing demand from a society composed mostly of non-Hispanic White households. Between 2000 and 2010, easy credit masked the effects of a shift in demographics and the homeownership rate did not change much. Overall homeownership rates did not change: overall at 65%, and non-Hispanic Whites at 72%. Black homeownership dropped from 47% to 45% and Hispanic homeownership rose slightly from 46% to 47%.[19]

Because homeownership rates are lower for minorities, the increasing share of minorities projected to 2035 will cause the nation's ownership level to fall from 65% to about 62%. If home ownership falls to about 62%, then the demand for rental housing will increase at a faster pace than population growth. Rental housing will account for about half of the growth. Holding 2010 homeownership rates constant to 2035 may be optimistic, however, given the trends reviewed earlier. If the homeownership rate for each racial and ethnic group is just five percent lower in 2035 than in 2010 – moving from 72% to about 68%

[19] From Housing and Household Economic Statistics Division, Census Bureau. http://www.census.gov/hhes/www/housing/hvs/qtr111/files/q111press.pdf.

for non-Hispanic Whites for instance – the nation's overall homeownership rate will fall to about 60% – the same it was in the 1960s. Rental housing would account for two thirds or more of the new housing demand with owner housing accounting for less than a quarter.

Trends and sweeping demographic changes also influence what Americans want from their housing and communities.

Challenges Ahead

America became a "suburban nation" between 1950 and 2000. The share of Americans living in suburban areas increased from 27% 1950 to 52%. Suburbia grew by 100 million people, accounting for three-quarters of the nation's population change.

That was then; this is now. In 1950 more than half of America's households had children living with them and single-person households accounted for slightly more than 10% of all households; the average household size was 3.4 persons. By 2035 only slightly more than quarter of all households will have children living in them, more than a third of all households will be single-person, and the average household size will be at about 2.6 persons. The needs of a society dominated by childless households, a growing share of which have only one person, will be different from needs seen in the middle 20th century when households with children were in the majority.

There was also a time when owning a home was seen as nearly a risk-free way to accumulate wealth and eventually enjoy a modest retirement. This has changed. Between the middle 2000s and middle 2010s, American real estate lost more than $6 trillion in value, or almost 30 percent. Up to one in five American homeowners found themselves owing more on a mortgage than what their home was worth.[20] Analysis of home values reported by the National Association of Home Builders shows that between 2000 and 2011 the average value of all homes in the U.S. fell in real terms.[21] While home ownership remains an important element of the nation's economy, there is also an emerging sense among prospective homebuyers to be cautious. For instance, National Foundation for Credit Counseling summarized results of a 2009 survey it commissioned as follows (Cunningham (2009):

> *The lack of confidence in consumers' ability to buy a home, improve their current housing situation, or trust homeownership to provide a significant portion of their wealth sends a strong message about the impact of the housing crisis. It appears that whether a person was directly affected or not, Americans' attitudes toward homeownership have shifted.* (2009: 1)

The survey also found that:

1. Almost one-third of those surveyed, or roughly 72 million people, do not think they will ever be able to afford to buy a home;

2. Forty-two percent of those who once purchased a home, but no longer own it, do not think they will ever be able to afford to buy another one;

---

[20] See Michael F. Ford, director of the Xavier University's Center for the Study of the American Dream, Washington Post op-ed, http://www.washingtonpost.com/opinions/five-myths-about-the-american-dream/2011/11/10/gIQAP4t0eP_story.html.

[21] See The NAHB/Wells Fargo Housing Opportunity Index: Complete History by Metropolitan Area, http://www.nahb.org/reference_list.aspx?sectionID=135, and compare national average sales prices in 2000 to 2011 prices using the consumer price index calculator., http://data.bls.gov/cgi-bin/cpicalc.pl?cost1=1&year1=2000&year2=2011.

3. Of those who still own a home, 31 percent do not think they'll ever be able to buy another home (upgrade existing home, buy a vacation home, etc.); and

4. Seventy-four percent of those who have never purchased a home felt that they could benefit from first-time homebuyer education from a professional.

Moreover, we find that future housing demand will be nothing like the past. Let us divide households into three broad groups:

> **Starter-home** households with householders under 35; they are young people many with young families, starting out in their career, and tend to rent or buy smaller homes, townhomes, or condominiums.
>
> **Peak housing demand** households with householders 35 to 64; they are in the peak of their space demand and often at the peak of their income with more than half comprised of dual-income households.
>
> **Empty-nesting/downsizing** households with householders 65+; for the most part they have raised their families, are retiring, and no longer wish to care for larger homes especially on large lots far away from services, shopping, and medical assistance.

As seen in Table 1.8, peak housing demand households accounted for nearly 80% of all the growth in households between 1990 and 2010 for the nation as a whole. Trends were different for CAMPO, however, as seen in Table 1.9. Demand for homes serving the needs of households during their peak space needs was about half (52%) while starter home needs accounted for 39% of the new demand over the period 1990-2010. The share of new demand associated with seniors was only eight percent. This is consistent with CAMPO attracting younger adults.

Table 1.8
U.S. Household Change by Age Group, 1990-2010

Householder Age	Households 1990 (000s)	Households 2010 (July 1) (000s)	Household Change 1990-2010 (000s)	Percent Change 1990-2010	Share of Growth 1990-2010
Total	92,315	116,945	24,629	27%	
<35 (Starter home)	25,163	23,406	(1,757)	-7%	0%
35-64 (Peak housing)	47,231	67,670	20,439	43%	77%
65+ (Empty-nesting/downsizing)	19,921	25,868	5,947	30%	23%

Source: Census.

Table 1.9
CAMPO Household Change by Age Group, 1990-2010

Householder Age	Households 1990 (000s)	Households 2010 (July 1) (000s)	Household Change 1990-2010 (000s)	Percent Change 1990-2010	Share of Change 1990-2010
Total	328	655	327	50%	
<35 (Starter units)	66	194	128	66%	39%
35-64 (Peak space demand)	199	371	172	46%	52%
65+ (Empty-nesting, downsizing)	62	87	25	28%	8%

Source: Arthur C. Nelson

The next 25-year period, 2010 to 2035 will be very different. Table 1.10 shows that for the nation, about 72% of the growth in households will be among those that are empty-nesting and downsizing. Households with peak housing demand will comprise just 16% of household growth while starter-home households will add just 12%. Trends for CAMPO are quite different with seniors accounting for just 32% of the share of change while peak housing demand households account for 44% and starter households accounting for about 24% of the growth. For the nation as a whole there may not be enough growth among peak-housing and starter-home households to absorb the supply of housing occupied by empty-nesting/downsizing households. In CAMPO, however, demand for homes serving families in their peak housing demand life stage will continue to expand. The CAMPO area will actually see more demand for new homes meeting the needs of households at their peak space needs between 2010 and 2035 than between 1990 and 2010 (245,000 compared to 217,000). Whether they will all want large homes on large lots is not clear, however, as will be discussed on the next section.

Table 1.10
U.S. Household Change by Age Group, 2010-2035

Householder Age	Households 2010 (April 1) (000s)	Households 2035 (000s)	Household Change 2010-2035 (000s)	Percent Change 2010-2035	Share of Change 2010-2035
Total	116,945	147,622	30,678	26%	
<35 (Starter homes)	23,406	27,077	3,671	16%	12%
35-64 (Peak housing)	67,670	72,582	4,912	7%	16%
65+ (Empty-nesting/downsizing)	25,868	47,963	22,095	85%	72%

Source: Arthur C. Nelson.

Table 1.11
CAMPO Household Change by Age Group, 2010-2035

Householder Age	Households 2010 (April 1) (000s)	Households 2035 (000s)	Household Change 2010-2035 (000s)	Percent Change 2010-2035	Share of Change 2010-2035
Total	655	1,228	573	87%	
<35 (Starter units)	188	332	144	76%	24%
35-64 (Peak space demand)	375	620	245	65%	44%
65+ (Empty-nesting, downsizing)	92	276	184	200%	32%

Source: Arthur C. Nelson.

How will homeownership change to 2035? Both tighter money for buying homes and growth dominated by minority households that have historically been unable to buy homes at the same rate as White non-Hispanic households serve to reduce home ownership. The nation's homeowner rate will fall between 2010 and 2035 as we estimate in Table 1.12. On the other hand, in 2010 the homeownership rate in CAMPO was lower than for the nation as a whole (58.5% compared to 65.1%). While the ownership rate in CAMPO will fall as well, as seen in Table 1.13, home owners will retain a higher share of total tenure change than the nation.

Table 1.12
U.S. Tenure Change, 2010-2035

Tenure Type	2010 (000s)	2035 (000s)	Change (000s)	Percent Change	Share of Change
Own	76,133	91,851	15,718	20.6%	51%
Rate	*65.1%*	*62.2%*		*-4.4%*	
Rent	40,812	55,771	14,959	36.7%	49%
Rate	*34.9%*	*37.8%*		*8.3%*	

Source: Figures from 2010 from Census; figures for 2030 from Arthur C. Nelson.

Table 1.13
CAMPO Tenure Change, 2010-2035

Tenure Type	2010 (000s)	2030 (000s)	Change (000s)	Percent Change	Share of Change
Own	383	695	312	81.3%	54%
Rate	*58.5%*	*56.6%*		*-3.2%*	
Rent	272	533	261	96.0%	46%
Rate	*41.5%*	*43.4%*		*4.6%*	

Source: Figures from 2010 from Census; figures for 2030 from Arthur C. Nelson.

Nationally, between 2010 and 2035, rental demand for new housing may account for about half of all the new housing demand. If new rental housing demand is not met, it may be met by turning millions of owner-occupied units into rental units, or creating split-tenure units where the owner occupies a part of the home and rents a separate unit out to others. The situation is different for CAMPO. Home ownership in 2035 will be less than in 2010 but to 2035 the new owner-occupied housing demand will be about 54% of total demand compared to 46% for new renters.

We provide detailed tables on demographic changes, housing, and tenure demand to 2035 in Appendix A for the nation, the South census region and West South Central census division, Texas, and CAMPO.

Summary

Change among the CAMPO jurisdictions will be unprecedented. Nearly a quarter of the growth to 2035 will be attributable to seniors and minorities will account for more than 60%. Between 2010 and 2035, households with children will comprise about a quarter of household growth while households without children will account for about three-quarters, with single-person households alone representing about a third of the total.

While households in their peak housing stage of their life cycle – those between 35 and 64 – accounted for two-thirds of growth in housing demand between 1990 and 2010, that same group will account for about 44% of the growth in housing demand to 2035. Following national trends, the home ownership rate in 2035 may be lower than in 2010.

In Part 2, we review emerging market preferences for housing, communities and amenities.

PART 2
MARKET PREFERENCES

According to a survey commissioned by the National Association of Realtors (NAR) and Smart Growth America in 2004 (Beldon Russonello & Stewart 2004), when asked what they want in a house about 70 percent of Americans say they prefer a large home on a large lot.[22] . A more recent survey conducted in 2011, also commissioned by the NAR, finds that fully 80 percent of the respondents would prefer to live in a single-family detached home right now, if they had the option (Beldon Russonello & Stewart 2011). Yet when confronted with choices of neighborhood and housing attributes they most prefer, people's decisions differ. For instance, although nearly everyone wants to live in a single family detached home, the NAR's 2004 survey found that nearly half also wanted access to transit and to be able to walk to schools, and nearly 40 percent wanted a mix of housing opportunities.[23] These are features usually associated with smaller lots.

In this section of the report, we synthesize surveys that try to determine what Americans generally, and Texas residents specifically, want in their neighborhoods and communities, and for their homes. These surveys explore preferences for smart growth for the population as a whole, with special reference to key age groups and household compositions.

Two national surveys are reviewed. The first is from Porter-Novelli, an international consumer market analysis firm. Porter-Novelli surveyed a total of about 10,000 people for their preferences relating to community type and walking or biking to destinations in 2003 and 2005. The second is from the NAR and included about 2,000 respondents answering questions relating to housing preferences when trading off commuting time, amenities, and the ability to walk to places in 2011. National preferences are compared to Texas.

We also include a discussion of "Walk Score" as a measure of walkability to estimate the supply of walkable neighborhoods which we also compare to apparent demand. Because there are no surveys directly of Central Texas residents, much of the discussion in this section assumes national and state trends apply locally. This may not be the case. For this and other reasons, we qualify our interpretation near the end of this section. Nonetheless, we surmise that there is a growing demand for walkable neighborhoods with mixed-uses and mobility options.

Porter-Novelli

Porter-Novelli gauged market preferences for a variety of "smart growth" attributes, including the desirability of smart growth communities and the ability to walk or bike to work and shopping.[24] With 5,873 respondents in 2003 and 4,943 in 2005, the total of 10,816 responses compares favorably with the more typical 1,000 or 2,000 responses.

Assuming that the respondents are representative of their demographic and regional groups, we assembled profiles of behaviors and attitudes. These profiles tell us, for example, whether low-income single persons between 18 and 34 have different preferences for walking and biking than high-income households with children between 35 and 54.

---

[22] See Gregg Logan, Stephanie Siejka, and Shyam Kannan, "The Market for Smart Growth." http://www.epa.gov/smartgrowth/pdf/logan.pdf.

[23] A sizable percentage wanted a detached home on a one-acre lot within walking distance of transit.

[24] Porter Novelli is a public relations company based in Washington, DC, www.porternovelli.com. We use their data with permission.

We are interested in two sets of questions asked in the Porter-Novelli surveys. The first addressed support for "smart growth" or "traditionally-designed" communities. The survey gives the following description with no title:

> *In recent years, there has been a greater interest in developing communities with a town design in place of today's suburbs. Such communities have a town center that is surrounded by residential neighborhoods. The town center has small shops, restaurants, government buildings, churches, and public transit (bus, rail) stops. Residential neighborhoods are clustered around the town center, providing easy access to work and shopping. Each neighborhood has a variety of housing types (apartments, townhomes, single family homes) and houses are built on smaller lots and are closer to the street.*
>
> *Streets are designed to accommodate cars, pedestrians, and bicyclists. In residential areas streets are narrower, slower, and quieter with sidewalks, trees and on-street parking. In commercial areas, sidewalks are wide and comfortable, streets are lined with trees, and parking lots are less conspicuous. The community includes a network of parks and trails for walking and biking. It also has a clearly defined boundary in order to preserve open space for parks, farmlands, and forests.*

Respondents were asked "How much would you support the development of communities like this in your area?" responding to a seven-point scale from "would not support at all" (1) to "would fully support" (7). The midpoint (4) meant a respondent "would somewhat support" the development of communities like this. A second question asked "If there were communities like this available in your area, how much would you want to live in one?" where they were again asked to respond on a seven-point scale from "definitely not" (1) to "definitely would" (7) with the midpoint (4) being "maybe."

The second set of questions focus on whether, based on a scale of 1 ("not at all important") to 5 ("very important"), how personally important it is for the respondent to:

> *Be able to walk or bike to work*
> *Be able to walk or bike to shopping*[25]

Because of the large sample size, we can assess preferences for key demographic groups across the nation. The future demographic make-up of the U.S. will be different from the middle 2000s, so we use the Porter-Novelli survey to assess the preferences of demographic subgroups. We chose to keep the categories and subgroups few in number for ease of use. Respondents are divided by age, income, and household type.

For age, we divided respondents into four groups: 18-34, 35-54, 55-69, and 70+. The age group 18-34 corresponds to a youthful population that is just staring out in life, building careers (including attending college), and starting families. Work by Myers and Ryu[26] suggests that by their early to middle 30s households slow dramatically in their propensity to relocate (2008). In the age group 35 to 54, people are more established in their careers and their neighborhoods and their children are older. Myers and Ryu report a constantly declining propensity to relocate from the middle 30s into the middle 50s. In contrast,

[25] "Shopping" in the Porter-Novelli survey is less inclusive than the term "family/personal business" uses in the National Household Travel Survey (NHTS), so its results will under-estimate preference for being able to walk or bike to errands as defined by the NHTS. We will address this nuance later.

people in the age group 55 to 69 are empty-nesters at the peak of their earning power, and the least likely to relocate among all the age groups. We use age 70 and above for seniors. Myers and Ryu's work shows that after decades of relative stability in their home situation, the propensity to relocate increases substantially and accelerates around age 70. When empty-nesters relocate, they tend to down-size significantly, sometimes more than once.

We used HUD's state-level area median income (AMI) figures for 2003 and 2005. Respondents with <80%-AMI are lower income, 80%-120% AMI are middle income, and >120% AMI are upper income.

Finally, we divided the population into households composed of single persons, and households with more than one person with and without children. This simple approach is similar to that used by Martha Farnsworth Riche, former Census Bureau director, in her work projecting demographic trends from 2000 to 2025 (2003).

These are very general groupings of a complex population. Notably lacking is a category for race and ethnicity. Yet, because of its high degree of correlation, income captures this reasonably well. We also note that by 2040, the share of people declaring themselves to be multi-race will be among the largest groups of minorities. We traded off precision for simplicity, and a high level of predictive accuracy for central tendencies or trends.

We also compare national results to respondents from Texas. (The sample size is not large enough to draw reliable results for the CAMPO area.) Table 2.1 shows the percentage of respondents who support smart growth communities, or who want to live in them.[27]

Table 2.1
U.S. Support for and Willingness to Live in Smart Growth Communities

Group	Would Support Smart Growth Community	Want to Live in Smart Growth Community
All	51%	47%
Age		
18-34	55%	51%
35-54	48%	45%
55-69	52%	47%
70+	59%	56%
Income		
Low	50%	45%
Mid	45%	41%
High	41%	39%
HH Type		
Single	50%	48%
With Children	52%	46%
No Children	52%	46%

Source: Porter-Novelli (2003; 2005)

[27] Sum of responses 4-7, "would somewhat support" through "would definitely support."

Generally, about half of Americans would support smart growth communities *and* would want to live in them. The < 35 and 70+ age groups prefer the smart growth options slightly more than the middle age groups. Lower income people tend to prefer smart growth communities over higher income ones. There is very little variation among households by type.

Results for Texas are reported in Table 2.2. There are important differences with respect to the nation as a whole. Single-person households and higher income households support and would want to live in a smart growth community in Texas more than their demographic counterparts nationally. On the other hand households with children prefer the smart growth option in Texas to an extent substantially less than the nation as a whole. The same holds for households with older householders.. Assuming CAMPO preferences are comparable to the state, we surmise there remains a greater demand for conventional suburban communities here than for the nation as a whole, or other metropolitan areas.

Next, we analyze the importance of a walk or bike to work option. National results are reported in Table 2.3 and results for Texas are reported in Table 2.4. Nationally, the option is important to a little less than a quarter of American households regardless of their ages. Income matters: lower income households value walking or biking more than upper income households, 28% versus 16%t. Single person households value walking and biking the most (28%), followed by households without children (22%) and households with children (20%).In Texas, the preference patterns are quite similar.

Table 2.2
Texas Support for and Willingness to Live in Smart Growth Communities

Group	Would Support a Smart Growth Community	Want to Live in a Smart Growth Community
All	52%	48%
Age		
18-34	54%	52%
35-54	54%	48%
55-69	45%	39%
70+	44%	40%
Income		
Low	53%	48%
Mid	47%	47%
High	51%	47%
HH Type		
Single	59%	54%
With Children	44%	40%
No Children	53%	49%

Source: Porter-Novelli (2003; 2005)

Table 2.3
U.S. Preference for Walking or Biking for Work and Shopping

Group	Important/Very Important Walk or Bike to Work	Important/Very Important Walk or Bike for Shopping
All	23%	22%
Age		
18-34	24%	22%
35-54	21%	20%
55-69	23%	24%
70+	24%	25%
Income		
Low	28%	27%
Mid	19%	18%
High	16%	16%
HH Type		
Single	28%	29%
No Children	22%	21%
Children	20%	18%

Source: Porter-Novelli (2003; 2005)

Table 2.4
Texas: How Personally Important Is It to Be Able To Walk or Bike to Work and for Shopping?

Group	Important/Very Important Walk or Bike to Work	Important/Very Important Walk or Bike for Shopping
All	24%	22%
Age		
18-34	31%	25%
35-54	19%	21%
55-69	18%	20%
70+	28%	20%
Income		
Low	32%	28%
Mid	19%	19%
High	14%	15%
HH Type		
Single	35%	33%
No Children	23%	23%
Children	19%	15%

Source: Porter-Novelli (2003; 2005)

Three-quarters of the respondents do not believe that being about the walk or bike to work is important or very important. Although the remaining one-quarter interested in walking or biking may sound insignificant, we know from the NHTS that fewer than five percent of all workers actually do walk or bike to work and only a few more walk or bike for errands (such as shopping). That means that about twenty percent of the population are interested in walking or biking to work or shopping but do not presently make these trips on foot or by bicycle.

What happens if a person lives within a mile of work, or lives and/or works within a mile of errands? Will they walk or bike to these destinations more frequently? We evaluated data from the NHTS for this question; outcomes are reported in Table 2.5. Walking or biking less than one mile to work has increased from 25% in 1995 to 37 percent in 2009. Walking or biking for errands within one mile increased from 26% to 42%. The rate of increase over just 14 years, 45% and 59% respectively, is remarkable. We suspect that in the intervening years, many more mixed-use, master planned communities were built. Suburban infill/redevelopment diversifies suburbia's land-use mix, enabling more modal options. A key lesson is that when communities provide opportunities to work and access errands within a mile of home and/or work, a third to perhaps a half of Americans will walk or bike to those destinations.

We surmise that although CAMPO residents may prefer conventional suburban communities to a larger extent than the nation as a whole, they also want roughly comparable walking and biking options.

Table 2.5
U.S. Percent Walking or Biking to Work, Shopping or Other Errands, 1995-2009

Year	Walk/Bike to Work Less than 1 Mile	Walk/Bike for Shopping/Errands Less than 1 Mile
1995	25%	26%
2001	34%	35%
2009	37%	42%
Change 1995-2009	45%	59%

Source: National Household Transportation Survey 2009 (2011)

National Association of Realtors

In 2004 and again in 2011, the National Association of Realtors conducted national surveys of Americans' housing and community preferences given tradeoffs between options. The 2004 survey included about 1,000 respondents while the 2011 survey had more than 2,000 respondents. We focus on the 2011 survey in this report. Because of its smaller sample size, we will not be able to compare national and broader regional responses by key demographic features. For our analysis, we compare national preferences to those of respondents located in Texas.

A key element of the NAR survey was having respondents trade off attributes between two prototype communities. The survey asked the following question:

> *Imagine for a moment that you are moving to another community. These questions are about the kind of community you would like to live in. Please select the community where you would prefer to live.*
>
> ***Community A** – Houses are built far apart on larger lots and you have to drive to get to schools, stores and restaurants, park/ playgrounds, and recreation areas, or*

Community B *– Houses are built close together on smaller lots and it is easy to walk to schools, stores and restaurants, parks/playgrounds, and recreation areas*

Results are reported in Table 2.6. Here we see that more than half, 56%, of Americans selected the smart growth community (Community B) while 43% preferred the sprawl option. This was nearly the same for Texas.

Table 2.6
Community Preference Tradeoff

Community Type	U.S.	Texas
Community A: Houses are built far apart on larger lots and you have to drive to get to schools, stores, restaurants, park/ playgrounds, recreation areas	43%	46%
Community B: Houses are built close together on smaller lots and it is easy to walk to schools, stores, restaurants, parks/playgrounds, recreation areas	56%	54%

Source: Adapted from NAR (2011).

While roughly half of Texans would seem to want smart growth communities, we note from the American Housing Survey that fewer than 20% of those living in the four largest metropolitan areas probably have this option.[28]

The NAR survey followed up on the kinds of destinations within walking distance of their home which people value. Table 2.7 shows results for the nation and Texas. Though there are some variations, we find little major difference between these two geographic scales of analysis.

Table 2.7
Walking Distance Preferences from Home

Activity	US	Texas
Schools	55%	61%
Grocery store	75%	75%
Pharmacy or drug store	65%	63%
Doctors' offices	55%	61%
Cultural resources	59%	54%
Recreational facilities	47%	41%
A hospital	61%	68%
Public transportation by rail	42%	46%
Restaurants	60%	56%
Place of worship	47%	54%

Source: National Association of Realtors.

[28] This is based on our analysis of the most recent American Housing Survey publications for the Dallas (2002), Fort Worth (2002), Houston (2007) and San Antonio (2004) metropolitan areas. As it takes several decades for urban form to be changed significantly, we assume forms evident in the 2000s persist into the later decades of the 21st century. See http://www.census.gov/housing/ahs/data/metro.html.

We observe that roughly half of Texans would want to live within walking distance of rail, which we also interpret to mean modern bus rapid transit systems as they have fixed-guideway features comparable to rail. According to the Center for Transit Oriented Development, only about 18,000 people of CAMPO's 1.7 million people, about one percent, within a half mile of existing or potential fixed-guideway transit stations.[29]

Another measure, "Walk Score," underscores how CAMPO may be lagging in matching supply to demand. Walk Score measures the walkability of an address using an algorithm that awards points based on the distance to amenities in several categories, with maximum points awarded if within one-quarter mile and none if located more than a mile away.[30] Scores can range between 1 and 100 with the following walkability descriptions:[31]

Walk Score®	Description
0-24	Car-Dependent
25-49	Car-Dependent; a few amenities within walking distance.
50-69	Somewhat Walkable; some amenities within walking distance.
70-89	Very Walkable; most errands can be accomplished on foot.
90-100	Walker's Paradise; daily errands do not require a car.

The overall Walk Score for Austin is 47. This is the same as Dallas and slightly lower than Houston at 50, but higher than San Antonio at 38.

Perhaps the most telling of the NAR's tradeoff questions is how people choose between two relatively extreme but reasonable alternatives, such the trade-off between a large home on a large lot with a long commute, and a smaller home on a smaller lot with a short commute. We find results reported in Table 2.8 rather interesting. For the nation as a whole, nearly 60% of Americans would do just this –give up the large home on large lot with a long commute for the alternative. By about the same margin, Americans will give up neighborhoods comprised solely of homes where you have to drive everywhere in favor of a mixed-use housing and mixed-use community where places are easy to walk to. This does not necessarily mean they will tradeoff detached homes for attached ones; by the same margin, Americans would not go that far. Results for Texas are similar to the nation.

[29] See http://toddata.cnt.org.

[30] See http://www.walkscore.com/methodology.shtml.

[31] See http://www.walkscore.com/live-more/

Table 2.8
Trading Off Housing Attributes

Preference Tradeoff Question	U.S.	Texas
Please select the community where you would prefer to live:		
Smaller house/lot, shorter commute	59%	56%
Larger house/lot, longer commute	39%	42%
Please select the community where you would prefer to live:		
Mix of houses/businesses easy to walk	58%	57%
Houses only, drive to businesses	40%	42%
Please select the community where you would prefer to live:		
Apartment/townhouse, easy walk	38%	35%
Single family house, drive	59%	63%

Source: National Association of Realtors.

Qualifications

We note that no survey of Central Texas residents was conducted that could be used for this report. At best, we know what Texans as a whole preferred in the 2003 and 2005 Porter Novelli surveys and in the 2011 National Association of Realtors survey. Still, we have found consistency between these national surveys and local surveys across the country. While variations in precise preference patterns exist, central tendencies seem to be robust for large, growing metropolitan areas.

There are other qualifications. While nationally there seems to be a trend for local tax increases to expand transit systems this does not appear to be the case in Central Texas. The Capital Metro transit agency has few participating jurisdictions outside Travis County. It also took several ballot initiatives to get the first rail line and Austin's Urban Rail plans have not made it to a bond election. While there may be a growing preference for transit options to now this has not translated into voter support for it as has happened elsewhere.

There may be other considerations that could temper the trends. One could speculate that the human desire for the new, coupled with the availability of cheap land in the region, would encourage people seeking large lots to provide a market for new sprawl. Yet, there are also important constraints such as rising gasoline prices and, in the case of Central Texas, water availability.

Synthesis and Application to CAMPO

From these surveys, we surmise the following insights for CAMPO:

> About half of Texans and more than half of those under 34 and single persons both support and would want to live in "smart growth" communities. We assume CAMPO preferences are at least the same. We estimate that no more than one in five have this option now.
>
> More than one-in-five Texans and by implication at least that many CAMP residents want to live within walking/biking distance of working and shopping/errands, including more than a quarter of Texans who are under 35 and those who are low income, and more than a third who are single.

More than half of Texans and by implication at least as many CAMPO residents want to be able to walk to destinations but we estimate that perhaps fewer than 10% now live in communities where they can.[32]

Nearly half of Texans want to be able to walk to fixed-guideway transit. We surmise this preference is at least as large for CAMPO residents but the reality is that probably less than one percent of them have this option now.

More than a third of Texans and we assume at least the same in CAMPO want the option to live in attached housing units but about a quarter have that option now.

In 2035, jurisdictions comprising CAMPO will have about 1.2 million, roughly 600,000 more than in 2010. Based on preference surveys, perhaps more than a third of them – about 400,000 in 2035 – will want to live in walkable, mixed-use communities probably with mobility options and with a wider range of housing types than exists presently. We suspect that fewer than 10% or about 60,000 households have these options now. To meet market demand, about two-thirds of all new residential units will need to build where these options are available. We will suggest ways in which to accomplish this in the last part of this report. We next discuss nonresidential development trends.

[32] This is estimated from the CTOD database at www.ctod.org.

PART 3
SPACE-OCCUPYING EMPLOYMENT AND NONRESIDENTIAL SPACE NEEDS

This Part of the report does three things. First, it identifies the kinds of jobs that occupy space. Second, it estimates the total number of workers (full- and part-time) who will occupy built space. Third, it estimates the space supported by workers in 2010 and projects space needs to 2035. A special feature of this exercise is estimating the volume of space existing in 2010 that will be replaced and/or repurposed – we use the term recycled – to 2035. As will be seen, the equivalent of more than the total nonresidential space existing in 2010 will be recycled by 2035. The reason is the very rapid pace of growth projected for CAMPO over the next 25 years.

Space-Occupying Employment Groups

Our focus is on those jobs that need to be housed in built space, such as stores, offices, schools, and the like. Natural resource jobs such as farming, fishing and mining, do not usually require built space in which to work. Construction workers, who build the space people occupy, usually do not have space of their own; they rather move from job to job. We also do not address military jobs because, although they certainly occupy space, the planning and development of that space is mostly beyond the influence of local governments. The relevant jobs that occupy space can be loosely organized into four broad land-use groups. For the most part, local planning and zoning includes a wide range of land-uses within each of these four nonresidential groups. In the office group, for instance, local zoning codes usually not differentiate between such activities as real estate or technical services, but they would restrict industrial and some institutional activities. Appendix C reports in detail how we group space-occupying employment into industrial, office, retail and lodging, and institutional categories for analysis.

Space-Occupying Employment Projections

Since the 1980s, no federal agency has projected employment over the long term and few commercial services do. Fortunately, Woods & Poole Economics has been making these kinds of projections for decades and I received permission to use their projections here. Woods & Poole reports jobs based on the Bureau of Economic Analysis definition of what a job is: any person earning a living for which federal income tax forms are filed. This could be a full time or part time person, or the same person holding multiple jobs. The Census Bureau's County Business Patterns, for instance, reports only the number of jobs claimed by firms with federal employment identification numbers principally for social security and unemployment purposes. The BEA definition is the most expansive.

Table 3.1 reports 2010 employment for each of the space-occupying groups, and projects employment to 2035. Three important trends among the employment groups emerge. Industrial job growth will lag behind population and employment growth, accounting for about seven percent of the share of overall job growth. The retail/lodging/food service and institutional groups will grow at about the overall rate of total job growth. Office and office-based services will account for about 56% of the new jobs.

Table 3.1
CAMPO Space-Occupying Employment, 2010-2035

Sector	2010 (000s)	2035 (000s)	Change 2010-2035 (000s)	Percent Change 2010-2035	Share of Change 2010-2035
Industrial	116	160	44	38%	7%
Office/Services	546	922	376	69%	56%
Retail/Lodging/Food	183	303	120	66%	18%
Institutional	129	265	136	105%	20%
Total	974	1,650	676	69%	

Source: Adapted from Woods & Poole Economics (2011) adjusted for CAMPO projections.

We turn next to estimating the amount of space needed to accommodate these jobs.

Nonresidential Space Projections

Most workers need space within which to work. Government agencies need to fulfill many functions inside buildings. In most urbanized areas, nonresidential space accounts for a third or more of the built environment (excluding rights-of-ways and other public spaces), and half or more of the taxable value.[33] In this section, we estimate the nonresidential space needs.

Estimating employment-based space needs can be complex and fraught with uncertainties about how technology will influence the use of space in the future. The requirement for nonresidential space may be decreasing due to trends including working at home, telecommuting, internet retailing, even office "hotelling" - wherein workers never have an assigned work area, but use space when needed based on the task and the need to be in an office.

Whether these factors increase the efficiency with which space is used, and result in less space needed in the future, is uncertain. For example, working at home accounts for a very small share of workers despite its growing prevalence. In 1990, people working at home accounted for three percent of all workers, and in 2000 it was just 3.3%. Telecommuting does not necessarily reduce office space needs. Telecommuters may work from home part of a day or some days of the week but still have an office. Office hotelling applies only to workers who travel and need places to function on the road – but does this mean they need less space than if working in a permanent office or cubicle? Or does it mean more space is needed to meet their office needs when aggregated across several locations? Internet retailing is growing but may plateau as people tend to prefer the tactile and social aspects of shopping. A decade of advances in telecommuting, office use, and retailing technologies has not reduced overall nonresidential space needs. In fact, the trend seems to be for increasing square feet per person. Total nonindustrial space in the U.S. averaged 233 square feet per person in 1992 and 246 square feet per person in 2003.[34]

While the nonresidential space needs per capita may be increasingly over time, the actual needs per worker have not changed much (see Nelson 2004). There seems to be a debate on how small office

[33] Most states have homestead exemption policies resulting in assessed values for residential development being less than market value, with the effect of shifting then property tax burden to nonresidential development.

[34] The Energy Information Administration of the U.S. Department of Energy conducts a periodic stratified random sample Commercial Buildings Energy Consumption Survey of all nonindustrial buildings in the nation. Total space in 1992 was 69.7 billion square feet and for 2003 it was 71.7 billion square feet, or an average of 233 and 246 square feet per person for populations of 256.5 million and 290.8 million respectively.

worker stations will become, principally because of electronic filing and interactions that do not require meeting spaces, but there is no consensus. For one thing, productive people still need productive space to work in, and office buildings still need halls, meeting rooms, restrooms, lobbies, and so forth. Office buildings are also adding exercise space, day care facilities, and space for other activities. On the whole, we do not see much reduction in office space per worker though we assume it may go down some, as discussed next.

To estimate space needs per work, we used the total square feet of space for each category of activities reported by the U.S. Department of Energy's Commercial Buildings Energy Consumption Survey (CBECS 2003) and the Manufacturing Energy Consumption Survey (MECS 2006), and divided that space by workers in each activity group for the respective years. The result is the average square feet per worker for all workers in the industrial and nonindustrial categories reported in Table 3.2. These figures include vacant space, and other space used for ancillary purposes such as building lobbies, rest rooms, staircases, and so forth. Many buildings also include exercise rooms, day care facilities, and so forth. We apply these figures to Woods & Poole's estimates of employees in each employee groups and aggregate them into a total amount of space that is estimated to be supported by the economy.

There is another consideration, however: nonresidential space is not as durable as residential units. The typical residential unit can last easily two centuries and perhaps several more. In contrast, the typical nonresidential space lasts on average around 40 to 45 years, as illustrated in Figure 3.1. Over time, nonresidential space will need to be recycled through demolition, rebuilding, or repurposing through renovations that renew the structure for different kinds of uses than for which it was originally built.

Table 3.2
U.S. Space Consumed per Industrial and Nonindustrial Worker

Land Use	Square Feet Per Worker
Industrial	
Utilities	300
Manufacturing	900
Transportation & Warehousing	1,800
Wholesale Trade	1,300
Nonindustrial	
Office & Office-Based Services	300
Education and the Arts	750
Lodging/Food Service	720
Retail Trade	605
Health Care	500

Sources: Nonindustrial space estimated from CBECS (Energy Information Administration 2005) and industrial space estimated from CBECS and MECS (Energy Information Administration 2009).
Note: Space includes: all occupied areas such as work spaces, lobbies, conference rooms, assembly areas, hallways, elevator shafts, etc.; collateral service functions such as cafeterias, theaters, exercise and day care; and vacant space. Figures are rounded.

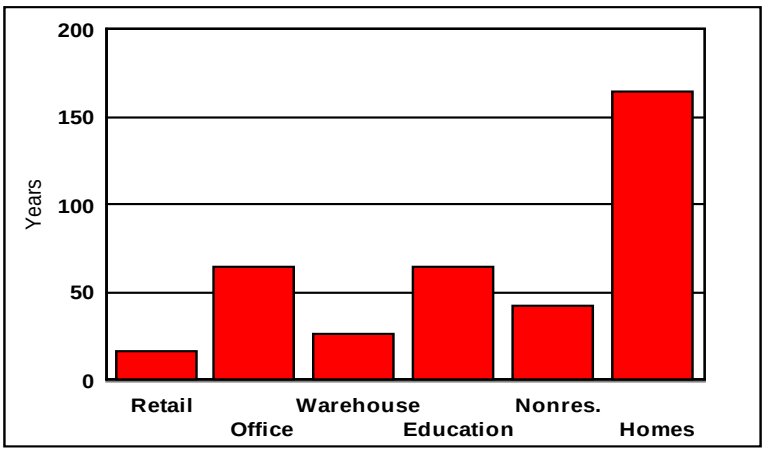


Figure 3.1 Life span of major building types
Source: Arthur C. Nelson based on Commercial Buildings Energy Consumption Survey (2006)

The speed with which nonresidential structures are recycled depends on two major factors: the rate of depreciation of the building and the rate of appreciation of the land on which it sits. Buildings depreciate at widely varying rates. Depreciation for most kinds of properties ranges from about 30 years to about 60 years.[35] But this assumes the structure is used until its intended purpose has run its course. In dynamic metropolitan areas, few nonresidential structures are used for their intended purpose through the expected useful life of the building. The reason is that as the structure depreciates, land value usually appreciates, and at some point the land is worth more than the structure. The owner of the structure may see a better return on investment by recycling the land use.

Consider how the recycling decision is made. Assume the structure has a depreciable life of 50 years, which is a common period for nonresidential structures. Suppose that when the structure is built, about 80 percent of the total property value is in the structure itself and 20 percent is in the land. Suppose also that the average annual appreciation of land (after inflation) is one percent. A 50-year structure depreciating at two percent annually with land appreciating at 1 percent annually (compounded) – roughly the average annual rate of growth – will be worth less than the land in about the 33rd year. This is illustrated in Figure 3.2. It is at about the 25th year if not before that the property owner begins to consider demolishing and building a new structure, or renovating the existing structure (perhaps adding to it) to serve a higher and better use. We call this "recycling". However, the actual moment of recycling is often deferred until market forces justify the cost of demolition and reinvestment. Thus, assuming all the nonresidential stock is built for a 50-year useful life, the equivalent of the entire nonresidential stock in the U.S. recycles about every 40 years.[36]

[35] Marshall & Swift, *Marshall Valuation Service* (2010).

[36] See the *Commercial Buildings Energy Consumption Survey* for 2003.

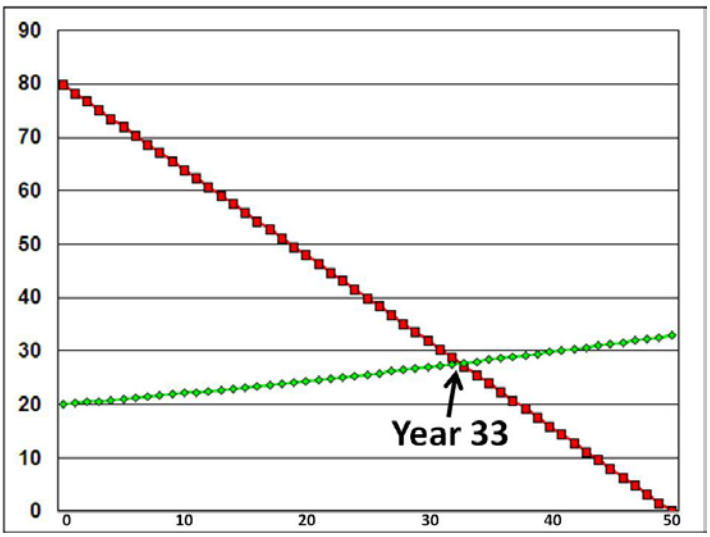


Figure 3.2 Conversion timing of nonresidential buildings
Note: Timing is based on structure depreciation (red line) and land value appreciation (green line)
Source: Arthur C. Nelson.

For this analysis, we will assume that the average life of all nonresidential structures will be as shown in Table 3.2. Certainly, some structures such as cheaply-built big box stores may become ripe for recycling after just 15 years or so, while Class-A, high-rise office buildings may last a century or longer. The average will under-estimate the pace at which nonresidential structures will become ripe for recycling considering land value appreciation. In addition, we "start" the depreciation "clock" in 2010; that is we estimate ripeness for recycling assuming all existing structures were built in 2010. This will tend to underestimate the total supply of nonresidential structures that may be replaced or repurposed by 2030. However, we make one more adjustment based on the discussion for Figure 5.2. We estimate the average annual compounded metropolitan area population growth rate over the analysis period and use it to accelerate the conversion rate. Suppose the compounded rate of growth in a given metropolitan area over 20 years was 20 percent. Suppose further that the class of structure being depreciated is 50 years. We therefore adjust the effective rate from 50 years to 40 years (50 x (1-0.20)).

Table 3.3 reports the net change to the inventory of each nonresidential group, the volume of space that is estimated to be recycled, and the total space that is estimated to be built, rebuilt, or renovated. We see that CAMPO jurisdictions will need to increase their inventory of nonresidential space by about 369 million square feet between 2010 and 2035 or nearly the same amount of space that existed in 2010. An even larger number, about 526 million square feet, will be recycled between 2010 and 2035, more than all the space existing in 2010. The reason is rapid growth that will accelerate nonresidential conversion processes. For CAMPO as a whole, we estimate that about 1.3 billion square feet of nonresidential space will be built or rebuilt between 2010 and 2035 or nearly double the nonresidential space that existed in 2010.

Table 3.3
CAMPO Nonresidential Space Inventory, 2010-2035
[Millions of square feet.]

Nonresidential Space	2010	2035	Change 2010-2035	Percent Change 2010-2035	Share of Change
Space Supported	427	796	369	86%	60%
Space Recycled		526			40%

Total New Construction	1,322

Source: Arthur C. Nelson.

Appendix C compares employment, space and redevelopment trends for space-occupying employment between the nation, census regions and divisions, the Austin MSA and CAMPO over the period 2010 to 2035.

In Part 4, we outline a strategy to leverage the opportunity to redevelopment commercial corridors to meet the emerging demand for walkable communities, mixed-residential and mixed-use development, and transit accessibility.

PART 4
A STRATEGY TO MEET EMERGING MARKET DEMAND

Market trends (Part 1) and preference surveys (Part 2) allow us to conservatively estimate the built space demands for communities of the future. We estimate that at least a third of households in 2035 will want the option to live in walkable communities with mixed residential and mixed-use development, urban amenities (such as shops, restaurants, and services within walking distance), and transit options such as bus rapid transit, street car, and light rail. For short-hand, we call these "smart growth" communities. Our analysis of preference surveys in Part 2 showed that:

> About half of Texans and more than half of those under 34 and single persons both support and would want to live in "smart growth" communities. We estimate that no more than one in five have this option now.
>
> More than one-in-five Texans, more than a quarter of Texans who are under 35 and those who are low income, and more than a third who are single want to live within walking/biking distance of working and shopping/errands.
>
> More than half of residents want to able to walk to destinations but maybe fewer than 10 percent live in communities where they can.
>
> Nearly half of Texans want to be able to walk to fixed-guideway transit.
>
> More than a third of Texans want the option to live in attached housing units but about a quarter have that option now.

Conservatively, we estimate that at least a third of Texans want walkable mixed-use communities with mixed residential options and accessibility to transit; we surmise this is at least comparable to preferences among residents in CAMPO. Put differently, however, perhaps two thirds do not want those options. The problem is that the one-third of households who want those options do not have them now and will not have them by 2035 without public and private collaboration in planning and development. In this Part we will outline such a strategy.

In 2035, CAMPO's jurisdictions will have about 1.2 million households, about double the number than in 2010. From surveys, we estimate that at least 400,000 households in 2035 will want to live in walkable communities, with transit access as an option, and with a wider range of housing types than exists presently. We suspect that fewer than 60,000 households have those options now. To meet market demand, about two-thirds of all new residential units built by 2035 may need to provide those housing and location options.

New development in the CAMPO area can meet emerging market preferences in many ways. They include new master planned communities, infill and redevelopment along transit-ready corridors, and redevelopment of commercial centers.

Given its rapid growth especially among households during their peak space demand needs, a large share of the future housing demand will be for detached homes. Yet unlike the past, preference surveys indicate this demand may be met best through detached homes on small lots (which does not necessarily mean small homes) with walk/bike accessibility to a variety of destinations, and mixed land uses. These new communities may be in Greenfield or large-site infill and redevelopment locations. Transit accessibility

may be a desirable option for some though probably not a large share of new communities catering to this market segment.

For the other half of the demand – starter and empty-nesting/downsizing households, much though not all of the demand may be accommodated through both new communities and infill and redevelopment in amenity-rich, transit-accessible locations. By amenities we mean more than parks and open spaces, but the kinds of functions that attract young professionals and seniors alike such as walk/bike corridors, attractive streetscapes, shops and restaurants, arts and cultural opportunities, and – above all – personal services including health care. Let us explore this option further.

In Part 3, we showed that the equivalent of more than all nonresidential space existing in 2010 will become candidates for redevelopment by 2035. The reason is very rapid growth that accelerates the timing of conversion from a lower to a higher and better use. We further estimate that half of these are one-floor structures and another one-quarter are two-floor structures.[37] Those structures are also at very low floor-area-ratios. FAR is a measure of land-use intensity; it relates total building area to total land area. A structure of 100,000 square feet sitting on a parcel of 400,000 square feet has an FAR of 0.25. For the CAMPO region, we estimate that about three-quarters of all nonresidential parcels have an FAR of less than 0.20, which means 80 percent of the land area is used for parking, loading, storage, and other non-structural purposes. Because of depreciating buildings and appreciation land values, the equivalent of more than all these parcels will become candidates for redevelopment by 2035. This happens as a low-FAR structure is replaced two or more times over the next 25 years. In our view, it is the sheer volume of nonresidential space to be recycled and the land it sits on that can substantially reshape metropolitan Austin.

We know from research and real estate developer experience that achieving FARs of 0.50 to 0.80 maximizes land-use intensity at low cost per square foot of structure, and provides adequate on-site parking especially if there are "smart parking" designs that share parking among activities, tuck-under parking options that avoid building parking structures (see Dunham-Jones and Williamson 2009; Williamson 2013). FAR above 1.0 can be achieved where there are reasonable transit options such as light rail, bus rapid transit, and streetcar. One of the key design opportunities possible in achieving FARs of more than 0.50 is mixed uses which can reduce and internalize vehicle trips. At FARs above 1.00, mixed uses can generate a quarter to a third fewer trips (see Ewing and Cervero 2010).

In our view, the redevelopment opportunities presented by commercial corridors is largely under-estimated by both the public and private sectors. Public-private partnerships can be formed to leverage resources of both to meet emerging market demand. After all, much of the land-uses along these corridors have attributes making them ideal candidates for redevelopment:

1. They are already flat and reasonably well drained so this part of the development process is largely finished.

2. Almost all of these sites sit along major highways with four or more lanes often with wide rights-of-way for easements. Because they are along multi-lane corridors that connect urban and suburban nodes, these sites are "transit-ready".

3. Large-scale utilities run along those major highways and are easily accessed for upgrading if needed. As they age, these utilities will need to be replaced. The conundrum facing local

[37] Estimated based on the Commercial Buildings Energy Consumption Survey, http://www.eia.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html.

government is approving new greenfield development where initial utility capital costs are low or bracing for the upgrades of major utility infrastructure along built-out corridors that would have to be done anyway and at lower long-term cost per unit of service delivery. Prudent fiscal management would seem to favor the latter investment decision.

4. Prior development approvals have already committed these sites to other than low-density residential development.

5. These sites have motivated owners interested in maximizing their return. This is important because impediments to redevelopment include the inability to assemble multiple, small ownerships, to gain the confidence of owners that it is in their best interest to redevelop; and to acquire clear title. This is not the case with most large commercially-developed sites.

6. As these sites age – and we know from above that most of them age rapidly – the deterioration of structures compromises the value of nearby residential property.

7. Those neighbors may be motivated to simultaneously deflect development pressure away from their neighborhoods into these aging commercial sites especially if they have a constructive say in how they are redeveloped; in other words, potential NIMBYs (not-in-my-backyard) may become YIMBYs (yes-in-my-backyard).

There are a number of qualifications and cautionary observations that can reduce redevelopment opportunities. For instance, tearing down the old to replace it with something more contemporary or at higher land-use intensity is not necessarily good in all cases. Preservation of neighborhoods to advance community character, create stability in the market, and even to elevate long term property values are among many reasons to preserve older structures. Nonetheless, many older structures sit on larger tracts of land that can be redeveloped, and older structures can be repurposed (from warehousing to office or residential) while retaining their historical and architectural character.[38] Our purpose here is to offer the broad perspective that for the most part apply to most nonresidential development existing in urban and suburban areas that are not worth preserving but instead are at the heart of meeting future development needs in the CAMPO area.

Second, will low-intensity parcels be redeveloped at a density to support walkable, mixed-use, transit-oriented neighborhoods? This is uncertain. In most metropolitan areas, land values increase over time at least in proportion to population growth and the higher the land value the more intensively land needs to be used to justify the cost of acquiring the property and redeveloping it. Indeed, a major road block to timely redevelopment is uncertainty by property owners about when to redevelop, usually erring on caution so that redevelopment is deferred perhaps longer than may be efficient. Public officials and planners need to be proactive in identifying those parcels that may become ripe for redevelopment within various time frames, such as between 2010 and 2035, and beyond.

Unfortunately, there is a third reason that property—both residential and nonresidential—is probably not efficiently redeveloped: local land use policies (Arora 2007). A study by the Transportation Research Board concludes that for business parks, a parking ratio of 2.0 per 1,000 square feet would be sufficient to take care of the overall needs (Kuzmyak et al. 2003).

[38] See the National Trust for Historic Preservation, http://www.preservationnation.org/.

The bottom line is that the place where much of this redevelopment can occur will be in suburbia. This is where most CAMPO residents live and where most jobs are found. It is also mostly composed of low-rise structures along commercial corridors with occasional activity nodes, also at low intensity use. Ellen Dunham-Jones and June Williamson's *Retrofitting Suburbia*, (2008) and Williamson's *Designing Suburban Futures* (2013) show how we can turn transit-ready corridors into transit corridors and we can transform dowdy suburban centers into vibrant, mixed-use ones. In combination with some new Greenfield new community development, the rest of CAMPO's development needs between 2010 and 2035 can be accommodated by retrofitting suburbs, and do so without invading established residential neighborhoods. The challenge is creating public-private-civil collaborations that can accomplish this.

APPENDIX A
DEMOGRAPHIC AND HOUSING TRENDS 2010-2035

Table A.1
Population Change 2010-2035
[Thousands of persons]

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Population 2010	309,350	114,866	36,485	25,257	1,728
Population 2035	390,114	156,038	51,138	37,387	3,251
Population Change, 2010-2035	80,764	41,172	14,653	12,130	1,523
Percent Population Change, 2010-2035	26%	36%	40%	48%	88%

Table A.2
Minority Population Change 2010-2035
[Thousands of persons]

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
White Non-Hispanic Population 2010	201,912	70,334	19,434	11,701	971
Minority Population 2010	107,438	44,531	17,050	13,556	757
Percent Minority Population 2010	35%	39%	47%	54%	44%
White Non-Hispanic Population 2035	211,171	79,317	22,025	13,538	1,556
Minority Population 2035	178,944	76,720	29,113	23,849	1,338
Percent Minority Population 2035	46%	49%	57%	64%	46%
Population Change, 2010-2035	80,765	41,172	14,654	12,130	1,166
White Non-Hispanic Population Change, 2010-2035	9,259	8,983	2,591	1,837	585
Minority Population Change, 2010-2035	71,506	32,189	12,063	10,293	581
Share of Net Growth of White Non-Hispanic Population to Net Change, 2010-2035	11%	22%	18%	15%	50%
Share of Net Growth of Minority Population to Net Change, 2010-2035	89%	78%	82%	85%	50%

Table A.3
Senior Population Change 2010-2035
[Thousands of persons]

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Population 65+ 2010	40,331	14,926	4,099	2,612	140
Population 65+ 2035	77,681	30,157	8,721	6,161	462
Population 65+ Change 2010-2035	37,349	15,231	4,622	3,550	323
Population 65+ Percent Change 2010-2035	93%	102%	113%	136%	231%
Share of Net Growth of Population 65+ 2010-2035	46%	37%	32%	29%	21%

Table A.4
Household Change by Type 2010-2035
[Thousands of households]

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Households 2010	116,945	43,728	13,309	8,963	655
Households with Children 2010	34,814	13,048	4,344	3,070	208
Households without Children 2010	82,131	30,680	8,965	5,893	447
Single-Person Households 2010	31,264	11,526	3,352	2,173	179
Households 2035	147,622	59,615	18,719	13,368	1,228
Households with Children 2035	39,785	16,186	5,633	4,206	371
Households without Children 2035	107,837	43,429	13,087	9,161	856
Single-Person Households 2035	47,304	18,660	5,498	3,841	372
Change in Households, 2010-2035	30,678	15,887	5,410	4,405	573
Change in Households with Children, 2010-2035	4,972	3,138	1,288	1,137	163
Change in Households without Children, 2010-2035	25,706	12,749	4,122	3,268	409
Share of Growth in Households with Children, 2010-2035	16%	20%	24%	26%	29%
Share of Net Growth in Households without Children, 2010-2035	84%	80%	76%	74%	71%
Change in Single-Person Households, 2010-2035	16,040	7,134	2,146	1,668	194
Share of Net Change in Households that are Single-Person, 2010-2035	52%	45%	40%	38%	34%

Table A.5
Household Change by Age 2010-2035
[Thousands of households]

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Households <35, 2010	23,406	9,021	3,065	2,110	194
Households 35-64, 2010	67,670	25,076	7,616	5,207	371
Households 65+, 2010	25,868	9,631	2,628	1,646	87
Households <35, 2035	27,077	11,466	3,999	2,927	332
Households 35-64, 2035	72,582	29,257	9,320	6,699	620
Households 65+, 2035	47,963	18,892	5,400	3,742	276
Change in Households, 2010-2035	30,678	15,887	5,410	4,405	573
Change in Households <35, 2010-2035	3,671	2,445	934	817	138
Change in Households 35-64, 2010-2035	4,912	4,180	1,704	1,492	250
Change in Households 65+, 2010-2035	22,095	9,261	2,772	2,096	189
Share of Net Growth in Households <35, 2010-2035	12%	15%	17%	19%	24%
Share of Net Growth in Households 35-64, 2010-2035	16%	26%	31%	34%	44%
Share of Net Growth in Households 65+, 2010-2035	72%	58%	51%	48%	32%

Table A.6
Housing Unit Change 2010-2035
[Thousands of housing units]

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Housing Units Existing 2010	131,705	49,981	14,923	9,977	707
Housing Units Supported 2010	127,884	48,475	14,691	9,837	677
Difference in Housing Units	(3,821)	(1,505)	(232)	(140)	(30)
Units Needed 2035	162,571	66,320	20,670	14,668	1,265
Net Change to Inventory, 2010-2035	30,866	16,339	5,747	4,691	559
Units Replaced, 2010-2035	13,818	5,661	1,743	1,240	99
Total New Units Needed, 2010-2035	44,684	22,000	7,490	5,930	658
New Housing Units Built as Share of Housing Supply in 2010	34%	44%	50%	59%	93%

Table A.7
Housing Tenure 2010-2035
[Thousands of persons]

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Homeowners, 2010	76,133	29,178	8,630	5,711	383
Ownership Rate, 2010	65.1%	66.7%	64.8%	63.7%	58.5%
Renters, 2010	40,812	14,550	4,679	3,252	272
Homeowners, 2035	91,851	38,267	11,739	8,236	695
Ownership Rate, 2035	62.2%	64.2%	62.7%	61.6%	56.6%
Renters, 2035	55,771	21,348	6,980	5,131	533
Change in Homeowners, 2010-2035	15,718	9,089	3,109	2,525	312
Change in Renters, 2010-2035	14,959	6,797	2,301	1,879	261
Renter Share of Change, 2010-2035	49%	43%	43%	43%	46%

APPENDIX B
SPACE-OCCUPYING GROUPS

Industrial Group

Here we describe the kinds of jobs comprising the industrial sectors for which we synthesize employment projections. Our employment and associated space needs for industrial development includes the following NAICS two-digit codes (unless otherwise noted) published by the Bureau of Economic Analysis of the U.S. Department of Commerce:

Utilities This sector includes Utilities (NAICS 22). The Utilities sector comprises establishments engaged in the provision of the following utility services: electric power, natural gas, steam supply, water supply, and sewage removal. Within this sector, the specific activities associated with the utility services provided vary by utility: electric power includes generation, transmission, and distribution; natural gas includes distribution; steam supply includes provision and/or distribution; water supply includes treatment and distribution; and sewage removal includes collection, treatment, and disposal of waste through sewer systems and sewage treatment facilities.

Manufacturing This sector includes all firms and employment in NAICS sectors 31-33. These establishments are usually described as plants, factories, or mills and often use power driven machines and materials handling equipment. Establishments engaged in assembling component parts of manufactured products are also considered manufacturing if the new product is neither a structure nor other fixed improvement. Also included is the blending of materials, such as lubricating oils, plastics resins, or liquors. The materials processed by manufacturing establishments include products of agriculture, forestry, fishing, mining, and quarrying as well as products of other manufacturing establishments. The new product of a manufacturing establishment may be finished in the sense that it is ready for utilization or consumption, or it may be semi-finished to become a raw material for an establishment engaged in further manufacturing. For example, the product of the copper smelter is the raw material used in electrolytic refineries; refined copper is the raw material used by copper wire mills; and copper wire is the raw material used by certain electrical equipment manufacturers.

Wholesale trade NAICS sector 42 comprises establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The merchandise described in this sector includes the outputs of agriculture, mining, manufacturing, and certain information industries, such as publishing. The wholesaling process is an intermediate step in the distribution of merchandise. Wholesalers are organized to sell or arrange the purchase or sale of (a) goods for resale (i.e., goods sold to other wholesalers or retailers), (b) capital or durable non-consumer goods, and (c) raw and intermediate materials and supplies used in production.

Transportation and warehousing The Transportation and Warehousing sector, NAICS 48-49, includes industries providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation. Establishments in these industries use transportation equipment or transportation related facilities as a productive asset. The type of equipment depends on the mode of transportation. The modes of transportation are air, rail, water, road, and pipeline. The Transportation and Warehousing sector distinguishes three basic types of activities: subsectors for each mode of transportation, a subsector for warehousing and storage, and a subsector for

establishments providing support activities for transportation. In addition, there are subsectors for establishments that provide passenger transportation for scenic and sightseeing purposes, postal services, and courier services.

Office and Office-Based Services Group

Several activities comprise the office land-use group. Building spaces are often fungible between these activities.

Information The Information sector, NAICS 51, comprises establishments engaged in the following processes: (a) producing and distributing information and cultural products, (b) providing the means to transmit or distribute these products as well as data or communications, and (c) processing data. The main components of this sector are the publishing industries, including software publishing, and both traditional publishing and publishing exclusively on the Internet; the motion picture and sound recording industries; the broadcasting industries, including traditional broadcasting and those broadcasting exclusively over the Internet; the telecommunications industries; Web search portals, data processing industries, and the information services industries. The expressions 'information age" and "global information economy" are used with considerable frequency today. The general idea of an "information economy" includes both the notion of industries primarily producing, processing, and distributing information, as well as the idea that every industry is using available information and information technology to reorganize and make them more productive.

Finance and insurance The Finance and Insurance sector, NAICS 52, comprises establishments primarily engaged in financial transactions (transactions involving the creation, liquidation, or change in ownership of financial assets) and/or in facilitating financial transactions. Three principal types of activities are identified:

1. Raising funds by taking deposits and/or issuing securities, and in the process, incurring liabilities. Establishments engaged in this activity use raised funds to acquire financial assets by making loans and/or purchasing securities. Putting themselves at risk, they channel funds from lenders to borrowers and transform or repackage the funds with respect to maturity, scale, and risk. This activity is known as financial intermediation.
2. Pooling of risk by underwriting insurance and annuities. Establishments engaged in this activity collect fees, insurance premiums, or annuity considerations; build up reserves; invest those reserves; and make contractual payments. Fees are based on the expected incidence of the insured risk and the expected return on investment.
3. Providing specialized services facilitating or supporting financial intermediation, insurance, and employee benefit programs.

In addition, monetary authorities charged with monetary control are included in this sector.

Real estate and rental and leasing The Real Estate and Rental and Leasing sector, NAICS 53, comprises establishments primarily engaged in renting, leasing, or otherwise allowing the use of tangible or intangible assets, and establishments providing related services. The major portion of this sector comprises establishments that rent, lease, or otherwise allow the use of their own assets by others. The assets may be tangible, as is the case of real estate and equipment, or intangible, as is the case with patents and trademarks. This sector also includes establishments primarily engaged in managing real estate for others, selling, renting and/or buying real estate for others, and appraising real estate. These activities are closely related to this sectors main activity, and it was felt that from a production basis they would best be included here. In addition, a substantial proportion of property management is self-performed by lessors. The main components of this sector are the real estate lessors industries (including equity real estate

investment trusts (REITs)); equipment lessors industries (including motor vehicles, computers, and consumer goods); and lessors of nonfinancial intangible assets (except copyrighted works).

Professional and technical services The Professional, Scientific, and Technical Services sector, NAICS 54, includes establishments that specialize in performing professional, scientific, and technical activities for others. These activities require a high degree of expertise and training. The establishments in this sector specialize according to expertise and provide these services to clients in a variety of industries and, in some cases, to households. Activities performed include: legal advice and representation; accounting, bookkeeping, and payroll services; architectural, engineering, and specialized design services; computer services; consulting services; research services; advertising services; photographic services; translation and interpretation services; veterinary services; and other professional, scientific, and technical services.

Management of companies and enterprises The Management of Companies and Enterprises sector, NAICS 55, comprises (1) establishments that hold the securities of (or other equity interests in) companies and enterprises for the purpose of owning a controlling interest or influencing management decisions or (2) establishments (except government establishments) that administer, oversee, and manage establishments of the company or enterprise and that normally undertake the strategic or organizational planning and decision-making role of the company or enterprise. Establishments that administer, oversee, and manage may hold the securities of the company or enterprise. Establishments in this sector perform essential activities that are often undertaken, in-house, by establishments in many sectors of the economy. By consolidating the performance of these activities of the enterprise at one establishment, economies of scale are achieved.

Administrative and support services, and waste management
Administrative and support services, and waste management are included in NAICS sector, 56. The Administrative and Support Services subsector, NAICS 561, comprises establishments performing routine support activities for the day-to-day operations of other organizations. These essential activities are often undertaken in-house by establishments in many sectors of the economy. The establishments in this sector specialize in one or more of these support activities and provide these services to clients in a variety of industries and, in some cases, to households. Activities performed include: office administration, hiring and placing of personnel, document preparation and similar clerical services, solicitation, collection, security and surveillance services, and cleaning. The administrative and management activities performed by establishments in this sector are typically on a contract or fee basis. These activities may also be performed by establishments that are part of the company or enterprise. Waste Management is included in NAICS 562. It includes establishments primarily engaged in waste management and remediation services' these establishments also collect, treat and dispose of waste materials.[39] The sector excludes employment in federal or state or local government operated utilities and waste management establishments.

[39] The NAICS combines Administration and Waste Management in the same general category, 56, calling it Administrative Services and Waste Management. It seems to us it would have been more consistent with the actual economic activities to combine utilities with waste management. Instead, we need to manually remove Waste Management, Subsector 562, from NAICS 56. Interestingly, Waste Management employment is only about five percent of the share of total NAICS 56 employment so moving it to a classification more akin to what it actually does may have aided users of the data. However, few would argue that the Bureau of Economic Analysis is always logical in assembling and reporting data.

Other services, except public administration
The Other Services (except Public Administration) sector, NAICS 81, comprises establishments engaged in providing services not specifically provided for elsewhere in the classification system. Establishments in this sector are primarily engaged in activities, such as equipment and machinery repairing, promoting or administering religious activities, grant-making, advocacy, and providing dry cleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services. Private households that engage in employing workers on or about the premises in activities primarily concerned with the operation of the household are included in this sector.

Public Administration – Federal civilian, state and local
The Public Administration sector, NAICS 92, as used here, consists of establishments of federal, state, and local government agencies that administer, oversee, and manage public programs and have executive, legislative, or judicial authority over other institutions within a given area. These agencies also set policy, create laws, adjudicate civil and criminal legal cases, provide for public safety and for national defense. In general, government establishments in the Public Administration sector oversee governmental programs and activities that are not performed by private establishments. Establishments in this sector typically are engaged in the organization and financing of the production of public goods and services, most of which are provided for free or at prices that are not economically significant. This sector does not include federal military employment.

Retail Trade and Lodging Group

This land-use group includes the entire retail sector plus accommodation and food service sector. Normally, food service is considered among retail trade land-uses while lodging may be addressed as a different land-use function. The NAICS, however, combines lodging with food service. In any event, food service employment outnumbers lodging employment nationally by six fold.

Retail trade NAICS sector 44 includes establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The retailing process is the final step in the distribution of merchandise; retailers are, therefore, organized to sell merchandise in small quantities to the general public. This sector comprises two main types of retailers: store and non-store retailers.

Accommodation and Food service Accommodation and food service are included in the NAICS 72 sector. The Accommodation subsector, NAICS 721, includes hotels, motels, casino hotels, bed and breakfasts, campgrounds and recreational vehicle parks and other lodging places. The other sector, NAICS 722, includes eating and drinking places, including restaurants, bars, and take-out stands. Also included are caterers and food service contractors.

Institutional Group

The institutional land-use group includes public, private, and nonprofit activities in education, health care and social services, and arts, entertainment and recreation.

Educational services
The Educational Services sector, NAICS 61, comprises establishments that provide instruction and training in a wide variety of subjects. This instruction and training is provided by specialized establishments, such as schools, colleges, universities, and training centers. These establishments may be privately owned and operated for profit or not for profit, or they may be publicly owned and operated. They may also offer food and/or accommodation services to their students.

Educational services are usually delivered by teachers or instructors that explain, tell, demonstrate, supervise, and direct learning. Instruction is imparted in diverse settings, such as educational institutions, the workplace, or the home, and through diverse means, such as correspondence, television, the Internet, or other electronic and distance-learning methods. The training provided by these establishments may include the use of simulators and simulation methods. It can be adapted to the particular needs of the students, for example sign language can replace verbal language for teaching students with hearing impairments. All industries in the sector share this commonality of process, namely, labor inputs of instructors with the requisite subject matter expertise and teaching ability.

Health care and social assistance The Health Care and Social Assistance sector, NAICS 62, comprises establishments providing health care and social assistance for individuals. The sector includes both health care and social assistance because it is sometimes difficult to distinguish between the boundaries of these two activities. The industries in this sector are arranged on a continuum starting with those establishments providing medical care exclusively, continuing with those providing health care and social assistance, and finally finishing with those providing only social assistance. The services provided by establishments in this sector are delivered by trained professionals. All industries in the sector share this commonality of process, namely, labor inputs of health practitioners or social workers with the requisite expertise. Many of the industries in the sector are defined based on the educational degree held by the practitioners included in the industry.

Arts, entertainment, and recreation The Arts, Entertainment, and Recreation sector, NAICS 71, includes a wide range of establishments that operate facilities or provide services to meet varied cultural, entertainment, and recreational interests of their patrons. This sector comprises (1) establishments that are involved in producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) establishments that preserve and exhibit objects and sites of historical, cultural, or educational interest; and (3) establishments that operate facilities or provide services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure-time interests.

APPENDIX C
NONRESIDENTIAL DEVELOPMENT TRENDS 2010-2035

Table C.1
Industrial Development Trends, 2010-2035

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Jobs 2010 (thousands)	24,327	8,500	2,921	2,037	116
Jobs 2035 (thousands)	26,364	9,946	3,616	2,637	160
Change 2010-2035 (thousands)	2,037	1,446	695	600	44
Percent 2010-2035	8%	17%	24%	29%	38%
Space Supported 2010 (thousands of sq.ft.)	28,904	10,252	3,545	2,497	137
Space Supported 2035 (thousands of sq.ft.)	33,158	12,684	4,606	3,389	202
Net Change in Space 2010-2035 (thousands of square feet)	4,254	2,432	1,061	892	65
Space Replaced 2010-2035 (thousands of square feet)	24,598	9,901	3,608	2,750	176
Total Space Built (thousands of square feet) 2010-2035	28,853	12,333	4,669	3,642	241
Space Built 2010-2035 as Share of Space in 2010	100%	120%	132%	146%	175%

Table C.2
Office & Office-Based Services Development Trends, 2010-2035

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Jobs 2010 (thousands)	76,217	33,198	11,340	6,174	546
Jobs 2035 (thousands)	107,307	47,851	16,078	9,546	941
Change 2010-2035 (thousands)	31,091	14,653	4,738	3,372	395
Percent 2010-2035	41%	44%	42%	55%	72%
Space Supported 2010 (thousands of sq.ft.)	20,465	8,927	3,176	1,513	123
Space Supported 2035 (thousands of sq.ft.)	29,747	13,343	4,500	2,626	253
Net Change in Space 2010-2035 (thousands of square feet)	9,282	4,415	1,323	1,113	130
Space Replaced 2010-2035 (thousands of square feet)	12,842	5,882	2,025	1,120	91
Total Space Built (thousands of square feet) 2010-2035	22,124	10,297	3,349	2,233	221
Space Built 2010-2035 as Share of Space in 2010	108%	115%	105%	148%	170%

Table C.3
Retail, Accommodation and Food Service Development Trends, 2010-2035

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Jobs 2010 (thousands)	30,184	11,200	3,519	2,452	183
Jobs 2035 (thousands)	42,532	16,644	5,316	3,817	303
Change 2010-2035 (thousands)	12,348	5,444	1,797	1,364	120
Percent 2010-2035	41%	49%	51%	56%	66%
Space Supported 2010 (thousands of sq.ft.)	18,779	6,692	2,043	1,381	91
Space Supported 2035 (thousands of sq.ft.)	25,986	10,075	3,205	2,289	184
Net Change in Space 2010-2035 (thousands of square feet)	7,207	3,384	1,161	908	93
Space Replaced 2010-2035 (thousands of square feet)	24,831	10,030	3,435	2,545	205
Total Space Built (thousands of square feet) 2010-2035	32,038	13,413	4,597	3,453	298
Space Built 2010-2035 as Share of Space in 2010	171%	200%	225%	250%	327%

Table C.4
Institutional Development Trends, 2010-2035

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Jobs 2010 (thousands)	26,521	8,670	2,620	1,795	129
Jobs 2035 (thousands)	43,897	15,538	4,718	3,382	265
Change 2010-2035 (thousands)	17,376	6,868	2,099	1,587	136
Percent 2010-2035	66%	79%	80%	88%	105%
Space Supported 2010 (thousands of sq.ft.)	15,201	4,929	1,465	1,006	75
Space Supported 2035 (thousands of sq.ft.)	25,114	8,774	2,612	1,873	157
Net Change in Space 2010-2035 (thousands of square feet)	9,913	3,845	1,146	867	81
Space Replaced 2010-2035 (thousands of square feet)	8,861	3,140	971	704	54
Total Space Built (thousands of square feet) 2010-2035	18,775	6,985	2,117	1,572	135
Space Built 2010-2035 as Share of Space in 2010	124%	142%	145%	156%	178%

Table C.5
Total Nonresidential Development Trends, 2010-2035

Feature	United States	South Census Region	West South Central Census Division	Texas	CAMPO
Jobs 2010 (thousands)	157,249	61,568	20,400	12,458	974
Jobs 2035 (thousands)	220,100	89,979	29,729	19,381	1,650
Change 2010-2035 (thousands)	62,851	28,411	9,328	6,923	676
Percent 2010-2035	40%	46%	46%	56%	69%
Space Supported 2010 (thousands of sq.ft.)	83,349	30,800	10,230	6,397	427
Space Supported 2035 (thousands of sq.ft.)	114,006	44,876	14,922	10,178	796
Net Change in Space 2010-2035 (thousands of square feet)	30,656	14,076	4,692	3,781	369
Space Replaced 2010-2035 (thousands of square feet)	71,132	28,953	10,040	7,118	526
Total Space Built (thousands of square feet) 2010-2035	101,789	43,029	14,732	10,900	895
Space Built 2010-2035 as Share of Space in 2010	122%	140%	144%	170%	210%

REFERENCES AND SELECTED BIBLIOGRAPHY

AARP Public Policy Institute (1997). *Community Transportation Survey*. Washington, DC: Association of Retired Persons.

Adams, James Truslow (1931). *The Epic of America*. New York: Little, Brown, and Co.

Alonso, William (1964). *Location and Land Use: Toward a General Theory of Land Rent*. Cambridge, MA: Harvard University Press.

ARA National Seniors Housing Group (2011). *2011 Seniors Industry Outlook*. Dallas, TX: Apartment Realty Advisors. http://www.arausa.com/FTP/seniors/ARA%202011%20White%20Paper.pdf.

Arora, Amit (2007). *Inventory of Policies Affecting Parking within the NYMTC Region.* New Brunswick, NJ: Bloustein School of Planning and Public Policy, Rutgers University.

Arrington, G. B. and Robert Cervero (2011). *Effects of TOD on Housing, Parking, and Travel*. Washington, DC: Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_128.pdf.

Ascierto, Jerry (2010). Market Movers: How the Emergence of Generation Y, the Aging of Baby Boomers, and Immigration Trends will Impact the Multi-Family Industry in the Next Decade. *Apartment Finance Today*,17-22.

Baldasarre, Mark (2001). *PPIC Statewide Survey: Special Survey on Land Use.* San Francisco: Public Policy Institute of California.

Baldasarre, Mark (2002). *PPIC Statewide Survey: Special Survey on Land Use.* San Francisco: Public Policy Institute of California.

Baldasarre, Mark (2004). *Special Survey on Californians and Their Housing*. San Francisco: Public Policy Institute of California.

Ben-Joseph, Eran (2012). *Thinking a Lot: The Design and Culture of Parking*. Cambridge, MA: MIT Press.

Baum-Snow , Nathaniel and Mathew E. Snow (2000). The Effects of New Public Projects to Expand Urban Rail Transit. *Journal of Public Economics*, 77, 241-263.

Bartholomew, Keith. (2007). Land Use-Transportation Scenario Planning: Promise and Reality, *Transportation*, 34(4), 397-412.

Bartholomew, Keith. (2005). *Integrating Land Use Issues into Transportation Planning: Scenario Planning—An Annotated Bibliography.* Salt Lake City, UT: University of Utah.

Bartholomew, Keith and Reid Ewing (2011). Hedonic Price Effects of Pedestrian- and Transit-Oriented Development. *Journal of Planning Literature* 26(1), 18-34.

Bartsch, Kristina J. (2009). The Employment Projections for 2008–18. *Monthly Labor Review* 132(11), 3-10.

Belden Russonello and Stewart Research and Communications (2004) *2004 American Community Survey: National Survey on Communities Conducted for Smart Growth America and National Association of Realtors®*. Washington, DC: National Association of Realtors.

Belden Russonello & Stewart (2011). *Community Preference Survey*. Washington, DC: National Association of Realtors.

Baxandall, Phineas, Tony Dutzik and Joshua Hoen (2008) *A Better Way to Go: Meeting America's 21st Century Transportation Challenges with Modern Public Transit*. Washington, D.C.: U.S. PIRG Education Fund and Frontier Group.

Bettencourt, L. M. A.,J. Lobo, D. Helbing, C. Kuhnert and C and G. B. West (2007). Growth, Innovation, Scaling, and the Pace of Life in Cities. *Proceedings of the National Academy of Sciences* 104(17), 7301–7306.

Blais, Pamela (2010). *Perverse Cities: Hidden Subsidies, Wonky Policy, and Urban Sprawl*. Vancouver, BC: UBC Press.

Bowes, David R. and Keith R. Ihlanfeldt (2001). Identifying the Impacts of Rail Transit Stations on Residential Property Values. *Journal of Urban Economics*, 50, 1-25.

Burchell, Robert W., *et al*. (2002). *The Costs of Sprawl—2000* (TRB Report No. 74). Washington, DC: National Academy Press.

Burchell, Robert W., *et al*. (1998). *The Costs of Sprawl—Revisited* (TRB Report No. 39). Washington, DC: National Academy Press.

Burchell, Robert W., Anthony Downs, Barbara McCann, and Sahan Mukherji (2005). *Sprawl Costs: Economic Impacts of Unchecked Development*. Washington, DC: Island Press.

Business, Transportation and Housing Agency (2002). *Statewide Transit-Oriented Development Study*. Sacramento, CA: California Department of Transportation. http://www.dot.ca.gov/hq/MassTrans/Docs-Pdfs/TOD-Study-Final-Rpt.pdf.

Canepa, Brian (2007). Bursting the Bubble: Determining the Transit-Oriented Development's Walkable Limits", *Transportation Research Record: Journal of the Transportation Research Board, No. 1992*, Washington DC:National Academy of Sciences, 28-34.

Carlino, Gerald, Satyajit Chatterjee, and Robert Hunt (2006). Urban Density and the Rate of Invention. WP 06-14. www.philadelphiafed.org/research-and-data/regional-economy/regional-research/index.cfm?tab=3.

Carruthers, J. I. and G. F. Ulfarsson (2003). Urban Sprawl and the Cost of Public Services. *Environment and Planning B: Planning and Design* 30, 503-522.

Census Bureau (2003). *Statistical Abstract of the United States*, Table HS-12.

Census Bureau (2008). *U.S. Population Projections*. Washington, DC: U.S. Department of Commerce. http://www.census.gov/population/www/projections/summarytables.html.

Census Bureau (2010a). *Current Population Survey, Annual Social and Economic and Social Supplements*. Washington, DC: U.S. Department of Commerce.

Census Bureau (2010b). *American Housing Survey for 2009*. Washington, DC: Department of Commerce.

Center for Transit-Oriented Development (2010*). Acquisition Fund Framework Study Final Report / San Francisco Bay Area Property Acquisition Fund for Equitable TOD*. Chicago: Center for Neighborhood Technology.

Center for Transit Oriented Development (2011). National TOD Database. Chicago: Center for Neighborhood Technology. http://toddata.cnt.org/.

Cervero, Robert, Steven Murphy, Christopher Ferrell, Natasha Goguts, Tu-Hsin Tsai, G.B. Arrington, John Boroski, Janet Smith-Heimer, Ron Golem, Pail Peninger, Eric Nakajima, Ener Chui, Robert Dunphy, Mel Myers, Shannon McKay, and Nicole Witenstein (2004). *Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*. TCRP Report 102. Washington, DC: National Academy Press.

Cervero, Robert and Michael Duncan (2002). Transit's Value-Added Effects: Light and Commuter Rail Services and Commercial Land Values. *Transportation Research Record*, 1805, 8-15.

Cervero, Robert and Samuel Seskin (1995). *An Evaluation of the Relationships between Transit and Urban Form. Research Results Digest 7*, Transit Cooperative Research Program, Transportation Research Board, National Research Council.

Ciccone, Antonio and Robert E. Hall (1996). Productivity and the Density of Economic Activity. American Economic Review, 86(1), 54-70.

Cisneros, Henry (2011). *Communities in Place Book Project*. http://longevity.stanford.edu/communities-in-place/book-project-in-collaboration-with-henry-cisneros-planning-to-stay-new-visions-of-aging-in-place.

Cobb, Rodney J. and Scott Dvorak (2000). *Accessory Dwelling Units: Model State Act and Local Ordinance.* Washington, DC: American Association of Retired Persons.

Cortright, Joe (2008). *Driven to the Brink: How the Gas Price Spike Popped the Housing Bubble and Devalued theSsuburbs*, Washington, DC: CEOs for Cities. www.ceosforcities.org/newsroom/pr/files/Driven%20to%20the%20Brink%20FINAL.pdf.

Cortright, Joe (2009). *Walking the Walk: How Walkability Raises Home Values in U.S Cities.* Washington, DC: CEOs for Cities. http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf.

Cowan, Tyler (2001). *What is the Correct Intergenerational Discount Rate?* Fairfax, VA: George Mason University, Department of Economics. http://www.gmu.edu/centers/publicchoice/faculty%20pages/Tyler/DISCOUNT.pdf.

Cudahy, Brian J. (1990) *Cash, Tokens, and Transfers: A History of Urban Mass Transit in North America*. New York: Fordham University Press.

Cunningham, Gail (2009). *Survey Reveals Long-Term Implications of Mortgage Meltdown.* Washington, DC: National Foundation for Credit Counseling. http://www.nfcc.org/newsroom/newsreleases/files09/HomeownershipSurvey.pdf.

Dalaker, Joseph (2001). *Poverty in the United States: 2000,* U.S. Census Bureau, Current Population Reports, Series P60-214, Washington, DC: U.S. Government Printing Office.

Day, Jennifer Cheeseman (1996). *Projections of the Number of Households and Families in the United States: 1995 to 2010*, U.S. Bureau of the Census, Current Population Reports, P25-1129, Washington, DC: U.S. Government Printing Office.

Debrezion , Ghebreegziabiher, Eric Pels, and Piet Rietveld (2007a). The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-Analysis. *Journal of Real Estate Finance and Economics*, 35, 161-180.

Debrezion, Ghebreegziabiher, Eric Pels, and Piet Rietveld (2007b). The Effects of Railway Investments in a Policentric City: A Comparison of Competitive and Segmented Land Markets. *Environment and Planning A*, 39, 2048-2067.

DeNavas-Walt, Carmen, Bernadette D. Proctor, and Jessica C. Smith (2011), U.S. Census Bureau, Current Population Reports, P60-239, *Income, Poverty, and Health Insurance Coverage in the United States: 2010*, Washington, DC: U.S. Government Printing Office.

Diamond, Rick and Mithra Moezzi (1994). *Changing Trends: A Brief History of the U.S. Household Consumption of Energy, Water, Food, Beverages and Tobacco*. Berkeley, CA: University of California, Lawrence Berkeley National Laboratory.

Downs, Barbara (2003). *Fertility of American Women: June 2002*. Current Population Reports, P20- 548. Washington, DC: U.S. Census Bureau.

Dittmar, H., and G. Ohland, eds. (2004). *The New Transit Town: Best Practices in Transit-Oriented Development*, Washington, DC: Island Press.

Duany, A., E. Plater-Zyberk, and J. Speck, (2000). *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. New York: North Point Press.

Dunham-Jones, Ellen and June Williamson (2008). *Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs*. New York, NY: Wiley.

Economic Policy Institute (2011). Various tables. http://www.epi.org/.

Eggers, Frederick J. and Fouad Moumen. (2011). *Housing Units that Serve Both the Renter and Owner Markets*. Washington, DC: U.S. Department of Housing & Urban Development Office of Policy Development & Research.

Energy Information Administration (2011). *EIA Weekly Petroleum Status Report* . (April 12, 2011) Washington, DC: U.S. Department of Energy. http://www.eia.doe.gov/emeu/steo/pub/cf_query/steoNotes.cfm?formula=MGEIAUS&periodType=Annual&startYear=2000&startMonth=1&startQuarter=1&endYear=2012&endMonth=12&endQuarter=4.

Eno Transportation Foundation, Inc. (1996). Economic Returns from Transportation Investment. www.fhwa.dot.gov/policy/otps/060320a/index.htm.

Environmental Protection Agency (2001). *Our Built and Natural Environments*. EPA 123-R-01-002. Washington, D.C.:EPA.

Environmental Protection Agency (2006). *Parking Spaces / Community Places: Finding the Balance through Smart Growth Solution.* Washington, DC: EPA. http://www.epa.gov/smartgrowth/pdf/EPAParkingSpaces06.pdf.

Environmental Protection Agency (2007). *Measuring the Air Quality and Transportation Impacts of Infill Development*. Washington, DC.: EPA. www.epa.gov/dced/pdf/transp_impacts_infill.pdf.

Environmental Protection Agency (2009). *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2007*. Washington, DC: EPA. http://epa.gov/climatechange/emissions/usinventoryreport09.html.

Ewing, Reid (1997), Is Los Angeles-Style Sprawl Desirable? *Journal of the American Planning Association*, 63(1), 95-126.

Ewing, Reid (2009). Highway Induced Development: What Research in Metropolitan Areas Tells Us. Forthcoming in Transportation Research Record.

Ewing, Reid, Keith Bartholomew, Steve Winkelman, Jerry Walters and Don Chen (2008). *Growing Cooler: The Evidence on Urban Development and Climate Change*. Washington, DC: The Urban Land Institute.

Ewing, Reid, Rolf Pendall, and Don Chen (2002). Measuring Sprawl and its Impact. Washington, DC: Smart Growth America. http://www.smartgrowthamerica.org/resources/measuring-sprawl-and-its-impact/.

Ewing, Reid and Fang Rong (2008). The Impact of Urban Form on U.S. Residential Energy Use. *Housing Policy Debate* 19(1), 1-30.

Ewing, Reid, Tom Schmid, Richard Killingsworth, Amy Zlot, and Stephen Raudenbush (2003). Relationship Between Urban Sprawl and Physical Activity, Obesity, and Morbidity. *American Journal of Health Promotion.* 18(1),47–57.

Ewing, Ewing & Robert Cervero (2010). Travel and the Built Environment, *Journal of the American Planning Association*, 76:3, 265-294.

Faiola, Anthony, Ellen Nakashima and Jill Drew (2008). "What Went Wrong?" *Washington Post.* http://www.washingtonpost.com/wp-dyn/content/article/2008/10/14/AR2008101403343.html?hpid=topnews&sid=ST2008101403344&s_pos=.

Fairfax County Dept. of Planning and Zoning (2005). Land Use and Development along the Rosslyn-Ballston Metro Corridor. www.fairfaxcounty.gov/dpz/tysonscorner/nofind/arlingdoc.pdf.

Farber, Nicholas and Douglas Shinkle (2011). *Aging in Place: A State Survey of Livability Policies and Practices*, Washington DC: AARP: Public Policy Institute and National Conference of State Legislatures.

Federal Highway Administration (2011). *2009 National Household Travel Survey*. Washington, DC: U.S. Department of Transportation.

Federal Reserve Board (2012). *Changes in U.S. Family Finances from 2007 to 2010: Evidence from the Survey of Consumer Finances*, Washington, DC: Federal Reserve Board. http://www.federalreserve.gov/pubs/bulletin/2012/pdf/scf12.pdf.

Federal Transit Administration (2000). *Transit Benefits 2000 Working Papers*: *A Public Choice Policy Analysis.* Washington, DC: Federal Transit Administration.

Fejarang, R.A. (1994). *Impact on Property Values: A Study of the Los Angeles Metro Rail*. Washington, DC: Transportation Research Board.

Fergsuson, Ronald F. and William T. Dickens, eds. (1999), *Urban Problems and Community Development.* Washington, DC: Brookings Institution.

Frank, James E. (1989). *The Costs of Alternative Development patterns: A Review of the Literature*. Washington, DC: Urban Land Institute.

Frumkin, Howard, Lawrence D. Frank, and Richard Jackson (2004). *Urban Sprawl and Public Health: Designing, Planning, and Building for Healthy Communities.* Washington, DC: Island Press.

Glaeser, Edward (2011). Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier. London: Macmillan.

Glaeser, Edward L. (2011) "Goodbye, Golden Years". New York Times. http://www.nytimes.com/2011/11/20/opinion/sunday/retirement-goodbye-golden-years.html?pagewanted=all.

Glaeser, Edward L. and Matthew E. Kahn (2003). *Sprawl and Urban Growth, Discussion Paper Number 2004*. Cambridge, MA: Harvard University, Harvard Institute of Economic Research. http://www.economics.harvard.edu/pub/hier/2003/HIER2004.pdf.

Glaeser, Edward L and David C. Mare (2001) Cities and Skills. *Journal of Labor Economics,* 19(2), 316-342.

Goldin, Claudia (2004). The Long Road to the Fast Track: Career and Family, Mommies and Daddies on the Fast Track: Success of Parents in Demanding Professions, Special Issue of *The Annals of the Amer. Acad. of Political and Social Science*, 596, 246-47.

Hamilton B. E., J. A. Martin and S .J. Ventura (2009). Births: Preliminary data for 2007. *National vital statistics reports*, (57)12, Hyattsville, MD: National Center for Health Statistics.

Handy, S.L., M. G. Boarnet, R. Ewing, and R. E. Killingsworth (2002). How the Built Environment Affects Physical Activity: Views from Urban Planning. *American Journal of Preventative Medicine* 23(2 Suppl):64-73.

Handy, S., J. Sallis, D. Weber, E. Maibach, and M. Hollander (2008). Is Support for Traditionally Designed Communities Growing? Evidence from Two National Surveys. *Journal of the American Planning Association*, (74)2, 209-221.

Harris, Timothy F. and Yannis M. Ioannides (2002). *Productivity and Metropolitan Density*, Medford, MA: Tufts University, Department of Economics.

Harvard Joint Center for Housing (2011). *State of the Nation's Housing*. Cambridge, MA: Harvard University.

Hernandez, D., M. Lister and C. Suarez (2011). *Location Efficiency and Housing Type: Boiling it Down to BTUs*. Washington, DC: Environmental Protection Agency. http//.epa.gov/smartgrowth/location_efficiency_BTU.htm.

Hertsgaard, M. (2011). *Hot: Living Through the Next Fifty Years on Earth.* Boston: Houghton Mifflin Harcourt Publishing Co.

HLB Decision Economics (2001). *The Economic and Community Benefits of Transportation Options for Greater Cincinnati.* Cincinnati, OH: Ohio-Kentucky-Indiana Metropolitan Planning Organization.

Holtzclaw, John, Robert Clear, Hank Dittmar, David Goldstein, David and Peter Haas (2002). Location Efficiency: Neighborhood and Socio-Economic Characteristics Determine Auto Ownership and Use - Studies in Chicago, Los Angeles and San Francisco. *Transportation Planning and Technology.* 25(1), 1-27.

Homeless Research Institute (2008), *Data Snapshot: Doubled Up in the United States.* www.endhomelessness.org.

Hu, Hsi-Hwa, Frank Wen, Simon Choi, SeongHee Min; and Jung H. Seo (2011). *Residential Land Use, Travel Characteristics, and Demography of Southern California*. Los Angeles, CA: Southern California Association of Governments.

ICF Consulting (2011). *Potential Changes in Emissions Due to Improvements in Travel Efficiency*, Contract No. EP-C-06-094, Transportation and Regional Programs Division, U.S. Washington, DC: Environmental Protection Agency. http://www.epa.gov/oms/stateresources/policy/420r11003.pdf.

Immergluck, Dan. (2011) *Foreclosed: High-Risk Lending, Deregulation, and the Undermining of America's Mortgage Market***.** Ithaca, NY: Cornell University Press.

Jacobs, Harvey M. (1998). *Who Owns America?: Social Conflict over Property Rights* Madison, WI: University of Wisconsin Press.

Jackson, Kenneth (1985) *Crabgrass Frontier: The Suburbanization of the United States.* New York: Oxford University Press.

Jaffe, Adam B, Manuel Trajtenberg and Rebecca Henderson (1993). Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations. *Quarterly Journal of Economics,* 108(3), 577-598.

Joint Center for Housing Studies (2011). *The State of the Nation's Housing 2010*. Cambridge, MA: Harvard University.

Jonathan Rose Companies. (2011) *Location Efficiency and Housing Type—Boiling it Down to BTUs.* http://epa.gov/smartgrowth/location_efficiency_BTU.htm.

Juergensmeyer, Julian and Conrad Juergensmeyer (1988). The Development of Regulatory Impact Fees: The Legal Issues, in *Development Impact Fees: Policy Rationale, Practice, Theory, and Issues*, Arthur C. Nelson ed., Chicago: American Planning Association.

Kamp, David (2009). "Rethinking the American Dream," *Vanity Fair*. http://www.vanityfair.com/culture/features/2009/04/american-dream200904.

Keenan, Teresa A. (2010). *Home and Community Preferences of the 45+ Population*. Washington, D.C.: American Association of Retired Persons.

Kim, Sukkoo (2007). Changes in the Nature of Urban Spatial Structure in the United States, 1890-2000, *Journal of Regional Science*, 47(2), 273-287.

Klosterman, Richard E. 1990. Community Analysis and Planning Techniques. New York: Rowman and Littlefield.

Kneebone, Elizabeth and Emily Garr (2010). *The Suburbanization of Poverty: Trends in Metropolitan America, 2000 to 2008*. Washington, DC: Brookings Institution.

Kuzmyak, J. Richard, Rachel Weinberger, Richard H. Pratt, and Herbert S. Levinson (2003). *Parking Management and Supply Traveler Response to Transportation System Changes*. TCRP Report 95. Washington, DC: Transportation Research Board.

Leinberger, C. (2007a) *Option of Urbanism*. Washington, DC: Island Press.

Leinberger, Christopher (2007b). *Back to the Future: the Need for Patient Equity in Real Estate Development Finance*. Washington, DC: Brookings Institution.

Leinberger, C. (2010). Here Comes the Neighborhood, *Atlantic*. http://www.theatlantic.com/magazine/archive/2010/06/here-comes-the-neighborhood/8093/.

Lennertz, Bill and Aarin Lutzenhiser (2006). *The Charrette Handbook*. Chicago: American Planning Association.

Levy, Stephen (2010). *Regional Employment, Population, and Households Projections in the SACOG Region, 2008-2035*, Sacramento: Sacramento Area Council of Governments.

Li F., P. Harmer, B. J. Cardinal, M. Bosworth, D. Johnson-Shelton, J. M. Moore, A. Acock, and N. Vongjaturapat (2009). Built Environment and 1-year change in Weight and Waist Circumference in Middle-aged and Older Adults: Portland Neighborhood Environment and Health Study. *American Journal of Epidemiology* 169(4), 409-12, discussion 413-4.

Lipman, Barbara (2006). *A Heavy Load: The Combined Housing and Transportation Burdens of Working Families*, Center for Housing Policy. http://www.nhc.org/pdf/pub_heavy_load_10_06.pdf.

Litman, Todd (2009) *Evaluating Transportation Economic Development Impacts: Understanding How Transportation Policies and Planning Decisions Affect Productivity, Employment, Business Activity, Property Values and Tax Revenues*, Victoria Transport Policy Institute.

Litman, Todd (20010a). *Land Use Impacts On Transportation*. Victoria, BC: Victoria Transport Policy Institute. http://www.vtpi.org/landtravel.pdf.

Litman, Todd (2010b). *Affordable-Accessible Housing In A Dynamic City: Why and How To Support Development of More Affordable Housing In Accessible Locations*. Victoria, BC: Victoria Transport Policy Institute. http://www.vtpi.org/aff_acc_hou.pdf.

Litman, Todd (2012). *Evaluating Criticism of Smart Growth*. Victoria, BC: Victoria Transport Policy Institute. http://www.vtpi.org/sgcritics.pdf.

Lodl, Kathleen Ann, Betsy S. Gabb and E. Raedene Combs (2005). The Importance of Selected Housing Features at Various Stages of the Life Cycle. *Journal of Family and Economic Issues* 11(4), 383-395.

Los Angeles County, CA (2009). *Los Angeles County Small Lot Subdivision Program Feasibility Study*. http://planning.lacounty.gov/assets/upl/official/official_20091001_small-lot-subdivision-response.pdf.

Lucas, Robert E, Jr. and Esteban Rossi-Hansberg (2002). On the Internal Structure of Cities. *Econometrica* 70(4), 1445-1476.

McCann, Barbara A. and Reid Ewing (2003). *Measuring the Health Effects of Sprawl*. Washington, DC: Smart Growth America. http://www.smartgrowthamerica.org/report/HealthSprawl8.03.pdf.

McIlwain, John (2009). *Housing in America: The Next Decade*. Washington, D.C.: Urban Land Institute.

McKeever, Mike (2011). *White Paper on Changing National Demographics and Demand for Housing Types*, Sacramento, CA: Sacramento Area Council of Governments.

McKinsey and Company (2008). *IT3 Scenario Results and Implications*, Atlanta:State of Georgia General Assembly.

Marks, Stephen Gary (2011). *Valuing the Future:* Intergenerational *Discounting, its Problems, and a Modest Proposal* . Boston Univ. School of Law Working Paper No. 11-12. http://ssrn.com/abstract=1783729 or http://dx.doi.org/10.2139/ssrn.1783729.

Mathur, Shishir and Christopher E. Ferrell (2009). *Effect of Suburban Transit Oriented Developments on Residential Property Values*. San José, CA: Mineta Transportation Institute, San José State University. //http:www.transweb.sjsu.edu/MTIportal/research/publications/documents/Effects%20of%20Sub-Urban%20Transit%20%28with%20Cover%29.pdf.

Mallach, Alan (2009), *Stabilizing communities: A Federal Response to the Secondary Impacts of Foreclosure*, Washington DC: Brookings Institution. //http:www.brookings.edu/reports/2009/02_foreclosure_crisis_mallach.aspx.

Malloy, Robin Paul (2008). *Private Property, Community Development, and Eminent Domain*. Aldershott, UK: Ashgate.

Malizia, E. and S. Exline (2000). *Consumer Preferences for Residential Development Alternatives*, Working Paper 2000-02, Chapel Hill, NC: Center for Urban and Regional Studies, University of North Carolina.

Martin J. A., B. E. Hamilton, P. D. Sutton, S. J. Ventura (2009). *Final Data for 2006: National Vital Statistics Reports*,(57):7, Hyattsville, MD: National Center for Health Statistics.

Mertens, Jean-Francois and Anna Rubinchick (2006). *Intergenerational Equity and the Discount Rate for Cost-Benefit Analysis*. Philadelphia, PA: University of Pennsylvania, Department of Economics. http://economics.sas.upenn.edu/events/intergenerational-equity-and-discount-rate-cost-benefit-analsis.

Metropolitan Transportation Commission (2007). *Station Area Planning Manual*. MTC: San Francisco, CA. http://www.bayareavision.org/.../Station_Area_Planning_Manual_Nov07.pdf.

Michael Y.L., E. M. Keast, H. Chaudhury, K. Day, A. Mahmood, A. F. Sarte (2009). Revising the Senior Walking Environmental Assessment Tool. *Preventive Medicine* 48(3), 247-9.

Minadeo, Dominic F. (2009). *Price Premiums and Mixed-Use Development*. Washington, DC: NAIOP Research Foundation. http://www.naiop.org/foundation/CTMTMixedUseResearch.pdf.

Molloy, Raven and Hui Shan (2011). *The Effect of Gasoline Prices on Household Location*. Washington, DC: Federal Reserve Board. https://federalreserve.gov/pubs/feds/2010/201036/201036pap.pdf.

Myers, Dowell. (2008). Immigrants and Boomers: Forging a New Social Contract for the Future of America. Russell Sage Foundation (New York).

Myers, Dowell. (2011). *The New Homegrown Majority in California: Now Seeking Generational Replacements*. Los Angeles, CA: Population Dynamics Research Group, University of Southern California. http://www.usc.edu/schools/sppd/research/popdynamics/pdf/2011_Myers_California-Homeownership.pdf.

Myers, Dowell, Elizabeth Gearin (2001). Current Preferences and Future Demand for Denser Residential Environments. *Housing Policy Debate.* 12(4), 633–659.

Myers, D. and S. H. Ryu.(2008). Aging of the Baby Boomers and the Generational Housing Bubble: Foresight and Mitigation of an Epic Transition. *Journal of the American Planning Association.* 74(1), 17-33.

National Alliance of Public Transportation Advocates. 2008. *Mobility for the Aging Population*. Washington, DC.

National Center for Public Policy and Higher Education (2007). *Per Capita Income of U.S. Workforce Projected to Decline IF Education Doesn't Improve*. Washington, DC: The Secretary of Education's Commission on the Future of Higher Education, U.S. Department of Education. http://www2.ed.gov/about/bdscomm/list/hiedfuture/reports/equity.pdf.

Nelson Arthur C. (1995). *System Development Charges for Water, Wastewater and Stormwater Systems*, Los Angeles: Los Angeles Times Publishing.

Nelson, Arthur C. (2006) Leadership in a New Era. *Journal of the American Planning Association.* 72(4), 393–407.

Nelson, Arthur C. (2009a) The New Urbanity: The Rise of a New America. *Annals of the Academy of Political and Social Science*.

Nelson, Arthur C. (2009b) Demographic Outlook for Multi-Family Housing. *Multifamily Trends*. Nov/Dec.

Nelson, Arthur C. (2010). Catching the Next Wave. *Generations: Journal of Aging and Society*. 33(4).

Nelson, Arthur C. (2013). *Reshaping Metropolitan America*. Washington, DC: Island Press.

Nelson, Arthur C. (2004). *Planners' Estimating Guide: Estimating Land-Use and Facility Needs*. Chicago: American Planning Association.

Nelson, Arthur C. and Mitchell Moody (2000). Effect of Beltways on Metropolitan Economic Activity. Journal of Urban Planning and Development 126(4), 189-196.

Nelson, Arthur C. Liza K. Bowles, Julian C. Juergensmeyer, and James C. Nicholas (2008). A Guide to Impact Fees and Housing Affordability. Washington, DC: Island Press.

Nelson, Arthur C. James C. Nicholas, and Julian C. Juergensmeyer (2009). *Impact Fees: Proportionate-Share Development Fees*, Chicago: American Planning Association.

Nicholls, R.J., P. P. Wong, V. R. Burkett, J. O. Codignotto, J. E. Hay, R. F. McLean, S. Ragoonaden and C. D. Woodroffe (2007). Coastal Systems and Low-Lying Areas. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden andC.E. Hanson, Eds., Cambridge, UK:Cambridge University Press, 315-356.

Nicholas, James C., Arthur C. Nelson and Julian C. Juergensmeyer (1992). *A Practitioner's Guide to Development Impact Fees*, Chicago: American Planning Association.

Norman, Jonathan, Heather L. MacLean, and Christopher A. Kennedy (2006). Comparing High and Low Residential Density: Life-Cycle Analysis of Energy Use and Greenhouse Gas Emissions. *Journal of Urban Planning and Development* 132(1), 10-21.

Norris, Nathan (2012). Why Gen Y is Causing the Great Migration of the 21st Century. *Better! Cities & Towns*, http://bettercities.net/news-opinion/blogs/nathan-norris/17803/why-gen-y-causing-great-migration-21st-century**.**

Parsons Brinkerhoff Quade and Douglas (1996). *Transit and Urban Form*. Washington, DC: National Academy Press.

Peiser, Richard (2001). Decomposing Urban Sprawl, *Town Planning Review* 76(3), 275-298.

Perk, Victoria A. and Martin Catalá (2009). *Land Use Impacts of Bus Rapid Transit: Effects of BRT Station Proximity on Property Values along the Pittsburgh Martin Luther King, Jr. East Busway*. Tampa, FL: National Bus Rapid Transit Institute, Center for Urban Transportation Research, University of South Florida. http://www.nbrti.org/docs/pdf/Property%20Value%20Impacts%20of%20BRT_NBRTI.pdf.

Pitkin, John, and Dowell Myers (2008). U.S. Housing Trends – Generational Changes and the Outlook to 2050. *Transportation Research Board Special Report 298*. Washington, DC: National Academy of Sciences.

Pollakowski, Henry O. et al. (2005). *Effects of Mixed-Income, Multi- Family Rental Housing Developments on Single Family Housing Values.* Cambridge, MA: MIT Center for Real Estate. http://web.mit.edu/cre/research/hai/pdf/40B_report_HAI_0405.pdf

Portland, City of (2008). *Portland Streetcar Development Oriented Transit.* http://www.portlandstreetcar.org/pdf/development_200804_report.pdf.

Rabianski, Joseph S. and J. Sherwood Clements (2007). *Mixed-Use Development: A Review of Professional Literature*. Washington, DC: National Association of Office and Industrial Parks. http://www.naiop.org/foundation/rabianski.pdf.

Raftelis, George A. (2005). *Water and Wastewater Finance and Pricing*, third ed. Los Angeles: CA: CRC Press.

Rampey, B.D., Dion, G.S., and Donahue, P.L. (2009). *NAEP 2008 Trends in Academic Progress* (NCES 2009–479). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. http://nces.ed.gov/nationsreportcard/pdf/main2008/2009479.pdf.

Rauch, James E (1993). Productivity Gains from Geographic Concentration of Human Capital: Evidence from the Cities. *Journal of Urban Economics* 34(3), 380-400.

RCLCO (2011). *Smart Growth Survey Analysis*, Bethesda, MD: RCLCO.

Real Estate Research Corporation. (1974). The Costs of Sprawl: Environmental and Economic Costs of Alternative Residential Development Patterns at the Urban Fringe. Washington D.C.: U.S. Government Printing Office.

Riche, M. F. (2003) "How Changes in the Nation's Age and Household Structure will Reshape Housing Demand in the 21st Century" in Office of Policy Development and Research (Ed.), *Issue Papers on Demographic Trends Important to Housing*. Washington, DC: Department of Housing and Urban Development, 125-147.

Rohe, William M. and Harry L. Watson (eds) (2007). *Chasing the American Dream: New Perspectives on Affordable Homeownership*. Ithaca, NY: Cornell University Press.

Sanchez, Thomas W. and Marc Brennan (2007). *The Right to Transportation: Moving to Equity*. Chicago: American Planning Association.

Sanchez, Thomas W. (1999). The Connection Between Public Transit and Employment: The Cases of Portland and Atlanta. *Journal of the American Planning Association*, 65(3), 284 – 296.

Skufca, Laura (2008). *Is the Cost of Gas Leading Americans to Use Alternative Transportation?* Washington, DC: AARP Knowledge Management.

Shrestha, Laura B. and Elayne J. Heisler (2009). *The Changing Demographic Profile of the United States.* RL32701. Washington, DC: Congressional Research Service, U.S. Congress. http://aging.senate.gov/crs/aging4.pdf.

Schwartz, Alex (2007) *Housing Policy in the United States*. New York, NY: Routledge.

Shoup, Donald C. (2005). *The High Cost of Free Parking*. Chicago: American Planning Association.

Shoup, Donald C. (2010). Putting Cities Back on Their Feet. *Journal of Urban Planning and Development*, 136(3), 225-233.

Steiner, Christopher. 2009. *$20 Per Gallon: How the Inevitable Rise in the Price of Gasoline Will Change Our Lives for the Better*. New York: Grand Central.

Sunshine, R. A (2009). *The Budget and Economic Outlook: Fiscal Years 2009 to 2019*. Washington, DC: Congressional Budget Office.

Surface Transportation Planning Process (2005). *Driven to Spend: Pumping Dollars out of Our Households and Communities*, http://www.transact.org/library/reports_pdfs/driven_to_spend/Driven_to_Spend_Report.pdf.

Sutton, Paul C. and Robert Costanza (2002). Global Estimates of Market and Non-Market Values Derived from Nighttime Satellite Imagery, Land Cover, and Ecosystem Service Valuation. *Ecological Economics*, 41, 509–527.

Swanstrom, Todd (2008). *The Road to Good Jobs: Patterns of Employment in the Construction Industry*, Transportation Equity Network and Public Policy Research Center, University of Missouri, St. Louis.

Tabors, Richard D. (1976). *Land Use and the Pipe*. Lexington, MA: Lexington Books.

Taylor, Paul, Jeffrey Passel, Richard Fry, Richard Morin, Wendy Wang, Gabriel Velasco, Daniel Dockterman (2010). *The Return of the Multi-generational Family Household*. Washington, DC: Pew Foundation.

Transportation for America (2011). *Aging in Place, Stuck without Options: Fixing the Mobility Crisis Threatening the Baby Boom Generation*. Washington, DC: Transportation for America.

Transportation Research Board (2009). *Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO2 Emissions*. Special Report 298. Washingtonm DC: Transportation Research Board, http://onlinepubs.trb.org/Onlinepubs/sr/sr298prepub.pdf.

Tu, Charles C. and Mark J. Eppli (1999). *Valuing New Urbanism: The Case of Kentlands*. Real Estate Economics, 23(3): 425–451.

Urban Land Institute (2010). *SB 375 Impact Analysis Report*. Washington, DC: Urban Land Institute.

Urban Land Institute (2010b). *Place Making through Infill and Corridor Redevelopment*. Washington, DC: Urban Land Institute.

Urban Land Institute (2011). *What's Next? Real Estate in the New Economy*. Washington, DC: Urban Land Institute.

Urban Land Institute and PricewaterhouseCoopers, *Emerging Trends in Real Estate* (2005, 2006, 2007, 2008, 2009, 2010, 2011). Washington, DC: Urban Land Institute.

U.S. Department of Housing and Urban Development (2008), *American Housing Survey for the United States: 2007*. Washington, DC: U.S. Government Printing Office.

U.S. Department of Housing and Urban Development (2010). *American Housing Survey for 2009.* Washington, DC: U.S. Government Printing Office.

U.S. Department of the Treasury. (2011). *Reforming America's Housing Finance Market: A Report to Congress*. Washington, DC: U.S. Government Printing Office.

Virginia Center for Housing Research (1995) *Retirement Relocation Among College Graduates: A Survey of Virginia Tech Alumni*. College of Architecture and Urban Studies, Virginia Tech (Blacksburg).

Voith, Richard (1998). Parking, Transit, and Employment in a Central Business District. Journal of Urban Economics 44(1), 43-48.

von Thünen, Johann Heinrich (1863). *Der Isolierte Staat in Beziehung auf Landwirschaft und Nationaloekonomie*. Munich: Pflaum.

Wheeler, Christopher H. (2005). *Cities and the Growth of Wages Among Young Workers*. St. Louis, MO: Federal Research Board of St. Louis. Working Paper 2005-055A http://research.stlouisfed.org/wp/2005/2005-055.pdf.

Williamson, June (2013). *Designing Suburban Futures*. Wasington, DC: Island Press.

Wilson, A. and R. Navaro (2007). Driving to Green Buildings: The Transportation Energy Intensity of Buildings. *Environmental Building News*, 16(9). http://www.buildinggreen.com/auth/article.cfm?fileName=160901a.xml.

Woods & Poole Economics (2011), *The Complete Economic and Demographic Data Source*, Washington, DC.