WHAT HAPPENS WHEN A SUBURB TURNS INTO A CITY?

AUTOMOBILE DEPENDENCE AND SECOND ORDER

URBAN SPRAWL IN ARLINGTON, TEXAS

HONORS THESIS

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ABSTRACT

Urban sprawl and automobile dependence often go hand in hand. Interestingly, when sprawling development is coupled with unplanned suburban growth and political preference for the automobile, a suburban town can quickly transform into a car-dependent city. This is the case for Arlington, Texas, which until recently was America's largest city without public transportation. By tracing Arlington's political history and patterns of development, this thesis explores how Arlington went from a suburb to a city, and how the municipality's legacy of automobile dependence may not be disproportionally affecting its oldest and most disadvantaged communities. Geovisualization and spatial analysis show that Arlington's current geographical distributions of selected socioeconomic status indictors are consistent with the same urban change processes observed in older center cities, which are known to produce patterns of sociospatial inequality and concentrated poverty. Given its lack of reliable public transit, this has implications for urban planning and transportation policy in the suburb-turned-city.

What Happens when a Suburb Turns into a City? Automobile Dependence and Second
Order Urban Sprawl in Arlington, Texas

Introduction

American planners and politicians have long viewed urban growth as a
"successful" development outcome (Logan and Molotch 1987). Hence, even where it
unplanned and unexpected, there is rarely a desire in U.S. cities to slow or reverse
patterns of urban growth, which is often measured using aggregate population and job
counts (Kantor and Turok 2012). From a planning and governance perspective, the
package of public resources and institutions demanded by a growing city is usually much
different from the package demanded by a suburb (Tiebout 1956). Consequently, when a
suburb grows so sharply and substantially that it becomes an "accidental city" (Lang and
LeFuergy 2007), a tension can naturally arise between the new urban reality and the
former suburban ideal. Residents of these accidental cities, and presumably political
representatives of those residents, often seek to preserve suburban character and lifestyles
in the face of rapid urban growth (Lang and LeFuergy 2007), the tendency to cling to
mismatched models is a common source of long-term planning and policy failure
(Marshall 2009).

It is through this lens that the current thesis explores urban population growth and
public transit in the U.S. city of Arlington, Texas. Arlington is historically a suburb of
both Dallas and Fort Worth in North Texas, and it positioned between the two cities in
the Dallas-Fort Worth (DFW) metropolitan statistical area. Because of this location,
Arlington is not the largest city in its region. Nevertheless, its current population is
nearly 380,000 people, which, according to the most recent U.S. Census Bureau

population data, makes the purported suburb a larger *city* than major urban centers such as New Orleans, Pittsburgh, Buffalo, and Cincinnati.[1] Rather than accepting this city-like status, many stakeholders in Arlington are actively resisting the prospect of becoming more "urban", which has led Lang and LeFurgy (2007: 147) to call it a "holdout" in their classification of American "boomburbs", i.e., "accidental cities". One of the most impactful consequences of this urban resistance is a notable lack of public transit. Up until 2013, Arlington was the nation's largest settlement (measured by population) without any form of public transportation (Barry 2013). Even though this label is now slightly outdated, as the city recently established a commuter bus service, public transportation continues to be a major hole in Arlington's urban fabric and policy. The single bus service that is presently available to residents covers only a fraction of the city's geographies, and operates on very limited hours.[2] In addition, there are no plans to create additional "urban" public transportation options into the near future (Lang and LeFuergy 2007)

On this backdrop, the current article leverages U.S. Census Bureau data, Geographic Information Systems (GIS), and spatial analysis to argue that, at the same time Arlington is clinging to its suburban identity, it is beginning to experience traditional "urban" problems and patterns of intra-city change: both the city and its built environment are aging, its population is becoming both more heterogeneous and sociospatially segregated, and its citizens have built out to its borders (Silverman 2011). For these reasons, leaders and other stakeholders face the dual challenges of (1) accepting that the suburb has become an accidental city, and (2) responding to this reality.

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[1] http://quickfacts.census.gov/qfd/states/48/4804000.html
[2] http://www.ridethemax.com/

Discarding mismatched models and plans is never an easy task in urban governance, but failing to do so can prove far more costly (Marshall 2009).

With that in mind, the remainder of this thesis proceeds as follows. The next section briefly introduces the notion of a "boomburb" (Lang and LeFuergy 2007), and unpacks Arlington's developmental history as it relates to this concept. Doing this showcases the auto-centric ideology that has contributed to so many of the political and infrastructural decisions that have occurred in Arlington over the past several decades. Next, the city's historical development patterns are juxtaposed with geovisualizations showing the present locations of older neighborhoods (built environments) and socioeconomically disadvantaged populations. These exercises demonstrate that Arlington appears to be following change processes that are known affect urban centers (Weaver and Holtkamp 2015). The city's patterns of development show signs of second generation urban sprawl—that is, recent development activity has concentrated near the city's borders. Given this evidence, the article concludes by discussing the implications of continued urban resistance in Arlington's planning and policy. Not only will a prolonged lack of public transit and other missing parts from the "urban" public resource package perpetuate auto-dependence in the city, but it will likely have a disproportionate impact on Arlington's oldest and most disadvantaged communities.

"Boomburbs", Sprawl, and Automobile Dependency

As defined by Dolores Hayden, a professor of architecture and urbanism, boomburbs are suburban places that have or had double digit population growth in recent decades while also having over 100,000 residents, but are not the largest cities in their metro areas (2006). Other examples of the boomburbs include: Tempe, Arizona; Anaheim, California; and Clearwater, Florida. Currently, there are 54 such places in the United States, with Arlington, Texas listed as the second largest in terms of population, behind only Mesa, Arizona (Teaford 2008).

Because boomburbs are not the largest cities in their metro areas, they are intimately tied to urban sprawl and automobile dependence. The most basic understanding of urban sprawl is the creation and expansion of low density development. This process involves taking up formally undeveloped or agricultural lands and putting people or businesses on the land. Sprawl shows itself in many ways—from exclusionary zoning practices that tend to separate land uses and privilege large residential lots, to a reliance on national chain stores, to large streets for automobiles that do not make room for pedestrians. These factors tend to add up to create a non-existent sense of place or identity for a locality, making it a place that people can forget. At one point in American history, this idea was very popular because it reflected the so-called "American Dream". Urban sprawl is a part of the Suburban Ideal. People in the 1950s left urban centers for the suburbs to increase their consumption of housing and decrease their exposure to traditional "city problems". This idea was the prevalent urban planning and building idea of the mid and late 20th century, which is when the city of Arlington developed into the place it is today.

In a chicken-and-egg-like problem, both a cause and consequence of urban sprawl is *automobile dependency*. Automobile dependency is defined as "high levels of per capita automobile travel, automobile oriented land use patterns and reduced transportation alternatives" (Litman 2002). There are many factors that contribute to this phenomenon. In Arlington in particular, these factors include: low land use density, single-use land use development patterns, ample parking for cars along roadways, placing parking at the forefront of site design processes, and, of course, high per capita automobile usage and ownership. More generally, the *cycle of automobile dependency* is caused by policies and land use decisions that encourage automobile usage and ownership. Once this cycle begins, it starts a positive feedback loop, growing exponentially until the system collapses. This cycle is depicted in Figure 1.
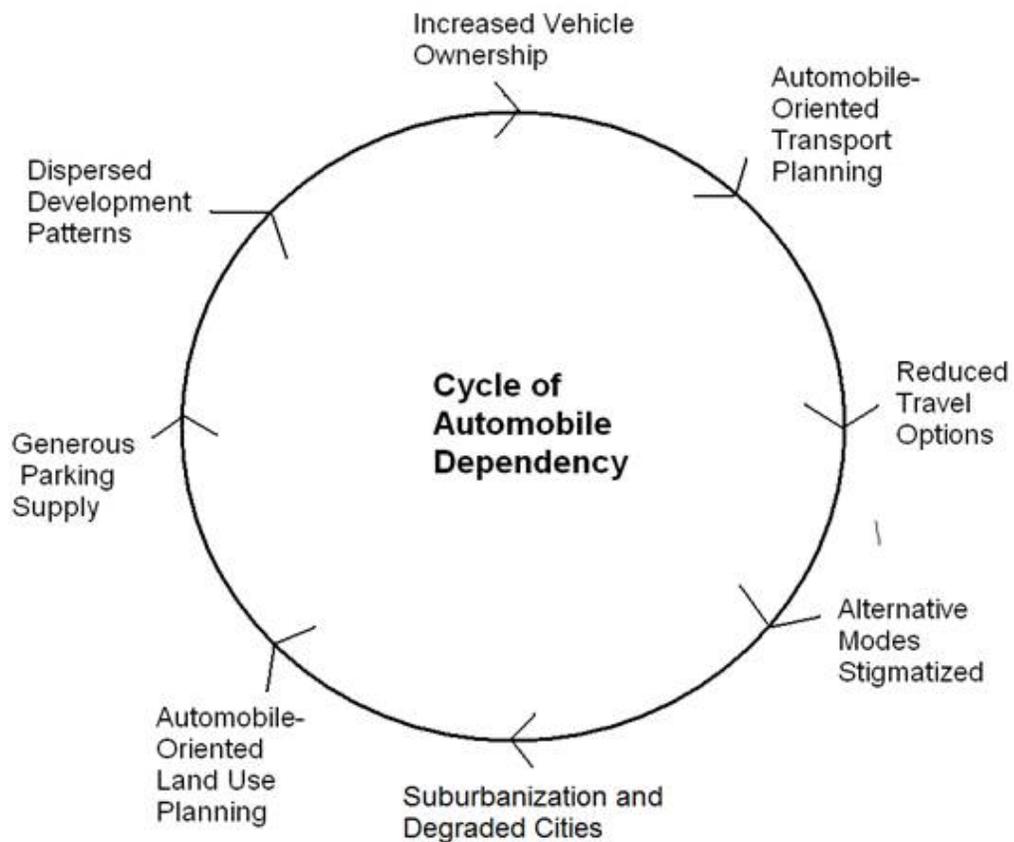
Figure 1: The Cycle of Automobile Dependency, Source: TDM Encyclopedia. Victoria Policy Institute: http://www.vtpi.org/tdm/tdm100.htm

Once automobile usage and ownership are already locked into place, auto-dependent land use patterns and planning decisions make the automobile all the more necessary. Alternative modes of transportation (e.g., public transit, biking, walking) are stigmatized, underfunded, and at times, forgotten. This cycle encourages more sprawling forms of development, reduced transportation choices and options, as well as degradation of older parts of the city (Victoria Transport Policy Institute 2014). In order to examine and understand how this cycle has played out in Arlington, Texas, one must first understand how Arlington got to the current situation. As the next section discusses, the politics that shaped Arlington did not come in form of city ordinances and laws, but rather in the form of indirect political power.

The History of Arlington, Texas-Suburban Paradise

Arlington, Texas was founded in 1876 as a Texas and Pacific railroad stop between Dallas and Fort Worth. Eight years later, in 1884, Arlington was incorporated as a city. The city has always benefitted from its strategic location between Dallas and Fort Worth. In the early days, Arlington was a railroad stop that was known for its cotton-ginning and farming. The town stayed primarily small and somewhat rural until after World War II. The post war era brought large expansion of Arlington, in terms of both the economy and the population (Saxe 2001).

The period from 1950 to the present is what came to define Arlington as a "boomburb". To begin, some of the most drastic changes in the city began in 1951 with the election of Mayor Tom Vandergriff. One of the biggest changes during his tenure as mayor occurred in 1954, after only three years in office. Specifically, the recently elected mayor was pivotal to bringing an automotive industry boom to the city. In 1954, Arlington became home to a General Motors (GM) Assembly Plant. Tom Vandergriff and his family were a major reason for GM choosing Arlington.

The Vandergriff family had been long time car dealers, selling General Motors automobiles. Tom's father, W.T. "Hooker" Vandergriff was a major car dealership owner in the Dallas-Fort Worth area. In 1937, Hooker opened a dealership in Arlington. Within a few years, he consolidated his other area dealerships to the Arlington branch. Shortly thereafter, when GM was looking to add another manufacturing plant in the late 1940s and 1950s, the Vandergriffs began to use status in the community to make the case for Arlington to host the plant. The Vandergriff family and the GM Corporation had had a long standing relationship, and GM knew the Vandergriffs were loyal to their

organizations. Unlike today, where corporations tend to have high geographic mobility, in the business culture of the 1950s location decisions had much to do with personal relationships.

When Tom Vandergriff was elected mayor of Arlington in April of 1951, this was the last boost of confidence the GM Corporation would need to locate in Arlington. GM issued a press statement in the summer of 1951 advertising they would place a new plant in Arlington, Texas. Soon after the announcement, Tom Vandergriff and his father began to purchase land parcels at market value to offer up to GM for construction of the new plant (Saxe 2001). The building of the GM Plant and the close relationship with the GM Corporation contributed to the development of the city's economy as well as a population boom in the latter half of the 20th century.

During his 26 years in office, Vandergriff is credited with bringing more than just the GM Plant to Arlington. From 1951- 1977, he attracted other large businesses and strived to make Arlington a place of growth. Vandergriff helped attract Six Flags over Texas amusement park in 1961, and the Texas Rangers baseball team in 1972. Vandergriff was instrumental in facilitating the transformation of Arlington State College into a university that was eventually incorporated into the University of Texas system (and now serves approximately 35,000 students). Vandergriff was a career businessman who saw the best way to grow Arlington was to bring as much development as possible to the city and surrounding area (Saxe 2001).

While Vandergriff was well known for his economic development accomplishments in Arlington, his leadership also ushered in some of the most defining features of Arlington's contemporary urban fabric: the city's connections to the Interstate

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Highway System. First, the Dallas-Fort Worth Turnpike opened in 1959. This highway connected downtown Dallas to downtown Fort Worth, and the cities that sit between the two major cities (Saxe 2001). Once the turnpike bonds ended, the roadway was named Interstate 30 and began to receive oversight from the Texas Department of Transportation (Texas Department of Transportation n.d.). The turnpike cut through Arlington, and divided the city into northern and southern sectors. In order for this to happen, existing, functional neighborhoods along the northern periphery of the city were split by the large-scale transportation infrastructure.

Interstate 20 further divided Arlington on the south end of the city. The highway presently connects the southern portions of Fort Worth and Dallas, continuing to Kent, Texas to the west and South Carolina to the east. When the current highway opened in 1971, southern Arlington was primarily rural, open land (Texas Department of Transportation n.d.). The incorporation of Interstate 20 spurred development along the city's south end and actively encouraged sprawl to the south.

From its founding to the 1950s, the population growth of Arlington followed the general population trends in the United States during that time. The city went from around 500 residents in the 1880s to 3,300 in the 1910s to 7,692 in 1950. As shown in figures 3 and 4, the next half century in Arlington saw a population boom. The population growth rate was 482% in the post war decade of 1950-1960. The growth slowed down to just over 100% in the next decade. Population growth since the 1980s has slowed down significantly; however Arlington is still a growing city (City of Arlington, Texas n.d.). The initial population explosions in the city are often connected to the incorporation of industry (such as the GM Plant) or the construction of major

highways. More recently, however, rapid population growth has been linked to the

overall population growth of the Dallas-Fort Worth metropolis, and the growth of new

entertainment-driven industries in the city.

Decade	Population Growth per Decade	Average Population Growth per Year
1950-1960	482%	48.2%
1960-1970	101.5%	10.15%
1970-1980	77.45%	7.75%
1980-1990	63.46%	6.35%
1990-2000	27.22%	2.72%
2000-present	12.62%	1.26%

Figure 2: Population Growth in Arlington, Texas 1950-2014, Source: *Arlington's Growth by Decade: Pathways of Change 1870-2025*. City of Arlington, Texas website: www.arlingtontx.gov

Year	Population	Population Change (from past figure)
1950	7,692	N/A
1960	44,775	+37,083
1970	90,229	+45,454
1980	160,113	+69,884
1990	261,721	+101,608
2000	332,969	+71,248
2010	375,438	+42,469

Figure 3: Population in Arlington, Texas 1950-2014, Source: *Arlington's Growth by Decade: Pathways of Change 1870-2025*. City of Arlington, Texas website: www.arlingtontx.gov

Mapping Residential Development Patterns in Arlington, Texas

As noted above, prior to the 1950s, Arlington was a small town. Since that time, Arlington has become a "boomburb", with a population which exceeds that of many established urban cores (refer to the Introduction above). According to an interview given by longtime mayor Tom Vandergriff, the city's original master plan called for regional centers within the town. Instead of following traditional development patterns, where a city has a strong central downtown area, with housing surrounding that, Arlington planned to develop differently. The city planned on having regional centers in different parts of the city. These regional centers would be smaller versions of a downtown, offering retail, entertainment, and civic functions, primarily meant to serve the residents closest to the regional center. This planned sprawl encouraged movement of residences and businesses away from the original center of Arlington (Saxe 2001). In order to bring the master plan to fruition, the city of Arlington began annexing nearby land, eventually ending up with approximately 99 square miles in the municipality. While Arlington made plans to grow, it never planned to be a major city of almost 380,000 people. The intention all along was to be a suburb of Dallas-Fort Worth. However, Arlington's development patterns suggest that it might be time to break away from these suburban plans.

When Arlington's population exploded in the mid-20th century, the city grew horizontally rather than vertically—consistent with patterns of urban sprawl. To illustrate this, Figure 6 shows that the pre-1949 residential development in Arlington was small and concentrated. This concentration is the oldest part of the city, and it is home to "downtown" Arlington, the University of Texas at Arlington, and the original Texas and

Pacific Railway line. Development first occurred near the railroad and the college (the college was not known as University of Texas-Arlington until 1967).   Prior to the population growth of the 1950's, Arlington residents lived primarily within these few areas. The increase in population, as well as preference for suburban-style development, caused Arlington's housing to spread into the nearby, empty land.

Housing Units Built 1949 or Earlier
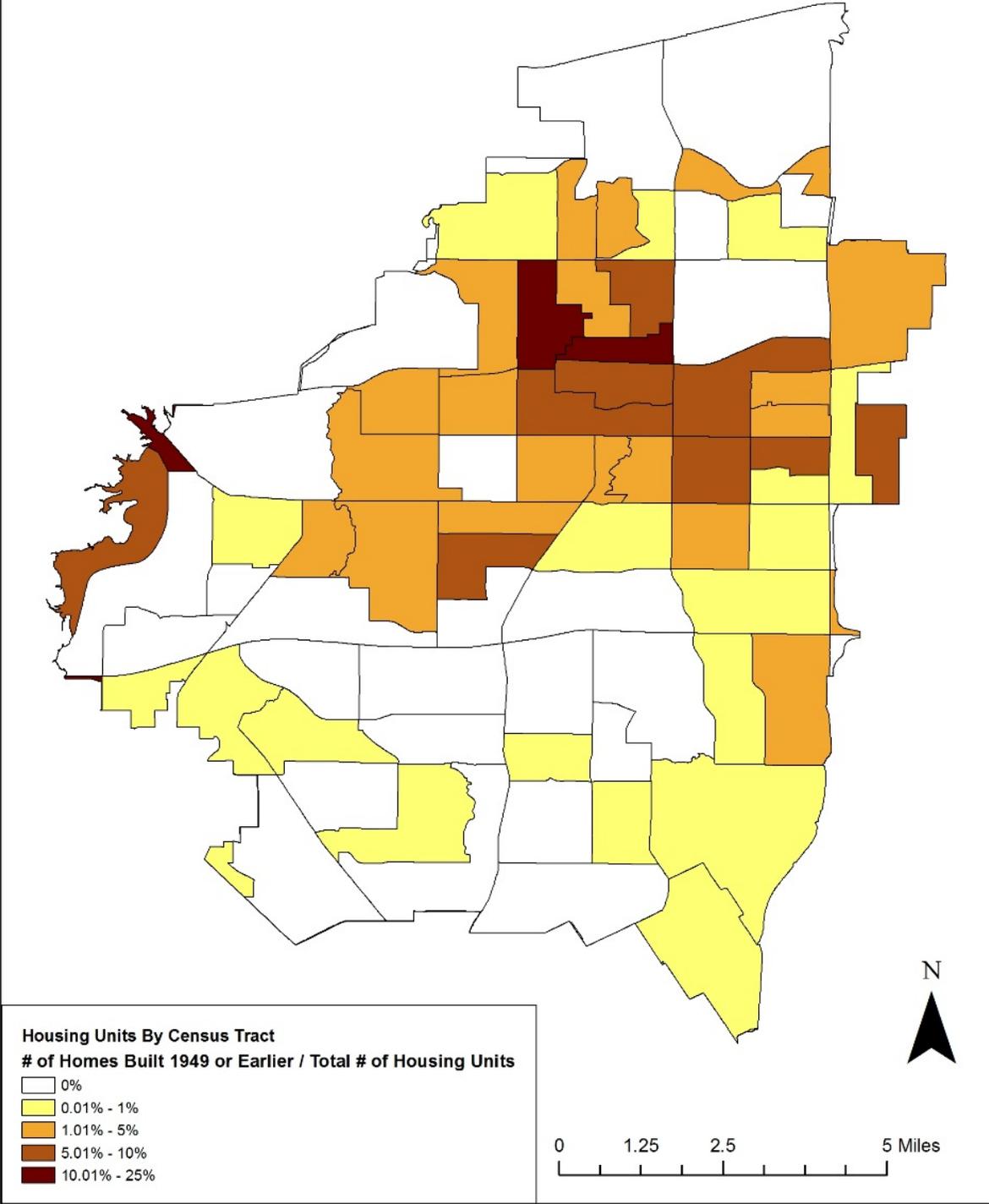
Figure 4: Percentage of Housing Units in Arlington, Texas, Built Between 1949 or Earlier, Mapped by Census Tract

Figure 5 shows housing units that were built between 1950 and 1959. This

decade saw the first major changes in Arlington, and nearly a six-fold increase in

population over the course of ten years. In 1950, the population of the small suburban

town was 7,692. By 1960, it had jumped to 44,775, a growth rate of 482% over the

decade. The General Motors Assembly Plant was constructed in the eastern section of

the city, along State Highway 360 and Abrams Street. This 250-acre development

spurred the manufacturing industry and encouraged other businesses and people to move

to the city. The other major development in the 1950s was the development of Interstate

30 (known then as the Dallas-Fort Worth Turnpike), which finished construction in 1959.

This highway split up the northern section of the city.

Housing Units Built 1950-1959

Housing Units By Census Tract
# of Homes Built 1950-1959 / Total # of Housing Units
- 0%
- 0.01% - 5%
- 5.01% - 15%
- 15.01% - 30%
- 30.01% - 70%
- ★ GM Plant
- Interstate 30

N

0   1.25   2.5   5 Miles
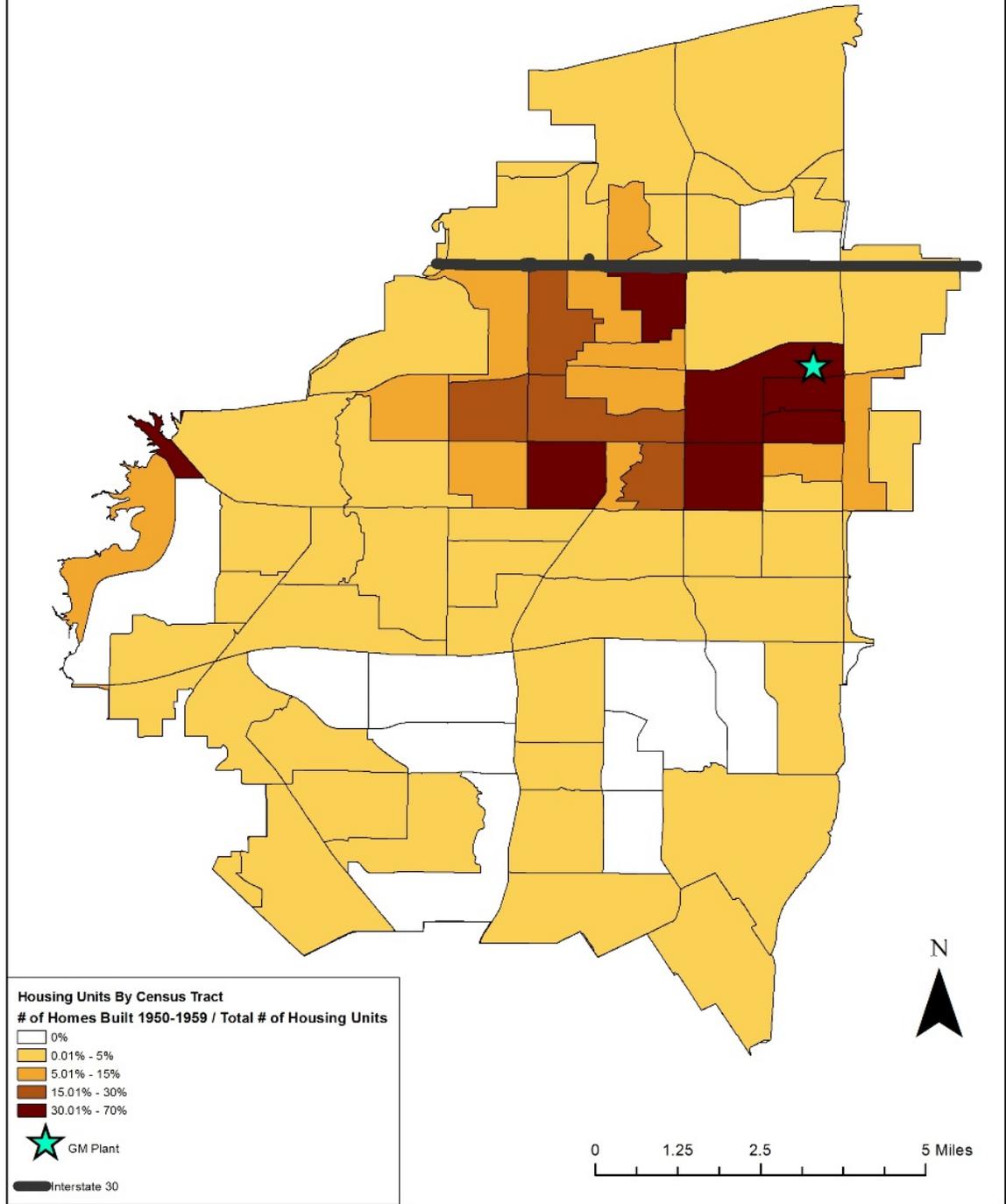
Figure 5: Percentage of Housing Units Built in Arlington, Texas, 1950-1959, Mapped by Census Tract

Figure 6 shows housing units that were added between 1960 and 1969. While the main housing developments are close and often adjacent to the concentration of housing units built prior to 1959, the first signs of suburban sprawl—in the *suburb* of Arlington—are beginning to appear in this map. The development patterns seen in Arlington during this period are somewhat typical of American *cities*: sprawling out, instead of up, while staying close to the older parts of the city. Housing development is most prominent in the census tracts close to the GM Plant, and to the west of the university.

Housing Units Built 1960-1969

Housing Units By Census Tract
# of Homes Built 1960-1969 / Total # of Housing Units
- 0%
- 0.01% - 5%
- 5.01% - 15%
- 15.01% - 30%
- 30.01% - 62%

★ GM Plant

Interstate 30

N

0   1.25   2.5   5 Miles
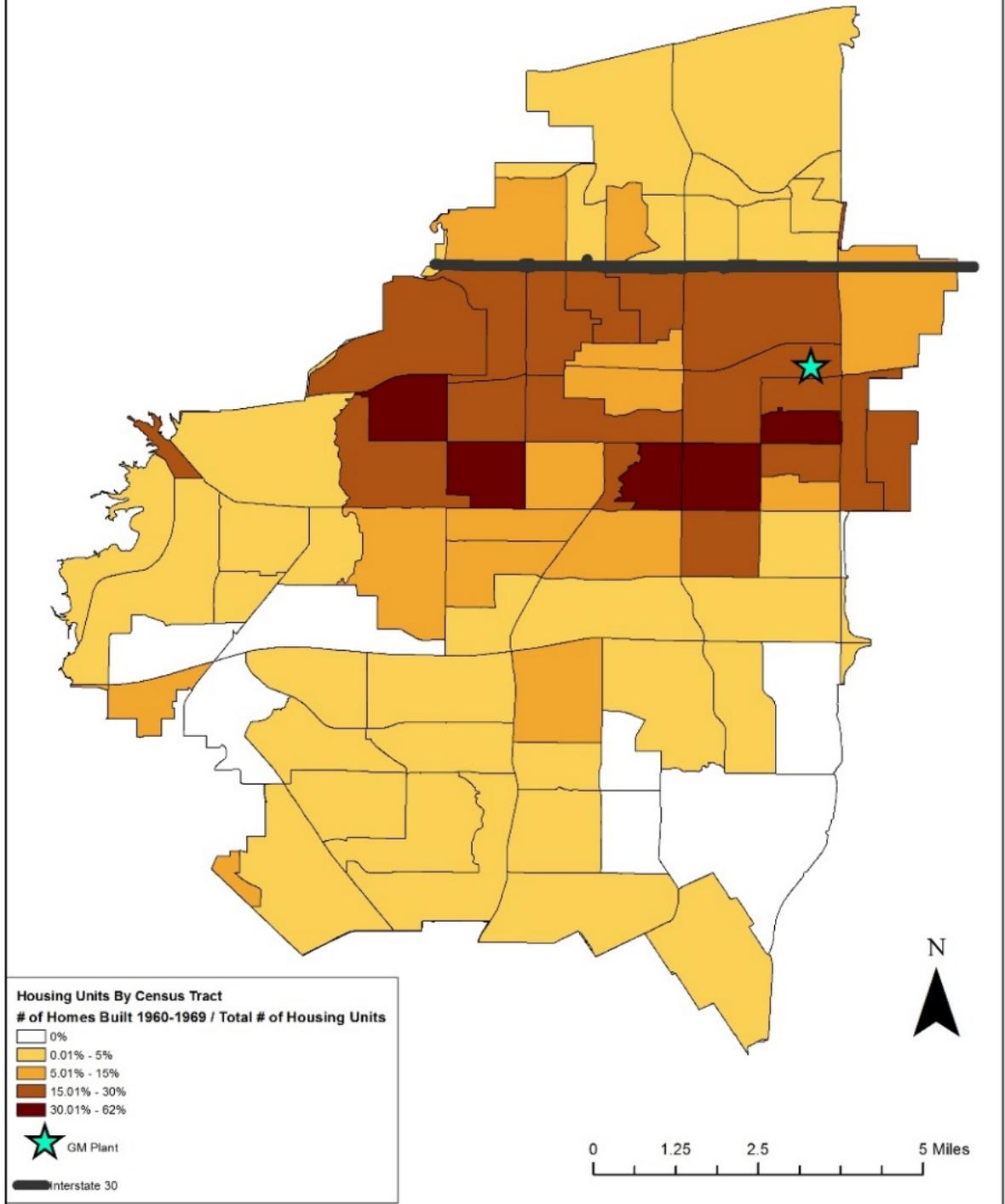
Figure 6: Percentage of Housing Units Built in Arlington, Texas, 1960-1969, Mapped by Census Tract

From 1970 to 1989 (figure 7), Arlington's housing development continued to push outward, with most of the home construction occurring north, south, and west of the earlier housing in Arlington. Most of Arlington's housing development is single family detached homes in sprawling neighborhood developments. During these decades, there is clear geographic evidence that development began "building out" to the city limits. In addition to the existing sprawl patterns in the city, the construction of Interstate 20 in 1971 encouraged additional development of previously vacant lands in the southern section of the city. This twenty year period saw a large portion of housing development occur in the census tracts adjacent to the interstate. The population of the city grew from 90,229 in 1970 to 261,721 in 1990 (an increase of 171,492 people), further explaining the continued home construction in new parts of the city.

Housing Units Built 1970-1989

Housing Units By Census Tract
# of Homes Built 1970-1989 / Total # of Housing Units

- 1.38% - 20%
- 20.01% - 40%
- 40.01% - 60%
- 60.01% - 80%
- 80.01% - 90%

★ GM Plant

━━ Interstate 30
━━ Interstate20

0   1.25   2.5   5 Miles

N
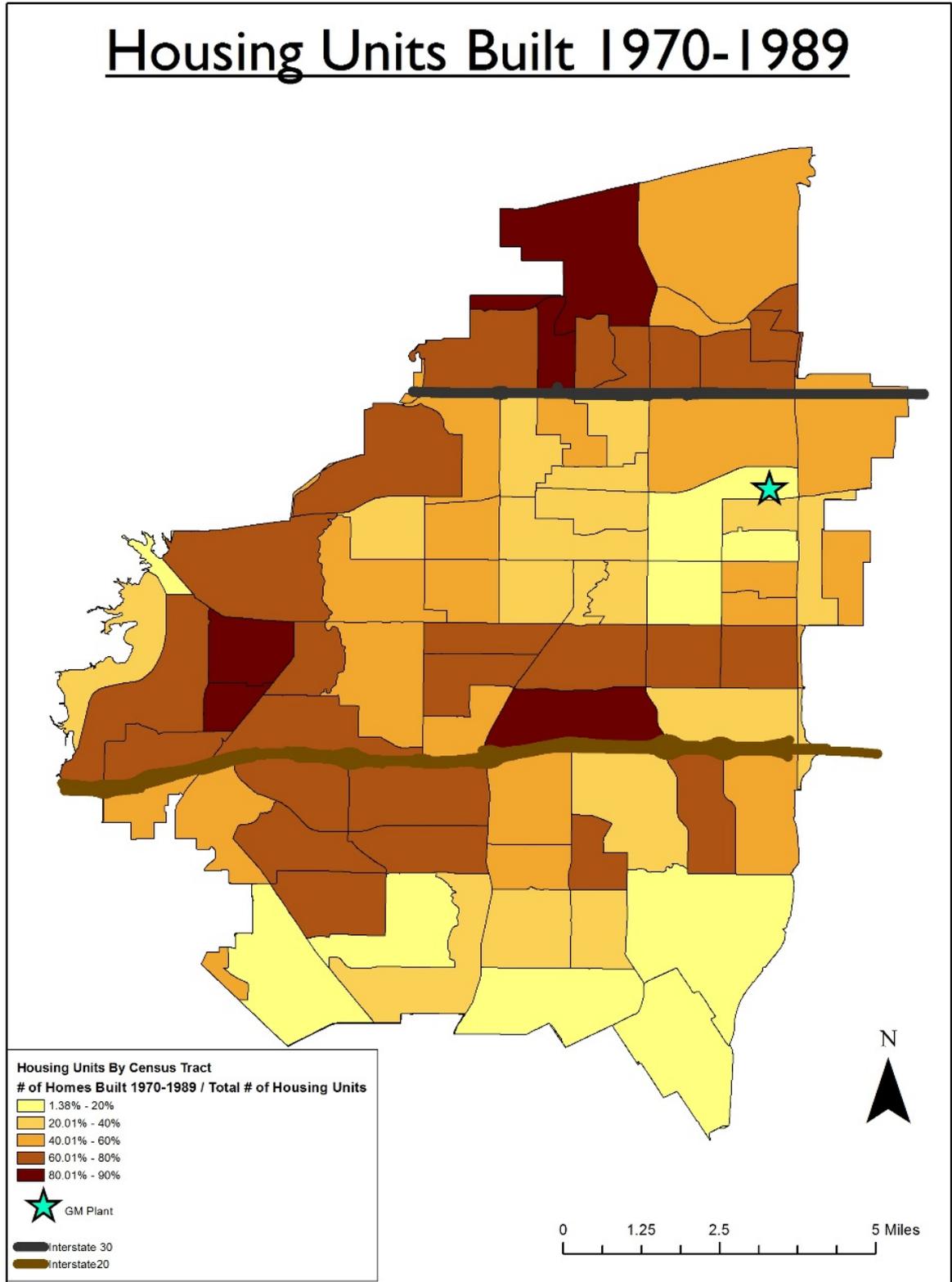
Figure 7: Percentage of Housing Units Built in Arlington, Texas, 1970-1989, Mapped by Census Tract

While Arlington's population growth began to slow in the 1990s, the pattern of sprawl continued, as shown in figure 10. This twenty year period saw a population growth of 113,717 people, at an average growth rate percentage of 2% per year. Figure 9 shows housing stock built 1990 or later. This map shows a spatial concentration of housing built in the southern part of the city, specifically south of Interstate Highway 20. Arlington today is approximately 99 square miles in size, with a population density of 3,811.3 persons per square mile (United States Census Bureau 2015).

Housing Units Built 1990 or Later

Housing Units By Census Tract
# of Homes Built 1990 or Later / Total # of Housing Units

- 1.89% - 10%
- 10.01% - 25%
- 25.01% - 50%
- 50.01% - 75%
- 75.01% - 98%

★ GM Plant

Interstate 30
Interstate 20

N

0   1.25   2.5   5 Miles
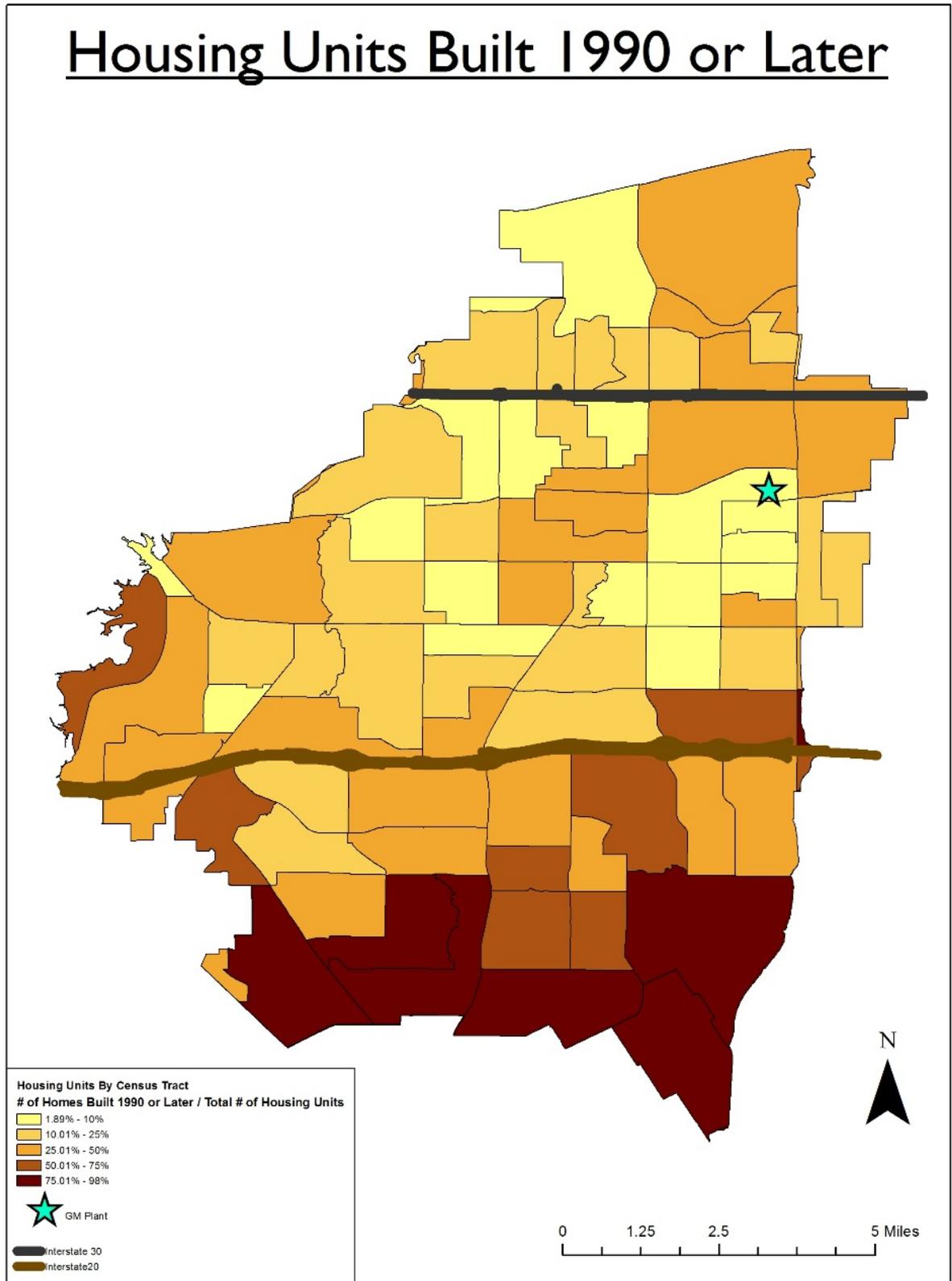
Figure 8: Percentage of Housing Units Built in Arlington, Texas, 1990 or Later, Mapped by Census Tract

The maps presented above demonstrate that Arlington, which was itself a consequence of mid-20th Century urban sprawl, has experienced its own internal patterns of sprawl, much like a traditional city. The next section argues that much of these development patterns are correlated with automobile dependent policies and land uses in the city.

Automobile Dependency in Arlington

Transportation paths in Arlington tend to be high-volume, fast speed, and large developments. These roadways are often difficult for those without a vehicle to navigate. Those with a vehicle can easily access and use the roads. Those without a vehicle therefore tend to experience relative geographic immobility in the suburbs.

It was argued above that sprawl brings about circumstances in which the automobile to become dominant. This is because each piece of a sprawled landscape typically only has one usage. In this case, otherwise continuous space becomes disjointed. There is housing in one part, large shopping centers in another, and business parks, government offices, and entertainment centers are often allocated to their own "districts". All are separate, none are together. The normal functions of the city are spread apart and split by large roadways. These large roadways make it easier to drive than to participate in any other form of transportation (Duany, Plater-Zyberk and Speck 2000).

In Arlington, two of the largest roadways are Interstate Highways. These high speed and high volume paths helped fragment and further the city's dependence on the automobile. In terms of geography, they also serve to divide Arlington into three major sections-north, central, south (see Figs. 6-10). The central part of the city is the oldest, followed by the northern part of the city. South Arlington is the newest part of the city, with most of the development occurring after 1990. Arlington was further subdivided by large roadways including: U.S. Highway 287, Texas State Highway 360, Spur 303, Texas State Highway 180, and Farm to Market Road 157. These roads and highways

simultaneously split up the city and contribute to a cycle of automobile dependency, as they serve to link the city's separated land uses.

In addition to the automobile dependence caused by urban sprawl, there are two other factors that contributed to the love of the automobile in Arlington. The first is the political past of Arlington. The political elite that held Arlington in their hands for years had personal stake in the issue of the automobile. Those in charge did not want to even bring up the issue of public transportation (Simnacher and Zavala 2011). For many years, even after Tom Vandergriff left office, those close to him took the office of the mayor. The mayors of Arlington since 1950, despite being constrained by checks and balances, have been pivotal players in maintaining a suburban approach to development in the city (Saxe 2001).

The mayors of Arlington embraced the power of the automobile. The GM Plant has been a major employer in the city since its opening, and this economic factor led to powerful political support for automobile-friendly policies and developments. The political elite of Arlington feared being seen as "anti-car". The votes for public transit in Arlington have historically failed miserably. In 1980, there was a ballot vote in order to include the city in a regional transit plan, which did not gain any ground in Arlington. Citizens wanted more control. The city put another transportation plan on the ballot in 1985, and despite the support of many local officials and offices, it too failed (Greene 2013). No other ballot initiatives were put forward until 17 years later, in 2002. Arlington tried yet again to get taxpayer support for public transportation. The public engagement on this measure was grand, including everyone from local celebrities and sports stars backing the sales tax increase of a quarter of 1%. This would have raised

over $11 million for public transportation (Jaffe 2013). Despite getting 80% approval in pre-polls, the measure failed, 42% in favor of the increase and 58% in opposition (Center for Transportation Excellence n.d.).

Secondly, in order for most cities in Texas to get money for public transportation, it requires a sales tax increase (MacKechnie n.d.). Arlington had already increased sales taxes on its citizens several times. The Arlington citizens were taxed to help pay for the Texas Rangers new ballpark in the 1990s as well as the Dallas Cowboys new stadium in the late 2000s. The citizens were "taxed out" (Jaffe 2013). People could see the immediate effects from their assistance in building a new sports complex. The stadiums were built, games were played, and people from all around flocked to game day in Arlington. The effects from supporting public transportation are often less immediate and less drastic. Public transportation enacts small changes on a community that eventually add up to large changes in a city (MacKechnie n.d.).

Arlington is the city that never planned to be. The town was originally thought of and planned as a suburb, and has not grown out of the suburban mindset. While Arlington grew and saw the population of a city, it kept the suburban mindset-sprawl, automobile dependence, and no public transportation.

These are just the beginning of the reasons as to why Arlington, Texas came to be the largest city in the United States without public transportation. While the reasons for Arlington's current transportation and sprawl state of affairs are plentiful, perhaps what matters more is the current state of Arlington, to which the thesis now turns.

The Present of Arlington-When a Suburb Turns Into a City

If Arlington loves the automobile so much, why should Arlington change its ways? As with most cities that are entirely dependent on the automobile, without a vehicle in Arlington it is difficult for a citizen to be a full, functioning member of society. Without a vehicle, a citizen in Arlington or other automobile dependent cities can have difficulty getting to work, accessing city services, and running basic errands, such as getting groceries. The default assumption in Arlington and cities like it is that everyone has access to a vehicle. While many do, there are still citizens without access to a vehicle. Because the built environment shows such a preference to the automobile, getting around is difficult. Those without access to vehicles tend to be groups that are traditionally marginalized by society-the old, the young, the poor, and other groups at a socioeconomic disadvantage.

Figures 9 through 13 show some of the current census information provided by the United States Census Bureau's American Community Survey (ACS). The numbers presented in the maps show information and estimates from the latest (2009-2013) 5-year ACS, and the data are shown at the census tract level. The maps show a spatial concentration of the following in central Arlington: persons without access to a vehicle, poverty, persons without a high school diploma, persons without United States citizenship, and low median household earnings. Note that where these patterns tend to concentrate is in an area bound to the east by State Highway 360, north by Interstate 30, west by Bowen Road and to the south by Arkansas Lane. This area is approximately 7.35 square miles and home to an estimated 51,202 people.

As discussed above, central Arlington is the oldest part of the city. It is home to the original developments, the "downtown", and the University of Texas-Arlington campus. Typical of urban sprawl development, the wealthier families often moved out of their smaller homes, for larger and newer homes farther out in the city. The smaller, cheaper homes were then occupied by those who needed more affordable housing. This development pattern causes socio-economic divides within the city, and often leaves older parts of the city to be forgotten by the local government.

While these areas are home to many people with a socioeconomic disadvantage, this area is also home to many of the institutions that have put Arlington "on the map" and allowed the city to become an economic hub for tourism and industry. In particular, within the 7.35 square mile block of Central Arlington are the following attractions: Six Flags over Texas, Hurricane Harbor (just on the other side of Interstate 30), Globe Life Park (home of the Texas Rangers baseball team), AT&T Stadium (home of Dallas Cowboys football team), the International Bowling Hall of Fame, and the Arlington Convention Center.

Figure 9 shows the percentage of workers (ages 16 and up) that do not have access to a vehicle. This figure excludes those who are not employed, the elderly, the young, and the disabled, which make up a sizeable portion of a population. While some census tracts of the area show that most workers have access to a vehicle, other census tracts see the percentage of workers without vehicle access from 4% all the way to 26.4%. The census tract with 26.4% of workers does contain the University of Texas-Arlington. It is common for college students to not work, and it is possible that they can walk to their on-campus jobs; however, what about those residents who cannot walk to

their job? Without access to a vehicle or public transit resources, residents must find

alternate methods of transportation. These methods, which include walking, riding a

bike, carpooling, and riding in a private taxi, are worthwhile and necessary components

to a complete transportation program in a city. These methods of transportation are more

difficult to come by in Arlington. With a transportation system that is dependent on

private vehicle usage, those without access to a private vehicle have difficulty getting

around. The need for a complete transportation system is especially evident in the older

parts of the city.

Percentage of Workers without a Vehicle Available

Transportation by Census Tract
% of Workers Without a Vehicle Available

- 0.00 - 1.00
- 1.01 - 2.50
- 2.51 - 4.00
- 4.01 - 8.60
- 8.61 - 26.40
- Interstate 30
- Interstate 20

N

0   1.25   2.5   5 Miles
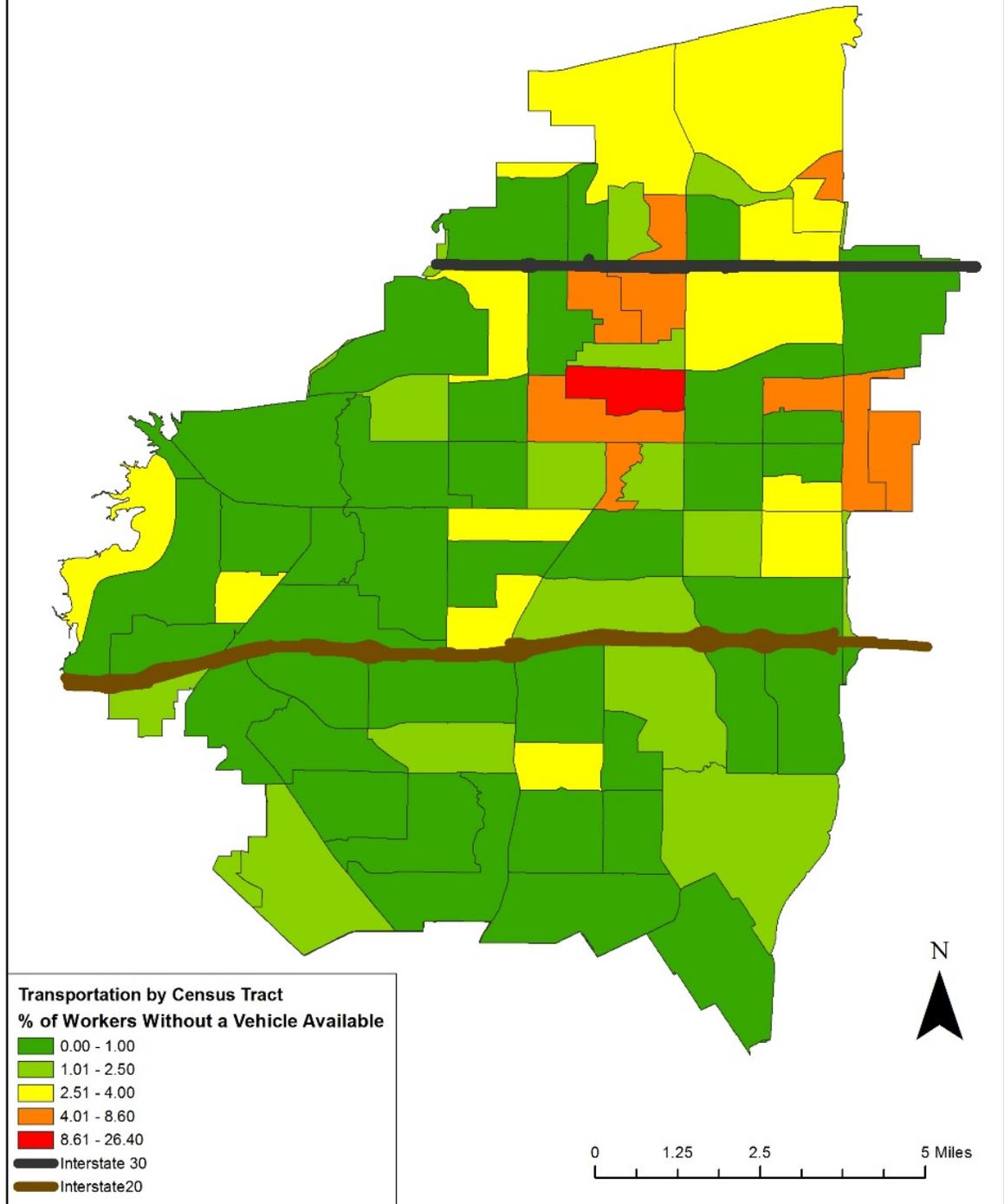
Figure 9: Percentage of Workers (ages 16 and up) that do not have Access to a Vehicle, Mapped by Census Tract

Figure 10 shows percentage of residents in poverty (as determined by the Health and Human Services-see figure 15). Some parts of the city, have poverty rates at or below the national average of 14.5% (United States Census Bureau-Social, Economic, and Housing Statistics Division: Poverty 2014). Other parts of the city have poverty rates from 20-50%. A majority of the census tracts with high poverty rates are spatially concentrated. This concentration again falls into the area of highest interest of study-the oldest part of the city, the part of the city with the least access to private vehicles. Like the data shown in figure 9, part of the phenomena can be explained because of the university. College students tend to make less money, due to a focus on their education, rather than making money. The data is not restricted to the census tracts adjacent or containing the university. The areas with the lowest levels of access to a vehicle and the highest levels of poverty extend past these census tracts and into the surrounding areas of the city.
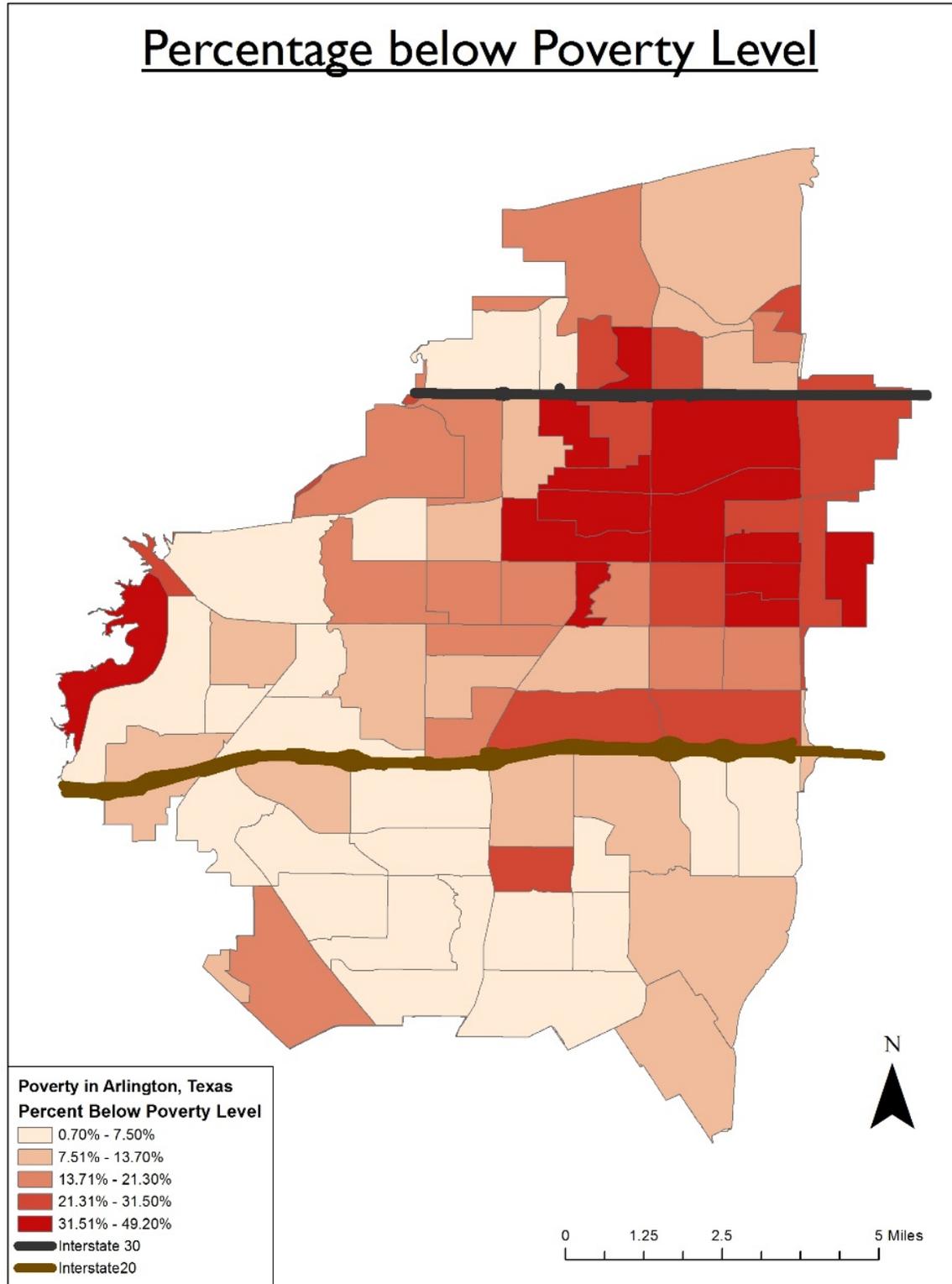
Figure 10: Percentage of People Living Below the Poverty Level in Arlington, Texas, American Community Survey 2013, Mapped by Census Tract

Figure 11 shows percentage of residents without a high school diploma. While the presence of the University of Texas-Arlington can partially explain the phenomena of availability of vehicles and poverty rates, the connection between the university and high school graduation rates tends to be the opposite, due to the fact that a high school diploma is a prerequisite for college admission. The percentage of residents without a high school diploma ranges from 10.1-42% in the area of highest interest. Those without high school diplomas tend to see higher unemployment rates, higher rates of poverty, and lower levels of income. Not having a high school diploma effects the economic potential of the city and of the individual. Educational attainment can be a barrier or a bolster. For those without a high school diploma, the level of education is a barrier to future success.
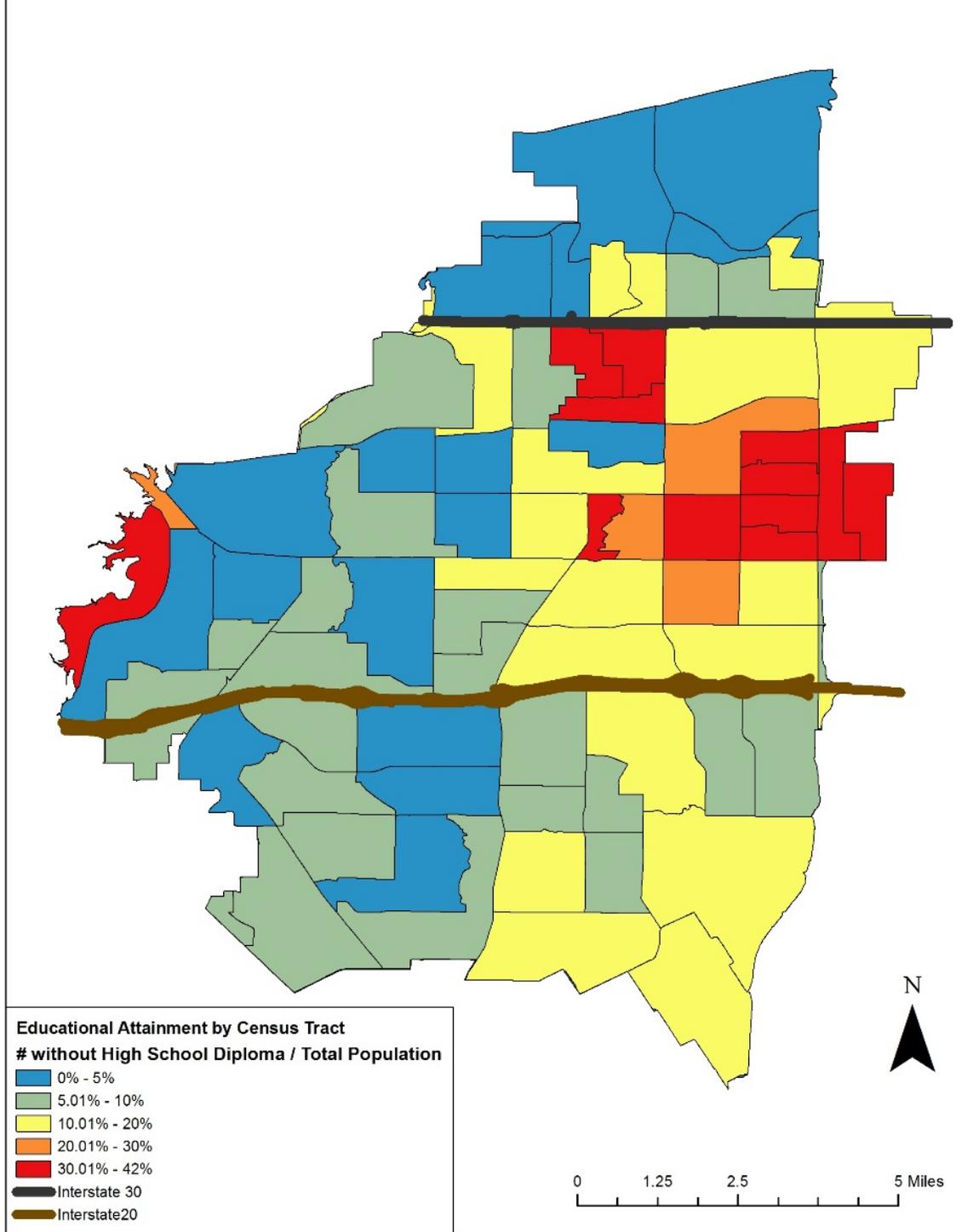
Figure 11: Percentage of People without a High School Diploma (or equivalent) in Arlington, Texas, American Community Survey 2013, Mapped by Census Tract

Figure 12 shows the percentage of residents without United States citizenship. Those without citizenship often experience barriers to being fully integrated in society. Without United State citizenship, it can be more difficult to obtain a well-paying job, a vehicle, governmental documents, and even reliable housing. The University of Texas-Arlington is home to a large portion of international students, totaling 11% of their student population, or 3,800 people (University of Texas-Arlington 2015). With percentages up to 30-40% per tract, the area of highest interest has the highest concentrations of these peoples in the city.
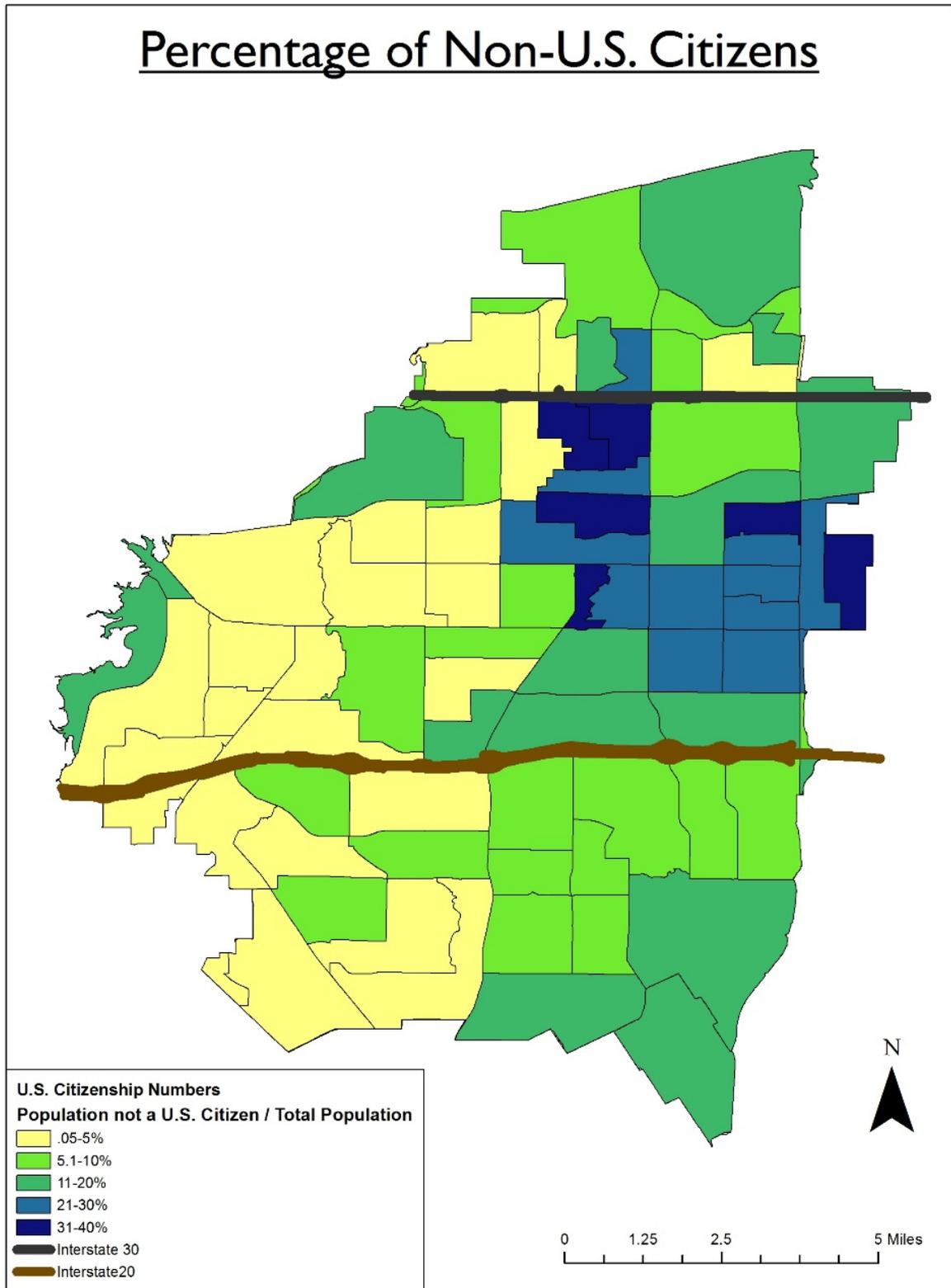
Figure 12: Percentage of People without U.S. Citizenship in Arlington, Texas, American Community Survey 2013, Mapped by Census Tract

Figure 13 shows median earnings per census tract. Some parts of Arlington see median earnings as high as $65,000. Meanwhile, in the area of highest interest, median earnings range from $18,608-$31,622. These earnings are the lowest in the city, and can partially explained by the figures shown in the earlier maps-lack of vehicle access, high school education, and U.S. citizenship. While these numbers again can be explained by the earlier maps and the presence of the university, even when educational attainment is the same, people living in the area of highest interest make less money.
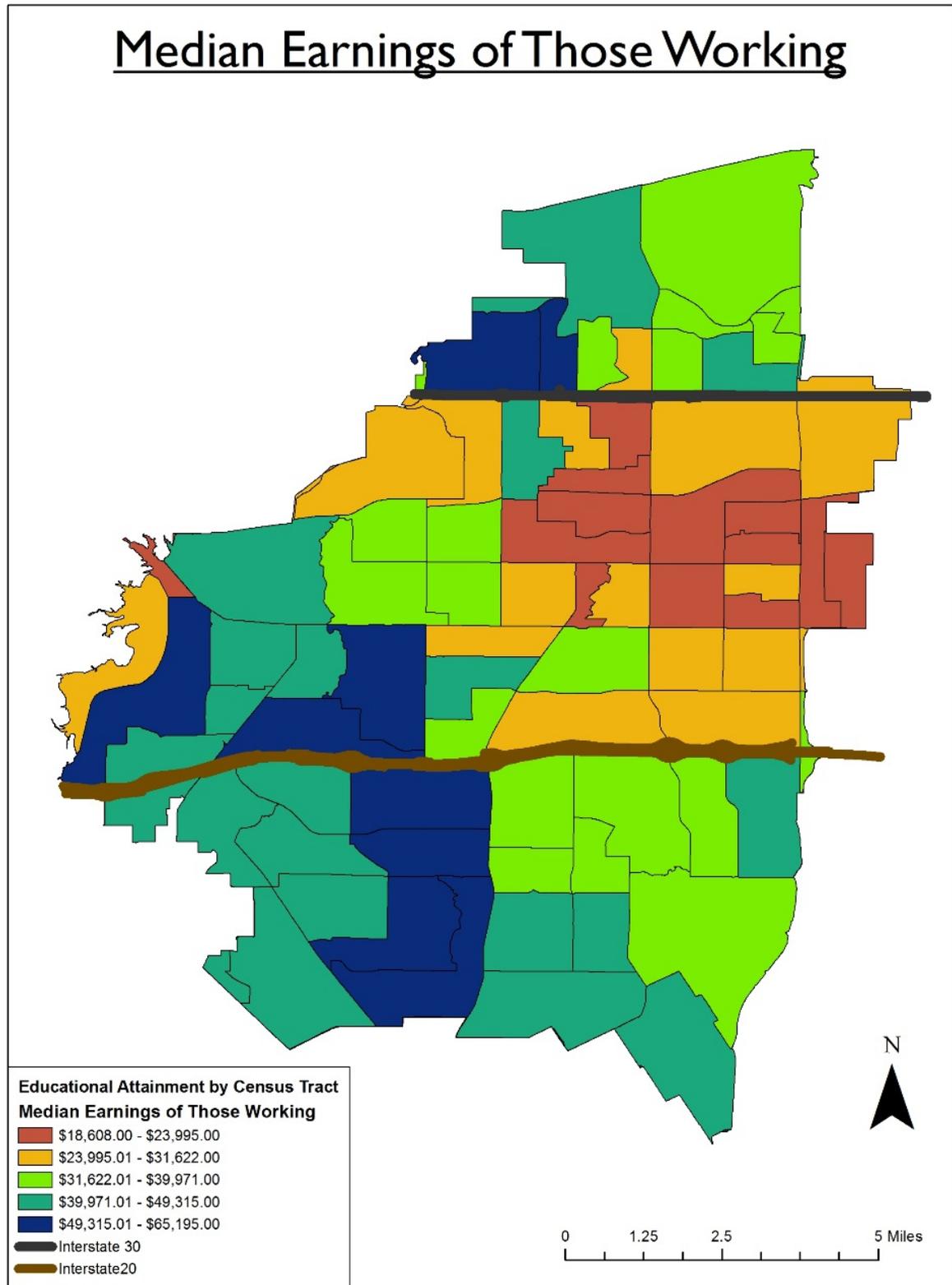
Figure 13: Median Earnings in Arlington, Texas, American Community Survey 2013, Mapped by Census Tract

Automobile dependent forms of development not only contribute to traffic woes and environmental hazards, but the form of development can have a negative impact on the citizens of a place. Cities are meant to serve their residents, and help create a safe and viable place for them to live and thrive.   The area of highest interest exhibits spatial concentrations of people who are usually disadvantaged in society-the poor, those without citizenship, and those without a vehicle. While these phenomena exhibit larger societal issues than just the pattern of development, automobile dependence is part of the problem.

The grand irony of this area is that it is surrounded by large, fast, and modern roadways. These roadways are meant to serve as carriers of people, ideas, and development. For those without a vehicle, these roadways serve as a barrier. Without a vehicle, it is difficult to get across highway lanes to other parts of the city. Whenever these large roadways were originally built, they often segmented the city and neighborhoods, ultimately isolating neighborhoods within these roadways from the rest of the city. A further lack of transportation options often results in residents being stuck in the neighborhood. Getting to options outside of their walking distance can be difficult, and at times, dangerous.

While public transportation would not solve all of the problems this area and the rest of Arlington face, it could begin to alleviate transportation burdens and limitations for residents. Public transportation is one of the ways Arlington can improve how the city governance acts and functions. For too long, Arlington has governed as if it is a suburb. It is time for Arlington to accept the reality and intricacies of its place as a city.

Conclusions and Implications for Planning Public Policy in Arlington

Arlington, Texas is a city that was never meant to be. While its population and economy suggest that Arlington is a major urban settlement, its ideology and physical environment are uniquely suburban. This thesis has made a case that the time for Arlington to embrace its urban character is now. Arlington has no more room to expand its city boundaries. If the city is going to continue to experience population growth, which seems likely, then its planners and policymakers must change their current approach to development and transportation. In particular, efforts must be made to increase both amenities such as public transit options, and residential density.

The government exists in order to preserve and protect citizen's health, safety, and welfare. While the government of Arlington has helped to create a city that is economically successful, its drive to be a suburban center of entertainment has overlooked certain parts of the city and the citizens who live there. Arlington must begin to consider the socioeconomic effects of being a boomburb. Arlington is facing issues that also face cities, and now must use similar thinking to a city to correct them. Arlington can be a world-class city—though this will require world class *urban* planning.

That being said, if Arlington is to embrace its urbanism, then the city's two most urgent priorities relate to its [lack of] public transportation system, and its sprawling development pattern. Arlington is in need of a more comprehensive, complete, and resilient transportation system. This means reducing automobile dependence by opening up other forms of transportation, such as public transportation via train or bus, walking, and biking. Comprehensive transportation systems benefit all in society. On average in

America, 30% of the population cannot drive due to age, ability, or purchasing power. The current transportation is not equitable and does not serve all peoples.

In order for changes in Arlington's transportation system to work, Arlington must reimagine how the city develops. While the status quo for the city has been low density urban sprawl, such a trend is no longer viable. Arlington has pushed out to its city limits, and in order to continue growing in population, housing stock, and commercial opportunities, the city must begin to build with more density. In other words, Arlington has run out of room to grow horizontally, so the city must now grow vertically. Higher living densities and having a mixing of uses for the land, for example commercial, medium and high density residential, and civic, should be the aim of Arlington's future zoning policies. Thinking like a city often means working towards walkable, accessible and connected places.

Embracing its urban character will not only boost Arlington's equity and access, but it will boost its future economic success. The current generation of young adults, known as Generation Y or Millennials, stands strong at 80 million. Of that 80 million, a majority desire to live in a walkable, connected community (Speck 2012). Many of this generation live outside of city centers in suburbs because of employment or pricing reasons (Riggs 2013). Affordable but connected, walkable suburbs are attractive to both the young and the old. There is a new demand for connected spaces from aging "Baby Boomers", born 1946-1964. As they age, driving becomes less of an option and more of a burden. They wish to be independent, but not drive. Connected, walkable places offer the freedom to go to the store and get out of the house without driving to get there.

Connected transportation networks make public transportation more successful. Density and a connected transportation network helps boost the success of public transportation. Public transportation makes accessing the rest of the city and DFW area easier. Public transportation also has noted personal health, energy saving, congestion, and economic benefits (American Public Transportation Association 2015).

Ultimately, the municipal government of Arlington must focus on place management. Place management looks holistically at making places and spaces and focusing on improving the function, look, and feel. Place management focuses on making places and spaces people can care about and for while still being efficient and effective. This is a difficult task, considering the city's size of 99 square miles, but Arlington must be thought of and planned for holistically. Instead of planning and focusing on one "signature" project, for example the Dallas Cowboys football stadium, the city should plan and focus on how Arlington works and functions as a whole. Consider questions such as: What is Arlington doing well? Where could Arlington improve? What steps are required for the city to become a place people can remember and care about? Arlington should begin with small, incremental changes in neighborhoods and communities. Change zoning codes to allow for a mix of uses and discourage more single-use zoning, and large lot, single family homes. Engage the citizens of Arlington and get citizen input.

Arlington has experienced unprecedented growth and expansion in the 20th century. While the levels of growth are unlikely to be seen in Arlington in the 21st century, the city will keep growing. Whether it clings to its old suburban ways or adapts to the population and the demands of the modern day will either bring Arlington great

success or a slow decline to a place where neither people nor businesses want to be. The city is beginning to see such urban issues such as spatial concentrations of poverty and socioeconomic disadvantage. If Arlington is willing begin to think and govern like a city would to such challenges, the city can improve the lives of its citizens, especially those with a socioeconomic disadvantage. Adaptability and changes in thinking and governance will be necessary for Arlington's success in the coming years.

APPENDIX SECTION

APPENDIX A

Number of Persons in Household	Persons in family/household
1	$11,670
2	$15,730
3	$19,790
4	$23,850
5	$27,910
6	$31,970
7	$36,030
8	$40,090

2014 Poverty Guidelines for the 48 Contiguous States and the District of Columbia,
Source: https://www.federalregister.gov/articles/2014/01/22/2014-01303/annual-update-of-the-hhs-poverty-guidelines
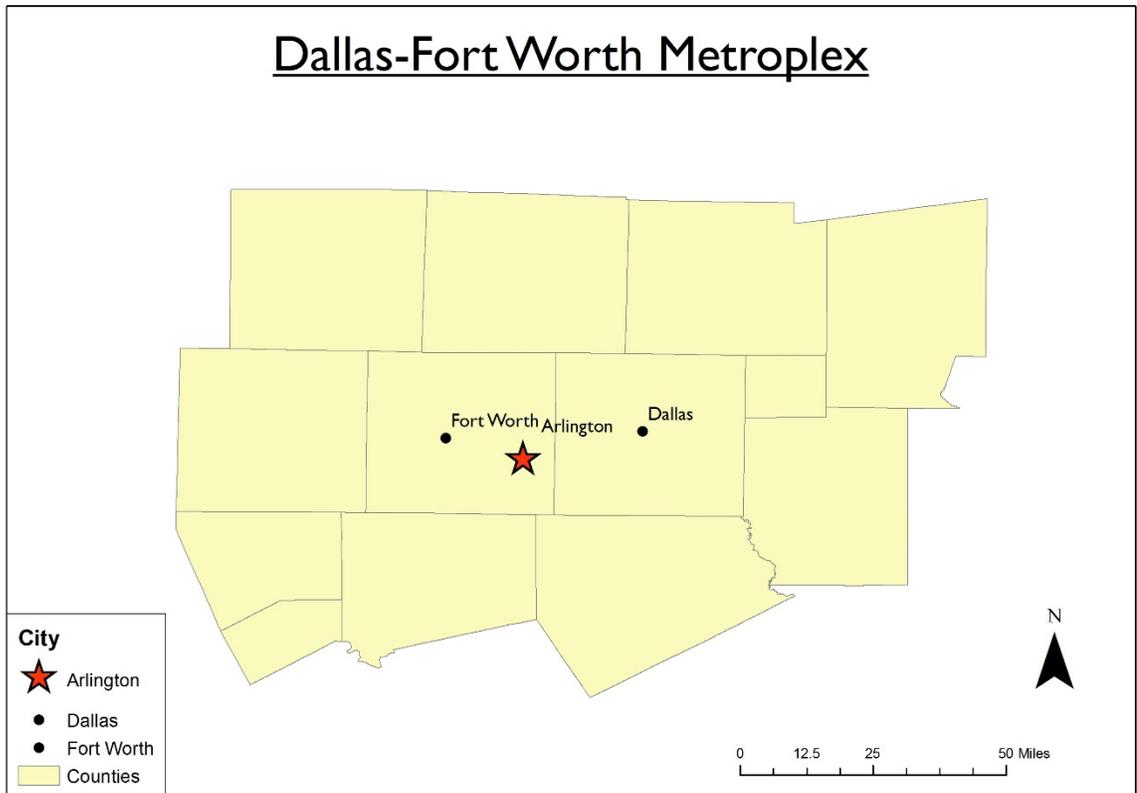
Location of Arlington, Texas, in relation to Dallas and Fort Worth

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