The Benefits of BART for the Downtown San Francisco Office Market

July 2015

prepared for:
San Francisco Bay Area Rapid Transit District

STRATEGIC **ECONOMICS** INC

TABLE OF CONTENTS

Executive Summary 2
I. Introduction 9
II. Transit's Economic Benefits and the Property Value Premium 11
III. BART and the Location of Office Buildings in San Francisco 16
IV. BART and Office Market Performance 21
V. BART and Assessed Values of Office Buildings 26
Appendix A: Data Sources 29
Appendix B: Previous Studies of BART and the Downtown San Francisco Office Market 30
Appendix C: Bibliography 32

EXECUTIVE SUMMARY

This report assesses the economic and property value benefits that BART provides for Downtown San Francisco. The report includes an overview of the many ways that BART supports job growth in the Downtown, as well as an analysis of how office building characteristics, rents, and property values vary with distance from BART. Key findings are summarized below.

How BART Supports Job Growth in Downtown San Francisco

BART helps concentrate job growth in Downtown in many ways, including:

- **BART significantly increases the size of the labor pool that can access Downtown.** BART makes it possible for an additional 193,000 workers to access Downtown within a 60-minute commute. This expands the labor pool for Downtown employers by 11 percent.[1]

- **BART facilitates San Francisco employers' capacity to recruit and retain workers living in the East Bay and northern San Mateo County.** BART provides a critical alternative to driving, particularly for workers who live in the East Bay and would otherwise have to commute using the San Francisco-Oakland Bay Bridge. By providing a cheap and convenient means to access jobs in Downtown San Francisco, the system helps employers recruit and retain workers and reduces overall traffic congestion.

  Two thirds of all BART trips begin or end at Embarcadero, Montgomery, Powell, or Civic Center Stations.

- **BART reduces commuting costs from the East Bay to Downtown San Francisco by $5,800 per year per worker.**[2] Commuting by BART also saves workers' time. During a typical weekday commute, workers who take BART into San Francisco save an average of approximately 30 minutes in each direction.[3]

  In 2010, 56 percent of workers who lived in the East Bay and worked in Downtown San Francisco used BART for their daily commute.

- **BART enables higher density development in Downtown.** Over the past several decades, the majority of new office development in San Francisco has occurred within a quarter mile of the Downtown BART stations. This concentration of office space would not be possible without BART, which enables workers to commute into San Francisco without a car. This in turn helps decrease demand for parking, freeing up developable area for additional rentable office space.

- **BART supports San Francisco's thriving economy by allowing Downtown San Francisco to support the highest concentration of jobs per square mile in the region.**[4] By enabling higher density employment uses, BART contributes to the overall health of Downtown's economy. Downtown San Francisco's high employment density is essential to the walkable, urban character that makes Downtown an appealing place to live and work. The concentration of employment within Downtown also concentrates worker spending, supporting a range of retail establishments. In addition, high employment densities create "agglomeration economies," or the benefits that occur when firms cluster together. These include improved access to a common labor pool, and decreased costs associated with easier access to clients and suppliers. A high concentration of employment can facilitate the exchange of skills and information (also known as "knowledge

[1] ALH Urban & Regional Economics, "Representative Draft Findings: BART's Economic Contributions to the Bay Area."
[2] Ibid.
[3] Ibid.
[4] Terplan et al., *The Urban Future of Work.*

spillovers") among workers and firms. Studies have shown that these types of knowledge exchanges lead to increased productivity and innovation for employers.[5]

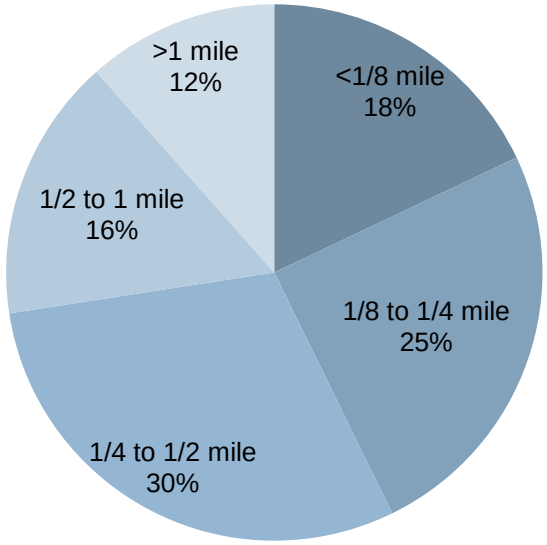
The analysis showed that these economic benefits are reflected in a clustering of high-quality office space around the BART stations, as well as higher rents and property values near BART. These findings are summarized below.

The Clustering of Office Space near BART

Office building location, class, and density vary significantly with distance from the Downtown BART stations. Figure 1 shows the total San Francisco office inventory by distance to the nearest Downtown station. Figure 2 provides a map of San Francisco office buildings by class and size.

Seventy-three percent of office space in the City of San Francisco is located within a half mile of the Downtown BART stations.[6] Overall, there are 112.6 million square feet of office space located in San Francisco. Of this, 81 million square feet (or 73 percent) are located within a half mile of the Downtown BART stations (Figure 1). The City's office space is highly clustered around the Downtown BART stations, with the majority of office buildings located near the Embarcadero and Montgomery stations (Figure 2). This area includes the core of San Francisco's office market, including the Financial District and most of South of Market (SOMA). Smaller clusters of office buildings are found near Powell and Civic Center stations.

Figure 1. Share of San Francisco's Total Office Inventory by Distance from the Downtown BART Stations



Includes all office space in the City of San Francisco as tracked by CoStar .
Source: CoStar, 2014; Strategic Economics, 2015.

Eighty-eight percent of the City of San Francisco's Class A buildings are located within a half mile of the Downtown BART stations. Class A includes the highest-quality buildings in the market. The majority of San Francisco's Class A inventory is clustered near the Embarcadero and Montgomery stations (Figure 2).

[5] Glaeser, *Agglomeration Economics*.
[6] Note that the data do not include medical office buildings, which are more likely to be located outside of Downtown.

Office properties located closer to Downtown San Francisco BART stations tend to be larger than properties located further away. The average office building size within an eighth mile of a station is 177,000 square feet, compared to a citywide average of 54,300 square feet. Most of the largest buildings are located within an eighth mile of the Embarcadero and Montgomery stations (Figure 2).

Figure 2. San Francisco Office Properties by Size and Building Class

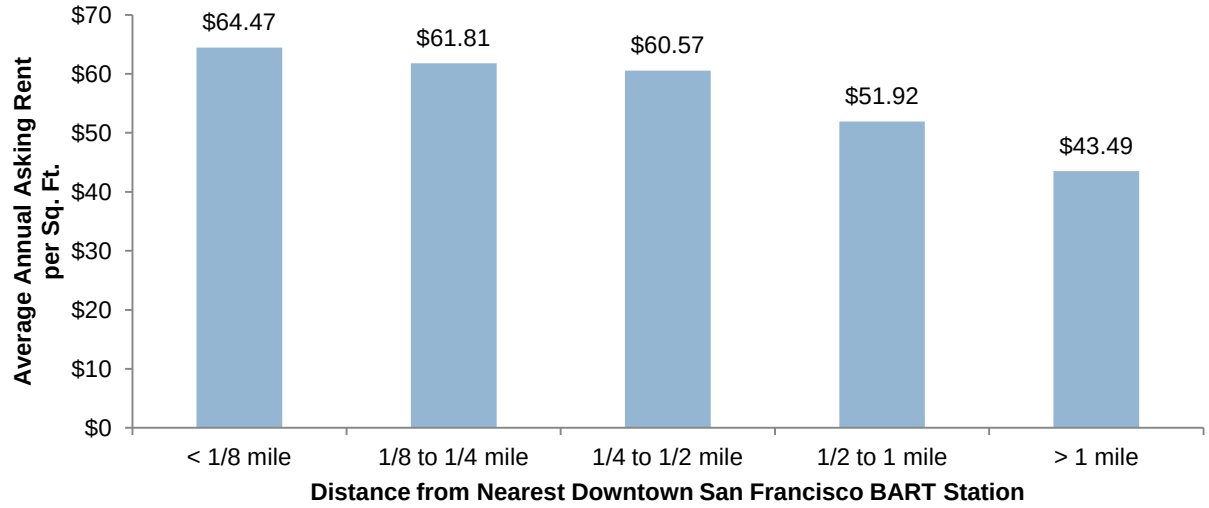
BART and Downtown San Francisco Office Market Performance

The analysis examined trends in office rents within the San Francisco market as a whole, as well as more local dynamics in specific office submarkets within Downtown.

Citywide Findings

Office buildings near BART tend to have higher asking rents than buildings located further away. As Figure 3 shows, the highest rents in San Francisco are found in close proximity to the Downtown BART stations. Within an eighth mile of the stations, asking rents averaged $64 per square foot per year in the fourth quarter of 2014. Rental rates gradually diminish as the distance from the nearest BART station increases.

Figure 3. Average Annual Office Asking Rents per Square Foot by Distance from Downtown San Francisco BART Stations (Fourth Quarter 2014)



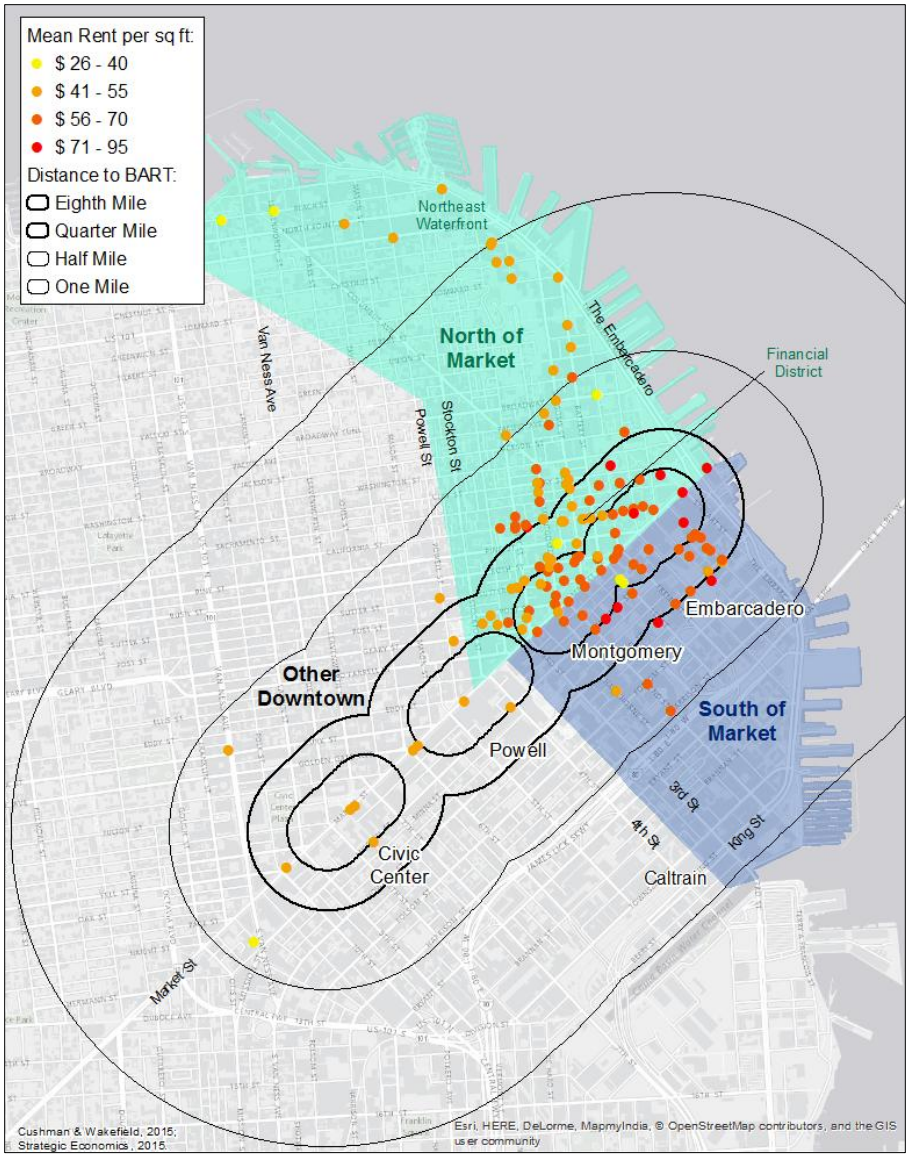
Includes San Francisco properties with space available for lease in the fourth quarter of 2014, as shown in Figure 4.
Source: Cushman and Wakefield, 4Q 2014; Strategic Economics, 2015.

According to brokers, the premium reflects the significant value that office tenants place on proximity to BART. Local brokers interviewed for this analysis reported that access to BART is a decisive factor guiding the location choices of many prospective tenants in San Francisco. Office tenants usually prefer to locate within a 10- to 12-minute walking distance (i.e., a half mile) from Embarcadero or Montgomery stations in order to more easily access workers and clients in the East Bay.

Submarket Findings

According to local brokers, proximity to BART is considered a more important amenity in some submarkets than in others. Strategic Economics created three broad submarkets to illustrate how proximity to BART has different impacts in different parts of the City: North of Market, South of Market (SOMA), and Other Downtown. Figure 4 shows the submarkets.

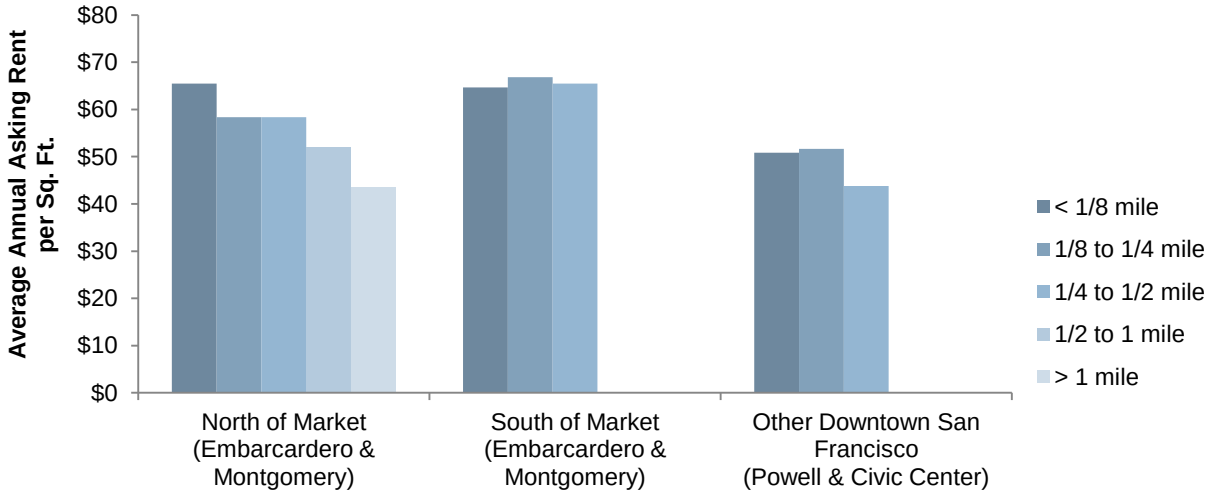
Figure 4. San Francisco Office Rents in Fourth Quarter 2014, by Submarket and Distance to Nearest BART Station



Note: This map shows the average asking rent for office properties in which space was available for lease in the fourth quarter of 2014.

The transit premium is strongest North of Market. Within this submarket, asking rents clearly decrease as distance from BART increases (Figure 5). According to brokers, BART connectivity is a particularly important factor for tenants considering the Financial District or other North of Market locations, many of whom draw a significant proportion of their workforce from the East Bay. Brokers reported that relatively poor transit connectivity is one of the key reasons for lower rents along the Northeast Waterfront.

Figure 5. Average Annual Asking Rents per Square Foot by Submarket and by Distance from Downtown San Francisco BART Stations (Fourth Quarter 2014)



Includes San Francisco properties with space available for lease in the fourth quarter of 2014, as shown in Figure 4.
Missing bars correspond to distance rings with no rental data.
Source: Cushman and Wakefield, 2015; Strategic Economics, 2015.

Rents in SOMA are consistently very high, regardless of distance from BART. SOMA is one of the most desired office locations in the entire Bay Area for companies in the region's booming tech industry. While brokers reported that tech companies do value proximity to BART, they are willing to pay very high rents to locate anywhere in SOMA. Moreover, many tech companies draw a substantial share of their workforce from the South Bay and other parts of San Francisco, as well from as the East Bay, and therefore value proximity to Muni and CalTrain stations as much as access to BART. As a result, the district has very low vacancies and some of the City's highest asking rents, regardless of distance from BART (Figure 5).

Rents are also higher in closer proximity to the Powell and Civic Center stations. As shown in Figure 5, offices located within a quarter mile of the Powell and Civic Center BART stations had higher asking rents than properties located a quarter to a half mile from the stations.[7] Overall, however, rents around these station areas are significantly lower than rents either in the North of Market or SOMA. The area near Powell station is more of a retail center than a strong office market, while the Civic Center area is dominated by government office buildings.

BART is playing a pivotal role in the revitalization of the Civic Center area. The Civic Center area (also known as Mid-Market) has experienced significant revitalization in the last several years. Twitter's 2012 decision to move their headquarters to Market Street between 9th and 10th Street marked the beginning of this revitalization. A number of other tech companies have followed, including Square, Uber, and Dolby Laboratories. Several of the brokers interviewed for this report were recently involved in major transactions in Mid-Market, and reported that the BART station is one of the most important reasons that this location is becoming increasingly desirable. The City of San Francisco has also facilitated the area's revitalization through land use planning, public investments, and payroll tax reductions.

[7] No rental data were available for properties located further than a quarter mile from Powell or Civic Center.

BART and the Property Tax Base

Proximity to BART is also associated with higher assessed property values. In California, assessed property values tend to be low relative to market value due to Proposition 13. Nevertheless, they provide insight on the relative value of different locations, and directly determine local governments' property tax revenues.

Nearly 85 percent of the total assessed value of office buildings in San Francisco is located within a half mile of the Downtown BART stations. Office buildings within a half mile of the BART stations represent a combined $21.8 billion in assessed property value.

The office buildings located within a half mile of BART stations generate $256 million a year in local property tax revenues.[8] These property tax revenues help support the City of San Francisco, the San Francisco Unified School District, the Community College District, BART, and other local taxing entities.

[8] This should be considered a conservative estimate, because the analysis only included buildings classified as "office" and excluded mixed-use buildings (which may include retail, residential, and other uses as well as office).

I. INTRODUCTION

Since the system first opened in 1974, BART has provided a critical link between Downtown San Francisco and workers across the region. By allowing commuters from the East Bay – and, more recently, from Northern San Mateo County – to access Downtown quickly and efficiently, BART has enabled San Francisco to retain its role as the center of the region's fast growing economy despite the constraints on growth posed by geography and limited road capacity. This report evaluates BART's role in supporting the Downtown San Francisco office market.

APPROACH

Strategic Economics began by characterizing the many economic benefits that the BART system contributes to Downtown San Francisco, such as expanding employers' access to the East Bay labor force, reducing commuting costs, and enabling higher density development. Previous studies have shown that these types of economic benefits are often reflected in higher rents and property values around transit stations.

In order to assess BART's influence on the office market, Strategic Economics analyzed how office building location, class, density, rental rates, and assessed property values vary with distance from the Downtown BART stations. Statistical analysis was not successful in isolating the value of proximity to BART from the value of other factors that also influence office rents (such as building quality, proximity to Muni, or the general prestige associated with locations on Market Street) because of the limitations of available data.[9] Instead, Strategic Economics took a qualitative approach to understanding BART's influence on the office market, conducting a series of interviews with real estate brokers from all the major firms that specialize in representing tenants and property owners in Downtown San Francisco (including senior brokers from Cushman and Wakefield, Jones Lang LaSalle, Newmark Cornish and Carey, DTZ, and Kidder Mathews).

REPORT ORGANIZATION

The remainder of this report is organized into the following sections:

- Section II reviews key findings from the literature on the economic and property value benefits of transit, and then examines the various economic benefits that BART provides to the Downtown San Francisco office market.
- Section III examines where office buildings in San Francisco are located in relation to the Downtown BART stations, and how building quality, size, and density vary with distance from BART.
- Section IV analyzes BART's influence on office building performance, drawing both from a quantitative analysis of rent data and interviews with brokers.
- Section V evaluates how assessed property values of office buildings vary with distance from the Downtown BART stations.

[9] In previous analyses in the East Bay and San Mateo County, Strategic Economics used hedonic regression analysis to isolate the effect of proximity to BART on rents and property values. This type of analysis was not successful in this case because of a small sample size. While Cushman and Wakefield provided data on building characteristics for all of the office buildings in San Francisco (excluding office buildings that are 100 percent medical office), current rent data were available only for the approximately 140 properties in Downtown San Francisco that had space available for lease in the fourth quarter of 2014, and historic rent data were not available for individual buildings. Using statistical analysis to isolate the value of proximity to the Downtown San Francisco BART is also challenging because the BART stations align closely with Muni stations and Market Street.

Appendix A provides further information on the data sources used in this study. Appendix B discusses previous studies on BART's influence on Downtown San Francisco office rents. Appendix C includes a complete bibliography.

II. TRANSIT'S ECONOMIC BENEFITS AND THE PROPERTY VALUE PREMIUM

Research has shown that transit access generates a wide range of economic benefits, such as reducing household transportation costs, enabling workers to more easily access employment, education, and other destinations, and facilitating more efficient land use patterns. Some of these benefits are translated into higher rents and property values for properties located near transit stations. This section summarizes some of the key findings from the literature on the economic and property value benefits of transit, based on the more comprehensive literature reviews included in Strategic Economics' two previous reports on BART's influence on property values in the East Bay and Northern San Mateo County.[10] Following the broader literature review, the section discusses the important role that the BART system plays in supporting job growth in Downtown San Francisco.

LITERATURE REVIEW: TRANSIT, ECONOMIC BENEFITS, AND PROPERTY VALUES

A large body of research has shown that transit access generates a variety of economic benefits. Some benefits accrue directly to transit riders and businesses. For example, improved transit access can generate savings for riders by reducing their required expenditures on auto use and ownership.[11] Transit improvements also allow riders to access employment more quickly and reliably, reducing absenteeism and improving employers' ability to recruit and retain employers from across the region.[12]

In addition to directly benefiting riders and employers, a high-quality transit system also contributes to the overall health of a region's economy. Frequent, convenient, and reliable public transit is increasingly seen as a critical component of quality of life, and is one of the factors that many households and firms consider in determining where to locate.[13] In addition, shifting travel from automobiles to transit can result in reduced traffic congestion and improved environmental quality.[14] Transit can also foster more compact, higher-density land use patterns by increasing the number of households or workers that can access a particular destination without a car, reducing the need for parking and roadway infrastructure. Studies have shown that more efficient land use patterns can result in increased revenues for local governments, as well as savings on the cost of providing infrastructure and services.[15]

The Transit Property Value Premium

The economic benefits associated with locations near transit are reflected in higher rents and property values around transit stations. Many studies have explored the influence of transit investments on property values or rents, controlling for factors such as property attributes, local and regional differences in market conditions, and other neighborhood characteristics. Studies have found widely varying property value premiums associated with locations near transit, with most results falling in the range of 5 to 20 percent.[16] In recent studies of the BART system's impact on property values in Alameda, Contra Costa, and San Mateo Counties, Strategic Economics found that all else equal, condominiums located within a

[10] Strategic Economics, *Property Value and Fiscal Benefits of BART*; Strategic Economics, *Benefits of BART for Office and Apartment Properties*.
[11] Litman, *Evaluating Public Transit Benefits and Costs: Best Practices Guidebook*.
[12] Ibid.
[13] American Planning Association, *Investing in Place: Two Generations' View on the Future of Communities*; Salvesen and Renski, *The Importance of Quality of Life in the Location Decisions of New Economy Firms*.
[14] Litman, *Evaluating Public Transit Benefits and Costs: Best Practices Guidebook*.
[15] Smart Growth America, *Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development*.
[16] Mohammad et al., "A Meta-Analysis of the Impact of Rail Projects on Land and Property Values."

half mile of a BART station were worth 15 percent more than properties located more than five miles from a station. Single-family homes located within a half mile of a station experienced an 11 percent property value premium.[17] In the East Bay (Alameda and Contra Costa Counties), proximity to BART was associated with 20 percent higher rents.[18]

In general, transit appears to have the greatest positive impact on property values when the transit system significantly improves households' access to employment centers and other regional destinations, and service is fast, frequent, and reliable.[19] Pedestrian-friendly, mixed-use neighborhoods with good connections to transit stations generally experience the most significant property value benefits from transit, particularly when local governments implement zoning and land use regulations to facilitate transit-oriented development (TOD).[20]

The Benefits of Transit for Office Properties

While most studies of the property value impacts of transit focus on residential properties, a number of studies suggest that transit also generates significant benefits for office properties. These benefits are summarized below.

- **Improved transit access helps attract office tenants**. Research has shown that firms in office-based industries (e.g., professional, scientific, information, and financial services) are more likely than other businesses to choose locations based on commute options and other quality of life factors for workers, including access to transit.[21] Firms in these industries are more likely than other types of businesses to locate near transit stations.[22] Workers in office-based industries are also most likely to take transit to get to work.[23]

- **Transit-served office properties achieve higher rents.** A recent study of BART's influence on office rents in the East Bay found that rents were 18 percent higher within a quarter mile of a BART station and 11 percent higher within a quarter to a half mile, compared to rents of properties located more than half a mile of a station.[24] A similar study in Dallas found that office properties near transit achieved an average lease premium of 14.4 percent in 2013. This premium fluctuated over time, ranging from 6.5 percent in 2003 to 19.6 percent in 2010.[25] Another analysis of commercial lease rates in Denver found that the rent premium ranged from 12 to 15 percent.[26]

- **Commercial properties can achieve sizeable property value impacts.** As mentioned above, most studies of the property value impacts of transit focus on residential single-family homes. However, a few have also considered commercial properties. A recent survey of this research found an average premium of 16.4 percent for commercial properties located within a quarter

[17] Compared to properties located more than five miles from a BART station. Strategic Economics, *Property Value and Fiscal Benefits of BART*.
[18] Not controlling for building quality or other factors. Strategic Economics, *Benefits of BART for Office and Apartment Properties*.
[19] Debrezion, Pels, and Rietveld, "The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-Analysis"; Landis et al., *Rail Transit Investments, Real Estate Values, and Land Use Change: A Comparative Analysis of Five California Rail Transit Systems*.
[20] Duncan, "The Synergistic Influence of Light Rail Stations and Zoning on Home Prices"; Atkinson-Palombo, "Comparing the Capitalisation Benefits of Light-Rail Transit and Overlay Zoning for Single-Family Houses and Condos by Neighbourhood Type in Metropolitan Phoenix, Arizona."
[21] Salvesen and Renski, *The Importance of Quality of Life in the Location Decisions of New Economy Firms*; Chapple and Makarewicz, "Restricting New Infrastructure."
[22] Center for Transit-Oriented Development, *Trends in Transit-Oriented Development, 2000-2010*.
[23] Greenberg and Belzer, *TOD 202: Transit & Employment*.
[24] Strategic Economics, *Benefits of BART for Office and Apartment Properties*.
[25] Clower et al., *Developmental Impacts of the Dallas Area Rapid Transit Light Rail System*.
[26] Knudtsen, "Value Capture for the Rest of US."

mile of transit.[27] In fact, some research suggests that commercial properties tend to experience greater impacts than residential properties.[28]

- **The benefits of transit for commercial properties tend to be highly concentrated within short distances of transit stations.** Most studies find that the value premium associated with proximity to transit for commercial properties is highly concentrated within short distance of a station. For example, a recent study of light rail's effect on office rents in Denver and Dallas found that while the positive effect on office rents extended as far as 2.35 miles from a station, half the premium was lost by the first 0.65 mile from a station, and three-quarters of the premium was lost by 1.1 miles from a station.[29]

HOW BART SUPPORTS JOB GROWTH IN DOWNTOWN SAN FRANCISCO

Downtown San Francisco is the central hub of the BART system. Two-thirds of all BART trips begin or end at Embarcadero, Montgomery, Powell, or Civic Center Stations.[30] By providing a fast, efficient alternative for workers across the region to access Downtown San Francisco, BART helps to concentrate job growth in Downtown in the following ways:

- **BART significantly increases the size of the labor pool that can access Downtown.** BART makes it possible for an additional 193,000 workers to access Downtown within a 60-minute commute. This expands the labor pool for Downtown employers by 11 percent.[31]
- **In 2010, 56 percent of workers who lived in the East Bay and worked in Downtown San Francisco used BART for their daily commute.** BART provides a critical alternative to driving, particularly for workers who live in the East Bay who would otherwise have to commute using the San Francisco-Oakland Bay Bridge. As shown in Figure II-1, approximately 282,330 workers were employed in Downtown San Francisco in 2010. Of these, 73,888 (or 26 percent) lived in the East Bay, and more than half of East Bay commuters used BART for their daily trip to work.

[27] Debrezion, Pels, and Rietveld, "The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-Analysis."
[28] Ibid.
[29] Nelson et al., "Office Rent Premiums with Respect to Light Rail Transit Stations in Dallas and Denver."
[30] Strategic Economics, analysis of ridership data provided BART, 2014.
[31] ALH Urban & Regional Economics, "Representative Draft Findings: BART's Economic Contributions to the Bay Area."

Figure II-1. Commute Trips from the East Bay to Downtown San Francisco** by Transportation Mode, 2010*

	Number of Workers	Percent of Total East Bay Commuters
Workers Employed in Downtown	282,330	N/A
East Bay Commuters by Transportation Mode	73,888	100%
Rail (BART)	41,401	56%
Single-Occupant Vehicle	14,414	20%
Carpool	8,749	12%
Bus	6,938	9%
Other	2,405	3%

*Includes Alameda and Contra Costa Counties.
**Includes the Census Tracts within a rough half-mile radius of the Downtown San Francisco BART stations. Since the only rail transit option for East Bay commuters to reach Downtown San Francisco is BART, all commuters reporting rail as their primary mode of transportation were assumed to take BART.
Sources: American Association of State Highway and Transportation Officials and U.S. Census Bureau, Census Transportation Planning Products, 2006-2010; Strategic Economics, 2015.

- **BART reduces commuting costs from the East Bay to Downtown San Francisco by $5,800 per year per worker.**[32] Commuting into Downtown San Francisco by BART is significantly less expensive than commuting by car, especially given the high cost of bridge tolls and downtown parking. Commuting by BART also saves time. During a typical weekday commute, workers who take BART into San Francisco save an average of approximately 30 minutes in each direction.[33] Some Downtown San Francisco businesses may also realize direct savings from proximity to BART. For example, businesses may have to provide less parking if more of their workers commute by transit.[34]

- **BART enables higher density development in Downtown.** Over the past several decades**,** the majority of new office development in San Francisco has continued to occur within a quarter mile of the Downtown BART stations, even as an increasing share of development has shifted towards South of Market (SOMA) and Mission Bay (this is discussed in additional detail in Section III). BART – along with the other transit options serving Downtown San Francisco – enables this intensity of development by reducing the number of people commuting into San Francisco by car. This in turn helps decrease demand for parking, freeing up floor area for additional rentable office space. The City of San Francisco's land use policies have also supported the concentration of new office around the BART stations by restricting new office development to the Downtown core and limiting the amount of parking that commercial development can provide.[35]

- **BART allows Downtown San Francisco to support the highest concentration of jobs per square mile in the region,[36] contributing to agglomeration economies that further support San Francisco's thriving economy.** By enabling higher density employment uses, BART

[32] Ibid.
[33] Ibid.
[34] However, some of the cost savings associated with providing reduced parking may be outweighed by higher rents around the stations.
[35] San Francisco's 1985 Downtown Plan limits office growth to the downtown core, preventing large commercial developments from occurring in neighboring areas such as Chinatown. The City's Planning Code also limits the amount of parking that can be built in areas near the Downtown BART stations. In the zoning districts adjacent to the BART stations, developers may devote no more than 3.5 to 7 percent of gross building area to parking. More parking is allowed in areas further away from the BART-served downtown core.
[36] Terplan et al., *The Urban Future of Work.*

> contributes to the overall health of Downtown's economy. Downtown San Francisco's high employment density is essential to the walkable, urban character that makes Downtown an appealing place to live and work. The concentration of employment within Downtown also concentrates worker spending, supporting a range of retail establishments. In addition, high employment densities create "agglomeration economies," or the benefits that occur when firms cluster together. These include improved access to a common labor pool, and decreased costs associated with easier access to clients and suppliers. A high concentration of employment can also facilitate the exchange of skills and information (also known as "knowledge spillovers") among workers and firms. Studies have shown that these types of knowledge exchanges lead to increased productivity and innovation for employers.[37]

Given the important role that BART plays in supporting the Downtown's San Francisco employment base, it is reasonable to expect that office buildings located near BART stations will command higher rents and property values. The relationship between proximity to BART and Downtown office values was last assessed in 1995, in a study conducted by John Landis and David Loutzenheiser as part of the *BART at 20* series.[38] While Landis and Loutzenheiser did not show a clear office rent premium associated with proximity to BART, the authors did find that new development clustered around Downtown San Francisco BART stations both during and after construction of the system. Appendix B provides a more complete description of Landis and Loutzenheiser's methodology and results.

In the two decades since *BART at 20*, the BART system has changed substantially. BART has extended its service to important regional destinations in North San Mateo County, Contra Costa County, and Alameda County, including the San Francisco and Oakland International Airports. New transit-oriented development near BART stations across the region has further increased the number of workers and firms with direct access to BART. Overall ridership has also increased significantly, from approximately 215,000 trips per day in the mid-1990s to over 400,000 a day in 2014.[39] These changes suggest that the benefits of proximity to BART for office buildings in San Francisco may be greater today than in the past.

CONCLUSION

Numerous studies of BART and other transit systems across the country have shown that transit access generates a wide range of benefits for transit riders, property owners, and businesses. For office properties in particular, studies show that transit service improves the ability to attract tenants and makes it possible to achieve higher rents. The literature has demonstrated that these benefits are reflected in higher property values for offices located near transit, and the benefits tend to be clustered in close proximity to transit stations.

BART plays an especially important role in supporting job growth in Downtown San Francisco, by facilitating access from the East Bay and other parts of the region. This access makes it possible to achieve the highest concentration of jobs per square mile in the Bay Area. BART also generates substantial savings for workers, who would otherwise have much longer commutes and much higher commute costs. However, while clearly provides many benefits for Downtown, the system's impacts on San Francisco office rents and property values have not been studied since the mid-1990s. Recent trends, including increased ridership and focused development near BART stations throughout the system, suggest that the value of BART for the downtown has continued to increase over the past two decades. The following chapters assess how office location, performance, and assessed values vary as a function of proximity to BART today.

[37] Glaeser, *Agglomeration Economics*.
[38] Landis and Loutzenheiser, *Bart @ 20: BART Access and Office Building Performance*.
[39] Metropolitan Transportation Commission, "Transit Ridership"; *APTA Ridership Report*.

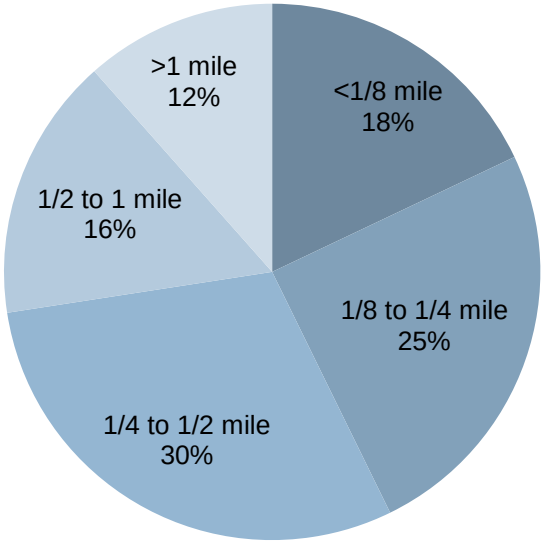
III. BART AND THE LOCATION OF OFFICE BUILDINGS IN SAN FRANCISCO

As discussed in the previous section, transit can enable higher density employment concentrations by reducing the number of employees who need to drive to work, resulting in decreased demand for parking, freeing up floor area for additional rentable office space, and mitigating the congestion associated with growth. In turn, increased employment densities can support a more walkable, urban character and result in more concentrated worker spending as well as productivity benefits for employers. This section examines the extent to which office buildings throughout the City of San Francisco are clustered near BART stations, and how building quality, size, and density vary with distance from BART.[40]

Most of San Francisco's office space is located near Embarcadero and Montgomery stations, with smaller clusters of offices near Powell and Civic Center stations. Overall, there are approximately 112.6 million square feet of office space in San Francisco. This space is highly clustered within a half mile of the Downtown BART stations (Figure III-1). Approximately 43 percent of the City's office inventory is located within a quarter mile of one of the Downtown BART stations, and 73 percent is located within a half mile.

This clustering is shown in Figure III-2, which also depicts the size and class of office buildings. The majority of office buildings in San Francisco are located near the Embarcadero and Montgomery stations. This area includes the core of San Francisco's office market, including the Financial District and most of South of Market (SOMA). Smaller clusters of office buildings are found near Powell and Civic Center stations.

Figure III-1. Share of San Francisco's Total Office Space by Distance from the Downtown BART Stations



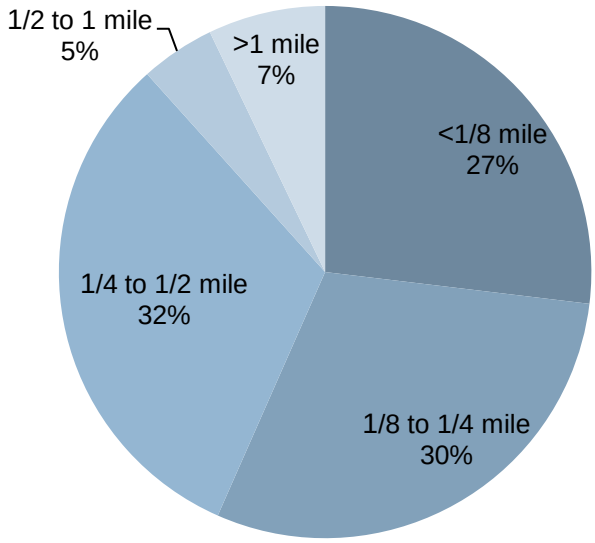
Includes all office space in the City of San Francisco as tracked by CoStar .
Source: CoStar, 2014; Strategic Economics, 2015.

[40] The data in this section on total inventory, building class, size, and year built were provided by CoStar. Floor area ratios (FARs) were calculated using Assessor-Recorder's data.

Figure III-2. San Francisco Office Properties by Size and Building Class, with Distance to Nearest BART Station

The City's Class A office space is even more clustered near BART. Most of San Francisco's Class A office inventory (88 percent) is within a half a mile of the Downtown San Francisco BART stations. Almost 30 percent of the City's Class A office space is located within an eighth mile of a station (Figure III-3). Most Class A office buildings are located in the heart of the Financial District, near Embarcadero and Montgomery stations (Figure III-2).

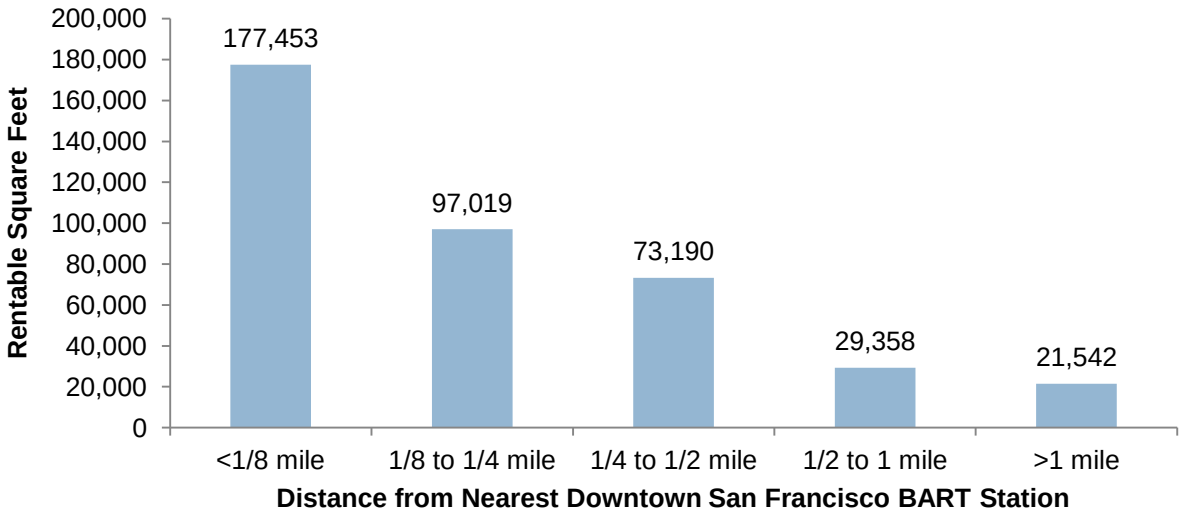
Figure III-3. Share of San Francisco's Total Class A Office Inventory by Distance from Downtown BART Stations



Includes all office space in the City of San Francisco as tracked by CoStar .
Source: CoStar, 2014; Strategic Economics, 2015.

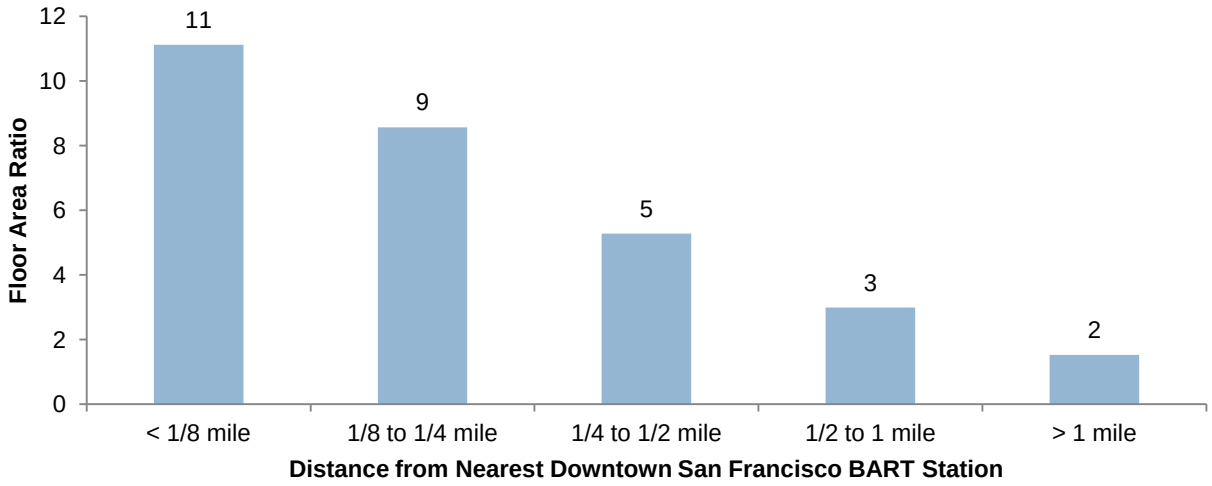
Office properties located closer to Downtown San Francisco BART stations tend to be larger and are built to higher development densities than properties located further away. As illustrated in Figure III-2, many of the largest office properties in San Francisco are located within an eighth of a mile from the Embarcadero and Montgomery BART stations. The average building size within an eighth mile of a station is 177,000 square feet, compared to a citywide average of 54,300 square feet (Figure III-4). The highest densities are found within an eighth mile of the stations, where the average Floor Area Ratio (FAR) is approximately 11 (Figure III-5). FAR is a measure of development density calculated by dividing a building's gross floor area by total lot area.

Figure III-4. Average Office Building Size by Distance from Downtown San Francisco BART Stations



Includes all office space in the City of San Francisco as tracked by CoStar .
Source: CoStar, 2014; Strategic Economics, 2015.

Figure III-5. Average Floor Area Ratio (FAR) by Distance from Downtown San Francisco BART Stations



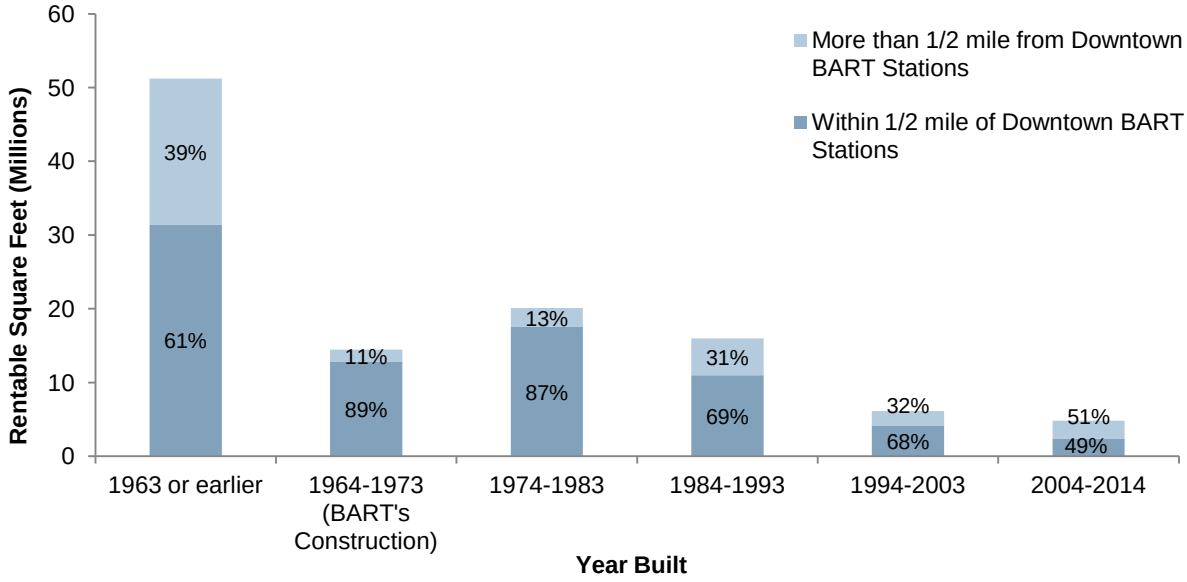
Includes all office buildings in the San Francisco Assessor's database.
Source: San Francisco Office of Assessor-Recorder, 2014; Strategic Economics, 2015.

Nearly half of all new office space built in San Francisco in the last decade is located within a half mile of BART, despite the City's efforts to encourage development in SOMA and Mission Bay. As discussed in the previous section, early studies of BART's impact on development showed that San Francisco office development was highly concentrated around the BART stations during the system's construction (approximately 1964 to 1973) and in the first thirty years after the system opened (1974 to 2004).[41] Over the past decade, however, SOMA and Mission Bay have attracted much of the new office development in the City, due to the limited number of development sites remaining near BART and the City's efforts to encourage development in those areas. While nearly half of development since 2004 was

[41] Landis and Loutzenheiser, *Bart @ 20: BART Access and Office Building Performance*; Sedway Group, *BART's Contributions to the Bay Area: An Update*.

located within a half mile of the downtown stations, this represents a significantly lower share than in previous decades (Figure III-6).

Figure III-6. San Francisco's Total Office Inventory by Year Built and Distance from Downtown BART Stations



Includes all office space in the City of San Francisco as tracked by CoStar .
Sources: CoStar, 2014; Strategic Economics, 2015.

CONCLUSION

BART enables Downtown San Francisco to have the highest employment concentration in the region, and to serve as the region's premier office location. Since the system's construction, the majority of new office development in Downtown has occurred within a half mile of the Downtown BART stations. Even over the past decade, as the focus of new development has shifted to Mission Bay and SOMA, BART-served locations continued to attract nearly 50 percent of all new office space. Overall, nearly three-fourths of the City of San Francisco's office space is located within a half mile of the Downtown BART stations. Moreover, the BART station areas support some of the City's largest and highest quality buildings.

IV. BART AND OFFICE MARKET PERFORMANCE

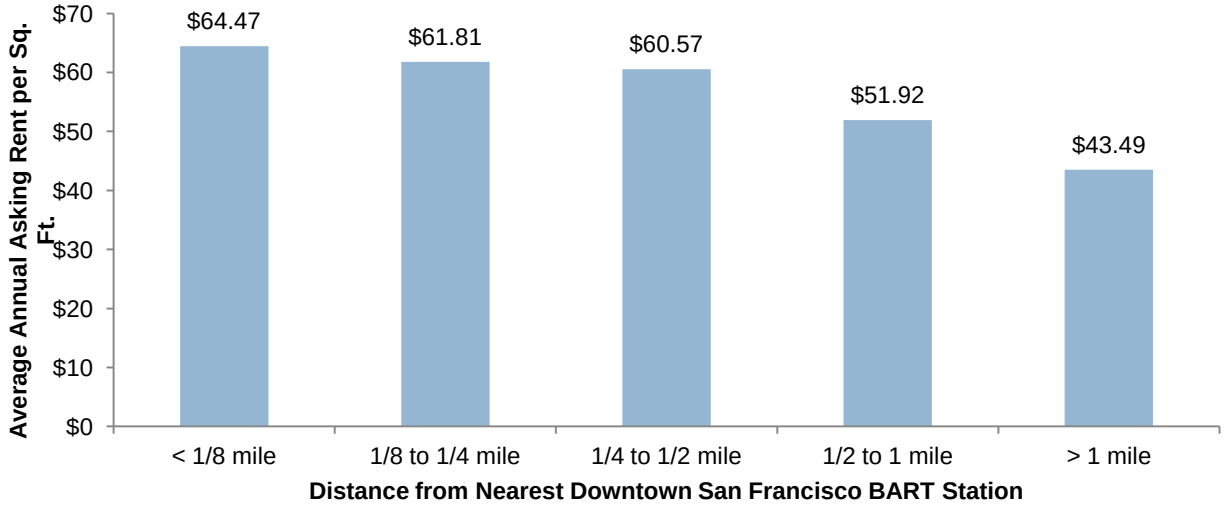
This section explores the influence of the Downtown BART stations on the San Francisco office market, based on a combination of quantitative analysis of rents[42] and qualitative findings from broker interviews. The study focused on both the San Francisco market as a whole and office submarkets within Downtown.

CITYWIDE FINDINGS

The San Francisco office market is currently one of the strongest in the world. In recent months, rents and occupancy rates have reached peak levels. In the last quarter of 2014, direct asking rents in San Francisco reached an average of $61.71 per square foot per year while overall vacancy had dropped to a very low 7.4 percent.[43] Current market conditions reflect more than four years of sustained growth in rents and declining vacancy rates.[44] Indeed, vacancy rates are so low that even properties in less desirable locations are able to attract tenants. As a result, the analysis did not find a clear relationship between proximity to BART and vacancy rates.

Office buildings near BART tend to have higher asking rents than buildings located further away. As Figure IV-1 shows, the highest rents in San Francisco are found closest to the Downtown BART stations. Within an eighth mile of the stations, asking rents averaged $64 per square foot per year in the fourth quarter of 2014. Rents gradually diminish as the distance from the nearest BART station increases, declining more steeply at distances further than a half mile from BART.

Figure IV-1. Average Annual Office Asking Rents per Square Foot by Distance from Downtown San Francisco BART Stations (Fourth Quarter 2014)



Includes San Francisco properties with space available for lease in the fourth quarter of 2014, as shown in Figure IV-2.
Source: Cushman and Wakefield, 4Q 2014; Strategic Economics, 2015.

According to brokers, the premium reflects the significant value that office tenants place on proximity to BART. It is not possible to isolate the extent to which the premium shown in Figure IV-1 is due solely to proximity to BART, as opposed to other factors that are also associated with proximity to

[42] The rent and vacancy numbers reported in this section were calculated from data provided by Cushman and Wakefield for the approximately 140 office properties in which space was available for lease in the fourth quarter of 2014.
[43] Cushman and Wakefield, Q4 2014.
[44] Colliers International, Q1 2015.

the stations such as the high concentration of Class A office space, the benefits of Muni service, the prestige associated with locations on Market Street, or views of the Bay.[45] However, local brokers interviewed for this analysis reported that access to BART is a decisive factor guiding the location choices of many prospective tenants in San Francisco. Office tenants usually prefer to locate within a 10- to 12-minute walking distance (i.e., approximately a half mile) from Embarcadero or Montgomery stations in order to more easily access to workers and clients in the East Bay.

SUBMARKET FINDINGS

Downtown San Francisco is comprised of a number of smaller office submarkets, each of which has distinct market dynamics. According to local brokers, proximity to BART is considered to be a more important amenity for tenants in some submarkets than in others. Based on conversations with brokers, Strategic Economics created three broad submarkets to illustrate how proximity to BART has different impacts in different parts of the City.[46] These are shown in Figure IV-2 and include the following:

- **North of Market** extends north from Montgomery and Embarcadero stations to Aquatic Park, and includes San Francisco's historic Financial District as well as the Northeast Waterfront district. This submarket includes 38.8 million square feet of office space, or approximately 45 percent of the City's total inventory.
- **South of Market (SOMA)** extends south from Montgomery and Embarcadero stations to 3rd Street. This submarket includes 29 million square feet of office space, 34 percent of the citywide total.
- **Other Downtown San Francisco** includes the remainder of the Downtown office inventory. All of the properties for which rental data were available[47] (shown in Figure IV-2) were within a half mile of the Powell and Civic Center stations.

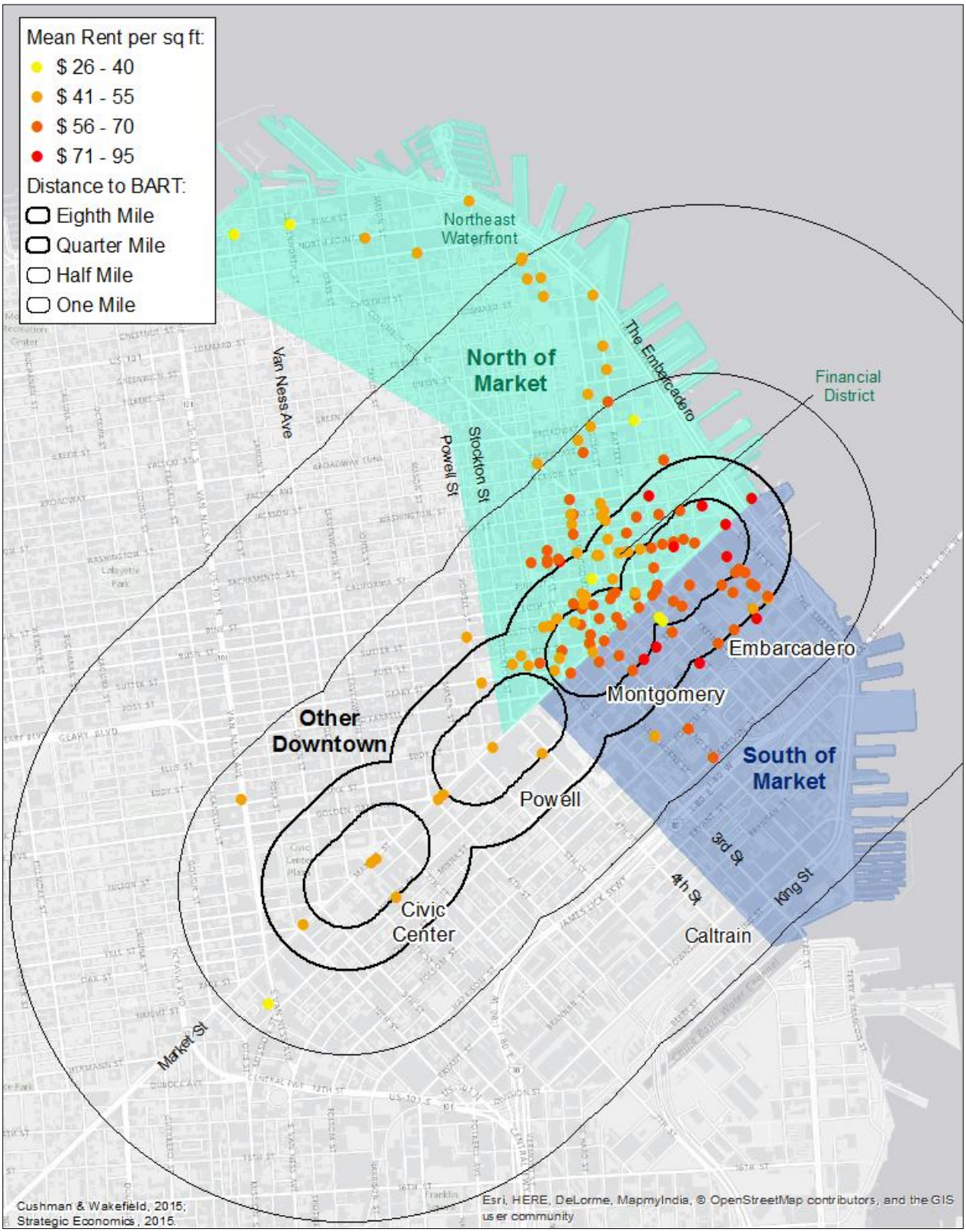
Findings from the submarket analysis are discussed below.

[45] As discussed in the introduction (Section I), hedonic regression analysis was not successful because of the relatively small sample of properties for which rent data were available, and the strong correlation between proximity to BART and proximity to Muni and Market Street.

[46] Office broker reports typically divide Downtown San Francisco into a dozen or more subareas. Based on patterns described by local brokers, Strategic Economics aggregated the submarkets typically used by office brokers into three broad submarkets that best illustrate how proximity to BART has different impacts in different parts of the City.

[47] Current asking rents were only available for properties that had space available for lease in the fourth quarter of 2014.

Figure IV-2. San Francisco Office Rents in Fourth Quarter 2014, by Submarket and Distance to Nearest BART Station

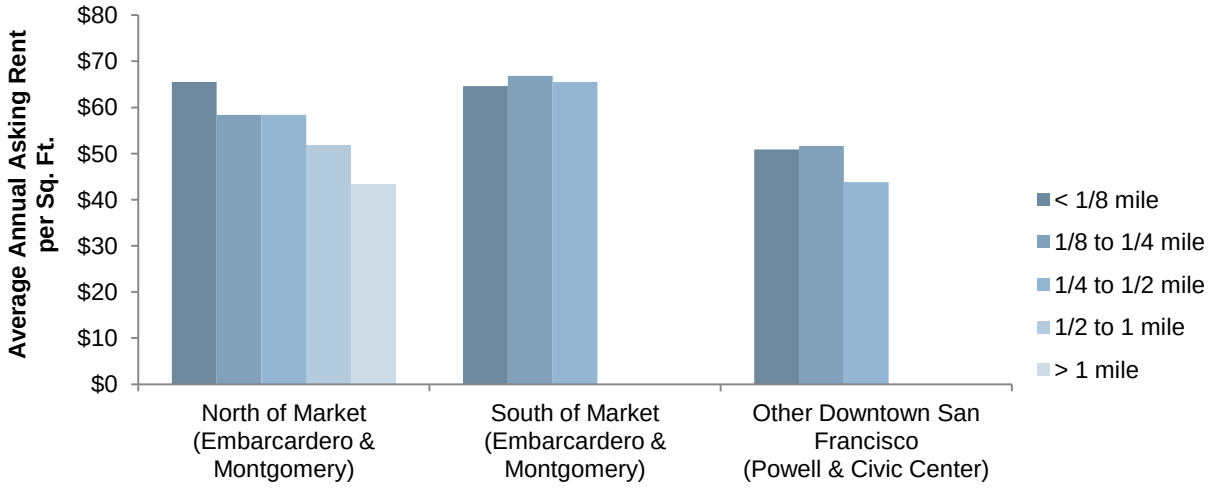


Note: This map shows the average asking rent for the 140 office properties in which space was available for lease in the fourth quarter of 2014.

In the North of Market submarket, average asking rents for office properties are significantly higher in close proximity to BART. Within this submarket, asking rents clearly decrease at greater distances from BART (Figure IV-3). The highest rents in the submarket are generally found within an eighth of a mile from BART, where the average annual asking rent was $65 per square foot in the fourth quarter of 2014 – 12 percent higher than asking rents for buildings between an eighth and a quarter mile of BART. Average rents drop another 12 percent for buildings located within a half to one mile of a station.

According to brokers, transit connectivity is particularly important for tenants considering North of Market locations. North of Market (particularly the Financial District) attracts well-established businesses in a wide range of industries, many of whom draw a significant proportion of their workforce from the East Bay. As a result, proximity to BART is particularly important for many of these tenants. According to brokers, relatively poor transit connectivity is one of the key reasons for lower rents along the Northeast Waterfront.

Figure IV-3. Average Annual Asking Rents per Square Foot by Submarket and by Distance from Downtown San Francisco BART Stations (Fourth Quarter 2014)



Includes San Francisco properties with space available for lease in the fourth quarter of 2014, as shown in Figure IV-2.
Note: Missing bars correspond to distance rings with no rental data.
Source: Cushman and Wakefield, 2015; Strategic Economics, 2015.

Rents in SOMA are consistently very high, regardless of distance from BART. SOMA is one of the most desired office locations in the entire Bay Area for companies in the region's booming tech industry. While brokers reported that tech companies do value proximity to BART, they are willing to pay very high rents to locate anywhere in SOMA. Moreover, many tech companies draw a substantial share of their workforce from the South Bay and other parts of San Francisco, as well from as the East Bay, and therefore value proximity to Muni and CalTrain stations as much as access to BART. As a result, the district has very low vacancies and some of the City's highest asking rents, regardless of distance from BART (Figure IV-3).

Rents are also higher in closer proximity to the Powell and Civic Center stations. As shown in Figure IV-4, offices located within one-eighth or one-eighth to one-quarter mile of the Powell and Civic Center BART stations had higher asking rents than properties located a quarter to a half mile from the stations.[48] Overall, however, rents around these station areas are significantly lower than rents either in the North of

[48] No rental data were available for properties located further than a quarter mile from Powell or Civic Center.

Market or SOMA. The area near Powell station is more of a retail center than a strong office market, while the Civic Center area is dominated by government office buildings.

BART is playing a pivotal role in the revitalization of the Civic Center area. The Civic Center area (also known as Mid-Market) has experienced significant revitalization in recent years. Twitter's 2012 decision to move their headquarters to Market Street between 9th and 10th Street marked the beginning of this revitalization. A number of other tech companies have followed, including Square, Uber and Dolby Laboratories. Several of the brokers interviewed for this report were recently involved in major transactions in Mid-Market, and reported that the BART station is one of the most important reasons that this location is becoming increasingly desirable. The City of San Francisco has also facilitated the district's revitalization through land use planning, public improvements, and payroll tax breaks.

CONCLUSION

BART helps make Downtown San Francisco one of the most dynamic office markets in the world. Buildings adjacent to Downtown BART stations achieve some of the highest rents in the region, reflecting the desirability of BART-served locations for tenants. Local brokers confirm that access to BART is key factor for many prospective tenants, with employers prioritizing locations near the Embarcadero and Montgomery Stations because of the excellent access to workers and clients in the East Bay. Brokers also report that BART is playing a critical role in encouraging the revitalization of the Civic Center area.

V. BART AND ASSESSED VALUES OF OFFICE BUILDINGS

In theory, higher rents for office properties near BART should be reflected in higher property values.[49] This section examines how assessed property values of office buildings[50] vary with respect to distance from the Downtown BART stations.

A NOTE ON PROPOSITION 13

The results of this section must be interpreted in the context of California's Proposition 13, passed by voters in 1978. Under Proposition 13, property is only reassessed to current market value when it changes ownership or undergoes significant new construction; otherwise, assessed values may only increase at the rate of inflation, not to exceed 2 percent a year. Assessed values of commercial properties may be particularly low relative to market values, because owners have an incentive to retain their property in order to keep the assessed value – and, thus, the tax liability – low. Given this incentive, some commercial property owners may choose to lease rather than sell their properties. Moreover, trusts and corporations can hold land for decades (and, in the case of publicly-traded corporations, may even change ownership) without facing reassessment. [51] As a result, assessed property values are often significantly lower than market values due to Proposition 13. Nevertheless, they provide insight on the relative value of different locations, and directly determine local governments' property tax revenues.

ASSESSED VALUES NEAR BART

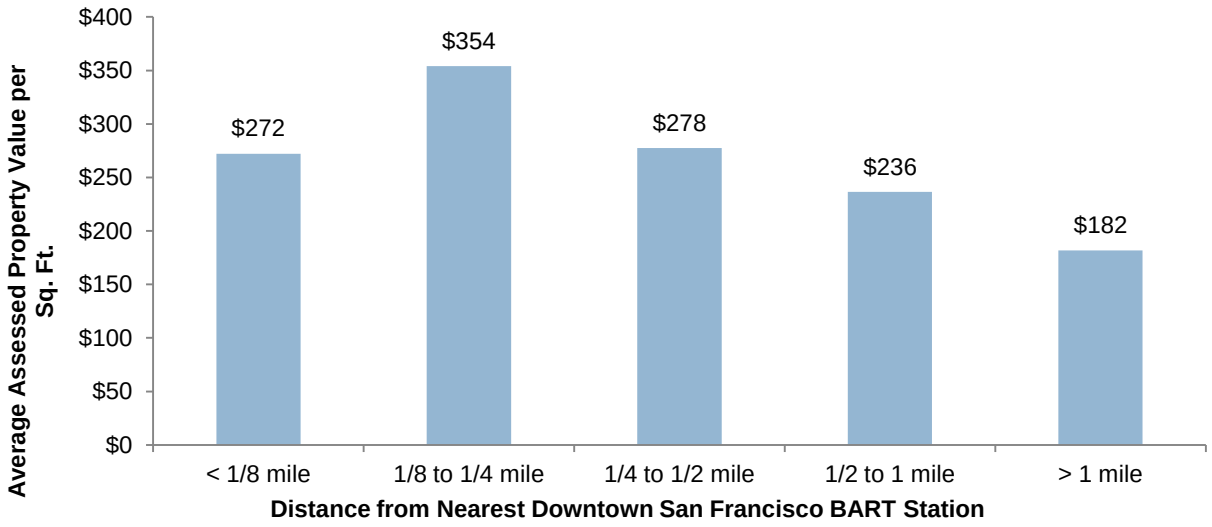
Assessed values tend to be higher closer to the BART stations. Figure V-1 shows average, per square foot assessed values for office properties by distance from BART. In general, assessed values decline with distance from the stations. The slightly low values within an eighth mile of the stations may reflect the fact that many of the buildings located immediately adjacent to the BART stations have retail on the ground floor, and are classified as mixed use in the assessed property value data. Institutional property owners of Class A buildings (which are strongly clustered within an eighth mile of BART) may also be more likely to hold their properties for longer periods of time, resulting in less frequent reassessments. This analysis excluded buildings classified as mixed-use because it was not possible to tell which included office space.

[49] Because commercial property owners (excluding owner-occupants) are primarily interested in generating a return from their investment in the form of future revenues, office property values should reflect rents, vacancies, and operating expenses.

[50] The findings in this section are based only on buildings that the San Francisco Assessor classifies as "office." Because this land use category excludes mixed-use buildings (which may include retail, residential, and other uses as well as office), the assessed values and property tax revenue figures reported in this section should be considered conservative estimates.

[51] Lenny Goldberg and David Kersten, *High-Tech, Low Tax: How the Richest Silicon Valley Corporations Pay Incredibly Low Taxes on Their Land.*

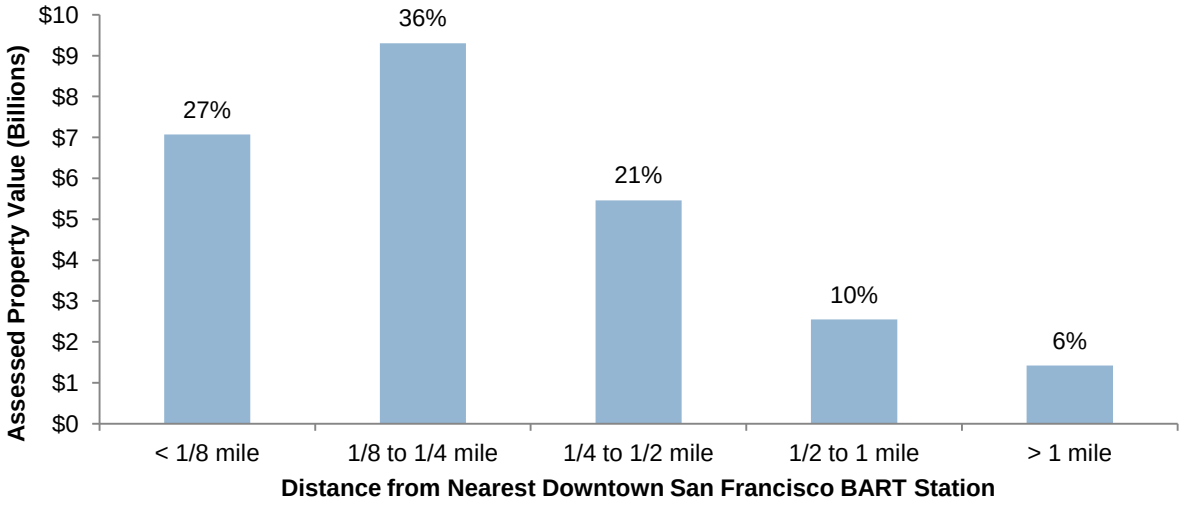
Figure V-1. Average Assessed Values (Per Square Foot) of Office Properties by Distance from Downtown San Francisco BART Stations, 2014



Source: San Francisco Office of Assessor-Recorder, 2014; Strategic Economics, 2015.

Office buildings within a half mile of BART stations represent a combined $21.8 billion in assessed property value. Figure V-2 shows the distribution of assessed property value of office properties in San Francisco. As illustrated, nearly 85 percent of the total assessed value of office buildings in San Francisco is located within a half mile of BART.

Figure V-2. Assessed Property Value of Office Buildings by Distance from the Nearest BART Station, 2014



Sources: San Francisco County Assessor's Office, 2014; Strategic Economics, 2015.

The office buildings located within a half mile of BART stations generate $256 million a year in local property tax revenues.[52] These property tax revenues are distributed to the City of San Francisco and other local taxing entities such as the San Francisco Unified School District, the Community College District, and BART.

CONCLUSION

The higher rents and development densities achieved near BART stations translate into higher assessed values – resulting in higher property tax receipts for the City of San Francisco and other taxing entities. In total, office properties located within a half mile of the Downtown BART stations generate $256 million each year in property tax revenues.

[52] This figure was calculated by applying a 1.1743 percent tax rate (the general property tax rate in the City and County of San Francisco for the fiscal year 2014-2015) to the sum of office property value.

APPENDIX A: DATA SOURCES

The analysis drew on several different data sources. Cushman and Wakefield, a commercial brokerage firm, provided data on average building rents and vacancy rates. The Cushman and Wakefield data were supplemented with information on building inventory from CoStar. Data on development density and assessed property values were obtained from the San Francisco Office of the Assessor-Recorder. All of the analysis included all office buildings located in the City of San Francisco, classified by distance from the nearest Downtown BART station (Embarcadero, Montgomery, Powell, and Civic Center). The quantitative data was supplemented with qualitative information gleaned from broker interviews. The following sections provide additional information on these data sources.

Cushman & Wakefield Data

The commercial brokerage firm Cushman and Wakefield provided data on average building rents and vacancy rates. Strategic Economics calculated the distance between each property and the nearest entrance to Embarcadero, Montgomery, Powell, or Civic Center stations, measuring distance "as the crow flies." Note that Cushman and Wakefield – like most other sources of office data – tracks asking rents; as a result, the data may not fully reflect actual lease rates.

CoStar Data

The analysis of San Francisco's office inventory – including total building area, building class, and year built – relied on a database of properties tracked by CoStar, and downloaded in August 2014. Both office and flex[53] properties were included in the analysis because there is considerable overlap between the two categories; as defined by CoStar, at least half of the rentable building area must be used as office in order for a building to qualify as flex space. CoStar tracks 1,170 existing office and flex properties in the City of San Francisco, accounting for 112.6 million square feet of rentable building area (RBA).

Assessor's Data

Assessed property value data were drawn from the San Francisco Office of the Assessor-Recorder. This dataset contains information about land use, office square footage, parcel area, and assessed value, and was also used to calculate average floor area ratios (FARs). In order to examine the relationship between building density, assessed value, and distance to BART, Strategic Economics calculated the distance from the center of each parcel to the nearest Downtown San Francisco BART station.[54] Note that data on assessed property values does not fully reflect market values, since under California's Proposition 13 properties are only reassessed when they change ownership or undergo new construction.

Broker Interviews

Strategic Economics conducted nine interviews with senior brokers from all the major firms that specialize in San Francisco's office market, including Cushman and Wakefield, JLL, Newmark Cornish and Carey, DTZ, and Kidder Mathews. The brokers were asked questions about the influence of BART on Downtown San Francisco's market, particularly in terms of tenant preference and rent premiums.

[53] CoStar defines flex buildings as "designed to be versatile, which may be used in combination with office (corporate headquarters), research and development, quasi-retail sales, and including but not limited to industrial, warehouse, and distribution uses. At least half of the rentable area of the building must be used as office space. . . ."

[54] In this case, distance from BART stations was calculated from a single point at the center of each station.

APPENDIX B: PREVIOUS STUDIES OF BART AND THE DOWNTOWN SAN FRANCISCO OFFICE MARKET

Two previous studies have examined the role that BART plays in San Francisco's office market: *BART at 20* and an update conducted by the Sedway Group in 2004. The major findings from these studies as they relate to Downtown San Francisco are discussed below.

Landis and Loutzenheiser's *BART at 20*

The most comprehensive study of BART's influence on the Downtown San Francisco office market was conducted by John Landis and David Loutzenheiser as part of the *BART at 20* series and published in 1995.[55] Key findings from the study are summarized below.

BART and Office Development Trends

BART's development was directly associated with an increased concentration of new office construction around the Downtown San Francisco stations. The authors compared the amount of development that occurred at different distances from BART stations in three time periods: before the issuance of the bond to fund BART (1962), between the issuance of the bond and the completion of the Transbay Tunnel (1963-1974), and after completion of the tunnel (1975-1992).

The total office inventory in San Francisco nearly doubled between 1962 and 1974 (from 18.8 million square feet to almost 35 million square feet), and then more than doubled again between 1975 and 1992 (to around 75 million square feet). Meanwhile, the share of the City's office development that occurred near the Downtown San Francisco stations also increased significantly. Prior to 1962, approximately half of San Francisco's office development occurred within quarter mile of what would become Embarcadero, Montgomery, Civic Center, and Powell Stations. In comparison, the same areas attracted two-thirds of the City's total office development between 1962 and 1974, and three-quarters after the Transbay Tunnel opened in 1974.

Landis and Loutzenheiser also demonstrated that the BART stations attracted larger office buildings during and after construction of the system. Office buildings built after 1962 and within a quarter mile of San Francisco BART stations were significantly larger than those developed either before 1962, or further away from BART stations.

BART had a much greater influence on office construction in Downtown San Francisco than in other office markets in the region. In contrast to Downtown San Francisco, office development decentralized in Alameda and Contra Costa Counties during and after BART's construction. Only a third of new office development in the East Bay occurred within a half mile of a BART station between 1962 and 1974, and even less after 1974. Landis and Loutzenheiser argued that the City of San Francisco's land use policies helped concentrate office development around the Downtown BART stations, whereas competition among the East Bay cities for new employment contributed to decentralization in Alameda and Contra Costa Counties.

BART and Office Performance

The authors were not able to identify a statistically significant relationship between proximity to BART and rents. Landis and Loutzenheiser analyzed average rents as a function of distance from the BART stations, using two methods: a basic comparison of rents by distance from the stations, and a

[55] Landis and Loutzenheiser, *Bart @ 20: BART Access and Office Building Performance*.

regression analysis that controlled for building quality, age, and other characteristics. The analysis did not find a significant rent premium associated with proximity to BART stations in Downtown San Francisco or elsewhere in the region, with the exception of Walnut Creek and Fremont. The authors noted that their findings were subject to significant caveats, including that the analysis was based on asking (not actual) rents and limited to a single year (1993), and that studies of other transit systems during the 1980s did find a relationship between office performance and transit accessibility.

Vacancy rates were lower in proximity to BART stations in 1993. The average vacancy rate within half a mile of the Downtown San Francisco stations was 18 percent in 1993, compared to an average vacancy rate of 28 percent for properties located more than half a mile from BART.

Update to *BART at 20*

Ten years after *BART at 20* was published, the Sedway Group updated parts of the study, focusing on whether the office development trends that had been identified by Landis and Loutzenheiser were still at play in the 1990s and early 2000s. The updated analysis showed that the trend of increasing office concentration around the Downtown San Francisco BART stations did indeed continue. Between 1999 and 2004, 82 percent of new office construction in San Francisco occurred within one-third of a mile from a Downtown BART station.[56]

[56] Sedway Group, *BART's Contributions to the Bay Area: An Update*.

APPENDIX C: BIBLIOGRAPHY

ALH Urban & Regional Economics. "Representative Draft Findings: BART's Economic Contributions to the Bay Area." Prepared for San Francisco Bay Area Rapid Transit District, June 10, 2015.

American Planning Association. *Investing in Place: Two Generations' View on the Future of Communities*, May 2014. http://www.planning.org/policy/polls/investing/pdf/pollinvestingreport.pdf.

APTA Ridership Report. American Public Transportation Association, Q4 2014. http://www.apta.com/resources/statistics/Documents/Ridership/2014-q4-ridership-APTA.pdf.

Atkinson-Palombo, Carol. "Comparing the Capitalisation Benefits of Light-Rail Transit and Overlay Zoning for Single-Family Houses and Condos by Neighbourhood Type in Metropolitan Phoenix, Arizona." *Urban Studies* 47, no. 11 (October 2010): 2409–26.

Center for Transit-Oriented Development. *Trends in Transit-Oriented Development, 2000-2010*. Federal Transit Administration, May 2014.

Chapple, Karen, and Carrie Makarewicz. "Restricting New Infrastructure: Bad for Business in California?," 2010. http://escholarship.org/uc/item/5rx2z17b.pdf.

Clower, Terry L., Michael Bomba, Owen Wilson-Chavez, and Matthew Gray. *Developmental Impacts of the Dallas Area Rapid Transit Light Rail System*. Dallas Area Rapid Transit, January 2014.

Debrezion, Ghebreegziabiher, Eric Pels, and Piet Rietveld. "The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-Analysis." *Journal of Real Estate Finance and Economics* 35, no. 2 (June 2007): 161–80.

Duncan, Michael. "The Synergistic Influence of Light Rail Stations and Zoning on Home Prices." *Environment and Planning A* 43, no. 9 (2011): 2125–42. doi:10.1068/a43406.

Glaeser, Edward L. *Agglomeration Economics*. Chicago: University of Chicago Press, 2010. http://public.eblib.com/EBLPublic/PublicView.do?ptiID=515742.

Greenberg, Ellen, and Dena Belzer. *TOD 202: Transit & Employment*. Center for Transit-Oriented Development, August 2008. http://www.reconnectingamerica.org/resource-center/books-and-reports/2008/tod-202-transit-and-employment/.

Knudtsen, Andrew. "Value Capture for the Rest of US." presented at the Rail-Volution, 2013.

Kolko, Jed. *Making the Most of Transit: Density, Employment Growth, and Ridership around New Stations*. Public Policy Institute of California, February 2011. http://www.ppic.org/main/publication.asp?i=947.

Landis, John, Subhrajit Guhathakurta, William Huang, and Ming Zhang. *Rail Transit Investments, Real Estate Values, and Land Use Change: A Comparative Analysis of Five California Rail Transit Systems*. Working Paper. The University of California Transportation Center, July 1995. http://www.uctc.net/research/papers/285.pdf.

Landis, John, and David Loutzenheiser. *Bart @ 20: BART Access and Office Building Performance*. Institute of Urban and Regional Development, University of California, Berkeley, September 1995. http://www.uctc.net/papers/309.pdf.

Litman, Todd Alexander. *Evaluating Public Transit Benefits and Costs: Best Practices Guidebook*. Victoria Transport Policy Institute, July 21, 2011. http://www.vtpi.org/tranben.pdf.

Metropolitan Transportation Commission. "Transit Ridership." *Vital Signs*. Accessed March 26, 2015. http://www.vitalsigns.mtc.ca.gov/transit-ridership.

Mohammad, Sara I., Daniel J. Graham, Patricia C. Melo, and Richard J. Anderson. "A Meta-Analysis of the Impact of Rail Projects on Land and Property Values." *Transportation Research Part A: Policy and Practice* 50 (April 2013): 158–70.

Salvesen, David, and Henry Renski. *The Importance of Quality of Life in the Location Decisions of New Economy Firms*. Center for Urban and Regional Studies, January 2003. http://www.unc.edu/depts/curs/curs-pdf-downloads/recentlyreleased/neweconomyreport.pdf.

Sedway Group. *BART's Contributions to the Bay Area: An Update*. Prepared for the San Francisco Bay Area Rapid Transit District (BART), October 2004.

Smart Growth America. *Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development*. Washington D.C., May 2013. http://www.smartgrowthamerica.org/documents/building-better-budgets.pdf.

Strategic Economics. *Benefits of BART for Office and Apartment Properties*. Bay Area Rapid Transit (BART), July 2015.

———. *Property Value and Fiscal Benefits of BART*. Bay Area Rapid Transit (BART), August 2014.

Terplan, Egon, Crescimano Laura, Shorett Mark, and Vi Tony. *The Urban Future of Work*. SPUR, January 2012. http://www.spur.org/sites/default/files/publications_pdfs/SPUR_The_Urban_Future_of_Work.pdf.