



TRANSPORTATION ASSESSMENT

Traffic Modeling

The mobility findings analysis for Dallas was based on the methodology of the North Central Texas Council of Government's Regional travel demand model. This model enables the City to estimate traffic trips in Dallas and beyond. In the simplest terms, the model turns people and employees into trips, finds their starting point and destination and assigns them a path to complete their trip (see the adjacent graphic). The trips are daily, accounting for home to work, home to shop and back to home.

With this modeling, planners and engineers can estimate current and future traffic demands. The model also allows comparisons by adjusting variables, such as land use and demographics. This allows planners to test the impact of transportation and land use ideas.

Basic Model Theory

By creating and using a travel model, researchers are trying to produce a mathematical representation of a person's decision-making process. This attempts to quantify the following questions: Why make a trip? When will the trip be taken? Where will one go on the trip? What transportation will be used to reach the destination? What route will be followed?

These individual choices are then combined so that aggregate impacts can be determined. The model needs to be manageable and supported with obtainable data.

As a project develops, travel demand models can be used to make planning level decisions about future transportation needs. Models estimate the overall demand on a road system based on the proposed land uses. Models are also used to answer questions such as the number of lanes required on a given road or the need for new roads or interchanges. Travel models are best suited to compare alternatives and the traffic projections provided will show general trends between these alternatives.

Four-Step Modeling Process

The model is comprised of a series of mathematical models that simulate travel on the transportation system. This macroscopic process encompasses four primary steps taken to estimate travel demand from a given land use and transportation network.

- 1. Trip Generation:** The estimated number of trip-ends (destinations) for each zone of the county. More detail on the trip generation process is included in the following section.
- 2. Trip Distribution:** The estimated number of trips between two regional zones.
- 3. Modal Split:** The predicted number of trips made by each type (mode) of transportation (car, train, bus, etc.) between each zone pair.
- 4. Traffic Assignment:** The amount of travel (or number of trips) that is loaded onto the transportation network through path-building and is used to determine network performance.



Modeling the Land Use Scenarios

The following information was generated from the North Central Texas Council of Governments' regional travel demand model, which includes the regional transportation network (roads and public transit). Trips are added to the system based upon various purposes (home to work, non-home to work, etc). Of the four variables (above), trip generation is relatively fixed but trip distribution, modal split and traffic assignment can be influenced by changes to land use and demographics. The purpose of using the regional travel demand model for forwardDallas! is to test how the two growth scenarios' land use and demographic modifications could alter travel demand.

Evaluation Measures

The two main evaluation measures for transportation plans are vehicle miles traveled (VMT) and vehicle hours of travel (VHT). When evaluating land use and growth scenarios, these numbers are often examined on a per capita basis to see how they would impact one individual.

Vehicle Miles Traveled (VMT) per Capita

What does it mean? Vehicle Miles Traveled (VMT) per person per day is the average distance traveled by a single person in a 24-hour period. This can reflect the spatial relationship between residence and employment or other destinations. Lower average VMT often reflects a better “spatial match” between residence and employment (meaning a person lives close to where they work), while higher average VMT can indicate a spatial mismatch between place of residence and place of employment. VMT per person per day will drop as the non-auto transportation mode (walk and public transit) increases.

How is it measured? The traffic volumes on each road network link are calculated using travel demand modeling software. The demographic, travel behavior and transport infrastructure data for each scenario are used as model input. Each link volume is multiplied by the average vehicle occupancy rate in the region. This value is multiplied by the length of each link to determine the person-miles traveled on each network link. All these values are added and then divided by the total Dallas population.

Vehicle Hours of Travel (VHT) per Capita

What does it mean? This estimates the hours of travel per capita per day.

How is it measured? Vehicle hours of delay are computed by determining the total vehicle hours of travel (VHT).

Travel Demand Modeling Findings

The model allows planners to compare how changes to land use and demographics will impact the transportation networks for Dallas and the region with results as follows based on the two growth scenarios (Trend and Vision) for Dallas 25 years into the future.

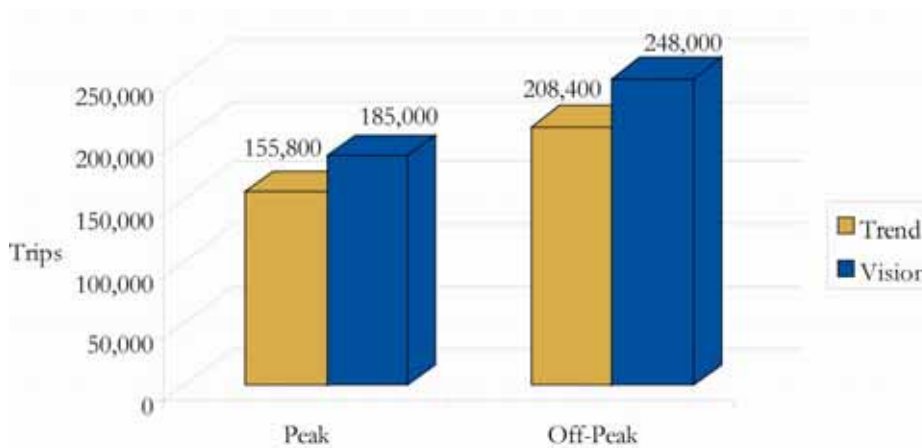
Table 1: Summary of Transportation Modeling Findings

TRANSPORTATION INDICATORS	GROWTH SCENARIOS	
	TREND	VISION
TOTAL VMT (DALLAS/REGION)	53,479,733/ 237,898,100	57,695,956/ 233,459,800
VMT PER CAPITA (DALLAS)	38	30
VHT (REGION)	6,4389,699	6,289,956
VHT PER CAPITA (DALLAS)	63	52
TOTAL DELAY (HOURS)	248,252/ 985,000	305,923/ 918,000
DELAY PER CAPITA (DALLAS)	11 MINUTES	10 MINUTES

Public Transit Trips

Use of public transit is significantly increased in the Vision scenario. Denser mixed-use development in this scenario produces a greater attraction to using mass transit. The result is almost 40,000 more transit trips in peak travel times when the Vision scenario is compared to the Trend. Off-peak public transit use experiences a similar rise in use.

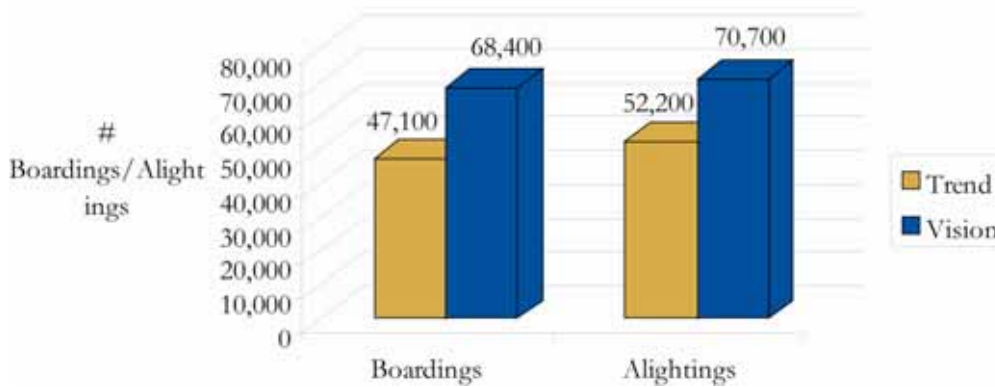
Figure 1: Total Regional Transit Trips



Transit Boardings & Alightings for Rail

Similarly, public transit boardings and alightings increase in the Vision scenario. This indicates more new transit riders are using the system. Transit in the Vision scenario becomes more attractive as a travel option.

Figure 2: Total Regional Transit Boardings and Alightings



Assessing the Growth Scenarios

The travel demand model is a series of mathematical models which create an abundance of quantitative information. For this study, VMT and VHT per capita offered the best indicator of transportation performance for the two growth scenarios.

- Vehicle Miles Traveled (VMT) per capita in Dallas is reduced from the Trend model in both the Turbo Charged and Vision scenarios.
- Vehicle Hours of Travel (VHT) per capita in Dallas is reduced from the Trend in both the Turbo Charged and Vision scenarios.
- The Vision and Trend scenarios have a positive influence on public transit ridership when compared to the Trend.
- The Vision and Trend scenarios improve Dallas mobility without hampering regional mobility.

The Vision scenario has a lower per capita VMT because the Vision fosters and allows for Dallas residents to live closer to where they work (a better spatial match). The higher average VMT depicted in the Trend scenario indicates a greater spatial mismatch between where people work and their destinations (employment, shopping and other activities). The lower VMT and VHT values in Dallas do not indicate that regional mobility has been hampered because the Vision scenario supports a sustainable mix of residential, employment and supporting land uses, meaning that city residents are able to fulfill their trips within the city, rather than being forced to travel to the suburbs for shopping, work or housing. These would be trips that in the Trend Scenario either began in Dallas and ended outside city limits or began in an adjoining area and ended in Dallas.



Summary

The travel demand model also shows that simply adding automobile lanes, as identified in the City's Thoroughfare Plan, changes in the NCTCOG Long Range Transportation Plan and the DART 2030 System Plan alone will not solve future transportation inefficiencies in Dallas. Widening roads will mitigate gridlock but that is limited by right-of-way constraints. The Vision scenario offers superior solutions to the Trend because it mixes land uses (residential, office and retail), which account for shorter trips, greater use of public transit and makes walking and biking more viable.

Current Dallas Thoroughfare Plan

The City's current thoroughfare plan uses the following hierarchy of the streets:

- **Principal Arterial**
- **Minor Arterial**
- **Community Collector**
- **Residential Collector**
- **Local Streets**

The thoroughfare plan designates current and future roads based upon this functional classification system. Current thoroughfare design is guided by standard and minimum roadway cross-sections as illustrated in adjoining illustration.


The City maps roads by their functional classification and uses this map to guide development and road construction. An example of the thoroughfare map from South Central Dallas is below. The City's thoroughfare map is shared with the North Central Texas Council of Governments for the purpose of creating a regional thoroughfare plan.

Network Design and the Thoroughfare Planning Process

Network design is a transportation planning activity that commonly precedes the thoroughfare planning process. Typically, network design focuses on minimizing travel time and congestion on roads at the regional level. Using travel time and congestion as criteria establishes a network hierarchy based on trip distance and travel speed with a goal of providing faster travel for longer trips. The functional classification system of arterial, collector and local roads is the result of this network planning process.

In this planning process, the size of roads and density of the network are controlled by how efficiently arterial and collector thoroughfares move regional traffic. Public transportation and bicycle networks are overlaid on the thoroughfare network and addressed from a demand (transit) and continuity (bicycle) standpoint within the planning process. The continuity and spacing of major thoroughfares in the network are based on the need to handle a projected volume of traffic on individual roads.

Furthermore, the network's design establishes the critical parameters for the thoroughfare design: the type of thoroughfare, modal requirements (public transit and/or bicycle networks), its general purpose (i.e., the



type of traffic it accommodates) and, by inference, the traffic speed and number of lanes necessary to accommodate the projected traffic shared among the network's many individual links. The design of the individual thoroughfare, therefore, is linked to the performance of the network.

In the past, the City's thoroughfare plans and designs have been heavily influenced by the need to move regional traffic and move traffic regionally. This has enabled Dallas to have six-lane arterials spaced at one-mile intervals. However this method of planning does not always acknowledge that roads not only serve to move traffic through an area or region, but to a destination along the particular road. These goals need to balance properly if the road and the land adjacent to it are to function successfully.

For example, if a road is intended to mostly move longer distance regional traffic that requires faster trips, it may be counterproductive to designate land adjacent to that road for neighborhood commercial and residential development. Such land use requires a high level of access (and slower traffic). Likewise, it is just as counterproductive to designate large-scale regional development along a street intended to serve neighborhood needs.

The Need for a New Dallas Thoroughfare Planning Process

The proposed thoroughfare planning process recognizes that thoroughfares need to be designed recognizing their role in the entire network of streets and that they must balance their regional, subregional and neighborhood functions. This new thoroughfare planning process is based on using context sensitive design.

CSD is a collaborative, interdisciplinary process to transportation planning and design that involves all stakeholders to develop a network that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSD considers the total environment within which a transportation project exists.

This allows special land use areas such as mixed-use, transit oriented and urban neighborhood developments to utilize context sensitive transportation elements with the goal of creating a connection between land use and transportation.

As a street passes by various land uses (illustrated in the graphic), the land use should influence its character. To properly plan for a street that is context sensitive, its right-of-way must be divided into separate, but related "realms."

Street Realms

A comprehensive thoroughfare plan will address issues in three "realms." The first is the travelway realm, the area between the curbs commonly known as the street, the second is the pedestrian realm, which runs from the pavement edge to right-of-way line, and the last is the context realm, the area that interfaces with adjacent buildings, sites, and land uses. In addition, a fourth element – called the intersection realm – must be carefully planned. These and other thoroughfare planning terms are more fully defined below.

- **Context Realm:** Properties and activities adjacent to the public right-of-way that contribute to character and mobility. Buildings, landscaping, land use mix, site access and public and semi-public open spaces are elements that primary shape the context. Some transportation facilities, notably transit stations and parking lots and structures, are included in the context realm.
- **Pedestrian Realm:** This is the public right-of-way, typically including planting areas and sidewalks, that encompasses the space from the curb to the front property line of adjoining land. The pedestrian realm can be divided into a series of zones that highlight different uses. These include: edge zone, furnishing zone, throughway zone, and, on blocks with ground-floor retail, frontage zone. The relative importance of the zones is in part the function of the adjacent land use. Transportation facilities including bus shelters and waiting areas and bicycle parking may be part of the pedestrian realm. Often the on-street parking lane overlaps with the pedestrian realm because of the pedestrian activity generated by parked vehicles.
- **Travelway Realm:** This is the public right-of-way from curb to curb and includes parking lanes (which overlap with the pedestrian realm). Also included are medians, transit stops (bus stops) where passengers get on and off, travel lanes for private vehicles, goods movement, public transit vehicles and bicycles.
- **Intersection Realm:** The realm includes public right-of-way and a portion of abutting private property that together form a frame, with the intersection at its center. The intersection realm is characterized by a high level of activity and shared use, complex traffic movements, potential conflicts between different modes of transportation (bus, bike, truck, car, etc.) and special design treatments.
- **Context/Pedestrian Overlap:** Ground-floor building frontage and any overhanging elements (arcades, awnings, etc) create one part of the overlap between the private development in the context realm and the public space of the pedestrian realm. Also included are paths and walkways on private property adjoining the street.
- **Pedestrian/Travelway Overlap:** The travelway areas where pedestrians are common are parking lanes and crosswalks (marked or unmarked). The parking lane frequently doubles as space for public transit riders to get on and off. In some locations, it may occasionally be used for community events such as farmer’s markets or parade viewing or the like, and in which case, traffic on the street (travelway) will be restricted.

New Street Typologies for Dallas

Two context zones (mixed-use/special districts and traditional single-use districts) form the underpinnings of street typologies used in the forwardDallas! Vision. These context zones help define which street typologies work best in each of the Vision’s Building Blocks. With an array of street types to select from, streets can be carefully crafted than under the current classification system to more closely meet the needs of the community and traveling public. These additions and refinements to the street types provide the City with more flexibility to address a variety of urban environments or “contexts.” The thoroughfare types shown below are the basis for context sensitive design (CSD) choices in the City of Dallas.



Context Based Street Typologies for Walkable Mixed-Use Building Blocks

Transit Streets

Transit-friendly streets “balance” the needs of various modes of transportation, without favoring one over the other. In many cases, this means altering a street to make public transit use more efficient and convenient. While this makes the street less efficient for automobiles, it still accommodates them. When done correctly, the alterations create equilibrium among public transit, cars, bicycles and pedestrians. There are two ways to provide public transit amenities. Most common are bus and light-rail stops spaced along a street. However, bus stops can be consolidated at a transfer center, allowing a concentration of passenger amenities at a single location, much like the DART Downtown Garland Station.

When placed on sidewalks, public transit amenities are part of a range of “street furniture” that is essential to designing a successful transit street. Trees, wide sidewalks, trash cans and other amenities make streets more comfortable and active; the DART bus shelter on Commerce Street is a great example of well-placed transit amenities.

Traditional intersections and traffic signal timing are often designed to benefit personal vehicles rather than public transit vehicles. Transit streets incorporate multimodal intersections (car, bus, bike, etc.) into their design. Wide sidewalks along the full length of a street or just at intersections and bus stops create more comfortable pedestrian areas and safer waiting places, while preserving traffic lanes.


Mixed-Use Streets

This street type is compatible with Mixed-Use/Special Districts, Transit Corridors and Urban Neighborhoods. Mixed-use streets are similar to transit street typology, however, they typically do not have dedicated right-of-way for public transit vehicles and place less emphasis on transit amenities.

The sidewalk in a mixed-use street is the primary physical environment of the street realm. Often sidewalks in mixed-use areas are larger than travel lanes, as is true, for example, in the West End of Dallas. The sidewalk is where most activity occurs. For mixed-use streets to be successful, buildings must be designed to relate to and face the sidewalk and street. After urban design features and sidewalks, on-street parking is the most important element in a mixed-use street design. The presence of parked cars reduces travel speeds, separates pedestrians from the travelway realm and fosters an exciting retail climate. State Thomas, for example, uses on-street parking as a buffer for pedestrian activity.

Main Streets

Main streets are similar to mixed-use streets in that on-street parking helps the street and pedestrian realms coexist. Where these streets differ is in the scale of sidewalk. Main streets typically adjoin lower-density developments and may not have a mix of uses that include residential, office and retail. Nevertheless, they should provide a comfortable pedestrian environment. This can be achieved by maintaining the human



scale in main street settings. Main streets typically have a 1:3 height to width ratio. When constructing new main streets or preserving existing ones it is important to keep lane widths proportional to building fronts.

Context Based Street Typologies for Conventional Separate Use Building Blocks

Commercial Streets

Commercial streets currently dominate Dallas' commercial centers/corridors, business centers/corridors and campus districts. High priority is placed on moving traffic and providing access to businesses. These streets typically have six to eight travel lanes, each lane ranging from 11 to 12 feet wide, a high number of access points for developments and few pedestrian and bicycle facilities.

Commercial streets can be pleasant for pedestrians and still efficiently move cars and buses. Some minor modifications in the travelway realm in commercial areas would make them more pedestrian-friendly places. If people are going to walk between two shops or a shop and restaurant, office or other commercial establishment, and if these areas are to be well-served by DART, then efforts should focus on improving shared parking and the connectivity between separate parcels (say, shopping centers across the street from each other). Improvements can make a commercial or business area a “park once and walk” district.


Improving connectivity with shared parking and better pedestrian features will also alleviate the need for additional vehicular capacity. If people park once and walk to multiple locations during one trip, less pressure will be placed on the adjacent streets. Montfort Drive west of Valley View Mall is an example of an existing commercial street that could become a “park-once” district.

Industrial Streets

Industrial streets are typically designed for large vehicles, which means lanes are 13 to 15 feet wide, wider than normal streets. Sidewalks, when present, are usually attached and a small planting strip maybe on the outside of the sidewalk. The design usually excludes on-street parking, medians, bicycle lanes and trees. Streets between Stemmons Freeway and the Trinity River levee are examples of industrial streets.

Residential Streets

Residential streets serve two major purposes in Dallas. As arterials, residential streets balance multimodal mobility with land access. As collectors, residential streets are designed to emphasize walking, bicycling and land access over mobility. In both cases, residential streets tend to be more pedestrian-oriented than commercial streets, but not as multimodal as mixed-use or transit streets. Residential streets generally consist of two to four travel lanes that are a total of 14 to 18 feet wide and have on-street parking. In Dallas neighborhoods built in the last 60 years, homes are set back from residential streets with ample space for landscaping and trees. Sidewalks in these neighborhoods abut the street.



In historic residential areas, homes typically are placed closer to the street. On-street parking is permitted and often a tree-lined planting strip separates the street from the sidewalk (as in Hollywood Heights). Pedestrian-level lighting is used on many of Dallas' residential streets.

One-Way Couplets

One-way couplets are pairs of one-way streets that function as a single higher-capacity street. Couplets are usually separated by one city block, allowing travel in opposite directions. One-way couplets primarily serve higher-density commercial and mixed-use areas of Dallas such as Downtown, Deep Ellum and Uptown and are designed to have a higher vehicular capacity than an equivalent two-way street. One-way couplets can be designated as any of the six street typologies: residential, main, transit, mixed-use, commercial or industrial.

Conclusion


Even today, about 50 percent of Dallas' population is either too young or too old to drive. That means that services, schools and stores not readily accessible by foot or by bicycle must be reached by car (driven by someone else) or public transit. This has important ramifications for development, which must embrace mixed-use areas that encourage walking as well as generous sidewalks and trails to connect homes, businesses and services. Dallas is moving toward this idea with more walkable neighborhoods and mixed-use centers like Mockingbird Station.

ForwardDallas! proposes a modified hierarchy of streets, a new means of designing streets and an opportunity to coordinate transportation and land use planning, while still using the framework provided by City and other governmental agencies. The goals of forwardDallas! – to create a city that welcomes land-saving densities, a walkable mix of uses and an integrated range of housing opportunities – must include transportation options that offer residents real choices in mobility and access. Significant changes in land use and economics cannot be realized without fundamentally restructuring the city's transportation system in a way that allows for growth while maintaining a pleasant lifestyle.

Context Sensitive Thoroughfare Planning and Design Process

The proposed thoroughfare planning process is both comprehensive and context sensitive. Context sensitive design (CSD) requires transportation projects serve all users and meet the needs of the contexts (people and land uses) through which they pass. This process divides the context sensitive thoroughfare planning and design process into five stages. These are:

Stage 1: Creating a Transportation Plan. This includes advanced planning activities needed to develop a transportation plan that is integrated with land uses and the related tasks that lead to identification of individual thoroughfare projects. In this stage, a broad spectrum of alternatives are developed and evaluated, usually in a public process. This level of planning involves many individuals and professions in



addition to the thoroughfare designer and often establishes the policy framework, goals and objectives from which context sensitive thoroughfare design is implemented.

Stage 2: Understanding Community Vision. This stage confirms or establishes the goals and objectives, performance measures and selection criteria for an individual project and requires input from an interdisciplinary team, public agencies and stakeholders. A key objective is to learn or clarify the long-range vision of the area or project so the thoroughfare design supports this vision. This stage often results in focused area plans or concepts that guide thoroughfare design.

Stage 3: Developing a Project Concept. In this stage, the context and thoroughfare types are identified. Design controls and criteria are then selected for a particular street. This stage requires an understanding and assessment of land use and community and environmental characteristics. With this knowledge, a context zone can be selected and identification of functional class, traffic projections and multimodal needs can be established in order to select a thoroughfare type. An interdisciplinary approach will be necessary to establish the relationships between context zone and thoroughfare type.


Stage 4: Testing Project Concept. This stage establishes the parameters, controls, constraints and priorities for the thoroughfare design and focuses on developing, evaluating and refining initial concepts and alternatives. Testing the concepts typically involves analysis at the network level as well as the corridor or facility level, assessment of tradeoffs and evaluation of potential environmental impacts. The initial design may include related activities such as development of access management and transportation systems management plans. Constraints, such as right-of-way issues, are considered in this stage. Design elements are prioritized so the most critical elements can be implemented. This stage ends with a conceptual design for the thoroughfare.

Stage 5: Project Design. This stage takes the initial design to preliminary and final engineering and encompasses detailed design of the project's components, from pedestrian facilities to the travelway and intersections. Tradeoffs and design priorities from the previous stage are integrated into the preliminary design. While the transportation engineer will be the lead person at this point, work should involve an interdisciplinary team to address issues related to adjacent buildings, transit stops, landscaping, and urban design features. This stage requires a review of the first two stages to ensure the project is achieving community vision, goals and objectives.

This process, with its five stages, will unite the city's land uses and street hierarchy. It will also identify the priority elements for each street typology. These elements will be tailored to meet the needs of the adjacent land use and the street function.

Priority Elements within Each Development Typology

The availability of right-of-way becomes an issue in these plans and decisions will need to be made about whether additional right-of-way is purchased or if some elements within the right-of-way will need to be either limited or eliminated. In order to determine what elements are necessary, elements must be prioritized. The following table will help the designer determine which elements take priority within each



development palate. This will help the designer, when faced with limited right-of-way, answer a question such as, “Do I eliminate the sidewalk, or do I eliminate a travel lane?”

The Transportation Element provides a “Priority Elements” table that ranks each element for every street type. These priorities should be used in order to maximize the usefulness of the right-of-way and to identify elements that should be emphasized in the context zone outside of the public right-of-way.

Number of Lanes Needed

The number of lanes needed on a given thoroughfare should be determined using two criteria. Traffic volume should take first priority in determining the number of lanes. The number of lanes needed is a function of the number of intersections per mile and level of service that is acceptable within a given area. It is recommended that either a transportation model or sub-area plan must be conducted to determine lane requirements. Second, the priority of through lanes within a specific land use palate needs to be reviewed. If a rich network of streets exists, that also needs to be considered.

Parking Lanes

On-street parking serves several critical needs – to meet parking requirements for nearby buildings, to protect pedestrians from traffic and to increase activity on the street. On-street parking seldom meets all of the parking needed by adjacent land use and typically supplements nearby off-street parking. The orientation of the parking lane should be determined according to street’s traffic volume and speed.

Typically on-street parking on arterial streets is parallel to the curb. Angled parking may be used on low-volume, low-speed collector or local streets. On-street parking can decrease capacity in the through lanes between 3 percent and 30 percent, depending on the number of lanes and the frequency of parking maneuvers.



forwardDallas!

Let's build our future.

Transportation Update





Transportation Update

- *Indicators*
- *Roadway performance*
- *Transit performance*
- *How will we compare scenarios*
- *Observations*
- *Next steps*



Transportation Indicators *Roadway*

- *Vehicle Miles Traveled (VMT)*
- *Vehicle Miles Traveled (VMT) per capita*
- *Miles of congested roads*
- *Percent of VMT that is congested*
- *Total Vehicle Hours Traveled (VHT)*
- *Vehicle Hours Traveled (VHT) per capita*
- *Total Vehicle Hours of Delay (VHD)*
- *Vehicle Hours of Delay (VHD) per capita*
- *Mode share percent drive alone*
- *Average trip length*



Transportation Indicators

Transit

- *Mode share percent transit trips*
- *Transit miles traveled*
- *Total transit trips entering or leaving Dallas*
- *Total truck trips*



Roadway Performance



Source: Fregonese Calthorpe Associates,
Blueprint Denver

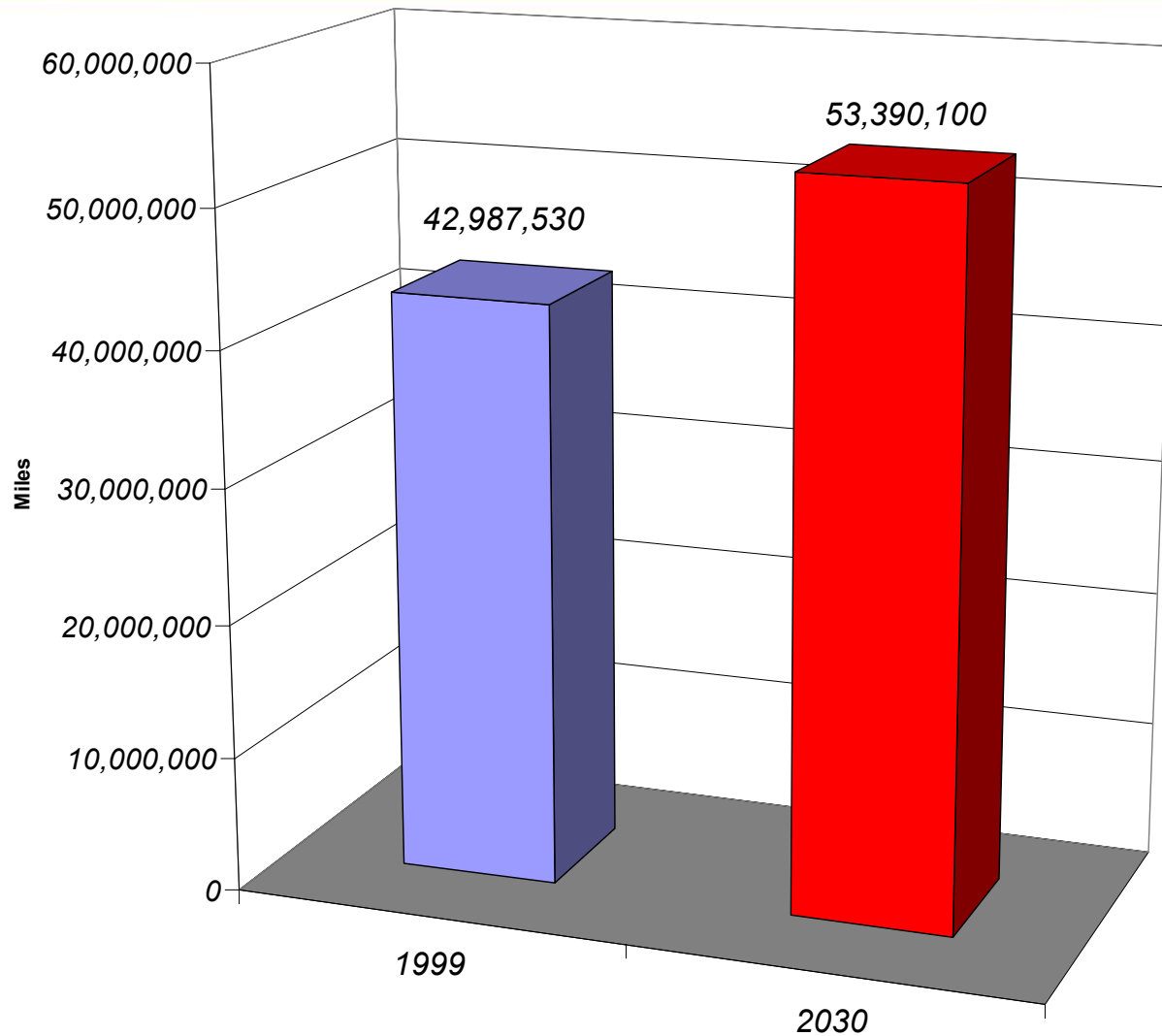
*What is the
most efficient
way to move 35
people?*



forwardDallas!
Let's build our future.



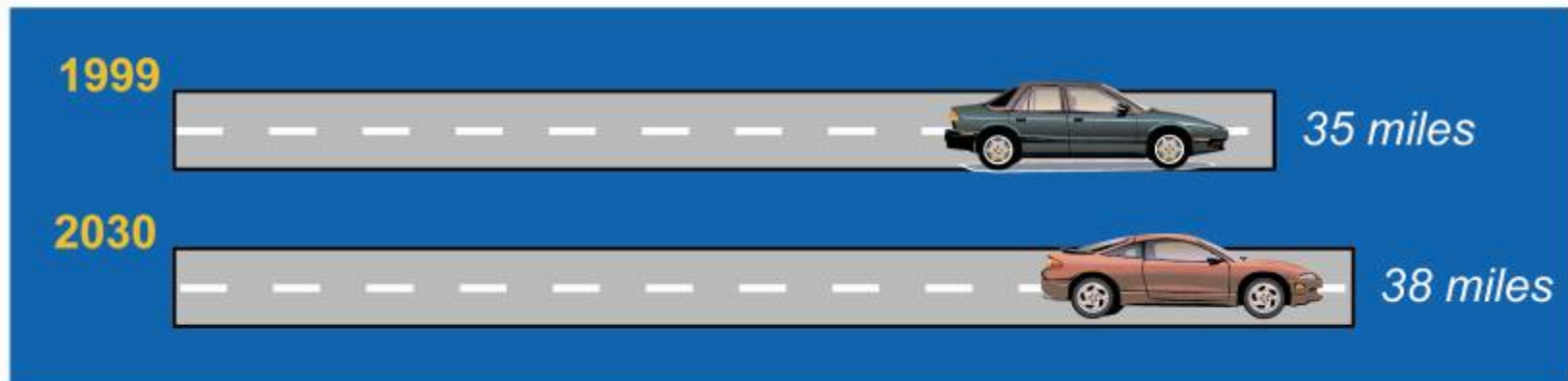
Vehicle Miles Traveled within Dallas





Vehicle Miles Traveled per Capita

Vehicle Miles Traveled per Capita

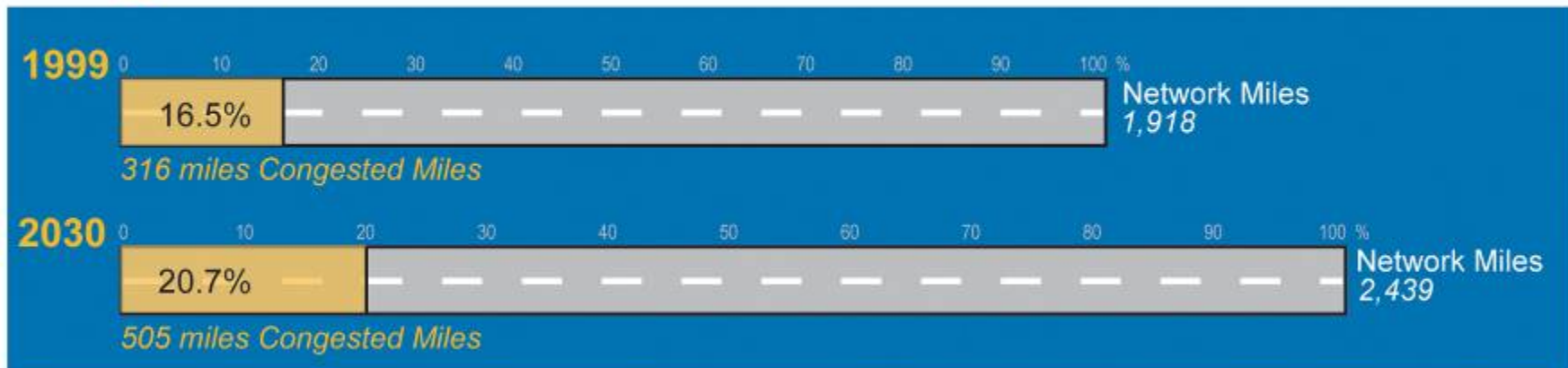


Characteristics	1999 Base Year	2030 Trend
Vehicle Miles of Travel (VMT)	42,987,530	53,390,100
Population	1,214,800	1,404,847
VMT per Capita	35	38



Miles of Congested Roadways

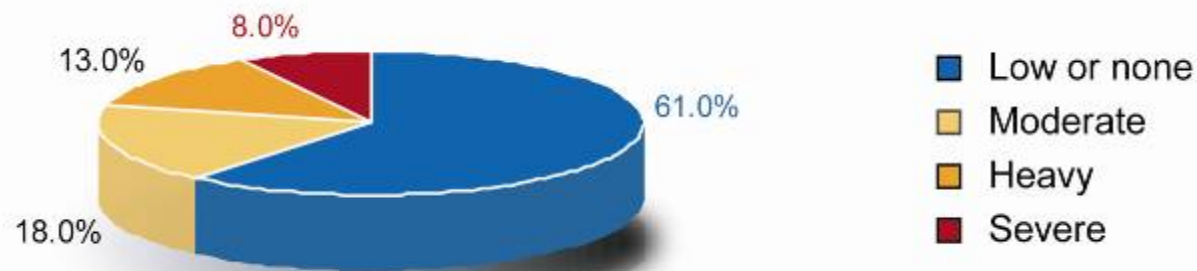
Congested Miles



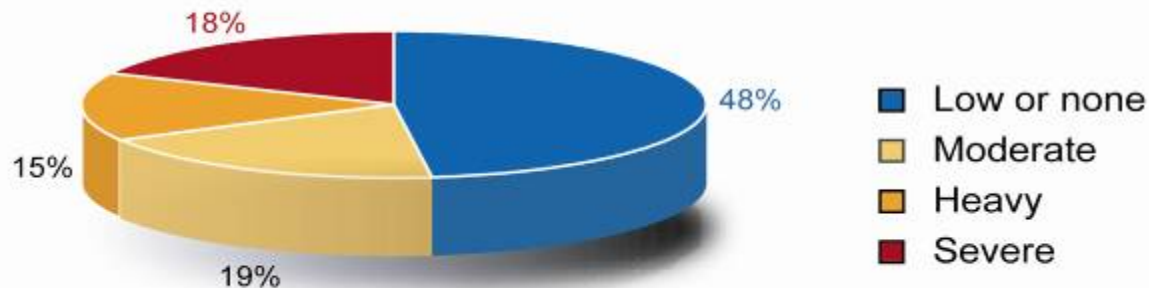


VMT in Congestion

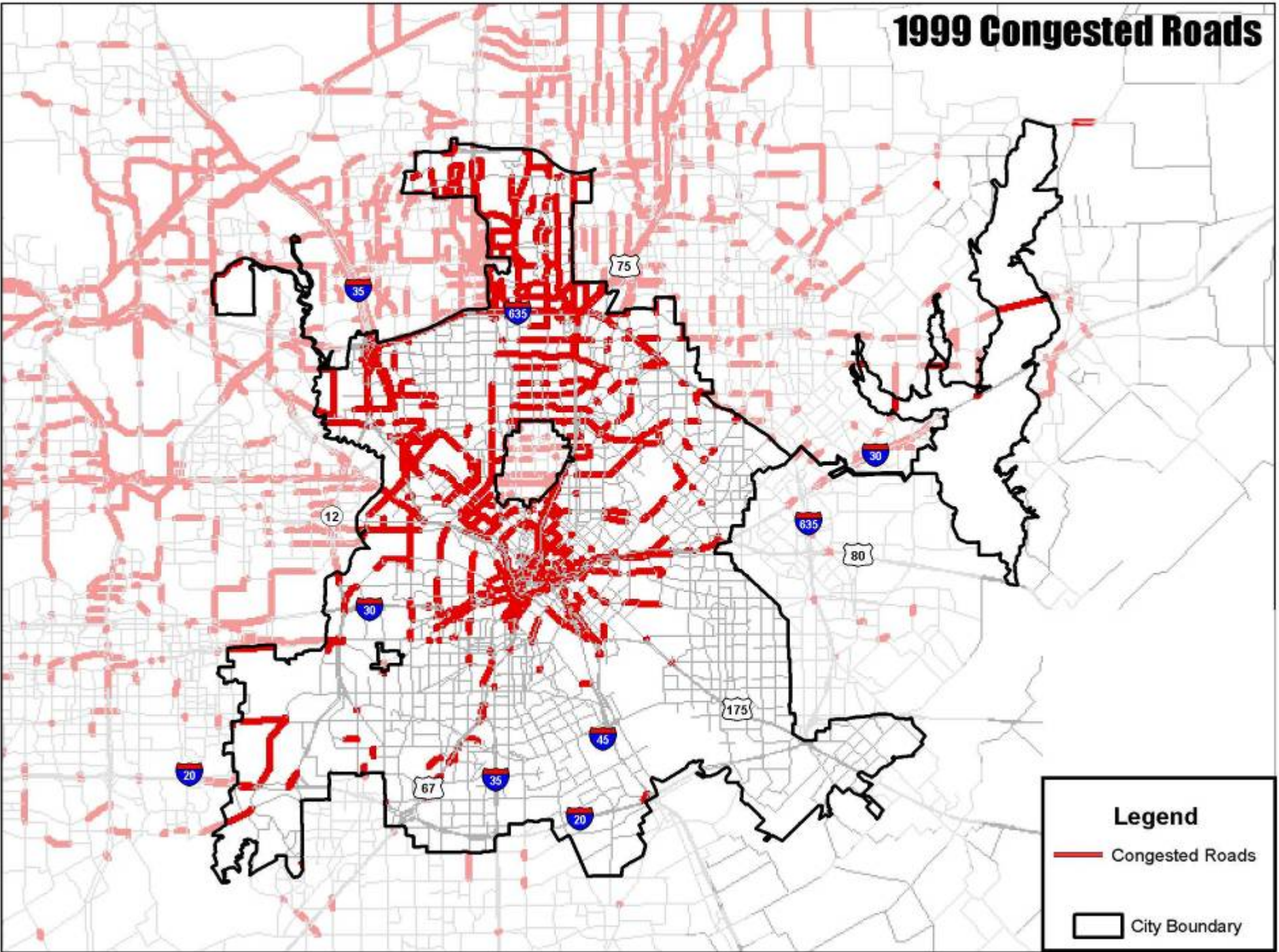
Percent of Vehicle Miles Traveled Under Congested Roadway Conditions in 1999





Percent of Vehicle Miles Traveled Under Congested Roadway Conditions in 2030



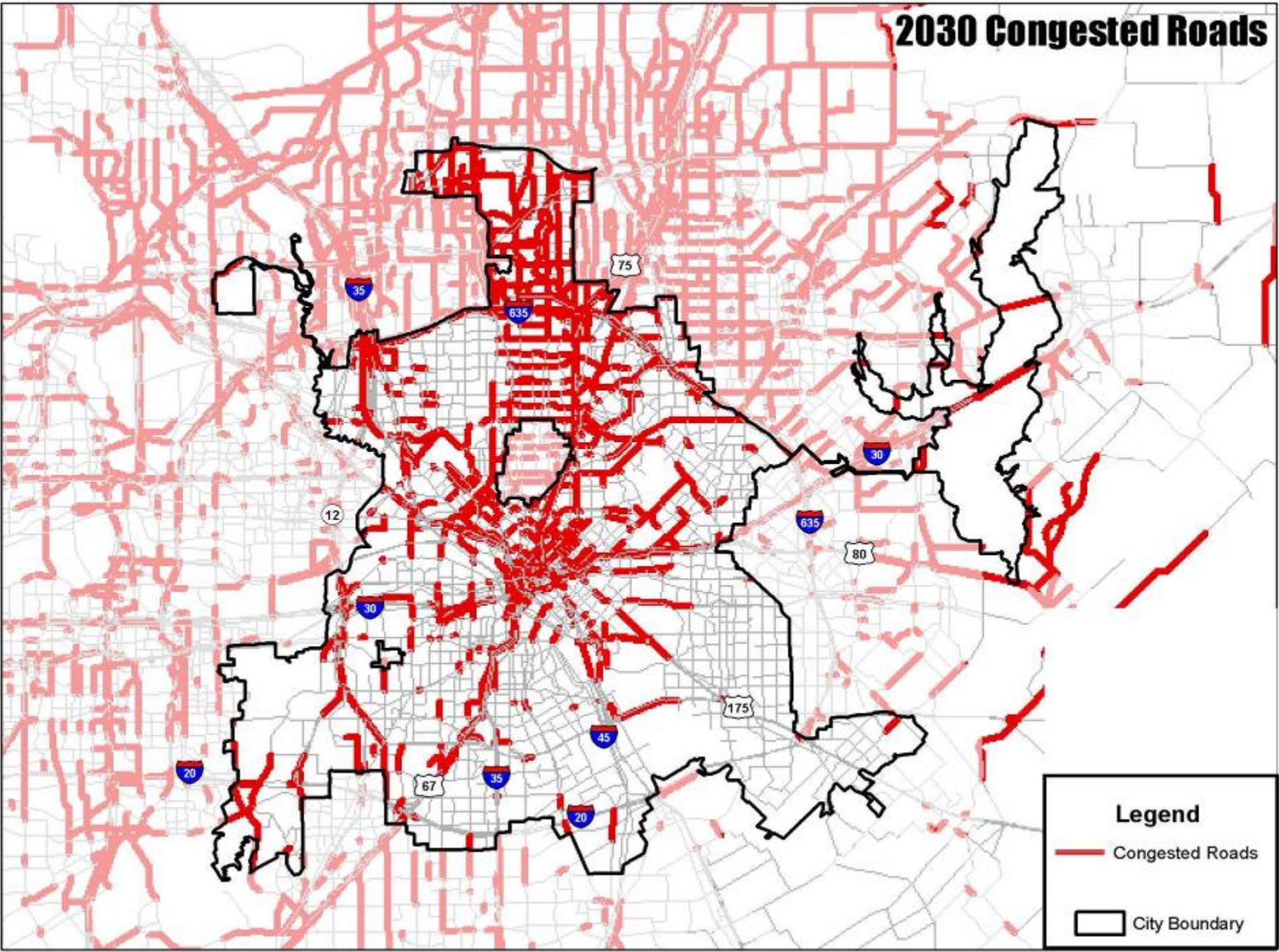
1999 Congested Roads



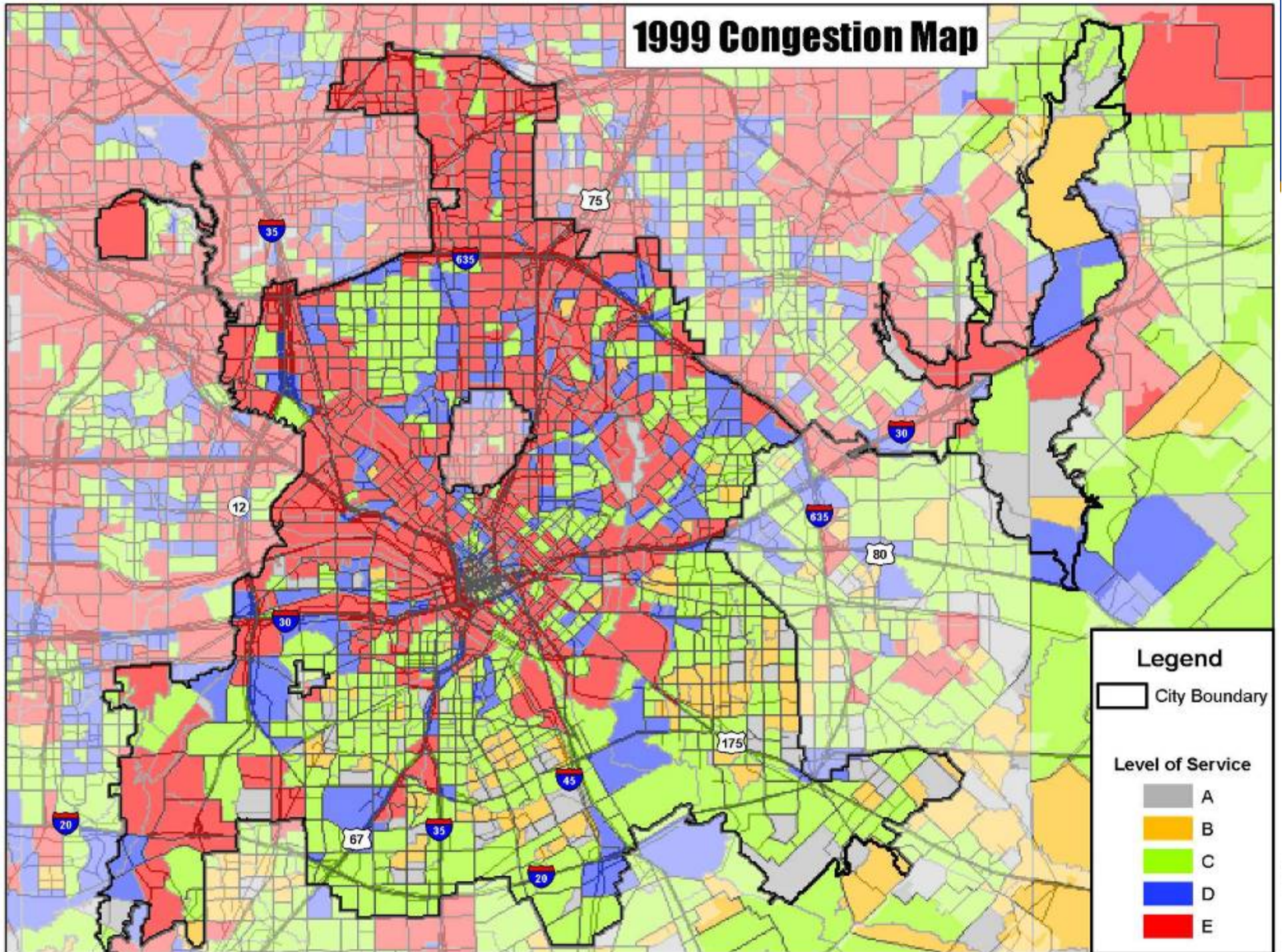
Legend

-  Congested Roads
-  City Boundary

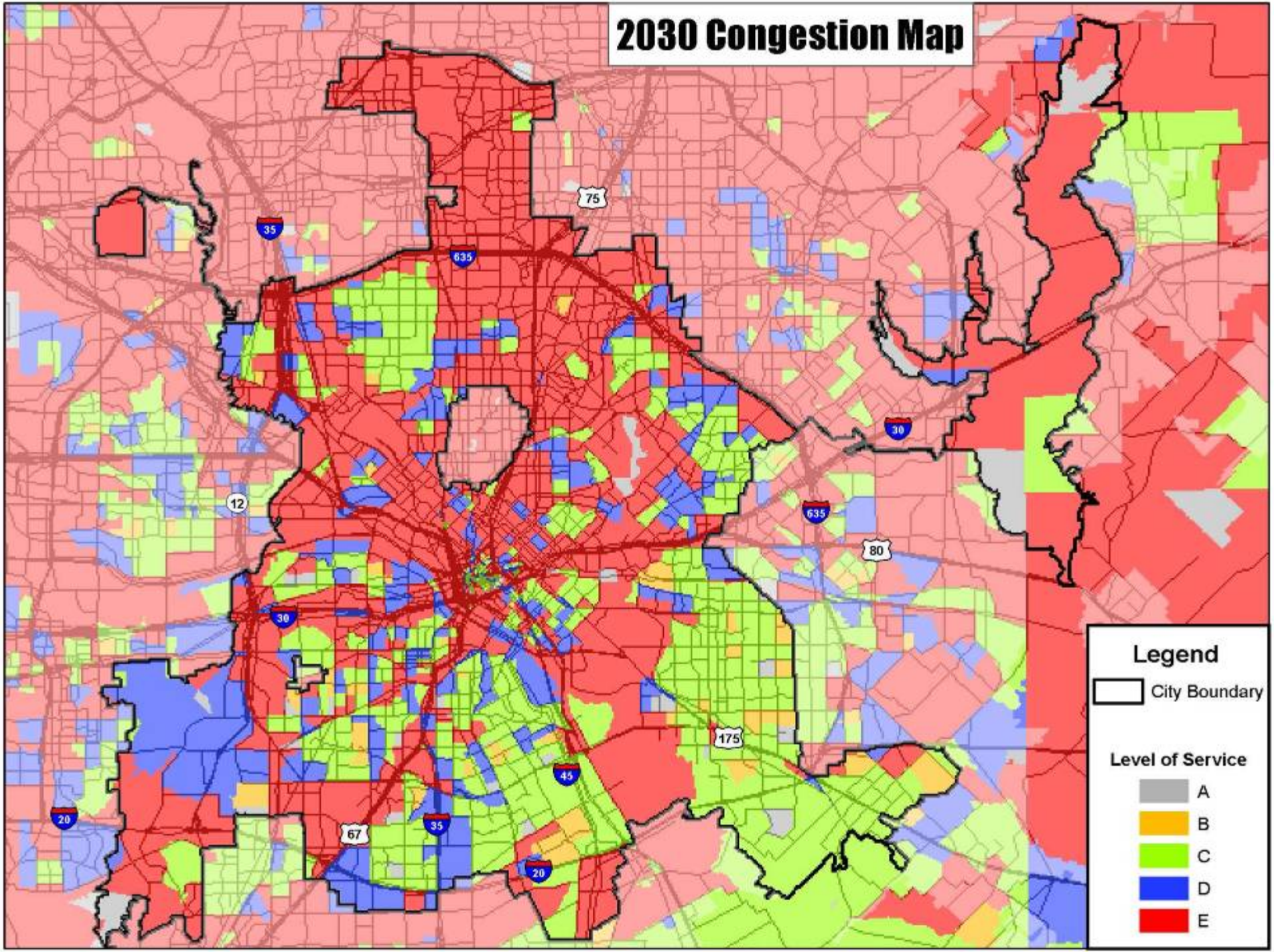
2030 Congested Roads



1999 Congestion Map



2030 Congestion Map





Vehicle Hours of Travel (VHT) and VHT per Capita

Characteristics	1999 Base Year	2030 Trend
Vehicle Hours of Travel (VHT)	1,183,600	1,491,200
Population	1,214,800	1,404,847
VHT per Capita (minutes)	59 Minutes	64 Minutes



Vehicle Hours of Delay (VHD) and VHD per Capita

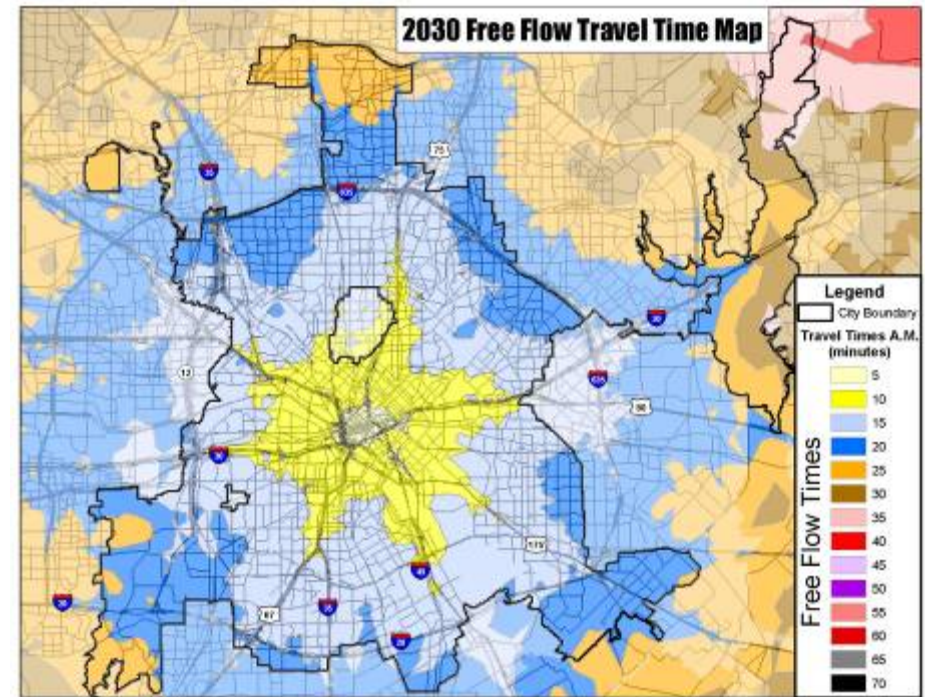
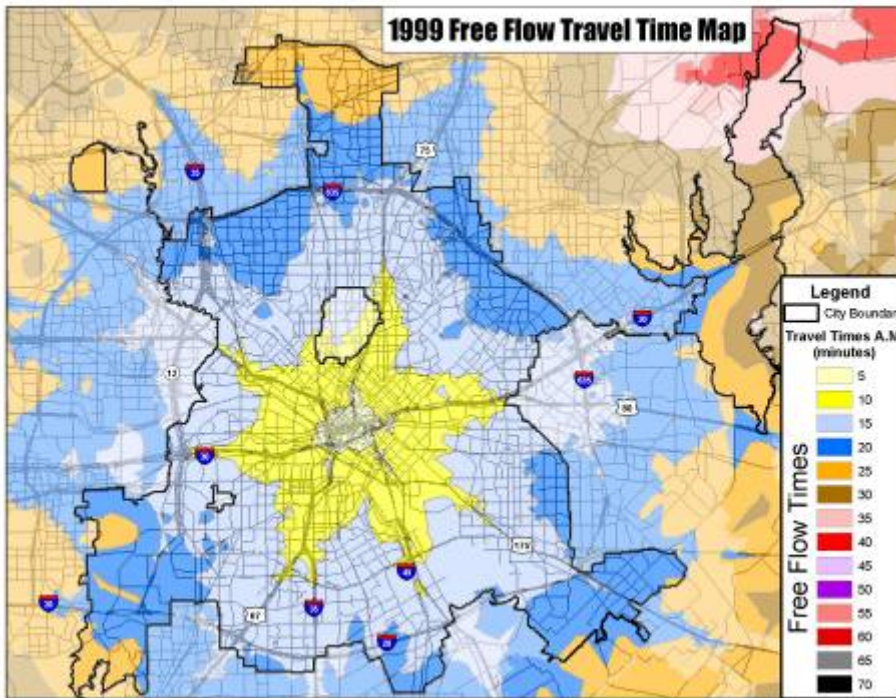
Characteristics	1999 Base Year	2030 Trend
Vehicle Hours of Delay (VHD)	198,500	275,000
Population	1,214,800	1,404,847
VHD per Capita (minutes)	10 Minutes	12 Minutes

forwardDallas!

Let's build our future.



Travel Time to Downtown

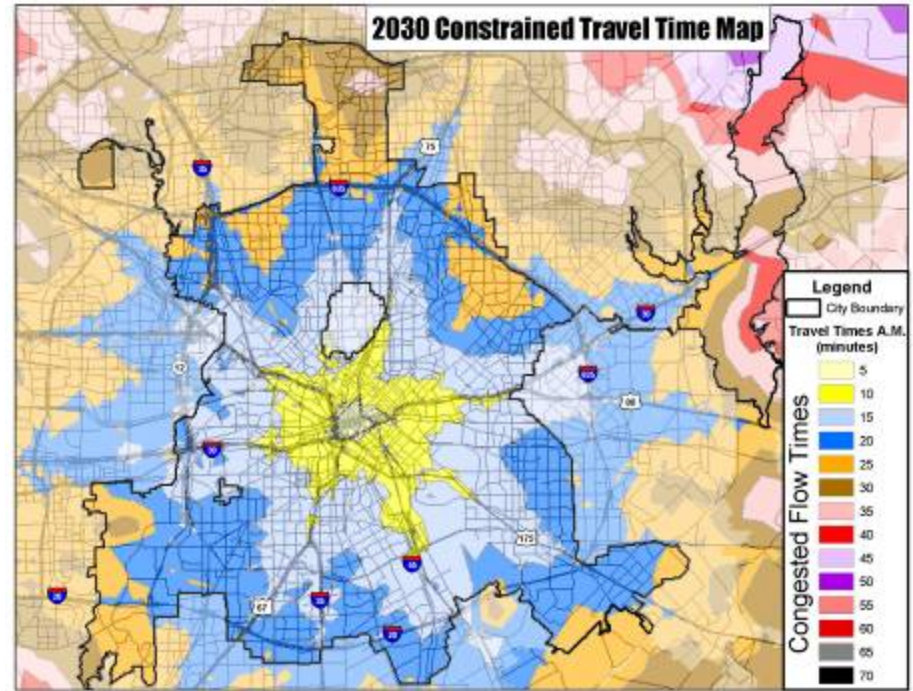
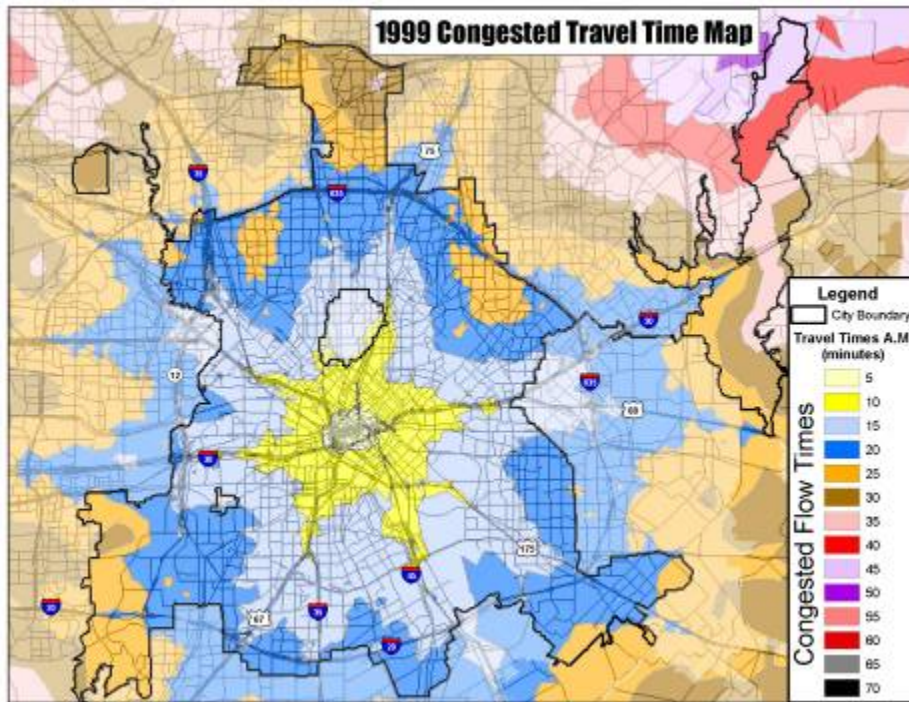


forwardDallas!

Let's build our future.



Travel Time to Downtown

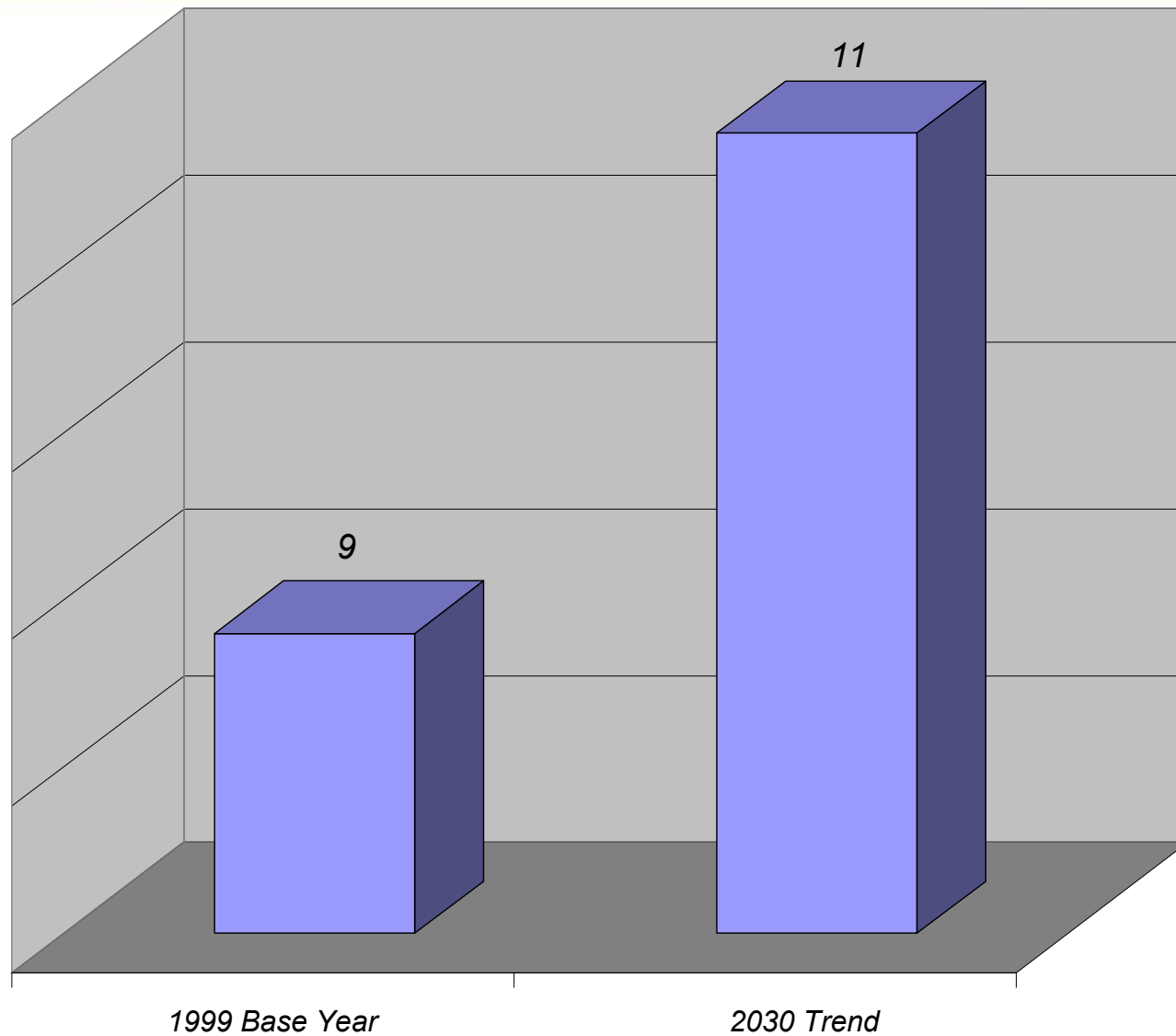


forwardDallas!

Let's build our future.



Average Trip Length

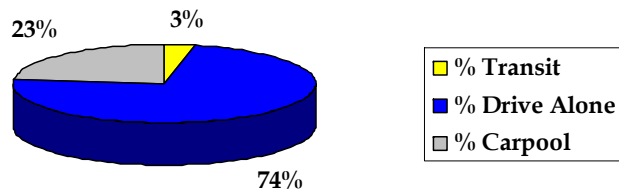




Mode Share

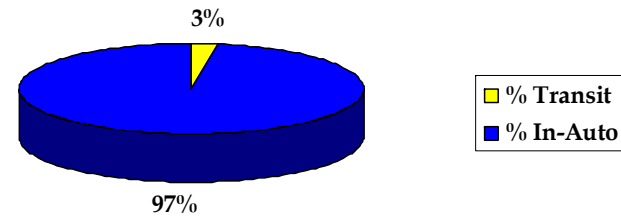
Work trips

1999 Work Trip Characteristics

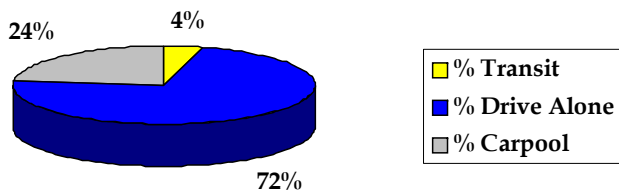


Non-Work trips

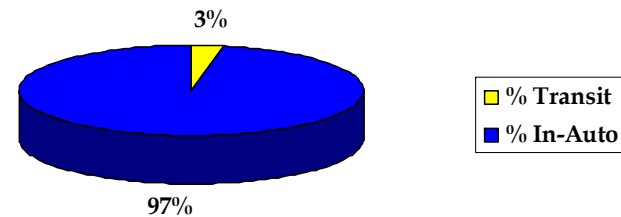
1999 Total Trip Characteristics



2030 Work Trip Characteristics



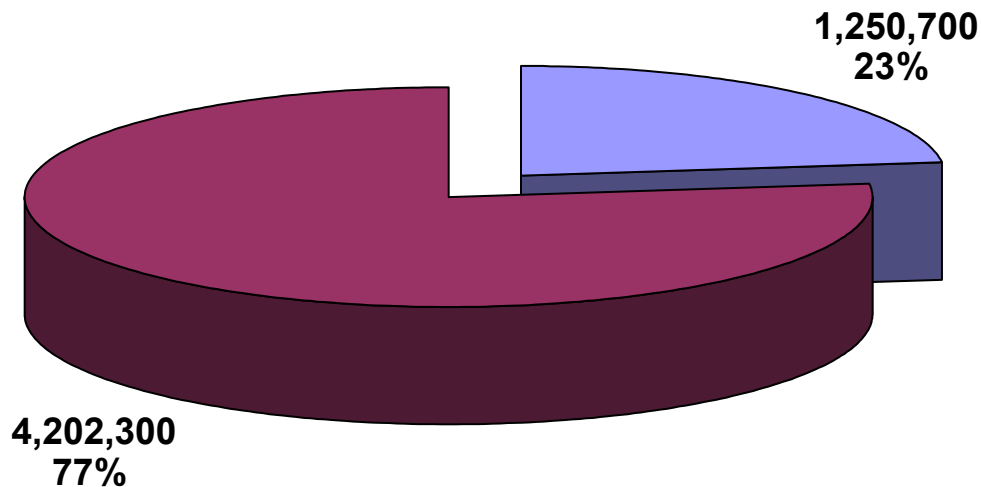
2030 Total Trip Characteristics



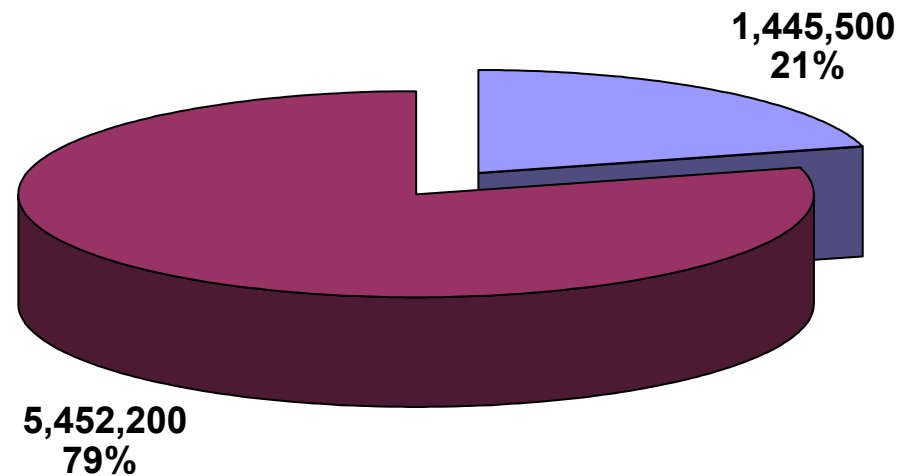


Where are the Trips Coming From?

1999 Roadway Trips



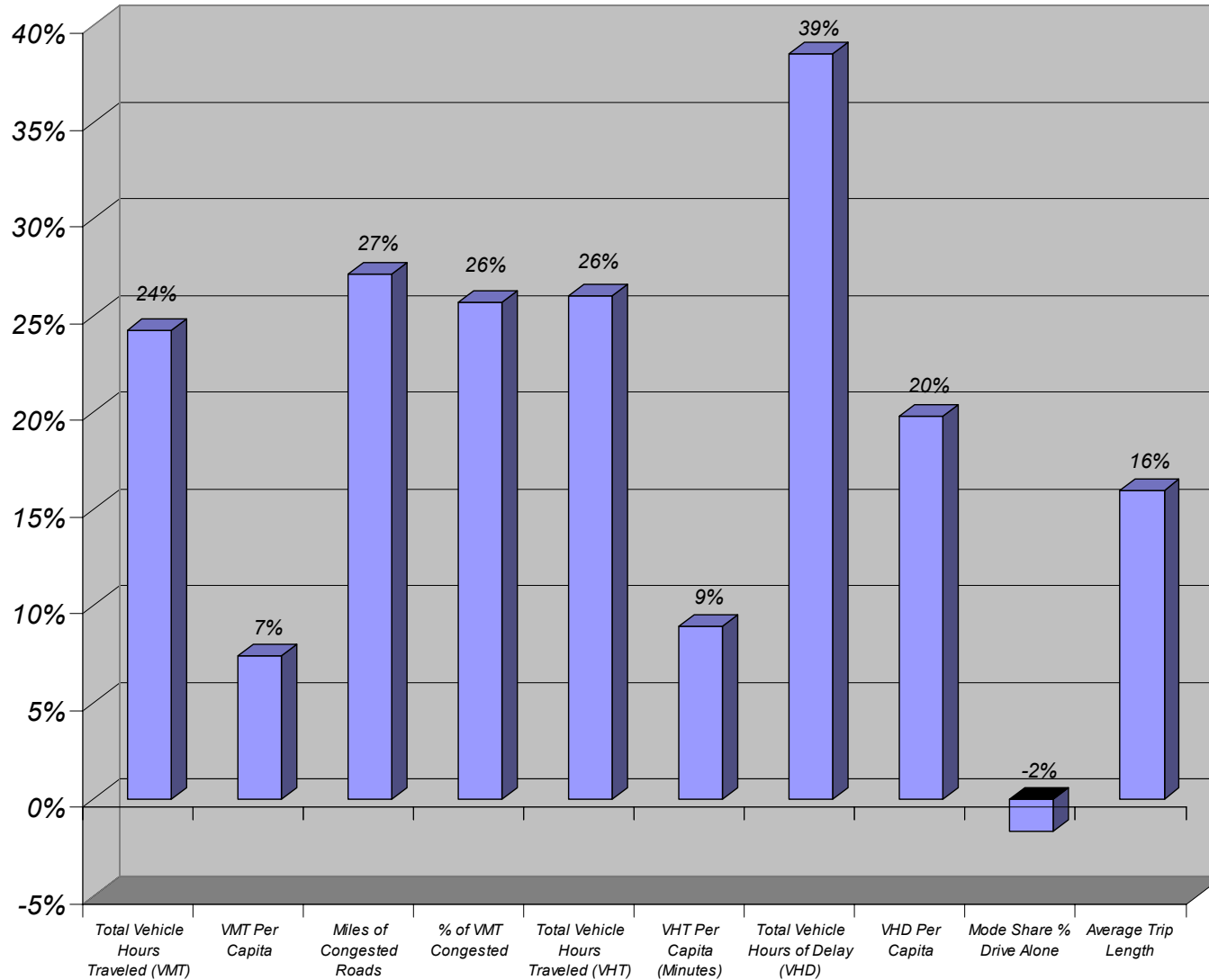
2030 Roadway Trips



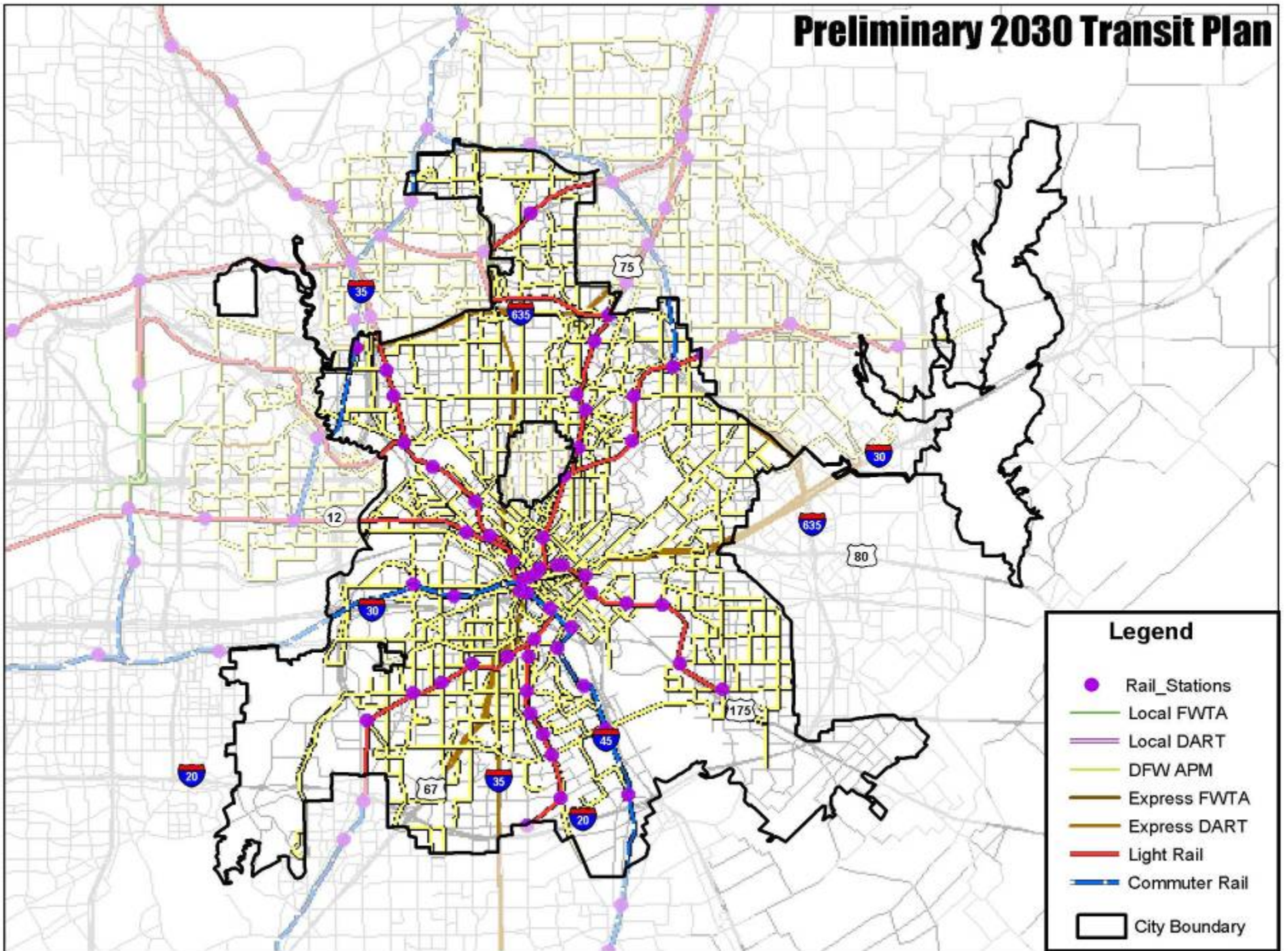
- Trips Staying Within Dallas
- Trips Entering or Leaving Dallas



Summary of Roadway Findings



Preliminary 2030 Transit Plan

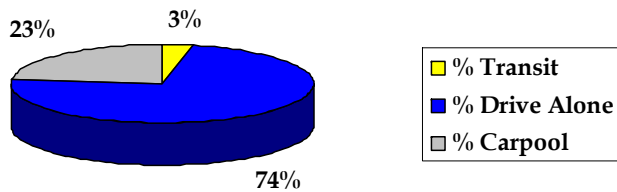




Mode Share

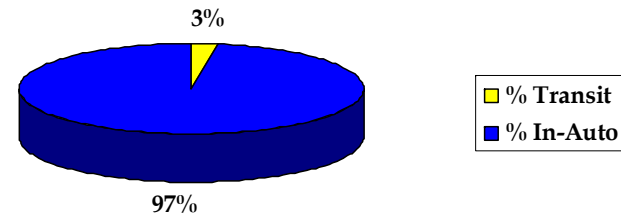
Work trips

1999 Work Trip Characteristics

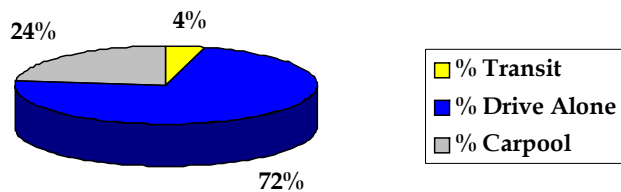


Non-Work trips

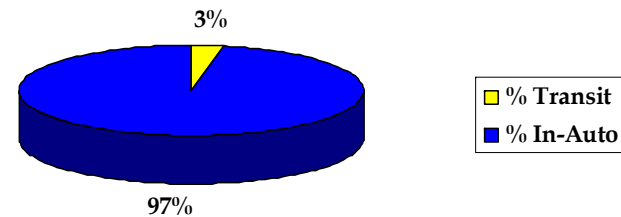
1999 Total Trip Characteristics



2030 Work Trip Characteristics



2030 Total Trip Characteristics



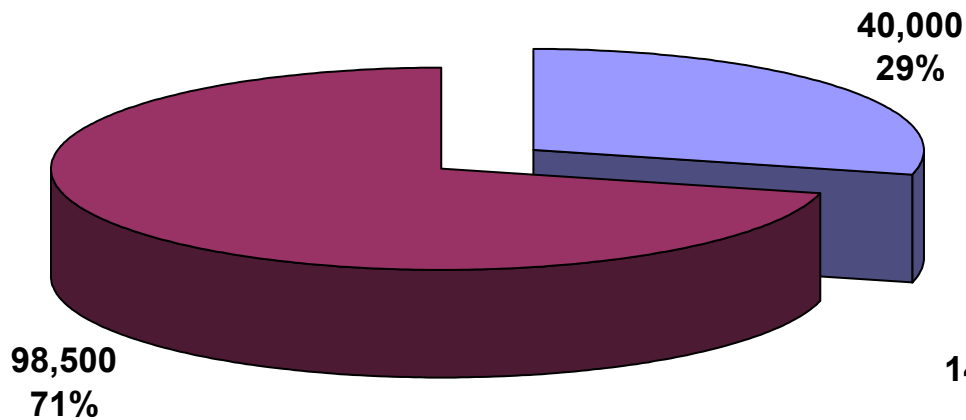
forwardDallas!

Let's build our future.

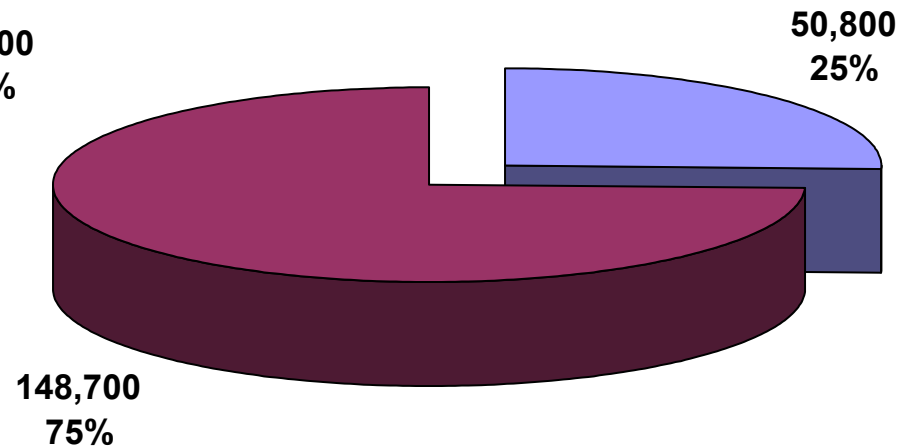


Where are the Trips Coming From?

1999 Transit Trips



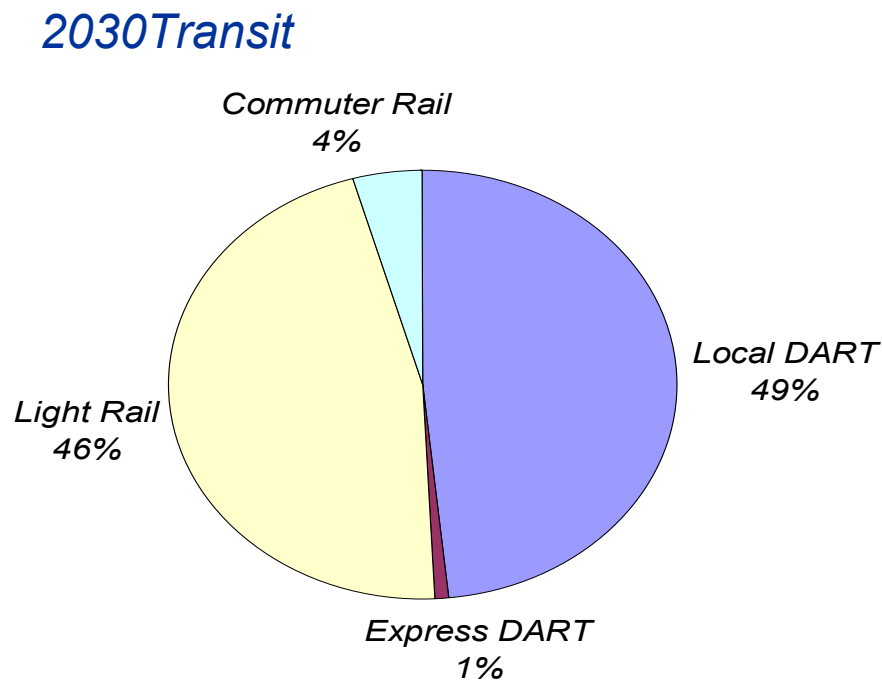
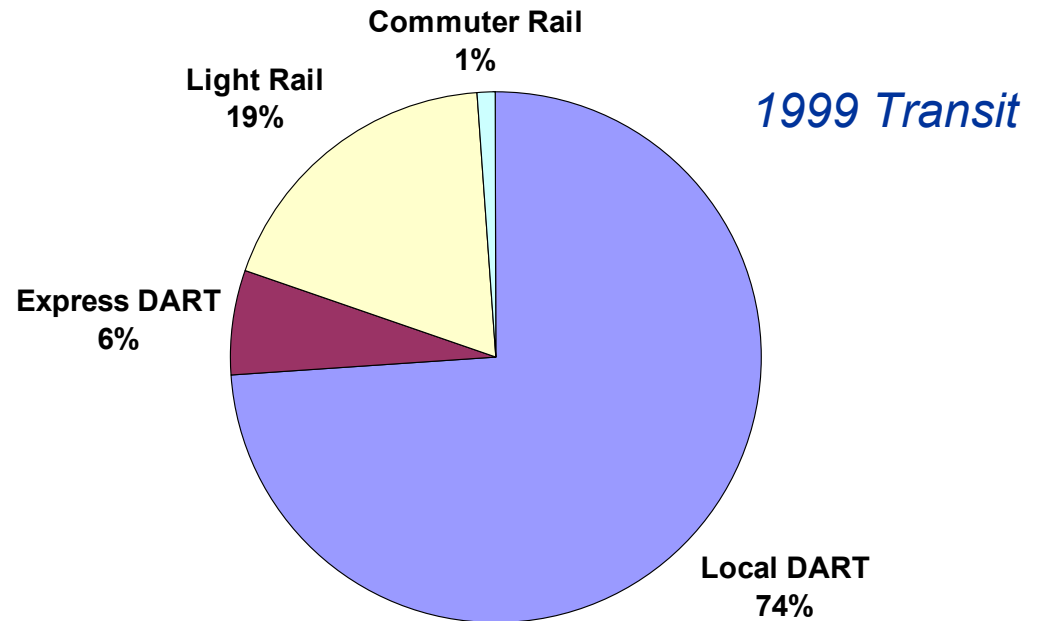
2030 Transit Trips



- Trips Staying Within Dallas
- Trips Entering or Leaving Dallas



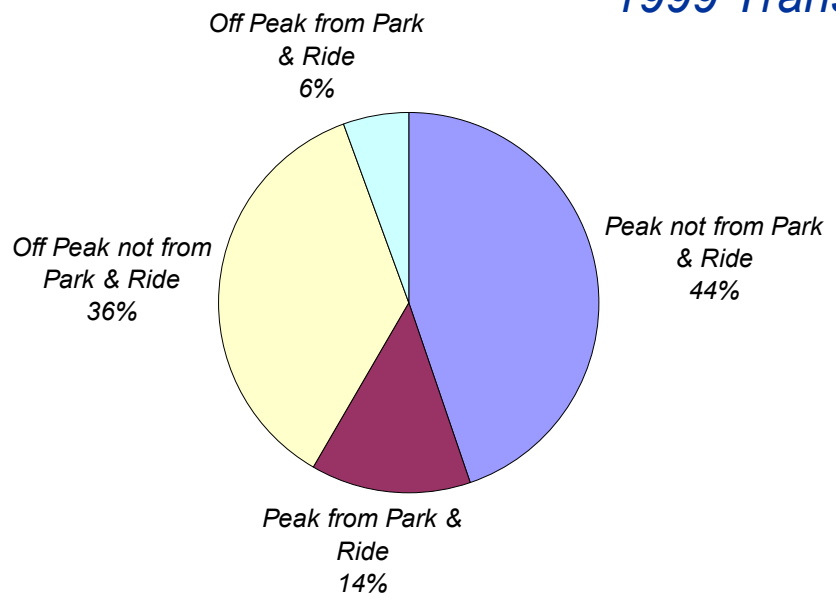
Transit Mode Shares



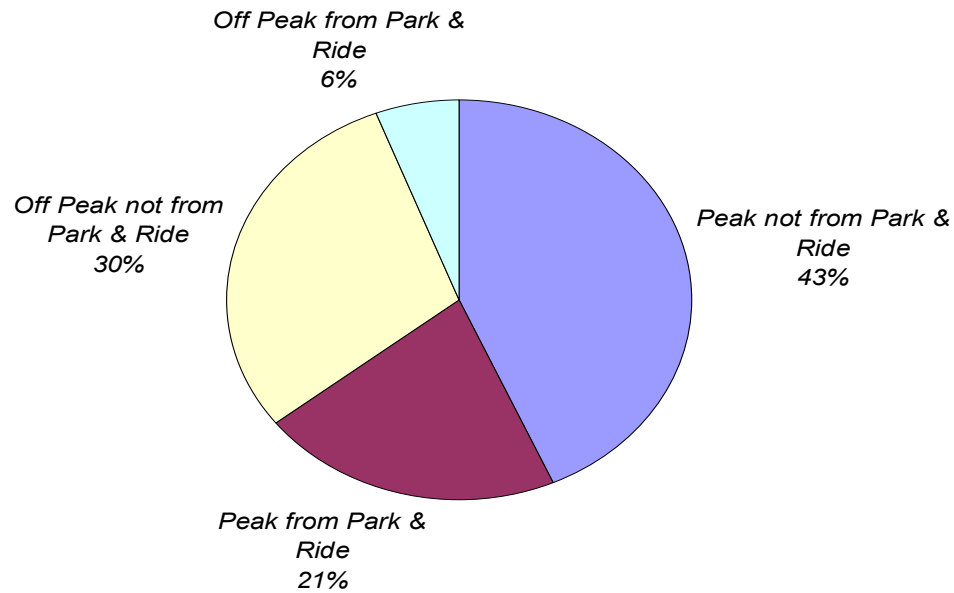


Transit Trip Origins

1999 Transit

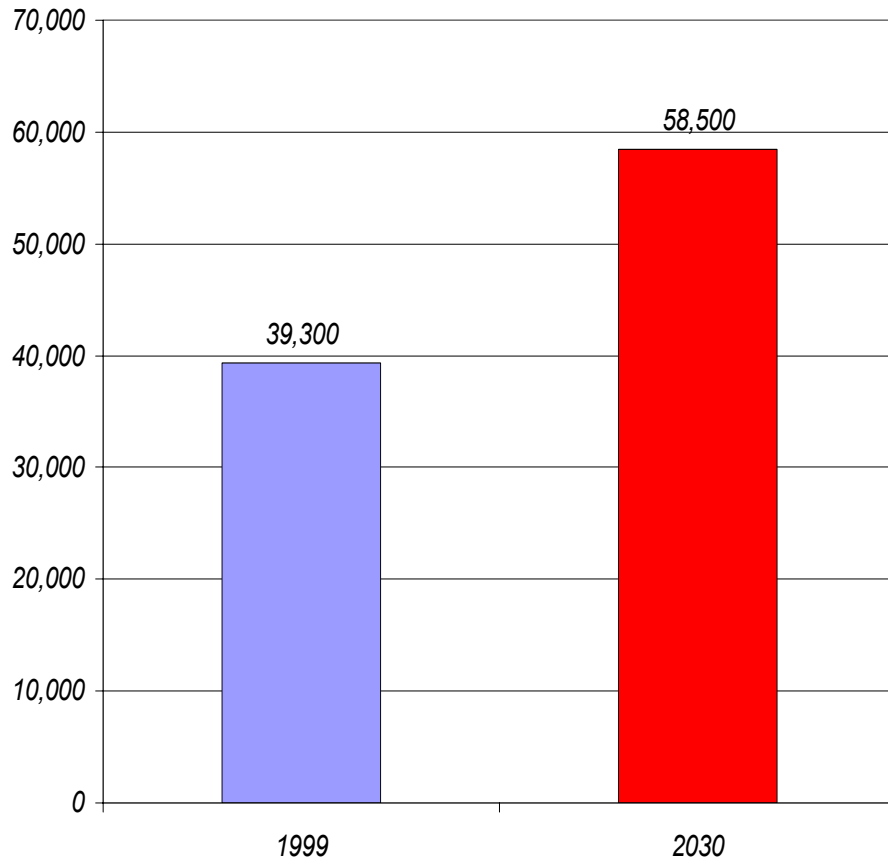


2030 Transit





Transit Miles Traveled



Characteristics	1999 Base Year	2030 Trend
Vehicle Miles of Travel (VMT)	39,300	58,500
Population	1,214,800	1,404,847
VMT per Capita	0.03	0.04

forwardDallas!

Let's build our future.

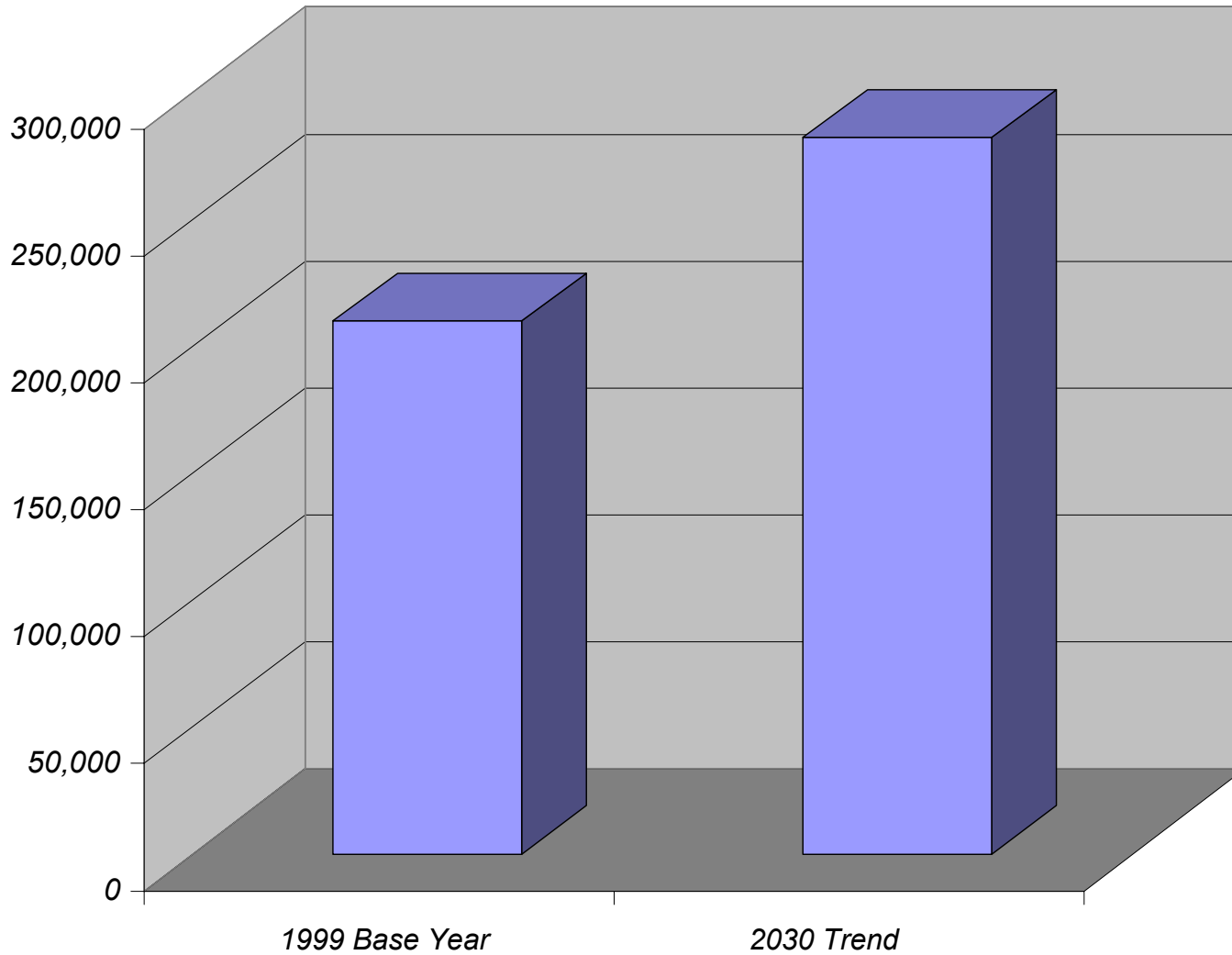


Freight Movement

- *NCTCOG is currently evaluating freight movements*
- *Trans-Texas corridor initiatives*
- *State Wide freight studies*
- *Look for opportunities to plan*

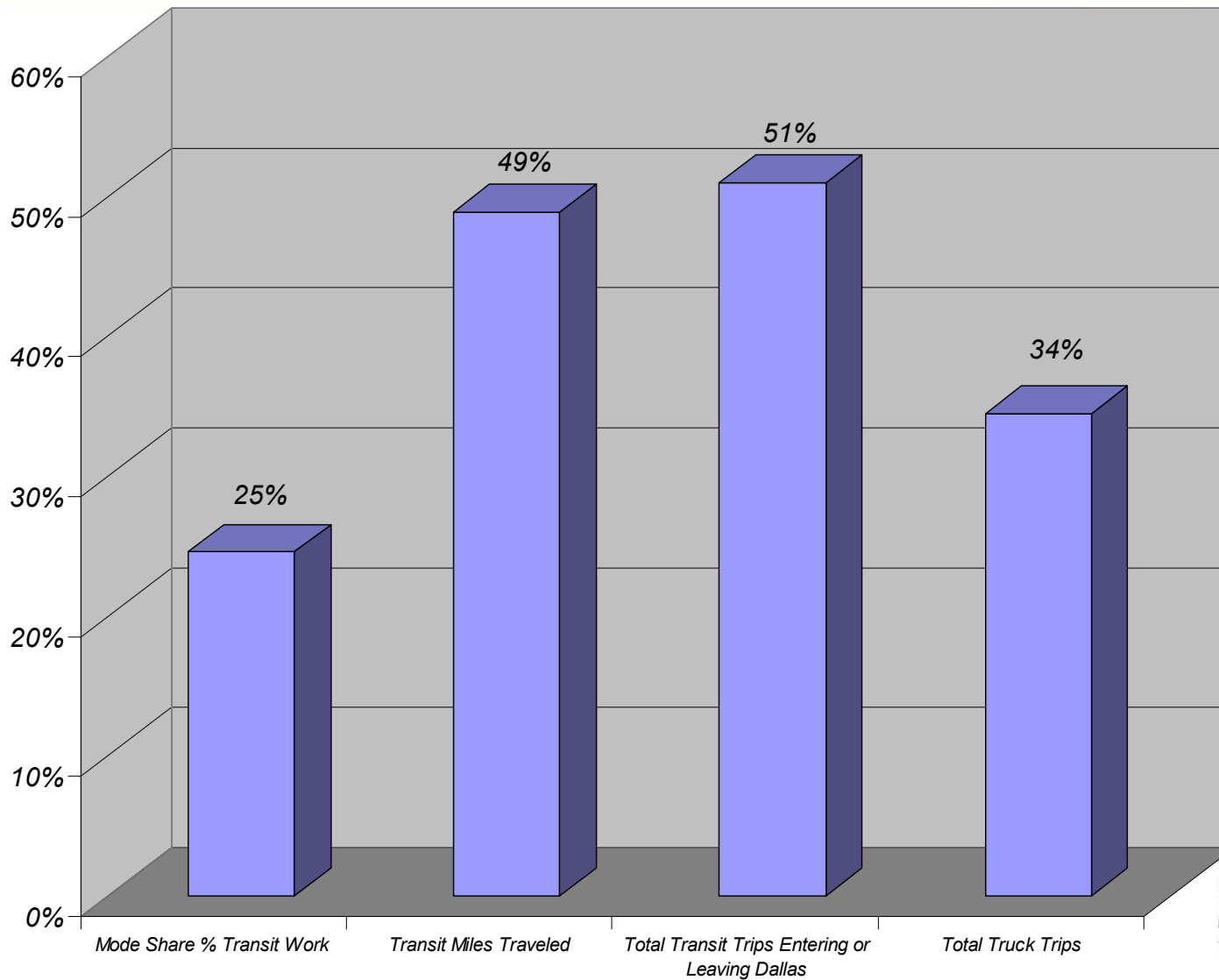


Truck Trips





Summary of Transit Findings





How will we compare scenarios

Indicators	1999 Base Year	2030 Trend	% Difference	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Highway							
Total Vehicle Hours Traveled (VMT)	42,987,530	53,390,100	24%				
VMT Per Capita	35	38	7%				
Miles of Congested Roads	1,918	2,439	27%				
% of VMT Congested	16%	21%	26%				
Total Vehicle Hours Traveled (VHT)	1,183,600	1,491,200	26%				
VHT Per Capita (Minutes)	58	64	9%				
Total Vehicle Hours of Delay (VHD)	198,500	275,000	39%				
VHD Per Capita	10	12	20%				
Mode Share % Drive Alone	74%	72%	-2%				
Average Trip Length	9	11	16%				
Transit							
Mode Share % Transit Work	3%	4%	25%				
Transit Miles Traveled	39,300	58,500	49%				
Total Transit Trips Entering or Leaving Dallas	98,500	148,700	51%				
Total Truck Trips	209,800	282,100	34%				

forwardDallas!

Let's build our future.



What Does All This Mean?

- *VMT and VHT continue to climb*
- *Overall delay is rising*
- *Trips into Dallas from other areas are increasing-this means trip lengths are longer*
- *Transit share is not rising as fast as SOVs*
- *Most of the congestion occurs in the north*
- *Simply adding more SOV lanes is not working*

forwardDallas!

Let's build our future.



How Can We Address These Issues

- *Provide more TOD pockets to shorten trip lengths*
- *Encourage more mixed use developments*
- *Infill park & ride stations with housing*
- *Focus capacity needs on hot spot locations*
- *Partner with NCTCOG to evaluate population and employment projections*



Next Steps

- *Develop Population and Employment from future land use scenarios*
- *Model future land use scenarios*
- *Compare to base case*
- *Develop CSD Standards*