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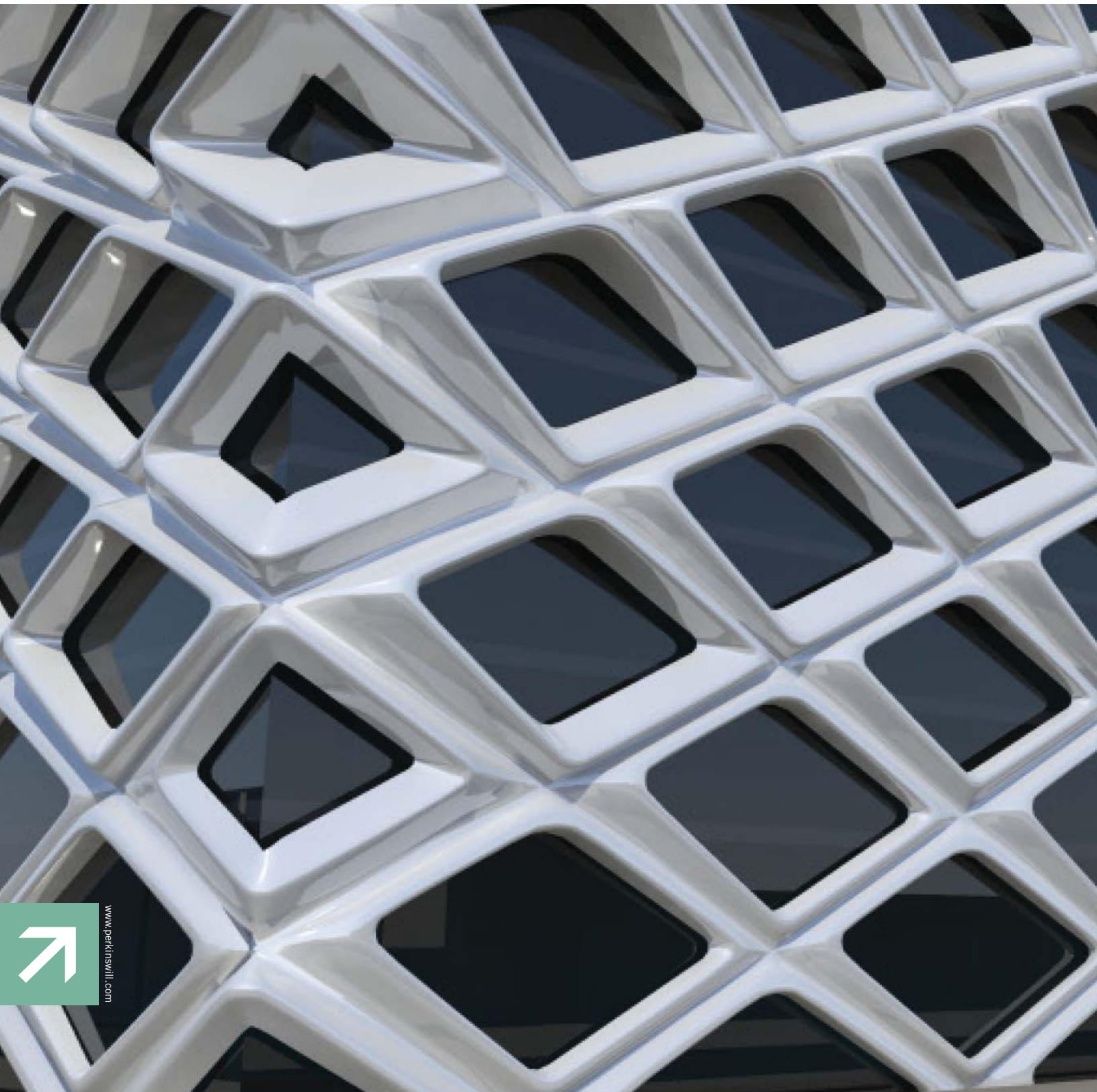
Research Journal

2012 / VOL 04.01



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PROJECTING RETURNS ON TRANSIT INVESTMENT:
A Research Proposal for Analyzing and Evaluating Investments Made In and Around MARTA Stations and Projecting the Returns

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ABSTRACT
It is a commonly held belief that the construction of rail transit systems and more specifically the stations along the system, drives real estate development in the areas they serve. The benefit is seen as a mutual one: high-density development at transit stations and along rail corridors generates the ridership and these systems need to be sustainable and ultimately successful. In practice, however, the success of this concept has not been consistent. The Atlanta region's MARTA (Metropolitan Atlanta Rapid Transit Authority) rapid rail transit system is a perfect example. MARTA offers a range of station types, from central business district to suburban that serve a range of demographics. Several of these station areas are well developed, while others remain surrounded by vacant land or expansive parking lots. This variation drives the core of the research: why has development unfolded at an inconsistent level at the various stations? Is this variation correlated to the investment made at each station and if so, how can the investments and returns be categorized to provide a clear understanding of these issues? The goal of the research is to provide a methodology for analyzing the performance of each station relative to fulfilling development potential and success of the transit system. In addition, it will provide a methodology for determining the broader return on investment that the city and county may realize in relation to the substantial infrastructure investment made at these stations.

KEYWORDS: Metropolitan Atlanta Rapid Transit Authority (MARTA), rail transit, economic development, transit-oriented development (TOD), station area planning, return on investment (ROI)

1.0 INTRODUCTION

"Fixed-guideway transit promotes growth and investment," is an axiom in the transportation world. Investment in rail transit has often been touted as a way to spur real estate development through the development of parcels in the vicinity for the transit system stops. On the surface this seems to make a great deal of sense. Rail transit systems represent significant public investment and establish a permanent presence in the areas in which they are located. It is an easy concept to grasp: people using a transit system would also live, work and shop nearby if these amenities were conveniently accessible at a specific station as well as throughout the entire system. In theory, this opportunity lures developers, spurs new development and leads to an increase in surrounding property values. Transit in turn benefits from this. Development appropriately designed and at the right intensities generates ridership for the transit system. High ridership helps sustain the transit system and ultimately makes it more successful.

As transit projects are planned, however, the development associated with the transit station construction rarely enters into the investment calculus on the part of the transit operators and affected jurisdictions with oversight. The policies and metrics that set goals and provide statistical value for the transit system are framed within narrow scopes. Typically, a transit system looks

at construction costs, projected ridership and revenues as well as projected operating costs in a limited set of criteria. In this scenario, the jurisdictions return on investment (ROI) is simply derived from these elements of the project. In a more comprehensive system, the local jurisdictions might consider additional elements that have great impact on the return they realize. Further, it may prove that additional, strategically allocated investments might increase the overall ROI at an attractive rate of return.

It is important to note that this concept conventionally applies to rail or other fixed-guideway transit only. This includes technologies such as commuter rail, rapid (or heavy) rail transit (RRT/HRT), light rail transit (LRT), streetcar and bus rapid transit (BRT) among others. Each of these systems requires physical infrastructure that is permanent in construction. The certainty of station and route locations and service are the development incentive. Conventional buses, local, regional, express or other are susceptible to relocation of stops, route changes and service cuts, thus, not providing the same development incentive.

From Portland, Oregon to Washington, DC there are many examples of development thriving in proximity to transit systems. However, there are also many examples where transit is devoid of development and is disconnected from the cities it serves. The Metropolitan Atlanta Rapid Transit Authority (MARTA) exemplifies this variation in the success of station-associated development. While a number of stations seem to have spurred expansive development, there are other stations along MARTA's rapid rail transit lines that serve as clear examples where development has failed to take hold. Few stations are surrounded by development. If they are, they are not pedestrian friendly, resulting in a poor quality of life. Of those that are, one in particular, Lindbergh Center station, has been heralded as a model for transit-oriented development (TOD). Lindbergh Center seems to be an exception to the otherwise undeveloped stations where underutilized surface and structured parking are the norm. What makes these undeveloped stations different? What causes development to pass them by? Station area plans are produced, transit-oriented guidelines are established and zoning regulations are modified, yet development remains absent. Lack of development in proximity to MARTA is a very real problem for Atlanta, especially as it relates to the investments the city is making in these areas.

The dearth of development at many MARTA stations indicates that there may be less truth to the axiom that investment in rail transit drives proximate real estate development. The reality appears to be that the positive relationship between transit and development may not be as operative in reality as it is in concept. In reality there are many other factors to consider in transit-related development; the presence of rail transit infrastructure is simply the prerequisite. Other conditions, such as market climate, development regulations and institutional requirements like joint development agreements and transit station design play a role. Each of these can either serve to entice development or act as a barrier to it. When these issues have become barriers they must be thoroughly examined, analyzed and understood in order to remove such barriers. This article discusses these conditions and outlines ways in which they may act as barriers. MARTA will serve as a case study throughout the article to illustrate examples where appropriate. While a complete station-by-station analysis is not in the scope of this article, a methodology for further research and understanding of each station in terms of its barriers to development will be framed. It is the expectation that this discussion on development barriers and proposed research framework is the first step of a larger research project.

Underpinning this analysis is the ultimate goal of creating a highly operational analytical framework within which jurisdictions may evaluate the various development parameters in the transit station areas, identify and address development barriers and accurately set investment levels and types to realize the highest levels of return on the jurisdiction's investments.

1.1 Development of New MARTA

When the original referendum forming MARTA was passed in 1965, it was intended that Atlanta's transit system would be designed in parallel with land use controls that would promote high density development around transit stations and high ridership on the transit system[1]. Throughout the next decade MARTA would work with the Atlanta Regional Commission (ARC) and the City of Atlanta Planning Department to classify and plan MARTA's stations for development. Zoning regulations were updated and land use plans were amended to ensure that the rail system would have supportive development. Figure 1 is a rendering that illustrates MARTA's original vision for its transit stations.

That original vision has generally been difficult to implement. Today MARTA's rail system has grown to include 38 stations and 48 miles of rail infrastructure funded by more than $6 billion in public investment, but the original goals for the system remain largely unmet in

terms of ridership and development potential. Parking, both surface and structured, represents the prevailing development model at transit stations (see Figure 2). Besides the 1970's, only recently has MARTA's Board taken a serious turn towards system-wide transit-oriented development to help increase ridership and reduce

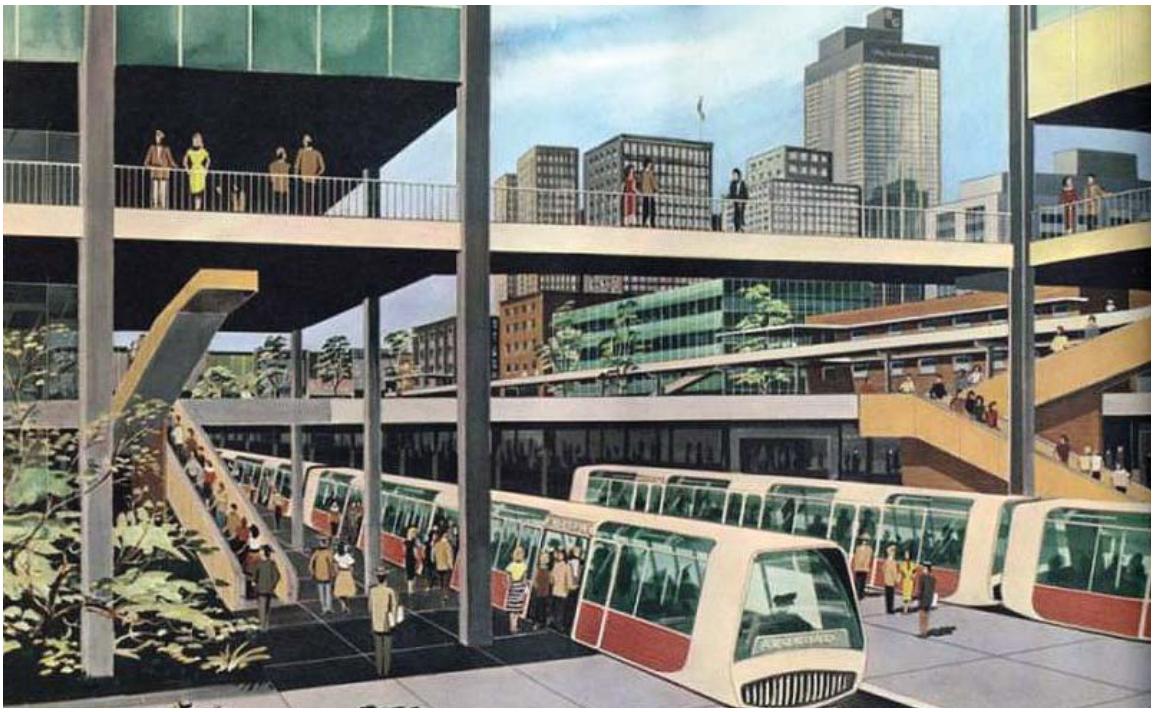


Figure 1: Original vision for MARTA's transit stations (rendering: Walter Hunziker, 1961).

Figure 2: Parking at West End MARTA station (photo: by author).

budget shortfalls with the potential sale of land. For example, in the last decade the Lindbergh Center station has been redeveloped and is now touted as a model of successful transit-oriented development[2]. The 47-acre site is home to a mix of high density office space, multi-family housing, retail and shared structured parking. As of 2011, the station has emerged as the third busiest of the entire system behind the stations at Five Points, Atlanta's transit hub and Hartsfield-Jackson International Airport (see Figure 3)[3]. In addition to Lindbergh's TOD, MARTA has also released its Transit-Oriented Development Guidelines aimed at outlining the agency's development expectations and clarifying its process for joint development[4]. MARTA anticipates that the presence of these guidelines will foster development at other stations in the system. It is too early in the process to determine the success and influences of both of these measures, yet one thing is clear: barriers to development at MARTA stations still persist. As the region seeks an aggressive expansion of rapid rail and streetcar transit over the next ten years, it seems critical that barriers to development are understood and overcome and that an operational system for evaluating the success of the projects aligned with the transit stations is developed.

CURRENT RANK	STATION NAME	FY 2012 (YTD)	FY 2011	FY 2010
1	FIVE POINTS	20,956	22,188	22,769
2	AIRPORT	9,335	9,583	10,769
3	LINDBERGH CENTER	9,156	9,263	8,970
4	COLLEGE PARK	9,154	9,261	9,352
5	PEACHTREE CENTER	7,290	7,411	7,602

Figure 3: MARTA annual weekday ridership for the top five stations (source: MARTA Analysis of Rail Station Entries: Fiscal Year 2012, Third Quarter Update).

2.0 BARRIERS TO DEVELOPMENT

Traditionally when barriers to transit-oriented development have been considered, land use and zoning regulations are the elements in the process that first come to mind. Development regulations certainly present barriers to undertaking these complex projects, but they are actually only potential barriers and seem to have become the easiest component to resolve. In addition to development regulations, other barriers that can affect development at transit stations include market conditions, station design and institutional requirements. These are representational, top-level categories. Further, they are framed in terms of conventional understandings of the relationship between each of the categories outlined and typical transit-oriented development.

2.1 Development Regulations

Even if the market climate is favorable, regulations on development may keep potential developers away from certain areas. Given the popularity and momentum that station area planning and transit-oriented development have gained over the past two decades, development regulations are not necessarily the major barrier to development that they once might have been[5]. Many cities, even neighborhoods have preemptively undertaken the process of station area planning; putting in place visions for development they deem appropriate. At the end of 2010, MARTA released guidelines for transit-oriented development. These guidelines provide great detail about how development should occur and what it should look like. MARTA is not the only example. BART (Bay Area Rapid Transit), DART (Dallas Area Rapid Transit) and even the State of Florida have similar guiding documents. Still, the presence of TOD guidelines alone does not automatically induce developer interest. While it seems clear that development regulations, in one form or the other, are still posing obstacles to development, it is probably unrealistic to discard regulations altogether in favor of generating new development, but understanding the persisting issues may help to resolve them. Obstacles may be presented when development regulations are unclear, too constricting or, as may be the case in some situations, antiquated and incompatible with transit-supportive development.

First, there are the cases in which existing development regulations discourage development near transit. This can include anything from the policies of a comprehensive plan to the specific parking ratio requirements found in a municipality's zoning ordinance. It is not that these regulations necessarily prohibit development at transit; they cling to outdated ideas of development such as single use projects, often at low densities with substantial minimum parking requirements. This is counter to the types of development that are financially feasible. Projects that support transit often require a mix of uses at higher densities with lower minimum or maximum parking requirements. The parking issues can be especially problematic. Since transit-supportive development conceivably reduces automobile dependence, it will reduce the overall parking requirement while satisfying the requirement through deck parking or shared parking structures. Many development regulations have not caught up with this strategy.

In response, some municipalities and agencies have attempted to update development regulations through zoning overlay districts and design guidelines that address the complexities inherent to transit-supportive development. These can all be useful instruments for changing the regulations themselves, but can also sometimes be problematic. Complex development is not encouraged by complex regulations. As discussed in the previous section, the market climate is highly dynamic. Development criteria change rapidly and in many instances the values associated with particular types of development change. Confining development to a narrow vision of a static solution may lead to a lower level of development. Regulations that are set forth to govern development, transit-oriented or otherwise, might need to be flexible enough to allow for interpretation and innovation in design proposals and thus, incentivize development appropriate to transit station success. As there is often more than one answer to these challenges, it may be that goals should focus on generating activity and ridership through a proactive incentivizing of development in the areas surrounding the stations. These are, most consistently, the properties that will determine the success of development and transit together.

Finally, ambiguity surrounding development regulations may also dissuade developers from taking on a particular project. Unclear zoning ordinances are the first and most obvious problem. Another problem not often considered is uncertainty as to which municipality will ultimately regulate the development. This is especially true of MARTA where the system crosses several municipal boundaries, each with its own set of development regulations. Further compounding the matter is that municipal boundaries in Atlanta are now in a state of flux. Over the past decade Atlanta has seen the incorporation of several new cities. Some of these have had direct influence on development at MARTA stations. For instance, the Sandy Springs station located north

of the city was primed for development. However, development plans fell apart in 2005 when Sandy Springs incorporated and it was no longer clear how the new city would regulate the new development. That problem still persists today. The Brookhaven station, on MARTA's northeast line, has long been thought of as a site with high development potential. Now Brookhaven, similar to Sandy Springs, seems destined for incorporation. As uncertainty regarding these changes are apparent, MARTA has remained hesitant to engage developers rather than invest valuable time and resources working towards a project that may become untenable as jurisdictional boundaries change.

2.2 Market Climate

As with any development, a developer must recognize transit-oriented development as a lucrative business opportunity in which a substantial return on investment can be realized. It is well established that development near transit commands a higher value than similar development located farther away[6]. In fact, some real estate studies have revealed this "transit premium" to be as much as 150 percent[7]. However, before private development will even consider undertaking a development project the market climate must be right. This does not just apply to transit-related development: a "good" market climate is a fundamental prerequisite to promoting development at any location. If the market is not favorable, there will be no interest in development and addressing any other barriers that exist is moot. But what constitutes a "good" market climate? How can "good" market climates be created? It is a difficult concept to define, however, this section considers four conditions that may contribute to a climate being favorable for development: population, economy, competition and history.

It may seem paradoxical, but a substantial existing population near transit is one favorable sign to a developer. Not only does this existing population produce transit riders it also promises initial patrons for any new development. Larger development projects at transit stations can take many years to come to fruition. Transit-oriented development at MARTA's Lindbergh Center station first gained traction when the Federal Transit Authority (FTA) relaxed its joint development guidelines in 1997 and selected Lindbergh as a pilot project. It would take almost ten years for the project to be completely developed[8]. A built-in population can help offset losses early in development reducing the risk a developer must assume. Several metrics that describe the existing population - population density, job density and area median income for example - can help gauge the characteristics of an existing population and are available from a variety of resources such as US Census Bureau data or market studies.

Another component of the market climate is the overall state of the economy. Since the start of the Great Recession in 2008, development across the country has stalled. Access to funding for new development has become scarce (see more under 2.4 Institutional Requirements) and investors have become increasingly risk-adverse. Though certain federal, state and local funds or low-interest loans may be available to help incentivize development, they often require a certain matching private investment to obtain. In the absences of startup capital, development will not occur.

Competition is another barrier to development near transit. If there is no sense of demand, developers will typically shy away from development projects. Areas that suffer from excesses of certain building types (office space, condominiums anf retail) and high vacancy rates are signs to a developer that the market is not capable of absorbing additional development. Competition with existing development is just one scenario. It is also possible and has been the case with MARTA that development near transit stations struggles when pitted against cheaper, lower-risk opportunities on the urban fringe and in the suburbs. Policies that reinforce this type of market can be responsible for a lack of interest in transit-oriented development. In this scenario, transit investment may require investment in the development process to realize the fullest benefits to the system and to provide a leveling of development opportunities.

Finally, a history of success with a certain development type or a proven model will encourage developers to repeat a similar undertaking. This again speaks to the risk-adverse nature of development. Strip commercial retail, office parks and townhome subdivisions are familiar development models that have a proven success rate and a fairly discernible market. High-density, mixed-use, joint public-private development near transit has the potential for higher returns, but the sample size for successful completion is too small to be convincing to developers. This is a local and regional issue. Though Portland has realized great success with transit-oriented development, developers in other cities may cite local differences in population demographics and market characteristics as reasons why the model may not be completely reproducible in Atlanta[9]. This is a difficult barrier to overcome: if TOD is not being built, how will there ever be enough successful models to encourage additional development?

2.3 Station Design

A critical condition that impacts development at transit stations is the transit station itself. Specifically, it is the station design and configuration of its site – how the station connects with and engages its immediate surroundings – that may encourage or discourage development. This point is often disregarded for its simplicity, but can actually play a very important role.

First, consider the configuration of a station site. Odd site geometries and extreme grade changes often encountered at transit stations can make a site difficult to build on or unattractive to development. As an example, a considerable amount of empty land surrounds the MARTA station at Dunwoody. Upon closer observation it is apparent that the land on which the station is located sits far below street level and actually serves as a stormwater retention facility. Its ownership by MARTA, notwithstanding the physical characteristics of this site, present a design challenge to even the most entrepreneurial developer.

Connectivity is also a major issue: do clear vehicular and pedestrian connections exist? Some stations, such as the MARTA station in Midtown Atlanta, have entrances on multiple streets and is easily accessible by car (drop-off only) as well as by bicycle and by foot. However, some stations (or the streets around them), such as the H.E. Holmes MARTA station, do not provide clear connections and accessing a station directly can be a challenge or even dangerous for pedestrians and bicyclists. The Vine City MARTA station has great potential for ridership with its proximity to the Atlanta University Center. However, its entrances are oriented away from the campus and a lack of connections to them make access problematic.

This leads to another consideration in station design: the number of entry points. Even if connections to station entrances exist, they may not be designed in a way that is capable of interfacing with future development. These stations would require significant investments to re-design and re-construct if they are to truly ever become part of a transit-oriented development. The North Springs MARTA station serves as an excellent example. Designed primarily as a park-and-ride facility, the station's primary points of access are via the parking decks that abut the station. Any other connection is an afterthought as the station was never truly conceived as a pedestrian-oriented station. A townhome development immediately south of the station was forced to create a pedestrian bridge just so residents would have some means of accessing the station.

Station amenities are also a design consideration. This can be as simple as the provision of restroom facilities, bicycle parking or bus transfer service that elevate the status of a station over others. A bolder approach is to allow vending or other commercial activities within the stations themselves. This immediately gives a transit station multiple purposes beyond transit access, creating a constant stream of patrons and activities. Recall the earlier discussion that an existing population or activity base can be a good sign to developers: expanded station activities can aid in this incentive in addition to make the experience of transit better for all users. People attract other people; activities attract other activities. MARTA offers us no examples of this principle in practice. The transit authority currently does not allow for vendor opportunities within its stations.

2.4 Institutional Requirements

Ultimately, institutional requirements may present the most critical set of challenges to the development process. This category can encompass barriers at the federal, state and local levels in addition to other private development requirement. Barriers in state and local requirements can vary widely from transit system to transit system. However, perhaps the biggest obstacle to enticing transit authorities to address real estate development is that these agencies are focused primarily on the expansion of transit and its operations and maintenance. While trying to keep operations of the system successful, real estate development may be a very low priority. As a result, many agencies lack the funds or have little or no personnel with the qualifications and experience to promote, coordinate or handle real estate and land development matters on a daily basis. Instead, the transit agency's legal department reviews and responds as they can along with their regular legal workload. This situation creates an atmosphere in which expanding the potential returns for the particular institutions is difficult.

In the state of Georgia, the Atlanta Regional Commission and Georgia Regional Transportation Authority also require oversight and review of large projects. FTA's joint development process is required for any TOD on federally purchased property. The Joint Development Agreements require very specific documentation and proof of well-conceived commitments from the developer, transit operator, governments and the public. All of these well-intentioned reviews and requirements add a significant amount of time to the development process. Few developers and their funders are able or interested in pursuing abnormally long projects unless they are significantly sized and lucrative.

One layer of institutional requirements that applies evenly to all transit systems are those set forth by the Federal Transit Administration (FTA). FTA guidelines for joint development were first released in 1997[10]. These guidelines apply to all transit stations where federal funds have been used to acquire land and give transit authorities the flexibility to undertake investment.

MARTA's Lindbergh station was a pilot TOD project under these revised FTA guidelines. It was further incentivized by the fact that any revenue obtained through development was not required to be used for future capital investments in the system, but could rather be channeled to the operations budget. Since transit systems almost always operate at a loss, this potentially unrestricted operations income stream was a huge benefit for transit systems to pursue development. Given that the FTA has seemingly relaxed its restrictions on development of land in which it has a vested interest and has even offered incentives to transit agencies, it is possible that most of the intuitional barriers to development still lie with the transit agencies themselves.

Furthermore, the region and state's priority on funding vehicular capacity leaves very little money for transit projects and is contrary to the goals and efforts to focus development concentrated in-town areas. This continues to create more sprawl and congestion, which in-turn keeps the public demand high for automobile transportation projects. Federal funding of transit is diminishing at the same time, creating more pressure on local governments to identify funding sources. Since regional and state sources are minimal, suburban congestion dominates the development community's focus.

3.0 RESEARCH PROPOSAL

The primary purpose of this article is to open the discussion on potential barriers to development at transit stations, to create a method for addressing these barriers and ultimately, to produce an analytical framework within which decisions are made and tracked relative to the investments made at each station and the returns realized as a result of these investments.

The next step in this process will be to identify representative stations in the MARTA system and then analyze and test these stations based on the criteria that are outlined through the process. While the research conducted for this article does not yet include the deep analysis required to determine specific outcomes, this section does focus on framing a methodology for conducting such an analysis. The research project will be conducted in five parts: establish station typologies, establish metrics to test for each criterion, analyze each station, compare with other transit systems and finally, make recommendations for realizing development at under-developed stations. The next sections detail the steps for the proposed research project.

3.1 Establish Typology

No transit stations are exactly alike. The design and configuration of stations and their sites impact development. The same holds true for the larger area in which a station is located. A station's context matters. The functions, operations and needs of a transit station located in a dense urban corridor are very different from one located in a suburban area. Well-established urban stations, much like the MARTA station in Decatur, eschew public parking in favor of denser, pedestrian-oriented development. At the Decatur station, few opportunities exist for new development. Suburban stations, on the other hand, may be located in sparsely developed areas and serve as a park-and-ride facility. The North Springs MARTA station is one such example. Its immediate neighbors are two structured parking decks surrounded by vacant land and a few townhome developments. The examples of the Decatur and North Springs stations represent extreme ends of a spectrum. Several types of stations are likely to exist. MARTA's TOD Guidelines suggest that there are seven station types: urban core, town center, commuter town center, neighborhood, arterial corridor, collector corridor and special regional destination. Other typologies may be used for the extended research effort. Since these types were created specifically for the MARTA system, it is very likely that other types exist. A clear and comprehensible typology of stations should be applicable to stations in virtually all transit systems. Classifying and organizing stations in this manner is a key first step in understanding how particular stations work and how barriers to development might be removed and incentives created to increase the city's return on transit infrastructure investment.

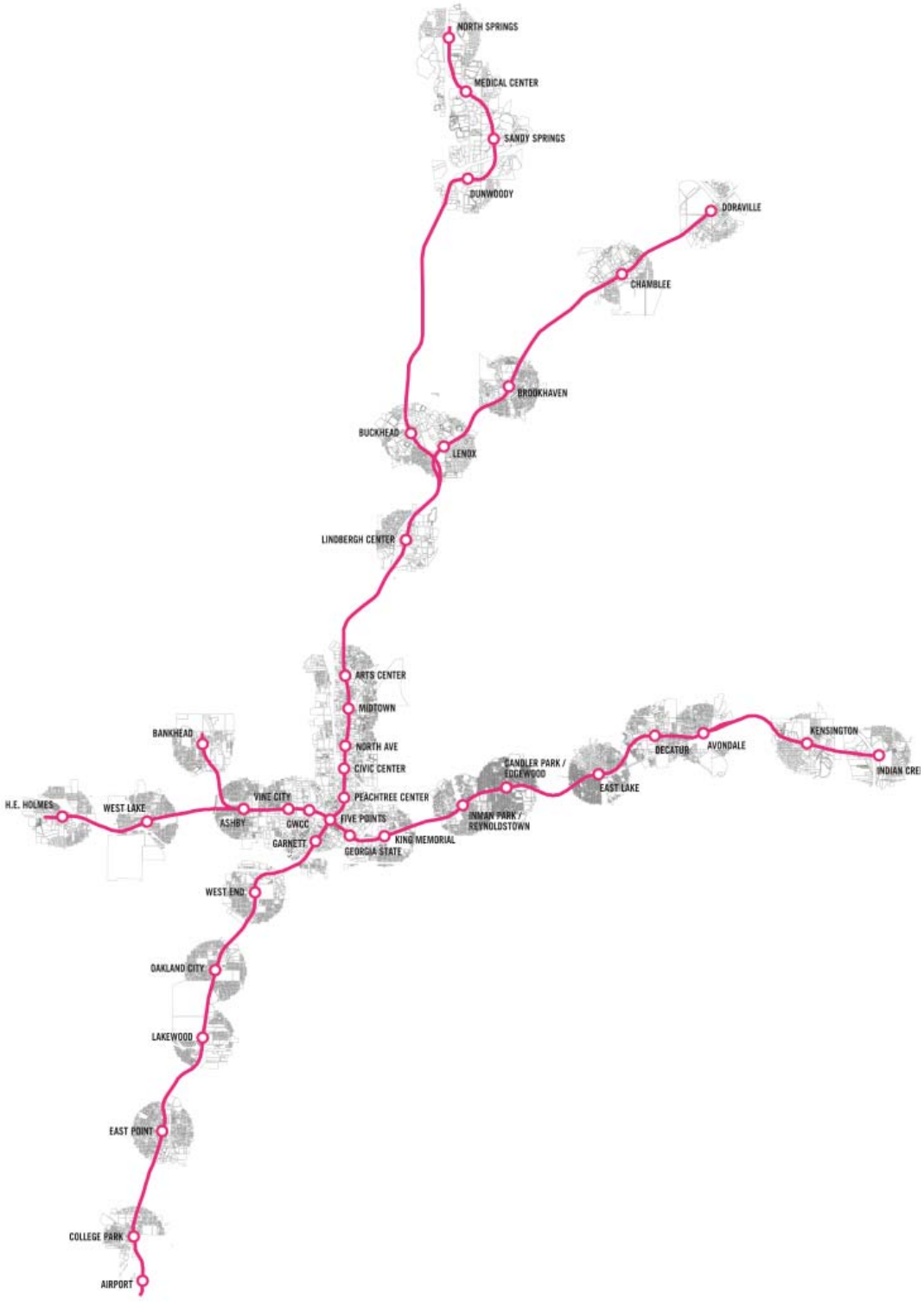


Figure 4: Parcels within ½-mile of MARTA stations.

3.2 Develop Metrics

Outlining the four major barriers was the first step in understanding why some stations might be more prone to development than others. Analyzing and testing for these barriers is a more detailed task. The next step of the research project is to develop specific metrics for the analysis of each subject station. The basis for creating metrics lies in the relationship between actions that have measureable inputs and outcomes. These relationships ultimately form the methodology for identifying, projecting and tracking the basic return on investment calculus for each decision in the development process. For instance, in terms of market climate, one might simply review current market conditions including barriers to entry and then determine the subsidies that would be required to incentivize development at a particular station. In a thriving market the investment may be low relative to the predicted return (increased ridership, reduced VMT, increased workforce housing, among others). However, in a more challenging market, the incentive may need to be greater. In this scenario the metrics are critical to determining the ultimate value of the investment for both the transit system and the city. Further, development regulations can be analyzed to ensure that the development levels and patterns that will be required to realize the anticipated returns are structured to incentivize development rather than create additional barriers to development. For instance, if the analysis shows that 100 units per acre yields the highest return and reduces capital barriers to smaller development, while zoning allows only 50 units per acre, then the analysis will reveal the element (the density regulations) that is inhibiting development at a particular station area. Analyzing institutional requirements will depend greatly on transit system location and may require a combination of literature review and interviews with different agencies to establish. However, it is assumed that the intention is such that the station typology will produce immediate data that indicating characteristics that preclude or incentivize development. Entry types, locations, number of connecting streets and adjacent land development may all be valid benchmarks in this category. Ultimately, establishing a clearly defined set of research metrics will make it more effective to compare the relationship between desired outcomes and barriers at the various stations. Once these metrics are created, the returns on individual investments can be determined and action can be taken.

3.3 Analyze Stations

Once the stations are organized into categorical typologies and the specific metrics have been established, the next step is to conduct an analysis of each station typology based upon each of the metrics. The result should be a substantially comprehensive matrix that compares metrics for each station, both internal to the individual station and in a comparative structure. The initial stages will include a limited number of stations that represent the various types of stations in the system, however, all stations should ultimately be included in the analysis regardless of surrounding development status. Recording data for stations where development has already occurred will serve as one of several controls for the specific analyses of stations that do not have substantial associated development. A matrix that includes both developed and undeveloped stations will provide relatively conclusive results regarding the nature and number of barriers preventing development in proximity to certain station types and further, act as controls for each of the research criteria.

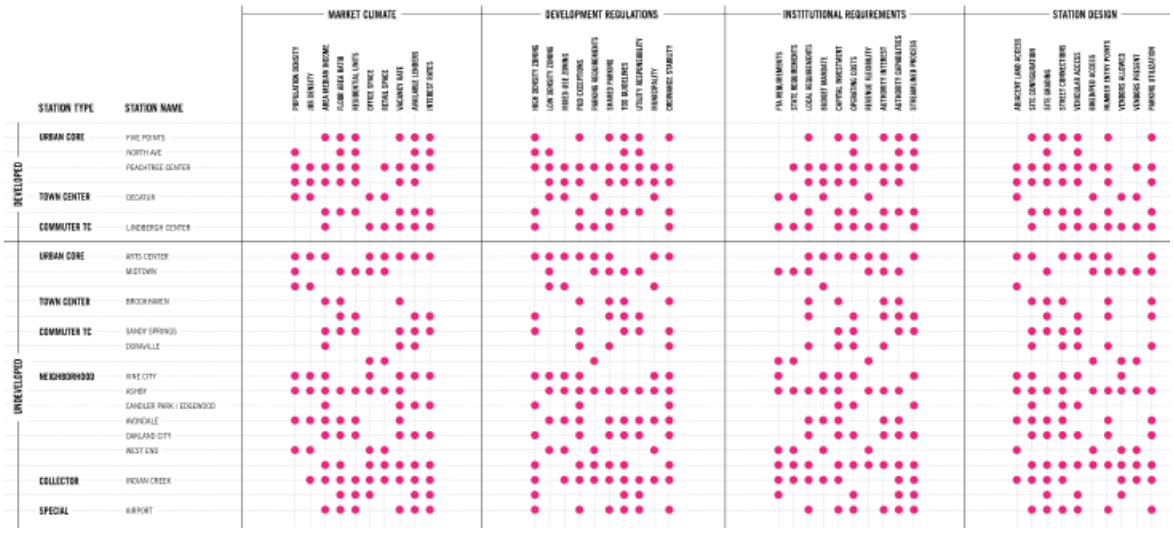


Figure 5: Potential matrix of MARTA system-wide station analysis.

3.4 Compare Systems

While section 3.3 provides an analytical comparison at an intra-system level, this next section builds on it by providing a high-level comparison on an inter-system platform. This research will address specific components of systems other than MARTA that have faced similar barriers to development, but have increased development through implementation strategies. Beyond understanding development barriers for stations on one transit system, the broader question remains unanswered: does fixed-guideway transit drive real estate development? By broadening the research to include multiple transit systems, a sufficient sample size can be obtained that might ultimately support a conclusion. The same series of criteria for measuring the efficacy of station area success used in the intra-system analyses will be implemented for the multiple system analyses as well. This should afford consistent preliminary conclusions as to why the conditions for development across multiple stations on multiple transit systems unfold with various levels of success.

MARTA - Atlanta | METRO - Washington DC | BART - San Francisco

Figure 6: Comparison of transit systems: MARTA (Atlanta), METRO (DC), BART (San Francisco).

3.5 Development Recommendations

The previous four sections are intended to yield a clear understanding of how specific types and amounts of investment yield specific returns. This section is intended to take the results from the first four and develop specific recommendations for realizing an increase in development associated with under-performing transit stations. These recommendations will be framed within the relationship between the investments made (the recommendations) and the results of those investments.

A study of the proposed Peachtree Corridor streetcar route conducted by students and faculty at the Georgia Institute of Technology illustrates how such an analysis might inform these recommendations[11]. In 2007 the Peachtree Corridor Task Force unveiled its vision for a 14-mile stretch of Peachtree Street, Atlanta's premier street[12]. The vision included not only streetscape enhancements, but also a streetcar route along the entire corridor. Though the vision's objectives included connecting residents to transit and stimulating development, both real estate and economic, the original alignment for the streetcar appeared to be driven more by a desire to create the perception of a physically continuous corridor. In prioritizing this perception, the proposed alignment often intersected or closely paralleled other major infrastructure elements such as freight rail, interstates and existing transit service all of which had the potential to diminish the transit's influence of development potential. This was particularly true in transit segment number seven in Atlanta's south side. While this area had much to offer in terms of development potential, it was here that the transit alignment abutted the greatest number of physical barriers such as interstate, freight rail and rapid transit infrastructure proximity.

Instead, the Georgia Tech study proposed an alternative alignment that balanced a continuous corridor form with a greater area of potential development capture. This "capture" was defined as the population and properties within ¼-mile and ½-mile radii of the transit alignment. By moving the streetcar alignment away from existing freight and rapid transit rail lines and closer to the neighborhoods it would serve, the streetcar alignment would theoretically realize higher potential gains in terms of developable land area, additional property tax digest, neighborhood access and overall ridership. Figures 7 and 8 illustrate the development vision and analysis for the transit realignment.

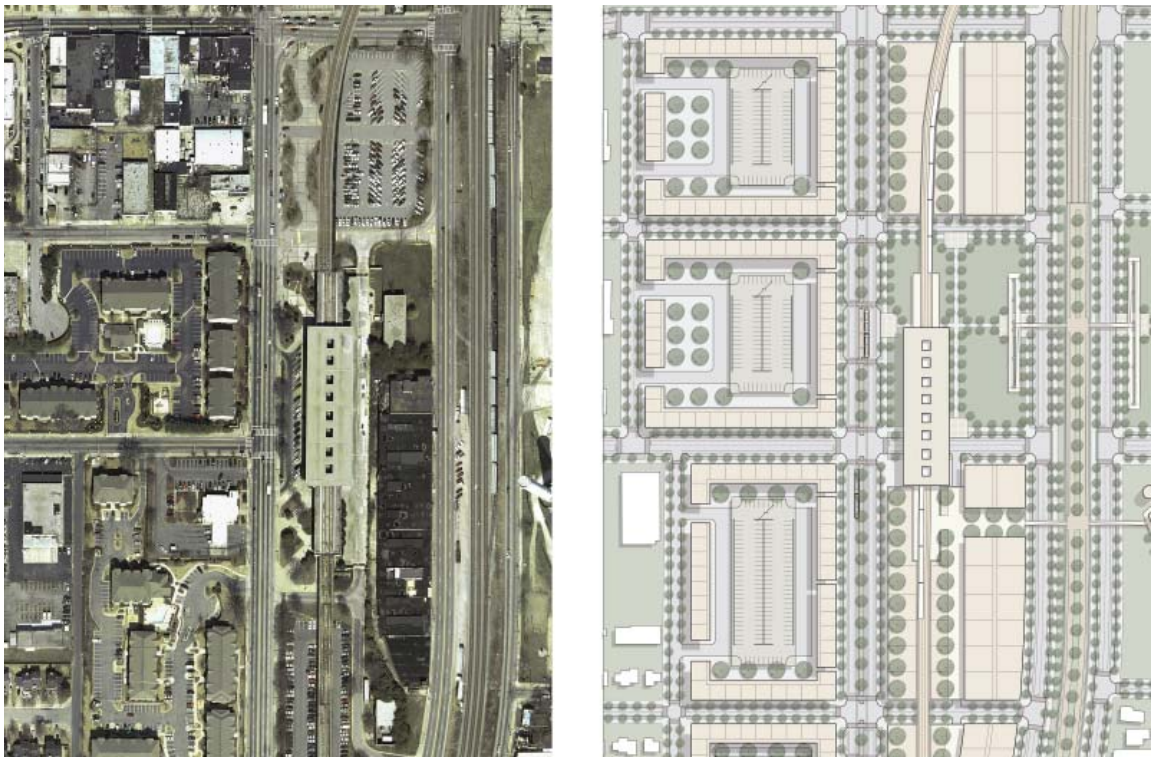
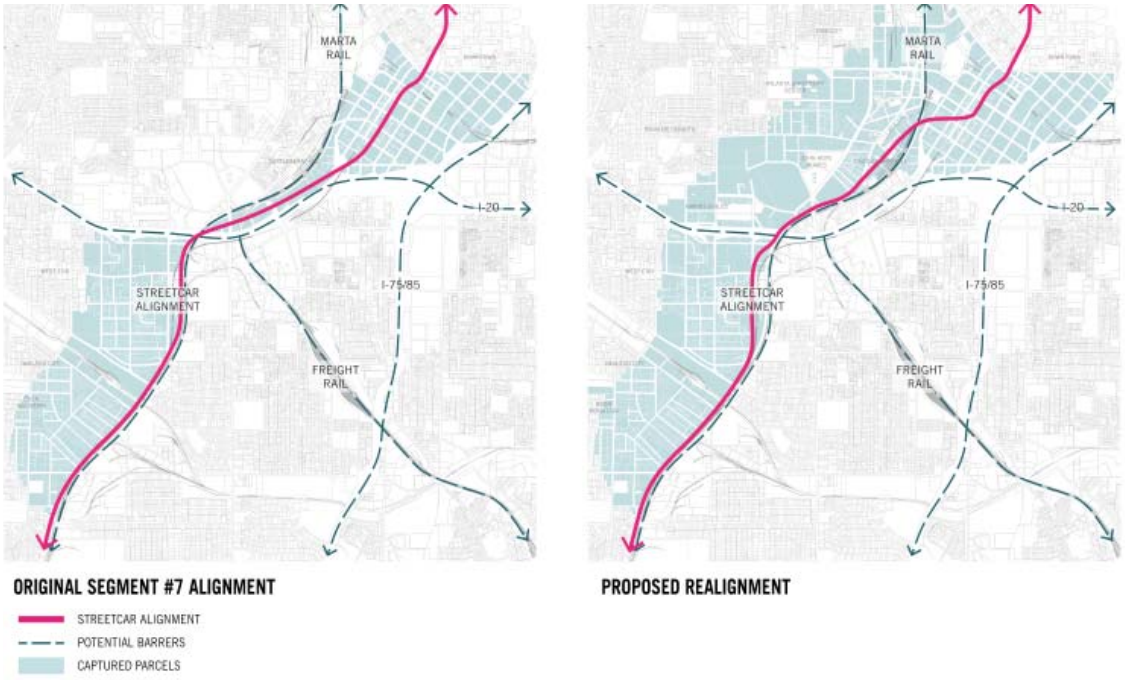


Figure 7: MARTA West End station today (left) and rendering of potential development from proposed alternative streetcar alignment (right).



ORIGINAL SEGMENT #7 ALIGNMENT

PROPOSED REALIGNMENT

STREETCAR ALIGNMENT
POTENTIAL BARRERS
CAPTURED PARCELS

DEVELOPMENT POTENTIAL ANALYSIS

METRIC	ORIGINAL ALIGNMENT		PROPOSED REALIGNMENT		POTENTIAL CHANGE	
	1/4-MILE RADIUS	1/2-MILE RADIUS	1/4-MILE RADIUS	1/2-MILE RADIUS	1/4-MILE RADIUS	1/2-MILE RADIUS
CAPTURED PARCELS	1,090	1,831	1,567	2,525	+ 477	+ 694
TOTAL LAND AREA (ACRES)	416	689	738	1,275	+ 322	+ 586
APPRAISED VALUE	$1.3 B	$1.9 B	$1.4 B	$2.6 B	+ $144 M	+ $780 M
ASSESSED VALUES	$526 M	$757 M	$584 M	$1.0 B	+ $57 M	+ $312 M
NUMBER OF BUILDINGS	975	2,000	1,481	3,086	+ 506	+ 1,086
BUILDING SQUARE FOOTAGE	6.3 M	11.3 M	7.6 M	16.0 M	+ 1.3 M	+ 4.6 M
NUMBER OF BLOCKS	131	197	222	285	+ 91	+ 88
POPULATION (POTENTIAL RIDERSHIP POOL)	4,619	7,297	8,367	16,978	+ 3,748	+ 9,681
HOUSEHOLDS	1,090	2,152	2,458	4,807	+ 1,368	+ 2,655
NEIGHBORHOODS SERVED	4	5	7	10	+ 3	+ 5

Figure 8: Comparison of original Peachtree Corridor alignment for Segment #7, Southside (left) and proposed alternative capturing a larger potential development base (right).

4.0 CONCLUSION

It is not yet certain that investment in rail transit results in real estate development. Though many have stated this claim, the best affirmation that data and literature review suggest that development near transit commands a premium in value. Empirical evidence is inconsistent: some transit stations have experienced great success, some have had mixed results and others have failed to stimulate development altogether. The evidence suggests that the answer is not a simple causal relationship. Rather it suggests that several conditions factor into whether or not development will be attracted by transit. Market climate, development regulations, institutional requirements and station design all play a role in this respect, however, the relationship between each and the overall extent of impact is not entirely clear. Specific benchmarks must be established and the larger analysis of transit stations and transit systems must be conducted as outlined in this article in order to understand the impact of each of these components on station area development. As rail transit systems continue to be funded and expanded, it is critical to understand which conditions actually contribute to surrounding development. If all of the factors are understood, conditions can be appropriately aligned to ensure the full realization of the development potential of transit, obtain maximum transit ridership and that investments are made that yield the highest returns for the system.

Moving forward, this research aims to provide a highly operational analytical framework for understanding the effects of various types of investment on the outcomes of development of the areas surrounding transit stations as well as the benefits to the larger system. This is intended to be an objective methodology to guide decisions on the allocation of investments in order to render the highest possible returns: returns that are categorized as being highly beneficial to the jurisdictions and citizens within these jurisdictions.

Acknowledgments

The authors would like to recognize several colleagues in the Atlanta office of Perkins+Will for their contributions. Heather Alhadeff served as a source of knowledge regarding real estate development processes within transit agencies and MARTA operations. Ryan Gravel provided several insights and suggested several MARTA stations where they have served as examples throughout the article. Cassie Branum and Jeff Williams provided clarity on the research concept and contributed to the framework for the research project.

REFERENCES

[1] Parsons Brinckerhoff/Tudor/Bechtel, (1962). A Plan and Program of Rapid Transit for Metropolitan Atlanta, Atlanta, GA: Metropolitan Atlanta Transit Study Commission.

[2] Dumbaugh, E., (2004). “Overcoming Financial and Institutional Barriers to TOD: Lindbergh Station Case Study”, *Journal of Public Transportation,* Vol. 7, No. 3, pp. 43-68.

[3] Metropolitan Atlanta Rapid Transit Authority, (2011). Fact Sheet, Retrieved on April 12, 2012 from http://www.itsmarta.com/uploadedFiles/News_And_Events/Newsletters/MARTA%20Fact%20Sheet%20010611.pdf.

[4] AECOM Transportation, (2010). MARTA: Transit-Oriented Development Guidelines, Atlanta, GA: Metropolitan Atlanta Rapid Transit Authority.

[5] Calthorpe, P., (1995). *The Next American Metropolis: Ecology, Community, and the American Dream,* New York, NY: Princeton Architectural Press.

[6] Cervero, R., Farrell, C., and Murphy, S., (2002). Transit-Oriented Development and Joint Development in the United States: A Literature Review, Transit Cooperative Research Program Research Results, Digest 52, Washington DC: Transportation Research Board.

[7] National Association of Realtors (NRA), (2011). Transportation and Real Estate: Making the Connections, Retrieved on April 10, 2012 from http://www.realtor.org/transtools.

[8] Metropolitan Atlanta Rapid Transit Authority, (1999). Development Application Submitted to the Federal Transit Administration.

[9] The Office of Transportation and Portland Streetcar, Inc., (2008). Portland Streetcar Development Oriented Transit, Retrieved on April 9, 2012 from http://www.portlandstreetcar.org/pdf/development_200804_report.pdf.

[10] Federal Register, (1997). Federal Transit Administration Policy on Transit Joint Development.

[11] Bacon, K. et al, (2007). Atlanta Peachtree Streetcar Alignment Study and Station Area Planning, Unpublished Study, Atlanta, GA: Georgia Institute of Technology.

[12] Peachtree Corridor Task Force, (2007). Peachtree Corridor Final Report, Atlanta, GA: City of Atlanta.