



# **VALUE OF TRANSIT STUDY FINAL REPORT**

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MAY 2023



# Value of Transit Study

## Final Report

May 2023

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# 1 INTRODUCTION

What is the value of transit service to a region, community or an individual? This question has been asked many times over the years and by different groups or entities. For the broader transit industry, the value of transit services has been questioned even more recently given the effect of the COVID-19 pandemic on ridership and staffing, which has affected reliability, and overall quality of service. Dallas Area Rapid Transit (DART) is no exception. The COVID-19 pandemic led to steep drops in ridership across the region and all modes. While ridership is recovering and is back to about 65% of pre-pandemic levels overall, remote work trends and decentralized development patterns continue to create challenges.

What has been made clear in this time is that transit value cannot be described solely in terms of a ridership metrics or subsidy per rider calculation. There is value in transit for the North Texas region, service area cities, and people beyond a ridership number. There is value in terms of household savings, environmental benefits, opportunities for upward mobility, safety, economic development, sustainable growth patterns, health, and more. Transit is a lifeline to many that rely on DART as their only form of mobility to reach essential services. Transit is an equalizer and a means to opportunity and growth. Without mobility, growth and economic competitiveness is limited for individuals, businesses, communities, and regions. As strong regional growth continues and traffic congestion worsens, people that have other travel alternatives available also rely on DART as an option to save time, money, and stress in getting to work, school, services, or special events. Many people, whether they use transit regularly or not, see transit as integral to supporting quality of life within a community, creating places where people connect, and ensuring a path to a sustainable future.

In DART's case, some of the questions surrounding value are also related to the fact that DART is in a transition phase. DART is moving from a building focus to an operating and maintaining focus, while continuing to evolve service options to meet changing travel needs of a growing region. Like other public services such as police, fire, parks, libraries, or utilities, operating an extensive network of transit services and maintaining infrastructure, fleet and other assets takes financial resources. The DART transit system also represents a significant investment that is in place to be further leveraged and capitalized on to promote community objectives and enhance quality of life.

## 1.1 Purpose

So how can we define value and is there a common definition that can be agreed upon relative to DART's value? This is a difficult question to answer as "value" means different things to different people, depending how they use, support, fund, or perceive transit.

"Value" can be defined in many ways:

- The monetary worth of something, or its market price
- A fair return or equivalent in goods, services, or money for something exchanged
- The relative worth, utility, or importance, such as a good value at the price

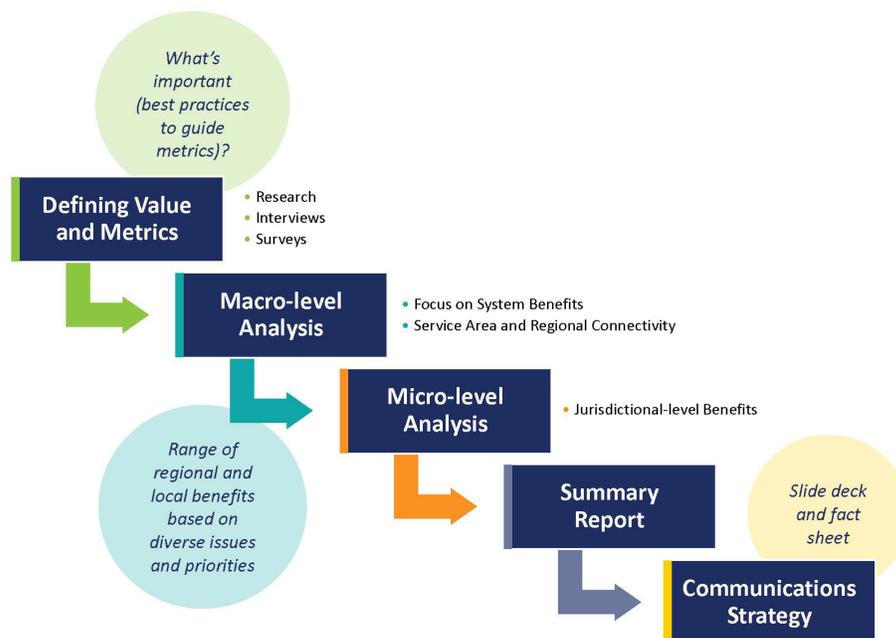
- Something intrinsically valuable or desirable, such as something that creates societal benefits or supports human rights
- A numerical quantity that is assigned or is determined by calculation or measurement

When describing the value of transit, taking only one of the above approaches will not capture value. The purpose of this study is help describe DART’s value proposition and offer our cities, stakeholders, riders, and the general public information on the benefits of DART in a variety of ways. The value proposition of transit cannot be defined by one number or a ratio of return on investment per city. Transit is a system and connects people and communities beyond city boundaries. There is a broader role for transit in our region and that creates benefits for the greater good, but also presents local opportunity. Realizing the full value of DART in the future can also not be done alone. The value of transit for a person or community or region can only be fully realized when we all work together toward a common vision and align our goals and policies to get there.

## 1.2 Study Process and Scope

**Figure 1-1** illustrates the overall study process and scope. This report is organized around this process, starting with the industry research and public and stakeholder engagement process to help understand what is important to our riders, city leadership, and other groups. Based on this information, the remainder of the report highlights the analysis approach and methodology to capture value in different topic areas.

**Figure 1-1. Value of Transit Study Process & Scope**

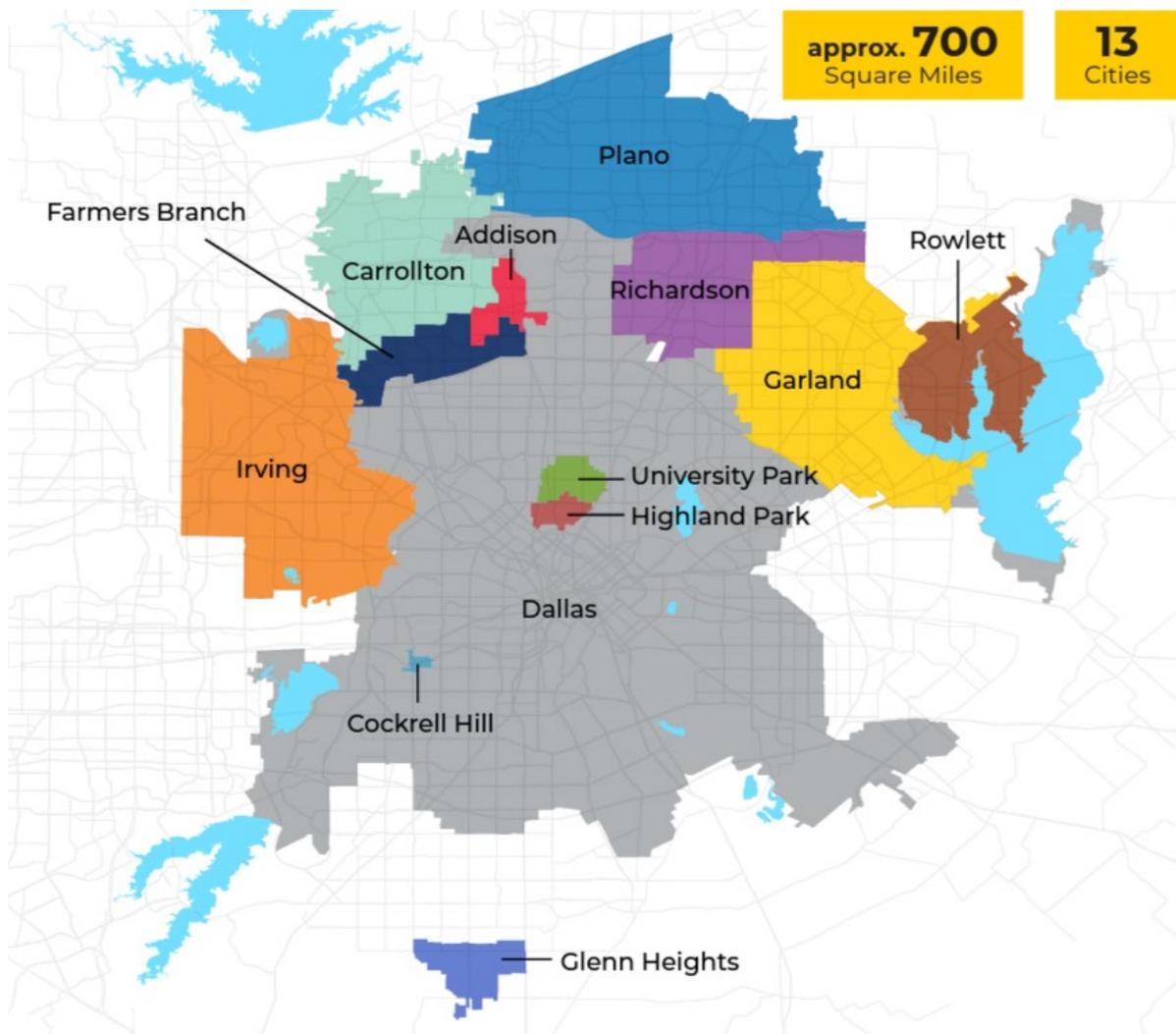


Source: DART

## 2 DART OVERVIEW

Dallas Area Rapid Transit (DART) is a sub-regional transportation authority that was created by a voting majority of the citizens in the future service area on August 13, 1983, to organize and provide public transportation and complementary services to jurisdictions pursuant to Chapter 452 of the Texas Transportation Code (the “Act”). The service area comprises 13 North Texas municipalities (Addison, Carrollton, Cockrell Hill, Dallas, Farmers Branch, Garland, Glenn Heights, Highland Park, Irving, Plano, Richardson, Rowlett, and University Park), as shown in **Figure 2-1**. Under the Act, DART is authorized to collect 1% sales and use tax on certain transactions.

**Figure 2-1. DART Service Area**

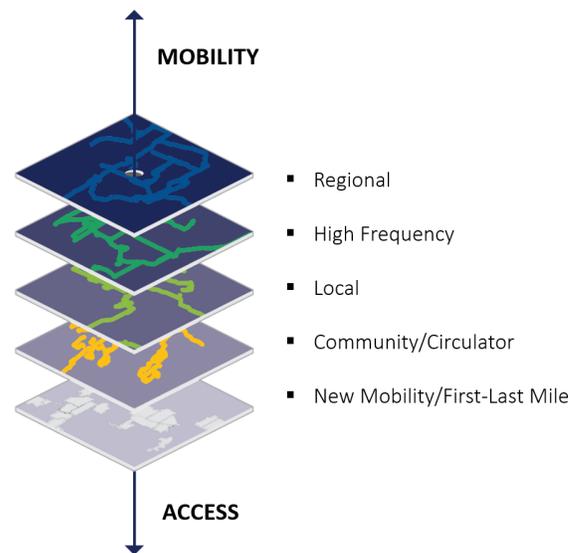


The DART system has grown and evolved since voters approved the original 1983 Service Plan which set forth a vision for the future. Much of that original 1983 vision is now in operation or under construction as part of an extensive multimodal network consisting of:

- Bus Transit service consisting of nearly 100 routes and shuttles
- 30 GoLink zones for on-demand service
- 93 miles of Light Rail Transit (LRT) service with 65 stations
- 34-mile TRE Regional Rail service jointly operated with Trinity Metro
- Mobility Management services, including ADA Complementary Paratransit services
- Rider assistance programs for the elderly and mobility impaired
- Regional vanpool program (coordinated through Trinity Metro or DCTA)

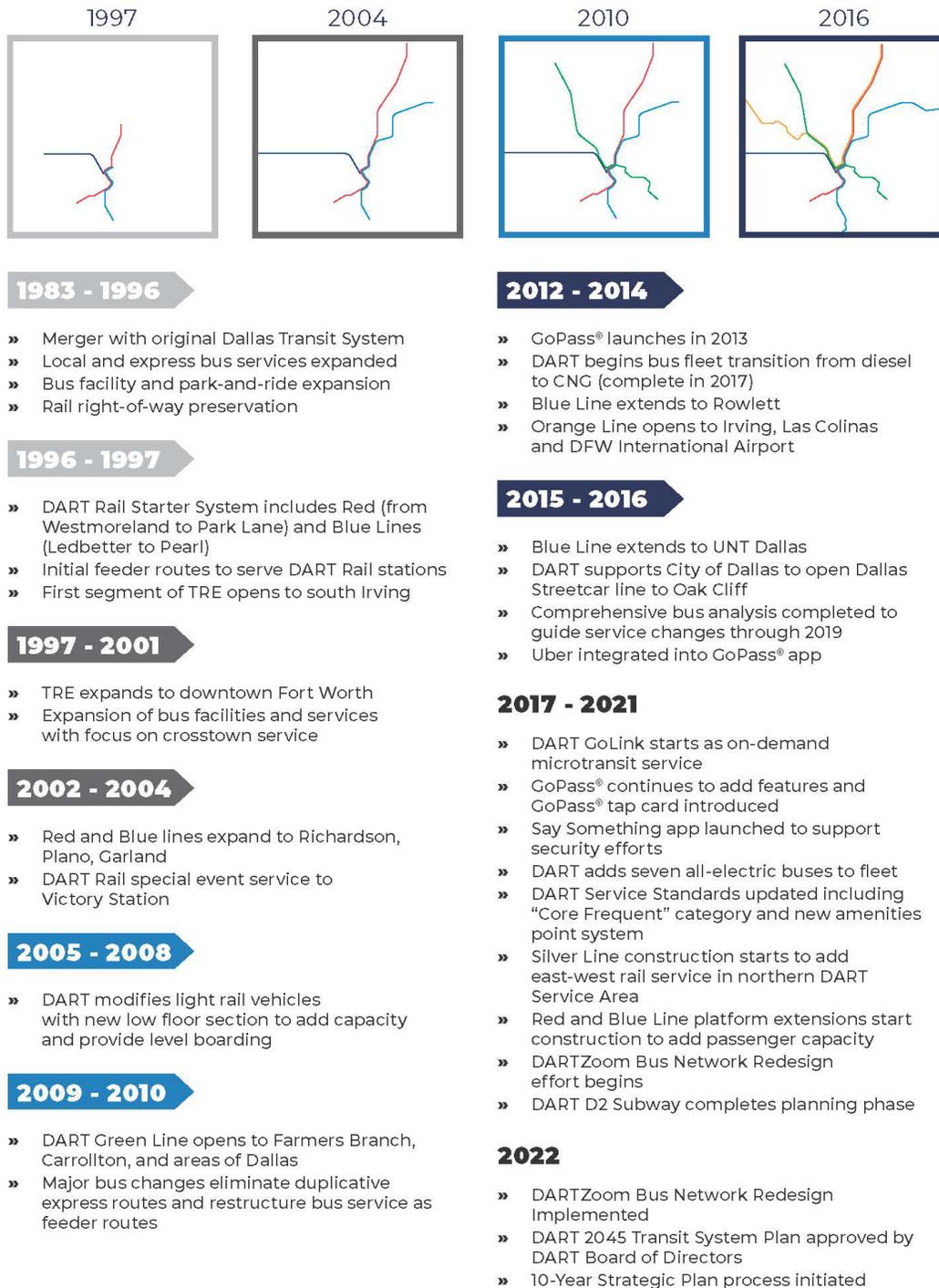
All of these services work together to provide mobility and access across the DART Service Area. Several bus service enhancements have been made over the last few years to better serve riders through more direct service, the creation of a frequent route network to complement the LRT system, additional off-peak and weekend service, and more shuttles and on-demand transit through GoLink service expansion.

Through the DARTzoom bus network redesign initiative, DART reimagined its entire bus network and launched the plan in January 2022 with a focus on increased frequency, less travel time, improved service and better access. To further meet the changing needs of customers and provide them with enhanced customer information to support their mobility decisions, the GoPass® app continues to be enhanced with features and has been instrumental in making DART a true mobility integrator.



**Figure 2-2** illustrates the evolution of the DART system over time, capturing key milestones along the way. **Figure 2-3** illustrates the current DART transit network.

**Figure 2-2. Evolution of the DART System**





## 2.1 DART Vision, Mission, and Strategic Priorities

In February 2020, the DART Board approved a new vision statement, mission statement, and strategic priorities. With new agency leadership and a variety of mobility challenges associated with post-pandemic recovery and a fast-growing region, DART is developing a new strategic plan to guide the agency over the next 10 years. This new strategic plan will refresh and refocus our vision and mission to ensure the agency's staff and financial resources are aligned around desired outcomes. This new strategic plan is anticipated to be complete in early 2024 and will capture key opportunities to continue to add value and enhance quality of life through collaboration with our key stakeholders and partners.

### **Vision**

Transforming our region with mobility options that connect people, communities and destinations.

### **Mission**

To benefit the region by providing a sustainable system of innovative, affordable, reliable and safe mobility options for our riders that enhances the quality of life and stimulates economic development.

### **Strategic Priorities**

1. Enhance the safety and service experience through customer-focused initiatives.
2. Provide stewardship of the transit system, agency assets, and financial obligations.
3. Innovate to enhance mobility options, business processes, and funding.
4. Pursue excellence through employee engagement, diversity, development, and well-being; and,
5. Enhance DART's role as a recognized local, regional, and national transportation leader.

## 2.2 DART Financial Overview

During initial discussions on the value of transit study, DART member city leadership expressed an interest in understanding baseline DART financial conditions and key performance measures related to ridership and service. This section of the report provides details on DART's revenues, operating and capital expenses, debt service, and financial performance measures. This information helps to supplement discussion of other broader measures of value associated with DART operations and capital investments. Performance measures are presented for the past five years to capture recent trends and post-pandemic recovery.

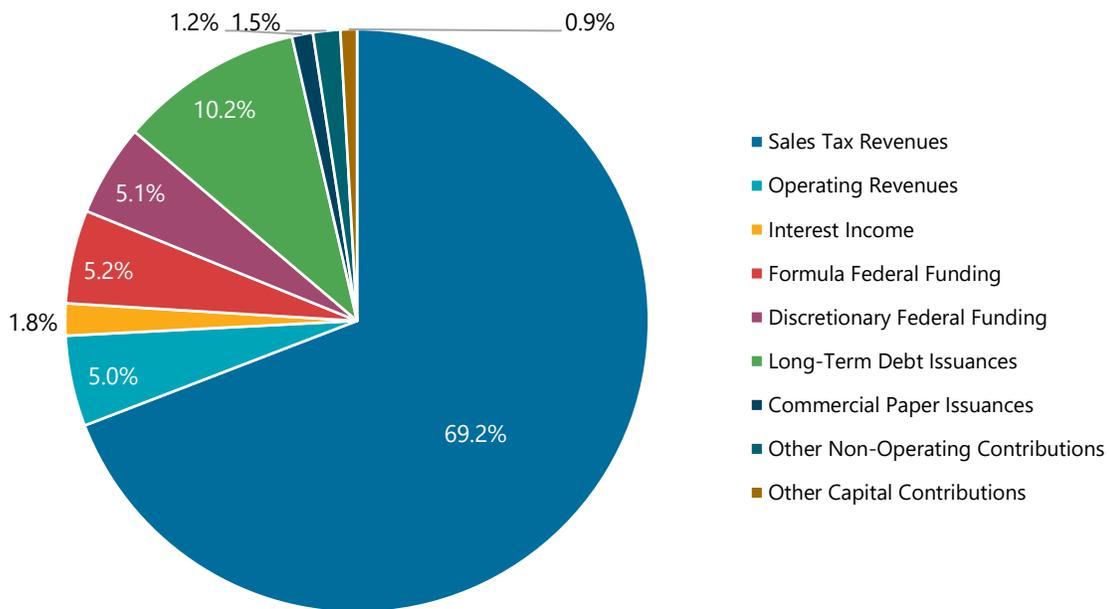
Each year, the DART Board approves the 20-Year Financial Plan and an annual budget (the first year of the plan). The plan represents a robust long-term projection of DART revenues, operating expenses, capital expenditures, and other financial information. It also validates the affordability of system expansion and maintenance commitments, operating requirements, and debt repayment. The FY 2023

Financial Plan, largely supported by improved sales tax projections, funds numerous improvements for riders across DART’s existing system with an emphasis on safety, cleanliness, reliability, and maintaining our State of Good Repair program.

## 2.2.1 Sources of Funds

DART’s three main revenue sources that support the 20-Year Financial Plan (FY 2023-FY 2042) are the one percent sales and use tax collections from the 13-city service area (69 percent), federal funding (10 percent), and operating revenues (five percent), which includes passenger fares, advertising revenue, leases and rentals, and access and impact fees. Total projected revenues are \$34.4 billion for the 20-year period. **Figure 2-1** illustrates sources of funds.

**Figure 2-1. FY 2023-FY 2042 Sources of Funds**



**Sales Tax** – As shown, sales tax revenues account for nearly 70 percent of the total. Fluctuations in consumer spending can significantly impact long-term revenue projections and the use of debt issuances and payments, so adjustments to account for some volatility in sales tax collections from one year to the next are included in projections. Sales tax revenues for the first five years of the 20-Year Financial Plan are estimated to be \$4.4 billion, and \$23.8 billion over the life of the plan.

**Federal Funding** – Another 10 percent of DART’s funding comes from federal formula and discretionary funding, estimated at \$1.78 billion and \$1.75 billion, respectively, through FY 2042. Formula funds include grants like State of Good Repair and Bus and Bus Facilities, while discretionary funding can vary from year to year and is project- or program- specific. The largest assumed

discretionary grant in the 20-Year Financial Plan is a \$1.43 billion grant for the D2 Subway. Additional smaller grants are also assumed for projects such as bus and rail fleet replacements beginning in FY 2028.

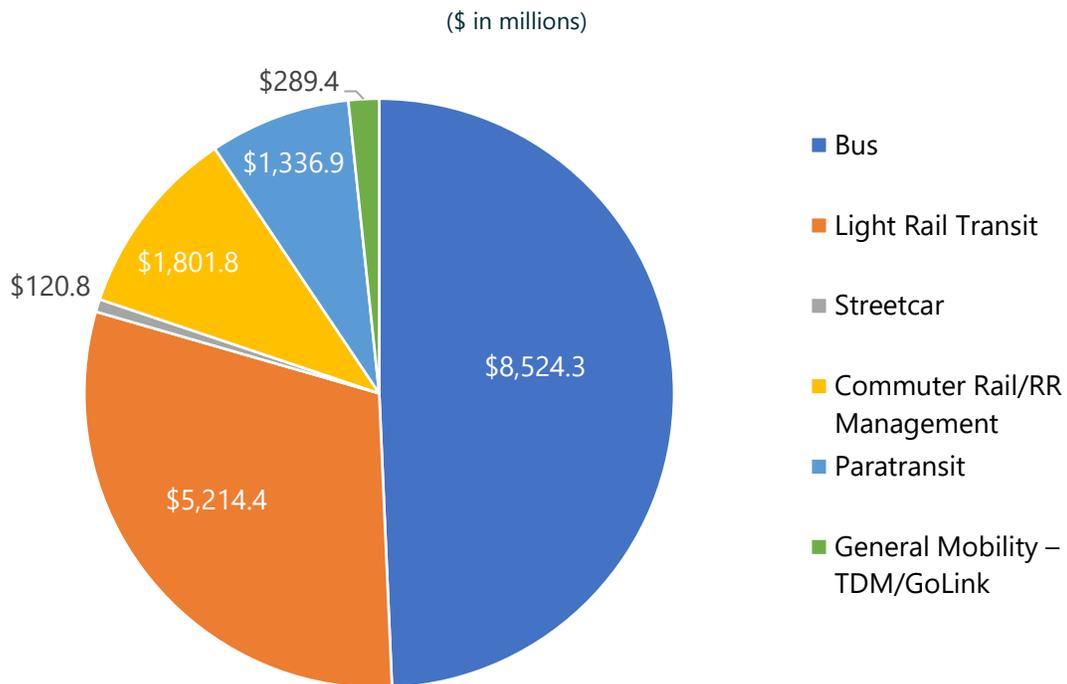
**Other** – Other sources of revenues include interest and operating and capital contributions from local partners to fund the continued operation of Trinity Railway Express (TRE) and the Dallas Streetcar.

## 2.2.2 Revenue Expenditures

DART’s annual expenditures include operating expenses, capital and non-operating expenses, and debt service, which includes principal and interest payments associated with prior capital program expansion and improvement programs.

**Operating Expenses** – Operating expenses are those associated with providing bus, light rail transit, streetcar, regional rail service, paratransit, and GoLink services. Total operating expenses for the next five years are projected to be \$3.4 billion and \$17.3 billion for the next 20 years. **Figure 2-2** illustrates operating expenses by mode.

**Figure 2-2. FY 2023-FY 2042 Operating Expenses by Mode**



Bus expenses represent the largest modal portion of DART’s operating costs (49.3 percent) for the next 20 years, while light rail is 30 percent. Regional rail services are provided through a contract with

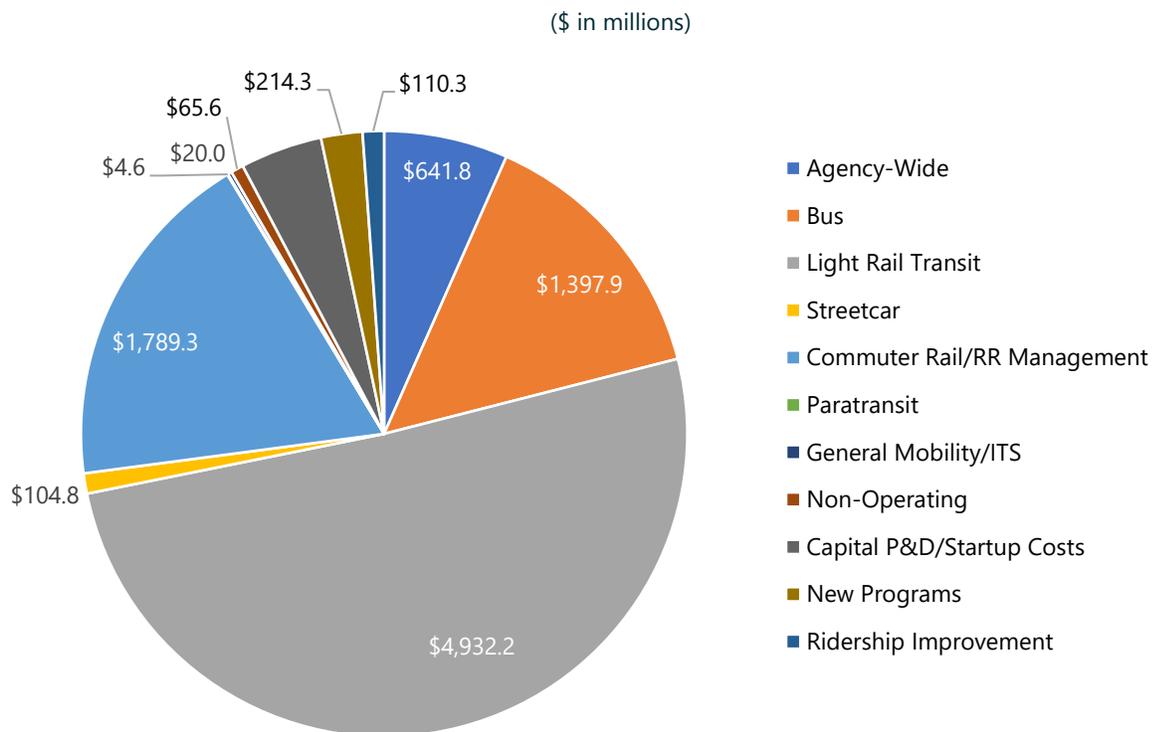
Herzog Transit Services, Inc., which includes service costs for the TRE and Trinity Metro’s TEXRail, as well as future Silver Line operations. Mobility Management Services (paratransit) operates through a contract with MV Transportation.

**Capital and Non-Operating Expenses** – Non-operating expenses include capital projects and state of good repair (SGR) improvements by mode of service, general mobility investments, capital planning and development, and new programs like the recent reallocation of sales tax to service area cities for public transportation improvements. The Ridership Improvement Program is also included, which is funded by the Mobility Assistance and Innovation Fund (MAIF) and focuses on systemwide improvements in security, cleanliness, and reliability.

Capital expenses for FY 2023 and the totals in the 20-Year Financial Plan are categorized by transportation mode (bus, light rail, agency-wide, etc.). Within each mode, capital projects may include new/expanded, repair/replacement, or modernization/upgrade of: guideways, passenger stations and facilities, administrative and maintenance buildings, revenue vehicles, service vehicles, fare collection equipment, communication and information systems, and related planning, design, or study efforts.

**Figure 2-3** summarizes capital expenses by mode.

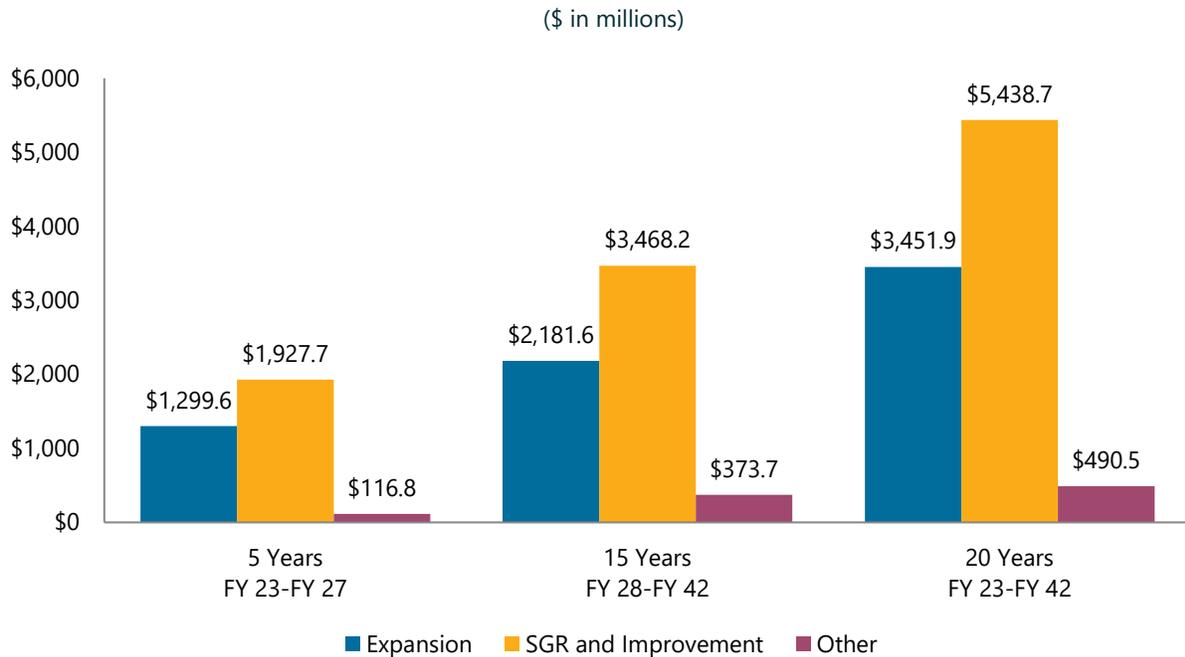
**Figure 2-3. FY 2023-FY 2042 Capital Program Expenses by Mode**



As shown above, DART plans to invest at least \$9.7 billion in capital and non-operating projects during the next 20 years. This includes enhancing passenger amenities, replacing bus and rail fleets, improving bus corridors, and initial elements of a broad light rail transit (LRT) system modernization program (not

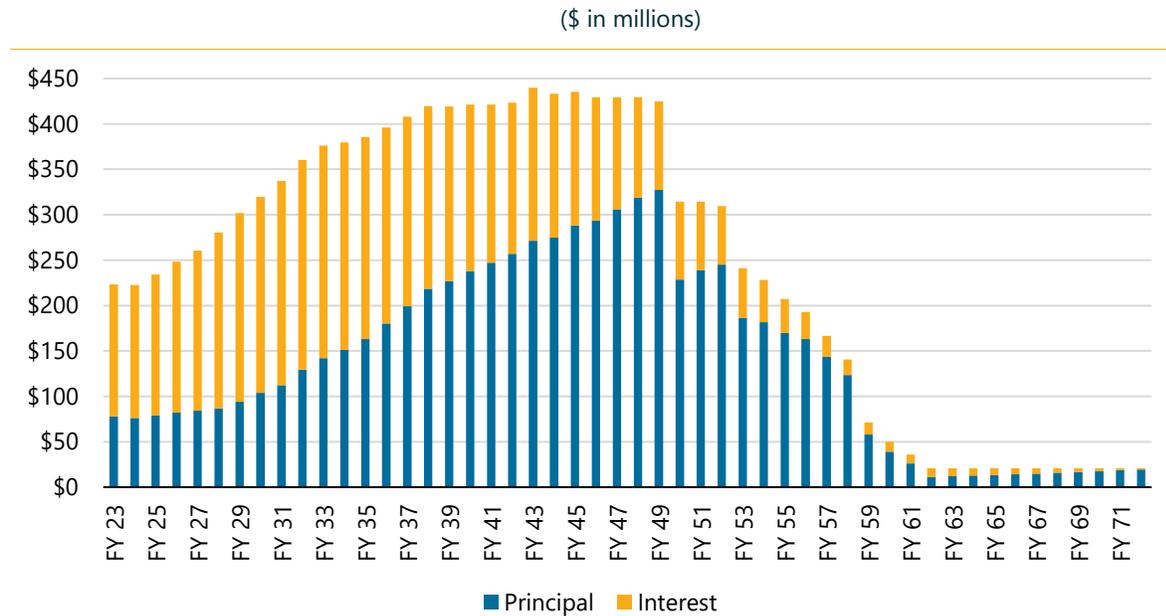
all of which are currently funded). **Figure 2-4** breaks down the distribution of capital projects by type. As a maturing agency focused more on maintenance and modernization to sustain system operations and assets, SGR investments represent about 60 percent of capital expenditures during the next 20 years.

**Figure 2-4. Distribution of Capital Projects by Type**



**Debt Program Expenses** – DART’s debt program is designed to meet its capital funding requirements and provide flexibility to meet changing debt market conditions. DART’s debt supports capital projects like the Silver Line regional rail project, future D2 Subway, rail and bus fleet replacements, and facility or system modernization. Figure 2-5 illustrates debt service costs for all existing and projected debt issuances contained in the FY 2023 20-Year Financial Plan.

**Figure 2-5. FY 2023 Financial Plan Principal and Interest Payments**



### 2.2.3 Selected Performance Measures

Below is a discussion of key performance measures that provide a transparent snapshot of DART’s operational health and recent trends related to ridership.

**Ridership** – **Table 2-1** presents ridership by mode. As noted previously, ridership has declined for most U.S. transit agencies in the past decade, including DART. Beginning in March 2020, COVID-19 caused it to plummet—DART ridership is still at just 67 percent of pre-pandemic levels. With the launch of the new bus network, increasing return to work, and additional service improvements in development, as well as a focus on improving the rider experience, ridership is expected to continue increasing in the coming years.

**Table 2-1. Ridership by Mode**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Fixed Route (millions)	61.3	69.3	49.30	35.5	42.1
<i>Bus</i>	30.3	38.7	27.8	20.1	22.7
<i>LRT</i>	29.0	28.6	20.3	14.6	18.4
<i>TRE</i>	2.0	2.0	1.3	0.8	1.1
Paratransit (thousands)	771.0	906.2	643.9	571.3	734.1
Vanpool* (thousands)	596.0	611.5	309.8	31.1	13.3
GoLink (thousands)	n/a	n/a	n/a	n/a	333.76
<b>Total Agency (millions)</b>	<b>62.7</b>	<b>70.8</b>	<b>50.3</b>	<b>36.1</b>	<b>43.2</b>

\*Vanpool program shifted to Trinity Metro and DCTA in FY 2022.

**Farebox Recovery** – Farebox recovery (sometimes called the farebox recovery ratio) is the percentage of operating costs funded by fares collected from passengers. Farebox recovery is one indicator of the value DART places on providing affordable transit services to residents within DART’s service area. With the recent drop in ridership, farebox recovery has been lower, meaning DART must make up the difference from other revenue sources. While raising fares can increase farebox recovery, decreasing operating costs or increasing ridership can positively impact this measure. **Table 2-2** presents farebox recovery by mode.

**Table 2-2. Farebox Recovery Ratio by Mode**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Fixed Route	13.1%	12.3%	7.7%	5.4%	5.9%
Bus	11.6%	8.8%	5.4%	3.9%	6.2%
LRT	15.1%	15.5%	9.8%	6.9%	6.1%
TRE	14.9%	23.7%	16.3%	8.9%	3.8%

Calculation: Modal Farebox Revenue / Modal Operating Expense

**Subsidy per Passenger** – Like farebox recovery, the subsidy per passenger is a measure of the cost of a service compared to the revenues it generates. Unlike farebox recovery, it accounts for all operating revenues associated with a particular mode. As shown in **Table 2-3**, the subsidy per passenger increased in FY 2020 and through FY 2021 as passenger counts and operating revenues declined due to COVID-19 but has started to improve in FY 2022. As shown, the highest subsidy modes are GoLink and paratransit. TRE has significantly increased largely due to commuter remote work trends.

**Table 2-3. Subsidy Per Passenger by Mode**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Fixed Route	\$6.52	\$5.97	\$9.28	\$12.72	\$10.83
Bus	\$7.50	\$6.37	\$9.85	\$12.98	\$10.39
LRT	\$5.13	\$5.14	\$8.05	\$11.10	\$9.61
TRE	\$11.73	\$10.11	\$16.43	\$36.28	\$34.16
Paratransit	\$44.97	\$42.87	\$62.43	\$65.59	\$49.01
Vanpool*	\$0.61	\$2.34	\$2.33	\$8.73	n/a
GoLink	n/a	n/a	n/a	n/a	\$21.62
Total System	\$6.94	\$6.41	\$9.91	\$13.56	\$11.43

Calculation: (Operating Expenses - Operating Revenues) / Passenger Boardings

\*Vanpool program shifted to Trinity Metro and DCTA in FY 2022.

**Sales Tax Used for Operating Expenses** – Finally, the percentage of sales tax revenue used for operating expenses indicates the amount of sales tax revenue required to fund operations (and inversely, the amount available for non-operating and capital expenses). Table 2-4 shows this has

generally been 70-80 percent. Due to conservative sales tax projections associated with uncertainty around the impacts of COVID-19 on the economy, the FY 2022 ratio was lower than budgeted.

**Table 2-4. Percent of Sales Tax Used for Operating Expenses**

FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
71.01%	74.17%	79.09%	79.09%	61.93%

Calculation: (Operating Expenses - Operating Revenues - Interest Income) / Sales Tax Revenues

The next chapter discusses the research and literature review to explore the range of metrics related to value beyond traditional performance indicators.

### 3 RESEARCH AND LITERATURE REVIEW

One of the first steps in the Value of Transit Study process was a research and literature review. This review summarizes a range of mechanisms for assessing the value of transit services across the US, establishes categories to communicate the value of transit to a variety of DART stakeholders and audiences, as well as provides recommendations for qualitative and quantitative metrics to do so.

The value of transit is difficult to characterize through quantitative means alone. Each of the mechanisms reviewed should be considered neither necessary nor sufficient to fully address the needs, experiences, concerns, and goals of the public and stakeholders alike; no single number can quantify the complete and universal benefits of transit. However, the quantitative analysis of the value of transit can be an important complement to a broader, more qualitative communication strategy.

#### 3.1 Reviewed Reports

Seventeen reports quantifying the type(s) of value that transit creates were reviewed as part of the study listed below in **Table 3-1**. Of these, four reports were issued at the agency level, one of them at the state level, and the remaining twelve at the national level. National reports targeted agencies or regions in four cases, a particular state in one case, and industry perspectives in general for the other seven cases.

**Table 3-1. List of Reviewed Reports**

Level	Agency / Institution	Title	Year	
Agency-Level Reports	WMATA	Making the Case for Transit: WMATA Regional Benefits of Transit	2011	
	New Jersey DOT	Benefits of Transit: Making the Case that NJ TRANSIT Brings Real Value to New Jersey’s Citizens	2018	
	LA Metro	Understanding How Women Travel	2019	
	DART	The Economic and Fiscal Impacts of Development Near DART Light-Rail Stations	2020	
State-Level Reports	Minnesota DOT	Measuring the Economic Benefits of Rural and Small Urban Transit Services in Greater Minnesota	2020	
National Reports	Agency/Region-Targeted Reviews	Urban Institute	Access to Opportunity through Equitable Transportation: Lessons from Four Metropolitan Regions	2020

Level	Agency / Institution	Title	Year	
	Journal of Comparative Urban Law and Policy	Inequities of Transit Access: The Case of Atlanta, GA	2020	
	EBP	Access to Opportunity and Pandemic Trends – Transit in the Atlanta Region	2021	
	Health Services Research	The Effect of a Public Transportation Expansion on No-Show Appointments	2021	
	State-Level Reviews	Medical Transportation Access Coalition	Non-Emergency Medical Transportation: Findings from a Return-on-Investment Study	2018
	Industry Perspectives	TCRP	Report 20: Measuring and Valuing Transit Benefits and Disbenefits	1996
		National Center for Transit Research	Cost-Benefit Analysis of Rural and Small Urban Transit	2014
		NCHRP	Selected Indirect Benefits of State Investment in Public Transportation	2015
		APTA	Supporting Late-Shift Workers: Their Transportation Needs and the Economy	2019
		APTA	Economic Impact of Public Transportation Investment	2020
		TCRP	Report 226: An Update on Public Transportation’s Impacts on Greenhouse Gas Emissions	2021
VTPI	Evaluating Public Transit Benefits and Costs: Best Practices Guidebook	2022		

Source: Cambridge Systematics, Inc.

Chronologically, one report dated back to the 1990s – a foundational report written by the Transportation Cooperative Research Program (TCRP). Three reports were relatively recent, belonging to the first half of the 2010s, whereas other four were written between 2018 and 2019. Finally, a significant core of seven works out of the 17 reviewed have been developed during or after the COVID-19 pandemic. Geographically, the reports reviewed address 9 out of 20 of the largest urbanized areas in the United States (see **Figure 3-1**. Geographical Scope of Reviewed Reports). Beyond DART, some national level reports examine small cities within large metropolitan areas in Texas. The latter represents the goal of the project: understanding how regional governments interact with DART.

**Figure 3-1. Geographical Scope of Reviewed Reports**



Source: Cambridge Systematics, Inc.

## 3.2 Communication Methods

The value of transit study literature review also examined different way to communicate value to different stakeholders. **The nature of transit—a publicly-accessible and -funded service—requires collective buy-in from a large and diverse audience.** Individuals and groups within a region have different interests and pursue different goals, making it harder to find a one-size-fits-all approach to communicate the value of transit. The importance of continuous operation for transit networks (or the potential harm derived from hypothetical shutdowns) also creates few opportunities to observe its value through fully empirical means; it is too costly to experience the absence of transit only to understand it. Instead, a series of assumptions and counterfactual analyses are needed to imagine alternative scenarios without transit, and to reinterpret benefits often taken for granted as the consequences of a no transit scenario.

From the list of selected reports, *Benefits of Transit: Making the Case that NJ TRANSIT Brings Real Value to New Jersey’s Citizens* (Titze & Baumgartner, 2018) discusses the different methods used for communicating the benefits of transit. This research highlights interesting, unconventional, educational, or interactive ways to demonstrate transit benefits to a range of stakeholders. Generally, there are three tiers of audience: 1. **users**, 2. **non-users** (these two groups represent *the general public* altogether), and 3. **stakeholders, elected officials, as well as lawmakers**. Implications for targeting each group vary based on specific characteristics.

**According to the authors, the most commonly communicated measures are the ones involving Economic Impact.** Economic impact (e.g., job creation) is the most successful and most frequently used tool in communicating transit benefits, given that, for example, elected officials and lawmakers pay attention to economic indicators to measure their own performance, and even non-users care about what the taxes they pay are being spent on. Metrics regarding Accessibility and Mobility (e.g. access to education and healthcare) are often used to characterize the aggregate or potential experiences of transit users. Impacts related to Environmental and Safety benefits (e.g., air quality improvements) were considered to be the least effective means of communication to audiences; recipients found environmental benefits to be intangible, especially when compared to the tangibility of economic metrics such as an increased number of jobs, property value increases, or new inflows of investment at the local level. This may be changing however and is evidenced by input from the general public survey (see Chapter 4) relative to transit’s role in supporting a sustainable region and reducing pollution, as well as some city and regional policies relative to safety initiatives like Vision Zero and addressing air quality conformity requirements.

A fourth aspect—seldom mentioned—is population growth. It usually refers to transit’s ability to allocate population growth optimally across an area, with Transit-Oriented Development (TOD) as its most prominent example. Stakeholders in the audience rarely identify this as a benefit *per se*, because of its multifold or indirect impact. However, city leadership interviews conducted as part of this process do see transit and economic development as linked and important to helping achieve growth and quality of life objectives.

Irrespective of individual transit use, **the most effective ways to communicate to the general public are through interactive and personal means**, such as videos, commercials, engaging graphics, and in-person events such as pop-ups (Titze & Baumgartner, 2018). Interaction-heavy personal campaigns, where direct engagement with the general public is primary, have proven worthwhile across the country. LA Metro, Los Angeles’ Transportation Authority, has built out programming, including community information meetings, pop-up events and tailgates at sporting events to engage in the public in situ. Social media (e.g., video advertisements) has been an effective new tool for local agencies to alert customers of changes and provide real-time information that begets transparency and efficiency, two qualities often desired from transit providers. DART already has multiple channels like this to interact and engage with the public through a variety of campaigns that may be general in nature or project or program specific. Examples include efforts associated with the DARTzoom bus network redesign and Silver Line design-build project.

**Addressing elected officials and lawmakers, however, requires more targeted, concise, and direct methods**, such as one-on-one meetings, one-pagers, or technical reports. For this specific audience, professional marketing materials and brochures are more effective and provide better visual communication.

Examples of successful communication campaigns range in methodology, location, audience, cost, and benefits communicated:

- WMATA’s **geometric and physical benefits of transit**, introducing the idea of a hypothetical five-story parking facility of the size of DC being needed to accommodate additional cars in the absence of transit.
- Capital Metro’s usage of **Gross Regional Product (GRP) to show positive return from service costs** combines a business-as-usual technique with the adequate size of the region served by the agency.
- SEPTA’s **clear, categorical statements (“sound bites”)**, such as the fact that 20% of suburban property values were attributable to station proximity, or that 33% of Pennsylvania’s population growth is in census tracts with SEPTA stations.
- SEPTA also traced **the flow of capital from its investments to all counties in Pennsylvania** via procurement contracts and their components, calling them “procurement maps.”

### 3.3 Areas of Benefit

Benefits derived from transit can be grouped according to categories associated with their areas of influence (**Table 3-2.**) For this research and literature review effort, the analyzed categories and key measures of benefit and include:

- **Economic Impact**
- **Accessibility and Mobility**
- **Environment and Safety**

While this chapter discusses general approaches to estimating the value of transit, not all approaches are used in the value analysis of the DART region (Chapter 5). Lack of data, overlapping measures, or low local impact all affect the selection of economic and other factors used to evaluate DART specifically.

**Table 3-2. Summary Table of Transit Benefit Categories and Measures**

Category	Measure	Inputs & Methodology	Outputs	Source
Economic Impact	Change in Property Value	Proximity to Light Rail Stations	Premiums of 5.8%, 17.9%, and 23% for office spaces, residential properties, and commercial spaces, respectively.	Carroll, 2020
		Proximity to Bus Stops	\$120.59 decrease in property value for every additional mile from the nearest bus stop.	Zhang et al., 2021

Category	Measure	Inputs & Methodology	Outputs	Source	
		Property values within one-half mile of a metro station	Premiums of 6.8%, 8.9%, and 9.4% for residential property, commercial or office spaces, and multifamily, respectively. Associated \$224 million increase in property tax revenue in the D.C. area.	AECOM & Smart Growth America, 2011	
	Poverty Reduction	Transit connectivity across census block groups	A 10% difference in transit connectivity correlates with 1.0 to 2.0-percentage-point lower poverty rates.	Wyczalkowski, 2020	
	Economic Multipliers	Economic Impact Analysis		Direct, indirect, and induced effects from real estate development following a new transit line added up to a 1.99x multiplier.	Carroll, 2020
		Benefit Cost Ratio (BCR)		1.4 BCR for transit service in multi-county metropolitan areas in Minnesota.	Mattson, 2020
				1.77 BCR for transit service in small urban areas in Texas.	Godavarthy, Mattson, and Ndembe, 2014
	Infrastructure Savings	Road Maintenance		Up to \$1.00 saved in road maintenance per transit vehicle mile for every 10 SOV trips displaced by transit.	Litman, 2022
		Parking Costs		Shifting modes saves \$0.84 per off-peak trip and \$2.18 per peak trip.	Litman, 2022
		Excess Road Capacity		Transit maintains current travel speeds without needing 1,000 more roadway lane-miles.	AECOM & Smart Growth America, 2011
			Transit serving the same 5-mile segment as a roadway yields \$510,000 annual benefits captured from fewer SOV trips.	Litman, 2022	
	Accessibility and Mobility	Travel Time Savings	Hours of Delay	Transit services reduced total delay time by 148,000 hours a day, in addition to saving	AECOM & Smart Growth America, 2011

Category	Measure	Inputs & Methodology	Outputs	Source
			\$342 in household transportation costs per year.	
		Annual Average Daily Traffic (AADT)	Light rail reduced daily vehicles about 49%, from 44,000 to 22,300 vehicles on an annual average.	Litman, 2022
	Access to Healthcare	Return on Investment (ROI) from Non-Emergency Medical Transportation (NEMT) Services	Over \$1,300 per Medicaid beneficiary per month.	Adelberg et al., 2018
		Attendance Reliability	A new light-rail service dropped appointment no-show's 4.5% overall. Specifically, up to 9.5% fewer Medicaid patients dropped appointments.	Smith et al., 2021
		Mitigation in access to healthcare reductions	Amid service cuts during the beginning of the COVID-19 pandemic, reduction in access to healthcare remained only 2% thanks to transit.	EBP, 2021
	Access to Education	Return on Investment (ROI) for Education-Related Travel	\$4.23 per education-related trip in Wisconsin.	HDR/HLB Decision Economics Inc., 2006
			\$5.85 per education-related trip in Florida.	Cronin, 2008
Access to Employment	Transit-Dependent Workers	A light-rail transit expansion improved access to 18,000 new jobs for transit-dependent workers.	Fan, 2010	
Environment and Safety	Air Pollution	Greenhouse Gas Emissions	Every PMT reduced 6.57 VMT, which in turn reduced 3.35 kg of CO <sub>2</sub> emissions per year.	National Academies of Sciences, Engineering, and Medicine, 2021
			Urban transit generated 50% of CO <sub>2</sub> and NO <sub>x</sub> emissions per passenger-mile compared to	Litman, 2022

Category	Measure	Inputs & Methodology	Outputs	Source
			emissions from an average automobile.	
		Fuel Consumption and Air Quality	Shifting modes from SOV to metro saved 40.5 million gallons of gas and \$10 million in damage from air pollution per year.	AECOM & Smart Growth America, 2011
	Stormwater Deferral	Negative Externalities	Less pavement eases stormwater management and saves additional infrastructure needed to mitigate flooding.	AECOM & Smart Growth America, 2011
	Safety	Crashes and Severity	A bus replacing ten automobile trips represents net savings of \$0.687 per mile from lower crash and fatality rates.	Litman, 2022
		Transit for Evacuation Services	Washington, D.C.'s Metro safely, swiftly, and securely evacuated potential victims on 9/11/2001.	AECOM & Smart Growth America, 2011

Source: Cambridge Systematics, Inc.

### 3.3.1 Economic Impact

Economic impact benefits can range in scope and magnitude. This section focuses on four benefits that can contribute to a clearer understanding for best communicating the value of transit:

- **Property Value Increases** for parcels near transit facilities,
- **Poverty Reduction** driven by access to transit service,
- **Economic Multipliers** measuring benefit-cost ratio or return on investment, and
- **Infrastructure Savings** that quantify the capital costs of infrastructure required to meet travel demand or other needs in the absence of transit.

Economic impact assessments generally aim to summarize and monetize a wide range of benefits, but usually narrow them down to the expected changes in gross economic output, employment, and/or public expenditure(s) required.

## ***Property Value Increases***

Property value analyses typically compare real estate prices for sale and/or rent operations for similar units or land plots according to their relationship with the transit network under study. Proximity to stations often proves to be a significant predictor of value.

Among the reviewed reports, some findings suggest that proximity to light rail stations increases property values for office space (5.8%), residential properties (17.9%) and commercial spaces (23%) (Carroll, 2020). Locations within one-half mile of a metro station have been identified to be influenced in terms of property value as well. Concrete results for the latter were 6.8% for residential property, 8.9% for commercial and office, and 9.4% for multifamily. Annual property tax revenue was estimated to increase by \$224 million in the D.C. area (AECOM & Smart Growth America, 2011).<sup>1</sup> In the case of bus service, a study in Hartford, Connecticut found that a one-mile difference in distance to the nearest bus stop can explain a \$120.59 increase in total property value (Zhang et al., 2021).

## ***Poverty Reduction***

Public transit is a foundational and affordable way for citizens to access economic opportunities such as employment or education. Studies have shown that a 10% increase in transit connectivity across census blocks groups correlates with having 1.0 to 2.0-percentage-point lower poverty rates (Wyczalkowski, 2020), equating to an elasticity value of 0.1 to 0.2. Additional or enhanced transit supply can reduce poverty through many channels related to its associated economic development.

## ***Economic Multipliers***

Economic multipliers help summarize the amount of development brought by a particular project or intervention. Multipliers in a broad sense can include both ad-hoc calculations for output magnitudes (direct, indirect, and induced impacts) as compared to inputs (original investments) and similarly calculated Benefit Cost Ratios (BCRs). In this instance, the latter suggests the amount of dollar benefits per dollar spent in transit. As an example of the former, real estate development incentivized by transit in Dallas resulted in a 1.99x multiplier (Carroll, 2020). This means after assuming real estate development near new stations precisely followed these new facilities (plausible), every \$1.00 spent in such development brought almost \$2.00 in economic impacts among direct (money spent in real estate projects), indirect (business-to-business transactions between developers and their suppliers), and induced (goods and services bought by employees of developers and their suppliers when they spend their income) effects altogether.

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<sup>1</sup>WMATA estimated the increased demand for property near Metrorail Stations generates about \$133M to \$224M additional property tax revenues, depending on whether the property is ¼ mile or ½ mile from the Metrorail Station. WMATA computed the estimate based on parcel assessment data from the WMATA Compact jurisdictions, Business Improvement Districts, and Federal funds paid to Washington, D.C. to cover courts, defense services, and supervising criminals.

As for BCRs, multi-county transit service provision in metropolitan areas in Minnesota has been associated with a BCR of 1.4 (Mattson, 2020), while an analysis for small urban areas in Texas found a BCR of 1.77 (Godavarthy, Mattson, and Ndembe, 2014). In both studies, benefits stemmed from public assistance and health care cost reductions, travel time savings, and safety improvements. Note that these are not overall assessments for all areas of benefit, but rather act as summary statistics for the economy as a whole, while being cognizant of not double counting.

### ***Infrastructure Savings***

Infrastructure savings can be understood as a reduced need for additional capital expenditure, such as not needing to build a parking lot for a new office complex. In short, if additional investment were needed in the absence of transit, these analyses compute the difference as savings derived from having transit in place. This can also include the reduction in funds allocated to maintaining and preserving assets i.e. money saved from deferred wear-and-tear of roadways. Although a transit vehicle is heavier than a single-occupancy vehicle (SOV), its higher capacity allows it to transport multiple people in a smaller space, using less road space per person and causing less wear-and-tear than a comparable number of SOVs.

## **3.3.2 Accessibility and Mobility**

Accessibility and mobility benefits are a key tool in communicating the value of transit, given these benefits are inherently focused on people and improving the system to support a greater quality of life. This section focuses on four benefits that can contribute to a clearer understanding for best communicating the value of transit:

- **Travel Time Savings,**
- Accessibility Improvements, including but not limited to:
  - **Access to Healthcare,**
  - **Access to Education,** and
  - **Access to Employment.**

Mobility, defined as the transportation networks' ability to move passengers around, has its benefits often measured through travel time savings in comparison to alternative routes. Accessibility, understood as the opportunities (belonging to specific locations) that can be accessed via transportation, is measured by quantifying the access to different types of opportunities. These generally include access to healthcare sites, educational institutions, and employment.

### ***Travel Time Savings***

Due to the implied efficiency transit has in traffic flows (especially where exclusive or prioritized guideway is available), it reduces delays for the entire transportation system. A key assumption is that people assign significant value to their time, and a reduced need to spend time traveling (assumed to

be a derived demand, i.e. there is no enjoyment in traveling other than to fulfill the expected commute, errand, etc.) is equivalent to earning or saving some monetary value. In terms of travel time savings and their associated value, it was found out that transit services reduced total hours of delay by 148,000 hours per day and household transportation costs by \$342 million per year in WMATA's service area (AECOM & Smart Growth America, 2011). As a counterfactual exercise, Salt Lake City's light rail system offset the negative traffic impacts of regional development, reducing traffic 49% from an annual average of 44,000 daily vehicles (if the system did not exist) to one of 22,300 daily vehicles (actual values) in 2014 (Litman, 2022).

### ***Access to Healthcare***

Providing widespread, affordable access to healthcare is beneficial because of the possible consequences of foregone trips: poorer public health outcomes, faster spread of disease, and increased public assistance costs. Based on a survey of Medicaid beneficiaries in New Jersey, Louisiana, and Michigan, Non-Emergency Medical Transportation (NEMT) services were found to yield a return on investment (ROI) of over \$1,300 per Medicaid beneficiary per month (Adelberg et al., 2018). These savings are generated from reduced healthcare expenditures for chronic care. Additionally, in Minneapolis, a healthcare access study came to the conclusion that building new light rail service led to a 4.5% decrease in missed appointments / no-show visits for residents who lived close to the new service. Further, the impacts were even greater among Medicaid patients, equating to a 9.5% decline (Smith et al., 2021).

The early phases of the COVID-19 pandemic were a critical period for healthcare systems all around the world. As a relevant case study, access to healthcare during those times was analyzed in the Atlanta region. Despite considerable service cuts, transit managed to sustain the region, capping the drops in access to healthcare and food to only 2% and 3%, respectively (EBP, 2021). This not only adds value in the form of benefits, but also proves the equity component of transit by serving transit-dependent riders under a time of critical needs. Transit also serves as a key community resource in times of emergency, providing access to shelters, warming/cooling centers, or critical supplies.

### ***Access to Education***

The availability of relatively inexpensive and fast travel options to education can provide expanded and rich opportunities for the public. For instance, the nature of higher education as unrequired implies that associated inconveniences derived from transportation could result in individuals dropping or choosing not to enroll in it. According to studies focusing on this matter, the ROI of public transit for education-related trips ranges from \$4.23 per trip in Wisconsin (HDR/HLB Decision Economics Inc., 2006) to \$5.85 per trip in Florida (Cronin, 2008).

### ***Access to Employment***

One of the most relevant points of interest and most successful communication measures is assessing access to jobs, often the most conventional metric for accessibility. Although employment is frequently

concentrated in areas where private vehicle access is provided, transit allows non-motorized workers to access their workplaces more easily. By providing an alternative mode, transit adds a reliable option to commuters and reduces congestion even for those who still choose to commute by private vehicles. There is a significant equity component in providing transit access to work for transit-dependent workers. For example, expanding light-rail transit in Minneapolis improved access to 18,000 new jobs for transit-dependent workers in jobs tending to pay lower wages (Fan, 2010).

### 3.3.3 Environment and Safety

Benefits derived from environmental and safety improvements are usually related to the associated costs and risks transportation poses to communities, public health, and environmental wellbeing in the short and long term. Typical metrics include:

- Reduced levels of emissions derived from fossil fuels that cause **air pollution**,
- Other environmental threats such as **stormwater runoff**, and
- **Safety** in terms of crashes and accidents prevented, alongside security benefits.

#### ***Air Pollution***

Emissions derived from fossil fuels typically involve carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and sulfur oxides (SO<sub>x</sub>). The distribution and magnitudes vary by type of vehicle and increase with the number of vehicles. Every time transit service reduces the need for other vehicles to operate (especially those burning fossil fuels), a reduction in emissions is considered an environmental benefit. Standardized monetary values per ton of reduced emissions are derived from associated health threats, environmental damage in general, and natural disasters attributable to climate change, among others.

For example, in Dallas, every passenger mile on transit is estimated to reduce community vehicle miles traveled (VMT) by 6.57 passenger miles, thus eliminating 3.35 kg of CO<sub>2</sub> per year (National Academies of Sciences, Engineering, and Medicine, 2021). Other findings suggest that urban transit only produces about 50% of the CO<sub>2</sub> and NO<sub>x</sub> emissions per passenger-mile compared to an average automobile (Litman, 2022). Finally, WMATA reduced air pollution and fuel consumption due to mode shift – mainly from SOV to WMATA, generating roughly \$10 million per year in environmental damage savings, and 40.5 million gallons of gas per year in fuel consumption savings, both at the regional level (AECOM & Smart Growth America, 2011).

#### ***Stormwater Deferral***

Infrastructure in general, and namely transportation infrastructure, often impedes proper drainage in urbanized areas. For example, large concrete surfaces and artificial grade-separated crossings worsen stormwater mitigation problems. Stormwater deferral intersects with the reduced need for infrastructure since the diminished demand for paved areas such as parking lots or roadways reduces the area of impervious surfaces, leading to lower levels of floodings and reducing attendant damages,

which can be considered savings from avoiding associated mitigation costs from building flood-management infrastructure (AECOM & Smart Growth America, 2011). In the absence of transit, governments and societies would have to invest in additional infrastructure and face the burden of its associated environmental mitigation needs.

## ***Safety***

The main implication associated with safety, besides the total number of VMT and similar indicators, is how crash probability rates fluctuate with and without transit. Since accidents have different outcomes (fatalities, permanent injuries, less severe injuries, standalone property damage, etc.) and consequently different payoffs, mode shares, and vehicle types are influential in terms of assessing the potential damage produced. For instance, given that a bus has a lower crash rate in general (particularly a lower fatality rate) compared to a private vehicle, a bus replacing ten automobile trips yielded \$0.687 per mile in net safety benefits (Litman, 2022).

An interesting, alternative but complementary approach was analyzed and demonstrated by WMATA, identifying transit as a safe, effective, and efficient route if a massive evacuation was needed (AECOM & Smart Growth America, 2011). The study proposed that without Metro services on 9/11, thousands of people would have been prevented from safely evacuating the D.C. region in the first hours after the initial terrorist attacks. This signifies that the transit network is an irreplaceable public asset for safety, defense, and security purposes.

## ***Summary***

This literature and research review highlighted a variety of measures to quantitatively or qualitatively define and communication the value of transit. In general, there are three main categories to document value: Economic Impact, Accessibility and Mobility and Environment and Safety. This value of transit study focuses on these three areas and complemented the research through a range of public and stakeholder engagement activities to further understand what types of topics are most important locally and regionally. The following chapter documents public and stakeholder engagement and key feedback relative to documenting value.

## 4 PUBLIC AND STAKEHOLDER FEEDBACK

This chapter describes the public and stakeholder outreach efforts and feedback. Engagement efforts were focused on finding out what is important to a variety of stakeholder groups, how they define the value of transit, and what some key opportunities are to enhance value moving forward. The sections below summarize the process and input for the following groups:

- DART City Managers
- Regional leader interviews
- Focus Groups (Riders, Organizations, Developers)
- General Public (Riders and non-riders)

In addition to this outreach, a summary of trends from annual DART Customer Satisfaction Surveys (2019-2022) is included, which is important to understanding key benefits of transit, but also key drivers of satisfaction and where there are opportunities to enhance value for our riders and improve DART's brand perception.

A summary of key findings is provided and helped to inform the information and metrics developed for the system and community level discussions of value. Overall, the input confirms that value is different for everyone and depends on how you use, support, fund, or benefit from DART services. Even so, there are some key findings that support a broad range of value or benefits that can be qualitatively discussed or quantitatively measured.

### 4.1 City Managers Interviews

City managers of 12 of the 13 DART member cities were interviewed for this Value of Transit study during the period of August through September 2022. The city manager position for the Town of Addison was vacant at the time of the interviews. Most of the city managers were accompanied by one or more staff members. In one interview, the city's mayor and a council member attended. An interview guide was sent to the city managers in advance of the meetings. The interviews were conversational, and the guide was loosely followed. The summary below is not attributed to individual managers or their cities, however, collective descriptive terms such as "suburban cities" are used.

Overall, the city managers uniformly stated support for DART and believe transit is an essential service to their communities and the larger region. The city managers share a common desire to better understand and communicate to the public the value of transit. Some city managers believe their city contributes more revenue in support of DART than it receives in benefits. All want to increase the rate of return through strengthening the quality of services, offering more flexible service options, and leveraging economic development. Some cities desire reconsideration of the sales tax revenue

structure, including the opportunity for expanding the DART Service Area. While the city managers share many common observations and opinions, their perspectives are as diverse as the cities they serve.

### **Back to Basics**

A theme universally expressed by city managers is improving the quality of basic service delivery. The three essential measures of quality service delivery are security, cleanliness, and dependability. COVID is considered the biggest cause of recent ridership loss, but not the sole cause. City managers believe there is increased public concern about personal safety and security at DART stations/stops and on DART vehicles. This risk is associated with disorderly conduct, antisocial behavior, and incidents of crime. As a manager reported, one bad experience is sufficient to lose a rider, especially one who has an alternative means of transportation. This problem is compounded by people sharing stories of bad experiences on DART. The perception of risk to personal safety is perhaps even more significant to the occasional and special purpose rider. Several managers stated they were unwilling to use DART. Many also believe post-COVID, DART vehicles and stations are more heavily occupied by the homeless, and non-ticketed riders are sometimes forced off cars at end-of-line rail stations.

Sanitation is also a problem. Trash, discarded food containers, and unclean surfaces increase rider discomfort, especially during a public health emergency. The problem extends beyond vehicles to DART stations, bus stops and surrounding areas. City managers believe DART vehicles and stations are not well maintained. They noted needed repairs to paint, paving, windscreens and landscaping. One manager said his city no longer takes pride in being a part of DART.

Dependability is an essential element of quality service. Reporting to work on time is important, if not critical, to most employers. If DART is undependable, workers have little choice but to find an alternative means of commuting. City managers reported that some employers (including city government) are hesitant to participate in transit pass or other transit incentive programs.

Some city managers voiced that DART's brand has been diminished. Rebuilding the public confidence in DART requires attention to the basics. City managers believe attention to basics is a higher priority than new programs and system expansion in attracting and retaining ridership.

### **Improved Communications and Involvement**

Most city managers desire closer communication on a routine basis with DART, especially at the executive level. City managers want city staff directly involved in DART capital improvement and operations planning. They respect the board's role in setting policy and agency oversight, but they believe city staff have greater knowledge of city development plans and day-to-day problems and opportunities.

### **Flexible Service Options**

City managers appreciate the need for consistent application of programs and policies. That said, they believe DART city needs vary and warrant flexible service options within a city. Area demographics,

density, employment concentrations are variable. Different areas of a city require different service levels. There seems to be a consensus among city managers about the need for greater flexibility. There is also acknowledgement that flexible service options increase disparity in service accessibility and inequities in service spending across DART cities. Some city managers maintain resources should be distributed primarily based on need. Most city managers do not expect revenue and services to be balanced on a city-by-city basis. Some believe significant revenue to service imbalances should be offset in some manner.

### **Return on Investment**

The amount of DART sales tax revenue collected within each DART city is fixed by state law at one cent based on the vote of citizens in 1983. The tax is collected by the state and remitted directly to DART. City government is not a part of the funding mechanism. The amount of DART sales tax generated within each city only loosely correlates to the city's geographic size, population, or transit needs. Further, a significant amount of DART sales tax is generated by the spending of people and businesses located outside DART's jurisdiction. Sale tax is volatile. It fluctuates due to the overall economy, shifting markets and individual business openings and closings. Most city managers still refer to DART sales tax collected within their jurisdiction as their city's contribution to DART although the contribution does not flow through the city but through the state. Nevertheless, it is the denominator they tend to use in calculating a city's return on investment.

City managers want to better understand and communicate the value of transit – preferably through quantifiable measures and ideally in dollars. Such measures would allow estimating the return on investment, evaluating performance and alternative services. City managers realize that transit benefits are difficult to define, quantify and assign to individual cities. Direct benefits (e.g., riders served, reduced vehicle miles traveled) are the most meaningful. Indirect benefits (e.g., reduced congestion, air quality, economic development), are less persuasive unless the benefits are clearly of service to their community. Qualitative benefits such as placemaking are even less important. Some city managers are quick to ask if the same amount of money could be spent in alternative ways to create the same or greater benefit.

Most city managers, especially suburban city managers, maintain that their city is subsidizing the system. Other city managers, believing that their city receives more benefits than it contributes through sales tax collection, point to the needs of their transit-dependent population. Most city managers are less concerned about imbalances than they are about improving the quality of service. Those managers believing their city pays (via the sales tax collected) significantly more than they receive in benefits want reconsideration of service and required revenue. They want discussion of alternatives, including broader spending options, rebates and tiered-revenue membership (less than a penny).

### **Rail vs. Bus**

Rail transit is the principal focus of most city managers. Four of the 13 DART cities do not have rail service within their city boundary (although they may be adjacent and benefit) and there are no plans

for future rail service (Glenn Heights, Cockrell Hill, Highland Park, University Park). Buses and other rubber-wheel services carry more passengers than rail. In many ways, rail transit was the lure attracting voter support to create DART in 1983. It has a higher public profile and receives the majority of DART press coverage. Few suburban city managers spoke of bus service during the interviews. One said they thought their city would give up fixed-route buses in exchange for other services. In contrast, Dallas and other cities having a greater percentage of transit-dependent persons desire greater bus services. They also believe light-rail was built at the expense of bus service to lower income and transit dependent persons. Most managers believe completion of the Silver Line marks completion of rail construction (none of the city managers mentioned D2 Subway). All city managers believe commuting patterns are changing. Employment continues to decentralize, more people work from home, and the temporal patterns of work are changing. They believe the demand is growing for flexible, demand-responsive service.

### **Economic Development**

City managers view DART as important to economic development - regionally and locally. All city managers view transit, especially rail transit, as a box to check in decisions about corporate relocation and expansion. To a large extent, quality transit service is considered essential to workforce mobility and accessibility. It is also seen as a critical element of regional sustainability. Locally, rail transit is potentially a catalyst to creating urban mixed-use centers, or transit-oriented development (TOD). This is especially important to suburban cities. City managers believe in transit's economic development benefit, but they also believe the benefits have been overestimated and could have been achieved through alternative spending strategies. They point to the major economic development investments that are not located near transit facilities. They also note all successful transit-oriented developments have required significant local incentives.

All the city managers with TOD projects feel DART could have been a stronger partner in the project. Specifically, they would like the agency to be pro-development in negotiating agreements, more willing to modify existing facilities to meet project needs, and willing to spend funds to support parking and infrastructure.

### **Service Area Expansion**

Interest in expansion of the DART Service Area is limited and mainly directed to Collin County. During the last two decades, Collin County population and job growth have soared. This has strained north-south expressways and arterials and increased pass-through traffic in north Dallas, Richardson, and Plano. In the past, commuters residing outside of the DART Service Area made up approximately half of the ridership at the Parker Road light rail station. Most city managers would welcome adding new DART cities, but only if they contribute one cent of sales tax, or an equivalent amount of revenue from other sources. A few city managers believe service expansion and revenue requirements should be reexamined, including amending state law on DART membership requirements.

## **Social Equity and Transit Dependent Populations**

City managers generally view DART as a part of the regional mobility system with an emphasis on serving work-based commuting. Central and southern city managers stress the importance of DART serving transit dependent and special needs populations reliant on transit as their only mobility option. Bus and flexible demand responsive services are required. Some city managers believe DART is a major element in achieving greater social equity. More affluent DART cities have seen growth of transit dependent persons, especially seniors. DART is also seen as an importer of workers, especially in a tight labor market. City managers are supportive of expansion of GoLink and other demand responsive services.

## **Trends and Long-Range Planning**

City managers believe demographics and technology change will shape DART's future. Among the trends and changes noted were:

- Regional population growth, sprawl and job decentralization
- Emerging urban activity centers – live, work, play environments
- Home based work
- Flexible workdays and hours
- Co-workspace
- Demographic diversification
- Private ride-hailing
- Autonomous vehicles – SOV and transit
- Electric vehicles
- Micro-transit
- Drones and air transit

## **Summary**

City managers are supportive of DART and want greater involvement in planning and improving transit services. Managers believe DART should give priority to the basics of quality service – personal safety/security, cleanliness, and dependability. City managers want better quantitative measures of the value of transit to their communities. There is general acceptance that individual city contributions through sales tax collections and service levels will not necessarily balance. The imbalance can be addressed through more flexible spending and service improvements. The rail system is viewed as essentially complete (Silver Line completion remaining), and more attention is needed on the rail system's maintenance and operation. Economic development is considered a significant benefit of DART. City managers, however, want DART to be a stronger partner in TOD through shared goal-oriented negotiations of development agreements, willingness to modify station facilities to complement TOD plans, and financial participation. City managers are interested in service area expansion and are open to discussing requirements for adding new cities. Finally, DART needs to look more at trends and changing technology in preparing long-range plans. Assumptions of the past may not apply to serving future needs.

## 4.1.1 Regional Leader Interviews

Based on comments during City manager interviews regarding regional expansion, especially to the north in Collin County, regional leaders from NCTCOG and Collin County were also interviewed for their perspectives on the value of transit and potential expansion. A summary of key discussion points follows below.

### Value of Transit

Transit is a vital element of a balanced regional mobility system, especially in meeting the need of transit dependent populations. All expect transit demand to grow as job formation in the suburbs expands and the region's central counties urbanize. All agreed that there are many ways to measure the value of transit. The four dimensions that strongly stood out included:

- Economic development/competitiveness
- Workforce availability and development
- Service to transit reliant persons
- Transportation benefits (Congestion reduction, safety, travel costs, etc.)

The interviewees believe excellent transit (especially rail) is a distinctive element of a world class city. It is essential to attracting economic development and staging global events. While small in its impact to date, transit is influencing land use patterns, most evident in transit-oriented development tied to the DART rail system.

### Work-Based Commuting Patterns

It was noted that work-based commuting patterns are changing, and that north-south traffic flow was approaching an even split in the peak hour. Collin County is becoming, if it is not already, a net importer of labor. Many of those commuting to Collin County reside in exurban areas. They believe there is a misconception that most of the job growth in the suburbs is mainly white-collar professionals. There pointed to growth in all job sectors, especially service and technical employment. It is no longer a matter of getting suburban workforce to central city jobs. It is commuting from and to everywhere. Home-based employment was also mentioned. All observed the need for expanded micro-transit to serve short point-to-point trips. This is needed to meet the daily needs of transit reliant persons, first and last mile strategies, and internal trips within urban mixed-use centers.

### Changing Technology

There is shared agreement that technological change is making the path forward less clear. Electric vehicles (EVs), autonomous vehicles, ride-hailing and sharing, video conferencing, electronic business and shopping, and drone delivery are just some of the emerging technologies to consider. New technologies are often heralded for offering innovative solutions, but they can often have latent consequences with negative impacts.

### **Land Use Policy**

Those interviewed believe greater cooperation and coordination among local governments on land use policy is needed. The current competitive environment among cities further fuel decentralization and regional jobs-housing imbalance. This places regional transportation planning in a reactive position. Currently, the consensus is that county government and regional organizations such as the Regional Transportation Council and DART do not have a voice in future land use planning or decision making.

### **DART Jurisdictional Growth**

The DART Service Area has not expanded since its creation in 1983. Those interviewed believe this is the result of the mandatory one-cent sales tax contribution to become a DART city. State law caps total sales tax at 8.25 cents and most cities surrounding DART are unable to join DART without reducing other authorized taxes. One interviewee said this policy impasse may lead to the development of alternative transit authorities, but a funding mechanism like sales tax would still be required. There is concern about fragmented transit service delivery, with a recommendation DART expand contract service to non-DART cities – “Think small and grow.”

### **Future of Transit**

There is consensus that the role and means of transit service are changing. The direction of change is less certain. More regional discussion is needed. Immediate attention to improved transit cleanliness and security is essential to maintaining and growing ridership. Use of contract services is needed for special commuting demands of employment, mixed-use and educational centers. Greater use of transportation management authorities is needed to manage employee work hours, parking and transit services, including microtransit. In general, they like a cafeteria approach to services to address local needs. New and expanded highway plans need to reserve room for transit services. There is concern that insufficient planning has been paid to east-west travel in Collin and Denton Counties. Feelings are mixed on specific technologies including bus rapid transit, light rail, and regional passenger rail. Some believe the existing light rail system may evolve to a different technology. Each technology has pros and cons deserving greater study and consideration. There is also concern that transportation planning under federal financial constraint rules limit full consideration of alternatives. Regional leaders want more aggressive plans, including passenger rail, corridor, and station site acquisition. In sum, regional leaders want more discussion and planning, they want improved coordination and cooperation among local governments on service delivery and transit supportive land use policy, and they want greater flexibility in service options.

## **4.2 Focus Groups**

In addition to City leadership interviews, the study effort included of the facilitation of focus groups to gain input from riders and other key stakeholders on the value of transit service to a region, community or an individual. The purpose of each focus group was to seek insight on how they define what aspects

of DART transit is most important to them. Individual perspectives collectively can provide insight into how to define value and how various elements of transit can be improved.

The focus groups consisted of:

- DART’s Citizens Advisory Committee (CAC) members, which is made up of DART riders appointed from each DART city,
- Key community stakeholders and organizations that agreed to participate (2 groups), and
- Transit-oriented development (TOD) project developers.

In preparation for the focus groups, DART developed a list of questions to facilitate the discussion. The TOD focus group had specific questions and a pre-survey which is discussed below. For the other three groups, five questions were composed with a focus on DART’s current value to communities and the region, as well as potential improvements that may add value to communities, individuals, and the region. The questions were as follows:

1. How do you define the value of transit for you (or you constituents)?
2. How do you define the value of transit to the broader community and the region?
3. Select up to (3) that most closely align with how you define value.
  - a. Environmental benefits (such as reduced emissions)
  - b. Access to Entertainment/Special events
  - c. Transit-oriented development opportunities
  - d. Access to jobs, healthcare, education, and essential services
  - e. Mobility option for transit reliant persons
  - f. Access and connectivity (first and last-mile mile)
  - g. Workforce availability and development
  - h. Economic development/competitiveness
  - i. Transportation benefits (less congestion, cost savings, safety, etc.)
  - j. Quality of service
4. What would make DART transit services more valuable to you, or your organization, business, or constituents/clients?
5. What do you envision the future of transit to look like?
6. How can DART better communicate the value of transit to your organizations?

The questions were structured to promote thought-provoking conversation from participants. Each question was incorporated into a presentation displayed on an interactive Mentimeter platform for interaction and record keeping.

### 4.2.1 DART CAC Focus Group

The DART Citizen’s Advisory Committee (CAC) participated in a focus group in which they were asked questions on how they define the value of transit, both from their perspectives as riders and as community advocates of transit. The dual perspective provided insight on the value of transit to them as regular riders, and also potential future enhancements that can add value and improve all riders’ experiences. Appendix A includes the Mentimeter results from the CAC focus group, which was held in person. A summary of feedback from the CAC is provided below.

**Figure 4-1. DART CAC Meeting, September 2022**



CAC members view transit as a necessity and place value in it because of the benefits it currently offers, such as environmental, financial savings, connectivity, access and mobility. They would like to see the view of transit shift to transit-by default – that is, being available and promoted as the primary choice to get around. An example was provided about State Fair collateral with extensive freeway driving and parking directions listed first, rather than DART. reliability and range.

How the group defines the value of transit is different depending on their individual experiences and perspectives. Members believe that transit could generate higher value if DART can create a more positive perception by meeting the basic qualities of cleanliness, safety and reliability which is a key issue right now. Some noted that pre-pandemic, it seemed that DART police had a higher presence on platforms and on-board vehicles. However, CAC members do not see this visibility as much. They do understand that staffing issues across the United States maybe contributing to the lack in DART police or security presence. They believe communicating the many benefits of transit should be improved through more marketing and publicity.

**Figure 4-2. DART CAC Feedback: Value of Transit in our Community and Region**

## How do you define the value of transit to your community and the region?



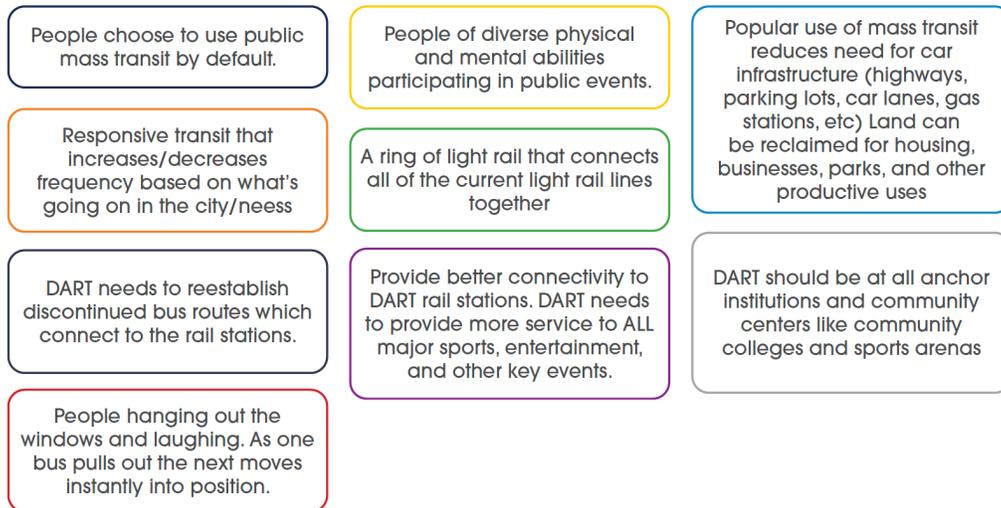
Reliability was a key topic of conversation among the group, as they discussed a need for more frequent routes and shorter wait times during peak hours. They believe the inconsistency with bus routes during off-peak hours directly affects the value of transit because if riders are unable to arrive, on-time, to their intended destinations, then they do not see how value is added. In addition, if the buses do not show up at all, then value is diminished. DART must actively show up, on time, to rebuild rapport with riders and the community.

There also appears to be a lack of communication to riders and the broader community, creating a disconnect with the community. Many communities and riders are unaware of the services readily available to them. CAC members view rail as the most common and well understood means of transportation, while bus and GoLink fall behind due to inconsistencies and lack of knowledge. CAC members encourage collaboration of internal communication among all DART staff. They believe communication with city staff and officials on how to access and use public transportation is important as well so they know what is available to their community. A core belief is that if the leaders in the communities are advocating for DART transit systems effectively and clearly, then the community stakeholders and residents will surely follow. CAC members directly correlate communication to value. If the communication is low, the value will also be viewed as low.

The information below captures what the CAC envisions the future of transit to be.

**Figure 4-3. DART CAC Feedback: Envisioning the Future of Transit in Our Communities**

### What do you envision the future of transit in your community to look like?



## 4.2.2 Stakeholder Organization Focus Groups

In addition to the CAC, DART also organized additional focus groups for which a variety of stakeholders could attend. While approximately 100 potential attendees were identified and invited, interest and participation was limited to about 10 representatives that were largely from transportation, workforce and social service organizations. As such, feedback from these two focus groups has been combined. Appendix A summarizes Mentimeter results from these focus groups.

A recurring theme of accessibility was shared among the two focus groups, especially as it relates to workforce development and other essential services. First and last mile connectivity and reliable options are key. There was a discussion of more frequent service to reduce connection wait times. In addition, quality of service embodies basic needs of customer service, such as representative availability, trained police and security presence, and real time application tracking.

**Figure 4-4. DART CAC Feedback: Defining the Value of Transit**

## How do you define the value of transit to your organization, business, or constituents/clients?



Several of the focus group members work within the social service realm and invest in transit passes for their clients. The transit passes serve the purpose of helping their clients get to where they need to go. Without access to the transit passes, these clients would not be able to maintain or obtain the resources provided for them. With that, these clients show up in different walks of life and may need extra support as they maneuver through DART transit systems. The social service focus group members suggest DART partner with organizations in the service areas to better understand their needs and how they can work together to provide user-friendly service for riders in all walks of life.

Workforce associates in the focus groups are committed to creating infrastructure and opportunities that are transit accessible for potential employees and customers. They believe it is vital to the economic development of the community and region to provide transit to and from these locations. As they develop new infrastructure, they seek to work with and depend on DART as a leader in their industry prior to their developments.

In conclusion, accessibility is key for transit-dependent communities and supports the economy by enabling job access and workforce development.

### 4.2.3 TOD Development Focus Group

During interviews with city leadership to discuss value, placemaking through quality transit-oriented development was noted as a key benefit. However, more insight was needed from the development community on how they define the value of transit and how that value can be enhanced to further leverage the system and support development goals. On October 10, 2022, a meeting was conducted with a small group of developers experienced with transit-oriented development. The meeting focused on the market appeal of TOD and their experience developing along the DART system. The meeting was conversational. Prior to the focus group, DART provided a short pre-meeting survey to 20

developers or financiers to help guide the discussion. A summary of key feedback from the focus group is provided below.

### **Site Selection**

Most TOD developments begin with the developer's search for a higher and better use for property they own or control or in response to a city solicitation. Developers stated that proximity to a light rail station is considered a plus but not a primary factor in site selection. Site size, configuration, surface street access, context and market exceed proximity to light rail. Government incentives and partnership are also important but are insufficient on their own. Securing entitlement of a project plan is sometimes referred to as the "cost of pursuit." The time and money required to obtain approval is typically an at-risk out-of-pocket expense to the developer. The amount of the cost can be large and make many developers leery of TOD projects.

### **Capital Markets**

All things being equal, TOD projects do have an advantage in national capital markets. It is considered an important box to check. Capital requirements depend heavily on project size, equity share and the developer's financial objectives. Government incentives are important but are unlikely to change the project's financial feasibility. TOD projects sometimes require long-term ground leases from cities and DART. Some developers believe this complicates project financing. Others believe it is not a barrier. All agree that a model template for ground leases is needed to streamline negotiations.

### **Station Area Plans**

Many TOD projects rest on a vision for the larger station area. Cities that have a station area plan and commitment to executing it are in a better position than those that do not. The plan needs to be consistent with market demands and provide flexibility for considering alternative plans proposed by developers. The city's commitment to the area's improvement is important to the developer's decision. The developers encourage making plans ambitious. Many developers feel plans for most TOD projects underutilize the site.

### **Mixed-Use and Housing Markets for TOD**

With some exceptions, today's market demand is primarily for housing and mixed-use. While DART does not have a role in land use and zoning decisions, it can influence station area plans. Developers wanted to encourage more owner-occupied housing but recognize this is difficult to achieve. Developers want cities to be realistic in judging the market for commercial use, especially ground floor commercial use in vertical mixed-use buildings. There is no data on residential retention in TOD projects. Most developers believe it is positive.

### **Parking**

Most developers believe TOD projects are overparked and city minimum requirements are too high. They encourage shared and pooled parking. They find that often DART parking, drop-off and bus circulation lanes separate the station platform from the development project and diminishes the

benefits station area development. The developers find DART has been resistant to modifying an existing station's layout to better serve the development and bring value to the larger area.

### **Maturing and Phased TOD**

Developers pointed out that TODs are seldom accomplished as a single project. Most TOD projects are constructed over an extended period by multiple developers. TODs continue to change as they mature; the tenant mix changes and buildings and amenities are modified. Cities and DART must make long-term commitments to ensure TOD projects are successful. Developers believe TODs complement the rail system by connecting the dots. They promote travel by creating destinations – reasons for travel other than commuting to work. TOD is all about making great places and connecting them. The developers believe TOD projects need to be able to change with shifting market demand. Changes in the workplace are real. For example, no one knows if the effects of COVID are temporary or long-lasting. Regardless we need to be capable of adapting. The same is true for changing technology – EVs, autonomous vehicles and ridesharing will change commuting patterns.

### **Market Share and Competitiveness**

TOD developers point out that TOD projects are only a small part of the market, Rail access is an important plus, but not an essential element to successful urban mixed-use projects. Cities and DART need to understand that developers and investment capital have alternative project opportunities. For TOD projects to be successful, cities and DART must create a competitive environment. The likelihood of protracted negotiations over station site integration, parking, financial incentives and entitlement make developers hesitant to engage.

### **Siloed Decision-Making**

TOD projects are complicated and require approvals from multiple parties. The spirit of cooperation and partnership is often lost and projects stalled when needed approvals are held hostage by individual decision makers. While cities and DART do desire more TOD, staff often loses sight of the larger objective when safeguarding their specific area of responsibility. Cities and DART should empower management to keep staff focused and to remove roadblocks.

### **Design**

Most DART stations were planned and constructed without a larger station area plan and thought of the longer-term development of adjacent property. Frequently, developers desire changes to existing DART facilities requiring relocation of parking, bus, vehicle, and pedestrian circulation. Property line adjustments and easements may be needed. DART is reluctant to make the changes unless they are fully compensated.

Pedestrian-oriented design and connections to the surrounding area are often overlooked by the developer, cities, and DART. Even when property planned, implementation is fragmented and completed over extended periods of time. City requirements and developers result in overparking. Opportunities for reduced and shared parking is missed.

## Security and Sanitation

Developers believe there is a growing public concern about security and sanitation at DART stations and vehicles. This perception has become more pronounced with the increase in homelessness. Overall, developers who work in other large metro areas believe DART does a better job than other transit agencies. However, developers believe security and sanitation require greater attention to maintain developer interest in TOD. Perception is reality.

### Summary

The developers attending the group interview were very appreciative of the opportunity to provide their perspectives on DART generally and TOD specifically. They encouraged DART to routinely engage with the development community. They feel development of the rail system is nearly complete. Now is the time to renew the vision and burnish the product.

## 4.3 Public Survey

The purpose of the public survey was to gain insight on the value of transit from DART riders as well as the general public. More specifically, the survey was used to gather feedback about how transit adds value for them and their community and what type of benefits associated with transit resonate most with them. It also helped to understand what types of potential improvements could add value for consideration and planning for the future.

Focus group feedback helped to refine and simplify the general public questions, A copy of the survey is included in Appendix B and included basic questions on frequency of transit use and demographics. The last section requested optional contact information, to gage the participant's interest in possible follow-up communication from DART as part of Rider Feature stories (see Section 5.5). The survey was also administered in Spanish. Appendix A summarizes survey responses.

The survey was open from September 28, 2022 to October 12, 2022. The survey link was distributed via DART email database, social media platforms and postcard communication. Ten pop up visits were made to transit facilities to hand out postcards and have conversations with riders about value, encouraging them to complete the survey and share the information. DART city public information contacts also assisted with distribution.

### Survey Results

The survey produced over 600 responses combined in English and Spanish. The open-ended questions yielded a diverse source of information, consisting of recurring themes, as well as some outlier and nuanced responses. The four main survey questions centered on the value of transit to the individual, the value of transit to the broader region and community, how to improve value, and their future vision of transit. Many survey respondents believe transit relieves the stress of sitting in traffic by reducing their commute times to and from work. In addition, respondents also shared positive responses to the

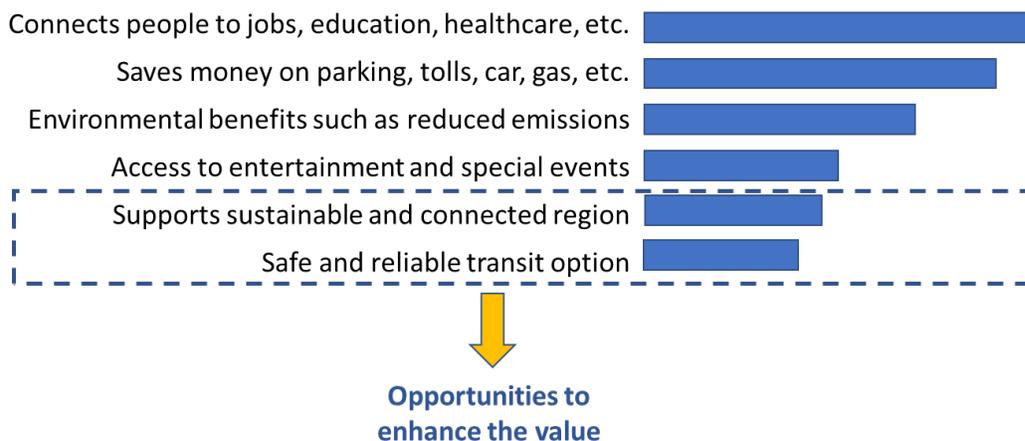
environmental benefits, financial savings, and access to essential services through convenience that transit provides. The graphic below summarizes some of the direct responses received from the survey.

**Figure 4-5. Public Survey: How Transit Provides Value Everyday**



When asked how transit provides value to the broader community and region, many respondents highlighted environmental benefits, congestion relief, financial freedom and connectivity within and between communities.

**Figure 4-6. Public Survey: How Transit Provides Value to the Community**



As for how DART can be more valuable, the responses centered around the basic qualities of service, such as increased safety, cleanliness and reliability with additional improvements that will modernize the current transit system. Many comments also discussed the need for more frequency and expanded transit to unserved areas of the region. Below are snapshots of the responses received from the survey.

**Figure 4-7. Public Survey: How DART Can Provide More Value**

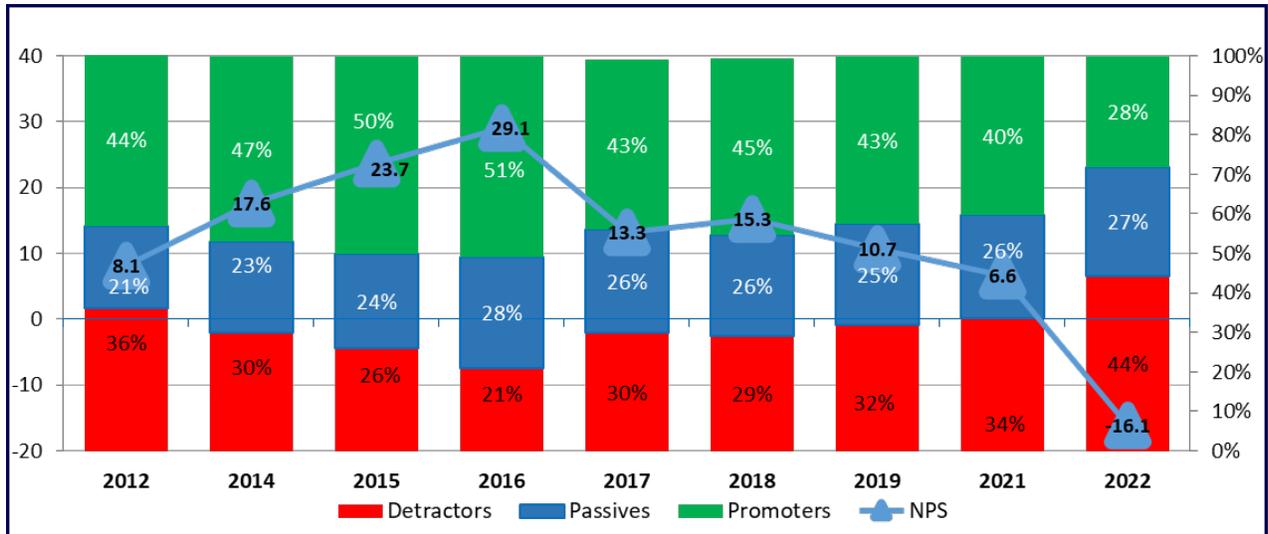


## 4.4 Customer Satisfaction Surveys

DART conducts annual customer satisfaction surveys to track trends in satisfaction across a range of categories. The following summarizes key findings from 2019 through 2022 (excluding 2020 which was not conducted due to COVID-19 restrictions) to provide another layer of public feedback related to value and the perception of DART. These surveys show similar trends and thoughts that are consistent with much of what was heard through the value of transit engagement efforts.

A key indicator the DART uses is the Net Promoter Score (NPS). Looking back several years, the NPS, which is on a scale of -100 to 100 has consistently been in the positive range above zero, but in 2022 dropped to a negative score for the first time. **Figure 4-8** shows trends.

**Figure 4-8 Customer Satisfaction Survey Net Promoter Score (NPS) Trends**



Source: DART Marketing and Communications

In 2019 the NPS increased slightly for choice riders but decreased more for dependent or reliant riders, resulting in a slight decline from prior years. These results were consistent with comments related to security and reliability. Trends show that dependent riders were more likely to respond with lower ratings than choice riders, with the highest satisfactory scores given to convenience.

The 2021 survey showed a continued decline in perceptions of DART largely related to security, cleanliness, and operations issues. The NPS declined with the most detracting scores collectively given by corporate commuters. Safety, security, rule enforcement and cleanliness were the top priorities of improvement for customers.

Overall satisfaction declined further in 2022 among riders. The NPS was negative for the first time. The survey revealed that train and bus timeliness, convenient locations, clean buses and helpful DART police are the driving factors of use for most riders. Bus timeliness scores greatly decreased, largely driven by issues associated with reliability and operator shortages in the first half of 2022.

## 4.5 Key Findings on What’s Important

Based on the feedback from interviews, focus groups and surveys, it is clear that different groups have differing opinions of value and how to best measure or convey value. For City Managers, and for many of the focus group participants, and public survey respondents, taking care of the basics is critical, especially as the system works to recover from the effects of COVID. The basic issues of safety/security, cleanliness and reliability directly affect the perception of value. This is also evident in trends in customer satisfaction surveys since 2019 which shows the net promoter score associated with brand health falling year to year.

In addition to the basics there are additional common themes are areas of importance to consider when discussing value of transit for a person, community or region. A summary of the key feedback and findings that will help shape the metrics and message related to value are provided below.

### **Back to Basics**

Cleanliness, safety and reliability are essential to value and were mentioned throughout interactions with the public and stakeholders. Many noted cleanliness as a priority for transit to maintain and better serve current riders, while also recovering prior riders and gaining new ones. According to the feedback received, the decline of cleanliness on vehicles and at facilities directly affects the value of transit, and makes it less competitive against other forms of transportation. Many people provided feedback on how to improve cleanliness, such as enforcement of current prohibitions, easy to clean surfaces for bus and rail, non-cloth interior seating, additional trash bins in more accessible places and regular or more frequent janitorial services.

As for personal safety, the general feedback was that DART police presence seems to have declined since the pandemic. With less presence, many people noted that crime and panhandling seemed to have increased which is a deterrent to ride. To reinforce security, increased police and security features are needed. Many people would like to see real time crime monitoring and more police or security on platforms and transit vehicles.

On-time and reliable service is essential to riders. Improving this for those that rely on transit as their only means will also translate into benefits for all riders. The general feedback is that light rail and TRE services are typically reliable, whereas bus services tend to vary. They also noted that services such as GoLink and paratransit are popular because of their reliability, on demand nature, and door-to-door opportunities. GoLink is seen as key to helping complete short trips and provide first and last mile connectivity.

### **Beyond the Basics**

The public and stakeholder engagement efforts also provide insight into what is important beyond the basics. These items relate to the many benefits and value that transit provides to individuals, cities, and the larger region, including:

- Access and mobility to reach essential services that promote economic opportunity, health and education
- Access to special events and major destinations to avoid traffic and parking
- Environmental benefits related to air quality
- Reduced reliance on single-occupant vehicles
- Reduced stress from traffic congestion and travel time and/or cost savings
- Economic benefits including shaping development and placemaking

- Workforce development and availability

It is clear from the feedback that DART transit services add value to many individuals' daily lives and also plays a role in enhancing quality of life and supporting a sustainable future. These themes and related measures are discussed in the next chapter.

## 5 VALUE ANALYSIS

This chapter documents the value of DART transit services in a variety of ways. The measures of value are based on information from the research and literature review, as well as input from interviews, focus groups and the public survey. This chapter is organized to document and assess value at several levels:

- Macro (system-level), which is most applicable to a public transit system that is available and accessible across a large service area
- Micro (community-level), to assess the key benefits collectively enjoyed by DART member cities relative to the region as a whole and document unique benefits and services within each city
- Rider-level, which builds on the public survey and focus groups to feature real DART rider stories from around the service area, demonstrating how transit provides mobility and benefits for a range of people

### 5.1 Identifying Value

The practice of identifying, estimating, and aggregating value relies on a mix of data and discussion. The gold standard for evaluating infrastructure—required for most capital projects funded with public revenue—is the Benefit-Cost Analysis (BCA).

A BCA weighs input factors from specific sources (identified with guidance from the US Department of Transportation) that can be quantified in terms of economic value over time which can be compared to known and estimated expenses over the same time period to generate a ratio of project benefits to project costs. A positive ratio represents a project that generates or preserves value in excess of the resources required to design, build, operate, and maintain it.

BCAs are effective tools for the prioritization and planning of projects because they provide a straightforward yes-or-no answer to the key question of “is this project worth building?” However, this specificity comes at a cost; namely, that other factors that are difficult to value, communicate, or measure are excluded from this process, and policymakers must take care to evaluate BCA results in the context of this larger pool of factors.

We consider three categories of value factors:

- **Economic Factors** that use industry-standard valuation to estimate a dollar value of a given system (in this case, the DART transit network).
  - These factors can be aggregated to produce a net benefit which can be compared to expenses over time
- **Quantitative Factors** that can be estimated in units other than dollars

- Some qualitative factors can be valued in dollars, but may be more easily communicated or understood in different units, such as hours of time saved in traffic.
- Others may not easily be translated into dollars, due to a lack of national or local studies providing standard valuation.
- **Qualitative Factors** that represent significant value, but which cannot be (or have not been) measured locally.
  - Some factors may be extremely contextual—such as improvements in quality of life due to presence of aesthetic or cultural value.
  - Some quantitative factors represent hypothetical or counterfactual scenarios whose results are not known, such as the effects of transformative rather than incremental changes in infrastructure.

A further challenge in developing a comprehensive valuation of transit relates to where and to whom the value accrues. Value may be relatively easy to measure at a regional level; for example, the total time spent in traffic as estimated by a regional travel demand model, and thus multiplied by a regional median income to produce an estimate of total value of time lost to congestion.

However, disaggregating the realized value of an inherently regional system is difficult. Consider the following example: a transit user who lives in Plano takes DART light rail to their job in Dallas, and is able to bypass congestion on US-75 on their way to work. Does the value of this time accrue to:

- Plano, where the user lives;
- Dallas, where the user works;
- Richardson, where the time was saved; or
- Garland, Addison, Allen, or any other city whose residents experience lower levels of congestion on US-75 as a result of the parallel DART Red and Orange line service?

The value of transit is distributed—and experienced—at many levels. Transit certainly benefits its users, but other benefits are shared with those who do not use the system, and even those who do not live, work, or play in municipalities whose residents have voted to join DART.

The challenge is compounded by the difficulty of analyzing this value over time. Some benefits accrue annually, while others may reflect specific or periodic events (such as civic events or emergencies) or investments.

**Table 5-1** lists some of the system-level benefits associated with transit. While the majority of this chapter focuses on **Economic Factors** to demonstrate a conservative approach to valuing DART’s total impact relative to the investment of residents in the region, additional factors are provided throughout to show various ways to illustrate this value beyond mere economic return on investment.

Put differently, the economic value factors are a subset of the value DART provides—a conservative estimate.

**Table 5-1. Typical Value Factors**

	User Benefits	General Benefits	Municipal Benefits
Economic Factors (\$)	<ul style="list-style-type: none"> <li>▪ Reduced costs of vehicle ownership</li> <li>▪ Reduced fuel costs</li> <li>▪ Reduced maintenance costs</li> <li>▪ Reduced parking costs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reduced emissions and improved air quality</li> <li>▪ Reduced congestion</li> <li>▪ Fewer crashes</li> <li>▪ Improved access to education</li> <li>▪ Improved access to healthcare</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increased tax revenue</li> </ul>
Quantitative Factors (+)	<ul style="list-style-type: none"> <li>▪ Time saved in traffic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fewer crashes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reduced infrastructure spending</li> <li>▪ Access to federal revenue</li> </ul>
Qualitative Factors (♥)	<ul style="list-style-type: none"> <li>▪ Free time to do work/relax while travelling</li> <li>▪ Connectivity to other regional transit services</li> <li>▪ Ability to age in place</li> </ul>	<ul style="list-style-type: none"> <li>▪ Placemaking and walkable communities around transit stations</li> <li>▪ Resources for emergency and evacuation services</li> <li>▪ Increased property values<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Economic competitiveness</li> <li>▪ Stormwater deferral</li> </ul>

### 5.1.1 Making Comparisons

Estimating value is typically done by comparing different scenarios. This can take many forms:

- An economic study may compare two different cities with respect to travel behavior and economic characteristics, such as infrastructure and poverty status (and one reason to rely on economic factors is that they are easy to compare—by definition, they have the same units);
- A travel model may be run with different simulated infrastructure networks, such as the inclusion or exclusion of a rail line;
- A simple mathematical model may be used to estimate the effects of different inputs, such as changes in parking costs; or
- A qualitative model may be more like a thought experiment or case study.

<sup>2</sup> This lies in tension with cost of living and as a result is not included in the economic analysis.

In this work, the NCTCOG regional travel demand model was used to simulate the effects of “turning off” transit service as an option for travelers. This is a coarse estimate, but it does give insight into the magnitude of the impact of transit service, especially on traffic and congestion.

Transit infrastructure and operations are sometimes compared to road and freeway facilities in order to gauge their “value over replacement”. For example, a bus was found to yield net savings in road maintenance expenditures of up to \$1.00 per transit vehicle mile for every 10 SOV trips displaced by transit (Litman, 2022). Another typical analysis includes parking cost savings. Estimated savings from the mode shift from SOV to transit are between \$0.84 and \$2.18 per off-peak trip and peak trip, respectively (Litman, 2022). Other examples include findings that the D.C. region would need over 1,000 more roadway lane-miles to maintain the current travel speeds after forsaking transit (AECOM & Smart Growth America, 2011). Finally, transit services that defer or avoid expanding road capacity by attracting 1,000 daily peak-period SOV trips on a 5-mile segment yield \$510,000 of annual benefits (Litman, 2022).

When comparing transit and freeways, a core benefit of transit is its ability to scale up well.<sup>3</sup> Rail systems in particular have the ability to move enormous numbers of passengers in a much smaller space than the equivalent highway network, with operating costs rising in parallel with ridership rather than at the time of investment. Extra capacity in the light rail system represents untapped value available to users and municipalities—or a buffer against unforeseen events, such as increases in fuel prices.

A transit network may have a relatively (though not completely) fixed capital cost, but provide much more value with increased use.<sup>4</sup> Contrast this with a freeway, whose capacity is essentially fixed at the time of opening and cannot be expanded without significant capital investment. Likewise, the significantly smaller physical footprint of rail systems leaves dramatically more land available for development. The recent Red and Blue Line platform extensions project enables 3-car train operations systemwide. The Red and Orange lines along US 75 currently provide combined peak hour passenger carrying capacity of 2,600 with 2-car trains. Adding a third vehicle at minimal operating cost can increase this capacity to nearly 4,000 people. This is compared to about 2,000 vehicles per hour for a freeway lane). US-75 would need to be expanded at significant cost to match the flexible capacity of the rail system. Research comparing car- and transit-based commutes across the US posits that while construction of new highway infrastructure degrades the performance of existing facilities, the opposite is true for transit facilities. The larger the geographic region served by

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<sup>3</sup> In contrast, on-demand services can scale down well with reduced or uncertain demand—reducing operational costs in proportion to reduced usage.

<sup>4</sup> For a regionally-specific discussion of this phenomenon, see *D Magazine's* [How Public Transit And Roads Are Different](#).

the transit network, the better the network performs when comparing on-peak to off-peak travel times—i.e., how closely travelers come to experiencing “free-flow” travel during their commutes.<sup>5</sup>

Transportation funding is usually limited by statute in what it can be spent on—a dollar spent on improving freeways cannot be easily allocated to transit, or vice versa, making scenarios that compare freeway and transit investments more complicated than simply moving dollars around between the two options.

For funding sources that do have flexibility—such as the sales taxes through which DART is largely funded—it is difficult to predict the precise results of reallocating sales taxes from transit to other potential community priorities such as more police or economic development. Transit funding allows the use of additional federal funds to be spent in a region, extending the power of revenue from sales taxes to stimulate the local economy. In comparison, local economic development investment may simply move investment dollars around the region, adding no net benefit to the regional economy.

Based on input, fully realizing the value of DART comes down to first meeting the basic needs of those that use the system. As some focus group participants said, “perception is reality” – and the perception is that DART is not meeting the basic needs at this time. For this reason, a discussion on Basic vs. Motivational factors is provided below to set the stage for the value analysis and path forward.

## 5.2 Basic and Motivational Factors

In exploring the value that transit adds to a person, community or region, it is immediately apparent that many benefits correlate strongly with ridership. This matters both in a regional macro sense, to demonstrate the absolute benefits of the system, and in a local micro sense, to demonstrate how these benefits accrue to or are maximized by DART cities.

Put differently, the value of DART and its use by riders are closely linked. People choose to ride DART because it provides value to them; likewise, cities work closely with DART and invest both directly and indirectly in transit because the return on that investment offers financial, access, and quality of life benefits.

Of course, people also choose not to ride DART, and do so for a variety of reasons—any one of which prevents cities and residents from benefiting from the value DART provides. Rather than thinking about the value of transit as a single spectrum of reasons to ride or not ride, in which riders weigh out the net benefits, it is worthwhile to separate them into basic factors, whose absence results in dissatisfaction; and motivational factors, whose presence results in satisfaction. As one focus group participant noted, “There are a lot of good reasons to try transit, but we need the basics met to continue to use it.”

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<sup>5</sup> Conwell, Lucas. “Working Paper 3087: More Roads or Public Transit? Insights from Measuring City-Center Accessibility.” *National Bureau of Economic Research Working Paper Series* (January 2023)

Motivational factors are those that add value. Access to important destinations, mobility benefits, environmental sustainability, and economic vitality all inspire and maintain ridership: a virtuous cycle of investment and return. In contrast, people will not ride transit if the basic factors—safety, cleanliness, affordability, and reliability—are not met, regardless of the presence of motivational factors. **Table 5-2** provides an example of these factors.

**Table 5-2. Basic and Motivation Factors**

	Basic Needs Unmet	Basic Needs Met
Motivational Needs Met	I tried using the service—I didn't feel safe. I won't be using it again.	This service is great!
Motivational Needs Unmet	I wouldn't use this service in any circumstance.	I'd like to use this service, but it doesn't take me where I want to go.

These factors are not hierarchical; **both basic and motivational factors must be addressed in order to attract and maintain ridership**. While this study examines and quantifies some of the motivational factors in detail, it does note devalue or preclude the need to address basic factors that affect both the impression and use of transit.

### 5.2.1 Addressing the Basics

The DART Board of Directors recognizes that in many cases, basic needs of safety/security, cleanliness and reliability are not being met, preventing the region from unlocking the full value of DART. In Fall 2022, the DART Board authorized the use of the Mobility Assistance and Innovation Fund (MAIF) to be used immediately to address many of these basics needs.

Chapter 6 outlines a range of current and future efforts aimed and addressed these basic needs. These efforts are being consolidated into a comprehensive Rider Improvement Program aimed at enhancing service quality and the customer experience.

## 5.3 System Benefits

DART’s contributions to regional economy and quality of life come in many forms. Some benefits accrue directly to users; others, to the general public; while still others free up public resources and improve local and municipal economies. This analysis of the value of DART transit services uses relevant data such as transit ridership, passenger miles of travel, vehicle revenue miles, vehicle revenue hours, average transit fares by transit mode, as well as information from a literature review of transit benefits. The analysis examines changes in travel from transit and passenger vehicles in the absence of DART services.<sup>6</sup>

The value of the DART system level benefits analyzed via a no-transit scenario is measured through the following categories in terms of annual benefits or avoided costs:

**Table 5-3. DART System Benefits**

Economic	Access + Mobility	Environmental + Safety
<p><b>1a. Enterprise Benefits.</b> The enterprise spending of the DART system reverberates through the region’s economy each year, as the agency employs residents and purchases goods and services. Through this direct payroll, nonpayroll spending rippling through the region’s economy, DART generates significant economic activity by creating jobs and spurring purchases of goods and services.</p>	<p><b>2a. Roadway and Transit User Benefits.</b> DART transit services reduce trips on roadways throughout its service area because transit services are present as an alternative option. Riders who choose to use transit instead of auto and other motorized modes reduce congestion through lower vehicle miles of travel (VMT) and lead to reduced travel times and costs for roadway users.</p>	<p><b>3a. Net Traffic Crash Cost Benefits.</b> The use of transit instead of auto and other motorized modes reduces the number of vehicles on roadways throughout the DART service area and lowers the risk of vehicle collisions and incidents.</p>
<p><b>Other Economic Effects.</b> Economic effects—not directly realized by households or users, but rather in the broader economy, include secondary effects on tax revenue, property values, and other economic factors.</p>	<p><b>2b. Affordable Mobility Benefits.</b> The affordable mobility benefits from DART transit service promote better health outcomes and educational and job opportunities resulting from more reliable access to jobs, education, and health care through transit.</p>	<p><b>3b. Environmental Sustainability Benefits.</b> The quantity of vehicular emissions entering the atmosphere is tied to the amount and type of fuel consumed by every vehicle in the transportation sector. Though some transit vehicles are currently less fuel efficient than automobiles on a per-mile basis, transit modes as a whole consume less fuel and emit less pollutants than personal</p>

<sup>6</sup> Modeled through the use of the NCTCOG regional travel demand model, run both with and without DART services.

Economic	Access + Mobility	Environmental + Safety
		vehicles because transit vehicles displace a larger number of automobiles due to their higher passenger capacity. The smaller number of transit vehicles needed to carry a comparable number of passengers reduces total emissions. This analysis determined the benefits of transit service in reducing vehicle emissions.

Source: Cambridge Systematics

The first two categories (1a and 2a) examine annual regional economic impacts from transit system expenditures and from direct travel costs avoided by households (riders). These are used as inputs to calculate the regional economic impacts, which are explained in more detail in the following sections.

Categories 2b through 3b represent broader direct impacts to the region associated with a lack of transit services. These are broad-based direct impacts, not associated with particular economic sectors, but rather affect the whole region and are enjoyed by many, especially DART cities.

The project team identified a set of benefit types, metrics, and unit costs for Categories 2a through 3b to incorporate into an economic impact analysis spreadsheet model. Category 1a benefits are based on capital and operating expenditures from DART for 2019, inflated to 2022 dollars.

### 5.3.1 Overview

The following provides an overview of the analytical methods used to calculate the economic value of DART transit services. Table 5.2 outlines the variety of sources, models, and datasets used to generate a composite economic valuation of DART services.

**Table 5-4. Sources and Models**

Source	Model/Dataset	Description	Factors
North Central Texas Council of Governments (NCTCOG)	Regional Travel Behavior Model (2019) <sup>7</sup>	A regional model used to estimate the effects of demographics, infrastructure, and transportation options on travel activity.	Trips by mode; change in travel behavior; time, speed, and distance of travel by mode.
IMPLAN	Regional Economic Model	A model estimating the direct and indirect employment, economic, and revenue benefits generated from transportation infrastructure projects	Economic Benefits including Taxes, GDP, and Wages
DART	Transit Operating Statistics (2019; inflated to \$2022)	Financial and operating statistics for DART	Ridership by mode, operating costs and revenues.
Internet Search	Area Average Parking Costs	Parking rates for Dallas area parking facilities	Cost per day for parking automobiles
USDOT	BCA Guidance	A list of standard valuation factors for evaluating transportation infrastructure	Standard Vehicle Operating Costs; Crash Costs; Emissions Costs
CalTrans	Cal B-C Emissions Values <sup>8</sup>	Transportation benefit cost model using running emissions values for vehicles by type from EMFAC environmental model.	Running emissions of various types of vehicles in grams per mile
TxDOT	Crash Records Information System (CRIS)	Texas Department of Transportation crash reporting system	Local crash rates
TCRP Research Results Digest 393: Selected Indirect Benefits of State Investment in Public Transportation (2015); and, American Public Transit Association	Studies/Surveys	National distributions of transit trips by purpose. Estimated social benefits of transit trips.	Educational Benefit Rate per Trip; Health Benefit Rate per Trip

The source and value of these inputs are presented in Table 5-5. All Unit Cost values were adjusted for inflation from the source year to conduct the analysis in 2022 dollars.

<sup>7</sup> NCTCOG Model Data o 2019 Boardings and Trips

<sup>8</sup> <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/data-analytics-services/transportation-economics/cal-bc/2021-cal-bc/f0009451-cal-bctechsupplementvol4v4-a11y.pdf>

**Table 5-5. Economic Impact Analysis Unit Benefits (Inputs)**

Benefit Category	Benefit Type	Unit Cost	Metric	Source
Roadway and Transit User Benefits	Reduced Automobile operating costs	\$0.51	Passenger Mile Traveled	USDOT 2022 <sup>9</sup>
	Reduced parking costs	\$11.00	Transit trip	Internet search of Dallas area parking costs
	Cost of congestion	\$0.124	Vehicle Mile Traveled	USDOT 2022
Net Traffic Crash Cost Benefits <sup>10</sup>	Avoided “unknown” Injury	\$183,770	Incident	USDOT 2022
Environmental Sustainability Benefits	CO Emissions Reduction	\$170.00	Metric ton	Caltrans 2021
	CO2 Emissions Reduction	\$53.00	Metric ton	USDOT 2022
	NOx Emissions Reduction	\$15,800	Metric ton	USDOT 2022
	PM10 Emissions Reduction	\$566,800	Metric ton	Caltrans 2021
	SOx Emissions Reduction	\$42,300	Metric ton	USDOT 2022
	VOC Emissions Reduction	\$4,300	Metric ton	Caltrans 2021
	PM2.5 Emissions Reduction	\$761,600	Metric ton	USDOT 2022
Affordable Mobility Benefits	Healthcare cost reductions	\$12.067	Transit trip	TCRP Research Results Digest 393: Selected Indirect Benefits

<sup>9</sup><https://www.transportation.gov/sites/dot.gov/files/2022-03/Benefit%20Cost%20Analysis%20Guidance%202022%20%28Revised%29.pdf>

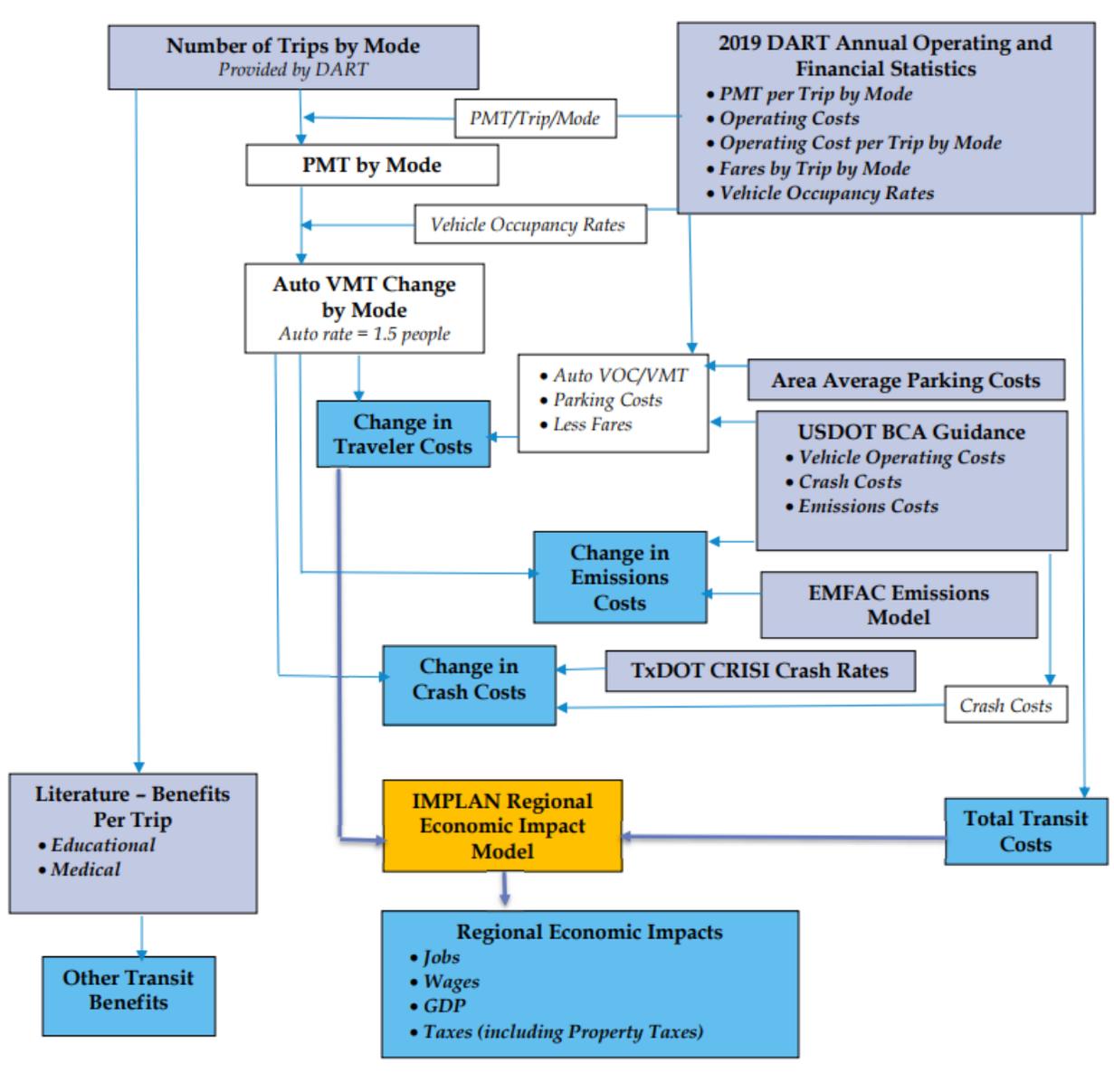
<sup>10</sup> The data does not provide the severity of injuries, therefore the monetary value for “unknown” injury per USDOT is used.

Benefit Category	Benefit Type	Unit Cost	Metric	Source
				of State Investment in Public Transportation (2015) <sup>11</sup>
	Education-related trip benefits	\$7.211	Transit trip	TCRP Research Results Digest 393: Selected Indirect Benefits of State Investment in Public Transportation (2015)

Definitions and estimation processes are provided below and illustrated in Figure 5-1.. The approach was to estimate the annual impacts on travel and societal costs avoided, and thus the resulting benefits of DART.

<sup>11</sup> <https://nap.nationalacademies.org/catalog/22174/selected-indirect-benefits-of-state-investment-in-public-transportation>

**Figure 5-1. Overview of Analytical Method**



Source: Cambridge Systematics

Benefits are then estimated by combining all of the above inputs as indicated below:

- Total Transit Costs.** The enterprise spending of DART reverberates through the region’s economy each year. DART employs residents and purchases goods and services from local, regional, national, and even international vendors. Through this direct payroll, nonpayroll, and capital spending, it generates economic activity by creating jobs and spurring purchases of

goods as well as services. It can be assumed that without DART, the region would lose these expenditures and associated benefits. To quantify these benefits, Operating Costs from 2019 DART Annual Operating and Financial Statistics, inflated to 2022 dollars are DART Operating expenditures for input into the IMPLAN Regional Economic Model.

- **Estimating Automobile VMT Change by Mode.** The Average PMT per Trip by Mode is multiplied by the Number of Trips by Mode to obtain Total PMT by Mode. The resulting PMT by Mode is in turn divided by the corresponding Vehicle Occupancy Rates to group those miles of individual passengers that would not have the option to take transit in its absence, into miles of a number of vehicles that would transport them (VMT).
- **Change in Traveler Costs.** Benefits derived from the Change in Traveler Costs represent a concrete, positive cashflow for households. For this reason, it will be used later for the economic impact analysis. The estimation of the Change in Traveler Costs consists of three elements, where the first two are added and the third one is subtracted:
  - Vehicle Operating Costs. Additional Auto VMT generated because of the change of scenario are multiplied by the Vehicle Operating Costs per VMT suggested by the U.S. DOT Guidance, obtaining a total cost for operating autos instead of riding transit.
  - Parking Costs. The Area Average Parking Costs are multiplied by the Number of Trips by Mode. Now every formerly transit trip is undertaken on a private vehicle, and this step aims to represent the associated parking costs of that option.
  - Less Fares Costs. Although private vehicles imply the additional costs estimated in the previous two steps, riding transit has a cost passengers face directly: fares. Fares by Trip by Mode are multiplied by the Number of Trips by Mode to obtain a total fare cost for each mode. This term is subtracted from the addition of the first two.
- **Change in Emissions Costs.** Greenhouse gas (GHG) emissions from different transportation modes represent health risks and damage. However, these emissions are not uniform, but rather related to the amount and types of fuel consumed by every vehicle in the transportation sector. Though some transit vehicles produce more pollution on a per-mile basis, transit modes on the whole emit less pollutants than personal vehicles due to economies and efficiencies of scale. This way, benefits derived from using cleaner vehicles, or improved vehicle occupancy that reduces emissions overall, are counted. Additional Auto VMT generated because of the change of scenario are multiplied by the Emission Rates coming from the EMFAC Emissions Model <sup>12</sup>. This results in an array of total emissions for different gases / pollutants. The latter is in turn multiplied by monetization rates or Emission Costs for each gas / pollutant, obtained from the U.S. DOT Guidance. Emissions as estimated using EMFAC emissions parameters associated with from transit trips and their associated costs are subtracted to obtain the net

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<sup>12</sup> <https://arb.ca.gov/emfac/>

change in emissions. These may change as alternative fuels and technologies such as electric vehicles are introduced-these are not accounted for in this analysis.

- **Change in Crash Costs.** The likelihood of being involved in a crash varies according to the type of vehicle, while it is also impacted on a per-passenger or per-trip basis by the increase or reduction in the number of vehicles because of differing vehicle capacities / occupancy rates. The reallocation of trips using different modes results in riskier or safer travel according to those two aspects. Generally speaking, the use of transit instead of auto and other motorized modes, reduces the number of vehicles on DART service area roadways, which in turn reduces the risk of vehicle collisions and incidents. To calculate this benefit, Additional Auto VMT generated because of the change of a no-transit scenario are multiplied by Crash Rates obtained from TxDOT CRISI data to obtain an expected number of crashes for each kind (fatalities, injuries, property damage-only). Crashes have a monetary cost representative of their kind of damage, as indicated by the U.S. DOT Guidance, so the number of added crashes of each kind are multiplied by their specific Crash Costs according to how the different kinds of damage are distributed among them. Expected crashes under current conditions (with transit) are subtracted to return the net change in crash costs.
- **Other Transit Benefits.** Other Transit Benefits are less direct but have been estimated for Educational and Medical per trip benefits (from the literature) are multiplied by the Number of Trips by Mode to calculate the benefits belonging to each of these types of benefits. These benefits calculated apply only to those trips which are educationally (9% of trips) or health related (4% of trips). These percentages are based on the American Public Transit Association's publication "Who Rides Public Transportation?"<sup>13</sup>

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<sup>13</sup><https://www.apta.com/wp-content/uploads/Resources/resources/reportsandpublications/Documents/APTA-Who-Rides-Public-Transportation-2017.pdf>

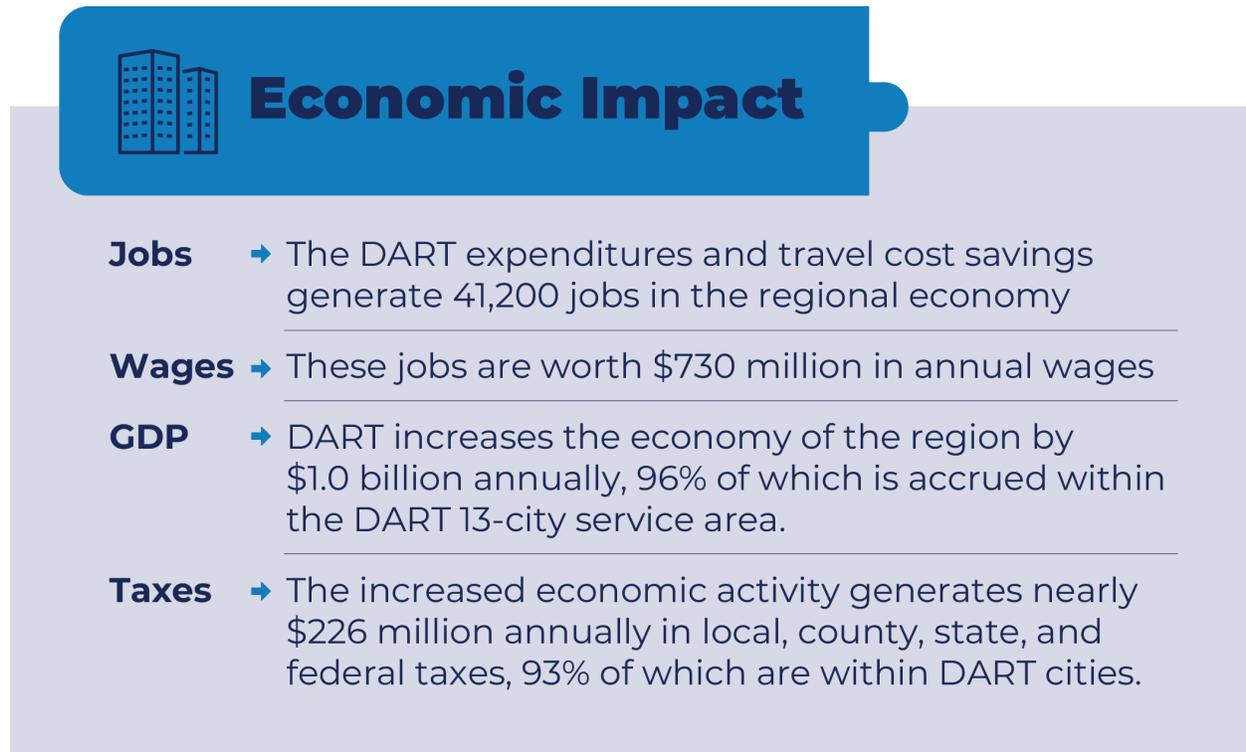
## 5.3.2 Analysis

### ***Direct Enterprise Impacts***

The direct impacts of transit service in the DART region include the expenditure of **\$657 million** in operating expenses in 2022 dollars<sup>14</sup>. As further discussed below, IMPLAN and other models estimate how these expenditures ripple through the economy, generating jobs, wages, GDP, and tax revenue as well as benefits to society at large.

The total regional impacts associated with the DART services are estimated using the IMPLAN Economic Impact model for the DART Service Area and six-county region. IMPLAN provides a measure of the effects of economic stimuli on total on the region’s economy. The IMPLAN model is used to estimate the total (combined direct, indirect, and induced) economic impacts of DART transit service in the region in terms of jobs, wages, value added (Gross Domestic Product or GDP), and tax revenues resulting from DART. The stimuli modelled include the Direct transit expenditures by DART and the travel cost savings by households made possible by transit. Figure 5-2 summarizes the economic impact analysis findings.

**Figure 5-2. DART Economic Impact in the Dallas-Fort Worth Region**



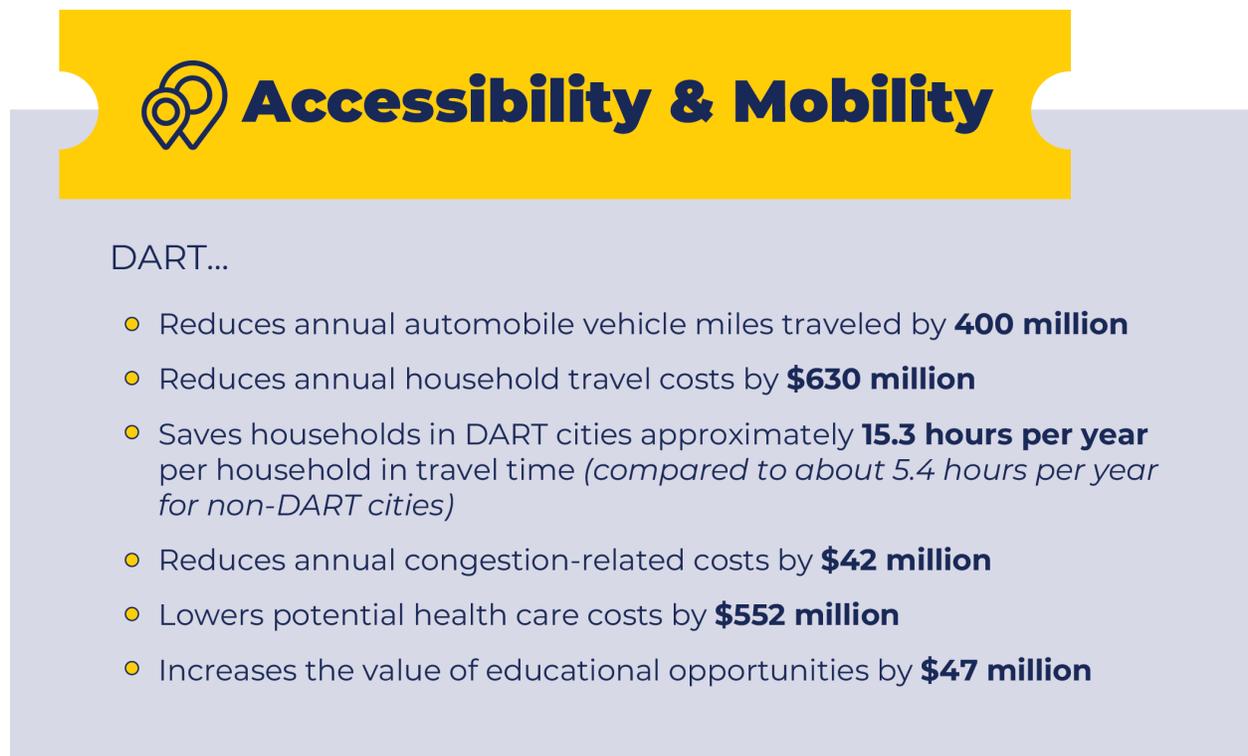
<sup>14</sup> Based on 2019 DART Operating and Financial reports inflated to 2022 dollars using the consumer price index.

The job impacts represent the transit workers; workers for companies that provide materials, products, and services to transit; companies that supply those companies; household expenditure of wages from all those workers creating jobs based on meeting those purchases. These total approximately **63 jobs per \$1 million in annual transit expenditures**. The transit expenditures and any impacts transit have on travel costs which impacts household spending, ripple through the economy, and through “economic multiplier effects” create impacts to the region’s economy several times the original transit expenditure amount.

### **Societal Benefits**

These benefits are those directly felt by roadway and transit users. DART transit services provide benefits to the region in terms of reducing vehicular miles travel (VMT) with resulting reduced travel costs (used as input for the regional economic model). The reduction in VMT also lowers the societal costs of congestion, emissions, and crash reductions. Transit service in the DART region also improves access to jobs and health and educational opportunities, also considered societal benefits. In total, direct roadway user and the broader societal benefits of DART annually are **\$880 million**. Figures 5-3 and 5-4 summarize the accessibility and mobility, and the environmental and safety related benefits of the DART system.

**Figure 5-3. DART Accessibility & Mobility Benefits in the Dallas-Fort Worth Region**



These values are derived from the shift of passengers from transit services to automobiles. Using transit vehicle and automobile occupancy rates from the DART Annual Agency Reports and U.S. Department of Transportation (USDOT) benefit-cost guidance<sup>15</sup>, the passenger miles of transit are shifted to “new” automobile vehicle miles traveled (VMT) on the region’s roadways on the regional demand model.

Congestion is a major factor in travel around the Dallas region; INRIX estimates that the Urbanized Area loses up to 56 hours lost to delays per person year.<sup>16</sup> The NCTCOG 2021 Congestion Management Process update notes that travel takes 41 percent longer to complete due to congestion, at an annual cost of \$12.1 billion.<sup>17</sup>

The societal health and education benefits of the transit services in the DART region are based on review of existing literature which provides guidance for evaluating the indirect benefits of transit investment. Improved transit access is hypothesized to lead directly to increased educational opportunities, which can also reduce unemployment and produce higher incomes in the long run. In addition, improved access to health care provided by transit can reduce public and private sector costs for health care services, particularly for people with chronic health conditions requiring regular care to prevent more severe health emergencies.

Additionally, existing literature demonstrates that system-level public expenditures on public assistance programs, such as SNAP benefits, decrease due to the improved job access that transit service provides, particularly to low-income residents.<sup>18</sup> Literature also demonstrates a correlation between transit access and reductions in poverty rate at the Census tract level. While it is likely that neighborhoods throughout the DART service area benefit in similar ways, this type of granular comparison of Census tracts is outside the scope of this study.

The literature provides generalized ranges of benefits across many transit scenarios (geographic layouts, populations, and demographics served; or types of transit services (fixed route, on-demand, bus/rail, etc.). Based on the literature, ranges of values are consolidated into generalized benefit values per trip and used to monetize the travel impacts of DART transit services in the region.

The mobility estimates are also used to calculate potential new automobile crashes based on published per-mile crash rates<sup>19</sup> providing estimates of increased crashes, fatalities, and injuries in the absence of DART transit service. Providing transit service in the DART region helps avoid these crashes and their consequences which benefits the region and all travelers. The value of these avoided crashes determined by using crash valuations provided by the USDOT.

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<sup>15</sup> NTD Annual Transit Agency Profiles. <https://www.transit.dot.gov/ntd/transit-agency-profiles>

<sup>16</sup> <https://inrix.com/scorecard/>

<sup>17</sup> <https://www.nctcog.org/trans/manage/congestion-management-process>

<sup>18</sup> These estimates were not calculated for the DART region due to the complexity of estimating economic outcomes in a high-growth area during a time of high inflation.

<sup>19</sup> [https://ftp.txdot.gov/pub/txdot-info/trf/crash\\_statistics/2018/02.pdf](https://ftp.txdot.gov/pub/txdot-info/trf/crash_statistics/2018/02.pdf)

**Figure 5-4. DART Environmental and Safety Benefits in the Dallas-Fort Worth Region**



## Environmental & Safety

DART...

- Reduces automobile crashes by 600 crashes saving **\$106 million** in crash-related costs
- Reduces carbon emissions by **240 million pounds**
- Reduces total emissions costs by **\$3 million**

The reduction in greenhouse gas emissions (GHG) associated with DART services is based on the VMT shift from transit to automobile in the absence of transit service in the DART region, assuming average automobile occupancy of 1.15 persons per vehicle. The emissions values by vehicle type from the Caltrans Cal-B/C model is used to determine the increase in GHG gas emissions the increased automobile travel would create. The societal cost of such emissions is calculated using Caltrans and USDOT valuations for GHG emissions.

Of course, these estimates do not capture the full range of DART's contribution to regional health and safety. DART's current bus fleet uses 100 percent renewable natural gas (RNG), and the agency as a whole uses 30 percent renewable electricity for facilities and light rail, with plans to increase to 100 percent renewables. Reduced emissions have significant impact on local air quality as well as contributions of greenhouse gasses.

### ***Overall Value of Transit Service in the DART Region***

The potential value of transit service in the DART region is over **\$2.6 billion** annually, consisting of transit-stimulated wages and GDP (**\$1.8 billion**) plus the broader societal impacts (**\$880 million**) (**Table 5**). DART returns **nearly \$4 in value for every dollar spent**. At the household level, by promoting mobility and reducing travel costs, DART provides societal benefits a typical household in the region—regardless of the DART service area boundary—by **\$500 per year**; DART cities realized these benefits at a higher rate of \$800 per year, six times the non-DART cities.

While these calculations reflect the return on operating investment, capital investments of course create their own economic benefit. While operating costs are more stable year over year, capital

investments provide the dual stimulus of direct economic investment paired with increased ability to conduct the operations that power the investments shown in this chapter.

An ongoing series of studies by the University of North Texas' Economic Research Group has tracked the impact of DART Light Rail capital investments on local development.<sup>20</sup> These studies have reviewed numerous development projects completed near DART light rail stations since 1999. In the latest study, 81 such developments completed between 2016 and 2018 had a property value of over \$5 billion. Properties surrounding DART stations rent for substantially more than surrounding projects. Residential properties have a 17.9% rent premium and commercial and office space have premiums of 23% and 5.8% respectively. In total, properties developed near DART stations since 1999 have an aggregate value of \$16 billion, with additional contributions to the economy through direct and indirect means similar to the discussion of wage, tax, and other economic factors above.

Annual local property tax revenue increases of **\$14.6 million** result from an estimated overall property value increase of **nearly \$3.3 billion**. Of course, this quantity lies in tension with affordability of housing; it is not included in aggregate calculation of DART's benefit to the community.

Additional benefits are generated at the community level, but their impacts are difficult to model and estimate locally. For example, DART service facilitates lower SOV usage and ownership within communities, which reduces vehicle emissions and parking demand. As a result, localized air quality is improved and impermeable surface (in the form of surface parking lots) is reduced, in turn reducing stormwater runoff into local sewer systems. At the community level, these benefits are difficult to aggregate and estimate due to the sensitivity of their measurement, but the mechanisms by which the benefits are generated are well-understood and demonstrated at the macro-level.

## 5.4 Community-Level Benefits

The majority of regional and DART Service Area system-level benefits discussed above are enjoyed by and accrued within DART cities. In addition to these broad economic and societal benefits, the value of transit study includes development of a series of city level summaries focused on the unique characteristics of each DART city how DART mobility options serve their residents and businesses. Alignment with plan and policy goals related to transportation and growth were also reviewed, acknowledging the role of transit in supporting city objectives.

These summaries are in development and are being provided to each city prior to inclusion in the report. These summaries will then be incorporated into a series of individual city "DART Service and Benefits" information sheets for use by city staff and leadership.

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[https://cdn.masstransitmag.com/files/base/cygnus/mass/document/2017/05/UNT\\_report\\_TOD\\_Impacts\\_final\\_051117.pdf](https://cdn.masstransitmag.com/files/base/cygnus/mass/document/2017/05/UNT_report_TOD_Impacts_final_051117.pdf)

The draft summaries cover key information such as:

### **City Characteristics**

- Socio-Demographic Characteristics
  - Population and employment
  - Demographics
- Travel Characteristics
  - Employment Travel
    - Employee Imports and Exports
    - City Resident/employed
  - Transit Travel (based on the most available 2014 On-Board Transit Survey)
    - Trip distribution and average length
- Activity Centers / Major Employers

### **DART Services and Facilities**

- Transit services
- Transit facilities
- Related transportation organizations/services by others

### **DART Benefits**

- Economic Impact (city and/or system-level)
  - Workforce Availability
  - Travel Time and Cost Savings
  - GDP/Taxes
  - DART Economic Impact Study information
- Access & Mobility (all City level)
  - DART Access – residents
  - DART Access – employers
- Transit Reliant Population Accessibility
  - Low Income population accessibility
  - Transit reliant jobs access
  - Access to health, services, education
- Environmental & Safety.

### **Land Use and Transit Oriented Development (TOD)**

- Comprehensive and/or Specific Area Plans and Strategies
- Specific TOD or Transit Supportive projects
- Key Opportunities

### 5.4.1 Summary

As described above, DART provides value to the region and the DART Service Area in excess of its operational costs-nearly \$4 in benefits per dollar of transit expenditure. Table 5-6 summarizes these benefits and the contribution estimated within the DART Service Area. As shown, the vast majority of benefits is accrued to DART cities.

Table 5-6. Annual DART Benefits and Contributions to the Region and DART Service Area

Category	Subcategory	Value	Calc	Item	DART Cities	All Others	Total	% DART
<b>Calculation Inputs</b>		<b>EX</b>		2019 Expenditures (in \$2022)			\$658,000,000	
		<b>HH</b>		Households	946,000	832,000	1,778,000	
		<b>JOBS</b>		Jobs created or induced			41,200	
		<b>VMT</b>		Mode shift btw. Auto and Transit			400,000,000	
		<b>HRS</b>		Hours in Traffic Avoided per HH	15.3	5.4	8.7	
		<b>CRSH</b>		Crashes Avoided	496	104	600	
		<b>CRBN</b>		Pounds of CO/CO2 reduced			265,000,000	
<b>Societal Benefits</b>	Access/Mobility	1a		HH Travel Cost Reduction	\$561,000,000	\$69,000,000	\$630,000,000	89%
	Env./Safety	1b		Crash Cost Reduction	\$87,000,000	\$18,000,000	\$106,000,000	82%
	Access/Mobility	1c		Health Cost Reduction	\$45,000,000	\$7,000,000	\$52,000,000	87%
	Access/Mobility	1d		Congestion Cost Reduction	\$35,000,000	\$7,000,000	\$42,000,000	83%
	Access/Mobility	1e		Education Access Benefits	\$40,000,000	\$7,000,000	\$47,000,000	85%
	Env./Safety	1f		Environmental Cost Reduction	\$2,000,000	<\$1m	\$3,000,000	67%
	Access/Mobility		1a,c,d,e	<i>Total Access + Mobility</i>	\$681,000,000	\$90,000,000	\$771,000,000	88%
	Env./Safety		1b,f	<i>Total Environment + Safety</i>	\$89,000,000	\$18,000,000	\$109,000,000	82%
	<b>1</b>	<b>1a-f</b>	<b>Total Societal Benefits</b>	<b>\$770,000,000</b>	<b>\$108,000,000</b>	<b>\$880,000,000</b>	<b>88%</b>	
<b>Economic Benefits</b>	Taxes	2a		Local Property Taxes	\$14,000,000	<\$1m	\$15,000,000	93%
	Taxes	2b		Other Local Tax Revenues	\$27,000,000	\$5,000,000	\$32,000,000	84%
	Taxes	2c		County Tax	\$4,000,000	<\$1m	\$4,000,000	100%

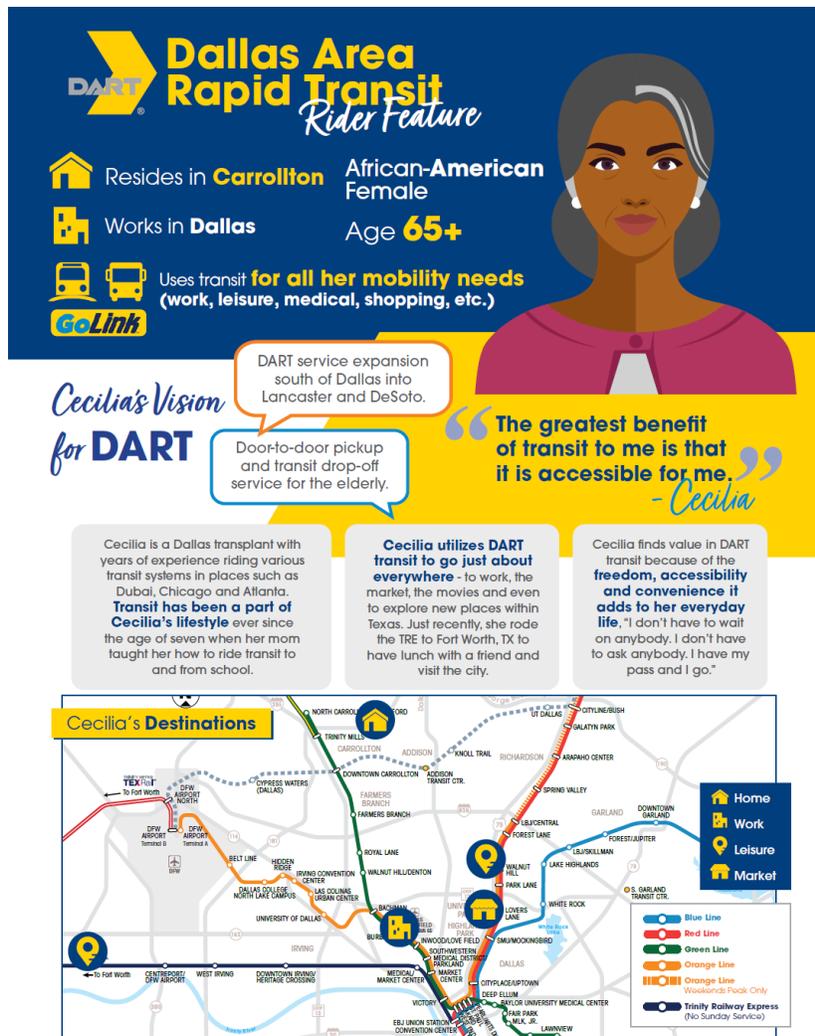
Category	Subcategory	Value	Calc	Item	DART Cities	All Others	Total	% DART
	Taxes	2d		State Tax	\$31,000,000	\$2,000,000	\$33,000,000	94%
	Taxes	2e		Federal Tax	\$135,000,000	\$7,000,000	\$142,000,000	95%
	<b>Taxes</b>	<b>2</b>	<b>2a-e</b>	<b>Subtotal Tax</b>	<b>\$211,000,000</b>	<b>\$14,000,000</b>	<b>\$226,000,000</b>	<b>93%</b>
	<b>Productivity</b>	<b>3</b>		<b>GDP</b>	<b>\$990,000,000</b>	<b>\$42,000,000</b>	<b>\$1,032,000,000</b>	<b>96%</b>
	<b>Wages</b>	<b>4</b>		<b>Wages</b>	<b>\$705,000,000</b>	<b>\$26,000,000</b>	<b>\$731,000,000</b>	<b>96%</b>
		<b>5</b>	<b>2+3+4</b>	<b>Total Economic Benefits</b>	<b>\$1,201,000,000</b>	<b>\$56,000,000</b>	<b>\$1,989,000,000</b>	<b>96%</b>
	<b>Societal, Productivity, and Wage</b>	<b>6</b>	<b>1+3+4</b>		<b>\$2,465,000,000</b>	<b>\$176,000,000</b>	<b>\$2,643,000,000</b>	<b>93%</b>
	<b>Less DART Expenditures</b>	<b>7</b>	<b>6-EX</b>				<b>\$1,985,000,000</b>	
	<b>Gross Per Household</b>	<b>8</b>	<b>6/HH</b>		<b>\$2,600</b>	<b>\$200</b>	<b>\$1,500</b>	
	<b>Net Per Household</b>	<b>9</b>	<b>7/HH</b>				<b>\$1,100</b>	
	<b>Societal Per Household</b>	<b>10</b>	<b>1/HH</b>		<b>\$800</b>	<b>\$100</b>	<b>\$500</b>	
	<b>Benefit Per Dollar Expended</b>	<b>11</b>	<b>6/EX</b>				<b>\$4</b>	

Source: Cambridge Systematics

## 5.5 Rider-Level Benefits

In addition to the system and community level benefits, people who use transit regularly or only as needed also benefit directly from DART. While the broader analysis captured benefits for users, non-users and the average household, the value of transit to individuals are best captured by their stories. Using the public survey and focus group information, DART reached out to several riders to opt in for a more detailed survey and interview. Several riders agreed to be interviewed and their stories are captured by “Rider Feature” stories. Appendix C includes these features. **Figure 5-5** is a sample of one rider, Cecilia, who lives in Carrollton, Texas.

**Figure 5-5. Rider Feature Example**



## 6 LOOKING AHEAD – MAXIMIZING VALUE LOCALLY AND REGIONALLY

DART provides a variety of benefits and is a key component of the broader transportation network in our region and 13-city service area. DART services provide access to jobs, healthcare, education, and more, promoting prosperity and economic opportunity for those that need it the most, but also providing a reliable alternative for those that choose to avoid the congestion, stress and travel costs associated with driving alone. As the fourth largest metro area in the country and fifth most congested, businesses and residents expect options. Transit can tip the scale for corporate relocation decisions, make the region more competitive for hosting national or international events, and influence a person’s decision on where to live and work.

This study has documented benefits associated with enterprise operations, economic development and real estate, cost and travel time savings, accessibility and mobility, and environmental and safety. Many of the quantitative measures are calculated by comparing the current network to a hypothetical “no transit” scenario. That is, removing transit from the transportation network results in a variety of costs that can be avoided and benefits that can be achieved if transit was available.

These economic benefits aren’t easily assignable to a particular DART city to compare to the sales tax that is collected within that city since the use of transit in most cases crosses city boundaries. More importantly, the entire transit system is accessible to everyone regardless of which city someone lives in. Residents and employees traveling throughout the entire service area do not recognize boundaries.

Voters decided to allow one percent of sales tax collections within their jurisdictional boundary to be collected by the state and provided to DART. With that sales tax revenue comes responsibility and opportunity, both for DART and for its 13 cities.

DART’s responsibility has been to build, operate and maintain a system that is responsive to the original plan voted on in 1983, while evolving to meet the changing growth patterns and mobility needs in the service area. Since forming 40 years ago, the travel and development patterns within the region and the 13 DART cities, along with customer needs and expectations, have changed considerably. Technology and microtransit have enabled expansion of innovative service strategies to build upon the backbone of the system provided by DART bus and rail assets. However, there is underutilized capacity in the transit system. While growth in ridership had been relatively flat, impacts to ridership on the system have been exacerbated by the COVID-19 pandemic, hybrid work trends, and continued auto-focused and decentralized development patterns in the region.

Where DART is right now is at an inflection and an opportunity point. Moving forward from this point to continue to add value for our riders and our communities has to be done in collaboration with each other and in partnership with key stakeholders. The following outlines some, but not all, of the key opportunities to capitalize on the untapped potential of the transit network.

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## 6.1 Addressing the Basics through Customer Experience Initiatives

Based on trends in the annual DART customer satisfaction survey and through engagement efforts in this study, DART is focused on fundamentally improving our customer experience to give our riders transit service that exceeds their expectations. In the near term, DART is investing more than \$110 million to improve the customer experience. These improvements emphasizing creating a cleaner, safer, and more reliable journey for current riders and to support efforts to regain riders that may have stopped using DART.

DART continues to undertake aggressive agency-wide cleaning and safety protocols on buses, light rail, paratransit vehicles and properties. DART recently launched a new pilot program, the DART Clean Team Initiative, which is increasing the agency's commitment to riders to provide a safe and clean transit experience. DART is also taking a multi-layered approach to security. Coupled with regular patrols and fare inspector presence, DART has security cameras at transit centers and on platforms and in partnership with the Transportation Security Administration, teams periodically conduct high visibility patrols throughout the DART system. DART's See Something Say Something safety and security app is a simple and discreet way for riders to report safety concerns directly to DART Police. With an increase in unhoused populations over the last few years, DART has kicked off its Unhoused Initiative and is working with municipal and non-profit partners on a human-centered approach to addressing homelessness on our system.

While staffing issues affected the rollout of the new bus network in January 2022, hiring initiatives have been successful allowing DART to restore and even expand services in January 2023. This included expansion of GoLink service to seven days a week, from 5 a.m. to midnight, to match local service standards. DART partnered with Uber as a service provider across all GoLink Zones to enhance on demand service availability within communities.

## 6.2 Collaboration Opportunities

### 6.2.1 Integrated DART/City Area Plans

DART will be undertaking the development of integrated area mobility plans for each DART city with the support of the DART General Planning Consultant. The intent of these plans is to conduct a holistic assessment to document both near-term as well as longer-term opportunities for collaboration to advance mutual goals and enhance quality of life, access and mobility. Elements will include:

- Service enhancements – Bus, rail and/or GoLink zone enhancements, most of which will largely be addressed through the Phase 2 Bus Network Redesign efforts which is underway and will document near-term and longer-term opportunities across the service area.

- Multi-modal connectivity improvements – Plans and opportunities to improve pedestrian, bicycle, and/or other micromobility (e-bike, scooter) access within ½ mile of transit stops or facilities.
- DART facility enhancements – Opportunities to add, relocate, modernize, redevelop, or right-size passenger transfer facilities to better integrate with and serve surrounding neighborhoods or activity centers.
- Corridor investments – Opportunities to enhance speed, reliability, safety, and access within key bus corridors. This will entail alignment with city improvements to enhance and prioritize transit travel and access in key corridors.
- Land Use Coordination – Opportunities to maximize development and transit supportive uses around bus corridors and transit facilities (both bus and rail). Plans will document existing and planned TOD efforts, and outline future opportunities to advance transit supportive land use strategies that can support mode shifts to transit and reduce reliance on automobile trips.
- Innovation – Opportunities related to smart city initiatives, customer information, or integration of ideas into the GoPass app to support decision making and ease of transit use.

These plans will build upon key goals and actions in the DART Transit System Plan and individual city comprehensive, area or strategic plans and result in specific recommendations to advance within each city. Opportunities to leverage local City/DART funds through grants or other external forces will be documented as well.

## 6.2.2 Local Transit Supportive Policies

While DART provides a range of services, use of those services is driven by the service design and even more so by the environment and characteristics of the area in which it operates. Cities control their right-of-way, land use development plans, zoning, and parking requirements. These items affect the operating environment, density, mix of land uses, access to transit (including barriers), and availability of parking – which in combination affect the competitiveness of transit compared to driving or other modes.

As part of the area planning effort noted above, discussions with city staff on current or future opportunities for changes to city policies and ordinances will be discussed to support increased ridership, reliability, and competitiveness of the DART system. This can include discussions on processes, responsibilities and roles, funding/financing mechanisms, and other items to expedite programs or projects.

Besides city policy, DART can work with cities and their chambers, employers and high-density residential areas to more aggressively promote pass programs and educational opportunities.

## 6.3 DART Strategic Plan

While DART has an established vision, mission and strategic priorities, new agency leadership and changing mobility needs present an opportunity to refine the agency's future direction and focus on desired outcomes beneficial to the agency and the communities we serve.

The last DART Strategic Plan was the FY2011-2015 plan. Since then, the Board has established five-year "Strategic Priorities" that give broad statements for guidance but don't include a clear vision of agency direction. A new DART Strategic Plan has been initiated and will provide a framework to guide development of annual goals. Key objectives are to:

- Create alignment and accountability within the agency.
  - Are we all working toward the same goals?
  - Do employees know their role and value in achieving the broader vision for our mobility system?
- Focus our time and resources on priorities
  - Are we investing in the right things at the right time?
  - Do we understand how different agency efforts and functions relate to one another?
- Communicate our vision and goals to our community and stakeholders
  - Do our riders, agency partners, and stakeholders know how our priorities and desired outcomes address their needs?

The latter objective is key to relationship-building and advancing priorities in collaboration with our service area city leadership and staff. The strategic planning process was initiated in late 2022 and includes conversation with a range of stakeholders including City Management. Internal workshops are underway to develop the future vision of DART, with the plan scheduled to be complete by early 2024.

# Appendices



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# Appendix A

## Focus Group and Public Survey Feedback

# CAC FOCUS GROUP

## How do you define the value of transit to your community and the region?

It solves many city and climate change problems., overcrowded streets, carbon emissions, land space.

Moving lots of people around in an efficient manner

DART helps link one community to another in our region.

Anti-Sprawl: enables and encourages more sustainable land use

It can increase green space and open space by reducing the need for more on street parking in neighborhoods

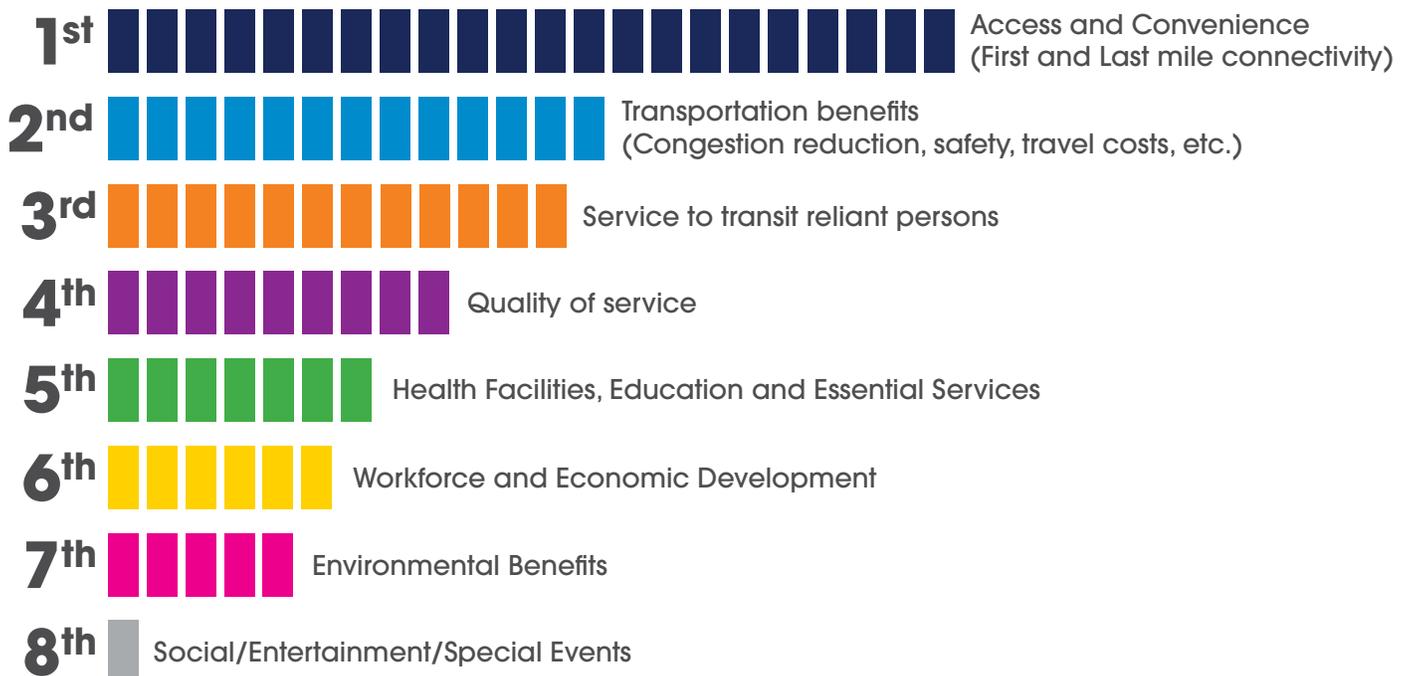
With DART bus routes getting eliminated in Carrollton and other communities, it is getting harder to get around and even just get to the rail stations.

Reduce Cost of Living

It can help neighbors meet each other by riding together

Inclusiveness: make the city's businesses, resources, and amenities accessible to people who can't drive (due to mental, physical, financial, and cultural reasons) or who choose not to.

## Select up to (3) that most closely align with how you define value.



## What do you envision the future of transit in your community to look like?

People choose to use public mass transit by default.

People of diverse physical and mental abilities participating in public events.

Popular use of mass transit reduces need for car infrastructure (highways, parking lots, car lanes, gas stations, etc) Land can be reclaimed for housing, businesses, parks, and other productive uses

Responsive transit that increases/decreases frequency based on what's going on in the city/needs

A ring of light rail that connects all of the current light rail lines together

DART needs to reestablish discontinued bus routes which connect to the rail stations.

Provide better connectivity to DART rail stations. DART needs to provide more service to ALL major sports, entertainment, and other key events.

DART should be at all anchor institutions and community centers like community colleges and sports arenas

People hanging out the windows and laughing. As one bus pulls out the next moves instantly into position.

## What would make DART and other transit services more valuable in your community?

Reliability

DART education program and initiatives

Better atmosphere/ environmental conditions during Summertime

Eliminate the communication walls that DART instinctively uses that effectively block communication vertical and horizontal within DART and between DART and the public.

Additional bus stops

Bus and train schedule accuracy

Clear and concise signage - easy to read and interpret

Shorter wait times for transit

City involvement

## How can DART better communicate the value of transit to the community?

Do free ride days where dart staff assists people in riding and learning how to buy tickets/understand routes

Social media ads telling people how easy it is to use DART for big events like the fair

DART and all city governments need to better communicate how to access and use public transportation.

Through television and radio advertisements. DART needs to run more reliably before it can really sell itself. DART needs to have cleaner vehicles in order to make it more valuable to the public.

## As a DART rider, how do You define the value of transit?

It saves me money, and provides a stress-free ride to and from work.

Provides cheaper method for getting around the city, but is not convenient

Transit-by-default: transit is at its best when it's the best means of getting where I want to go versus other modes of transportation.

I would like to see reliable on-time buses and trains (bus route 57 is always late)

I ride the train to work on weekdays.

It allows me to get where i need to go. Unfortunately DART buses have not been coming on time and this has caused a lot of inconvenience.

I would rate DART as a "B." I feel that everyone should pay a fair fare and not be able to ride free. Trains and buses needed to be frequent and on-time. Delays in revenue service dates are getting worse.

Provide reliable "shelter in place".

Dependability: when i don't need to check the schedule every time, not do i fear of no show

# FOCUS GROUP

## How do you define the value of transit to your organization, business, or constituents/clients?

Transit allows folks to get to jobs. When there are good transportation options, they can go for even better paying jobs

It's a must for the clients to have daily transportation to have a productive life.

The quality of transit options helps to define the value of transit. An efficient 30-40 minute transportation options is more valuable than 80 minute ride

When possible, I teach people to use the bus feature on Google Maps; I have little experience as to how accurate it is.

Obviously our homeless friends need public transportation to get to where they need to go to receive services and programs from our organization and others in the Homeless Service Provider space.

## How do you define the value of transit to the broader community and the region?

Companies that are considered to have employee friendly cultures are more likely to move to the region if Dallas has a strong public transportation system where employees can easily get to work via public transportation

Park and Ride

Essential to eliminate cars on road/ environmental issues

Additional train availability and frequency

Reliable transit for lower income earning individuals

Increased seat availability when the trains and buses are full

Continued access to events in the DFW area

## Select up to (3) that most closely align with how you define value.

- 1<sup>st</sup>  Access to jobs, healthcare, education, and essential services
- 2<sup>nd</sup>  Access and connectivity (first and last-mile mile)
- 3<sup>rd</sup>  Quality of service
- 4<sup>th</sup>  Mobility option for transit reliant persons
- 5<sup>th</sup>  Workforce availability and development
- 6<sup>th</sup>  Transportation benefits (less congestion, cost savings, safety, etc.)
- 7<sup>th</sup>  Transit-oriented development opportunities
- 8<sup>th</sup>  Economic development/competitiveness
- 9<sup>th</sup>  Environmental benefits (such as reduced emissions)
- 10<sup>th</sup>  Access to Entertainment/Special events

## What would make DART transit services more valuable to your organization, business, or constituents/clients?

Reliability of transportation services and reliability of Go Pass app. We have had problems for months that GoPass has errors. It takes too long to get these errors fixed

High-level sensitivity and engagement training of DART drivers and transit police in relationship to riders who are homeless

I don't think riders know how to report issues. It would be great to see the phone number or website to report service issues. Nothing on GoPass to easily report issues

Have corporate passes available to companies in the Inland Port Connect zone. Majority of their employees are Dallas residents, but company can't offer DART corporate pass due to non DART service area

On demand of DART communication with changes, services, etc.

Day passes that are efficient for night workers

Bridge the disconnect between DART and social services and city managers

Incorporate better plans for inclement weather emergencies

## What do you envision the future of transit to look like in the broader community and region?

Folks pick where they decide to live based on the easy transportation access to their jobs. When people move to Dallas for new job, they know where is housing that has transportation option to their job

folks not scared to ride buses/light rail. they see it as a chance to interact with community vs being scared

Manage the transition to electronic communications.... A physical presence, with trained DART staff, is such a meaningful deterrent to conflict.

Strategic identification of DART access within communities. DART employee presence is essential for both safety and information access. Thoughtful consideration of restroom positioning at some stations.

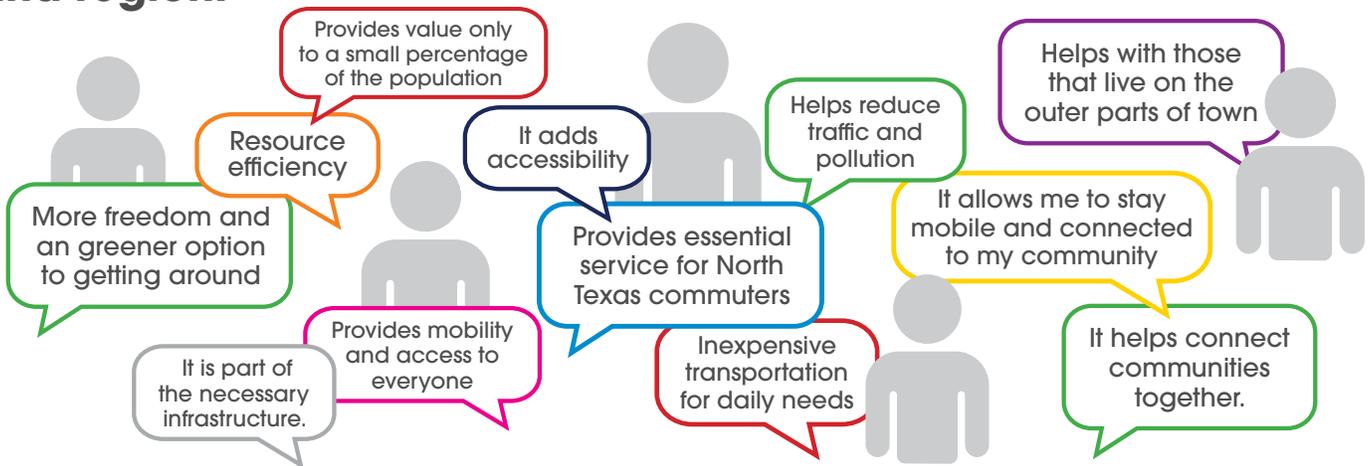
I just learned about say something as a result of this event. would be good to publicize more widely this service so folks know they can call/text

# PUBLIC SURVEY RESPONSES

Describe how transit provides value in your everyday life.



Describe how transit provides value to the broader community and region.



What would make DART transit services more valuable to you?



# CONTINUED PUBLIC SURVEY RESPONSES

Whether you use transit every day or not at all, select up to (3) that most closely align with how you define the value of DART services.

**1<sup>st</sup>** Transit provides environmental benefits such as reduced emissions

**2<sup>nd</sup>** Transit provides access to entertainment and special events

**3<sup>rd</sup>** Transit connects people to jobs, education, healthcare, etc.

**4<sup>th</sup>** Transit supports a more sustainable and connected region

**5<sup>th</sup>** Transit saves people money by avoiding parking, tolls, or costs of car ownership

**6<sup>th</sup>** Transit provides a safe and reliable travel option

## What is your vision for transit in the future?

A clean, safe, affordable and no-drama commute to work and back

A system that operates better and not limited to a few places

Expand GoLink service city wide

Additional suburban connections

More direct service

Express Lines

Cleaner cars

Faster service

All of DFW to be connected

More police and staff presence, express trains that skip certain stops

Reduced fare and reliability, no canceled routes

Shift to transit being the standard for all transportation

Greener safer genuinely friendlier

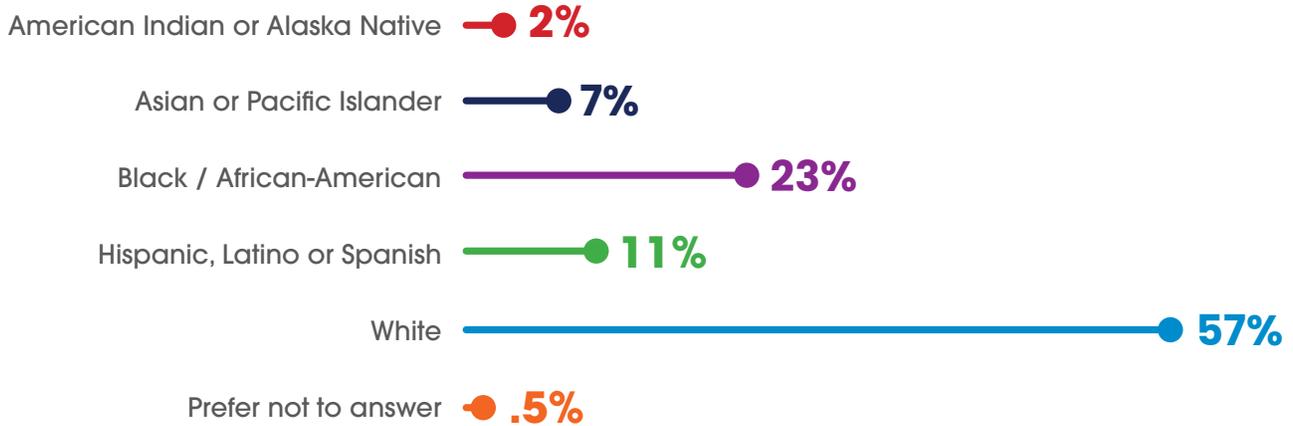
Operate 24/7 Monday thru Friday only

Efficiency and reliability of the buses

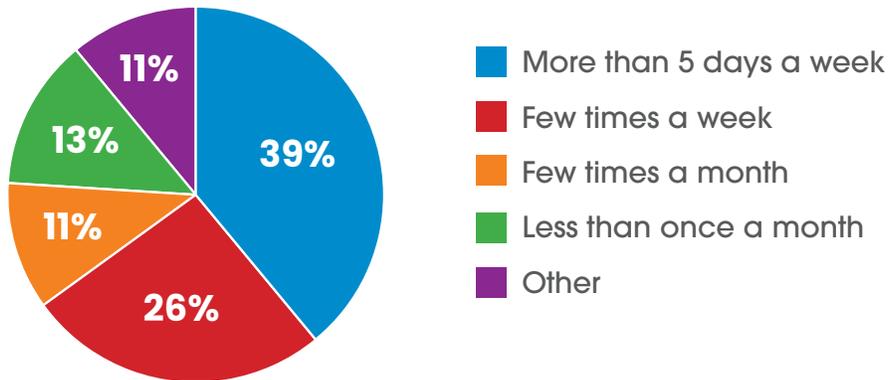
No smoking and drinking in the train

# PUBLIC SURVEY

## Ethnicity



## How many times a week do you use transit?



## Areas Represented

Addison	Allen	Austin	Collin County	Carrollton
Cockrell Hill	Coppell	Dallas	Denton County	DeSoto
Farmers Branch	Fort Worth	Frisco	Galveston	Garland
Glenn Heights	Grapevine	Highland Park	Irving	Keller
Lancaster	Lewisville	McKinney	Plano	Richardson
Rockwell	Rowlett			



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# Appendix B

## Public Survey Questions

# DART Value of Transit Study

DART is seeking feedback and insight on the value of transit from our riders, key community stakeholders, 13 service area cities, and the public. Your feedback will help to:

1. Define what is most important to you as we assess the benefits associated with DART transit services.
2. Inform how we will measure and document the value of DART.

Please complete the survey below. We appreciate your feedback!

Email \*

Your email

---

The DART logo consists of the word "DART" in a bold, blue, sans-serif font. To the left of the text is a large, stylized yellow arrow pointing to the right. A registered trademark symbol (®) is located at the bottom right of the yellow arrow.

You are invited to participate in a short survey to **give feedback** and help define the value of transit in your community.

Survey closes  
October 12.

Describe how transit provides value in your everyday life.

Your answer

---

Describe how transit provides value to the broader community and region.

Your answer

---

Whether you use transit every day or not at all, select up to (3) that most closely align with how you define the value of DART services.

- Transit provides environmental benefits such as reduced emissions
- Transit provides access to entertainment and special events
- Transit supports a more sustainable and connected region
- Transit connects people to jobs, education, healthcare, etc.
- Transit saves people money by avoiding parking, tolls, or costs of car ownership
- Transit provides a safe and reliable travel option
- Other: \_\_\_\_\_

What would make DART transit services more valuable to you?

Your answer

---

What is your vision for transit in the future?

Your answer

---

Next

Clear form

# Estudio del Valor del Tránsito de DART

DART busca comentarios e información sobre el valor del transporte público de parte de nuestros pasajeros, partes interesadas clave de la comunidad, 13 ciudades del área de servicio y el público. Tus comentarios ayudarán a:

1. Definir qué es lo más importante para usted mientras evaluamos los beneficios asociados con los servicios de tránsito de DART.
2. Informar cómo mediremos y documentaremos el valor de DART.

Por favor, complete la encuesta a continuación. ¡Agradecemos sus comentarios!



Está invitado a participar en una breve encuesta para **dar su opinión** y ayudar a definir el valor del transporte público en su comunidad.

La encuesta  
cierra el 12  
de octubre.

Describe cómo el transporte público proporciona valor en su vida cotidiana.

Your answer

---

Describe cómo el transporte público proporciona valor a la comunidad y la región en general.

Your answer

---

Ya sea que use el transporte público todos los días o nunca, seleccione hasta (3) que más se alineen con la forma en que define el valor de los servicios de DART.

- El tránsito proporciona beneficios ambientales como la reducción de emisiones
- El tránsito proporciona acceso a entretenimiento y eventos especiales
- El tránsito apoya una región más sostenible y conectada
- El tránsito conecta a las personas con el empleo, la educación, la atención médica, etc.
- El tránsito ahorra dinero a las personas al evitar el estacionamiento, los peajes o los costos de propiedad del automóvil
- El tránsito proporciona una opción de viaje segura y confiable
- Other: \_\_\_\_\_

¿Qué haría que los servicios de tránsito de DART sean más valiosos para usted?

Your answer

---

¿Cuál es su visión para el tránsito en el futuro?

Your answer

---

Next

Clear form



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# Appendix C

## DART Rider Features



# Dallas Area Rapid Transit

## Rider Feature



Resides in **South Dallas** White Male



Works in **Oak Cliff** Age **45-54**



Used transit **regularly for the past 23 years**

Accesses bus, rail, TRE and streetcar via bike, walking or vehicle



### Jonathan's Future Vision for DART

Bus frequency optimization, 5-7 minute bus frequency within a 2-3 block walk.

I valued it (transit) a lot after not having it.

Transportation is all about incentives. Time is generally an incentive.

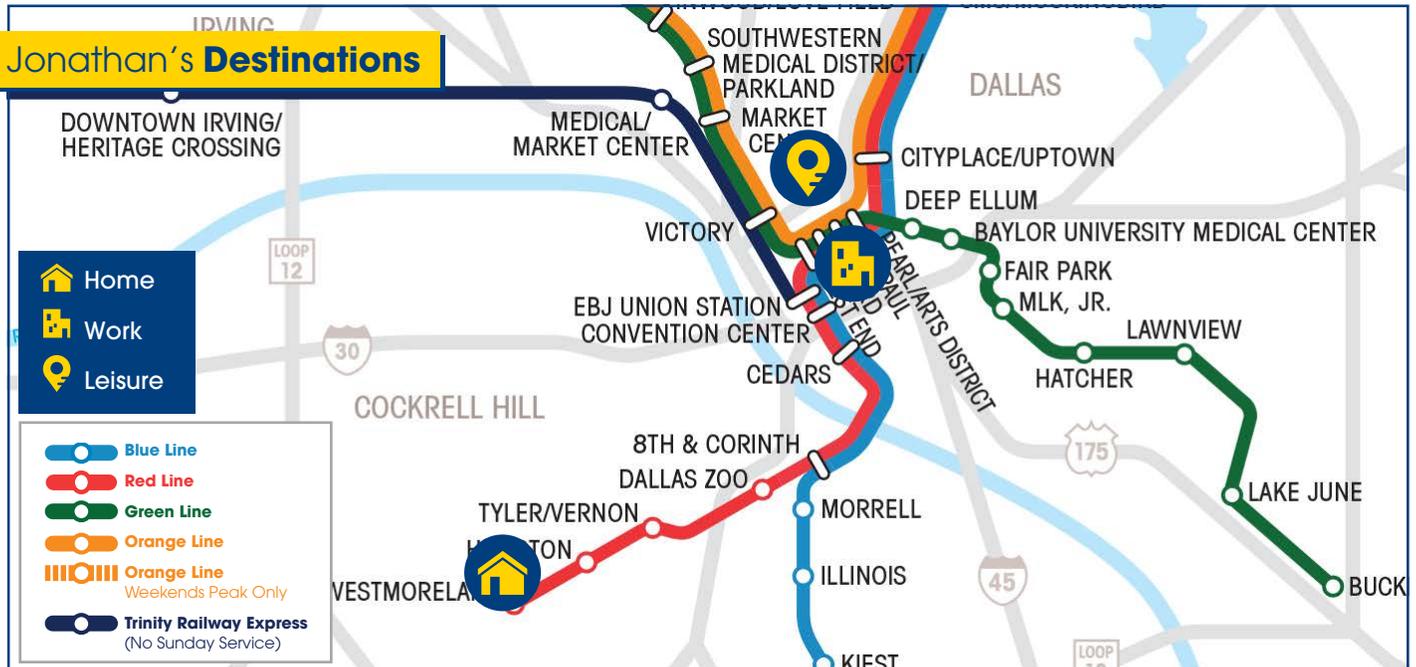
“Transit is a public good and we have a right to have public transportation.”  
-Jonathan

Jonathan is an experienced transit rider and bicycle enthusiast living in Oak Cliff. **He and his family occasionally take the streetcar to Union Station, where they walk to Kyle Warren Park.** Although he is Dallas-born and Plano-raised, his public transit experience did not begin in Texas but in Ukraine.

While living in Ukraine, Jonathan relied on public transit to get around, “Not having a vehicle, of course, forced me to use it (transit) or walk. So, it impacted me from day to day.” One of his most memorable transit moments was riding a Marshrukta, a route taxi. **These independently owned vehicles offered faster transit services for a premium price - a service he would love to see implemented in Dallas.**

**Jonathan believes improved bus frequency will add value to DART.** “If DART can get to a level where we don't think about when the bus arrives and we just know it's going to arrive when it arrives, that would be the number one best thing that DART could ever achieve - that would make it competitive.”

### Jonathan's Destinations





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Farmers Branch** White Male



Works in **Dallas Love Field** Age **25-34**



Uses transit **4-5x a week to access work and leisure activities**  
Accesses bus route 232 and the Green and Orange Line via walking

### Ryan's Future Vision for DART

Expansion of DART into additional cities in north Texas.

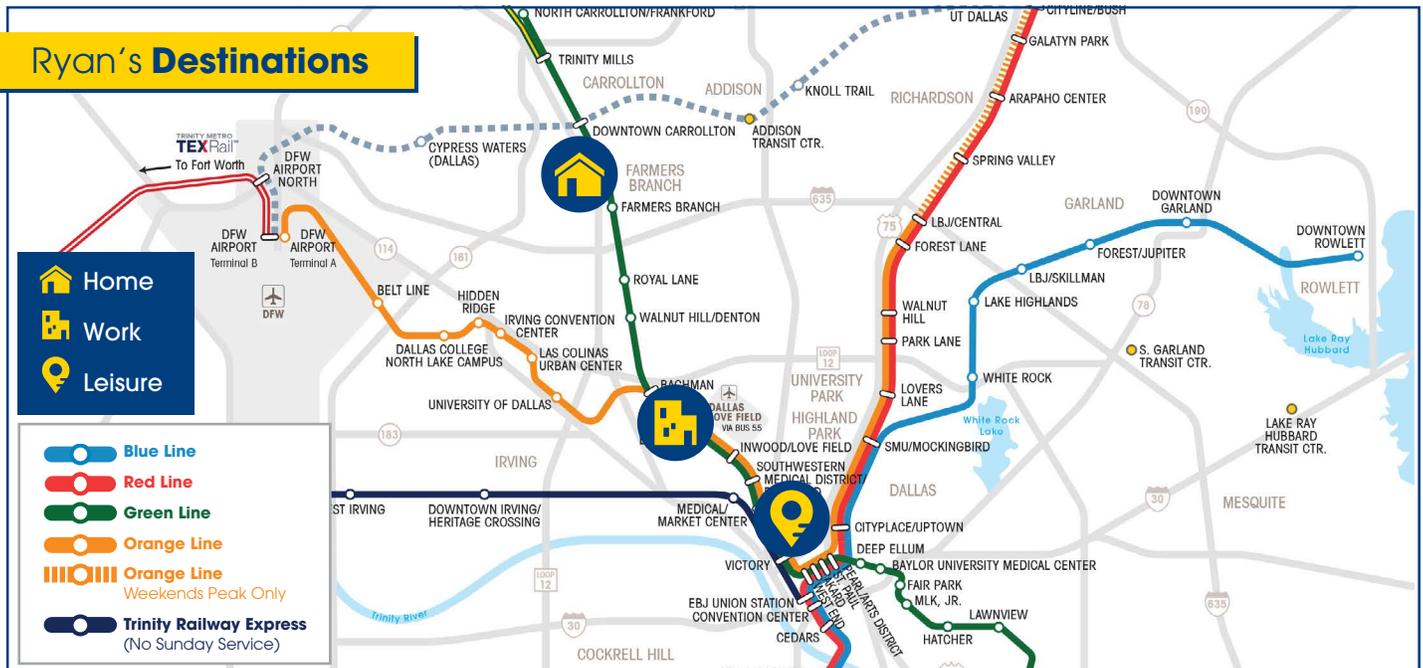
“ Rail takes the stress and anxiety out of my daily commute to work, or to sporting events at Victory Park.”  
- Ryan ”

Ryan currently lives in Farmers Branch and works five days a week at the Southwest Airlines headquarters in Dallas. **Although he does own a vehicle, he chooses to take transit to and from work,** “I find value in transit because of the shorter commute to and from work it provides.”

Ryan also uses transit for leisure activities, such as sporting events in Victory Park. **He finds value in transit because of the time and cost savings.**

In the future, Ryan would like to see other communities outside of the DART Service Area become part of the system so others can **experience the convenience and ease of using DART transit.**

### Ryan's Destinations





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Garland** Hispanic Female



Works in **Dallas** Age **55-64**



Uses transit **for all her mobility needs**  
Accesses the bus and Blue Line via carpool

### Diana's Future Vision for DART

Increase Fare enforcement

Place security on rail station platforms

implement more power washing at stations

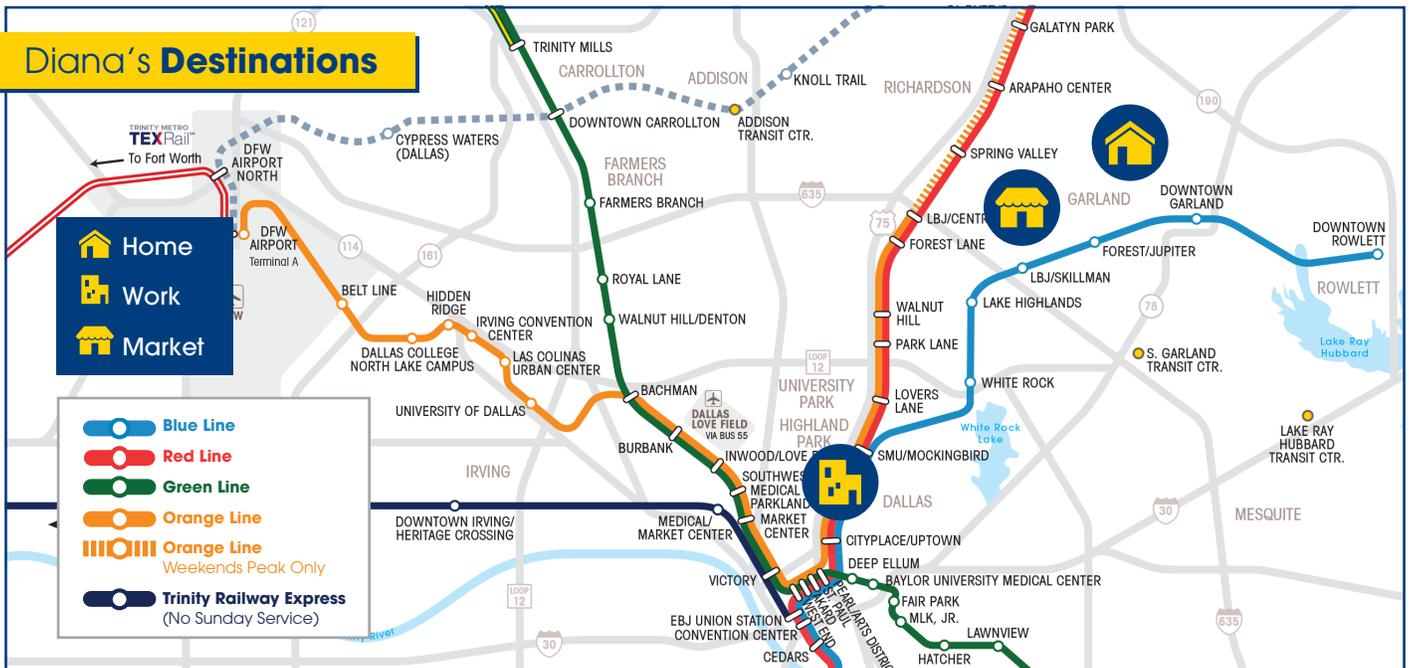
“ I have used public transit almost my entire life. I remember using the “pink bunny” Hop-A-Bus when I went to school at El Centro in Downtown Dallas. ”  
-Diana

Diana is a long-time transit rider with experience dating back to the **pink bunny “Hop-A-Buses” that operated in Downtown Dallas in the 1970s and ‘80s.** During that time, she rode the bus to access the El Centro downtown campus of Dallas College.

Today, Diana still relies on DART transit as her only means of transportation. Diana accesses the **Blue Line at the Downtown Garland and Mockingbird stations five days a week to get to and from work.**

Diana has watched DART transform over the years and looks forward to many more years of growth and expansion, **“I would love to be able to get almost anywhere in the region via DART transit services.”**

### Diana's Destinations





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Carrollton**

**African-American Female**



Works in **Dallas**

Age **65+**



Uses transit **for all her mobility needs** (work, leisure, medical, shopping, etc.)



### Cecilia's Vision for DART

DART service expansion south of Dallas into Lancaster and DeSoto.

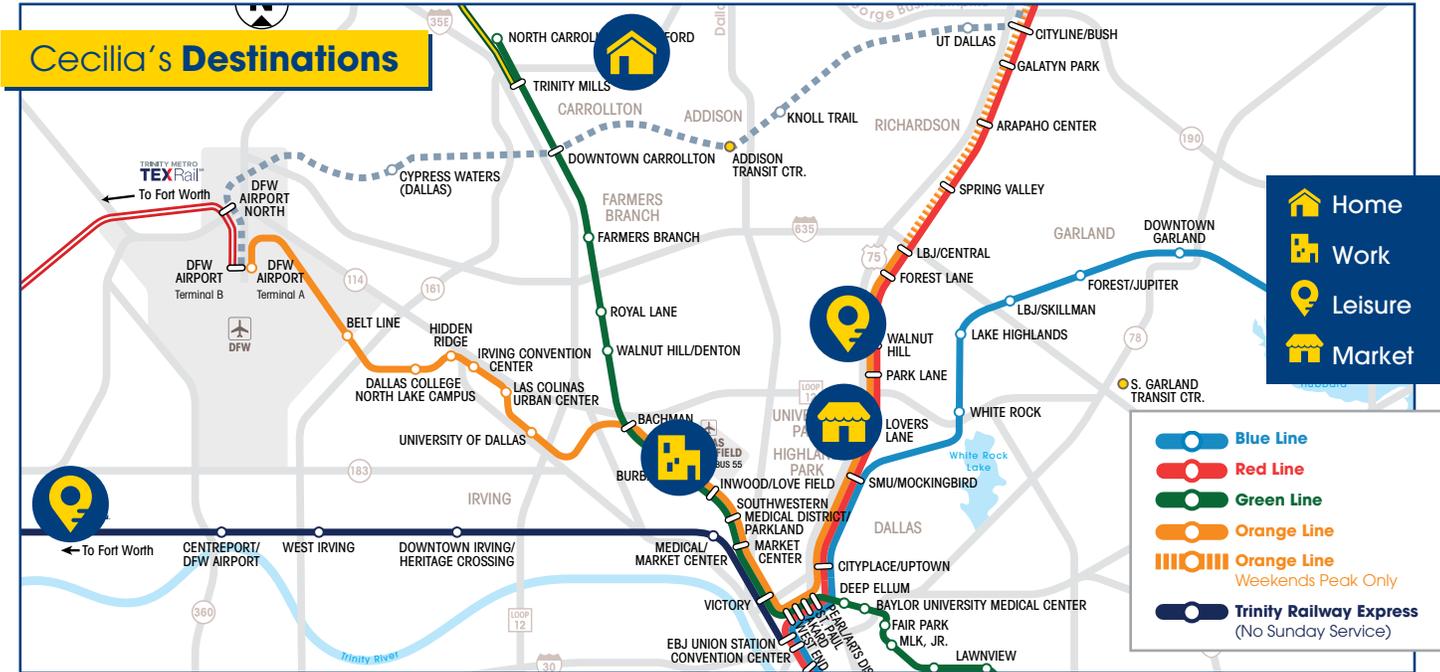
Door-to-door pickup and transit drop-off service for the elderly.

**“The greatest benefit of transit to me is that it is accessible for me.”**  
*- Cecilia*

Cecilia is a Dallas transplant with years of experience riding various transit systems in places such as Dubai, Chicago and Atlanta. **Transit has been a part of Cecilia's lifestyle** ever since the age of seven when her mom taught her how to ride transit to and from school.

**Cecilia utilizes DART transit to go just about everywhere** - to work, the market, the movies and even to explore new places within Texas. Just recently, she rode the TRE to Fort Worth, TX to have lunch with a friend and visit the city.

Cecilia finds value in DART transit because of the **freedom, accessibility and convenience it adds to her everyday life**, “I don't have to wait on anybody. I don't have to ask anybody. I have my pass and I go.”





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Plano** White Male



**Retired** Age **65+**



Uses transit **for most mobility needs**  
**Accesses the Red Line via car**

### Charles' Future Vision for DART

User-friendly GoLink interface

More fixed bus and rail routes

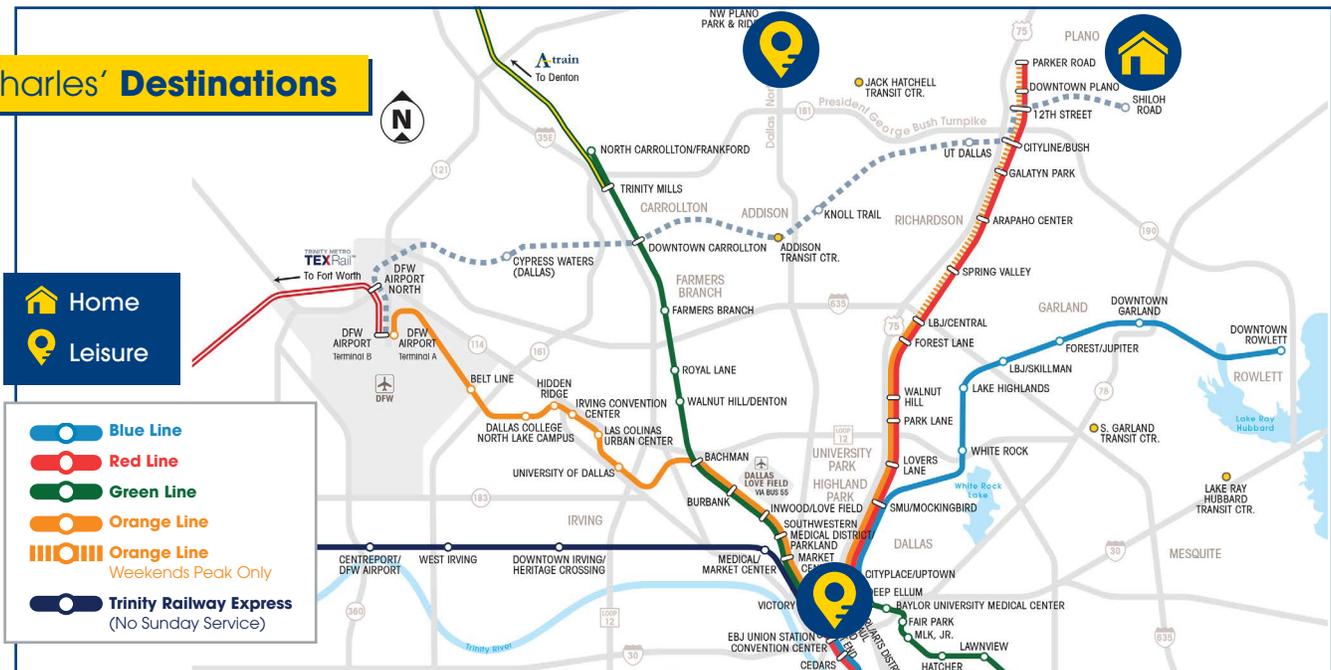
“DART Silver Line which is close to me - will come to Plano and is making great progress, at last - will be the first real connector. And I am looking forward to that.”  
- Charles

Charles has lived in Plano for the past 45 years with his wife and has extensive experience riding transit systems around the world, but currently frequents the Parker Road station via vehicle. As he advances in age, he seeks to rely on transit even more, **“It’s a whole lot nicer when someone else drives.”**

As a DART rider, Charles is looking forward to the completion of the DART Silver Line, **“I look forward to riding that line.”** The Silver Line will expand reach into Plano, **making it easier for Charles to access specific locations**, such as the airport, without going directly into downtown Dallas.

Charles believes that DART has a way to go concerning modernization and accessibility, but he is committed to remaining a DART rider and supporter, **“Most of us try to stay and make DART work. I am one of those that stayed with them, and I am going to continue to stay with them.”**

### Charles' Destinations





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Richardson** White Male



Works in **Dallas** Age **35-44**



Accesses the **red and orange line via walking**

Accesses the Red or Orange line via walking, uses the Route 238

### Liam's Vision for DART

State funded worker's union

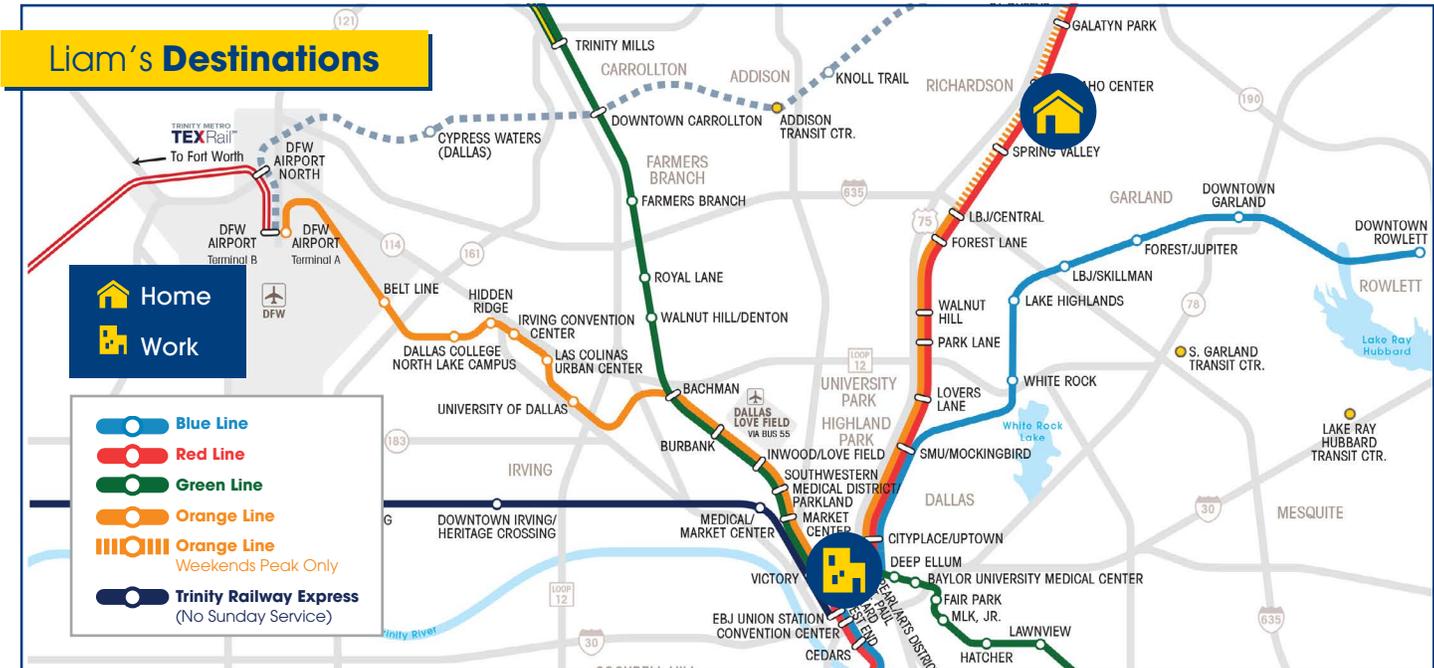
Reduce bus wait times

“Transit allows me to get to work without the hassle of traffic or contributing to climate change.”  
- Liam

As an environmentalist, Liam looks for ways to advocate for and protect the environment. One way that Liam decides to contribute is by taking DART transit to and from work, which he believes **reduces vehicle air pollution while providing traffic relief.**

Liam starts his work week by taking bus route 238 to access the Arapaho Center station, where he takes the **red and orange line to and from the Pearl/Arts District station.**

Liam believes that **transit adds value to the broader community and region** by allowing others the flexibility to take transit as needed, “(Transit) **helps those who either can't or don't want to own a car to move around.**”





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Dallas**

African-American Female



Works in **Dallas**

Age **55-64**



Uses transit **4-5x a week for all her mobility needs**

Uses bus and rail, accesses the bus and Blue and Orange Lines via walking



### Julia's Future Vision for DART

Consistent cleaning procedures and non-cloth or vinyl seat coverings.

DART service expansion into rural areas so that other people may benefit from DART transit

"If I miss the train, that's okay, I can catch the bus which is one block behind me and on the way. So I have multiple ways of getting to one place."

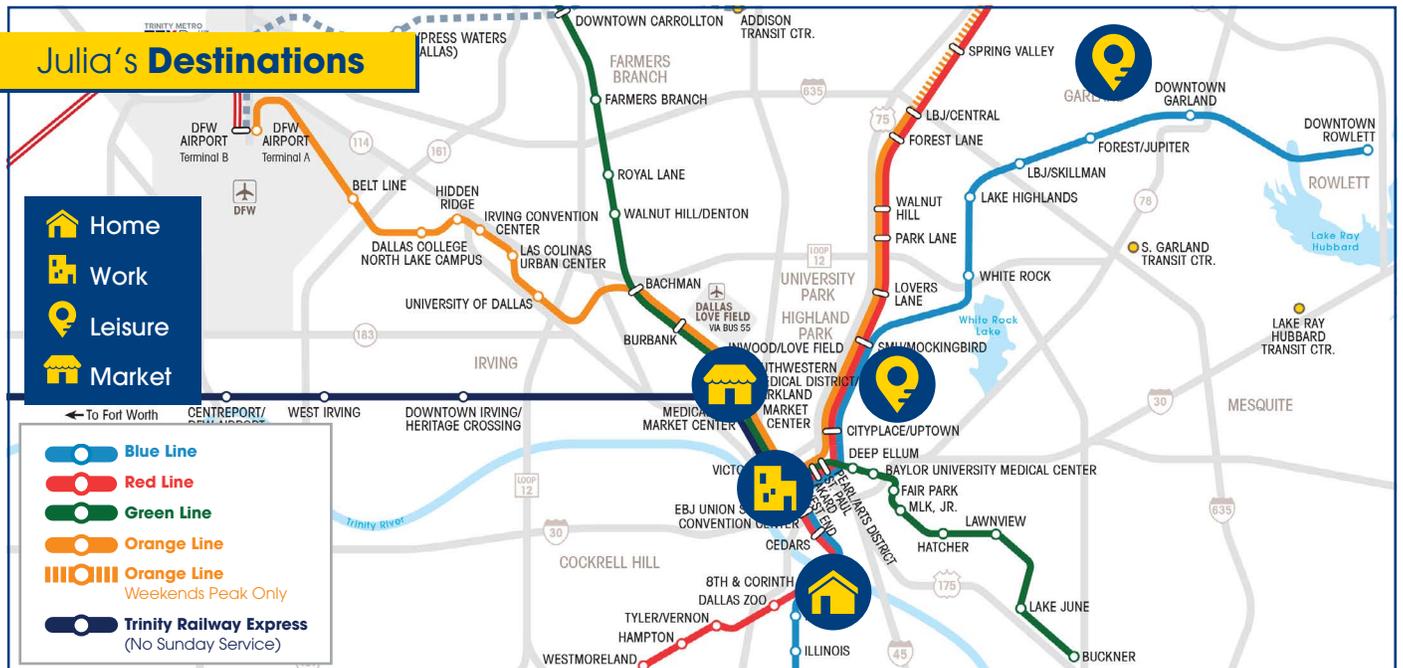
- Julia

Julia is a transplant from California with extensive experience riding DART transit. In July 2021, she relocated to Dallas and now **relies on DART transit as her main mode of transportation.** "DART works really really well for me. As a rider and someone who is on a budget, I am very happy with the transit system."

Julia attributes her love for DART to its **affordability, accessibility and reliability.** "It's very reasonable to be able to ride." If DART transit didn't exist, Julia would be stuck, "Oh dear, I'd be stuck and would have to go back to California."

While onboard, she enjoys helping others find their way around Dallas, "I get joy from the little things in life. So, if I am on the train and someone is visiting here from another country, and they don't know how to navigate the system, for me - **it brings me joy** to give them directions."

### Julia's Destinations





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Rowlett** White Female



Works in **Uptown Dallas Park District** Age **35 - 44**



Uses transit **3-4x a week for work**  
Uses rail, access the **BLUE Line** via carpool and GoLink

Increase in fare enforcers and DART security on light rail trains

It's nice to sit back and relax on my way to work

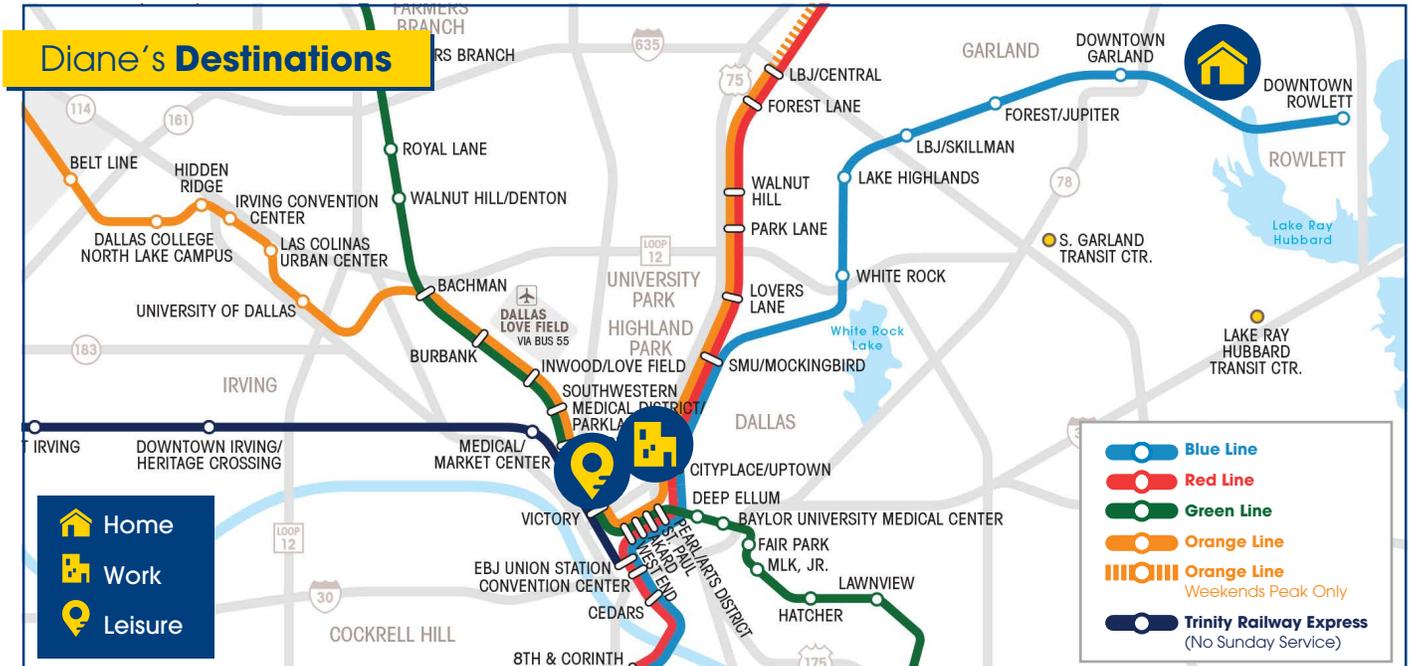
“It works great. I don't have to worry about gas, it's less wear and tear on the car, less traffic. - Diane”

## Diane's Future for DART

Diane is a Fort Worth, TX native and has lived in Dallas-Fort Worth Metroplex for 10 years. She currently resides in Rowlett with her family, where **they balance between a one-car household and DART's transit services** as their main modes of transportation.

Diane works in Dallas three to four times a week. She accesses the **Blue Line at the Downtown Rowlett Station** via carpool or the GoLink application. Diane is an **avid rider with experience using transit** for over seven years.

Aside from the bustle of every day, Diane and her family take **DART transit downtown to enjoy hockey or basketball games** at the American Airlines Center.





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Irving**

White Female



Works in **Dallas**

Age **35-44**



Uses transit **5-6x a week for all her transportation needs**

**Accesses bus #230 and #231, and the Orange Line via walking or rideshare**

### Maggie's Future Vision for DART

Increase in safety and cleanliness for bus and rail

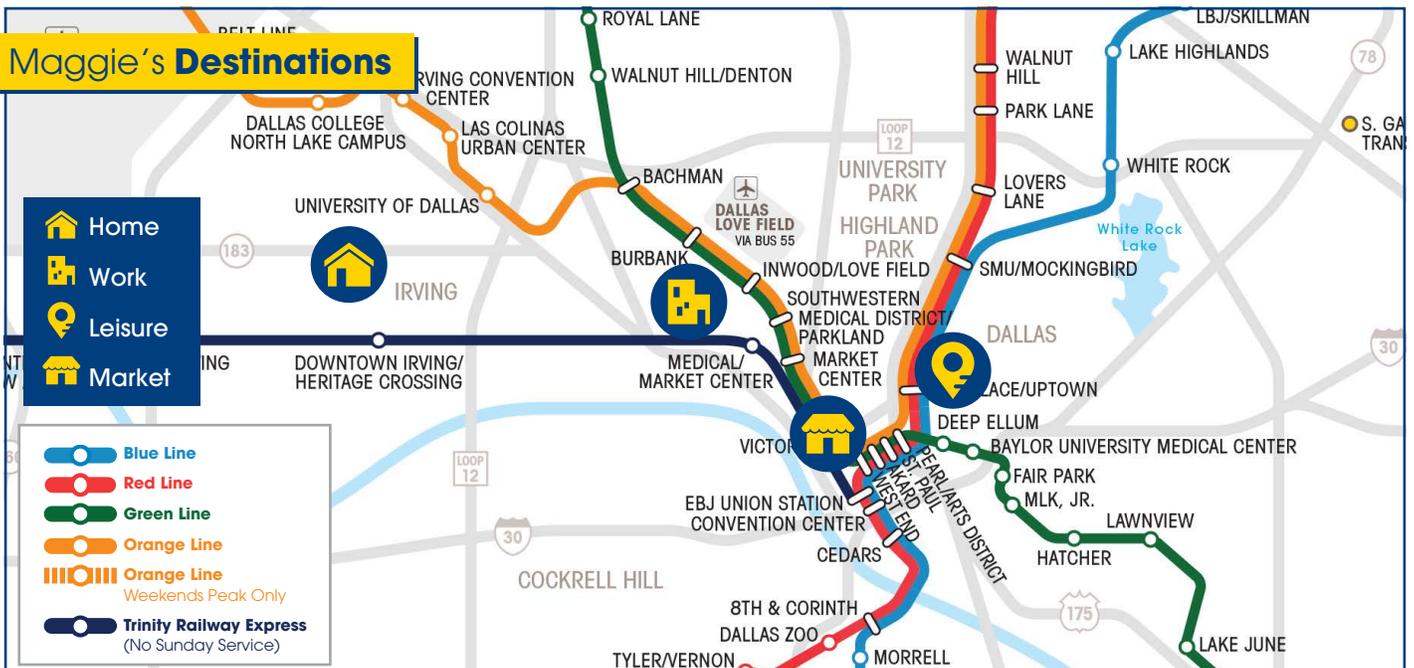
DART service expansion into neighboring cities, such as Grapevine, Grand Prairie or Arlington

**“DART could have the opportunity to expand in Arlington. I feel like transit should be readily available because you have the stadiums over there but no transit options.”**  
- Maggie

Maggie relies on DART transit as her main mode of transportation. **She takes the DART bus and rail just about everywhere - to work, the store, the bank, to explore Dallas and more!** She appreciates the updated DART bus routes that took effect in January 2022, as the new routes significantly reduce her walk to each stop.

While Maggie is grateful for DART transit, she believes that improvements to the security and cleanliness will influence her decision to remain a loyal DART rider. **“If the improvements were in place I don't think I would have to revert to other means of transportation; DART would be able to fulfill what I need.”**

Maggie's vision is to see service expansion in neighboring cities. Before Dallas, Maggie lived in Seattle, where she appreciated Seattle's Sound Transit system for its route availability and reliability. **She believes that DART has the potential to become just as available and reliable.**





# Dallas Area Rapid Transit

## Rider Feature



Resides in **North Dallas**

**Pan-Asian American Male**



Works **from home**

Age **25-34**



Uses transit, bicycle and walking **for all his mobility needs.**

### Hexel's Future Vision for DART

Improved transit frequencies

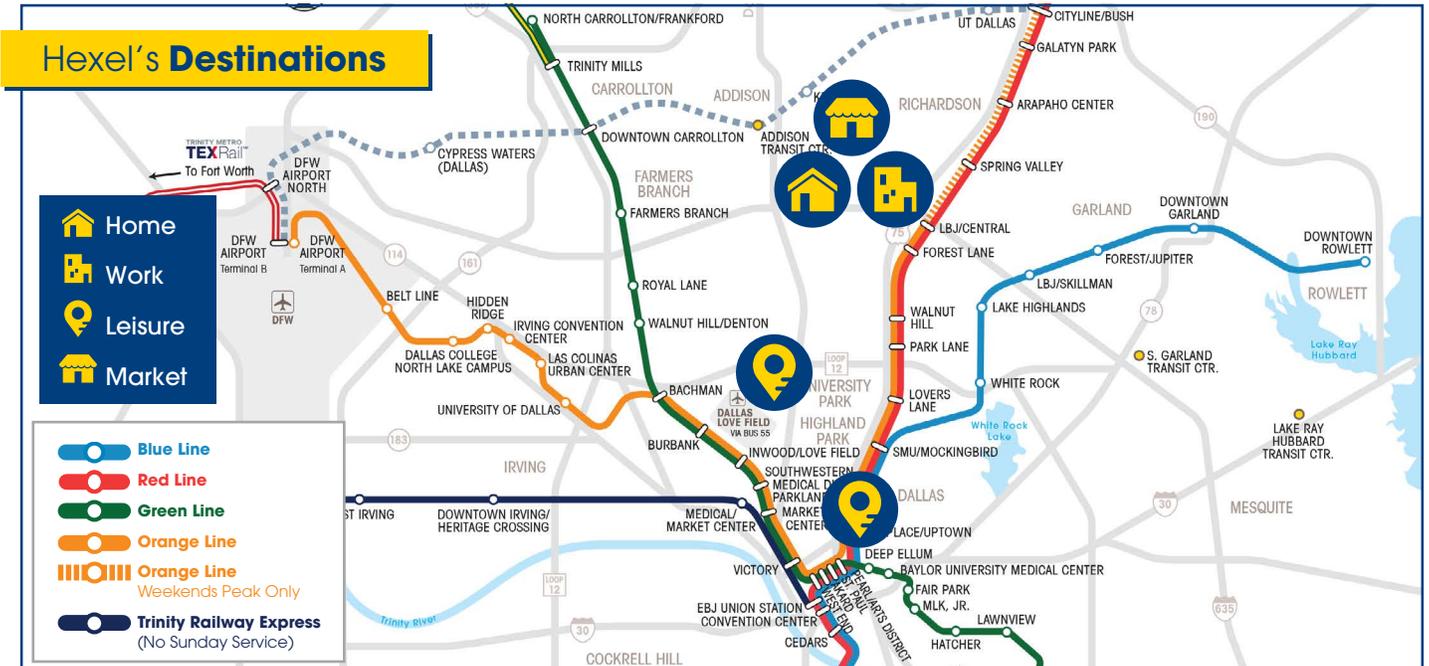
More routes with dedicated right-of-way and bus lanes specifically for DART buses

“What started out as an experiment has turned into a permanent choice. Now I advocate for better transit for all of Dallas.”  
- Hexel”

Hexel is a Dallas native, transit advocate, and DART Citizens Advisory Committee board member. In 2021, **he decided to sell his car and rely on Dallas transit system as an experiment to save money and become more active.**

“**I gained far more than just financial savings:** I became more connected with my neighborhood, I became more physically active on a daily basis, I started shopping locally for almost everything, and **I adopted sustainable lifestyle habits.”**

Hexel recently **launched a podcast** that covers an array of topics dedicated to public transit and mobility. In addition, he creates **TikTok videos that showcase his day-to-day experience utilizing DART transit systems and services.**





# Dallas Area Rapid Transit

## Rider Feature



Resides in **Plano** White Male



Works in **Dallas Medical District** Age **35 - 44**



Uses transit **4-5x a week for work**  
Uses rail, accesses the **Orange and Red Lines** via vehicle



Uses bus occasionally

More fare enforcement

Better off-peak rail frequency

Increase in DART communication to riders

### John's Future Vision for DART

“Transit helps me reduce costs for myself by taking the train to work. My work subsidizes my yearly DART pass, encouraging mass transit.”  
- John

When John and his family were relocating to DFW, a deciding factor in their relocation was an **alternate mode of transportation** that did not require hours of sitting in traffic.

Now John can **easily access the Parker Road light rail train station** just four miles from his residence. He was happy to find that relatively close to his place of employment is a **light rail train station that his job provides shuttle service** to and from.

His employer also subsidizes annual DART passes for all employees, **“by taking DART, I avoid having to sit in traffic** by driving to work. It also **helps me reduce fuel costs**, as I only drive a few miles each way to the station.”

### John's Destinations

- Home
- Work
- Leisure

- Blue Line
- Red Line
- Green Line
- Orange Line
- Orange Line Weekends Peak Only
- Trinity Railway Express (No Sunday Service)

