25 Years of DART Transit-Oriented Development

Economic and Fiscal Impacts of Development Around DART Light Rail Stations from 1999-2024

Including 2022-2024 Update

Prepared for
Dallas Area Rapid Transit
September 2025

ECONOMICS RESEARCH GROUP
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The University of North Texas (UNT) began studying the economic and fiscal impacts of DART's light rail stations in 1999 and has continued to compile data and release regular reports on the subject over the last 25 years. From DART's initial light rail starter system to the current 93-mile light rail network, the agency's light rail stations have continuously attracted development resulting in an influx of commerce, tax revenue, and jobs to the Dallas-Fort Worth[1] region.

This study, conducted by the Economics Research Group at UNT, highlights the significant 25-year history of DART transit-oriented development (TOD) projects, describes the economic, employment, and fiscal impacts of development projects within one-quarter mile of DART light rail stations from 2022 to 2024, and finally, examines the rent premiums that developers enjoy as a result of their proximity to a DART station. As this report details, development near DART's light rail stations resulted in a $18.1 billion direct economic impact to North Texas over the 25 years since UNT first began its studies. In 2022-2024, the region saw a $1.0 billion direct impact, a $1.9 billion total economic impact, and 10% and 12.6% rent premiums for residential and commercial properties, respectively.

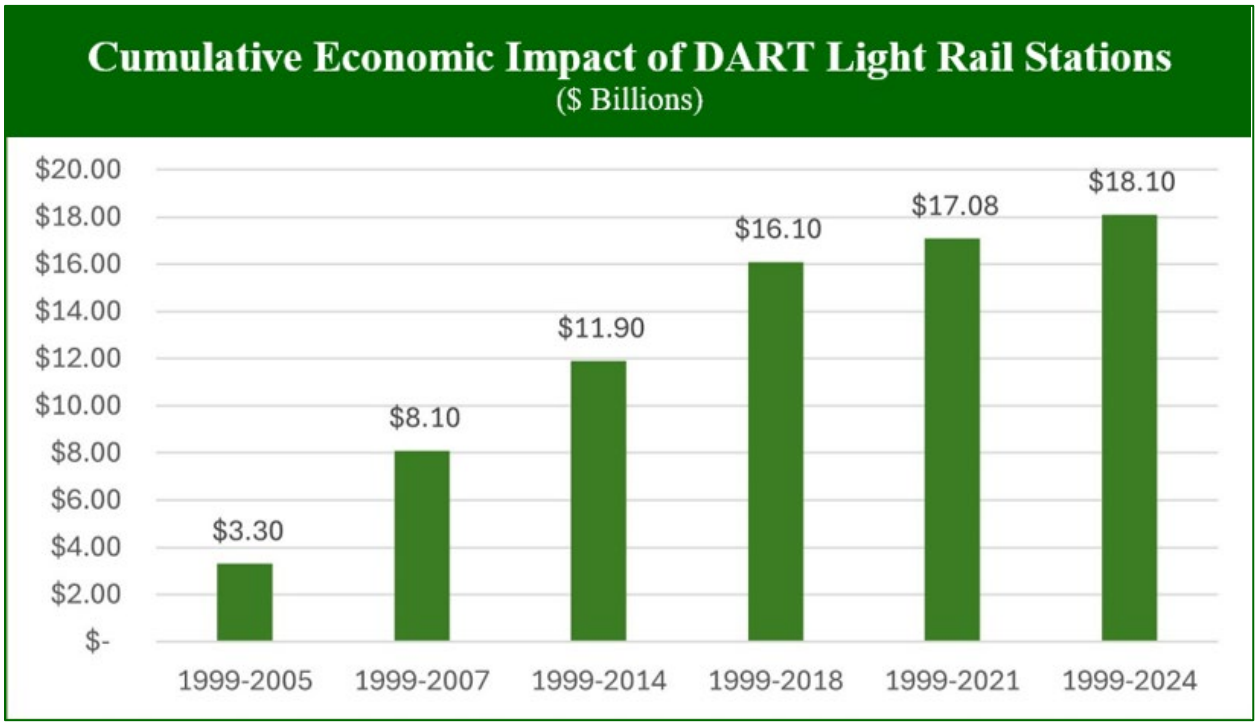
Section One
25 Years of DART Transit-Oriented Development

Transit-oriented development (TOD) is designed to promote livable, walkable, mixed-use communities centered around public transportation hubs, like train and bus stations. TOD leverages the quality-of-life benefits offered by convenient transit travel to build economic activity resulting in significant public and private sector benefits.[2] Over the past 25 years, DART's light rail stations have catalyzed development resulting in thousands of jobs, millions of increased tax

[1] In this study, the Dallas-Fort Worth region is the "Dallas-Ft. Worth-Arlington Metropolitan Statistical Area" as defined by U.S. Office of Management and Budget's (OMB), The counties in the region include Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Somervell, Tarrant, and Wise.

[2] The Federal Transit Administration (FTA) estimates that TOD projects increase nearby property values by 30 to 40 percent. *https://www.transit.dot.gov/valuecapture*

revenues for DART's service area cities, and a direct economic impact of $18.1 billion, as shown in the chart below. Importantly, this impact is only *direct* impact and has not been adjusted to account for inflation over the 25 years. The volume and consistency of TOD over the past quarter century reflects the North Texas region's commitment to multi-modal transportation options, as well as the critical role transit plays in the region's overall economic health.



Section Two
The Economic and Fiscal Impacts of Development Near DART Light Rail Stations 2022-2024

This study, like the studies that precede it, examines the economic and fiscal impacts of construction projects located within one-quarter mile of DART light rail stations, excluding stations within the Dallas Central Business District, over a two-year time frame.[3]

Methodology and Data

The real estate development projects that make up the underlying data used for this study were gathered through an ongoing review of publicly-announced projects in publications such as the *Dallas Morning News*, *Dallas Business Journal*, assorted community newspapers, online resources, and Google Earth satellite image comparisons. ERG identified 37 planned, under-construction, or completed real estate development projects within one-quarter mile of DART light rail stations during the 2022-2024 time frame.[4] ERG examined and organized each project by type of project and status of completion and then determined the value of each project through a combination of steps, including recording the project's estimated value (as published in the sources analyzed) and cross-checking the property with the Dallas Central and Collin County appraisal districts where possible. ERG then enlisted the help of commercial real estate analysts to review the values for accuracy.

To understand how the effects of development projects constructed within one-quarter mile of DART light rail stations ripple throughout the economy of the Dallas-Fort Worth region, ERG used IMPLAN – an industry-standard tool used to calculate the direct, indirect, and induced impacts of spending and employment – to create economic models based on the development data collected. In this analysis, "direct" impacts are the result of the money initially spent in the region

[3] Researchers agree that a one-quarter mile radius for construction activity yields a positive association between the transit facility and the development. The study excludes the Dallas CBD because of the proximity of stations and density in a large downtown area.

[4] Economic impacts for projects not yet in the construction phase are offered as economic scenarios of what would happen if the projects in question come to fruition. Dollar values are associated with projects as they are announced; however, once the project reaches the construction phase, it may be expanded or contracted in scale and material costs may have fluctuated from initial projections. These uncertainties can result in direct spending on a project that is higher or lower than previous expectations.

by companies such as real estate developers and construction companies to complete projects. This includes money spent to pay employee salaries, purchase supplies, and other operating expenses. "Indirect" impacts are the result of business-to-business transactions. When suppliers to the companies building the development (for example, an accounting firm) purchase services or supplies, they create the indirect impact. When the employees of the real estate developers, construction companies and their suppliers spend their income, this causes the "induced" impact. The sum of all the activity from direct, indirect, and induced impacts is the "total" impact. Total impact is significantly greater than the direct spending for the development – this is referred to as the "multiplier effect." A more detailed description of the economic impact methodology is included in Appendix I.

Results for 2022-2024

This study identified 37 development projects within a one-quarter-mile radius of a DART light rail station, excluding stations within the Dallas Central Business District, during the 2022-2024 timeframe. Based on the IMPLAN economic model, development activity near DART stations between 2022 and 2024 led to more than **$1.02 billion** in direct impacts. This generated a total (direct, indirect, and induced) economic impact of **$1.93 billion** in the Dallas–Fort Worth region, up from the $1.80 billion total economic impact of TOD in 2019-2021.

Table 1: Direct and Total Economic Impact of TOD Projects (2022-2024)	
Direct Economic Impact	$1,024,665,479
Total Direct, Indirect, and Induced Economic Impact	**$1,926,909,452**

Table 2: Direct Economic Impact of TOD Projects (2022-2024)	
Under Construction[5]	$773,012,000
Completed in 2024	$251,653,000
Commercial Development	$363,374,000
Residential Development	$661,292,000

[5] The higher number of projects under construction is likely a result of the COVID-19 pandemic. Many projects were started with initial land preparation early in the current study period, but the actual construction phase was delayed until later. This number includes projects soon to be underway.

Projects in 2022-2024 directly created 5,295 jobs, with total employment creation across the DFW area of 9,422 jobs, for a total of $724.2 million in labor income for workers in DFW. These numbers vary only slightly from the 2019-2021 period, which saw 6,264 direct jobs, 10,747 total jobs, and a total of $738 million in labor income.

Table 3: Jobs and Labor Income from TOD Projects (2022-2024)		
Description	**Direct Employment**	**Total**
Employment (Jobs)	5,295	9,422
Labor Income	$428,118,163	$724,246,566

Construction around DART stations in 2022-2024 generated $51.5 million in state and local tax revenue, the bulk of which ($25.4 million) was from sales tax related to construction of the projects, not including the portion remitted to DART. In addition to this development-related sales tax, development around DART stations generated $21.1 million in property taxes, with $5.0 million in other state and local revenue from miscellaneous fees and fines. These numbers are up from 2019-2021, when construction around DART stations generated $50.0 million ($1.4 million less) in state and local tax revenue.

Table 4: Total Tax Revenues (2022-2024)	
Jurisdiction	**Tax Revenue**
Municipal	$8,300,470
Special Districts[6]	$13,808,720
County	$3,560,171
State	$25,820,255
Total State & Local Revenue	**$51,489,616**
Federal[7]	$148,025,351
Total Tax Revenue	**$199,514,966**

Table 5: State and Local Revenue Details (2022-2024)	
Type of Tax	**Tax Revenue**
Sales Tax	$25,413,819
Property Tax	$21,102,969
Miscellaneous Fees & Fines	$4,972,828
Total State & Local Revenue	**$51,489,616**

[6] Special districts are local governmental units that provide specific services, such as school districts, water districts, hospital districts, and community college districts.
[7] Federal tax revenue was primarily due to FICA payroll taxes.

The tax revenues reported in Tables 4 and 5 exclude the ongoing local and state sales and property taxes generated once the project is built and operating. These recurring revenues provide a substantial and continuing source of income for cities, school districts, and other local jurisdictions. The magnitude of this revenue stream depends on development scale and mix of uses: Low-density single-family development, for example, yields far less property tax per square foot of land as higher-density multifamily and office projects. Developments with retail uses add another layer of fiscal benefit by producing both sales and property tax revenues.

Section Three

Rent Premiums for Properties Near DART Light Rail Stations 2022-2024

In addition to economic impact, this study examined rental rates for properties near the following DART light rail stations during the 2022-2024 time frame: Walnut Hill, Park Lane, Downtown Carrollton, Downtown Plano, Parker Road, Addison, Forest/Jupiter, Farmers Branch, Bachman, Lovers Lane, North Carrollton/Frankford, Trinity Mills, Downtown Garland, and Arapaho Center.

As shown in Table 6 below, the closer the location of the property to a DART light rail station, the higher the rental price for both commercial and residential properties. These results are statistically significant at the 95% confidence level. (See Appendix II.)

Table 6: Rent Premiums

	Rent per sf/month 0-0.5 mile from station	Rent per sf/month 0.5-1 mile from station	Premium
Residential	$2.04	$1.85	10.0%
Commercial	$1.83	$1.63	12.6%

Notably, rent premiums can vary from year to year. For example, the transit-related rent premiums for 2020 for residential and commercial properties were 17.0% and 5.8% respectively.

APPENDIX I – Detailed Methodology of the Economic Impact Calculations

To understand how money being spent developing properties within a quarter mile of a DART station ripples through a regional economy, the first step is to define the region in question. This study uses the Dallas-Fort Worth-Arlington Metropolitan Statistical Area as defined by the U.S. Office of Management and Budget's (OMB) for analysis because its economy is strongly integrated. The Dallas-Fort Worth-Arlington MSA includes Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Somervell, Tarrant, and Wise counties. After deciding on a region for analysis, the values of the selected properties are placed into an Input/Output economic model that examines how the money being spent on property development ripples through a regional economy. Input/Output methodology allows for insight into forward and backward linkages that are present in any regional economy, highlighting how they add value to the initial dollar spent. The model – in this case facilitated by the IMPLAN software package – measures the total annual economic activity that results from inter- and intra-industry transactions.

The model first breaks the economy into 536 separate sectors with each sector representing an individual industry, then it uses a sectoring scheme developed by the IMPLAN Group. This scheme is closely related to the Bureau of Economic Analysis (BEA) REIS model and is a 536 X 536 (row x column) matrix showing all the economic activity between the individual sectors. The entries in the matrix are based on the dollar amount that each industry sells to (and purchases from) other industries in a regional economy. It measures the amount of final consumption by the residents of the region as well as how much each industry exports from the area. The model uses data collected at the county level, which is obtained from the IMPLAN Group and the BEA. County data are in turn aggregated or "rolled-up" to form service areas such as local regions, states or larger geographic regions such as the Midwest. Input/Output models can estimate economic impacts because the flow of goods and services within an economic region is relatively stable. Predictions can be made of an industry's total economic impact by examining the purchasing patterns of the individual sectors. The BEA collects extensive data on these regional trade flows and reports their findings annually.

After the region is selected and the data on spending is entered, how the spending flows through the region and impacts it can be calculated. The three levels of spending impacts analyzed are direct, indirect, and induced. The direct impact includes the purchases of resources (labor, goods, and services) by real estate developers, builders, and construction companies, for example,

for the completion of a project. The indirect impact occurs through industry-to-industry purchases made by regional suppliers. Finally, the induced impact reflects the change in household demand as the employees of real estate developers, builders, and construction companies and the employees of their suppliers earn dollars for consumer spending. Therefore, the total impact on the economy is the summation of the direct, indirect, and induced components. The impact of the indirect and the induced portions is often referred to as the "multiplier effect." It shows how the initial (direct) spending gets multiplied through the economy. IMPLAN calculates the multipliers based on the supplier relationships and employee consumption patterns, a much more accurate method than simple multiplier tables.

IMPLAN uses the three levels of impacts and related spending to calculate the effect on employment, which is the total number of full-time wage and salary employees, plus the number of self-employed workers, in a particular industry. Part-time workers' hours are aggregated into full-time equivalents (2,080 hours) and reported with the full-time workers. Because of differences in how employment data is gathered by varying government agencies, an IMPLAN economic model will draw from multiple sources of data to offer employment estimates. In general, due to nondisclosure rules, the employment figure reported by government agencies often underestimates true employment in a given county. In accordance with U.S. Code Title 13, Section 9, no datum is published that would disclose the operations of an individual employer or put an individual employer at an unfair disadvantage.

The combined employment figures reported by the U.S. Department of Labor, Bureau of Economic Analysis, U.S. Census, and the Internal Revenue Service allow analysts to construct a comprehensive employment figure. The raw data are then "sectored" into the appropriate NAICS and, in turn, combined into the necessary industry vectors and IMPLAN matrices. The result of this process is a "Total Employment" impact figure that is a result of the three levels of economic impacts associated with the initial spending.

An IMPLAN economic model also calculates employee compensation which includes all salaries, wages, and benefits paid to the industry's employees resulting from the direct, indirect, and induced employment impacts. The figure includes the proprietors' income of self-employed persons in the industry. The figures reported are gross amounts and taken from the IMPLAN data set.

Input/Output methodology and IMPLAN software allow one to leverage and integrate the enormous amount of data collected by government agencies. As such, a reliable model of how spending affects a regional economy can be developed. These models take into account not only how money is initially spent in the "direct" stage of an event, but also inter- and intra-industry transactions. These transactions establish forward and backward linkages in a regional economy during the "indirect" and "induced" stages. In addition to spending, these models also estimate the resulting change in employment and labor income. The end product is a comprehensive economic analysis of a given event and its impact on a region.

APPENDIX II –Detailed Methodology of the Rent Premiums Calculations

Residential Rents

In order to limit the human biases in the analytical process to the minimum possible, and for the sake of a large sample size, all apartment complexes that have 1 bedroom & 1 bathroom (1B1B) units available are included in the study. The 1B1B listings were collected from *www.apartments.com*, and the walking distances from the apartment complexes to the nearest DART light rail stations were confirmed via Google Maps. For those properties within 1-mile walking distance, ERG further divided them into the treatment (≤0.5 mile) and control (>0.5 & ≤1 mile) groups. From each apartment complex, ERG selected the first group of 1B1B units and then selected the unit type with the lowest price. The final numbers used for each complex is the per square foot per month rate. Eventually, 92 apartment complexes in total were successfully identified, among which 46 are within the half-mile range, with the remaining 46 complexes in the one-half to one-mile range. The t-test is summarized in Table 1 below.

Table 1: Residential T-Test Results

Residential Rent Premiums	**within 0.5 mile**	**0.5-1 mile**
Mean	2.0407	1.8548
Variance	0.1324	0.0789
Observations	46	46
Hypothesized Mean Difference	0	
Degree of Freedom	85	
t Stat	2.7428	
P(T<=t) one-tail	0.0037	
t Critical one-tail	1.6630	
P(T<=t) two-tail	0.0074	
t Critical two-tail	1.9883	

The P-value is statistically significant at 0.0037 at a 99% confidence level, for the one-tail test. Therefore, ERG determined that there is a significant price premium for apartments that are closer to a DART station. Apartments within one-half mile of a DART station have an average apartment rental price of $2.04 per square foot per month, while apartments between one-half and one mile of a DART station have an average apartment rental price of $1.85 per square foot per month. In

other words, the closeness to DART premium is $0.19 per square foot per month, or a 10.02% premium comparing to the further ones.

Commercial Rents

A similar data collection process was conducted for commercial and office rental units, from *www.loopnet.com*. 100 rental listings with prices were found, among which 44 are within the one-half-mile range of a DART station, with the remaining 56 listings in the one-half to one-mile range. A similar analytical model was run comparing rent for commercial and office properties. A t-test was used to determine whether the rent price (per square foot per month) differential was statistically significant between properties within one-half mile of a DART station and properties further away at one-half to one mile from a DART station.

Table 2: Commercial T-Test Results

Commercial and Office Combined	within 0.5 mile	0.5 to 1 miles
Mean	1.8330	1.6277
Variance	0.3501	0.2343
Observations	44	56
Hypothesized Mean Difference	0	
Degree of Freedom	82	
t Stat	1.8630	
P(T<=t) one-tail	0.0330	
t Critical one-tail	1.6636	
P(T<=t) two-tail	0.0660	
t Critical two-tail	1.9893	

As shown in Table 2 above, the P-value is statistically significant at 0.0330 at a 95% confidence level, for the one-tail test. Therefore, ERG determined that there is a significant price premium for properties that are closer to a DART station. However, for the two-tail test, the P-value is just slightly under the 95% level, 93.4%. Realistically, the one-tail test fits the context better, as it is more reasonable to hypothesize that properties closer to DART stations would have a higher rent. However, considering the local context of Dallas-Fort Worth metroplex, driving is another main means of transportation. Thus, it is unsurprising to see the statistical significance not at the 99% level. Overall, the analysis still sends a clear message that commercial property within one-half mile of the DART stations has a $0.21 (12.61%) per square foot per month rent premium than

those located between the one-half to one mile of these DART stations, and the premium is statistically significant at the 95% significance level.